The Business of Government

Conversations with Government Leaders

2022

Sanjeev "Sonny" Bhagowalia

Michael Brown

Jane Datta

Gene Dodaro

Sanjay Gupta

Jamie Holcombe

Pamela Isom

Kate Kelley

Caroline Kuharske

Stacy Marcott

Admiral Karl Schultz

IBM Center for **The Business of Government**

INFORMATIVE | INSIGHTFUL | IN-DEPTH

THE BUSINESS OF GOVERNMENT HOUR

- **Conversations with government executives and thought leaders**
- **Sharing insights on the intersection of government, technology, and leadership**
- **Changing the way government does business**

ON THE AIR

Mondays at 11:00 am
Fridays at 1:00 pm
Federal News Network, WFED (1500 AM)*
or on the web at federalnewsnetwork.com

ANYWHERE, ANYTIME

Download current and archived shows:
businessofgovernment.org

* Washington, D.C. area only

From the Executive Director

From the Editor's Desk

Conversations with Leaders

Insights

Perspective

Viewpoints

Management

Research Abstracts

IBM Center for
The Business of Government

Daniel Chenok is Executive Director of the IBM Center for The Business of Government. Email: chenokd@us.ibm.com.

Laying a Foundation to Achieve Management Success in Government

Important milestones were recently passed regarding the focus of the Biden-Harris administration and the Congress on management priorities for government programs. The President's FY 2023 Budget Request added funding and detail to multiple aspects of the President's Management Agenda Vision. The PMA reflects a set of initiatives and activities intended to improve the effectiveness and efficiency by which federal agencies serve their constituents and carry out their mission.

The latest PMA focuses on strengthening and empowering the federal workforce; delivering excellent, equitable, and secure federal services and customer experience; and managing the business of government (a priority that resonates with us at the IBM Center for The Business of Government!). These and related agency performance goals are further developed on the Performance.gov website. Just prior to that, Congress enacted the FY 2022 Enacted Budget, which prioritized resources for management programs.

The structure that new law and policy provides for management implementation point to multiple focus areas that are consistent with research priorities of the IBM Center. Emerging stronger and more resilient from COVID matches our recent reports, Emerge Stronger and More Resilient: Responding to COVID-19 and Preparing for Future Shocks and Managing The Next Crisis: Twelve Principles For Dealing With Viral Uncertainty.

Another key priority involves addressing equity in the implementation of government programs. The Center is partnering with the Center for Open Data Enterprise to address how data can drive greater equity in managing programs for underserved communities and increased efficiency for all beneficiaries.

The FY 2023 Budget Request also focused in on managing supply chains at reduced risk levels. Current priorities include reducing bottlenecks on producer and consumer networks, distributing needed medical material, and enhancing the food supply. This has long been an interest of the Center, including two new studies by prominent academic experts: The Key to Modern Governmental Supply Chain Practice: Analytical Technology Innovation and Enabling a More Resilient and Shared Supply Chain Strategy for the Nation: Lessons Learned from COVID-19.

Also contained within the Budget are multiple technology priorities that help lay a foundation for achieving management success in the twenty-first century. These priorities are relevant to transformation success for governments around the world. They include:

- **A focus on customer experience** as a key to program delivery, especially in helping the public move through "life events" that leads to interaction with multiple agencies—like going to school, starting a business, or retiring from the workforce.

- **"Digital first"** that improves access to, and delivery of, online services for the full range of diverse communities accessing those services.

- **Modernizing legacy technology** through the Technology Modernization Fund, which can spark accelerated performance across the nearly $100 billion in total IT spending.

- **Improving cybersecurity**, especially by taking a "zero trust" focus that assumes threats at every corner of an agency's technology presence and develops risk reduction and response strategies accordingly.

- **The use of better data** and evidence to inform decisions.

All of these priorities can be enhanced through greater agility by government agencies. Agility is a goal being addressed directly by the Agile Government Center, which led the National Academy of Public Administration to collaborate with our Center.

As reflected in the insights from government leaders in this latest Center magazine, we will continue to collaborate with public sector managers—and work on research with practical insights and actionable recommendations from top scholars and nonprofit partners—to inform leadership and management priorities for governments around the world. ◘

Michael J. Keegan is Editor, *The Business of Government* magazine and Leadership Fellow at the IBM Center for The Business of Government. Email: michael.j.keegan@us.ibm.com.

Navigating Crisis: Insightful Lessons in Resilience

Events over the last couple of years have put a renewed emphasis on the importance of being resilient. Leaders and organizations have been walloped by the unforgiving realities of disruption and uncertainty. Often when responding to the unforeseen—doing all one can to operate, meeting expectations, following through on commitments, and delivering on missions—there is little time to reflect, take stock, or gain perspective. When faced with the unexpected, reflex and instinct seem to be what leaders and organizations alike rely on to weather the turbulence. Though these may serve as core components of a solid foundation, they are most certainly not enough.

This edition of *The Business of Government* magazine underscores the importance of resilience—how correlating short-term decision-making with long-range consequences can help you become ready for future shocks. We highlight the latest trends and best practices for improving government effectiveness by introducing you to key government executives, detailing the work of public management practitioners, and offering insights from leading academics on how best to navigate an increasingly complex environment and build a more resilient future.

Discovering Value in the Unexpected

Evidence and observation tell us it isn't simply about getting by. Resilience is more about pushing through and bouncing forward after adversity or disappointment—turning crisis into opportunity and recognizing the wisdom offered by Oscar Wilde in his play, *The Importance of Being Earnest,* "what seems to us as bitter trials are often blessings in disguise." Indeed, honing our capacity to be resilient can help unveil the truth of Wilde's penetrating insight and discover value in the unexpected.

At the onset of the pandemic, I began a series on Leading Through Uncertain Times, which explores the qualities, tools, tactics, and mindset that leaders from all sectors may need to navigate unsettling times and transform order out of chaos. Like the topic of leadership, much has been written about resilience.

I recently came across, *Resilient Leadership: Beyond Myths and Misunderstanding*, released in 2017 well before our current tumult. The author, Karsten Drath, views resilience as a dynamic competency not hardwired in us from birth, but developed, cultivated, and strengthened through effort and experience. He puts forth some practical steps and strategies to do just that. He offers some cogent insights on what it means to be a resilient leader, but he also dedicates a portion of his work based on cited research to dispel myths and misunderstandings surrounding resilience.

Reflecting on Drath's fuller deconstructing of these myths, it reminded me of a 2002 Harvard Business Review article, *How Resilience Works*, by Diane Coutu. This piece still has much to teach us. If as Gartner declares organizational resilience is a strategic imperative, then Coutu's article should be required reading for all leaders.

In it she describes three core characteristics that resilient people—and organizations—exhibit. They possess a "staunch acceptance of reality; a deep belief, often buttressed by strongly held values, that life is meaningful; and an uncanny ability to improvise." One can bounce back from hardship with just one or two of these qualities, but one will only be truly resilient with all three.

Readying Now for the Next Shock

As the pandemic recedes, there may be a tendency among people and institutions to bounce forward thinking in terms of the last disruption. Leaders must not fall prey to this tyranny of the present. The next shock to the system is less likely to be a global pandemic. Regardless of what is on the horizon, a single constant remains: uncertainty abounds.

The most effective way to navigate the unknown and discover value in the unexpected rests on the importance of being resilient. So, anticipating the future—getting ahead of events rather than being subsumed by them—becomes integral to positioning, resourcing, and preparing an agency for what may come, while always keeping focus on primary responsibilities.

Here are summaries of what you will find in this edition of *The Business of Government* magazine.

Conversations with Leaders

Throughout the year, I have the pleasure of speaking with key government executives and public sector leaders about their agencies, accomplishments, and visions of government in the twenty-first century. The leaders profiled exemplify a commitment to visionary thinking—manifesting the leadership and strategic foresight to meet their varied missions.

- **Michael Brown, Director, Defense Innovation Unit (DIU)** directs the only U.S. Department of Defense organization focused exclusively on fielding and scaling commercial technology across the U.S. military to help it solve critical problems and build a future-ready force. "DIU is building the technology pipeline," explains Michael Brown, director of the DIU. "We work to ensure our global leadership, alongside our allies and partners, by forging new partnerships and growing the innovation ecosystem. A thriving public-private ecosystem is essential to maintaining American competitiveness." Brown joined me on *The Business of Government Hour* to discuss DIU's critically important mission, his "fast-follower" strategy, and how DIU uses alternative acquisition approaches to bring commercial technology into the U.S. Department of Defense.

- **Gene L. Dodaro, Comptroller General, U.S. Government Accountability Office (GAO)** leads the U.S. Government Accountability Office, working with Congress to improve the performance of government, ensure transparency, and save federal funds. Today, the agency's work spans all federal programs and spending. "GAO performs a range of oversight, insight, and foresight-related work," explains Gene Dodaro, "to support the Congress in meeting its constitutional responsibilities and to help improve the performance and accountability of the federal government for the benefit of the American people." Comptroller General Dodaro joined me on *The Business of Government Hour* to discuss the evolving mission of GAO, how it is innovating the way it conducts its oversight mission, and what the future holds for the agency.

- **Admiral Karl Schultz, Commandant, U.S. Coast Guard** leads one of the oldest continuously operating naval service of the United States with the motto Semper Paratus ('Always Ready'), which is more than a motto; it goes to the core of its mission. Today's complex maritime operating environment demands nothing less. "As the twenty-sixth commandant of the Coast Guard," explains Admiral Schultz, "my guiding

principles focus on ensuring our Service remains best positioned to 'Stand the Watch.' Our Coast Guard is strong, the total workforce highly capable, and the demand for our services never greater." Admiral Schultz joined me on *The Business of Government Hour* to discuss the Coast Guard's strategic direction, his key priorities and modernization efforts, and reflections on his tenure as the commandant.

Insights from Leaders

All year long, I speak regularly with leaders who are pushing limits, transforming the way the government works, and making a difference. This edition introduces eight government executives who share their insights on the work they do and the efforts they lead. Their respective missions force them to look ahead, and although they come from diverse disciplines, they are all focusing on finding what works. They joined me on *The Business of Government Hour* to discuss the missions they lead and critical issues they face.

- **Sanjeev "Sonny" Bhagowalia, Assistant Commissioner, Office of Information and Technology, and Chief Information Officer, U.S. Customs and Border Protection (CBP)** shares his insights on CBP's mission, its strategy for IT modernization, and how the agency is using technology to change the way it does business. "My office," says Sonny Bhagowalia, "has been increasingly called on to meet the challenges of an ever-changing environment." He recognizes that to be successful his agency requires a resilient, adaptive, reliable, and secure IT infrastructure that keeps pace with evolving threats and technological advances.

- **Jane Datta, Chief Human Capital Officer, National Aeronautics and Space Administration (NASA)** recognizes that integral to the success of NASA's mission are the people and workforce of the agency. "Our vision is people first, mission always," she declares. Mission success relies upon strong workforce planning, acquiring top talent quickly, enhancing how people work, and creating a workplace environment that cultivates and fosters innovation and engagement. Jane offers insights into how the operations of her office support the mission of NASA. She also discusses current challenges, the response to the pandemic, and the changing nature of how and where work is done.

- **Sanjay Gupta, Former Chief Technology Officer, U.S. Small Business Administration (SBA)** understands that technology is a force multiplier and key to mission success. "SBA may be one of the smaller cabinet level agencies," admits Sanjay Gupta, "but it has played a very significant role in the nation's largest economic recovery response in the wake of the COVID-19 global pandemic." For Gupta, technology has been a critical enabler in making this happen. He shares his insight into SBA's cloud journey and digital technology strategy. Since our discussion, Sanjay has taken on a new leadership role with an office within the U.S. Department of Justice. We wish him the best in his new role.

- **Jamie Holcombe, Chief Information Officer, U.S. Patent and Trademark Office (USPTO)** came to the agency to modernize and transform how it uses technology to accomplish its constitutionally required mission. "I came to help the agency," explains Holcombe, "to stabilize and modernize its IT systems and infrastructure, to move it from a client-server-based system to an internet and cloud-driven one." He outlines USPTO's IT strategy, his efforts to realize this vision, the challenges met, and innovations accomplished at an agency integral to the success of nation's economy.

- **Pamela Isom, Director, Artificial Intelligence and Technology Office, U.S. Department of Energy** emphasizes the critical importance of pursuing an ethical and trustworthy application of artificial intelligence. "It is the mission of this office," explains Isom, "to transform the department into a world-leading AI enterprise by accelerating research, development, delivery, demonstration, and adoption of responsible and trustworthy AI. She provides her insights into the mission and purpose of the office she leads, discusses the importance of responsible and trustworthy AI, and highlights her key priorities.

- **Kate Kelley, Chief Human Capital Officer, Army Futures Command (AFC)** understands that the workforce is the foundation of AFC's success. It focuses specifically on forging future readiness. Its stated mission is to make sure soldiers have what they need, before they need it, to protect tomorrow today. "AFC is charged with doing what some may consider impossible, and that is predicting the future," explains Kelley. She outlines the AFC human capital strategy, its efforts to attract, reskill, and retain the right talent, and ways it is working to transform organizational culture.

- **Caroline Kuharske, Acting Chief Data Officer, Defense Information Systems Agency (DISA)** is charged with building a holistic approach to the management of data, merging silos, and deriving value from those data assets that are the lifeblood of her agency. DISA is considered the nation's premiere IT combat support agency. "We have supported and enhanced," explains Kuharske, "the overall communication infrastructure at a global scale to support the warfighters. She describes the mission of her office, the agency's evolving data strategy, and details insights into how DISA is leveraging data as a strategic asset.

- **Stacy Marcott, senior official performing the duties of the Chief Financial Officer, U.S. Department of Homeland Security (DHS)** underscores that DHS must be good stewards of taxpayer dollars. To do that, the department continues to modernize its financial management systems. "Our financial management strategy has four core goals," describes Marcott, "to be a workplace of choice, revolutionize business practices and systems, allocate resources based on mission requirements and priorities, and provide evidence that we are good stewards of taxpayer money." She shares her insights into the DHS' financial management strategy and its financial systems modernization journey.

Perspective on Leading through Uncertain Times

My goal each week on *The Business of Government Hour* is straightforward: to interview key government executives and thought leaders who are tackling significant challenges and seizing opportunities to lead. To complement these examples of leadership in action, the show also highlights the practical, actionable research done by some of the most recognized and respected thought leaders. It is from this rich library that I draw on the insights from five authors I have had the pleasure of interviewing over the last several years. These authors—Bob Rosen, Jacqueline Carter, Chester Elton, Michael Canic, and Margaret Heffernan—have helped me recognize and understand that leaders benefit from being grounded, mindful, grateful, and ultimately, ruthlessly consistent in everything they do. This perspective ends with a focus on leadership as a creative act.

Viewpoints

Dan Chenok reveals there is little to no value in a sole actor response to twenty-first century challenges. Only through leveraging a mosaic of interests can most modern complexities be addressed by governments, often working with their partners in civil society, academia, and industry. A blockbuster, one-time-only pandemic driven grant of $350 billion to states and localities has created an opportunity of a lifetime to make investments in longstanding needs. John Kamensky ponders if officials will be up to the challenge. Margie Graves explores certain recommendations as to the challenges and opportunities associated with the implementation of zero trust. Mark Newsome details how the U.S. Department of Veterans Affairs seeks to adopt newer technologies on its journey to become a lean, efficient supply chain that is recognized by its peers as being among the best in health care. Matt Warshaw muses on delivering what matters while improving government service delivery.

Management

This edition highlights two recent IBM Center reports that offer practical, actionable insights, recommendations, and principles that can help government executives manage successfully through the next crisis and improve supply chain operations leveraging analytics, blockchain, and AI.

The first report, Managing The Next Crisis: Twelve Principles For Dealing With Viral Uncertainty, addresses the goal of helping governments capture lessons learned for future action, relying not just on lessons from the pandemic but also from other tragic events of the near or intermediate past. This report puts forward twelve principles that can help tackle and soften the impact of the next shock to the system, whatever that might be.

The second report, The Key to Modern Governmental Supply Chain Practice: Analytical Technology Innovation, aims to provide insight on how technology innovation can facilitate supply chain management practice within government organizations. Technology innovation is examined through the lens of emerging technologies via analytics, blockchain, and AI.

I close this edition with brief descriptions of recent IBM Center reports. If you have not read these reports, please download them at businessofgovernment.org.

I hope you enjoy this edition of The Business of Government magazine. Please let us know what you think by contacting me at michael.j.keegan@us.ibm.com. ◼

Leading the Defense Innovation Unit: A Conversation with Michael Brown, Director, Defense Innovation Unit, U.S. Department of Defense

By Michael J. Keegan

DEFENSE INNOVATION UNIT

The Defense Innovation Unit (DIU) is the only U.S. Department of Defense (DoD) organization focused exclusively on fielding and scaling commercial technology across the U.S. military to help it solve critical problems and build a future-ready force.

"DIU is building the technology pipeline," explains Michael Brown, director of the DIU. "We work to ensure our global leadership, alongside our allies and partners, by forging new partnerships and growing the innovation ecosystem. A thriving public-private ecosystem is essential to maintaining American competitiveness."

Michael Brown joined me on *The Business of Government Hour* to discuss DIU's critically important mission, his "fast-follower" strategy, and how it uses alternative acquisition approaches to bring commercial technology into the U.S. Department of Defense. We also discuss what DIU is doing to give innovative businesses and startups the opportunity to solve high-impact national security problems, and highlight some key successes. The following is an edited excerpt of our discussion, complemented with updated and additional research.

On the History and Mission of the Defense Innovation Unit

In 2015, then Secretary of Defense Ash Carter created DIU with the expressed purpose of helping the U.S. military make faster use of emerging commercial technologies. Secretary Carter saw that more R&D spending in the U.S. was happening faster in the commercial sector than in the federal government. It was essential, therefore, to get access to this commercial technology in areas like artificial intelligence autonomous systems and cyber to enhance our warfighting capability.

The department needed to become better adept at fielding and scaling this technology across the U.S. military. For these reasons, he established DIU (then DIUx with the "x" standing for experimental) to lead this mission and realize this vision.

Since its inception, DIU's mission has expanded. We continue to focus on accelerating the adoption of commercial technology. But we've also taken on two additional core elements to expand and diversify the types of companies the department can access. In the National Defense Strategy, we call that the "national security innovation base"—meaning we need to work with more than just the defense contractors to make innovative capability available for the department. Here are the two complementary efforts that now reside within the DIU umbrella:

- The National Security Innovation Network (NSIN) works with universities, incubators, and accelerators. It attracts new talent to solve national security challenges, leverage start-ups and academic communities for new concept development, and facilitate the launch of new, dual-use ventures by commercializing Department of Defense lab technology and through customer discovery. In fact, some companies started through this program are now vendors to the DoD.

- The National Security Innovation Capital (NSIC) is a way to catalyze private investment in hardware. The venture capital industry in the U.S. is more focused on software than hardware, but the military runs on hardware. This newly-funded initiative enables dual-use hardware startups to advance key milestones in their product development by addressing the shortfall of private investment from trusted sources.

On Working with DIU

We model the commercial world by focusing on speed and simplicity. This is different than how the DoD traditionally acquired capabilities. When you buy an aircraft carrier you might need some of that complexity; but if you're buying commercial software, you don't need it. What we've done is maximize the ability for competition by minimizing the opportunity costs for companies to compete.

We identify and understand critical national security challenges that can be solved with leading-edge commercial technology within twelve to twenty-four months. Through our Commercial Solutions Opening (CSO) process, we competitively solicit proposals for innovative solutions that meet the needs of our DoD partners. DIU leverages "Other Transaction Authority" (OTA) to award prototype agreements in as few as sixty to ninty days. More importantly, after a successful prototype, the company involved and any DoD entity can enter into a follow-on production contract or agreement, without having to recompete it.

We make it easy for companies that have never done business with the DoD—or the U.S. government—to win contracts based on merit and to implement solutions at commercial speeds. DIU has already introduced more than seventy-five first-time vendors to the DoD. DIU delivers revenue through flexible prototype contracts that apply commercial innovations to solve national security challenges.

Whether seeking hardware, software, or service solutions, DIU lowers the barriers to entry and makes it faster and easier for companies of any size to do business with the department.

On Challenges

The first challenge pertains to resources. For example, in fiscal year 2021, we launched thirty-seven projects—almost double the average number of projects we've started over the last six years of DIU's existence. So we're on a growth path. But we continue to work with the same number of billets and a modest increase in budget year over year. Our throughput is increasing exponentially while our supporting resources remain fixed. We need the people and the funds to be able to sustain this growth. Securing the necessary resources to sustain our growth and facilitate technology adoption across DoD is one of my top priorities.

The second challenge involves working effectively with an organization the size of the U.S. Department of Defense. We are a change agent charged with fielding and scaling technologies in the department. Our goal is to ensure that these technologies have an impact for our end users, the warfighters.

> 66 Securing the necessary resources to sustain our growth and facilitate technology adoption across DoD is one of my top priorities. 99
>
> —*Michael Brown*

The third challenge centers on making sure we can transition commercial technology. We look at how we are changing the process inside the Pentagon to properly transition commercial technology into a military context. For instance, there is a commercial technology capability that has been proven to work in a military environment. But our challenge is to make sure we have a production contract, the budget to move forward, and a way to make that technology scalable for use by our warfighters. Getting the department ready to adopt commercial technology and establish processes to scale commercial tech is quite a challenge.

On Informing and Shaping a Vision

Understanding the strategic competition we have with China is what brought me to DIU. We haven't faced such a competitor in our history. This competition is multifaceted—it is economic, technological, geopolitical, ideological, and likely will define the next fifty years. China is a much bigger economy and is more integrated into the global economy than the Soviets, during the Cold War. This reality shapes and informs the strategic vision of the DIU.

The question is: how do we drive more impact? Our impact is both in identifying the most critical projects to work on and ensuring a transition so that the vendor is successful through a production contract and that the capability is scaled to our warfighters. We have seventy-five projects underway at this point—more than ever before (and double our historical average)—supporting every military branch and many defense agencies and commands. We're also working with more companies than ever before—assessing

more than 1100 submissions last year alone. In our history, we've introduced eighty first-time vendors to the DoD. More of these vendors are also receiving higher-value production contracts such as Anduril who recently received a $1 billion contract from Special Forces to supply counter-drone technology or C3 who received a $500 million contract from the Missile Defense Agency to supply synthetic trajectories for missiles which enables us to better defend against incoming missiles. However, given the types and amounts of procurement of DoD, we're just scratching the surface on the impact we could be having.

We also need to develop solutions alongside our allies and partners around the world on a large scale. We would like to be more proactive in using technology from allied companies. Our vision is to sell technology solutions—qualified in a military environment—to our allied military or partner military.

On Pursuing a "Fast-Follower" Strategy

We need to pursue a fast-follower strategy. This is what is done in the commercial world when you are not first to market. You quickly follow so that you can minimize the time between the first mover and your ability to deploy that technology. Since the 1960s, the Pentagon was a first-mover, taking the lead in bringing technology R&D into use. But times have changed.

Eleven out of the fourteen technology priorities identified by the department recently are commercial technologies—namely artificial intelligence, software, cyber, autonomous systems, rapid launch, satellite imagery, additive manufacturing, and more. As such, positioning the department as a fast follower would make it far more competitive in fielding and scaling the best technology quickly.

There are four core elements to a fast-follower strategy:

1. **Identify an organizational home for commercial technology.**

    We don't need a technology that is service-specific. Rather than duplicate a specific technology across the Services, we need an organizational home for each technology. We do need to have a technology owner whose job it is to assess the need and then field that technology across the Services. Doing this will eliminate duplication and wasted resources.

2. **Create a consistent budget for refreshing capability.**

    We need flexibility from Congress to budget for a capability rather than a program. We are going to buy

and field a certain technology for decades, so we need to have a process in place that allows us to refresh and upgrade that technology capability at the rate of the commercial market.

3. **Use commercial acquisition processes.**

    If we want to encourage more companies to work with us, then we've got to use speed as an advantage and encourage that competition. That's what we've done at DIU with the commercial solutions opening. We use Other Transition Authority (OTA)—as opposed to relying on the Federal Acquisition Regulations (FAR)—to meet these demands and exceed our expectations.

4. **Jettison the requirements process.**

    Today, anything that we buy at the Defense Department starts with requirements specifying what we need. With commercial technology, we don't need to specify it. Therefore, requirements can be eliminated. We probably need something in place to validate that we have a need. But we don't need to tell the market what to build.

If we pursue these four steps—three things that we need in place, one that we need to remove—then we could effectively implement the fast-follower strategy. Ultimately, we need to modernize faster, use more commercial technology, and better enable the interlocking aspects of Planning, Programming, Budgeting, and Execution (PPB&E), requirements, acquisition, and budget work for the department—rather than be impediments. We owe it to our service members to give them the best tools and technologies so they can keep us safe.

On the Effective Use of Other Transaction Authority

We continue to use Other Transaction Authority very effectively. While this authority has been used by NASA since 1958, its expanded use is somewhat recent within the DoD. Other Transactions have become a vital part of the defense research process. In fact, the IBM Center recently released a report, *Other Transactions Authorities: After 60 Years, Hitting Their Stride or Hitting The Wall?* that concludes OTs are an invaluable tool and offer an increasingly common, viable alternative to traditional, FAR-based procurements. Using them does not represent a significant departure from the principles of public procurement—competition, transparency, and accountability.

OTAs offer a more streamlined, flexible, and faster way to buy things. The use should continue to grow and more people should be trained in how best to use this authority. I would like to see department leadership encouraging more widespread use of OTAs as an alternative to the federal acquisition regulations.

On Successes

We must increase the impact of the work we are doing. We'd like to be doing more projects on a larger scale, as well as work internationally with our partners. That said, we're proud of our work at DIU.

The creation of the Blue sUAS project, for example, develops trusted small unmanned aerial systems (sUAS) for the broader DoD and other federal government partners. This effort builds upon the U.S. Army's sUAS program of record, Short Range Reconnaissance (SRR), for an inexpensive, rucksack portable, vertical take-off and landing sUAS. Blue sUAS systems share the SRR air vehicles' capabilities but integrate a vendor-provided ground control system. We decided what we needed to do was harmonize requirements across DoD so that we're not splitting the volume that we need across multiple vendors. Blue sUAS is aimed at doing that. Today we're increasing the number of vendors who are on the approved list—they're

cyber-hardened and don't use Chinese components or Chinese completed products. They are available on the GSA schedule so any agency can purchase them.

Another example is buying launch as-a-service technology, combined with sponsoring small satellite companies. It's phenomenal what's happening: being able to launch more cargo at low prices and accessing technologies that give us visibility around the earth, that go beyond optical. It's called synthetic aperture radar. It allows us to see day and night and through clouds. Then of course, AI/ML technology allows us to spot what's changing in these images so that people don't have to go blind looking at pixels. We're bringing this combination of technologies to the Defense Department so that we have much more situational awareness or global visibility.

On Key Takeaways

The first takeaway is recognizing China as a strategic competitor and that this competition, amongst other things, centers on technology. We must make sure that our country does not fall behind. Our technology lead is eroding today. This underscores a sense of urgency not only about the work that we're doing at DIU but what the Defense Department and the whole nation needs to be focused on in terms of making sure that we're making the right investments to be preeminent in science and technology for decades to come.

Another key takeaway is understanding that DoD is not a first mover anymore with respect to a lot of the technologies we need like AI, cyber, autonomous systems, etc. Therefore, we have to be a fast follower to incorporate technologies developed by commercial companies (instead of DoD) and field this more quickly.

The third takeaway is speed. Speed is absolutely critical to making sure we've got a Defense Department that is competitive and possesses the capabilities it needs. It needs to adopt new warfighting concepts at the "speed of relevance," as Secretary James Mattis used to say. We're not an agile organization at DoD but we need to become one.

These are some of the key areas that we're focusing on at DIU every day. I was heavily influenced by Secretary Mattis, who hired me. He impressed upon me that DIU is a change agent. We have a dedicated part of DIU that continuously scans for the most important problems, finds solutions that save us the most money, and delivers new capabilities that save the most lives.

How robust are the different types of available commercial capabilities? The sweet spot we look for is very high-impact and a robust set of commercial vendors. That's the area that we want to be targeting.

On Leading

Leadership principles are transferable across sectors. We must understand what we are trying to accomplish. What I call setting the agenda. If you don't have that vision in mind, a destination for where you want to go, then all roads can take you anywhere. A leader must have that vision and agenda for where the organization is going. Once you have a vision, then it's all about executing on it. Having the best possible staff and talent working alongside you to achieve that vision is key. This is true across industries.

I've been very impressed with the caliber of talent that we have at DIU. I feel very fortunate. A leader must give staff the proper tools and resources to be successful. This also involves developing processes and fostering a culture that allows staff to do their best work. We want to make sure that we have an environment where staff can do their best with access to all the tools they need to work collaboratively to realize the vision and mission of this organization.

To learn more about the Defense Innovation Unit, go to diu.mil/.

To hear the interviews from *The Business of Government Hour*, go to businessofgovernment.org/interviews.

To download the show as a podcast, go to PodcastOne or iTunes and search for *The Business of Government Hour*.

To view excerpts of the show, go to youtube.com/businessofgovernment.

Evaluating and Improving the Performance of Government: A Conversation with Gene L. Dodaro, Comptroller General, U.S. Government Accountability Office

By Michael J. Keegan

For over 100 years, the U.S. Government Accountability Office (GAO) has helped Congress to improve the performance of government, ensure transparency, and save federal funds. Today, GAO's work spans all federal programs and spending—from agriculture to space programs, banking regulation to public health, and cybersecurity to international aid. It also does financial audits of the U.S. government and assessments of its fiscal outlook.

The mission of GAO continues to evolve from establishing its science and technology work, to growing its cybersecurity expertise, to developing quick-read products. GAO seeks to anticipate and respond to changing congressional needs and emerging issues, challenges, and opportunities laying the foundation for the next 100 years.

"GAO performs a range of oversight, insight, and foresight-related work," explains Gene L. Dodaro, Comptroller General of the United States and head of the U.S. Government Accountability Office, "to support the Congress in meeting its constitutional responsibilities and to help improve the performance and accountability of the federal government for the benefit of the American people."

Comptroller General Dodaro joined me on *The Business of Government Hour* to discuss the evolving mission of GAO, how GAO is innovating the way it conducts its oversight mission, and what the future holds for the agency. The following is an edited excerpt of our discussion, complemented with updated and additional research.

On the Evolving Mission of the Government Accountability Office

Last year, GAO marked its 100th anniversary. The organization was established following World War I with the passage of the Budget and Accounting Act of 1921 when Congress realized the need to control growing government expenditures and

debt. Until the end of World War II, GAO primarily checked the legality and adequacy of government expenditures.

After World War II, as government responsibilities and programs grew specifically with the Depression, the War on Poverty, and the Great Society programs. So did our responsibilities. The focus of our work shifted from not only doing financial management reviews but also doing performance audits to make sure that federal programs were operating efficiently and effectively.

During the last twenty years, we've strived to improve accountability by alerting policymakers and the public to emerging problems throughout government. Today, GAO is a multidisciplinary organization equipped to handle Congress's toughest audit and evaluation assignments. We evaluate

government programs, conduct real-time analyses and technology assessments, identify high-risk issues, and provide decisions on bid protests and appropriation law. The agency has also established a new science and technology team to meet Congress' growing need for information on cutting edge issues like artificial intelligence and infectious disease modeling. Most recently, GAO has been evaluating the largest response to a national emergency in U.S. history with the trillions of dollars expend in COVID-19 response legislation.

Our organization follows the strategic objectives outlined in the GAO strategic plan. That plan focuses on what we need to do to serve the Congress and the nation. We have subject area teams that are filled with experts in health care, defense, energy, transportation, and natural resources. We're organized in subject areas covering the entire breadth and scope of the federal government's responsibilities in addition to technical teams in science, technology assessments, and analytics team; a financial management and assurance team; information technology and cybersecurity team; a team that focuses on contracting issues across government; and an applied research and methods team. We do close to seven hundred projects a year. Our budget is a little over $700 million. We have 3,400 people right now at the GAO.

On Being Comptroller General

The comptroller general is a multifaceted role. First off, the comptroller general is appointed. A ten-member bicameral, bipartisan commission of congressional leaders recommends individuals to the president. The president then appoints the comptroller general to a fifteen-year term with the consent of the Senate.

My most important responsibilities are to make sure we're supporting the Congress in carrying out its constitutional responsibilities while also enhancing the performance and accountability of the government for the benefit of the American people. I have good working relationships with the Congress, meeting with chairs and ranking members of congressional committees to ensure GAO is responsive to congressional priorities. I also maintain effective relationships with the Executive Branch departments and agencies. When appointments are made, I reach out to new department and agency leaders to discuss how we are going to work together. While we're an independent organization in the Legislative Branch, I always want to have good, constructive working relationships with the executive agencies that we audit to encourage them to voluntarily adopt our recommendations and suggestions.

The comptroller general has some unique responsibilities to set Generally Accepted Government Auditing Standards (GAGAS). These standards must be followed by anybody auditing federal funds, whether it's a state auditor or an independent public accountant. I am also the chief spokesperson for the GAO testifying before the Congress and doing media interviews. Lastly, the comptroller general also represents the country on the governing board of The International Organization of Supreme Audit Institutions— one of the largest nonpolitical international organizations in the world. We set international standards for public sector auditing and provide technical assistance to national audit offices that are in developing countries to help improve their capacity and performance.

On Management Challenges

There are several management challenges associated with leading an organization like GAO. Having a strong focus on risk management is very important given the audit and assessment work we do. I know every audit engagement that we're going to start. I weigh in. We establish a risk level for that audit engagement, high, medium, or low based upon the controversy of the subject, its complexity, methodology being used, and the anticipated cost of that project.

Another significant challenge: ensuring we have the right resources to carry out our responsibilities. This involves making a strong case for properly funding the agency before the House and Senate Appropriations Committees. We have met that challenge by demonstrating GAO's return-on-investment. Over the last five years, GAO has returned $158 for every dollar spent along with all the valuable information provided by GAO to help Congress make informed decisions.
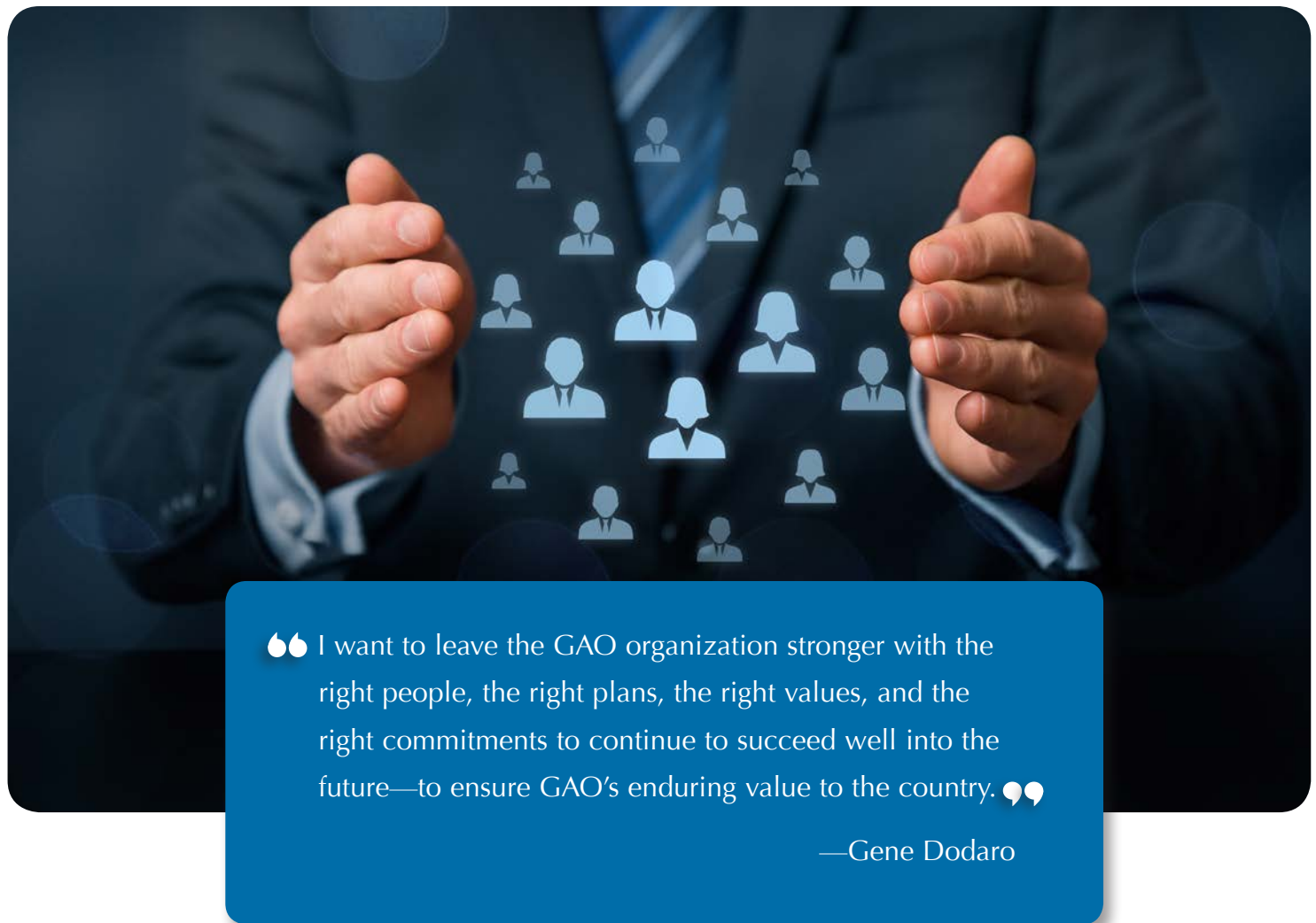
HON. GENE DODARO

> ❝ I want to leave the GAO organization stronger with the right people, the right plans, the right values, and the right commitments to continue to succeed well into the future—to ensure GAO's enduring value to the country. ❞
>
> —Gene Dodaro

Making sure that we have solid succession planning in place is another challenge. I've created a ten-year succession plan for our senior executives at GAO to make sure that when my term ends the organization is well functioning and prepared to meet the challenges of the future. Over the last five years or so, 50 percent or more of our senior executives have retired. Today something on the order of 40 percent of GAO staff are forty years old or younger. With the pending retirement of the baby boom generation, we need to attract and retain that next generation of GAO professionals that keeps true to our core values of accountability, integrity, and reliability.

On Developing a Strategic Planning Framework

Our strategic planning process has evolved over time. When Dave Walker became comptroller general, he asked me to be the chief operating officer. We created a new strategic planning approach for GAO. I have continued to refine the process over the years, further enhancing our

strategic planning and foresight capabilities with by creating our Strategic Foresight Center.

Our strategic planning process starts with the Congress, understanding their issues, and then we end with sharing with them a draft of our strategic plans. It's very important in terms of strategic planning for GAO to anticipate trends that are shaping the environment and the type of decisions that the Congress and the country will face. Having a strong strategic planning framework helps us better identify trends that may affect the environment in which you're operating. We'll know how best to change our practices, approaches, and workforce to meet those challenges. We're developing our next strategic plan, which will go beyond my tenure.

Now regarding priorities, with the federal government investment of $4.5 trillion in COVID-19 relief, GAO has unique oversight responsibilities. GAO is engaging in real-time auditing, which continues to be a key priority for us. Our high-risk list, which identifies and tracks the greatest

risks identified across government continues to be one of our top priorities. We update that work every two years with our last update in 2021. Identifying overlap and duplication in the federal government is a priority. I also keep Congress informed of our views on the fiscal outlook for the federal government's financial position. Certainly, it's changed here with the federal COVID-19 response.

On Building GAO's Science and Technology Capabilities

I have been long interested in building our capabilities in science and technology. Today, we're now evaluating the development of the new Columbia-class nuclear submarines. We have a long history with NASA programs, space programs, weapon systems, environmental, and medical programs. Congress has weighed in and given us a lot more encouragement, support, and resources to expand our science and technology capabilities to help them understand emerging technologies like artificial intelligence and quantum computing.

In 2019, we created the Science, Technology Assessment and Analytics (STAA) team in GAO. That team is up and running now with the intended purpose of combining and enhancing our technology assessment functions and our science and technology evaluation into a single, more prominent office to better meet Congress' growing need for information on these important issues. For example, we've partnered with the National Academy of Medicine to do three different artificial intelligence technology assessments.

We have done technology assessments in the use of artificial intelligence to expedite drug development. We're doing one now looking at the use of artificial intelligence for diagnostic purposes as well. We've also done technology assessments on quantum communications, quantum computing, small nuclear reactors, 5G, and forensic algorithms in law enforcement. The work is having a huge impact and we are not only doing technology assessments, but also providing short-term turnaround assistance to the Congress. We continue to broaden our scope with the release of artificial intelligence and accountability framework, doing reviews of infectious disease modeling, and looking into the vaccine development issues.

We also began releasing science and technology spotlights, which are two-page explainers that outline the science behind specific topics.

STAA is the home of our Innovation Lab, which was established to enhance GAO's ability to tackle accountability challenges through data science and emerging technologies. The Innovation Lab works with GAO mission teams and external stakeholders to examine the latest technological advances in oversight. During the pandemic, the Lab provided Congress with the tools to make complex information easily accessible and timely. As part of our work on vaccine development and deployment, the Lab created the first-of-its-kind digital dashboard to provide up-to-date details on vaccine technology development, manufacturing, and rollout.

> *"Since 2005, GAO has been ranked in the top five of best places to work in government by the Partnership for Public Service. Last year. we were ranked number one in midsize agencies. We want to keep this going."*

On Accomplishments

I am very proud that much of our work has led to putting in place governmentwide management reforms that have had lasting impact. We were involved in the Chief Financial Officers Act of 1990, which created a new leadership structure for financial management and addressed improvement of financial management systems, requirements for audited financial statements, and management reporting. In 1994, I oversaw our Accounting Division. From 1994 to 1999, I oversaw our Accounting and Information Management division.

We worked with Congress in the development and passage of the Government Management Reform Act of 1994. This required that all individual major federal departments and agencies prepare and have independently audited financial statements, as well as preparation of a consolidated financial statement covering all accounts and associated activities. During the first set of audits, there were only six of the twenty-four top agencies that could get a clean audit opinion.

Most recently, twenty-one to twenty-four agencies are receiving clean audits. These laws and others that followed fundamentally improved the federal government's financial management practices, strengthened internal controls, and give us a much better handle on the government's finances.

Similarly, I also worked with the Congress back in 1996 as the Clinger-Cohen Act was being crafted. This act formally established the role of chief information officers within federal agencies while also putting in place IT investment practices. Over the years, it became evident that more needed to be done in this area. The recent Federal Information Technology Acquisition Reform Act (FITARA) strengthens the previous law giving agency CIOs greater authority and involvement in their agencies' procurement, workforce, and budget matters, while also putting in place more disciplined investment processes.

In the fraud area, we worked with Congress on the development of the Fraud Reduction and Data Analytics Act of 2015 (FRDAA). This law created requirements for federal agencies to establish financial and administrative controls for managing fraud risks more proactively. It was a little disappointing to see that the law hadn't been implemented as much as I hoped before the pandemic. If it had been, perhaps the fraud related to COVID-19 programs could have been reduced.

I also pushed for the Data Analytics Accountability and Transparency Act (DATA Act), which aims to make information on federal expenditures more easily accessible and transparent. It establishes common standards for financial data provided by all government agencies and expanded the amount of data that agencies must provide to the government website, USASpending, to make it more downloadable and transparent. The goal is to improve the ability of Americans to track and understand how the government is spending tax dollars.

Our work has also focused on reducing and eliminating improper payments, which has led to a series of legislation to deal with an ever-growing problem across the federal government. Our work has also led to legislation addressing IT security as well as putting critical infrastructure protection on the high-risk list. There's much to be proud of in terms of using our work to inform legislation, all with the expressed purpose of improving the management of government.

On the Future

The priorities that I outlined in my confirmation hearing are what I would like to fully realize. Number one is making sure GAO is always working on the most important national issues. This is essential for us to meet our mission and serve the Congress and the American people most effectively.

Number two is getting as many high-risk areas identified and off the high-risk list if possible. Over the years, about 40 percent of the programs put on the high-risk list have been addressed and have come off the list. For example, we avoided having gaps in the coverage of our weather satellites. We have good weather forecasting capabilities, which is critical since we are experiencing more frequent and extreme weather events. This helps save life and property. Another example was improving the sharing of terrorist related information among the intelligence communities. We're in much better shape now than we were before 9/11. Our high-risk list has been one of the longest, good government, bipartisan supported efforts in our country's history.

The third objective is to convince Congress and the administration to devise a plan that addresses the country's long-term fiscal sustainability challenges.

My fourth objective focuses on building the agency's capabilities in science, technology, and analytics. We've made progress. I want to continue that progress, build more towards the future, and be able to provide more technical assistance and insightful information to Congress and the American people.

Lastly, I want to make sure GAO has the capacity and capabilities to deal with emerging challenges. I want to leave the GAO organization stronger with the right people, the right plans, the right values, and the right commitments to continue to succeed well into the future—to ensure GAO's enduring value to the country.

To learn more about the U.S. Government Accountability Office, go to gao.gov.

To hear the interviews from *The Business of Government Hour*, go to businessofgovernment.org/interviews.

To download the show as a podcast, go to PodcastOne or iTunes and search for *The Business of Government Hour*.

To view excerpts of the show, go to youtube.com/businessofgovernment.

On Leading the U.S. Coast Guard: A Conversation with Admiral Karl Schultz, Commandant, U.S. Coast Guard

By Michael J. Keegan

August 4th, 2021, marked the Coast Guard's 231st birthday. Created by Congress as the Revenue-Marine on August 4, 1790, at the request of Alexander Hamilton, the Coast Guard is the oldest continuously operating naval service of the United States. In 1915, the Revenue Cutter Service merged with the U.S. Lifesaving Service and became the modern U.S. Coast Guard. As one of the country's six armed services, the U.S. Coast Guard has been deployed to support and fight every major U.S. war since 1790. In 2003, the Coast Guard found its current home as a component of the U.S. Department of Homeland Security (DHS).

"As the twenty-sixth commandant of the Coast Guard," explains Admiral Karl Schultz, "my guiding principles focus on ensuring our Service remains best positioned to 'Stand the Watch.' We serve a nation whose economic prosperity, national security, and global influence are inextricably linked to the maritime domain. Our Coast Guard is strong, the total workforce highly capable, and the demand for our services never greater."

Admiral Schultz joined me on *The Business of Government Hour* to discuss the Coast Guard's strategic direction, his key priorities and modernization efforts, and reflections on his tenure as the commandant. The following is an edited excerpt of our discussion, complemented with additional research and updating from Admiral Schultz's State of the Coast Guard 2022 address.

On the Mission of the U.S. Coast Guard

We have eleven statutory missions, which conveys the complexity of the work we do. We are responsible for maritime safety, security, and environmental stewardship in U.S. ports and waterways. We have a unique dual mission, encompassing law enforcement and being part of the U.S. armed services. We have broad legal authorities associated with maritime transportation, hazardous materials shipping,

bridge administration, oil spill response, pilotage, and vessel construction and operation.

The Coast Guard is a member of the national intelligence community as well. We do all this with a primary team of over 56,000, complemented by a truly valuable and unique cohort called the Coast Guard Auxiliary. We operate a fleet of over 200 cutters, over 240 fixed- and rotary-wing aircraft, and over 1,600 boats. There's about $5.4 trillion in annual economic activity that comes in and out of our 360-plus ports, and our 25,000 miles of nautical waterways in the Marine Transportation System (MTS). Last year, our budget eclipsed $13 billion for the first time in our history.

On Building an Agile and Adaptive Force

We are an agile, adaptive force whose greatest value to our nation resides in our ability to rapidly shift our missions and efforts to meet national priorities during both steady state and crises. The agility, strength, and resilience of our 42,000-strong active-duty force continues to impress. But we could not have performed at the highest level—especially in times of crisis—if not for our reserve component and volunteer auxiliary.

Last fall, Coast Guard personnel supported thirteen contingency operations occurring simultaneously, on top of steady state business. In every major operation, reservists and auxiliarists were "United in Service," meaning side-by-side with our full-time personnel. They were among one hundred medical personnel deployed to the Southwest border, supporting Customs and Border Protection operations and FEMA. They were also among the medical contingent who delivered CDC-recommended vaccines to Afghan nationals in support of DHS's Operation Allies Welcome.

On Management Challenges

My first challenge is to make sure we have sufficient and, if possible, additional resources to meet our readiness challenges. We continue to make progress budget-wise with support from the Hill and the administration.

The second challenge involves operating in an increasingly competitive market for talent. From surveys, slightly north of 25 percent of America's youth are eligible to serve in the armed forces. You look within that percentage and there's about 10 percent with a propensity to serve. We're trying to find 4,000 young men and women that want to serve in our enlisted workforce and trying to find about 500 officers. While we have the highest retention of any of the armed forces, we still need to attract men and women to lead the next generation of "Coasties."

We're focused on retaining our workforce by looking for opportunities—from childcare subsidies to expanded educational benefits—that will make the Coast Guard an employer of choice for a new generation of Americans. We've adopted a new blended retirement strategy. We work to attract technical specialists. A critical part of that effort is to continually increase the diversity of our service. Anything less means that we will fail to garner the talent, innovation, creativity, and performance necessary to meet the challenges of an increasingly complex maritime operating environment.

On the Pandemic Response

As the commandant, I am incredibly proud of our workforce and accomplishments. The Coast Guard entrusts and empowers its personnel at every level to lead with a bias for action—taking on-scene initiative and bringing solutions to complex problems—and that has never been truer than during the pandemic.

There are several key insights that stand out to me. Most important, we must modernize our training and health care delivery systems to enable flexible delivery of these key workforce enablers. The increased demand on technology reinforced the need to strengthen our networks, improve IT resilience, and expand the use of mobile tools for our field operators.

In an environment that continues to pose new challenges and place added strain on our frontline operators, we must modernize our data systems as well. Our goal is to reduce the burden on our field personnel (e.g., data calls, manual data entry), enhance real-time operational decision-making, and enable the use of modern analytics tools.

Additionally, we must reduce reliance on single sources of supply and improve our expeditionary logistics. Supply shortages made it clear that we must diversify our logistics suppliers to eliminate single points of failure (e.g., PPE, critical ship/aircraft parts, etc.). The closing of many major ports worldwide highlighted the need to strengthen logistics for our deployed units.

66 Our enduring success throughout our 232-year history . . . is because we are ever adaptive, agile, and resilient. We succeed because we are 'United in Service' and we are 'Always Ready.' 99

—Admiral Karl Schultz

On Securing a Stable and Safe Western Hemisphere

As nations confront maritime challenges, they increasingly look to the U.S. Coast Guard as the leader in maritime governance. It is a privilege to share our Coast Guard experience with like-minded navies and coast guards in advancing maritime safety, security, and environmental stewardship. The Coast Guard continues to advance and operationalize the Tri-Service Maritime Strategy (promulgated in December 2020) with our U.S. Navy and Marine Corps teammates. Today, the Coast Guard supports every geographic combatant command and numbered fleet.

Prosperity of the U.S. depends on a secure, stable, and safe Western Hemisphere. Although the Service's unique authorities and capabilities take us to every region in the world, significant Coast Guard operations are focused on addressing threats and challenges within the Western Hemisphere. Our increased capability with partner nations, for example, greatly enhances persistent presence in the Eastern Pacific and Caribbean to challenge criminal activities. The Coast Guard is committed to expanding the scope of our existing sixty multilateral and bilateral agreements to eliminate jurisdictional gaps for illicit maritime activities around the world.

This year, CGC *James* participated in the largest off-load of drugs from the decks of a Coast Guard cutter. CGC *James'* crew off-loaded over 60,000 pounds of illegal drugs with an estimated street value of $1.06 billion. The drugs on board were the result of twenty-seven interdictions by ten separate units, including multiple cutter crews and Law Enforcement Detachment Teams deployed with U.S., Canadian, and Netherlands naval vessels.

On Maintaining a Safe, Prosperous, and Cooperative Arctic Region

The Coast Guard is a strategic leader in forums such as the Arctic Council's Working Group on Emergency Prevention, Preparedness, and Response, the Arctic Coast Guard Forum, and the International Maritime Organization, where we partner with other nations to maintain the region as safe, prosperous, and cooperative.

CGC *Healy* completed a historic deployment circumnavigating North America via the Northwest Passage and the Panama Canal. CGC *Healy* spent fifty-one days north of the Arctic Circle. The crew mapped 12,000 square kilometers of previously uncharted seafloor, completed a search and rescue exercise with the Canadian Coast Guard

and Canadian Rangers, and conducted engagements to promote cooperation with our Western Hemisphere allies.

With the planned delivery of polar security cutters, the Coast Guard is taking the necessary steps to ensure continued effective presence in the Arctic. Within the next decade, the U.S. Coast Guard will complete our fleet comprised of 100-plus modern cutters operating both offshore and in the navigable inland waterways.

Polar security cutters, national security cutters, offshore patrol cutters, fast response cutters, and waterways commerce cutters now in development will enable us to meet America's current and future demands. Construction of the first polar security cutter—named the CGC *Polar Sentinel*—is projected to begin this year. It will be the first heavy polar icebreaker built in the U.S. in over four decades. Once operational, this unique asset will be instrumental in protecting U.S. economic, environmental, and national security interests in the polar or high latitude regions.

> "While we adjust course to best address enduring and emerging challenges, one constant remains: the need to deliver the assets, resilient infrastructure, and capabilities necessary to accomplish the mission."

On IT Infrastructure Modernization

Command and control, communications, computers, cyber and intelligence (C5I) are as vital to mission execution as our cutters, boats, and aircraft. Modernizing these systems is imperative to improve mission outcomes and prepare the Coast Guard for the evolving and increasingly complex challenges of the future. Over the last four years, more than $275 million has been appropriated by Congress to support the Coast Guard's technology revolution, launching the first wave of transformational change in how we deploy mobile, reliable, and integrated information systems.

For the first time in decades, we are modernizing critical tools with capabilities like MHS Genesis electronic health record system, Department of Defense (DoD) 365 cloud computing, and an electronic Official Military Personnel File set to be released this August. Significant investments like these are indicative of a healthy and evolved attitude towards data and information technology that support a more "ready" Coast Guard. DoD 365 cloud computing allows members to access work accounts from personal computers using a CAC (common access card) reader.

The upgrade especially helps our reservists, who are now able to access their Coast Guard email and collaboration tools from anywhere. The replacement of all 48,000 Coast Guard standard workstations with modern mobile computers is in process. To that end, 20,000 laptops are scheduled for delivery this year, enabling both faster and more powerful computing, as well as additional mobility options for our workforce.

On Mitigating Cyber Risks

The risk of cyberattacks to maritime critical infrastructure and maritime organizations threatens the resilience of our nation's Marine Transportation System. This past August, we released an updated Cyber Strategic Outlook that lays out how the Coast Guard is adapting to protect the MTS, as well as defend our own network, and operate in cyberspace. These efforts range from prevention and response strategies

to leveraging relationships with interagency partners. We're also building a robust cyber workforce—which, I'm excited to announce, includes a new cyber mission specialist rating with its own chief warrant officer specialty.

On Asset Recapitalization and Capacity Building

We are making progress on the acquisition of thirty waterways commerce cutters. These new tenders will have greater endurance, speed, and deck load capacity to efficiently maintain 28,000 aids that mark over 12,000 miles of navigable inland waterways. These aids to navigation are a critical component of our MTS on which cargoes and commodities comprising 25 percent of our nation's gross domestic product moves.

For the first time in history, our entire inland fleet will be able to accommodate mixed-gender crews, providing all junior enlisted members these unique afloat experiences. In the interim, we are creating additional afloat billets for our women shipmates.

Much change is also afoot in our aviation community where we are recapitalizing and changing the composition of our fleet, delivering new and upgraded fixed-wing platforms, and strategically relocating assets. We now have two long-range HC-130-J Super Hercules in Hawaii where aircrews have greater capability to conduct missions in a region that knows the tyranny of distance. Our medium-range HC-144s sited in Miami, Mobile, Cape Cod, and Corpus Christi, as well as our C-27-Js in Sacramento, are instrumental to meeting mission objectives, as well.

On Enhancing the Coast Guard Infrastructure

Every operational commander knows that Coast Guard missions begin and end at a facility. During my State of the Coast Guard 2022 address, I emphasized that to remain 'Always Ready' we must invest in our shore facilities—a message that was heard, loud and clear. We have seen historic support for our infrastructure, including $434 million in the recently enacted Infrastructure Investment and Jobs

Act to address critical shore needs, funding eighteen distinct projects across the Coast Guard.

Thanks to Congressional support, we have many sizable construction projects underway right now at eight small boat stations, like Station Key West, at the Coast Guard Yard, and at three new cutter homeports. We are also building the first new Coast Guard Air Station in decades from the "ground up" in Ventura, California. We are currently executing about $1.4 billion dedicated to improving shore facilities across our Service, with plans to tackle another eleven infrastructure projects.

On a Constantly Evolving Operational Environment

This transformational change in the maritime domain, and its blistering pace, is not confined to the U.S. Rather, it is global. These changes taking place in coastal waters act as a forcing mechanism, compelling coastal nations worldwide to establish or bolster their own coast guards, and to adapt or expand their existing maritime security capabilities.

Our enduring success throughout our 232-year history, accentuated by these uniquely challenging past three years, is because we are ever adaptive, agile, and resilient. We succeed because we are "United in Service" and we are "Always Ready."

Almost four years ago, we launched a strategic framework for a "ready, relevant, and responsive" Coast Guard to address America's most complex and dynamic maritime challenges. Because we are "United in Service" within our own communities and across the organization, we've driven forward our strategic plan and are building the Coast Guard the nation needs today and well into the future. While we adjust course to best address enduring and emerging challenges, one constant remains: the need to deliver the assets, resilient infrastructure, and capabilities necessary to accomplish the mission.

To learn more about the U.S. Coast Guard, go to uscg.mil.

To hear the interviews from *The Business of Government Hour*, go to businessofgovernment.org/interviews.

To download the show as a podcast, go to PodcastOne or iTunes and search for *The Business of Government Hour*.

To view excerpts of the show, go to youtube.com/businessofgovernment.

Advancing Mission Success Using Innovation and Technology: Insights from Sanjeev "Sonny" Bhagowalia, Assistant Commissioner, Office of Information and Technology, and Chief Information Officer, U.S. Customs and Border Protection

By Michael J. Keegan

The U.S. Customs and Border Protection (CBP) protects our nation's borders from terrorism, human and drug smuggling, and illegal migration while simultaneously facilitating the flow of lawful travel and trade. Its mission is vitally important for the protection of the country and the national economy.

To protect the American people, safeguard our borders, and enhance the nation's economic prosperity, CBP depends on its ability to navigate through change and anticipate the future while never losing sight of its core mission. Doing so requires investment in innovative technology, reliable IT tools, and intelligence capabilities to anticipate and confront ever-changing dynamics.

"My office," says Sonny Bhagowalia, assistant commissioner of the Office of Information and Technology (OIT) and chief information officer at CBP, "has been increasingly called on to meet the challenges of an ever-changing environment." He recognizes that to be successful his agency requires a resilient, adaptive, reliable, and secure IT infrastructure that keeps pace with evolving threats and technological advances.

Sonny joined me on *The Business of Government Hour* to share his insights on CBP's mission, its strategy for IT modernization, and how the agency is using technology to change the way it does business. The following is an edited excerpt of our discussion, complemented with updated and additional research.

What is the mission of your office and how does it support the efforts of CBP?

CBP has a tremendous 24/7 global mission. In adherence with authorities and the U.S. Department of Homeland Security's (DHS) mission goals, the OIT works collaboratively across DHS agencies to support and accomplish key initiatives for cost savings, operational efficiency, and national security. My office supports the CBP mission in a variety of ways, including leveraging the agency's unique authorities, data holdings, intelligence enterprise, and partnerships.

We increase situational awareness to impede and respond to illicit cross-border traffic. We're leveraging cutting-edge technology to transform traveler verification and dramatically reduce the need to verify physical travel documents. We integrate classified and sensitive information to improve travel and immigration decisions. We also help facilitate lawful trade and business, while recruiting and training the most qualified people. It's not an eight-to-five job.

In FY21, we achieved some of our best results ever. Even in the age of COVID, we successfully managed border surges, the Afghanistan evacuation, and cyberattacks. In FY22, we look forward to continuing to provide best-in-class IT services—where and when they're needed.

What are your specific duties and responsibilities at CBP?

My CIO duties emanate from the Clinger-Cohen Act 1990 and a host of other laws. We are the enabler of how we can support CBP at the speed of mission. CBP is the second largest collection agency in the federal government. It collects approximately $93.8 billion in duties, taxes, and other fees, which represents a 133 percent increase over a five-year period. We also processed about $4 trillion in imports/exports.

I also work to deliver high-quality information technologies and services to CBP, other government agencies, the travelling public, and the international trade community—all in support of securing the border and facilitating trade and travel. To be proactive in responding to new threats, I manage CBP's information and technology (I&T) operations and infrastructure. Our goal is to enable CBP mission readiness, including how officers and agents in the field perform critical work functions.

From mobile devices to systems that screen people and goods entering the country, to the data networks that keep information accessible and flowing—we manage all aspects of a fully functioning CBP I&T system. My team also manages the day-to-day operations of CBP computer and tactical communications facilities and systems. We provide technology support, ensure a secure method for information exchange, protect against cyberattacks, and collaborate with other countries.

My job, in a nutshell, is to make sure all the 180 critical systems are supported, while processing fourty billion data exchanges every day while withstanding constant cyberattacks.

Would you outline your agency's IT strategy?

Developing an IT strategy is foundational. It provides the organization with a vision of where it is going, coupled with a measurement framework to gauge progress. My strategy builds on the work of my predecessors, but it aligns with the core priorities of the agency and the department. CBP has five Enduring Mission Priorities: countering terrorism, combating transnational crime, securing the border, facilitating lawful trade and protecting revenue, and facilitating lawful travel. Our IT strategy works to support these priorities.

At CBP, our information technology strategy has six key focus areas. First—enhancing *our mission applications*. This includes AI (artificial intelligence), facial comparison technology, and our unified immigration portal. We're processing 1.2 million passengers within two second adjudications at some of the 328 ports of entry. We're also using our unified immigration portal and agile frameworks to improve efficiencies.

The second focus area is *mission infrastructure*. Migrating to the cloud, enhancing our network, and improving our performance management ensures a high degree of resilience in our operations. The third focus area is *enterprise IT governance*—establishing a chief data officer, developing our data strategy, and developing a technology roadmap and dashboards to enhance transparency with our mission partners.

Cybersecurity, the fourth focus area. It is a key component of the IT strategy with a specific emphasis on the implementation of zero trust architecture. It also helps to manage growth and retention of our cyber workforce. Our fifth focus area centers on *business operations* to ensure our employees growth and development. Finally, we focus on our *trusted partnerships* within CBP and DHS, across the U.S. government, and among our partners.

The mission depends on our ability to deliver resilient solutions. By continually innovating how we deliver and manage, we create the capability and capacity to deliver new ideas and technologies while also efficiently managing existing operations. We're saving time, money and realizing efficiencies through almost 140 robotic process automation projects and fourty artificial intelligence and machine learning projects—which we're doing slowly and deliberately.

Industry best practices have led us to developing an enterprisewide OIT Playbook. This playbook not only meets the needs for programs to be able to tailor services to unique mission needs, but also standardizes the "plays" to improve the support received from OIT.

In 2021, CBP was the named winner for Public Sector Excellence by the Technology Business Management (TBM) Council for driving digital transformation with IT cost savings. Would you tell us more about this effort?

It starts with our executive directors, including Patty Howell, our budget director, and Janet Pence, the chief of staff. Our TBM implementation has been an iterative process, enabling CBP to mature its IT operations and financial management processes. TBM has helped OIT run as a business by connecting IT spend to mission priorities. Structured data now supports the evaluation and

management of IT cost effectiveness, prioritization of unfunded requirements, and advanced data analytics and visualization. Taken together, this better enables our field operators to achieve their mission.

TBM helped OIT provide agency decision-makers with deeper visibility into IT requirements and costs across the full financial lifecycle for OIT's $1.45 billion annual spend. It also helped us improve our ability to provide cost transparency to customers. TBM has enabled OIT to better understand and communicate the types of IT goods and services CBP is procuring. As OIT continued its TBM implementation, we were able to better understand how IT dollars impacted the mission. It also allowed us to uncover pain points that required more attention.

CBP OIT has focused on using TBM to drive operating efficiencies. We're improving collaboration with customers. We're spending more on cloud, cybersecurity, and network modernization to improve customer service. Importantly, we've also become better stewards of taxpayer funds.

How has COVID impacted your IT operations?

At the beginning of the pandemic, we implemented a mobile solution so our workforce could work remotely. This helped to keep our operations moving. The Automated Commercial Environment (ACE) workforce seamlessly transitioned to a full mobile work model. We also developed the Electronic Advanced Passenger Information System (eAPIS), which contributed to a vital COVID-19 response.

The ACE workforce also supported a steady and legitimate import and export of COVID-19 vaccines, COVID-19 testing, Personal Protective Equipment (PPE), and medication to and from partner government agencies and countries. The team supported the ability to bring the supply chain directly to America's doorstep, lessening the burden on vital frontline workers. There are approximately 9.6 million travelers enrolled in Trusted Traveler Programs (TTP) with 7.2 million in Global Entry. Membership growth exceeded 200,000 in FY21.

Prior to COVID-19, Global Entry applicants with a conditionally approved application made in-person appointments for enrollment processing. During the pandemic, videoconferencing capability added an alternative to in-person interviews. It assisted with an increase of 350,000 conditionally approved applications and a growing backlog of applicants. Since the February 2021 implementation, the remote interview process has reduced

that number by more than 2,200, and there have been more than 5,643 successful interviews. Interviews were conducted across twenty-four countries and forty-eight states.

Can you demystify how you are putting the Technology Modernization Fund (TMF) to work for CBP?

As the first project awarded TMF funding within DHS, ACE Collections helped shape the way for future DHS requests. The ACE Collections project was awarded through the TMF, authorized by the Modernizing Government Technology Act of 2017. It encompassed over two years of extensive and detailed collaboration.

During that period, CBP gained a partnership and maintains a favorable momentum with the TMF, Office of Management and Budget, and General Services Administration. The partnership provides a solid example for current and future DHS submissions attempting to modernize through the TMF. With the TMF funding, CBP was able to deploy the first TMF funded ACE Collections release, which was delivered on time and within budget.

The Southwest Border Technology Integration was DHS' first tri-bureau, cross-government (CBP, ICE and CIS) TMF award. The SWB technology integration project was approved under the relaxed repayment that TMF funded within the American Rescue Plan. We are currently awaiting the first increment of funds to ensure that we can continue to execute the tri-bureau enhanced immigration process lifecycle.

What are you doing around workforce development, recruitment, and retention?

We've adopted a proactive approach to workforce development, recruitment, and talent retention by fostering an agile workforce. We also retain our professionals who've proven capable of executing the OIT mission and achieving our long-term goals.

On branding, CBP's frontline careers are well known within the conscience of the public; however, our cyber/technology mission has been historically underrepresented. To ensure OIT can recruit the next generation of technical talent, we first need to educate the public on who we are and what we do. We've increased our presence on popular social media sites and partnered with DHS to host DHS-wide public webinars discussing OIT careers. We're also working to spotlight career opportunities on CBP.gov.

Regarding recruitment, OIT has a complex mission. It spans a large geographical footprint and takes a targeted approach to recruitment—which ensures a capable and balanced workforce. We've increased engagement with colleges and universities to recruit entry-level IT and cyber professionals as well. We have also partnered with DHS SRDI (Strategic Recruitment, Diversity, and Inclusion) to reach historically underrepresented communities. Additionally, we participate in cyber and cyber-talent programs, where we obtain access to commercial job-boards and target resume mining for specific mission needs.

I also want to retain our workforce. We continue to spearhead the Cybersecurity Retention Incentive and to renew that program annually. Currently OIT sits at 107 employees signed up for the retention incentive. At the end of the day, it's all about the mission.

> To learn more about the U.S. Customs and Border Protection, go to cbp.gov.

To hear the interviews from *The Business of Government Hour*, go to businessofgovernment.org/interviews.

To download the show as a podcast, go to PodcastOne or iTunes and search for *The Business of Government Hour*.

To view excerpts of the show, go to youtube.com/businessofgovernment.

People First. Mission Always: Insights from Jane Datta, Chief Human Capital Officer, National Aeronautics and Space Administration

By Michael J. Keegan

Since NASA's inception, scientific discovery has been an enduring mission of the agency. NASA conducts scientific exploration, gazing out into the galaxy and beyond, seeking to discover the secrets of the universe, searching for life in the solar system, and protecting and improving life on Earth. It leads innovative and sustainable programs of exploration with commercial and international partners to enable human expansion across the solar system—and bring new knowledge and opportunities back to Earth. It also supports the growth of the nation's economy in space and aeronautics, increases understanding of the universe and our place in it, works with industry to improve America's aerospace technologies, and advances American leadership.

Integral to the success of NASA's mission is the people of the agency. "Our vision is *people first, mission always*," declares Jane Datta, chief human capital officer at NASA. Mission success relies upon strong workforce planning, acquiring top talent quickly, enhancing how people work, and growing employees and leaders, and creating a workplace environment that cultivates and fosters innovation and engagement.

"NASA's selection as the Best Place to Work in Government for the ninth year in a row is a testament to the dedication and determination of our world-class workforce through the most difficult circumstances our nation has faced in generations," said NASA Administrator Bill Nelson. The top ranking was bestowed upon NASA by the Partnership for Public Service.

Jane joined me on *The Business of Government Hour* to share her insights into how the operations of her office support the mission of NASA. We also discuss current challenges, the response to the pandemic, the human resources (HR) transformation, and the changing nature of how and where work is done. The following is an edited excerpt of our discussion, complemented with updated and additional research.

Would you tell us about the mission of your office—and its scale?

My office is an end-to-end human capital service organization, which means we're in the people business. We think about it in terms of *people first, mission always*. NASA's mission is incredibly important, and our people make mission success possible. We support about 18,000 civil servants who are spread across the country in many different lines of business. These include human spaceflight, aeronautics research, and science missions. It's an exciting time for our agency.

I have overseen this office's transformation from providing decentralized human capital services across ten centers to a centralized, functionally unified line of business. The office provides a robust portfolio of services and change management initiatives, including workforce planning and analytics, learning and development, talent acquisition, and policy and accountability. It is responsible for building the quality and depth of talent necessary for supporting the agency's mission and improving capabilities for delivering human resources services. Today we are positively shaping NASA's culture to maintain high levels of employee engagement and commitment.

What are your specific duties and responsibilities as chief human capital officer?

My duties are the people side of the business. That includes talent acquisition, talent development, and talent mobility. I work with agency senior leadership on key administration priorities such as COVID and Diversity, Equity, Inclusion, and Accessibility (DEIA)—as well as the move to hybrid work. So, along with the transactional human resources (HR) support services, I am one of a team of senior leaders helping NASA navigate how the agency meets its critically important mission today and positions itself for the future.

We need to blend the now with the future, both for human capital services and NASA workforce strategy. So we consider—how do we go about hiring talent given changes in the labor market? How do we become more demand-driven and agile? How can we set ourselves up to have the right people for the future? It's about thinking three, five, ten years from now. Balancing the needs of today and tomorrow is an incredibly important part of what I bring to the agency.

Lastly, I am a CHCO at NASA and for the federal government. Part of my responsibility is to stay engaged with my counterparts in other agencies—to learn from them and to share what we need and what's working. We pay attention to what's happening in industry as well and identify innovations that we might want to leverage.

What are some key challenges you face in your position?

Let me start with the internal human capital challenges. We do much with a relatively small group of people. So our goals are to identify ways to become more effective and efficient. We are looking at automation and improving

NASA's human capital information technology footprint. We have a three-year plan in the works, in line with our business plan.

I have been given an opportunity to have a voice in the biggest workforce challenges now facing the agency. The response to COVID remains a challenge. We are focused on addressing workload and employee burnout. Caring for the health and welfare of our employees is both an opportunity and a challenge right now—one we take very seriously.

NASA is not standing still. We are doing work with commercial partnerships on the human spaceflight side. As such, we are helping to reshape workforce skills. The future of work/hybrid is a great example of this. I am here to help the agency move into the future, leveraging a combination of the best of the pre-pandemic and the pandemic experiences.

What are the characteristics of an effective leader and what leadership principles guide your efforts and how you lead?

Leaders must set a clear direction. People need to know where they're going and why. Why are we transforming human capital right now? Why is it important? Setting a direction does not mean devising a hundred-point plan. It is about describing the future; what it generally looks like and why our goals now are important.

Leaders also need to build strong teams. I have seen organizations struggle because they lack strong, cohesive teams. I am blessed with one of the most talented teams that you could ever hope to have. I need to be connected to people enough to know what's going on, so that I can support our teams and remove obstacles for them to do their jobs. It is about the team—delegate to them, let them learn, let them innovate.

How did NASA respond to the pandemic and keep the workforce performing?

I'm proud of how our agency responded during this pandemic. From leadership to every employee and contractor, we all kept the agency going in the midst of a very stressful and trying period.

I was CHCO for a couple months when we moved to mandatory telework in March 2020. We quickly assembled a team focused on the health and safety of our workforce. We worked to determine what needed to be done and how to make decisions quickly. We moved fast and worked hard, moving 90 percent of the workforce offsite in a very short period. We created order and determined how we'd operate—communication, charge time, different hours of work, contractors, etc.

For my part, I focused on the supervisor cadre, because that is the layer of our organization where the work and the workforce come together. Supervisors are in the best position to know what's what at any given moment and to help in the caretaking of the workforce. So we setup a series for supervisors that touched on many different topics.

It was clear the series served a valuable purpose. It fostered togetherness—a shared response to a crisis. Though this may have been borne out of a crisis, the resulting engagement will continue long after the pandemic subsides. Focusing on communication across all levels of the agency continues to be critical. We are living and working differently. We can no longer pretend how what we used to do in going in the office is still the best way forward today.

How will NASA be working when the pandemic is behind us?

We have declared, as have most agencies, that we will be moving into what we call the hybrid environment. We're striving to take the best of our pre-pandemic experience, the best of what we learned during the pandemic—and apply it. We have people with different reactions to how we've been working and how they want to work. We've done several internal surveys—many focused on productivity, support, communications.

People have been surprised at how much they can do remotely. Seventy percent of NASA employees desire to work offsite for more than half of their work schedule. Some are mixed, with more wanting off site. We don't have it all

figured out. There's a desire to reconnect with people in person, but when getting back together is safe and viable, we expect to see a mixture of onsite, remote work, and some more active telework. I have alerted leadership to the fact that this is an evolving situation. We didn't want to fall into the trap of deciding too early, but instead give ourselves some breathing room once restrictions have lifted.

We're in an experimental phase that will likely last for a good part of 2022. We weren't sure what level of remote work people would want. They might imagine this is something they want, but how do they behave when given a choice? Instead of reconfiguring workspace, let's see what people choose and what practices they adopt first. Let's give them that opportunity, then determine investments/divestments.

We aspire to determine real requirements first. We'll see what we learn and use that. How much space do we need, what are we doing in that space? The workforce wants to have a say—what work they do, when they do it, where they do it, how they do it. To keep an engaged workforce, we need to pay attention to this and listen to our people.

Would you tell us more about efforts to transform NASA's HR services?

NASA used to have an HR office at every field center location and a policy program office at headquarters. We consolidated the human capital function into one organization on Oct. 1, 2018. We are one organization with a regular connection with leaders across the human capital enterprise.

A traditional HR customer model provides services through people for whatever is needed. It involves innovating on the fly. If you need a tool, then under this model we'll build it. It works in a decentralized model with all the advantages and disadvantages. At NASA, for example, if a customer has a question, they go to a person. It has been very successful in the past. Our people want to understand our customers.

We want to modernize HR to achieve the right blend of efficiency and effectiveness. We introduced the HR Business Partner (HRBP) model, which integrates the HR function—focusing on people—with the business side of things. We're now looking at more standardization to automate. And we are moving from a transactional to a consultancy model of HR management. It is very challenging, as these types of transitions don't happen overnight.

What advice would you give someone who is considering a career in public service?

Public service careers are meaningful in ways that are wide and deep. Yes, there are aspects of work with, say, federal agencies, that feel challenging—the bureaucracy, some of the constraints we must accept in how things work. Yet, we spend our time doing good for the world. For many of us, the meaning of the work matters more than anything else.

To that end, we place a great deal of value on the employee experience—rights of employees, work/life balance, for examples. We encourage people early in their careers to take advantage of a variety of work opportunities as well. A porous border, in and out of public service, is a healthy way to understand what each type of experience within NASA can give to an employee.

To learn more about the NASA, go to nasa.gov.

To hear the interviews from *The Business of Government Hour*, go to businessofgovernment.org/interviews.

To download the show as a podcast, go to PodcastOne or iTunes and search for *The Business of Government Hour*.

To view excerpts of the show, go to youtube.com/businessofgovernment.

Leveraging Technology to Innovate and Deliver Results: Insights from Sanjay Gupta, Former Chief Technology Officer, U.S. Small Business Administration

By Michael J. Keegan

Editor's note: Since this conversation, Mr. Gupta has taken on a new role at the U.S. Department of Justice. We wish him all the best.

Since 1953, the mission of the U.S. Small Business Administration has been to maintain and strengthen the nation's economy by enabling the establishment and vitality of small businesses and by assisting in the economic recovery of communities after disasters. By expanding access to capital, counseling, federal contracts, disaster assistance, and entrepreneurial education, SBA gives small business owners the tools they need to create jobs and grow businesses. "SBA may be one of the smaller cabinet level agencies," admits Sanjay Gupta, "but it has played a very significant role in the nation's largest economic recovery response in the wake of the COVID-19 global pandemic."

For Gupta, technology has been a critical enabler in making this happen. The agency strives to leverage technological advances and innovation to deliver more effectively its mission. He joined me on *The Business of Government Hour* to provide insights into SBA's cloud journey and digital technology strategy. We also discussed his leadership approach, key challenges, and SBA's response to the pandemic. The following is an edited excerpt of our discussion, complemented with updated and additional research.

Would you tell us more about your role and the portfolio under your charge?

The chief technology officer is responsible for the agency's overall technology strategy. What are we trying to accomplish? How are we trying to get capital into the hands of the small business entrepreneurs and startup communities? It is about identifying innovative solutions that help SBA answer these questions and meet its mission.

For example, given the increase in SBA loan and grant applications, we needed to expand and accelerate the use of algorithm-based decision support systems. It was important for us to use these solutions, so we could increase our throughput. On the cybersecurity side, we've implemented a cybersecurity strategy that leveraged the use of artificial intelligence and machine learning for anomaly detection capabilities. This has been immensely beneficial given the shift to working in a virtual environment. Over the last couple of years, we've pursued serious outreach to vendors and partners who offered their assistance. These included Fortune 50 companies and startups. I served as a point of contact for this outreach effort, and it was a very invigorating experience for me.

Since coming to SBA, I have led major transformations. In 2017, I launched the SBA Cloud Initiative, which was an eighty-two-day cloud journey with no funding. The big impact of that was in fall of 2017 when three major hurricanes, Harvey, Irma, and Maria hit landfall. Our disaster response mission went immediately into high gear. We ramped up to nearly six thousand people in less than sixty days. We were able to leverage our cloud computing environment to accelerate our disaster recovery response.

In 2018, I led a ninety-day Trusted Internet Connections (TIC) modernization initiative with the Office of Management and Budget (OMB), Department of Homeland Security (DHS), and the General Services Administration (GSA). I worked closely with them to showcase how we were reaching and meeting the objectives of the Trusted Internet Connections using our cloud-based cybersecurity model. In 2019, I had the opportunity to lead a similar ninety-day continuous diagnostics and mitigation modernization initiative with

DHS. We were able to meet their objectives without necessarily following design patterns or the architecture that they were proposing.

What are the top management challenges?

The top challenges we face center around people, budget, and contracting acquisition. On the people side, we face two key challenges: technology skills gap and sufficient staffing. The skills and competencies of the workforce do not align with the skills needed to use modern technologies. Second, we do not have enough skilled resources adequate to meet the demand we are supporting.

We have taken four specific actions to help mitigate these challenges. First and foremost, we made increased availability of training, especially in new technologies like cloud, data, and cybersecurity in the cloud environment. Second, we have increased using contractor resources where possible and appropriate. Third, we began a major initiative creating new career paths for the technology workforce, which allows them to grow and advance both technically and managerially. Finally, we are augmenting our workforce by tapping into programs like the Presidential Management Fellows Program.

The next challenge concerns budgeting. We started looking for cost savings opportunities. What I call self-funding models. You identify cost savings from right sizing maintenance contracts and direct those funds to core priorities like modernization and innovation. We also must understand how the federal budget process works, and then manage resources accordingly. We can tap into our IT Working Capital Fund or the Technology Modernization Fund. You need to leverage all available funding sources. It also helps to make a solid case in your congressional budget justification for increased appropriation.

Our next challenge involves contracting and acquisition. IT is moving into what I call a consumption-based model. In this model, we see less buying of servers or equipment. It also isn't easy to determine how much you will consume of IT services in a given period. You make the projection and then you make the acquisition accordingly.

Would you tell us more about SBA's cloud journey?

Fairly new to federal service, I launched the SBA Cloud Initiative in spring of 2017. There was a confluence of events at the SBA. Our primary data center had all kinds of challenges, from aging and out-of-date equipment to overheating and reliability issues. We went from no cloud footprint to a design architecture to building a cloud foundation in eighty-two days. Moving to the cloud did result in cost saving and cost avoidance. But the most significant result was our enhanced ability to respond and ramp up during a disaster. Moreover, having this cloud foundation in place has helped SBA tremendously in scaling up in response to the COVID-19 pandemic.

What were the key cloud benefits for SBA?

First and foremost, it is speed to execute. In the traditional model, you need to acquire hardware, software, do the installations, configure it, and now you're able to start "building a solution for the business." This changes in a cloud environment. Your ability to start building that business solution is reduced to hours, not months or quarters.

The second benefit comes from the cloud's capacity to scale up and scale down based on demand. Having this ability is critical given SBA's unique mission. Whether we are responding to a natural disaster or standing up economic recovery programs in the wake of a global pandemic, the cloud infrastructure provides the flexibility that enables mission delivery.

Third, from a purely financial management standpoint, the cloud allows us to move away from a capital expenditure model to an operational expenditure model. We no longer have to make significant investments in refreshing hardware every five or seven years.

What were some of the challenges in migrating to the cloud?

Moving towards a cloud environment requires a shift in mindset. It's a paradigm shift going from an asset procurement model to a consumption model. You need to look at your infrastructure in the same way that you look at a utility at your home. It's like a light switch—when you turn it on, charges are incurred. There's also a change management aspect to consider; what may have taken months before can be done almost overnight in a cloud environment.

The benefits far outweigh these adjustments. We have extensively leveraged cloud-based solutions across SBA to scale up rapidly to respond to the exponential increase in demand. Broadly, these capabilities include secure network connectivity, virtual onboarding, cybersecurity, email-based

customer service, citizen portals, virtual desktops, solution platforms, reporting, analytics, and dashboards. Secure, cloud-based solutions have increased our flexibility and agility to deploy solutions and address mission needs. It has also allowed for the creation of new innovative solutions that can combine services and deliver outcomes previously inconceivable.

What are the benefits of developing a robust technology strategy?

COVID-19 global pandemic underscores the critical role IT plays in all we do. In fact, organizations that invested in modern technologies prior to the pandemic were better able to respond to changes brought on by the pandemic. We saw it within SBA. In areas where we had modern solutions in place, we were able to pivot quickly in the wake of the COVID-19 response.

It's about delivering improved citizen services using tools like automation or technology, such as artificial intelligence and machine learning. Using these tools can transform mundane functions into value added work. The SBA administrator

recognizes the strategic importance of being technology driven—which is the ability to swiftly adopt innovative, technology-based solutions to scale, and secondly, deliver capital efficiently to America's small businesses.

In the wake of this pandemic, SBA staff peaked to nearly four times the staff size pre-pandemic. With the maximum telework policy in place, most SBA staff continued their work virtually. With the surge in staffing, the need for laptops went up significantly. Given the global supply chain disruptions, laptop availability was constrained. Recognizing the importance of the new surge staff becoming productive quickly, we accelerated the implementation of the virtual desktop solution in the SBA cloud that allowed the staff to access the SBA network and applications using their personal computer. This modern solution was secure, scalable, cost effective, and quick to implement, establishing a new precedent in federal IT.

Email based customer service inquiries for the various SBA programs increased exponentially almost overnight. Within a week, we implemented a modern cloud-based case management system to help manage the burgeoning caseloads. Modern technologies such as Natural Language Processing, together with automation, provided an insight into customer sentiment and support trends.

Would you outline for us your leadership approach?

My leadership approach follows five principles. These are in no order of priority. The first principle consists of six words: "Think big, start small, iterate rapidly." The second principal is challenging the status quo. Third principle is about empowerment. Fourth principle is about learning by doing and demonstrating value. And last, it's about being inclusive.

Let's explore each one of these principles. "Think big" is having a grand vision and setting out to achieve it. You must have a vision that you believe in, which stretches you and your team to aspire. "Start small" means finding a business case where you can apply the vision on a smaller scale to demonstrate what you can achieve. "Iterate rapidly" when you're starting small, you're doing it in a controlled manner and you're learning from it. You continue to iterate rapidly and then scale up. These six words are foundational to my approach to leadership.

Leaders challenge the status quo. It is not about simply challenging something just for the sake of it. It requires a shift in mindset resting on the inherent belief that there is a better way to do something: to deliver better value to the

agency and to its mission. Once you have developed a grand vision, then you must empower your team to achieve it. You give them the latitude to drive towards the goal. An effective leader learns by doing and works to demonstrate value. It is wonderful to absorb knowledge, attend events, and participate in webinars. These things can inspire and motivate, but there is no substitute for doing things yourself—putting knowledge to work. It's all about learning by doing.

The second side of this is demonstrating value. In the case of technology, it's not about the latest gadget or innovation. It is about finding ways or using technology to meet the mission needs of the agency. That is how to demonstrate value. The final principle centers on being inclusive across multiple dimensions—within teams and amongst sectors and people—as a condition of achieving a leader's grand vision.

To learn more about the SBA, go to sba.gov.

To hear the interviews from *The Business of Government Hour*, go to businessofgovernment.org/interviews.

To download the show as a podcast, go to PodcastOne or iTunes and search for *The Business of Government Hour*.

To view excerpts of the show, go to youtube.com/businessofgovernment.

Driving IT Modernization and Transformation: Insights from Jamie Holcombe, Chief Information Officer, U.S. Patent and Trademark Office

By Michael J. Keegan

The U.S. Patent and Trademark Office (USPTO) is the federal agency that grants U.S. patents and registers trademarks. Under this system of protection, American industry has flourished. New products have been invented, and new uses for old products have been discovered. Given this critical function, USPTO has unique technology needs. Having a consistent, reliable, scalable, innovative IT infrastructure is critically important to help the agency better serve key stakeholders including inventors and entrepreneurs while also deploying state-of-the-art technology throughout its entire enterprise.

In early 2019, Jamie Holcombe became the chief information officer at the U.S. Patent and Trademark Office (USPTO). He came to the agency to modernize and transform how it uses technology to accomplish its constitutionally required mission. "I came to help the agency," explains Holcombe, "to stabilize and modernize its IT systems and infrastructure, to move it from a client-server-based system to an internet and cloud-driven one."

With a mission-first strategy, Holcombe has sought to drive next-generation enterprise information technology (IT) investments, as well as implement better, faster, and cheaper ways to grant patents and register trademarks. This involves maintaining current systems while leveraging advances in technology, such as cloud, to transform how the USPTO delivers and uses IT services.

Jamie Holcombe joined me on *The Business of Government Hour* to discuss his agency's IT strategy and his efforts to realize its vision. The following is an edited excerpt of our discussion, complemented with updated and additional research.

What are the responsibilities and mission of USPTO?

Our agency's funding comes from the fees we collect. Therefore, we have a fiduciary responsibility to our stakeholders and to our intellectual property community to register trademarks and award patents in an efficient and effective manner.

I came to USPTO to serve and accomplish its powerful mission. As outlined in the U.S. Constitution, our mission is to secure for limited times to authors and inventors the exclusive right to their respective writings and discoveries. It is a solemn duty. USPTO is "America's Innovation Agency" as we award patents and register trademarks for those who have created some of the greatest things the world has ever seen.

I'm proud to support our mission to ensure that the intellectual property system contributes to a strong global economy, spurs job growth, encourages investment in innovation, and fosters our nation's entrepreneurial spirit.

I came to help the USPTO stabilize and modernize its IT systems and infrastructure, to move it from a client-server-based system to an internet and cloud-driven one. Our moves in this arena will mean much more efficiency and agility as we deliver business value to our customers.

What were your initial challenges?

Upon arriving at the USPTO, I recognized the need to change our culture to improve delivery and workflow. With my team, I focused on creating a "New Ways of Working" (nWOW). I challenged our IT staff to automate more workflows to make things better, cheaper, and faster. Though some efforts may fail in thirty, sixty or even ninety days, in the short term, we can learn from small failures and adapt.

As I learned in the Army, checklists and SOP's (standard operating procedures) are merely guidelines for tactical execution. What matters most is what happens on the ground. Bringing this mindset into how we execute IT at the USPTO is key to producing better, faster, and cheaper results. We need to be more agile, and bring commercial best practices into the agency. Given that the USPTO is a fee-based organization, we have an obligation to operate more like a commercial business.

As an example, with our "people to teams" effort, we adopted a matrix organizational approach. Staff maintain their reporting structure and job descriptions, but are detailed to product teams. We eliminated the project management organization and created business product teams. We pivoted from managing over 200 separate, unique projects to thirty products across four product lines: patents, trademarks, enterprise business, and enterprise infrastructure. Each product line has about seven or eight products within it. With this product-driven approach, we have a new way to operate and manage IT offerings that are better, cheaper, and faster.

What is your role at USPTO?

As the CIO, you must set the vision and develop a roadmap outlining how to realize that vision. This has to do with transforming the culture. There are three key elements: people, process, and tools. You must apply the right tools to the right people with the right processes. All elements are necessary to make sure that we accomplish the mission. We are a support organization that provides the best tools to the patents and trademarks teams. In the end, we accomplish our mission by supporting the organization in meeting its mission: awarding patents and registering trademarks.

I reference the old real estate adage: location, location, location. Similarly, my three biggest priorities are culture, culture, and culture. We need to ensure that people have the right attitude while pursuing our new ways of working. This culture shift includes moving away from the old ways, and toward the new ways of working. It requires you to act now. You must have a sense of urgency. You must be bold. Do not just do little things, but do something that really matters.

Finally, seek to simplify processes. It is all about a sense of urgency. You must make people see and feel a sense of urgency. One of the most effective commercial practices I have adopted is a thirty-, sixty-, and ninety-day plan. If you cannot complete an IT modernization effort with milestone results in ninety days, then do not do it! Our goal is "Better, Cheaper, Faster."

How did you go about modernizing the agency's IT?

We have a good understanding about which applications should move from the current client-server environment to the cloud. Our thirty product teams review their applications to assess not only the ease of migration, but the business case for doing so. It has to make business sense to move an application to the cloud.

There are applications that are sometimes process intensive and/or storage intensive—so it makes better business sense for those to remain in our data center. We will continue to assess our move to the cloud on an application-by-application basis with a solid business case analysis. Most of our twenty-year-old applications are client-server based. We must assess how quickly we can move these applications into the cloud and modernize them, analyzing the trade-offs: what we can stabilize and what we can move while simultaneously being able to deliver on the agency's mission. Since our transformation efforts began, we have stabilized over twenty-six critical systems, and have a plan to modernize based on prioritizing "high-value" assets.

Early in my tenure, we focused on security and stabilization for our core IT infrastructure, which helped us transition to remote work seamlessly. With roughly 13,000 staff across the U.S., we operate both a network operations center (NOC) and a security operations center (SOC) that runs twenty four hours a day, year-round. A big part of that security and stabilization focus has been applying automation to the NOC and SOC with the help of machine learning (ML) and robotic process automation (RPA). We have reduced alerts caused by false positives and automated security compliance tasks.

How do you use technology to transform service delivery?

Today we see service expectations have changed. People put value on ease and convenience and wonder why the government cannot adopt a more commercial way of doing business. We need to transform the way we serve customers in the best way possible.

Our job is also to provide the best tools for our patent and trademark examiners. For example, our patent examiners' ability to find the best "prior art" quickly ensures both quality and timely examination, two primary goals of the USPTO's Strategic Plan. Agency teams have been working diligently to improve the search capabilities for examiners so they can readily identify patentable subject matter. Our new Patent End to End Search tool now with artificial intelligence (AI) can help examiners do their vital work more effectively with swift, easy access to the relevant prior art they need. This tool currently provides examiners access to millions of foreign documents and full English translation documents.

Our teams used TensorFlow and Python to create new machine learning (ML) algorithms. We augmented our new patent search tool with machine learning to help examiners search not just for certain words in a patent filing, but the concepts. When it comes to using machine learning, our approach involves having employees in the loop to train the models, coach them, and enhance the algorithms. It is all about augmenting examiners, not replacing them.

How are you using emerging technologies to shape the future of the agency?

We hired Jerry Ma as the director of Emerging Technologies from the private sector. Ma has a phenomenal approach and vision for how to leverage emerging technologies. As we proceed, we need to engage in further proof-of-concept efforts and pilots with emerging technologies, so we can get verifiable results. We need to understand the pros and cons of such technologies as RPA, blockchain, and AI/ML. Today, we are already putting AI/ML models and RPA tools to work for new operating efficiency.

I was thrilled that our agency won a 2021 Future Edge award for our success in leveraging emerging technology for our business. As we continue to move fast, we're making a significant difference, saving resources and gaining new operating efficiencies. Grounded in our efforts are best practices in the work we do; people across business units create, try, test, fail fast, launch, and learn to make
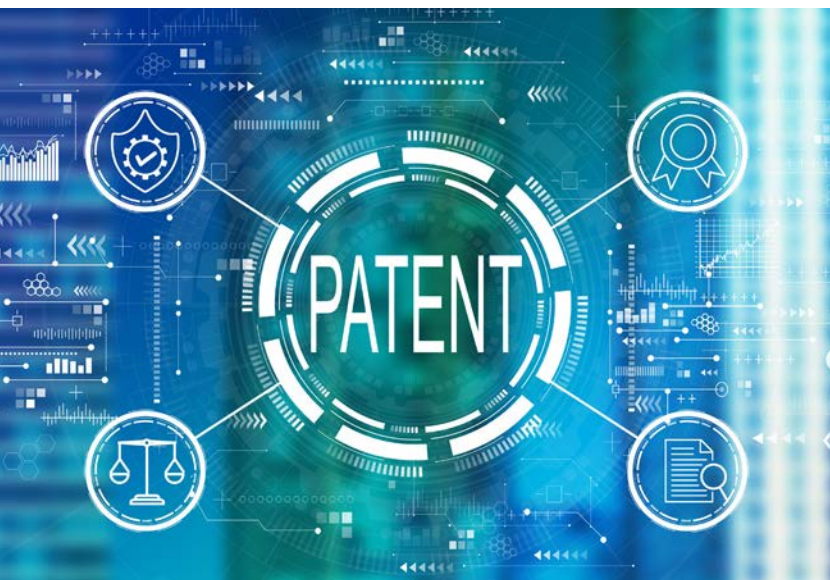
technology and tools the best they can be. I know these new technologies can help shape the future of the agency.

Though we should engage in new endeavors by doing research and development, we also need to ensure we get results. If we do not get results at the end of ninety days, then you must starve that failure. We should learn from failure, and feed success. If you achieve success at the end of a pilot, then you figure out how to adapt, build your business case, and decide whether to invest or not in that technology for that specific area. Execute, learn, iterate, and repeat!

What was your experience with virtual work during the pandemic?

The USPTO has had in place a longstanding, robust telework program. Of the nearly 9,000 agency examiners, almost 75 percent telecommuted before the pandemic struck. Since early 2020, we have proven that 98-99 percent of us can do our job at home and do it just as well or better. We significantly upgraded our bandwidth just in time, thanks to a novel partnership we struck with NOAA, another agency within the Department of Commerce. During the pandemic, we saw that our productivity metrics improved.

> To learn more about the U.S. Patent and Trademark Office, go to uspto.gov.

To hear the interviews from *The Business of Government Hour*, go to businessofgovernment.org/interviews.

To download the show as a podcast, go to PodcastOne or iTunes and search for *The Business of Government Hour*.

To view excerpts of the show, go to youtube.com/businessofgovernment.

Improving AI Strategic Coordination: Insights from Pamela Isom, Director, Artificial Intelligence and Technology Office, U.S. Department of Energy

By Michael J. Keegan

Since World War II, the U.S. Department of Energy (DOE) has been at the forefront of most of the groundbreaking and world-changing revolutions in science and technology. Artificial intelligence (AI), including machine learning (ML), is an ideal tool for deriving new insights from analysis of very large data sets. AI becomes more useful as the speed and computational power of today's supercomputers grows. With all its research, computing, and funding strength, it should come as little surprise that the DOE is spearheading the charge to advance research into AI and its applications across a wide range of industries and uses.

"It is the mission of this office," explains Pamela Isom, director of the Artificial Intelligence and Technology Office (AITO) within DOE, "to transform the department into a world leading AI enterprise by accelerating research, development, delivery, demonstration, and adoption of responsible and trustworthy AI."

Pamela joined me on *The Business of Government Hour* to share how the department is maximizing the impacts of AI through strategic coordination and planning. She describes the mission and purpose of the office she leads, discusses the importance of responsible and trustworthy AI, and highlights key priorities, from national security to climate resilience and energy justice. The following is an edited excerpt of our discussion, complemented with additional research.

What is the history and mission of the Artificial Intelligence and Technology Office?

The AI and Tech Office was established in September 2019. Some refer to it at AITO, but I call it AI and Tech. I became the director in August of 2021, providing a new leadership and focus but building on the successes and lessons learned of the prior leadership. We know that AI is pervasive in everything, in science, in engineering. This includes how to address climate change, carbon capture, etc. The mission of this office is to transform the Department of Energy into a world leading AI enterprise by accelerating the research, the development, deployment, demonstration, and adoption of responsible and trustworthy AI.

I like to emphasize the responsible and trustworthy aspect of artificial intelligence in our mission. We work to accelerate AI-enabled capabilities through strategic portfolio alignment while scaling department-wide use cases that advance the agencies core missions. In addition, we advocate for department program offices pursuing AI efforts. We provide advice on trustworthy AI and machine learning strategies. We also expand public, private, and international partnerships, policy, and innovations, all in support of national AI leadership and innovation. More focused on impact than inventory, we enable the department to advance AI capabilities where it makes sense.

How is your office organized?

The office is organized into three pillars: leadership and administration, AI portfolio and program optimization, and AI strategy and partnership development.

Led by a seasoned program manager, the *portfolio and program optimization* team conducts strategic portfolio analysis and alignment of the AI investments. It looks at the investments and assesses what the department is doing in the AI space. This team keeps an eye out for capabilities that ensure departmental and national security priorities are met. They bring gap analysis to the forefront. They also facilitate department-wide trustworthy and responsible AI practices through workshops. Moreover, they guide ethical AI practices and focus on delivery of tool kits to enable and mitigate risks. Recently, this team stood up the responsible and trustworthy AI task force.

The *strategy and partnership development team*, also led by a seasoned program manager, builds and ensures robust partnerships and customer excellence across internal, external, and international boundaries. This team leads the strategic communications for the office on AI. This includes the development of the DOE-wide AI strategy. The team provides elite, innovative governance through operationalization and administration of the AI Advancement Council.

Finally, there is the *leadership and administration area*. Our focus is on understanding the impacts that we're making and how we can make an even greater impact and maximize the return on the AI investments across the department. The leadership aspect of this team focuses on work force optimization and performance management.

What about your specific duties and responsibilities as the director of the office?

I am responsible for ensuring that we are delivering cross-cutting innovation and impacts through AI. That's really my responsibility. Also, I have a passion for equity. So responsible and trustworthy AI is at the center of my personal attention. If we are going to lead AI at a global scale, which is our mission, then focusing on humanitarian impacts is a must. I'm helping to make sure we track societal impacts: that we are verifying, validating, and looking to apply AI for goodness, equity, and positive societal impacts.

We must be mindful, however, of the adversarial outcomes. You'll find me operating throughout the department, working with the national labs, and doing all that I can to facilitate success for my office as well as the department. Then lastly, I like creative problem solving and removing roadblocks. That's where you'll find me—somewhere trying to solve a problem and remove roadblocks out of my team's way.

What has surprised you most since joining AI and Tech?

I would like to see more talent and capabilities in the department, particularly around responsible and trustworthy AI. We have formed a Responsible and Trustworthy AI (R&T) task force and the participation is fantastic with great representation from the department. An example of why this is important is we want AI to fuel distributed energy fairness and not widen equity gaps. AI can help if we integrate R&T practices.

The R&T AI task force is a pleasant outcome and a little surprising because of some unknowns on my part. We have workforce development on the agenda with some successful actions. The budget appears better in 2023 and I hope the impacts continue so that an upward trend continues. One of our goals is to introduce operational practices and behaviors to guide Ethical AI project management, development, and operations. We are very interested in an integrated environment for AI development that can be leveraged across the department.

Given your private and public sector experience, how have both of those experiences informed the way you lead? What are the characteristics in your mind of an effective leader?

I like to lead by example. I like to lead with practical use cases so people can relate and understand what it is that they're doing and why they're doing it. I don't like to lead with the style and approach of "just do it just because it has to be done." I do like to hear from others prior to making decisions, but I am a decision-maker. I believe in teams that are strengthened by diversity. I believe the greater the diversity the greater the possible impact and success of our efforts.

I would rather follow the process and offer innovations to make things better and more efficient. I love when my team does the same thing. I expect them to look at the process. Is there a way to make it better? What can we do to address the challenge that fuels innovation? If I just see a team that is following the orders, following the rules—which I want us to follow the rules—but if you're just doing that, just because you're trying to hit the metric, I'm not impressed.

Would you highlight the priorities of your office? Do they align with the National AI Initiative Office?

The focus on responsible and trustworthy AI is a top priority. My team is focused on innovative AI governance where responsible and trustworthy AI outcomes are the standard. Development of the departmental AI strategy is another key priority. This also includes establishment of the AI Advancement Council.

Another priority is on the continued development of strategic partnerships. We're going to continue to evolve that strategic partnership framework. Workforce education, training, and upskilling are all key priorities. We must do more around training and upskilling—it's essential. Each of these priorities pretty much aligns with the National AI Initiative Office and its strategy.

Would you briefly describe AI and outline the AI lifecycle?

We know that AI is a disruptive technology. It's starting to be intertwined in all that we do. It is about getting computer systems to perform tasks that mimic what humans would do or mimic human intelligence. This is basically how we look at artificial intelligence. AI will never think exactly like a human, but it can get close to it. The key is that when applied effectively, it can do things much faster.

The AI lifecycle is composed of four core areas. It starts with the *supply chain,* where you want to understand the hardware, software, and the components of the AI. The next area is *data acquisition*, establishing data provenance and chain of custody. The models don't perform without data. Once you combine the data and the algorithms, that's when you have the models.

The next part of the lifecycle is the *deployment*. You want to deploy the models so that they are going to the right destinations in a secured manner. The last aspect of the lifecycle involves *monitoring performance*. AI should be monitored after it's deployed. It should be monitored and then we should continue to measure its performance relative to what we intended the AI to do. This encompasses harms monitoring and modeling as well as AI assurances in the face of cyber and adversarial threats.

What is your office doing in AI governance and risk management?

The AI Advancement Council will play a key role in the area of governance and risk management development. Our approach to governance involves understanding our inventory, making decisions, and providing recommendations on how to advance the outcomes of our AI investments. When it comes to governance, one of the things that we're doing is infusing risk management and risk mitigation. Our data is more vulnerable when it comes to AI because of the way that the data is utilized and the way that the data is accessed.

The risk management aspect of what we're doing is there to minimize those risks and make sure that we're thinking about things that we can do to mitigate such risk. We deal often with adversarial AI. We are working on finalizing an Artificial Intelligence Risk Management Playbook with a planned release in 2023. We are working on the playbook with the National AI Initiatives Office, the National Institute of Standards and Technology (NIST), along with some industry partners. Once released the product will evolve and we welcome feedback.

This playbook captures risk scenarios and provides prescriptive guidance to mitigate those risks so that AI decisions are responsible and trustworthy. The playbook even takes into consideration mitigations that are relevant to edge devices like unmanned systems and personal devices. Edge AI systems allow teams, such as our emergency responders, to act quickly on data right where it's captured. It's important to have a robust AI Risk Management Framework since AI is being used in critical infrastructure and is, as a result, vulnerable.

A part of our responsible and trustworthy principles is that we stay close to the models after they are deployed. Our approach around risk mitigation is to be proactive, try to prevent as much as possible, and then understand the risk mitigation techniques that can be applied across the entire AI lifecycle.

Would you tell us more about ethical AI? Why is it so important and how does it contribute to the pursuit of that goal of trustworthy AI?

Ethical AI is the conscience of AI. AI doesn't have awareness of itself. It can only separate right from wrong based on data that has the label "right" and the label "wrong" attached to it. The only moral compass there is when talking about AI, is that of its developer, alongside interdisciplinary teams and data, who set the bar for what is right and what is wrong.

Ethical AI is designed and deployed to deliver equality, fairness, justice, safety, and integrity. It can save lives, but unethical AI can lead to an erosion in public trust and the slow progress and adoption of AI. For example, we want to make sure that communities are properly represented in data sets and in the inputs to the AI model. We need a diverse set of individuals who are either validating the outcomes of the AI or they are involved upfront for what we call "human in the loop." It is one of the best ways to prevent bias. You need a diverse set of folks that can see information from the different perspectives.

We are focused on proactively detecting, assessing, and mitigating the impacts of bias in systems. We are focused on AI as a force multiplier for equity aka equity AI systems. We are accelerating the research, development, deployment, demonstration, and adoption of responsible and trustworthy AI—developing tools to audit and certify AI systems as responsible and trustworthy. We've convened the Responsible and Trustworthy AI Task Force that is going to be looking at how we institutionalize AI independent verification and validation teams. We don't want to do this in a vacuum. We want the inputs from across the department.

To learn more about the Artificial Intelligence and Technology, go to energy.gov/artificial-intelligence-technology-office.

To hear the interviews from *The Business of Government Hour*, go to businessofgovernment.org/interviews.

To download the show as a podcast, go to PodcastOne or iTunes and search for *The Business of Government Hour*.

To view excerpts of the show, go to youtube.com/businessofgovernment.

Building the U.S. Army of the Future: Insights from Kate Kelley, Chief Human Capital Officer, Army Futures Command

By Michael J. Keegan

The creation of the U.S. Army Futures Command (AFC) marks one of the most significant Army reorganization efforts since 1973. Unlike its peer commands, which focus on today's readiness, AFC focuses specifically on forging future readiness. Its stated mission is to make sure soldiers have what they need, before they need it, to protect tomorrow *today*.

According to the AFC's first Commanding General Mike Murray, "The AFC's incredible workforce is the foundation of our success." In its efforts to execute on the Army People Strategy, AFC has enhanced its use of Direct-Hire Authority to get the right talent hired faster. It has implemented several first-of-their-kind technology talent initiatives, establishing the first-ever Soldier-led Software Factory in Austin, Texas, and an artificial intelligence degree program for soldiers and civil servants in Pittsburgh, Pennsylvania.

"AFC is charged with doing what some may consider impossible, and that is predicting the future," explains Kate Kelley, chief human capital officer at the AFC. There are no guarantees and likely many hits-and-misses when attempting to anticipate the future. But "the U.S. Army has a very honest assessment of itself and established [AFC] to do what it needs to do to be prepared for that future fight," she adds.

Kate joined me on *The Business of Government Hour* to discuss the AFC human capital strategy, its efforts to attract, reskill, and retain the right talent, and ways it is working to transform organizational culture. The following is an edited excerpt of our discussion, complemented with updated and additional research.

What are your specific duties and responsibilities as chief human capital officer of the Army Futures Command?

First, my title is unusual in the Army context, however it is a very typical title and role within the private sector and in many federal government agencies. This was on purpose as part of AFC's continuing effort to challenge legacy thinking. My responsibilities are broad, spanning traditional human capital functions—such as hiring, compensation, managing, career-building—to being charged with thinking about and integrating modern innovative human capital practices into the Army.

I think of my role as trying to challenge the enterprise to get away from legacy human capital systems. My role is also to move the AFC as far as we can legally within the federal government toward practices that are more agile, modern, and more effective in attracting, keeping, and managing talent.

What are some of the key challenges facing you in your role?

One of the prevalent challenges we face is operating within the constraints of some very antiquated legacy systems that mark the current federal workforce hiring environment. The Army is doing a wonderful job of recognizing that its talent management must evolve for both its military and civilian staff. My challenge is how do you do that within the confines of the general schedule for federal employees, competition, and fair practice.

It has also been quite challenging, and somewhat surprising, in standing up this command over the past three years. AFC established this new command not on an Army installation but in an office building in downtown Austin, Texas, which is a high-cost urban setting. While establishing headquarters, we also had to merge the existing scientific and research communities across the Army, along with its analysis and data components and concept writers—all merging to be part of this new entity called Army Futures Command. It was a complex, difficult, and, quite frankly, lengthy process of simultaneously merging and acquitting existing entities, while also creating a startup in Austin all at once.

What are you doing to discover untapped talent?

There is a prevalent narrative that the federal government must find ways to bring needed talent in information technology, network architecture, software, and data analytics, from the private sector. By canvassing our current workforce, we found that we had this talent in our ranks. When we brought them into the Army, we did not have data specific career models. We did not have software design career models. Instead, we assessed this talent into the existing legacy career models, even though this talent can do things like DevSecOps or big data analytics.

Today, we are pulling this talent from existing career models, creating an environment for those individuals with the skills

and interest in coding or software development to apply them in the Army. The exciting challenge for us is building new career models for talent that is being pulled from established career paths. The misconception has been that we need to go looking for this talent outside of the Army, when, a lot of it is exists in the Army family today. We are currently exploring options within the larger Army to expand career pathing for these participants so we can grow an internal capacity that attracts more of this talent and retains Army capabilities

Would you tell us more about the Army Futures Command Software Factory?

This is our incubator and accelerator to improve digital competency. We create teams of individuals—cohorts—who have discreet roles on software development product teams that understand how to build, how to code, and how to develop viable applications that solve Army problems. These teams also have the requisite platform engineer and support structures to deploy these new tools in a secure way, onto networks. This is a very interesting model informed by a couple of learning campaigns we did.

One of those campaigns focused on learning how the private sector does application and software development. We've leveraged the plethora of software companies that are in Austin and elsewhere. We have also consulted existing U.S. Department of Defense (DoD) assets such as the U.S. Air Force's Kessel Run Experimentation Lab, the Defense Innovation Unit, and a host of other entities across the DoD.

We visited and worked with them to build the model here at AFC. We are asking and trying to solve crucial questions: How can we impact our generating force and solve problems at the garrison level? Can we put these software development teams in a future deployed environment where they are able to do agile software development, diagnose, and provide solutions on the spot that can help a commander on the ground make better and faster decisions? The experiment is not only to create the talent to build these teams, but also to determine how to employ them across the Army.

How important is it to change culture?

Fail early, fail often seems to describe innovation cultures, especially in the private sector. It runs absolutely counter to our Army culture, which is in many ways: *do not fail ever, and make sure you deliver.* We try to create new ways of operating to anticipate the future needs of our soldiers. It is impossible to get this right 100 percent the first time. AFC is working towards that culture shift where it is okay for one of our cohorts to come up with two or three ideas, and only one of which turns out to be viable. The point is, the Army identifies a viable solution even if two of three ideas fail. If we can put a viable idea into production and scale accordingly to support the Army, that is a win.

As a command, we need to know when to challenge the status quo, and at what level and degree to do so. This balancing act keeps AFC from just becoming a thorn in the side of the larger Army. When you are trying to get people to do things differently, to think differently, to shift their mindset, every small conversation becomes significant. Transforming how things are done never happens overnight.

To what extent is the Army enterprise moving to a hybrid work model—and how important is it to strike the right balance of work productivity, work location, and flexibility?

Regarding hybrid work models, the most important thing we can do is strike a balance that enables flexibility for the workforce but also gets the mission done. Prior to COVID-19, it is safe to say that we were less flexible about allowing distributed work environments. Telework has been available by permission. The COVID environment has challenged us to test some assumptions and assess whether parts of our workforce and their jobs can effectively be done in a distributed way.

Right now, we are piloting for Army Futures Command a strategy that allows for telework and is flexible about when and to what degree. It also seeks to create work environments where teams can come together, collaborate, and then go back into those distributed work patterns to produce the next round of the product. It's an exciting time, but the effort continues to evolve to ensure that we find the right balance. Important, we recognize that being more flexible on work location improves our chances of getting a better pool of candidates interested in working in Army Futures Command.

How are you working to make the U.S. Army an employer of choice?

🏛 It is important for us to communicate how much the Army has to offer. When people think of the Army, they may envision the requisite infantry soldier. We are that and much more. At AFC, we hire scientists, engineers, information specialists, and data scientists, to name a handful of professions.

We want to be an employer of choice. We have existing partnerships with universities across the country. These partnerships provide us with student interns who work in our labs during the summer alongside our scientists and researchers, focusing on real problems. The experience exposes these interns to all the Army has to offer, in terms of employment opportunities. It also builds a pipeline of relationships that make it easier to recruit and attract the right person, with the right skill, for the right job—and in a timelier manner.

Using direct-hire authority—or our science and technology lab authorities—we can offer a job to that engineering graduate who may have also interned at our lab. Having these authorities enables us to compete for talent and shrinks the time for getting the right candidate on board.

What are the characteristics of an effective leader? What leadership principles guide your efforts and how you lead?

🏛 Leaders must be authentic. You must present your real self to your teams, colleagues, and across your organizations. Authenticity is a crucial characteristic, especially when you are engaged in difficult work. People you lead must believe in you—but also in your vision and mission. Leaders must cultivate credibility. This is garnered not simply from technical expertise, but more from a willingness to do the hard work and to put in the effort yourself.

I think good, effective leaders can be both authentic and credible if they take the time to do that. Leaders must also avoid micromanaging. You want to empower your team, so they can achieve the vision you have set forth.

To learn more about the U.S. Army Futures Command, go to armyfuturescommand.com/.

To hear the interviews from *The Business of Government Hour*, go to businessofgovernment.org/interviews.

To download the show as a podcast, go to PodcastOne or iTunes and search for *The Business of Government Hour*.

To view excerpts of the show, go to youtube.com/businessofgovernment.

Leveraging Data as a Strategic Asset: Insights from Caroline Kuharske, Acting Chief Data Officer, Defense Information Systems Agency

By Michael J. Keegan

The Defense Information Systems Agency (DISA) is considered the nation's premiere IT combat support agency and the trusted provider to connect and protect the warfighter in cyberspace. DISA provides, operates, and assures command and control (C2), information-sharing capabilities, and a globally accessible enterprise information network that directly supports the U.S. Department of Defense (DoD) and its services.

"We have supported and enhanced," explains Caroline Kuharske, acting chief data officer, "the overall communication infrastructure at a global scale to support the warfighters. It operates in 4,300 locations and ninty nations worldwide with a workforce of more than 14,000 and an annual budget of more than $8 billion." DISA continues to prioritize C2, drives force readiness through innovation, leverages data as a center of gravity, and harmonizes cybersecurity and the user experience. It also works to strengthen the security and resilience of networks and systems that enable U.S. military advantages.

Caroline joined me on *The Business of Government Hour* to discuss the establishment of DISA's Chief Data Office, its evolving data strategy, data management activities, knowledge management, and how DISA is leveraging data as a strategic asset. The following is an edited excerpt of our discussion, complemented with updated and additional research.

Would you provide us an overview of the history and mission of DISA?

DISA has been providing communication system support since the 1960s. It was originally known as the Defense Communications Agency (DCA). The creation of the agency was to designate a needed "strong focal point" for DoD development, integration, and operation of ground and satellite-based communications initiatives. DCA grew over the decades and supported many military efforts such as Desert Storm and Desert Shield. In those operations, it provided long-haul network support, voice switches, technical control facilities, and many other data support elements.

Around 1990, DCA underwent a major reorganization and was renamed the Defense Information Systems Agency to reflect its expanded role in implementing the DoD's CIM (Corporate Information Management) initiative, and to clearly identify DISA as a combat support agency. Since then, we have supported and continue to enhance, the overall communication infrastructure, at a global scale to support our warfighters, the Secretary of Defense, the White House, and all the other DoD information networks support elements.

Why was the Chief Data Office established? Where does it fit within the DISA organizational structure?

In 2021, DISA created the Chief Data Office (CDO). While we've been using and managing data and pursuing different data initiatives, we never had a dedicated office focused on dealing with data requests and information sharing. The DISA CDO portfolio consists of two branches.

One branch concentrates on the data management activities and the second branch concentrates on the knowledge management. The office was built specifically so we have influence over the entire data lifecycle components.

We began looking at what the organization should look like, and resources needed to start the hard work of evolving DISA's current view of data and knowledge management practices. Its purpose was to spearhead the agency's approach to the evolution of our data management: How to make use of all the vital data we have and turn it into information for the internal and external DISA components to leverage at the center of gravity. A key goal is to have the data high ground that will enable actionable decision-making capabilities for the agency.

The Chief Data Office resides under the direction of the DISA chief information officer, Mr. Roger Greenwell, and is in the newly created center, the Enterprise Integration Innovation Center. This center houses the chief information officer, the chief technology officer, and the chief data officer, and our risk and security management division, and our operations engineering division. So, having all these different entities together, it really helped to craft a center that is creating an ecosystem that starts with ideas and ends with realization.

The core intent of this office is to influence and lead DISA to use data that derives business and operations outcomes, working closely with all DISA directorates and providing guidance for data use across the agency. The CDO helps to develop governance and policy frameworks used in our programs and services. We want to ensure that the data—used internally and externally—is quality data that will help our mission partners to execute their tasks in an efficient manner. We are focused on creating a DISA Data Implementation Plan to meet the direction of the DoD Digital Modernization Strategy, DoD CDO Data Strategy, and the DISA Strategic Plan.

I am also focused on growing the use of knowledge management (KM) by providing KM best practice information to the workforce. Since we are asking those in the agency to change the way they use data, we've got to give them the resources to be able to do that. I can't tell somebody to do something if I'm not going to give them the training or tools to do it. We're really focusing on ensuring that the workforce can meet these data demands that we're putting forth.

We are also working across our cyber and business data custodians on how we can exploit our data to our mission partners in a secure and ethical manner. This will increase our data sharing opportunities to our DoD partners and elevate their ability to make decisions from the data we can provide.

What are your top management challenges that you face in your position and how are you addressing these challenges?

With our first 100 days behind us, I'm at the point where I can take a step back and reflect on challenges we've encountered and pivot our responses to them. Acquiring the right resources from the beginning is a key challenge. We had to solicit data governance support resources and we wrote some documents with the words of an established CDO entity. We quickly learned we needed to pivot and adjust the support that was needed in the first phases of building this office.

The next challenge was the importance of communicating to the workforce. The CDO team is about innovation and not disruption. We are not here to completely turn data use upside down but to see how we can mature with our use of data—illustrating the case for change to them. This is very exciting. I'm so thrilled to be able to craft something out of nothing. It took about four months for us to create the plan and begin implementing that plan for the office. Though it may be very challenging, I very much enjoy watching things grow and seeing the need for a CDO component in DISA. Seeing it fulfilled has been a real privilege.

Would tell us more about DISA's data strategy and your key implementation priorities?

We are currently drafting and finalizing the DISA Data Implementation Plan, which is our data strategy to meet the DoD CDO Data Strategy and our DISA Strategic Plan. DISA Director Lt. Gen Skinner and DoD CDO David Spirk have laid out our strategies. Now it is up to the DISA components, OCDO included, to map the implementation plan to meet that strategy. Our key implementation priorities include the exploitation of DoD data across the DoD in a secure and ethical manner. We need to harness that data and share that information to the warfighters that need to make actionable decisions.

In the DISA Strategic Plan, data is outlined as line of effort #3; titled leverage data as a center of gravity. Accelerating data managed projects across DISA and the DoD is a large internal driver to collect and analyze data. Also on our radar—finding where data lives are, who the data steward is, and where we have deficiencies.
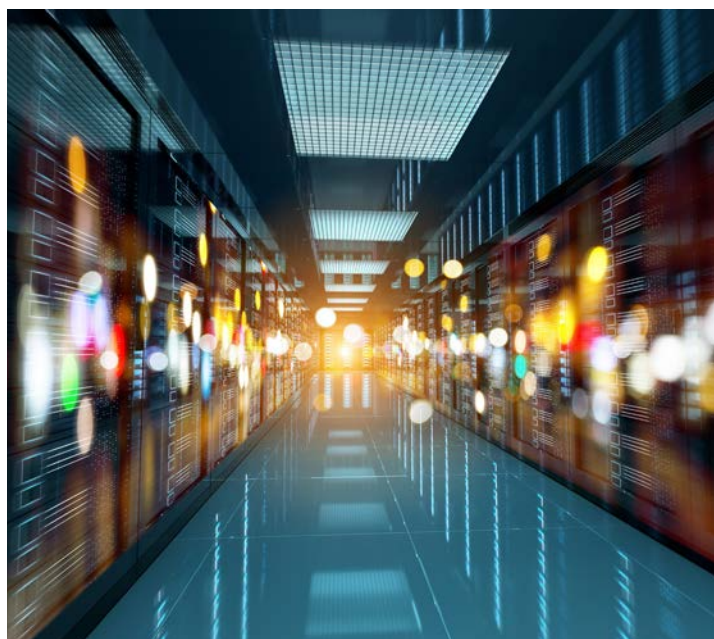
The DoD has worked in data silos for decades. This has led to the workforce of hoarding data and having a massive amount of redundancy data out there. We are looking to integrate those silos together, consolidate where data lives, and create a balance of governance and polices to increase data quality.

External trends are also an influencer. Look at how popular the CDO conversation has become in the last five years. We see how industry in changing the way they view data and the value of it, and we are right along with them. Extracting that value and using it to find gaps is where we see our paths converging. The DISA Strategic Plan says, "Leveraging cyber, business performance, and analytical data encourages our total force and mission partners to accelerate innovation by exploiting untapped efficiencies." And that is exactly what our focus is.

What are you doing to advocate for and support the DoD enterprise in thinking differently about data? What does this entail?

This is an area that I see being the big rock for all new CDO offices and data focus efforts. The DoD has always had the mission of keeping information safe from adversaries and based on "need to know" status. This has led to disparate, distant, and disjointed data efforts internally and externally. While the security of our data is important, we must expand the minds of the DoD workforce to want to share data in that secure and ethical manner.

Looking at data as an asset—as a tangle tool for DoD to capitalize on to enhance our mission effectiveness—is the mindset we are trying to craft. We are trying to craft a data-centric mentality, inspired by insights from General James Mattis, focusing on "what do I know, who needs to know, and have I told them." This is what I am communicating across DISA. This entails loads of effort and evangelism from all areas of the workforce. We must provide robust training for the workforce to reengineer the culture to become

data centric. This will really help us all to understand the true lifecycle of data into knowledge and how we can help manage that entire lifecycle.

What are some of the key challenges to transforming the DISA culture towards a more data-centric one that looks at data as a strategic asset, but makes sure that it's discoverable, accessible, and decision-enabling?

A key challenge that I always come back to is walking that line of risk and innovation. As DISA and our workforce matures with how we are changing some of the business strategies used for our capabilities, we will take risks to achieve innovation. We need to carefully craft and weigh these risks to ensure our investments and missions are supported and to enhance our day-to-day decision-making.

Changes to procedures and operation procedures can also be challenging. I had the privilege to work with a woman who has been a pioneer in the data world. She advised to not use the word change but use the word evolve or mature, because humans are nervous about change. Which is true! If we were to begin talking about all the changes to our business operations or our defensive cyber postures, we would be met with total apprehension.

One other key challenge is time. We are focusing on achieving small wins to provide that proof of value to leadership and the workforce that data management and knowledge management will drive efficiencies. Getting to a data maturity level where we can be trusted as an influencer will take time and lots of foundation work that isn't as fast or flashy as some other efforts.

Would you tell us more about yourself and your career path?

I've been with DISA for about fifteen years working in various areas of the agency. I started in DISA Oklahoma City providing office, mobility and operations support. My family and I moved to Fort Meade about five years ago, when I began learning the business side of the agency. I've always asked "why?" about everything and that has helped me in my advancement. I am always trying to push for people to collaborate more and share data more. It has also given me the opportunity to learn a little about all the different services and areas of the agency.

DISA is a very important supporter of the DoD mission, and I couldn't be happier to be part of that. My career path is to continue solving problems and providing value where I can. I do have the desire to advance but continue focusing on where I can best provide value for the DoD.

What has surprised you most since taking your role?

There have been surprises around every corner. The buy-in from leadership and the workforce has been a very pleasant surprise. It was that collective desire to assist in building this office and the willingness to provide needed resources when we didn't have any. This really proves the importance of having a single data management component in the agency to pull efforts together.

To learn more about the Defense Information Systems Agency, go to disa.mil.

To hear the interviews from *The Business of Government Hour*, go to businessofgovernment.org/interviews.

To download the show as a podcast, go to PodcastOne or iTunes and search for *The Business of Government Hour*.

To view excerpts of the show, go to youtube.com/businessofgovernment.

Modernizing Financial Management Systems: Insights from Stacy Marcott, Senior Official Performing the Duties of the Chief Financial Officer, U.S. Department of Homeland Security

By Michael J. Keegan

Today, the nation faces a range of diverse threats and challenges. The U.S. Department of Homeland Security (DHS) continues to play a leading role in battling the pandemic, securing the border, implementing our immigration laws, strengthening the nation's cybersecurity, building greater resilience and preparedness, and so much more.

The third largest department in the U.S. federal government, DHS meets its mission with the dedication of more than 240,000 employees and an annual budget of $90 billion. One of its most important duties is to be good stewards of taxpayer dollars. To do that, the department continues to modernize its financial management systems. The objective is always to improve access to financial data across the enterprise and leverage that data to inform decision-making and resource allocation.

"Our financial management strategy has four core goals," describes Stacy Marcott, senior official performing the duties of the chief financial officer (CFO) at DHS. "First, be a workplace of choice for highly skilled and talented people delivering financial excellence. Second, revolutionize CFO business practices and systems to enable proactive decision support. Third, resource DHS based on mission requirements, priorities, and availability. Last but not least, provide evidence to DHS partners, Congress, and the public that we are good stewards of taxpayer money."

Stacy joined me on *The Business of Government Hour* to discuss DHS' financial management strategy and progress on its financial systems modernization (FSM) journey. We also addressed the U.S. Coast Guard's implementation of FSMS,

lessons learned and best practices in financial modernization, and hiring opportunities within her office. Underlying our conversation was the impact of COVID-19 on DHS operations. The following is an edited excerpt of our discussion, complemented with updated and additional research.

What is the mission of your office and how does it support the overall mission of DHS?

First, our mission is to safeguard the American people, our homeland, and our values. It's critical we secure and protect resources that allow Homeland Security to perform its mission efficiently and effectively. Therefore, we are fundamentally mission enablers. We support the department's frontline operators. This means getting the money to the right people, at the right time, who are in the right places.

DHS is a diverse organization composed of eight frontline components—Cybersecurity and Infrastructure Security Agency (CISA), U.S. Customs and Border Protection (CBP), U.S. Immigration and Customs Enforcement (ICE), Federal Emergency Management Agency (FEMA), Transportation Security Administration (TSA), U.S. Coast Guard (USCG), U.S. Secret Service (USSS), and U.S. Citizenship and Immigration Services (USCIS). About 94 percent of our budget goes to the big eight components.

We are the second largest revenue collector in the federal government after IRS. With such an expansive mission, the department also has a diverse set of financial systems totaling twelve separate systems, some with outdated technology. Some 240,000 people, including 43,000 active military personnel, are dedicated to executing the mission of DHS. This is done throughout the U.S. in 12,386 buildings and across fifty-nine countries.

What key challenges do you face?

Of our top three, the number one challenge is getting resources to support the growing mission areas. The scope of DHS continues to grow, especially in response to national emergencies, such as the pandemic and surge operations at the Southwest border. Many of these efforts require cross-agency collaboration, such as partnering with U.S. Health and Human Services (HHS). We've been given mission sets to lead unified coordination groups across the federal government in response to things that the administration wants us to help tackle. Multiagency operations are extremely challenging, given department restrictions on using resources for certain purposes.

The second challenge is attracting and bringing onboard the right talent and people. For me, it is essential to grow the pipeline of leaders for our organization and making sure they have the right skills. Third, and perhaps the most significant challenge, is the ongoing pandemic and working in a remote/hybrid environment. It's been a long, stressful two years for everyone. Here and elsewhere, it can be harder to show folks you care, harder to feel like a team, harder to communicate—harder to do everything. Dealing with COVID has made us stronger in some ways and enabled more flexibility. I've called it a social psychology experiment, whose longer-term impacts will become clearer over time.

So I encourage my team to be very adaptive. Because change is always difficult, you simply cannot communicate enough. The most important aspect of communication is listening. We need to mentally adapt and overcome. We need to work to get resources, training, and people in place to support our success.

What progress have you made modernizing agency financial systems?

Financial systems modernization (FSM) has been near and dear to my heart because we've lived it for the last nineteen years. It's been quite a long, bumpy journey, going around cliffs, up and down mountains, to get to where we are today. We've made a lot of progress on the FSM front. To date, we have consolidated twenty-two separate federal agencies—all with diverse organizations, missions, accounting, and systems. When we were formed, DHS itself had twelve diverse financial systems, many with outdated technology.

Most recently, U.S. Coast Guard's FSM Solution (FSMS) went live. DHS now has 40 percent of its spending flowing through a modern, integrated, financial system. Prior to that, two other components—Countering Weapons of Mass Destruction Office (CWMD) and the Transportation Security Administration (TSA)—migrated to a modern, integrated financial system. These were the first to go live on FSMS.

What lessons have you learned from your FSM efforts?

First and foremost, the FSM is a component effort. We help, guide, and bring tools, but most of the work will always fall on the component. It goes without saying that subject matter expert engagement early and often in the process is irreplaceable. Grouping all user testing at the end of the project is a recipe for disaster. User testing must be incorporated throughout.

One challenge we faced was migrating a massive quantity of old and often unreliable data. The migration was fraught with surprises. We performed five practice migrations before cut-over and still were often surprised and delayed by data anomalies during cut-over. Another key challenge involves a large, complex component—like the USCG, which has many business processes across many layers of the organization. It is almost impossible to uncover all the business processes. And those that are buried the deepest and arise at the last minute are the most difficult to migrate. Continuous SME engagement is key to quickly addressing these issues. Overall, change management is a challenge, although our old systems had shortcomings. Our users were familiar with them and knew how to make them work.

One key lesson learned from our implementations is that you can never do too much training. However, you can train too early. Getting the right training, to the right users, at the right time, is critical. In terms of timing, training just before go-live is critical along with post go-live hyper care support.

We've stayed in constant contact with the future system users, particularly over the last 100 days. USCG leadership had an excellent engagement plan that included multiple messages per week from their CFOs. Generating confidence in a successful migration is the most important thing we can do. It helps end users through the adaptation process. Doubt prevents them from taking the necessary actions to be successful—that is, preparing, accessing training, and engaging with information we send them.

What is the future of DHS' financial modernization journey?

We have planned migrations of the remaining agencies in FY24 through FY27. FEMA is 41 percent of DHS spending. Having every dollar of DHS spending flowing through a modern, integrated, financial system is very important to me because it will reduce the risk of waste, fraud, and abuse. It also better enables us to use financial reporting data to make data-driven decisions across the department. In turn, we become better stewards of taxpayer dollars.

What is your approach to hiring and training staff?

We have made employee development a priority, and the Office of Chief Financial Officer (OCFO) has channeled efforts through a dedicated Workforce Development Division (WDD). WDD has developed a robust array of training and developmental opportunities such as the Centralized Training Program, detail opportunities, internal and external leadership programs, and Career Path Guides. It is probably one of our smaller divisions within OCFO that is making a long-lasting impact on our workforce.

The Centralized Training Program delivers 60 distinct courses per year, covering a wide array of topics in technical, data analytics, leadership, and workplace skills. We focus training on competencies prioritized through the annual needs assessment. This is available to the entire DHS financial management community.

With many vacancies throughout the department, as well as our continued focus on professional development, staff can broaden their skill sets through detail assignments. We have leadership development programs, technical training programs, and career path guides in place for different functional areas. Having these assets in place illustrates our support for our employees to build their skill sets.

Technology expands training and developmental opportunities, improves efficiency and productivity, facilitates collaboration, and strengthens employee engagement across our CFO team. Building a workforce that embraces and applies innovative uses for technology remains a critical driver of future organizational capabilities. Partnerships are critical to continue to bring in fresh and innovative ideas to the organization, as well as to fortify our bench strength and skill sets.

How has COVID-19 impacted your operations?

I am proud to say that our financial operations haven't skipped a beat. While the pandemic may have caught us off guard, our workforce adapted overnight. I think the key challenge was the transition of our mindsets for all OCFO staff, including myself. Moving to a hybrid or fully virtual environment impacted everyone a little differently, but the workload never ceased, nor did the productivity. There was no change in the quality of our products. Our people really stepped up to the challenge, despite the uncertainty the last two years presented.

What leadership principles do you follow?

Leadership is about creating a positive environment where people can be successful and authentically themselves. I like to characterize my leadership philosophy as the ABCs of leadership. The "A" is your *attitude*—keeping it positive. Attitudes have the potential to build up or tear down the success of teams. We all know a negative attitude can spread across an organization. You can build your teams with respect by keeping things positive.

"B" is for be *bold*. Look for gaps, or places where you can be helpful, and take the initiative to fill those gaps. You need to step outside your comfort zone. Being *bold*—looking for gaps and not waiting for tasks to be given to you—is probably one of the characteristics that I value most in any employee.

The "5 Cs" of leadership are about building *connections* with people. Leadership is not about control, power, or job title. It's about building positive relationships with people. Leaders spend 70-90 percent of their time in group or team interactions every day—not working on spreadsheets or creating pivot tables.

Communication and leadership are joined at the hip. The challenge with communication isn't one of quantity—it's a quality issue. The most important part of communication is listening—listening with quality, which is extremely hard in the virtual environment.

Collaboration is critical to create a shared understanding of issues, as well. This is foundational for future action. You can't stay stuck in a silo if you want your team to be successful. Problems today are multifaceted, so good leaders are skilled facilitators who focus on getting problems out of their workers' ways. When my Director for the Joint Program Management Office (JPMO) comes to me and says that

he isn't getting something he needs, I often can't solve the problem by myself and have to collaborate with other lines of business (LOBs) or even a component.

Also, leaders *cultivate curiosity*. Again, don't be satisfied with the status quo. It is about asking the "why" behind something—and not being afraid to ask. Leaders need to create an environment where people feel safe to try new things—where failure is a learning experience, not an embarrassing one. You will create more curiosity because people will want to think of new and better ways of doing business.

> To learn more about the Department of Homeland Security, go to dhs.gov.

To hear the interviews from *The Business of Government Hour*, go to businessofgovernment.org/interviews.

To download the show as a podcast, go to PodcastOne or iTunes and search for *The Business of Government Hour.*

To view excerpts of the show, go to youtube.com/businessofgovernment.

Perspective on Leading through Uncertain Times

By Michael J. Keegan

Leaders benefit from being grounded, mindful, grateful, and ruthlessly consistent in everything they do.

My goal each week on *The Business of Government Hour* is straightforward: to interview key government executives and thought leaders who are tackling significant challenges and seizing opportunities to lead.

To complement these examples of leadership in action, the show also highlights the practical, actionable research done by some of the most recognized and respected thought leaders. To that end, I have dedicated a series of shows exploring the qualities, tools, tactics, and mindset that leaders from all sectors may need to navigate unsettling times and transform order out of chaos.

It is from this rich library that I draw on the insights from five authors I have had the pleasure of interviewing over the last several years. These authors—Bob Rosen, Jacqueline Carter, Chester Elton, Michael Canic, and Margaret Heffernan—have helped me recognize and understand that leaders benefit from being grounded, mindful, grateful, and ultimately, ruthlessly consistent in everything they do. This perspective ends with a focus on leadership as a creative act.

Being Grounded

Bob Rosen

Leaders who pay attention to their personal health have clarity and honesty about who they are and what they can accomplish.

Confronted by disruptions such as the pandemic, many of today's leaders find themselves ill equipped to manage the hazards they now face. The gale force winds of change add layers of uncertainty and frustration, but they also underscore the need for effective leaders to be grounded.

Bob Rosen, author of *GROUNDED: How Leaders Stay Rooted in an Uncertain World*, joined me on *The Business of Government Hour* to explain the importance of being a grounded leader.

Using the metaphor of a large oak tree, Rosen posits that the only way a leader can withstand the winds of change is by relying on their healthy roots. The roots of the tree represent what is inside a leader in terms of values, beliefs, experiences, emotions, and thoughts that define who one is as a person and a leader. Rather than examining only performance outcome metrics, grounded leaders focus on the question "Who are you?" Effective leadership requires a deep, holistic approach to personal and organizational excellence. The bottom line is that leadership is personal, and who we are is a function of how we're grounded.

When people focus on the roots of who they are, they are better able to align their personal emotions and thoughts with their behaviors. Leaders who pay attention to and develop the roots of their personal health have clarity and honesty about who they are and what they can accomplish. The result is a leadership that is highly personal, deeply grounded, and strong enough to handle the pressures of relentless change.

> You can listen to the complete version of my interview with Bob Rosen, author of *GROUNDED: How Leaders Stay Rooted in an Uncertain World,* at https://www.youtube.com/watch?v=FvXNCdX0Fx4&t=4s.

Being Mindful
Jacqueline Carter

Leadership pioneer Peter Drucker said, "You cannot manage other people unless you manage yourself first." Jacqueline Carter, co-author of *The Mind of the Leader,* agrees and joined me on *The Business of Government Hour* to affirm how leadership starts with yourself. More specifically, it starts in your mind. By understanding how your mind works, you can lead yourself effectively.

By understanding and leading yourself effectively, you can understand others and be able to lead them more effectively. And by understanding and leading others more effectively, you can understand and lead your organization more effectively—and by "more effectively," Carter means in a way that is going to tap into your own and your people's intrinsic motivations and sense of purpose.

Based on the research documented in their book, Carter and her co-author conclusively found that mindfulness stands out as foundational for leaders today. Mindfulness means paying attention, in the present moment, with a calm, focused, and clear mind. Carter says it allows a leader to be present and attentive to what really motivates the people they lead.

Mindfulness allows a leader to be present and attentive to what really motivates the people they lead.

There are two key qualities of mindfulness—focus and awareness. Focus is the ability to concentrate on a task at hand for an extended period with ease. Awareness is the ability to make wise choices about where to focus your attention. Optimal effectiveness is achieved when you're simultaneously focused and aware. After you have cultivated a greater ability to "be here now," Carter offers two ways you can apply mindfulness toward enhancing leadership effectiveness: creating personal "touchpoints" and doing less by being more.

According to Carter, it's about creating human connections to strengthen engagement and increase performance. Leaders have a choice. They can rely on the built-in structures of command and control, or they can facilitate true connectedness, meaningful work experiences that enhances engagement and improve performance. Despite distance, digitalization, and disruption—mindfulness can become the glue that creates true human connections.

You can listen to the complete version of my interview with Jacqueline Carter, co-author of *The Mind of the Leader,* at https://www.youtube.com/watch?v=i9aOsA4WtZI.

Being Grateful
Chester Elton

For leaders wanting to attract and retain exceptional talent and better engage their people, authors Chester Elton and Adrian Gostick say the solution might be right under their noses. Showing gratitude to employees is the easiest, fastest, and most inexpensive way to boost performance and transform the way organizations operate.

Leading with Gratitude is filled with practical advice and insights on how to incorporate gratitude into how one leads. COVID-19 and the pandemic response along with the personal and economic impacts of both have really changed the leadership calculus with much discussion on the importance of resiliency and flexibility. Along with being flexible and resilient, leaders must also recognize how this "new normal" is affecting their staff. It is about navigating this uncertain time by emphasizing the importance of expressing gratitude towards those who work, day in and day out, to execute a leaders' vision.

Chester Elton joined me on *The Business of Government Hour* to discuss their book and underscore how leading with gratitude can help both leaders and staff make it through uncertain times.

Elton identifies seven ingratitude myths that are holding leaders back from recognizing the power and value of

Making human connections and helping employees feel valued is the job of leaders.

gratitude. These myths create what the authors call the ingratitude gap that chasm between awareness of gratitude's benefits and the failure of so many leaders to show it properly causing them to withhold thanks when it could be a strategic differentiator.

Every small step toward an organization's goals and values is worthy of acknowledgement. The ongoing, cumulative effect of small outcomes can be significant. Research finds the single most important factor in boosting motivation in the creative process is when employees feel they are making daily progress in meaningful work. One of the most distinctive attributes of great leaders is they notice and express appreciation for small-scale efforts as much as they celebrate major achievements. This allows them to find ways to inspire all their people to stretch and grow.

By checking in with people and helping them see they've made appreciable progress each day, leaders can boost energy levels considerably. Frequent gratitude also gives team members perspective that setbacks aren't the end of the world and can point out achievements—even small ones—they may have overlooked. Rewarded behavior gets repeated. Delaying expressions of gratitude prevents effective positive reinforcement. Gratitude does not get old if it's aligned with what the leader and the team value most.

The most important take away of all is that leading with gratitude isn't just about being nice; it's about being smart—really smart—and it's a skill that everyone can easily learn. For some leaders, learning to practice the soft stuff like this might feel too mushy and touchy-feely. But making human connections is the job of leaders, and helping employees feel valued and providing a little boost of joy at work can make a huge difference.

> You can listen to the complete version of my interview with author Chester Elton, *Leading with Gratitude,* at https://www.youtube.com/watch?v=dAy9h-msyQg.

Being Ruthlessly Consistent

Michael Canic

This year's unprecedented turmoil has put every leader to the test. The need for focus, alignment, and execution is greater than ever. To adapt, it takes more than just the will to win. It demands the will to do what it takes to win. This is no time for wavering or wobbling. This is a time for ruthless consistency.

To be ruthlessly consistent, an effective leader must do three things according to author Michael Canic: Develop the right focus, create the right environment, and build the right team. Most of all, leaders must do all three consistently. Canic joined me on *The Business of Government Hour* to explore why leaders should pursue ruthless consistency.

He notes every case of failure he came across could be traced to inconsistency. He saw unsuccessful companies forming quality improvement teams but didn't give people the authority to make changes. They set goals but didn't provide the resources to achieve them. They promoted quality, but if managers hit their financial targets, then quality did not matter. The difference between success and failure was ruthless consistency.

During our conversation, Canic offered the following advice to become a ruthlessly consistent leader:

An effective leader must develop the right focus, create the right environment, and build the right team.

- Developing and sustaining the right focus is key to being a ruthlessly consistent leader. Be sure that everyone in your organization understands what you're striving to accomplish, why you've chosen those goals, and how you plan to reach them. Communicate clearly on what you expect of each of your team members to get there.

- If you create the right environment, you're providing a space that enables your team to perform at their absolute best. An ideal winning environment is one in which employees feel equipped, coached, supported, and valued.

- Choosing the right team is critical to a winning strategy. Focus your hiring efforts on more than just knowledge, skills, and experience. Be sure to look for the traits associated with winning in potential employees—like taking initiative, persevering through challenges, and being resilient in the face of change.

As a leader, you need to have the right commitment to being ruthlessly consistent. For Canic, ruthless consistency doesn't mean robotic repetition. It's not about mechanical activity performed without variation or creativity. He is not suggesting we submit to the tyranny of consistency. It's more important to have a consistency of purpose that's constantly reflected in your decisions and actions. It means that everything you do is consistently aligned with your purpose and your intentions. The relentless alignment of intentions, decisions, and actions is the foundation of success.

According to Canic, a ruthlessly consistent leader has an uncompromising commitment to their stated purpose. Fulfilling that commitment requires a leader to understand, encourage, and reinforce the human spirit, not squash it. Make no apologies for ruthless consistency. It doesn't mean being inflexible or inhuman. It means being committed and effective.

> You can listen to the complete version of my interview with author Michael Canic: Develop the right focus, create the right environment, and build the right team, at https://www.youtube.com/watch?v=PlXvbT5KlvI.

Leadership and Creativity

Margaret Heffernan

In her book, *Uncharted: How to Navigate the Future*, Margaret Heffernan noted that the "work of artists endures because they dare to imagine what they can't see and allow their minds to leave predetermined paths." I had the pleasure of interviewing Margaret on *The Business of Government Hour* to discuss her book and the many cogent leadership insights it offers. She counsels that though we may not all be artists we need their independence and stamina. Today's leaders can learn much from such wisdom, especially when leading in uncertain times where independence seems so sorely missing and stamina so integral to long term success.

Heffernan continues that if artists have the capacity to make work that defies time, it is because instead of trying to force-fit a predetermined idea of the future, they have learned to live productively with ambiguity, to see it as a rich source of discovery and exploration. "Instead of trying to reduce complexity," she points out, "they mine it, undaunted by contradictions and paradoxes."

I came across an interview with a medical doctor turned sculptor named Dr. Gindi. The insights she shares dovetail perfectly with those outlined in Uncharted and resonate more so because they come directly from an artist. I wanted to highlight some of them, all attributed to a very telling interview conducted by Grant Schreiber linked herein.

- Leaders [that] can perceive the world around them with a slightly detached outlook that considers themselves part of a broader reality, in a highly imaginary way. Then, on returning to reality, leaders can—like a sculptor's

Leaders are like sculptors who give life to an otherwise supine clump of clay.

mold that casts an artwork— authoritatively present bold, new ideas. With regular, critical self-reflection and creative destruction of the obvious, leaders can advance and create real value for many stakeholders—customers, employees, and investors.

- Leaders are like sculptors who give life to an otherwise supine clump of clay. Leadership is always nonlinear in the beginning and transformational at the end. If leaders adopt a combination of thinking and feeling—a process that allows creative intuition into a business—they can achieve ongoing creativity and sustainability.

- Art can shock while it speaks to the observer. When explaining things to a broader audience, leaders should take care not to appear to be promoting a fantasy, but rather, persuading and enlightening.

- Real leaders strive to create value that lasts a very long time—even forever. They should inspire others to launch themselves rhapsodically into the future while remaining predicated in the present. Leaders need to sail ahead, testing the winds, currents, and tides of these challenging times.

Going Forward

Leaders are responsible for envisioning, shaping, and safeguarding the future, creating clarity amidst uncertainty. This is no small feat, and it is made increasingly difficult in the twenty-first century, where rapid, unforeseen change seems to be the only constant. We are in the midst of an exciting, engaging, yet trying period marked by uncertainty, significant challenges, undeniable opportunities, and indelible aspirations. Today's most effective government leaders can spark the imagination to look beyond the day-to-day urgencies and reflect on the serious problems and critical challenges they face and inculcating these four qualities may help these leaders be successful.

You can listen to the complete version of my interview with Margaret Heffernan, author of *Uncharted: How to Navigate the Future,* at https://www.youtube.com/watch?v=TlhJEcRcc_w.

Orchestration: A Key Framework for 21st Century Government Action

By Daniel Chenok

The collective response to COVID-19 over the last two years—and the emerging pattern of recovery from this unprecedented global pandemic—reveals little to no value in a sole actor response to twenty-first century challenges. Only through leveraging a mosaic of interests can most modern complexities be addressed by governments, often working with their partners in civil society, academia, and industry.

A strategy and roadmap to orchestrate players and systems now stands as one of the pillars of successful modern governance—orchestration similar to leading a great symphony from the conductor's podium, but with far more players and higher stakes. The orchestration needed for a digital age involves multiple levels of action, which fall into three categories: organizations, systems, and technologies. Here are key elements of this strategy, based on recent research from the IBM Center.

Organization

Many government programs involve supply chains for the production and distribution of goods, services, data, funds, and other public benefits. The national response to the COVID pandemic has included hundreds of federal, state, local, and private sector entities in the exchange and distribution of information, personal protective equipment, testing, and vaccine administration. The administration of these programs can be transformed by leveraging a "whole of government" scope and industry-leading supply chain management, as well as shared services business models to their delivery.

Through such a networked effort, individuals who step outside assigned roles and designations and join with others can bring their collective talent to bear on urgent problems. Greater networked response capacity will be necessary to improve future response capability. Expanding this capacity

> *To win on the future battlefield, governments must focus on gaining situational advantages—making decisions better and faster than the enemy.*

Daniel Chenok is Executive Director of the IBM Center for The Business of Government.

will require improved transparency and information sharing across levels of government and throughout the private sector.

In the context of national defense, a recent IBM Center report discussed how orchestration across organizations in the air, sea, land, space, and cyber domains—referred to as "Multi-Domain" or "Joint" Command and Control—enables governments and partner organizations to meet the challenges of twenty-first century engagement. To win on the future battlefield, governments must focus on gaining situational advantages—making decisions better and faster than the enemy.

MDC2, also referred to as Joint All-Domain Command and Control (JADC2), represents the operational vision of connecting sensors from all military services into a single, interoperable, actionable data environment. Following on the foundations of network-centric operations, MDC2 leverages data-centricity to include data interoperability across different sensors, communication, and processing capabilities, to produce effective command and control capabilities to ensure collective defense.

Data

Data gathering, analysis, and dissemination across multiple levels of government, and among international governments, can enable information sharing to enhance threat prediction and prevention in a global context. International stakeholders can increase the understanding of effective ways to leverage channels involving technology, human capital, organizations, and private sector coordination that meet strategic, mission, and operational needs. Governments can leverage data integration and analytics to support better decision-making around a range of mutual challenges, especially in cyber and homeland security.

Technology

To start, the application of artificial intelligence (AI) to address government challenges is a team sport. For example, AI can help predict and prevent harmful behavior and identify at-risk communities in real time. However, even with the most effective and accurate algorithms, only human actors can determine how to turn AI insights into action and identify a valid intervention that would not cause residual problems.

Other examples of this need to orchestrate AI strategies include leveraging data gathered by drones to narrow down the path of hurricanes, managing the influx of cybersecurity events and reviewing logs, and applying natural language processing (NLP) to analyze public comments in regulatory proceedings. AI can even predict where floods or saturation might occur and help manage levees, locks, dams, and critical infrastructure waterways. The application of this technology in the real world, however, requires an orchestrated action plan.

A particular technology that can strengthen supply chains involves blockchain, which enables a shared ledger to record the history of transactions with consistency and certainty across a network. In a blockchain business network, all parties to a transaction must give consensus

before a new transaction is added. Once recorded in the blockchain network, a transaction cannot be altered. Blockchain eliminates or reduces paper processes—speeding up transaction times, increasing efficiencies, and building trust among participants to a transaction.

Finally, a hybrid and multi-cloud architecture can provide a consistent, standards-based approach to orchestrate development, security, and operations. This smarter architecture allows for workload portability, orchestration, and management across multiple environments.

Orchestration Relies on Open Strategies

Orchestrating across "open" systems that rely on data sharing can yield broader and deeper positive outcomes than "closed" systems that restrict access to internal data. But some question the security of open systems.

For example, in a world that has already witnessed the inadvertent exposure of sensitive military sites by technology as mundane as fitness apps, there is concern around how public data sources may be used by foreign adversaries to harm U.S. interests.

But the benefits of an open approach are clear. For example, analysts now leverage commercial data to understand changes happening at U.S. military bases and how that could affect national security. And there is a cost to not sharing data or working collaboratively. Because the resources of any single organization are inherently limited, pursuing responsible partnerships represents a viable path to realizing objectives that would otherwise be impossible. At a 2021 Roundtable that the IBM Center helped to drive, one government leader commented:

> *"Are we losing things by not collaborating or putting a choke or a governor on collaboration? I think the answer is yes. . . . I think you're starting to see a shift in organizational culture. There are use cases and considerations where opening up access to closed data is becoming common. We're starting to implement those mechanisms."*

A Path Forward

An action-oriented strategy can help governments orchestrate across functional communities—including mission leaders, engineers, and end-users—as well as reach out to their nonprofit, industry, and academic partners. An IBM Center report recently emphasized the importance of building partnerships with key organizations in the public, private, and nonprofit sectors. It focused on managing networks needed to drive such partnerships to overcome challenges by improving operations and service delivery. It also discussed steering outcomes across networks that lead to well-understood and measurable improvements in the health and well-being of the public.

Governments should consider these specific recommendations to orchestrate across networks:

- **A new organizational model** to effectively leverage state, local, and industry resources in a unified national response capability—for example, in combating national crises like Covid-19

- **A robust and well-integrated planning and governance framework** that would align and coordinate these interests throughout the lifecycle of response activities

- **Addressing data challenges** through cross-agency and intergovernmental data standards and integration

- **A cultural shift** to tackle issues on a whole-of-nation basis

Governance, Standards, and Shared Services Can Drive Effective Implementation of Zero Trust Strategies

By Margaret Graves

Federal agencies and their partners are engaged in a continuous and ongoing dialog about improvements to our cybersecurity posture. I am heartened by the fact that there is such continued focus on the topic and accelerated momentum in implementing improvements.

With the January 26th release of OMB Memorandum M-22-09, and the release of the National Security Network Advisory Committee (NSTAC) draft, Report to the President:

Zero Trust and Trusted Identity Management, I want to take the opportunity to emphasize certain recommendations from the draft report and to share what I am hearing from my colleagues in industry and government as to the challenges and opportunities associated with the implementation of zero trust.

The NSTAC draft report contains twenty-four recommendations and identifies nine of those as a priority for agency

> **66** *Governance . . . is key to a successful long-term federal enterprise implementation of zero trust.* **99**

Margaret Graves *is a Senior Fellow with the IBM Center for The Business of Government.*

implementation. The nine priority recommendations, from my perspective, fall into three categories: governance, standards, and shared services.

Keys to Zero Trust

It is important to address governance at the outset, as it is key to a successful long-term federal enterprise implementation of zero trust. The NSTAC draft report states the need to establish a whole-of-government approach and to manage implementation at an enterprise level, complete with all the expected governance elements. Those elements include, at a minimum, an enterprise program management office (PMO), a reporting and accountability structure, a unified plan, and oversight from appropriate stakeholders. If this structure is not in place, we risk the real possibility of agencies pursuing individual transactional improvements without the benefit of a clear vision.

In a conversation regarding this topic with Francis Rose on The Daily Scoop, I referred to the fact that there is already precedent for this enterprise model. The Continuous Diagnostics and Mitigation (CDM) program and its PMO were established within the Department of Homeland Security/CISA to ensure a set of cybersecurity improvements were met from a governmentwide perspective. The program was legislated by Congress, with appropriated centralized funding and a mandate to build an enterprise implementation plan inclusive of all agency activity.

In addition, the CDM PMO executed a centralized acquisition strategy and established shared services for agencies to use. OMB and DHS held periodic progress reviews with agencies and reported to Congressional stakeholders as required. There is already a baseline of cyber reporting and what is added should indeed be minimal.

Both the Federal Information Security Modernization Act (FISMA) and the Federal Information Technology Acquisition Reform Act (FITARA) have recently been the subject of legislative revisions, so there is a very real and timely opportunity to rationalize all cyber reporting requirements, avoiding any additional burden and ensuring that all measures are congruent. Finally, all this activity must be underpinned by best practice frameworks, maturity models and playbooks, and ultimately codified in National Institute of Standards and Technology (NIST) standards.

A Long-Term Vision

Establishing governance, standards, and shared services will focus us on the long-term vision, but agencies are already in the throes of implementing the short-term requirements of zero trust. The DHS/CISA Zero Trust Maturity Model establishes pillars or areas of focus for zero trust implementations. Those pillars are identity, device, network/environment, application workload and data.
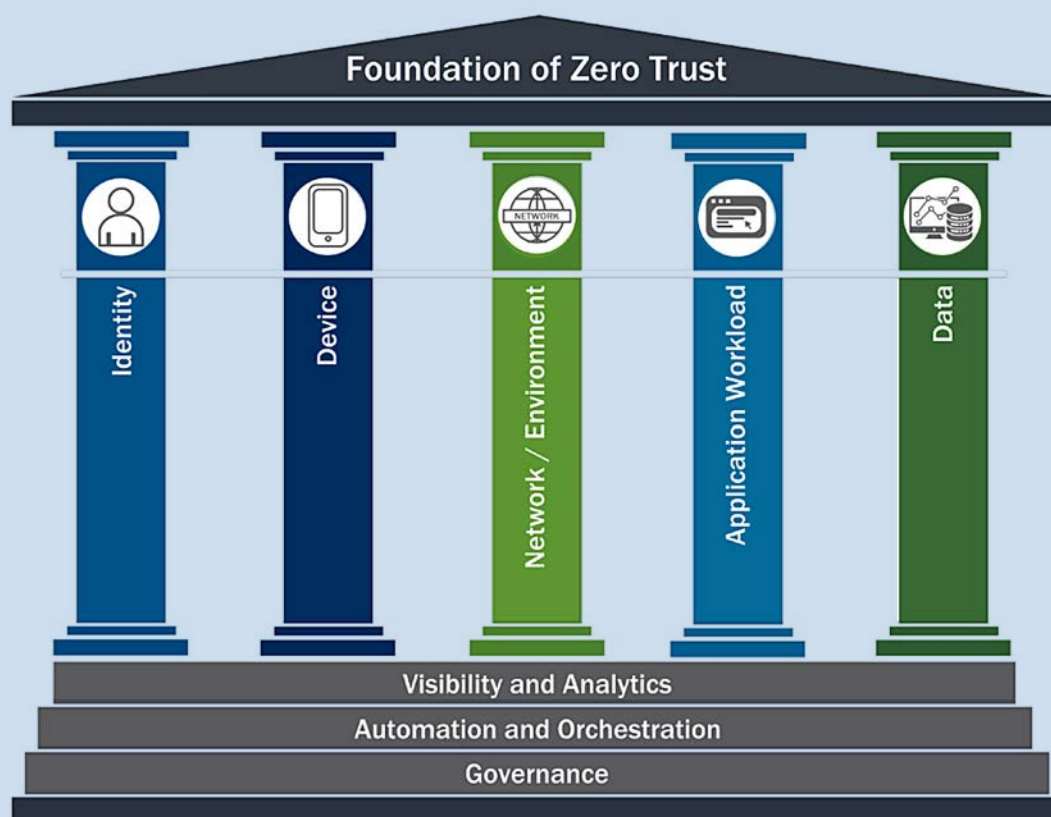
CISA Zero Trust Maturity Model does not prescript a starting point, and indeed every agency will be developing a roadmap based on its legacy environment and a risk-based assessment of opportunities to rapidly improve cyber posture. In addition, the maturity model does not imply that these pillars should be addressed in a stove-piped manner. Agencies should take advantage of ongoing cyber initiatives where investments have already been made while augmenting that activity with complementary projects that could enhance outcomes. Agencies can integrate cyber improvement initiatives across all the pillars by borrowing from the agile methodology and driving implementation across the domains through the application of use cases or user stories.

When you study the graphic representation of the CISA Zero Trust Maturity Model, you notice that the two pillars that "bookend" the model are "identity" and "data." In discussions with my government and industry colleagues, a common theme emerges of identity, data, and the intersection of the two elements being key.

The Bottom Line

Zero trust has at its center the concepts of data architecture and identity and access management. The incorporation of the principle of "least privilege access" requires that agencies understand their data and data flows, and how employees, external partners and customers interact with that data. This fundamental foundation must be established to correctly classify the protection level required for data and to develop appropriate fine-grained permissions for access. This foundation is also necessary to take full advantage of the tools and analytics that can accelerate and augment the implementation of zero trust.

Most importantly, establishing an effective data architecture and identity and access management ruleset is work within the purview of the agency personnel who best understand the mission and data within their portfolios. My observation is that most agencies have not completed this work in its entirety, but must do so to move forward with speed. The good news is that the Foundations for Evidenced-Based Policy Act has already established the imperative for CIOs, CDOs,

Foundation of Zero Trust

Identity | Device | Network / Environment | Application Workload | Data

Visibility and Analytics
Automation and Orchestration
Governance

Source: This illustration was inspired by Figure 1 of the American Council for Technology (ACT) and Industry Advisory Council (IAC) "Zero Trust Cybersecurity Current Trends," (2019). https://www.actiac.org/system/files/ACT-IAC%20Zero%20Trust%20Project%20Report%2004182019.pdf.

and program executives to work together to understand and make best use of their data for policy making, mission execution, and program performance/management. In parallel to establishing a data and access baseline, agencies can take best advantage of technologies and toolsets to improve operational cybersecurity.

Effective Implementation

Some examples of technical approaches and tools available to agencies to enable implementation include:

Data discovery and classification tools and technology that assist with establishing data provenance and tracking data flows. Dynamic, automated data discovery and tracking highlights the behavior and flow of data and allows agencies to understand how the data is accessed and used by agency personnel and customers/citizens. Data tracking uncovers areas of vulnerability that should be addressed to enhance data loss prevention programs, and prevent inappropriate access and improper data exposure. The study of data use patterns also gives agencies visibility into how the data is morphed and changed through use in mission processes and identifies areas where multiple data stores of the same data can be reduced.

Identity proofing that incorporates biometrics and behavior. Companies and government entities are increasingly turning to algorithms and artificial intelligence/machine learning to curate digital footprint data from multiple sources—i.e., multifactor authentication (MFA) to result in a confidence factor score of an individual's identity. These tools gather multiple data points based on biometrics and behavior. For example, online behavior follows patterns based on an individual's professional activities. If that behavior changes, that identity may have been compromised.

Conclusion

Federal agencies can start with the basics of understanding their data portfolio and integrating that data with appropriate access. It is the most cost-effective way to gain traction. This is not glamorous work, but it is key to success. At the same time, an overarching governance approach needs to be established to integrate and guide all agency activities for long-term success.

An Opportunity of a Lifetime: Unexpected Monies to Address Long-Standing Needs

By John Kamensky

A blockbuster, one-time-only pandemic-driven grant of $350 billion to states and localities has created an opportunity of a lifetime to make investments in longstanding needs. Will officials be up to the challenge?

States and localities imposed austerity measures in the early months of the pandemic as sales tax revenues plunged and they faced unprecedented unemployment claims. Their spending dropped 6 percent on an annual basis in the second quarter of 2020. This was the biggest decline in nearly seventy years, and it continued to drop. Florida, for example, projected a $2.7 billion budget deficit at the end of 2020.

In March 2020, Congress provided states and localities $150 billion in stopgap funding to battle the coronavirus as part of the larger $2.2 trillion Coronavirus Aid, Relief, and Economic Security Act (CARES Act). These funds were targeted to mitigating costs of the public health emergency created by the pandemic and had to be spent by the end of 2021. But states and localities continued to predict dire financial circumstances. By the end of the year, they had hemorrhaged 1.3 million jobs, mostly in education.

In March 2021, as part of the $1.9 trillion American Rescue Plan, Congress provided a second fiscal infusion of $350 billion to states and localities via a new program—the Coronavirus State and Local Fiscal Recovery Fund. This program provides states and more than 19,000 localities the greatest fiscal flexibility since the General Revenue Sharing program in the 1970s. These new monies are equivalent to 5 to 23 percent of a state's annual budget, depending on the distribution formula, and averages nationally about 8.5 percent. For many localities, the funds are equivalent to 25 to 50 percent of their annual budgets, according to the Brookings Institution.

According to the U.S. Treasury, which administers this program, this historic windfall is intended to "help turn the tide on the pandemic, address its economic fallout, and lay the foundation for a strong and equitable recovery." There is substantial flexibility in how these funds can be used—a flexibility unseen in federal grants since the 1970s.

What is the Coronavirus State and Local Fiscal Recovery Fund?

The Recovery Fund's main purpose, according to one of its architects, Gene Sperling, who is now the overall White House coordinator for the implementation of the broader American Rescue Plan, is based on a lesson learned in the 2009 Great Recession: that a broad economic recovery isn't possible without fiscally healthy state and local governments. The main purpose is to allow them to avoid painful budget cuts and layoffs.

Recovery Fund monies can be used for more than just revenue replacement or to mitigate the impact on local economies and individuals (such as rent relief or pay boosts for essential employees). States and localities can also use the funds to provide services to communities disproportionately affected by COVID-19, to expand access to broadband, and for other longer-term investments such as water and sewer infrastructure. The program's chief goal is to lay a foundation for a systemic, strong, and equitable recovery.

> 66 *The fear that the massive influx of federal aid would be wasted or would primarily be used to balance budgets or cut taxes seems to be unfounded.* 99

John Kamensky *is Emeritus Senior Fellow at the IBM Center for The Business of Government.*

Allowable Uses for State and Local Fiscal Recovery Funds	
Replace lost public sector revenue	Recipients may use funds up to the amount of revenue loss for services traditionally provided by recipient governments.
Support the COVID-19 public health and economic response	Recipients can use funds to address economic harms to households, small businesses, nonprofits, impacted industries and the public sector, including populations or groups experiencing disproportionate impacts.
Provide premium pay for eligible workers performing essential work	Eligible workers are generally those working in-person in key economic sectors who are below a wage threshold.
Invest in water, sewer, and broadband infrastructure	To improve access to clean drinking water, support vital wastewater and stormwater infrastructure, and to expand affordable access to broadband internet.

Source: U.S. Department of the Treasury (January 2022). Coronavirus State & Local Fiscal Recovery Funds: Overview of the Final Rule. pp. 6-7.

While the potential uses of the Recovery Fund are broad, there are several specific restrictions—the monies cannot be used to replenish under-funded pension funds, or "rainy day" funds, or to cut taxes.

Interestingly, Treasury's guidance on allowable uses specifically encourages building state and local capacities to develop and use evidence and data to better manage their overall performance. The guidance notes: "State, local, and tribal governments may use payments from the Fiscal

Recovery Funds to improve efficacy of programs addressing negative economic impacts, including through use of data analysis, targeted consumer outreach, improvements to data or technology infrastructure, and impact evaluations."

In addition to flexible uses of various pandemic relief funds, the monies are distributed more broadly than any grant program since the General Revenue Sharing program of the 1970s:

States	$195.3B	Each state receives $500 million and the remainder is allocated based on its unemployment rate. On average, the funds are equivalent to about 8.5 percent of a state's annual budget, but the amount varies, ranging from 5 to 23 percent of a state's budget.
Counties	$65.1B	Each of the 3,006 counties receive funds based on either its share of the population or on the allocation formula used to distribute the Community Development Block Grant, whichever is higher.
Large cities	$45.6B	Each of 142 large cities receive funding based the allocation formula used to distribute the Community Development Block Grant.
Other	$44.0B	These remaining funds are divided among 19,000 communities. $24.5 is reserved for distribution to Native American tribes and American territories. The remainder is to be allocated to states to be distributed to what are called "non-entitlement" units of local government (under 50,000), based on size of population.

For the most part, half of these monies were distributed to recipients in May 2021. Most of the remainder will be distributed in May 2022.[1] These funds must be spent by the end of 2026—another lesson from the 2009 Recovery Act: unnecessarily short spending deadlines can result in projects that do not address longer term community needs.

Treasury Guidance on Uses and Reporting

How can we ensure this large infusion of funds is used wisely and in the spirit of the law? In April 2021, the Office of Recovery Programs was created and tasked with quickly designing the distribution, use, and accountability for this program. By law, the initial funds had to be distributed within 60 days after the law was signed. The first tranche of grant monies was distributed in May 2021 before official, final program guidance had been developed. This caused great uncertainty among state and local recipients—they feared spending the funds on new initiatives and then see these funds "clawed back" later when final guidance was issued and they find their initiatives were deemed as not being "allowable costs." As a result, states and localities were initially slow to spend the funds.

Treasury staff quickly scrambled to develop interim guidance before the funds were distributed in May 2021. When the final version took effect April 1, 2022, Treasury noted that this guidance "provides state and local governments with increased flexibility to pursue a wider range of uses, as well as greater simplicity so governments can focus on responding to the crisis in their communities and maximizing the impact of their funds."

The guidance creates different tiers of reporting and frequency of reporting. Recipients with more than 250,000 population have to submit "an annual Recovery Plan Performance report which will provide the public and Treasury information on the projects that recipients are undertaking with program funding and how they are planning to ensure project outcomes are achieved in an effective, efficient, and equitable manner."

These large recipients, as well as other recipients of awards over $50,000, are required to submit quarterly project and expenditure reports through the end of the program in 2026. Treasury created an electronic "submission portal" and templates to simplify reporting. The guidance encourages reporting the "amount of project funds allocated to evidence-based interventions." Smaller recipients (less than $5 million) do not have to submit plans or quarterly reports, but must submit annual reports on spending, including contracts or grants over $50,000, as well as descriptions of the types of projects funded.

According to *RouteFifty*, an online magazine covering states and localities, some small localities are foregoing the aid. "Generally they just don't have the infrastructure to support the reporting requirements required under the law," said Emily Brock, director for the Government Finance Officers Association. These include communities of 500 or less where most of the work is done by community volunteers unfamiliar with complex programs.

However, the value of these reporting requirements, especially by larger jurisdictions, will be to fill a blank space that existed after massive spending in 2009 under the Recovery Act: did the monies make a difference? The Recovery Act required detailed reports on spending, but not on whether the monies spent led to improvements. The Biden administration is encouraging recipients to use funding to stabilize their immediate need to support existing services but also to invest in longer-term recovery programs, in a sustainable and equitable manner. The reporting requirements for the Recovery Fund, according to an article in Government Executive, are envisioned to fill that blank space this time around.

Spending Advice from Experts

States and localities were initially unsure as to how they might handle this massive cash flow, especially since the original projections of large-scale revenue shortfalls from their own tax sources proved to be wrong and many had unexpected surpluses. The Urban Institute reported that tax revenues grew 17.3 percent in August 2021, compared to a year earlier. *RouteFifty* reported that some state lawmakers see this as a once-in-a-lifetime opportunity to invest in long ignored community needs "thanks to booming tax revenues and federal aid." An early study by the Brookings Institution of spending plans developed by large cities recommends they use some of these funds to develop comprehensive strategies to reverse decades of decline as a result of budget cuts over the years.

Bill Leighty, a longtime advisor to states and localities, sees them "awash in money" thanks to the federal Recovery Fund

and they are "struggling with how to spend it." His home state of Virginia received $4.3 billion and its localities have been allocated $2.9 billion on top of that amount. The City of Richmond's allocation, for example, is equivalent to 20 percent of its annual budget. So how should they approach spending wisely?

Leighty observes that most communities have created working groups to create consensus on priorities for spending. Many also have appointed an accountability officer to track spending. He recommends uses that will not create a long-term stress on budgets after the federal monies run out in 2026. For example, he recommends using funds to tackle deferred maintenance and invest in parks, recreation, and affordable housing—and not to hire more staff, since such positions would either have to be terminated or funded with local resources after the federal aid runs out.

Who Makes Decisions on How Funds Are Used?

At the state level, tensions arose over whether the governor or the legislature would have the authority to determine spending priorities over their portion of the grant monies. As *RouteFifty* notes, "You might think this would be the kind of question for which there would be a simple, standard answer." But no. In fourty states, the governor has authority to spend unanticipated federal funds without legislative approval, with some restrictions. The tensions are even starker in those states where the legislature is controlled by a different party than the governor, such as North Carolina.

At the local level, there is large variation in the extent to which city councils proactively seek citizen input as to spending priorities. *RouteFifty* writes that Alexandria, Virginia, which will receive about $60 million, is surveying residents for their input, using a range of approaches beyond traditional public hearings. In Charleston, West Virginia, community input in minority neighborhoods may lead to the expansion of a local food co-op and allowing food stamps to be used in local farmers markets to purchase produce.

Baltimore is a good example of how large cities are managing historic funding amounts. These monies total $641 million—$141 million allocated to offset budget cuts, the remaining $500 million to fund recovery programs. By the end of 2021, Mayor Brandon Scott's organized proposals for spending around five priority "pillars," such as equitable neighborhood development and clean and healthy communities. About one-third of more than 500 proposals came from city agencies; the remaining two-thirds from nonprofits. For example, the city health department proposed increasing vaccination rates by operating mobile clinics. The proposals then were integrated into the city council's approval process.

Where Are Funds Being Invested?

Treasury encourages states and localities to invest in "evidence-based" interventions where possible. However, Brookings saw few "transformational" investments in the early plans submitted to Treasury that would emphasize long-term support and build systems capacity.

At the state level, the National Association of State Budget Officers reviewed thirty-nine state plans publicly available as of October 2021. It found that these states had defined allocations for only about half their funds (as of August 2021): 32 percent to replace lost revenues, 16 percent to infrastructure, and 9 percent for public health priorities.

An October 2021 survey by the National League of Cities found that two-thirds of cities "expect to use American Rescue Plan Act money to cover lost revenues." It concluded that these funds helped localities to avoid painful choices, such as further layoffs of employees and cutting essential services. The second-most cited use of Recovery Funds was to ameliorate the negative economic effects of the pandemic to small businesses, households, and nonprofits.

Results for America, an advocacy and research nonprofit for more evidence-based government, reviewed 149 initial plans by large cities and counties that were submitted in August 2021 to Treasury. It found that about half were investing in

ways to engage their communities more meaningfully to determine funding priorities. For example, Cook County, Illinois, hosted meetings and conducted surveys with community-based organizations in historically marginalized communities, and created a process for ongoing engagement.

Localities with preexisting programs and priorities were able to move more quickly. For example, Detroit's workforce development initiative is using its funds to expand a preexisting "Skills for Life" pilot initiative to help individuals get ready for work. This program, run as a pilot for five years, was found to reduce poverty by 90 percent. Similarly, King County, Washington, had a preexisting Social Justice Strategic Plan that prioritizes homelessness as well as community health and equity. The goal is to report not just dollars spent but the results—whether people are better off and who is better off.

Conclusion

The bottom line, according to several experts, is that the fear that the massive influx of federal aid would be wasted or would primarily be used to balance budgets or cut taxes seems to be unfounded. For example, public finance expert Girard Miller, writing in *Governing* magazine, calls the State and Local Fiscal Recovery Fund an "unintended social science laboratory." He wrote, "It's going to be important for the state and local government community to be able to show politicians, pundits and voters that the federal money they received is mostly being well and wisely spent," and that serious studies of "outcomes" of these diverse experiments can show the funds benefited their most needy residents. As the quarterly spending reports become available over the course of this year, they will be a rich resource for researchers to make such assessments, and for states and localities to demonstrate that they can make a difference.

Footnote

1. Economically hard-hit states received their full allocation in May 2021, as did Native American tribal governments. As a consequence, as of August 31, 2021, a total of $240 billion had been distributed.

Toward an Intelligent, Agile, and Responsive Supply Chain

By Mark Newsome

The U.S. Department of Veterans Affairs (VA) has the daunting mission to provide health care services, benefits, and an honorable final resting place to those who served in the defense of our nation. That mission equates to over ten million veterans per year for the VA and hundreds of millions of dollars for medical and surgical supplies. The provision of care for this magnitude of beneficiaries requires supply chain solution that is intelligent, agile, and responsive to the needs of the organization to achieve cost and time efficiencies.

The COVID-19 crisis stress tested an already burdened medical supply chain system exposing difficulties in obtaining personal protective equipment and tracking of medical supplies. Prior to COVID-19 and as part of its supply chain transformation efforts, the VA chose to implement the Defense Medical Logistics Standard Support (DMLSS) system and other initiatives.

VA has several initiatives underway to modernize its supply chain and prepare for future public health emergencies. These modernization initiatives, considering the associated chronic delays and protracted struggle to succeed, give way to partnerships and ecosystems that can deliver effective technology platforms, robust cybersecurity, and proven change management approaches. The delays of current efforts in effect and by default signal a call for help to industry commercial-off-the-shelf providers to assist with thinking through the problem and assist with solutions.

Antiquated Inventory Management System is Challenge #1

VA's supply chain modernization efforts face enormous challenges to its transformation journey to be a lean and efficient leader. The goal is to develop an enterprise solution that achieves speed to market, scalability, security, technology prowess, and the stakeholder buy-in for a sizable, complex organization.

Among the most pressing of challenges is a true medical supply chain platform that seamlessly integrates the functions of procurement, asset and facility management, warehousing, and commerce—while seamlessly interfacing to the other enterprise resource planning (ERP) initiatives involving financial and health care systems.

At present, the VA is challenged to achieve consistent operational and business execution across its disparate systems today. The root of the challenges today revolves around "long-standing problems with its antiquated inventory management system [that] exacerbated VA's challenge [with COVID-19]."[1]

A 2016 study completed by the IBM Center for The Business of Government, in collaboration with Northeastern University, noted that the 1990s-era VA inventory management system—the Generic Inventory

> 66 *Those veterans who served in the defense of our nation must receive the right care with the right supplies delivered in the right quantities at the right time.* 99

Mark Newsome *is the IBM Center's Healthcare Fellow and an IBM Senior Partner, Industry Leader, U.S. Federal Healthcare Consulting.*

Package—proved so difficult to navigate that some employees chose to keep inventory on paper and entered the data later.[2]

This challenge represents a must-prioritize business opportunity for the agency and requires a strategy for information technology deployment that ensures success. To move from antiquated capabilities in place today to the leading supply chain of tomorrow, this requires both mission and funding priority if an intelligent, agile, responsive supply chain system is to be possible. It also requires a partner ethos to leverage market leaders and best-of-breed technologies to accelerate VA's supply chain transformation objectives.

A Call to Action

As with any sizable undertaking to deploy enterprise information technology systems in support of improved business or health care functions, technology is not the sole panacea. Decoupled from IT strategy and management, front-end change management and stakeholder buy-in, and investment prioritization, any technology deployment is destined to be a protracted, if not impossible effort.

The call to action for VA and industry resides at the nexus of supply chain deficiency and industry's mature supply chain

technologies with intentional leverage of partnerships and ecosystems, platforms, and cyber, and front-end change management. Ecosystems are now even more essential for success. The vital nature of these partnerships—between business and government, across industries, and even among perceived competitors—is the optimal path to innovate at non-negotiable pace and scale needed to serve veterans.

Successful assimilation of these approaches, ecosystems, and partnerships is critical. Those veterans who served in the defense of our nation must receive the right care with the right supplies delivered in the right quantities at the right time.

The Department of Veterans Affairs can and should leverage its commercial off-the shelf (COTS) in-hand industry supply chain leading capabilities and vendors to deliver transformative VA supply chain at pace, scale, and cost efficiencies desired of all stakeholders from Congress to the Veteran served. As of June 2021, the system designed, configured, and deployed by a strong VA program office supports:

1. 38 VA Medical Centers, VA Central Office, Office of Enterprise Asset Management, Office of the Inspector General, and more

2. 1.49 million assets distributed across 281,000 locations and valued over $5.2 billion

3. 144,000 end users who submit over 27,000 service requests per month

4. Management of over 91,000 work orders (preventive, corrective, emergent) per month

5. Capture and alignment of costs to work orders for 165,700 labor hours per month.[3]

Successfully leveraging a best of breed industry partner ecosystem ensures experienced, worldwide past performance and top talent combines to provide highest benefit to VA endeavors for an effective supply chain.

The VA can leverage an ecosystem partner to drive requisitioning through the purchase order creation and maintenance processes. Benefits to the VA include:

- End-to-end automated system that removes complexity and allows users to manage the acquisition processes on a single, integrated platform

- Electronic document creation (e.g., goods and services receipts)

- Email notifications to buyers and suppliers

- Single source of the truth in requisitioning and purchase order data and processes

Another key ecosystem partner could assist with prebuilt inventory management, warehouse, and distribution features. Some of the key built-in capabilities that will support the VA are:

- Warehouse management module enables VA to manage warehouse processes. This module has a wide range of features to support the warehouse facility at an optimal level, at any time. Warehouse management is fully integrated with other business processes, such as transportation, manufacturing, quality control, purchase, transfer, sales, and returns.

- Transportation management lets VA identify the most efficient vendor and routing solutions for inbound and outbound orders. For example, you can identify the fastest route or the least expensive rate for a shipment.

An integrated enterprise supply chain solution for the Department of Veterans Affairs requires a transformative cognitive dashboard that provides transparency and insight into all areas of its supply chain, shipping, and warehousing operation. Through existing and/or future partnerships, the VA can map and create visibility with the entire supply chain ecosystem of enterprise applications. Connecting these software solutions to the entire supply chain ecosystem will offer business insights, consolidated enterprise data and analytics reporting, and dashboarding.

A force multiplier in the form of a cognitive dashboard delivers predictive decision support, intelligence, and analytics. It is also the underpinning for intelligent workflows.

Intelligent workflows fuel responsive supply chains. They are AI-driven, embrace automation where possible, and facilitate horizontal integration and adjustments across functions, providing 360-degree visibility of the supply chain and potential disruptions. Intelligent workflows

ultimately generate value by reimagining the way work is done, adding AI and automation to everyday tasks, insights, responses, and actions. Intelligent workflows serve as the "center of gravity" to your supply chain, sitting at the nexus of five supply chain trends that can power responsiveness and flexibility.

To facilitate a complex ecosystem of integrations, implementation of an enterprise service bus (ESB) is necessary for everyday integrations between systems. It can help safeguard that the system can grow as the business requires. The ecosystem is largely modern and able to communicate from system to system, with the latest in communication standards supporting secure encrypted connection over web services as well as other integration and API methods. However, each system is still unique and requires a unique communication process.

The use of an enterprise bus will make system maintenance easier, and allow for rapidly built, resilient, fault tolerant data integrations, to name a few benefits. In cases where an enterprise service bus is not applicable to the business need, direct integrations can be built to support high volume batch or legacy systems. Additionally, the ESB will allow the VA to have a single point of integration for the enterprise and its external partners to connect to all systems related to the supply chain management tools.

The industry ecosystem of partners is charged with shoring up a platform for VA that provides the "now" need, but also remains scalable, secure, and dynamic to "future needs" and crises. This ecosystem must embrace continuous learning and mastery of VA technologies and requisite interfaces to adjacent and supporting systems that enable success across the entire value stream. The ecosystem of partners must be

active participants and, at times, owners in the change management process. Execution of change management is absolute for front-end consideration and deployment if back-end success is to occur within time parameters and achieve fluid sustainment.

Ecosystem partners must engage with a sense of urgency to deliver timely results for the benefit of end customers— veterans who have honorably defended this nation, and veterans who served with a warrior ethos.

Near Term Impacts

The VA initiated an investment in a successful deployment of an enterprise asset management software solution. Completing this deployment will bring immediate benefits to VA:

1. Realize a vision articulated over twenty years ago to retire dozens of legacy, distributed VistA applications with the market leading asset management platform.

2. Consolidate over 130 instances of the AEMS/MERS systems with a single repository, consistent data, and consistent work processes across the VA enterprise.

3. Provide VA leadership with timely and consistent visibility to VA asset data without requirements to operate and maintain a central data warehouse or initiate data calls to each medical center.

4. Expand the capability to analyze maintenance and asset performance to identify areas for systemic improvement based on a vast trove of consistent asset performance data.

5. Establish a baseline for expanded capabilities into additional business processes, organizational function, and supply chain enhancements leveraging modern technologies.

Conclusion

The Department of Veterans Affairs' mission to over ten million beneficiaries per year has an imperative to become a lean, efficient supply chain that is recognized by its peers as being among the best in health care. An effort that draws upon ecosystems, platforms, robust cybersecurity, and front-end change management—to facilitate the right care with the right supplies delivered in the right quantities at the right time for the right patient for those who have served in the defense of our nation—will make the VA's mission achievable and certain.

Footnotes
1. "VA COVID-19 PROCUREMENTS, Pandemic Underscores Urgent Need to Modernize Supply Chain." United States Government Accountability Office. June 2021. Accessed July 2021. https://www. gao.gov/assets/gao-21-280.pdf.

2. Cordell, Carten. VHA needs to fix its inventory management, here's 10 ways it can, June 20, 2016. Accessed July 2021. https://www. federaltimes.com/management/leadership/2016/06/20/vha-needs-to-fix-its-inventory-management-heres-10-ways-it-can/.

3. Mahon, Tom; Newsome, Mark. "Executive Summary: VALOR Strategic Direction Recommendation [Unpublished]." IBM. July 2021.

Delivering What Matters: Improving Government Service Delivery

By Matt Warshaw

Governments perform a number of important functions. However, almost all government functions can be boiled down to protecting people and helping people.

As the U.S. federal government has grown, much of its work has included analyzing, studying, and reporting on government policies—both creating new agency and governmentwide policy and looking back at the effects of these policies. Government agencies must also report out on their activities to Congress, the Government Accountability Office (GAO), the Office of Inspector General (IG), and several other state, local, tribal, and nonprofit partners. In effect, government agencies have built up large organizations to set policy, but many parts of the government lack the same ability to implement that policy in the form of citizen services.

After more than two years responding to the COVID-19 pandemic emergency, both through economic and public health outreach, it is clear that we need more focus on how

citizens receive services, as well as how the federal and state governments work together to deliver services quickly and effectively. Large stimulus programs, such as the Paycheck Protection Program (PPP) and the CARES Act, demonstrated the government's ability to distribute large amounts of money to businesses and individuals. It also exposed the complexity in creating services that are easy to use and accessible by all who need them.

Citizen services in the United States rely on a mix of state and local government funding and program execution, creating mixed results across programs. Social Security is held up as the gold standard by experts Pamela Herd and Don Moynihan as an extremely effective government program because there is minimal burden placed on the recipient. The Social Security Administration keeps track of wages earned, benefits received, and eligibility. The beneficiary simply needs to sign up online or in one of 1200 field offices.[1]

In their book, *Administrative Burden: Policy by Other Means,* Herd and Moynihan identify other governmental, civic, and health services that aren't as easily accessed as Social Security. For example, Medicare, Medicaid, and SNAP are not nearly as simple to navigate and universally accessed as Social Security. As a result, benefits go unclaimed and those benefits that are claimed often require significant time and effort to access. If government is to make good on the policies it sets out, these more burdensome programs deserve our attention, resources, and innovation.

In her article, "The Time Tax," reporter Annie Lowrey highlights one of Herd and Moynihan's most egregious cases. The benefits application for the State of Michigan's Department of Health and Human Services (DHHS) was previously sixty four pages long and asked invasive questions such as "Tell me the date of conception of your child." With the help of Civilla, a nonprofit design firm, the Michigan agency was able to:

Agencies afraid to change how they do business will need to become much more comfortable experimenting with how they deliver services, pilot various approaches, and measure impact.

Matt Warshaw *Studio Leader, IBM Innovation Studio in Washington D.C.*

1. Reduce application length by 80 percent, dropping the time it takes to fill out from fifty minutes to under twenty minutes.

2. Cut case processing time in half.

3. Reduce time spent correcting errors by 75 percent.[2]

Lowrey explains that poorly managed and unresponsive government programs harm those they are intended to serve. They also result in an erosion of trust and confidence in government. One way to alleviate these issues is to take a more human centered approach to designing government programs.

In redesigning their services, Michigan DHHS not only improved the experience for beneficiaries, but also improved internal efficiencies and reduced costs. So how did the form for Michigan DHHS's benefits end up clocking in at 18,000 words? According to Civilla, the form grew over the course of thirty years based on audits and lawsuits, new processes and policies, and potentially little user research to understand exactly what it felt like to fill out an 18,000-word application. Additionally, Michigan DHHS had tried to redesign the benefits application multiple times before, but no effort made it to completion.

Given the importance of government services to those who need them and the clear benefits of redesigning government services, why is it that every local, state, and federal government agency isn't redesigning services to improve services usage and delivery?

Governments around the world responded to the onset of COVID-19 with massive direct cash payments to individuals and businesses. In the U.S., the federal government greatly expanded the eligibility and added additional funds to unemployment insurance managed by the states. In European countries, governments were paying much of the salaries of employees who would otherwise be laid off.

Governments Should Take These Steps to Improve Citizen Services

Create Better Services
In early December 2021, the White House directed agencies to use technology to deliver services underscoring the vital importance of improving the customer experience when delivery services.[3]

Also in December, 2021, the acting director of OMB issued a memo underscoring the impartiality of inspectors general, but also the need for agency leadership to have a productive working relationship with IGs, specifically referencing the American Rescue Plan funding. Agency leaders should bring in IGs on their plans to reduce administrative burden, and where appropriate, work with Congress, GAO, and IGs to balance program risks with benefits.

Any agency that collects data on improper payments or misuse of government programs should also collect data on ease of use and eligible beneficiaries of those using the service.

Gain Leadership Buy-In

In their book *Power to the Public,* Tara Dawson McGuinness and Hana Schank explain that "a leader willing to worry about delivery is essential." Service delivery must be a priority of senior government executives. Released in December 2021 and signed by agency deputy secretaries, President Biden's Presidential Management Agenda Vision commits to delivering excellent, equitable and secure federal services and customer experiences. To continue to improve government service, leadership buy-in and incentives are essential.

Develop Skills

Starting with the U.K.'s Government Digital Service. (GDS), governments around the world have established digital services teams to help agencies more effectively leverage digital technologies to better serve their constituencies. To do this well, governments have recognized the need to diversify the skills it needs for this digital age. This includes hiring those with data science, customer experience, and services delivery skill to complement their public administration and public policy professionals.

However, an overfocus on policy does not create better government services. Francis Fukuyama notes that "being skilled in policy analysis is woefully inadequate to bring about policy change in the real world. Policy analysis will tell you what the optimal policy should be, but it does not tell you how to achieve that outcome."[4] How we achieve that outcome requires leadership and dedicated public servants with the right tools and skills.

Reduce the Risk of Negative Consequences

Fear of congressional investigation is a barrier to experimentation. This is the hardest to fix. There is incentive for those who don't like a program to make it burdensome and gum up how it works.

In December 2021, the White House released a report on improper payments for COVID relief funds,[5] explaining that improper payments had increased in the past year due to the increase in payments from new programs related to COVID relief. On one hand, government services should be easier to use and have a lower administrative burden. Yet improper payments from the government has also gone up when the government made programs easier to access.

Conclusion

Improving government services is not a new idea. Bill Clinton stood up the National Partnership for Reinventing Government, headed by then-Vice President Al Gore. George W. Bush created the President's Management Agenda—a document now central to how administrations manage government services. Barack Obama created the U.S. Digital Service and 18F, new government organizations dedicated to improving government service delivery.

President Joe Biden has released an ambitious plan to improve customer experience and reduce improper payments. Hopefully Biden will not only create a better customer experience, but also simplify the government benefits process wherever possible, removing the time tax that all Americans face and prevent those who need services the most from obtaining them.

Changing how multiple government agencies operate will not be easy. Agencies afraid to change how they do business will need to become much more comfortable experimenting with how they deliver services, pilot various approaches, and measure impact.

Footnotes

1. https://www.russellsage.org/publications/administrative-burden.

2. https://beeckcenter.georgetown.edu/wp-content/uploads/2021/12/Civilla-x-Beeck-Center_Final-Report-1.pdf.

3. https://www.whitehouse.gov/omb/briefing-room/2021/12/13/using-technology-to-improve-customer-experience-and-service-delivery-for-the-american-people/.

4. https://www.the-american-interest.com/2018/08/01/whats-wrong-with-public-policy-education/.

5. https://www.whitehouse.gov/omb/briefing-room/2021/12/30/updated-data-on-improper-payments/.

Managing The Next Crisis: Twelve Principles For Dealing With Viral Uncertainty

By Katherine Barrett, Richard Greene, and Donald F. Kettl

On January 21, 2020, the Centers for Disease Control (CDC) confirmed the first case of a mysterious disease with origins in Asia: it would come to be known as COVID-19. Within ten days, the World Health Organization (WHO) issued a global health emergency, followed shortly by restrictions on air travel. By February 3, the United States declared a public health emergency. In the ensuing months, more than 700,000 Americans died, while over five million people have suffered fatalities worldwide at the time of this report publication. In mid-summer 2021, the Delta variant of the disease emerged as far more contagious than its predecessors, even as experts hoped that the pandemic's remaining days could be counted.

Governments and societies continue to face the unforeseen and unprecedented challenges of responding to and recovering from the COVID-19 pandemic. This experience has pointed to the importance of well-managed actions at the local, national, and cross-border levels. Many of these steps address issues that are now well documented, including medical support for testing, contact tracing, and vaccine management; supply chain challenges around vaccine production and distribution; impacts on local job markets; and the importance of addressing equity in delivering needed social services.

When Uncertainty Mixes with Opportunity

One essential step to turning the pandemic crisis into something teachers call a "learning moment" involves identifying how governments at all levels might have better navigated the nation through a calamity the likes of which few living Americans can recall. America's unique form of government posed important challenges in combatting the virus—but it also frames important lessons for responding to future pandemics, as well as to a broad array of other and often unpredictable crises.

Katherine Barrett and Richard Greene *are currently engaged as Visiting Fellows at the IBM Center for The Business of Government; Senior Advisors, Columnists and Co-chairs of the Advisory Board for Route Fifty; Special Project Consultants at the Volcker Alliance; Advisors and Columnists for the Government Finance Officers Association; Senior Advisors at the Government Finance Research Center at the University of Illinois in Chicago; and Fellows at the National Academy of Public Administration.* ***Donald F. Kettl*** *is Professor Emeritus and Former Dean of the University of Maryland School of Public Policy. He is also Senior Advisor for the Volcker Alliance and Nonresident Senior Fellow at the Brookings Institution.*

As the nation transitions from the heights of the pandemic, an opportunity presents itself to go beyond that first step and reach the next crucial level: actionable steps that federal, state, and local governments can take in responding and recovering to future, if likely less widespread, traumas.

This report, assembled over the course of many months, addresses that goal of helping governments capture lessons learned for future action, relying not just on lessons from the pandemic but also from other tragic events of the near or intermediate past. Reflecting on this task, the report coins a new term for this moment when uncertainty mixes with opportunity: the "Pandoric," based on the ancient Greek poet Hesiod's mythic tale of the first woman on earth, Pandora. In this story, each of the gods presented Pandora with gifts of grace or beauty. One mysterious present, though, came as a dowry in the form of a large jar often used to contain oil. The jar was sealed carefully, but when her husband Epimetheus asked about its contents they opened it together. Out flew the pantheon of diseases, troubles, and worries that would forever afflict mankind. Once they had escaped, though, the box was not empty. Hope remained.

Lessons learned over that period can and should apply to the current crisis, and those that will inevitably befall governments at all levels in months and years to come. Twelve principles follow for confronting and softening the impact of the next trial. These principles are based on conversations with experts, insights gained from academic and popular study of the pandemic and other similarly unpredictable yet devastating events, and reliance on a combined 120 years of experience the authors have accumulated in researching analyzing and writing about government.

Discussion of the twelve principles form the large portion of this report. The first four principles address how governments can build partnerships, the next four how governments can manage networks, and the last four how governments can steer outcomes.

Four Principles for Building Partnerships

1. All crises are local—but there is wide variation in how localities respond. COVID showed that big crises inevitably start as local problems, and then percolate across borders in a way that proves a poor match for solving the larger crisis. Local governments—cities, counties, and states—must lead the response, but the federal government has a primary responsibility to devise strategy and coordinate across the country, because one community's problems can quickly become every community's crisis.

2. Centralized policy does not matter—if it does not get local support. COVID teaches that great expectations in Washington can evaporate without active partnerships to bring those expectations to life. Some partnerships must involve nongovernmental entities, like private companies and nonprofits, while others must involve state and local governments. The federal government's foremost responsibility in crises is not only to design policies, but also to design the partnerships required to bring those policies to life. The federal government can help lead the charge against a widespread crisis, but its primary responsibility often involves obtaining buy-in from and coordinating the efforts of states, counties, and cities.

3. Governments need a language to talk about crises—and the language is data. Data is key to understanding a problem well enough to develop a solution. But the various players responding to a crisis must be able to communicate with one another using consistent terms, definitions, and methodology for the data. COVID showed that data matter more than many government officials realized, and that data can help create a language for defining a crisis, laying out a plan for solving it and tracking success. The federal government must lead, with federal experts defining a common language to ensure coordinated communication about issues that matter—in a way that helps drive and track effective state and local action.

4. Emergencies are fought with goods, services, and logistics—but state and local governments cannot preserve supply chains alone. Solutions to many major crises, from wildfires to hurricanes to the pandemic, require assets like hoses, sandbags, masks, and vaccines. Large-scale crises often require large-scale mobilization of supplies and equipment; mobilization on a large, coordinated scale typically falls beyond the reach of even the largest of the nation's subgovernments. To achieve a rapid, effective response, the nation needs to rely on the federal government for creating and leveraging needed national supply chains. Central coordination for their procurement prevents the various players involved from competing against one another, which can lead to higher prices and unnecessary shortages.

Four Principles for Managing Networks

5. Governments must grow needed expertise—and wake from any delusions of confidence. Steering through complex crises—and the complex systems we need to tackle them—relies on people. The pandemic demonstrated an increasing shortage of the necessary personnel to deal with a health care crisis. The nation must develop better means for growing the next generation of experts in multiple fields who can serve in times of need. Listening to competing scientific views is not ever easy, but the more complex the crisis, the greater the need for insights from those trained to wrestle with them. The nation not only needs to find a place in public debate for experts, but also to build the people pipeline today to ensure a sufficient supply of experts now for the future.

6. Artificial intelligence and predictive analytics can help—there is no need to fly blind. Technology is a central element to solving most modern problems, though not the only element. Artificial intelligence can help governments to better understand problems and form solutions. The use of predictive analytics like artificial intelligence and machine learning could fuel far more useful strategies by experts.

7. Managing risks helps to avoid crises from getting unnecessarily worse. Unlikely events that have high potential consequences still require preparation. Risk management can help weigh the odds and spell out plans for future calamities. Risk management needs to be part of the basic game plan of every political leader. This does not mean that the leader needs to personally participate in and resolve every potential problem. But it does mean that the leader needs to be schooled in black swan events that might occur, to exercise responses for the events likely to demand attention, and to ensure that the team builds the capacity to act on even low probability events that could ultimately prove damaging. Risks must also be communicated throughout the organization and with the public so that they can be anticipated and addressed appropriately.

8. The key is networks—but they do not spontaneously organize themselves. When addressing a major crisis, organizing all the participants trying to respond is necessary. Unfortunately, these kinds of networks must be consciously formed—they do not come together spontaneously. Networks provide the core of the nation's response to any crisis of any real scale. Local governments, especially counties, often are at the hub of these networks. Planning for any emergency requires recognizing and acting on these two inescapable truths, before crises occur—and strengthening the capacity of the networks to respond to evolving crises.

Four Principles for Steering Outcomes

9. Solutions to crises require trust—but trust is hard-earned. When many people face great risk, they must trust those who lead response and recovery—or those interventions are severely impeded.

10. Experiments in the "laboratories of democracy" are great—but they are worthless without learning. States and localities often help find solutions by trying a variety of different approaches to solving a problem. But ignoring the lessons learned across the states makes their experiments less productive. Governments at all levels can develop a far more sophisticated approach that views federalism on a continuum between national control and local flexibility—and can then determine which kinds of crises call for which kinds of action. The more sweeping and devastating the consequences, the greater need for federal steering of state and local action.

11. The nation faces inequities—and the pandemic helped to make the effects of inequity more transparent. The pandemic revealed that without addressing social and economic inequities, disasters will harm huge segments of the population disproportionately—and that, in turn, can unravel the fabric of society. Heightened awareness may well lead to solutions at all levels of government, including sharing more resources with disenfranchised neighborhoods, hiring chief equity officers to keep issues of inequality in the forefront, ensuring that government data does not perpetuate racial bias, and using the power of public discourse soapbox to keep people from falling back into a state of ignorance. These actions are important far beyond COVID and can help to address problems of inequity during disasters and for obvious moral and ethical reasons.

12. Accountability is often the first casualty in a crisis—even when governments know the results of their efforts. Holding institutions and individuals' accountable helps ensure responsible actions. This requires knowing exactly how to define and measure success. Accountability is a bedrock problem in dealing with crises, and their growing complexity makes that problem even worse. But solutions include coming to a consensus about the problem and developing measurements of performance that determine success or failure without placing broadscale blame on any individual player involved. "Gotcha" is not a helpful word to use in holding individuals and institutions accountable in a complex world.

Conclusion

What would have happened if the nation's leaders had been following all twelve of the preceding principles when the first cases of COVID were identified in China? No matter how closely they pursued the steps recommended in this report, there still would have been an enormous number of cases and deaths in the United States. However, the numbers would most likely have been substantially smaller than what the nation experienced. The country would have also likely emerged from the COVID crisis with far more trust in government's institutions. Crises will come and go, regardless of the lessons learned (or ignored). Good governance will not stop hurricanes, terrorists, floods, wildfires, heat waves, or cyberattacks from disturbing society's smooth functioning.

Improvements in the way government manages crises, however, can soften their impact in demonstrable ways, lessening their impact and abbreviating recovery.

The principal takeaway from all of these principles: Even in a nation consumed with politics, the other two facets of government—policy and management—make ambitious efforts succeed or fail, and profoundly shape the politics that surround crises. Applying most of these principles is not easy. Maintaining them as a crisis ebbs away may be even harder. In fact, once a crisis becomes a memory, it is often easy to forget the painful journey, to ignore the steps needed to prevent a recurrence, and to yearn for a return to a past that, almost always, has vanished forever.

Hope for applying the dozen principles spelled out in this paper relies on a fragile commodity—a long memory about the consequences of the past and a firm resolve to do better in the future. This paper sets forth details for building a new kind of national roof to protect from future unanticipated rainstorms. The key is to continue to keep the roof in good repair, even when the rain stops and the roof ceases leaking. That is the government that Americans deserve.

Managing The Next Crisis: **Twelve Principles For Dealing With Viral Uncertainty**

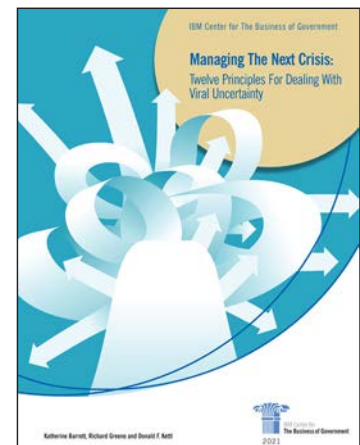*by Katherine Barrett, Richard Greene, and Donald F. Kettl*

download PDF

businessofgovernment@us.ibm.com

(202) 551-9342

The Key to Modern Governmental Supply Chain Practice: Analytical Technology Innovation

By Dr. David Preston, Dr. Daniel Chen, and Dr. Morgan Swink

Supply chain management (SCM) is a fundamental practice of government organizations that facilitates the exchange of products for its stakeholders. Government purchases include expenditures on goods and services by federal, state, and local governments. Each year the United States spends trillions of dollars to purchase goods and services for public use. For example, it was estimated that the U.S. government purchases contributed about $3.18 trillion, or about 17 percent of the total GDP in 2018. The cost of operating supply chains is a cumbersome endeavor and accounts for up to two-thirds of the final costs reflected in traded goods. As such, effective supply SCM is essential for procurement operations.

Over the past few years, the COVID-19 pandemic has done much to expose and highlight critical gaps and flaws in the global supply chain. Any improvement in supply chain operations achieved through effective supply chain management will have a significant positive impact on timely delivery and appropriate pricing of goods and services. Many of these improvements can be realized through analytical or technology improvements, yet both commercial and government entities have not tapped into the full potential of technologies and analytical approaches available to them.

Improving Supply Chain (SC) Effectiveness and Efficiency

Investment in information technology (IT) is often considered an essential means to improve SC effectiveness and efficiency. However, government executives remain in a quandary on how to best invest in technology to truly make such performance improvements in SC practices. An even greater level of uncertainty has arisen about SCM due to recent issues associated with COVID-19 and tenuous international relationships that can alter the nature through which government organizations provide its services. Therefore, effective use of technology to

Dr. David Preston is a Professor of Information Systems at Texas Christian University, Fort Worth, Texas. Dr. Daniel Chen is a Professor in the Department of Information Systems and Supply Chain Management of the M.J. Neeley School of Business at Texas Christian University, U.S.A. Dr. Morgan Swink teaches and leads research in areas of supply chain management, innovation management, project management, and operations strategy.

improve SC practices has become essential for governmental organizations. This study examines the role that organizational use of technology innovation plays in improving SCM activities for public organizations.

Technology innovation is imperative to SCM success since organizations along the value chain require information flows and knowledge creation. Technology innovation has key organizational implications to the domain of SCM. SCM activities are boundary-spanning by their nature since they often most involve other organizational partners across the value chain.

However, public entities often lag in technological innovation and as such their supply chain (SC) practices are affected accordingly.

Three Frameworks for Analytics Usage

Government organizations should look to industry practice to model how technology innovation can improve SCM. In this study, technology innovation is examined via the potential use of analytics, blockchain, and artificial intelligence (AI) as they apply to SCM practice. In this report, we first examine analytics usage for SC impacts since analytics currently has wider rates of adoption in industry. Through an empirical analysis of industry survey data, the research design develops three frameworks for analytics usage.

Framework I: The first framework examines the key drivers of analytics usage for SC practice which consists of the following contexts: 1) Technical; 2) Organizational; 3) Environmental. Specifically, this framework examines how the mechanisms within each context either directly or indirectly influence analytics usage.

The technological context is comprised of both the organization's expected benefits and its technological capability. Such technological concerns are relevant to both public and private organizations. To adopt a technology to an appreciable and useful degree, an organization must expect to benefit from such technology. For an organization to adopt analytics for SCM, it should expect a series of operational and strategic benefits will arise: cost savings, inventory reduction, reduced cycle times, better product/service delivery rates, improved customer service, improved knowledge sharing, and increased confidence levels in decision-making, etc. Therefore, key decision-makers will need to assess if analytics use as a technology is truly compatible with the values and SCM work practices of the organization.

The organizational context is considered in terms of "organizational readiness," which is the degree to which an entity has the required organizational resources to effectively implement analytics. Such resources include financial capital available for allocation and technical infrastructure as needed. Top management is key in assessing the external landscape and how the industry is engaging with from technology standpoint. Findings indicate that the organizational and environmental factors alone are not sufficient to influence analytics adoption and usage directly and adequately, rather managerial leadership is needed as a mediating effect. Hence, top management is likely to sponsor analytics ubiquitously for organizational functions if it views that the entity has proper resources in place and there are salient competitive pressures.

forecasting accuracy help them properly manage resources for optimal asset allocation.

In addition, the study examines the influence of analytics use in SC activities to generate growth opportunities for the organization. This outcome also pertains to public organizations that wish to expand operations and service opportunities. Using analytics, organizations can identify innovative opportunities to capitalize on temporary advantages driven through SC activities. For instance, the analysis of inventory and resources capacity across the supply chain can result in better availability of products, reduced shipping time, customized services, and customer analysis. As such, analytics use can enable organizational executives to anticipate and hence exploit emerging opportunities for driving growth.

Framework III: The final framework examines analytics usage through more granular dimensions: 1) Analytics use for Optimization; 2) Analytics use for Learning. In addition, this framework examines the mechanisms through which each of these dimensions of analytics usage influences organizational decision-making capability These two distinct patterns of analytics usage involve different analytics approaches and applications:

- **SC optimization** activities generally use advanced mathematical programming algorithms to evaluate alternative solutions to highly structured problems, using highly structured data.

- **SC learning** activities make use of analytics which apply a broader array of tools and address solutions for a wider range of questions posed. They may analyze both programmable and nonprogrammable questions using structured or unstructured data.

Many organizations wish to capitalize on analytics. However, many entities take a haphazard approach with no a-priori design strategy. The public entity should first understand the objectives of analytics initiatives before committing organizational resources.

SC decision-making capability is fundamental to the organization's SC strategy. Analytics usage can enhance both speed and quality of the collection, analysis, and dissemination of information for organizational decision-making. Supply chain executives have traditionally made "gut decisions" rather than using analytical intelligence. There may also be incongruent goals among the different decision-makers across the various partners of the supply network.

Framework II: The second framework examines the influence of analytics usage on SC performance outcomes: 1) Asset Productivity; 2) Organizational Growth. Furthermore, this framework examines the moderating effect of a dynamic environment that influences the degree to which analytics usage can impact each component of SC performance.

Despite the optimism expressed about the benefits of analytics usage in the SC context, there has not been substantial empirical support for this direct link. For effective use of analytics in SCM, it is essential that such tools are fully assimilated within SCM processes. SCM processes are clearly noted to be of great complexity since they can involve varied roles and tasks (e.g., purchasing, inventory management network optimization, etc.).

The results found that analytics usage directly influences the following two fundamental components of SC performance.

Asset productivity is a primary measure used to assess SC performance with established measurements including turnover rate and return on assets. Organizations can potentially use analytics to collect and integrate information from various sources along the supply chain and consequently disseminate such aggregated knowledge to key decision-makers.

The knowledge derived from analytics usage can mitigate certain levels of uncertainty about managing inventories and demand capacity. With smoother management of the supply chain, an organization can operate with leaner asset inventories while also ensuring that financial and inventory assets are not fully depleted. Analytics usage can enable more accurate predictions that allow asset managers greater

There is great demand for SC organizations to implement analytics to capture more detailed data for decision-making at multiple points within the supply chain (e.g., sourcing analysis, network design, inventory optimization, demand management, etc.). The thorough implementation and utilization of analytics allows for the development of a knowledge base that can be collectively shared among the various leaders during different stages of the supply chain.

The findings provide evidence that analytics use for SC optimization has a direct influence on organizational decision-making capability without the need for human/managerial intervention. However, analytics use for SC learning does not have a direct, but an indirect effect to decision-making capability, which requires internal integration. Most public entities will be focused on optimization to some degree. However, such organizations need to have the right mindset and integration across channels to benefit from analytical learning opportunities.

Impact of Blockchain and AI on Supply Chain Practice

In addition, this study examines organizational potential for blockchain and AI. Blockchain and AI are assessed with consideration to the analytics frameworks as applicable and based on their idiosyncratic technology characteristics. We examine adoption of these three technologies via the approach of a technology portfolio.

Blockchain is an emerging open-source recordkeeping technology that enables intra- or interorganizational transactions via a series of peer-to-peer transaction represented by blocks that are "chained" together. Specifically, blockchain technology utilizes time stamps and

cryptographic hashes to ensure information within a block is tamperproof. Technological advances are transforming traditional linear supply chains into dynamically connected digital supply networks; however, most organizations are not properly prepared for such disruptions. Blockchain is considered a potential technological innovation that can make the supply chain more efficient and resilient, despite volatile environments. As such, blockchain is an emerging technology that can efficiently connect stakeholders of government supply chains and monitor and document the transitions of goods across the supply chain. Government organizations can seek to benefit from the potential promise of blockchain for an array of necessary activities: financial/real estate transactions, health care data, and SC activities related to an assortment of products and services.

Applying AI technology—machines and algorithms—to make predictions, recommendations, and decisions has enormous potential to improve social welfare and organizational productivity. AI-led transformation can certainly improve government services, fundamentally changing how government delivers value to its citizens. For example, AI has been reportedly generating powerful new abilities in areas like national security, food safety, regulation, and health care.

However, very few government organizations have initiated plans on taking advantage of AI capabilities to improve their SC processes. AI-based applications have the potential to reduce backlogs, cut costs, stretch resources, release workers from routine tasks to perform higher value work, improve the accuracy of projections, and bring intelligence to scores of processes, systems, and uses. For example, changes in weather patterns, trade policies, and the inventory status of suppliers of cryptic ingredients or secondary parts can make it hard to know how much of anything to order at one time in any location.

AI can help with predicting and making sense of SC dynamics by identifying and differentiating varying supply sources or using sensor data in a variety of ways that improve efficiencies. However, AI-based SCM may not be effective merely by layering AI over existing organizations or processes without appropriate investment in the transformation and reimagination of the delivery model.
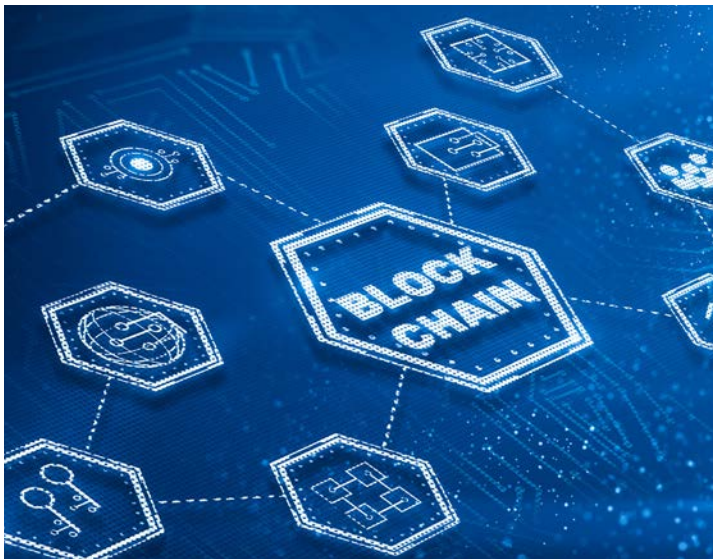
Recommendations for Government Technology Innovation

Implications and recommendations for practice are provided to government executives for actionable results. Such recommendations include a series of managerial and organizational factors relevant for adoption of these technologies.

Leverage the Lessons Learned from Analytics Analysis. Government organizations should leverage the empirical findings outlined about analytics frameworks. Public organizations should seek to examine how these analytics findings can be applied to blockchain and AI for SC practice. The decision to adopt blockchain or AI may have similar technical, organizational, and environmental factors that parallel that of analytics but differ based on the idiosyncratic nature of these different technologies. Public entities should consider a series of strategic questions, covering the three identified aspects when crafting their blockchain and AI adoption strategies. These questions are provided in the Table below.

Strategic Questions for Implementing Blockchain and AI-Based SC Models

Technological Benefits	Organizational Readiness	Environmental Pressure
What are the expected values of blockchain and AI to our supply chain organizations?	What blockchain uses and AI applications should we target and do we have the right IT infrastructure to support them?	What blockchain and AI features are suppliers/customers using?
How will these values be defined and measured?	What are the resource requirements to support our blockchain and AI initiatives and where do we locate these resources?	What blockchain and AI related initiatives are other functions of the government organizations pursuing?

Follow the Leader. When considering the adoption of technology, an organization can seek several pathways about innovation: first mover, fast follower, slow follower, or laggard. As emphasized, there is little value that a government organization can derive as a laggard. On the other hand, being a first mover may not be worth the risk as government organizations generally do not benefit from seeking extreme risk-taking opportunities. As such, this study recommends that government organizations seek to fall somewhere between a fast follower and slow follower based on organizational goals. As addressed within the following portfolio recommendation, public entities should seek to first gain capabilities in analytics and rapidly follow industry use cases from industry and other public entities as applicable. Government organizations would likely benefit from a more conservative approach to blockchain and AI initiatives and can follow suit after these technologies have greater proof of concept and the fit with organizational objectives are clear.

Develop a Technology Portfolio. Government organizations and regulatory agencies need to consider developing a technology portfolio. This portfolio should have a sequence of adoption. The technologies of analytics, blockchain, and AI are independent yet highly complementary. Government organizations should prioritize developing its capabilities in analytics. Based on the outlined findings from the empirical analysis in this study, it is observed that analytical savviness can be developed via series of managerial efforts and organizational commitments. Blockchain adoption can be considered an independent organizational decision. But it should be noted that blockchain will facilitate the organization's ability to enhance its capabilities in both analytics and AI. As outlined, AI has promise for great potential for public entities; however, AI is still very much in its infancy. Government organizations should first develop analytical maturity prior to seeking to fully engage in AI.

Empower Technology Champions. To fully engage and capitalize on technology innovation, organizational leadership is paramount. It is rare that technology will be fully infused in an organization without the sponsorship of its leaders. Visionary technology leaders play a primary role in the assimilation and effectiveness of technology initiatives. Organizations that merely appoint a top technology executive but fail to provide this individual with both formal and informal means to provide influence will likely fail in fully capitalizing on innovative technology initiatives. Information derived from analytics has become the key organizational "currency" and as such many "data owners" across the supply chain may intentionally or inadvertently hoard such information rather than share it across channels.

Facilitate a Climate for Innovation. The organizational climate is fundamental to the adoption and utilization of technology. Government organizations are often considered bureaucratic and hierarchical when compared to private

industry. Such hierarchical structures can provide benefits in providing organizational efficiencies and standardized processes. However, such structures do not necessarily foster a climate for innovation. Having a "data-driven" culture is imperative for organization to derive expansive value from information-related technologies. Such a climate that enables knowledge dissemination and organizational learning is particularly relevant for SCM. Fostering a climate for innovation within the structures is essential for a government organization to fully capitalize on the potential of analytics, blockchain, and AI.

Ensure Strategic Alignment. For optimal performance value, a public organization needs to ensure that the supporting technology strategy is aligned with organization's SC strategy. It is not enough for an organization to realize technology as potential strategic resource. The organization must strive for strategic alignment of the technology strategy with the supply chain to derive a competitive advantage. There are two elements of technology strategic alignment that must be considered: 1) social dimension, which constitutes a shared level of understanding of the role of technology within the organization; and 2) intellectual dimension of alignment, which addresses the congruence of the entity's technical strategy with the organization's mission. Each public entity should not merely follow the herd when it some to technology investments, it is imperative that alignment of each technology is assessed with organizational goals.

View Functional Managers as Key Stakeholders. To fully implement, adopt, and capitalize on analytics, blockchain, and AI for SCM, functional managers must be viewed as key stakeholders in the process. Functional managers serve as a bridge between top management and the end users of technology. It has been observed that within public entities, most of the innovation arises at staff levels and tends to diffuse upward yet strategy is implemented from the higher ranks top-down. As such, functional managers who understand the purpose of technology to achieve SC objectives are needed to ensure a pervasive utilization of analytics, blockchain, and AI.
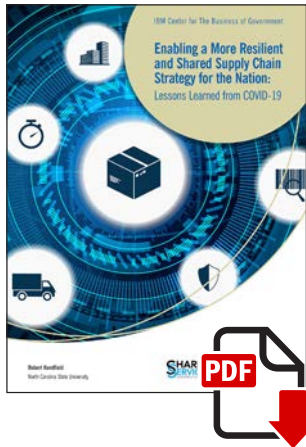
Manage Technology Talent. The competition for technical and analytical talent remains fierce. Government organizations and agencies have had notorious difficulty in the attraction technical talent for strategic purposes and have even had a lack of success with external consultants. To develop talent resources for SC analytics, blockchain, and AI, it requires both technology experts and SC experts. It is mandatory that there is collaboration between these two groups and that there is some overlap in knowledge. To optimally perform

and deliver value, there must be analytical/technical training for the SC professionals and SC/operational training to develop the knowledge of the technologists.

In conclusion, this report aims to provide insight on how technology innovation can facilitate SCM practice within government organizations. Technology innovation is examined through the lens of emerging technologies via analytics, blockchain and AI.

The Key to Modern Governmental Supply Chain Practice: **Analytical Technology Innovation**

by Dr. David Preston, Dr. Daniel Chen, and Dr. Morgan Swink

download PDF

businessofgovernment@us.ibm.com

(202) 551-9342

Recently Published IBM Center Reports

Enabling a More Resilient and Shared Supply Chain Strategy for the Nation: Lessons Learned from COVID-19

Robert Handfield

In this report, author Robert Handfield—a leading global supply chain expert and professor at North Carolina State University—outlines how a modern supply chain strategy can leverage shared service models to increase efficiency and productivity. The author coalesces significant insights to address whole of government supply chain and shared service challenges, using the COVID-19 experience as a proxy and drawing conclusions for larger process, technology, and policy strategies. Among these observations was the tremendous problem-solving capacity coming from networked individuals who step outside assigned roles. They bring their collective talent to bear on urgent problems facing the country—addressing what has been learned for how to prepare for the next pandemic, as well as other whole of government management challenges.
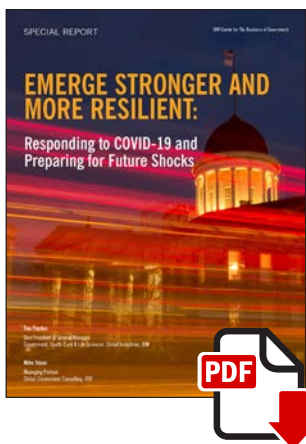
Emerge Stronger and More Resilient: Responding to COVID-19 and Preparing for Future Shocks

Tim Paydos and Mike Stone

This report authored by IBM Global Government leaders Tim Paydos and Mike Stone, as well as a set of contributing authors and IBM experts builds off a series of blog posts to frame a roadmap for the public sector on strategies and actions to move forward from the latest crisis while building the capacity to handle what may come. It includes essays that focus on promoting digital enablement of citizens, modernized supply chains, strong cybersecurity, and emerging analytics frameworks The report concludes with a call to action for governments and their partners to work together—to emerge stronger and more resilient from our collective experience—and build a better society.

Emerging Technology for Response and Recovery: An International Dialogue

Kevin C. Desouza

In a post-pandemic world, homeland security and border control agencies are being tasked with transforming how they respond and operate in a highly digitalized environment, while ensuring safety and prosperity of citizens and country. To address these key issues, the IBM Center for The Business of Government hosted an international dialogue in September 2021 attended by CIOs and IT leaders from Australia, Singapore, and the U.S. Professor Kevin Desouza has drawn on this discussion to produce a report providing keen insights about leveraging technologies to improve operations and security across borders.

Recently Published IBM Center Reports

The Age of Remote Work: How COVID-19 Transformed Organizations in Real Time

David C. Wyld

While predictions that much work could be done anywhere arose, the COVID-19 pandemic took remote work to a whole new level as a necessity. This report chronicles changes in modern office work arrangements across government agencies and private sector companies in response to the pandemic. It identifies challenges facing both workers and their organizations and outlines the recognized and surprising benefits from this massive and rapid transition to remote and hybrid work arrangements. The report recommends core tools to help governments manage a changing workforce and transformed work environment.

Reskilling the Workforce with Technology-Oriented Training

Stacie Petter and Laurie Giddens

Government agencies use technology to increase the efficiency of their services, but rapid changes in technology create a need for additional training to help the workforce remain current in their knowledge and application of new innovations. This report offers an assessment of two technology-oriented training programs in which organizations set out to reskill members of a workforce with technical skills needed to conduct their jobs effectively or move into new roles. The authors outline the benefits and limitations of each program while offering recommendations for agencies to achieve more effective technology-oriented training outcomes when reskilling employees.
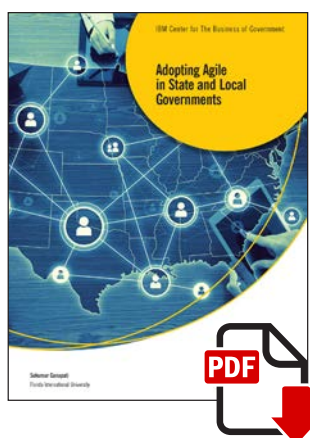
Adopting Agile in State and Local Governments

Sukumar Ganapati

This new report examines the adoption of Agile among state and local governments. State and local agencies have increasingly adopted Agile methods in the last decade, applying them across a range of applications. At the same time, agencies vary widely in their maturity levels for adoption and implementation. The author identifies three broad phases in this lifecycle of Agile maturity among public agencies. The report highlights the evolution of Agile in the cases of four governments—two states (Connecticut and California) and two cities (New York and Austin). These case studies offer lessons for enabling strategies to adopt Agile across these three phases.

CONNECTING RESEARCH TO PRACTICE

Five Easy Ways to Connect
businessofgovernment.org

Blog **Reports** **Interviews** **Magazine** **Books**

IBM Center for
**The Business
of Government**

LISTEN TO THE
BUSINESS OF GOVERNMENT HOUR
ANYTIME, ANYWHERE

STRATEGIC PARTNERS with global reach:

FEDERAL NEWS NETWORK ▶

PODCASTONE ▶

Listen on Apple Podcasts ▶

Broadcast and streamed around the world

YouTube ▶

LISTEN TO
THE BUSINESS OF GOVERNMENT HOUR

Weekly conversations with government executives and thought leaders

Mondays at 11:00 am and Fridays at 1:00 pm
Federal News Network, WFED (1500 AM)*
or on the web at federalnewsnetwork.com

* Washington, D.C. area only

About the IBM Center for The Business of Government

Through research stipends and events, the IBM Center for The Business of Government stimulates research and facilitates discussion of new approaches to improving the effectiveness of government at the federal, state, local, and international levels.

About IBM Consulting

With consultants and professional staff in more than 160 countries globally, IBM Consulting is the world's largest consulting services organization. IBM Consulting provides clients with business process and industry expertise, a deep understanding of technology solutions that address specific industry issues, and the ability to design, build,and run those solutions in a way that delivers bottom-line value. To learn more visit ibm.com.

For more information:
Daniel J. Chenok
Executive Director
IBM Center for The Business of Government

600 14th Street NW
Second Floor
Washington, DC 20005
202-551-9342

website: businessofgovernment.org
e-mail: businessofgovernment@us.ibm.com

Stay connected with the IBM Center on:

or, send us your name and e-mail to receive our newsletters.

IBM Center for
The Business of Government