

The New Government Appointee Guidebook

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The Beeck Center for Social Impact + Innovation at Georgetown University reimagines systems for public impact using design, data, and technology. Our projects test new ways for public and private institutions to leverage data and analytics, digital technologies, and service design to help more people. Our action networks of policy and technology leaders work on projects ranging from promoting human-centered design in policy making to collaborating with data ethicists to develop and implement a model for responsibly sharing data.

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The Tech Talent Project is a nonprofit, nonpartisan initiative focused on increasing government's ability to recruit modern technical leaders to achieve critical human, economic, and policy outcomes. Having these leaders in the right roles means the government can effectively leverage modern technology to develop policy, support and regulate emerging technologies, and ultimately improve education, reduce poverty, protect the environment, expand access to healthcare, and provide critical benefits to the poor, the unemployed, people with disabilities, and senior citizens.

ABOUT THIS GUIDEBOOK

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Table of Contents



- ABOUT THE AUTHORS 4**

- EXECUTIVE SUMMARY 5**

- PART 1: CREATING THE CONDITIONS FOR CHANGE 6**
 - Starting Up at the U.S. Census Bureau: Building the Census Open Innovation Labs8
 - Countering the Field of Dreams Fallacy: Launching the Social & Behavior Change Team at the Millennium Challenge Corporation 17
 - A Checklist for Designing Culture Change at the Office of the Surgeon General 22

- PART 2: OVERVIEW OF THE TEN COMPETENCIES 25**
 - What Are the 10 Competencies and Why Are They Important? 25
 - Why Focus on These 10 Competencies? 28
 - How Do I Use the Competency Cheat Sheets? 29
 - Top Four Myths about Technology and Delivery 39

- RESOURCES LIST 41**

- ACKNOWLEDGMENTS 46**

About the Authors



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Kyla Fullenwider is a fellow at the Beeck Center and teaches at Georgetown's School of Foreign Service. Prior to Georgetown, she was the in-resident Entrepreneurship Fellow at the Shorenstein Center on Media, Politics, and Public Policy at the Harvard Kennedy School. She previously served as the first Chief Innovation Officer of the U.S. Census Bureau, the principal agency of the U.S. Statistical System and part of the U.S. Department of Commerce.

Executive Summary

Innovation in government is about uncovering new ways to positively transform the lives of individuals and engage them in shaping their government. It not only involves transitioning legacy structures, but modes of thinking; embracing new technologies *and ideas*. In this guidebook we offer opportunities to better understand the challenges government appointees may face and new approaches in addressing them.

Through research and curriculum materials, the guidebook offers practical steps for successfully stewarding innovation and in turn improving the lives of all Americans. In Part 1—Creating the Conditions for Change—we show how government innovation hubs have dealt with the cross-cutting factors that impact innovation. These efforts include, among other things, managing bureaucratic barriers, harnessing the power of the peoples' ideas, building open, transparent, and trust-based systems, enabling an internal culture that supports innovation, and forging unlikely partnerships.

In Part 2—Tech Competencies—we look at how federal leaders can ensure their agencies have the key technical competencies needed to deliver on critical missions. Alongside the report, we've created a set of competency cheat sheets based on [Tech Talent for a 21st Century Government](#)—a guide for bringing technology and innovation talent into government. Using the cheat sheets, teams can quickly sort and identify key examples of each tech competency at work in the federal government—and hopefully discover some of their own.

This guidebook is designed for practical and immediate use. It can be used to help create discussion around the different types of public sector innovation and explain approaches and methodologies of innovation done right via use cases. It also provides a synthesis of key drivers of success for innovation in government via the cheat sheets and top myths about technology and delivery. Taken as a whole, the guidebook serves as a practical, step-by-step path you can use to promote and sustain innovation and continuous improvement in your agency.

Section I:

Creating the Conditions for Change

In his 1962 book *Diffusions of Innovations*, author Everett Rogers defines an innovation simply as “anything perceived as new by its audience.” In fact, his research started with a study on the uptake of a new corn seed among farmers in rural Iowa. His now-classic adoption curve shows how innovations are adopted across a population and how the uptake of anything new is—at the end of the day—something that can only happen if people choose to adopt the change.

Adopting change is at the heart of each of the stories in this section. Starting with the work at the U.S. Census Bureau’s Open Innovation Labs where the Lab team came to understand the very real innovation fatigue career staff felt after many years (and sometimes decades) of “transformation efforts”, and the critical importance of bringing people—and the institution—along with you. We look at both external-facing initiatives that asked the public to engage with the federal government in new ways and internal-facing initiatives that asked career staff to approach their work in new ways. And we explore how creating long term change, by necessity, means institutionalizing it.

The phrase “if you build it they will come” has long haunted product designers and political leaders alike. Who hasn’t launched a new feature or created a new program that fell flat? At the Millennium Challenge Corporation, where a program not achieving its full agenda can mean fewer humans across the world can access clean drinking water or U.S. taxpayers dollars are less effective than intended, they know all too well that just because you build it, doesn’t mean they will come. The Social and Behavioral Change team at MCC dubbed this the “the field of dreams fallacy” and built an entire unit around refuting this notion. They also applied their expertise in engaging their colleagues as they stood up their new team, knowing that before they made their case to the world they needed to start inside the building.

This guidebook also features a checklist on creating culture change from learnings at the Health and Human Services in the Office of the Surgeon General. Culture change may come in the form of something as banal as updating a performance review or as unlikely as a meeting over ping pong, but it is nonetheless as critical as a technological or design innovation itself. You will see how the Surgeon General and his team found ways to both work within the bounds of the institution, but to also leave it better than they found it.

What these stories have in common is not the products they created, the websites they rolled out, or the security features they launched, but rather an empathic understanding of what it takes to do the hard work of institutional change. Fear of change is real. And yet, what these stories demonstrate is that people and the institution are central to any new effort's likelihood to succeed. In other words, you can't make change without the people, and you can't sustain change without the institution.

Starting Up at the U.S. Census Bureau: Building the Census Open Innovation Labs

FEDERAL AGENCY

U.S. Census Bureau,
The Department of Commerce

DATE RANGE

2016–Present

A 225-YEAR-OLD STARTUP

When Jeff Meisel joined the Census Bureau in 2014, it was clear from the start that things would be different from what he expected. A newly minted Presidential Innovation Fellow (PIF), he waited in the White House Indian Treaty Room alongside other fellows for a “meet and greet” with representatives from what would be their home agency for the next year. As he scanned the room he was surprised to see the agency’s most senior executive there. He notes, “What immediately struck me was how welcoming and supportive the [Census Bureau] was in onboarding me from the highest levels of leadership. I only realized later how important having sponsorship at that level was.”

Census Bureau Director John Thompson showed up that day in person to meet what was then billed as their “entrepreneur-in-residence.” Thompson, who had served in career positions at the Bureau as well as a political appointee under both Presidents Barack Obama and Donald Trump, had approved the funding to support bringing Meisel and the PIF program to the Bureau. He prioritized and invested in blue sky projects—the kind that might reimagine what the 2030 Census would look like long before the 2020 Census had taken place.

About the Census Bureau

The Census Bureau sits within the U.S. Department of Commerce and, importantly, is mandated by Article I of the Constitution. The once-a-decade count has been conducted without disruption every decade since our nation's founding. It is our country's largest non-wartime effort and, among other things, involves hiring more than 500,000 workers and spending about \$12 billion dollars in very short order. The Census is used to determine how more than \$1.5 trillion in federal funding is distributed annually and how many congressional seats each state will get. It is the nation's denominator and critical data infrastructure for our country. But the decennial Census is just one of the many things the Bureau does. It produces hundreds of data products, collects much of the data used for determining GDP, and collects and processes data for most federal agencies including the U.S. Departments of Housing and Urban Development (HUD) and Health and Human Services (HHS), among many others.

Meisel's tenure as a PIF eventually led to a position as the agency's first Chief Marketing Officer where he evangelized the value and importance of Census data, built digital-first communications capabilities, and expanded the talent pool. "There was a recognition at some point that in order to accelerate our timeline and to get there faster, the quickest way would be to bring in world-class experts and folks from outside of government."

That next hire was Presidential Innovation Fellow Kyla Fullenwider, who became the agency's first Chief Innovation Officer. Fullenwider built a team that was made up of both career staffers and others who had never served in government. "I felt it was critical to have both a diversity of experience and perspectives on this team to do the kind of work that was both impactful and sustainable over the long term. I didn't want our work to be a flash in the pan, but rather something that built upon the existing culture and infrastructure. I knew that would be critical for any change to stick."

The small unit, initially funded by and housed in the Economic Directorate within the Bureau, was focused on efforts aimed at the future of the Census with an eye toward 2030. However, early on it became clear more pressing needs would have to be addressed following the Presidential election in 2016. Namely, the segments of the population the Bureau deemed "hard to count"—many of whom are from immigrant households—were already expressing fear of how the government might use their data. Engaging these populations to participate in the 2020 Census, while showing the value of the treasure trove of data the Bureau held, and (eventually) expanding the work beyond the small startup team became the mandates of what was now called The Census Open Innovation Labs (COIL).

FROM LAUNCH TO DESIGN: IMPLEMENTING A PEOPLE-CENTERED MANDATE

As the team coalesced in 2016, one of their first endeavors was to make sense of a massive amount of documentation and program reviews from 2010. After conducting an initial environmental scan and literature review from 2010, a few things became clear. First, an enormous amount of money was spent on marketing the 2010 Census and a program that gave small grants to local communities to get out the count (GOTC) locally was particularly effective. However, the funding that supported that effort came from 2010 stimulus funding that would not be available for 2020. Next, it became clear that public-private partnerships were essential to GOTC efforts, particularly in hard-to-count communities. And while millions of dollars were invested in the Census Bureau's partnership program and there were more than 250,000 documented partners, there was little data or metrics on which partnerships were actually effective in increasing response rates. Finally, the sheer magnitude of nonprofits, schools, churches, and businesses that engaged in the 2010 Census meant that there was clearly interest in supporting GOTC efforts.

To try to make sense of these initial insights COIL teamed up with the Office of Evaluation Sciences (OES) and conducted a **randomized control trial** to assess the impact of national partnerships on the response rates of another household survey the Bureau conducted. In an effort to improve response rates and minimize door knocks, the OES team made changes to the standard letter sent to respondents using behavioral insights and implementing a new design.

At the end of the study, the results were clear: the designed changes created no measurable impact on response rates and in some instances there was a slight negative impact. And while the results did not point to a positive impact on partnerships with national brands, they did provide further insight into the importance of trusted messengers in reaching the hardest-to-count populations. The team used these and other behavioral design insights to create an evidence-based, human-centered **downloadable toolkit** for trusted messengers and local communities. While small grants would not be made available to local communities this time around, these resources would provide communities and trusted messengers with tools to more effectively get out the count.



One of hundreds of Census Solution Workshops that took place across the country. *Photo Credit: Census Open Innovation Labs*

The team doubled down on the co-design process in and with local communities through the Census Solution Workshop. The workshop format was built off a design thinking framework but with an important distinction: those designing the solutions were also the intended audience. The COIL team initially hosted early pilots with an eye toward scalability and eventually put forth a train-the-trainer model that allowed thousands of communities and organizations to host them locally. This approach allowed the Bureau to go to where the people they wanted to reach were, create local buy-in, and generate creative, community-based messaging in ways the federal government simply could not. “The basic business need was that we needed to get people talking about the Census. We also know that people needed to feel it impacted their community and so we deviated from the way we traditionally partnered with organizations [so that] people could create the messages that would resonate with their own communities,” notes Lorena Molina-Irizarry, COIL’s Operations Director.

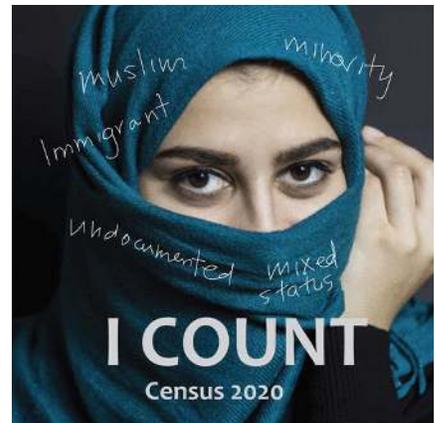
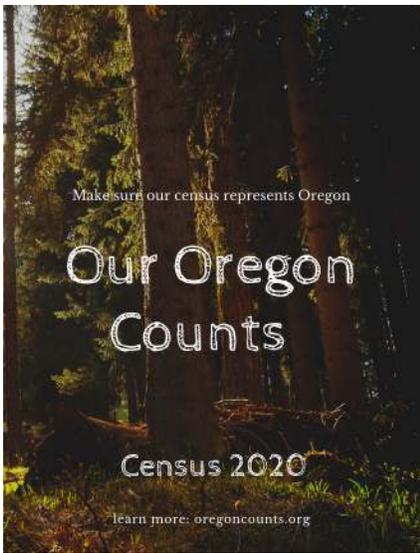


Image Credits: Census Open Innovation Labs

Building on those early successes, COIL expanded its team and its reach. As 2020 neared, the team hired 14 new staff members including designers, developers, and digital strategists, and launched a new program. Creatives for the Count, led by Mara Abrams and Molina-Irizarry, focused on engaging filmmakers, designers, and developers across the country to “open source” content creation. This program was meant to provide an opportunity for the creative community to create the kinds of idiosyncratic memes, gifs, and other shareable media that the Census Bureau could not and would not make. Hundreds of “create-a-thons” across the country and online resulted in so much content that the Bureau partnered with Rock the Vote to create a **repository to host it all**.

With the 2020 Census underway, the team furthered its open source ethos when it **launched a prize competition** through Challenge.gov. By the end of the program the Census Bureau had received hundreds of video submissions in 12 languages that focused on some of the hardest-to-count populations across the country including tribal, rural, and urban regions. Leveraging the existing open innovation policy infrastructure was critical to the success of the program. “So much of how the government interacts with the public often involves oversight and regulation. Having the appropriate authority [through the America Competes Act] and Challenge.gov made it so much easier to interact with the people we were trying to reach,” Molina-Irizarry notes.

Showing the Value of Government Data: The Opportunity Project

A series of informal conversations in early 2015 between staffers at the White House Domestic Policy Council (DPC), the Office of Science and Technology Policy (OSTP), and the Office of Management and Budget (OMB) about the troves of data agencies were releasing as part of the broader open data efforts being championed by the Obama Administration would lead to one of the longest-lasting open data programs in the federal government of the last decade: The Opportunity Project. Earlier that year, HUD released a series of neighborhood-level datasets that provided insight into local economic opportunities. By 2016, a number of collaborative projects between the White House and federal agencies—including the **College Scorecard** and **Hack the Pay Gap**—were creating new ways of engaging the public by making government data more accessible and usable.

The Opportunity Project (as it would come to be known) built off this early momentum and in the spring of 2016 enlisted 12 tech teams—including LinkedIn, Airbnb, Fitbit, and Zillow—for a six-week sprint. By the end of the year, Drew Zachary, the project’s lead, knew the initiative was rare in its ability to create meaningful outcomes with the private sector and in its appeal across the political spectrum. Everyone seemed to like it. But likability wasn’t going to be enough to survive the chaotic presidential transition of 2016. Resilience and adaptability would also be critical if the program was going to make it. “The only chance for this program to survive was for there to be continuity—and that meant me staying on,” Zachary noted. U.S. Chief Data Scientist DJ Patil asked the Department of Commerce to take the program on and it would eventually find its home at the Census Bureau.

Once at the Census Bureau it became clear that simultaneously innovating on and institutionalizing the initiative would prove to be more than just finding a budget and departmental home. It also meant building and maintaining a culture of experimentation in an agency known for its centuries-old bureaucracy. “I’ve been obsessive about maintaining the culture ... of experimenting, adapting, and letting people pilot things with us,” Zachary said.

It was ultimately this attention to the unconventional details—showing not just telling, laser-sharp focus on culture, and transparent metrics—that has allowed the program to have such staying power. To date, the project has worked on 40 problem statements, with 25 federal agencies and departments, using more than 295 data sets, and alongside 1,500 participants who’ve built 135 products ranging from interactive games and mapping solutions to AI. One metric the team is particularly proud of: many of the volunteer tech teams return for future sprints.

MEETING PEOPLE WHERE THEY ARE: EMPLOYEE ENGAGEMENT

After months building public-facing programs and initiatives, the COIL team found itself in an ironic predicament. At the heart of all their work was an unwavering commitment to centering people and prioritizing user needs—sometimes at the expense of policy or process. This approach within the Bureau, however, was complicated by an equally unwavering commitment to a strict survey methodology process that characterized the culture there. Furthermore, the decennial Census with its massive scale, operated with a rigid hierarchy that could make receiving and integrating feedback challenging and in some cases impossible. These long-standing cultural norms made it difficult for the team to initially break through and there was a kind of agency “immune system” response that occurred in those early months that made it hard for this novel unit to be fully absorbed and integrated.

Challenges notwithstanding, team members who had been at the agency the longest provided critical insights that allowed for important course corrections.

- Resistance to new initiatives was, at least in part, a kind of innovation fatigue from years of “transformation efforts.” In other words, initial skepticism toward new ways of doing things was in some ways par for the course, and it was up to the new team to accommodate those concerns.
- Performance reviews matter. While there was senior leadership buy-in for the new approaches COIL was bringing to the agency, most managers and front line workers did not have, for example, user research and feedback as part of their training or integrated in any meaningful way into their performance reviews. Without that, it was just one more thing the 8th floor (management) was asking staffers to take on with no perceived benefit.
- Push back from management was in fact a reluctance to manage what they did not understand. “If you don’t know the work, you can’t manage the work and so you are reluctant to implement the work—people feel vulnerable when they don’t understand or know that they will be successful in managing it,” one staffer shared.
- There were in fact a number of “early adopters” within the agency that had both institutional knowledge and understood the importance of new approaches. They would be critical in integrating the human and public-centered approach the COIL team was championing.

These early insights led to perhaps the most important insight of all: people-centered also means the people with whom you work. The COIL team recalibrated and focused on a strategy to win the hearts and minds of their colleagues in an effort to more actively engage and court others outside the core team. Team members began presenting at almost every meeting they were invited to attend and sought out opportunities to present in the farthest corners of the bureaucracy. While initially resistant to what at times felt like a diversion of limited resources, these meetings became crucial for helping career staffers see how the work COIL was doing could directly benefit their own. In other words, the team made it relevant. The internal marketing also helped identify the early adopters who could be internal champions for the work and provide the institutional knowledge essential to pushing new initiatives through. Invitations were then extended to anyone interested in seeing for themselves how a co-design workshop could add value to their work. This show-and-tell approach provided opportunities for staffers to get to know the work and the team in a non-threatening way—and on their own terms.

In spite of the increased visibility of COIL internally, many managers did not understand how agile and human-centered design methods worked. And they were often the critical linchpins in agency-wide adoptions. To address this, COIL developed a “User-Centered Methods” training and certificate program for managers. The training was based off of the course curriculum Chief Innovation Officer Kyla Fullenwider had taught at Johns Hopkins University, but was right-sized to work with a manager’s schedule and existing obligations. Importantly, the month-long program also provided learning credits. While not exhaustive by any means, the program provided a shared vocabulary and created a space for managers to ask questions they might otherwise feel uncomfortable asking in the context of a meeting. At a minimum, it reduced hostility and decreased the innovation fatigue that was hamstringing so many efforts. In some cases, it even changed the way people worked.

DISCUSSION QUESTIONS

- 1** The Census Open Innovation Labs identified a problem but did not go directly to identifying solutions, instead they began to research the outputs, challenges and benefits of public-private partnerships. How did this extra step affect their insights and their eventual solution? How might jumping to solutions actually slow down innovation?
- 2** Supporting and training managers and attaching value to new learning is an important way to gain momentum “from the middle.” What are some other methods one could use to invite change in new places?
- 3** When building new technologies, it’s easy to focus on one type of user. Working in the government, COIL began to see the value of gaining insights from internal users as well. Do we think about the end users and system implementers when we’re building new systems? Why or why not?
- 4** Many of the techniques used throughout this section point to catalyzing change by fostering technological inclusion:
 - A.** How do you personally ensure that the technology you are building is inclusive and addresses a broad range of user needs and constraints?
 - B.** How do you personally ensure that the technology you are building is ethical? Who can you reach out to help you determine that?
 - C.** Are there ways to build a questioning framework into your process?

Countering the Field of Dreams Fallacy: Launching the Social & Behavior Change Team at the Millennium Challenge Corporation

FEDERAL AGENCY

The Millennium
Challenge Corporation

DATE RANGE

2015–Present

AN EVIDENCE-BASED ETHOS

Development and foreign aid in the United States have long been fraught with accusations of waste and lack of transparency. It was in this context that President George W. Bush called for a new kind of development in 2002, one with more accountability and transparency. By 2004, there was bi-partisan support from Congress for the founding of the Millennium Challenge Corporation (MCC) whose mandate would be to “reduce poverty through economic growth.” The new agency would carry out its mission by focusing on good governance, country ownership and implementation, measurable results, and a commitment to transparency. The primary means of engaging countries would be through a compact process that requires selected countries to develop their own priorities and implementation plans for both poverty reduction and economic growth.

Importantly, this work would also be supported by a rigorous **monitoring and evaluation** (M&E) process and ethos to track and evaluate the impact of MCC programs and investments. It was this focus on a rigorous M&E process that initially placed quantitative data at the forefront of how MCC tracked the efficacy of its work. The attention to an evidence base and measurable outcomes was itself an innovation at the time of the agency's founding.

MCC spent its first decade effectively getting its feet on the ground—starting and completing the first generation of compacts. But by 2015, the agency was ready to begin thinking about how to innovate and improve on its work. MCC's M&E process in that first generation of compacts surfaced roadblocks that were affecting the impact of the agency's work, including one that the agency could act on: breaking down internal silos. The M&E process also showed that while MCC investments were successful with building quality infrastructure, the investments did not adequately account for human behavior, and therefore did not fully achieve anticipated results.

THE FIELD OF DREAMS FALLACY

When Alison Montgomery arrived at MCC in 2015 as part of the American Association for the Advancement of Science Fellows program she was part of a new wave of efforts focused on breaking down silos within the agency. An anthropologist by training, she was initially brought in as a qualitative methods advisor to ensure the agency could collect robust qualitative data. Fellows were detailed to two departments within the agency, spending half their time with one and half with the other. The division of labor was intentional: by placing fellows in two departments they could act as connectors and collaborators across departments.

By 2017, Montgomery had teamed up with her direct supervisor, an agency veteran and fellow social scientist, to expand on the work she started as a fellow. The career staffer had been making the case for years that MCC made too many assumptions about human behavior. Specifically, just because they built an electrical grid or new road doesn't necessarily mean local people will use it. Montgomery called this the "field of dreams fallacy." She argued that qualitative research could be rigorous and valid, and was well-suited for triangulation with quantitative data to better understand human behavior. About five years after first discussing the value of Social and Behavior Change (SBC), the agency funded the workstream and the SBC Team was born.

That fall, Montgomery and her supervisor assembled a team, hired SBC contractors, and socialized SBC within MCC, focusing on how integrating an understanding of human behavior—inside MCC and with external beneficiaries—could improve their colleagues' existing work. They set about creating an employee survey to get a sense of existing views and how staffers perceived human behavior impacting their work. They also wanted to identify potential early adopters and what they liked about the SBC approach as well as understand the concerns of naysayers.



The Social Behavioral Change team launch at MCC. Photo Credit: Alison Montgomery

“SBC is a process involving individuals, communities, or societies that enables them to adopt and sustain positive behaviors. It does so by identifying the various factors that influence people’s behavior and addressing these through interventions most likely to be effective.”

—Alison Montgomery

LAUNCHING FOR LONGEVITY

Following the soft launch, Montgomery and her boss hosted a launch event and kickoff week to help answer the question that had repeatedly come up: Addressing social and behavioral change is great in theory but how are you actually going to do it? To further engage colleagues in the work and provide opportunities to meet the team, they hosted a series of presentations and brown bags, and shared explanatory materials. And to translate theory into practice, program leads from the first two collaborating teams presented on the impact of their work together. Practical examples were critical to show what collaborating with the SBC team could do and also helped mitigate any fears and risk aversion that may have prevented teams from engaging with the social and behavioral change group. That is, these early-adopter country teams made it “ok” for others to follow suit. To date, the team continues to build their case internally by marking country team milestones with agency-wide events.

The internal marketing efforts have had real benefits for the SBC Team, including ongoing engagements with six additional country teams. Their team has continued to build on initial efforts, cutting across internal silos by engaging more fellows, staff, political appointees, and compact development teams in their work. They now have onboarding tools for new staff that include modules on the SBC Team model, methods, and integration into Compact investments. They are currently working on including SBC training as part of all new compacts. This sometimes requires capacity building on the part of the SBC team but they see that as integral to the work they do. “In order for this work to be successful at MCC, our colleagues need to understand how integrating social and behavior change into their work is not just another bureaucratic hurdle, but rather is a way to ensure that their designs—engineering, education, utility reform, etc.—have the impact that they desire. This means building knowledge on both the basics of SBC and how our team can work in tandem with them,” Montgomery noted.

DISCUSSION QUESTIONS

- 1** If you build it, they will come. Why does this idea persist so often when working with technology? How can designing with a focus on humans, aka Human-Centered Design, counter this thinking?
- 2** Tech at the table: When it became time to build a team, why was it important to include people who understood how to implement technology as well as high-level strategists?
- 3** Creating sustainable and long-lasting social and behavioral change in the beneficiaries of a service goes hand in hand with breaking down organizational silos. What benefits can you see to creating these?

A Checklist for Culture Change Design at the Office of the Surgeon General

FEDERAL AGENCY

U.S. Department of Health and Human Services, The Office of the Surgeon General

DATE RANGE

2014-2016

INTRODUCTION

As the first Chief Design Officer for the Office of the Surgeon General (OSG), Ann Kim’s role was to bring a human-centered lens to the work of “the Nation’s doctor.” As a leading voice for public health, the Surgeon General informs not only policy but broader culture. It became quickly apparent to Kim that in order to enable this type of external impact, the team needed to shift their approach to the work. So much of OSG’s public work happened behind the scenes, and their effectiveness was in large part a consequence of the culture that the Surgeon General’s team created. Here are four lessons the team learned to help drive the culture change.

1 PRIORITIZE A SHARED SPACE

In the work-from-home era it is easy to assume most things can be done remotely. But a shared space allows for informal connections, loose affiliations, and, most importantly, a kind of collaboration that reinforces the sense of team that is frankly hard to do over Zoom. And it can act as a hub of activity for people that might not otherwise meet. “When I arrived at HHS they already had a space, a kind of war room type space where everyone worked. The IDEA Lab was a hub that was both a place for innovative minds to gather as well as a symbol of the innovative work they were sparking across HHS,” Kim notes.

2 KEEP AN OPEN-DOOR POLICY

The OSG office kept an open-door policy—literally. In a world of closed doors and cubicles this kind of openness looked and felt different. It also meant that young staffers would “just appear” and offer to help. But this openness and ease of access extended beyond their office and into their leadership ethos. “The Surgeon General’s philosophy was to treat everyone the same—whether the front office or a Secretary, whether uniform or nonuniform. Part of the reason why we were able to create networks so quickly was because someone junior was able to have face-time with the Surgeon General and others on the team. I recognize not everyone is going to be that leader but I think openness was key [to our success as a team],” noted Kim.

3 FIND YOUR INSTITUTIONAL COMPASSES

Creating a new program or initiative is often the easy part. Institutionalizing something, on the other hand, can consume the process and limited resources of a young team. In 2016, as the OSG leadership team began pushing forward initiatives like their Turn the Tide campaign against opioid use, it became clear that much of the work was going to be “getting it through the system.” Kim estimates they spent as much of 70% of their overall effort, in the pre-launch of the campaign, navigating within and between agencies. “You are running through a maze that you can’t see,” she noted. But navigating the bureaucracy became much less of a burden when Will—a young agency staffer—showed up and offered to help, largely because he was inspired by the open and welcoming leadership style of the Surgeon General. Will had started his career as an intern at HHS and had a fluency and knowledge of the agency that allowed him to find pathways for the work that Kim’s team was trying to push through. While the initial work was creative, much of their effort involved the kinds of inter-agency collaboration that can stymie a new initiative.

4 GET OUTSIDE (AND BRING PEOPLE WITH YOU)

Kim brought her background as a designer to all of the work she led at the OSG. As the office of “the Nation’s doctor,” she felt it was critical for the OSG to reimagine how it interacted with the public. This started by designing new ways of engaging the people they were aiming to serve. OSG prioritized approaching engagement through human-centered design. For instance, as part of their opioid work they talked to healthcare providers, patients, and families to inform the outputs. And it wasn’t just “the design team”—everyone was involved with the research, including the Surgeon General. That looked like spending time talking to Flint, MI, families in their living rooms or talking to patients in residence at an addiction treatment center. Getting outside and getting a sense of how things are on the ground—from the perspective of an individual, family, or community—creates a foundation for your work.

DISCUSSION QUESTIONS

- 1 How would you create a shared and safe space in your department to attract people like Will?
- 2 What are the challenges of cultivating a shared and safe space in your agency or department? How do you think you can mitigate those challenges?
- 3 If your team needed to create and push a new initiative through your agency or department, where would you start? Where would you likely be stopped? How would you navigate with or around that complexity in your organization?
- 4 How would you bring human-centered design approaches to your team or agency to inspire culture change?



Surgeon General Vivek Murthy prioritized getting outside the building and meeting directly with people. *Photo Credit: Ann Kim*

Section II:

Overview of the 10 Competencies

What are the 10 competencies and why are they important?

Tech Talent for 21st Century Government's guide for federal leadership identifies 10 tech competencies critical for agencies to meet their mission in the 21st century. Agencies that internalize these competencies will have more effective delivery of services, more efficient internal operations, improved technology reliability, and greater security compliance and cost savings. Below is a brief description of each tech competency. A set of competency cheat sheets are also provided, which include action-focused next steps any federal agency leader can take to build a productive, human-focused and technically literate culture in their department or agency.

1 **TECH-INFORMED DECISION MAKING**

Tech-informed decision making is the practice of involving technical leaders in agency decisions. As agencies wrestle with complex technical issues, decision makers need to actively bring technologists to the table to clarify opportunities and to avoid missteps that can derail initiatives and cause painful problems for everyday Americans.

2 **SECURITY**

Information Security (sometimes “cybersecurity”) is the practice of defending and protecting computers, servers, mobile devices, electronic systems, networks, and data from malicious attacks and breaches. A recent example is the SolarWinds hack in which major government agencies, including the Justice Department, the Treasury, and many private companies, were breached.

3 DATA GOVERNANCE AND USE

Data governance is a collection of processes, roles, policies, standards, and metrics that ensure the effective and efficient use of information in enabling an organization to achieve its goals. Americans expect that government agencies will use this data to provide the kinds of effective and timely services they typically receive from the private sector in the digital age, and do so in a way that protects their privacy.

4 HUMAN-CENTERED DESIGN

Human-centered design is a framework focused on understanding users—their needs, constraints, contexts, behaviors, and wants. Human-centered design focuses on the end user’s experience and starts by asking a few basic questions: Who is receiving the experience you are creating, what do they need, and how are current solutions working? The results are usable and useful products and services for the families, individuals, and humans who are supposed to receive them, and the civil servants responsible for delivering.

5 PRODUCT MANAGEMENT

Product management centralizes management of multiple functions into one leader with the accountability and resources to ensure the goals are met and the product is delivered on time and in a way that meets user needs.

6 DEVOPS AND SITE RELIABILITY ENGINEERING

DevOps—a combination of the words “development” and “operations”—and Site Reliability Engineering (SRE) are two approaches to removing the silos that have historically existed between teams responsible for building software systems and the teams responsible for deploying and running them. Together, DevOps and SREs work to assess risk and plan for navigating system failures inherent in the delivery of high demand, high traffic digital infrastructures.

7 MODERN STACK SOFTWARE DEVELOPMENT

Modern stack software development describes the tools which a technology organization uses to build and manage its software. Just like anything else, there are old tools and techniques and new ones—some which have proven very durable and some which have become obsolete. Implementing older technologies can mean increased costs, lower interoperability, and a hampered user experience. At the same time, recreating those systems using a modern stack could introduce bugs, compromise data integrity, or slow processes down rather than speed them up. Software stack determinations must be made thoughtfully.

8 TECHNOLOGY PROCUREMENT

Procurement refers to the process or the act of sourcing or obtaining services or goods for an organization. Some businesses use the term procurement only to refer to the actual buying, while at most federal agencies, “procurement” refers to the entire—often complex—process that leads up to the purchase and which is also governed by a maze of laws, regulations, and processes.

9 INSTITUTIONAL INNOVATION AND CHANGE MANAGEMENT

Institutional innovation can mean building a new process, improving an existing one, or bringing something that works from another field into a new context. Innovation in government can take place in programs, products, services, or even experiences. As management expert John Kotter laid it out in 1995, change management describes a set of approaches used by leaders to create “fundamental changes in how business is conducted,” to help the organization address a new environment. Embracing innovation requires culture change and a focus on outcomes in addition to process. One needs to create a management culture that incentivizes the use of effective approaches and solutions.

10 EMERGING TECHNOLOGIES

Emerging technology is generally used to describe a new technology, but it may also refer to the continuing development of an existing technology. The pace of innovation is accelerating further and, coupled with the creative mindset of researchers and engineers, is leading to a class of emerging and breakthrough technologies such as 5G telecommunications and machine learning that have the potential to alter entrenched practices in the federal government. Harnessing emerging technologies and protecting the public’s best interest will involve filling existing and creating new roles in government that do both.

Why Focus on These 10 Competencies?

These 10 competencies are proven approaches to support effective delivery of services, more efficient internal operations, improved technology reliability, greater security compliance and cost savings.

Building these competencies in an agency can help leaders:

1 ALIGN LEADERS AROUND DELIVERY

Leaders can use these competencies to align around the most critical products and services to deliver and ensure that the agency is moving in the right direction, holding people accountable, and rewarding achievements.

2 FIND AND INVEST IN CRITICAL TALENT WITH THESE COMPETENCIES

Agencies are only as effective as the people they lead. Give resources to the qualified talent already in your organization to maximize their impact and empower your HR partners to attract a new, solid talent base.

3 INCORPORATE DELIVERY AS A KEY PART OF PLANNING EFFORTS

Engaging technologists in the development of the strategic plan, budget plan, operating plan, and project plans gives you the ability to channel resources to the critical efforts. Make sure technologists have a seat at the table during the planning process and that their role is clearly understood by all, including yourself.

How Do I Use the Competency Cheat Sheets?

The cheat sheets consist of four sections:

- An explanation of broad tech concepts.
- Suggested Day One actions to help leaders think through their first steps.
- 100-day action items.
- Micro case studies to help leaders establish a path and precedence through departmental innovation.

1 TECH-INFORMED DECISION MAKING

Explanation: When policies are designed without input from technology and digital leaders, they can result in significant unintended consequences and missed valuable opportunities. As federal government agencies wrestle with technical policy issues such as cybersecurity, as well as broader policies with significant digital implementation components (e.g., the operational rollout of the American Rescue Plan, or a change to how Veterans disability benefit appeals are processed), decision makers need to actively bring technologists to the table. Failure to do so could lead to missed opportunities and missteps that derail initiatives and cause painful problems for both everyday Americans and the civil servants on whom they rely.

Day One Actions: Get to know key technical and business/program executives responsible for delivering the three most critical services at your agency.

100-Day Actions:

- Answer these questions:
 - » What are the top three pain points in delivery of your agency's mission? What role does technology play in these?
 - » How often are operational and technical leaders a part of your planning process? Note what happens when the implementers become a part of planning.
- Build a strong product management practice in your agency.

Micro Case Study: In March of 2020 Congress passed the Coronavirus Aid, Relief, and Economic Security Act (CARES Act), which included several provisions to expand access to unemployment insurance benefits to those suffering economically due to the pandemic. But those policies were set without input from operational and technical leaders in the states who are actually responsible for implementing the system. As a result, the CARES Act and subsequent guidance unintentionally required states to spend months modifying their systems or building new services, and the U.S. took far longer to get much needed economic relief into the hands of struggling families than other countries which took simpler, more delivery-driven policy approaches.

2 SECURITY

Explanation: Information Security (sometimes “cybersecurity”) is the practice of defending and protecting computers, servers, mobile devices, electronic systems, networks, and data from malicious attacks and breaches. A critical recent example is the SolarWinds hack in which major government agencies, including the Justice Department, the Treasury, and various private companies, were breached. A truly dangerous aspect of the attack was that the hackers turned a run-of-the-mill software update into a weapon. Agencies should be organizing programs that actively encourage people to find and help fix security vulnerabilities. Invest in more secure technology products and services, and enable technology security staff to stay up-to-date on the latest threats and protections, which are critical to improve the overall security capability of an agency.

Day One Actions: Take inventory of your security team’s skill sets and establish development plans. What are your strengths? How will you fill gaps?

100-Day Actions: Answer these questions.

- Do I have a designated and trained information security expert on staff? Do they have direct modern technical experience?
- Do our employees understand their role in securing the agency from cyber attacks?
- How is our agency shifting away from cybersecurity as an after-the-fact compliance exercise?
- How is our agency making technology and services secure by design?
- What are the most significant, evidence-informed cybersecurity threats facing our agency and how are we mitigating them?
- How does the security organization work with other parts of the agency to ensure things are secure, without generating blockers and stop-energy?

Micro Case Study: In 2016, with support from the Defense Digital Service, the Department of Defense launched its first [Hack the Pentagon bug bounty program](#)—a program that provides compensation for identifying security vulnerabilities. Hack the Pentagon identified nearly 140 vulnerabilities and at a cost of \$150,000. Achieving the same goal might have cost millions more but been far less effective using more traditional efforts such as contracting with cybersecurity vendors for multiyear contracts. By 2018, DOD increased its investment in the Hack the Pentagon program to \$34 million.

3 DATA GOVERNANCE AND USE

Explanation: The federal government constantly collects data from the public on everything from health care to finances to demographics. Americans expect that governmental agencies will use this data to provide the kinds of effective and timely services they typically receive from the private sector in the digital age, and do so in a way that protects their privacy.

Day One Actions: Answer these questions from “[Memos for a Tech Transition](#).”

- Does the agency have a robust data strategy to align data use to advance the agency mission, assess its performance, and drive innovation inside the agency and for people in America?
- Considering the data needs and opportunities at the agency, do agency officials have the capacity and processes to ensure secure, reliable, and responsible use of data, especially personally identifiable information (PII)?
- Does the agency have a plan and the technical infrastructure to meet its open-government and open-data commitments?

100-Day Actions: Consider the steps below drawn from [Tech Talent’s “Memos for a Tech Transition”](#).

- Modernize and upgrade your data infrastructure to improve data-driven policymaking, security, service delivery, and innovation.
- Pair agency leads with a modern technical, digital, or data advisor.
- Empower Chief Data Officers (CDOs) and teams in agencies to launch or implement a strategy to leverage data assets to serve the agency mission and the American people, including a plan for reporting program effectiveness.
- Create the operational and governance capability for appropriate data sharing across agencies.

Micro Case Study: In December 2020, the General Services Administration (GSA) developed a [draft data ethics framework](#) to help agencies systematically identify and assess the potential benefits and risks associated with the data they acquire, manage, and use. This framework can help agency staff, managers, and leaders make considered data acquisition, management, and use decisions to address ethical issues they may encounter throughout the data lifecycle. The framework is broad and flexible—outlining and describing high-level principles that can be applied to specific circumstances, such as preparing data for the responsible and ethical use of evolving technologies, including mitigating bias when developing AI and machine learning methods and systems.

4 HUMAN-CENTERED DESIGN

Explanation: Human-centered design integrates a set of practices to understand users of a product or service—their needs, constraints, contexts, behaviors, and wants. Most people in the United States engage with a federal service whether it be paying taxes, receiving mail, paying into or receiving social security, or receiving Medicare. Human-centered design generally focuses on the user’s experience and starts by asking a few basic questions: Who is receiving the experience you are creating, what do they need, and how are current solutions working? When done well, the result is usable and useful products and services.

Day One Actions: Along with your senior leadership team, go through the process of signing up for or using one of your agency’s critical services as if you were an end-user, or take an opportunity to observe service recipients using your service. Talk through what went well and where pain points exist with leaders responsible for delivering that service.

100-Day Actions: Answer these questions:

- Which users are prioritized first? Mobile? Desktop? Local? International?
- Are you familiar with what the Paperwork Reduction Act and other policies allow in terms of user research?
- How are you and other senior leaders regularly observing and interacting with end-users of your agency’s services?
- Are the services your agency delivers organized and presented to the public based on your agency’s policies and organization chart or based on end-user needs? How can you shift toward the latter?

Micro Case Study: Agencies such as GSA and the U.S. Department of Veterans Affairs (VA) have dedicated offices focused on understanding how people use their programs and services. While some may go by names such as innovation centers, customer offices, or design labs, they specialize in applying human-centered design techniques to improve program delivery and digital services. The Veterans Experience Office, working with the Digital Experience Product Office in the Office of the CTO, for example, has undertaken large-scale efforts to document the lives of veterans, and uses those observations to redesign digital services and technical systems. According to Memos for a Tech Transition, “Veteran trust in VA was 55 percent in 2016, and is up to 90 percent in 2020, thanks to its focus on becoming a veteran-centric organization.”

5 PRODUCT MANAGEMENT

Explanation: In this context, product management is defined as an approach to delivering products and services that requires a “single product owner who has the authority and responsibility to assign tasks and work elements; make business, product, and technical decisions; and be accountable for the success or failure of the overall service,” as described in the U.S. Federal CIO’s [Digital Services Playbook](#). Modern product management in government is not yet a standard practice. Complex products and services can have dozens of contractors on the job with no one leader who has the accountability and resources to ensure the goals are met and the product is delivered on time and in a way that meets user needs. The majority of federal technical teams lack properly skilled and trained product managers.

Day One Actions: Answer these questions: What is the most critical product or service your agency delivers? Is there a single leader acting as a product manager or owner for that service?

100-Day Actions:

- Answer these questions (including some derived from the Digital Service Playbook):
 - » What are the top five most critical products or services your agency delivers? Who are the single leaders serving as owners of the service?
 - » What organizational changes have been made to ensure the product owner has sufficient authority over and support for the project?
 - » What does it take for the product owner to add or remove a feature from the service?
- Ensure the product owner has a work plan that includes budget estimates and identifies funding sources.
- Facilitate (or encourage) a strong relationship between the product owner and the contracting officer

Micro Case Study: Seeing the need to improve agencies’ product management capabilities, alumni from United States Digital Service worked closely with Georgetown University to develop a new technical [product management training and certification program](#) that launched in 2019. This initiative dovetails with efforts by agencies such as the Office of Personnel Management and the Federal Reserve Board of Governors to build stronger technical product management competencies and link the skillsets back to the federal government. The work is a start and there is clear room for growth.

Digital Services Playbook

- 1 Understand what people need
- 2 Address the whole experience, from start to finish
- 3 Make it simple and intuitive
- 4 Build the service using agile and iterative practices
- 5 Structure budgets and contracts to support delivery
- 6 Assign one leader and hold that person accountable
- 7 Bring in experienced teams
- 8 Choose a modern technology stack
- 9 Deploy in a flexible hosting environment
- 10 Automate testing and deployments
- 11 Manage security and privacy through reusable processes
- 12 Use data to drive decisions
- 13 Default to open

6 DEVOPS & SITE RELIABILITY ENGINEERING/ “SOFTWARE OPERATIONS MANAGEMENT”

Explanation: Modern software management has moved away from managing on-premise data centers, and toward managing infrastructure in the cloud. This has resulted in DevOps—a combination of “development” and “operations”—and Site Reliability Engineering (SRE), two approaches to removing the silos that have historically existed between teams responsible for building software systems and the teams responsible for deploying and running them. DevOps and SRE focus on the application of automation and modern software engineering practices to software deployment problems in order to improve key metrics like site uptime and speed of deploying new code changes.

Day One Actions:

- Take inventory of your DevOps/SRE team’s skill sets and establish development plans. What are their strengths? How will you fill gaps?
- Get to know your CIO and those who run your most critical technical sites and services.

100-Day Actions: Answer these questions:

- How often do you deploy new code? If there is a system up and a change needs to be made, how long will it take the identified change to be made? (Expectation setting: most modern web companies can get changes out in minutes—most federal tools deploy quarterly, but that is improving.)
- How much visibility do you have into what is happening in existing websites and systems? Do you have monitoring to show uptime and availability? Can you track user metrics like number of users, how far they make it through the process, and which pages they are using?
- What’s the process for handling a site outage? How does the agency ensure failures behind an outage don’t recur?
- What steps are involved in deploying new software projects into production? How long do they take?
- What metrics exist for the agency’s websites and systems? Can you answer questions about availability and performance?

Micro Case Study: A few agencies have piloted [DevOps and SRE teams](#), including the Internal Revenue Service, Air Force and GSA. According to the IRS, its use of DevOps significantly helped reduce testing and deployment times of releases and upgrades of technology systems from months to minutes, and automated testing time from minutes to milliseconds. GSA used an SRE approach to develop, deploy, and improve Login.gov, a single sign-on tool for government websites.

7 MODERN STACK SOFTWARE DEVELOPMENT

Explanation: Modern stack software development describes the tools an organization uses to build and manage its digital products, such as backend databases, websites, mobile apps, and web apps. The tools and techniques used by software developers are rapidly evolving. Some fundamentals of modern software development have proven durable, and some practices and tools have become obsolete and been replaced. The debates between these techniques can be fierce and there are usually many right answers, but a good understanding of the options and pros and cons is critical in technical leadership.

Software stack choices usually have far reaching implications for budget and time to delivery. For example, will you use commercial cloud services or a GovCloud? Will you be able to find programmers who can maintain your software? Will the interfaces between data sources ensure that systems can “talk to each other”? Will your applications scale to millions of individuals?

Day One Actions: Answer these questions:

- Do you have expertise in-house to manage the tools, contracts, staff, and budget?
- What are the components in the agency/department tech stack? Have you standardized on a specific tech stack or are there multiple? Why was this approach chosen?
- Take inventory of your software team’s skill sets and establish development plans. What are their strengths? How will you fill gaps?
- What do you think about the sustainment requirements for the software and how will it be continuously improved?

100-Day Actions: Drawn from the [Ten Commandments of Software](#)

- Get to know your CIO and those running critical technical sites and services.
- Hire and support in-house teams of software experts who are capable of modifying or extending the software through source code or API access for every agency system that relies on software.
- Automate testing of software to enable critical updates to be deployed in days to weeks, not months or years.

Micro Case Study: At the U.S. Department of Veterans Affairs, a combination of modern software tools and DevOps practices allows the agency to make a new production deployment to VA.gov—the agency’s premier customer-facing application—every business day (Monday–Thursday), without any downtime. The agency works in small sprint teams, with each working on a limited number of features at a time. Using modern source code control tools and automated tests, its developers can confidently make changes to the application. And by using a continuous integration/continuous delivery tool, the agency can automate its deployments (and rollbacks, if necessary). All of this allows the agency to plan a daily production deployment that includes whichever changes happen to have been completed by that time.

8 TECHNOLOGY PROCUREMENT

Explanation: Procurement refers to the process or the act of sourcing or obtaining services or goods for an organization. Some businesses use the term procurement only to refer to the actual buying, while at most federal agencies, “procurement” refers to the entire—often complex—process that leads up to a purchase. Government places a deep emphasis on being prudent stewards of taxpayer dollars and on ensuring that all companies have an equal opportunity to compete for contracts, so procurement decisions often seem optimized for fairness and completeness at the expense of quality, efficiency, speed, or mission outcomes. It can take months or longer to scope requirements, identify vendors, and find a suitable provider while complying with the many federal acquisition regulations. The good news is that the tradeoffs and drawbacks are well understood, and there is a powerful movement of procurement innovation that is pressing to make buying decisions more agile, swift, informed, and creative.

Day One Actions:

- Are there procurements underway that are critical to achieving your goals? Are they supported by business, IT, and procurement leaders with experience in modern technology procurement methods?
- Levelset: Find your agency on the [IT Dashboard](#). The IT Dashboard provides Federal agencies with the ability to view details of Federal information technology (IT) procurement projects online and to track their progress over time. Is your agency succeeding? Why or why not?
- Spend time using industry analyses like Gartner and Forrester to do market research and get to know the industry before making decisions.

100-Day Actions (drawn from Tech Talent’s Memos for a Tech Transition):

- Do individuals in key roles for procuring technology have deep experience in modern technology acquisition, digital delivery, and/or commercial technology using modern practices?
- Does the agency have a modern tech procurement strategy, program management, and acquisition life cycle/governance that ensures strong outcomes? Does it differentiate between procuring software and hardware?
- Consider small, targeted spending that is not based on budget cycles (e.g., multiyear or no-year money for tech projects) so teams can start budgeting and planning for technology projects with an agile, iterative approach.
- Incorporate technical challenges and demonstrations into software development procurements to evaluate vendors on delivering a product rather than writing a proposal. Hint: Many companies have invested in figuring out how to win IT contracts and hold on to them (e.g., vendor lock-in) rather than how to build amazing applications.

Micro Case Study: The Digital IT Acquisition Professional (DITAP) program identifies procurement specialists, trains them on how to buy software, and is developing a network of alumni. The U.S. [Department of Homeland Security’s Procurement Innovation Lab](#) creates an environment where acquisition professionals have the leadership support to take managed risks and find innovative ways to improve procurement. The [TechFAR](#), a guide for buying digital services, helps agencies navigate the federal acquisition process for software purchasing.

9 INSTITUTIONAL INNOVATION AND CHANGE MANAGEMENT

Explanation: Institutional innovation can include building a new process, improving an existing one, or bringing something that works from another field into a new context. Innovation in government includes programs, products, services, or even experiences. The unifying principle is that these improvements are new to the government, disrupt a past way of doing things, and offer a significant benefit to actual people. Change management, as management expert John Kotter laid it out in 1995, describes a set of approaches used by leaders to create “fundamental changes in how business is conducted,” to help the organization address a new environment.

Day One Actions: Ask about the last substantive policy change in your agency. How did it begin? Where did it get stuck? How was it ultimately successful?

100-Day Actions:

- Consider following [John Kotter’s 8-Step process for Change Management](#). The process was cultivated from more than four decades of observations of leaders and organizations as they were trying to transform or execute new strategies.
- How would your IT operating activities transform if the agency suddenly had to ramp up or pivot its strategy? (For example, to adopt telework rapidly due to a pandemic.)
- To accomplish a transformation, what shift in people, ideas, and leadership is necessary? What training and upskilling is needed? What is the narrative that explains the benefits of the change and why it’s needed?
- What changes in organizational processes have gone right recently? How do you double down?

John Kotter’s 8-Step process for Change Management

- 1 Create a sense of urgency
- 2 Build a guiding coalition
- 3 Form a strategic vision and initiatives
- 4 Enlist a volunteer army
- 5 Enable action by removing barriers
- 6 Generate short-term wins
- 7 Sustain acceleration
- 8 Institute change

Micro Case Study: Centers of Excellence can focus on helping staff define problems, processes and create accountability to make better decisions at a limited scale. In 2017, the [GSA created Centers of Excellence](#) to accelerate IT modernization with a focus on artificial intelligence and cloud computing, among other technologies. And in 2018, the Army launched the Business Process Reengineering Center of Excellence to help make better technical and organizational decisions. For these centers to work, it is critical for agency and center leadership to commit to spreading learnings throughout the larger organization.

10 EMERGING TECHNOLOGIES

Explanation: The term emerging technology may be used to describe a new technology or sometimes the continuing development of an existing technology. The pace of innovation is accelerating further and, coupled with the creative mindset of researchers and engineers, is leading to a class of emerging and breakthrough technologies such as AI and Machine Learning that have the potential to alter practices in the federal government.

Day One Actions: Request technology briefs from Chief Information and Chief Innovation officers. Include mission and status of departmental goals to reduce any overlap in new efforts.

100-Day Actions: Answer these questions:

- Do you have the right infrastructure (strong data collection, etc) to kick off advanced emerging technology projects? Do you/your agency have the data infrastructure? Is the data clean enough to work?
- How do policy priorities and user needs inform the direction of Research and Development (R&D) efforts at your agency?
- How do R&D efforts actually improve the delivery of your core services, and how can that feedback loop be tightened?

Micro Case Study: In April 2020, GSA released a [solicitation for an artificial intelligence](#) pilot as part of its commercial solutions program to streamline how it procures innovative and commercial solutions. The solicitation is for the use of AI for regulatory management. GSA's Federal Systems Integration and Management Center office is managing the program and the pilots are intended to help GSA learn how to properly staff the efforts, streamline the acquisition process, fast-track vendor selection timelines, simplify contract administration, and find ways to let vendors retain their core intellectual property. An example of using machine learning to improve direct services critical to people's lives can be found here:

[DigitalVA: VA Launches Smart Tool to Reduce Veteran Wait Times for Disability Claims.](#)

Top Four Myths about Technology and Delivery

From April 2020 to September 2020, the Tech Talent Project brought together more than 80 agency leaders in policy, operations, and technology to develop a set of memos to inform the 2020 presidential transition. During this process, the Tech Talent Project team found four persistent myths that can hinder delivery of critical services and products in the public sector.

MYTH 1: TECHNOLOGY EXPERTISE IS ONLY REQUIRED AFTER A POLICY HAS BEEN CREATED.

Agencies need leaders with the technical expertise to craft and deliver modern policy from day one. Appoint or hire leaders who understand how to effectively hire, support, and engage modern technologists into relevant leadership roles, especially procurement and operations. Key approaches include:

- Pair non-technical leadership with modern technical advisors and bring them to the table.
- Prioritize strong data leadership, especially when the data is complex, directly informs policy or operations, and when it is about people.
- Invest time and resources to upskill the government's existing workforce.

MYTH 2: DELIVERY ISSUES CAN BE SOLVED WITHOUT FIXING INEFFECTIVE TECHNICAL BUDGETING, PROCUREMENT, AND HIRING PRACTICES.

[A 2019 Government Accountability Office \(GAO\) report](#) cites poor acquisitions and ineffective IT management as a major source of Information Technology project failure, placing the issue on their High Risk List. Reform requires substantial training for government procurement managers to become informed buyers. Training and support for hiring managers to understand how to hire using technical, data and delivery subject matter expertise is critically important. See the [results of several subject matter qualification assessment pilots](#) completed in 2020.

MYTH 3: TECHNOLOGY IS A ONE-TIME INVESTMENT. THEN IT'S DONE.

Technological systems need maintenance and regular updates to remain effective. Technology has upfront cost for development and should be treated as something that is continually reinvested in. There are three reasons for this:

- Continuous, iterative improvement of technology keeps overall costs lower and ensures stronger security and interoperability.
- Human-centered design is shifting expectations of Americans and responsiveness to evolving user needs and policy environment.
- Agencies must also consider the shifting expectations of Americans who wish to connect and be communicated with in fundamentally different ways.

MYTH 4: NOTHING CAN BE DONE *RIGHT NOW* TO GET US ON TRACK.

There are high-impact changes that can be made right now, including:

- Recruit Chief Information Officers (CIOs), senior advisors, and relevant agency leadership with significant modern technical expertise to the appropriate positions.
- Use subject matter experts to identify qualified candidates for technical roles.
- Find and build on existing successes in each department and focus on continually improving.
- Bring relevant technology experts to the policy table to ensure that policies developed are doable.

Resources List

TECH COMPETENCY CASE STUDIES

This [Competencies + Case Studies](#) table provides stories and examples to help agency leaders light the fire and help their teams consider new innovations, or simply to make the business case for their budget.

A list of useful multimedia resources to watch, read, or listen to is also included below.

TV/WEB VIDEO

- 1 [Government Matters](#).** Government Matters is a non-partisan news program focused on providing information and analysis to federal managers, contractors and those supporting the federal marketplace. Government Matters' primary areas of concentration are technology, security, defense, management, industry, and workforce.
- 2 [Government is a System](#)** at the Velocity Conference: Matt Cutts, Administrator of the United States Digital Service, discusses how better technology can improve not just software systems but also trust in government itself.
- 3 [Government Services that Work for People](#)** at Code for America: Jennifer Pahlka, founder of Code for America, speaks about the ability to bring about real change in Government Services in her Plenary talk at Code for America.
- 4 [Government and Open Source Technology](#)** at JupyterCon: Nadia Eghba discusses how money can support open source development without changing its incentives—especially when grants and government are involved.
- 5 [Digital.gov's Video archive](#):** Digital.gov is a channel created by people at Tech Transformation Services and 18F at the General Services Administration. Its goal is to transform how the government learns, builds, delivers, and measures digital services in the 21st century by providing people in government the tools, methods, practices, and policy guidance they need to deliver effective and accessible digital services.

FAST ACTION REPORTS

More and more government agencies and external organizations are working to increase tech literacy in government. As a result, a growing list of reports and memos are capturing the evolving landscape of effective policy delivery.

- **Bit by Bit: How government used technology to move the mission forward during Covid-19, Partnership for Public Service.** This report, co-authored by Partnership for Public Service and Microsoft, features stories from federal, state, and local governments and the lessons they learned establishing new ways to deal with the pandemic.
- **Cracking the Code: Harnessing the Exponential Power of Technology, Partnership for Public Service.** This report addresses three emerging technologies—artificial intelligence, immersive technologies, and edge computing—to identify issues governments should consider to maximize the benefits of these technologies and provide advice for accelerating their adoption.
- **Mobilizing Tech Talent, Tech Talent Project & Partnership for Public Service.** The federal government lags behind the private sector in hiring qualified technologists for mission-critical leadership and staff positions. This report offers advice for recruiting and hiring technical experts, and opportunities and challenges for technology transformation in federal agencies.
- **National Security Commission on Artificial Intelligence Report, NSCAI.** This commission's recommendations are often referred to when policy regarding artificial intelligence and security is being considered. NSCAI submitted these 2020 Interim Report and Third Quarter Recommendations to the President and Congress. The report highlights three main recommendations: 1) organize for AI and emerging technologies competition; 2) democratize AI innovation and expand the AI talent pipeline; and 3) marshal international cooperation around AI.
- **Talent Acquisition Quick Tips, Partnership for Public Service.** As hiring managers and HR staff work together to find the best candidates for roles, they should consider the recruiting and hiring tools and flexibilities available to them. This guide captures strategies and insights shared by experts.
- **Tech Talent For 21st Century Government, Tech Talent Project.** The Tech Talent Project, co-published this paper with Partnership for Public Service. The work identifies top technology and innovation leadership positions in government, and 10 competencies these leaders and their teams need to be successful.

- **Software is Never Done: Refactoring the Acquisition Code for Competitive Advantage, Defense Innovation Board.** Written for a DoD audience—but widely applicable to any agency—this report by the Defense Innovation Board provides a blueprint of recommendations and explainers on how to buy or build software in a government agency. It includes the **Ten Commandments of Software:**
 - 1** Make computing, storage, and bandwidth abundant to government developers and users.
 - 2** All software procurement programs should start small, be iterative, and build on success or be terminated quickly.
 - 3** The procurement process for software must support the full, iterative life cycle of software.
 - 4** Adopt a DevSecOps culture for software systems.
 - 5** Automate testing of software to enable critical updates to be deployed in days to weeks, not months or years.
 - 6** Every purpose-built government software system should include access to source code as a deliverable
 - 7** Every government system that relies on software should have a local team of software experts who are capable of modifying or extending the software through source code or API access.
 - 8** Only run operating systems that are receiving (and utilizing) regular security updates for newly discovered security vulnerabilities.
 - 9** Security should be a first-order consideration in design and deployment of software, and data should always be encrypted unless it is part of an active computation.
 - 10** All data generated by government systems—in development and deployment—should be stored, mined, and made available for machine learning.

BOOKS

From municipalities to federal systems, the books highlighted here investigate how government policy is affected by and depends on science and technology in ways that are not widely considered. Designed for deeper study, some works are designed for direct action (e.g. Cyd Harrell) and some are more focused on underlying questions about technology and government (e.g. author Ruha Benjamin).

- **Race after Technology: Abolitionist Tools for the New Jim Code, *Ruha Benjamin*.**
This book seeks to understand how emerging technologies can reinforce racism and deepen social inequity. The book argues that automation, far from being a sinister story of racist programmers, has the potential to hide, speed up, and deepen discrimination while appearing neutral and even benevolent when compared to the racism of a previous era.
- **Innovative State: How New Technologies Can Transform Government, *Aneesh Chopra*.**
This book highlights how the federal government is incorporating technology innovation in the context of Chopra's time as U.S. Chief Technology Officer from 2009–2012.
- **Good Services: How to Design Services that Work, *Lou Downe*.** Lou Downe is the Director of Housing and Land transformation for the UK Government. They are at the forefront of the government service design movement. This is the first book that describes what a “good” service is and how to design one.
- **A Civic Technologist's Practice Guide, *Cyd Harrell*.** Immensely practical, this book highlights the types of projects, partnerships, and people that civic technologists encounter, and the methods they can use to make lasting change.
- **Leading Change, *John Kotter*.** This book remains a go-to for organizational change management. The 8-step process outlined here is foundational for leaders and organizations that require organizational change to effectively achieve their goals.
- **Open Government, *Daniel Lathrop, Laurel Ruma*.** This is one of the original books that ushered in the Gov 2.0 wave, and is still worthwhile as a foundational explanation for why transparency and open data are fundamental and important.
- **Power to the Public, *Hana Shank, Tara Dawson*.** Published just before this document and can be found [here](#).

PODCASTS

These podcasts provide compelling examples and stories focused on one or more competencies identified in this guidebook. While some are focused on stories within companies rather than the government, all offer key strategies to consider that can translate across context and competencies.

- **The Friction Podcast**: This podcast features Stanford Engineering Professor Bob Sutton as he shares insights that improve the way we work. Two directly applicable episodes are:
 - » Change Management: **Over, Under, Through: Fixing Government Friction**, Featuring Jennifer Anastasoff, Co-Founder, Tech Talent Project.
 - » Dev-Ops: **The Spreadsheet Troll: Tales of Silos and Scaling**, Featuring Eric Ries, author of *The Lean Startup*.
- **Gov Actually**: This podcast, hosted by Dan Tangherlini, former head of GSA, and Danny Werfel, a director with the Boston Consulting Group, explores how the federal government works from the perspective of operations, processes and systems in government. Two directly applicable episodes are:
 - » Modern Procurement: **The “Dave” episode**, A breakdown of the famous budgeting scene, and why it would never happen in government.
 - » Modern Procurement: **How the government buys things (And why it does it the way it does)**, Dan and Danny discuss federal acquisition and why it’s frustrating and exhaustingly long at times.
- **Masters of Scale**: This podcast has guests who have been closely involved in the key inflection points of scale in their respective companies. The episodes are useful to consider and discuss, but methods of scale for the private sector need to be reviewed carefully as they do not necessarily crossover. Three directly applicable episodes are:
 - » Tech Informed Decision Making: **Megan Smith: How to solve an impossible challenge**, Megan Smith former U.S. CTO notes “if you include everyone, you can fix nearly everything.”
 - » Change Management Innovation: **Shishir Mehrotra: Your Company Needs New Rituals**, Mehrotra Former VP at YouTube urges listeners to “Design your teams, your rituals, your systems. What do you want to encourage or discourage?”

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