Better Government + Innovation

Playbook

Toolkit

Case Studies

GSA

January 2018

About this Publication

This research and project was co-created with hundreds of innovators across the Federal government and is housed in the General Service Administration's Technology Transformation Service and maintained by the Office of Products and Programs.

The information collected in this document is a printable form of the Innovation.gov Beta website that launched in January 2018. This site houses a Playbook that outlines the principles via a Playbook, of public sector innovation as crowdsourced by hundreds of innovators in the federal government, a Toolkit and Case Studies that further defines and shows how innovation is being applied in government, and how to join the Better Government Movement. To learn more about Innovation.gov and the Better Government Movement, read the section below.

Development Timeline

- October 2015: The Strategy for American Innovation is released, which states that *"The Administration is creating an Innovation Toolkit to facilitate the broader adoption and awareness of a core set of innovative approaches. The Innovation Toolkit will consist of high-quality online resources that explain how and why these approaches can yield important results for the American people."*
- December 2015: The General Services Administration funded a research project through its initiative called "The Great Pitch"
- Spring 2016: 18F Discovery Sprint, led by Amy Wilson and Alan Brouilette,
- Spring-Summer 2016: Teams in Fellows in Innovation, a coalition of fellows across the executive branch of the federal government, start foundational research
- Summer--January 20, 2017: Research is completed through General Services Administration, the Executive Office of the President, and the Policy Design Lab
- Fall 2016: Amy Wilson joins full time as the leader of the Toolkit
- December 2016: Prototype of the Better Government Toolkit is created
- 2017: Launched Innovation.gov Alpha and Founded the Better Government Movement
  - Convened more than 1,000 people from 89 agencies through 15 co-creation workshops and two design-a-thons
  - Built the movement: 120 active participants
  - Co-created six plays/principles and 15 reports in four verticals
  - Created a Community of Practice to learn, share, and build
  - Built a network of nearly one hundred mentors, coaches, facilitators to catalyze change
- January 2018: Innovation.gov Beta launches with the Better Government Playbook and Toolkit

About Innovation.gov + The Better Government Movement

About Innovation.gov

Innovating in the public sector requires a new kind of mission-oriented thinking and perspective. We're a website built by government innovators to build awareness and spread the use of innovative practices and methods within government. Innovation.gov exists to:

- Inform people inside and outside of government of the kinds of innovation/change happening in government
- Educate people in government about how they can innovate (roadmap to innovation)
- Connect others across the silos of government to create "better government" in a holistic way

This open source project supports dozens of agencies spanning thousands of government employees, and is supported by more than 200 active contributors across government and beyond.

The people working to implement and advocate for innovation within the Federal government are experienced in research, networking, "bureaucracy hacking", and figuring out how to get things done with limited resources. We're developing out a product that iteratively figures out how to serve their needs -- not just a standalone toolkit "product", but a useful web resource combined with community and human interaction, which would grow and iterate over time.

Below is a screenshot of the Innovation.gov Beta page:

About the Better Government Movement

We created the Better Government Movement on the proven concept that culture change requires a movement and not a mandate. With our community of thousands of innovators, we're working to co-create a better and more modern government. This includes sharing stories within our open community of innovators to shape a better understanding of problems and build custom, agile solutions. We share stories of when we fail, experience small and big wins, and of how to work across the government. We also:

- Build 21st century, delivery-driven government.
- Create an inclusive space where public servants can grow their creative capacity and learn new tools to jumpstart innovation to solve government-wide problems and affect positive change within their organizations.
- Practice what we preach and preach what we practice.

On our website, we have a playbook explaining the core principles of innovation; a toolkit that provides a comprehensive set of methods, approaches, and resources; and various opportunities to actively engage in the Better Government Movement.

How We Spur Culture Change

Culture changes from the inside out. It starts with a shift in thinking and is followed by a change in behavior, doing. We believe that a better government hinges on exposure and partnership with the public sector. Yet, the government needs to shift their thinking to build that relationship.
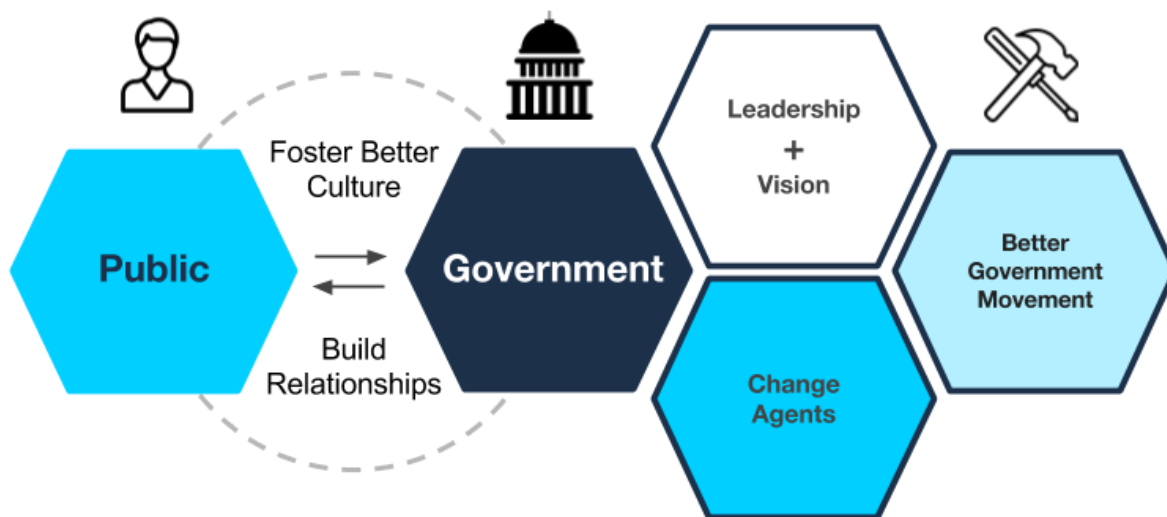
We are committed to creating a paradigm shift. Our vision is set through three pillars:
1. Establishing strong leadership and vision
2. Creating core definitions, knowledge base, and understanding the citizen-government journey
3. Teaching and empowering change agents to be catalysts within their organizations

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Steve Blank, Founder of Lean LaunchPad & Lean methods, Adjunct Prof. Stanford
Christie Canaria, National Institutes of Health (NIH)
Lydia Mcclure, National Science Foundation (NSF)
Lili Portilla, NIH
Michael Weingarten, NIH
Ken Wright, White House Leadership Development Fellow, OSTP
Marc Wynne, OSTP

Human-Centered Design
Lissan Anfune, CFBP & HHS
Virginia Hamilton, DOL
Joshua Marcuse, Defense Innovation Board (DIB), Office of the Secretary of Defense (OSD)
Michelle Ramsden, PMF Fellow, IGP & ICE

Chief Innovation Officer
Seema Patel, Global Development Lab, USAID
Matt Dunne, former COO, Department. of Energy (DOE)
Bryan Sivak, former CTO, HHS

Deploying Innovation
Lynn Buquo, NASA
Camron Gorguinpour
Christopher Gunderson Adaptive Acquisition
Virginia Hamilton, DOL
Andrea Ippolito, Lead for VA Innovators Network, VACI
Carol Lundquist, Researcher
Jim Macrae, HRSA
Joshua Marcuse, OSD
Kevin Mctigue, HHS
Joanie Newhart, OMB, OFPP
Sandeep Patel, Open Innovation Manager, HHS
Traci Walker, USDS
Dan Ward, Lt. Col, USAF (ret.),
Will Yang, Innovation Consultant, HHS
Dave Zvenyach, Technology Transformation Service Acquisitions

Evidence-Based Policy Making
Diane Epstein, OMB
Anne Healy, USAID
Maryann Feldman, NSF
Molly Irwin, DOL

Public-Private Partnerships
Melissa Bradley, Social Innovation Fund, Corporation for National and Community Service (CNCS)
Matt Corso, USAID
Julia Wolf-Rodda, Foundation for the National Institutes for Health (FNIH)

Aligned Commitments
Joe Kochan, US Ignite
Nick Maynard, US Ignite
Talia Milgrom-Elcott, 100Kin10

Tiered Grantmaking
Diana Epstein, OMB
Maryann Feldman, NSF
Anne Healy, USAID
Molly Irwin, DOL

Grand Challenges
Randy Atkins, National Academy of Engineering (NAE)
Jenn Gustetic, NASA
Seema Patel, USAID

Tour of Duty
Katika Floyd, OPM
Arianne Gallagher, OMB
Bernie Kluger, OPM

Prizes and Challenges
Jay Benforado, Chief Innovation Officer, EPA
Lynn Buquo, Manager, COECI, NASA
Kelly Olson, Director Innovation Portfolio, GSA

Citizen Science
Jay Benforado, EPA
Chris Nelson, OSTP
Kelly Olson, GSA

Engaging Startups
Brenna Krieger AAAS Science and Technology Policy Fellow, Clean Energy Manufacturing Initiative

Ruth Sibon, NASA
Will Yang, HHS
Dave Zvenyach, Technology Transformation Service Acquisitions

Innovation Labs
Matt Corso, USAID
Andrea Ippolito, VACI
Lorin Kavanuagh-Ulku, Senior Advisor for Grand Challenges for Development, U.S. Global Development Lab, USAID
Sanjay Koyani, Senior Advisor, HHS CTO
Kevin Mctigue, IDEA Lab Innovation Coach, HHS
Sandeep Patel, HHS

Seema Patel, USAID
Will Yang, HHS

Toolkit Volunteers
Amira Choueiki Boland, GSA
Loretta Kuo, Federal Trade Commission
Laura Rabuck, Department of Veterans Affairs
Terica Scott, Centers for Disease Control and Prevention
Achaia Walton, Broadcasting Board of Governors
Nick Weber, National Institutes of Health
Lori Winterfeldt, Department of Veterans Affairs

Better Government Design-a-Thon Attendees

Lindsay Aaronson
Bernadette Adams
Sachin Agarwal
Alexander Aguiler
Terry Ahmed
Margeaux Akazawa
Rebecca Allegar
Katie Aloisi
Desha Anderson
Paul Andron
Tiffany Attaway
margo bailey
Amber Baum
Karlyn Beer
Julia Begley
Jay Benforado
Jessica Berrellez
Jack Bienko
Bethany Blakey
William Brantley
Phoebe Brauer
Jessie Buerlein
Josh Burgess
Yousaf Butt
Casey Canfield
Blake Carlton
John Carr
Amy Cesal
Leah Chan
Amber Chaudhry
Tina Chen
Eric Cho
Maria Collins
Dan Correa
Matthew Corso
Natasha Coulouris
Juliana Cyril
Ben Damman
Amanda Dean
Wei Ding
brandon dube
Daniel Duplantier
Alisha Earle

Dan Elbert
Latecia Engram
Stephanie Feldman
Erika Franz
Diana Galperin
Tori Garten
Thomas Giancola
Laura Gravesen
Courtney Greenley
Terrence Griffin
Eric Harris
Anne Healy
Samuel Hedlund
Andrea Heiss
Matthew Hennessy
Samantha Hinz
Felicia Hodge Denison
Caraleigh Holverson
Michelle Ibarra
Gabriel ILiadis
Joel Islam
T. Natasha Isler
Vishal Iyer
Natasha Jackson
Teresa Jackson
Garth Jensen
Demarquin Johnson
Christine Johnson
Lydia Jones
Leann Katz
Michael Knight
Angela Kolesnikova
Gwynne Kostin
Alexander Kostura
Maia Laing
Kevin Larsen
Sophia B Liu
Linda Lynch, PhD
Mangala Manivannan
Brent Maravilla
Joshua Marcuse
Sharon McAleer
Michelle McBee
John Miller
David Miller
James Miller
Jessica Miller

Emily Mitchell
Kat Mullens
Sandra Naoom
Thomas ONeill
Andrey Ostrovsky
Melody Parkhurst
Seema Patel
Alice Pennaz
Vikki Porter
Laura Prestia
Tiffany Pryce
Richard Puddy
Mishu Rahman
Leila Rassi
Emily Read
Erica Reott
Nathan Roth
Erin Schnettler
Delonda Scott
Christine Sharp
Gyami Shrestha
Courtney Silverthorn
Bishen Singh
Jessica Skretch
Everett J Smith
Joe Suh
Roselyn Thalathara
Elaine Thomas
Jim Thompson
Renni Thornton
Tommi Tyler
Ivette Vigano
Wendy Walsh
Kenneth Walton
Nick Weber
Joanna Widzer
Star Wilbraham
Matthew Wilchek
Andrew Wilson
Stephanie Wilson
Abbey Wojno
Adam Wong
Aileen Wu
Maggie Yancey
Alycia Yozzi
Andrew Yuen

Public Sector Innovation Playbook

When we think of "innovation," we may first think of the private sector and Silicon Valley creating ideas, products, and tools that continue to advance our thinking and change the way we do things for the better. As this most often occurs outside of the government and not within, government has a tremendous opportunity to catch up with the progress made by the centers of innovation in sectors of industry and academia.

This deficiency within government is not driven by a lack of intelligence or ability, but rather by a lack of incentive for federal innovators and a federal culture that does not support innovative practices and mindsets, whereas many facets of the private sector promotes, rewards, and embraces it.

What is Public Sector Innovation?

Defining Innovation in the public sector is not about bringing what works in other sectors and bringing it over to the public sector and expecting it to work in the same way. In the private sector, what fuels innovation is growth and more market share. In government agencies, mission impact and being good stewards of taxpayer's money drives innovation. Therefore, incentives to innovate are very different. Underlying both of these incentives is deeper impact and creating innovations that people love and want to keep coming back.

Based on our research, we have defined public sector innovation in the following way:

> *Innovation is a product, program, service, or process that is new, creates value and changes the status quo of government services. To be impactful, innovations must also be scalable, not merely one-off novelties.*
>
> *Federal government innovation means delivering a better government for and WITH the People.*

Public sector innovation is split between four main categories of innovation, based on how might we as a government:

Category	Types of Innovations
Create a 21st Century Culture and Workforce	● Better hiring practices: hiring a Chief Innovation Officer, Tour of Duty hiring ● Improve ways that contracting and acquisitions is done ● Incentivize people to innovate and overcome barriers to innovation
Improve Government Services Delivery	● Support creation of innovative labs, programs, and services; evangelize proven innovative disciplines, methods, and tools. Hire top talent to lead innovation. ● Encourage data-informed decision making and evidence-based approaches to contribute to your transformation story. ● Design citizen- and user-centered programs, products and services that speak directly to the public's needs.
Solve Complex Problems	● Identify and pursue grand challenges of the 21st century to address national priorities and tackle societal problems. ● Lessen siloed thinking across government and encourage cross-agency collaboration to address common government challenges and share expertise. ● Lead research and design to solve current challenges and look at what's ahead to solve the challenges of the future.
Collaborate with Innovators Inside and Outside Government	● Harness the creativity of the public through incentivized competitions/challenges. ● Empower innovators with open and machine-readable Federal data. ● Launch high-impact multi-sector collaborations.

Meeting the Innovation Imperative

The power of the federal government is in the reach and scale of its work. That reach and scale creates opportunities and challenges for innovation. Meeting the innovation imperative within government is not about launching ever-greater numbers of pilot projects that don't grow. It's about developing cultural norms and practices that support increased awareness, adoption, and adaptation of successful innovations systematically across the entirety of government.

Moreover, innovation is not a process with a fixed beginning and ending. It is the presence of a culture within an institution that prompts continuous action to improve processes to meet goals. Innovation is about encouraging a problem-solving mindset organization-wide, and using new tools and approaches to achieve greater mission impact.

We have narrowed down a deeper definition of innovation with the six plays that are located in this Playbook. The plays listed here were co-created over a series of workshops with more than 1,000 public sector innovators in Spring 2017.

Play 1: Everyone can build a better government

Building a better government is not limited to "innovation professionals." Great ideas come from all walks of life and innovation works best for everyone when everyone can participate and provide feedback. Incentives, accountability, and a sense of urgency can encourage the government and the public to work on and collaborate towards meaningful solutions. Identify and replicate proven methods that deliver more responsive and effective results; explore opportunities to apply them to your work. To enable innovators of all kinds, regularly question your methods and think about how you can do your work better.

Questions to Ask

- How can you inspire disengaged employees/colleagues to want to innovate?
- Is your work effective in producing the intended results?
- Which potential areas for improvement can you identify?
- How can you implement an idea when you lack required resources or skills?
- Do you see any other agencies or entities conducting work more effectively?
- What aspects of other agencies' successes are transferable to your agency?
- What resources are available to help facilitate solutions?
- Are the innovative methods you are implementing having a positive effect? If not, how can you more effectively facilitate change?
- Are you/is your leadership fostering an innovative environment?
- What is the business case for investing in training on innovation?
- Are staff members encouraged to offer solutions?
- What changes can be made to your office environment that would make it more conducive to innovation?
- How do you foster a sense of urgency without creating stress (which can reduce innovation)?

Checklist

- Regularly evaluate your work to determine whether you are most effectively delivering your intended results.
- Identify potential areas for improvement. If you are not sure, ask coworkers, or, if possible, your "customers" for their opinion.
- Identify existing solutions and evaluate their potential for impact in your office.
- Identify incentives to foster innovation in your office.
- Identify quick wins that can help obtain leadership buy-in.
- Choose people (colleagues, supervisors, leadership) and resources to facilitate your solutions.
- Identify proven solutions and pilot them
- Implement your solutions.
- Regularly evaluate the success of your solutions and whether other areas for improvement have arisen as a result of innovation.
- Encourage open dialogue about areas for improvement and innovative solutions.

Play 2: Keep your user at the center of your design

For the most part, government products and services are designed to benefit the public at large. Therefore, it is important to understand and consider the "customer" (here, the public's) needs in designing and conducting innovation. This concept is called "Human Centered Design" (HCD) or Design Thinking, which involves the following:

- Take the time to define and understand the customer you're trying to reach.
- Measure your customer's journey through your program, project, product, or initiative and always seek to improve the customer experience.

Questions to Ask
- Who are your customers and what are their primary concerns?
- How can you communicate with your customers to obtain information and measure the urgency of needs? How can you remain within bounds of federal requirements like the Paperwork Reduction Act?
- How do I keep the focus on your customer?
- What steps can you take to improve the focus of your solution?
- Are your solutions addressing the customer's needs or your own idea of a best product?
- Are your solutions one-size-fits-all or do they need to be customized?
- What does the customer think of your product or service? How can you measure the user experience?
- How can you assemble a diverse and representative sample of customers to engage?
- How have the implemented solutions affected your customer?

Checklist
- Define your "customer." Who is the audience your product or service intends to reach?
- Group customers and develop personas to hypothesize about your customers' needs.
- Create interview questions and interview the customer to determine what their needs are and how your product or service can best improve their experience. When in doubt, ask the customer.
- Ask "what if" questions to test your assumptions.
- Brainstorm ideas based on your interviews. Share stories with your team to inspire their ideation.
- Design solutions to address your customer's primary needs.
- Test the solutions with your customer. Solicit and implement their feedback.
- Continue refining your product or service based on customer feedback (iterate!)

Play 3: Embrace change and experiment

In order to create a better, modern government we need to challenge the status quo, often through innovative methods that require learning through failure. Innovation is a unique field in which failure is an expected and positive force. When you fail, you learn your limits and can actively adapt your innovation to enable best success. When you bias toward experimentation, you:

- Use quick, low-barrier experiments to test assumptions, fail in small increments, and incorporate insights to make a better end product or service.
- Approach problems with a growth-mindset and stay flexible, improve and learn continuously.

Questions to Ask
- Who are the change makers in your organization?
- How do people currently obtain the product or service and are there ways to improve their experience?
- How can we 'experiment' when program cycles are lengthy and limited by statute?
- Which solutions could be implemented to improve the user experience?
- What are the minimal changes required for each potential solution to be effectively tested?
- Did the minimal changes make a positive, neutral, or negative impact?
- If the tested solution did not make a positive impact, which other solutions could you test?
- How much testing can you do before determining that the product is failing as is?
- If the product is failing, how can you pivot?

Checklist
- Understand the different ways people obtain the service.
- Identify key barriers to adopting changes within your organization.
- Identify mechanisms for quick, low-risk experiments.
- Assess the product for areas needing improvement.
- Consider which changes could improve the user experience.
- Take minimal steps to implement each solution.
- Test the product again to determine whether the solution was beneficial. If so, repeat the above.
- If not, try another solution.
- If several solutions do not improve the product, pivot.

Play 4: Collaborate with partners

Diversity of backgrounds and thought makes for better overall experience, products and services. To build a culture of collaboration look outside of your team or organization's silo to deliver your mission, and include them in your process to co-create the future. Also, celebrate the successes as well as the failures.

Questions to Ask

- What are the rules with regards to engaging non-feds in public policy, program and service design?
- Whose feedback are you soliciting in evaluating the efficacy of your work?
- Are you speaking to your leadership? Staff? The "consumer"?
- Is your work producing results for the public, or does it simply look good "on paper?"
- Are you soliciting feedback from a diverse group of individuals? In terms of stature, age, race, ethnicity, religion, and other factors? Differences in perception are critical to identifying areas for improvement.
- How do I manage the conflict that comes with diversity?
- Are you including a diverse group of individuals in the brainstorming and solution processes?
- Who is evaluating your work or product?
- How can you learn from external partners?

Checklist

- Open lines of communication between staff and leadership.
- Contact innovators with the community (18F, Presidential Innovation Fellows, United States Digital Services)
- Open lines of communication with the public.
- Solicit, consider, and implement the feedback and solutions offered by your stakeholders. Move beyond mass emails. Set up telephone conversations and, wherever possible, in-person interviews.
- Include stakeholders in all stages of innovation, from the evaluation of your services to evaluation of the solutions.
- Consider the successes of external partners and ask your stakeholders how your agency can replicate those successes.

Play 5: Let data inform your decision making

Data is more available than ever before, and is used by government, civil society, and the private sector to improve processes, products, and services. Data presents an incredible opportunity for innovators to track and analyze progress and results in near-real time. To conduct data-driven design:

- Focus on measurable outcomes that reasonably define changes from the status quo.
- Monitor progress and, whenever possible, use counterfactuals to determine if what you are testing is responsible for success or failure.
- Track costs and quantify benefits to evaluate return on investment.
- Give important context to quantitative results by using qualitative data to describe the problem you are trying to solve and tell the story of implementing the innovation.
- Don't be afraid to fail but continue to test and measure results.

Questions to Ask
- How are you defining success (and failure) at the beginning of the project?
- Which data points are indicative of overall success? Failure?
- Are changes to the data the result of innovation? Or external factors?
- What are the benefits and costs of the evidenced changes?
- Do the changes evidence success or failure? Tell the story.
- Which solutions could be implemented to facilitate greater success?

Checklist

- Consider the quality and relevance of potential data sources.
- Hypothesize about which data points should change to achieve success.
- Develop methods to measure the changes to those data points over time.
- Determine whether the changes to the data are the result of innovation or external factors.
- Repeat this process while considering previous results.
- Determine whether the changes to the data evidence success or failure.
- Consider which solutions could be implemented to facilitate greater success and implement those changes.

Play 6: Innovation is not a one-size-fits-all approach

Innovation and creativity is a messy process and is not the same every time. Innovations can be small an impactful, and systemic change is long and slow. To customize innovative methodologies to meet your own needs, be deliberate about the kinds of innovations you want to do. Learn from others, but forge your own path.

- Which methodologies are best suited to the type of innovation you are pursuing?
- Can you improve upon existing methodologies?
- Can you share those improvements more widely to facilitate greater innovation elsewhere in government?
- What lessons have you learned from innovating?
- How can your approach be refined to reflect those lessons?

Questions to Ask
- How are you defining success (and failure) at the beginning of the project?
- Which data points are indicative of overall success? Failure?
- Are changes to the data the result of innovation? Or external factors?
- What are the benefits and costs of the evidenced changes?
- Do the changes show evidence success or failure? Tell the story.
- Which solutions could be implemented to facilitate greater success?

Checklist
- Consider which methodologies are best suited to your particular need.
- Consider how those methodologies can be modified to better meet your need.
- Implement modified approaches where applicable. Remember: even innovative processes can be improved upon. That is innovation!
- Consider how these modifications may improve innovative processes for others.
- Take note of previous failures for consideration in designing future innovation.

Public Sector Innovation Toolkit

Build a 21st Century Culture and Workforce

- Culture of Innovation
- Innovation Lab
- Chief Innovation Officer
- "Tour of Duty" Hiring
- Acquisitions and Procurement

Improve Government Services Delivery

- Human-Centered Design
- Agile
- Lean Startup
- Evidence-Based Decision Making

Solve Complex Problems

- Communities of Practice
- Grand Challenges

Collaborate with Innovators

- Public Engagement
- Startup Engagement
- Prizes and Challenges
- Crowdsourcing and Citizen Science

21st Century Culture and Workforce

Creating a Culture of Innovation

"Everyday Americans deserve a way of thinking that empowers rather than divides, that confronts challenges rather than creating them, that solicits all types of expertise rather than espousing tired approaches."

-Aneesh Chopra, former U.S. Chief Technology Officer

Summary

Purpose and Outcomes
Purpose: Innovation in the federal government involves encouraging a problem-solving mindset in your organization and empowering your employees to use modern tools and experiment with new approaches to achieve greater mission impact.

Motivated innovators across federal agencies have pioneered approaches that deliver better results at lower cost for the U.S. public. However, only 31 percent of federal employees feel their agency rewards creativity and innovation according to the Office of Personnel and Management (OPM) 2017 Federal Employee Viewpoint Survey. This is a decrease of 6 percent from the 2015 survey results.

Government innovators need support at all agency levels to effectively introduce, test, and scale promising programs and solve challenging problems. An innovative culture's ultimate goal is to learn and share the skills and capabilities that can help us do our work more effectively.

Examples
- Digital IT Acquisition Professional (DITAP) Training from Office of Federal Procurement Policy (OFPP) and U.S. Digital Service (USDS). Using human-centered design (HCD) principles and agile methods for software development are very different from traditional waterfall methods for development. The OFPP and USDS created DITAP to train contracting professionals on how to develop appropriate acquisition strategies for procuring digital supplies and services.

- Health and Human Services (HHS) IDEA Lab Innovates Awards identified and celebrated employee-led innovation at HHS from 2010 to 2015. HHS employees nominated and voted on the top innovations. The winning innovators were personally recognized by HHS leadership at an annual awards ceremony and received media recognition and cash prizes for their work.

- The HHS Ignite Accelerator is an internal innovation startup program for HHS staff. Started in July 2013, the program allows employees to develop bold ideas to improve how their program, office, or agency works, and to infuse entrepreneurial approaches into their work. Selected teams receive design thinking and lean start-up training during a three-day boot camp, followed by coaching and technical guidance over three months to help teams define and test creative ideas in meaningful ways.

- Veterans' Affairs (VA) Spark-Seed-Spread Innovation Funding Program supplies VA employees with supportive pathways to design and deploy thoughtful solutions to tough challenges. It provides training opportunities for VA employees to learn innovation-related skills like human

centered-design (HCD), access to three different types of funding grants, and mentorship support to develop and test innovation projects.

Approach

Tactical strategies are required to effectively encourage adoption, adaptation, and deployment of innovation within an agency. Innovators at all levels of government use various approaches:

Support change seekers institutionally
- Become or ally yourself with high-level champion and advocates
- Use policy guidance to empower
- Create different types of infrastructure that make new approaches easy
- Link the broader performance management agenda with specific innovative tools

Create enabling environments
- Create new organizations, such as centers of excellence and accelerators
- Charter an innovation council to build capacity and consensus of broader adoption of particular approaches
- Use accelerators to pilot new ideas

Have incentives and reward experimentation
- Formally recognize innovators through awards and acknowledgement
- Create incentives for adoption of innovation
- Link broad goals to individual performance plans

Foster a culture of learning
- Create high quality, updated, online resources that help federal employees
- Use experiential learning in professional development and training
- Foster communities of practice

Actions and Considerations
 Use these key tactics when trying to encourage a new idea or process improvement:
- Start small, and let success build on itself. Start with well-documented early wins (i.e. evidence, rather than simply inspiration, provided by small piloted successes.)
- Have multiple approaches to engage community: Leaders can use a public platform to spotlight an issue, but have a concurrent bottom-up (or out) strategy.
- Establish accountability: Make people commit to doing things in front of the highest levels of leadership.
- Look for allies: Take a team approach.
- Build community and networks: Build communities of practice (CoP) in your own agency and work up to interagency CoPs.

Policies

- American Innovation and Competitiveness Act of 2016
    - Expands the use of challenges and gives the authority for any federal government agency to work cooperatively with and pool funds from multiple government agencies and profit or nonprofit private-sector entity, state, tribal, local, or foreign government agencies and higher education institutions.
- America Competes Reauthorization Act of 2010

- - Established authorities for all federal agencies to offer incentive prizes and run challenge competitions "to stimulate innovation that has the potential to advance the mission of the respective agency."
- [Principles for Federal Engagement in Standards Activities to Address National Priorities](#) OMB, M-12-08, January 17, 2012.

- The White House, "[A Strategy for American Innovation: Driving Towards Sustainable Growth and Quality Jobs](#)," September 2009.

- The White House, "[Memorandum for the National Science & Technology Council Committee on Technology – Subject: Winning the Future through Open Innovation](#)," June 8, 2011.

- The White House, "[A Strategy for American Innovation](#)," October 2015.

Resources

- Andy Feldman, "[A primer on the Commission on Evidence-Based Policymaking's recommendations: An interview with Nick Hart, Bipartisan Policy Center – Episode #160](#)," GovInnovator, October 3, 2017. Conversations on useful practices and insights from public-sector innovators and experts, hosted by Andy Feldman, a Visiting Fellow at the Brookings Institution and former Special Advisor for Evidence-Based Policy at OMB.

- HHS IDEA Lab, "[Innovation as a Problem Solving Tool in Government](#)," 2016. An overview of how HHS has deployed innovative approaches to deliver on its mission.
- U.S. Government Accountability Office, "[Data and Analytics Innovation: Emerging Opportunities and Challenges (GAO-16-659SP)](#)," September 2016. GAO convening summary of the emerging innovation opportunities presented by big data and analytics.
- [Stanford's e-Corner](#): Contains several conversations, videos, and podcasts with leading innovators and entrepreneurs.
- The White House, "[Memorandum for the National Science & Technology Council Committee on Technology – Subject: Open Innovator's Toolkit](#)," February 8, 2012. Former Chief Technology Officer (CTO) Aneesh Chopra lays out his vision for an innovation toolkit in government.

Launching an Innovation Lab

"Primarily it's creating the time and the space to be able to do it. That's minimal resources, but it's giving people the time and space to look at a problem differently, think about what potential solutions are, do a bit of research and then test and try out the new ideas to see if they work. Initial successes are also very helpful as success builds on itself."

- Jim Macrae, "Operationalizing Innovation"

Summary

Purpose and Outcomes

Purpose: Innovation labs create space for agency staff and key external stakeholders to imagine, test, and scale new ways to address their most difficult challenges.

The labs are designed to encourage more rapid exploration, embracing periodic failure as an integral part of any learning process. If something doesn't work right the first time, you need to try again and do it differently the next time.

Innovation labs have surfaced across the federal government in recent years. They bring together savvy problem solvers to increase innovation capacity within their agency.

Benefits of federal innovation labs include:

1. Creating solutions to solve specific challenges
   Labs focus teams on solving high-priority problems and developing usable and scalable solutions. Agency staff often work with employees across government and citizens alike to take part in co-creating innovations.
2. Engaging citizens, nonprofits, and businesses to find new ideas
   Labs open up their agencies to new ideas sourced from anywhere. By pairing open innovation approaches like crowdsourcing or challenges with robust engagement strategies, labs become a conduit for new ideas and new solutions to be brought in from the outside.
3. Transforming government processes, skills, and culture
   Labs transform an agency by acting as a centralized hub for innovation. Labs build their agency's internal capacity to adopt and deploy new approaches by providing how-to blueprints, coaching, and training.
4. Achieving wider policy and systems change
   Labs also look beyond specific projects and challenges to help shift the policy context in their agency. Lab staff can help encourage systemic change.

Examples

Several agencies have developed their internal innovation capacity through innovation lab models including:

- HHS IDEA Lab at the Health and Human Services (HHS)
- Lab @ OPM at the Office of Personnel Management (OPM)

- [U.S. Global Development Lab](#) at the U.S. Agency for International Development (USAID)
- [VA Center for Innovation](#) at the Veterans Administration (VA)

Approach

Before creating an innovation lab, carefully evaluate whether existing offices or programs can help realize their mission more effectively. The agency's mission ultimately affects every aspect and decision from human resources and budget to partnerships and communications. Decide whether an agency's mission and its structure will support an innovation lab.

Actions and Considerations

Consider the following questions when establishing and structuring their own innovation labs.

How strong is your agency's commitment to establish and support an innovation lab?

The agency must provide a minimum commitment of support to meet the lab's goals. In addition to financial resources, agency leaders should also consider technological and human capital needs, among many others. Simply assigning more responsibilities to a current team member may not be enough to accomplish the lab's goals. Labs may be staffed by dedicated teams or by part-time volunteers from across the agency. Innovative hiring mechanisms such as hiring part-time employees, contractors, fellows, or interns can be used to supplement traditional hiring or full-time employees.

Your lab should develop partnerships with the following offices within your agency as early as possible in order to ensure effective support:

- Office of the General Counsel (OGC)
- Office of the Chief Financial Officer (OCFO)
- Office of the Chief Human Capital Officer (OCHCO)
- Office of Communications and Outreach (OCO)
- Office of Management
- Office of the Secretary/Administrator

How can you engage the public to support your lab's mission?

Engage potential partners and their resources across government and the public/private partnerships to support your lab. Other agency labs and the government Communities of Practice (CoPs) can provide valuable resources and partnerships. Private and philanthropic organizations or the research community can enhance existing resources and capacities for your lab using public-private partnerships and aligned commitments.

How will your agency's leadership support your lab?

Determine whether your agency's leaders have the political desire to risk establishing a lab. Assessing the political support is not a simple checklist of interagency agreement to launch a lab. Your lab is more likely to succeed over the long term if agency leaders support it. If they don't, your lab will fail.

How do innovators submit ideas to your lab?

Identify how your lab will get, generate, solve, and implement ideas from innovators. Labs may opt for an open-door policy when it comes to receiving ideas and involving employees in implementation;

others may prefer to receive an application or proposal. Labs may also engage external stakeholders using prizes and/or challenges. In some cases, project proposals come from agency leadership; others depend on a bottom-up approach.

Where should the lab be located?

When creating your agency's innovation lab, consider the physical location as well as the agency's organization. The lab's location can create or diminish a collaborative culture. Consider the organizational hierarchy to gain the most benefit and support from agency leadership.

How should we market the lab within the agency?

Once your lab is established, consider how best to convey its presence and initiatives so it becomes an integral part of the agency.

- Develop marketing and communication strategies for internal and external messaging campaigns, find lab-specific training opportunities for employees, and create advising councils that publicize the lab's successes.
- Build employee interest in the lab through training opportunities, all-staff meetings, open houses, and new employee orientation.
- Gather metrics and share your success stories to build your lab's credibility and ensure its continued growth.

Policies

- Establishing innovation labs across the government will be critical to foster a culture of innovation. The White House National Economic Council and Office of Science and Technology Policy published A Strategy for American Innovation in October 2015. The policy asks agencies to develop a network of innovations labs capable of empowering and equipping agency employees and members of the public to implement their innovative ideas to more effectively serve the U.S. public.
- On March 9, 2016, the White House Office of Budget and Management sent the Acquisition Innovation Labs & Pilot for Digital Acquisition Innovation Lab memorandum to Chief Acquisitions Officers, Senior Procurement Executives, and Chief Information Officers announcing the new initiative to accelerate establishing acquisition innovation labs across federal agencies.

Legislation

- America Competes Reauthorization Act of 2010
  - Established authorities for all federal agencies to offer incentive prizes and run challenge competitions "to stimulate innovation that has the potential to advance the mission of the respective agency."
- American Innovation and Competitiveness Act of 2016
  - Expands the use of challenges and gives the authority for any federal government agency to work cooperatively with and pool funds from multiple government agencies and profit or nonprofit private sector entity, state, tribal, local, or foreign government agencies and higher education institutions.

- Presidential Innovation Fellows Program Act of 2016
  - Act establishing the Presidential Innovation Fellows (PIF) Program at the General Services Administration (GSA) to enable innovators to serve time-limited appointments in executive agencies. The PIF program was originally established under Executive Order 13704, August 17, 2015.

Resources

- Adam Grant, "How to Build a Culture of Originality?," Harvard Business Review, March 2016.
- Darcie Piechowski, "Beyond the Lab: Government Innovation in Unlikely Places," IBM Center for The Business of Government, August 1, 2016.
- Lawrence Molnar, David Lewis, and Elsie Harper-Anderson, "Incubating Success: Incubation Best Practices That Lead to Successful New Ventures," University of Michigan Economic Growth Institute, 2011.
- Lidia Gryszkiewicz, Tuukka Toivonen, and Ioanna Lykourentzou, "Innovation Labs: 10 Defining Features," Stanford Social Innovation Review, November 3, 2016.
- Rachel Burstein and Alissa Black, "A Guide for Making Innovation Offices Work," IBM Center for The Business of Government, 2014.
- Ruth Puttick, "Innovation Teams and Labs: A Practice Guide," NESTA Innovation Skills Team, December 11, 2014.
- UNICEF Innovations Lab Network, "UNICEF Innovation Labs: Do-It-Yourself Guide," November 6, 2012.

Hiring a Chief Innovation Officer

"People often feel that they are in a box where the lid is closing. It is hard to execute on ideas in a hierarchical system full of red tape."

- *Interview with Bryan Sivak, former Chief Technology Officer (CTO) at Health and Human Services (HHS), by the Science and Technology Policy Institute (January 29, 2015).*

Summary

Purpose & Outcomes
Purpose: Federal agencies can substantially benefit from having a Chief Innovation Officer (CINO) to serve as a catalyst for change to confront emerging challenges or improve the efficiency of decades-old service delivery processes.

A CINO serves as a beacon for innovation, working to harness, foster, execute, and manage innovative ideas. CINOs are force multipliers: these innovators teach and enable others, and spotlight staff doing or wanting to do innovative work. The role is also inherently flexible and sometimes includes ambiguous boundaries. A CINO's portfolio may be defined around an agency's priority needs. In broad terms, CINOs:

- Reframe problems to change thinking patterns
- Connect people and break down silos
- Celebrate innovative work within an agency, which encourages more of it

CINOs can be valuable assets for working to make an agency's priorities real, from leading agency-wide initiatives, addressing employee engagement and culture change, tapping employee ideas in innovative ways, and sometimes leading efforts to change core underlying processes and improve performance and efficiency.

Appointing a CINO can result in persistent, high-value benefits for agency leadership because the CINO's top priority is to focus on innovation and relentlessly drive it forward. These efforts can amplify any senior leadership's capacity for attaining an agency's mission. In times of tight budgets, CINOs act as change agents to transform an agency's operations.

Examples:
- Bryan Sivak launched several new programs that sit within HHS IDEA Lab including the HHS Ignite Accelerator and the Entrepreneur-in-Residence program, which brings external talent into HHS for a tour-of-duty (Source: Interview with Bryan Sivak by Policy Design Lab, July 27, 2016).

- For Chris Gerdes, just getting staff talking about and appreciating new approaches has been a significant step in shifting the Department of Transportation (DOT) culture – and approaches that may seem trivial can have big impacts. For example, Gerdes began carving out a few minutes in the senior leaders' weekly agency meeting to spotlight staff doing innovative work.

When Monday morning meetings began acknowledging and celebrating that new approaches were important and were succeeding, he received very positive feedback (Source: Interview with Chris Gerdes by Policy Design Lab, July 1, 2016).

- Having a separate innovation team like the U.S. Agency for International Development's (USAID) Global Development Lab generates more critical mass, bringing together best practices, and helping to evangelize across the organization. "It's much harder," former CINO Ann Mei Chang observed, "When people are trying to work in isolation to push the boulder up a hill rather than having a team and space to innovate together." (Source: Interview with Ann Mei Chang by Policy Design Lab, July 7, 2016).

- Matthew Dunne led The Quiet Clean Energy Innovation Revolution at the Department of Energy. He found Senior Executive Service (SES) employees support vital. When they authorize the employees they manage to invest time in innovative activities, such as participation in communities of practice (CoP) (Source: Interview with Matthew Dunne by Policy Design Lab, July 18, 2016).

Approach

There is no single definition for CINO roles; senior leaders have created and defined this role in the ways that best address their agency's needs.

In all cases, agencies must have a clear understanding of a CINO's mission, role, and authority within an agency, in order to attract the most qualified candidates and to enable them to succeed. Sometimes it may be more appropriate to promote operational innovation by designating an innovation "home" in key functional roles such as human resources (HR), legal, and acquisition.

In other contexts where the top priorities involve technology integration and deployment, a Chief Technology Officer (CTO) may also be a suitable leadership home for an innovation portfolio. Some agencies designate their Chief Information Officer (CIO) as the lead for identifying and implementing innovative activities.

For CINOs or any leader tasked with overseeing innovation, the position must have clear authority and direction to fully realize their potential impact.

Actions and Considerations

Federal agencies may wish to consider the following when establishing a CINO position:

- Checklist for defining the CINO's role
- Guidance and various pathways for hiring
- Implementation insights for setting up a CINO to succeed
- Sample job description
- Sourcing CINO candidates
- Traits of effective CINOs

Defining the CINO's role is critical. Once it is defined, an agency can better determine the job description, and which characteristics are most important in hiring candidates.

This checklist helps define the CINO's role:

- Clarify vision. Ask yourself why you decided to hire someone for this role. What are you trying to achieve? Are you willing to make this a fundamentally important role in your agency? Articulate your answers; it's an essential step for clarification. If you're just checking the box, then your innovation attempts will fail.

- Establish clear goals. At the outset, clearly define the CINO role, its expectations, and the measurements. Consider working with your incoming CINO to fully focus their job description.

- Remain flexible. An inherent amount of flexibility is essential. Thomas Wedell-Wedellsborg stated in [What It Really Means to be an Innovation Officer](#), "By now, it is widely recognized that if you are developing a new idea, you have to stay flexible in the beginning and be ready to deviate from the original plan. What fewer people realize is that this is equally true when you establish innovation units. Marry yourself too firmly to a specific setup, model, or metric at the outset, and trouble will soon ensue." (Source: Thomas Wedell-Wedellsborg, "[What it Really Means to be a Chief Innovation Officer](#)," Harvard Business Review, December 5, 2014). In a spirit of continuous learning, agency leaders may consider how to re-visit and re-evaluate the CINO's job responsibilities.

Under the [Intergovernmental Personnel Act (IPA)](#), personnel from other federal agencies, state and local governments, colleges and universities, Indian tribal governments, federally funded research and development centers (e.g., national laboratories), and other eligible organizations can be recruited to serve in a temporary position. The initial term can be up to two years, but it can be extended for another two years. The assignment may be reimbursable (e.g., the host agency reimburses all salary costs, travel, and administrative costs) or non-reimbursable.

IPA is a powerful but commonly misunderstood policy. The Office of Personnel Management (OPM) encourages agencies to [re-think the following IPA myths and misperceptions](#):

Myth	Truth
IPAs are a popular and widely used flexibility.	Agencies do not take full advantage of the IPA program that, if used strategically, can help agencies meet their needs for hard-to-fill positions such as information technology and nurses.
IPAs are cumbersome to use and require OPM approval.	Agencies do not need OPM approval to make assignments under the IPA authority. Federal agencies interested in using the authority simply enter into a written agreement.
IPAs are expensive to use.	Agencies may enter into IPA assignments on a reimbursable or non-reimbursable basis. This means they may be cost-neutral to

	federal agencies. Whether an IPA assignment is reimbursable is determined by the agency and non-federal entity involved in the assignment.
An agency may only enter into an IPA agreement with a state government entity.	An agency may enter into an IPA agreement with state and local governments, institutions of higher education, and Indian tribal governments.
Agencies receive no recruitment benefit from sending employees on IPA assignments.	Federal employees serving in IPA assignments can serve as both recruiters and ambassadors for positions in your agency. For example, federal nurses sent to colleges and universities as teachers/instructors can inspire students about federal employment and encourage them to consider employment with your agency via the Pathways Program. This results in a win-win for the academic institution as well as your agency.
An agency may document IPA assignments for full-time employment only.	An agency may document IPA assignments for intermittent, part-time, and full-time employment.

Policies

- [Institutionalizing Hiring Excellence to Achieve Mission Outcomes](). OMB M-17-03, November 1, 2016.

Resources

- Alessandro Di Fiore, "[A Chief Innovation Officer's Actual Responsibilities]()," Harvard Business Review, November 26, 2014.
- Beeck Center for Social Impact + Innovation, "[The Architecture of Innovation: Institutionalizing Innovation in Federal Policymaking]()," Georgetown University, October 2016.
- David Raths, "[Will the Chief Innovation Officer Transform Government?]()" Government Technology, January 31, 2013.
- Deloitte, "[Navigating legacy: Charting the course to business value, 2016–2017 Global CIO Survey: UK edition]()," 2016.
  - Provides overview of how CIOs create legacy and the value and impact technology leaders deliver to their organizations.
- Jeffrey Stinson, "[Chief Innovation Officers: Do They Deliver?]()" The Pew Charitable Trusts Stateline, February 6, 2015.
- Matthew Steppe, "[The Quiet Clean Energy Innovation Revolution at the Department of Energy]()," Forbes, January 7, 2013.
- Thomas Wedell-Wedellsborg, "[What it Really Means to be a Chief Innovation Officer]()," Harvard Business Review, December 5, 2014.

Tour of Duty Hiring Authorities

"You can do this too. We are not special snowflakes; these are hiring authorities that are available to every agency in government."
- *Jennifer Anastasoff, Founding Member at U.S. Digital Service*

Summary

Purpose and Outcomes

Purpose: Agencies have the authority to recruit and hire talented individuals on a temporary basis to help bolster strategic initiatives in their organization.

The quality of the people that federal agencies can recruit, hire, and retain has a decisive impact on public-sector performance. Recruiting outside talent is an important avenue for infusing innovative thinking and technologies into the federal workforce. Agencies should try harder to employ a diverse and talented workforce by actively recruiting individuals who can help build a more effective, efficient, and innovative government.

By leveraging temporary tour-of-duty employment opportunities (also known as details), federal agencies can tap into new talent willing to serve their country. Using flexible hiring authorities allows agencies to recruit executives, entrepreneurs, technologists, and other innovators willing to enter government service for a short period.

Examples

Use flexible hiring models to rapidly recruit top talent with specialized skills. Programs like the General Service Administration's [Presidential Innovation Fellows](#) and [18F](#), and the [United States Digital Service](#) (USDS) in the Executive Office of the President have successfully demonstrated the benefits of recruiting technical and design talent. These recruits significantly improve the delivery of digital services and experiment with new approaches to solve problems.

Agencies can gain similar benefits from using flexible hiring authorities to bring in domain experts in other critical areas besides digital technology, such as process improvement, data science and data-driven decision-making, financial innovation, human-centered design, open source, and agile approaches.

Agencies can quickly address critical skill gaps and further define their most pressing problems and stretch goals. For example, the U.S. Department of Health and Human Services (HHS) has an [Entrepreneur-in-Residence](#) programs to address some of the tough challenges the department faces.

Approach

Tour of duty is a temporary employment hiring process available under flexible hiring authorities. This approach allows agencies to meet critical hiring needs at a faster pace than the traditional federal hiring process.

Here are a few flexible hiring authorities that facilitate tour of duty hiring:

- [Direct Hire Authority](#) - with permission from Office of Personnel Management (OPM)
- [Expert and Consultant Pay](#)
- [Intergovernmental Personnel Act](#) (IPA)
- [Schedule A Part R hiring authority](#)

Understanding and properly using all available flexible hiring authorities can help each agency's human capital team meet agency hiring needs more efficiently. OPM offers [more guidance](#) on different hiring authorities and recruitment approaches.

An effective public service appeal directly asks prospective hires to use their tremendous skills to serve their country. Particularly with fellowship authority ([Schedule A sub-part R](#)), talent can be hired under two-year appointments with the option of extending another two years. The tour of duty model can appeal to talent with technical expertise who might not have otherwise considered public service.

Actions and Considerations

Follow these steps to recruit private-sector talent:

Step 1: Assess the type of program that fits your agency's hiring needs:

There are five specific reasons why you'd bring in a tour of duty hire--determine which of these your agency needs:

- Internship or fellowship programs provide developmental or professional experiences to individuals who have completed their formal education;
- Training and associate programs increase the pool of qualified candidates in a particular occupational specialty;
- Professional/industry exchange programs provide cross-fertilization between the agency and the private sector to foster mutual understanding and idea exchanges, or to bring experienced practitioners to the agency;
- Residency programs help participants gain experience in a federal clinical environment
- Assistance programs require a period of government service in exchange for educational, financial, or other assistance.

Consider using [Human Resources University's Hiring Decision Tool](#) to evaluate what you might need at your agency. The interactive questionnaire can help match potential hiring flexibilities with your agency's needs.

Step 2: Pitch your call to serve to private-sector talent

Recruit by using a call to serve. Effective appeals can include:

- Focus on the mission and emphasize outcome-driven goals.
- Highlight the amount of impact an individual can make through the position.
- Point to specific examples of similarly skilled people who have already had widespread impact.

Step 3: Adopt private-sector best practices to actively recruit top talent

The U.S. Digital Service (USDS) process has six essential stages:

1. Identify the most effective skillsets to address priorities. You'll need to do considerable internal work to understand and articulate the agency's talent gaps.

2. Identify who would excel at these skills. Ideal candidates will most likely not be looking for a job. Find them using the tools like LinkedIn, industry blogs, and networks to identify ideal candidates.

3. Use a network to discover and refer a diverse pool of candidates. Use a team approach to connect with experts from around the country and tap into the full range of potential talent.

4. Build relationships with target individuals. Invest time and social media/web resources to identify ideal candidates, initiate contact, present the opportunity, and convey the operating conditions and possible impact.

5. Communicate candidly, directly, and consistently via media and local recruiting events. Events like demo days and roundtables are key for persuading top talent to consider a public service tour of duty.

6. Create a responsive and strong candidate experience during the application and onboarding process. Design internal processes to make it easy to apply and quickly process applications and potential hires. Communicate frequently with the potential applicants to set up interviews and check on the hiring and security clearance process.

Step 4: Build talent pipelines through demo days and roundtable events
Use demo days and roundtable engagements as two elements in an active recruitment process. For example, the USDS hosts demo days across the country where multiple agencies showcase completed projects to potential candidates. Their talent team host follow-up roundtable discussions of individual case studies with 10 to 12 potential candidates. Candidates are directly asked if they are interested in joining. If they are, they are invited to one-on-one meetings.

Step 5: Recruit for both technical expertise and cultural fit
Recruit for both technical skills and soft skills that will help private-sector talent adjust to the challenges of the public-sector workplace. Candidates must be able to empathize with public servants who may be risk-averse due to compliance and regulatory concerns. Other soft skills include active listening, respect for different viewpoints, honest communication, patience, and tolerance for bureaucracy.

Checklist

- Use flexible hiring authorities such as
    - Internship or fellowship programs
    - Training and associate programs
    - Professional/industry exchange programs
    - Residency programs
    - Assistance programs

- Pitch to private-sector talent with a call to service
- Adopt private-sector best practices for actively recruiting top talent into government
- Recruit for both technical expertise and cultural fit
- Build collaborations between innovators and career federal employees
- Support innovators

Policies

- Direct Hire Authority and Schedule A Part R hiring authority
  - Authorities that allow agencies to do tour of duty hiring.
- Intergovernmental Personnel Act (IPA)
- Institutionalizing Hiring Excellence to Achieve Mission Outcomes. OMB-M-17-03, November 1, 2016
- Congress passed many important new hiring flexibilities as part of the Chief Human Capital Officers Act of 2002. It reinforced the strategic role played by human capital officers in the Government Performance and Results Modernization Act of 2010.
- Talent Act of 2017 and Executive Order 13704—Presidential Innovation Fellows Program
  - This order and bill codifies the Presidential Innovation Fellows Program to encourage entrepreneurs, executives, and innovators to join the government and work in close cooperation with government leaders to create meaningful solutions that can help save lives and taxpayer money, fuel job creation, and significantly improve how the government serves the American people.
- Expert and Consultant Pay
  - How much money an expert or consultant should be paid

Resources

- Information on Hiring Authorities for Schedule A or B
- Delegated Examining Operations Handbook
  - Refer to Chapter 2, Section A for a review of hiring flexibilities
- Human Resources Flexibilities and Authorities in Federal Government Handbook
- OPM's Hiring Excellence Campaign (HEC) and Hiring Excellence Mythbusters
- Human Resources University's Excepted Service Hiring, which includes how-to steps for:
  - Hiring Toolkit and Decision Tool
  - Intergovernmental Personnel Act (IPA)
    - Making 30-Day Critical Hiring Need Appointment
  - Recruitment Policy Studio
    - Resources specific to flexible hiring authorities:
  - Schedule D – Pathways Programs
    - Using OPM-approved Schedule A hiring authority for Digital Services

Innovative Acquisitions and Procurement Practices

"Innovations arise when people are given a problem to solve instead of being told to implement a known solution."

- *Partnership for Public Service, "[Innovation is a Contract Sport]"*

Summary

Purpose and Outcomes

Purpose: Innovative acquisitions and procurement methods help the government get the most value of its purchasing and outcomes while spending less on contracting processes.

Acquisitions (often described as procurement) is the process by which the U.S. federal government acquires goods, services, and property through appropriated (set aside by Congress) funds. This is one of the key tools the federal government has to get things done. Acquisitions implies the strategy behind getting a product , while "procurement" is used to define the technical process of getting a needed service or product.

In FY 2016 the US federal government spent [$462 billion on contracts], with more than $86 billion in federal information technology (IT), making it the largest buyer in the world. Nearly $64.5 billion goes to maintain current systems rather than improve them.

The federal government spends a lot of money on IT purchases, but doesn't always receive the full value's worth of that money. In 1974, the Federal Acquisition Regulation (FAR) codified federal acquisitions. The FAR is nearly 1,500 pages and was created before modern technology.

Federal IT acquisitions have had difficulties because:

- The skills gap because few people in the workforce understand both IT and procurement.

- The status quo approach of large, multiyear, waterfall-based, extended requirement gathering, year-long competitions moves slower than technology.

- Companies that have creative solutions to many of government's tech problems [find it challenging to do business with the government] due to high barriers to entry, lack of customer-facing tools, complex acquisition processes, and not understanding how to identify opportunities.

Therefore, the acquisitions and procurement community has had to rethink and reframe the practice to meet user needs. Innovative acquisitions comprise a variety of procurement approaches for both digital services and physical products that reduce risk while delivering required outcomes. These approaches:

- improve the likelihood of on-time or early delivery of contracts,
- increase end user satisfaction
- can reduce the total cost of ownership.

The recent fresh perspectives and focus on IT acquisitions or procurement. Because that's the biggest need, but they apply to other fields as well.

Approach

Common features of the innovative acquisition methods profiled here include early and frequent collaboration between acquisition teams and end-users, and the use of agile, iterative, and modular implementation methods. (see "Human Centered Design", "Lean" and "Agile" sections)

Many innovative contracting models can reduce transaction costs and increase access to innovative contractors while still operating within the limits of existing law and regulation.

Here are some new ways of thinking in acquisitions:

Traditional Thinking	New Thinking
If it's not explicitly allowed, it's prohibited.	If it's not explicitly prohibited, it's allowed.
Creating a statement of work with requirements (prescriptive rather than descriptive)	Offering a statement of objectives with overall purpose/direction (descriptive rather than prescriptive)
Acquisitions professionals manage and lead the process	Acquisitions professionals form part of the team, all of whom are needed to successfully acquire modern products and services
Large, monolithic contracts	Modular contracting and agile delivery
Too-large Request for Proposals (RFPs)	Just-right RFPs that are short and to the point
"Push" methods where products and services are outlined in detail; funded whether or not the final product meets agency needs	"Demand pull" methods depend upon user needs to stimulate non-traditional methods and companies to participate; funded when the needs are met

With fewer resources, agencies must use procurement practices that ensure federal agencies pay only for successful results, not just best efforts. Existing regulations and authorities permit new and more effective acquisition models and processes, currently being tested by and used at many agencies. Many proven practices, some listed in this Toolkit like human-centered design and agile software development, help to close the gap.

As new approaches become available, each agency can consider how to encourage the workforce to test and adopt new and better ways of doing business.

Most agencies have Acquisition Innovation Advocates and acquisition labs or similar mechanisms, which were announced in 2016 by the Office of Management and Budget Office of Federal Procurement Policy Memo. With the dedicated support of this advocate or lab, agencies can reframe problems and produce better results.

Examples

Modern Contracting Vehicles

18F Agile Delivery Services Blanket Purchase Agreement (BPA)

In keeping with its mission to transform the way the federal government builds and buys digital services, 18F set out to find a new way of procuring digital services at the speed of agile development cycles. That means ideally less than four weeks from solicitation to contract kickoff, and from there no more than three months to deliver a working product.

18F partnered with the General Service Administration (GSA) Office of Information Technology Category to establish a blanket purchase agreement (BPA) featuring vendors specializing in agile delivery services (e.g., user-centered design, agile software development, DevOps). The Agile Delivery Services BPA (Agile BPA) attempts to align acquisition practices with agile delivery practices.

The Agile BPA is different from most other traditional IT services contract vehicles. It uses novel ways to select vendors: the most important thing for them is their ability to ship high-quality working software. They issue task orders — consistent with the TechFAR — that feature shorter time-frames, smaller dollar amounts, and user-centered design principles.

Push versus Demand Pull Methods

Traditional complex procurement processes discourage small business and non-government innovators like startup companies from participating. This process, called the "push" method, outlines the exact needs up front and all acquisitions/procurements are treated roughly the same despite their demand and based on forecasts that are almost always wrong (Source: The Standish Group, "Chaos Report 2015," 2015). Procurements with this method is usually set aside for traditional government contractors, and provides funds upfront whether or not the final product meets the agency's needs.

Opposite is the "demand pull" method, which uses actual real-time customer demand to generate the need for the product and its direction. This method stimulates innovation and allows smaller businesses and inexperienced government contractors to participate. Demand pull mechanisms offer agencies the ability to discover, prove, and scale new solutions and more effective outcomes.

There are two distinct categories of demand pull methods: pay for performance and purchase commitments, described below:

Category	Demand Pull Mechanism	What It Does
Pay for Performance	Advance market commitments	Creates new markets and commits to long-term pricing for purchases
	Motivating or "Incentive"prizes	Gets citizens involved in solving problems
	Competitive milestone-based payments	Attracts new solutions to well-defined, multi-component problems

	Micro-purchase authority	Uses a government purchase card to make small awards for coding challenges
Purchase Commitments	Challenge-based acquisitions	Breaks the entry barrier for startups and young organizations
	Non-binding purchase agreements	Collaborates with industry and encourage new solutions, without firmly committing to them
	Rapid technology prototyping	Tries out new technologies rapidly and inexpensively
	Staged contracts	Solicits proposals and assesses them quickly

Pay for Performance

Advanced Market Commitment (AMC) The Pneumococcal AMC
The Gates Foundation and governments of Italy, The United Kingdom, Canada, Russia, and Norway promised to purchase vaccines on a per-unit basis for a limited amount of time. In return for that promise and financial support, companies developed a pneumococcal vaccine and manufacturers provide it at a reasonable cost to citizens in developing countries. In 2015 the target was 1 year ahead of schedule, and by 2016 an estimated 109 million children had been immunized.

Incentive Prizes
New York City Big Apps Challenge
In 2012, NYC launched the Big Apps Challenge, which sought innovative software applications that made municipal data more accessible to city residents. Designers tapped into the developer community to access external expertise. They considered many challenges to help net the $50,000 purse. Designers broke the challenge into 10 topics (for example, green, health and safety, and mobility) and posted clear requirements for each category. They included commercial benefits, inviting investors such as BMW to help judge the challenge. Finally, New York City included an "Investor's Choice Winner" and allowed the grand prizewinner to demo the app at the New York Tech Meetup. The Big Apps Challenge spurred the development of 96 apps using municipal data in new and innovative ways.

The Ansari X Prize
Until October 4, 2004, space flight was the exclusive purview of government. The possibility of space tourism was considered too dangerous and too expensive for the general public, and space exploration for the private sector was neither possible nor affordable. The Ansari XPRIZE aided investment in a brand new industry. Over the course of the competition, 26 teams invested more than $100 million for research and development in suborbital space flight.

In 2004 the Ansari Foundation awarded a $10 million prize to Scaled Composites' Tier One Project for developing a reliable, reusable manned spacecraft. Among other participants, SpaceX and Virgin Galactic continue to develop private space travel (2018 is the projected date for first trips) and payload

delivery. Breakthroughs made as a result of this successful competition led to a private space industry worth more than $2 billion today.

Purchase Commitments

Challenge-Based Acquisition
Department of Defense (DOD) Robotic Rodeo
The key difference between challenge-based acquisition and a traditional performance-based acquisition is the requirement to demonstrate product performance in real-world conditions before an agency commits resources for full production. Payment is made only after a successful solution is shown.

Twenty-six companies participated in a two-week robotics competition in 2012 held by the DOD at Fort Benning. Four different events tested innovative technical solutions for surveillance and inspection of Improvised Explosive Devices (IED) in real-world conditions. A follow-up competition in 2014 choose those who would participate in the next phase of the $49.5 million contract.

Micro-Purchase Award
18F Micro-Purchase Agreement Experiment
An 18F Micro-purchase is an experiment in federal acquisition, which makes it easier for individuals and businesses, or vendors, to use their technical expertise toward building the open source software that powers federal agencies — and vice versa.

Conceptually, the platform is simple: 18F Micro-purchase functions as a reverse auction house. Federal agencies work with 18F to create auctions that start at $3,500 or less (this is the ceiling of the federal government's micro-purchase authority, the authority from which we draw our name).

Vendors evaluate auctions, review any source code associated with that auction, and place their bids. At the end of each auction, winners deliver their work in accordance with policy and 18F pays.

Anyone can participate in this work. Vendors need only have GitHub and System for Award Management (SAM.gov) accounts to sign up and place a bid. If you work in government and are interested in running auctions for an open-source project, read the getting started guide. Members at 18F are available to scope features, develop an auction strategy, and run your auctions. Although many auctions ask for code, this process can be applied to any kind of contribution to an open source project, including design, content, etc. This experiment will also soon be extended to auctions with starting prices of $25,000 or less.

Non-Binding Purchase Agreement
The Department of Energy (DOE) Purchase Challenge
The DOE created a coalition of more than 200 major commercial building partners and issued a challenge to U.S. manufacturers: "If you can build wireless sub-meters that cost less than $100 apiece and enable us to identify opportunities to save money by saving energy, we will buy them."

At least 18 manufacturers have responded, and DOE's private-sector partners have signed letters of intent to purchase the wireless sub-meters since DOE issued the challenge in 2013. U.S. Energy Secretary Ernest Moniz described this activity as "a perfect example of how government can team up with industry to identify a problem and promote the innovation needed to solve it."

Rapid Technology Prototyping
Defense Advanced Research Projects Agency (DARPA) Fast Track Robotics
The recent explosion in robotics comes from small businesses and individuals in maker and hacker spaces and incubators of low-cost innovation and collaboration. DARPA partnered with Virginia-based hacker space TechShop to streamline the contracting process to address non-traditional performers' needs while still meeting all requirements under the FAR. DARPA supported the rapid development of new robotics capabilities designed to respond to, and even anticipate, quickly evolving warfighter needs. New robotics projects have an average cost of $150,000 and require only simple contracts lasting 6-12 months. The contracting process itself, from the time a proposal is submitted (via a website) to when a contract is signed, took less than a month.

Actions and Considerations

According to The Standish Group, small IT projects have more than a 70% chance of success while a large project has virtually no chance of coming in on time, on budget, and within scope. For this reason and for others discussed in this overview, the federal government needs to rethink and reshape how it builds and buys products and services.

Below are some known pitfalls identified during the Digital Acquisitions Accelerator in 2016. These are all things that haven't worked well for us when it comes down to digital acquisitions. Avoid them--or at least use them carefully.

Avoiding these common pitfalls is the first steps in transforming acquisitions at your agency.

Pitfall #1: Large, monolithic contracts
These often do not work well for digital products and services. The Standish Group points out that you're only giving yourself a six percent chance of success when you start these types of projects. Also, technology moves fast, and if you want your agency to be able to respond quickly in an ever-changing landscape, you'll need to avoid these.

Pitfall #2: Writing too-large RFPs
In 1907, the U.S. Army wanted to acquire an airplane. Airplanes were so cutting edge at the time that they weren't even called airplanes; they were called "heavier than air flying machines." Guess how many pages the solicitation was for this? 50? 20? No, 2 pages!

You don't need 100-page RFPs to acquire the best digital solutions for your agency. Often, all this does is encourage some of your better potential vendors to not respond. These long RFPs are typically driven by the old requirements-gathering mindset combined with bloated legalese, focusing on oversight and liability rather than product quality and project success.

These long RFPs take too much time for your agency to write, too much time from vendors to respond to, and discourage good vendors from bidding. There are very few good outcomes.

Instead, work internally to develop a sound problem statement and product vision. Think in terms of objectives and user stories. Indeed, modern agile development methods pay careful attention to alternative ways of specifying and achieving desired outcomes for product development.

Pitfall #3: Only having acquisitions people involved in the acquisitions process
Acquisitions is more than just buying, and it's important to bring key expertise, like policy, law, engineering, design, and security, to the table early in the acquisitions process to ensure a project's success. Leveraging a cross-functional team's expertise will help ensure your agency is solving your users' problems.

Pitfall #4: Not being open to change
The world moves fast, and technology moves even faster. You must be willing to adapt, change direction, and try new things to get the best digital products and services. The goal is to get better outcomes, not just contracts. No matter what your experience has been until now, you can learn and apply new techniques to make acquisitions more effective, more efficient, and hopefully more joyful.

Being open to change means shifting the focus from a "no, we can't" to a "how might we" context. It allows you to solve the problems as they arrive based on any given context, known or unknown.

Pitfall #5: Forgetting that people, not contracts, manage projects
Often, a contracting officer will work really hard to be sure that every possible clause that may or may not be needed is included within the contract. This is fine, but it often overlooks the reality that over the life of the contract, new ideas will be formed and business strategy may shift.

So it's important to have someone from your agency working hand in hand with the vendor to help make rapid decisions that still align with organizational goals. Relying too heavily on contract clauses to solve every problem that may arise over the period of performance doesn't work. You'll need to assign a resource to be a product owner who works with the vendor until the period of performance is complete.

These steps will help you to rethink and reshape how you build and buy products and services:

1. Talk to your agency's advocate for innovative acquisition. They are there to help you
2. Use "demand pull" mechanisms
3. Think big, and act small
4. Break large projects into small, discrete components with clearly defined objectives
   a. Simplify the contract or use a Memorandum of Understanding (MOU) to get started
   b. Establish constraints on time, money, complexity, and size
   c. Add a "kill switch" so contract ends when objectives cannot be met

5. Track results against metrics established by Office of Management and Budget (OMB)
6. Share results in the Innovation Hallway of GSA's Acquisition Gateway

7. Participate in the Acquisition Innovation Advocates Council that meets regularly with OMB and 18F Consulting to broaden awareness and cross-agency collaboration

Policies

Innovative contracting approaches are allowed under existing law. New regulations are not needed to deploy any of these authorities:

- Federal Acquisition Regulations (FAR)
  - Provides a variety of pathways that allow agencies to reshape existing processes to reduce transaction costs while still operating within the confines of existing law and regulation.
- Other Transactions Authority (OTA)
  - Funding mechanisms that target non-traditional sources and allow a high degree of flexibility in how the agreement is awarded.
- American Innovation and Competitiveness Act 2016
  - Expands the use of challenges and gives the authority for any federal government agency to work cooperatively with and pool funds from multiple government agencies and profit or nonprofit private sector entity, state, tribal, local, or foreign government agencies and higher education institutions.
- America Competes Reauthorization Act of 2010
  - Established authorities for all federal agencies to offer incentive prizes and run challenge competitions "to stimulate innovation that has the potential to advance the mission of the respective agency."

Resources

Government Services Administration (GSA): Acquisition.Gov and Acquisition Gateway

Office of Management and Budget's Office of Federal Procurement Policy's Memo establishing Acquisition Innovation Labs and an Acquisitions Innovation Advocate Council

18F and the Presidential Innovation Fellows
- Modular Contracting Toolkit
- Blanket Purchase Agreement
- Digital Contracting Cookbook
- Digital Acquisitions Accelerator and Digital Acquisitions Playbook

U.S. Digital Services
- The TechFAR Handbook and the TechFAR Hub
- Digital Services Playbook

Further reading:
- U.S. Agency for International Development, "Healthy Markets For Global Health: A Market Shaping Primer," Fall 2014.

- Partnership for Public Service, "[Innovation is a Contract Sport: Ways that agencies can achieve innovative outcomes through acquisitions]()," February 6, 2016.
- The Standish Group, "[Chaos Report 2015]()," 2015.
- The White House, "[Innovative Contracting Case Studies]()," August 2014.
- The White House, "[Memorandum for the Chief Acquisition Officers and Senior Senior Procurement Executives -- Subject:Transforming the Marketplace: Simplifying Federal Procurement to Improve Performance, Drive Innovation, and Increase Savings]()," December 4, 2014.

Improving Government Services Delivery

Human-Centered Design

"If human-centered design can guide us towards a human-centered process that accommodates how people work, how they like to discover and consume information, we're all the better for it."

-- Matt Conner, Acting Chief Information Security Officer and Director of Cybersecurity Office at the National Geospatial Intelligence Agency

Summary

Purpose and Outcomes
Purpose: Human-centered design (HCD)—sometimes called design thinking—is a discipline in which the needs, behaviors, and experiences of an organization's customers (or users) drive the design of a solution to a particular problem.

HCD methods can guide work across products, programs, and policy and can also enable federal employees to engage with the public as partners to identify and address the root causes of problems, rather than the symptoms.

Human-centered design:
- Makes government more participatory and responsive
- Increases stakeholder engagement and cross-sector collaboration
- Offers insight into citizens' needs, behaviors, and decisions
- Equips us with tools for generating, testing, and improving solutions

Ultimately, using this methodology ensures that we are solving the right problem in a way that works for the people we serve.
Examples
- The [Innovation Lab at OPM]() redesigned [USAjobs.gov]() and the [Free and Reduced School Lunch]() program application form.

- The Department of Justice and [Health and Human Services](#) have introduced incubators that use design principles in team-based projects.

- Members of the [intelligence community](#) have developed better tools to train analysts to solve problems creatively.

- [GSA and 18F](#) have streamlined federal acquisitions and increased the collective buying power of the federal government.

- The State Department's [Collaboratory](#) has pursued education diplomacy overseas to improve bureaus' organizational structures and program design.

Approach

An HCD process follows three main areas of work before you have a working solution:

- Identify and understand the problem
- Brainstorm and select possible solutions
- Build and test out a prototype

The concepts of divergent and convergent thinking are key to HCD. Divergent thinking explores many possible ideas/solutions, and convergent thinking narrows down these problems//ideas to a few or one solution.

The point of divergent thinking is to collect as many ideas (no matter how crazy) and then use convergent thinking to bring it back into reality and see what's the best possible solution.

There are two schools of thought for HCD and Design Thinking--the IDEO Method and the Stanford d.School approach.
The IDEO Method
The IDEO Model starts with building empathy during the discovery phase, then moves through a flow of divergent and convergent thinking and doing. It first starts with ideation, then goes to inspiration, and finally implementation:

Step 1: Inspiration
In this phase, you start learning how to better understand people. You observe their lives, hear their hopes and desires, and learn about the challenge before you.

Step 2: Ideation
This phase helps you make sense of what you've heard, generate lots of ideas, identify opportunities for design, and test and refine your solutions.

Step 3: Implementation
During this phase, you bring your solution to life. You figure out how to maximize its impact in the world.
Stanford d.School Approach

Stanford University has a [five-step process that they've developed for HCD](#), which follows these five steps:

Step 1: Empathize

Put yourself in the shoes of your users or audience, and design ways to observe and listen to their experience with your product or program. Collect insights and lessons learned from the process.

Step 2: Define

Using the insights and lessons learned from step one, narrow down the possibilities to define the challenge ahead of you--what problem(s) you're trying to solve. Use different ways to frame the problem clearly so that you can collect the best ideas to solve those problems. Many times, people would define their problem in a "How Might We" question to help kick off the brainstorming (ideation) phase.

Step 3: Ideate

Using the clearly defined problem from step two, you can begin to think of all the ways to solve the problem. We do this through brainstorming. Use team brainstorming to create diverse perspectives and get better outcomes.

After you've created a list of great ideas, select the best ideas to create a short list to move to the next step. Also at this point, start defining how you're going to pick the best solution over the others.

Step 4: Prototype

After you've narrowed down your choices, you can begin the process of prototyping, which is creating fast and inexpensive models of your solutions so you can get feedback from your users. The key here is to pick 2-3 possible solutions and then move quickly to create rough drafts to see if they will help our target audience or user.

Prototyping can be sketches or actual physical products built of sticks and paper. Whatever you create does not need to be perfect--it's very rough and part of the process is to perfect what you have over many iterations so it gets better each time.

Step 5: Test

Now you've created a prototype, talk to your users to get their thoughts on what you've created. Ask open-ended questions so you can really get a good idea of what they like or don't like. This is not the time to get attached to your idea--be humble and listen to what your users are telling you. It will help make the next draft much better and will improve over time.

Once you have prototyped and iterated many times, it is ready to pilot. A pilot allows you to test your solution in a real-life situation for a limited time and with a small target audience to see how it performs.

How might we encourage and support additional HCD projects at my agency?

Human-centered design is a process you can start implementing today on your existing projects to make it better. However, to create a larger culture that is more human-centered takes a little more groundwork and time.

Individuals or project teams using this approach often use it to tackle problems with existing government services, or when an existing problem needs a new solution. Government agencies may deploy, support, and encourage HCD on the front line as well as at management and leadership levels. These steps can help you spread these practices.

Step 1: See how you may support HCD practices based on your level within your agency
Here's what you can do do right now to help support spreading HCD at your agency, wherever you sit in that agency.

Agency Level	How to Spread Human-Centered Design
Front Lines Doers	- Work with team members who have different responsibilities - Suggest working with other offices - Investigate sociological research on specific countries, communities, or populations to influence language and style of deliverables - Create multiple advertising messages targeted at specific audience values - Develop many user experience decisions for digital and physical products and services to improve information flow and access - Make user interface decisions that affect the usability of digital and physical products, services, and applications for users with disabilities - Research and examine culturally and regionally significant colors for design - Develop and circulate a list of HCD practices for your specific office
Mid-level Managers	- Create a collaboration space for your team - Support flexibility and ambiguity of your team's project - Serve as a buffer for your project team's work - Propose policy, guidelines, and standards that institutionalize better usability and accessibility for all users - Partner with other offices that serve similar audiences - Create office hours for employees to come learn about your office's HCD practices - Meet with HCD leaders at other agencies - Advocate for dedicated resources to support HCD projects
Executives	- Broadcast HCD projects to other offices across your agency - Support information sharing and developing software that uses HCD principles - Attend team meetings to show leadership support and stay informed about HCD processes - Advocate for increased collaboration on multi-agency campaigns - Advocate for HCD as a business imperative that helps your organization deliver on its mission goals

Step 2: Make the case to leadership
Your leaders will need to approve your implementing an expansive HCD process. Focus your business case on your leadership's areas of concern. Early federal adopters of HCD have found success with the following strategies:

- Build a coalition of colleagues interested in using HCD to demonstrate broad interest, different perspectives, and key elements when pitching to leadership.

- Appeal to a motivating factor, such as budgetary concerns. While HCD may require an upfront investment for training or innovation lab assistance, the long-term savings of an improved program often outweigh the initial costs.

- Use storytelling to pitch HCD to your leadership. If another group or agency has solved a similar issue or used HCD to solve other complex issues resulting in quantifiable results, use their stories to validate using HCD in your agency.

- Take advantage of training opportunities. Agencies like OPM offer HCD training. It is currently designing training for federal executives whose buy-in and understanding of HCD are critical to HCD's success within their agencies.

- Focus on results. Agencies may hesitate to implement HCD due to uncertainty of how to measure the success or failure of HCD methods. They may hesitate mid-project at the shifting end-goals or success markers that are natural in HCD implementation. Employees and leadership have a natural desire to benchmark progress. You will need to re-brief your leadership on the HCD process throughout the project. Focus on the proven benefits of multiple failures and pivots and the value that the project will eventually demonstrate.

Step 3: Market HCD within your agency

To successfully use and scale an HCD approach, you'll need to build agency-wide support and interest by effectively marketing HCD within your agency.

One proven approach to marketing is called RAISE: Research, Adaptation, Implementation, Strategy, and Evaluation:

- Research: Understand your audience through research and analysis, including surveys, focus group testing, interviews, and intake meetings.

- Adaptation: Create ideas and messages targeted at your audience based on your research. Develop materials like brochures, pamphlets, web pages, or even short videos. Include personal success stories or case studies.

- Strategy: Develop an implementation strategy to publish your messaging and materials. Training programs and classes, e-blasts, webinars, factsheets, posters and social media are all effective methods.

- Evaluation: Create metrics and a process for measuring your marketing success. Evaluate the feedback and then tailor your plan and messaging accordingly.

Actions and Considerations

Every HCD project will vary based on the environment, the targeted problem(s), stakeholders/customers, and goals. It will naturally evolve and change as you follow the broad phases:

- Adopt and embrace multidisciplinary skills and perspectives

- Develop and communicate a clear understanding of the users, tasks, and environments
- Make design user-centered and evaluation-driven
- Analyze the overall consumer experience
- Involve the consumer in the design and production process
- Iterate the MVP/pilot to incorporate feedback and continually improve.

Policies

Federal agencies must follow various laws and regulations, including the Paperwork Reduction Act (PRA) and the Privacy Act, when collecting information from the public. You should also know SORN (Systems of Records Notice), as well as rules around personally identifiable information (PII), and laws that relate to your specific method of feedback collection (such as Section 508 compliance for online surveys).

- 18F's Before You Ship: Paperwork Reduction Act (PRA)
- 18F's Before You Ship: Privacy
- Flexibilities under the Paperwork Reduction Act for Compliance with Information Collection Requirements. OMB, July 22, 2016
- Paperwork Reduction Act Fast Track Process (DigitalGov)
- Social Media, Web-Based Interactive Technologies, and the Paperwork Reduction Act, OMB, April 7, 2010

Federal agencies must make their electronic and information technology (EIT) accessible to people with disabilities under Section 508 of the Rehabilitation Act of 1973, as amended (29 U.S.C. § 794 (d)). GSA offers a robust overview of Section 508 Law and Related Laws and Policies.

Additional Resources

The Lab at OPM's Human Centered Design (HCD) Discovery Stage Field Guide V.1 is a teaching tool and a reference guide. It was originally created for Veterans Experience Office (VEO) by Insight & Design and adapted for use across other agencies through a partnership between GSA's Office of Customer Experience and The Lab at OPM.

External Resources
- IDEO.org has created excellent resources for its three-step process for design thinking:
  - DesignKit: an online toolkit for HCD methods, mindsets, and case studies.
  - The Resources section includes books, guides, and free downloads for solving problems using IDEO's process including the step-by-step Field Guide to Human-Centered Design.
- OpenIDEO and +Acumen also run free online courses that are open to the public:
  - Introduction to Human-Centered Design
  - DesignKit: The Course for Human-Centered Design
  - DesignKit: Prototyping
- Stanford d.School 90-minute virtual crash course in design thinking. Introduce your team to design thinking following the video, facilitator notes, and participant handouts available through the d.school:

- ○ [Crash course video](#)
- ○ [Facilitator Guide](#)
- ○ [Participant Handout](#)
- [Design Thinking courses](#) by University of Maryland Academy for Innovation and Entrepreneurship
- [Executive Education programs](#) by Stanford University Institute of Design
- [Facilitator's Guide to Human-Centered Design](#) by Acumen and IDEO Online
- [Fundamentals and Advancing Workshops](#) by LUMA Institute

Government-specific Resources:
- Paula Brown, "[Human-Centered Design in the US Federal Government](#)," Harvard Kennedy School, March 2016.
- Tom Kalil, "[Using Human-Centered Design to Make Government Work Better and Cost Less](#)," The White House Blog, September 4, 2015.

Agile

Summary

Purpose and Outcomes

Purpose: Agile methods support government in the iterative and responsive design, implementation, and ongoing management of both functional and mission-oriented projects.

Agile is a set of project management methodologies commonly used by innovative organizations because its practice emphasizes simplicity, quick iteration, and close customer collaboration. Agile is both a philosophy and an umbrella term for a collection of methodologies or approaches that share certain common characteristics. Agile methods are commonly applied in the federal government in contracting, project management, design discovery, and software development.

There is no universally accepted, formal definition for Agile, though one federal Agile practitioner informally defines Agile as:

> *"an iterative and incremental (evolutionary) approach to software development which is performed in a highly collaborative manner by self-organizing teams within an effective governance framework, with 'just enough' ceremony, that produces high quality solutions, in a cost effective and timely manner which meets the changing needs of its stakeholders." (Source: The White House, "[Innovative Contracting Case Studies](#)," August 2014)*

The Agile philosophy is embodied in the four tenets of the [Agile Manifesto](#) and its 12 associated principles.

Although Agile is not one specific method, there are a variety of common approaches that differ with respect to project approach, resource availability, and desired end result of an Agile project.

Common Agile Methods

Agile Method	Framework Description

Extreme Programming (XP)	Organizes so customers and developers partner partner around a series of short developmental releases paired with customer testimonials and intensive, continuous code review
Dynamic Systems Development Method (DSDM)	Emphasizes business needs/value as the primary criteria for delivery and acceptance of a system while rigorously defining requirements and ensuring reversibility of developments
Features-Driven Development (FDD)	Designs and schedules the build around end product's expected and desired features
Kanban	Manages a process focused on visualizing a workflow, limiting work-in-progress, and measuring and optimizing lead time
Scrum	Provides teams with a process to manage prioritization, implementation, delivery, and testing of iterative work

The variety of Agile methods available must be considered in relation to the intent and expected outcomes of any one intervention. However, adopting an Agile methodology can equip practitioners with one or more of the following outcomes:

- A set of engineering best practices that allow for rapid delivery of high-quality software
- A project management process that encourages frequent evaluation and adaptation
- A leadership philosophy that promotes collaboration, teamwork, and accountability

Agency practitioners should have an understanding and the resources necessary to incorporate Agile methods in the development and execution of programs, services, and products.

Examples

Below are applications of Agile methods at the federal and state levels, including benefits of using these methodologies, challenges of adopting and how to address them, and common best practices for Agile methods

1. Department of Justice (DOJ): Beginning in 2014, the DOJ adopted a Scrum Agile methodology to modernize and consolidate the DOJ website, justice.gov. With early success in implementing version releases on time and to budget, the DOJ overhauled justice.gov across 12 iterations within the Scrum methodology. Scrum Agile lessened project challenges impact and encouraged stakeholder investment as the iterative approach allowed for user testing and feedback during development.

2. Salt Lake City: The Salt Lake City Information Management Services (IMS) department wanted to implement fresh ways to approach business, so the department leadership established a project management office (PMO) and Agile training series. The Salt Lake City IMS now applies Agile for a variety of projects including software development, system implementations, and upgrades.

3. State of Maine: The State of Maine moved to Agile processes to better quantify and prove success within initiatives while progressing through them, to avoid risk and project failures at cost. In adopting Agile, the State of Maine established an Agile Center of Excellence (CoE), responsible for equipping project teams with the skills and resources necessary to effectively apply Agile in their culture.

Approach

Benefits of Using Agile

Agile methods enable teams to develop programs, services, and products incrementally and be able to quickly adapt to changing requirements. Other project management methodologies, such as waterfall, are focused on developing a 100% solution upfront. Agile methods differ as they focus on building working increments of a given product or solution that both allows for faster time-to-market and flexibility to change requirements and/or directions for the next version of the program, service, or product. This also reduces lifecycle costs by not creating unnecessary and unwanted components.

Although Agile methods are iterative and build programs, services, or products in increments, they also provide a clear process and structure for discussing priorities and tradeoffs. This generates more accurate assessments of the project state at any given time. The process also requires constant collaboration between contractors and government personnel, increasing the understanding of the requirements which potentially results in a deliverable better suited to the end users' needs.

Other benefits of using Agile Methods include:

- Early users insight into the actual design and implementation of the solution
- Early and ongoing developers insight into user behavior, leading to more usable applications
- The ability to change requirements and priorities throughout the life cycle
- Opportunities to fail fast and make timely adjustments if the early solution ideas turn out to be flawed. This minimizes the time and money spent before that learning occurs, and enables rapid redirection to be implemented
- Surfacing and addressing bugs earlier in the process

(Source: The White House, "Innovative Contracting Case Studies," August 2014)

Any federal agency that develops or purchases software can benefit from Agile – either by embedding Agile practices in its work, or in working with offerors using Agile methods. When adopting Agile – or entering into contracts with Agile-practicing businesses – agencies should be mindful of the various flavors of Agile and select the method(s) that most closely aligns with its goals.

Understanding Agile: Common Challenges

Adoption of any methodology requires a change in the prevailing culture, and adopting Agile is no different. It requires a marked shift in perspective to development from traditional waterfall approaches, with implications for the organization structure, rewards system, communications, decision-making, and staffing model. To meet the challenges of adopting Agile, a program management office can take specific actions:

- Plan for Agile practices and any deficits in resource skill or knowledge;
- Address deficits and align resources through continuous Agile training;
- Anticipate changes in the environment and business model that may affect how Agile is applied and implemented;
- Be Adaptive. Flexibility is a tenet of Agile and should be of any project team.

Additionally, terminology will need to be learned or relearned if terms have different meanings across project teams. Once adopted, however, Agile's transparent nature provides continuous and immediate insight into the project state.

Best Practices when using Agile

In addition to understanding the common benefits and challenges to applying an Agile framework, the Government Accountability Office (GAO) has identified a number of best practices to consider and practice when adopting Agile:

- Start with Agile guidance and an Agile adoption strategy
- Enhance migration to Agile concepts using Agile terms and examples of those terms
- Continuously improve Agile adoption at both the project and organization level
- Seek to identify and address impediments at the organization and project levels
- Obtain stakeholder/customer feedback frequently
- Empower small, cross-functional teams
- Include requirements related to security and progress monitoring in your queue of unfinished work (the backlog)
- Gain trust by demonstrating value at the end of each iteration
- Track progress using tools and metrics
- Track progress daily and visibly

Actions and Considerations

For teams actively adopting Agile methodologies for their projects, follow the guidance below to ensure effective delivery and collaboration among stakeholders throughout the project lifecycle:

- Build a functioning minimum viable product (MVP) or service that solves a core user need, with a clear agreed-upon project deadline, using a beta or test period if needed
- Ask for user feedback to see what works well and identify improvements that should be made
- Ensure people building the service communicate closely, using techniques like war rooms, daily standups, and team chat tools
- Keep delivery teams small and focused; limit organizational layers that separate these teams from the business owners
- Release improvements to the product or service according to an appropriate cadence
- Prioritize improvements and use an issue tracker to catalog them
- Use a version control system to track and understand iterative changes
- Ensure entire team has access to the issue tracker and version control system
- Use quality reviews with each improvement

Applying the above actions is integral to successful practice of any Agile framework.

Policies

- Section 804 of the National Defense Authorization Act (NDAA) of 2010
  - Section 804 of the NDAA authorizes the Secretary of Defense to recommend IT systems for implementation via project management methods that align to general Agile approaches.
- FAR 16.3, Cost Reimbursement
  - FAR 16.3 provides guidance regarding multiple contract types that are amenable to the design and execution of an Agile methodology in a project.
- LOE-Term FAR 16.306(d)(2) and indefinite delivery FAR 16.5
  - FAR 16.306(d)(2) relates level of effort and iterative cadence within an Agile framework where deliverables are provided according to a fixed period of time (or cadence. This guidance is valuable for structuring of compensation and fees within an Agile development initiative.

Resources

- The TechFAR Handbook and Digital Services Playbook document the best processes and practices, including Agile, that help to advance smarter IT delivery in the government.
- Agile Acquisition 101
  - This video seminar features examples of where agile acquisition has been successfully implemented in the federal government
- AGL Academy
  - A community effort by Agile government professionals to help educate and empower those who seek to implement Agile processes into their own agencies
- David Rath, "Four Roadblocks to Agile Development and How to Overcome Them," Government Technology, November 17, 2014.
  - This editorial discusses broad challenges to implementing Agile development practices in the government sector, including issues of talent and training, change management, customer engagement, and procurement.
- Government Accountability Office, "Effective Practices and Federal Challenges in Applying Agile Methods (GAO-12-681)," July 27, 2012.
- The White House, "Innovative Contracting Case Studies," August 2014.

Lean Startup

"For long-term change, experiment immediately."

-Eric Ries, [Lean Startup](#)

Summary

Purpose and Outcomes

Purpose: Lean Startup is a framework for developing user-centered solutions through small-scale tests, regular end-user engagement, and continuous iterations. The Lean Startup approach allows federal agencies to experiment with new programs and use only the strongest and most effective idea.

While many federal agencies are too large and established to be considered lean startups, smaller government programs and new offices can use the methodology. This approach can be adapted and applied to a broad array of agency-specific missions.

One definition for lean startup is working with incremental steps that include feedback loops to continually create improvements and scale projects quickly. The method emphasizes flexibility, pragmatism, and experimentation, which allows organizations to quickly understand their stakeholders, deployment issues, costs, resources, and ultimate mission value while delivering solutions that best meet stakeholder needs.

Adopting effective Lean Startup techniques can:

- Break the status quo and overcome obstacles with effective change management processes.
- Build an entrepreneurial mindset and agency culture that responds to stakeholders by design.
- Generate new ideas for improvement and build capacity for translating ideas into action.

Example

The [National Science Foundation (NSF) Innovation Corps (I-Corps) program](#) was started in 2011 to increase the economic impact (through commercialization) of NSF-funded basic research. I-Corps provides experiential entrepreneurship training to [teams](#) of federally-funded researchers to better prepare academic researchers for commercialization of their funded research. I-Corps offers an evidence-based framework to support research commercialization. The rigorous boot camp curriculum emphasizes understanding customer or stakeholder needs and articulating a clear value proposition to implement or scale an idea, technology, product, or program. With guidance from established entrepreneurs and through a targeted curriculum, I-Corps participants learn to identify valuable product opportunities that can emerge from NSF-supported academic research. Over a period of six months, each team learns what it will take to achieve an economic impact with their particular innovation.

NSF has extensive experience in how challenging it can be to move research to commercial applications. They relied on this experience and sought guidance from established entrepreneurs to develop a targeted curriculum where I-Corps participants could learn to identify valuable product opportunities that can emerge from NSF-supported academic research.

NSF relied on a quick-turn, internal-review for proposals and limited their size to $50,000. The founding principle was to quickly provide small catalyst funds on a quarterly cycle; the

near-continuous cycle allowed teams to explore the commercial potential on concepts as they emerged from the lab.

Since its founding in 2011, NSF has increased the annual I-Corps program budget from $2M to $30 million in FY2017, held 44 cohorts, and worked with 950 teams of 2900 individuals through the national I-Corps program. It created a National Innovation Network of over 70 universities that has taught a version of the I-Corps curriculum to tens of thousands of researchers.

Learn more at [NSF Innovation Corps: From Science Lab to Startup](#).

Approach

Lean Startup methods apply a collaborative, team-based approach to accelerated problem solving. They emphasize challenging assumptions and reacting quickly to new information and feedback using hypothesis development and testing as part of the customer discovery. It is closely aligned with human-centered design (HCD) principles, which stress empathy, ideation, prototyping, and testing ideas to validate whether they meet the stakeholder's needs.

Lean Startup applies to a range of activities, including program creation and management, procurement, and grant making.

There are four steps for Lean Startup:

- Step 1: Break down your grand vision into component parts and sketch out your idea.

- Step 2: Test the problem (customer discovery/stakeholder analysis and engagement).

- Step 3: Test the solution with a pilot (Agile development).

- Step 4: Verify or pivot.

Step 1: Break down your grand vision into component parts, and sketch out your hypothesis.
There are different approaches to defining a problem One tool is the [mission model canvas](#), which is an adaptation of the [business model canvas](#). It provides a structured process for developing a deeper understanding of the problem and the challenges of deploying a solution for mission-based organizations.
Step 2: Test the problem (customer discovery/stakeholder analysis and engagement)
Your team should engage, collaborate with, and receive feedback from your stakeholders. In addition to users, you should engage your colleagues in legal, policy, procurement, etc., whose support you may need in terms of funding, mandates, user requests, etc. You will also need to get long-term support and. Conduct a thorough stakeholder analysis to identify all beneficiaries and engage with them throughout the Lean Startup Process.
Step 3: Test the solution with a pilot (Agile development)
You will need to establish what a successful deployment looks like for your program. You can run a small-scale pilot to develop a minimally viable product (MVP) or beta-test based on what shows that your product works.
Step 4: Verify or pivot
Once the pilot is implemented, step back to evaluate stakeholder feedback. It will help you to decide whether to conduct more tests on the pilot approach or if you should move in a different direction. Ask

your stakeholders if they agree that you're solving a high-value problem and whether the pilot/model is ready to scale up into execution and implementation.

When not to use
Lean Startup may not be the right approach for your agency depending on your problem. Lean Six Sigma may be more useful when redesigning an existing process while Human-Centered Design may be more appropriate when designing a product to delight the users.

Grand Challenges may be a better approach for agencies tackling highly ambitious goals where a minimally viable product, prototyping, and incremental steps will not achieve the goals alone.

How can we promote adoption?
You can use three main approach to promote the Lean Startup process in your agency:

Provide training through accelerator programs
Most federal employees are not trained in entrepreneurial approaches. Their work often involves large projects involving an entire system or enterprise. Accelerator programs, such as the Health and Human Services (HHS) Ignite Accelerator, provide a space to explore and test new ideas. The training, coaching, and support they provide is like startup accelerators in the private sector.

Accelerator programs contain the following elements:

- Small teams – There are typically 3 to 5 people on a team
- Competitive application process – Teams must submit their idea for selection from across an agency
- Resources – Teams may receive seed-funding, tools, or something else.
- Fixed time frame – Programs typically last 3 months
- Training boot camp – Teams participate in a 3- to 5-day boot camp at the beginning of the program where they learn the practices of customer-discovery, prototyping, and product testing.
- Coaching – Program staff check in with teams weekly to reinforce the methodologies
- Pitch Day: Each team presents to senior leadership at the program's end. They share what they built and learned, and pitch their idea to the judges for support to take their idea to the next level.

Promote online prototyping tools
Federal networks block many digital tools used for product prototyping for various reasons such as terms of service concerns. However, HHS offers guidance on useful tools that fully comply with federal regulations.

Encourage experimentation as a cultural norm
Many agencies' culture doesn't match the principles of starting small, growing slowly, and interacting frequently with users. Overcoming these barriers starts at the top. A culture of trying new things in small ways is an important step to address this entrenched issue.

Actions and Considerations
- Define the problem and scope clearly and early. Adjust as necessary per feedback as necessary.

- Conduct customer discovery/stakeholder analysis and engagement.
- Develop a minimum viable product (MVP) that solves a core user need as soon as possible -- no longer than three months from the beginning of the project, using a beta or test period, if needed.
- Implement a version control system.
- Use peer review to ensure quality.
- Run usability tests frequently to see how well the service works and identify improvements.
- Communicate closely using techniques such as launch meetings, war rooms, daily standups, and team chat tools.
- Keep delivery teams small and focused.
- Limit organizational layers that separate these teams from the business owners.
- Release features and improvements multiple times each month.
- Create a prioritized list of features and bugs, also known as the feature backlog and bug backlog.
- Give the entire project team access to the issue tracker and version control system.

Policies

Federal agencies must follow various laws and regulations, including the Paperwork Reduction Act (PRA) and the Privacy Act, when collecting information from the public. You should also know SORN (Systems of Records Notice), as well as rules around personally identifiable information (PII), and laws that relate to your specific method of feedback collection (such as Section 508 compliance for online surveys).

- 18F's Before You Ship: Paperwork Reduction Act (PRA)
- 18F's Before You Ship: Privacy
- Flexibilities under the Paperwork Reduction Act for Compliance with Information Collection Requirements, OMB, July 22, 2016
- Paperwork Reduction Act Fast Track Process (DigitalGov)
- Social Media, Web-Based Interactive Technologies, and the Paperwork Reduction Act, OMB, April 7, 2010

Federal agencies must make their electronic and information technology (EIT) accessible to people with disabilities under Section 508 of the Rehabilitation Act of 1973, as amended (29 U.S.C. § 794 (d)). GSA offers a robust overview of Section 508 Law and Related Laws and Policies.

Resources

- Agile/Lean Community of Practice is a community of federal employees who are currently working with agile/lean methodologies or would like to learn more about agile/lean.

- 18F Guide for Lean Product Design

- Aneesh Chopra, "Project Innovation," Government Executive, May 9, 2014.

  - Describes several Federal efforts to apply Lean Startup methodology, including HHS Entrepreneurs-in-Residence program and Consumer Financial Protection Bureau (CFPB).

- "Lean Experimentation for the Social Sector: Build Smart to Learn Fast," Stanford Social Innovation Review, August 22, 2016.

  - 55-minute podcast featuring Steven Blank, Giff Constable, Chase Adam, and Alethea Hannemann.

- Steven Blank, "Why the Lean Startup Changes Everything," Harvard Business Review, May 2013.

  - Describes the I-Corps/Lean LaunchPad/Hacking For X methodology.

- Strategyzer, "Webinar with Steve Blank: Business Model Design For Mission Driven Organizations," YouTube, June 30, 2016.

Evidence-Based Decision Making

"What does it mean […] to create 'evidence-based initiatives?' It means that the administration strives to be as certain as possible that federal dollars are spent on social intervention programs that have been proven by rigorous evidence to work."
 - Ron Haskins and Greg Margolis, Show Me The Evidence

Summary

Purpose and Outcomes
Purpose: Inform how evidence-based decision-making and its common approaches to practice can further agency goals.

Evidence-based decision-making helps to achieve greater impact per dollar by focusing resources on what works. The Office of Management and Budget (OMB) outlined the importance of using evidence-based approaches that allow agencies to measure the effectiveness of programs, services, and products by evaluating what's working, where it's succeeding, for whom, and under what circumstances. By using data, performance metrics, and assessments, agencies can target their resources to invest in programs and initiatives shown to be the most effective.

Taking an evidence-based decision-making approach ensures using efficient and cost-saving methods and presupposes routine, rigorous use of data and evaluations to make funding decisions. The benefits of this decision-making approach are numerous, including creating a culture where continuous learning and program improvement lead to better overall performance (Source: David Garvin, Amy Edmondson, and Francesca Gino, "Is Yours a Learning Organization?," Harvard Business Review, March 2008).

All federal programs and services can benefit from evidence-based approaches, enhancing their ability to:

- Collect and use data

- Employ appropriate program assessment to understand what is and is not working

- Enable continuous improvement across initiatives, programs, and agencies

In 2009, OMB established guidance to encourage evaluation across government agencies and defined evidence as "the available body of facts or information indicating whether a belief or proposition is true or valid. Evidence can be quantitative or qualitative and may come from a variety of sources, including performance measurement, evaluations, statistical series, retrospective reviews, and other data analytics and research." (Source: Office of Management and Budget, "Analytical Perspectives: Budget of the United States Government, Fiscal Year 2017," 2016. See chapter 7, pgs. 71-72.)

Outcomes: Evidence-based decision-making exists to ensure the impact you say you're going to have results in positive future outcomes for your work. The section below on "Implementing Evidence

Requirements" identifies the types of data that may exist or be best appropriate for evidence-based decision-making strategies.

The remaining sections outline three broad strategies to implement evidence-based decision-making exists across the federal government. These approaches share a common emphasis on producing evidence and understanding around funded initiatives:

1. Tiered Grant-making: Grant programs that include evidence requirements and provide agencies a systematic way of addressing structure of investment to support new ideas, while also investing in the scale-up of approaches that have demonstrated results.
2. Learning Agenda Strategy: Implementing a learning agenda emphasizing federal employees and grantees' understanding of how to apply evidence- and data-based decision making and ensuring they have the resources, capacity, and data needed to implement this approach.
3. Pay for Success (PFS) through Public-Private Partnerships: Using public-private partnerships to achieve outcomes through evidence-based programs and pay for them in a more cost-effective way. Three definitions are possible: new type of financing model, a new form of outcomes-focused contract, or a new approach to public-private partnership.

Examples
Several examples of agencies using evidence-based decision-making approaches currently exist:

1. U.S. Agency for International Development's (USAID) Development Innovation Ventures (DIV) Program: Taking a portfolio approach, DIV invests small sums of funding in many relatively unproven ideas, but continues to support only those that demonstrate rigorous evidence of impact, cost-effectiveness, and potential to scale via the public and/or private sector. In six years, DIV has invested more than $90 million in nearly 170 innovations across all 10 sectors.

2. Department of Labor (DOL): To adopt a robust learning agenda, the DOL established the Chief Evaluation Office (CEO) in 2010, and has since made significant progress in institutionalizing a culture of evidence and learning. Responsible for managing the DOL's evaluation program, the CEO is committed to conducting rigorous, relevant, and independent evaluations, as well as to funding research through a collaborative learning agenda process. Through its work, the CEO has been able to connect evaluation with performance and partner cross-agency to encourage the adoption of analytical approaches in decision-making.

3. Social Innovation Fund (SIF): Program of the Corporation for National and Community Service that has used tiered-evidence approach to award more than $240 million in funding for program expansion and evaluation in communities across the country since 2010; 2014 and 2015 appropriations included up to $21.7 million to support development of PFS projects.

Approach

Implementing Evidence Requirements for Approaches
Evidence comes in many forms, and different types of evidence are appropriate for different purposes. Agencies should develop a portfolio of evidence that includes the following:

- High-quality performance measurement: Outcomes and output measures that align with the theory of change and a systemic method to collect and report on data on a regular basis are implemented.

- Implementation or process evaluations: Investigate how a program is being enacted and whether it is carried out as intended. The process includes quantitative and qualitative methods to capture measurable units and descriptive elements.

- Formative evaluations: Ensure that a program or activity is feasible, appropriate, and acceptable before it is fully implemented.

- Outcome evaluation: Tracks whether the program achieved the identified desired outcomes, including pre- and post-measurements to identify changes that occurred during a program's implementation.

- Impact Evaluation: Designed to determine if the outcomes observed are due to having received program services or an intervention. It is the only way to determine cause and effect. There are several methodologies that can be used to achieve this:

  - Quasi-Experimental Design: Includes a comparison group formed using a method other than random assignment, or that controls for threats to validity using other counterfactual situations.

  - Randomized Control Trials (RCTs): Examines the effects of a program by comparing individuals who receive it with a comparable group who do not. Individuals are randomly assigned to the two groups to try to ensure that, before taking part in the program, each group is statistically similar in both observable and unobservable ways.

Approach A: Tiered Grantmaking

Tiered grantmaking allows for innovative ideas to rise up from local practitioners or other program sectors, be tried out, scaled, and tested, to advance understanding about a particular policy issue.

For agencies, it's a valuable way of directing investments towards programs and projects that provide greater impact for each dollar invested.

Agencies can structure grant competitions into different tiers, varying the amounts of funding available depending on where a program or intervention falls on the continuum of evidence of effectiveness. Many programs distribute funding across one of three tiers:

- Highest tier: For programs, services, and products where the evidence base is "strong," that is, they have been proven effective through multiple random assignments or strong quasi-experimental studies that can be replicated with fidelity. These projects are deemed suitable for scaling and warrant funding at the highest level because they have been shown to work.

- Middle tier: For programs, services, and products with only a moderate evidence base, that has limited quasi-experimental studies or a single or small random assignment study. Moderate-level funding is provided for replication grants designed to further test and validate

effectiveness.

- Lowest tier: Where there is only preliminary evidence or a strong theory of action, funding is offered for development or proof of concept projects with an appropriate evaluation design to determine whether the project would merit further development.

(Source: The White House, "A Strategy for American Innovation," 2015)

This approach's goal is to identify replicable evidence-based models and bring them to scale. This tiered approach can seed multiple potential interventions and encourage further testing and validation (Source: Results for America, "Invest in What Works Fact Sheet: Evidence-Based Innovation Programs," October 2015). It avoids larger investments in ineffective programs, while the built-in mechanism for scaling up interventions that work also helps prevent the troubling problem of not investing in programs with proven high returns (Source: The White House, "2014 Economic Report of the President," 2014. See Chapter 7: Evaluation as a Tool for Improving Federal Programs).

A tiered-evidence approach to grantmaking has implications for leaders, policymakers, and career civil service employees. Problems across social, economic, and environmental domains are often at varying levels of scientific understanding. Engaging researchers in-house or in the broader scientific community through the tiered model builds a foundation for solving big problems using evidence.

Senior leaders and career employees looking to introduce an evidence-driven approach to grantmaking should understand the existing state of knowledge, define and focus their efforts, and ensure that proposed approaches are empirically validated by experienced researchers using quantitative scientific methods.

Approach B: Learning Agenda Strategy
Adopt learning agenda approaches in which you collaboratively identify the critical questions that will make your programs work more effectively. The key components of that approach are that agencies:

- Identify the most important questions that need to be answered to improve program implementation and performance. These questions should reflect the interests and needs of a large group of stakeholders, including program office staff and leadership, agency and administrative leadership, program partners at state and local levels, and researchers, as well as legislative requirements and congressional interests.

- Strategically prioritize which questions to answer within available resources, including which studies or analyses will help the agency make the most informed decisions.

- Identify the most appropriate tools and methods (e.g. evaluations, research, analytics, and/or performance measures) to answer each question.

- Implementing studies, evaluations, and analysis using the most rigorous methods appropriate to the context.

- Develop plans to disseminate findings in accessible and useful ways to program officials, policy-makers, practitioners, and other key stakeholders—including integrating results into performance.

Three elements are important to successfully implement evidence-based policy:

1. Build staff capacity: Hire staff or contractors who understand evaluation and data collection methodologies and can translate these concepts to other program staff. Having the appropriate technical skills to create, maintain, and report on data systems and data sets is integral to any evidence-based approach.

2. Develop a coalition of support: Build and maintain support from all levels of the agency, including visible leadership buy-in and investment.

3. Budget for evaluation activities: Assess if there is a budgetary authority for evaluation spending or if there is flexibility within an agency or program's budget to set aside funds for evaluation activities.

Approach C: Pay for Success (PFS) Strategy
PFS programs are outcomes- and evidence-based investments, allowing agencies to invest specifically in an issue area where they hope to achieve outcomes and scale interventions that have demonstrated impact. According to Results for America's Invest in What Works: Pay for Success, in a PFS investment "a government agency enters into a contract with an intermediary organization to achieve specific outcomes that will produce government savings. The contract specifies how results will be measured and the level of outcomes that must be achieved for government to make payments. The intermediary selects one or more service providers to deliver a proven or promising intervention expected to produce the desired outcomes. Funding for service delivery comes from outside investors, often secured by the intermediary. If the desired outcomes are achieved, then government pays the intermediary, which in turn pays investors."

Common programmatic elements of Pay for Success initiatives include:

1. Budgetary Authority or Flexibility: PFS programs contracts are inherently years-long to allow for launch, implementation, and evaluation. You must have the money to enable long-term PFS programs.

2. Access to Expertise via Technical Assistance Contracts or Internal Staffing: Over the years-long process, you'll need various roles to fit your staffing profile. Just-in-time staffing levels, with subject-matter expertise with the needed technical skills, is key to a PFS initiative's long-term viability.

3. Agency Focus on an Issue that Lends Itself to PFS Programs: You'll need to ensure that an intervention is defined and measurable in terms of outcomes and costs and that there are existing interventions with evidence of effectiveness demonstrated.

Actions and Considerations

There are many ways to build evidence of what works. After reviewing many federal evaluation initiatives in 2016, the Office of Management and Budget identified five guiding principles that should be part of any evaluation policy:

1. Rigor: Use the most rigorous methods that are appropriate to the evaluation questions and feasible within budget or other constraints.

2. Relevance: The evaluation priorities should consider legislative requirements and Congressional interests, and reflect other stakeholders' the interests and needs

3. Transparency: Evaluation plans, ongoing work, and findings should be easily accessible. Release them regardless of findings.

4. Independence: Insulate evaluation functions from undue influence or bias.
5. Ethics: Conduct evaluations in an ethical manner that safeguards participants' dignity, rights, safety, and privacy.

Policies

- Office of Management and Budget, "Analytical Perspectives: Budget of the United States Government, Fiscal Year 2018," 2017.
  - Analytical Perspectives contains analyses concerning a number of subject areas that place the Budget of the U.S. Government in perspective. Chapter 6: Building and Using Evidence to Improve Government Effectiveness addresses the U.S. Government's definition and understanding of evidence-based evaluation.
- Department of Labor Evaluation Policy. US Department of Labor, November 2013.
  - This policy describes the Department of Labor's (DOL) governance and use of program evaluations as part of continuous improvement within the agency.
- Evidence-Based Policymaking Commission Act of 2016
  - Act established within the executive branch a Commission on Evidence-Based Policymaking, including that Commission's responsibility and scope for evaluation.
- Increased Emphasis on Program Evaluations, OMB M-10-01, October 7, 2009.
  - This memo announces the OMB's 2009 launch of government-wide efforts to inform and encourage participation in rigorous program evaluations.
- Next Steps in the Evidence and Innovation Agenda, OMB M-13-17, July 26, 2013.
  - This memo provides detail and resources for agencies to include evidence and evaluation for 2015 agency Budget submissions. Specific strategies are outlined for agency budget proposals to address both categories.

Resources

- Pew-MacArthur Results First Initiative, "Legislating Evidence-Based Policymaking A look at state laws that support data-driven decision-making," March 2015.

- ○ Pew-MacArthur Results First Initiative provides a review of 100 state statutes between 2004 and 2014 relating to evidence-based evaluation programs and assesses common approaches to evaluation across the legislative material.
- Andy Feldman, "The Role of a Chief Evaluation Officer: An interview with Demetra Nightingale, Chief Evaluation Officer, U.S. Department of Labor – Episode 42." GovInnovator, March 23, 2014.
    - ○ This interview with Demetra Nightingale gives federal, state, and local leaders insights into the DOL's establishment of a Chief Evaluation Officer role, and how best to replicate a similar role or its duties to encourage evidence and evaluation.
- Alex Neuhoff, Simon Axworthy, Sara Glazer, and Danielle Berfond, "What Works Marketplace: Helping Leaders User Evidence to Make Smarter Choices." Results for America, April 2015.
    - ○ What Works Marketplace is a policy report surveying the 'market' for evidence on effectiveness; assessing its current state and areas of opportunity using data from supply- and demand-side interviews, research, and analysis of supply-side data sources.
- What Works Clearinghouse
    - ○ Hosted by the Department of Education's Office of Education Sciences with the expressed goal of providing "educators with the information they need to make evidence-based decisions" through aggregation of existing research on evidence-based programs, products, practices and policies.

Solving Complex Problems

Communities of Practice (CoPs)

Summary

Purpose and Outcomes

Purpose: [Government Communities of Practice (CoPs)](#) are designed to help their members reach beyond their agency and other traditional outlets.

CoP members can consult subject-matter experts (SMEs) in government to solve problems, share ideas, develop peer relationships, and build on shared resources. Individual members can fulfill personal and professional goals around a defined topic of interest. Communities of practice allow government to do more with less. Their use is steadily increasing.

When communities of practice are properly cultivated, they grow into dynamic and innovative social structures. While agencies and other groups can initially sponsor and set up a community, the members must define and sustain it over time. Most communities consist of volunteer members who determine the goals, structure, and governance of the community.

Examples

[Check out these 20 government-wide communities of practice you can join today!](#)

Approach

By joining one or more of the government CoPs, federal employees can:

- Achieve White House strategic goals through coordinated efforts across the CoP.
- Consult a network of experts at any time
- Improve existing shared services and tools
- Improve shared performance outcomes
- Institutionalize the roles and responsibilities for innovation within agencies
- Provide professional development opportunities for members to enhance or learn new skills
- Reduce costs related to training, shared resources, and professional development
- Use each other's strengths to produce a mutually beneficial solution

Agencies benefit when their employees join government communities of practice because the CoP can:

- Connect people across the government who might not otherwise be able to
- Inspire new ideas from cross-agency interactions and collaborations
- Build shared solutions by leveraging subject-matter expertise
- Learn from each other in a forum where conversations can produce solutions and provide a network for mentoring and coaching opportunities.

- Share resources and best practices including educational development tools for member knowledge and development.

Actions and Considerations

If you're deciding whether to start a CoP, ask yourself these questions:

- What problem are you trying to solve?
- Does anyone else in the government have the same problem?
- Is anyone currently working to solve this problem?
- Is a community of practice the ideal way to solve this problem? Should we keep a formal group together for future collaborations?
- Is there a subject-matter expert available to set up and grow the community?

Follow these steps when deciding to setup and maintain a government CoP:

- Explore: Identify the audience, purpose, goals, and vision. Reach out to others within a community for lessons learned and shared resources.

- Plan: Define the activities, technologies, group processes, and roles that will support the community's goals. Use all the resources and guidance of existing government community of practice hubs such as [DigitalGov University](#).

- Launch: Distribute the new community of practice to the designated government agency and engage all new members with upcoming activities and benefits. Promote the community to other communities.
- Grow: Engage members in learning and knowledge-sharing activities, group projects, and networking events to create a cycle of participation and contribution.

- Sustain: Review and assess the knowledge and products created within the community for future strategies, goals, and technologies. Use short surveys to prioritize the next steps.

Successful communities measure their accomplishments on predetermined outcomes, community maturity, or other factors. However, elements of community success such as learning about best practices, knowledge transfer, and building government-wide solutions are intangible and impossible to quantify.

To measure properly, include metrics for both tangible and intangible outcomes, whenever possible. Here are some ways to measure both outcomes:

- Tangible outcomes:
    - Number of members, discussions, interactions, posts to a forum, and finished deliverables
    - Website analytics (pageviews, returning visitors, file downloads, etc.)
    - Social media analytics (if applicable)
- Intangible outcomes:

- Transfer knowledge within the community
- Track the networking of peers and experts to easily answer questions
- Post success stories

If a CoP doesn't meet your needs, consider joining or creating one of these groups:

Type	Definition	When to Use
Centers of Excellence (CoEs)	A group of people with specialized skills and expertise whose job is to provide leadership and disseminate their knowledge.	When there is a group of SMEs or executives who wish to coach, teach, and mentor for a defined period of time. A CoE can lead to a CoP.
Community of Interest	Similar to CoPs but tend to be narrower in scope and have a specific focus.	When there is a specific topic within a bigger community that members want to build out.
Guild	An association of craftsmen or merchants who set standards, and pricing, and work to perfect their skills. Guilds were originally started during the Middle Ages.	When a group of people in the same organization or agency want to share best practices, lessons learned, and collaborate on projects.
Public-Private Partnership	Collaboration between public and private sectors, typically on a long-term basis.	When there is a need to use members from industry and government to solve problems.
Working Group	Group of individuals who collaborate to achieve a specific objective.	When there is an issue or project to solve and there is a defined beginning and end.

Policies

There are currently no direct policies about setting up and managing a government community of practice. As a federal government, consider these recommendations:

- Understand your agency's policy about using all government equipment.
- Behave online in such a way that you do not bring your agency into disrepute, even if you are not officially representing your agency.
- Do not participate in commercial communications or endorsements.
- Remember all of your email correspondence with the CoP are subject to release under the Freedom of Information Act (FOIA) .
- Check your current agency policies on managing records. Find more information on the National Archives Records Management Information Page.

Note: If your community includes members of the public (non-government), please review the [Paperwork Reduction Act (PRA) Guide](#) before sending out a survey or other requests for feedback.

Resources

- [DigitalGov: Communities of Practice](#)
- [DigitalGov: Other Government Communities](#)
- [DigitalGov University](#)
- [GSA Hosted Listservs](#)

Grand Challenges

Summary

Purpose and Outcomes

Purpose: A grand challenge is an ambitious yet achievable goal that solves key problems on a large scale, usually capturing the public's imagination.

It issues a call to action, creating a sense of urgency and possibility that engages the many stakeholders needed to speed up new ways of thinking about the problem and progress towards solving that problem. A pioneering vision, large-scale collaborative effort, and an ambitious, but concrete, target are the defining hallmarks of grand challenges:

- **Grand vision:** The power of a grand challenge comes from a narrative that shifts the collective conversation. Bold language - like [making solar energy as cheap as coal](), [understanding the human brain](), or [answering the biggest questions in cancer]() – changes the question from "Why would we do that?" to "Why aren't we doing that?"

- **All hands-on deck:** Grand challenges galvanize public excitement and draw in new communities of solvers. A coordinated, all-hands-on-deck approach engages other agencies, foundations, research universities, companies, and citizens. The idea of [everyone as an asteroid hunter]() was a powerful way to involve the public in National Aeronautics and Space Administration's (NASA) work. Framing the call as "We can't do this alone; we need you," drew in motivated citizens interested in participating in scientific research (also known as citizen scientists) and experts.

- **Ambitious yet achievable target:** A grand challenge inspires people to come up with new approaches because they know what you are trying to accomplish. [NASA's challenge]() was to "land a man on the moon and return him safely to earth." The grand vision to "sequence and map all of the genes" guided the [Human Genome Project](). These targets let the community of solvers ask "what if," removing boundaries to innovative solutions.

Examples

Many agencies use grand challenges:

- The Defense Advanced Research Projects Agency (DARPA)'s [Cyber Grand Challenge Final Event]() brought together top security researchers and hackers to identify cybersecurity flaws.

- The Department of Energy's [SunShot Initiative]() seeks to make solar energy cost competitive with coal by the end of the decade, and [NASA's Asteroid Grand Challenge]() aims to find and address all asteroid threats to human populations.

- The U.S. Agency for International Development's (USAID) [Grand Challenges for Development]() address infant and maternal mortality, health supply chains, clean energy for agriculture, water

for agriculture, access to off-grid energy, and early grade literacy. They are fighting Ebola, Zika, and future threats.

- The Audacious Goals Initiative at National Institute of Health's National Eye Institute aims to restore eye vision.

See other federal grand challenges at Challenge.gov.

Approach

How might we create grand challenges?
You can use many frameworks:
- get an all-in commitment from an agency (like NASA's space program);
- engage matching funds from the private sector;
- announces your commitment framework, and then create space for others to support it;
- commit with external partnerships, but not fund any of the solutions.

Base your agency's commitment, the ways they will support the grand challenge, on many reasons including how they can, in a federal context, engage with other organizations–formally or informally–and which approach is most appropriate for the challenge goal:

- How much control do you want to maintain?
- Do you want to issue this into the world, and let a 501c3 or organizations take it forward?
- Do you want to formally partner with other organizations to help run this?
- Are you contracting with them, or partnering?

At its most basic level, a grand challenge program has three phases:

Phase 1: Problem Definition Phase
Invest time and resources in the problem definition process. Be open-minded to defining and redefining goals. Be prepared to refine your target based on feedback. Define the problem with expert stakeholder input and meaningful engagement by citizen solvers. They help identify the barriers to problem solving, and assess the landscape to understand what sort of call to action is needed. It takes the right problem, right partners, and right activities to catalyze action and create an opportunity to solve problems.

Phase 2: Program Development Phase
Grand challenge programs have these ingredients:
- High-level support and receptiveness to new approaches give grand challenge teams permission to reimagine how they see the problem and who can help solve problems.
- The right team of creative thinkers from within the agency who can see beyond what will happen next year, and look at longer time horizons.
- A set timeframe, typically 5 to 10 years, but up to 20 years, with clear measurable targets and easy-to-track milestones.
- Goals broken into parts so that experts and citizen solvers can contribute in different ways.

- Multi-year planning that aligns with budget cycles, including a plan for implementation, and long-term plans for integrating outcomes from the challenge.

Phase 3: Program Implementation Phase

Like other programs, during implementation you will continually refine to keep pace with new learning, changes in technology, and other factors. In a challenge, focus an engagement strategy on the community of solvers. Use events to encourage progress towards the goal, to find what next steps might be, hear about needs, or share accomplishments. You are building a community based on partnership and engagement from every level, from deep technical experts to motivated citizens. If you want to broaden the community base of problem-solvers, you must have a constant drumbeat of activities and communication.

Actions and Considerations

You have a lot of flexibility in how you set up a grand challenge. Develop one that works best for your agency by using choices about funding levels, the structure of your program, and dividing roles and responsibilities. Below are a few things to consider while working on grand challenges:

- Identify who should be engaged in the early stages of defining the problem.
- Find out how you can use appropriated funds.
- Select a framework to match your agency's commitment.
- Get leadership support and build your agency's team.
- Set goals and targets that balance ambition and feasibility.
- Prepare multi-year budgets and plans for program development and implementation.
- Develop targeted messages for each within the community of solvers.

Policies

- American Innovation and Competitiveness Act 2016
  - Act expands the use of challenges and gives the authority for any federal government agency to work cooperatively with and pool funds from multiple government agencies, and profit or nonprofit private-sector entities, state, tribal, local or foreign government agencies and higher education institutions.
- America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science (COMPETES) Reauthorization Act of 2010
  - Act passed "to invest in innovation through research and development, and to improve the competitiveness of the United States." In many places, the Act mandates that each agency cooperate with its partner agencies and offices, and it calls attention to the importance of high-risk, high-reward research in areas of critical national need.
- 15 U.S. Code Chapter 81 - High-Performance Computing § 5503

Resources

- Diana Hicks, "Grand Challenges in US Science Policy Attempt Policy Innovation," International Journal of Foresight and Innovation Policy, 2016.

- ○ Provides an overview of the evolution of Grand Challenges outside and within the federal government.
- Fourteen Grand Challenges for Engineering in the 21st Century
  - ○ From the National Academy of Engineering, this article covers four cross-cutting themes: sustainability, health, security, and joy of living.
- Grand Challenges
  - ○ Funded by USAID, Government of Canada, and the Bill and Melinda Gates Foundation, is a family of initiatives fostering innovation to solve key global health and development problems.
- National Science Foundation, "A Report of the National Science Foundation Advisory Committee for Cyberinfrastructure Task Force on Grand Challenges," March 2011.
  - ○ Looks at how the grand challenge framework is used to advance discoveries in computer science and engineering.
- U.S. Global Development Lab, "Tools for Innovation Programming: Step 1: Identify & Define the Problem."

Working with Innovators

Public-Private Partnerships Engagement

"For effective change in a complex system, you need to find ways to constructively involve everyone who is impacted. This is because in a complex environment if you are impacted, you exert influence."

- Seth Kahan, "The Power to Convene and Set Context"

Summary

Purpose and Outcomes
Purpose: Public-Private Partnerships (PPPs or P3s) and aligned commitments are important tools for engaging the public to help the government solve societal challenges through formal and informal agreements.

Public-private partnerships are formal joint ventures between the federal government and outside entities in order to address public-sector problems. PPPs effectively address a wide range of challenges such as:

- creating and improving infrastructure
- improving public health
- creating desired economic impacts

They work best when all partners benefit, and incentive structures and expectations are set from an early stage to help mobilize market forces on an issue or in a region that had a market failure.

An **aligned commitment** is a specific type of collaboration between the federal government and outside entities. Unlike formal PPPs, calls-to-action and convenings (meetings) match executive action to specific commitments from public and private sectors to create societal advancements and target specific issues like creating U.S. jobs and solving the global refugee crisis.

The federal government, particularly the White House, is uniquely positioned to assemble multiple stakeholders, declare inspiring calls to action on issues at significant turning points, and elevate an issue's national profile from talk to action. Through high-level engagement, public officials can match executive action to specific private-sector commitments.

Examples
Many agencies use PPPs and aligned commitments to solve challenges:

- 100Kin10 is solving the challenge of giving children a great education in science, technology, engineering, and math (STEM) by adding more than 100,000 more STEM teachers to America's classrooms by 2021.

- BRAIN (Brain Research through Advancing Innovative Neurotechnologies) Initiative seeks to deepen understanding of the inner workings of the human mind and to improve how we treat, prevent, and cure disorders of the brain. Launched in 2013, the participants include federal government agencies, private industry leaders, philanthropists, nonprofit organizations, foundations, and academic institutions whose research has resulted in finding nearly 100 previously unknown areas of the brain and publishing a new map of the brain.

- Global Alliance on Clean Cook Stoves (GACC) aims to create a global market for clean and efficient household cooking and fuel solutions. Launched in 2010, GACC has 19 founding partners from the public, private, and non-governmental organizations (NGOs) sectors. These partners include five federal agencies, five government partners, four private foundations/companies, and six United Nations (UN) agencies.

- Global Development Alliances (GDA) models public-private partnerships at the U.S. Agency for International Development (USAID), helping to improve the social and economic conditions in developing countries and deepen USAID's development impact.

Approach

Creating Successful Public-Private Partnerships
PPPs or P3s require a common agenda with clear goals and a structure for engagement in order to succeed and sustain themselves. While the partnership may use traditionally binding legal agreements, the partnership itself may not be legally binding. Work must be based on trust, relationships, and the collaborative power of multi-sector participation.

Successful P3s require:

- Policies, processes and tools that support federal efforts to form and sustain PPPs

- A legal framework to establish and enforce long-term PPPs agreements

- Alternative financing mechanisms/innovative procurement to work towards sustainability for partnership, whether within the federal government or independently managed

- Skills to manage and oversee projects and partnerships.

Call for Actions and Convenings for Aligning Commitments

External organizations respond to the White House's call to action by organically building their own coalitions to make financial and in-kind commitments. These commitments align with national priorities through well-structured convening (or meetings). Benefits of convenings include:

- Multidisciplinary approaches can help tackle our thorniest problems.
  Collaborative efforts focus on how to reach scale and scope to solve the problem while individual participants focus on their domain expertise and contributions.

- Unexpected coalitions can generate innovative solutions.
  Commitments mobilize stakeholders to align, act, and influence their networks to create new products and services, and develop future directions.

- High-visibility commitment spurs public engagement and jumpstarts new solutions.
  Stakeholders respond from a deep sense of civic responsibility; being directly asked to advance the public good appeals powerfully.

- Meetings complements concurrent efforts in the legislative process.
  External collaboration enables policymakers to focus on areas where legislation is essential.

- Galvanize more resources towards shared challenges.
  A measure of successful collaboration between the public and private sectors is whether the effort delivered more resources for solving a shared challenge by changing private-sector practices.

Actions and Considerations

Steps for Initiating and Deploying P3s

Designing a P3 arrangement is a continual process. Sustained success relies on building in feedback loops from start to finish.

There are seven key steps that the sponsoring agency should undertake when initiating and deploying PPPs.

Step 1: Scoping
Decide and define the issues, needs, goals, and objectives and revise them each time a new partner is approached by any member of the central partnership.

Step 2: Partner Identification: Internal and External Champions
Conduct internal mapping to identify projects that have P3 potential early in the planning process to consider how they may fit into long-term performance objectives and budget constraints. Identify and

avoid any conflicts of interest by identifying any existing connections with potential partners. Engage potential external partners through public convenings to create a common understanding of the goals and objectives that all participants can work towards.

Step 3: Engagement

Establish a coalition of collaborators interested in solving a problem, some of whom may be brought in early to help with implementing and understanding the framework. Collaboration begins after the legal parameters are understood and the agency has determined the level of domain of interest in employing the P3. Set priorities for engagement with a call to action by a high-level government official highlighting the urgency of solving a specific public issue. Bring together stakeholders to set common agenda, define measurable goals and timelines, and begin allocating workflow to partners based on expertise.

Step 4: Definition and Formation

Understand the statutory and policy framework that the government entity (federal, state, or local) is operating under determines the P3 arrangements allowed for project selection, funding, management, and other policies. Agencies may also establish specific policies to guide P3 project development and involve general counsel and contracting experts in developing the initial partnership framework.

Conduct procurement for P3s by allowing greater flexibility to allow for innovation by the bidders and provide more room to negotiate with multiple stakeholders. Government officials should work directly with contracting and procurement officials to ensure the P3 framework supports the partnership's goals. The agency may want experienced financial, legal and technical advisors to help assess the financial quality of the bid, determine the technical expertise of the bidders, and negotiate with the private partner.

Step 5: Implementation

Build a robust strategy. It should improve visibility of the public-private partnership. It should also enhance the networks of partners, media, and peers into the plan and increase the sponsoring agency's participation. The agency must manage relationships and conduct continuous monitoring and oversight to ensure that it achieves the performance standards established in the partnership agreement.

Step 6: Performance Measurement

Include metrics to measure both tangible and intangible outcomes. Metrics for intangibles may have to be contextual, such as proxy indicators, anecdotal evidence, and storytelling. Properly define objectives and intended results to develop meaningful performance measures.

Step 7: Renewal and Closure

Capture overall success of the partnership through a two-fold approach: measuring the process and measuring the impact over time. Test the partnership's reliability and viability to determine if it creates impact for the beneficiaries and whether the project should be renewed.

Steps for Announcing and Gathering Public and Private Commitments

Agencies must inform external organizations about the opportunity to make commitments by:

- Issue a call for action: Issue through a speech or op-ed by senior leadership. Use blog posts that highlight how organizations can get involved and where they should submit their commitments through online platforms or e-mail addresses.

- Organize a workshop: Use brainstorming sessions to generate ideas for specific commitments. Invite senior administration officials to convey serious intent.

- Leverage associations or professional societies: Inform and mobilize association and professional society members, particularly if they have entrepreneurial and highly motivated staff.

- Schedule an event: Create a sense of urgency through a deadline.

- Amplify momentum: Identify a few organizations that are willing to act in order to create momentum.

- Highlight past commitments: Show people and organizations relevant examples of past commitments.

Structure the convening process to keep the meetings focused on the defined outcomes and processes.

- Select the problem by clearly defining concrete pieces of high-priority challenges. Use backwards mapping to identify and segment dimensions of the policy challenge.

- Be open to co-creating the solution context. Achieve a clear purpose centered on outcome-driven goals, but empower partners to adapt and co-create the collective mission and specific responses.

- Structure convenings around action. Convey an explicit expectation that participants will produce deliverables or commitments for their specific follow-on actions and investments.

- Build trust.

- Focus on realizing the shared outcome.

- Include the public. Create a platform where citizens can also contribute new ideas. Get input through digital engagement tools

Policies

P3 Legislation

- American Recovery and Reinvestment Act of 2009
  - Act authorized $126 billion for infrastructure projects, some of which have evolved into public-partnerships by using funding to encourage private-sector investment and involvement.

- [Edward M. Kennedy Serve America Act of 2009](#)
  - Act reauthorized and expanded national service programs administered by the Corporation for National and Community Service (CNCS), establishing new parameters of engagement with nonprofits, community-based organizations, and foundations.

P3 Policy Guidance

- Alissa Ardito, "[Public-Private Partnerships Draft Report](#)," Administrative Conference of the United States, September 7, 2016.
  - Established best practices for agencies including creating offices for strategic partnerships and suggested that the administration issue an Executive Order regarding Public-Private Partnerships.
- U.S. Senate Foreign Relations Subcommittee on State Department and USAID Management, International Operations, and Bilateral International Development, "[Public-Private Partnerships in Foreign Aid: Leveraging Taxpayer Dollars for Greater Impact and Relevance](#)," July 12, 2016
  - Testimony of Daniel F. Runde, Chair and Director, Project on Prosperity and Development, CSIS) communicating the United States' role in development and the dynamic atmosphere of international development.
- U.S. House Committee on Transportation and Infrastructure, "[Public Private Partnerships: Balancing the needs of the public and private sector to finance the nation's infrastructure](#)," September 14, 2017.
  - Panel on Public-Private Partnerships established in January 2014 to examine the current state of public-private partnerships (P3s) across all modes of transportation, economic development, public buildings, water, and maritime infrastructure and equipment, and make recommendations for how to balance the needs of the public and private sectors when considering, developing, and implementing P3 projects to finance the nation's infrastructure.

Aligned commitments are not bound by the same legal considerations required by more formal public-private partnerships because they are not formalized partnerships. However, they are consistent with recent efforts to expand public and civil society participation and to create more open, participatory, and collaborative government.

- [2016 Agency Open Government Plans](#). OMB M-16-16, July 14, 2016.

Three action plans from the Open Government Partnership promote transparency and accountability in the federal government:
- [The Open Government Partnership: National Action Plan for the United States of America](#), September 20, 2011
- [The Open Government Partnership: Second Open Government National Action Plan for the United States of America](#), December 5, 2013
- The Open Government Partnership: Third Open Government National Action Plan for the United States of America, October 27, 2015

Resources

- [U.S. Public Participation Playbook](#)
  - A resource for government managers to effectively evaluate and build better services through public participation using best practices and performance metrics.
- Clear Impact Forum:
  - [Collective Impact Toolkit](#) is a free toolkit designed to help launch and sustain collective impact initiatives.
  - [Resources](#) including webinars, presentations, and cases for implementing collaborative approaches using collective impact.
- [FHWA P3 Toolkit](#)
  - A toolkit from the Department of Transportation's Federal Highway Administration (FWHA). It includes analytical tools and guidance documents to help educate public sector policy-makers, legislative and executive staff, and transportation professionals in implementing P3 projects.
- FSG.org webinar series on how to understand and deploy the collective impact framework:
  - [Is Collective Impact the right approach for you?](#)
  - [Collaborating to create a common agenda](#)
  - Setting the Scene for Collective Impact
- Noah Rimlaud Flower and Anna Muoio, "[Gather: The Art & Science of Effective Convening](#)," Monitor Institute, June 2013.
  - A free digital guidebook from the Rockefeller Foundation for designing convenings based on extensive research.
- Organization for Economic Cooperation and Development (OECD), "[OECD Recommendation on Principles for Public Governance of Public-Private Partnerships](#)," May 2012.
  - Provides concrete guidance to policy makers on how to make sure that PPPs represent value for the public sector.
- Seth Kahan, "[The Power to Convene and Set Context](#)," Fast Company, October 28, 2008.
- World Bank Group, "[World Bank Group Support to Public-Private Partnerships: Lessons from Experience in Client Countries, FY02-12](#)," December 2015.
  - [Chapter 1: Introduction to Public Private Partnerships](#)
- World Bank Group, "[Practical Tools for PPPs](#)."
  - Practical guidance for structuring a project and developing bidding documents, from hiring advisors through to toolkits and checklists and procurement processes.

Startup Engagement

Summary

Purpose and Outcomes
Purpose: As budgetary cuts reduce available resources, government agencies can meet their mission goals engaging with small businesses and startups.

There are a few differences between small businesses and startups. The U.S. Small Business Administration (SBA) describes a small business as "independently owned and operated, organized for profit, and not dominant in its field." Serial entrepreneur and author Steve Blank describes a startup as a "[temporary organization designed to search for a repeatable and scalable business model](#)." It has to prove its business model quickly in a way that affects its target market. People who create startups intend to grow quickly and become a large company.

The driving force behind startups and small businesses is different. The small business owner wants to be her own boss and secure a place in the local market. The startup founder wants to disrupt the market with a scalable and impactful business model.

They're also funded differently: while both a small business and startup are usually funded by self or friends and family from the start; if a startup succeeds, it will receive more series of funding from angel investors, venture capitalist, and eventually, an initial public offering (IPO).

Although the startup founder and small business owner are both entrepreneurs, the intent, primary function, and funding of their respective business models are radically different. Despite their differences, knowing their purpose and organizational structure will help to work with them more effectively.

Governments gain many benefits for increase their engagement with startups and small businesses:

- Access alternatively designed, priced, or produced solutions than those offered by traditional providers

- Lower the risk of new, cutting-edge technologies from startups for widespread adoption in the private sector

- Increase the available talent and resource pool

- Catalyze new innovations that broadly benefit the U.S. people

Startup and Small Business Challenges
While a startup focuses on exponential growth and a small business focuses on incremental growth, they both face similar challenges when engaging with government agencies.

These challenges include having a high barrier to entry, specifically a costly procurement pipeline, misconceptions about intellectual property, and maintaining their innovative culture.

1. **A costly procurement pipeline:** The procurement pipeline can be understood as the nature and order of events that must take place when the federal government wishes to buy a service or product from the private sector. The federal government, as the ultimate big customer, has developed structures optimized to big companies, big contracts, and big oversight. This drives up transaction costs for small businesses at every stage: initial discovery of product needs and specifications by the government buyer, dialogue and interface between the government buyer and the startup seller, identifying appropriate contracting vehicles for the sale (authorized frameworks, methods, and appropriate contacts/departments), interface while implementing a

contract with a prime (overhead contractor), and ultimately delivering the product or service to the government buyer.

Many startups assess the time, effort, and financial cost at each juncture to be too high, and instead choose to opt-out of working with the government to pursue opportunities with lower barriers to entry.

2. **Misconceptions regarding intellectual property:** Another barrier is the perceived danger to their intellectual property (IP) assets. Startups, or their angel investors and venture capitalists, commonly fear that government collaborations will result in a new product to which they have limited rights, or they fear that the rights to their main marketable product may be, in some part, transferred to the government. Government's primary goal is to seek a private partner that possesses the necessary expertise to modify an existing technology (or, sometimes, create an entirely new technology) that fits an agency's needs. However, agencies need to create a clear line of communication about their IP and contractual policies with their private partners, whether this means providing small businesses with a very clear and exhaustive FAQ webpage (e.g., the Department of Energy's (DOE) Small Business Voucher pilot program) or providing direct access to trained representatives or legal teams (e.g., the NASA patent portfolio). [Ansari, S., Krieger, B., and Siboni, R., "Buying What Works Memo," Unpublished, August 25, 2016.]

3. **Maintaining a culture of innovation:** Startups and often small businesses exist in a culture where they are willing to take risk and are used to developing quick partnerships. Government, on the other hand, has little to no tolerance for failure, and operates under the guidance of policies and procedures specifically to minimize agility, discouraging modern vendors from working with government (Source: The White House, "Exit Memo: Office of Management and Budget," January 5, 2017).

   [Ansari, S., Krieger, B., and Siboni, R., "Buying What Works Memo," Unpublished, August 25, 2016]

Examples

Here are some case studies of agency-led approaches to engage startups and small business:

Small Business Innovation Research (SBIR)

SBIR is a highly-competitive program that encourages domestic small businesses to engage in federal research/research and development (R/R&D) that has the potential for commercialization. Through a competitive awards-based program, SBIR enables small businesses to explore their technological potential and provides the incentive to profit from its commercialization.

DOE Lab-Embedded Entrepreneurship Program

The goal of the Lab-Embedded Entrepreneurship Program at the U.S. Department of Energy (DOE) is to embed innovators and aspiring entrepreneurs within the national laboratories to perform applied research and development (R&D) with the express goal of launching advanced energy businesses under world-class mentorship.

DOE Small Business Vouchers Pilot Program

To efficiently execute the Small Business Vouchers (SBV) Pilot Program, the DOE streamlined the process of collaborating with small businesses and national laboratories by developing a standard legal agreement for research and development.

DHS EMERGE Accelerator Program

The Department of Homeland Security (DHS) launched the EMERGE Accelerator to find emerging commercial technology that is adaptable for homeland security. EMERGE attracts entrepreneurs in the wearable technologies field (e.g., body-worn electronics, sensors).

DHS Silicon Valley Office

In early 2016, the Science and Technology Directorate of DHS announced the opening of a DHS Silicon Valley office. Its primary goal to create a pipeline for nontraditional partners who may have access to Silicon Valley's fast-paced innovation network of Silicon Valley to work with the federal government.

NASA Patent Portfolio/ Software Catalog

NASA has enjoyed great success in attracting small businesses for technology-based partnerships. NASA has published consumer-friendly, easy-to-use websites that list all available NASA technologies, including licensable patents, software, and public domain technologies.

NIH SPARC Program

Funded by the National Institutes of Health (NIH) Common Fund, the Stimulating Peripheral Activities to Relieve Conditions (SPARC) program is designed to bring together government and individuals, industry, foreign, small business, and non-profit (nontraditional) partners to improve neuromodulation therapies by uncovering the underlying neuroanatomy and biological mechanisms of action governing nerve-organ interactions. The SPARC program is one of three programs at NIH that are currently using NIH's Other Transaction (OT) Authority, which allows the NIH to streamline the process of awarding federal funds and better target organizations and individuals.

Approach

As shown in the examples above, there are several innovative strategies including new innovative contracting models that increase accessibility to these entrepreneurs, and reduce the complexity and cost of doing business with the government.

Lessons Learned

Here are some lessons learned from agencies who have worked with startups and small businesses:

- Decentralize trust and empower personnel lower down the chain of command: Contracting Officers (COs) are usually excluded from conversations about fulfilling the agency's mission. As a result, they award contracts to larger, more established companies. One lesson learned is to empower COs with the information they need to take risks on awarding contracts to

companies that are the most effective and have demonstrated capabilities regardless of the company's size.

- Follow the law instead of tradition: One of the first steps to streamlining procurement and working with small companies is to distinguish self-imposed recommendations from actual regulation. The HHS Buyer's Club recognizes this and seeks to find innovative strategies to find new ways to use old regulations and laws, rather than assume the laws are essentially wrong. As new practices are validated, they can first be published internally through informational webinars and then circulated more widely through training courses offered by entities like the [Federal Acquisition Institute.](#)

- Express needs in the form of problems / outcomes instead of solutions / requirements: The usual process of procurement is to define the solicitation by the solution requested and the related requirements. By design, the wording is typically narrow so only a handful of suppliers are eligible. Typically, there is a bias against small businesses.

  If instead solicitations specify the problems to be solved and the outcomes expected, smaller companies have room to be creative and will not be immediately disqualified. Additionally, small companies will see that the government sees them as valuable partners and may be more willing to apply.

- Start small, gain quick wins, and scale fast: Any change takes time and resources. The same Agile and Lean Startup perspectives from the world of entrepreneurship can be applied to making changes to government procurement. Many small pilots can try out new ideas, and quick wins can help convince any skeptics. The pilots that succeed can then be scaled appropriately.

Actions and Considerations

Consider these tactical actions and recommendations when engaging with startups and small businesses:

Designate a small business representative

In addition to widely disseminating new opportunities, agencies that wish to engage innovative small businesses should designate a representative. Not all agencies will have the resources to create a new position dedicated to private-sector outreach, but existing employees may be assigned duties that include direct contact with incubators and accelerators.

Address intellectual property (IP) concerns through clear communication

Consider providing specific methods for partners to ask questions and receive answers about legal considerations. One option is to designate an individual with legal knowledge to serve as an IP liaison with new private partners, and to publish that person's contact information in a readily accessible web space. This increases the likelihood that small business with legal concerns will get their questions quickly and efficiently, therefore increasing much needed trust in prospective government partners.

GSA IT Schedule 70 "Making It Easier"

The U.S. General Services Administration (GSA) launched Making It Easier (MIE) in April 2016 for IT Schedule 70 to accelerate and streamline procurement. IT Schedule 70 is the largest IT acquisition vehicle in the U.S. government, and MIE is an effort to meet the speed of IT and supply government purchasers with the most innovative solutions. MIE includes the IT Schedule 70 Roadmap that explains the contracting process in plain language and provides a standardized welcome package for new contractors.

The GSA FASt Lane initiative reduces the processing time of contract modifications and new offers, provides the Startup Springboard to get companies less than 2 years old on the schedule, and provides a contracting forecast tool. Similar progress in other areas is possible by dedicating resources and time to streamlining processes. For more information, contact FAStlane@gsa.gov.

Create workable procurement pipelines

Despite the procurement pipeline challenges, at least one widely workable alignment exists for research and prototyping projects for which Other Transaction (OT) Authorities or Blanket Purchase Agreements (BPA) are appropriate. See the Innovative Acquisitions and Procurement section for more information.

Use Innovative Acquisitions and Procurement Methods

Many new procurement methods foster a better relationship between the government and startups/small businesses:

- Challenge-based acquisitions are a try before you buy approach. They provide for the small-scale introduction of innovative and cost-saving technologies into existing acquisition programs through challenge proposals. With a challenge-based acquisition, an agency can motivate private-sector entities to develop and demonstrate their solutions in real-world conditions so an agency can choose a source to award contracts or task orders for more testing, refinement, or production.

- Competitive milestone-based payments: Competitive milestone-based contracts are a useful tool for attracting businesses with innovative approaches to well-defined, multi-component problems. It promotes competition among a stable pool of selected offerors across a series of clear, technically feasible milestones, with payment withheld until the associated, agreed-upon milestone is completed.

- Incentive prizes: This contracting model promotes innovation by offering a reward upon completion of a specific objective task. Prizes enable the federal government to pay only for success, establish an ambitious goal, and reach beyond the usual suspects to increase the number of minds tackling a problem without having to predict which team or approach is most likely to succeed. Many well-known incentive prizes have focused on catalyzing technology R&D, though prize administrators are increasingly using incentive prizes to drive behavior change, market adoption of existing solutions and interventions, and progress in areas of social policy such as health, energy use, and education. See Challenge.gov for a listing of challenge and prize competitions.

- Non-binding purchase agreements: Non-binding commitments to purchase products can create demand for new, more effective solutions where market requirements remain unmet. Frequently developed in partnership between federal and private-sector partners, commitments can catalyze the voluntary market introduction of cost-effective solutions that advance everyone's best interests. Non-binding purchase commitments work best when there is both a clearly defined performance specification and a strong expression of interest from potential buyers.

- Rapid technology prototyping: A rapid technology prototyping contract is an innovative contracting model that consists of multiple, small, fast, and cheap acquisitions to test innovative technologies. They may be used to rapidly and inexpensively identify whether cutting-edge, unproven, but potentially transformative technologies are viable options for an agency's particular requirements.

- Staged contracts: Staged contracts offer agencies a tool to solicit proposals widely across the private sector—from established contractors to entrepreneurs—and rapidly assess them. A staged contract is an innovative contracting model that follows a three-phase evaluation process consisting of a short concept paper, invite-only full proposal, and subsequent year pilot evaluation. Staged contracts may be used to rapidly and cheaply assess many existing or prototype private-sector technologies.

Read more on why, when, and how to deploy these approaches in "Innovative Contracting Case Studies."

Use existing training resources to build capacity

The Defense Acquisition University and Federal Acquisition Institute have some courses aimed toward including small businesses and implementing agile practices. The procurement lessons learned should be shared, when applicable, through these platforms to maximize impact. Civilian contracting officers are required to take 40 hours of training every two years; encouraging staff to choose training on innovative contracting models can enhance agency capacity to engage a wider range of partners. This training model could be replicated to provide experiential learning on other innovative contracting models.

Policies

- Small Business Administration and Agencies Partnership Agreements
- The White House, "A Strategy for American Innovation," October 2015.
- The White House, "Contracting Guidance to Support Modular Development," June 14, 2012.
- The White House, "Memorandum for Chief Acquisitions Officers, Senior Procurement Officials, and Agency Small Business Directors – Subject: Increasing Small Business Participation in Federal Contracting," February 11, 2011.
- The White House, "Memorandum for the Heads of Executive Departments and Agencies, and Independent Regulatory Agencies – Subject: Social Media, Web-Based Interactive Technologies, and the Paperwork Reduction Act," April 7, 2010.
- The White House, "Memorandum for the National Science & Technology Council Committee on Technology – Subject: Open Innovator's Toolkit," February 8, 2012.

Resources

- [18F Contracting Cookbook: User-Centered Design](#). Guidelines for contractors to employ user-centered design.
- David Thornton, "[How agencies can build an engaged social media following](#)." Federal News Radio, August 17, 2016.
- [Engine: The Voice of Startups in Government](#). Research, policy analysis, and advocacy
- [Making it Easier for Suppliers to Work With the Government](#), General Services Administration
- The White House, "[Innovative Contracting Case Studies](#)," 2014.

For Startups

- Arika Pierce, "[The Startup's Guide to Government Relations](#)," StartupGrind, 2016
- Lalita Clozel, "[This new accelerator helps startups get federal contracts: Dcode42](#)," Technical.ly, March 10, 2015.
- Lauren Marinaro, "[How startups can work with cities to innovate for a smarter future,](#)" ReadWrite, January 4, 2017.
- Mariana Mazzucato, "[The Entrepreneurial State: Debunking Public vs. Private Sector Myths](#)," Anthem Press, 2013.

Prizes and Challenges

"A good Government implies two things: first, fidelity to the object of Government, which is the happiness of the People; secondly, a knowledge of the means by which that object can be best attained."

- James Madison, *The Federalist Papers*

Summary

Purpose and Outcomes

Purpose: Prizes and challenges are an approach to federal contracting that promotes innovation by offering a monetary or non-monetary reward upon completing a specific objective or task (i.e., a challenge) (Source: The White House "Innovative Contracting Case Studies," August 2014).

Prize competitions are a proven way to increase innovation for the public, private, and philanthropic sectors. Incentivized, open competition is a standard tool in many agencies' toolboxes for delivering more cost-effective and efficient services, and advancing agencies' core missions.

Using prizes can provide benefits for federal agencies that use them by

- Enabling the Federal government to direct resources to projects with a successful outcome.

- Establishing an ambitious goal by laying out a challenge for prize seekers.

- Helping agencies extend their reach to new participants.

- Increasing the number of people working on a problem without having to predict which team or approach is most likely to succeed.

- Bringing out-of-discipline perspectives to bear.

To date, agencies have sponsored more than 740 public-sector prize competitions on Challenge.gov, a website where tens of thousands of entrepreneurs and citizen problem solvers have participated and won over $250 million in prizes (Source: The White House, "A Strategy for American Innovation," October 2015).

Example

National Institute of Justice (NIJ): Ultra High-Speed Apps

Under the general authorizing statute to conduct research and 28 USC Section 530C, NIJ launched the Ultra High Speed App Challenge to source new solutions to improve public safety applications. NIJ offered a $150,000 prize purse, and four winning entries provided real-time and individually tailored information to practitioners in rapidly evolving emergency situations.

NIJ's Approach

- The developers created a multidisciplinary team that included IT, finance, communications, and justice programs personnel.
- Contestants were required to submit a working prototype of the software and corresponding apps. All submissions were required to demonstrate the need for the app; articulate the way in which the app would improve criminal justice effectiveness and/or efficiency; specify the public

access databases used to support the app and the proposed method of acquiring and updating these data; and identify appropriate and obtainable impact measures.

- NIJ spread the word through press releases and social media content while also performing targeted outreach at relevant conferences and events.

Learn More: NIJ Ultra High Speed App Challenge.

Approach

How can we create and run prizes and challenges?
When considering prizes and challenges, agencies should have a clear idea of what they are trying to accomplish with a prize, and how the prize will help them achieve that goal. A prize should not be an end in itself, but one tactic within a broader strategy for encouraging and shaping private innovation and change. Agencies should plan appropriately for all stages of prize development and, where permissible, consider partnering with other entities that might administer, support, or market the prize.

There are five distinct phases of tasks required to successfully run a challenge:
1. Prepare
2. Develop
3. Conduct
4. Award
5. Transition

Phase 1: Prepare
- Estimate your necessary resources and partnerships.
- Determine if a challenge is the best tool for addressing your goals.
- Identify your goals and desired outcomes.

Phase 2: Develop
- Determine the prize competition structure and implementation timeline.
- Work with internal groups to establish eligibility and submission requirements, terms and conditions, and judging criteria.
- Connect with your communications team to outline your announcement and ongoing outreach strategy to engage contestants who can solve the problem.

Phase 3: Conduct
- Roll out your communications plan, accept solutions, and interact with contestants to continue to generate interest and enthusiasm to solve the problem.
- As submissions close, begin to evaluate entries, select winners, and verify winner eligibility.

Phase 4: Award
- Determine the appropriate channels for announcing your winner(s).
- Work with internal teams to expedite payment and document your processes.
- Explore important nonmonetary incentives that reach all participants — regardless of winner status — such as detailed feedback, recognition, and information on follow-on funding opportunities.

Phase 5: [Transition](#)
- Analyze and document the results, outcomes, and impact of your incentivized competition.
- Evaluate avenues for remaining engaged with contestants as well as next steps for high-potential solutions, whether moving them into an innovation "accelerator" to quickly develop their prize solutions or exploring other channels for moving prize solutions to procurement.

Actions and Considerations

Setting up and running a challenge require flexibility. Develop a challenge that works best for your agency and your challenge goals.

- Define the problem to solve and establish clear goals. Do not run a challenge if you don't have a problem to solve.
- Identify and engage appropriate stakeholders early.
- Determine how you will fund the challenge.
- Get leadership support and build your agency's challenge team.
- Prepare a communication plan before launching the challenge.
- Sign up for an [OMB Max](#) login to use Challenge.gov.

Policies

- [S.3084 - American Innovation and Competitiveness Act](#), 114th Congress, December 2016. This stipulates that 'Federal agencies may use crowdsourcing and voluntary, collaborative citizen science to advance their missions.

- The [America COMPETES Reauthorization Act](#) provides all Federal agencies broad authority to conduct prize competitions as called for by the President in the [Strategy for American Innovation](#). The [American Innovation and Competitiveness Act](#) updated important parts of this authority. All agencies and programs should be aware of the flexibilities offered by the COMPETES Act prize authority to source solutions from U.S. innovators. Under the Act, agencies have authority to establish ambitious prizes to advance national priorities:
  - **Scope**: The Act authorizes agencies to conduct any prize competition that will "stimulate innovation that has the potential to advance the mission of the respective agency."
  - **Size**: Agencies can offer up to a $50 million prize without further consultation with Congress.
  - **Multi-Sector Partnerships**: The Act allows agencies to partner broadly with other government entities and the private sector, as well as solicit and accept philanthropic and private sector funds to support a prize purse or the competition's design and administration. (For more information on the prize authority in the America COMPETES Reauthorization Act, please see the [Fact Sheet and Frequently Asked Questions memorandum](#).)

- Section 24 of the [The Stevenson-Wydler Technology Innovation Act of 1980](#), 15 U.S.C. §3719, as enacted by the America COMPETES Reauthorization Act of 2010, permits any agency head to "carry out a program to award prizes competitively to stimulate innovation that has the potential to advance the mission of the respective agency" (§24(b)). Section 24 authorizes

agencies to use both private sector and Federal appropriated funds in order to design prizes, administer prizes, and offer monetary awards for prize competitions.

● Agencies can conduct prizes under other authorities, such as agency-specific authorities (such as those that apply to DOD, DOE, and NASA); procurement authority such as that provided by the Federal Acquisition Regulation (FAR); authority to award grants, participate in cooperative agreements, or both; and authority related to "necessary expense" doctrine, among others. The General Service Administration has a contract vehicle (Schedule 541 4G) to decrease the amount of time required for agencies to tap into private-sector expertise that is critical to early success.

Resources

● Challenge.gov provides essential information and resources to guide Federal employees working on challenges and prizes.

● DigitalGov, "FAQ FARs: Contracting Expert Shares Best Practices for Running Competitive Challenges," YouTube, August 15, 2017.

  ○ Presentation by Mark Hopson, Innovation Specialist at the U.S. General Services Administration, discusses best practices in running competition-based acquisitions.

● DigitalGov, "Prize Design Interactive Session: Developing Ambitious Prizes," YouTube, Oct 19, 2015.

  ○ Sandeep Patel, former Open Innovation Manager at the U.S. Department of Health and Human Services, presents a workshop on developing challenge prizes.

● Karim Lakhani and Raymond Tong, "Public-Private Partnerships for Organizing and Executing Prize-Based Competitions," Harvard University Berkman Klein Center for Internet & Society, June 10, 2012.

  ○ Provides an overview of the prize lifecycle to help agencies better understand when to use prizes and the various elements involved in developing a prize.

● Perrie Ballantyne "Challenge Prizes: A Practice Guide." NESTA Center for Challenge Prizes, 2012.

  ○ Insights from the Centre's work to design and run challenge prizes.

Crowdsourcing and Citizen Science

"The potential of crowdsourcing and citizen science is limitless: solving puzzles, formulating new approaches to science, to creating entirely new hypotheses and eventually being able to test them. Really, the only limit is our imagination"

-   Amy Robinson Sterling from *Crowd & Cloud*

Purpose and Outcomes

Purpose: Crowdsourcing and citizen science are tools that educate, engage, and empower the public to apply their curiosity and contribute their talents to a wide range of real-world problems.

By enabling and scaling the use of open innovation methods such as citizen science and crowdsourcing, the federal government is increasingly harnessing the public's ingenuity to accelerate science and technology innovation, and improve government's efficiency and effectiveness.

Crowdsourcing is an online, distributed problem-solving and production model where organizations submit an open call for voluntary assistance. Through citizen science, members of the public participate voluntarily in the scientific process, addressing real-world problems in ways that may include formulating research questions, conducting scientific experiments, collecting and analyzing data, interpreting results, making new discoveries, developing technologies and applications, and solving complex problems. Members of the public can contribute to a wide range of scientific and societal problems, including public health, disaster response, biodiversity research, and astronomy."

Citizenscience.gov is an official government website designed to accelerate the use of crowdsourcing and citizen science across the U.S. government. The site provides a portal to three key assets for federal practitioners:

- a searchable catalog of federally supported crowdsourcing and citizen science projects
- a toolkit to assist with designing and maintaining projects, and
- a gateway to a federal community of practice (COP) to share best practices.

In September 2015, the White House Office of Science and Technology Policy (OSTP) outlined the benefits of citizen science and crowdsourcing approaches that can help federal agencies including:

- Enhance scientific research
- Address societal needs
- Provide hands-on learning and increase literacy of science, technology, engineering, and math (STEM)

Enhance scientific research
Citizen science and crowdsourcing help enhance and accelerate scientific research through group discovery and co-creation of knowledge. Volunteers can collect data over large geographic areas and long periods of time that federal agencies may not be able to do given resource constraints. Volunteers also can provide unique perspectives and local expertise for interpreting data such as categorizing millions of objects or finding solutions to complex problems that computer algorithms may not be able to solve.

Address societal needs
Citizen science and crowdsourcing projects can boost and enhance the scientific process and address other societal needs while drawing on the vast skills, dedication, and ingenuity of the American people. Diverse participation by all parts of society brings in new ideas and insights and contributes to solutions. They can address societal needs and federal agency goals, ranging from enhancing the accuracy of prediction markets to tagging and transcribing national archives and records.

Provide hands-on learning and increase literacy of science, technology, engineering, and math (STEM)

Adult and student participants in crowdsourcing and citizen science projects can acquire a life-long enthusiasm for science, along with valuable STEM skills. Students working on real-world problems can make classroom learning experiences more exciting, and adults can advance their knowledge and skills while contributing to the larger scientific enterprise. They might become more involved in community decision-making because citizen science and crowdsourcing projects helps citizens and communities gain STEM literacy and learn about issues important to them.

Examples

- [The Aggregative Contingent Estimation (ACE) Program](#), sponsored by the Intelligence Advanced Research Projects Activity, enhances the accuracy, precision, and timeliness of forecasts for a broad range of global events. Launched in 2010, ACE is based on the idea that combining forecasts made by an informed and diverse group of people often produces more accurate predictions of future events than those made by a single expert.

- [CoCoRaHS — Community Collaborative Rain, Hail and Snow Network](#) provides a way for volunteers to collect and submit local precipitation data and educate the public. CoCoRaHS is now used in peer-reviewed publications, in classrooms around the country, and in local communities to promote awareness of weather effects

- The U.S. Department of State's [MapGive](#) supports a global open mapping initiative with learning tools, satellite imagery, technical services, event support, and networks in the global OpenStreetMap and humanitarian communities.

Approach

Agencies should apply these principles, where relevant, when designing crowdsourcing and citizen science projects:

1. **Data quality**. Federal agencies should ensure that data have the appropriate level of quality, credibility, and usability for the project. Also, citizen science projects should incorporate the same practices followed by all science projects, including data-quality assurance, data management, and ongoing project evaluation; relevant federal and agency policies for scientific integrity and ethics; and other applicable agency principles, policies, and practices.

2. **Openness**. Information is a valuable national resource and a strategic asset to the federal government, its partners, and the public, which should be preserved and shared. Federal agencies should design projects that generate datasets, code, applications, and technologies that are transparent, open, and available to the public, consistent with applicable intellectual property, security, and privacy protections. Agencies should use machine-readable formats to share data, metadata, and results with project volunteers and the public.

3. **Public participation.** Public engagement enhances the government's effectiveness and improves the quality of its decisions. Project participation should be fully voluntary. Volunteers should receive acknowledgment for their contributions, understand how their contributions are

meaningful to the project, and how they will benefit from participating. Where appropriate, agencies should consider engaging other countries or regions with relevant experience, programs, or citizenry to provide useful scientific data on issues that span national borders and build international understanding of shared scientific challenges.

Actions and Considerations

The Federal Toolkit for Crowdsourcing and Citizen Science includes five basic process steps for planning, designing, and carrying out a crowdsourcing or citizen science project (adapted from Bonney et al. (2009). Each step includes a list of tips you can use to keep your project on track.

1. Scope out your problem: Know your tools, engage your stakeholders and participants, know where your project fits, and get approval from your supervisors.
2. Design a project: Know your objectives, list your resources, plan project management, and get ready to go.
3. Build a community: Know your community partners, engage your community, nurture your community, and be sensitive to socio-cultural issues.
4. Manage your data: Think of your data as an asset, prepare a data management plan, and acquire, process, analyze, share, and preserve your data.
5. Sustain and improve: Adapt to cycles of participation, communicate effectively, solicit feedback from your participants, sustain your project funding, evaluate your data's quality, evaluate your participants' engagement, build flexibility into your project, and know how to end your project.

Interested in bringing crowdsourcing and citizen science and crowdsourcing into your work in the federal government?

1. Join the Federal Community of Practice for Crowdsourcing and Citizen Science to share lessons learned and develop best practices for designing, implementing, and evaluating crowdsourcing and citizen science initiatives.
2. Network within your agency and check the Federal Crowdsourcing and Citizen Science Catalog for collaboration opportunities.
3. Use the Federal Toolkit for Crowdsourcing and Citizen Science to design and carry out a citizen science project.
4. Contribute lessons learned and best practices back to the community, and add your project to the Federal Crowdsourcing and Citizen Science Catalog!

Policies

In December 2016, Congress passed the [American Innovation and Competitiveness Act](#), which adds new authority for agencies to undertake crowdsourcing and citizen science projects. While citizen science has long been conducted by federal agencies, this new law explicitly recognizes the value of this approach and gives agencies the capacity to carry out the projects.

OSTP published a memorandum on September 30, 2015 entitled [Addressing Societal and Scientific Issues through Citizen Science and Crowdsourcing](#), which outlines principles that agencies should apply in order to ensure the greatest value and impact of citizen science and crowdsourcing. It also recommends agency actions to build capacity and provides examples of successful applications.

Legal and Policy Considerations

There are many relevant [legal and regulatory issues](#) you may confront when launching citizen science and crowdsourcing projects. Certain non-federal resources have worked to identify these issues including the [Woodrow Wilson Center for International Scholars](#). Its [Commons Lab](#) within the [Science and Technology Innovation Program](#) provides independent and rigorous analysis of emerging technologies, networks, and methods that mobilize public participation in science, technology, and policy. In April 2015, it published [Crowd Sourcing, Citizen Science, and the Law](#) by Robert Gellman, which addresses some of the administrative, legal, and ethical frameworks for using citizen science and crowdsourcing.

Resources

- [Citizenscience.gov](#) is an official government website designed to accelerate the use of crowdsourcing and citizen science across the U.S. government. The site provides a portal to three key assets for federal practitioners: a searchable catalog of federally supported citizen science projects, a toolkit to assist with designing and maintaining projects, and a gateway to a federal community of practice (CoP) to share best practices. Additional resources can be found in the [Resource Library](#).
- The US Government Accountability Office (GAO) released a report in June 2017 reviewing federal guidance for open innovation, including citizen science and crowdsourcing. [Open Innovation: Executive Branch Developed Resources to Support Implementation, but Guidance Could Better Reflect Leading Practices](#).
- The [Citizen Science Association](#) is a growing professional organization dedicated to sharing expertise.
- [Scistarter.com](#) is a place to find, join, and contribute to science through more than 1600 formal and informal research projects, events and tools.
- [The Crowd and the Cloud](#) is a four-part public television series that explores the potential and challenges of citizen science.

Innovation Lab Case Studies

Defense Advanced Research Projects Agency (DARPA)

The Defense Advanced Research Projects Agency (DARPA), was founded in 1958 by President Dwight D. Eisenhower. Initially called ARPA, it was created in response to the shock of Sputnik and other early Soviet Union missile achievements that suggested the U.S. might be falling behind its Cold War rival in technological achievement and especially in the technologies of war fighting and defense.

The agency encourages, funds, and manages research carried out by the military, private industry, and academia to fulfill its mission of avoiding and creating technological surprise. Over its almost six decades of existence, it has supported and guided work that has changed the world—a phrase frequently heard at DARPA to ensure a focus on transformative innovation as opposed to incremental improvements in existing technologies.

Its long history of successful innovation contributes to the agency's continuing success. Internally, that track record sets a high bar of achievement and shows what is possible. Externally, that history of valuable work gives DARPA the credibility it needs to help maintain financial support and decision-making independence, even in the face of the failures and partial successes that inevitably accompany ambitious efforts to do radically new things.

Many organizations innovate in their early years and lose that inventiveness over time. DARPA is unusual and possibly unique in maintaining its pioneering spirit and achievements for so many years.

Key Accomplishments and Impact

Since its beginnings in 1958, DARPA research has created many innovations for national security and also has implications for the entire country. DARPA research has:

Launched the Information Revolution by creating an early version of the Internet. DARPA developed and furthered much of the conceptual basis for the ARPANET—the prototypical communications network launched by DARPA nearly half a century ago, which led directly to the now ubiquitous Internet. DARPA also provided many of the essential advances that made possible today's computers and communications systems, including seminal technological achievements that support the speech recognition, touch-screen displays, accelerometers, and wireless capabilities at the core of today's smartphones and tablets. DARPA has also long been a leader in the development of artificial intelligence, machine intelligence and semi-autonomous systems. DARPA's efforts in this domain have focused primarily on military operations, including command and control, but the commercial sector has adopted and expanded upon many of the agency's results to develop widespread applications in fields as diverse as manufacturing, entertainment and education.

Have shrank global positioning system (GPS) receivers dramatically. As a result, these sophisticated devices can today be carried easily by troops to provide location information or integrated into

weapons to inexpensively turn dumb bombs into precision-guided munitions. Enhanced and miniaturized GPS has significantly improved the U.S. military's ability to attack and eliminate difficult targets, and to do so from greater distances— fundamentally and progressively changing strategy and enabling successes during the Cold War, the Gulf War, and in more recent conflicts in which the United States has had to contend with dispersed and elusive foes. Beyond military applications, GPS devices have now become ubiquitous in daily civilian life, providing enormous commercial and consumer value.

Microelectronics DARPA has repeatedly set and then achieved record-breaking goals in the field of microelectronics. The agency pioneered a number of novel digital and analog designs that are now integral to computing and communications and that point to future capabilities far beyond what is possible today. Many of these advances have had immediate applicability in military command and control operations as well as other national security domains. But they have also helped fuel the ongoing revolution in commercial electronics, stoking iterative technical improvements and enabling economies of scale that have, in turn, fed back to the military Services and other defense entities to benefit national security.

Tools and Approaches

The most important factors that define the DARPA creative culture and explain its long and continuing history of innovation are:

- Limited tenure and the urgency it promotes
- A sense of mission
- Trust and autonomy
- Risk-taking and tolerance of failure

Limited tenure and urgency

The short tenure and continual rotation of program managers and office directors and deputies are probably the single most distinctive features of DARPA's culture and the most important contributors to continuing innovation. Those people, a majority of the agency's employees, generally hold their jobs for four or five years. The end of their time at DARPA is always in view: their expiration date is printed prominently on their ID badges, a constant reminder to them and their colleagues that time to accomplish important work is limited.

According to the office directors and deputies who hire them, program managers who come to DARPA must be fired up to do exciting things, must have their hair on fire, determined to achieve something new and important during their short time at the agency. Information Innovation Office program manager Mike Walker notes that the sense of time ticking away is the heart of the whole thing. It is an impetus to venture into the unknown, to get people to put something forward, to build the prototype warts and all.

In most organizations that would be considered a problem; at DARPA, it is intentional and invigorating. A short tenure means that people come to the agency to get something done, not build a career. Defense Sciences Office Director Stefanie Tompkins says, The longer you're in one place, the more

tendency you have to become risk-averse. You start to refine what you're doing as opposed to throwing out what you're doing and starting fresh.

Justin Sanchez, Director of the Biological Technologies Office, also sees a connection between limited tenure and a willingness to risk failure in pursuit of ambitious goals: If you're in a place where you only get fired if you mess up, you do just enough not to mess up. Many organizations see the departure of talented people as a loss of important technical knowledge—the organizations memory of what it knows. At DARPA, people think more about the downside of having a long technical memory: that some of what is remembered may be wrong or outdated and stand in the way of important innovation.

Long-time employees sometimes use the fact of a past failure to prove that something can be done, but what was once impossible may be feasible now thanks to the development of new tools and technologies, or the increased urgency of a need. Hiring people who are ignorant of past failures sometimes opens the door to breakthrough success. Here is one well-known example of a technology that was impossible until developments in related fields made it achievable.

Rapid and widespread turnover would also seem to threaten the agency's cultural memory of its aims and values and its ways of getting work done. That has not been a problem at DARPA, where employees maintain a vivid understanding of the agency's goals and approaches. One important reason is the clear criteria for hiring and the terms of hire. Bringing in people who are passionate about far-reaching innovations for only a few years attracts individuals who already value DARPA's goals and approaches and eliminates the kinds of candidates who might make the agency a more cautious and bureaucratic place. DSO program manager John Main says, If you want a security blanket, DARPA is not for you. The blanket is ripped out of your hands four times a day. People who come to DARPA recognize their responsibility to maintain its unique culture. In the words of Justin Sanchez: While you're here, you're the steward of the culture. Then you pass it on.

Sense of Mission
DARPA's reason for being—to prevent and create technological surprise—expresses its role in promoting the security of the United States and the safety and success of military personnel. This vital mission draws people to the agency. Program managers talk about the call to serve, about giving back to a country that has been good to them. DARPA's determination to change the world suggests the scope of its mission. The agency offers program managers a chance to be a part of shaping the future, says one program manager. The importance and ambition of the mission help fuel the drive toward innovation. People are inspired and energized by the effort to do something that affects the well-being and even the survival of their fellow citizen (and often the citizens of the world), as opposed to the innovations that might make a commercial product a bit more salable.

The mission also adds to the sense of urgency, since some of the agency's work aims to counter existing or looming threats to war fighters or the general population. One program manager working to respond to what he considers an almost certain future cyber-attack, says, If you pass up the opportunity to be part of the solution, you become part of the problem for the rest of your life.

Reflecting on both the program managers limited tenure and his sense of being a small but vital part of an essential, larger mission, DSO Deputy Office Director William Regli says, When you leave you know you're done, your time is up. You say, Im one of the bricklayers of the cathedral.

Trust and Autonomy

Trust is a precondition of autonomy. You only grant people the freedom to make decisions and carry out their work as they see fit if you believe they will do it responsibly and well without someone looking over their shoulders. To be effective, trust must go in both directions: the trusted employee must also trust her employer to be faithful to the values and goals of the organization and to the terms of their working relationship.

The freedom to make decisions and take action without having to obtain the permission of managers or supervisors is critical to innovation at DARPA. Microsystems Technology Office Director Chappell puts it this way: Get the best people, then trust them. Office directors and deputy directors describe DARPA as a bottoms up organization where research topics come mainly from program managers and potential program managers who are passionate about an idea.

Office directors often have an idea of the kinds of projects they would like to see carried out. But the creative ideas typically come from below and projects only happen when a project manager is passionately committed to the work. Information Innovation Office Director John Launchbury says, There are no marching orders. The marching orders are: create innovation.

This does not mean, however, that every innovative idea becomes a program. DARPA has a rigorous approval process for deciding which projects to fund; agency leadership must agree to support a program before millions or tens of millions of dollars are committed to it.

Risk-taking and tolerance of failure

DARPA is committed to cutting-edge innovation, the kind of work that will change the world. That level of ambition—trying to do things that have never been done before, working at the edge of the possible—necessarily brings with it the possibility and in fact the likelihood of failure.

Openness to new ideas, risk-taking, and tolerance of failure are essential elements of DARPA innovation. Proposals are rigorously scrutinized, but no idea is dismissed out of hand as too bold to consider. BTO Office Deputy Director Barry Pallota says, No idea is too crazy. The reaction is never, That's impossible. We say, How would you do that? How would you get there? Write down the steps. And Stefanie Tompkins says, If you're on the fence, err on the higher-risk side. She adds, Why study the feasibility of a project for six months if you can get further and learn more by starting the work?

Ideas are more likely to be rejected because they are not far-reaching enough than because they are too risky and ambitious. Launchbury says, If none of our programs fail, were not stretching far enough. Phillip Alvelda makes a similar point: If half the people don't respond to a publicly-announced challenge saying its impossible, we haven't set the bar high enough. As BTO program manager Matt Hepburn says, "if it's not transformative, change it."

This does not mean, of course, that any crazy ideas will get funded. Thinking about where to draw the crazy line, Tactical Technology Office Deputy Director Pamela Melroy considers the size of the investment in especially risky projects. A $10 million gamble is one thing, she says but if you're spending $80 million, you'd like it to work.

The how and why of failure also matter. Tompkins says, If you fail because you're sloppy and lazy, that's not good. And it doesn't happen much here. The right kind of failure comes from being ambitious, pushing to the edge of what is possible, and often generates valuable knowledge even though program goals are not met. As I2O Office Director John Launchbury says, Failure doesn't mean the whole thing collapses. Even if the end result isn't what you were hoping for, technologies developed along the way may have great value. They feed into the ecosystem; something new is known.

BTO Office Director Justin Sanchez says, If something doesn't work out, we feed what we learn into something else. Proposals submitted to DARPA are reviewed by government experts with advice on specific topics from subject-matter experts both within and outside the government. The Source Selection Board makes recommendations to help the agency decide whether or not to invest in a proposal. It provides advice about technical risk associated with prospective programs, working to differentiate between the barely feasible (and potentially groundbreaking) and the absurd. The boards judgment is highly informed and useful, but occasionally the experts are wrong about radical advances that defy conventional wisdom about what is possible.

Key Insights

Rely on the larger innovation ecosystem to deliver the best products
DARPA explicitly reaches for transformational change instead of incremental advances. But it does not perform its engineering alchemy in isolation. It works within an innovation ecosystem that includes academic, corporate and governmental partners, with a constant focus on the Nations military Services, which work with DARPA to create new strategic opportunities and novel tactical options. For decades, this vibrant, interlocking ecosystem of diverse collaborators has proven to be a nurturing environment for the intense creativity that DARPA is designed to cultivate.

DARPA goes to great lengths to identify, recruit and support excellent program managers— extraordinary individuals who are at the top of their fields and are hungry for the opportunity to push the limits of their disciplines. These leaders, who are at the very heart of DARPA's history of success, come from academia, industry and government agencies for limited stints, generally three to five years. That deadline fuels the signature DARPA urgency to achieve success in less time than might be considered reasonable in a conventional setting.

Stay small and nimble--and hire new talent constantly
Work at the agency is project-based. Programs typically last for only a few years, defined and limited by explicit progress milestones and the goal of developing a new important technology or capability that can further DARPA's mission. No project gets done without a passionate project manager leading it.

Given the importance of program management and the constant turnover, office directors and deputies are constantly looking for new people to fill that role. Hiring new talent is an essential and time-consuming part of their work. Program managers must be brilliant people with brilliant ideas they are passionate to develop. Good DARPA program managers are people with intellectual self-confidence who are willing to participate in discourse and don't consider ideas their personal property.

Create a sense of passion and urgency

Program managers at DARPA is the heart and lifeblood of the organization. Program managers are hand selected per project and have the freedom and resources to do important and even transformational work is a powerful attraction. Many program managers come to DARPA to work on ideas that they have thought about and championed for many years without ever having had the resources of time and money to work on them.

Most of the program managers that they bring into DARPA are on a three- to five-year contract, so that there's a sense of urgency to quickly get on board, create a prototype and iterate to a better product. The brevity of the DARPA assignment eliminates people who are looking for a safe and stable career. They're looking to make their mark and they perceive it as an honor to be selected to work at DARPA.

Evaluate contracts based on program milestones and stay agnostic of vendors

DARPA's contracts are evaluated based on the milestones programs are expected to reach at various points during their life cycles. The emphasis on milestones makes it possible to evaluate genuine progress and identify valuable results as well as to judge whether continued funding is justified. DARPA program managers establish these milestones up front, crafting them to reflect the nature of the overarching objectives of their individual programs—be it insights from basic research or a technology prototype for a new military system. In many organizations, projects take on a life of their own, continuing to absorb resources despite their failure to achieve results.

DARPA's sense of urgency, its emphasis on programs of limited duration, and its willingness to end unproductive work all guard against that tendency. So does the rotation of program managers. Coming in with fresh eyes and no established loyalty to program ideas or performers, new program managers help identify non-productive program elements in existing programs and feel free to change or cut them.

Next Steps

A big part of DARPA's mission is to envision the future and make the impossible possible. In October 2015 as Back to the Future day approached, DARPA turned to social media and asked the world to predict: What technologies might actually surround us 30 years from now? We pointed people to presentations from DARPA's [Future Technologies Forum](http://archive.darpa.mil/WaitWhat/), held in September 2015 in St. Louis, for inspiration and a reality check before submitting their predictions.

Below are some highlights from the responses, in roughly descending order by number of mentions for each class of futuristic capability:

- Space: Interplanetary and interstellar travel, including faster-than-light travel; missions and permanent settlements on the Moon, Mars and the asteroid belt; space elevators
- Transportation Energy: Self-driving and electric vehicles; improved mass transit systems and intercontinental travel; flying cars and hoverboards; high-efficiency solar and other sustainable energy sources
- Medicine Health: Neurological devices for memory augmentation, storage and transfer, and perhaps to read people's thoughts; life extension, including virtual immortality via uploading brains into computers; artificial cells and organs; Star Trek-style tricorder for home diagnostics and treatment; wearable technology, such as exoskeletons and augmented-reality glasses and contact lenses
- Materials Robotics: Ubiquitous nanotechnology, 3D printing and robotics; invisibility and cloaking devices; energy shields; anti-gravity devices
- Cyber Big Data: Improved artificial intelligence; optical and quantum computing; faster, more secure Internet; better use of data analytics to improve use of resources

Additionally, the Outreach team asked three DARPA researchers from various fields to share their visions of 2045, and why getting there will require a group effort with players not only from academia and industry but from forward-looking government laboratories and agencies:

- [Pam Melroy](http://www.darpa.mil/staff/ms-pamela-melroy), an aerospace engineer, former astronaut and current deputy director of DARPA's Tactical Technologies Office (TTO), foresees technologies that would enable machines to collaborate with humans as partners on tasks far more complex than those we can tackle today:
- [Justin Sanchez](http://www.darpa.mil/staff/dr-justin-sanchez), a neuroscientist and program manager in DARPA's Biological Technologies Office (BTO), imagines a world where neurotechnologies could enable users to interact with their environment and other people by thought alone:
- [Stefanie Tompkins](http://www.darpa.mil/staff/dr-stefanie-tompkins), a geologist and director of DARPA Defense Sciences Office (DSO), envisions building substances from the atomic or molecular level up to create impossible materials with previously unattainable capabilities

To Learn More
- [Innovation at DARPA](http://www.darpa.mil/attachments/DARPA_Innovation_2016.pdf)
- [DARPA Research Projects](http://www.darpa.mil/our-research)
- [People of DARPA](http://www.darpa.mil/about-us/people)

United States Department of Health and Human Services IDEA Lab

Innovation in HHS is centered in its IDEA (Innovation, Design, Entrepreneurship and Action) Lab, whose work is split across eight initiatives. The IDEA Lab, established in 2013 by the HHS Secretary, broadly promotes the use of innovation as a framework for achieving HHS mission of enhancing and protecting the health and well-being of the public. IDEA Lab initiatives empower internal innovation, tap into external talent and creativity, and build collaborative communities to tackle cross-cutting issues of strategic importance. The Lab creates a space (both in terms of a physical location and in terms of opportunity) to facilitate the freedom to play, ideate, and experiment in pursuit of improving the health of all Americans. (Source: [HHS IDEA Lab About Us](http://www.hhs.gov/idealab/about/))

Three core principles underline HHS approach:

1. Every individual has the ability to improve the health and well-being of Americans;
2. People are more powerful when working together; and
3. There is a solution to every problem.

HHS has actuated these values through three main strategies:

- Supporting innovators from within, e.g., the [HHS Innovates] (https://www.hhs.gov/idealab/innovates-awards/) initiative that identifies and celebrates internal innovation by employees
- Bringing new ideas and concepts from without, e.g, the [HHS Entrepreneurs] (https://www.hhs.gov/idealab/eir-program/) and [HHS Innovators-in-Residence] (https://www.hhs.gov/idealab/iir-program/) initiatives that bring in innovators from outside the department to help tackle important challenges
- Mobilizing communities of practice to work on discrete challenges or ongoing, cross-cutting initiatives that require creative thinking and new solutions (Source: Andy Feldman, [Implementing a department-wide innovation strategy: An interview with Bryan Sivak, Chief Technology Officer, U.S. Department of Health Human Services – Episode #58] (http://govinnovator.com/bryan_sivak/). GovInnovator, August 20, 2014).

Tools and Approaches

HHS leverages a variety of innovative tools and approaches. From the use of inter-agency and public-private partnerships to advance the Departments work, to deploying prizes and challenges to source great ideas from unexpected places, to recruiting new talent to leapfrog progress, the overriding message is a willingness to experiment and embrace new ways of doing that result in more effective, focused outcomes.

IDEA Lab initiatives include:

1. The [HHS Ignite Accelerator](http://www.hhs.gov/idealab/ignite-accelerator/) is an internal innovation startup program.
2. [HHS Ventures Fund](https://www.hhs.gov/idealab/ventures-fund/): Invests in and supports bold ideas to transform Departmental operations
3. [HHS Entrepreneurs-in-Residence](http://www.hhs.gov/idealab/eir-program/): Bringing in top external innovators and entrepreneurs for tours of duty to solve complex problems in health and the delivery of human services.
4. [HHS Innovators-in-Residence](http://www.hhs.gov/idealab/iir-program/): Brings new ideas and expertise to tackle a critical problem of shared interest between the Department and not-for-profit organizations. Through the program, not-for-profit organizations can sponsor a paid fellowship to be filled by an individual with a background in entrepreneurship and innovation.
5. [HHS Buyers Club:](https://www.hhs.gov/idealab/buyers-club/) Modernizing IT acquisition, procurement, and contracting.
6. [Health Data Initiative](http://www.hhs.gov/idealab/health-data-initiative/): Liberating health and social service data to serve the public.
7. [HHS Open](https://www.hhs.gov/idealab/competes/) Innovation: Leverages incentive prize and challenge competitions to source external solutions from unexpected places.
8. [Invent Health Initiative](https://www.hhs.gov/idealab/invent-health-initiative/): Empowering makers and creators to invent tools for better living and better clinical care.

Other essential components of the HHS innovative landscape include:

- [Innovation Council](http://www.hhs.gov/idealab/wp-content/uploads/2014/05/Approval-of-the-HHS-Innovation-Council-Charter-091812.pdf)
- [Innovation Day](http://www.hhs.gov/blog/2016/07/27/hhs-innovation-day-innovation-force-good.html)
- [HHS Innovates Awards Program](http://www.hhs.gov/idealab/innovates-awards/)

Key Insights
- Motivating the process of change
- Building a culture of learning and discovery
- Empowering those on the frontlines
- Starting small with pilots, and capitalizing on quick wins
- Institutionalizing change with employee-driven initiatives
- Driving change from the top

From then to now: Motivating the process of change
Early on in his tenure, former CTO Bryan Sivak saw that many long-term public servants felt stifled by the compliance-driven, risk-averse culture of government. While most private companies will approach a problem with a positive attitude and a list of possible solutions, many government organizations face problems with an attitude of reservation and a list of reasons why the problem is impossible to overcome. This attitude kills many peoples intrinsic values (value, freedom, and skill

development)—the very values that brought many people to government in the first place. The goal of launching the IDEA Lab and related innovative initiatives at HHS was to help empower the creative problem-solvers in the Department get their ideas heard and tested – and in doing so, reignite the fire that brought them to government.

Culture of discovery of learning

Culture change doesn't happen overnight; it's a difficult, lengthy effort, explains Sivak. Any attempt to drive cultural change has to contend with a complex communications and community-building challenge, agrees CTO Susannah Fox. For any new innovative tool, how to actually implement a specific mechanism or authority is often not widely known by program offices, and often, potential benefits and drawbacks are also not clearly understood. With over 90,000 employees across 12 largely independent divisions, HHS responds to the challenge in three ways:

1. Improved internal communications, which include bi-weekly newsletters that transmit valuable how-to knowledge and news to an active listserv community
2. Simplification of process, which include documentation use cases and creating simplified guides to help offices deploy new methods
3. Community engagement among Divisions, which include site visits, presentations, and the cultivation of an active network of mentors and experts [source: HHS 2015 Prize memo]

HHS has also emphasized genuine support for staff-driven innovation; employees are empowered to co-create a culture of learning and discovery. For instance, [a Lightning Talk](https://www.youtube.com/watch?v=-yWM8d-Ijis) at the 2016 HHS Innovation Day evaluated how to help HHS existing learning management system become more responsive to users actual needs. Using actual user feedback to pinpoint design priorities, they iterated prototypes for new ways that the Learning Portal could more effectively transmit knowledge and offer required trainings. This particular Lightning Talk was an exercise, but it exemplifies how the Department has welcomed and encouraged employees to lead with their own change-oriented mindset and innovative problem-solving approaches.

Listen: [Bryan Sivak offers advice about creating culture change [2:30]] (http://govinnovator.com/wp-content/uploads/2014/08/Bryan-Sivak-advice.mp3)

Empowering frontline employees to share ideas

We have this radical notion that good ideas can come from anywhere, says CTO Susannah Fox. The IDEA Lab is a response to the realities of a large, hierarchical organization: If somebody three layers down has a fantastic idea, how likely--and how empowered-- is that person to raise their hand?

What the IDEA Lab does is provide literally a physical place for people to come, and sometimes even close my door to whisper, I have an idea. IDEA Lab initiatives are geared around building a pipeline for innovation by empowering career staff to speak up, share ideas, and receive resource support to actualize them, whether that entails small venture funding, training, or even bringing in outside talent. (The Entrepreneur-In-Residence program, Fox explains, grafts an entrepreneur onto a team that has a great idea, but just needs that skillset to come in and empower them.)

Starting small with pilots and capitalizing on quick wins

The IDEA Lab uses a seeding model; employees with innovative ideas can receive a small sum of seeding money to explore their idea. If the activity shows signs of success, the results are used as evidence to receive larger funding from the Department. This lean, evidence-based approach – starting small with pilots and iterating based on results – encourages a culture of experimentation, and lets good ideas bubble up from unexpected places.

Institutionalizing change through employee-driven initiatives

Recognized the pattern of how adoption is diffused through a large organization [crosslink back to Adoption Curve discussion], HHS leadership has focused its internal efforts on the early adopters. Acknowledging their ideas and providing the resources to help achieve their goals help to generate early wins. Having small successes to point to builds further buy-in across the organization. HHS leadership is explicit that the central support provided for innovative tools is ultimately driven by the demand of the offices that recognize the value of a particular tool. Attempting to drive change by imposing edicts from the top is not an effective way to genuinely transform ways of working; instead, uptake is driven by HHS offices and divisions that genuinely embracing new approaches.

Read more: Samantha Ehlinger, [HHS Innovation Day Tries to hack the red tape](https://www.fedscoop.com/hhs-innovation-day-tries-to-hack-the-red-tape/). FedScoop, July 14, 2016.

Driving change from the top

Leadership has been integral to driving the culture change by setting the tone and reinforcing an environment for creativity and experimentation. Be brave enough to bring your ideas forward, Susannah Fox charges. Creative thinking is a muscle we must exercise. Progress happens outside our comfort zone. (Source: Susannah Fox, [HHS Innovation Day: Innovation is a Force for Good](https://wayback.archive-it.org/8315/20170119031510/https://www.hhs.gov/blog/2016/07/27/hhs-innovation-day-innovation-force-good.html). HHS Blog, July 27, 2016).

But while it's easy to convey those messages, it's essential that leadership take actions to create an environment that is open and receptive to new ideas. I literally have had people tell me great idea, and I say, That's a great idea – you should share it with your boss!, recounts Fox. And they say, No, no, I can't. Its above my level; thats why Im bringing it to you; you're allowed to have an idea like that. Driving culture change requires leadership to inspire confidence in employees that its OK to speak up, and it also has to ignite within management a similar receptivity.

Next Steps

Guided by a customer-centric approach to understand and directly respond to the barriers encountered by different offices, HHS is continuing to expand the use of innovative work across the Department, with a particular focus on:

- Simplifying the prize and challenge execution process, and increasing the participation among HHS divisions in the use of prize competition authority

- Creating a recurrent bootcamp, based on a 2015 pilot, to provides HHS offices with an accelerated peer learning environment and focused mentorship
- Growing operational capacity for innovation in continuing to improve communication among program, acquisition budget, legal, and leadership offices (Source: HHS memo to OSTP – HHS Report on Prize Competition Activities Conducted in FY2015.)

United States Agency for International Development (USAID) Global Development Lab

At USAID, the [U.S. Global Development Lab] (https://www.usaid.gov/GlobalDevLab/about) is the seat of innovation. The Lab grew out of initiatives to re-position USAID to meet the 21st century challenges for development. In 2010, the USAID Office of Innovation and Development Alliances and the Office of Science and Technology were established with the goals of sourcing new development solutions, encouraging scientific inquiry, and creating a culture driven by entrepreneurial ingenuity. In April 2014, the two offices evolved into the Global Development Lab. (Source: U.S. Global Development Lab, [2015 The Lab Year in Review: Accelerating Development through Science, Technology, Innovation, and Partnership](http://pdf.usaid.gov/pdf_docs/PBAAD682.pdf). 2015).

The Lab's mission -to accelerate development impact – is channeled through two primary avenues:

1. Produce breakthrough innovations. Using open and directed innovation methods, source new solutions, evaluate them, and scale those with proven impact.
2. Transform the development community. Open up development work to anyone with good ideas, create new and sustaining existing partnerships, apply data and evidence to decision-making, and harness advances in science and technology.

The Global Development Lab seeds innovation across USAID through a three-stage process:

1. Source new ideas, tools, or approaches that could be innovative; test as many as possible, as quickly as possible, to identify which ideas have promise. Failure is common and expected.
2. Identify early stage successes; work with the rest of AID to apply insights to the agency's most pressing problems, and embed elements within existing programs.
3. Continue to gather evidence of impact. Idea iteration and refinement continues, and eventually the successful and validated concepts are mainstreamed into standard best practices

Discussions of innovation often emphasize disruption and newness. The Lab's approach underscores the entire life cycle, with particular on ensuring that impactful innovations are actually integrated into the rest of USAID. What we're trying to do at the Lab, explains Executive Director and Chief Innovation Officer Ann Mei Chang, […] is really look at how do we change the culture of the agency, the systems, the incentives and the mechanisms -- so that we can be more agile, and open, and adoptive and data driven, with the result being more cost-effective and sustainable solutions. [Source for all Chang quotes: 7/9/16 interview]

Tools and Approaches

The Lab organizes its work across four priority areas; Science, technology, innovation, and partnership (STIP). The Lab enables the work of the rest of USAID by providing numerous toolkits, trainings, guidance, staff support, and communities of practices to help introduce and diffuse innovative tools across the Agency.

Within the Lab and across USAID, innovative initiatives include:

- Global Development Alliance
- [Development Innovation Accelerator](https://www.usaid.gov/GlobalDevLab/fact-sheets/development-innovation-accelerator-factsheet-10202014)
- [Development Innovation Ventures](https://www.usaid.gov/div): Sources new innovations through a year-round grant competition, using a tiered-funding model inspired by venture capital. [crosslink tiered grantmaking]
- [Grand Challenges for Development](https://www.usaid.gov/grandchallenges)
- [Monitoring, Evaluation, Research And Learning Innovations Program (MERLIN)](https://www.usaid.gov/GlobalDevLab/about/monitoring-evaluation-research-and-learning-innovations-program): Aims to innovate on traditional approaches to monitoring, evaluation, research, and learning.

Key Insights

- Understanding innovation is the instrument for greater mission impact
- Investing in partnerships amplifies reach
- Building momentum for adoption relies on evidence of success
- Leading with strategic vision sets the tone for transformation

Innovation is the instrument for greater mission impact

"Often, we [incorrectly] think of innovation as the thing we're trying to do," explains Chang. But the right way to understand innovation is as an instrument for achieving greater impact. It's about finding more effective approaches, better ways of doing that return greater value for the dollar. The Lab understands innovation as a force multiplier for achieving mission-driven outcomes. Innovation is the path and impact is the destination, Chang asserts.

Investment in new kinds of partnerships amplifies reach

Through open innovation and deep partnership engagement, USAID has sourced more than 10,000 ideas over the past few years to address some of humanity's greatest challenges – with more than 300 innovations in various stages of testing (Source: The White House, [A Strategy for American Innovation](https://obamawhitehouse.archives.gov/sites/default/files/strategy_for_american_innovation_october_2015.pdf), 2015). USAID has built a rich expertise in building public-private partnerships in the past 15 years, but beyond their know-how for formalizing partnerships, the experience at AID is a story of a shift in mindset. The agency understands its role as one element of a multi stakeholder, sector-based coalition, and the Lab has further emphasized partnering with new, non-traditional partners. This engagement has required deep work on operational innovation and support from contracting officers:

"[These] new non-traditional actors, they don't know us, and they don't know how to work with us," explains Seema Patel, Division Chief, Innovation Design and Advisory at the Lab, Old ways of working—like putting out a RFP—aren't the most effective ways of reaching new audiences. Guided by human-centered design principles, the Lab has thoughtfully assessed the positioning non-traditional partners engage with, and begun applying different methodologies (including broad

agency announcements) to encourage open innovation co-creation. The new mindset has enabled very different types of conversations with potential partners, encouraging stakeholders to team in a new way (7/19/16 interview).

Build momentum to drive system-wide adoption

Success breeds success. The Lab understands that to encourage agency-level change, their job is not to describe how to do innovation. Their job is to provide the principles, space, and support systems to help their colleagues design and problem-solve solutions. We start with one program to build momentum, then shine a big spotlight around 'What did we learn?', 'What was the evidence?,' 'What was the value proposition?' and we use a little bit of fanfare to get others to pick up on that approach, explains Seema Patel. [7/19/16 interview] Quick wins help to build momentum by creating a positive feedback loop; as the value of new approaches becomes self-evident, teams and sub-units become enthusiastic champions.

Leading with strategic vision sets the tone for transformation

The Lab is guided by a strategic vision for holistically engaging the entire development ecosystem. This understanding is integral to the process of agency-wide adoption and adaptation of innovative tools. Specific tools – like Grand Challenges [CROSSLINK to V3 AID case study] – act as a galvanizing force to bring partners together around the broader goal. Multiple types of innovative methodologies are deployed for the purpose of tackling different elements of the broader challenge. The intent is not just to source new supplies of innovation but catalyze collective impact.

Next Steps

The Lab has aggressive five-year goals for diffusion innovative approaches across the agency and for advancing progress in each priority focus area. Broadly, the target is for sixty of AID's operating units to fully integrate STIP as a framework in their strategic, programmatic, and organizational work. In addition:

- Science: Increase agency investment in research 10 percent per year
- Technology: Increase the use of digital tools and data analysis for decision-making
- Innovation: Deploy ten innovative solutions widely, with direct impact on a million or more people.
- Partnership: Continue leveraging PPPs for mission impact, with emphasis on ensuring that high-potential pilots supported by the Lab secure follow-on funding from partners.

Successful diffusion and mainstreaming innovation will critically depend on changing the incentives within the agency, Chang observes. It's not enough to developing great tools and knowledge support, or to create a permissive environment. Currently, incentives still revolve largely around compliance; There's not an incentive either in the staffing reviews or in the bureau reviews to actually continually improve your impact or your cost effectiveness. There's no incentive to innovate in an environment where risk-taking isn't rewarded, or where the dominant expectation is to cyclically repeat last year's performance. To move beyond the enthusiasm of early adopters and champions and Mainstream innovative approaches, the organizational incentive structure must be re-organized to reward experimentation. Changing the default ways of working can be uncomfortable. Employees need to be rewarded for investing the time – and the risk – in trying something new.