Presidential Innovation Fellows

2020 Impact Report

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About *us*

A message from our *Executive Director*

Presidential Innovation Fellows (PIF) unites industry's brightest technologists with forward-thinking federal leaders to improve the way our government builds, designs, and delivers services for all Americans.

2020 was a challenging year, and we remain as dedicated as ever to our work. Here are the 2020 results we delivered, the lessons we learned, and the vision we're taking into 2021. I'm proud of what we've done with our partners this year.

We're stronger together. There is no single "hero" in our work. We exist to build bridges. With our newest PIF cohort, we've embedded 34 of the nation's top technologists in 22 federal agencies to work on 26 projects. Our fellows also foster interagency modernization, like digital telemedicine resources to help the public safely find the care they need during the pandemic.

We're building a resilient digital government. Since 2012, PIF has played a critical role in responding to national challenges. We've served as first responders to healthcare.gov, and played founding roles in some of the government's more advanced digital capabilities. Throughout COVID-19, PIFs have been on the front lines of the civic tech response with fellow public servants. PIF helped launch telehealth.hhs.gov with leaders across HHS, HRSA, and OSTP to provide plain-language telemedicine resources to 1M+ health care providers and millions of patients across the United States. We also led the development of a coronavirus chatbot to address the VA's rising call center wait times.

We need to act today to solve tomorrow's challenges. We face emerging opportunities and tomorrow's threats with our visionary and tactical expertise today. Consider the profound impact that artificial intelligence (AI) is already having in government. PIF's AI work helps deliver veterans' benefits faster, counter hiring biases, protect human health and the environment, advance COVID-19 diagnostics, and more. With this year's Executive Order on Promoting the Use of Trustworthy AI in the Federal Government, we formalized our commitment to unite mission-driven data science, AI, and machine learning experts with federal leaders to design, develop, and deliver AI for public good.

Our commitment is stronger than ever. Every year, we recruit the best data scientists, engineers, designers, product leaders, and entrepreneurs into government. They're eager to join us. These tours of service often extend far beyond our program. More than 50% of our fellows take technical leadership roles within government after graduating from our program, ensuring our civil servants' digital expertise endures and grows.

The work continues. It's the honor of a lifetime to contribute to a modern, trusted government for all.

Joshua Di Frances
Executive Director,
Presidential Innovation Fellows

Our *mission*

We're proud to be part of GSA's Technology Transformation Services (TTS). TTS' mission is to design and deliver a digital government with and for the American public.

Our mission

Embed industry's brightest technologists, entrepreneurs, and innovators within federal agencies to improve the way our government builds, designs, and delivers services.

Who we are

PIF is committed to representing the diversity of the public we serve. We're a multidisciplinary team of product designers, full-stack engineers, and venture-backed founders. We're also artists. Parents. Immigrants. Veterans. As a team, we all share a passion for civic purpose — people helping people.

What we do

We unite private-and public-sector innovators to build bold solutions for public good. Hand-in-hand with federal agency leaders, we identify PIF projects that will make an impact. Each project is an innovation opportunity with critical agency and/or national priority. Every year, our team recruits outstanding private-sector talent into our program.

PIF embeds the nation's top technologists, designers, and strategists within agencies as yearlong entrepreneurs in residence. With our agency partners, our fellows advise, rapidly prototype, and scale solutions using industry best practices across data science, design, engineering, product, and systems thinking. Our fellows serve as both strategic advisors and practitioners who build, test, and ship solutions.

Our *values*

Design with the public

We create products and services with users, not for them.

Focus on service

We don't build tech for tech's sake. We co-create solutions to enrich the lives of the public.

Be courageous

We do what is right for the people even, and especially, when it is hard.

Stay curious

We are lifelong learners who bring empathy and humility to complex challenges.

Create inclusion

We recognize and celebrate what makes each of us uniquely brilliant. Every day, we work to foster a culture of belonging where everyone can do their best work.

Grow together

We make our agency partners, alumni, and collaborators succeed. Community is at the center of all we do.

Our *journey*

Since our founding in 2012, 190+ fellows have worked with 45+ agency partners, improving and modernizing government services for hundreds of millions of Americans.

Here's our journey timeline:

2012

U.S. CTO Todd Park co-creates the PIF program within the White House Office of Science and Technology Policy (OSTP) to attract top innovators into government who can tackle issues where technology, policy, and process intersect.

2013

PIF joins the U.S. General Services Administration (GSA) family to further innovation across government.

PIF also serves on the team that addresses the healthcare.gov launch.

2014

PIF alum Ryan Panchadsaram becomes U.S. Deputy CTO under Todd Park. PIFs co-found and help start digital services:

- In March, PIF alumni co-found 18F, a digital design and development shop within the federal government.
- In August, PIF alumni are on the founding team of the U.S. Digital Service (USDS), a program that deploys small, responsive groups of designers, engineers, and product managers to work with and empower civil servants.

2015

President Barack Obama makes the PIF program permanent through Executive Order 13704.

2016

PIFs partner with the National Cancer Institute as part of Vice President Biden's Cancer Moonshot Initiative to help redesign how people think about, find, and participate in cancer clinical research.

Our *journey*

2017

President Obama codifies the PIF program into law by signing the TALENT Act, which passed 100-0 in the Senate.

2018

PIF alum Michael Brown becomes Director of the Defense Innovation Unit. As a PIF at the Department of Defense (DoD), he co-authored Pentagon study on China's participation in the U.S. venture ecosystem, a catalyst for the Foreign Investment Risk Review Modernization Act (FIRRMA). FIRRMA was signed into law in August 2018 and provided expanded jurisdiction to the Committee on Foreign Investment in the United States (CFIUS).

2019

PIF grows to 40 fellows and 20 agency projects, expanding our work and collaboration across government. PIFs also partner with the White House Office of Management and Budget on the Customer Experience (CX) Cross-Agency Priority (CAP) Goal effort to provide a modern, streamlined, and responsive customer experience across government.

2020

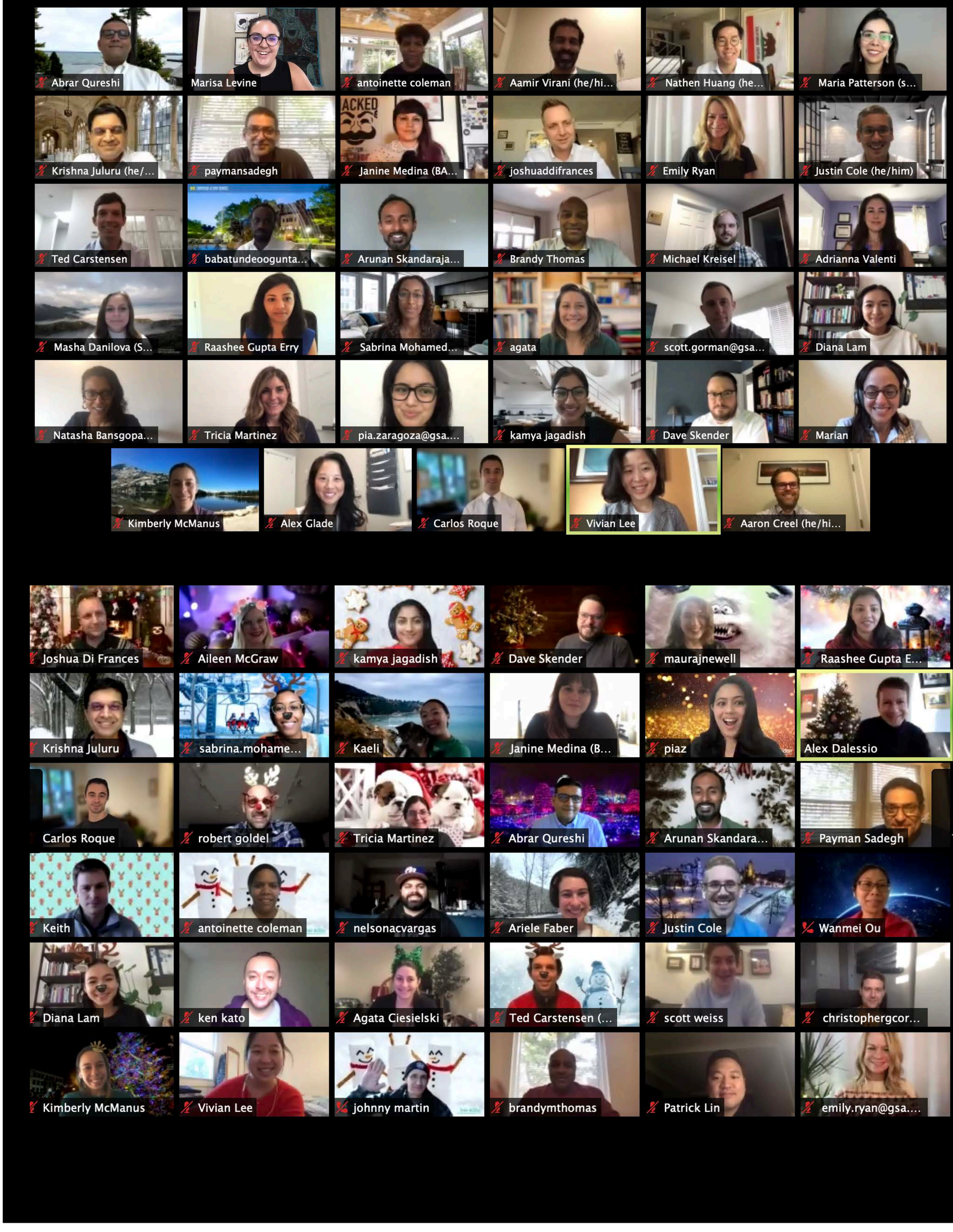
PIFs rally to serve the public and frontline workers throughout the COVID-19 pandemic, developing telehealth resources, coronavirus chatbots, precision medicine research, crowdsourced childcare, screening apps, and more.

The White House signs the Executive Order (EO) on Promoting the Use of Trustworthy AI in the Federal Government, which establishes the first-ever common principles for using AI in the federal government. The EO also directs agencies use the PIF program to enhance AI expertise in government.

PIF grows 70% year over year to 62 fellows working on 42 projects at 25 agencies as we announce our newest class of 34 fellows, 45% of whom bring deep expertise in data science and AI.

Civic tech grows globally! The United Kingdom launches the No.10 Innovation Fellowship Programme to lead new products and services in areas such as healthcare, veterans support, and natural disaster relief, noting inspiration from the U.S. Presidential Innovation Fellows program.

Showing up for our partners, our community, and the public



PIF

by the numbers

PIF *by the numbers*

Our team

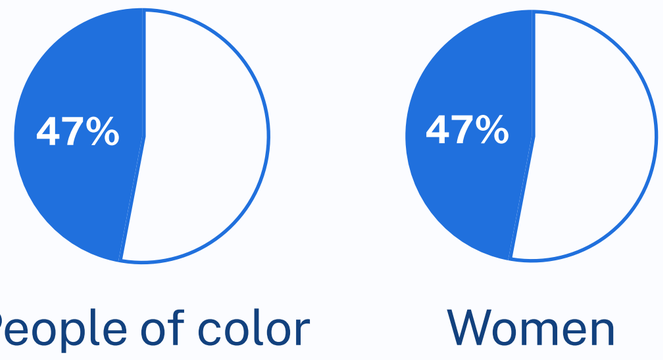
62
current Presidential Innovation Fellows

25
federal agency partners in 2020

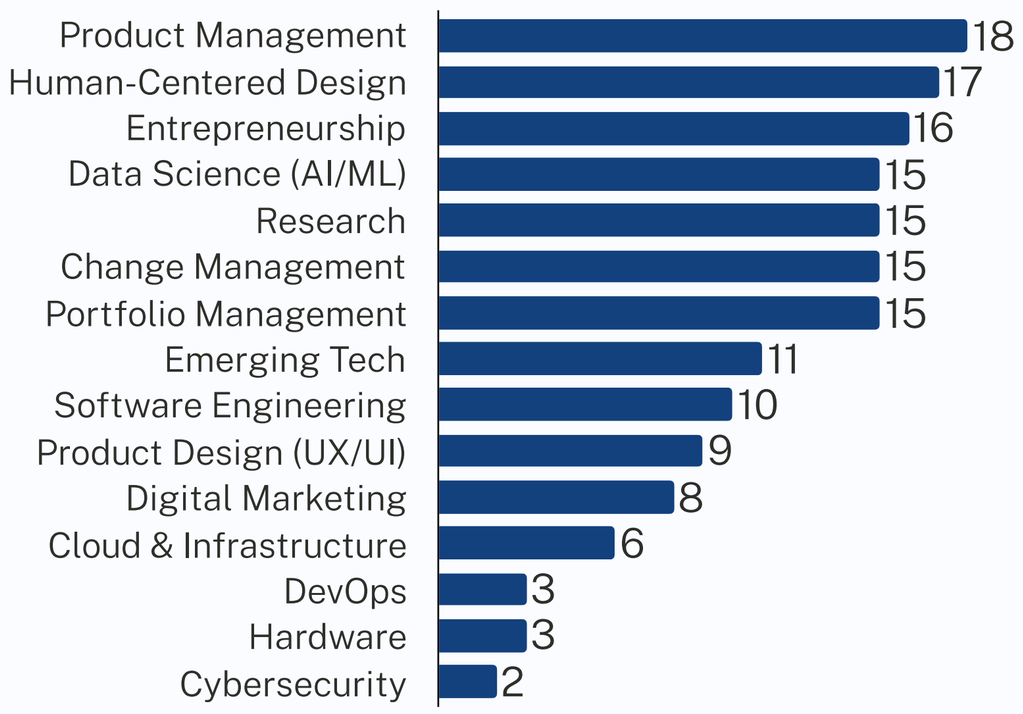
42
current projects

190+
industry leaders
in technology, design, and strategy brought into government by PIF since 2012

53%
of PIFs continue in government roles
after graduating from our program



Expertise brought into government in our latest cohort:



Our impact

2 million +
COVID-19 screenings for VA patients and employees

130K+
user sessions with VA coronavirus chatbot, helping care providers focus on urgent issues

175
industry COVID-19 response offers triaged for White House

<2 weeks
from idea to launch for telehealth.hhs.gov, serving 1M+ health care providers and millions of patients

17x
more digital benefits applications from veterans, processed 3-5 days faster

100 partners
committed to using the U.S. Department of Transportation CARMA Platform℠ (Cooperative Automation Research Mobility Application)

$1.5 million
direct labor cost savings for VA

>7x
faster authority to operate (ATO) across the Naval enterprise

24%
increase in trust in the VA among veterans

Big *picture*

Innovating in times of crisis: *Product lessons from COVID-19*

When PIF welcomed our 2020 cohort in October 2019, we did not anticipate the pandemic. For us, it turned out to be a call to step up and serve the U.S. people in a time of need. We prioritized helping agencies respond to COVID-19 by building new digital services that addressed public needs. We worked within and across agencies to build digital response efforts across FDA, NIH, VA, HHS, HRSA, OSTP, CMS, and more.

With the U.S. Department of Health & Human Services (HHS) and the Health Resources and Services Administration (HRSA), PIF led the launch of telehealth.hhs.gov, a website that centralizes telehealth policy updates and resources for health care providers and patients. Our PIFs detailed to the VA led the launch of the VA coronavirus chatbot to provide veterans information on COVID-19's impact on their VA benefits and services, as well as a VA COVID-19 screener tool that helps assess COVID-19 risk factors at VA medical centers' building entrances.

Developing products during this time of crisis was uniquely challenging for a few reasons:

- Every problem we came across was urgent in some way
- Visibility and scrutiny on work delivered was higher than usual
- The appetite for risks and tolerance for "hiccups" was very low
- Results needed to be delivered "yesterday"
- We were working 100% remote for the first time while coming together as new teams

These constraints led us to ask ourselves: ***How do we innovate faster and cultivate a culture of rapid prototyping and iteration in the government? More importantly, how do we build useful digital services quickly without compromising quality and value?***

Despite intense timelines, we ended up launching new digital products and services from ideation to production in less than two weeks. Lean and agile product development proved to be more essential than ever in these constraints. Product managers and technologists can apply these lessons to effectively build products and services and bring them to production quickly.

In this Digital.gov blog, we dive deep on our learnings:

- Start by digging into the problem space
- Build a strong coalition of support and partnerships — especially with those on the front lines
- Build your team small to stay nimble
- Don't let perfect be the enemy of good

Deep Dive: COVID-19 Response

U.S. Department of Veterans Affairs (VA)

Reducing burdens on veterans and care providers through chatbots and modern digital tools

The *challenge*

The COVID-19 pandemic led to a surge in calls to VA's contact centers and other communication channels. Veterans and their caregivers were — and are — concerned about COVID-19 and how VA's response affects their existing VA healthcare and services. The increased call volume (up to three hours) led to frustrating hold times for veterans, staffing challenges, and delayed access to clinical expertise for callers with an urgent healthcare need.

The *solution*

For veterans who need information about COVID-19 and how VA's response affects their healthcare and other services, VA's coronavirus chatbot is an interactive, web-based digital tool to better serve this increased demand for information during the pandemic. The Digital Experience Product Office within the VA Office of Information and Technology, in partnership with PIF, the Veterans Health Administration Office of Community Care, and the Veteran's Experience Office, developed this tool. Through user research, including deep dives with VA call centers and multiple rounds of interviews with veterans, the team learned that most of the calls were about a handful of the same, VA-specific frequently asked questions related to COVID-19. One example was, "how can I switch my scheduled VA healthcare appointments to telehealth appointments?" The VA and PIF developed the chatbot as a way to give this information to veterans without requiring a phone call.

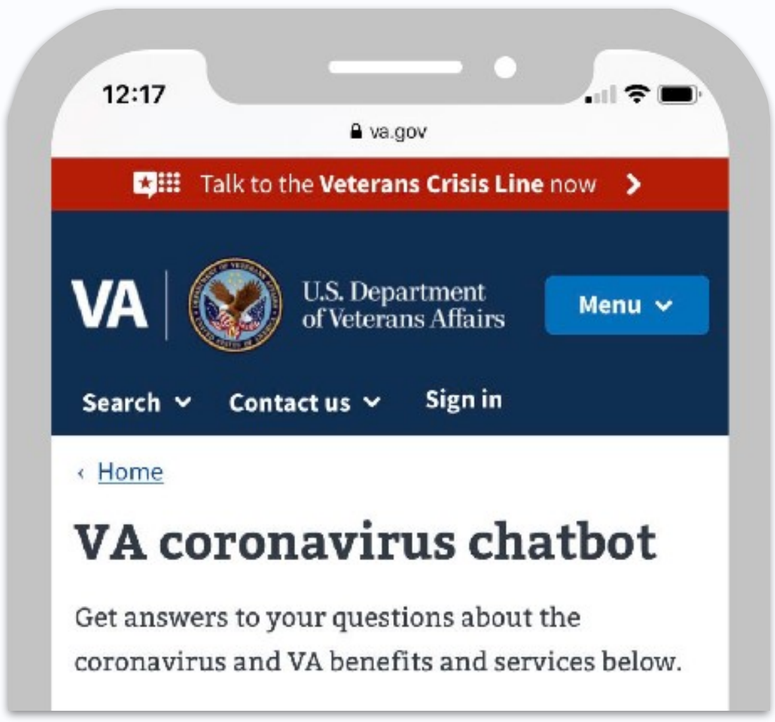
The *impact*

As of December 1, 2020, the VA coronavirus chatbot has seen **130K+ user sessions**. Top categories for veteran questions include:

- COVID-19 testing at VA
- Healthcare, appointments, and prescriptions
- My current COVID-19 symptoms (CDC self-checker tool)

Fewer than 4% of user sessions end with the veteran choosing to "talk with someone about [their] specific needs" (i.e. connect with a call center). This result suggests that the chatbot may be effectively **diverting calls from VA call centers**.

Feedback from veteran user testing sessions and surveys suggest that veterans enjoy interacting with VA through this type of digital tool. Given the promising results so far, the VA Office of the Chief Technology Officer is now exploring more use cases for interactive digital tools.



Deep Dive: COVID-19 Response

Health Resources and Services Administration (HRSA),
U.S. Department of Health and Human Services (HHS)

Accelerating telehealth awareness and adoption during COVID-19

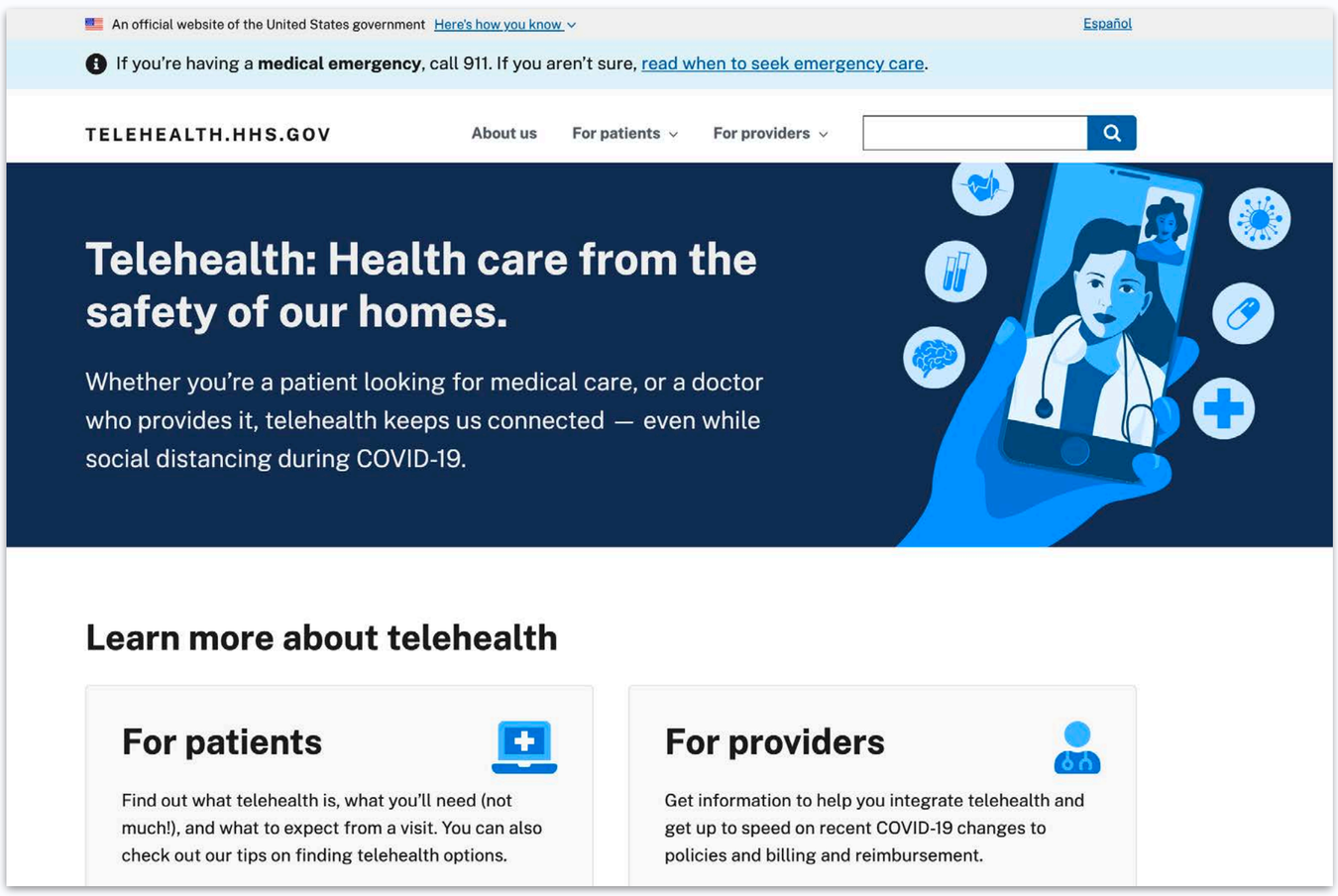
The *challenge*

During the global COVID-19 pandemic, digital health became increasingly important. When people seek in-person medical care, they risk exposure for themselves, their family, other patients, and health care providers. As a result, brick-and-mortar medical facilities are also offering telemedicine. Responding to this challenge, the U.S. government made historic strides by deregulating telehealth. However, policy information and the impact on the public was not available on a centralized HHS website, nor communicated in plain language. This thwarted fast adoption of telehealth for both providers and the public.

The *solution*

To address this challenge and expand telehealth capacity to meet the spike in demand for safe virtual care, PIF led the development and launch of telehealth.HHS.gov, a government website that provides helpful information about telemedicine in plain language, and links to tools and resources for health care providers. It also uses U.S. Web Design System (USWDS) to easily adopt the latest web design standards.

Bringing together leaders and subject matter experts from HHS, HRSA, OSTP, FEMA, and ASPR, PIF envisioned the project, articulated user needs, and secured sponsorship for a timely execution, **launching the site from inception to production in less than two weeks**.



< 2 weeks

for website launch, from inception to production

Deep Dive: COVID-19 Response

Health Resources and Services Administration (HRSA),
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Accelerating telehealth awareness and adoption during COVID-19

The *impact*

The website actively serves **thousands of users** and has seen a positive response across the telehealth community. The core team remains committed to mobilizing a strong telehealth workforce to help keep Americans healthy through and beyond this challenging time, with this effort finding a long-term home and funding in HRSA's Federal Office of Rural Health Policy and Office for the Advancement of Telehealth.

Building on this work, PIF worked with White House colleagues on the White House launch of the Pledge to Embrace Technology to Advance America's Health. **50+ of the nation's largest health insurance plans and stakeholders committed to expand telehealth coverage and adoption**.

This move helped reassure Americans that telehealth is here to stay. When patients can get healthcare through telehealth — and doctors can provide it — we protect ourselves and our communities. Our digital approach helps keep providers and patients safe and healthy for the long run.

"The Presidential Innovation Fellows were essential to telehealth.hhs.gov. PIF Likhitha Patha's leadership delivered a comprehensive telehealth website where, for the first time, patients and providers could get the information they needed to access and provide care. PIF Dennis Chornenky was instrumental in ensuring our private-sector partners were taking the right steps to provide virtual care across the country. The PIFs stepped up and in to drive innovation with HHS at a crucial time and ***it is a model of how successful collaboration across government should occur.***

William Brady Chief of Staff to the Deputy Secretary and Senior Advisor to the Secretary at HHS

Big Picture: Interagency Innovation

Interagency innovation:
Operationalizing CX government-wide

The *challenge*

On multiple satisfaction indices, the U.S. federal government lags behind all industries. Trust in government is declining to near-historic lows. The 2018 President's Management Agenda prioritized customer experience (CX) effectiveness to improve service delivery and foster trust. The Cross-Agency Priority (CAP) Goal team (co-led by OMB, VA, and USDS) sought to operationalize customer experience management in an environment lacking the growth and competitive imperatives that drive CX in the private sector.

Customer experience is an individual's perception of their collective interactions with an organization or brand. A federal service is defined as the sum of the help provided — by an agency and its partners — throughout the process a customer goes through to obtain, receive, or use a public offering (or comply with a policy). Customers perceive the series of interactions as a whole when they combine to solve a need.

The degree to which those interactions are effectively coordinated (across levels and agencies of government), easy to navigate, and reduce uncertainty largely determines customer satisfaction and trust. Agencies measure the degree to which different drivers — transparency, equity, speed, efficiency, effectiveness, and employees — contribute to their overall experience for different types of services.

The *solution*

As a part of the CX CAP Goal core team, PIF is institutionalizing industry-level customer experience rigor including:

- Incorporating CX best practices from the private sector, including new performance metrics, into government-wide guidance documents like OMB Circular A-11 Section 280
- Launching *Touchpoints*, an easy, low-barrier tool to help agencies begin surveying customers, and working with them to identify when and how they'll collect feedback
- Creating and leading multi-day trainings on service definition and management
- Using these trainings to show how service definition and management can reflect 21st Century Integrated Digital Experience Act (IDEA) prioritization of services to digitize at High Impact Service Providers (HISPs)
- Processing more than 1.1 million survey responses per quarter from more than 20 federal programs
- Cleaning, analyzing, and gleaning actionable insights to inform more than 200 federal program managers government-wide and working with many of them to understand, learn from, and act on their own results
- Developing an even more simple, streamlined approach for federal agencies and services in collecting feedback data for the 2021 A-11 Section 280 guidance in line with improved methods from leading organizations

Interagency innovation:
Operationalizing CX government-wide

- Piloting an agency-agnostic, more service-oriented approach to conducting natural language processing, machine learning, and other sophisticated techniques for learning from social listening and comment box data
- Providing ongoing advisory support to HISPs as they conduct customer outreach and research activities, such as their CX capacity assessments, and develop action plans
- Conducting a Federal CX and Service Delivery strategy sprint to identify transformative actions that inform the 2021 President's Management Agenda

The *impact*

In a survey of nearly 100 HISP federal program leaders, more than 80% strongly agreed that defining central CX measures, establishing the A-11 280 guidance, and providing a central support team had helped them improve their services. This includes establishing annual routines to define federal services, evaluate maturity against leading practices, listen to customers, and from this, commit to action. This, with a central PIF team supporting and coaching, provides a critical foundation to build upon:

- **2x increase** in agency participation and HISP quarterly data submissions, and many HISPs collected customer feedback for the very first time
- **10x** increase in *Touchpoints* product usage, improving how our government understands and responds to public feedback
- **100% completion** of HISPs' CX capacity assessments and action plans (and public release on performance.gov/cx)

The momentum generated deep within many of the nation's highest impact programs — touching the lives of nearly every individual living in the United States — will help lead to a more human-centered, responsive government.

> *"The PIFs supporting our team have brought such incredible experience to bear – providing a new level of credibility with Federal agencies – to inspire change and worthiness of these efforts. Their willingness to dive in, do everything from data analysis to facilitating workshops with executives, is game changing.*
>
> **Amira Boland** Federal Customer Experience Lead, Office of Management and Budget

Fellow *projects*

Fellow Projects

U.S. Department of Transportation (DOT)

Advancing safe, efficient intelligent transportation systems

The *challenge*

With the increasing maturity and application testing of automated and robotic technologies for transportation, the DOT Intelligent Transportation Systems Joint Program Office (ITS-JPO) and the Turner Fairbank Research Center (TFRC) have been actively researching safe and efficient ways to implement these technologies.

Although there is private-sector funding for autonomous vehicles, there is a significant gap in technology research for how multiple and differentiated autonomous systems can safely and efficiently co-exist and interact with one another. We need a broader ecosystem view and multiple connected and automated transportation systems platform to address a looming market failure.

The *solution*

CARMA Platform℠ (Cooperative Automation Research Mobility Application) focuses on a critical area of collaborative mobility research for surface-level autonomous systems. On behalf of the ITS-JPO within the CARMA project, the PIF serves as its chief strategy officer managing project-wide strategy, engagement with public and private stakeholders, and technical development pathways.

CARMA is developing an open-source software platform for multiple autonomous driving systems to communicate, negotiate, and operate seamlessly together. The research is currently split into three major workstreams: software simulation, prototyping of small-scale vehicles (1/20th), and full-scale (road-ready) autonomous vehicle research.

Fellow Projects

U.S. Department of Transportation (DOT)

Advancing safe, efficient intelligent transportation systems

The *impact*

In only a year, CARMA has successfully attracted **over 100 project partners who have committed to using the CARMA platform** for collaborative autonomous research. It has received multiple grants from across the department and state DOTs.

CARMA's impact is resonating and being reused in other agencies and programs. In several white papers, DOT's Office of Research and Technology has referenced key lessons from the CARMA project highlighting the need for cooperation among automated vehicles to ensure higher levels of safety and efficiency. Several DOT modal administrators (Volpe National Transportation Systems Center, Federal Motor Carrier Safety Administration, National Highway Traffic Safety Administration, etc.) have voiced their support and funded major portions of CARMA's research.

CARMA has successfully worked with industry standards organization Society of Automotive Engineers to **create standards** for Cooperative Driving Automation under J3216, a document of taxonomy and definitions for terms related to cooperative driving automation for on-road motor vehicles.

100 partners

committed to using the CARMA platform

Fellow Projects

U.S. Department of the Navy (USN)

Achieving continuous ATO using DevSecOps

The *challenge*

The Naval enterprise wanted to improve and scale its cloud usage, and more critically, how they write and ship software to warfighters.

Writing good software is difficult, and developing a great app takes a team. Learning to code is only a small portion of digital transformation. The team and culture competencies aren’t obvious and aren't a part of any curriculum, especially those of DevSecOps.

This leaves a Naval enterprise in need of not just technical expertise, but experience and leadership that can only be earned through working in the tech industry. Additionally, organizations like the Department of Defense have rigorous standards for the efficacy and security of their software, making authority to operate (ATO) a lengthy process (historically, most ATOs take around 18 months). The Navy wanted to increase software delivery speed without compromising quality or security.

The *solution*

In order to educate the Naval enterprise on agile software development and lean product management — both foundational components for DevSecOps — PIF led the pathway to gather a team that built Black Pearl, an enterprise-wide software practice that enables the Naval enterprise to build software factories and deliver software that their sailors love. This cloud infrastructure, DevOps, and procurement practice streamlines processes to deliver consistent impact across multiple Navy teams.

PIF established an agile project management mindset across the agency, enabling frequent deliveries of customer-prioritized features that offer meaningful capability, even in very small increments. These deliveries embody a culture of continuous integration and continuous deployment (CI/CD) by integrating the intended security architecture and operations concept from the outset. The solution is a combination of platform operations, infrastructure as a service, ops, and security. Technology is purely an enabler to build the trust that this process not only works, but works in a way that can be clearly understood, and where each person who touches it understands what they are contributing, and why that’s valuable. At the heart of Black Pearl is a simple want: to enable culture change.

> *“Positive change within the government is brought about by finding pathways rather than dwelling on potholes. And they say to go fast you must go alone and to go far you must go together. [Presidential Innovation Fellow] Ken [Kato] has brought the acumen and collaboration to build teams that go far, while also bringing the relentless activation energy to go fast. This pairing is hard to find and has already helped the Navy towards a better future.*
>
> **Justin Fanelli** USN, Tech Director, PMW-240

Fellow Projects

U.S. Department of the Navy (USN)

Achieving continuous ATO using DevSecOps

The *impact*

Black Pearl's platform abides by the mantra of, "build once, deploy many." The managed platform **provides 80% of foundational DevSecOps technology needs** that enables teams to concentrate on the 20% value-add to their warfighters. Standing up Black Pearl came with the PIF defining a metric of success that even the agency considered to be a high bar: Black Pearl would have a fully functional platform, an ATO, customers, and all of this in 100 days. The team began July 1, 2020 and was able to deliver 25 days ahead of the 100 day goal.

By moving from >18 months to 75 days, Black Pearl enables the Navy to achieve ATO **7.2x faster, and it's a *continuous* ATO!**

The impact was more than technology — it was also process transformation. Black Pearl has enabled the Navy to mitigate risk, ruthlessly prioritize product roadmaps, and create a team equipped with best-in-class agile and CI/CD skills that enable constant learning (build, measure, learn, loop). All to contribute to Black Pearl's core mission: proliferate DevSecOps across the Department of the Navy.

> *"What [PIF] Ken Kato has managed to accomplish with the Navy in just a few months would usually take the Government years to plan and begin to implement. Utilizing a 'lean startup' approach, Ken has reimagined and begun modernizing the IT acquisition and development lifecycle that will have a lasting impact for decades to come. Additionally, his sailor-centered mentality has begun to proliferate throughout the Navy, inspiring other innovators to take the same approach to problem solving by focusing on customer feedback to improve products instead of planning the entire solution upfront.*
>
> **Lt. Peter Guo** USN, Chief Product Officer

Fellow Projects

Centers for Medicare and Medicaid Services (CMS)

Driving human-centered culture and workforce resilience

The *challenge*

At the beginning of October 2019, human-centered design (HCD) had many meanings at CMS: HCD was a movement, an approach, a teachable skill set, and an emerging capability. CMS has a growing, distributed network of design, technology, and innovation talent across the agency, yet they do not always have visibility into the complementary work of their teams within the Office of Information Technology (OIT) and the agency at large.

The *solution*

To meet this challenge, PIF led the strategy and implementation of creative solutions in collaboration with 200+ dedicated staff, managers, and senior leaders. These solutions focused on two priorities:

1. **Formalizing design operations** to build the human-centered design capability at CMS
2. **Operationalizing a human-centered culture** across key strategic initiatives

Through collaboration with OIT and the CMS Human-Centered Design Community of Practice, PIF co-created the first CMS-wide Future Vision and Design Strategy & Operations Roadmap. This portfolio covers community building; contracts and budgets; data, analytics, and insight sharing; internal/external stakeholder engagement; workforce training and development; and tools and techniques.

PIF embedded human-centered design principles into four high-priority initiatives:

- End User Experience (Employee-Facing Products & Services)
- CMS Cloud Program
- Workforce Resilience
- Leveraging Objectives and Key Results (OKRs) to Move from Reporting to Analytics

These initiatives have common threads:

- They can become “fed-led” and contracting partner-enabled
- They were built *with* (rather than “for”) all stakeholders involved
- They were architected with an eye towards sustainability.

Fellow Projects

Centers for Medicare and Medicaid Services (CMS)

Driving human-centered culture and workforce resilience

The *impact*

Today, best practices from these efforts are consistently shared within and between government agencies to scale what worked. Highlights include:

- **Successful transition to 100% telework during COVID-19**, driven through an end-to-end CMS employee experience strategy
- **Faster, cheaper delivery of cloud technology** that meets user needs, increasing team trust and engagement
- **240+ OIT employees upskilled** across human-centered design, product management, cloud technology, and cybersecurity
- **80% growth** in CMS design community

240+ employees

Number of OIT employees upskilled across human-centered design, product management, cloud technology, and cybersecurity

80% growth

in CMS design community

> *As a PIF, Ariele Faber has opened our eyes to what's possible when holistic user experience (UX) and design are part of our service delivery. Her empathy, expert knowledge, and engaging guidance made it safe for us to try new and different things, and made us better in servicing 6,000-plus CMS employees.*
>
> **Mark Oh** Director, Infrastructure & User Services Group, CMS

Fellow Projects

Millennium Challenge Corporation (MCC)

Spurring long-term economic growth by supporting innovators and entrepreneurs worldwide

The *challenge*

To alleviate poverty through economic growth, the Millennium Challenge Corporation (MCC), an innovative U.S. government agency, forms partnerships with developing countries committed to good governance, economic freedom, and citizen investment. MCC constantly evaluates ways that in-country stakeholders gain resources they need to lift themselves out of poverty. Given the small fraction of venture capital funding that is allocated to local innovators and entrepreneurs, it was clear that greater attention to entrepreneurship in key MCC departments could unlock exciting opportunities.

The *solution*

PIF used its industry expertise in both entrepreneurship and venture capital to raise awareness about the potential for entrepreneurs and innovators. PIF acted as an advisor/consultant, informing colleagues as a subject-matter expert, while building knowledge, capability, and interest across the agency.

At a broad level, PIF led a gradual approach to be a resource in the areas of entrepreneurship and venture capital to different practice groups that make up MCC's compact and threshold programs.

PIF contributed to the activity design for the Tunisia Compact's Transforming Women-led Business in Digital Trade-Oriented Economy. This program works to help women-led, growth-oriented businesses over five years through technical and business training, mentorship, and networking.

At a more targeted level as a member of the Data Collaborative for Local Impact (DCLI) team, PIF presented, ideated, and implemented bold initiatives where technology and international development intersect. PIF worked with the Tanzania Data Lab (dLab) to stand up an accelerator program. This program will nurture a cohort of innovators and small and medium enterprises (SMEs), and connect them to venture capitalists with an interest in growing their African portfolio.

PIF also helped draft the winning grant proposal to establish a Women Business Data Lab and Network (WDLN) to support Ivorian women-led SMEs (W-SMEs). PIF mentored and provided strategic support to management teams for self-sustainability, access to capital, and networking.

WDLN is an interagency/public-private sector initiative among MCC, United States Agency for International Development (USAID), and Microsoft Corporation, supported by the White House through the Women's Global Development and Prosperity (W-GDP) Interagency Fund. The program is currently in co-creation. PIF will continue to play an active role in helping to stand it up during FY21.

Fellow Projects

Millennium Challenge Corporation (MCC)

Spurring long-term economic growth by supporting innovators and entrepreneurs worldwide

The *potential impact*

In Tunisia, **1,000 women-led businesses are expected to benefit** from the Tunisia Compact program**.** In Tanzania, **60+ promising SMEs are expected to be mentored** through the dLab Accelerator program. And in Côte d'Ivoire, **3,500+ women-led businesses are expected to benefit** from the WDLN program, the first of its kind focused on Ivorian W-SMEs.

> *In recruiting a PIF to MCC, I hoped to attract an individual capable of navigating different levels of strategic thinking while also being able to operationalize new approaches to innovation in context of MCC investments. Minh Chau has exceeded our expectations on all fronts. As a former venture capitalist and entrepreneur, he brings first-hand experience of what it takes to succeed; and the credibility needed to engage with technical staff at all levels of the organization. Slowly, resiliently and steadily, Minh is painting a new picture of what innovation could mean to MCC.*
>
> **Agnieszka Rawa** MCC Managing Director, Data Collaboratives for Local Impact

Fellow Projects

National Institutes of Health (NIH) All of Us *Research Program*

Using data from wearable sensors to discover relationships to health

The *challenge*

Biomedical research has an unmet need for high-quality, objective measures captured outside of the clinic. Developing digital health technologies (DHT) like sensors, platforms, and applications happens rapidly. Many academic institutions build capabilities related to digital health technologies research, often in cross-sector collaboration with technology companies and other organizations. Their goal is to generate clinically meaningful evidence to improve patient care and identify users at an earlier stage of disease presentation. Several federal agencies fund development of digital health technology-related devices, platforms, applications, and other related research. However, most data is currently in the private sector and not widely accessible.

+8K participants

amount of data collected by end of 2020

The *solution*

With its mission to create one of the world's largest and most diverse health data sets, NIH's *All of Us* Research Program (AoURP) can change this gap and create the world's largest publicly available digital health data set by incorporating "bring your own device" data into the program's data analysis platform, the Researcher Workbench.

NIH AoURP partnered with PIF to deliver wearables data to researchers for the first time, including a Fitbit "bring your own device" model for participants to share data with the program. By the end of 2020, this effort had collected data from over **8,000 participants**. To get the wearable sensor data to researchers via the Researcher Workbench, PIF used their expertise with digital health sensors and data as the product manager and champion for the Fitbit "bring your own device" data in AoURP.

PIF and AoURP took an agile approach (move the data, explore data analysis, clean the data, curate the data, develop tools, and summarize the statistics graphics). PIF and the AoU Consortium team used a minimum viable product (MVP) approach to guide the "bring your own device" data product development. The wearable sensor data and tools were released in the Researcher Workbench December 2020.

Fellow Projects

National Institutes of Health (NIH) All of Us *Research Program*

Using data from wearable sensors to discover relationships to health

The *impact*

AoURP is now able to share widely the **most diverse and largest set of digital health sensor data that is linked to electronic health records data**. PIF and AoURP also set up processes that the teams can follow for other digital health technologies data, including from Apple HealthKit and future integrations. This data release establishes AoURP as a leader in digital health technologies research. From the central Researcher Workbench, researchers will be able to share tools and code to democratize the use of these data by researchers who may have never done so until AoURP. It can also lead to discoveries connecting sensor data to health, a critical step towards using these sensors in healthcare.

> *Without Michelle Holko, this invaluable data would still be collecting dust on a server. She brought expertise, creativity, and enthusiastic adaptability to deliver an outcome that will benefit all Americans, again proving the value of the PIF program.*

Chris Lunt Chief Technology Officer, AoURP, NIH

Fellow Projects

U.S. Food and Drug Administration (FDA)

Unlocking the value of data

The *challenge*

In the next decade, the FDA anticipates a 10x rise in regulatory review activities as well as increasing complexity of scientific decision-making and reliance on primary data sources. The FDA knows it cannot just add more people; the agency needs to make its regulatory review processes more efficient and seamless. Doing so will unlock the value of data for both operational and scientific decision-making purposes.

The *solution*

FDA's new Technology Modernization Action Plan (TMAP) lays out the near-term roadmap for bolstering the agency's technical infrastructure to enable future data modernization. The TMAP also details plans for fostering an innovation culture of "learning by doing." This culture involves establishing a product development capability to evaluate ideas and novel technologies for the FDA environment through data-intensive demonstration projects. To get there, FDA partnered with PIF on three initiatives:

1. PIF is helping the FDA establish an enterprise-level **Resource Capacity Planning** (RCP) capability to anticipate workflow demands on the agency and adjust resource planning accordingly. This initiative uses advanced analytics and machine learning models to forecast future needs in a highly dynamic environment. The effort to generate internal alignment on the development of an agency-level RCP platform has paved the way for implementation of a broader data strategy at FDA.
2. At the start of the COVID-19 pandemic, FDA leadership and the White House Coronavirus Task Force needed access to near **real-time dashboards** with information regarding therapeutics, diagnostics, and vaccine developments. The siloed nature of FDA Center data made it difficult to extract and report on FDA activities. FDA and PIF developed a streamlined process to extract, transform, and visualize data. This made it possible to easily digest and share the most up-to-date information with our nation's leaders during this critical period.
3. The urgency of the COVID-19 public health emergency has led FDA to issue a number of Emergency Use Authorizations for diagnostics tests. The **Diagnostics Evidence Accelerator** was created by the Reagan Udall Foundation to help the FDA understand the real-world performance of these tests. The PIF and FDA worked closely with the Reagan-Udall Foundation to ask critical time-sensitive questions of the data, identify key insights, and communicate new learnings in a timely manner.

Fellow Projects

U.S. Food and Drug Administration (FDA)

Unlocking the value of data

The *impact*

These three initiatives have helped advance FDA's TMAP and influenced the development of a forthcoming data modernization strategy.

- Resource Capacity Planning is ensuring that FDA is appropriately resourced for the future.
- The COVID-19 dashboards continue to provide critical information on a daily basis to the FDA Commissioner and White House Task Force. This work has helped provide the data needed to manage the nation's largest public health emergency in the last century.
- The Diagnostics Evidence Accelerator is providing insight into the real-world performance of COVID-19 diagnostics. This is critical to understanding and evaluating the impact of therapeutics and vaccines. This work has also revealed challenges in the diagnostics data ecosystem. The FDA's work to address these issues will help expand the use of real-world data beyond COVID-19.

These projects are solving important challenges today and laying the groundwork to identify, develop, and deploy technology products that allow the FDA to operate at the accelerating pace of medical product development and regulation and fulfill its public health mission.

> *"As a PIF, Gina Valo has been a critical member of the team, championing key projects that have moved our Technology Modernization Action Plan forward. She is a creative problem-solver and willing to dig in deep on tough issues in order to find solutions. And Gina has been a role model on the team, where learning by doing is a key ethos.*
>
> **Amy Abernethy**, **M.D.**, **Ph.D.**, Principal Deputy Commissioner of Food and Drugs and Acting Chief Information Officer (CIO), U.S. Food & Drug Administration

Fellow Projects

U.S. Department of Veterans Affairs (VA)

Using machine learning to deliver veterans' benefits faster

The *challenge*

Veterans submit 1.5M+ claims/year for disability compensation and pension benefits, and 65-80% of those claims are submitted via mail or fax. Unfortunately, 98.2% of attempts to submit claims online fail. Processing also delays how quickly veterans receive and use their benefits.

The *solution*

The PIF — a data science expert with a decade of industry experience at Fortune 100 companies — worked with the VA Office of the Chief Technology Officer (CTO) to build a machine learning application programming interface (API), referred to as Content Classification Predictive Service (CCPS). CCPS analyzes what veterans write on a claim. It automatically predicts the most likely classification for it to automatically start the claim process.

CCPS is the first machine learning API the VA implemented. The tool reads what a veteran writes as their current disability on a disability compensation form. It then uses AI to match that entry to a classification. For example, if a veteran indicates "ringing in my ears," CCPS classifies it as "hearing loss." The veteran can then get an appointment with an audiologist.

> *[Presidential Innovation Fellow] Nel Colón and his VA partners used a modern data science technique to get benefits to Veterans more quickly. They solved the right problem with the right technology and served as an example of why it's so impactful for people with modern technology skillsets to work in government.*
>
> **Zachary Goldfine** Deputy Chief Technology Officer, U.S. Department of Veterans Affairs Office Benefits Team

Fellow Projects

U.S. Department of Veterans Affairs (VA)

Using machine learning to deliver veterans' benefits faster

The *impact*

This API has processed over 400K claims automatically without needing human intervention, a **24x increase** that has **saved $1.5 million in direct labor cost**. The VA CTO team is now scaling this technology in new products and services.

Also, the VA's new CTO Office Benefits team is working to develop technology tools and services that will deliver benefits faster. The team, led by PIF alum Zachary Goldfine, helps teams implement optical character recognition to

- automatically process handwriting on PDFs,
- automate parts of a benefits application process, and
- build out an orchestration layer of services that delivers benefits faster.

In October 2020, VA CTO brought on even more PIFs as data science experts to continue scaling this work.

$1.5 million savings

in direct labor cost

24x increase

in claims processed automatically

Fellow Projects

U.S. Department of Veterans Affairs (VA)

Turning data into knowledge with enterprise data and analytics

The *challenge*

The VA has multiple business offices interfacing with veterans' social determinants of health, like healthcare services, economic benefits, and education. The VA wanted to integrate its learning health system and social determinants of health to improve veterans' and their families' quality of life, but in order to do so, the VA needed an up-to-date data and analytics platform that integrated and organized data across offices. This modernized data and analytics platform also required computing, toolsets, and insight delivery capabilities to efficiently analyze big data and deliver final insights back to the VA.

The *solution*

To get there, the VA Office of Information Technology (OIT) partnered with PIF to begin a data and analytics modernization effort inside the VA's enterprise cloud environment, including an enterprise-level data and analytics platform. The platform provides advanced analytics tools and computing resources to VA analysts and data scientists. It also curates, organizes, and integrates separate sources of data following industry standards. All of these result in faster and more consistent analysis results while reducing VA analyst burdens.

As an expert in data science and health systems, the PIF worked hand-in-hand with the VA's CTO and Chief Data Technology Officer to create, implement, and manage strategy and the end-to-end software product development cycle.

> *"VA's health data is a national asset. Using it is central to our delivering on our agency's mission. Presidential Innovation Fellow Wanmei Ou's technical leadership has set us on a path towards modernizing our core analytics computing environment in a way that will enable VA to use our data to deliver better outcomes to Veterans over the coming decade.*
>
> **Charles Worthington** Chief Technology Officer, U.S. Department of Veterans Affairs

Fellow Projects

U.S. Department of Veterans Affairs (VA)

Turning data into knowledge with enterprise data and analytics

The *impact*

The platform went live in September 2020 after four months of intensive agile development. In this release, the VA delivered a number of core platform capabilities:

- Role-based access and security controls that comply with National Data Systems policies and protect veteran data in the platform
- Six end-to-end, self-service tools, from ingestion to dashboard creation, that operate in a harmonized environment via Personal Identity Verification (PIV)
- VA can rapidly improve the platform by using automated configuration management via FedRAMP high platform services

It helps unlock the value of VA data, bringing data-driven insights to decision makers. Key impacts of the first release include:

- The Office of Mental Health can **reduce time to insights** and calculate the medication possession ratio for all drugs in under 20 minutes, an **88% reduction**
- VA's data scientists and analysts can **work faster and get better insights** thanks to improved user experience, workflow, and modern analytics tools

88% reduction

in the time to insight and to calculate the medication possession ratio for all drugs

Fellow Projects

U.S. Department of Veterans Affairs (VA)

Increasing veterans' trust using human-centered design

The *challenge*

The VA identified an extreme pain point in 2014, when veterans experienced long wait times for care at the VA hospital in Phoenix, Arizona. The VA realized it needed to establish a centralized capability to listen to the voice of the veteran and ensure that customer experience (CX) was a co-equal component in how the department measured performance, organized, and operated; thus, the VA created the Veterans Experience Office (VEO).

The *solution*

When VEO was just beginning, PIFs helped to create a transformational journey map to re-envision how the VA might best serve veterans and their families, caregivers, and survivors based on their journey and life experiences. As experts in human-centered design and CX, PIFs collaborated and consulted on best practices while VEO conducted a broad qualitative research project to gain a picture of veterans' life journeys. Instead of understanding VA as an organizational structure that customers needed to navigate, the journey map enabled the VA to see itself the way customers do and how the department fits into the veteran's life stages.

The Veterans Journey Map marked an important step in VA's CX journey and enabled the department to re-imagine how VA could understand its customers. The VA has continued to build on the practice of human-centered design, creating dozens more journey maps examining veteran-VA interactions, identifying additional opportunities for improvement.

Today, a core part of VEO capabilities centers around CX data, which includes two important dimensions: human-centered design and real-time CX survey feedback. Human-centered design provides insights about the moments that matter most to veterans and their families, caregivers, and survivors, bright spots in their journey with VA, and pain points. Real-time CX survey feedback enables the VA to respond to individual concerns and system-wide trends for improvement. VEO has actualized these and other important CX capabilities and programs to "hardwire" customer experience into the fabric of the VA.

Fellow Projects

U.S. Department of Veterans Affairs (VA)

Increasing veterans' trust using human-centered design

The *impact*

Since the VA began to hardwire customer experience into the department as a core business discipline driven by the VEO four years ago, the VA has seen a **24-percent increase in trust among veterans**. VEO continues to build and mature the VA's CX practice and has created a core set of CX capabilities and usable frameworks to enable the practical application of CX across the department. VEO has also spearheaded the department's efforts as lead agency partner in the President's Management Agenda (PMA) Cross-Agency Priority (CAP) Goal of Improving Customer Experience with Federal Services. As part of this work, VEO shares best practices and lessons learned in standing up and maturing a CX capability in government, which includes leveraging partnership with the PIF program, as highlighted in its recently-published CX Cookbook: A Collection of Key Ingredients & Recipes for Embedding Customer Experience in Federal Services.

24% increase

in trust among veterans

> *PIFs are unique assets to government in that they bring an endless set of creative possibilities informed by robust industry experiences that greatly complement the transformative change agents in government. They offer unique skill sets and perspectives that are of incredible value to the public sector. When we blend the expertise of PIFs and the expertise of public servants in navigating government to make it better serve the people, that is when the magic happens..*
>
> **Barbara Morton** Deputy Chief, Veterans Experience Office, U.S. Department of Veterans Affairs

Looking *ahead*

Looking Ahead: PIF Alumni

From fellow to CTO:
A launchpad for civic innovation

The fact that many of our fellows' public service continues after they graduate from our program testifies to their dedication to strengthening digital expertise across government.

In the last 8 years, more than 60 fellows have grown into technical leadership roles across local, state, and federal government. They join our ongoing dedication to public good and civic tech.

PIF alumni currently serve or have served as:

- U.S. Deputy CTO
- Chief Technology Officer (CTO), VA
- CTO, U.S. Environmental Protection Agency (EPA)
- Chief of People & Culture, FDA
- Chief Data Officer, USAID
- Chief Design Officer, VA
- Director, Defense Innovation Unit
- Chief Innovation Officer, U.S. Census Bureau
- Chief Product Officer, U.S. Census Bureau
- Chief Marketing Officer, U.S. Census Bureau
- Deputy Chief Innovation Officer, U.S. Department of Labor
- Deputy CTO - Benefits Delivery, VA
- Deputy Chief Data Officer, U.S. Department of Commerce
- Executive Director, PIF
- Executive Director, 18F
- Director, VA Innovators Network
- CEO, Canadian Digital Service
- Chief Digital Officer, Ontario Canada

Our *vision*

We're energized by what the future brings, 2021 and beyond. As always, Presidential Innovation Fellows is committed to:

- **Serving** as a trusted resource for our partners' success and public benefit
- **Uniting** forward-thinking leaders across government
- **Delivering** government *and* technology that is accessible, secure, ethical, and equitable

We're looking forward to advancing government innovation with even more federal agencies. From AI to human-centered design, from CX to digital advertising, we're dedicated to cultural transformation, technology, and digital services that embody our nation's values.

To the engineers, data scientists, designers, and entrepreneurs who begin their public service with us, and to the federal agency leaders iterating alongside our fellows, *thank you*.

And, to the American public, we promise to continue creating solutions with and for you.

Joshua Di Frances
Executive Director
Presidential Innovation Fellows

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