10x is the Federal Venture Studio in GSA's Technology Transformation Services (TTS)

GSA

IMPACT REPORT

FY20

10X.GSA.GOV

This impact report is our attempt to communicate the value of the investments we've made over the last year, and to highlight some program enhancements we've implemented. We've opted to include specific data points and dollar figures for transparency. Lastly, this report will serve as a teaser trailer for what to expect next from 10x. Happy reading.

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Letter from the Team

Welcome to the 10x FY20 Impact Report!

The team is excited to share an in-depth report on 10x's growth, progress, and what we have in store for the future. We have more momentum than ever before with a few years of learning and growth under our belt.

Fiscal Year 2020 was a big year for the program. We developed new investment themes as well as expanded our outreach efforts to reach as many federal employees as possible—without whom 10x would not be what it is today.

A lot of great things happened on our projects. Our first-ever Phase Four projects graduated from the 10x pipeline, we shipped more products than any year before, and we piloted the 10x Halo Network, a curated community of experts that mentor 10x project teams and help them understand the landscape and history of their areas of exploration.

In looking back on FY20, we identified an exciting trend across our later-stage projects: we have moved from delivering prototypes to delivering real products that help users in meaningful ways. Examples of projects that have delivered in-flight products include *DevOps for Privacy Offices, Spotlight,* and *the Eligibility APIs Initiative*. Also new this year, we began narrowing our investment areas to include specific themes of interest: Direct Public Services, Disaster Management, and Diversity, Inclusion, and Accessibility. We have been pleased with the response to our new investment themes, and we are grateful to all idea submitters who took the time and effort to submit an idea. As always, we have iterated on our evaluation process and recruited new evaluators with expertise in the new thematic areas. We extend our deepest gratitude to everyone who played a role in our evaluations.

We are excited to share more developments that have unfolded over the last year and we look forward to FY21—we have a lot in store for you! We will continue to deepen our impact and extend our reach across other agencies and the public. This year, we received the largest number of submissions from non-GSA agencies, and we hope to continue this growth and further expand our reach by exploring more agency partnerships.

We are committed to our goal of improving the public's experience with government by providing an opportunity for federal employees to identify and solve problems they see on the front lines of their work each day. This year, more than ever, we realize the need for programs like 10x and are glad to be able to make an impact in the world during this pivotal time.

All the best,
The 10x Team

Nico Papafil Will Cahoe Sarah Crane

10x Snapshot

What Is 10x?

10x is an incremental investment program within the General Services Administration (GSA)'s Technology Transformation Services (TTS). 10x funds, supports, and develops ideas from federal employees about how technology can improve the public's experience with the government.

The 10x Approach

- Uncovers ideas from all corners and levels of government
- Provides an ecosystem of support to help those ideas develop into tangible solutions
- Uses a phased funding approach, based on startup studio and modern venture capital practices, to limit risk and focus investment on the most promising ideas

The 10x Process

Idea Submissions	What problem are you trying to solve?	10x gathers ideas from federal civil servants about problems to be solved.
PHASE 01 **Investigation** [2-3 weeks]	Is this a bad idea?	**Understand the problem space:** Teams explore ideas to determine if there's a need in the federal marketplace and what it would take to meet this need. Teams define what it would take to be successful–uncovering risks, roadblocks, and opportunities.
PHASE 02 **Discovery** [8-10 weeks]	Is this a good idea?	**Understand the solution space:** Teams deeply understand the industry, problem, market fit, finances, timeline, and regulatory environment. They analyze what could go right and wrong and create an initial strategy to address these issues.
PHASE 03 **Development** [2-3 months]	Will anyone use this?	**Develop the solution:** Teams develop a functional minimum viable product (MVP) with at least one active customer, estimate cost and effort to build and maintain the product, create a product roadmap, conduct a market analysis, and establish a long-term spend plan.
PHASE 04 **Scale**	Will everyone use this?	**Scale the solution:** Teams receive a final tranche of funding to expand the customer base and implement an independent business model.

FY20 in Review

At the end of every fiscal year (FY), we carve out time to take a step back from our day-to-day operations to look at the year behind us. We do this to find out what went well, what didn't go well, what we learned, and what we're going to do with those lessons. Our reflection on FY20 revealed both distinct differences from past years as well as consistent patterns we've seen before. We'll briefly highlight some of them here and talk about what we learned.

Developing Investment Themes

For the first time, we experimented with distinct investment themes—targeted areas of the government technology ecosystem that we wanted to invest in and explore. We did this because our investment strategy for the first few years of 10x took the "everything bagel" approach—where all ideas, no matter the subject area, were welcome. While all ideas are still up for consideration, we wanted to try something different by tailoring our pipeline into specific areas. The three themes we settled on were *Direct Public Services, Disaster Management and Response,* and *Diversity, Inclusion, and Accessibility.* We identified these themes based on our knowledge of current events, both in the government technology ecosystem and in our country more broadly. We felt that these areas were unique, apt, and ripe for investigation. We shared our ideas for investment themes with stakeholders (both within our agency and with our oversight bodies for a gut check on their merit) and we received the green light across the board. To collect ideas around these specific themes, we catered our outreach to folks with knowledge in these areas, and we encouraged them to submit ideas. Of the 145 ideas we received, 111 were aligned with these three focus areas.

From Prototypes to Products

We're ready to launch! We can confidently say that 10x has developed a consistent cadence of shipping live products. We've delivered products every single year, but this year we felt in our gut that we've solidly moved from churning out prototypes to churning out real products. Prototypes clearly have value in the government technology ecosystem, but they often do not evolve past proofs of concept. From our site scanning service to our agile budgeting field guides, we felt the conveyor belt on our product assembly line pick up speed.

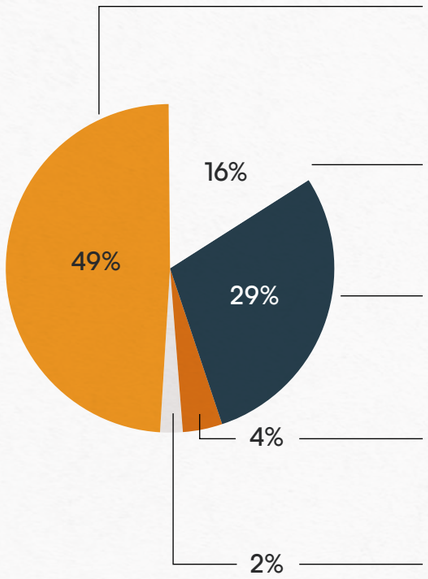
Influencing Other Accelerators

Now that our program is more established, we've begun to see others learning from our experience and modify our processes for their needs. For example, 10x drew the attention of GSA's FAS Systems Governance Committee (FSGC), which is now piloting a similar incremental investment model for their funding decisions. The FSGC regularly evaluates and approves ambitious, high dollar technology projects, which often requires detailed financial estimates for up to five years in the future. Given the uncertainty inherent in development cycles, and recognizing the potential value of the 10x model, the FSGC has chartered an Iterative Funding Subcommittee to explore revising its processes. The potential shifts could potentially lead to "preliminary" approval for executive business cases, allowing teams to work for several months before presenting their findings. The FSGC would then be able to vote on a final proposal, equipped with better information on the exact needs of the project.

10x also received international recognition from the Organisation for Economic Cooperation and Development (OECD) Observatory for Public Sector Innovation (OPSI). They identified us as one of their top 2020 Public Sector Innovators. This recognition, with worldwide reach, has the potential to help governments around the world learn from our experimental model.

Evaluating a Project's Exit

Another priority we addressed in FY20 was to examine the dozens of projects we funded during the year to identify patterns on when they exit our funding pipeline and why. We feel that by better understanding the challenges our projects encounter, we can better equip our project teams to successfully navigate the 10x process. This analysis confirmed something we've long suspected: the biggest hurdle for 10x projects is identifying a clear customer need for consuming, and in some cases "owning," the products and services developed by 10x's seed funding. Looking ahead, we'll continue to expand this analysis and adjust the 10x process to create successful outcomes.



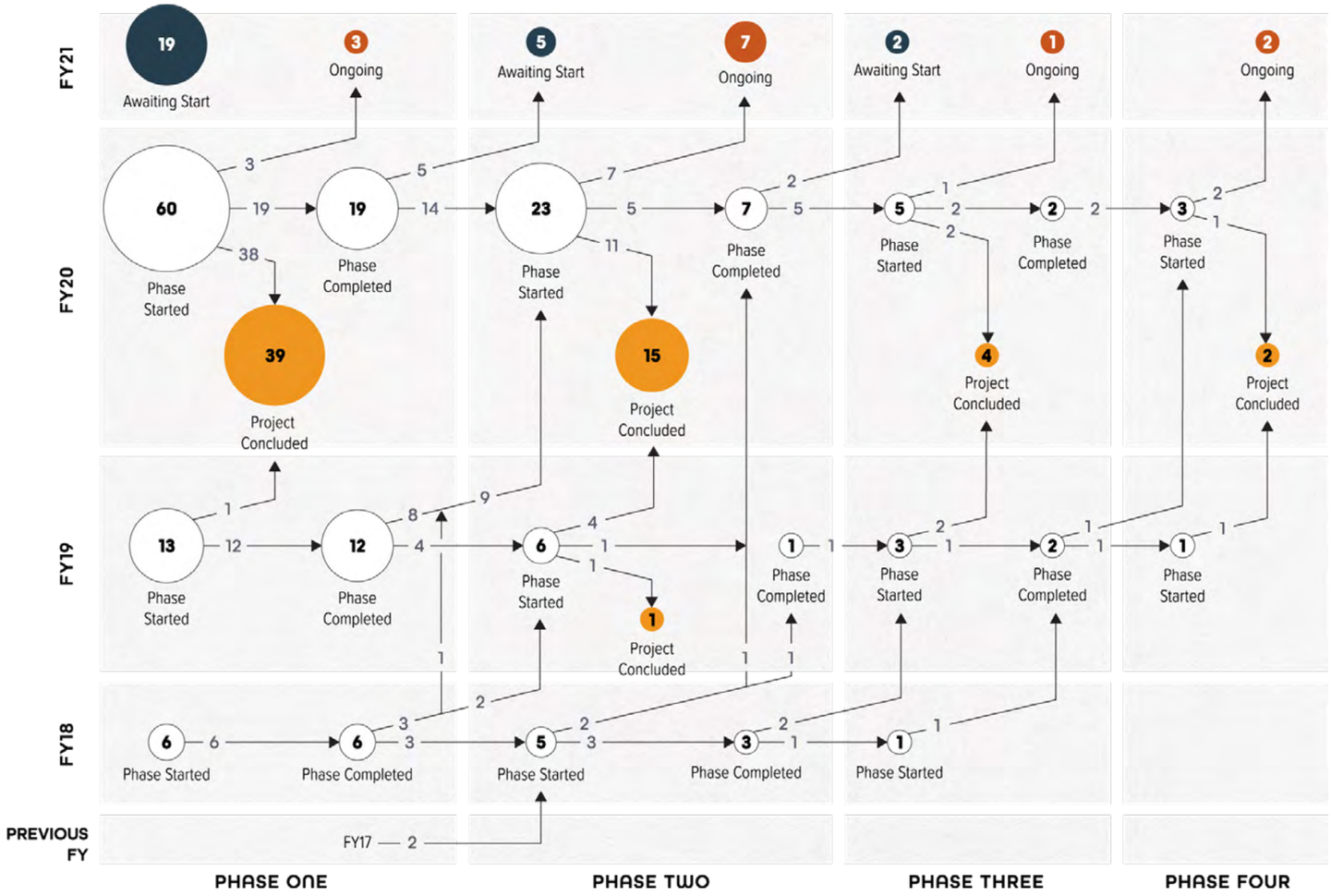
Demand & Adoption [49%]	• There is not a clear problem or practical solution • Low, no, or unclear demand for service • Potential customers don't see the problem as urgent or disagree that the problem exists • Potential customers aren't yet able or willing to adopt solution
Feasibility [16%]	• Business model is unclear or untenable • Regulatory or legal hurdles present a significant barrier to project success • Potential benefits are not sufficient enough to justify further investment
Redundancy [29%]	• Someone else already is doing this or has the mandate to pursue this area and 10x doesn't need to be involved • Another 10x project working on something similar is better suited to carry this work forward
Team Dynamics [4%]	• Project team didn't coordinate closely enough with necessary stakeholders • Project team didn't work well with 10x and/or with each other • Project team didn't have the right skillset(s) to work effectively
Executive Support [2%]	• TTS can't staff this in perpetuity • TTS leadership does not see this as high-value work and/or this is not aligned with priorities

FY20 by the Numbers

Project Journey

How Did Projects Advance through the Funding Phases?

FY20 was record-setting for the 10x program. We funded 68 projects across multiple phases! 10x accepted new ideas and oversaw the continuation of projects that were still ongoing from past fiscal years. The progression of these ideas through the 10x process is illustrated in the chart to the right. A number of FY20 projects kicked off in previous fiscal years and/or will continue to future fiscal years. Other projects did not continue through the investment pipeline for a variety of reasons. Some project teams chose not to pursue additional funding when they completed a phase, while other projects pitched for additional funding for future phases and were rejected by 10x. However, a project does not have to advance to additional rounds of funding to succeed. Many projects can solve their problem without needing additional funds, and 10x considers it a success if it prevents bad ideas—ensuring that funding is provided only to those ideas that truly require it.



Project Funding

The Digital Services Fund

The Digital Services Fund (DSF) is the funding authority that allows 10x to provide seed funding for software technology ideas that are new, good for government products and services. The DSF enables 10x to support low-cost exploratory activities to identify and prototype promising technology investments, which affect multiple agencies and/or a large swath of the public.

At the onset of FY20, the total amount of funding available in the DSF, including the year's appropriation and the budget carryforward from prior years, was (1) $9,603,275.

Over the course of FY20, (2) $6,489,000 of DSF funds were obligated, resulting in (3) $3,114,275 of FY20 funds remaining at the end of the year.

10x works with a "no-year" budget, which means the total amount available to use per year is the combination of the funding appropriated for that fiscal year plus unspent funds carried over from the previous fiscal year. This allows 10x-backed projects to cross over fiscal years without any disruption.

	Total FY20 carryforward	$2,979,275*
	+ Total FY20 appropriation	$6,624,000
1	**Total FY20 funding**	**$9,603,275***
2	– FY20 amount obligated	$6,489,000
3	**Amount remaining**	**$3,114,275***

** This number does not include $4.5M set aside for Agency IT Modernization with spend under discretionary control of the GSA Administrator*

Why the remainder?

10x typically aims to keep about $2M of funds available at the end of each FY so that money can be used to fund projects in the event of a Continuing Resolution. This FY we had slightly more than that, because we were waiting for some projects to close out.

10x Projects

PHASE	# OF PROJECTS	TOTAL $
Phase One	45	$770,000
Phase Two	14	$1,940,000
Phase Three	3	$1,325,000
Phase Four	2	$975,000
	TOTAL	**$5,010,000**

Other DSF Obligations

ITEM	TOTAL $
Login.gov IAL2 Pilot	$500,000
10x Program Support	$459,000
2030 Future of Federal IT White Paper	$430,000
10x cloud.gov prototyping	$50,000
10x Admin Support	$40,000
TOTAL	**$1,479,000**

Our Impact

Throughout FY20, 10x invested in a variety of problem spaces across government and impacted the way in which the government serves the public. Because of 10x...

1. Benefits applicants can more easily assess their eligibility

page 8 >

2. Data practitioners can make smarter use of data in government

page 9 >

3. USA.gov can better respond to the public's need for information

page 9 >

4. Government can more effectively plan and oversee custom technology projects

page 10 >

5. The Department of Housing and Urban Development (HUD) has a clear modernization plan for helping people find affordable housing

page 10 >

6. The government has the clearest-ever picture of the federal web experience

page 11 >

7. Users have a more consistent experience with forms on government web pages

page 11 >

8. Privacy offices can focus more effort on protecting the public's information

page 11 >

9. AI practitioners can ensure more equitable application of AI tools

page 12

FY20 Project Showcase

1.

Eligibility APIs Initiative

Improving the Efficiency of Benefits Program Modernization and Administration

Challenge: Federal agencies establish criteria for social safety net programs, but it's the state and tribal governments that are responsible for implementing these programs. An issue is that these state agencies do not have a simple way of incorporating new eligibility requirements into their systems. These agencies and programs often face similar challenges but cannot collaborate or benefit from each others' work because their systems are isolated. They are often unable to share data, processes, and software. The result is that each government agency tries to solve the same problem over and over again, which comes at a great cost to the federal budget. The costly modernization efforts undertaken by the states are also risky and failure-prone. What if a federal agency coded their program's eligibility criteria into a single, central web service that states could be used to help determine eligibility?

Solution: The Eligibility Application Program Interfaces (APIs) Initiative sought to transform the current eligibility process to directly deliver federal policy to state systems in a format they can easily process and utilize. The Eligibility APIs Initiative project team worked with partners across the federal government, along with some state partners, to better understand eligibility programs and develop solutions to help improve the process. In doing so, the team created tools and guidance that can help improve the user experience of navigating the eligibility enrollment process. The team published a website that includes illustrations of how their model can help improve mission delivery, along with sample language that can be used by partners as they seek to acquire software development services.

Impact: The team's work has offered an alternative approach for federal and state governments to move toward a more automated approach to eligibility programs making eligibility determinations. Through prototyping with the Supplemental Nutrition Assistance Program (SNAP), the team developed a

benefits "pre-screener," which can allow applicants to understand if they are eligible and, if so, what level of benefit they may qualify for. The initial prototype pre-screener proved so promising that we continued developing it into a live product, which is now hosted on the Virginia Poverty Law Center (VPLC) website and is actively being used by potential applicants. This reusable component has spread to at least seven other states and continues to be adopted and adapted by volunteer developers.

The team's efforts to demonstrate the potential merit of this approach to various federal agencies has borne fruit. The Beeck Center highlighted the Eligibility APIs Initiative approach as a model toward more effective administration of social safety net programs. Similarly, federal partners, including the Department of Health and Human Services (HHS) and the Department of Labor and are now engaging in efforts to make use of API-driven approaches.

2.

The US Data Federation

Making it Easier to Collect, Combine, and Exchange Data across Government

Challenge: Gathering reliable data can be challenging. What's more, exchanging this data across disparate organizational boundaries in the federal government can be incredibly difficult. Federal agencies are improvising solutions for data processes and tooling, and they currently lack any real cross-government coordination or infrastructure. This leads to inefficiency and missed opportunities for maximizing the value of data.

Solution: The US Data Federation makes it easier to manage federated data efforts by supporting the development of shared resources, such as reusable tools and repeatable processes. Specifically, the team built and launched ReVal, a Reusable Validation Library, which has been used by the USDA Food & Nutrition Services (FNS) and multiple other agencies to streamline data collection and validation processes. Furthermore, the team has supported data.gov, Office of Management and Budget (OMB), and the Office of Government Information Services stakeholders in developing a vision and delivering increased functionality for resources.data.gov, an online repository of policies, tools, case studies and other resources to support data governance, management, and use throughout the federal government. In developing the site, the project team interviewed more than 14 agencies about their data challenges, with an eye toward tailoring the site to agencies' areas of need.

Impact: The project team piloted ReVal with the USDA FNS, with a production version of the tool going live in Fall 2019. By centralizing data validation, FNS has been able to save state and local employees time, reducing duplication of effort, and improving the quality of data gathered as part of the National School Lunch and Breakfast Program. FNS partners using the tool noted that it made the process significantly easier. According to one user, ***"We had a reduction in errors from 96 last year to 2 this year. In terms of time, that's days of work. It used to take at least one person a week—40 hours—to get all the data back fixed."*** FNS is continuing to use the tool and is seeking to expand it to additional state partners. ReVal is continuing to scale, with additional implementations at the Census Bureau and Department of Transportation.

The revitalized resources.data.gov launched on July 2, 2020. The new site includes dozens of new resources identified, created, and tailored by the 10x project team. It also includes a completely revamped information architecture that is intended to make it easy for users to find the information they need. The team has since presented their site to senior stakeholders across government, including the Chief Data Officers Council, to ensure the resources continue to receive use and attention. The TTS Data and Analytics Portfolio will sustain the site in the long term, ensuring that it remains up-to-date with the latest data developments and needs.

3.

MeL, the Machine Learning Tool

Applying Machine Learning to Improve Customer Service in Government

Challenge: Many agencies collect unstructured qualitative data in the form of survey responses, open-ended comments on public websites, etc., and rely on manual processes and time-consuming methods to make use of this data.

Solution: The project team behind MeL developed a Natural Language Processing (NLP) prototype—a semi-automated product and process that utilizes topic extraction, word/phrase frequencies, or other applications of text analysis. This allows the team to more quickly analyze and respond to user feedback.

Impact: Each month, approximately 9,000 surveys (approximately 2,000 of which include open-ended comments) are submitted through USA.gov and gobierno.USA.gov. USA.gov and gobierno.USA.gov have saved a tremendous amount of time

and effort by determining which open submission comments are valuable through natural language processing. MeL has helped the USA.gov team better serve their users by introducing process improvements and simple automation in analyzing open-ended comments submitted through their website. Additionally, MeL has helped introduce experimental sentiment-analysis tools and other qualitative data analysis techniques to more robustly analyze these data with less human intervention.

4.

De-risking Government Technology

Spreading Modern, Modular Approaches to Technology Investment

Challenge: Government acquisitions professionals tasked with purchasing software development services often lack a basic familiarity about how modern software development actually works. The result is that agencies frequently approach software acquisition the same way they would for buying materials or other types of services. However, buying a developer's time is not the same as purchasing goods and software acquisition might require a tailored approach and way of thinking. According to one source, only 13% of large government software projects are successful. What would a software-specific acquisition method look like?

Solution: 10x hired a team from 18F to investigate opportunities for lowering risk in government technology investments. The team spent a year working with state and federal officials to learn current practices in the field in order to develop and recommend alternatives. This led to the publication of "De-risking custom technology projects: A handbook for state budgeting and oversight." It's a guide for agency executives, budget specialists, legislators, and program administrators on how to set up IT acquisition projects for success with minimal risk. The team has also developed an educational workshop curriculum for states to help them improve their budgeting, procurement, and oversight of federally-funded technology projects.

The project team then expanded upon the work of the state handbook, developing a companion work focused on budgeting at the federal level. The 121-page guide helps provide best practices to federal employees overseeing and participating in software development teams.

Impact: The de-risking custom technology projects handbook has received widespread acclaim within the government technology community. The handbook continues to draw interest, averaging about 300 views per week, with consistent attention from state and federal partners. In addition, the team's work has resulted in proposed legislation for agile budgeting requirements in at least one state legislature. The project team has also held workshops with Michigan, Texas, and Colorado to help them make better investment decisions for federally-funded technology projects.

Similarly, the federal handbook has received widespread attention, including publicity in FedScoop, NextGov, and ExecutiveGov. Within a week of its release, the guide received upwards of 7,500 views. Additionally, numerous 18F partners began internal conversations about how they might incorporate the guide's recommendations into their work. Lastly, the guide has gone international: it is being translated into Portuguese and Czech.

5.

Improving Access to Government Housing Assistance

Creating an Elegant Digital Experience For Americans Seeking Housing Assistance

Challenge: The Department of Housing and Urban Development (HUD) provides critical services to millions of Americans, including access to affordable housing. The challenge is that the government's current digital resources for Americans to find information on public housing are outdated. In particular, HUD's current online resource locator receives approximately one million visitors per year, but a lackluster user experience results in people abandoning their search for information. In addition, a lack of modern data analytics capabilities means that the government cannot perform insightful data analysis of the customer journey using the tool

Solution: The 10x project team investigated what it would take to improve the public's experience in searching for public housing. The team found ways to incorporate waitlist data for HUD-assisted properties into a new and improved tool. Working closely with partners within HUD, the team analyzed HUD's previously-conducted customer experience reports and engaged in user discussions to determine the most valuable improvements that could be made to improve mission delivery.

Impact: The team created mock-ups of a Minimum Viable Product (MVP) redesign for the HUD resource locator based on user feedback. These proposed improvements were presented to key users and early adopters within HUD leadership and are awaiting final decision for further development.

6.

Spotlight

Highlighting the Features Contributing to any Federal Website's Success

Challenge: TTS drives the adoption of digital best practices and policy, from mobile-friendliness to online privacy and security, but currently lacks comprehensive, timely data to measure our success at seeing these approaches adopted. 10x explored the possibility of creating a tool that scans the federal webspace for things that really matter to federal web managers and the public.

Solution: Spotlight (formerly known as Site Scanner) is a customizable, automated scanning service that generates real-time intelligence for agencies that they can use to improve their websites to better serve the public. Spotlight not only reduces the legwork that this type of work has traditionally involved but also promotes compliance with various government mandates, including the use of US Web Design System (USWDS) components and the presence of security certificates.

Impact: Spotlight allows web managers, program leads, and the public to scan federal websites for a variety of key dimensions like mobile-friendliness, load times, and responsiveness. Not only can stakeholders access this critical data, but they are also now capable of copying the scan engine and building off of it for their own, customized uses. TTS can now surface and scan a more accurate number of federal domains to ensure that websites are identified for performance, best practices, and tools, which in turn will improve the public's experience. As of the end of Phase Three, Spotlight can scan for 10 unique requirements (and 14 OMB-mandated pages for top-level domains). In addition, the data uncovered by Spotlight scans are fed into the Digital Dashboard, another tool offered by GSA to help federal web managers improve their websites. In Phase Four, the team is working to further refine the tool, provide higher quality data, and further expand to new scans.

7.

USWDS Advanced Form Controls

Helping Agencies Build and Deliver Useful, Accessible, And Mobile-Friendly Forms for the Public

Challenge: The 21st Century Integrated Digital Experience Act (21C) requires that any paper-based form related to serving the public be available in digital form by December 2020. Without guidance and proper tooling, every agency will be left to navigate these challenges alone and may either fall into non-compliance or look for expensive private sector solutions.

Solution: USWDS is well positioned to provide guidance and resources to agencies navigating the process of digitizing their forms. Over the course of this project, 10x built nine new form components, including button groups, character counts, date pickers, and other features. These components have been incorporated into the USWDS, which is already helping agencies as they begin digitizing their paper-based forms all while promoting key USWDS principles, such as accessibility and mobile-friendliness.

Impact: The form components built by the team are invaluable resources to web managers and other technologists across the government who need to comply with legislative mandates. The presence of these form components also further entrenches the USWDS as the center of gravity for design best practices within government. This new form functionality expanded the potential user base for the USWDS and accelerated adoption. Most recently, GSA's Acquisition Gateway adopted the system and is using the new form components we delivered. The program has further seen adoption or expressions of interest from numerous others across the federal government. This work helps agencies deliver elegant user experiences for the public, which is the bread and butter of the 10x mission.

8.

DevOps for Privacy Offices

Building Tools to Help Privacy Officers Better Protect Personal Information

Challenge: Government technology professionals increasingly collect and interact with information from the public in their pursuit of user-centered service design. Working closely with the Federal Privacy Council, 10x is exploring how the application of technology might help civil servants understand, mitigate risk, and better manage the challenges resulting from aggregations of personally identifiable information (PII) in government systems.

Solution: 10x is working with federal privacy offices to structure data from privacy-related compliance documents, which are typically formatted as difficult-to-analyze PDFs. By structuring data, the 10x team is equipping privacy offices with the ability to more

quickly search through these documents, reducing unnecessary manual practices and laying a foundation for them to more easily collaborate with developers. Thus far, 10x has built a fully-functional privacy dashboard for the GSA privacy office, which allows for easy analysis of all of GSA's Privacy Impact Assessments (PIAs) and System of Records Notices (SORNs).

Impact: The Privacy Dashboard will build trust with the public by helping them easily understand how and why personally identifiable information gets collected by government agencies. It is also a time-saver for privacy offices. GSA's privacy office estimates that the Privacy Dashboard will save them 300 hours (~$76k) annually. In Phase Four, the project team is looking to expand this impact government-wide, a potential savings of $2.5M per year.

9.

Combating Bias in Artificial Intelligence (AI) / Machine Learning (ML) Implementation

Reducing Bias in Government Implementations of AI

Challenge: Data is the basis of any implementation of artificial intelligence. However because data is often imperfect, the outcomes of AI pipelines are also imperfect. When the dataset contains inherent biases from the beginning, the results of the AI process—and any policy decisions based on them—can be unfair, with severe consequences. A real-world example: a study found that an automated recidivism prediction tool used by a county in Florida gave harsher sentencing for Black defendants and misjudged them as having a higher chance of recidivism. This had devastating consequences beyond data; thousands of Black defendants received sentences informed by the recommendations of the flawed system. Data biases also have serious financial and time consequences. Harvard Business Review reports that 80% of a data scientist's valuable time is spent simply finding, cleaning, and organizing data, leaving only 20% to actually perform analysis.[1] The time and significance of data is only set to increase. IEEE USA predicts $142.2B in federal research and development spending in FY21 and $2B in projected AI spending by agencies in FY22.[2]

Solution: The 10x Combating Bias in AI/ML Implementation project team is building a user-friendly suite of de-biasing tools and resources to address the needs of technical and non-technical users experimenting with AI adoption. These web tools help users learn how to identify bias in data and remove them. The team has also built automated no-code tools to help users detect bias in datasets and models.

The team interviewed and partnered with over 50 subject matter experts and potential users. As part of the engagement and development effort, they hosted seven workshops with members of the government AI community to identify user needs and solicit feedback on prototypes. Based on these workshops, the team refined five prototype tools to solve common issues of bias in government and created over 30 annotated resources on machine learning, bias, and AI in government.

Impact: As a result of these efforts, the federal government is better equipped to deliver equitable outcomes during these early days of AI experimentation. The adoption of de-biasing best practices and tools by government users will improve the quality of government data and decision-making. This will, in turn, yield second-order benefits including cost and time savings from reduced re-work, improved datasets for use by partners (including academic and research institutions), and increased public trust in the government.

1 https://hbr.org/2018/08/what-data-scientists-really-do-according-to-35-data-scientists
2 https://insight.ieeeusa.org/articles/fy-2021-rd-budget-proposal

The Dark Matter

The 10x program doesn't simply provide funding, oversight, and logistical support to our project teams. We also take it upon ourselves to learn from them by carefully observing their work across the phases of each project, all the while trying to make sense of the successes and frustrations they experience to distill lessons and ideas that may be of interest to the broader government technology community.

We think of these lessons and ideas as dark matter[1]—the invisible 85% of the universe that evades human inquiry. We shamelessly stole this concept from NASA, another part of the federal government that is not afraid of trying new things. NASA, if you're out here, we're big fans, and we hope you submit ideas to 10x from orbit. **In order to look for dark matter on 10x projects, we simply ask ourselves, *what's really going on here?* Searching for value that is not product-shaped allows us to see a bigger picture and uncover intriguing nuggets of possibility.**

For our first attempt at locating dark matter, we pointed our telescope at one of our longest-running projects, the *Eligibility APIs Initiative*, which recently graduated from Phase Four. The ideas presented here were inspired primarily by that project. But the beauty of 10x is that we are able to identify patterns and learn lessons across projects that on the surface seem unrelated, and this one is no different. Many different 10x projects over the years have informed the thoughts presented here.

Over the years of working in the government technology space, we've noticed that much of the dialogue in the government technology community (talks given by government IT executives, white papers from consultancies, articles in the trade press) focuses on similar ideas for addressing the challenges of IT modernization. Popular opinions include the need to recruit top technical talent, develop new procurement vehicles, migrating systems to the Cloud, etc. A consistent theme of the discourse around solving these challenges is the explicit designation of *industry and government* as the two sole actors capable of achieving real progress towards government modernization, with a common refrain that real progress will come when "the government and private sector work together more efficiently to solve our most pressing challenges". But our experience observing the *Eligibility APIs Initiative* project over the years suggests that this binary understanding may represent a scandalous exclusion of a whole range of non-public and non-private actors from the opportunity to contribute to these efforts in a meaningful way.

Over the course of this project, the involvement of groups like the Virginia Poverty Law Center (VPLC), Code for America, the Beeck Center for Social Innovation at Georgetown University, and community-supported open-source platforms like OpenFisca played a significant role in the direction and outcome of the project. None of these actors fall easily within either the public or private sectors. Instead, they represent a third group—*civil society* actors.

Based on our observation of this project, we propose that the assumption that government modernization is the sole domain of the public and private spheres merits some gentle interrogation. Partnerships between government and civil society are not a new concept; in fact, they happen all the time. But much of this cross-sector collaboration focuses on the sharing of *talent and ideas* (through fellowships and joint research projects), but the possibility for cross-sector sharing of *technology*—and not technology ideas, but actual software components—does not garner nearly as much attention. We think our project, specifically the involvement of the VPLC, might prove instructive by serving as an example of this. **While cross-sector collaboration may not be an original concept born from this project, the idea of enlisting civil society actors as technology sandboxes for government feels more novel.**

Here are a few key components for how this type of collaboration could succeed:

Identifying mission overlap between government and civil society actors is critical. VPLC offers services to the public that are typically not in the purview of government agencies, such as lobbying for legislative changes that align with their political philosophies and providing pro-bono legal services to low-income Americans. Likewise, government agencies offer services that

1 The concept of Dark Matter has been applied in non-astronomical contexts elsewhere, such as "Dark Matter and Trojan Horses: A Strategic Design Vocabulary" by Dan Hill

civil society actors cannot offer at scale, such as public housing. But there are clear areas of mission overlap between the two. For example, both civil society and government try to reduce poverty and hunger in communities. States do this by distributing benefits to help needy Americans feed their families. Civil society actors, like food pantries, contribute by providing food directly to the public at no cost. In the context of our project, VPLC contributes to this shared mission by helping the people of Virginia understand and apply for the SNAP benefits.

Identifying critical slivers of mission overlap unlocks a second opportunity, which is to identify overlapping technical needs between the two actors. In the current state, technical collaboration between states and civil society actors is quite limited; it might consist exclusively of a state listing the contact information for a food pantry on its agency website. **But if the two actors are pursuing the same goal from different angles, might there be more robust opportunities to share technology that can contribute to both efforts?**

Leveraging relative advantages is the key ingredient to any successful partnership. Reflecting on our experience with VPLC, the relative technology advantages of their organization are clear. They aren't required to adhere to federal acquisitions regulations, making it easier for them to acquire new technology. An organization like the VPLC is also less likely to be subject to a large cybersecurity-approvals apparatus than government agencies simply because the stakes for security failures are much higher for the government than for most small civil society actors. We believe these relative advantages and shared mission overlap could make civil society actors ideal testing grounds for new government technology.

The final opportunity is to collaborate on sharable technology that meets needs for both parties. The main product our project team delivered was a benefits calculator (that uses the only open-source SNAP API that we know to exist) designed for user testing purposes. But it gained traction quickly and the VPLC was interested in learning more about our tool. VPLC expressing interest in leveraging our tool sparked a perfect test run for this new idea of cross-sector, shareable technology. The product we built gives members of the public a clearer picture of their ability to leverage benefits programs. It allows VPLC to serve its community by providing valuable information for the public, and crucially, it crucially allows the government to observe new technologies at work, from a safe distance, that they may one day adopt for themselves. **One shareable piece of software, built in the open by the government, could contribute to a shared, cross-sector mission.** Everyone wins.

Enlisting the capabilities of civil society does not make sense for all government IT initiatives. A local food pantry's ability to assist with an agency's effort to migrate its back-end server applications to a secure-cloud environment before FY24 is likely limited. But the food pantry might be collecting quantitative data on foot traffic through its doors, which could be valuable intelligence to government agencies trying to measure the health of local communities and allocate resources more equitably and accurately. If gathering and analyzing this data would be useful for both the local organization and the government, might there be an opportunity to explore sharable technology components, like a standardized data schema or a shared tool to facilitate the exchange of data across disparate organizational and bureaucratic boundaries?[2] Agencies that administer social safety net programs have a strong ecosystem of civil society actors around them that pursue similar goals from different angles. This ecosystem provides the perfect conditions to seek out further opportunities for shared technology.

It's certainly possible that the opportunities for shared technology between VPLC and the state government end with the pre-application process and the calculator we built. After all, once a person has applied to a benefits program, the next steps in the process fade into distinctly state-only territory. VPLC does not share the state's mandate to adjudicate the applications and allocate benefits paid for by taxpayers. **But we never expected to find this initial instance of cross-sector, reusable web components in the first place, and we think it would be a shame to stop searching now.**

Our thinking on this matter has been informed by the experiences and findings of many other 10x projects over the years. For instance, our experience investing in artificial intelligence (AI) projects (such as MeL, and Combating Bias in AI Implementations) made it crystal clear to us that much of the expertise and innovation in the field of AI is found, not in the government, but in in America's remarkable universities. Some of the best insights our teams gained throughout the duration of those projects came from conversations with experts at the University of Chicago, Georgetown, and Carnegie Mellon. Similarly, we're looking at what we can learn from civil society on projects related to life events (such as retirement or a death in the family) and improved coordination between the federal government and museums and libraries across the country. We're excited about those.

Could it be true that the current state of sharable technology between government and civil society represents only 15% of what's really possible? We think it might be. In FY21, we'll be shining a light into new unexplored corners of the government technology universe, looking for the other 85%. The truth is out there.

2 See US Data Federation in "Our Impact"

Look Ahead to FY21

We've got a lot on the horizon for FY21, and we are excited to share what we have brewing. FY20 was an ambitious year for us, and we want to aim even higher in FY21.

FY21 Financial Projections*

PHASE	# OF PLANNED PROJECTS	TOTAL $
Phase One	40	$685,000
Phase Two	14	$2,000,000
Phase Three	7	$2,725,000
Phase Four	2	$800,000
	TOTAL	$6,210,000

*Projections are based on anticipated appropriated budget for FY21

Sharing Our Learnings

This year, we're prioritizing a complete revamp of the 10x website with a focus on better highlighting the investments we've made and showcasing the impact they've had. We recognize that after three years of work, we've got a trove of research, ideas, and products that we believe the broader government technology community would find valuable. Beyond the research produced by our projects, we plan to use the new website to provide commentary and lessons-learned from our experience managing an experimental incremental investment fund in the federal government.

Strengthening Our Partnerships

While we're working to share more about our projects and our program, we're also going to devote some time in FY21 to focus on addressing some of the persistent challenges we've faced over the years. We're particularly interested in how we can more easily establish long-term sustainability for 10x projects. We recognize that 10x's flexible funding and broad mandate makes it easy to start on work, but the rigid, years-long budgetary cycles in the government make it difficult for agencies to carve out space for new innovative solutions. To get there, we'll be redoubling efforts to engage with agency partners at all phases of the process. In particular, we want to better strategize how to secure paths for long-term sustainability for our projects in the early phases of the 10x process by working alongside partners to identify potential sources of funding that can bridge the gap between the end of 10x funding and the sustained adoption and development of the products and services we deliver for agencies.

Focusing Our Investments

In FY20, we took our first shot at identifying specific areas of investment that interest us and encouraging folks to submit ideas aligned with these themes. We want to see what benefits that approach yields and, if we feel it's been successful, think about how we can further expand that model in FY21. Building on this model will include providing our teams with resources and expertise specifically tailored to each investment theme right from the beginning of a project in Phase One. The idea is to empower our teams to quickly ramp up valuable work instead of spending the early weeks of a project trying to gain context and understanding of the problem spaces they are investigating.

Expanding Our Community

One of our highest hopes for FY21 is to further expand and mature 10x's network of friends within the government technology ecosystem. We aren't the only game in town when it comes to innovative programs within agencies and we want to serve as a convener of these different groups so that we can learn from each other. We're also looking to expand the 10x Halo Network, begun in FY20, to provide our project teams with more access to mentors who have critical experience and expertise in various fields. We're confident that FY21 will bring new, unexpected successes and challenges that we will meet with open minds and creative solutions. In '21, we'll be pushing harder and faster to pursue our dream of contributing to a government that effectively wields elegant, human-centered technology to elevate public service as high as it can go.

> This is a present from a small distant world, a token of our sounds, our science, our images, our music, our thoughts, and our feelings. We are attempting to survive our time so we may live into yours. We hope someday, having solved the problems we face, to join a community of galactic civilizations. This record represents our hope and our determination, and our good will in a vast and awesome universe.

President Jimmy Carter's message on the Voyager Golden Record, which was launched on the Voyager 1 and Voyager 2 into outer space.

We like to think of this as the world's first README file.