



THE U.S. DIGITAL SERVICE

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## **Report to Congress – December 2016**

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Section 1

# Introduction

In August 2014, the United States Digital Service (USDS) was created to improve the Federal Government's most important public-facing digital services. USDS is a collaboration between some of the country's top technical talent and the government's brightest civil servants, who work in partnership to apply private sector best practices to our digital services.

Initially, USDS' small team of technologists planned to focus on three projects. Additional funding and the support of Congress for the Information and Technology Oversight and Reform (ITOR) Fund in the 2015 and 2016 Fiscal Year appropriations bills allowed USDS to invest in a greater number of high-priority projects, detailed in this report. Of the \$30M appropriated in the 2016 fiscal year, \$14M was apportioned to USDS to support its operations, with the balance of the \$30M supporting other IT oversight and reform activities. At its creation, USDS was administratively placed within the Office of the Federal CIO. After more than two years of operations, however, the Office of Management and Budget (OMB) has decided to move the Administrator of USDS to directly report to the Deputy Director of Management (DDM).

USDS staff in OMB work alongside agency Digital Service team staff to support high-priority projects in agencies including the Departments of Veterans Affairs, State, Education, Homeland Security, Health and Human Services, Defense, the Internal Revenue Service, and the Small Business Administration.

The central focus of USDS is on the measurable improvement of the performance and cost-effectiveness of important, public-facing Federal Government digital services – via the application of modern technology best practices. To execute this mission, USDS conducts hands-on engagements with agencies. A summary of USDS' most impactful engagements is provided in Section 2.

In support of its core mission of improving the performance and cost-effectiveness of important government digital services, the USDS engages in three additional activities:

- **Rethink how we build and buy digital services.** USDS is working on modernizing procurement processes and practices for the modern digital era. Our partners in the IT contracting community are a critical element of modernizing our government, as skilled contractors deliver the majority of the government's digital services.
- **Expand the use of common platforms, services and tools.** USDS is working with agencies to identify and implement shared tools and services to address common technical issues and usability challenges across the Federal Government. One example is building Login.gov, a universal login system that will enable the

American public to access multiple government agency services with one, streamlined account.

- **Bring top technical talent into public service.** In support of these goals, USDS has recruited and placed over 200 Digital Service Experts, from one of the most competitive industries in the world, to join the government for term-limited tours of duty with the USDS and work with civil servants inside agencies. The long-term goal is to encourage a tradition of public service in the tech industry that will support the ongoing improvement of government digital services.

USDS has developed procedures and criteria for prioritizing projects, which includes obtaining input from OMB's IT Dashboard, agency leadership, and relevant U.S. Government Accountability Office (GAO) reports. To prioritize projects, USDS also uses the following three criteria, which are listed in their order of importance:

- (1) What will do the greatest good for the greatest number of people in the greatest need?
- (2) How effective and cost-efficient will the USDS investment be?
- (3) What potential exists to use or reuse a technological solution across the Federal Government?

Along with its investment in the ITOR Fund, Congress asked USDS to provide a regular update on progress in each of its programs. This report details that progress.

Mikey Dickerson  
Administrator, U.S. Digital Service



THE U.S. DIGITAL SERVICE

## Section 2

# High Priority Projects

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## Priority Project Summary

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USDS executes focused, hands-on engagements in which small teams of technical experts embed into existing agency programs, where they accelerate adoption of modern private sector best practices on important projects. These engagements may be proactive or reactive, and can range from two-week diagnostic sprints to in-depth multi-month engagements to dramatically improve a target service.

Typically, USDS is focused on increasing the success rate of a major IT acquisition in an agency. USDS personnel help promote the critical factors underlying successful major IT acquisitions identified by GAO in 2011 and reiterated in 2015 by GAO in its report on "Improving the Management of IT Acquisitions and Operations."

This section details USDS' most impactful projects, including those completed during the 2016 Fiscal Year:

- **Stabilizing and Improving HealthCare.gov (page 9).** In the 2013-2014 Open Enrollment season, a small team of private sector experts helped overhaul, update, and simplify the design and infrastructure of HealthCare.gov, helping eight million Americans sign up for coverage. This success paved the way for the creation of USDS. In the two subsequent open enrollment periods, USDS staff continued to partner with CMS staff and contractors to further improve the HealthCare.gov system and services.
- **Modernizing the Immigration System at DHS (page 14).** Since 2014, USDS has been helping USCIS implement private sector best practices on the Electronic Immigration System project. As of September 2016, 25% of immigration transactions applications are processed electronically using the system, including the green card renewal application (I-90), which has a 92% user satisfaction rate.
- **Streamlining VA Disability Claim Processing (page 20).** Over the summer of 2016, the USDS team at VA helped launch Caseflow Certification, a tool to improve paperless appeals processing by detecting if required documentation has been added before an appeal can move forward. This simple check helps reduce preventable errors and avoidable delays caused by disjointed, manual processing. As of September 2016, approximately 87% of all paperless appeals are certified using the tool.
- **Simplifying Veteran-facing Services with Vets.gov (page 26).** USDS is working with leaders across VA to build Vets.gov, a simple, easy-to-use site that consolidates information for Veterans. Over the summer, the USDS team helped VA launch a new digital application for healthcare built with feedback from

Veterans. Previously, less than 10 percent of applicants applied online. Since the launch of the new healthcare application, daily online applications have increased from 62 per day to more than 500 per day.

- **Providing Secure Access to IRS Taxpayer Information (page 31).** USDS helped IRS introduce Secure Access in June 2016, a user verification process that relies on strong identity proofing and two-factor authentication to protect users' sensitive tax records. Secure Access ensures that users have convenient, real-time access to their transcripts while protecting taxpayer information from automated fraudulent attacks. As of September 2016, taxpayers have accessed 2.7 million tax records using the Secure Access process.
- **Improving the Visa Processing System at Department of State (page 37).** USDS is assisting State to implement improvements in the Consolidated Consular Database, on which many Visa processing applications depend. USDS helped State adopt modern engineering best practices, and is helping State develop tools to communicate case status to applicants, which is the primary reason for many of the 9,000 phone calls the National Visa Center receives per day.
- **Helping CMS Implement Congressionally Mandated Medicare Payment Changes (page 41).** Implementation of the Medicare Access and Chip Reauthorization Act of 2015 (MACRA) will change the way Medicare pays doctors for services rendered to Medicare patients. USDS is helping CMS use modern best practices to ensure the transition from the current payment program to the new system is simple, clear and effective.
- **Reducing Inefficiency in the Refugee Admission Process (page 44).** Each year, the United States admits tens of thousands of refugees using a rigorous approval process. Previously, DHS officers had to approve refugee registration forms using an ink approval stamp in the field where the refugee file was physically located. USDS helped DHS and State implement a "digital stamp," removing an unnecessary processing delay of 2 to 8 weeks for thousands of cases.
- **Helping Students Make More Informed College Choices at Department of Education (page 49).** USDS, along with 18F, helped the Department of Education launch the College Scorecard to help students make more informed decisions about college selection. Millions of students have already benefited from this data, the most comprehensive and reliable ever published on employment outcomes and success in repaying student loans. Additionally, more than a dozen organizations have built new tools using the data.
- **Modernizing the Department of Defense Travel System (page 55).** The USDS team at DoD (Defense Digital Service) is helping implement a new commercial



tool to better manage the \$3.5 billion of travel handled through the Defense Travel System each year.

- **Identifying Security Vulnerabilities in Department of Defense Websites (page 59).** To strengthen data security at DoD, the USDS team at DoD (Defense Digital Service) launched “Hack the Pentagon,” the first bug bounty program in the history of the Federal Government. Adopting this private sector best practice led to the resolution of 138 previously unidentified vulnerabilities and cost \$150,000, compared to the \$1 million DoD estimates contracting an outside firm to do a similar audit would have cost.

Additional detail on each of these projects is provided in the chapters below.

# Stabilizing and Improving HealthCare.gov

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## The Challenge

As required by the Affordable Care Act, HealthCare.gov is the Federal website that facilitates purchase of private health insurance for consumers who reside in states that did not establish health insurance marketplaces. HealthCare.gov supports the Federal Health Insurance Marketplace (Marketplace), providing citizens with the ability to compare, shop for, and enroll in affordable healthcare plans.

HealthCare.gov launched in October 2013, and encountered serious technical challenges which prevented many people from using the service.

## Project Impact Summary

- A team of private sector engineers and product managers joined CMS staff and contractors to identify and solve website operation problems. By March 2014, over 8 million Americans had successfully signed up for health insurance and the site was stable.
- In the two subsequent open enrollment periods, USDS staff continued to partner with CMS to improve the HealthCare.gov system and services. USDS staff helped CMS implement several private sector best practices including performance tracking of the system and application process, building an improved identity management solution with an uptime of 99.99%, increasing the conversion rate in the new application workflow from 55% to 85%, and building new systems with industry standard open source software.

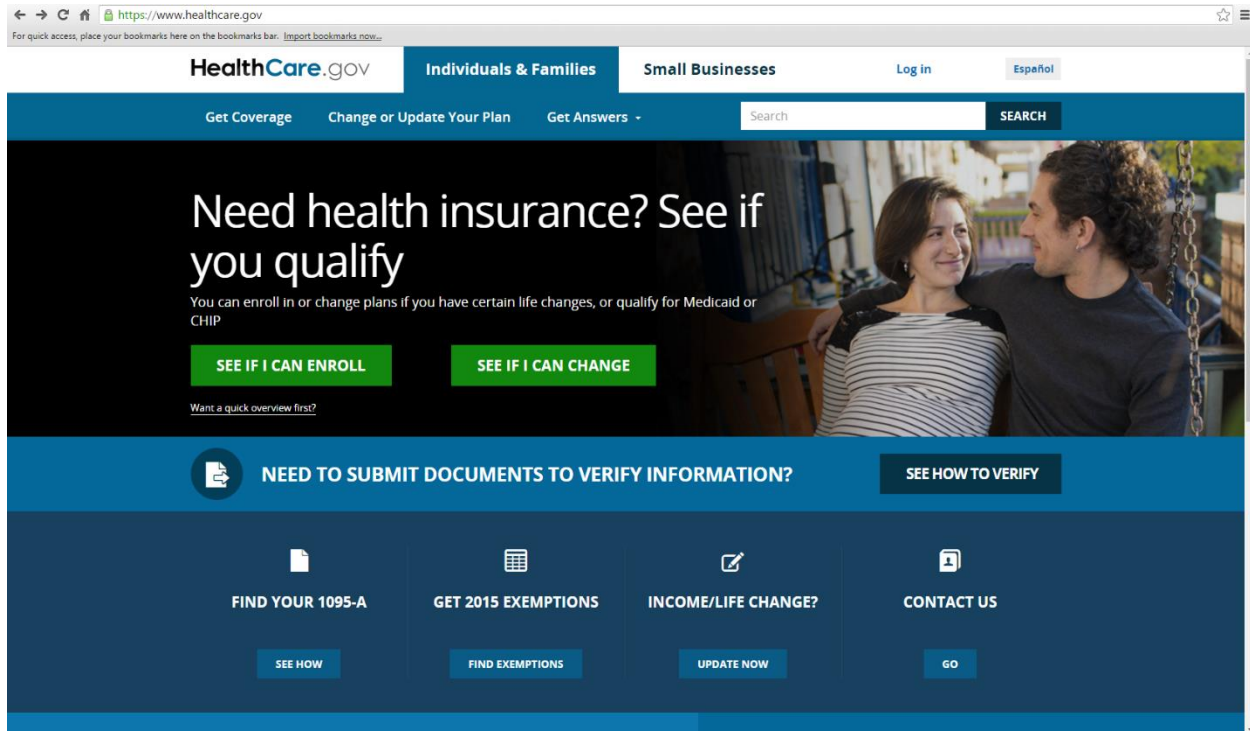
## The Solution

Over the three month period following the launch, a team of engineers and product managers from the private sector joined with CMS staff and existing contractor teams to troubleshoot the service. Working around the clock, this “tech surge” team systematically identified and solved problems with the service by following industry best practices in site reliability and product management. By March 2014, the end of the Marketplace’s first open enrollment period, over 8 million Americans had successfully signed up for health insurance.

The HealthCare.gov turn-around demonstrated the enormous potential of empowering small teams of America’s brightest digital talent to apply modern technology best

practices to Federal Government projects. In August 2014, the White House established the U.S. Digital Service (USDS) to apply this technique to a greater number of projects. Mikey Dickerson, a site reliability engineer on the HealthCare.gov team, was appointed the USDS Administrator.

In the two subsequent open enrollment periods (ending February 2015 and January 2016), USDS engineers, product managers and designers partnered with CMS staff to continue to improve HealthCare.gov systems and processes used to deliver the service.



For example, contractors from multiple companies along with CMS staff improved coordination in the HealthCare.gov operations center by embracing a “one-team” mentality with fewer process restrictions, which has improved the ability of this team to troubleshoot issues and make important decisions quickly. The team also implemented application monitoring to track performance.

Additionally, USDS supported several smaller teams working on components of HealthCare.gov which adopted agile and iterative development processes, allowing them to quickly deliver functioning software. In one such case, a small team built and launched the Scalable Login System (SLS), a replacement for HealthCare.gov’s previous identity management solution. SLS has proven to be vastly more stable and efficient since it was created specifically for use by Marketplace consumers.

Additionally, CMS launched a simpler and more efficient application for healthcare plan enrollment (Marketplace Lite 2.0 App). The conversion rate in the new application workflow stands at around 85%, compared with approximately 55% in the previous system. Finally, CMS with input from the insurer community, built and launched a new set of decision support tools for the window shopping and plan compare tools. These tools allow consumers to search for preferred doctors, prescription drugs, and facilities while shopping for a health plan. This was one of the most requested features from Marketplace consumers over the past several years.

| Success Criteria  | Status  |
|---|---|
| Transition HealthCare.gov to a scalable login system with an uptime of 99% or greater | Complete. Scalable Login System implemented and users migrated to the system in 2015. Uptime 99.99% |
| Implement application monitoring.   | Complete. Monitoring installed and in use.  |
| Launch the Marketplace Lite 2.0 app   | Complete. App launched in 2015, resulting in improved conversion rates.                             |

## Milestones

- October 2013: HealthCare.gov launches. “Tech surge” assists with troubleshooting the service.
- March 2014: First open enrollment period closes with 8 million Americans enrolled (5.3 million through HealthCare.gov).
- August 2014: USDS created.
- November 2014: Second open enrollment period begins. USDS team supports Marketplace operations.
- February 2015: Second open enrollment period ends with 11.7 million enrollments (8.8 million through HealthCare.gov). USDS team supports Marketplace operations and assists with the transition from to SLS.
- November 2015: Third open enrollment period begins. USDS team supports Marketplace operations
- January 2016: Third open enrollment period ends with 12.7 million enrollments (9.6 million through HealthCare.gov). USDS support role winds down.

## The Process and Lessons Learned

1. **Install application monitoring.** At initial launch of HealthCare.gov, there was no end-to-end monitoring of the production system, making identification, prioritization and diagnosis of errors very challenging. One of the first actions the “tech surge” team took was to recommend the addition of an application monitoring tool, which has remained an important resource for the team to identify issues as they occur.
2. **Facilitate open and direct communication between technical contributors.** HealthCare.gov has many components, many of which were created by different companies hired by CMS. Problems with the integration of these components was a source of many errors in the initial launch. The most effective solution was to bring individual technical contributors from these various teams to a single location where problems could be discussed openly, solutions could be explored, and assignments could be made. Additionally, all staff and contractors working on aspects of HealthCare.gov began to use a collaboration tool to communicate more effectively.
3. **Deploy in a flexible hosting environment.** Traffic on HealthCare.gov is highly variable. Near the end of an enrollment period, for example, the number of visitors can increase by an order of magnitude.

Several of the newer components of HealthCare.gov are deployed in a flexible cloud hosting environment (including SLS and the Marketplace Lite App 2.0 described above). CMS has experienced high availability and increased development speeds with this approach, and is seeking to use this approach for more of its components.

4. **Build services using agile and iterative processes.** CMS has had success using small teams to incrementally deliver enhanced functionality based on an evolving understanding of user needs. For example, the Marketplace Lite App 2.0 continues to be iteratively improved based on user feedback and metrics.
5. **Choose a modern technology stack.** The Scalable Login System was built with industry standard open source software components commonly used by the private sector. The service is deployed in the public commercial cloud. These decisions enabled the team to build the service at a lower cost.

# Modernizing the Immigration System at DHS

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## The Challenge

Every year, the Department of Homeland Security's U.S. Citizenship and Immigration Services (USCIS) processes millions of immigration requests. This system is mostly paper-based, consists of multiple forms, and results in long waiting periods for applicants who have little visibility into the status of their applications.

USCIS wanted to modernize the process. They wanted a streamlined experience that would allow applicants to identify which form was meant for their specific situation, and enable adjudicators to process applications more efficiently and effectively than on paper.

To achieve this goal, USCIS began a five-year engagement with a technology vendor to create the Electronic Immigration System (ELIS). The project ran into a host of issues: the project scope was too large, the proprietary technology adopted was too complex and inflexible, and releases happened years after the project began. The agency was heavily reliant on specific vendors and proprietary technologies that proved costly and difficult to customize to address USCIS' product requirements.

ELIS fell short of expectations and didn't meet user needs – so USCIS made the hard but correct decision to restart the project using a new management style and a new technical approach that took key plays from private industry.

In 2014, members of the USDS joined the USCIS team to help the agency implement these changes, and the USDS has provided ongoing support to the agency since then.

## Project Impact Summary

- Every year, USCIS processes millions of immigration requests. Its multi-year project to modernize this process (the ELIS project) ran into a host of issues common in Federal Government IT projects, leading USCIS to restart the project.
- In 2014, USDS staff engineers, designers and product managers began working with USCIS to help it implement private sector IT management best practices including agile software development and continuous integration.
- In March 2015, following a November 2014 soft launch, USDS supported USCIS with the release of online filing and adjudication of the Form I-90, the application to replace permanent resident cards. 92% of online I-90 filers (renewing or replacing their green cards) reported being satisfied with the experience.

- In February 2015, USCIS partnered with 18F, private contractors, and USDS to launch myUSCIS, a new service to help applicants and their representatives better navigate the immigration process.
- The Immigrant Fee payment launched in August 2015, enabling over 1.1 million applicants to make fee payments digitally.
- USCIS has adopted deployment approaches that allow it to release improvements to ELIS weekly, compared to the quarterly release schedule the project followed previously.
- Today, 25% of immigration applications are processed electronically and USDS continues to work with USCIS to increase this percentage.

## The Solution

In restarting the project, USCIS leadership changed the way they did business.

The team embraced an agile, iterative style of product development that allowed the agency to design, build and deploy functionality more quickly to respond to user needs. While the previous project had taken years before an initial launch, the new approach led to a beta release just one year after development began. Agency staff are now heavily involved in the day-to-day development effort, running stand-up meetings and increasing visibility across the team. Seasoned USDS product managers, engineers and designers partnered with the USCIS team to integrate these modern digital service practices.

In order for the team to effectively support this agile development style, USCIS had to change its approach to contracting. They engaged with multiple vendors instead of using one large contract with a single vendor. The teams worked together to deliver features, build and maintain the infrastructure for the service, and enable the continuous integration of new improvements into the production system. The contracts are designed to support frequent prototyping, refining of product requirements, and delivery of working software. Most of them give USCIS the flexibility to ramp up or down the number of development teams from each vendor based on that vendor's performance.

USCIS also conducted deep research on their customers that led them to re-imagine the end-to-end immigrant experience well beyond the core actions of filing and processing requests. They began to redesign the immigrant experience around people, not form numbers.

In partnership with 18F and private contractors, USCIS brought this vision to life by launching [myUSCIS](#), a new service built to help applicants and their representatives.





| Success Criteria  | Status   |
|---|--|
| Increased percentage of immigration applications processed electronically | In progress. 25% of immigration applications are now processed electronically  |
| Increased customer satisfaction rating over time                          | In progress. 92% of online I-90 filers (renewing or replacing their green cards) reported being satisfied with the experience. |
| Increase frequency of ELIS releases                                       | Complete. ELIS releases new code weekly, up from previous quarterly releases   |

### Milestones

- July 2014: A "pilot" USDS engagement prior to its official launch in August began with a "Discovery Sprint" focused on ELIS
- November 2014: ELIS2 I-90 Three-Day "Soft" Launch
- March 2015: ELIS2 I-90 Full Launch
- August 2015: Immigrant Fee payment launched
- April 2016: ELIS2 Naturalization Pre-processing Go-live Date

### The Process and Lessons Learned

1. **Understand what people need.** The USDS team helped USCIS implement a user-centered design process to ensure that the delivery team understood what people need the service to offer. USDS coordinated and led visits to field offices and the National Benefit Center to conduct direct observation of application processing, giving insight into users' needs and experiences. This user research informed the design of the system. The team further refined these designs by getting adjudicator feedback on simple mockups of functionality, and testing early versions of the system with adjudicators.
2. **Build services using agile and iterative practices.** In the new system, USCIS chose two high-volume services and focused on rapidly digitizing them using an

agile development process. The Form I-90 application to replace a permanent resident card was first launched in November 2014, and USCIS Immigrant Fee Payment launched in August 2015. These services were rolled out in an incremental manner, and teams continue to deliver bug fixes and enhancements on a weekly basis. The teams collect feedback from end users and engage in regular usability testing to identify opportunities to improve efficiency and inform development of future product lines.

3. **Structure budgets and contracts to support delivery.** The USCIS CIO spearheaded an innovative contracting approach, which replaced a single large vendor with multiple contractors working together and competing for business. Each contractor provides cross-functional development teams that participate in the iterative product development process, working with federal product owners and project managers. Each vendor is evaluated based on its ability to rapidly deliver working software.
4. **Deploy services in a flexible hosting infrastructure.** USCIS chose to use a “public cloud” infrastructure service provider to host the service. This choice makes it easy and cost-effective for the team to provision, configure and adjust virtual computing resources as needed.
5. **Identify and empower product owners.** USCIS centralized the product development effort in its Office of Transformation Coordination, led by a single executive. This executive has identified product owners for each business line, who are each empowered and responsible for the digitization of that business line’s product. Each product owner can prioritize work, advocate for users, and accept delivery of features from the contractor staff. USDS provided training and support to these product owners, and advocated for the creation of this product management structure.
6. **Implement robust monitoring and incident response.** USDS led an initiative to create a rapid response procedure for troubleshooting major incidents such as service outages. This procedure involves identifying “incident commanders” who are empowered to make quick decisions and the use of an alerting tool (currently PagerDuty) to coordinate incident response.
7. **Use “soft launches” to help identify issues prior to full release.** The USCIS team has incremental releases built into its process. For example, the ELIS2 external interface was opened to accept I-90 applications for 72 hours in November 2014. The applications received in this “soft launch” window were then processed using the new system, allowing USCIS to complete an end-to-end test

of the service with real data. The results of this test were used to refine the service prior to its full launch in February 2015.

8. **Rely on automated tests to increase development speed.** Good automated test coverage allows the team to verifiably demonstrate the system is working as intended, and speeds the development process by providing instant and reliable feedback to developers about how changes they have made to the system have impacted existing functionality. Working together, USDS engineers and contractor teams have increased the use of automated unit and integration tests.

# Streamlining VA Disability Claim Processing

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## The Challenge

When a veteran has a disease or injury related to service, he or she may file a claim for disability compensation for the service-connected disease or injury. These claims are filed with the Department of Veterans Affairs (VA) and can result in a grant, partial grant, or denial. If a veteran is unsatisfied with the outcome of his or her claim, he or she may file an appeal. Since 1996, the appeal rate has averaged 11 to 12 percent of all claims decisions.

Between FY 2010 and FY 2015, the Veterans Benefits Administration (VBA) completed more than 1 million claims annually, with nearly 1.4 million claims completed in FY 2015. As VA has increased claims decision output over the past 5 years, appeals volume has grown proportionately. Today, there are more than 450,000 pending appeals, and this number is expected to grow to 1 million by 2025 without legislative reform.

The current IT system used to track and process appeals at the Board of Veterans' Appeals and across the VA is more than 20 years old and is built on outdated infrastructure. It powers a variety of workflows essential to the appeals process across VA, but is difficult to use and hard to update, and it is straining under the increased volume of appeals. With such a large volume of paperless cases that travel across jurisdictions within the VA, from the local regional office level to the Board and back again, the VA needed an updated IT solution to ensure full and seamless accountability of all appeals as well as data integrity through integration of systems, increased automation, and reduced manual processes. VA recognized that the processes and technology underpinning the appeals system needed improvements, and began the Appeals Modernization initiative in 2014.

Appeal Id:                      Name:                      RO:                      Status:

CAVC   DAS(1)   Mail(2)   Oth Docs   RemRea   Issues(7)   Hearing   Mot   CC

Docket   Dispatch   PriorLocs   Address   Vet Info   Attachment   Diary(1)/Opinion(1)

Recvd BVA:                      RO:                      Type Action: 3 - Post Remand                      Rep:                      00/00/00

Docket Nr:                      Med Facility:                      Remanded to:                      Hearing Request: 2 - Travel Board

Travel Board Preferences                      RO Notify: 01/01/10                      NOD: 02/04/11                      SOC: 04/03/12

Video:                       Outbased:                       Date Form: 05/01/13                      Cert BVA: 05/05/15

Ready:                       Req Date: 1/1/2015                      Thurber Ltr: 00/00/00                      Prior Dec: 00/00/00

Current Location:                      SSOCs(1-5):                      Rocket Docket:                      Reviewed by:                      Stays:                     

*A screenshot from the current VA IT system used to track and process appeals*

## Project Impact Summary

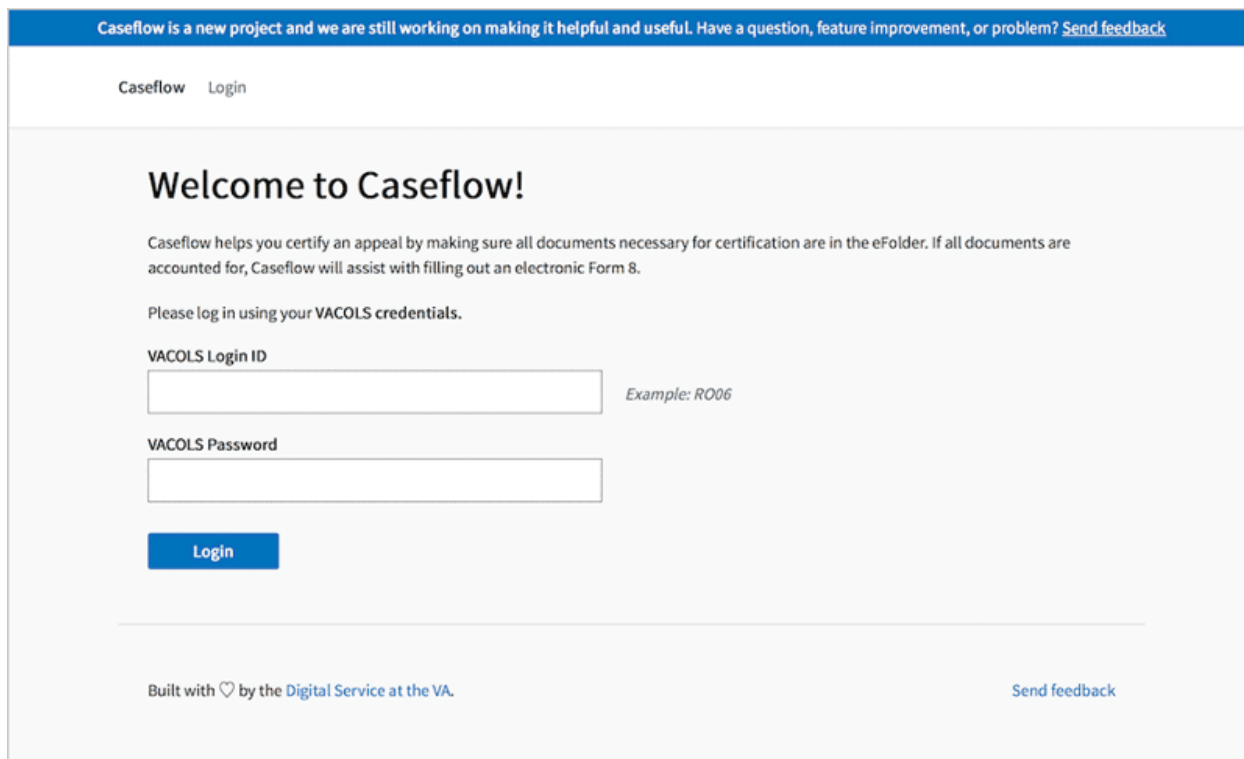
- The legacy IT system used to track and process appeals at the Board of Veterans' Appeals is more than 20 years old and is built on an outdated infrastructure.
- A team of three Digital Service at VA staff worked with the VBA beginning in June 2015 to design and implement a new Casflow Certification tool to provide the Board with all of the information it needs to process an appeal.
- Digital Service at VA developed a script that discovered 2,172 appeals that had been incorrectly categorized and were in limbo. Without this script, appeals in this state may have remained unprocessed for an indefinite period of time.
- As of September 2016, approximately 87.3% of all paperless appeals are now certified using Casflow Certification. The new tool was successfully rolled out as certification volume increased 34.1% from the year ago period.
- As of September 2016, Casflow Certification handles 5,000+ certifications per month.

- Digital Service at VA awarded an agile contract on T4NG in September 2016, using a coding exercise to determine contractors' capabilities.
- With a new contract in place, the Caseflow team is growing to 30, including nine Digital Service at VA staff.
- In October 2016, Digital Service at VA began rolling out eFolder Express to the Office of General Counsel and the Records Management Center to improve the efficiency with which appeal documents can be retrieved, including for Privacy Act requests.

## The Solution

The U.S. Digital Service at VA (DSVA) – the U.S. Digital Service's first agency digital service team – has worked closely with the Board of Veterans' Appeals to develop a new system that tracks and processes paperless appeals, called Caseflow. This system will have many user-facing web applications that map to existing workflows in the appeals process such as Certification, Activation, Review, and Dispatch. The team is using an iterative approach that will gradually replace small portions of the older system as new components are created, minimizing any disruption to existing business processes. In addition, the USDS modular approach enables quick updates and changes to Caseflow should there be any changes in legislation, regulation, or VA policy.

Caseflow Certification, released nationwide in April 2016, is the first component of the modernized system to be deployed. Caseflow Certification is a tool for VA employees to ensure that the Board has all of the information it needs to process the appeal, and that the data in the claims system — known as the Veterans Benefits Management System (VBMS) — matches the data in the appeals system, known as the Veteran Appeals Control and Locator System (VACOLS). Because many appeals that arrived at the Board contained manual data errors or were incomplete, providing VA employees at regional offices better tools to verify and reconcile key information using automated steps has been critical to optimizing accuracy and efficiency, and ensuring data integrity through system integration. Caseflow Certification also provides a simplified way for staff to generate a VA Form 8 – the Certification of Appeal – which is a required step in the appeal process. The tool automatically populates many fields of this form based on data in the system, reducing manual data entry to just a handful of questions. It also allows staff to file the form in the claims system with a single click, rather than requiring users to switch browser windows, navigate to the veteran's case folder, and manually upload the form.



*A screenshot from Caseflow.*

In addition to the user-facing component, Caseflow Certification allowed the DSVA team to develop and run an important script that helps the Board identify pending appeals that may have been incorrectly categorized as paper transfers, when in fact the appeals were paperless. Without this step, the Board could be left waiting for a physical appeal to arrive at its facility when in fact none exists. Without the Caseflow Certification tool, appeals in this state could have remained unprocessed for an indefinite period. The DSVA team discovered 2,172 appeals in this state by running the script. This enabled the VA to proceed with processing these Veterans' appeals, and to take preventative measures to avoid the problem in the future. The DSVA continues to monitor the data to detect appeals that could end up in this state again.

As of September 2016, approximately 87.3% of all paperless appeals are now certified using Caseflow. The remaining appeals are certified using the legacy process, and represent edge case scenarios. The DSVA is working to incrementally improve the Caseflow Certification tool so it can be used in more of these uncommon scenarios. Throughout the rollout, DSVA promptly responded to feedback and issues reported by VA employees.

| Success Criteria                         | Status  |
|--|---|
| All appeals are certified using Caseflow | In progress. At present, 87.3% of paperless appeals are processed using Caseflow. |

## Milestones

- June 15, 2015: DSVa engagement began
- July-August 2015: Discovery Sprint
- March-April 2016: Caseflow Certification rollout to all VA regional offices
- September 1, 2016: Agile Contract awarded on T4NG with coding exercise
- October 2016: Rolled out eFolder Express to Office of General Counsel and Records Management Center

## The Process and Lessons Learned

1. **Understand what people need.** The DSVa team visited the New York Regional Office to collect feedback on Caseflow Certification in October 2015. The team conducted five usability sessions, and used the feedback to improve the tool. The team visited again in December 2015 to gather additional feedback and verify the tool worked as intended in production. Additional usability tests were conducted in the St. Petersburg, Roanoke, Boise and Lincoln regional offices. Testing the service with actual users was critical for building a service that worked for veterans.
2. **Account for training materials and help desk support information.** Prior to rollout, the team needed to prepare training materials for staff who had to use Caseflow. Rather than creating a click-through slide presentation with quizzes, the DSVa decided to record a 5 minute screen share tutorial. Regional Offices provided positive feedback on this format, which they felt was short and specific. In addition to end-user training, the team had to prepare knowledgebase documents for the helpdesk staff who would field support requests from end users.
3. **Launch incrementally.** DSVa established a rollout schedule phased over a month. The team started off with the launch at the New York Regional Office whose employees were most familiar with the tool from the in-person usability



sessions. From there, DSVA launched in the other regional offices where it conducted remote usability testing. In each subsequent week the team rolled out the application to a larger and larger group of regional offices until it was deployed in all offices.

4. **Ensure application has appropriate monitoring.** The lack of robust application monitoring made it difficult to identify issues with the system. For example, the identity access management service used by the tool went down several times over the rollout period, preventing access to Caseflow. Better monitoring would have allowed the team to identify issues like this before they impacted end users.
5. **Improve automation.** Automation can help improve many aspects of the appeals process (and many similar case processing systems in government). For example, a VA employee shouldn't need to manually re-type information from one system into another system in order to create a form. But there are times in a case processing workflow where human judgment is required. Instead of attempting to account for every edge case, case management systems should automate the most common use-cases, eliminate redundant tasks, and empower staff to use their knowledge and expertise to navigate and resolve tricky edge cases when necessary.

# Simplifying Veteran-facing Services with Vets.gov

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## The Challenge

Presently, Department of Veterans Affairs' (VA) digital services, such as obtaining a prescription refill, applying for healthcare benefits, checking the status of a claim, and accessing VA forms, are spread across hundreds of public-facing VA websites. Veterans must navigate disparate online systems, remember multiple user names and passwords, and contend with long pages of legalese to access benefits they have earned.

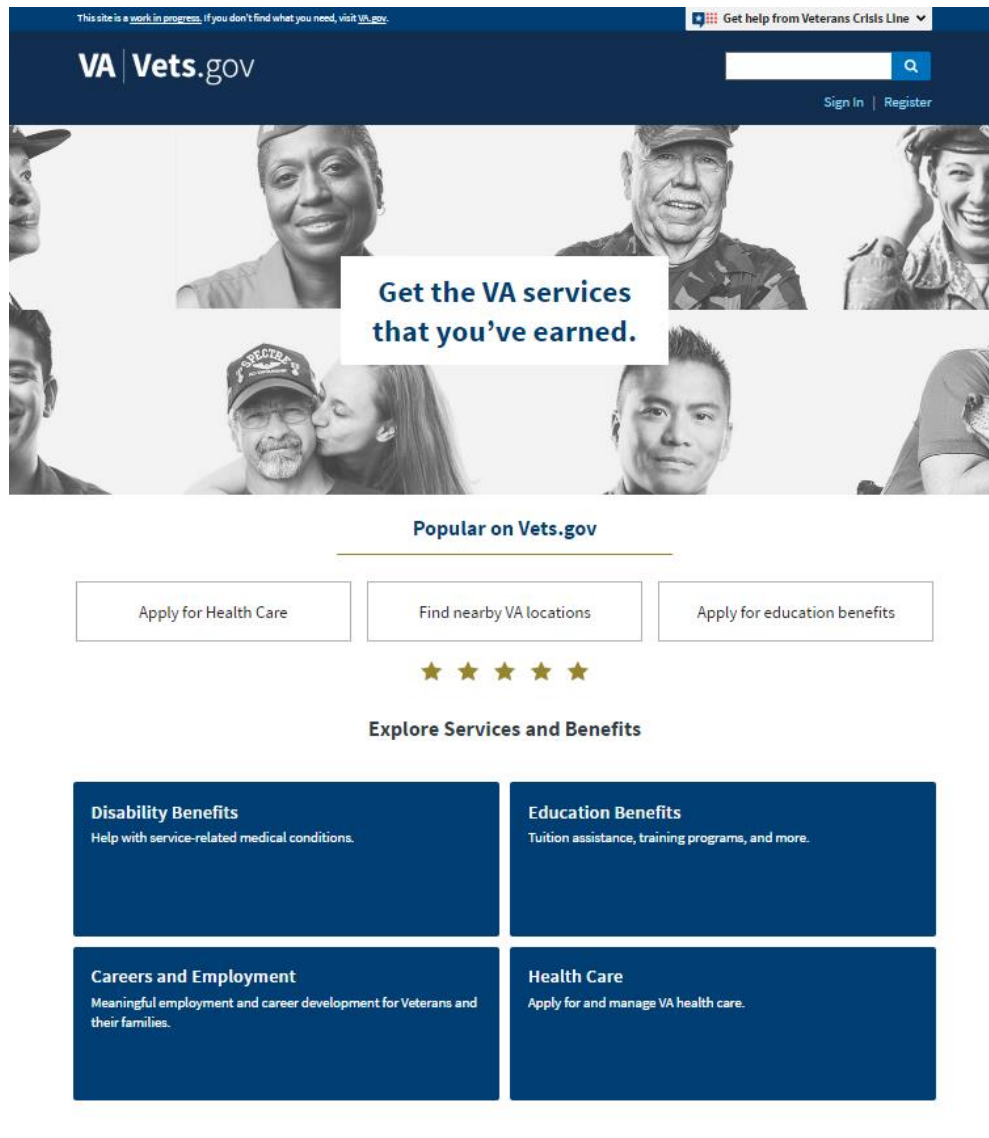
Many of the systems that power these services are outdated and provide a poor user experience. For example, the current digital 10-10EZ form to apply for healthcare was built as a fillable PDF, which requires Adobe Acrobat. The only browser that defaults to Acrobat for PDFs is Internet Explorer, so based on current browser usage, 70% of visitors saw an error message when they tried to apply. As a result, since 2012 only about 8% of all VA healthcare applications were submitted online.

## Project Impact Summary

- Many of the systems that power VA's digital services are outdated, and are spread across hundreds of public-facing VA websites.
- In November 2015, the Digital Service at VA launched Vets.gov, a mobile first, cloud-based platform that provides a new way for Veterans to discover, apply for, track, and manage their benefits.
- The initial Vets.gov website included plain language content for education and disability content and several tools: GI Bill Comparison Tool, Facility Location, and a Veteran feedback forum.
- Since then, the vets.gov team has launched 39 products, and reduced release cycle times from 90 days to 7 days.
- In June 2016, a new digital healthcare application was added to Vets.gov. In the first 60 days, 41,000 online submissions were received; an increase from a daily online submission average of 62 per day to more than 500 per day.
- VA is tracking to increase online health care applications from 10% (of 582,000 health care applications received by VA) in 2015 to 50% in 2017.
- In November 2016, the VA Digital Service team will launch several new features including: online application for education benefits, ability to check your disability claim status, prescription refills, secure messaging your health provider, and more.

## The Solution

In November 2015, the VA launched Vets.gov, a new way for Veterans to discover, apply for, track, and manage their benefits. Instead of visiting numerous websites with multiple logins to have their benefits explained to them, Veterans told the USDS design team that they wanted to go to one site to get things done.



*The Vets.gov homepage*

Specific pieces of functionality planned include the most demanded health and benefits services, such as an accessible health care application that does not require specific software to complete. New functionality will also include claims and appeals statuses, as well as prescription refill services.

Design and development of vets.gov is led by the U.S. Digital Service at the VA (DSVA) – the first established U.S. Digital Service agency team. It is built with modern, open source tools and is hosted in the commercial cloud. The DSVA is using an iterative development process in which features are continually designed, tested, and integrated into vets.gov. Vets.gov is being [built in the open](#), where Veterans can provide feedback and report bugs directly to the DSVA team, who quickly respond to comments.

| Success Criteria   | Status  |
|--|---|
| Vets.gov website is available to the public.   | Complete. Alpha version launched November 2015. Authority to Operate complete.  |
| Launch digital healthcare application.   | Complete. Vets.gov digital healthcare application launched June 2016.   |
| 100% of relevant content and front-end functions migrated from 514 existing public-facing VA websites. | In progress. Content related to disability benefits, education benefits, and careers and employment has been migrated to date.  |
| Measurably improved Veteran experience.  | In progress. The new online health care application has increased online submissions from 62 per day to more than 500 per day. Metrics collected will include bounce rates, page views, percentage of applications submitted online, volume of support requests to VA call centers. |

## Milestones

The initial vets.gov website was launched on November 11, 2015. It is a cloud-based platform with a modern technology stack. Immediate benefits and features included the following:

- Mobile-responsive website
- 508 compliance improvements

- GI Bill Comparison Tool
- Facility Locator
- Disability Benefit content rewritten in plain language
- Education Benefit content rewritten in plain language
- Feedback forum to collect Veteran feedback on the website

Since November, the team has been conducting ongoing research with Veterans and delivered additional content and features on the site, including employment services, the crisis hotline, and most recently the healthcare application.

On June 30, 2016, a new digital healthcare application was added to Vets.gov to enable Veterans to apply for healthcare online, solving the problems that prevented many Veterans from using the previous online application. As a result, the number of Veterans applying for health care online increased from 62 per day to over 500 per day. VA is now on track to increase the percentage of Veterans applying online from 10% in 2015 to over 50% in 2017.

Migration will continue throughout 2016, focusing on the highest demand Veteran services including functionality such as applying for healthcare and obtaining prescription refills.

## The Process and Lessons Learned

1. **Understand what people need.** Vets.gov is being designed based on Veteran feedback. The vets.gov team works with Veterans regularly on research activities including usability testing, [card sorting](#), and contextual interviews, using a combination of remote / in-person sessions and individual / group sessions.
2. **Build the service using agile and iterative practices.** Vets.gov is being iteratively developed, with new functionality released incrementally and refined based on feedback from Veterans. To manage this iterative process, the vets.gov team uses industry-standard techniques such as sprint planning and stand-up meetings for each vets.gov product team. These processes enable open communication and fast problem resolution. The whole team holds retrospectives every quarter to review progress and troubleshoot challenges.
3. **Engage stakeholders across the agency.** As a change management tool, the team opened bi-weekly vets.gov 101 briefing to all VA employees and stakeholders. To ensure leadership was fully engaged, the team had regular meetings with the Secretary and Deputy Secretary. The team was fully transparent in its planning and reporting by opening up the vets.gov roadmap to anyone at

the VA and offering status reports daily to anyone at the VA. Finally, weekly VA Change Management working sessions with communications leads and VA stakeholder meetings helped the team bring diverse players to a common understanding of the vision and goal to ensure success.

# Providing Secure Access to IRS Taxpayer Information

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## The Challenge

Over 150 million taxpayers interact with the IRS each year. The IRS wants to offer taxpayers digital services such as online access to individual tax records and tax refund statuses. There is clear demand for these services from taxpayers – for example, the “Where’s My Refund” online tool is one of the most popular Federal Government websites, with over 200 million requests in 2015. However, providing online taxpayer services is difficult due to the challenge of distinguishing a legitimate taxpayer from an identity thief who may try to steal information held by the IRS to commit fraud. IRS currently withstands more than one million attempts to maliciously access its systems each day.

One important IRS digital service is Get Transcript Online. The tool lets taxpayers access their official tax history, which can be needed for student loan applications, mortgage paperwork, or even filing the current year’s returns. In May 2015, widespread unauthorized access of the tool forced IRS to take it offline. After analysis, IRS determined that bad actors had been using taxpayers’ personal information stolen from data breaches outside the IRS to circumvent the tool’s identity verification process. As a result, some taxpayer information was released to unauthorized users, who used the data to commit tax return fraud.

Creating a new authentication system that solves the difficult challenge of verifying the identity of individuals seeking to use IRS services was a top priority for the agency. Not only would this allow the IRS to restore access to the Get Transcript Online tool, but a method for securely identifying taxpayers is a prerequisite for many future digital services that the IRS is seeking to build for the American people.

One approach considered early in the Secure Access project was to add a “PIN in the mail” step to the user registration process, in which the IRS would mail an activation code to a taxpayer’s physical address. The IRS was not satisfied with this solution because it wouldn’t provide a better user experience than the default process of simply mailing tax transcripts directly to taxpayers that request them, a process which takes 5-10 days. The IRS wanted a solution that would allow taxpayers to get access to their own data in minutes, not days.

## Project Impact Summary

- In May of 2015, the IRS removed the ability for millions of taxpayers to get online access their tax transcript because the "Get Transcript Online" service had been abused by unauthorized users.
- One option considered to secure the service would be to physically mail transcripts or account PIN numbers. However the IRS wanted a solution that could be completed in minutes, not days.
- A team of three USDS personnel worked with IRS beginning in October 2015 to help design and implement a new Secure Access online process.
- With the help of the USDS team, IRS executed a controlled launch in which the new service was tested with small groups of real users prior to full launch. The team also implemented fine-grained error-tracking and log monitoring. With this approach, USDS helped IRS achieve a 4x reduction in the error rate prior to full launch.
- The new Secure Access process takes an average of 12 minutes for users to complete, compared to the 5-10 calendar day wait for mailed transcripts without Secure Access.
- "Get Transcript Online" was returned to service for all taxpayers using the new Secure Access process in June 2016.
- As of August 22, 2016, taxpayers have accessed over 2.7 million transcripts using the online Secure Access process.
- IRS plans to re-use the Secure Access process for four additional services in IRS' e-Services suite.

## The Solution

Recognizing the importance of secure online access, the IRS asked to partner with experts from the USDS in determining how to strengthen their authentication protocols while remaining convenient for taxpayers. Together USDS and IRS outlined the characteristics of a tool called "Secure Access": a user verification process using strong identity proofing and two-factor authentication in line with both industry best practices and federal standards from OMB and NIST.

The new system adheres to the "Level 3" standards of Electronic Authentication Level of Assurance, as defined by NIST in [SP 800-63-2](#). This level of assurance requires an individual to demonstrate control over a physical object (i.e. "something you have") in addition to demonstrating knowledge of personal information such as name, birth date and social security number (i.e. "something you know"). The old system adhered to



LOA2, which allowed access to the system using personal information as well as knowledge-based multiple choice questions. This level of assurance proved insufficient, because some of the personal information used to verify users' identities in this approach had already been compromised in various data breaches from sources other than the IRS.

Using Secure Access to protect sensitive applications like Get Transcript Online would enable taxpayers to have convenient, real-time access to their transcripts without making that information vulnerable to automated fraudulent attacks. Working side by side with the agency, USDS helped IRS deliver the Secure Access project following principles from the [Digital Services Playbook](#). These proven approaches enabled the IRS to efficiently deliver the Secure Access project in a timely manner. In June of 2016, the IRS launched Secure Access and brought Get Transcript Online back into service.

| <b>Success Criteria</b>  | <b>Status</b>  |
|--|--|
| Restore online access to tax records in a manner that is secure against automated attacks (implementation of the NIST Level of Assurance Level 3 standard) | Complete. Service launched in June 2016. As of August 22, 2016 taxpayers have accessed over 2.7 million transcripts.   |
| Build an account creation process that takes less than 15 minutes for a user to complete.  | Complete. Account creation takes an average of 12 minutes, vs. 5-10 days for mailed transcripts or PIN numbers.  |
| Implement error tracking and log monitoring. Collect and report daily business metrics.  | Complete. Daily statistics on attempts, pass rates, error rates and overall traffic are collected and disseminated. Error tracking and log monitoring implemented. Phased launch strategy resulted in fourfold reduction in error rate.  |
| Secure Access process used for at least one additional IRS service in addition to Get Transcript Online.   | Complete. Secure Access is now used for the "Get an Identity Protection PIN" service in addition to Get Transcript Online. IRS also plans to implement Secure Access for four additional services in IRS' e-Services suite (Registration Services, e-File Application, Transcript Delivery, and TIN Matching). |

## Milestones

- October 2015: Discovery Sprint completed
- November 2015: Project start date
- February 2016: Secure Access protocol code completed
- March 2016: Internal employee test
- May 2016: Service launched to production, beginning controlled phase-in approach
- June 2016: Service launched to all users

## The Process and Lessons Learned

1. **Assign one leader.** The IRS recognized the need for a single executive to help provide consistent oversight over all authentication and authorization needs across the many IRS functions and channels. They created the Identity Assurance Office, led by a senior IRS executive with experience working with both business and information technology groups. USDS worked side by side with this executive, helping clarify the business, product, process, and technical decisions that come with the responsibility of meeting user demands. USDS also worked with partners at OMB and NIST to get relevant background information that would help this leader make decisions that would meet federal standards while also meeting both user and business needs.
2. **Understand what people need and design a simple and intuitive service.** USDS worked with the IRS team to maintain constant focus on taxpayer needs. At the beginning of the project, USDS gathered input from the United Kingdom's Government Digital Service to inform early directions and learn from this organization's hard-won experience. One of the key insights from the U.K. team proved particularly valuable. The U.K. team learned it was important to set user expectations about how the authentication process would work up front, and to provide graceful alternatives if the user cannot or does not wish to continue with the online authentication process.

USDS worked with the IRS to create draft user flows and tested them with users on a weekly basis. USDS improved the navigation, flow and messaging based on these tests. For example, an early prototype confused taxpayers by stating that authentication would require a "Credit card or auto loan, mortgage, home equity loan account number." In usability tests, the team learned that taxpayers thought they needed the account number for the credit card, not just the last eight digits of the credit card itself. The team changed the wording to be clearer. The IRS will

continue to use this iterative design process to help determine which features and fixes should be prioritized.

3. **Build the service using agile and iterative practices.** In addition to the iterative design process described above, at the suggestion of the USDS, the IRS used a phased launch process to test and refine the Secure Access protocol before its full launch. Initially, the agency limited access to the authentication system to only IRS employees. This controlled test allowed the team to get end-to-end user data that accelerated debugging and improvements.
4. **The USDS worked together with developers and business analysts to understand how users were getting stuck in order to improve the process.** An example of an issue that was discovered and fixed in this controlled launch was in a data entry field. When users were prompted to enter their account number, some users included the “#” character when typing the number. This would generate an error message that explained the “input was too long,” confusing users. This problem did not surface in internal quality assurance testing, and would not have been discovered without letting real users interact with the system prior to full launch. The team fixed the problem and redeployed the improved code to another cohort of internal users. After this internal test, the IRS used a public beta period where the improved Get Transcript Online service was offered to a small percentage of public visitors to the IRS website. This beta period allowed the team to fix even more issues. This iterative process was used to identify and fix many subtle errors and points of confusion prior to full launch.
5. **Use data to drive decisions.** Collecting good data on how users were interacting with the system was a key to success. With USDS assistance, the IRS developers implemented fine-grained error codes and log monitoring. With this data, the team could categorize bugs and list the most common errors, allowing the team to prioritize its efforts. In one such case, a bug that resulted in a small number of users in the public beta test being unable to register was identified and eliminated. In this case, USDS engineers examined the code and speculated that an input validation filter on one of the field items had been accidentally set too strictly, rejecting some valid inputs. An IRS developer used the error monitoring data to identify that the error was highly correlated with specific versions of the Firefox web browser. With these insights, the team was able to identify the root cause of the error and deploy a fix before the tool’s public announcement, saving hundreds of users a day from having the same issue.

Between the initial deployment of the Secure Access protocol and the full public launch, iterative development coupled with good monitoring allowed the IRS to

achieve a fourfold drop in the error rate. The agency will continue to monitor errors and prioritize effort based on this data.

# Improving the Visa Processing System at Department of State

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## The Challenge

The Department of State (State) protects the lives and interests of U.S. citizens overseas and strengthens the security of U.S. borders through the vigilant adjudication of visa and passport applications. State provides a range of services to U.S. citizens and foreign nationals, including issuance of U.S. passports and Consular Reports of Birth and Death Abroad and adjudication of nonimmigrant and immigrant visa applications. These processes largely are conducted through a collection of custom applications that depend on a system called the Consular Consolidated Database (CCD).

Many government systems, including the CCD, were designed at a time before most modern technologies to support distributed data processing were available. As a result, CCD's technical approach – innovative at the time it was implemented – deviates from what are now industry best practices. Over time, development focused on adding new features rather than modifying the underlying platforms and tools.

The integration of various components made the CCD progressively more complex. As a result, it became more difficult to ensure new features were integrated in a high-quality, easily maintainable manner. As demand increased, some tools were not able to be improved upon in a timely fashion.

## Project Impact Summary

- In June 2016, the USDS team began discovery work around how to improve the visa application process. The team honed in on better ways to update applicants and petitioners on case status by making adjustments to a tool built in 2012.
- Over the past year, the CEAC Visa Status Check site received over 3 million visits per month from users ranging from petitioners in the United States to applicants across the world.
- The National Visa Center, a visa application processing center run by the Department of State, receives approximately 9,000 phone calls a day. The vast majority of those calls are about a visa applicant's case status.
- The USDS team, in partnership with the Bureau of Consular Affairs, is in the process of engineering improvements to the tool that will show users better

information about their case status and how to advance to the next stage of the application process.

- The USDS team performed robust user testing of the new status tool and tested how improved information using plain language may help cases move more quickly through the appropriate parts of the process.
- The status tool will launch soon. We will measure the impact of the tool against several metrics, including how it impacts the National Visa Center's call volume.

## The Solution

USDS worked closely with State’s Bureau of Consular Affairs' Office of Consular Systems and Technology (CST), which supports, develops, and maintains the technology that enables a global network of consular systems to support U.S. consulates and embassies, domestic visa processing centers, and domestic passport processing agencies and centers. CST already had a number of viable plans to improve overarching stability of the CCD and related applications, but attempts to execute these plans had been stymied by the system's complexity. USDS served as technical consultants, both vetting possible solutions and advising on industry best practices and as an empowering authority facilitating communication across divisions and organizations.

| Success Criteria   | Status   |
|--|--|
| Standardize software development processes and tooling, enabling the Federal Government to have better visibility into contractor-developed custom software. | Completed. Established central source control repositories on a unified source control system. Completed a pilot that has improved developer workflows and allowed greater oversight into how code is being developed. |
| Transition how information is batched and sent to partner agencies to ensure there are no artificially created backlogs.                                     | Completed. Changes made from both ends have been implemented and information is more efficiently transferred between agencies.   |
| Immigration process and status is clear and comprehensible to applicants.  | Ongoing. USDS team is currently implementing improvements to an existing tool that should more clearly communicate case status to applicants.  |

## Milestones

- December 2015: USDS began engagement to improve information security of various State applications.
- February 2016: USDS began exploration of what kind of developer tools were needed within State to improve engineering practices.
- March 2016: State received USDS recommendations for improved developer tools, including usage of version control software.
- April 2016: USDS began assisting a State vendor with implementation of a version control software pilot.
- April 2016: USDS began discovery work on how to improve how State transmits information for Security Advisory Opinions with partner agencies.
- June 2016: USDS began determining ways to improve how visa status information is shared with applicants, petitioners, and their agents.
- June 2016: Technical implementation of the Security Advisory Opinion data sharing process began.
- July 2016: Technical implementation of improvements to visa status check tool began.
- September 2016: Completion of the technical and business process changes for the Security Advisory Opinion data sharing process.
- September 2016: USDS completed work on a pilot that saw a number of contractors using modern software development tools in the form of version control software.

## The Process and Lessons Learned

1. **Working with and Empowering the Agency:** State identified a number of areas where it could improve its information security. USDS provided assistance in the form of consultation on system remediation and coordination of implementation. USDS also worked closely with teams within State to identify how to prioritize various kinds of remediation that needed to be implemented and how to rank ongoing concerns. Using these techniques, State has markedly improved its defensive posture.
2. **Breaking Agency Silos to Solve Problems Together:** In many cases both the technical expertise and the most appropriate solution were already present within the organization. However, in an agency the size of State it is sometimes difficult to convene these groups and share solutions to senior leadership and across the agency. USDS conducted extensive site visits to bring various branches and contractor groups across State together, and with State leadership's help was able to create cross-team collaboration that sped up the development and deployment of solutions. The project to modernize developers' tools, for

example, is a collaboration between multiple divisions within CA/CST: Configuration Control, Systems Engineering and Integration, and Service, Systems and Operations.

3. **Technical Vetting and Evaluation:** USDS provided State program and project managers with objective technical advice. This gave State better accountability and communication among contractors. Since problems were often spread over applications and systems governed by several contracts, government managers heard different technical explanations. USDS engaged in several “fact finding missions,” allowing State to use this information to prioritize tasks effectively.
  4. **Embrace pilots:** Pilots are great opportunities to perform experiments in a contained, structured way. The ability to experiment is essential when bringing on new tools, services, or methodologies. It's not clear which will work best in a given environment, so experimentation is essential to bringing new tools, services, and methodologies to an organization. Knowing that the results will be used to determine if a pilot will continue helps stakeholders embrace new methods of doing things.
  5. **Test early and often:** Manual and automated testing are essential parts of the software development process. Increasing your test coverage makes it easier to deploy a tool or functionality quickly and securely. We are hopeful that by working with stakeholders and contractor teams, we can improve the testing culture for how Department software is developed.
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# Helping CMS Implement Congressionally Mandated Medicare Payment Changes

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## The Challenge

In April 2015, Congress passed the Medicare Access & CHIP Reauthorization Act of 2015 (MACRA), changing the way Medicare pays doctors for services rendered to patients enrolled in the Medicare program. The act implements changes designed to reward health care providers for giving better care, not just more care. These changes will impact a large percentage of Medicare Part B payments, and the Centers for Medicare & Medicaid Services (CMS) seeks to ensure the transition from the current payment program to the new system is simple, clear, and effective.

## Project Impact Summary

- Implementation of the Medicare Access and Chip Reauthorization Act of 2015 required a transition of payment programs that would impact a large percentage of Medicare payments to doctors.
- CMS engaged the USDS team to draw on best practices from other large program implementations.
- CMS created an integrated project team that combines policy and operations, and uses agile methodologies and other modern technology practices.
- The development team has employed user research, user need analysis and constant iterative feedback loops with users to ensure transition success.
- On October 14, USDS helped CMS released the Final Rule for implementing MACRA concurrently with a [plain language website](#) describing the rule. The website serves two purposes: first, to help clinicians and their partners easily understand how MACRA impacts them and, second, to serve as a single entry point for clinician interaction with the program in the future.
- The MACRA implementation is still on-going and iterative development will continue throughout 2017.

## The Solution

MACRA implementation is an important priority at CMS. USDS is helping CMS take an implementation approach that draws best practices learned from implementing other large programs, including HealthCare.gov and the adoption of the 10th revision of the

International Statistical Classification of Diseases and Related Health Problems (ICD-10) standard. Key priorities include widespread user research and user needs analysis, an integrated project team across CMS responsible for program delivery from policy to operations, a tight iterative feedback loop with users to inform program design and ensure that it is clear and accessible, and incorporation of modern technology best practices.

| Success Criteria   | Status  |
|--|---|
| Contracts for key elements of MACRA implementation are agile and responsive to evolving program needs.   | In progress. CMS has successfully used agile acquisition practices across most of the contracts for the MACRA program.          |
| Project team is integrated and running off of a shared roadmap for execution, including user research, policy, procurement, operations, technology, and analytics. | In progress. CMS has identified a product owner for MACRA implementation. CMS staff and contractors work on an integrated team. |
| Modern technology development best practices are being used in the creation of program infrastructure.   | In progress. USDS assisting CMS staff and contractors to implement best practices in design and engineering.                    |

## Milestones

- February 2016: USDS Discovery Sprint/Project Started
- May 2016: Development work started
- October 2016: Final Rule with Comment and website concurrently launched

## The Process and Lessons Learned

1. **Go where the work is.** The USDS team has pushed for extensive collaboration and information sharing between the USDS, CMS, and its contractor teams. The USDS team works alongside CMS staff and contractors on an integrated team at least four days a week in a shared space to facilitate this goal.

2. **Engage agency leaders and policymakers in the process.** The USDS team works hand-in-hand with CMS leadership on the program. The team is helping to ensure that implementation details, technical trade-offs, and operational complexity are communicated effectively to the whole team, including those writing policy.
3. **Identify a product owner.** CMS identified a single product owner for the implementation of the law, which has facilitated faster decision making.
4. **Provide contracting officers with agile acquisition training.** The CMS team was aware of agile acquisition practices, and their ability to implement agile contracts was significantly helped because one CMS contracting officer had already gone through the USDS agile acquisition training program. CMS has successfully utilized agile acquisition practices across most of the contracts for the MACRA program. The head of the division has further requested more training in agile contracting for the entire team.

# Reducing Inefficiency in the Refugee Admission Process

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## The Challenge

In Fiscal Year 2016, President Obama set a ceiling of admitting 85,000 refugees into the United States. This represented a 15,000 person increase over the previous fiscal year's ceiling, and this increase depended upon improving the efficiency of the refugee admissions process.

One of the most impactful improvements was the introduction of the digital approval process for refugee applications. Previously, Department of Homeland Security (DHS) officers were only able to approve refugee registration forms using an ink approval stamp in the field where the refugee file is physically located. 57% of cases are finalized on a different day than the DHS field interview. In many of these cases the requirement for an ink approval stamp added an unnecessary delay of up to eight weeks after all security checks had been completed, as cases waited for a DHS officer to travel back to the field location where the file was located to stamp it approved.

## Project Impact Summary

- In December 2015, USDS, the State Department, and the Department of Homeland Security established an interagency Refugee Coordination Center (RCC) staffed with representatives from each agency.
- The RCC began working on a prototype for digital approval of cases in January 2016 and launched the product for DHS use in June 2016.
- By September 30, 2016, 11,571 individuals had been digitally-approved, helping the Administration meet its refugee admissions goals while maintaining integrity in the process. Furthermore, the digital approval process codified rigorous security standards, granted DHS flexibility of when and where it can spend time doing administrative work, and saved the Department of State's Resettlement Support Centers time and money by eliminating the need to prepare and ship case files for ink approval stamping.
- State Department Resettlement Support Centers (RSCs) processing these cases stated that the following amounts of time were reduced in the admissions process as a result of the launch of the digital approval process: Bangkok: 1-2 months; Malaysia: 1-2 months; Middle East and North Africa: 1-6 weeks; South Asia: 15 days; Latin America: 15 days; Africa: 12 days.

## The Solution

The digital approval process enables DHS officers to digitally-approve a refugee registration form without having to physically travel to apply an ink stamp on paper. The solution was created by granting DHS editing rights to the State Department's refugee case management system for the first time. Filters ensure that only cases ready to be approved appear for DHS to digitally approve.

In order to convert the manual process into a digital process, the RCC worked with DHS officers to convert all of the manual steps to approve a case into the new digital approval feature. These included:

### *Checking security statuses*

In the manual process, DHS officers are required to physically review a security report for each individual on a case and annotate the page attesting that they have reviewed each page. In this digital approval process, DHS officers electronically affirm they have reviewed all security statuses and the case file, which then enables them to click the digital approval button.

### *Updating the hard copy form*

In the manual process, DHS officers have a paper form that is a history of all actions made on a case. In the digital process, once a digital stamp is applied, the system automatically generates a new digital file for the case, including the time and date the case was digitally-approved, and is included in the case's physical file by the State Department.

### *Approving the I-590*

In the manual process, DHS officers physically approve a refugee registration form (Form I-590) by applying an ink stamp to the approval block on the form. In the digital process, DHS officers click "stamped approved" and the system securely and automatically-generates an individual-level approval page with the time stamp and name of the approving DHS officer. The RSC staples this file to the front of the refugee form, which Customs and Border Protection reviews upon the refugee's arrival at a port of entry in the United States.

### *Approval Letter*

In the manual process, once a case is ready for approval DHS officers initial an approval letter. State Department Resettlement Support Centers then date the letter before

scanning it and then delivering to the refugee. In the digital process, the system automatically-generates an approval letter with the approving officer’s initials and the time stamp when the case was approved, and it is automatically-saved in the case's digital file. The Resettlement Support Centers print and deliver the approval letters to the refugee.

*The Role of the RCC*

In addition to these process modernizations, USDS assisted with data modeling to predict the number of people who would benefit from digital approvals in order to justify dedicating engineers’ time to develop this feature. USDS also designed the system requirements, created prototypes, and coordinated agency-wide approvals for the project. USDS then worked with State Department engineers to develop the new features, and with DHS officers to test the features prior to launch. USDS assisted with the phased roll-out of the digital feature, including training of DHS officers and development of Standard Operating Procedures (SOPs). Finally, USDS ensured that USCIS notified all stakeholders within DHS to prepare components for these changes prior to the first digitally-approved cases arriving in the United States.

| <b>Success Criteria</b>   | <b>Status</b>   |
|---|---|
| Reduce the time between the date a case is ready for approval and the date it is approved to under two weeks. | On track. In August 2016, of all cases that were digitally-approved, 74% were approved in five days or less and 56% in two days or less. Of the 124 cases that took more than 15 days to digitally approve, 77% did not need to travel until January 2017 or later. |
| Reach 8,000 individuals approved digitally before the end of the fiscal year.                                 | Complete. 11,571 individuals were digitally-approved by the end of the fiscal year.   |
| Ensure at least 20 officers were part of the digital approval pilot.  | Complete. By the end of the pilot, more than 60 officers were trained and had permission to use the digital approval process.   |

**Milestones**

- January 2016: Began prototyping and requirements gathering for the digital stamp

- March 2016: Finalized all data analysis, cost benefit analysis, completed requirements
- May and June 2016: State Department engineering team developed digital approval feature
- June 2016: Conducted user testing and fixed bugs in the system
- June 2016: Digital approval process launched
- September 30: Digital approval process pilot ends and full roll-out began

## The Process and Lessons Learned

1. **Engage stakeholders across the agency and collaborate with subject matter experts.** Engaging stakeholders across the agency and working with civil servants who are subject matter experts was essential for the success of this project. In this case, the concept of digitally processing cases had previously been identified by individuals at DHS as an opportunity to increase efficiency. Identifying and collaborating with these individuals allowed USDS to make progress faster.
2. **Keep the scope narrow for the minimally viable product (MVP).** Despite pressure to expand the scope of the MVP that was prototyped, development remained focused on the most critical features for refugee officers and refugees. Throughout the development process, USDS focused on core user needs, replicating the existing physical process into a digital experience. This narrow focus ensured that work flows would remain largely unchanged for refugee officers.
3. **Understand users' needs by testing with actual users.** The digital approval process was built with input from internal users to ensure their feedback was understood and addressed prior to launch. While quality assurance testing by Department of State engineers was critical, USDS' time spent with DHS end users was important for uncovering a variety of issues that would not have been found through engineering team testing alone.
4. **Rely on pilots and build up to a successful launch.** USDS relied on an initial pilot period (from June 24th through September 30th) with limited users (at first only one user and by the end more than 60) to identify any new glitches. Additionally, USDS worked with DHS to develop Standard Operating Procedures and video, teleconference, and in-person trainings to ensure ease of use and clear understanding of the new digital process. Once the digital approval process was judged to be successful and stable with the small pilot group, it was rolled

out more broadly to additional users. There was unanimous support to roll out the digital approval process to all trained and eligible users in Fiscal Year 2017.



# Helping Students Make More Informed College Choices at Department of Education

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## The Challenge

For students, higher education may be the single most important investment they can make in their futures to ensure they have the knowledge and skills needed to compete in an increasingly global marketplace. College is the surest path to becoming part of America's middle class and for this reason, selecting a college is an incredibly important decision for many people. But, many potential college students and their families do not have the advisors or resources to help them find a college that will serve them well.

With college costs and student debt on the rise, the choices that American families make when searching for and selecting a college have never been more important. Yet, students and the organizations that serve them struggle to find clear, reliable, and comparable data on critical questions of college affordability and value, such as whether they are likely to graduate, find middle-class jobs, and repay their loans. At a time when America needs colleges to focus on ensuring affordability and supporting all students who enroll, many of the existing college rankings instead reward schools for spending more money and rejecting more students. Additionally, college leaders and state policymakers who seek to improve institutions' performance often lack reliable ways to determine how well their schools are serving students.

To address this challenge, the Department of Education sought to redesign the [College Scorecard](#).

## Project Impact Summary

- The USDS team at the Department of Education, with help from 18F, launched the College Scorecard to help students and their families make more informed choices about where to go to school.
- The Scorecard makes comprehensive data on college costs, graduation rates, graduate debt, repayment rates, and post-college earnings accessible to help students choose a school based on access, affordability and outcomes.
- The project drew on hundreds of interviews with students, parents and guidance counselors to ensure that the product would fit their needs.

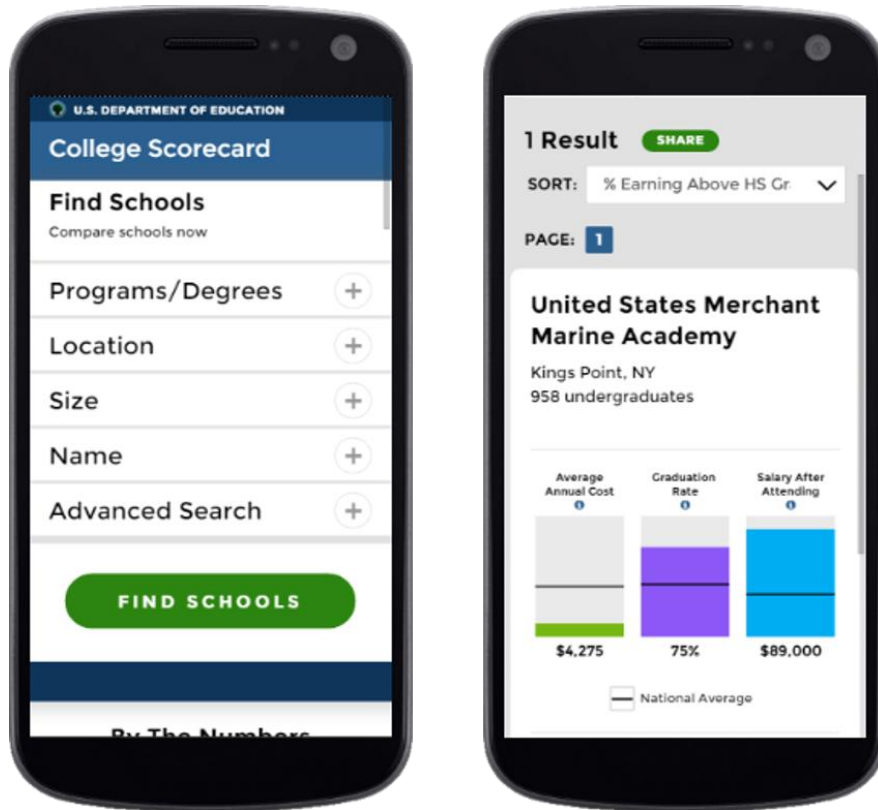
- In its first two weeks, College Scorecard attracted over 850,000 unique users, a major uptick from the 160,000 who used the prior version of the tool the entire year before.
- The project opened the data to the public and made an API available specifically for third-party developers to build more applications to help students and policymakers. More than a dozen organizations have built new tools using this data.
- Google has now integrated College Scorecard data so that it shows up front and center in the results of hundreds of millions of education-related searches.

## The Solution

The new College Scorecard was redesigned with direct input from students, families, and their advisers to provide the clearest, most accessible, and most reliable national data on college costs, graduation rates, and post-college earnings. This new College Scorecard can empower Americans to rate colleges based on what matters most to them; enable policymakers and the public to highlight colleges that are serving students of all backgrounds well; and focus greater attention on making a quality, affordable education within reach. The new tool for assessing college choices, with the help of technology and open data, makes it possible for anyone—a student, a school, a policymaker, or a researcher—to evaluate an institution on the factors that matter most to them.

The public can now access the most reliable and comprehensive data on students' outcomes at specific colleges, including former students' earnings, graduates' student debt, and borrowers' repayment rates. This data is published through an open application programming interface (API), enabling researchers, policymakers, and developers to customize their own analyses of college performance more quickly and easily.

More than a dozen organizations are using this data to build new tools. For example, Scholar Match, Propublica, and College Abacus—three college search resources—are using the new, unique data to help students search for, compare, and develop a list of colleges based on the outcomes data that the Department of Education made available for the first time through an API. InsideTrack, comprised of a team of coaches and consultants working to improve student outcomes by helping students find the institutions that are right for them, uses the data to develop and implement effective student-centered initiatives.



*The College Scorecard*

The Department of Education plans to continue releasing new College Scorecard data and promoting use of these new access, affordability and outcome metrics.

### Success Criteria

| Success Criteria  | Status  |
|---|---|
| Engage a diverse set of students and their supporters, especially high-need, low-income and first-generation college-goers. | Ongoing. In the first two weeks the Scorecard was launched, it was accessed by 850,000 users. The previous version of the tool received 160,000 total users in the previous year. |
| Educate the marketplace and shift focus to key outcome metrics and institutional performance                                | Ongoing. External organizations and third party developers are making use of this new data in their tools and research.   |

| Success Criteria                      | Status   |
|---------------------------------------|--|
| Enable more informed college matching | Ongoing. As of September 2016, 1.5 million unique users have accessed the tool. The previous version of the tool received 160,000 unique views a year. |
| Foster continuous improvement         | Ongoing. New data was released to the Scorecard in September 2016. All Scorecard information is now appears in search results for colleges.            |

### Milestones

- April 2015: Project Start Date.
- July 2015: Code Start Date.
- September 2015: Go-Live Date.
- May 2016: USDS Project End Date.
- September 2016: New data released to Scorecard. All data indexed and searchable.

### The Process and Lessons Learned

- **Understand what people need.** USDS, Ed, and 18F built College Scorecard by working with users at every stage of the project to find out how they made decisions about college. The team met with students (both high school and adult), parents, guidance counselors and advisors, open data users, and people who wrote to the President about their college search experiences. Long before the first line of software code was written, the team was working with students, testing paper prototypes to make sure they were as easy-to-use as possible.



*Getting feedback on a paper prototype of the new College Scorecard.*

- **Build services using agile and iterative processes.** The Department of Education built the College Scorecard using agile development methodology. To deliver the right product — what students actually need — as efficiently as possible, the team built the new College Scorecard using an approach that allowed the team to work in short iterations, and to test, scale, and design the tool with a process that could adapt to changes in technology and user needs. The team maintained a project rhythm of two week iterations, with daily stand up meetings to coordinate progress.
- **Run a developer beta.** USDS ran a beta specifically for developers — giving them a chance to test the data and documentation and flag opportunities to make it even easier to use. The feedback from the developers made it possible to release the data in a way that led to easy re-use by third parties.
- **Launch a minimum viable product (MVP).** The team focused on launching a MVP, building the right products to meet customer needs as efficiently as possible. This approach allowed the project to launch with less than 3 months of development time. The team built the project mobile-first and focused on the most critical feature set and information that each user type advocated for.
- **Release open data, and build services using the same APIs offered to the public.** Rather than focusing solely on creating a user-facing website, the team

also created documentation for, and released, open data for over 7,300 colleges and universities, going back 18 years. This made it possible for third-parties to incorporate the data into their own products and tools, increasing the chance that the information makes it to users wherever and whenever they might be looking for it.

To make it easier for third parties to integrate this data, Department of Education [published an API](#). This API serves both as the engine for the College Scorecard itself as well as a source for external software developers or researchers who want to use the data in their own digital products. The College Scorecard effort is one of the first government digital services that not only releases open data, but also builds a user-facing tool on top of the very same API it provides to the public. This is a common practice used by American's best technology companies.

# Modernizing the Department of Defense Travel System

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## The Challenge

The Defense Travel System (DTS) provides travel for all Department of Defense (DoD) employees (excluding permanent changes of station). While the DTS does provide end-to-end travel and expense functionality, the antiquated system provides a poor user experience and limited reporting capability. The system has long been a pain point for DoD travelers and officials, and has been scrutinized by lawmakers and auditors. For example, after the Government Accountability Office determined that DoD had overestimated savings for DTS and failed to fix implementation problems with the system nearly a decade ago, DTS added fees for the user and prevented travelers from quickly making changes to their reservations. Lawmakers have required the DoD to improve Defense travel through the creation of the Defense Travel Management Office (DTMO) and providing them with the Defense Travel Pilot Authority to find ways to improve the system and agreements that govern Defense travel.

Currently, the Department of Defense's travel spend is over \$8.7 billion per year. Of this spend, \$3.5 billion is handled through the DTS, with a per-transaction cost around \$10. In addition, there are over 1600 pages of DoD travel regulations. Despite this, about 100,000 unique users access DTS daily, according to the DoD website.

The complexity of the Joint Travel Regulations imposes a challenge for standard DoD users, as well as Authorizing Officials who administer and authorize travel. Many of the policies make it difficult to apply commercial best practices to the system. For example, the policy precludes the integration of industry-standard features like restricted fares, which could ultimately lead to higher cost savings across the department.

## Project Impact Summary

- The Department of Defense has long needed to improve the costly and cumbersome system used to book, expense, and manage travel for its employees.
- In March 2015, the Digital Service team at the DoD started working with agency staff to identify a new, commercial tool to better manage travel, and agreed to oversee a pilot test of the new system.
- At the same time, DoD worked to simplify its complex travel policy, with an eye toward saving millions of dollars and delivering a better user experience.

- In June 2016, the new software-as-a-service travel tool and streamlined policy were in place, and a pilot opened for “basic travelers.” Both are still being refined.
- This project demonstrates the potential of pairing policy development with technology implementation to produce more efficient outcomes, and reinforces the principle that using commercial software when minimal customization is required can save the Federal Government significant time and money.

## The Solution

To reduce costs and improve the customer experience, DoD is seeking to modernize its travel system with a commercial software-as-a-service (SaaS) product. At the same time, DoD has committed to simplifying the travel policy under the Joint Travel Regulation (JTR). These changes have the potential to save hundreds of millions of dollars per year and improve satisfaction of Defense travel customers. The Deputy Secretary of Defense has directed the relevant human resources and travel offices to complete the policy review and the initial technical transition. The USDS’ Defense Digital Service team assisted DoD and its DTS contractor in identifying a commercial vendor that could meet its requirements without requiring expensive customization.

The Defense Digital Service team is also helping DoD pilot this new system. The pilot, now underway, is focused initially on a small population of “basic travelers” using a streamlined travel policy subset. Over time, the project will scale in size and complexity. Concurrently, an effort is underway to considerably simplify the JTR by consolidating the types of travelers.

| <b>Success Criteria</b>                     | <b>Status</b>  |
|---|--|
| New DTS tool released                       | In progress. Tool has been identified, and is currently being piloted.                                       |
| Policies governing DoD travel simplified    | In progress. An effort is underway to considerably simplify the JTR by consolidating the types of travelers. |
| Increasing DTS customer satisfaction rating | In progress. As of June 2016, pilot is underway.   |



| Success Criteria   | Status                            |
|--|-----------------------------------|
| All travel request processed in new DTS system                               | Incomplete. Small pilot underway. |
| Improve data collection to enable better market position with travel vendors | Incomplete. Underway.             |

### Milestones

- March 2015: DTS Sprint begins.
- June 2016: First user booked travel in the new system.

### The Process and Lessons Learned

1. **Digital services are only as good as their underlying policy.** Many of the challenges with the current DTS system stem from the complexity of the Joint Travel Regulations. Without updates to this policy, it will be difficult to modernize the DTS. For example, the Joint Travel Regulations require pre-obligation, which is the act of obligating funds for travel prior to the trip based on the trip’s estimated cost. This pre-obligation estimate is intended to prevent a trip from costing more money than is available, and includes transportation, hotel, per diem, and incidentals. However, many standard commercial travel solutions cannot easily accommodate pre-obligation estimates, so the DoD is working to change the current policy requirements to avoid requiring system customization. One solution being proposed is to estimate total travel costs and make a budgetary hold on the funds so that approving official will not approve trips in excess of an approved budget. Another potential solution also includes making an estimated bulk obligation based on historical expenditures.
2. **Test services with users as early as possible.** While the new system is being developed for use by all users, DoD is piloting it with certain types of travelers who have basic requests. DoD is following an industry best practice of launching systems earlier in their development, even when not all aspects may be fully automated. This will enable the team to improve the system based on real-world usage information.

3. **Use commercial cloud software services when possible, but be wary of commercial solutions that require extensive customization.** The modernized Defense travel system is being delivered using a commercial software-as-a-service travel tool, allowing DoD to avoid an unnecessary custom software development project. This is a best practice to follow when the commercial solutions require minimal customization to meet the government's needs. The DoD is seeking to avoid custom configuration requests for this service as much as possible, understanding that the expense and difficulty of such customizations often negate the benefits of using commercial services, and can lead to vendor lock-in.
4. **Modernization efforts should have clearly defined objectives.** If the success criteria above are met, this will enable the DOD to achieve the three main goals of modernizing the DTS: 1) Provide users a better customer experience, 2) increase the volume of trips, travelers and trip types processed with the system, and 3) save the Federal Government money. By clearly defining the strategic objectives of the effort, the delivery team can stay focused on what's important. In the absence of such a strategy, technical and policy constraints can drive product decisions.

# Identifying Security Vulnerabilities in Department of Defense Websites – Hack the Pentagon

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## The Challenge

The Department of Defense (DoD) spends billions of dollars every year on information security. However, the DoD had not yet taken advantage of a “bug bounty” approach to identifying security vulnerabilities that has gained traction in the private sector.

In this “bug bounty” approach, private citizens and organizations are invited to probe specific services for potential security vulnerabilities, and are rewarded for qualifying vulnerabilities they uncover and responsibly disclose to the sponsoring organization. In this way, private citizens are provided a legal way to disclose potential vulnerabilities without fear of retaliation or prosecution, and are given an incentive for doing so. Private sector companies have successfully used this approach to improve the security of their systems. Despite this technique’s acceptance as an industry best practice, the government had not attempted such an initiative before.

## Project Impact Summary

- In January 2016, the Digital Service team at DoD (Defense Digital Service) got approval for the Hack the Pentagon program, inviting private citizens to find and get rewarded for uncovering vulnerabilities in its information security system.
- This “bug bounty” approach mirrors that used by companies like Facebook and Twitter to catch more vulnerabilities and cost-effectively improve security.
- DoD contracted HackerOne – a well-known bug bounty platform startup with a strong reputation in the hacker community – to run the program.
- The digital services team, in conjunction with the existing vendors, worked in near real-time to fix security flaws as they were disclosed.
- The program led to the resolution of 138 previously unidentified vulnerabilities and cost \$150,000. Contracting an outside firm to do a similar audit would have cost an estimated \$1M and possibly still would not have provided the same security coverage.
- In June, the Secretary of Defense announced that DoD would run a persistent bug bounty program, and efforts are being made to share the practice with other agencies. There are also additional bug bounties the DoD will be running through the month of December.

## The Solution

On April 18, 2016, the DoD, supported by the USDS' Defense Digital Service team, launched the first bug bounty in the history of the Federal Government. This innovative effort adopted from the private sector provided authorization to security researchers – “hackers” – to attempt to hack limited public-facing DoD systems and report vulnerabilities in exchange for financial rewards. This crowdsourced solution used the talent of over a thousand individuals, 250 of whom submitted at least one vulnerability report. Of these, 138 vulnerabilities were determined to be legitimate and unique. These had escaped notice from previous penetration tests DoD conducted. Using this information, DoD resolved all of the vulnerabilities.

While the program was underway, the Defense Digital Service team held daily calls with all agency stakeholders for everyone's situational awareness in regards to bounty activities. There was also a pre-determined escalation process in place to follow in case of an immediate, critical need for defensive action against out-of-scope activity.

For the first challenge, the DoD contracted with HackerOne, an experienced administrator of bug bounty programs that performs services for companies such as Yahoo, Square, and Twitter. This strategy worked well for several reasons: HackerOne already had a strong reputation and relationship with the hacker community, they could quickly sub-contract a private background check firm, they receive and triage vulnerability reports, and they are able to allocate payouts for qualifying bounties. Using a third party platform also served to quell any concerns of hackers about providing personal information to the DoD as part of a larger effort to create a hacker database.

The cost of the program was \$150,000. DoD estimates hiring an outside firm to perform a comparable security audit and vulnerability assessment would have cost more than \$1 million.



In early June, Secretary of Defense Ash Carter announced his plan to launch a persistent DoD Bug Bounty program to continue to allow hackers to be paid for discovering security flaws in specific DoD websites, applications, binary code, networks, and systems. To make this possible, he had the Defense Digital Service take on three initiatives: run more bug bounty programs for other DoD components in 2016; develop a Vulnerability Disclosure Policy that would firmly and clearly express that hackers are acting legally when they surface DoD vulnerabilities; and provide guidance for the future acquisition of services like those provided by HackerOne.

To date, two new bug bounty programs are in the planning stages. The disclosure policy has been drafted, circulated, and is on track for release by the end of 2016. Acquisition guidance is in progress. The contract with HackerOne has been renewed, and is a model for future contracts not just at DoD, but government-wide. Altogether, these efforts will help the Defense Digital Service work with interagency teams to advise on implementing similar bug bounty programs. There will also be a “Government Only” day for agency stakeholders to gather and gain insight on Hack the Pentagon’s model of success.

## Success Criteria

| Success Criteria             | Status                                  |
|------------------------------|---|
| Engage the hacker community. | Complete. 1,400 Registered Participants |

| Success Criteria   | Status  |
|--|---|
| Identify and fix previously unknown security vulnerabilities.                      | Complete. 138 vulnerability reports were determined to be legitimate, unique and actionable for remediation. DoD fixed all vulnerabilities identified.  |
| Resolve vulnerabilities at a cost lower than would be possible with other methods. | <p>Complete. The total contract cost was \$150,000, with approximately half of this paid as bounties to participants. With 138 actionable vulnerability reports, that equates to less than \$1,100 per vulnerability.</p> <p>DoD estimates it would have cost \$1M for an outside firm to perform a similar security audit.</p> |

### Milestones

- January 2016: Hack the Pentagon program approved.
- March 2016: Contract signed to start the program.
- April 2016: Challenge start date and bounty start date.
- May 2016: Bounty end dates.

### The Process and Lessons Learned

1. **Provide a method for outside individuals to responsibly disclose security vulnerabilities.** Many private citizens have an interest in uncovering security issues. Private sector companies often provide such individuals a legal, secure way to disclose vulnerabilities without fear of retaliation or prosecution. Hack the Pentagon has shown that the "bug bounty" approach can work well for the government. Even if there is no active bug bounty program, providing researchers a way to provide responsible disclosure of vulnerabilities could yield results.
2. **Ensure the agency is prepared to remediate vulnerabilities as they are discovered, in near real-time.** DoD took the important step of putting a team

on standby that could implement fixes to the vulnerabilities as they were disclosed. Being able to quickly address issues helped ensure no malicious activity could take place.

3. **Involve stakeholders early.** Running a new type of program in government can be complicated. The Defense Digital Service team worked closely with the DoD Office of General Counsel to resolve legal questions around bug bounty payments, participant background checks, and whether bounties could be paid to U.S. Government personnel.



THE U.S. DIGITAL SERVICE

## Section 3

# Other USDS Initiatives



# Hiring Top Technical Talent

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## The Challenge

In order to deliver on the mission of transforming the country's most important digital services, the Federal Government needs an infusion of modern software engineering, design, and product management skills. As demonstrated in earlier sections of this report, pairing individuals with these skills with dedicated civil servants across the Federal Government can dramatically accelerate modernization efforts on major IT acquisition projects.

However, hiring individuals with these skills has been challenging for the Federal Government for several reasons:

- It is difficult to attract highly qualified applicants to apply for government technology positions.
- The Federal Government often provides a candidate experience that is not competitive with the private sector in terms of timeline, ease of application, and frequent communication of application status.
- It is challenging to properly evaluate these highly specialized and technical skills in order to select the most qualified individuals from among all applicants.

One of the early priorities of the USDS was to build a robust recruitment and hiring program that could address these challenges.

## Project Impact Summary

- It is difficult to attract highly qualified applicants from the private sector to apply for government technology positions, as the technology industry is one of the most competitive in the world.
- USDS partnered with OPM to secure the tools necessary to recruit and hire the country's brightest technical talent.
- Mirroring technology industry best practices, USDS built an experienced recruiting team who sources software engineering, product management, and design professionals from industry.
- USDS provides candidates with an easy application process and a fast timeline for hiring decisions, averaging 34 business days from application to conditional offer.

- USDS hiring process has a satisfaction score of 4.5 or greater (out of 5.0) from among all finalists, including those who did not receive offers.
- USDS uses subject matter experts to evaluate specialized skills.
- USDS has shortened the personnel security process from 67 days to 20 days.
- USDS reached its goal of recruiting 200 digital service experts by the end of 2016, ahead of schedule.

## The Solution

USDS partnered with OPM to secure the tools necessary to recruit and hire the country's brightest technical talent. Using these tools, we created a recruiting and hiring operation that draws on several private sector best practices.

- **Engage in Targeted Recruiting Activities.** Mirroring private sector best practices, USDS has built an experienced recruiting team tasked with identifying and encouraging a diverse set of qualified applicants to apply for digital service positions. Specific tactics include targeted outreach to technology and design professionals (including those who are not currently seeking a new job), events, roundtables, and building a network of influencers who can validate the importance and professional respectability of the USDS' public service mission.
- **Focus on Candidate Experience.** The USDS hiring process puts a premium on providing a high quality candidate experience that is competitive with the private sector. Specifically, the USDS aims to provide candidates with an easy application process (currently delivered [via the website](#)), a fast timeline for hiring decisions (targeting 15 business days from application to conditional offer for qualified applicants), and good visibility into the process and application status.

USDS measures its effectiveness by asking all candidates who complete the hiring process to complete a satisfaction survey, and target a satisfaction score of 4.5 or greater (out of 5.0) from among all finalists (including both those who receive offers and those who do not).

- **Use Subject Matter Experts to Evaluate Specialized Skills.** Evaluating applicants with highly specialized skills is a challenging practice that requires subject matter expert involvement at every stage. USDS has fully embraced the use of such experts in the hiring process. Each candidate for the USDS is evaluated by a panel of engineers, designers and product managers who themselves possess the desired specialized skills. By ensuring that applicants are evaluated by technical specialists within their own discipline, the process ensures

that individuals selected for USDS roles have the digital expert skills that are required to improve government technical services.

This hiring program is run centrally from the USDS headquarters unit inside OMB, so that all chartered USDS teams can benefit from a dedicated recruiting operation and a standardized, rigorous selection process.

| <b>Success Criteria</b>   | <b>Status</b>  |
|---|--|
| Hire 200 Digital Service Experts by end of 2017   | On track to meet target ahead of schedule. 196 Digital Service Experts hired as of September 2016. |
| Days from Application to Conditional Offer = 15 business days   | In progress. Time reduced from 55 days in Q4 2015 to 34 days in Q3 2016.                           |
| Day from Conditional Offer to Final Offer (personnel security process) = 16 days  | In progress. Time reduced from 67 days in Q4 2015 to 20 days in Q3 2016.                           |
| Candidate Satisfaction Score for going through the hiring process is 4.5 (or above) out of a scale from 1 to 5 (5 being the most satisfied) | On track. Average candidate satisfaction since Q4 2015 is greater than 4.5.                        |

# Transforming Federal IT Procurement

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## The Challenge

Government procurement cycles do not keep pace with fast-changing technology and user needs. This is largely due to a reliance on waterfall development methods where requirements are defined and documented in full detail before any design, development or user testing can take place. When tied to inflexible contracts, this approach makes it very difficult to build an easy to use, effective digital service. Adapting patterns and best practices from private industry will allow the Federal Government to deliver products faster, cheaper, and at higher quality.

## Project Impact Summary

- The USDS procurement team has launched several projects to help the Federal Government enter into better, more agile contracts and buying decisions.
- The objective is not only to change the way IT services and products are acquired, but to model new procurement processes for the government at large.
- During a discovery sprint, the USDS team made recommendations for modernizing SAM.gov, the system businesses use to receive contracts and grants from the Federal Government.
- The GSA has accepted the recommendation to move SAM.gov to a Common Services Platform, allowing developers to make speedier improvements to the existing system, automate more services, and increase security.
- USDS also advised SBA to consolidate certification systems for small businesses seeking government contracts. SBA has since moved to a modern technology stack, and will soon process all certifications through [certify.sba.gov](http://certify.sba.gov).
- In October 2015, USDS and OFPP launched the Digital IT Acquisition Professional Training (DITAP) program, piloting a course that successfully taught federal contracting professionals material relevant to digital services procurement.
- USDS and OFPP are now working to transition this program to GSA and other Federal Government agencies.
- Also in partnership with OFPP, USDS developed the TechFAR Handbook, and the TechFAR Hub, to advise all federal agencies on how to adopt more flexible acquisition practices.

## The Solution

USDS has a dedicated acquisition team working to improve the government technology marketplace and to help the government make better buying decisions. The USDS procurement team has launched several solutions since its inception and continues to evaluate new potential solutions.

### *System for Award Management (SAM.gov)*

In order for businesses to receive a contract or grant from the government, they are required to register in the General Services Administration's (GSA) System for Award Management (SAM.gov). However, because the process is so cumbersome, many businesses are discouraged from engaging with the government. The USDS and GSA completed a two-week discovery sprint in March 2016 to define what a successful SAM.gov modernization would look like. This included evaluating the technology, business processes, and the customer experience underlying SAM and the related Integrated Award Environment.

USDS' recommendations from the discovery sprint included:

- **Shift from Process to Product.** In order to develop and ship such a large solution, the work must be centered around the idea that it is delivering a federal-wide product capable of meeting the demands and objectives of various and competing end user needs.
- **Invest in the Team.** Rather than hiring external experts, or bringing on other teams, GSA should make an investment in and prioritize comprehensive and frequent training for all roles within its Integrated Award Environment, from management to external stakeholders to contracting officers.
- **Empower a New Team Culture.** The unified team has the potential to deliver a powerful digital service by adopting a culture that embraces change, challenges the status quo, and does not accept anything less than excellence. The ideal team is self-motivated to look at everything as an opportunity to solve end users' problems.
- **Deliver. Deliver. Deliver.** The main benefit for adopting an agile development methodology is the ability to accelerate product delivery. Leadership must dissolve any fears of failure that create hesitancy when making a change to a product—whether it's prototypes, beta versions, or enhancements. The team has universally expressed a willingness to move to continuous integration, rapid delivery model, and USDS provided a 6-month plan for this transition.

- **Migrate to a Secure, Robust Services Platform.** The SAM.gov environment is transitioning to a Common Service Platform that will allow applications to be built on top of an infrastructure layer. Adopting continuous integration, implementing the "DevOps" practice of integrating system operations with application development teams and processes, and establishing protocols for a multi-vendor environment to implement changes on the new platform would speed improvements. In addition, there should be a drive to automate services and provide real-time data, such as TIN validation. To improve security, USDS recommended SAM.gov implement host segmentation and network security controls for restricting access to sensitive data on the Secure FTP service. Other key areas of opportunity recommended to improve the basic platform include open-source, standardization, and implementing a mitigation strategy for DDoS protection aligned with the public release of services on the Common Service Platform (CSP).

GSA has accepted the recommendations and is in the process of making nearly all of the changes. They have already restructured their team based on functions and are working cohesively in a team based environment.

### *Small Business Certifications*

It is part of the mission of the Small Business Administration to expedite small businesses' access to government contracts. Better utilization of the 8(a) Business Development, Women-Owned Small Business (WOSB), HUBZone, and Service Disabled Veteran Owned Small Business Programs would serve this mission.

In early 2015, SBA asked the USDS to help it modernize and consolidate the systems that power these certification programs. After USDS personnel conducted an initial technical evaluation, the USDS procurement team assisted SBA in developing a contract to create a modern system using the best practices described in the [Digital Services Playbook](#). SBA has since awarded an agile software development contract for revamping these certification processes as part of the SBAOne project.

In just 5 months following the award of the contract, SBA moved to a modern technology stack, hosted on flexible public cloud infrastructure, and launched an eligibility service in December 2015 for the WOSB program. This release was shortly followed by the successful launch of the modernized Woman-Owned Small Business certification system in March 2016 on [certify.SBA.gov](http://certify.SBA.gov). Work is underway for the modernization of the 8(a) certification program, for a release planned in early 2017. Eventually all SBA Certifications will be processed through Certify.SBA.Gov.

## *Digital IT Acquisition Professional Training (DITAP)*

Helping the government become smarter buyers requires the establishment of a specialized and educated procurement workforce that understands the digital and IT marketplace, utilizes best practices for IT purchasing, and capitalizes on the power of the government acting as a single purchasing entity and the economies of scale this provides. To achieve this, the USDS and the Office of Federal Procurement Policy (OFPP) have partnered to develop a digital IT acquisition professional community (DITAP).

The first component of this community was a training and certification program for contracting officers. USDS and OFPP posted a prize competition on Challenge.gov in May 2015 to develop the Digital Service Contracting Professional Training and Development Program for the Federal Government. As a part of this process, USDS and OFPP held a Reverse Industry Day where 70 representatives from vendors familiar with agile software development techniques, system integrators, collegiate entities, and training developer came together to confirm that the specific training did not yet exist and confirm that the Challenge.gov platform would be an effective path forward in developing the training. In all, 23 submissions were received, 3 finalists provided mock classroom presentations of their content and assessment plan, and by October 2015, the final winner began its finalized 6-month course with the first class of 30 Contracting Professionals from 20 federal agencies.

Over the 6 months, the attendees completed 11 days of classroom training on agile software development methodology, cloud hosting, and the "DevOps" practice of integrating system operations with application development teams and processes. The attendees completed 120 hours of self-directed learning and webinars, heard from 10 guest speakers, supported 6 live digital assignments, and completed a final capstone assessment of skills. Since the course ended in March 2016, 6 participants received promotions or changed job roles to take on IT work, 12 participants were assigned digital service acquisition work or are working with an agency digital service team, and two were named agency Acquisition Innovation Advocates. 90% of the 28 graduates felt they were ready to conduct digital service acquisitions in their agency. USDS and OFPP are restructuring the next round of implementation based on these results. The second class began in July 2016.

USDS and OFPP are currently training Federal Acquisition Institute (FAI) facilitators on how to conduct the program, for transfer of responsibilities in FY17. In addition, USDS and OFPP are finalizing the Federal Acquisition Certification in Contracting (FAC-C) Digital Service certificate program requirements and encouraging the development of similar training programs for government Contracting Officer Representatives and Project Managers. The long-term goal is for any federal training institution to be able to

use and update the course material in an open source manner to create their own development program without incurring the cost of content.

| <b>Success Criteria</b>   | <b>Status</b>   |
|---|---|
| 60 Contracting Officers trained in digital service acquisition. | In progress. 28 completed pilot. 30 started next round in July 2016 |

### *TechFAR Handbook*

In the Government, digital services projects too often fail to meet user expectations or contain unused or unusable features. Several factors contribute to these outcomes, including, overly narrow interpretations of what is allowed by acquisition regulations. The Office of Federal Procurement Policy, with the assistance of the USDS, developed the [TechFAR](#) to highlight flexibilities in the Federal Acquisition Regulation (FAR) that can help agencies implement “plays” in the [Digital Services Playbook](#).

The TechFAR is a handbook that describes relevant FAR authorities and includes practice tips, sample language, and a compilation of FAR provisions that are relevant to adopting an agile style of software development as the primary means of delivering software solutions. Agile software development is a proven commercial methodology characterized by incremental and iterative processes where releases are produced in close collaboration with the customer. The TechFAR facilitates a common understanding among agency stakeholders of the best ways to use acquisition authorities to maximize the likelihood for success in agile contracts and there is nothing prohibitive in the Federal Acquisition Regulations for adopting these methods and re-engineering contracts to support delivery of quality products. This handbook is a living document; users are urged to provide feedback, share experiences, and offer additional strategies, practice tips, policies, or contract language that may be used to assure that IT acquisitions achieve their desired results.

USDS also released the TechFAR Hub on GSA's Acquisition Gateway. The [TechFAR Hub](#) is designed to advise all federal agencies on how to implement best practices, as described in the digital service playbook and TechFAR, and as a community space for digital service practitioners.



# Supporting the Development of Federal Shared Services

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Shared technology platforms and services have the potential to simplify government products, increase consistency, reduce development costs, and eliminate duplication. Security also benefits by focusing resources on a smaller number of key components.

USDS is uniquely positioned to support the development of these shared services, because it works across many agencies and has visibility into many of the government's digital service development efforts. This insight enables USDS to invest in developing and promoting reusable platforms and services.

## Project Impact Summary

- USDS supports the development of shared technology platforms and services because they have the potential to simplify government products, increase consistency, and reduce development costs.
- In May 2016, a USDS and 18F team began implementation work on Login.gov, a service that will provide a secure and user-friendly login process for multiple government digital services. Login.gov is currently being integrated with its first agency customer.
- Many government digital services are siloed under unique brands and programs, leading agencies to spend time and money redesigning common digital components such as buttons, forms and search bars. In September 2015, USDS and 18F released the U.S. Web Design Standards, a set of components that agencies can adopt to provide their users a consistent, high quality online experience while reducing the chance of duplicative work. Moving forward, GSA will continue to develop the Standards. Since its release, the standards have been downloaded over 17,000 times.

## Login.gov Consumer Identity Platform

Many consumer-facing government digital services require individuals to create user accounts in order to access the service. The USDS has helped several agencies implement such systems, including at USCIS, CMS, SBA and IRS. Many more agencies have already implemented their own solutions. Despite several earlier attempts to build a common identity management platform, no such platform has been widely adopted.

Providing a secure and user-friendly login process for the government's digital services would improve the experience of interacting with government services, and help agencies implement digital services faster and more securely. To that end, the USDS and the General Service Administration's 18F are working iteratively with a team of technologists from across the Federal Government to build a platform for users who need to log in to government services. The team is coordinating with the Federal Acquisition Service, the Office of Management and Budget, and the National Institute of Standards and Technology on the specifics of the platform.

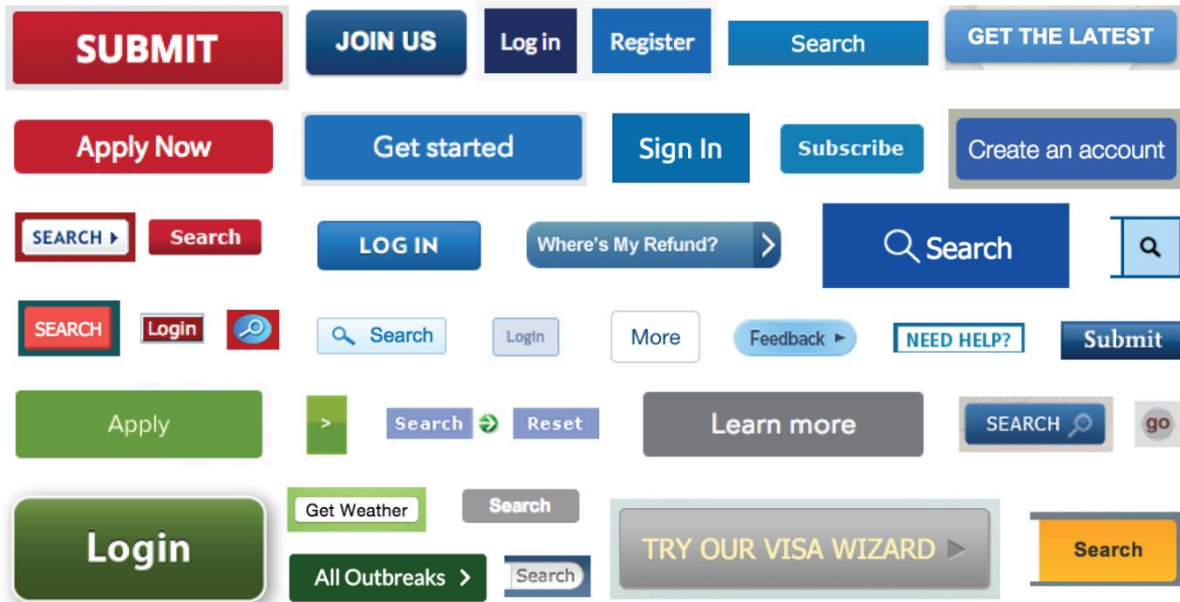
To build the Login.gov platform, the team is using modern, user-friendly, strong authentication and effective identity proofing technology. The project builds off of the hard work that was already done to create and implement the Connect.gov pilot, an earlier project with similar goals. The team is also using lessons learned from our counterparts in the UK who built GOV.UK Verify. More specifically, the team will accomplish these goals by:

- Creating a simple, elegant way for the public to verify their identity, log in to federal government websites, and, if necessary, recover their account
- Building experiences, processes, and infrastructure that will use the latest available technology to safeguard all user data
- Delivering software that will allow government developers to integrate it within hours, not weeks
- Iteratively improving the system throughout its lifetime
- Preserving privacy including mitigating risks and adhering to federal privacy guidelines
- Following security best practices including implementing easy-to-use multi-factor authentication

The team has identified the first agency to adopt this shared platform, and is in talks with several additional agency customers to be the second adopter early in 2017. Based on the success of the first two initial adopters, the team will scale out the adoption in 2017.

## U.S. Web Design Standards

When members of the public access government services online, they're often met with confusing navigation systems, conflicting visual brands, and inconsistent interaction patterns — all factors that can erode trust in our government's services.



*A snapshot of buttons across government websites*

Recognizing the necessity of consistent, easy-to-use design, many agencies have started creating their own design patterns and user interface (UI) toolkits, but their efforts are often duplicative. Because many digital services are siloed under unique brands and programs, the Federal Government runs the risk of spending time and money reinventing the wheel — that is, recreating common patterns such as buttons, forms, and search bars that already exist. What’s more, creating pattern libraries and toolkits is a time- and labor-intensive process, and one not all agencies have the resources to support.

Designers and developers at USDS and 18F teamed up to address the need for consistent, accessible design components. Together, they created the [Draft U.S. Web Design Standards](#) (the "Standards"), a set of open source UI components and a visual style guide that agencies can use to create consistent online experiences. The Standards, which launched in September 2015, follow industry-standard accessibility guidelines and draw on the best practices of existing style libraries and modern web design. To offer the highest-quality product, the Standards team makes frequent updates to introduce new features, fix bugs, provide clearer documentation, and more.

Agencies using the Standards enjoy several distinct benefits. Not only are they providing an enjoyable, consistent user experience, but they’re also saving design and development time that can be dedicated to other projects. Using the Standards, a team can build a site quickly and with minimal effort, allowing their agency to communicate its message more effectively.

Moving forward, GSA's 18F team will continue to develop the Standards.

| <b>Success Criteria</b>  | <b>Status</b>  |
|--|--|
| Overall Goal: Begin implementation of at least one outstanding common platform by end of 2016. | Complete. Implementation of shared login platform began in May 2016. Draft U.S. Web Design Standards released September 2015.  |
| Sub-Goal: Draft U.S. Web Design Standards available for agency use.                            | Complete. Initially released in September 2015, they include an online style guide and downloadable software package. The standards have been downloaded more than 17,000 times. As of September 2016, more than 78 people have contributed to the Standards' code base, and more than 200 people have participated in conversations on the Standards' GitHub repository. The Standards team welcomes outside recommendations and contributions, which help drive the project's process forward. |
| Sub-Goal: At least three agencies have adopted a shared login service.                         | Incomplete. Development of an interagency login system is in progress, but it is not in use yet. Initial agency customer identified.   |

## Milestones

### Web Design Standards

- September 2015: Draft U.S. Web Design Standards released

### Consumer Identity Platform

- December 2015: Identity sprint completed

- January 2016: Research starts
- May 2016: Implementation begins