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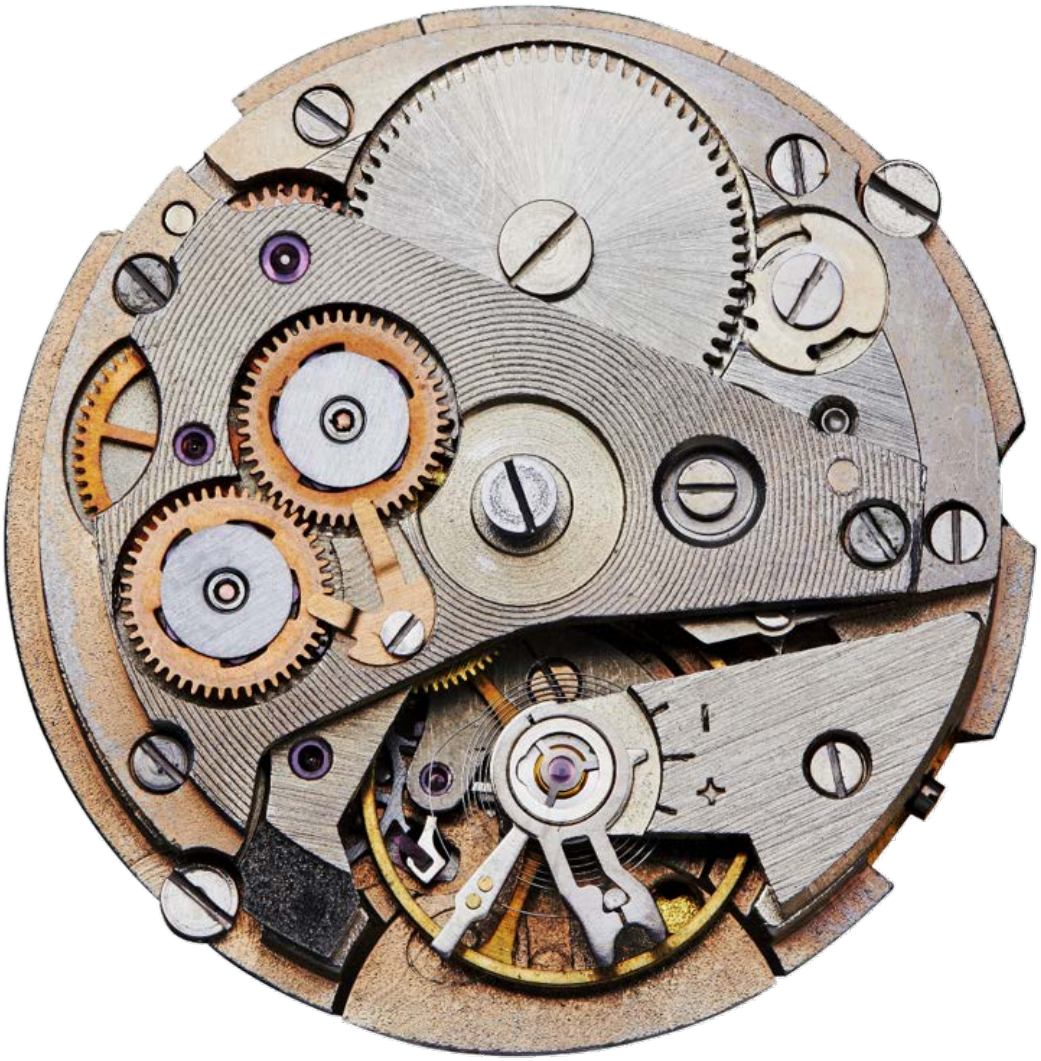

Establishing a Government Effectiveness Advanced Research (GEAR) Center

Deloitte Response

September 14, 2018

Submitted by:
Deloitte Consulting LLP
1919 North Lynn Street
Arlington, VA 22209

Primary Contact
Greg Pellegrino, Principal
Tel. +1 202-412-2534
Email: gpellegrino@deloitte.com

Contracts POC
Thomasina Sligh, Contracts Manager
Tel. +1 571-814-6981
Email: tsligh@deloitte.com

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Office of Management and Budget
725 17th Street, NW
Washington, DC 20503

September 14, 2018

To whom it may concern:

New technologies and ways of doing business are changing the way people interact with institutions and the world around them, which means that organizations have to adapt their services and operations. And government is no exception - to improve mission delivery, citizen services, and the stewardship of public resources, agencies need operations designed for the digital age.

Establishing a Government Effectiveness Advanced Research (GEAR) Center represents a unique opportunity to create a new partnership model for collaborative, cross-sector, and multi-disciplinary innovation that supports a government modernization agenda.

Deloitte is pleased to share the following response on how to design and establish the GEAR Center, drawing on our experience, insight and capabilities as a global professional services firm supporting over 80 percent of Fortune Global 500 companies. Our top-tier strategy practice has been recognized as the leader in Innovation Strategy Consulting (ALM Intelligence 2017), Business Transformation (Forrester 2017), Organizational Consulting (IDC 2017), and Operating Model Strategy (ALM Intelligence 2016). And we bring a track record of doing this work with government and public sector clients.

In addition to our work on behalf of our clients, our research centers such as the Center for Government Insights, Center for the Edge, and Monitor Institute help us stay on the cutting edge of how new solutions can be applied in both the public and private sectors. And our $400m annual investment in capabilities such as crowdsourcing, augmented reality, blockchain, robotics, internet of things, artificial intelligence, and smart cities give us firsthand experience testing and deploying new solutions.

Beyond our broad capabilities in business transformation, workforce development, and innovation strategy, we bring specific experience in public-private partnerships and workforce reskilling that will be directly relevant to the GEAR Center. For example, we have helped a large federal health agency launch a public-private partnership to provide growth funding to promising scientific discoveries while building the entrepreneurial skills of the innovators to convert their discoveries into viable health products. Similarly, we are helping several municipalities develop a “workforce of the future” strategy, delivering actionable implementation advice and playbooks to help update the approach to skilling and training – both for a major city’s workforce ecosystem and a state department of transportation.

If you have questions or require additional information, please do not hesitate to contact me at (202) 412-2534 or by email at gpellegrino@deloitte.com.

Sincerely,

Greg Pellegrino, Principal
Deloitte Consulting LLP

Table of Contents

Executive Summary—GEAR At-A-Glance

The opportunity:

- The President's Management Agenda prioritizes modernizing today's management approaches, structures, and operations. Other public sector innovation efforts have prioritized outward facing initiatives that advance specific agency missions instead of making agency operations more dynamic, adaptable, and responsive to ever-changing national and global conditions.
- Transforming government requires more than just technology and the desire to change. It requires a vision of the possible, a roadmap for how to get there, and a committed network of researchers, business leaders, entrepreneurs, and government innovators to make it happen.
- Establishing the Government Effectiveness Advanced Research (GEAR) Center provides an opportunity for the federal government to design and implement a new partnership model for collaborative, cross-sector, and multi-disciplinary innovation – a center that can research, fund, develop, pilot, and scale solutions in pursuit of a transformation and modernization agenda that spans political cycles.

Suggested objectives and activities for the GEAR Center:

- In order to improve mission delivery, citizen services, and the stewardship of public resources in a manner that reflects the potential of a government with operations designed for the digital age, the GEAR Center should be able to effectively:
  - Engage in **sensing and scanning** to identify new and emerging solutions with the potential to transform government operations.
  - **Prioritize focus areas** based on emerging technologies/capabilities and cross-cutting challenges faced by Federal agencies that have not yet been addressed in a centralized, coordinated manner;
  - Conduct applied research on potential solution concepts to **identify, manage, and support a portfolio** of innovation projects aligned to GEAR priorities;
  - Use human-centered design and behavioral insights-driven capabilities to **incubate solutions** by adapting them to the government context, developing and evaluating pilots, and supporting scaling/market penetration of these new solutions across the government ecosystem

GEAR's structure:

- To execute these activities effectively, GEAR should be organized to incentivize and encourage long-term commitment from a diverse set of partners. The partnership model should be self-funding and one that embraces change, accepts and learns from failure, and allows each partner to have a defined role.
- The GEAR Center's operating model structure should include a variety of elements to achieve these goals, including: (1) **a membership model** for external parties to contribute resources, ideas, or pilot commitments; (2) an **executive board** to evaluate portfolio progress and approve decisions; (3) a **primary research center** to identify cross-cutting agency needs and conduct sensing and scanning activities; (4) **research & project portfolio groups** to identify and prioritize solution concepts; and (5) an **incubator lab**, to adapt solutions to the government concept through prototyping, iteration, and piloting as well as identifying critical requirements for scale.
- The GEAR model can be self-sustaining through multiple streams of funding. Private sector, foundations, and individuals can participate at varying tiers of membership that offer different levels of access, while agencies provide grants or contracts for specific pilots and solutions.

Introduction

A Vision of the Future

The dashboard blinked twice. Another pilot had just gone live.

Standing at her desk in the Government Effectiveness Advanced Research Center (GEAR), Joan – the manager of the Center's Workforce Reskilling portfolio – swiped the touch screen in front of her. It flashed:

Pilot Details
Name: *Immersive Re-training through Virtual Environments*
Pilot Participant: *Food and Drug Administration, Center for Food Safety and Applied Nutrition*
Pilot Start Date: *8/22/2020*
Pilot Partner: *4rtNight VR Systems*

Below was a box she could select to view the evaluation timeline, pilot participants, projected cost and ROI estimates, and a detailed description of the pilot solution.

She smiled as this was the eighth active pilot in her portfolio and the one she was most excited about. This pilot focused on using virtual environments to retrain FDA workers on new inspection processes based on emerging technologies that fundamentally changed how sample collection would be performed in the future. But to her, the more important test was the degree to which the immersive, SIM-City-like game environment could be used at scale to re-train government workers across agencies for the demands of the 21st Century.

An eighth live pilot was yet another indication of real progress. As the Reskilling Portfolio Manager, Joan's job was to chart the course for her portfolio of workforce modernization pilots being developed, piloted, and prepared for scale within the GEAR Center. That meant working with a network of startups, technology companies, and academics to identify new solutions, testing those solutions and adapting them for government use, identifying the relevant GEAR partner-agencies within the federal government (each of which had committed to hosting pilots as part of their participation in GEAR) to pilot the solutions, and establishing a roadmap to scale that other agencies could follow for their own workforce needs.

Joan's company, QuantumQuotient, had sponsored the reskilling portfolio of projects – which included not only financial resources, but also her current fellowship role to help incubate these projects. It gave the company access to several things they were excited about, including a network of experts and startups, validation as experts in a new space and market they were looking to develop, and new relationships with leading thinkers in the federal government. As a result, it helped Joan identify cutting-edge solutions in the workforce modernization space she hadn't even known existed – and which she would bring back to QuantumQuotient when the portfolio closed out this round of projects.

Many pilots also had startup partners – in this case 4rtNight VR Systems – that received GEAR support for adapting their solution to the government modernization challenge at hand and preparing it for deployment within the sponsoring or contracting agency for the project. Since the GEAR Center's launch in 2019, it had proven to be an effective system.

The eight pilots currently underway had stemmed from Joan's team of researchers who helped build the initial point of view on government needs in the workforce modernization space and who identified potential solutions, not merely through industry and academic network engagement but also through tools like prize challenges and hackathons. In fact, four additional opportunities had been identified by her team, and she was just waiting for an agency sponsor to get them off the ground.

Joan's biggest achievement, however, was the two successful pilots she and her team completed that were now being scaled across multiple government agencies. By the end of the calendar year, Joan anticipated having 12 active pilots, five solutions ready to scale, and a pipeline of eight more projects to pursue the following year.

And Joan wasn't the only one. Joan could look around the GEAR Center and see several colleagues and other initiatives getting things off the ground. Eduardo, for example, managed a portfolio for Artificial Intelligence. In the Design-Test (DT) lab, a group of startup founders worked with a government agency rotational employee, one of GEAR's in-house design thinking experts, and a programmer on-loan from MIT to customize the startup's solution to the unique needs of government.

She marveled at what had been accomplished in the one year of GEAR's existence. Six portfolios had been stood up, evenly distributed between needs-based portfolios focused on Workforce Reskilling, Data Management, and Procurement, and the emerging technology portfolios focused on Blockchain, Artificial Intelligence, and Autonomous Vehicles. Across these six portfolios, 48 active pilots had created 9 concepts ready to scale. More than 30 academic institutions, 20 large companies, 50 startups, and 20 government agencies had partnered to drive government transformation in an unprecedented way. And the entire effort was being driven by a self-funded, self-sustaining GEAR Center, insulated from dramatic shifts in direction resulting from new leaders or appointments. ***Innovation and transformation, tailored to the practical considerations of government, was helping the United States firmly position itself as the global leader in 21st Century government operations****.*

Background

The narrative above paints a picture of a future that should – and can – become reality through the GEAR Center, which will serve to help modernize government operations for the Digital Age.

Today, legacy business approaches, structures, and operations across the federal government limit the effectiveness and negatively affect the public's perception of government. Customer satisfaction and public trust are both low for the public sector.[i] Similarly, government employee engagement trails the private sector average by 16.3 percent – with fewer than half of respondents indicating they have the resources or skills to do their job.[ii]

An inability to adopt and adapt emerging technologies will only further entrench these performance gaps. Emerging technologies and digital solutions such as artificial intelligence, blockchain, autonomous vehicles, quantum computing, and robotics are disrupting existing industries and operating models faster than ever before – with no less potential to impact government operations. However if no action is taken, agencies could find themselves relying on operating models designed decades ago.

But transforming core operations is challenging if agencies act independently. Government executives often lack the **permission** to experiment (and fail) with new approaches in the face of increasing mission demands and limited tolerance for risk on the part of citizens and other stakeholders. Industry advisors and business leaders can accelerate the process, but often find themselves engaging with multiple agencies, multiple times – with **no single point of entry for promising ideas**. And individual agencies may **lack the scale** to attract new solutions and providers – particularly when it comes to being able to offer the incentives and support needed to adapt a new solution to the complexities of the federal operating environment.

Part of the challenge is that there is no organization providing a definitive, cross-cutting point of view on how agencies should evolve. The focus of innovation efforts in the public sector often prioritize outward facing initiatives to advance specific missions of different agencies – instead of modernizing internal operations to become more dynamic, adaptable, and responsive to ever-changing national and global conditions. Outside of the federal government, groups like Code for America are responsive to specific needs of (typically state and local) governments, but do not drive cross-cutting modernization and require governments to commit funding

they often do not have. Focused sensing, research, and scouting of technologies would provide a 'shared service' that allows individual agencies to focus on actionable opportunities.

At the same time, transforming the federal government requires more than technology and the desire to change. Many good ideas struggle to get traction because they fail to connect to the practical operating considerations of government.

So how can government agencies transform themselves from organizations designed for the past into what the nation needs them to be in the future? How can they respond to the challenges posed by factors such as an aging workforce, increasing data management needs, new privacy and security vulnerabilities, and outdated operating models, while simultaneously taking advantage of the opportunities presented to increase effectiveness through emerging solutions? And how can they help identify, test, and scale new solutions in a way that drives true impact?

Introducing GEAR

The GEAR Center should be designed to provide tangible, operations-oriented improvements, not policy prescriptions. GEAR offers an opportunity for the federal government to design and implement a new partnership model that will set the standard for collaborative, cross-sector innovation. Government is uniquely positioned to establish this hub of diverse stakeholders who can use new means to fund, research, develop, pilot, and scale solutions to address common issues shared by government agencies.

Specifically, GEAR should be designed to uncover both the most pressing crosscutting challenges facing government agencies and the emerging solutions needed to address them. These sensing, scanning, and design thinking-focused functions will be driven out of a central research team, providing a clearinghouse for new challenges and innovations to be analyzed. Topics identified for further research will be worked through GEAR research portfolios and potential pilots fed into GEAR's Design-Test lab, which enables GEAR to incubate, pilot, and prepare to scale promising solutions.

Both the public sector and non-governmental organizations will contribute to GEAR's effectiveness. Corporations, foundations, academia, and non-profits can become "members" of the GEAR Center at differing levels of commitment (funding plus time, for example) and gain the opportunity to participate in GEAR's research and pilot activities. A small percentage of these membership fees could be set aside into an endowment to sustain GEAR's independence and operations in the future. Government organizations will commit staff, potentially some funding, and a willingness to pilot new solutions coming out of the Center as part of their participation.

On an ongoing basis, a number of "portfolios" of projects will be underway – aligned to either emerging solutions or specific pain points for government – which the GEAR Center will develop in coordination with its members and network.

This membership-driven "network" approach allows a wider and diverse array of universities, companies, academia, the startup community, and government executives to engage with the issues where they have the most to contribute. Beyond improving how government brings together diverse players, GEAR will also be positioned to help non-traditional problem solvers (like startups) engage with the government. In this sense, a mechanism like GEAR means that competition is enhanced, and not limited – expanding the pool of ideas and suppliers for the government, removing some of the procedural complexity that create "moats" for traditional players, and creating a single point of entry for outside players to access a complex government landscape.

Ultimately, the establishment of GEAR will create a mechanism for government transformation that is self-funded, insulated from short term political winds, and capable of driving measurable and meaningful change. The Center's focus on a constant, iterative process will help engage stakeholders in the development of new

solutions to prepare government agencies for the future. The remainder of this document explores what will be needed to make this vision a reality.

Informing the GEAR Center: Objectives & Operating Model

What should GEAR do?
Strategic Approach and Operating Objectives

Traditionally, government faces three big challenges in identifying, generating, and diffusing innovation across and within agencies. The GEAR Center will be established with these challenges in mind, and specifically designed to overcome them.

1. **Inform: GEAR should provide an intake mechanism for forward-looking, 21st century management practices, technologies, and solutions.** Today, industry leaders often bring ideas, research, and leading practices to government executives through a wide range of mission- or agency-specific advisory boards, associations, consortia, events like "industry days," requests for information, or other advisory functions. However, these intake mechanisms are siloed and miss common cross-government themes or priorities and they provide limited ability for government to experiment with these innovations. *The GEAR Center should provide a means to identify, prioritize, and deeply study challenges, research, ideas, and practices with broad applicability across mission sets or agencies.*
2. **Enable: GEAR should provide easy access to transformative options that can scale across departments, agencies, and mission units.** Agency-specific change misses the opportunity for economies of scale. Often, resources are wasted on duplication of efforts solving similar problems, and information about what works is limited to other government entities – creating only incremental change designed to imitate the 'sector leader' rather than fundamentally rethink delivery. *The GEAR Center should provide a means to translate new ideas into actionable solutions that fit the policy, statutory, and regulatory environment in which agencies operate – and help these solutions scale across government organizations.*
3. **Accelerate: GEAR should provide a bridge for businesses or academics with existing and emerging innovations that don't currently have a way to connect with government.** Innovation is context-specific. Without access to government and an understanding of its operating environment, many companies struggle to penetrate the market and adapt solutions for government needs. Often, the most innovative and impactful solutions sit in the private sector with entrepreneurs or businesses who do not have a natural intersection with government needs, processes, and systems. *The GEAR Center will work directly with startups, technology companies, and other solution providers to adapt their concepts for the government operating environment – driving greater openness, competition, and diversity among solution providers.*

GEAR needs to account for these objectives in its design and approach to applied research. Past and current centers aspire to achieve similar goals but often miss the mark. GEAR should aim to develop an approach that acknowledges and breaks down these barriers through its model, bringing government leaders and innovators to the table with funders, thinkers, scientists and entrepreneurs, to yield measurably improved outcomes for citizens. To do this, the GEAR Center should be able to rapidly and effectively:

- ✓ Engage in **sensing and scanning** to identify new and emerging solutions with the potential to transform government operations.
- ✓ **Prioritize focus areas** based on emerging technologies/capabilities and cross-cutting challenges faced by Federal agencies that have not yet been addressed in a centralized, coordinated manner;
- ✓ Conduct applied research on potential solution concepts to **identify, manage, and support a portfolio of innovation projects** aligned to GEAR priorities;
- ✓ Use human-centered design and behavioral insights-driven capabilities to **incubate solutions** by adapting them to the government context, developing and evaluating pilots, and supporting scaling/market penetration of these new solutions across the government ecosystem

How Should GEAR be Structured and Funded?
Organizational Design

Organizing Structure

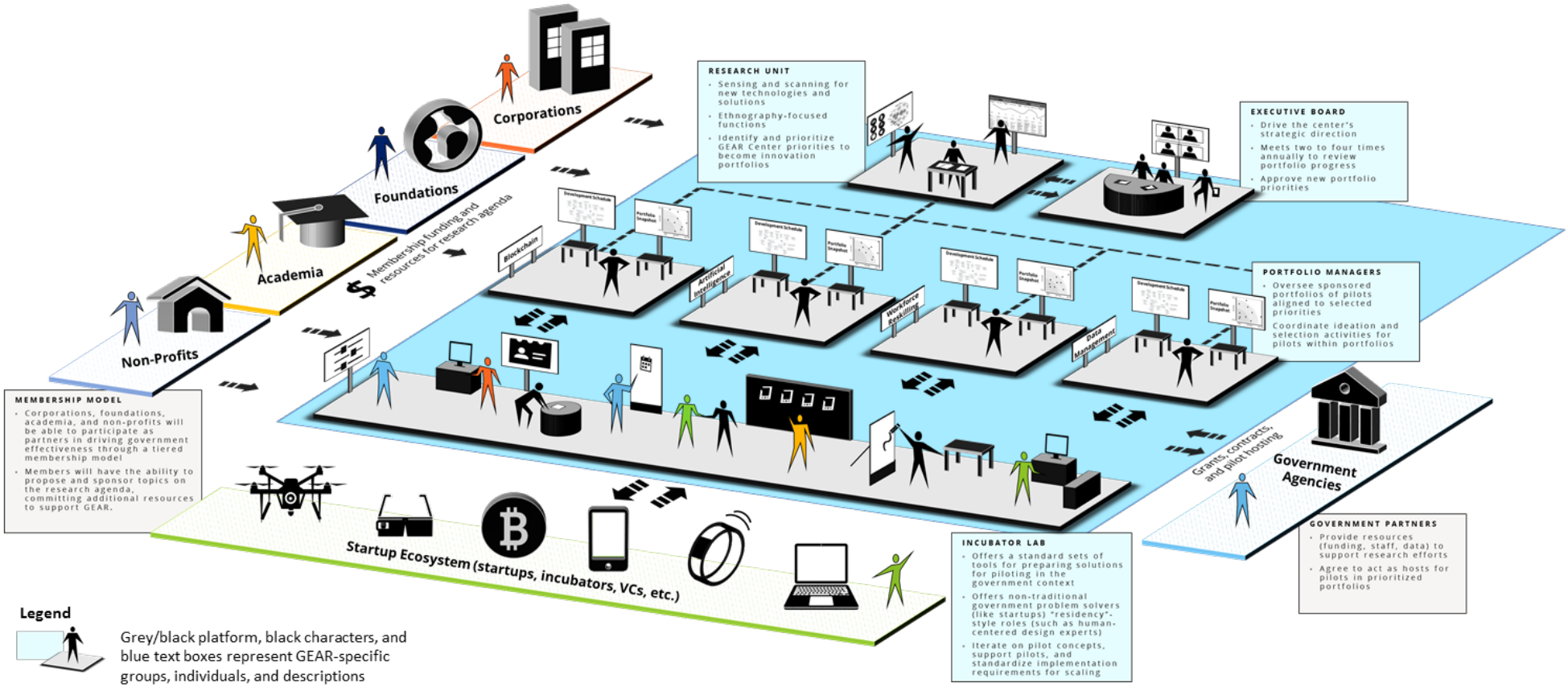
To execute these activities in the most meaningful way possible, the design of the GEAR Center should concentrate on fostering a non-governmental, public-private partnership that engages researchers, academics, non-profits, and private industry from an array of disciplines in the process of transforming government operations to meet the challenges and opportunities of the Digital Age. Each of these groups has a role to play in establishing the GEAR Center's priorities, identifying and testing new solutions, and providing resources to the center (financial and otherwise). The image below depicts a graphical overview of a notional structure for GEAR.

The GEAR Center would likely be incorporated as a 501(c)(6) organization, establishing a "business league" focused on government modernization.

The structure and operations of GEAR would be designed to be compliant with the Federal Advisory Committee Act (FACA), offering channels for engagement with government executives on cross-cutting intergovernmental issues.

GEAR
Transforming Government

The proposed operating model of the GEAR Center should concentrate on fostering a non-governmental, public-private partnership that engages researchers, academics, non-profits, and private industry across an array of disciplines in the process of transforming government operations to meet the challenges and opportunities of the Digital Age. Each of these groups can perform a specific role in establishing the GEAR Center's priorities, identifying and testing new solutions, and providing resources to the center (financial and otherwise).



This illustrative model has the following characteristics:

- **Core research unit.** A central research team could be responsible for ongoing sensing, scanning, and ethnography-focused functions to identify and prioritize GEAR Center priorities.
- **Executive board.** The GEAR executive board would drive the center's strategic direction, meeting two to four times annually to review progress in existing portfolios and prioritizing new portfolios.
- **Research managers and portfolios.** GEAR priorities will be managed as a series of sponsored solution "portfolios" – aligned to either emerging solutions or specific pain points faced by government and supported by a network of individuals and companies from the private sector, academia, and government. Like DARPA's program managers, a different GEAR research manager would oversee each individual research area. The managers will oversee other contributors in advisory and "fellowship" or assignment-style roles to help shape a point of view, identify potential projects, and recommend a portfolio of experiments to test and evaluate.
- **Incubator lab.** Individual pilots within each portfolio that are selected for development will have a designated pilot owner and be incubated within an incubator lab. The lab would offer a standard set of tools for piloting and testing and connect projects to government agency sponsors (who champion an idea as it moves from conceptual testing to funded pilots). It can also support non-traditional government problem solvers (like startups) in "residency"-style roles to prepare their solutions for application within the government context. While it is unlikely that any one startup would have the resources (time, funding, etc.) to participate in a standing organization or membership group, the lab allows smaller, startup solution providers to engage early in the experimentation process for highly-relevant projects.
- **Membership model.** Corporations, foundations, academia, and non-profits will be able to participate as partners in driving government effectiveness through a **tiered membership model**, with differing levels of resource commitments required for each category of member. Like the World Economic Forum model, members will be able to gain access to research and pilot activities, with the various membership tiers providing different types of access. In addition, members will have the ability to propose and sponsor topics on the research agenda, committing additional resources to support GEAR.
- **Government partners.** Agency participants will provide government staff and commit to pilot new solutions coming out of the Center as part of their engagement. They may also choose to fund pilot activities through grants, contracts, or other funding mechanisms.

The most effective pilots will be those positioned to scale across government agencies resulting from lessons learned during the incubation and testing processes.

Funding Model

Initially, the GEAR center will generate funding through two primary levers: (1) private sector/foundation membership, or funding and shaping of priority research areas – with different levels of sponsorship granting different levels of access – and (2) public sector funding of pilots and projects through grants or other traditional contract vehicles that award deployment-ready ideas.

The front-end funding of general research and events or specific portfolios by private entities creates the incentive to set a research agenda that reflects private sector innovation and interest, while the back-end funding of projects balances those topics by driving to solutions with the potential to attract government sponsors for pilots.

A small percentage of membership fees could also be set aside year-over-year in a fund (perhaps eventually an endowment) to allow GEAR to make independent investments outside of this process to incent specific problem solvers or behaviors from academia or other outside research institutions – or preserve the organization's independence and viability by being able to unilaterally fund specific, high-priority projects. This could be structured as a percentage contribution of each project, or potentially as a "shared savings" agreement with agencies who use the solution – sharing a percentage of the government's first-year's savings with the Center to fund future applied research.

Ultimately, the establishment of GEAR will create a mechanism for government transformation that is self-funded and removed from partisan appointments or government gridlock, drives measurable and meaningful change around emerging opportunities and pressing government challenges, and promotes a constant, iterative process for non-traditional stakeholders to develop new solutions to prepare government agencies for the future.

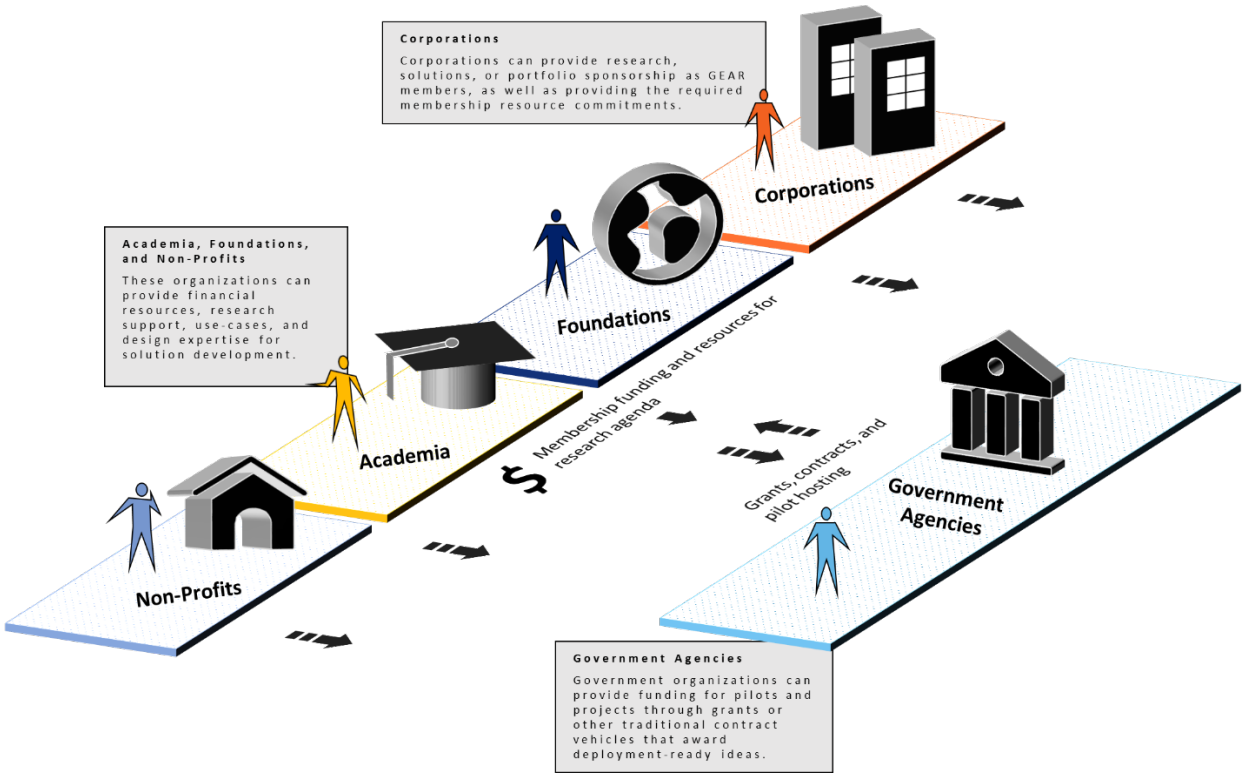


Figure 1. The front-end funding of general research or specific portfolios by members creates the incentive to set a research agenda that reflects private sector innovation and interest, while the back-end funding of projects by government grants and contracts drives this research toward solutions with the potential to attract agency sponsors.

How Should GEAR Operate?

Functional Details

To fulfill its mission, the GEAR Center should have the following capabilities:

- **Sense and scan** (surface emerging and future trends, engage industry)
- **Prioritize focus areas** (set a government innovation and effectiveness research agenda)
- **Build insight and manage solution portfolios** (conduct applied research to identify solution concepts and a transformative vision for each portfolio)
- **Incubate, pilot, and prepare for scale** (adapt solutions to the government context, iterate on them, pilot them, define requirements to support scaling)

Sense and Scan (Identify trends)

To lay the groundwork for where government operations and services need to be in 5, 10, or 20 years, leaders need a sense for what trends or technologies may define the future operating environment – and the GEAR Center should provide a shared capability to do so. The Center will have more permission to look out further and look at more cross-cutting implications than a single, appropriations-funded agency – while still having a mission and focus that is more tightly connected to government operations and effectiveness than general trends analysis groups.

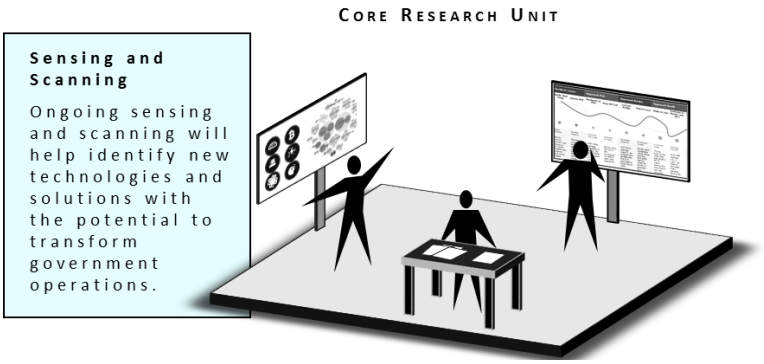


Figure 2. The GEAR Center offers the opportunity to take a more holistic, systematic analysis to identify emerging technologies or solutions through digital, research, or network-driven scanning.

Many government organizations are already attempting to engage industry, understand their environment, and gain additional context through specific offices or programs. Many agencies have created offices of private sector engagement or strategic partnerships, or have advisory boards like the Defense Innovation Board. Several cross-pollinate by sending employees out – establishing talent sharing arrangements like tours of industry or "secondments." Some host industry days or summits on emerging topics that bring together outside perspectives to bolster a critical mission, while others have established outposts that put them closer to innovation ecosystems – like NGA's Silicon Valley outpost, or the recently-launched Army Futures Command in Austin. The Department of Homeland Security Science and Technology (S&T) directorate even stood up an office to provide technology scouting services to its employees – any employee can submit an inquiry for horizon scanning to "maintain constant awareness of the technology space to inform project managers of impactful breakthroughs or alternatives." [iii]

However, no single hub for government agencies exists to surface cross-cutting challenges and explore potential use cases. A wide lens will increase the possibilities of identifying government-wide solutions. The GEAR Center offers the opportunity to take a more holistic, systematic analysis to identify emerging technologies or solutions through digital, research, or network-driven scanning – much like the United Kingdom's Horizon Scanning Program.[iv]

In doing so, the Center creates a nexus for industry advisors and other partners to share insight on the trends and technologies they are tracking – and how government might face similar challenges. Where today, industry leaders may find it daunting to create an exchange of ideas with government executives, a single, respected entry point may simplify the information flow. As a member, executives will have the opportunity to interface with and advise government leaders, and through that dialogue, begin offer input on forward-facing ideas that can shape the research agenda.

Prioritizing Focus Areas

Prioritizing focus areas allows the GEAR Research Center to translate emerging trends into a clear research agenda – driving study, solution design, and experimentation for a set of portfolios that evolves over time. In the private sector, treating innovation as a portfolio of investments can help a company to constantly make improvements to its "winning" products or services, while also seeking new advantages and mitigating disruptions in a structured manner.[6] Google itself has famously applied this approach to making innovation investments.[7]

Such prioritization is one of the clear areas where having an independent third-party organization could add tremendous value – offering an objective voice to articulate shared focus areas for government effectiveness. This process should be independent, objective, non-partisan, of high quality, and sustainable beyond political cycles to be credible and effective. The GEAR executive board would meet two to four times annually to review progress in the existing portfolios and prioritize new ones. Beyond simply assessing what trends are most relevant, high-impact, or urgent for government, selection would also consider whether the research areas would have the ability to secure funding at two different stages: (1) whether private and nonprofit sector members are interested in sponsoring the research; and (2) whether government executives would see value in participating and contracting for the pilots and solutions that come out of it.

"Focus areas" for the GEAR Center would fall into one of two broad categories: cross-cutting challenges faced by multiple government agencies (e.g., Workforce Modernization, Data Management, Screening and Vetting), or an emerging capability with significant commercial impact to date that merits analysis of government implications (e.g., Internet of Things, Artificial Intelligence, Blockchain). Categorizing the areas of focus for the GEAR Center in this way will allow it to simultaneously mature complimentary solutions that collectively address long-standing barriers to government modernization, while also looking to emerging capabilities to keep government "ahead of the curve."

Identifying and Solving Cross-Cutting Government Challenges. Many of the cross-cutting challenges facing government are already known; for example, it is easy to envision GEAR initiatives focused on enhancing the citizen experience, improving data management and access, improving agency digital capabilities (in a recent survey of state and local governments officials, 73 percent believed their organization's digital capabilities were behind those in the private sector), reforming core processes such as procurement, budget, IT investment and capital allocation, or exploring how the public-sector workforce can be augmented by AI, reskilled and redeployed. Other challenges are nascent, and not yet as widely recognized – such as defining how regulatory practice will need to evolve in the 21st century.

In both cases, identifying cross-cutting challenges means creating feedback loops between industry, agencies, and citizens and regularly applying design-based techniques to understand what various stakeholders need. Nothing can replace the insights gained through experiencing firsthand what customers encounter—the highs, the lows, and everything in between.

Identifying Use Cases for Emerging Capabilities. Emerging technologies like autonomous vehicles, blockchain, augmented reality, or drones are both thrilling and frightening. But with limited resources, how can government leaders identify which new technologies are most relevant to their mission so that they can capitalize on opportunities and mitigate threats? How can they take a concept such as Artificial Intelligence and figure out where and how to apply it across their enterprise in a meaningful way?

By starting with a new solution or technology and then identifying problems to which it can be applied (rather than taking a more traditional approach to innovation that starts with a pain point), GEAR can help leaders not only keep abreast of emerging approaches and technologies, but diagnose where and how to apply them for greatest impact.

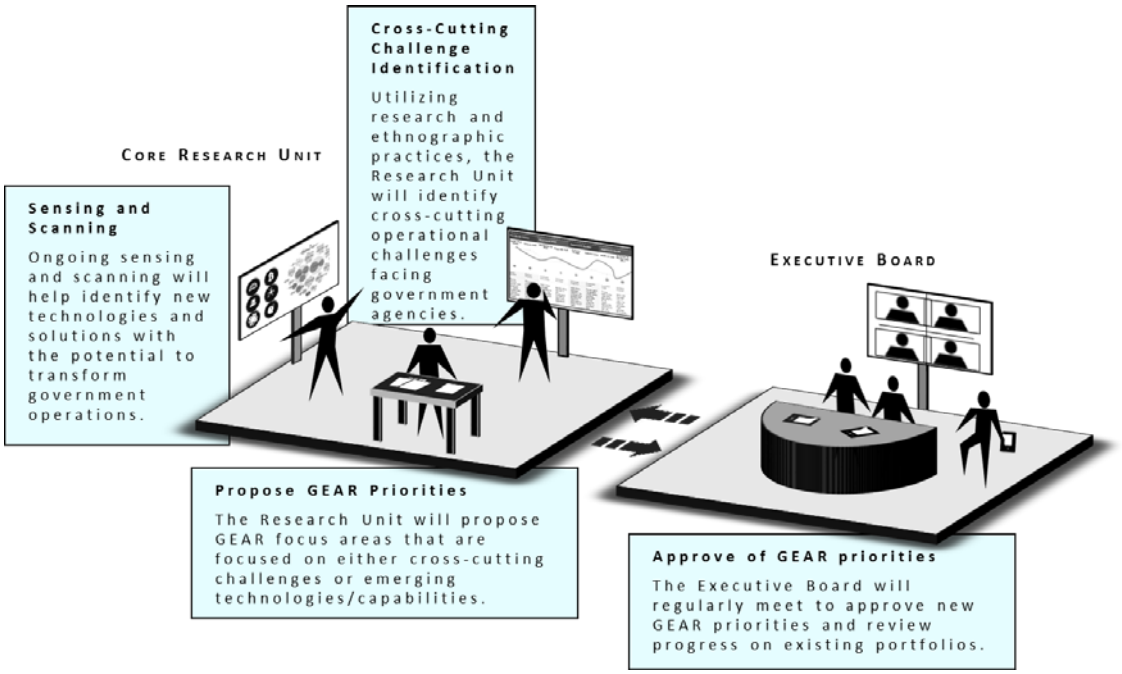


Figure 3. A core research center will translate emerging trends into a clear research agenda – driving study, solution design, and experimentation for a set of portfolios that evolves over time.

Build Insight and Manage Solution Portfolios

Once a priority area has been identified, the GEAR Center research team should further explore ways in which the priority area can be operationalized as a set of pilot solutions. For example, in the case of an emerging technology such as Artificial Intelligence, what is the end-state of AI in government that the series of projects marshalled by the GEAR Center is hoping to achieve? What types of problems and/or use-cases might AI be applicable to in government operations? And how will the GEAR research team source potential products or solutions that turn these use cases into measurable, testable pilots?

GEAR research managers will need to activate the GEAR network to identify the applicable group of experts from industry, government, academia, and the start-up community to:

- **Identify the community involved in this portfolio.** Who needs to be involved in this set of transformation efforts? Who is providing the leading research, thinking, and solution concepts focused on this area in the world today?
- **Paint a clear vision of the end-state for the research area.** How might a coordinated set of pilots focused on this topic transform government? What end-state should this portfolio of projects be focused on as a north star, based on research and leading thinking in the field?
- **Identify channels for innovative concepts.** Where are solution concepts going to come from? Does the GEAR team need to run a prize challenge? Provide data to enable solution developers to engage with government? Hold a hackathon or workshop to get start-up founders in a room to begin customizing their solution to the government context?

Upon executing identified channels for idea generation, it is important that the GEAR Center not manage the associated solutions as a series of one-off efforts. Rather, the Center should take a portfolio-driven approach to managing these focus areas, selecting projects that are complimentary and collectively balance risk and reward.

A portfolio-driven approach to innovation management has helped other innovation coalitions in the public sector achieve high-impact outcomes – balancing immediate wins with more transformative investments. For example, the Smart Columbus Partnership Acceleration Fund oversaw the coordination of investments by the private and public sectors that will complement, scale, and sustain Smart Columbus projects and programs into the future. This portfolio-driven approach to smart city investments is credited with playing a significant role in the city, winning the US Department of Transportation (USDOT) the first-ever Smart City Challenge and an award of US$50 million in grants.[9]

At the federal level, USAID's Bureau for Global Health had over 150 innovations funded in 2018 with 25 transitioning to scale. To do so, it invests between 70 and 90 percent of its innovation efforts in "improving the known" solutions—what could be classified as core, incremental innovation—and 10 to 30 percent in "inventing the new" or transformational innovations. The results? An innovation presence in 33 countries with a targeted 2-3 million lives saved.[14]

Despite individual efforts at several agencies, however, the federal government does not have a view into shared investments across agencies, rolling up use cases for shared challenge areas, or shared interest in emerging capabilities. Adopting this approach will allow GEAR to function as a hub to its various agency spokes, rapidly sharing new use cases for emerging technologies and solutions for cross-cutting problems across its

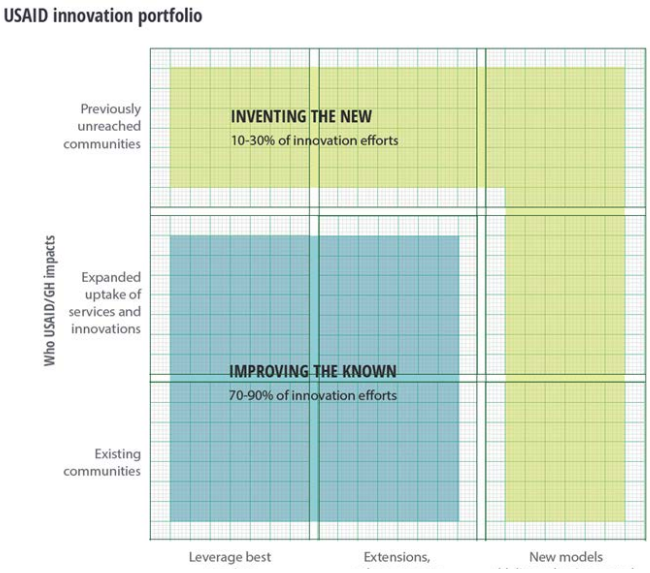


Figure 4. A portfolio-driven approach to innovation projects balances immediate wins with more transformative investments – much like USAID's approach to balance "improving the known" and "inventing the new."

participating network, driving increased market penetration and adoption.

Individual pilot applications/solutions within each portfolio would be selected by the leadership team associated with that portfolio, following a similar (and standardized) scoring system across the portfolios. Portfolio managers would be encouraged to select a blend of higher risk, longer time horizon, more transformational projects together with shorter-term, more incremental solutions, allowing GEAR stakeholders to simultaneously see the immediate impact of new solutions while also pursuing longer-term transformation. To help make this assessment, portfolio managers would be responsible for building an assessment of potential business impact (value), technical feasibility (LOE), and agency interest (desirability). Criteria to assess might include degree of architectural/process change, potential to disrupt existing operations negatively, and projected cost.

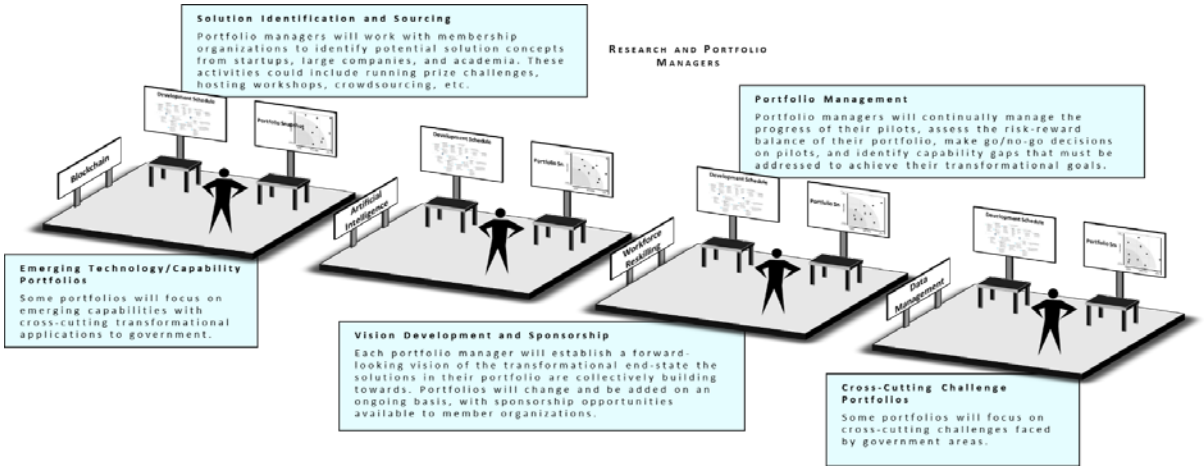


Figure 5. GEAR portfolio managers will engage the community involved in this portfolio, paint a clear vision of the end state, and identify channels for innovative solutions.

Incubate, pilot, and prepare for scale

As portfolio research managers select pilot projects to make up their portfolio, these projects move into a dedicated environment – the GEAR "Incubator" or Lab" – to support design and testing of solutions. This environment offers tools like design thinking, customer segmentation, and journey mapping to turn selected ideas into deployable solutions. A large part of this effort also involves helping startup-up and other solution providers overcome the barriers associated with engaging with government, facilitating the modification of solutions for the government context.

This process will include working with government agencies, citizens, and other GEAR stakeholders to provide broad, comprehensive user research, a sense of the cross-product landscape, and users' interactions with other products and services to identify and address specific pain points.

Utilizing data collected through this process, the GEAR Lab team would apply wire-framing, prototyping, and service design practices to develop solutions that are ready to be tested. Through this process, ideas or solutions will undergo rapid cycles of user-testing to refine prototypes, mitigate critical uncertainties, and document final design solutions. In this way, GEAR will be far more than a technology showcase, focused instead on driving market penetration for solutions and not simply proof-of-concept.

In addition to tools and accelerators for solution design, the GEAR Lab would also offer the opportunity to connect with existing market solutions – particularly from smaller, "startup"-style players with relevant solutions. Such a "shared incubator" may look like "corporate VC" groups like Engage Ventures, an Atlanta-based venture capital incubator that manages shared investment funds from multiple Atlanta-based companies (like Home Depot and Delta airlines), scouting and identifying new technologies with applicability across business areas in specific categories of new technology. Some cities have experimented with similar seed funding and co-location to help marry capabilities

with needs – notably, the Startup-in-Residence program that started in San Francisco. Now in 28 cities, it connects startups who have relevant technologies to city leaders for a year-long "residency" focused on using that technology to solve real civic challenges.

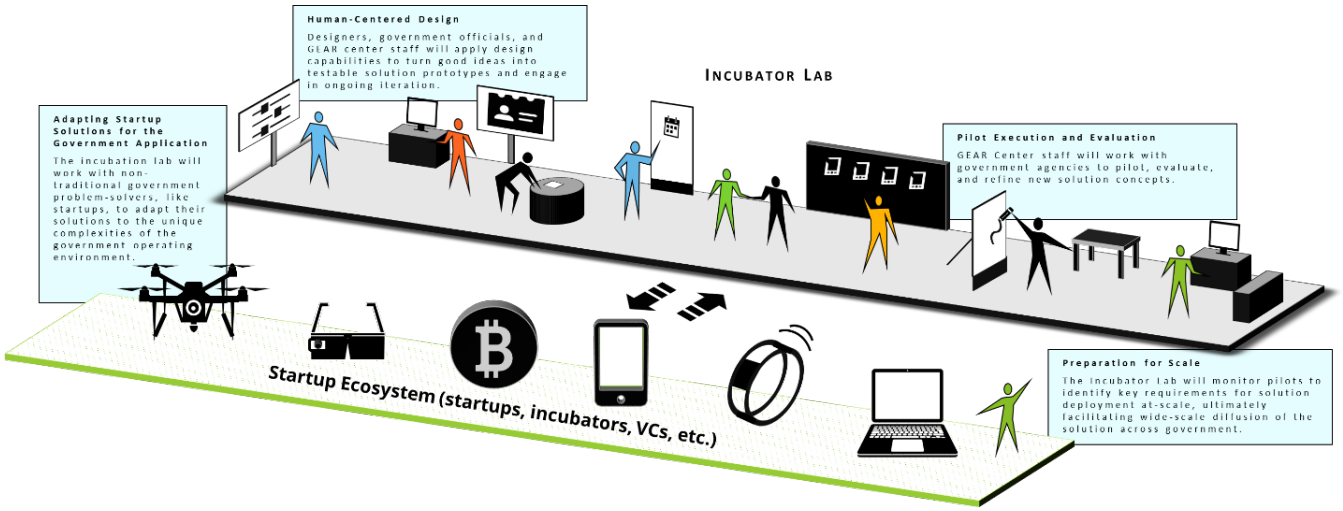


Figure 6 A dedicated environment – the GEAR "Incubator" or Lab" – will provide access to the capabilities needed to design and test solutions.

Unfortunately, far too often, an innovative approach shows promise in a pilot and generates funding for expanding the effort. But once the approach is tried in multiple locations or at scale, the results are disappointing. What went wrong? In many cases, failure at scale can be traced to problems related to how the pilot was set up. Even good ideas often fail when they are tested or scaled ineffectively. Nearly 70 percent of startups die not due to a flawed idea, but from a failure to successfully scale their efforts.

A recently published report from the Innovation Unit and the Health Foundation of the United Kingdom highlights the importance of understanding both the innovation and its targeted users in eventually scaling a given solution: "The 'adopters' of innovation need greater recognition and support. The current system primarily rewards innovators, but those taking up innovations often need time, space and resources to implement and adapt an innovation in their own setting."

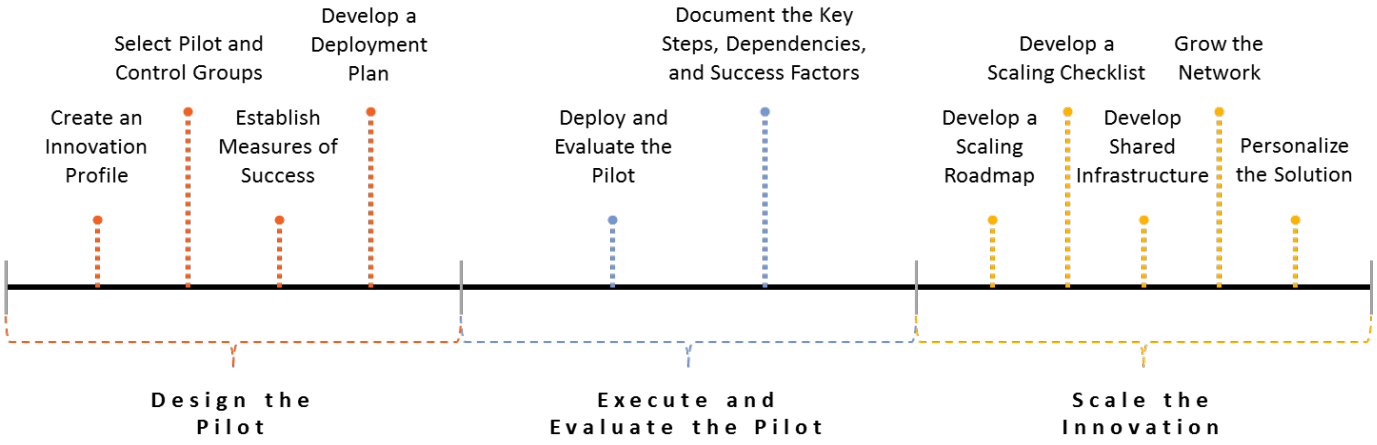


Figure 7. Representative Process for Pilot Design for Scale

GEAR can engage government agencies seeking a solution under development in a GEAR portfolio. For the agency, the incentive becomes additional support for the deployment of what might otherwise be a costly solution to acquire and pilot. For GEAR, the value is derived from the ability to measure and evaluate the efficacy of the new solution.

GEAR would work with the agency to develop impact measures, refine the solution in real-time as it is being deployed, and document what made it effective. This documentation is vital to avoid having to "start over" each time they attempt to expand to a new site or population. Once its solution has demonstrated impact, the GEAR Center can lay out the process, legal, data, architectural, and other considerations required for other Agencies to adopt it – many of the lessons coming directly from the pilot. In this way, innovation adoption can be accelerated across government organizations, and redundant efforts can be reduced due to coordination through GEAR.

Establishing the GEAR Center

Standing up a sustainable, independent, non-governmental organization requires a nuanced startup funding strategy. Successful prior challenges demonstrate an array of possible approaches, from all-in funding commitments that fund and scale solutions, to offerings to match funding from private and philanthropic sectors, to commitments to source a prize without funding the resulting solutions, and even simply high-level commitments that create space for other stakeholders to develop and fund implementation

Therefore, GEAR should consider how challenge prizes could create a novel approach to procurement to establish and launch GEAR:

- **Design and launch of the Center (challenge prize - coalition)**. The winner of the challenge emerges with the winning design, and is awarded seed funding to launch and operate (likely 70-80% of the first 2 years operating budget). The winner is organized as a coalition, bringing diverse, cross-sectoral capabilities – perhaps digital technology companies that regularly engage with startups, strategy and research providers who advise on trends, integrators and implementers who have experience in government operations, and/or academic institutions who lead in this area (e.g., MIT Media Lab). The goal of the challenge is centered on the structure that the winner proposes and implements, while providing a means to engage inaugural members and build momentum for the 'membership organization,' establishing a baseline group of funders for GEAR's first years.
- **Solutions for "pilot" portfolio issues (i.e., workforce development)**. The coalition responsible for the design and launch of GEAR should be independent of the perspective and provision of expertise to one of what will over time be many topics. The government should support the launch of the Center and use an initial pilot portfolio (reskilling) to establish and test GEAR's processes. Embracing the spirit and iterative processes of innovation and design, this approach can initiate the Center's portfolio and attract ideas related to early issue areas like workforce development. Having multiple challenge winners offers early partners for the Center to jumpstart testing – and real issues with which to refine its operations and processes.

Incentive prizes, deceptively simple in concept, are often challenging to construct in a way that drives the desired outputs and supports the desired outcomes. An effectively-designed competition can build and maintain communities of interest, encourage participation, create opportunities for public organizations to share costs with private and philanthropic partners, and foster collaboration among government, academia, the private sector, and individuals – the same network that GEAR should ultimately engage to be effective. Additionally, a prize model helps shift the stand-up and operationalization of GEAR outside of government – a critical element of its long-term sustainability.

To effectively use a prize challenge to design GEAR, the federal government should provide a clear set of design constraints, require that responders detail both the "what" of how the center will operate and the "how," provide a detailed description of funding models capable of sustaining GEAR in the long-term, be willing to accept financial risk associated with failure, and clearly lay out a stand-up schedule that utilizes available resources to establish not only the GEAR operating model but its first set of pilots.

As a starting point, challenge prize design should account for the following critical components:

- **Funding Allocation.** What are the critical functions for the GEAR Center's first year of operation – and what kind of operating budget does that demand? An estimate of these costs point to the amount of seed funding the prize should offer as seed funding for the new organization. And how long should this seed funding extend (and at what rates) – what is the drawdown? Funding for out-years can create clear incentives to sustain certain types and levels of activity. And in addition to seed funding itself, how should the prize design think about the anticipated breakdown or use of these funds – how should it allocate funding and resources for the ideation activity itself, the administrative costs, and any purse or incentives?
- **Talent and Resources.** What kind of talent, capabilities, and partnerships are needed to stand it up? In addition to a strong concept, having the right coalition of players to stand up the GEAR Center gives greater flexibility to pivot throughout the process. A robust coalition would likely include some organizations who have digital technology platforms, some who have relationships and inroads into the startup community, and/or some with experience supporting government strategy and operations.
- **Evaluation.** How are potential ideas for GEAR going to be evaluated? Clearly-defined evaluation criteria can help prompt participants to generate more ideas, gain buy-in, and reduce frustration. For example, if timeframe for implementation is a criteria, with shorter time-horizon projects given preference, this will help participants generate new concepts that fit this criteria.
- **Structure.** Innovation requires defined structure, including an articulated design challenge of what is being solved, constraints related to the ideas submitted (cost, topic, time horizon), and clearly defined channels to collect and refine ideas. These can include crowdsourcing platforms, email/sharepoint submissions, in-person workshops (hackathons, innovation café, design activities), and wikis/co-creation platforms.
- **Communication (attracting a diverse set of problem solvers).** How will OMB reach a target group of potential problem solvers? What format or incentives will drive participation by a diverse coalition of businesses, multiple research institutions, and other innovation partners? Targeting objective industry influencers will directly impact the nature and volume of response – perhaps through a formal mechanism such as a challenge "steering committee" of independent/objective luminaries who understand both government challenges and industry capabilities (e.g. Code for America's Jennifer Pahlka, or technology journalist Tim O'Reilly). Additionally, non-monetary incentives like the level/type of public recognition (with messaging that emphasizes public service and leadership) may "up the ante" for players for whom the prize itself may not be a strong motivator. Beyond these specific strategies, an overarching participant segmentation could inform more nuanced engagement and drive more diverse response.

GEAR in Action: Workforce Reskilling

The above sections outlined the objectives of the GEAR Center, presented its operating model, and explored the collaboration model used to convene a diverse body of stakeholders on behalf of GEAR's mission. But how would this model operate in practice, with an actual identified research priority?

The following section demonstrates how one prioritized research area – workforce reskilling – can illustrate how the ecosystem of players, different types of solutions, and government-specific considerations come together to generate the types of impactful outcomes described in the opening vignette.

Sense, Scan, Prioritize: "Workforce Reskilling and Modernization" as a GEAR Research Portfolio

What are leading practices for effective reskilling, upskilling, and training adult workers, including opportunities for new applications of existing models?

For any portfolio, GEAR's Core Research Center would assess the current landscape and horizon to identify trends and opportunities for 1) emerging innovations through sensing and scanning functions described above (Sense and Scan (Identify trends)), and 2) where government organizations need the most help. This capability helps to identify opportunities and leading practices.

Consider, for example, the trends and technologies reshaping work today – and driving increased need for rapid reskilling and upskilling.

In today's workplace, disrupters are causing a fundamental shift – technology is accelerating and work is changing. Advances in automation and cognitive technology, changing demographics, and new collaborative technologies mean that employees require reskilling and training in new areas as the very nature of how work is performed continues to evolve.

- **Automation and Cognitive Technologies.** Technological advances, particularly in the areas of robotics, artificial intelligence, and machine learning, are enabling machines to produce value in ways that only humans could until the very recent past. These advances create a pool of "digital labor" that both amplifies human effort and supplants it. In the context of the federal workforce, a 2017 Deloitte study on AI in government found digital labor could free up to 28 percent of total federal labor hours, depending on the degree of investment and adoption.[v]
- **Changing Demographics**. Demographic changes are shifting the composition of the workforce. The U.S. Bureau of Labor Statistics (BLS) estimates that approximately 103 million people will be age 55 years or older by 2025 – more than 30 percent of the population.[vi] The oldest cohort is also projected to increase its labor force participation rate, just as it did over the prior 20-year period.[vii] Given rapid technology and business changes, the skills relevant at the beginning of a career may not be relevant during the later years, meaning that workers will need periodic reskilling and upskilling to remain employable throughout their career life.
- **Communication and Collaborative Technologies.** The world has grown smaller and more connected. Instant, ubiquitous, and cheap communication now enables work to be performed from anywhere. These changes, coupled with the rise of the information economy, make it easier to perform work anytime, anywhere. In addition, a growing array of digital platforms is making it easier for potential employers and customers to find the most appropriate talent anywhere in the world and to pull that talent together to perform specific tasks.[viii]

While day-to-day functions of individual jobs may be shifting, the fundamental aspects of what differentiates humans from machines provide and produce new, adaptive opportunities for workers. Critical thinking, creativity, empathy,

and people management will be critical competencies for 21st Century jobs.[ix] Deloitte's 2018 Global Human Capital Trends survey, for example, found that top companies list complex problem-solving, cognitive abilities, and social skills as the most sought-after capabilities in their future talent.[x]

These workplace disruptors offer new opportunities in the federal workforce to both integrate new technologies and reinvest in developing essentially human skillsets. With the help of automation and shared services, manual, high-volume tasks can be removed from employees' day-to-day responsibilities, allowing additional time for employees to focus on mission-oriented, high-priority tasks that require essential human skills. Focusing on an approach that employs reskilling and upskilling models to achieve both technology integration and the development of essentially human skills is critical to developing the federal workforce of the future, and in the selection of specific pilots. [xi]

Build Insight and Manage a "Workforce Reskilling and Modernization" Solution Portfolio

What approaches could be piloted for possible application and scalability across the Federal sector in various learning domains (e.g., cognitive, affective, behavioral) – such as gamification, use of massively open on-line courses (MOOCs), apprenticeship models, and other new approaches?

Once Workforce Reskilling is selected as a priority for the GEAR Center, GEAR's Reskilling Research Portfolio Manager would be responsible for conducting research to develop a point of view on how a portfolio of solutions could help transform learning and training at government agencies and background information to inform future solution development.

For example, the GEAR Portfolio Manager might find that current research has found that to create adaptive organizations, leaders need to move away from traditional top-down, rigid approaches to training and migrate towards a networked, agile ecosystem designed to enable real-time learning between peers, experts, internal, and external assets. The guiding principles drawn from the latest research could indicate that reskilling the federal workforce should focus on:

- **Flexibility**. Leading organizations are transitioning from static to dynamic career ladders to promote learning and development flexibility.[xii] To help employees "learn how to learn," learning and development teams are building internal knowledge-sharing programs, developing easy-to-use portals and video sharing systems, and promoting collaborative experiences at work that help employees constantly learn and share knowledge.[xiii]
- **Consumer-Grade, Hyper-Personalized Experiences**. Companies are also designing broadly-applicable learning and development plans that include an array of disciplines, such as finance, sales, marketing, and Information Technology, to name a few. Such an approach is gaining importance in the wake of the increasing convergence between the different functions of an organization.[xiv] Building on self-directed learning tools, companies such as Visa, Ingersoll Rand, IBM, Walmart, and others are creating learning networks and knowledge-sharing systems using new platforms to curate content sourced both internally and from massively open online courses (MOOCs).[xv]
    - AT&T is a trailblazer in this arena. Through its AT&T's Workforce 2020 initiative, AT&T will invest over $1 billion to retrain 100,000 employees by 2020. [xvi] AT&T is looking within its own existing workforce to build the skills needed in the future. AT&T has helped employees quantify their skills in terms of competencies and credentials and have launched internal tools that connect them to training options.[xvii]
    - It revamped its learning and development framework to enable employees to curate courses, develop new skills and build on current expertise, choose mentors, and even switch departments. AT&T has also partnered with universities to provide on-demand courses.[xviii]
- **Continuous, On-Demand and Self-Directed Learning.** The workforce of the future will require learning opportunities that are available on-demand through virtual / mobile platforms.[xix] Easy access to courses is

now possible through platforms such as Coursera, LinkedIn, and edX.[xx] A vast array of new self-directed learning tools have also entered the market, enabling employees to find content, take courses, and share information at even greater levels than today.[xxi]

- **Microlearning.** Short, focused learning modules to meet an immediate need. This can consist of videos, articles, blogs, e-books, audio clips or other forms of content that can be indexed and found easily.[xxii] Many organizations are pushing further, incorporating advanced technologies such as augmented reality (AR) and virtual reality (VR) into their adult learning strategies.
- **Adaptive.** Learning is refined and improved through analytics-driven measurement of employee performance. Leading edge corporate learning systems make it possible to monitor employees' learning progress and offer personalized learning and development programs.[xxiii] Adaptive learning platforms also facilitate quick and repeated retrieval during learning.[xxiv]
    - In Singapore, employers from across industries inform the government about the skills they would need in the next three to five years. The government uses this information to create Industry Transformation Maps. The maps also provide a list of training courses corresponding to in-demand skills. Individuals can use these maps to make informed education and career choices and prepare themselves for their chosen occupation. The maps also helps education and training providers to respond to the evolving needs of the industry.[xxv]
- **Apprenticeships.** By combining education and work experience, apprenticeships make learning more real-time and on-the-job relevant, neatly aligning what individuals are learning with the skills employers need. Within the federal workforce, apprenticeships could include cross-agency opportunities to address the common challenges faced by agencies or agencies within a given sector, thereby creating a more borderless approach to learning, working, and addressing challenges facing the government.
    - At the local level for example, MC2, a non-profit in St. Louis, designed an apprenticeship program in partnership with businesses, government, and military officials to meet the growing demand for cybersecurity professionals in Missouri. The program is in its early stages, but many of its apprentices have already found jobs with local businesses.[xxvi]
- **Upskilling As-A-Service.** Upskilling as-a-service through a network of non-profit, commercial, and academic partners would allow the federal government to bring together digital, educational, and technological talent to curate an integrated, immersive learning experience for employees across government agencies. By leveraging the power of the network, employees could obtain access to a wider range of options to train up on a new skill quickly, such as taking a course online from a top-rated institution or participating in an 8-week boot camp or immersive experience.

What might a portfolio of "Workforce Reskilling" projects look like?

Based on developed perspectives and insights, the Research Portfolio Manager would identify a series of solutions that collectively would make up the Workforce Reskilling portfolio. These could be sourced through engagement with GEAR members, or prize challenges, workshops, and crowdsourcing from startups and individuals. The result of these efforts would include a set of projects that could include:

- **AR / VR for contextual or adaptive learning.** Many companies are now applying advanced technologies such as AR and VR in their learning ecosystems. For example, Bank of Montreal (BMO) uses an AR application that allows employees to interact with a digital layer over their physical workplace, providing on-demand access to learning materials and using gamification to encourage exploration. Other companies like Shell are transforming their learning capabilities into interactive digital experiences that use both AR and VR to accelerate learning and augment the job experience. [xxvii]

  Senseye is a sensory human interface start-up focused on natural interaction between humans and machines. One of their current projects is working with the US Air Force as they redesign their pilot training. One class of

pilots learning to fly has been using this technology to have real-time analysis of their mental activities during VR simulation training. Cognitive load levels, stress levels, and ability to plan ahead and strategize are each tracked by the system. Founder, David Zakariaie, explained, "We essentially built an AI model for them to know exactly what's going on pilot's brain. We know exactly what their strengths and weaknesses are. The AI will build a custom syllabus for each pilot based on what's going on in their mind.

- **Apprenticeship for digital upskilling.** The rising cost and time commitment of formal training puts a premium on high-demand skills like cybersecurity, digital developers, or, in the health arena, nursing staff. But in many cases, it is possible to fuse lightweight instruction with real-life experience to build these skills inside an organization. In the health space, for example, health system Dartmouth-Hitchcock (in New Hampshire) has solved the challenge of attracting medical assistant talent to remote areas by training people who are already there – designing an apprenticeship program within the hospital built around on online training delivery (to reduce costs).

  Similarly, the UK government has created a boot camp-style digital academy to train and upskill government employees. Cohorts of civil servants work their way toward understanding and practicing more complex aspects of digital tech and service delivery over a six-week course, followed by a fellowship role to apply these skills to real-world problem. Workers are trained on critical elements of digital technology such as user-centric design, agile development and digital government services. At the end of their time in the boot camp, the graduates go to work on technology projects where they can learn as apprentices until they are ready to strike out on their own. GEAR could potentially pilot a similar approach, working with agencies to create combination "boot camp"-style training and apprenticeships.

- **Self-directed content delivery**. A vast array of new self-directed learning tools have entered the market, enabling employees to find content, take courses, and share information at even higher rates than today. For example, LinkedIn Learning (Lynda.com) is a platform that offers a mix of micro- and macro-learning courses on a variety subject areas. Deloitte uses the platform to provide customized content to its professionals, in addition to the existing content that it has in its legacy learning system. Deloitte also recently piloted a new approach to adult learning internally. Titled "Deloitte Disrupt", the training event brought a new meaning to continuous learning with a live-streamed, "choose your own adventure"-style day to help employees thrive in a rapidly evolving world. The event consisted of four hours of innovative content divided into bite-size segments, including TED-style talks on the hottest topics in the industry, live sessions with practice leadership, and prizes, incentives, and social media engagement throughout the day. Utilizing innovative learning approaches such as this will empower the government to revolutionize cross-agency learning.

These solutions would be prepared for application within the government operating environment, piloted, and evaluated in the GEAR Incubation lab in partnership with a sponsoring agency (where the pilot would be executed). Projects may be curtailed if they do not demonstrate an impact or return on investment above an agreed upon hurdle rate. For example, if a pilot to provide VR headsets to remote employees fails to provide sufficient benefits to offset the cost, it could be ended and the lessons learned documented by GEAR for potential future use. In a scenario where a pilot proves successful, for example a new chatbot, the Portfolio Manager, in cooperation with the sponsoring agency, would be responsible for putting together a strategy and tools to help scale the solution to other agencies.

Incubate, Pilot, and Prepare for Scale: How would success of the pilots be evaluated?

What are examples of metrics currently used to assess the effectiveness of reskilling and upskilling efforts?

Just as training needs and methods have evolved in an increasingly digital, technology-oriented workplace, measurement methods should move beyond mere class surveys and assessments. Program effectiveness needs to be tied to both learning program objectives and the overall objectives of the agency. To assess the effectiveness of

reskilling and upskilling efforts, it is important to consider both the employee perspective and the organizational perspective. The GEAR Center can use a variety of newly developed measurement tools to determine how prepared federal staff are for the jobs of the future based on the reskilling efforts that have taken place. This measurement can be done at an agency or cross agency level using the following types of tools:

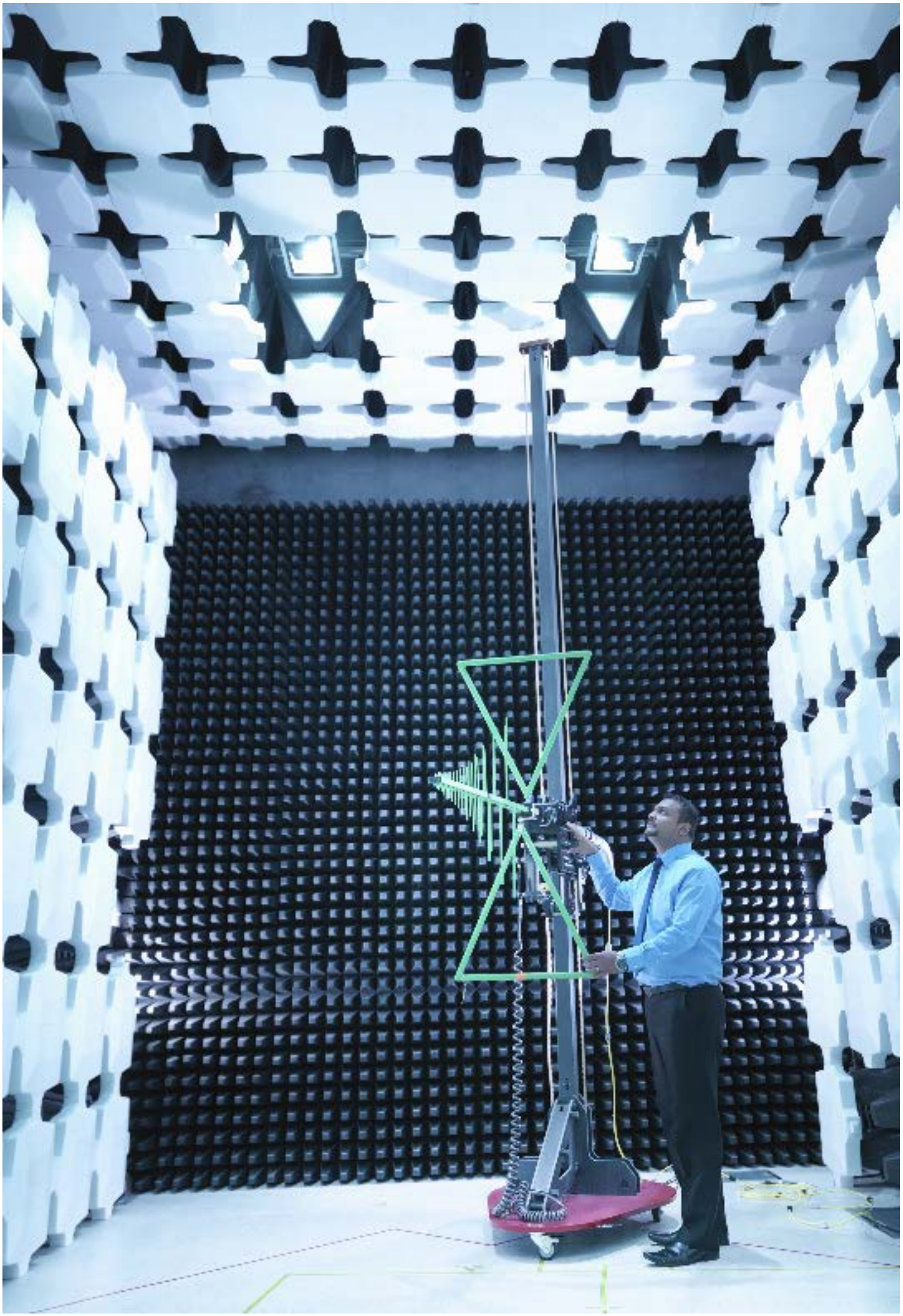
- **Learning Evaluation Tools.** Employers are increasingly looking for tools that can indicate whether participants find training valuable, and whether they are likely to recommend it to their colleagues. The Department of Energy, for example, is committed to developing a comprehensive strategy to evaluate training that will demonstrate alignment between the learning experience and the intended outcomes and objectives. Their strategy, based on Kirkpatrick's levels of evaluation, includes monitoring, tracking, and reporting; developing tools; continuous improvement; and sharing results with the department's training community.[xxviii] A leading evaluation tool that Deloitte uses is the Bersin Learning Impact Measurement Framework. The Bersin Framework has nine areas of concentration: adoption, utility, efficiency, alignment, attainment, satisfaction, learning, individual performance, and organizational performance.[xxix] These parameters help analyze satisfaction with the course material and instructors; utility, alignment, and relevance to work; attainment and alignment to the learner's development goals; learning and ability to demonstrate the new skills at the end of the program; adoption to the workplace; and the degree of impact on individual and organizational performance.
- **User-Based Measurement.** Organizations have begun using yelp-style ratings to provide real-time feedback on microlearnings through tools such as poll everywhere. Using social collaboration forums and LMS systems to scrape and capture this data allows organizations to align micro and macro learning to the needs of their employees based upon their feedback. This approach is part of a more fluid learner-driven approach to content curation / creation based upon demand.

Ultimately, the critical components of the most effective pilots will be documented and communicated out across the Federal Government to support diffusion and market penetration.

Conclusion

Government currently faces an inflection point – find a way to modernize operations for the 21st Century, or fall increasingly behind citizen expectations and private sector standards in a world of exponential change.

The GEAR Center offers a means to fundamentally change the ways in which corporations, startups, non-profits, academics, and government partner to transform government operations to meet the needs of the Digital Age.



Appendix

Table 1: Top 10 labor-intensive tasks in the federal government (million hours)*

Task name	Current time spent on tasks	Hours saved due to AI/Automation	Post-AI/automation investment hours
Evaluate applications, records, or documents to gather information about eligibility or liability issues.	46.2	10.8	35.4
Analyze data gathered and develop solutions or alternative methods of proceeding.	40.9	17.0	23.9
Gather and organize information on problems or procedures.	38.5	2.0	36.5
Test, maintain, and monitor computer programs and systems, including coordinating the installation of computer programs and systems.	34.7	2.3	32.4
Document findings of study and prepare recommendations for implementation of new systems, procedures, or organizational changes.	33.4	14.7	18.6
Obtain and verify evidence by interviewing and observing suspects and witnesses or by analyzing records.	26.5	6.0	20.5
Monitor, record, and report symptoms or changes in patients' conditions.	24.3	-0.8	25.1
Issue licenses to individuals meeting standards.	22.5	9.8	12.7
Administer oral, written, road, or flight tests to license applicants.	21.1	6.0	15.1
Examine immigration applications, visas, and passports and interview persons to determine eligibility for admission, residence, and travel in the U.S.	20.6	10.1	10.5

* Time savings at a medium level of investment

Table 2: Top 10 tasks in the federal government by hours saved due to AI/automation (million hours)*

Task name	Current time spent on tasks	Hours saved due to AI/Automation	Post-AI/automation investment hours
Analyze data gathered and develop solutions or alternative methods of proceeding.	23.9	17.0	40.9
Document findings of the study and prepare recommendations for implementation of new systems, procedures, or organizational changes.	18.6	14.7	33.4
Score tests and observe equipment operation and control to rate ability of applicants.	7.1	12.6	19.8

Evaluate applications, records, or documents to gather information about eligibility or liability issues.	35.4	10.8	46.2
Examine immigration applications, visas, and passports and interview persons to determine eligibility for admission, residence, and travel in the U.S.	10.5	10.1	20.6
Issue licenses to individuals meeting standards.	12.7	9.8	22.5
Develop, document and revise system design procedures, test procedures, and quality standards.	7.5	8.0	15.5
Provide staff and users with assistance solving computer related problems, such as malfunctions and program problems.	4.5	7.1	11.7
Prepare reports of activities, evaluations, recommendations, or decisions.	9.2	7.0	16.2
Compute, record, and proofread data and other information, such as records or reports.	4.5	6.6	11.1

* Time savings at a medium level of investment

Table 3: Top 10 occupations in the federal government by hours saved due to AI/automation (million hours)*

Occupation name	Current time spent	Hours saved due to AI/Automation	Post-AI/automation investment hours
Information technology management	172.7	58.7	114.0
Miscellaneous clerk & assistant	118.0	37.2	80.9
Compliance inspection & support	106.0	35.4	70.5
Management program analysis	151.8	32.2	119.6
General inspection, investigation & compliance	73.2	24.5	48.7
Contracting	77.3	21.7	55.6
Customs & border protection	47.6	14.8	32.8
Contact representative	62.3	14.3	48.1
Air traffic control	43.1	14.0	29.1
Logistics management	40.9	12.1	28.8

* Time savings at a medium level of investment

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