

The Business of Government

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2019 / 2020

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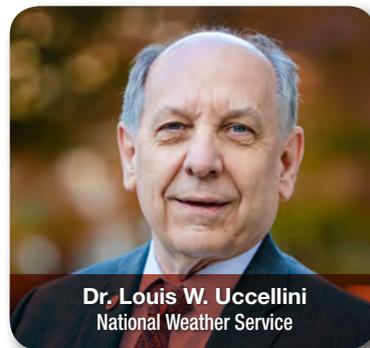
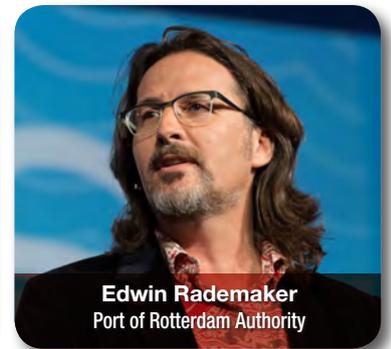
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The Business of Government

A Publication of the IBM Center for The Business of Government

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Harnessing the Power of Data to Improve Government Services

It's all about the data—make that, *data management*.

For decades, governments have developed policy and programmatic frameworks that promote collecting, analyzing, deciding on, and disseminating information in ways that drive better results and make most effective use of public resources. In the U.S. government, law and policy—ranging from the Paperwork Reduction Act and E-Government Act to the Privacy and Federal Information Management and Security Act—have guided agency actions around using and protecting information, based primarily on effective management of information systems that store that information.

In the last several years, the advent of powerful new analytics technologies has focused government leaders in a different direction—toward rapid management of data based on applications and tools that do not rely on large internal systems. Such innovations as artificial intelligence (AI) and blockchain are important not because of the technologies per se, but because they enable government to work with industry, nonprofit, and citizen partners through collaborative networks that leverage data from a massive variety of sources in real time.

This issue of *The Business of Government* highlights leaders who are driving public sector forward in harnessing the power of data to improve services, quickly and effectively. From the blockchain-powered business networks that share information to drive more effective trade across nations, to agencies adapting AI in reaching faster and more effective decisions, to leaders who are driving cross-cutting data strategies that support a transformation in how government achieves measurable improvements in service and stewardship—these and similar strategies point to a new era for government to capitalize on information resources for mission results.

The Center for The Business of Government continues to support new research by academic experts that identify practical solutions to 21st century challenges. Better and faster use of data is core to this work, and is also a key factor in our support for a new collaborative venture with the National Academy of Public Administration to launch the Agile Government Center (AGC). As Center Visiting Fellow G. Edward DeSeve notes in his Viewpoint in this edition, an agile government interacts with its citizens to constantly exchange data in pursuit of continuous, incremental performance improvement. The AGC will provide a home for sharing principles, practices, and success stories that can help governments, and we look forward to working with NAPA and engaging with a broad range of leaders across sectors in building this resource.

Just as the AGC promotes spreading agile techniques from their initial roots in software development to a broader set of programs and functions, actions of today's visionary leaders in adopting emerging technologies promote broadening access to data from its roots in legacy IT systems. We hope that this issue helps change agents across government understand models for how best to integrate innovation, agility, and data in achieving better results for the public they serve. ■



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Government has many diverse and unique missions, but a single constant remains regardless of the mission set: serving the public above all else. From improving government management to building a weather-ready nation, compensating the sick and injured from the 9/11 terrorist attacks, providing development and humanitarian assistance, to envisioning transportation and supply chain infrastructure for the future, this edition of *The Business of Government* magazine offers insights from leaders who are advancing many of these initiatives, while also overcoming seemingly intractable public management issues facing us today.

“Between the thought and the deed,” notes Aaron Wildavsky, “there is a vast chasm. That gulf can be bridged only by taking seriously the task of organizing work.” The 10 leaders profiled in this issue underscore the critical importance of doing just that. I present the leadership stories of these public servants and complement their frontline experience with practical insights from a cadre of thought leaders—merging real world experience with practical scholarship. The purpose is not to offer definitive solutions to the many management challenges facing government executives, but to provide a resource from which to draw practical, actionable recommendations on how best to confront such issues.

Conversations with Leaders

Throughout the year, I had the pleasure to speak with key government executives and public sector leaders about their agencies, accomplishments, and vision of government in the 21st century. The four profiled manifest the leadership and strategic foresight needed to meet their varied missions.

- **Rupa Bhattacharyya, Special Master, September 11th Victim Compensation Fund**, leads the VCF, which is charged with providing compensation to any individual (or a personal representative of a deceased individual) who suffered physical harm or was killed as a result of the 9/11 terrorist attacks. She outlines the VCF priorities, how the program works, efforts to expand outreach to the 9/11 community, and what the future holds for the VCF.
- **Bonnie Glick, Deputy Administrator, United States Agency for International Development**, is the chief operating officer of USAID, which provides development and humanitarian assistance to those countries most in need. Deputy Administrator Glick details her agency's key priorities, its digital strategy, efforts to foster self-reliance, and how USAID engages the private sector to enhance development solutions.
- **Dr. Louis W. Uccellini, Director, National Weather Service**, manages an agency tasked with providing weather forecasts, warnings of hazardous weather, and other weather-related products to organizations and the public for the purposes of protection, safety, and enhancement of the national economy. Dr. Uccellini spearheads efforts to build a weather-ready nation. He describes the key strategic priorities of the National Weather Service, how it is using technology to meet its mission, and what the future holds for his agency.



- **Margaret Weichert, Deputy Director for Management, Office of Management and Budget**, outlines the Trump administration's vision for modernizing the U.S. federal government to meet the mission, service, and stewardship realities of the 21st century. She leads the management side of OMB and notes that in the 21st century, agility powered by IT, powered by data, and powered by people is how leading players execute, differentiate, and build trust.

Insights

I also had an opportunity to speak with public servants pursuing innovative approaches to mission achievement and citizen services. Five current and former government executives provide insights into how they are changing the ways government does business.

- **Tom Brandt, Chief Risk Officer, U.S. Internal Revenue Service**, runs the agency's enterprise risk management (ERM) efforts. He provides insights into the benefits of ERM, how risk management can enhance agency decision making, and explains the mission of the Association for Federal Enterprise Risk Management (AFERM).
- **Allison Brigati, Deputy Administrator, U.S. General Services Administration**, is the chief operating officer of an agency with a mission to deliver value and savings in real estate acquisition, technology, and other mission support services across government. She has sought to transform the way the agency operates, finding ways to be innovative and cost effective.
- **Nancy Potok, Chief Statistician, Office of Management and Budget**, safeguards the integrity of U.S. federal government data. She is charged with making sure that federal statistics are objective, unbiased, not politically influenced, accurate, timely, and relevant. Her office puts out methods and standards that federal agencies need to follow if they're going to assert that their statistical data is official U.S. government data.
- **Al Short, Chief Information Officer, Washington Metro Area Transit Authority**, is responsible for everything from fiberoptic rights-of-way along the railroad to standard enterprise resource planning (ERP) associated with finance, procurement, and HR to the public facing website. His department is involved in supporting the systems that enable the Smart Trip card to the maintenance of the technology for running the D.C. rail system.
- **Dr. John Zangardi, former Chief Information Officer, U.S. Department of Homeland Security**, reflects on his time as CIO at DHS. Dr. Zangardi discussed the department's IT priorities, and his efforts to modernize its IT infrastructure, and change the way IT is done across the DHS enterprise. Please note, shortly before the publication of this magazine, Dr. Zangardi left his position at DHS. The insights provided are a snapshot in time.



Perspective on Driving Digital Transformation

The Port of Rotterdam is the largest port in Europe. From all indications, the port is preparing for the future today, focusing on safety, efficiency, and sustainability. To do this successfully, the port is developing its digital twin, providing real-time situational awareness of all things static, moving, human-driven, or autonomous, pulling together all the geographic, sensor, and real-time information to provide port personnel a complete and current view of port activities.



Erwin Rademaker, program manager, Port of Rotterdam Authority, joined me and my co-host, Sreeram Visvanathan, IBM global managing director for Government, Healthcare, and Life Sciences to discuss the Port of Rotterdam's digital transformation strategy, how it is creating its "digital twin," and other ways the port is changing the way it does business. We conducted this interview at this year's SPADE conference hosted in Soesterberg, the Netherlands. SPADE brought together defense, intelligence, and security leaders from Europe and around the world in dialogue with experts from IBM and industry. This year's theme was designing for the future of defense and security.

Forum on the Evolving Use of Artificial Intelligence in Government

Over the last two years, the IBM Center for The Business of Government and the Partnership for Public Service have collaborated on research focusing on the use of AI in government and its implications. The finding and insights from this joint effort culminated in the release of three distinct yet complementary reports:

- ***The Future Has Begun: Using Artificial Intelligence to Transform Government.*** This report offers four cases of organizations that have used AI. It distills findings from over a dozen interviews with thought leaders who are applying AI in government and demonstrates that government can use AI to solve real issues and meet their missions. The forum contribution will provide a synopsis of two of the four cases outlined in the full report.
- ***More Than Meets AI: Assessing the Impact of Artificial Intelligence on the Work of Government.*** This report addresses how government can best harness AI's potential to transform public sector operations, services, and skill sets. It draws on insights from a series of roundtables with government leaders and focuses on three areas: AI impact on a transformed workday, the potential for personalized customer service, and the increased importance of technical and data skills.
- ***More Than Meets AI, Part II: Building Trust, Managing Risk.*** This report discusses further steps agencies can take to manage risks. While taking advantage of the many anticipated benefits of AI, agencies must also manage real and perceived risks associated with AI to build trust in the technology.



The final contribution in this forum, **Agile and Inquisitive—AI Leadership**, is an original piece I wrote that explores two leadership qualities essential for meeting the demands and challenges of a continuously evolving technological landscape. With the promise of artificial intelligence no longer in some far-off future, government leaders must comprehend and harness both its perils and possibilities and doing that effectively will require these leaders to be agile and inquisitive. This forum highlights the insights, findings, and recommendations derived from the IBM Center and Partnership roundtables and reports. Several of the contributions in this forum are edited excerpts of the reports referenced above. It is our aim to spark a conversation on the use of AI, help prepare federal leaders to assess the inevitable changes coming, and provide government leaders with insights to navigate this transformative time.



Viewpoints

This edition presents a host of viewpoints from array of thought leaders. These authors explain how open innovation can transform the government technology playing field and how the use of agile principles is at a tipping point in government. They also provide insights on how using algorithmic auditing can make machine learning in the public interest, how cognitive enterprise is transforming the delivery of government services, and how behavioral science can help improve program outcomes.

I close this edition with highlights of a selection of recent Center reports. If you have not read these reports, I invite you to do so by going to businessofgovernment.org. I hope you find *The Business of Government* magazine both intellectually stimulating and rich with practical insights. Please share your thoughts by contacting me at michael.j.keegan@us.ibm.com ■

Leading the September 11th Victim Compensation Fund: A Conversation with Rupa Bhattacharyya, Special Master, Victim Compensation Fund, U.S. Department of Justice

By Michael J. Keegan

9/11
VICTIM
COMPENSATION
FUND

In the aftermath of the September 11th terrorist attacks on the United States, Congress created the September 11th Victim Compensation Fund (VCF), which provided compensation for economic and noneconomic loss to individuals, or the personal representative of individuals, who were killed or physically injured in the attacks. In 2011, as it became clear that exposure to the toxins generated in the aftermath of the attacks was having lingering health effects, Congress passed and the President signed a new law, which reactivated the VCF to accept claims for a specific timeframe and expanded its pool of eligible claimants. President Trump recently signed into law H.R. 1327, the VCF Permanent Authorization Act. The Act extends the VCF's claim filing deadline until 2090 and appropriates such funds as may be necessary to pay all eligible claims.

Rupa Bhattacharyya, special master of the VCF, joined me on *The Business of Government Hour* to discuss her priorities, how the program works, efforts to expand outreach to the 9/11 community, and what the future holds for the VCF. The following is an edited excerpt of our discussion, complemented with updated and additional research.

On the History and Mission of the VCF

The VCF was originally created in 2001, immediately following the attacks, as an alternative to tort litigation, and was designed to provide compensation for any individual (or a personal representative of a deceased individual) who suffered physical harm or was killed as a result of the terrorist attacks. The original VCF (known as "VCF I") operated from 2001-2004 under the direction of special master Kenneth Feinberg, distributed over \$7 billion, and concluded operations in June 2004 after compensating more than 5,500 claimants.

In 2011, as it became clear that exposure to the toxins generated in the aftermath of the attacks was having lingering health effects, Congress passed and the president



signed the James Zadroga 9/11 Health and Compensation Act of 2010, which reactivated the September 11th Victim Compensation Fund (now known as "VCF II"), expanded its pool of eligible claimants, and appropriated \$2.775 billion to pay claims. VCF II opened in October 2011 and was originally authorized to accept claims until October 2016. In December 2015, Congress reauthorized the VCF for five more years, allowing individuals to submit claims until December 18, 2020, and appropriated an additional \$4.6 billion to pay claims, bringing the total appropriated amount for VCF II to \$7.375 billion.

By February 2019, however, it became clear that that funding was insufficient to compensate the number of claims pending and expected, and in fact, the VCF made the decision to slash awards by up to 70 percent in order to preserve the available funding, as it was required to do under the law. As a result, just recently, on July 29, 2019, the president

signed the Never Forget the Heroes: James Zadroga, Ray Pfeifer, and Luis Alvarez Permanent Authorization of the September 11th Victim Compensation Fund. The VCF Permanent Authorization Act extends the VCF's claim filing deadline from December 18, 2020, to October 1, 2090, and appropriates such funds as may be necessary to pay all eligible claims.

On the Responsibilities of the VCF Special Master

When Congress established the VCF in 2001 to compensate the victims of the terrorist attacks and their families, it created the position of special master to administer the claims process. The attorney general at the time, John Ashcroft, appointed Ken Feinberg to serve in that capacity, and Mr. Feinberg was given the sole authority to determine what each claimant would receive. By law, his rulings were final and were not subject to judicial review. When the fund was revived in 2011, this same structure was kept in place, and the same discretion was afforded the new special master. I was appointed as special master by Attorney General Loretta Lynch in July 2016.

As to my responsibilities and duties, they are very straightforward—and at the same time fairly complex. Our mission—my mission—revolves around three tenets: being fair to the claimants, faithful to the statute, and defensible to the taxpayers. While that is fairly straightforward, there are many moving parts involved in making sure those expectations are continually being met.

On the Challenges of Managing the VCF

This is an interesting question—and one that, on at least one level, is different today than it would have been several months ago. I'll come back to that in a minute. The top challenge I have is simple: getting claims reviewed in the most timely, fair, and efficient way possible. It has long been my goal to reduce the time it takes us to review a claim—once we have everything we need—to 12 months or less. We are not there yet, but we continue to make progress, and I am optimistic that we will be there soon. Now backing up to talk about what has changed. One of my top priorities, until the recent passage of the VCF Permanent Authorization Act, was making sure that we did not exhaust our finding. That is a problem we no longer have—but that said, we are still extremely committed to the type of fiscal responsibility and responsible stewardship of government funding that helped to get us the vote of confidence that the legislation represents. Beyond that, our challenges are reflected in our ongoing mission—which is to operate the VCF in a manner that is fair to the claimants, faithful to the statute, and defensible to the taxpayer.



On the Implications of 9/11-Related Illnesses

What has surprised everyone in the 9/11 community, myself included, is the increase in the number of people who are getting sick and dying due to 9/11-related illnesses. There is no accurate count of how many people might have been exposed to toxins stemming from the attacks. There is also considerable uncertainty about the number of individuals who ultimately will fall ill due to the long latency periods that can elapse before manifestation of the cancers determined to be related to 9/11 exposure. Moreover, the VCF has suffered from an information gap; in the early years of the program, many eligible individuals were not aware that the VCF was an available resource. They assumed it was meant only for New York City first responders. As an example, even the FBI, which has lost at least 16 employees to 9/11-related illnesses, did not recognize until fairly recently that its employees might be eligible for VCF compensation.

As a result of increasing outreach, but also as a harbinger of the increasing seriousness of 9/11-related illnesses, the VCF received a record number of new claims in 2018 and will exceed that number in 2019. For perspective, in the first five years of the Victim Compensation Fund, through December 31, 2016, roughly 19,000 compensation forms were filed. In the two years after that, through December 2018, almost 20,000 additional compensation forms were filed, with over 10,000 compensation forms already filed to date in 2019.



“For the most part, the law is unchanged with two very large exceptions: the length of time until the filing deadline and the removal of a funding cap. Prior to passage of the law, the deadline for filing a claim was December of 2020. Now, people can file a claim until October 1, 2090.”

—*Rupa Bhattacharyya*

On the VCF Permanent Authorization Act

For the most part, the law is unchanged with two very large exceptions: the length of time until the filing deadline and the removal of a funding cap. Prior to passage of the law, the deadline for filing a claim was December of 2020. Now, people can file a claim until October 1, 2090. And while we previously operated with a set amount of appropriated funding that the VCF could not exceed, the new law appropriates such funds as may be necessary to pay all eligible claims.

On the VCF Claims Process

The VCF process has two distinct steps: registration and filing a claim. Registration is simple and fast and preserves your right to file a claim in the future if you become sick. You can register on the VCF's website, at www.vcf.gov, or over the phone by calling the VCF Help Line at 1-855-885-1555. You don't need to be sick, exhibiting symptoms, or have a certification from the World Trade Center (WTC) Health Program to register. We encourage people to register with the VCF now, even if they are not sick, to avoid missing any deadlines. There is no harm in registering and it does not obligate you to file a claim in the future or waive any legal rights.

Filing a claim is done once the WTC Health Program has certified an eligible 9/11-related illness. This requires the completion of the VCF claim form, and the submission of a number of relevant documents. As a general rule, claims are reviewed in "first in, first out" order based on the date the claim was submitted. The timeframe for processing depends on the type and complexity of the claim, whether the documents needed to evaluate the claim have been submitted, and other factors.

The VCF reviews claims in two phases: eligibility and compensation. For eligibility, the VCF reviews the claim to determine whether the claimant is eligible to receive compensation under the law. This includes assessing whether the claim was timely registered; the claimant has sufficiently proven that he or she was present at one of the attack sites or in the New York City Exposure Zone (Manhattan, south of Canal Street); the claimant suffers from an eligible physical injury or condition as certified or verified by the WTC Health Program; and the claimant has properly complied with the Act's requirements that any 9/11-related lawsuit be properly settled or dismissed.

On Compensation Determinations

For compensation, all awards are individually calculated based on the specific circumstances of the claim. The VCF

reviews eligible claims to determine the appropriate amount of noneconomic loss—commonly referred to as "pain and suffering"—based on the nature or severity of the individual's physical injury or condition. Noneconomic loss awards are capped by statute at \$90,000 for non-cancer conditions and \$250,000 for a cancer condition. If a government entity or private insurer has formally determined that the claimant suffers a full or partial occupational disability as a result of an eligible 9/11-related physical injury or condition, the VCF generally also will calculate economic loss. This portion of the award can encompass a variety of components, including loss of income as well as loss of pension and other employment benefits. The VCF also awards, in limited and appropriate cases, reimbursement of out-of-pocket medical expenses, replacement services losses, and reimbursement for burial costs in deceased claims. Once the claim review process begins, the VCF contacts the claimant if additional information is needed.

The VCF is required by law to subtract from the calculated award certain "collateral offsets," which are benefits paid to the claimant by other entities because of the eligible 9/11-related condition. These offsets may include disability benefits, settlements from 9/11-related lawsuits, and in the case of deceased claims, life insurance paid to the victim's beneficiaries.

By statute, claimants are limited to filing only one claim with the VCF, but VCF policy allows claims to be amended at any time before the program closes in 2090 if the claimant suffers a new injury or incurs a new and previously uncompensated loss. Claimants are also allowed to appeal in the case of an eligibility denial, or if the individual believes the award calculation did not properly account for the individual circumstances in the claim. Hearings are non-adversarial and





“Our mission—my mission—revolves around three tenets: being fair to the claimants, faithful to the statute, and defensible to the taxpayers. While that is fairly straightforward, there are many moving parts involved in making sure those expectations are continually being met.”

— Rupa Bhattacharyya

provide an opportunity for claimants to tell us their story, and we have a dedicated staff of pro bono hearing officers (who operate under a special appointment from the attorney general) who generously lend their expertise and gravitas to the VCF’s administrative appeals process. The law provides that the ultimate decisions of the special master on eligibility and compensation are final and unreviewable by any judicial authority, which is an extraordinary grant of discretion that I take extremely seriously.

On the Importance of Collaboration and Partnerships

The VCF is a program that is subject to substantial public scrutiny, including from members of Congress and representatives of various 9/11 advocacy groups who were instrumental in the successful passage of the legislation reopening the VCF in 2011, the additional \$4.6 billion in funding added in 2015, and the permanent reauthorization with all necessary funding passed earlier this year. The VCF has been extremely dedicated to forming positive, productive

relationships with key stakeholders. By taking a proactive approach to our communications with external stakeholders (reaching out to them before they contact us) and generously sharing information, we have maintained extremely positive and constructive relationships with all of our external constituencies. We are on good terms with the congressional offices of the New York delegations with representatives from New York districts often present at events also featuring the VCF. Under my leadership, the VCF has also continued its practice of meeting regularly with the law firms representing VCF claimants to update them on claim progress and new or revised policies. We routinely “blast” emails to law firms for every website update and the publication of other key information. We also continued our practice, as we considered policy changes over the course of the year and following publication of the Notice of Inquiry, of attempting to “socialize” the more significant changes with law firms to get feedback and, more importantly, begin to build support for the changes. More generally, we have appointed three claim reviewers who serve as law firm liaisons; they have weekly or biweekly calls with the law firms that handle a substantial volume of VCF claims to explain policies, solicit feedback, and update claim statuses. The lawyers—who represent over 80 percent of VCF claimants—have been very appreciative of the VCF’s level of information dissemination and have repeatedly praised the clarity of the guidance and outreach they have received.

The 9/11 community continued to push this year for increased VCF outreach and we have made a special effort to revamp our outreach plan and activities—so much so that we have established an Outreach Team to handle the numerous requests for VCF information. As part of our outreach activities, we participate in numerous meetings and information sessions with external entities, establishing a positive dialogue and presenting information about the VCF to their members and constituents. These included multiple training sessions for WTC Health Program and Clinical Centers of Excellence (CCE) employees, including benefits counselors and social workers who are in a position to pass accurate information to potential claimants; and



regular contact with 9/11 Health Watch and the FealGood Foundation, advocacy groups with a strong following among the 9/11 community.

We spent considerable time this year shoring up relationships with some of our long-time partners. We have regular contact with the Fire Department of New York, the New York Police Unions, the Social Security Administration, the Veterans Administration, and the New York Workers' Compensation Board to discuss information exchanges and to make sure that the processes we have in place are efficient and generating the needed data. In addition, we established significant new contacts with federal law enforcement agencies, which are underrepresented in the VCF claimant pool, participating with the FBI in numerous events, and reaching out to contacts with the U.S. Marshals Service and the Secret Service to ensure that information is available to their employees.

We also have firmly cemented our collaborative relationship with the National Institute for Occupational Safety and Health (NIOSH), which administers the WTC Health Program, by regularly attending monthly WTC Health Program Responder Steering Committee meetings. The relationship with NIOSH and the CCEs continues to be critical to many of the policy issues we have successfully reassessed over the last year, as we were able to refine our guidance by incorporating their feedback and gain a better understanding of how our policies were affected by their practices and vice versa.

On Accomplishments and What's Next

The clearest indicator of the VCF's success is the overwhelming vote of confidence the VCF received in July 2019, when the Congress overwhelmingly and with bipartisan support passed, and the president signed into law, legislation reauthorizing the VCF essentially permanently (until 2092) and providing it with such appropriated funds as may be necessary to pay all eligible claims, an unconstrained amount of statutory funding that is nearly unheard of in a program where awards are insulated by law from judicial review. The permanent authorization of the VCF, with no substantive alteration of its claim review procedures or mechanisms for award calculation, clearly reflects that the program is achieving exactly the results it was created to achieve. This has been an exceptional year, given the sheer volume of activity surrounding my decision early in the year relating to the

reduction of awards and then the passage of the Permanent Authorization Act. But I am confident that the foundation we laid will continue to serve us well as we move forward to provide compensation to those suffering as a result of the 9/11 attacks for many years to come.



To learn more about the September 11th Victim Compensation Fund, go to vcf.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.

Providing Development and Humanitarian Assistance: A Conversation with Bonnie Glick, Deputy Administrator, United States Agency for International Development

By Michael J. Keegan



The United States Agency for International Development (USAID) seeks to deliver sustainable development solutions. As part of its mission, USAID advances U.S. national and economic prosperity, demonstrates American cooperation, and promotes a path to self-reliance

and resilience of aid recipients. The purpose of foreign aid should be ending the need for its existence, and USAID provides development assistance to help partner countries on their own development journey to self-reliance—looking at ways to help lift lives, build communities, and establish self-sufficiency.

Bonnie Glick, deputy administrator of USAID, joined me on *The Business of Government Hour* to discuss the agency's key priorities, its digital strategy, efforts to foster self-reliance, and how it engages the private sector to enhance development solutions. The following is an edited excerpt of our discussion, complemented with updated and additional research.



On the History and Mission of USAID

In 1961, President Kennedy established USAID recognizing that this country's moral obligation, as a wealthy nation, is to help countries that are much poorer. Over nearly 60 years, USAID has evolved to focus more on aid receiving countries and their journeys to self-reliance.

What do we do at USAID? We reduce the reach of conflict around the world, so that conflicts that are breaking out, wherever those may be, impact the fewest number of people possible. We work hard to prevent the spread of pandemic diseases such as what is happening today with the Ebola outbreak in the Democratic Republic of the Congo. We work to counteract the drivers of violence around the world that can lead to instability and can lead to some terrible transnational crimes, things like human trafficking. We work to promote American prosperity through market expansions to enable the export of U.S. products. We create a level playing

field for U.S. businesses around the world, particularly in emerging market countries. We support stable, resilient democratic societies. As the world's preeminent humanitarian assistance provider, we support nations when disasters strike or when crises emerge.

USAID is an independent agency of the U.S. government. We are part of the president's National Security Council. U.S. foreign assistance budget is around \$40 billion annually, of which USAID holds the largest portion. We are the largest development agency in the world.

On the Duties of the USAID Deputy Administrator

I am the number two ranking person in the agency—the chief operating officer of USAID. I was nominated by President Trump and confirmed by the Senate to serve in this role. There is a big management component of the agency. The deputy administrator manages the agency's budget, manages

a staff of 11,000 people in around a hundred different offices and USAID missions worldwide. As part of the national security infrastructure, we work to craft the vision for foreign assistance around the world.

On Challenges

Managing the agency's budget responsibility is a significant challenge. We have to ensure that we are excellent stewards of the taxpayers' dollars. Every single day, I make sure that we are using taxpayer dollars in the most effective and efficient way possible. In development, we talk about developing countries. In industry, one talks about emerging markets or growth markets. At USAID, we talk about aid beneficiaries. The private sector calls those same people customers and clients. We are looking at the best way to take U.S. budgeted dollars and the best way to effectively, efficiently use taxpayer dollars to provide people around the world too with an additional margin of dignity in their daily lives. In order to solve these development problems, I want to engage with the private sector, both international corporations and American-based international corporations, but also local private sectors because we want to make sure that programs that USAID funds and runs are sustainable. The best way for a program or a project to be sustainable is by having it run through a private sector lens where there are benefits that accrue both to the investors, businesses, donors, as well as to the beneficiary community.

Another big challenge we have centers around humanitarian assistance. The U.S. is the largest global bilateral donor of humanitarian assistance. A large component of what we do is working with other international donors to ensure that there is appropriate burden sharing in the costs associated with humanitarian responses, and that too is a way of ensuring that we're good stewards of the taxpayer's dollars.

We also face the challenge with the rise of alternative development models, which are in fact simply debt traps. These models are not about development. The Chinese model of development is about placing countries into debt traps that force them to give up national sovereignty. I would reference the recent experience of China's financing and building of a port in Sri Lanka. Sri Lanka defaulted on the debt and lost control of this port. I talk to leaders of developing countries about the importance of considering all aspects of development projects as they are presented, particularly large-scale infrastructure projects.

On USAID's Policy Framework

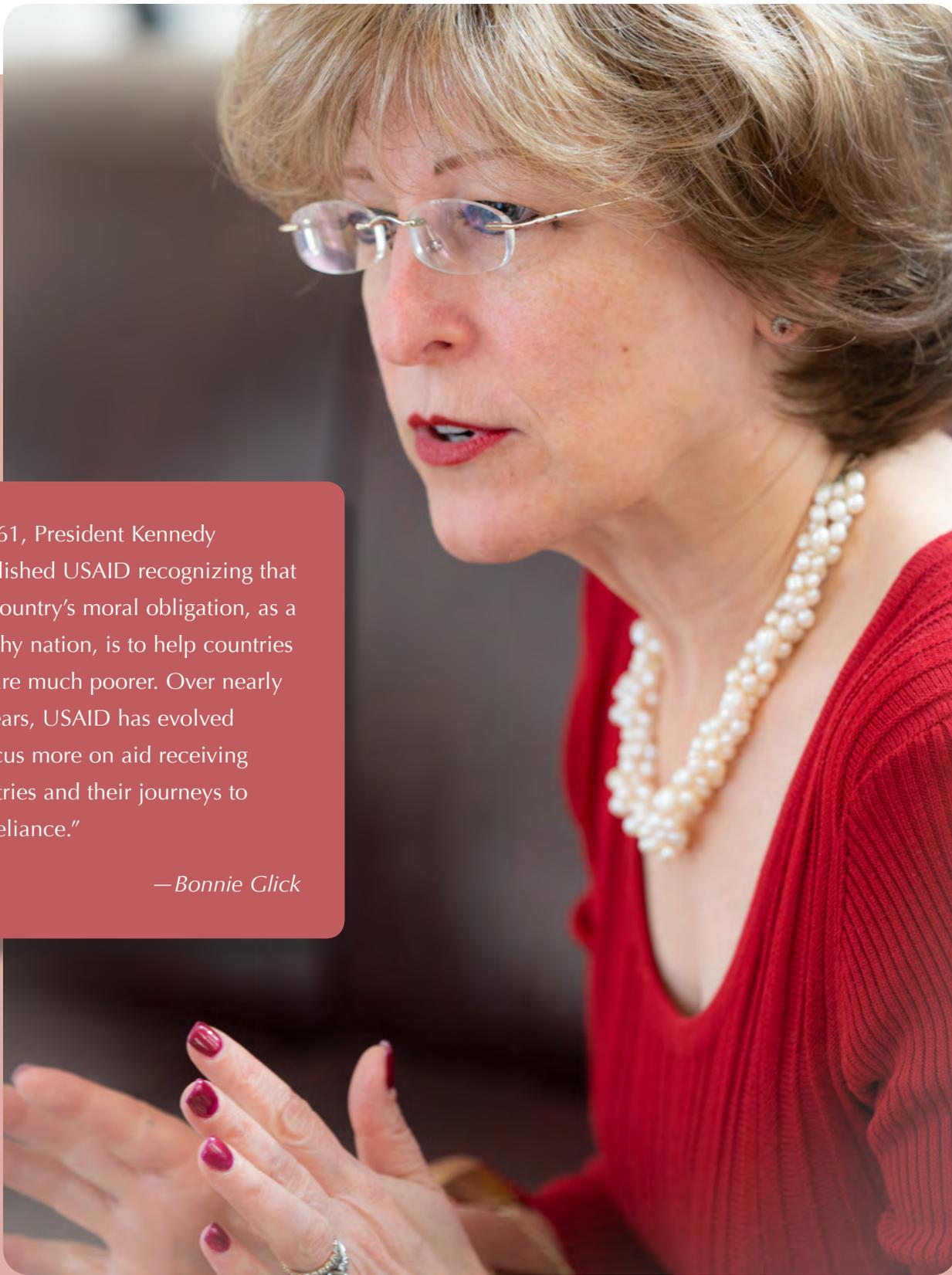
The USAID policy framework aims to bring the sort of ethereal, academic approach to development into the



real-world operational space. In April 2019, we released the agency's policy framework. It outlines USAID's approach to its mission, vision, and strategic orientation around what we refer to as a journey to self-reliance. The policy framework allows us to be a better partner, strengthen our ability to accelerate development progress, while meeting urgent humanitarian needs. That framework makes USAID a more effective provider of foreign assistance on behalf of the American people.

To capitalize on development gains and to respond to complex challenges—the ones that present themselves in the new development landscape—we focus on what we are referring to as a journey to self-reliance. At the same time, we're transforming our organization with a single goal in mind—working to end the need for foreign assistance. Our development model is rooted in building self-reliance in each of the countries in which we operate. For USAID, this is an explicit pivot toward a much more country-centric, locally led, and data driven approach to development assistance based on proven development best practices.

Our model of assistance promotes balanced trade, open market, democratic norms, and social inclusion. This means enabling locally led problem-solving for enterprise driven growth, inclusive societies, and transparent, accountable, citizen-responsive governance so that our partner countries have both the commitment and the capacity to solve their own development challenges.



“In 1961, President Kennedy established USAID recognizing that this country’s moral obligation, as a wealthy nation, is to help countries that are much poorer. Over nearly 60 years, USAID has evolved to focus more on aid receiving countries and their journeys to self-reliance.”

—Bonnie Glick

What we mean by a journey to self-reliance underpins everything that we are working to accomplish at USAID. It means countries receiving aid have ownership of their own destiny; they make decisions based on their own self-interest that will allow them eventually to eliminate the need for receipt of foreign assistance.

Our goal, ultimately, is to end the need around the world for foreign assistance. Different countries are in different places along that journey to self-reliance. There are countries that are at the beginning stages and countries that are closer to transitioning from an aid recipient country to a more partner-centered country—and even in many cases, to becoming a donor country itself.

On USAID's Digital Strategy

USAID's digital strategy will focus on its history of innovative digital development efforts. USAID co-drafted and was the first official endorser of the principles for digital development. It led a public outreach campaign which has resulted in the endorsement of over a hundred organizations, including the Bill and Melinda Gates Foundation, the World Bank Group, Swedish Aid (SIDA), and development aid out of the U.K., called the Department for International Development (DFID). We also cofounded industry leaders such as the Better Than Cash Alliance, the Alliance for Affordable Internet, and the Digital Impact Alliance. We also launched the Women Connect Challenge. USAID has been at the forefront of fighting to close the digital gender divide.

The potential for digital technologies and services to drive widespread economic growth, to improve health outcomes, and to lift millions of people out of poverty is clear. Significant barriers still remain. The resulting gaps can slow global growth and can increase a country's risk of instability. They can help keep countries dependent on foreign assistance. For example, four billion people in developing countries do not have access to the Internet and 1.7 billion women still lack access to a mobile phone.

At the same time, digitally-enabled disinformation campaigns and emerging cybersecurity risks can further threaten stability and introduce violent conflict. It is important as an agency that we look at ways to foster digital self-reliance as part of the journey to self-reliance.

There is a digital pathway to self-reliance. Connectivity delivered through wireless telecommunications networks is critical for development. Countries with strong digital ecosystems foster more self-reliant and resilient societies,

which, in turn, invest in their own infrastructure. It is a virtuous cycle.

USAID plays a critical role in increasing the effective and responsible use of digital development. It also creates a runway for the private sector to drive long-term growth. This is sustainable and it makes for an excellent investment in open, interoperable, inclusive, and secure Internet. All of which are critical to maximizing the positive values of the Internet.

Through our commitments to digital programming, we can measure how technology and services help individuals experience economic empowerment and financial inclusion. It also advances a country's national security and it supports accountability and transparency in governance. It is hard for me to think of a better way to lead toward self-reliance than along a digital pathway.

On USAID's Private Sector Engagement Policy

USAID is undertaking a major cultural and operational transformation to expand our engagement with the private sector. This will help us achieve outcomes of shared interest and shared value. One of the things that we focus on is open markets. Open markets send signals to investors, both in-country investors as well as foreign direct investment. We're looking at ways to move countries from being foreign assistance recipient nations to foreign direct investment recipient nations. We think the private sector can help do just this.





“There is a digital pathway to self-reliance. Connectivity delivered through wireless telecommunications networks is critical for development. Countries with strong digital ecosystems foster more self-reliant and resilient societies.”

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One of the most exciting developments in the past year was the passage of the Build Act. The Build Act led to the creation of the new U.S. International Development Finance Corporation (DFC). It will combine all of the existing loan and loan portfolio guarantees that USAID has had historically through our development credit authority. Our development credit authority will be augmented with political risk insurance, loans, and loan guarantee products from the overseas private investment corporation, which was called OPIC. The new DFC is a blend of OPIC and some of USAID’s assets that will also have the authority to make direct equity investments in projects. We’re looking forward to working closely with the DFC to use its expanded set of potential tools so that we can directly support even more market driven private sector led solutions at a larger scale than ever before.

One great illustrative example is something that our team put together last year with USAID’s land and urban office. It is a new program to address the widespread problem of plastics in the ocean. USAID provided support to an entity called the Ocean Fund with a loan portfolio guarantee. Our guarantee enabled the fund manager, Circulate Capital, to raise up to \$35 million from key private sector actors to invest in companies all along the plastics recycling value chain.

Borrowers under the guarantee will be private sector enterprises that work in either the collection, sorting, recycling, or manufacturing parts of chains throughout south and southeast Asia. The result is projected to bring significant market-based private sector led improvements in the overall recycling value chain and reduce plastic waste flowing into the world’s oceans.

On Leadership

When I think about leadership, I actually have other people front of mind, people who have been great leaders and mentors to me. I am frequently asked by younger people to talk about what it means to be a mentor and would I mentor them. And one of the things that I say to them is you

should never have just one mentor. And you gain different things from different mentors. You learn not just from their experiences but also from the way they present and if there is something that you want to do or avoid.

A leader is a good listener and is not doing all the talking. A leader is a good evaluator who can look at a situation and quickly distill the driving factors of a situation. A leader has to be a tireless advocate for their mission’s success. When I think of the people I have looked up to, they are people who listened. They are people who could evaluate a situation with both a sympathetic and empathetic ear. They are people who care about the work they are doing and they bring others along to do that work.

To learn more about the United States Agency for International Development, go to usaid.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](https://podcastone.com) or [iTunes](https://itunes.apple.com) and search for *The Business of Government Hour*.



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

Building a Weather-Ready Nation: A Conversation with Dr. Louis W. Uccellini, Director, National Weather Service

By Michael J. Keegan



Americans are increasingly dependent on timely, reliable, and accurate information on weather, water, and climate for the protection of life and property, as well as the enhancement of the nation's economy. In fact, a nationwide survey indicates that weather

forecasts generate \$35 billion in economic benefits to U.S. households, about six times the cost spent on weather forecasting and research. Extreme weather becomes more common and damaging due to a confluence of physical and socioeconomic factors.

Dr. Louis W. Uccellini, director of the National Weather Service (NWS), joined me on *The Business of Government Hour* to discuss the mission of the National Weather Service, his strategic priorities, and his vision for building a weather-ready nation. The following is an edited excerpt of our discussion, complemented with updated and additional research.

On the History and Mission of the National Weather Service

The National Weather Service history is rooted in decisions that were made after the Civil War with the expansion of a population westward into areas known to be, let's put it this way, more challenging weather-wise. The stories were already out about blizzards and tornados that people didn't really experience on the east coast in the early history of the U.S. The NWS core mission has remained constant since we were established: to protect lives and property and enhance the national economy. It was established in 1870 by President Ulysses Grant as part of the Army Signal Service. It was moved to the U.S. Department of Agriculture in 1891 and named the U.S. Weather Bureau. Initially, its mission was directed at public safety, military and commerce, but aviation safety grew in prominence over the next several decades. In 1940, President Roosevelt moved the Weather Bureau to the U.S. Department of Commerce. In 1970, President



Nixon established the National Oceanic and Atmospheric Administration and renamed the Weather Bureau to the National Weather Service. As we approach NOAA's 50th anniversary and the National Weather Service's 150th in 2020, we recognize that our past provides the context for who we are today and the inspiration for our future.

We've come to understand that to fully achieve this mission, we need to connect our forecasts and warnings to the decisions our partners are making in the field. It's not about just issuing forecasts and warnings, but making sure that decision makers understand and interpret the information to make good decisions. We call this new focus Impact-based Decision Support Services (IDSS). The IDSS offers more effective communication, more tailored customer service, and is more attentive to the "customer experience" as described in the President's Management Agenda (PMA). We're facing new challenges, increasing vulnerability to

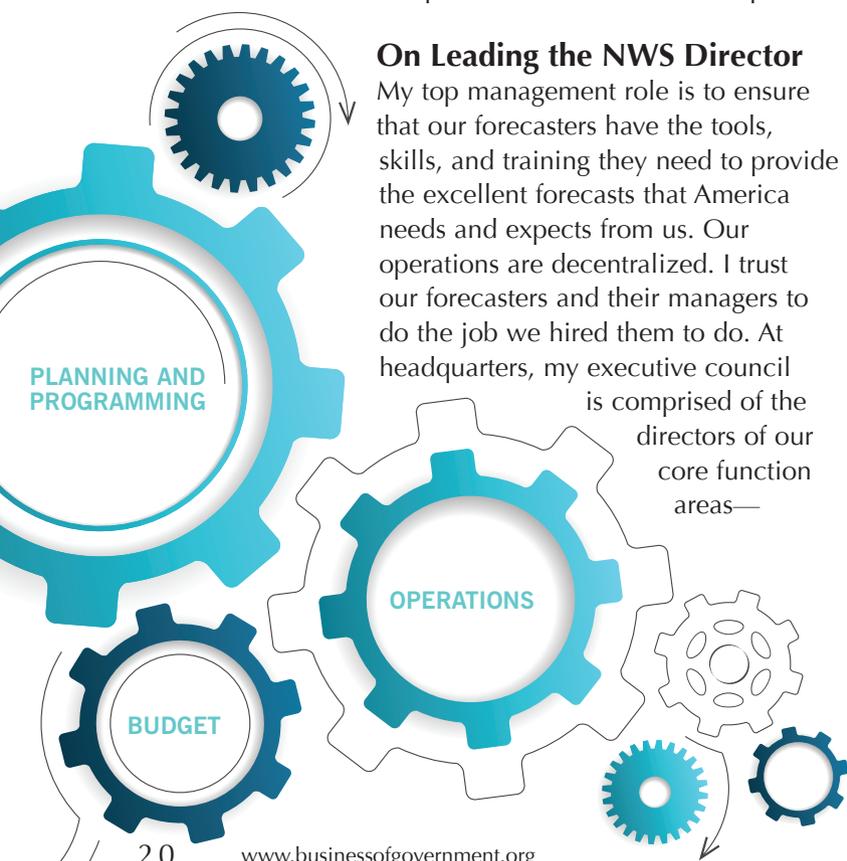
extreme events, and increasing demand from an expanding user base for weather, water, and climate forecasts and information. More sectors of the economy are now recognizing the importance of weather information, relying on our forecasts to meet today's challenges.

On How NWS is Organized

The National Weather Service is fundamentally an operational unit. We have the action verb in our mission statement to provide the data for weather, water, and climate and to provide forecasts—actually predict the future state, which is a very unique aspect of a mission statement for a government agency. Within NOAA the word “predict” maps into their mission statement as well. It's the only agency in the federal government that has that word in its mission. We have a core team of support functions at headquarters, but most of our staffing is in the field. We are decentralized, with offices all over the country: 122 weather forecast offices, 13 River Forecast Centers, six regional headquarters, nine National Centers for Environmental Prediction, 20 Center Weather Service Units, two Tsunami Warning Centers, and a National Water Center. We have 4,189 funded positions onboard. Our agency is small compared to many others, but our footprint is nationwide. Our budget for FY19: \$1.163 billion. In the past few years, we conducted an operations and workforce analysis, which concluded that our local presence in communities throughout the country is key to our ability to provide effective IDSS. Our ability to meet our mission is dependent on local relationships.

On Leading the NWS Director

My top management role is to ensure that our forecasters have the tools, skills, and training they need to provide the excellent forecasts that America needs and expects from us. Our operations are decentralized. I trust our forecasters and their managers to do the job we hired them to do. At headquarters, my executive council is comprised of the directors of our core function areas—



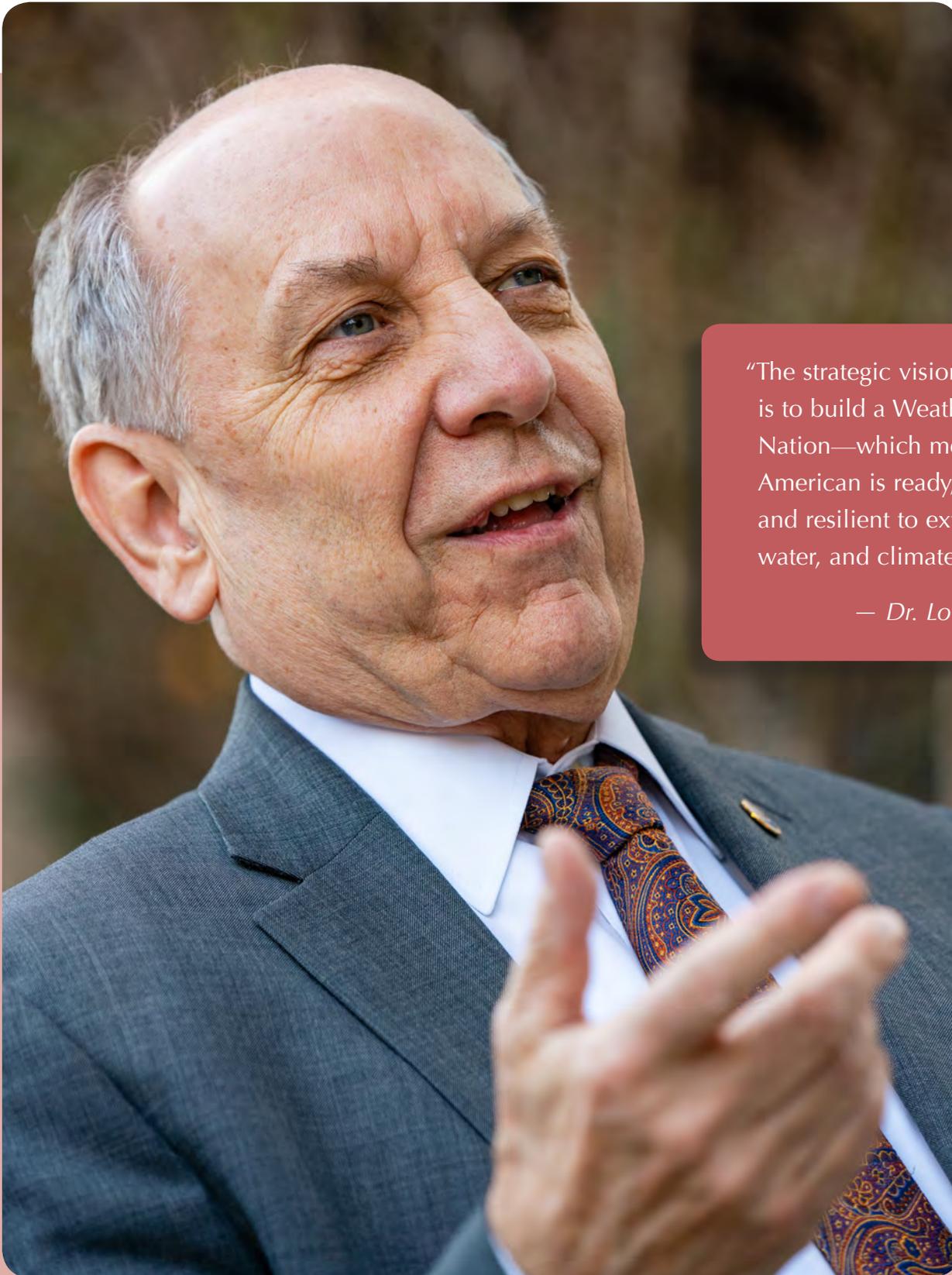
operations, planning and programming, and budget. Together, we identify agency priorities and needs and develop longer term strategic goals and objectives, including service improvements. There is never a dull moment in my job; no two days are ever the same. I think the worst thing is to come in and say, well, I have a slow day today, because it never works out that way.

From a leadership perspective, I visit the field and have gone to over a hundred of our forecast offices. I emphasize how important the field structure is to accomplishing our mission in a cost-effective manner. From a headquarters perspective, there's always this tension about what we do, because we know our field structure touches every county every day, and is very visible to the country's entire population. We have to ensure that we're all marching towards the same goal. We have a very important strategic goal of building a weather-ready nation. We're continually reminding our workforce that their job doesn't end with producing the most accurate, timely forecasts and warnings. It really involves that connection to good decision making, especially for public safety. Consistency, therefore, is a very important attribute of our products and services. An emergency manager or public safety official, for instance, cannot be getting three or four different forecasts from the same agency and be expected to make decisions five, four, three days before an event. Thus, we have implemented a collaborative effort. That means all of us rolling up our sleeves and making sure we're getting the job done that has to get done with a consistent product in mind.

On Challenges

One of the main challenges I encountered when I became the NWS director in 2013 was that we didn't have a working governance structure, which had caused some fairly complicated budget management issues. My first goal was to fix this problem. We developed a new governance structure that mirrors our forecast process. I hired a new management team and implemented a new budget process that maps to our main portfolio areas. We had to shore up our business processes to understand where every dollar was going and implement fiscal discipline.

For example, we did not have a separate budget category for dissemination. Social media is a major way of communicating the forecast, current conditions, and situational awareness with emergency alerts on cell phones and tablets. How much money were we spending on it? How was it organized? In November 2013, we discovered during the severe weather outbreak how fragile our dissemination capability was at NWS. The entire



“The strategic vision for the NWS is to build a Weather-Ready Nation—which means that every American is ready, responsive, and resilient to extreme weather, water, and climate events.”

— *Dr. Louis W. Uccellini*

network was under capacity. It was fractured among six different regions. They couldn't even operate training and administrative functions through their office bandwidth to get data in and products out at the same time.

To build a weather-ready nation, we had to deal with the core issues of budget acquisition and program management. When I arrived, we had 25 budget categories that no one knew how they came into existence or how they interacted with each other. We needed to simplify the budget structure that mapped to our functions. Today, NWS has six budget categories. I can tell you the priorities in each one. I can tell you how we plan for the three-year budget cycle. We can show the value proposition and how the money is being spent. We also have six offices. We have the Office of Observations, the Office of Central Processing, the Analyze, Forecast, and Support Office, Office of Dissemination, the Office of Science and Technology Integration (STI) and Office of Facilities. These offices have responsibilities for budget planning and execution mapped to agency goals. We have buy-in, and one of the reasons we have buy-in from all the senior executive service leaders is we hold people accountable. This budget challenge led to a better managed budget, with high execution rates and better investment decisions within the portfolios. Now we are establishing a vision of what the National Weather Service would look like in the future—how it will remain relevant in a rapidly changing and expanding weather enterprise.

On Building a Weather-Ready Nation

The strategic vision for the NWS is to build a Weather-Ready Nation—which means that every person in America is ready, responsive, and resilient to extreme weather, water, and climate events. The initiative has three main goals going forward:

1. Reduce the impact of weather, water, and climate events by transforming the way people receive, understand, and act on information. Through scientific studies and anecdotal evidence, we are realizing that we need to better connect our forecasts and warnings to decisions at all levels in order to accomplish our mission of saving lives and property.
2. We need to harness cutting-edge science, technology, and engineering to provide the best observations, forecasts, and warnings. We've made great strides in improving the accuracy and precision of our forecasts and warnings, but there is still room for improvement.
3. Finally, we need to evolve the NWS through investment in our people, partnerships, and organizational

performance. In other words, in order to accomplish the first two priorities, we need to focus on organizational and culture change.

Advances in science technology are transforming the nature of work across our economy. It's happening in meteorology as well. High resolution observations, new computer models, statistical techniques like machine learning, are helping to generate accurate and highly-resolved forecasts a week or more in advance. We need to ensure these new advances are built into the forecast process. Another trend is the growing weather, water, and climate enterprise. A few decades ago, the private sector primarily tailored NWS forecasts and warnings for public consumption. Now, the private sector is involved in observations, modeling, forecasting, and decision support. We need to expand our partnerships with the enterprise to ensure we are all providing the very best products and services to the nation. For instance, that may include buying more observations from industry rather than building those systems in house.

On Connecting Forecasts to Decision Making

For a long time, NWS forecasters were told that their job ended with issuing the forecast or warning. Over time, meteorologists have come to realize that connecting those forecasts to decisions is critical to fully achieve our mission of protecting lives and property. Now, we are working towards evolving the organization to make this a key component of what we do.

IDSS can take many forms. It could be a virtual briefing to an emergency manager or public safety official. It could be a heads-up phone call. Or, it could take the form of a meteorologist embedding in an activated emergency operations center during an extreme event. In 2017, Congress explicitly authorized this activity for the NWS with the Weather Research and Forecasting Innovation Act. This law directs us to provide IDSS to public safety officials



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— Dr. Louis W. Uccellini



across federal, state, local, and tribal levels of government. While we don’t provide IDSS to the public, we are working with the enterprise to simplify and better communicate our forecasts and warnings so they are more understandable and actionable.

The only way to understand what our partners do, we need to be at their table-top exercises. We have to practice with them. We can’t show up just before a weather event and say, okay, I’m here, what do you need? We need to be involved. They need to understand we can’t give them a perfect forecast. The longer out in time, the less accurate the forecast. We build a trusted relationship by engaging in these exercises and that relationship flows both ways. There is a personal and professional stake involved here. For example, the storm in Taylorville, Illinois, on December 1, 2018, we forecasted a tornadic outbreak that likely could affect the town’s Christmas parade at 5 p.m. that Saturday evening. With that trusted relationship, we provided the town officials with the best information so they could make the most informed decision. The parade was cancelled. When the tornado did touch down, it was between an F2 or F3 and ripped through the block where the parade was supposed to be. We’ve received testimonials from the local officials that undoubtedly this process saved lives—that’s the IDSS connecting us to the decision making.

On Partnerships and Collaboration

It’s a priority to make partnerships and business relationships a win-win for NOAA and the National Weather Service. We regularly host meetings and workshops with our partners to openly collaborate and explore opportunities to meet the vision of the Weather-Ready Nation initiative. We’ve been partnering with America’s Weather and Climate Industry for decades to help expand the reach of NWS observations, forecasts, and warnings to communities and the public to save lives and property. We know we can’t do it alone. There are areas where we know we need to leverage new and innovative partnerships—including use and visualization

of data; sharing, distributing, and communicating data, information, forecasts and warnings; improving the suite of observations used in our models; improving the situational awareness of our forecasters, including crowdsourcing; and improving our understanding of how to use new predictive analytics to improve our forecasts, as well as artificial intelligence to assist forecasters in providing decision support. We seek partnerships throughout the modeling community to build and improve our modeling suite and improve research to operations.

To learn more about the National Weather Service, go to weather.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.

Modernizing Government to Meet 21st Century Realities: A Conversation with Margaret Weichert, Deputy Director for Management, Office of Management and Budget

By Michael J. Keegan



Most Americans may not think about the U.S. federal government every day—but when they need government services, they expect it to work. As technology, e-commerce, and customer needs have evolved, government institutions have some catching up to do. The U.S. federal

government still operates many capabilities and processes established in the mid-20th century— if not earlier—despite dramatic changes in technology, society, and the needs of the American people in this Digital Age.

Margaret Weichert, deputy director for Management, Office of Management and Budget (OMB), joined me on *The Business of Government Hour* to discuss the Trump administration’s vision for modernizing the U.S. federal government to meet the mission, service, and stewardship realities of the 21st century.



On Leading OMB’s Management Mission

I lead the management side of OMB, which develops and executes a governmentwide management agenda that includes information technology, financial management, procurement, performance, and human resources. The management side of OMB is comprised of offices that oversee and coordinate the administration’s procurement, financial management, e-government, performance and personnel management, and information and regulatory policies.

I’ll give you a brief overview of some of these areas that comprise the management portfolio. The Office of Federal Procurement Policy (OFPP) works with agencies to improve federal procurement practices that affect the full range of federal acquisitions. The Office of Federal Financial Management (OFFM) develops and provides direction to improve financial management and systems. The Office of E-Government and Information Technology, headed by the federal government’s Chief Information Officer Suzette Kent,

develops and provides direction in the use of information technology to deliver on government missions. The Office of Performance and Personnel Management (OPPM) works with agencies to encourage use and communication of performance information and to improve results and transparency. OPPM also works closely with the U.S. Office of Personnel Management (OPM) to advance effective personnel practices.

On Transforming How Government Works

Our vision for government modernization as outlined in the President’s Management Agenda (PMA) started by focusing on those government serves—our customers, the citizen who use government services. Trust in government is at an all-time low. We wanted to understand the causes and identify ways to modernize and improve how government delivers on its various missions. We looked at specific functions and sought to identify where government agencies are failing to connect.

Fundamentally, this failing relates to our service delivery and a business model, if you will, that has its roots in fighting the Cold War with process and institutional approaches dating back to the 1950s. This operational model is far from agile. In the 21st century, agility powered by IT, powered by data, and powered by people is how leading players execute, differentiate, and build trust.

Many of the jobs we can't fill today, nobody could have conceived of even 10 years ago, let alone 50 years ago. How we can acquire goods and services has changed with online marketplaces that provide you real-time information about both prices and activity. The way we hire and compensate hasn't kept up with what is considered commonplace today. The American people see and experience these changes and the federal government needs to catch up to meet these expectations. We need to remove structural obstacles that make it impossible for today's federal government to adapt to changing technology and workforce needs. We recognized that government must transform its outdated approaches, technology, and skill sets so that the workforce of today can meet the needs and expectations of the public tomorrow.

Rather than pursue short-term fixes that quickly become outdated, we initially focused on investing in deep-seated transformation through the PMA centering on:

- Deliver mission outcomes
- Provide excellent service
- Effectively steward taxpayer dollars

To move from vision to action, the administration identified the need to modernize several key drivers of transformation:

- Modern information technology
- Data, accountability, and transparency
- Building a modern workforce

In order to advance change across the federal enterprise, we established Cross-Agency Priority, or CAP, goals for each of these three key areas. We have a list of priorities under each. I invite you to visit [performance.gov](https://www.performance.gov) for more detail on each of these goals as well as their priorities. There you can get a sense of what is being done and the quarterly progress made under each goal.

On Thinking Outside the Box

Being results oriented, I believe there is always a potential solution if you just keep looking and asking questions. Washington, D.C., is a place of laws and regulation. Such



a place does not necessarily give way to outside-the-box thinking. Sometimes this is necessary, but when you are managing the business of government we need leaders who are constantly asking questions, inquiring about how might we achieve this same objective within the construct of existing law or within the construct of new legislation. How do we bring new thinking to the table? How do you leverage and use innovation happening in the private sector? How do you apply that innovation to a world that isn't about profit and loss? In government, our focus has to be about mission, service, and stewardship.

During my tenure, simply asking different questions has led people to get energized and to free people up to say, if we run down a path and we find out we're not able to do it that way, what is the next way? And the next way? And oh, by the way, let's document all of the paths taken: testing hypotheses, running them down, documenting activities, and outcomes. A test or path taken that leads to a dead end is not a failure if you document what didn't work and why. Doing this can inspire new paths forward while possibly identifying better approaches and solutions.

On Optimizing Across the Federal Enterprise

Modernizing government for the 21st century involves getting the right people in the right jobs at the right time in order to focus on mission, service, and stewardship. Often when we talk about personnel management in the federal government, we tend to get lost in the mechanics of getting people in and out of government. Sometimes focusing on

“I am very excited about the Gears of Government Award program. This program recognizes the contributions of individuals and teams across the federal workforce who make a profound difference in the lives of the American people.”

—Margaret Weichert



the mechanics and process we can lose sight of our overall purpose: why we are here to begin with. Keeping the mission of government front and center is key.

For a period of time, I was also the acting director of the U.S. Office of Personnel Management. This role, which tends to focus on human capital from an operational perspective, complemented my OMB role where I approach government policy, including HR, from a strategic perspective. Having both perspectives afforded me an opportunity to look at the personnel function from end to end, finding more effective ways to help federal agencies address the complex and critical human capital challenges they face.

Doing both roles, I also began to see the importance of jettisoning siloes and working towards optimization across agencies, whether doing IT modernization, personnel management, procurement, or leveraging data.

On the Technology Modernization Fund

The Technology Modernization Fund (TMF) was authorized by Congress as a mechanism to finance technology modernization efforts across the federal government. It is an innovative funding model that allows agencies to accelerate key IT modernization projects. It seeks to enable agencies to reimagine and transform the way they use technology to deliver their mission and services to the American public in an effective, efficient, and secure manner. We're making investments in incremental, agile ways, not spending millions on critical IT and then having the agencies come back for more monies when they've proven it out.



The fiscal year funding of \$100 million followed by \$25 million in 2019 has enabled us to fund projects with U.S. Department of Agriculture (USDA), U.S. Department of Housing and Urban Development (HUD), and U.S. General Services Administration (GSA), along with a host of other agencies. USDA's Farmers.gov was one of the earliest projects seeking to provide a one-stop-shop for self-service applications, educational materials, and business tools for farmers, ranchers, conservationists, and private foresters. With this project, the department has made incredible strides towards modernizing their core infrastructure and becoming much more service oriented to support farmers, producers, and ranchers across the country. The fund was designed to have initially funded project payback the fund. This way the fund wouldn't solely rely on annual appropriations. Some of the earlier funded proposals are starting to be set towards repayment. If you'd like more detailed information on the TMF, go to tmf.cio.gov.

On Establishing Government Effectiveness Advanced Research Centers

When I came from the private sector to government, I noticed at-risk capital from the private sector wasn't really being deployed to help government with its unique management challenges. Let me provide some context. The federal government has been slower than the private sector to adapt operations to new realities. These failures mean we are not meeting the public's expectations as I mentioned earlier, and that our use of resources is less than optimal. Moreover, reliance on outdated technology has led to a workforce insufficiently equipped to transition to more modern ways of doing business. We conceived of the Government Effectiveness Advanced Research (GEAR) Center as a nongovernmental public-private partnership that would engage researchers, academics, nonprofits, and private industry from disciplines ranging from behavioral economics, computer science, and design thinking. The goal is to use creative, data-driven, and interdisciplinary approaches to reimagine and realize new possibilities in how citizens and government interact.

Working with the General Services Administration (GSA), we launched a competition to create a GEAR Center to address challenges facing the federal government. The intent is to have the centers provide the federal government with the opportunity to not only catch up to where the private sector services and capabilities are today, but also to lay the groundwork for where government operations and services need to be in five, ten, twenty years or more. It would provide capacity to explore questions concerning how government can best harness technological advances to



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— Margaret Weichert

address evolving challenges concerning citizen interactions with the government, federal workforce skill/reskilling requirements, the leveraging of big data, and collaboration with the private sector via grantmaking, procurement, and public-private partnerships.

On September 10, OMB along with GSA announced three grand prize winners of the GEAR challenge. Each winner receives an award of \$300,000 each. Five honorable mentions were also selected from the pool of highly competitive applicants. The grand prize winners will focus on such topics as cybersecurity workforce collaboration, data for impact, and data and evidence for government and academic impact. Our hope is once we get the GEAR Centers fully launched, we can fund with capital that would come in from the private sector as well as from grants and other government funding sources.

On Recognizing the Federal Workforce

I am very excited about the Gears of Government Award program. This program recognizes the contributions of individuals and teams across the federal workforce who make a profound difference in the lives of the American people. Whether they are defending the homeland, inspecting our food, making scientific discoveries, or

managing cyber risks, federal employees underpin all the operations of our government and touch nearly every aspect of our lives. These awards recognize not just the front-line mission employees, but also those teams and individuals that are strengthening our country to be a more modern, effective government to better serve their fellow citizens. This year the award recipients include employees and teams from federal agencies, including NASA and the departments of Defense, Health and Human Services, Energy, Veterans Affairs, Agriculture, and Transportation. This program underscores that the heart and soul of any federal agency are its people and recognizing them is critically important.

To learn more about the Office of Management and Budget, go to omb.gov.



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Managing Enterprise Risk: Insights from Tom Brandt, Chief Risk Officer, U.S. Internal Revenue Service

By Michael J. Keegan



Federal agencies are hardly immune to the “slings and arrows of outrageous fortune” and uncertainty. Each day federal agency leaders face risks associated with fulfilling their respective program missions and yet today’s headlines present stories of cyber hacks, abuses of power, extravagant spending, and a host of

other risk management failures. In some cases, if leaders had taken the time to foresee and mitigate potential risks, many of these failures could have been either avoided or at least had less of an impact. It is a leadership imperative for government executives to mitigate the potency of uncertainty by managing the realities of risk. Employing an enterprise risk management (ERM) process can assist leaders in doing just that.

The U.S. Internal Revenue Service (IRS) has sought to do just this and develop an effective enterprise approach to identifying, measuring, and assessing risks and developing effective policy responses—pursuing enterprise risk management as an approach. What are the benefits of pursuing enterprise risk management? How can risk management enhance agency decision making? What is the mission of the Association for Federal Enterprise Risk Management (AFERM)? Tom Brandt, chief risk officer (CRO) at IRS, joined me on *The Business of Government Hour* to share his insights on these topics and more. The following is an edited excerpt of our discussion, complemented with additional research.

What is the history and mission of the IRS’ Office of Chief Risk Officer?

 The chief risk officer position within IRS is relatively new. It was established in 2013 in the aftermath of a major crisis

within the agency. The intent was to establish a CRO to help leadership get ahead of potential risks while providing capabilities across the agency to help identify other potential risks that may be on the horizon. The office oversees the ERM program, which provides an agencywide approach to risk management to foster a risk aware culture through education, awareness, and mitigation approaches. It also helps IRS units incorporate risk management principles into strategies and daily operations.

What are your primary responsibilities as CRO at IRS?

 When the CRO position was established, my primary responsibility was to develop, establish, and then execute a common risk management framework for how we capture, report, and address risks within the IRS. I continue to mature this approach while also bringing to the fore emerging problems and issues and getting out in front of the potential negative impact of risk.

In addition, I also serve in a consulting capacity that supports the IRS leadership team and others who are perhaps facing risk issues. In this role, I need to continue to evolve and mature ERM within the agency in accordance with the IRS’s enterprise risk management vision. I participate in IRS’s strategy and objective setting discussions, including strategic planning and decision-making forums, and provide risk perspective. I also work to ensure proper risk management ownership by the business units and guide integration of ERM with other IRS planning and management activities. My office also works to promote risk awareness at the IRS. Integral to doing this, I partner with the business and functional units on their most important risks. I also represent the IRS in the Treasury ERM Council, the Federal Interagency ERM Council and other forums.



“Being an effective leader requires one to be a good listener who takes the time to understand and engage their team.”

—Tom Brandt

What are some of the challenges you face in your role?

 As I reflect on my tenure as CRO, a major challenge is finding the time. It is having enough time to assess, focus, and identify risks. Along with the challenge of time, it is also about working with the IRS leadership team to think about those things that could happen to get beyond what's right in front of us and spend time anticipating. Our leadership team definitely recognizes the importance of planning for and preparing to get ahead of other potential problems, issues, and risks.

Another challenge is overcoming perhaps a natural tendency for people to not want to share what can be considered “bad news.” The challenge lies in creating an environment where people feel comfortable pointing out problems and raising concerns while there's enough time to mitigate and deal with them. Creating a risk aware culture can help an institution get out in front of possible issues and mitigate their potential adverse effects. Our leadership recognizes this reality and promotes the notion that everyone needs to be a risk manager. If we're going to be successful in what we're doing here, we really need everybody to be on the lookout for risks and things that could go wrong.

Within IRS, there is also a desire to fix problems before raising them. Culturally, if we find something that is not working, there is a strong interest in fixing it before sharing it. Given how quickly situations can escalate from an isolated issue to a full-blown crisis, we are challenging this way of doing things internally. It's about creating a truly risk aware culture and that can be challenging for any organization.

What do you appreciate most about the IRS?

 What I appreciate most about the IRS as an institution is just its ability to get things done. My time as CRO has coincided with a period of significant reductions in the agency's budget and staffing. During this period and under these constraints, the IRS implemented critical aspects of the Affordable Care Act and most recently the tax reform law. In both cases and in a variety of others, under significant constraints, we are able to marshal people, attention, and resources to get things done. For example, the tax reform law with almost a nonexistent window of time to implement those provisions, the IRS had to reprogram hundreds of lines of code and do untold number of forms and guidance. These changes and updates had to be completed and ready to go by the following tax filing period. We got it done.

How would you define an effective leader?

 During my career, I have been fortunate to work for some great leaders, from the previous IRS commissioner, John Koskinen, to our current commissioner, Charles Rettig. I have appreciated the opportunities to serve on their teams. I have learned that being an effective leader requires one to be a good listener who takes the time to understand and engage their team. It is also important for leaders to always be learning and building their skill set. An effective leader also cultivates a robust network of colleagues and people who can help them achieve their vision. Effective leaders must always be inquiring and ask questions. Using the resultant information and knowledge gained from employing this curiosity can help leaders match the right people with the right skills and place them in the best role and context to succeed.

There are various definitions of risk. What is risk and why is risk so often viewed in negative terms? Can it have a positive sense to it too?

 Risk is uncertainty: the reality that we never really know how something is going to turn out. On a personal level, we take risks every day. Many risks are related to how we make





“Last year, AFERM partnered with RIMS, the risk management society, to create the RIMS Certified Risk Management Professional-FED certification. This certification distinguishes the achievement of validated risk management competencies for an effective risk management professional in the federal government environment.”

— Tom Brandt

decisions. Our commute to work is fraught with many risks. Today, there are more tools and apps that can help us mitigate the risks associated with choosing the best or worst route to work. These tools help us to better understand our options and make more informed decisions.

Organizationally, risk is the possibility that events will occur and affect the achievement of strategy and business objectives. Risk management provides the tools, techniques, and approaches to better understand risk issues and minimize their impact.

Risk is often viewed in negative terms because of the environment in which we exist. When something goes wrong much is at stake and significant consequence can be an unfortunate reality. The impact of poorly managed risks can lead to lots of unwarranted attention. This becomes even more of an issue if it happens in the federal sector. When something goes wrong in the federal government there is often a rapid tendency to point fingers and lay blame, and not take the time to truly understand what has happened and address it accordingly. Operating in such an environment risk will almost always be viewed negatively rather than as an opportunity to transform how things are done. This environment makes people risk adverse. This can unnecessarily limit the ability of organization to be innovative. We need to view risk as uncertainty and not necessarily as negative on its own. Risk management tools and techniques can help an organization cultivate a proper risk awareness culture.

What is enterprise risk management? How does it work within your agency?



ERM is defined as the culture, capabilities, and practices, integrated with strategy-setting and its performance, that an organization relies on to manage risk in creating, preserving, and realizing value. We have a well-established ERM process. We're six years into our program. We do conduct an

annual enterprise risk assessment. We engage every part of the IRS to review risks across all the units and assess what is happening in our external environment. As part of this process, we review audit findings and take input from employees, managers, and the leadership team. We will certainly consider our existing risk and whether there are new risks that are emerging that we need to begin putting on our radar. We have an IRS Executive Risk Committee (ERC) that I chair. As an output of the risk assessments, the ERC develops the IRS's risk profile. Leadership determines whether additional action needs to be taken for any of the risks and assigns accountability. The risk profile reflects the environment facing the IRS, including how over the past several years the IRS has operated with reduced funding and a declining workforce while workloads and responsibilities have increased. Some of the top risk areas highlighted in the IRS's risk profile have included:

- Aging technology infrastructure
- Cyber and data security
- Critical staffing shortages
- Reduced service and enforcement levels

Every single unit at the IRS also has an ERM champion or liaison. Most of those positions are collateral duty. However, some of the larger units in IRS have a dedicate full-time ERM lead. Each unit gets together monthly to stay current on what is happening across the IRS and to understand our risk response strategies. We've incorporated this discipline into the IRS performance management process as well as our business performance reporting. We're regularly monitoring and tracking our enterprise risk, but it is not enough to simply go through these exercises to create an enterprise risk list and be done. That isn't going to get you very far. The key is putting in place risk response strategies and then monitoring those risks and our responses throughout the course of the year.

Tom, you have been president of the Association for Federal Enterprise Risk Management (AFERM). Would you tell us more about the mission of the AFERM?

 I have enjoyed being involved in AFERM. In addition to my day job, I set aside time to do this because it has been so helpful really to connect with other practitioners in the federal government and other organizations. Overall, the mission of AFERM is to promote the practice of ERM in the federal government. We meet this mission through training programs, various educational events, and thought leadership research. We host many workshops and networking events each year. A key AFERM resource that provides great value to our members is the sharing of best practices and lessons learned. AFERM provides a network of risk practitioners and access to information on how best to implement ERM in an agency. The association also provides

informal mentoring opportunities for newcomers to ERM within the federal government. Last year, AFERM partnered with RIMS, the risk management society, to create the RIMS Certified Risk Management Professional-FED certification. This certification distinguishes the achievement of validated risk management competencies for an effective risk management professional in the federal government environment. Individuals who earn the RIMS-CRMP-FED have demonstrated their knowledge and competency in the area of risk management in the U.S. federal government. AFERM will continue to seek ways to advocate the further adoption and integration of ERM into and throughout the entire federal government.

To learn more about the U.S. Internal Revenue Service, go to irs.gov.



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Providing Mission-Support Services Across Government: Insights from Allison Brigati, Deputy Administrator, U.S. General Services Administration

By Michael J. Keegan



Over the last seven decades, the nation's population has more than doubled. The price of real estate in major cities has skyrocketed and super computers have gone from filling three-story rooms to fitting in your pockets. The world has become vastly more interconnected and federal

agencies are striving to match the pace of change, evolving to meet new domestic and global challenges and better serve the American public.

The U.S. General Services Administration (GSA) is working with federal agencies on multiple fronts to save taxpayer dollars and improve the efficiency and effectiveness of the federal government. This unique mission support role ties back to GSA's founding in 1949 when President Truman sought to create one agency to help the federal government avoid senseless duplication, excess cost, and confusion in handling supplies and providing space. Today, GSA fulfills this mission, pursuing a wide range of programs that support partner federal agencies with their real property, procurement, information technology, and shared service's needs.

What are GSA's strategic priorities? How is it providing mission support services to federal agencies? Allison Brigati, deputy administrator at GSA, joined me on *The Business of Government Hour* to share her insights on these topics and more. The following is an edited excerpt of our discussion, complemented with additional research.

What are GSA's current strategic priorities?



We have four priorities. Our first priority is to save taxpayer money through better management of federal real estate. The second priority is to establish GSA as the premiere provider of efficient and effective acquisition solutions across the federal government. Our third priority involves improving the way federal agencies buy, build, and use technology. Lastly, we want to design and deliver expanded shared services within GSA, and across the federal government to improve performance and save taxpayer money.

Would you briefly describe the mission, continued evolution, and operational footprint of the U.S. General Services Administration?



GSA's mission is to deliver value and savings in real estate acquisition, technology, and other mission support services across government. In July 2019, we celebrated our 70th anniversary. As we reflected on the agency's history, it is amazing to see how stable our mission has been over the years. President Truman established the agency in 1949 wanting to create an agency to help the government avoid senseless duplication, excess cost, and confusion in handling supplies and providing space. While the mission has been quite steady, we are always evolving in not just how we deliver on this critical mission support role for the government, but also in what we deliver.

An example of how we have evolved over the last few years, we have been keenly focused—as a result of positive policy and industry shifts—on customer experience and data driven policy and decision making. If not the first, we were one of



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— Allison Brigati



“I am the chief operating officer for the agency. I manage the day to day operations. While I do get engaged in our core business lines, my day to day focus is on managing the internal operations of GSA.”

— Allison Brigati

the first agencies to create the roles of the chief customer officer and the chief data officer. As part of our evolution, the delivery of technology services has become a major line of business for GSA. In addition, we play significant roles in promoting management best practices and efficient government operations through the development of governmentwide policies. That function resides in Office of Government-wide Policy, which I led when I first came to GSA.

GSA's scale of operation is pretty significant. We have more than 11,000 employees, \$24 billion in annual revenues, \$43 billion in assets, including property, vehicles, and office equipment. A gross annual budget authority of \$9.7 billion and an additional \$17.8 billion in obligations, supporting approximately \$68 billion in annual contracts. For context, our annual revenue puts us roughly in the top quarter of Fortune 500 companies, so we're just a few spots below a very well-known coffee company. On the real estate side, with more than 368 million rentable square feet in over 8,700 active assets, we administer one of the largest and most diversified real estate portfolios in the world.

In terms of the policy side, most significantly I'm sure you've heard of the Federal Acquisition Regulation (FAR). The FAR set the rules that govern the more than \$500 billion in annual procurement spend by the federal government. We manage the FAR in coordination with NASA, Department of Defense (DoD), and the Office of Management and Budget (OMB).

What are the duties of GSA's deputy administrator?



I am the chief operating officer for the agency. I manage the day-to-day operations. While I do get engaged in our core business lines, my day to day focus is on managing the internal operations of GSA. The C-Suite reports up through me, which include IT, finance, human resources, as well as the Office of Administrative Services, basically a mini-GSA within GSA, and Office of Customer Experience. Managing

the CXOs account for roughly 2,000 of our 11,000 employees and an annual budget of \$700 million.

As deputy administrator, I also manage agencywide initiatives. One of those initiatives is the Technology Modernization Fund Project Management Office (TMF PMO), which was established by the Modernizing Government Technology Act. The other initiative involves working on the proposed merger of the Office Personnel Management (OPM) and GSA. I also managed the startup of New Pay initiative: the governmentwide initiative to establish GSA as the single civilian payroll provider. Recently, this initiative was transferred over to the GSA Chief of Staff's office. Finally, managing GSA's coordination effort during presidential transition also falls under the deputy administrator's portfolio.



Can you tell us more about the Technology Modernization Fund Project Management Office?



I love this initiative. It is fabulous. I am very excited to be a part of it. It was authorized by the Modernizing Government Technology Act of 2017. Since that time, the fund has received \$100 million in FY 2018 and another \$25 million in FY 2019. We're waiting to see with crossed fingers that we're going to receive something in FY 2020.

I oversee the TMF's Project Management Office along with its executive director, Liz Cain. Suzette Kent, federal CIO, chairs the TMF Board. The board is made up of IT and acquisition experts across government. The process borrows from the TV show Shark Tank. Agencies come pitch different ideas to the board. The board does a very rigorous assessment process with key players involved in the proposed project. The fund is designed to provide resources for the IT modernization project that never seem to receive the proper funding. The TMF is a great way for these projects to get funding. It is important to underscore these are not grants, but loans that are expected to be paid back with savings from whatever it is that they are modernizing.

The funds are also dispersed in tranches. If an agency requests \$15 million, the board will allocate a set amount to, say, run a pilot or provide upfront monies. However, the next tranche of money isn't provided until progress is reported and results shown. As of this discussion, we have awarded seven projects totaling \$89 million. It is important to note that in July, the TMF PMO received three payments totaling about \$1.1 million. This is important for two reasons: first, getting repaid may assuage some of the initial doubt about that aspect of the TMF concept, and second, that repaid money can be used to support another TMF project.

Does GSA have any TMF funded projects?



GSA actually has two projects. We have the application modernization project that is helping us transition from legacy technologies to open source technologies. As of this discussion, that project just wrapped up its pilot phase. We have transformed two applications with a third one in production. The project identified best practices and techniques during the pilot stage that will benefit the team as they go into full implementation. We promised the TMF board that the team will put together a playbook that could be distributed to all federal agencies to assist other agencies in this area. The other GSA TMF project was the New Pay project. TMF is funding part of this project. This initiative is essential to GSA's goal of making back office operations



more efficient. This is a great example of a common repeatable transaction service that, as a government, we can and should do in a shared, centralized way.

In the early 2000s, the federal government launched the e-payroll initiative. Its focus was to streamline payroll processing governmentwide. At the time, there were 26 payroll systems. So, the initiative resulted in the consolidation of those 26 down to four designated payroll providers—GSA is one of those four. New Pay really is about finishing this work, trying to get the federal government to streamline even further, achieving a single payroll provider for the civilian side. So, right now, those four current payroll providers are stuck with some pretty old, costly systems, and they need to be repaired or replaced. Maybe not today, maybe not tomorrow, but very soon. We believe that through this migration to a single provider, we can realize some significant economies of scale. We can modernize to a software as a service model, which puts the risk and the cost off onto whoever is providing that software as a service and then improve the functionality and user experience of the payroll technology.

What is the GSA's Emerging Leaders Program?



ELP is a great program. It had kind of been put off to the side. I wanted to get this program back on track. We take newly graduated college students. We bring them into GSA for two years of training and rotations throughout the agency. After that time, these participants are then placed permanently in the agency. I had an amazing young woman from University of Wisconsin as my special assistant for two rotations. I would have hired her, but she decided to move to Chicago. She is still with the agency in the fleet department.

I have also had the opportunity to work with several other amazing ELPers through some of the programs that I manage. They are the future of GSA. Just so bright, hardworking, innovative. We have an incredibly high retention rate. It is 80 percent. I meet ELPers throughout the agency. Some of them are in their late 20s, early 30s—they all still talk about the program and the cohort that they formed. They still have lunches with leadership. Even though they are rotating around, we try to keep them as a cohort and build those relationships. It is just great, because they form relationships across the agency that, once they are finally placed, will help them be successful.

For instance, if you have somebody that does a rotation from the federal acquisition service to public building service, well, that is great. If they end up in one of those two services, they probably don't need to know what the other is doing. They feel valued because they know people throughout the agency and they can bring value to their organization.

What has surprised you most since becoming deputy administrator?

 Outside and perhaps within Washington, D.C., the GSA mission may be kind of a mystery. After taking the role, I started to get to know the mission and the people better. I was incredibly impressed, just blown away by the talent, the skill, the dedication, the motivation of GSA career employees. Just phenomenal! On the mission side, I was impressed by the business-like entrepreneurial atmosphere. All the innovation, the excitement about many different initiatives—how people's imaginations are rewarded. We want people to think outside the box.

What is a key characteristic an effective leader?

 It depends on context. Leadership in the military looks very different from leadership at a tech startup. For me, leadership starts with building a sense of trust. I am very much a team player. I have always viewed my role as leading from within the group as opposed to running ahead and asking everyone to follow me. I want my team to feel like we are all in it together. I try to create an environment that is a little more casual, friendly. I want people to feel safe to disagree with me and freely share their opinions. I may not listen, but I want them to tell me what they think. I have noticed that—one of my pet peeves—people in leadership positions that go around and talk about “I did this and I did

that.” It drives me crazy because we don't do anything by ourselves. In government, leaders must understand that it is a group effort. I try to make sure that my team knows that I recognize everything that they have done to get us across the finish line and that they know I appreciate all that they do.



To learn more about the U.S. General Services Administration, go to gsa.gov.



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Modernizing the U.S. Federal Data System: Insights from Nancy Potok, Chief Statistician, Office of Management and Budget

By Michael J. Keegan



An effective and efficient U.S. federal government requires evidence about where needs are greatest, what works and what does not work, where and how programs could be improved, and how programs of yesterday may no longer be suited for today. Having access to timely, accurate, reliable statistical data enables the federal

government to make reasoned and disciplined decisions about where to target resources to get the largest possible return for the American taxpayer. The federal government's statistical agencies and programs play a vital role in generating that data. Timely, accurate, and relevant statistical data are the foundation of evidence-based decision making.

How is the U.S. federal government leveraging data as a strategic asset? How is the federal government building the infrastructure for evidence-based policymaking? And what does the future hold for the federal data and statistical communities? Nancy Potok, chief statistician within the Office of Management and Budget (OMB), joined me on *The Business of Government Hour* to share her insights on these topics and more. The following is an edited excerpt of our discussion, complemented with additional research.

Would you tell us more about the work of the Statistical and Science Policy Office and your duties and responsibilities?



When I tell people that I'm the chief statistician of the United States, there is this pause. People say, that's the coolest title I ever heard in government. There is another pause with an immediate, "What do you do?" I don't produce statistics. It's a policy job. It was established as part of the

Paperwork Reduction Act and put into the Office of Information and Regulatory Affairs (OIRA).

My job is threefold. First and foremost, my job is to safeguard the integrity of federal data. I am charged with making sure that federal statistics are objective, unbiased, not politically influenced, accurate, timely, and relevant. All statistical directives that outline standards and rules on handling federal statistical data come from my office. My office puts out methods and standards that federal agencies have to follow if they're going to assert that their statistical data is official U.S. government data.

Given we have a decentralized statistical system in the U.S., I also coordinate all federal statistical agencies. I'll give you a sense of the size and scope: 13 principal federal statistical agencies and three recognized statistical units—agencies whose principal mission is to produce official federal statistics—are joined by over 100 other federal programs in statistical activities, spanning measurement, information collection, statistical products, data management, and dissemination. I head an Interagency Council on Statistical Policy (ICSP), which promotes integration across the Federal Statistical System.

My third role is to represent the U.S. internationally. I lead the U.S. delegation to the UN Statistical Commission. I also represent the U.S. at the Organization for Economic Co-operation and Development (OECD) on statistical matters. These are very important partnerships. We collaborate with the international statistical community and have good working relationship with my international counterparts.



“First and foremost, my job is to safeguard the integrity of federal data. I am charged with making sure that federal statistics are objective, unbiased, not politically influenced, accurate, timely, and relevant.”

—Nancy Potok

Given your role and responsibility as chief statistician of the U.S., what would you say our top challenges are and how have you sought to address those challenges?

 A top challenge is the pace of change around information and the ways in which information can be made available. Things have changed considerably in the last 10-15 years. My challenge is to make sure that the federal statistical system stays relevant in an ever-changing environment. A common perception of a statistician is someone with a green eyeshade who is calculating variance and standard deviations. This is not an accurate portrayal; statistical activity really defines information that is used to describe groups, even though it comes from individuals. It's business data or social data.

If you want high-quality information, it's very important that you think about the mature system of quality measurement that the statistical community has developed over decades. In some quarters, I think there is a view that if you have enough data, you're going to get to the right answer eventually. But a lot of people use big data sets that aren't complete, that have biases built into them. The statistical system has a very mature framework that is important to use. How do we take these traditional statistical methods that rely primarily on surveys and modernize them for using other types of data? It's a big challenge.

As the world produces better, faster, more granular statistical products, what do you worry about?

 Re-identification. Protecting confidentiality is a big, big challenge these days because technology, computing power, and the availability of open data really create a different environment than we had 30 years ago. The intake side is a big challenge in terms of new data sources and the rapidity at which you can create products to meet increasing demands for timely and granular data.

What are your strategic priorities? How have external trends informed and shaped your strategic direction?

 One of my key priorities is to modernize the data collection methods in order to be able to get data out faster. Surveys take a long time to process and they're expensive. Also, people increasingly don't like to answer surveys. It's an intrusion. It's hard to collect information that way. We also have a proliferation of data accessible in less traditional ways that can be used for statistical purposes. For example, if you are releasing a monthly retail sales economic indicator and you want to put it out faster than, say, six weeks after you complete each monthly survey asking businesses about their

retail sales, you can start to look at data from companies that aggregate credit card records, because more and more purchases are on credit cards. The Census Bureau and the Bureau of Economic Analysis have done research in using aggregated credit card records to calculate retail sales. The individual purchases are de-identified because they're aggregated, but you can see what was purchased using credit cards in Chicago or in New York the day after the purchases took place. That's how fast the data are aggregated. You no longer have to go to the businesses to ask about sales, because you can see the sales from the purchase end. But you need to be careful that you are not missing sales that are paid for by means other than credit cards in the released indicator.

What big initiatives are you working on?

 Data sharing between agencies, and safeguarding that data, is one. There are large amounts of information that the government has already collected on people. It resides not just in Social Security records, but also Medicare and Medicaid, veterans' records, housing records. Why would you spend all this money to go out in a survey and recollect the information if the information that you wanted has already been collected? Doing more data sharing between agencies is a big focus and a key requirement of the Foundations for Evidence-Based Policymaking Act (Evidence Act). Another priority is to safeguard it at the other end and make sure that you're protecting confidentiality and privacy. That also includes assuring that these sensitive data are only used for statistical purposes and not to identify or take action against any individuals. These are two big strategic initiatives that we're working on cross-agency, along with the federal data strategy.

Would you tell us more about the federal data strategy?

 To help agencies leverage their data as a strategic asset, the federal data strategy includes four components. These components are the building blocks and guides for federal agency actions over the next several years.

The first component is enterprise data governance. It includes standardizing metadata, creating inventories, safeguarding confidentiality and privacy, and so on. The more expansive governance vision includes collaboration across agencies and agency program silos in order to bring multidisciplinary expertise together to formulate and address the 'big questions' that have been so difficult for agencies to tackle. To be successful means changing federal agency cultures not only to ask priority questions that are meaningful and specific to the agency, including operational and mission-strategic questions, but also to share data across silos within and across agencies.



“The requirements of the Evidence Act are geared towards a fundamental change in the way agencies think about what they’re doing. The law enacts 11 of the 27 recommendations of the Commission on Evidence-Based Policymaking. I was one of the Commissioners. I know these recommendations. I’m very excited about this law.”

— Nancy Potok

The change for many agencies will be that the priority questions to be answered must drive the research methods, rather than methods being determined by what data have been readily available in the past.

The second component focuses on access, use, and augmentation of data. It calls on agencies to make data available to the public more quickly and in more useful formats. In addition, agencies should be using the best available technologies to increase access to sensitive, protected data while protecting privacy, confidentiality, and security, including the interests of the data providers. The Evidence Commission envisioned a National Secure Data Service that would be a center of excellence for statistical activities that support evidence building. The strategy’s action plan calls for the creation of toolkits and methodologies to help agencies build their own competencies as well. Agencies would also be expected to seek out new sources for building statistical data sets, which could include commercially available data and data from state and local governments.

The third component—decision making and accountability. It addresses the need for policy and decision makers to increase their use of high-quality data and analyses to inform evidence-based decision making and improved operations. Agencies are expected to use the most rigorous methods possible that align and are appropriate to answering the identified ‘big’ questions. Agencies may answer questions using existing evidence, including literature reviews, meta-analyses, and research clearinghouses. But they are also encouraged to explore opportunities for acquiring new evidence, including utilizing outside expertise.

Finally, the federal agencies need to facilitate the use of government data assets by external parties, such as academic researchers, businesses, and community groups. To accomplish this through commercialization, innovation, and public use will require agencies to reach out to partners outside of government to assess which data are most valuable and should be prioritized for making available.

Would tell us more about the implementations of the Foundations for Evidence-Based Policymaking Act (the Evidence Act)?



The federal data strategy and the Evidence Act are a powerful match. Their collective vision: to create partnerships between U.S. federal agencies, State, tribal, and local governments, academia, and industry to realize effectively the value of shared federal data—accomplished by putting ‘open’ non-sensitive data in the hands of the public and using secure technology to increase legitimate researcher access to more restricted, sensitive data while still protecting privacy and confidentiality of those data.

The requirements of the Evidence Act are geared toward a fundamental change in the way agencies think about what they’re doing. The law enacts 11 of the 27 recommendations of the Commission on Evidence-Based Policymaking. I was one of the commissioners. I know these recommendations. I’m very excited about this law. The purpose is to address the fractured federal statistical landscape. It illustrates a shift in thinking. This is not about starting with the metrics and then creating your metrics based on data you have. It is about focusing on what you want to know such as: are your programs changing anything in society as they were intended to do? What about operational efficiency?

Can you elaborate on this fundamental shift in thinking?



Sure. The Evidence Act requires that agencies become more transparent with their data and create a comprehensive data inventory and data catalogue accessible to the public that can be accessed through a single site for the federal government. In addition, each agency must create an Open Data Plan. To help facilitate easier access to protected statistical data, the Act mandates that a single application be developed and put in place for researchers to request access to statistical agency data. Currently, each agency has its own application, making the process cumbersome for researchers.

The Act also requires agencies to develop evaluation plans tied to their strategic goals. Agencies then create learning

agendas focused on first asking the big questions, and then getting the information needed to answer those questions. What kinds of questions might agencies have? The Act envisions that agencies will begin to understand the longer-term societal outcomes of their programs, be able to visualize the results of multiple federal programs in various geographic areas, improve their operations, and better serve the public.

How are these learning agencies created and carried out?

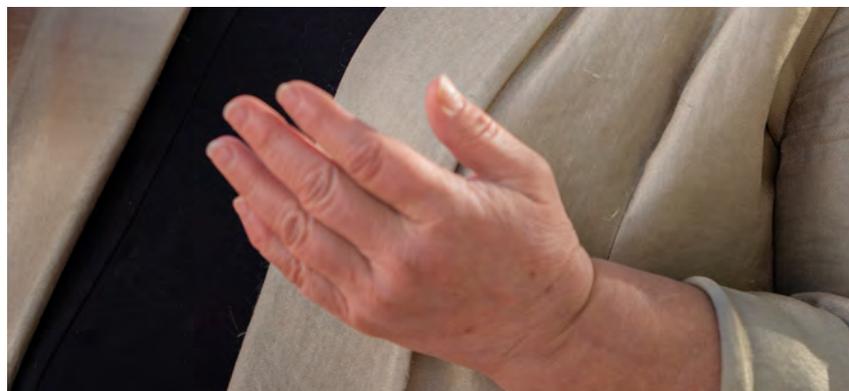
 Agencies are required to designate a chief evaluation officer, a senior statistical official, and a chief data officer. The qualifications, data governance requirements, and general expectations around these activities are laid out in the OMB guidance memorandum to agencies, M-19-23. In September, OMB held an orientation for people in these new roles to help them understand their responsibilities. We found the orientations to be very interesting because of the wide range of backgrounds, skills, and agency mission objectives across government, which highlighted the challenges we are facing. The good news is that although this is a heavy lift for many agencies, and a major culture change, there is a lot of enthusiasm, commitment, and pockets of deep knowledge that people are eager to share.

We have also established an OMB Data Policy Council to further this effort. We have been working towards meeting some statutory deadlines we have in the Evidence Act for releasing Notices of Proposed Rule Making (NPRM) for public comment. The first one we hope to release defines the roles and responsibilities of statistical agencies, emphasizing their need to be able to produce objective, unbiased, relevant, timely high-quality data without political interference. The second sets out criteria on how units within agencies, such as evaluation offices, can qualify to get the official designation of a statistical unit. This designation comes with many advantages, such as access to confidential data for statistical purposes.

These changes are quite significant, and the Act envisions that they will occur with some standardization across the federal government. We have a first-year implementation plan, which should be out by the end of this year, and has very specific things that we want agencies to do.

What does the future hold in the federal data and statistical communities?

 There are tremendous opportunities for agencies to take advantage of now, with an eye on the future. There's the rise



of artificial intelligence and machine learning. Agencies are drowning in old unstructured data some of it handwritten in PDF form. Technology like machine learning can help. You can do things like text analysis with machine learning. Advances in technology takes us away from more manual processes to more automated processes. It seems to me a natural next step for the statistical and data communities is to start relying on such technologies as artificial intelligence and the machine learning. We just need to ensure we address issues of transparency and bias in order to assure that we continue to provide high quality data that can be relied upon to guide important decisions.

To learn more about the Office of Management and Budget, go to omb.gov.



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Role of IT in the Delivery of Rail Service: Insights from Al Short, Chief Information Officer, Washington Metro Area Transit Authority

By Michael J. Keegan



The Washington Metro Area Transit Authority (WMATA) runs the Washington D.C. Metro system, a powerful economic engine for the national capital region, connecting residents in the state of Maryland, the Commonwealth of Virginia, and the District of Columbia to jobs, housing,

entertainment, and schools while providing transit service for close to 20 million visitors each year.

In 2018, Metro achieved a milestone with the creation of the Authority's first dedicated capital funding. The capital investments WMATA seeks to undertake in the coming years will focus on improving the safety, reliability, and affordability of its operations. By focusing resources on rebuilding, reforming, and improving Metro, this transit system can adapt and grow to meet the needs of this dynamic region. What role does information technology play in making this a reality? How is WMATA using technology and innovation to enhance customer experience and improve its operations? Al Short, chief information officer at WMATA, joined me on *The Business of Government Hour* to share his insights on these topics and more. The following is an edited excerpt of our discussion, complemented with additional research.

What is WMATA?

Commonly known as Metro, it was formed in 1967 by a tri-jurisdictional compact between D.C., Maryland, and Virginia (DMV) and an act of Congress. WMATA provides rapid transit service under the Metrorail name, fixed-route bus service under the Metrobus brand, and paratransit service under the MetroAccess brand. The Authority is also

part of a public-private partnership that operates the D.C. Circulator bus system. WMATA has its own police force, the Metro Transit Police Department. Today, we run about 1,500 busses and 118 miles of rail across the area. We support the entire DMV area, about a million trips a day between Metro's various modes of transportation, including buses, rail, and metro transit.

How does your office support Metro in meeting its transit missions?

I lead the Information Technology (IT) department for WMATA and report to the executive vice president of Internal Business Operations who reports to the general manager. My organization is responsible for everything from fiberoptic rights-of-way along the railroad to standard enterprise resource planning (ERP) associated with finance, procurement, and HR to the public facing website. Our IT department is involved in supporting the systems that enable the Smart Trip card to maintaining the technology for running our rail system. It is a 24/7 operation, encompasses a gamut of applications, and is made up of about 600-plus professionals between contractors and full-time employees.

What has surprised you most as CIO?

Recently, I was surprised that if you lay out all of the fiber optics we support end to end, we have two million miles of fiber along our rights-of-way. Another example is that the IT organization brings in something on the order of \$10-plus million a year in revenue for WMATA through leasing of rights-of-way to various carriers in the area. The rights-of-way across the DMV area is a very valuable resource for the Authority. As we move forward with the



“I lead the Information Technology department for Metro . . . My organization is responsible for everything from fiberoptic rights-of-way along the railroad to standard enterprise resource planning (ERP) associated with finance, procurement, and HR to the public facing website.”

—Al Short

rapid transit Silver Line phase two, we expect these rights-of-way to be even a greater benefit.

Would you provide a glimpse into things that are challenging?

 The breath, size, and scope of our expansive IT portfolio is significant, encompassing infrastructure and operations that help to make the railroad run. Twice a year we inspect every phone along 118 miles of track to make sure that they are operational.

Cybersecurity is another challenge. We must ensure the security of our systems and infrastructure, across many different applications, including mobile and online. We also run internal operational technologies, like Generalized Ordered Track Right Systems (GOTRS) that supports railroad operations. GOTRS helps us make sure the right people



have the right access—and, at the same time, that control room operators know to clear out trains when and where work is being done. It’s about safety and security.

Many of the challenges and opportunities we face require IT to continue to make concerted efforts to address current long-term concerns. It also plays an important role in:

- Supporting the acquisition of new technologies
- Recruitment and retention of skilled resources
- Mitigating the risks associated with outdated technology
- Ensuring cybersecurity for ridership, lines of business, and third parties
- Managing a growing pool of data to support state decision makers

How do you lead?

 Situational leadership resonates with me. It refers to when the leader or manager of an organization must adjust styles to fit the development level of the followers he is trying to influence. If you are working with somebody who is very accomplished and experienced, then your approach may be more collaborative. Whereas with inexperienced staff, a situational leader may be more direct with them. Along with tailoring your leadership approach, it is also important to surround yourself with those with diverse opinions and experience. They allow you to test your assumptions and provide new perspectives.

Information technology is critical to the success of WMATA. Would you give us an overview of your IT priorities?

 Our priorities are safety, customer service, transparency, fiscal responsibility and decision support. My office provides IT and telecommunication services to support these goals. We promote compatibility, integration, and interoperability; and we develop and enforce IT policy and standards throughout the Authority.

To keep pace with trends in transportation and IT, we also need to refresh our technology stack by reinvesting in hardware and software applications. Some of the key drivers are end-of-life and end-of-support, as flagged by our ERP application. We’re positioned to continually refresh IT with minimal disruption.

“Situational leadership resonates with me. It refers to when the leader or manager of an organization must adjust styles to fit the development level of the followers he is trying to influence.”

— Al Short



Important to us today is the emergence of the Internet of Things (IoT). From the standpoint of big data and analytics, we are focusing on how we need to respond to IoT. We are pursuing an enterprise data management (EDM) strategy to establish and institutionalize data quality methods and practices. The goal is to establish models for enterprise data and information flow—turning high quality, accurate and relevant data into information that facilitates a good decision-making process.

Another key focus for us is the data lake enterprise decision support system, as outlined in our Enterprise Decision Support Systems (EDSS) Strategy. Its purpose is to establish a data consolidation platform through enterprise data lake infrastructure—which includes associated data hygiene, data quality, and data governance. Through our systems and sensors, we can collect a wealth of data and then draw inferences in order to make better decisions.

Can you give examples of how improving data management helps you make better decisions?



Twenty years ago, when you installed a fan, all you had was on/off, exhaust, or supply, right? Four bits of information about that fan. You install a fan now it provides you all kinds of data about temperature, RPMs, its overall performance. Multiply this by hundreds of devices with thousands and tens of thousands of sensors. Our task now is to establish an infrastructure capable of processing that data into useful information to support making even smarter decisions.

Another example: we are pursuing a Fare Modernization Strategy. Its goal is to enhance and implement an innovative, easy-to-use, simplistic solution that provides a secure, convenient, ridership-friendly solution over multiple end points. The ridership is always looking for options when it comes to their fare payment choices. Technological innovations and mobile applications render versatile ridership terminals for fare collection and management.

We also see data as a way to attract a strong workforce. We are focusing on building a flexible, secure, resilient, highly available data center—crucial to Metro-IT. We need the best people with the right skills in order to make this IT vision a reality. By enhancing workforce capabilities, we hope to make Metro an “employer of choice.”



What does it mean to be a “transit provider of choice”?

 That means providing a seamless experience for riders, as far as how they can plan their journey—and it needs to be as flexible as possible. Our mobile app environment gives online users more options, which means we may partner with companies like Lyft and Uber. As a transit provider of choice, we want to support that first mile and last mile, as well.

The Greater Washington Board of Trade is leading a long-term Smart Region Movement to explore, deploy, and expand smart concepts, partnerships, and technologies across our region. Would you tell us more about this effort?

 Connected DMV is a smart region, smart cities initiative. It helps communities, governments, and businesses work together to improve how the region runs. Not only is the initiative striving for regionwide collaboration, it is focused on digital technology solutions that boost prosperity and serve the public good. We recently had a meeting with the CIO’s Consortium at the Council of Governments. I was there with my peer CIOs from around the DMV region, along with the Office of the Chief Technology Officer for the District of Columbia. I have a very good working relationship



with my IT regional colleague. The Board of Trade provided an overview on the initiative. This Connected DMV initiative can only enhance that working relationship within the region. As a regional transit provider, WMATA is a strategic partner in this effort.

What are some of the key characteristics a successful CIO?

 Today, the CIO cannot simply be about the technology, you must be a partner with the business, a facilitator of organizational success. It is critical that you add value to the organization—in terms of addressing business needs, enhancing operational efficiency, improving effectiveness of the organization. You cannot just invest in technology for technology sake. The CIO must always keep the business mission front and center. You are there to provide technology solutions that help solve business problems.

To learn more about the Washington Metro Area Transit Authority, go to wmata.com.

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Rebuilding Foundations and Driving Innovation: Insights from Dr. John Zangardi, Former Chief Information Officer, U.S. Department of Homeland Security

By Michael J. Keegan



Editor's Note: Since this conversation, Dr. Zangardi retired from public service.

The single most important responsibility of government is securing the homeland—protecting a nation from terrorists and the instruments of terror, while at the same time, fostering the country's economic security through lawful travel and trade. That is the mission of

the U.S. Department of Homeland Security (DHS)—securing the U.S. homeland from varied and ever evolving threats. Meeting this mission rests on having in place a modernized and innovative technology and information infrastructure.

Dr. John Zangardi joined me on *The Business of Government Hour* from the 2019 SPADE conference on “Designing for the Future of Defense and Security” from Soosterberg, Netherlands. This year's SPADE conference brought together defense, intelligence, and security leaders from Europe and around the world, in dialogue with experts from industry. At the time of the conference, Dr. Zangardi was the CIO at DHS. He discussed with me the department's IT priorities, and his efforts to modernize its IT infrastructure and change the way IT is done across the DHS enterprise.

What is the CIO's overall mission at DHS?

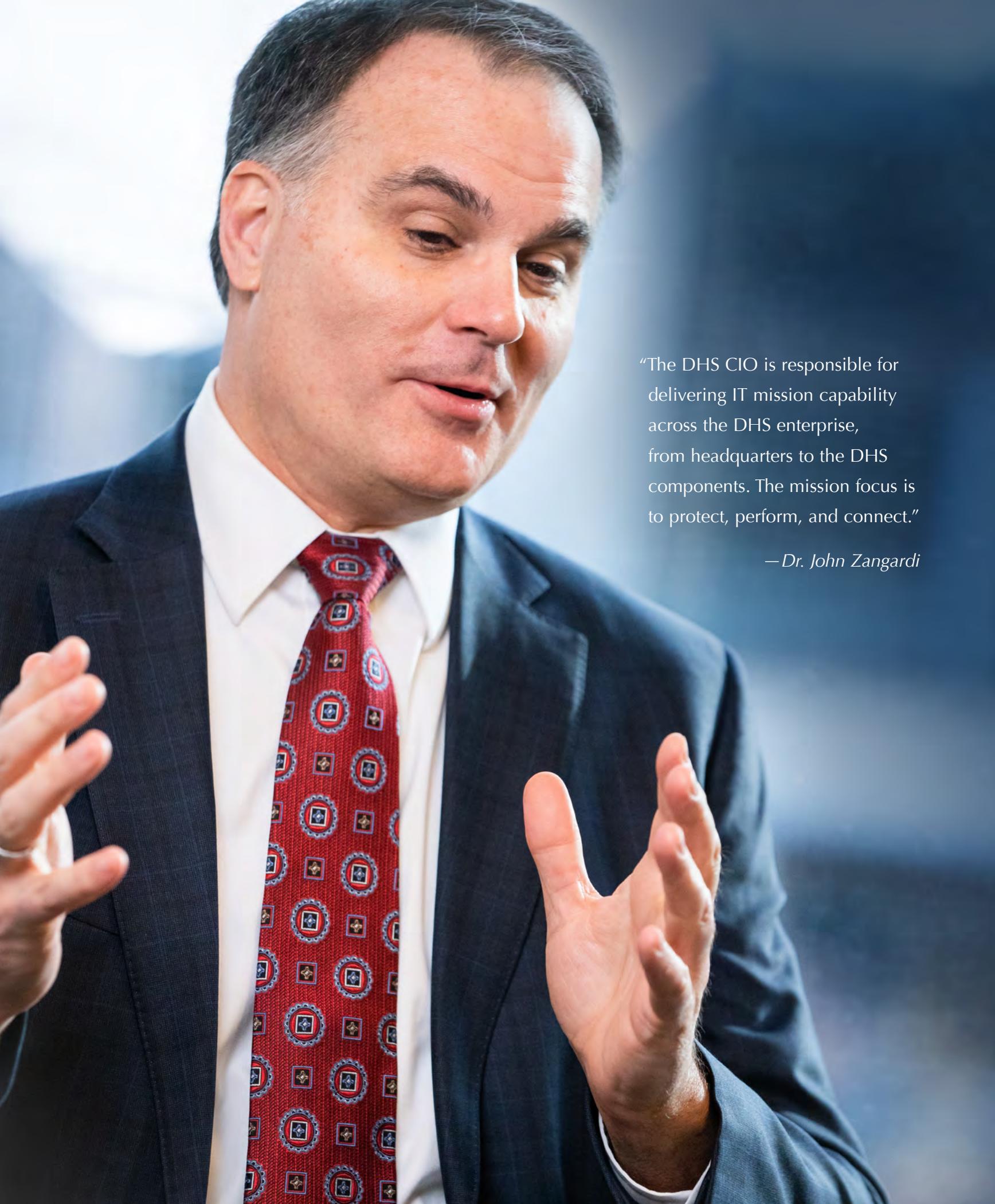
 The DHS CIO is responsible for delivering IT mission capability across the DHS enterprise, from headquarters to the DHS components. The mission focus is to protect, perform, and connect. Every day requires you have to be on your game—to make sure that the capability people need to do the mission is being delivered. Therefore, you need to efficiently connect the entire enterprise. You need to enable the mission through the movement of data and information

across the network. While doing this, you also need to ensure that the system and its contents are protected and secure. For practical illustration, if the need for a new IT capability springs up at the border, the team has to be able to support that quickly. Most important, you have to make sure that what the team delivers can be secured.

The DHS Office of the Chief Information Officer breaks down in several ways. It has an operational component, which is the largest component. The second largest is the security component. There is an area that delivers applications and develops a path to the cloud—assessing how we organize and make better use of our data. There is also an area in the CIO shop that focuses on IT budget. If you don't know where your money is, we cannot protect, perform, or connect functions. Money is the gasoline that makes the engine go.

Along with our operational environment, there is a group that focuses on the future of technology, looking out to see what innovations we can leverage that might be on the horizon. This group also focuses on initiatives like IT modernization as well as handling how we're going to roll out the use of the GSA's Enterprise Information Services (EIS) contract.

In the end, the CIO's mission is to make sure that the DHS components are able to meet their missions. If they need help with something, the CIO needs to make sure that staff is engaging with those components appropriately, in order to get them where they need to be.



“The DHS CIO is responsible for delivering IT mission capability across the DHS enterprise, from headquarters to the DHS components. The mission focus is to protect, perform, and connect.”

—*Dr. John Zangardi*

“I have learned coming up through the ranks that relationships are everything. The lone wolf theory doesn’t work. IT is a team sport. You can’t go it alone.”

— Dr. John Zangardi



What challenges have been faced?

 The number one challenge is security. Security breaks down a couple of different ways. You’ve got to make sure you have a team fully trained and capable of doing the job. We’ve been focusing on how we train IT security staff and tying it back to something called cyber retention incentive pay. We look at each of the billets that my cyber security team is working in, reviewing their duties and performance, and ultimately, making sure that they are properly trained. We keep them on this track with incentive pay.

Along with securing our systems and infrastructure for today, we also need to anticipate the future of IT security. I participated on a panel discussing 5G, which is a game-changer technology. In light of such an innovation, the key question and challenge is: how do we secure the network of the future? We’re looking at things like “zero trust identity,” how we roll those things out across the enterprise, and how they shape what we’re doing. It also requires an attitudinal change. Doing this right goes beyond simply compliance. It goes to truly understanding threats and how they evolve. It’s about communicating the threats, the risks, and the potential impact of them to department leadership, so they understand the mission impact if a system goes down.

Speed is a challenge. What I mean by speed is how quickly can we get things out there to people? It is a function of our ability to leverage contracts, resources, and get things built out on the networks. Speed is important because the demand signal today is so much different than the demand signal 10 or 15 years ago. Built into that speed challenge is something that I think is positive within government. Ten, 15 years ago when I was working in business systems, you had a great reluctance to change. Today, that reluctance has waned.

Along with security and speed, the CIO’s team needs to possess technical acumen. We are in a very competitive marketplace for talent. People with the right skills—whether in cybersecurity, data science, or the cloud—are in demand. It is a continued challenge to get highly skilled, technical people on board so we can help the department succeed.



How do you lead?



The Navy has a motto: honor, courage, and commitment. I bought into this motto long ago. You need to be committed to what you do every day. A leader must also have courage to do the difficult tasks and the honor to follow through on their commitment. That is, leaders must always, and in every context, maintain their integrity.

A leader must also prioritize. You must limit your priorities while you also empower your staff. Leadership is about, as I said, exhibiting the U.S. Navy motto: honor, courage, and commitment. But it's also about taking seriously the power of delegation.

Would you outline the strategic vision that guided your efforts?



Let's start with my IT priorities. When I arrived at DHS these priorities were made clear to me. My priorities were to modernize the network, secure the network, and deliver



capability across the DHS enterprise. We need to modernize the network by taking advantage of GSA's Enterprise Infrastructure Solutions contract vehicle to begin that modernization. It is fundamentally important to how we move forward with our network in delivering new capability at lower cost. Priority number one is getting EIS out the door, on the street, and awarded. At the end of the day, it is about simplifying network management and delivering higher quality performance that ensures information flows smoothly across all DHS missions and devices. This entails maturing a virtual network, exploring mega data opportunities and data portability, accelerating network innovation and agility, and ultimately, enforcing a zero trust network.

Priority number two is in the security field. We are looking to optimize our Security Operation Centers (SOC). SOCs are how we assess and defend our websites, apps, databases, data centers, networks, and desktop computers from cyber intrusion and attacks. Most of the centers operate independently from each other. We have 16 SOCs. We started a long road here in a 'crawl, walk, run' strategy. We're beginning to get into our 'walk' phase. The SOC optimization is part of a wider DHS effort to simplify and amplify cybersecurity. That effort involves contracting, operations, and tools, such as Continuous Diagnostics and Mitigation (CDM). We have delegated aspects of the optimization effort to component chief information security officers (CISOs). The Customs and Border Protection (CBP) CISO has the lead for identifying what tools we want to have on our network. The Immigration and Customs Enforcement (ICE) CISO is focusing on policy and procedures. Across tools and procedures, we have to recognize that DHS components may have uniquely different missions and we need to make allowances for those differences, ensuring that we don't make it harder for them to achieve their missions. The Secret Service has the lead here. It has been developing the single multiple award contract that will provide a central pool of services from which all DHS SOCs can pick and choose.

Another key priority focuses on department and component data. We completed a study exploring how to instantiate a DHS chief data officer. Is it a CDO policy? Is it a CDO with a lot of authority? What is it? That is the problem we've been wrestling with. We have also laid out an intelligent automation strategy that deals with robotic process automation, machine learning, and artificial intelligence (AI). We're not going to jump immediately to AI. We'd probably fail. It is about: how do you start small and then build your way up to AI? We're focusing this effort on mission-support aspects of DHS—the business systems.



We are also working on reducing our data center footprint as much as possible. Doing this gets down to cost versus mission. Getting to the cloud is also important for us. It enables us to meet our missions by enhancing our mobility. We have got to make sure that the right security is in place when we do it. My strategy on cloud has always been federated hybrid. We're not going to pick just one. We're going to go with whatever makes sense based on cost, schedule, and performance. What is the capability I get? What's the cost? How quickly can I deliver it? All critical questions guiding how we move to the cloud.

From your perspective, how has the role of the CIO within federal agencies changed over the years? What characteristics make one a successful CIO?

 I have learned coming up through the ranks that relationships are everything. The lone wolf theory doesn't work. IT is a team sport. You can't go it alone. If you look at game theory, trust is built on probability of defection, right? You want people to understand that when the time gets tough, you aren't going to defect. I am in there with you. Building that trust—where people know they can rely upon you—leads to collaboration and greater success.

I have had three federal CIO jobs, all dramatically different. The Department of Navy CIO was very policy focused with an enterprise perspective and not much focus on actual execution. As the acting Department of Defense CIO, you

focus on policy, but you have a lot of overarching work that you need to do with the military services, pulling them together. You are very involved in spectrum. You are very involved in military satellite and nuclear command and control communications. Moving to the DHS CIO, it is a very IT mobility focused organization, where the priority is on execution and getting the right things out there. Albeit three very different CIO jobs, but when you look across the variances, there is one characteristic needed to be successful. Can you build relationships? Can you understand the other person's problems? Are you going to help them get through those problems? When you think about the characteristics of a CIO, if you want to drive change, you need people to trust you. You've got to have established relationships.

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

 Just do it. It is wonderfully rewarding. You will get back more from public service than you will from anything else. It's hard. You have to come into it with the realization that it is not going to be the easiest thing that you've ever done, but it is really worthwhile.

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

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

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Evolving Use of Artificial Intelligence in Government

By Michael J. Keegan, Forum Editor

The use of artificial and augmented intelligence (AI) in government is expanding as the application of these tools and techniques continue to evolve. Governments are embracing AI for mission critical services that include identifying insider threats, supporting military deployment planning and scheduling, and answering routine questions about services. Agencies are considering additional uses that range from checking compliance with tax laws and regulations to assessing the accessibility of government products and websites.



The term artificial intelligence refers to machines and software able to perform tasks we typically associate with humans, such as recognizing speech or images, predicting events based on past information, or making decisions. Machine learning, another commonly used term, is a subset of AI that uses large amounts of data and information to continually improve how a system performs a task. While AI has a long history, it has begun to deliver real results, particularly with the recent rapid progress in machine learning and the increased availability of data and computing power.

The advent of AI has moved rapidly in government. In May 2017, Congress established the bipartisan Congressional Artificial Intelligence Caucus, and members have since introduced numerous pieces of AI legislation. In February 2019, the administration launched the American AI Initiative through executive order, and the U.S. Department of Defense also released its own strategy on how to incorporate AI into national security. As agency use of AI evolves, the federal government is leading a comprehensive initiative to maximize AI's benefits, while laying the groundwork for agencies to address risks responsibly. To increase the trust the public and

federal employees have in government's use of AI tools, the government's strategy deals with transparency, security, technological know-how, procurement, budgeting, and risk management.

Over the last two years, the IBM Center for The Business of Government and the Partnership for Public Service have collaborated on research focusing on the use of AI in government and its implications. The finding and insights from this joint effort culminated in the release of three distinct yet complementary reports:

- ***The Future Has Begun: Using Artificial Intelligence to Transform Government.*** This report offers four cases of organizations that have used AI. It distills findings from over a dozen interviews with thought leaders who are applying AI in government and demonstrates that government can use AI to solve real issues and meet their missions. This forum contribution will provide a synopsis of two of the four cases outlined in the full report.
- ***More Than Meets AI: Assessing the Impact of Artificial Intelligence on the Work of Government.*** This report addresses how government can best harness AI's potential to transform public sector operations, services, and the skill sets of employees. It draws on insights from a series of roundtables with government leaders and focuses on three areas: AI impact on a transformed workday, the potential for personalized customer service, and the increased importance of technical and data skills.
- ***More Than Meets AI, Part II: Building Trust, Managing Risk.*** This report discusses further steps agencies can take to manage risks. While taking advantage of the many anticipated benefits of AI, agencies must also manage real and perceived risks associated with AI to build trust in the technology.

The final contribution in this forum, **Agile and Inquisitive—AI Leadership**, explores two leadership qualities essential for meeting the demands and challenges of a continuously evolving technological landscape. With the promise of artificial intelligence no longer in some far-off future, government leaders must comprehend and harness both its perils and possibilities and doing that effectively will require these leaders to be agile and inquisitive.

This forum highlights the insights, findings, and recommendations derived from the IBM Center and Partnership roundtables and reports. Several of the contributions in this forum are edited excerpts of the reports referenced above. It is our aim to spark a conversation on the use of AI, help prepare federal leaders to assess the inevitable changes coming, and provide government leaders with insights on how to navigate this transformative time.

The Future Has Begun: Using Artificial Intelligence to Transform Government

Edited by Michael J. Keegan



In our first discussion, we highlight two case studies. The first is how the Bureau of Labor Statistics (BLS), used AI to make tedious tasks a thing of the past. The second case focuses on how the U.S. Department of the Air Force is applying AI to conquer the complexities of federal purchasing. These cases describe works in progress, not end results. Still, other agencies can learn and likely benefit from these organizations' early experiences, particularly if these first stages end up being a springboard to significant shifts in agency practices. We also present insights, based on these stories, which can be guideposts for other government agencies interested in using AI. These are just two of four case studies found in *The Future Has Begun: Using Artificial Intelligence to Transform Government*, which is excerpted in this contribution.

Using AI to Relieve Employees of Tedious, Repetitive Tasks

The Bureau of Labor Statistics at the U.S. Department of Labor looks to use artificial intelligence to relieve employees of tedious, repetitive tasks and save hundreds of work hours. Bureau staff have to read and study hundreds of thousands of survey responses about workplace injuries and illnesses each year to understand and help prevent them. AI technology evaluates responses faster than a person can and enables bureau staff to work on more important tasks, including follow-up on the survey results.

BLS collects data on workplace injuries from a sample of around 200,000 businesses through its annual Survey of Occupational Injuries and Illnesses. It then must assign codes that correlate to particular survey responses. In 2015, there were 2.9 million reported private sector injuries and illnesses in the workplace and 752,600 reported by the public sector, according to the survey. Understanding why and how these injuries and illnesses happen can help the bureau tell companies and governments how to prevent them. But reading hundreds of thousands of survey responses to pick out the important details to code is a repetitive,



time-consuming process, and one that does not require critical thinking.

Employees of the bureau's Occupational Safety and Health Statistics program choose codes to assign to pieces of information, whether it is a code designating that a respondent is a nurse or one that indicates, say, an arm injury. They then read through the survey responses and assign the codes. Once they had the codes and the rules down, program team members had to go through about 300,000 incident narratives each year. It took about 25,000 work hours to read and code, and then more time to double-check the coding and correct mistakes—until the bureau found a way to automate the coding process and improve the quality and efficiency of the coding tasks.

In 2014, the bureau started using AI to code responses. It started small. The first survey year, computers assigned five percent of all codes, and they coded only the occupations in

which the injury or illness occurred, as these are the easiest codes to assign. By 2016, the most recent survey year, computers assigned nearly 50 percent of all codes, and these codes related not just to occupations, but to the nature of the injury or body parts affected. Even better, the bureau found from the start that the computer coded more accurately, on average, than a trained human coder. To allay employees' apprehension about technology, in the form of machine learning, taking over some of their job responsibilities, the bureau's leaders played an active role in communicating the change and the benefits of using AI.

The technology can provide more comprehensive, ongoing, and timely surveillance to inform future injury prevention policy and practice. It also could benefit bureau employees themselves. They could now focus on more complicated cases that require human judgment, shifting from mind-numbing to more interesting tasks, and increasing the quality of their work. Staff also could do more follow-up work, such as calling respondents to get clarifications on their survey responses. At the same time, the bureau held training sessions for coding staff on what machine learning is and what it does, to help them get a better understanding of its value to the bureau.

Conquering the Complexities of Federal Purchasing

A second illustration of the use of AI explains how the Air Force looks at using the technology to make sense of complex acquisition regulations so it can speed the process of buying goods and services. The department will upload thousands of regulations, contract cases, acquisition training material, and Defense Department policy. AI technology then will be able to answer queries from federal contract officials and contractors about acquisition rules and regulations, such as, how to proceed with a contract, what procedures to follow, or what contract a small business could bid on.

Every federal agency and branch has dealt with the complicated acquisition process for obtaining goods and services. For the Air Force, a huge government purchaser, the challenge is exponentially larger than for many other agencies. In fiscal 2017 alone, the department spent around \$53 billion on products and services, or 11 cents of every dollar the federal government spent on acquisitions that year. AI could help the Air Force smooth the acquisition process by helping officials figure out rules and regulations and make good contract decisions more quickly and efficiently.

At the time of drafting *The Future Has Begun*, the department began running a pilot project, working with two contractors, with hopes to unveil the AI system both online and as a phone application starting later in 2018. Department employees and contractors are uploading a massive amount of data—information from Federal Acquisition Regulations and the Defense Federal Acquisition Regulation Supplement, as well as other laws and rules. The data identifies the capabilities the Defense Department needs and how those capabilities will be evaluated.

This effort requires major effort before the system can be helpful. "It's not magic," said Frank Konieczny, the Air Force's chief technology officer. Once the Air Force completes this task, the system should be able to answer requests from department employees and contractors. The goal is to enable a contract officer to query how a specific contract should be structured or if a particular contract type can be used for buying a particular product or service—whether that is an incentive contract, a fixed-price contract, or some other contract type. Contracting officers could quickly find answers to difficult questions so that they can focus on creating agreements and use the flexibility available in the procurement regulations. Any business interested in contracting with the Air Force, from a large multinational corporation to a small startup, would be able to query the software about bidding on a contract. A company also could request a list of all the contracts it is eligible to bid on—options that could simplify the process for those bidders.

At the same time, AI technology can be taught to analyze text to get at the regulation's meaning. Human experts can help the system learn to discern the intent of regulations by correlating words, acronyms, or phrases to an explanation. Acquisition professionals tend to use the contract type they are used to, rather than the most appropriate one—even if it is not the best or most efficient contract for their purchase—because they know how to follow the regulations for that specific contract. AI could help ensure that Air Force professionals use contracts expeditiously and comply with all regulations, even when they use a new and unfamiliar contract type. An acquisition process using AI software could also help company employees understand what they need to know for a contract application and what acquisition regulations apply when submitting a proposal, without the assistance of lawyers. It could also help businesses identify what regulations they must follow based on their type of work.



Additionally, making contracting easier could lead to new and innovative services and technologies for our country as more first-time contractors, small businesses, and others become willing to bid for defense contracts. Expanding the number of potential bidders could help the department supply better products and services to the warfighter faster, and at lower cost. A successful pilot can help give other agencies an AI approach to emulate—one that would simplify and speed up what is now a mystifying government necessity. The acquisition workforce no longer will have to spend hours trying to find and make sense of regulations, and employees would have more time to focus on other mission-critical work.

Recommendations for Getting Started

The people interviewed in the drafting of *The Future Has Begun* report shared several insights for government leaders seeking to use AI. Most of their ideas focused on the transformation their organizations went through when starting to use AI.

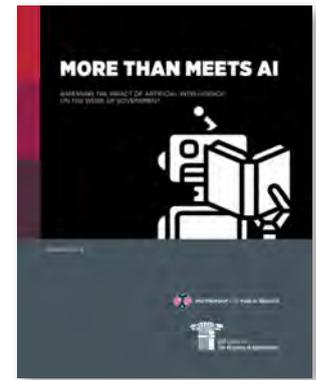
- **Not every task should be augmented by artificial intelligence.** Agencies and project teams should first discuss what role artificial intelligence could play in their work, what tasks AI could make easier, and what outcomes they expect AI to help them achieve. AI is not a silver bullet, and it is not appropriate for every challenge.
- **Do not underestimate the upfront investment needed.** Once agencies and project teams identify areas where AI can help them achieve their missions, they need to consider the resources they will need, including experts with knowledge of AI systems and how to use them, and

budgets to support implementation of the technology. Agencies should also consider how much staff time will be necessary to get an AI system up and running, especially in cases where employees must upload a trove of data and information.

- **Start small.** Artificial intelligence, like most new technologies, is best tested on a small scale before it is deployed fully. Using a pilot program enables people to get familiar and comfortable with the technology and catch errors and correct course. And it enables the system to improve.
- **It is always about the data.** AI is data hungry. One of the most common challenges with using AI is data access, availability, and quality. The more and better quality the data, the better its performance and accuracy. However, most government data and information is contained in separate agencies and, in many cases, the data is limited. All agencies should ensure quality data and information are available for training, testing, using, and refining AI systems.
- **Agency expertise in artificial intelligence could boost AI's potential.** Agencies will need a robust federal AI workforce to manage the growth and potential of these technology systems. These experts could serve as the repository of AI knowledge for agency program and could work directly on projects when teams lack AI expertise. However, agencies likely will encounter challenges with attracting AI experts, as they have with cybersecurity experts. Therefore, they should prepare for a probable shortage of AI talent in government and look for ways to work with AI experts in the private sector and academia.
- **Government could work with outside experts, particularly at colleges and universities.** Colleges and universities have a tremendous amount of artificial intelligence expertise and ongoing research and development programs and projects, and some have designated AI departments. Agencies could conceivably realize an added benefit if, while working with AI departments, public service piques the interest of college and university students and researchers who could take their skills to the public sector.

More Than Meets AI: Assessing the Impact of Artificial Intelligence on the Work of Government

Edited by Michael J. Keegan



Our second contribution to this forum addresses how government can best harness AI's potential to transform public sector operations, services, and skill sets. The report draws on insights from a series of roundtables with government leaders to explore pressing issues surrounding AI, share best practices for addressing solvable challenges, and work toward an implementation roadmap for government to maximize the benefits of AI. What follows is excerpted from the report, *More Than Meets AI: Assessing the Impact of Artificial Intelligence on the Work of Government*.

Introduction

How agencies incorporate AI into their work and manage the potential impact on the workforce has implications beyond the professional lives of federal employees. Federal agencies must become knowledgeable about AI if they hope to develop effective policies for technologies such as self-driving cars or applications that protect our national security.

AI is expected to revolutionize how government works. For one, AI could enable federal employees to focus on core responsibilities related to their agencies' missions and spend fewer hours on administrative duties. They are likely to have more time to deliver services, interact with customers, and perform other mission-related tasks. Should AI become pervasive in federal agencies, employees will need to enhance their digital and data literacy and learn how best to use the technology to work with citizens effectively. AI systems require critical thinking. Jobs based mainly on tasks that can be automated would likely be phased out, and employees would have to learn new or different skills for other jobs.

The insights excerpted here derive from a report based on two roundtable discussions the Partnership and the IBM Center hosted in July and October of 2018, as well as interviews conducted in October and November of 2018. The 43 people who participated have AI expertise in a variety of sectors and fields.



AI Will Transform the Federal Workday

Experts predict that automating administrative tasks will be one of AI's initial benefits. Over time, federal employees will spend less time on repetitive administrative work and more of their workday on tasks that are core to their agencies' missions, from mitigating hazards in workplaces to following up on complicated applications for grants or other government services.

A food safety inspector, for example, could spend more time advising on sanitation standards in restaurants or stores than on processing food sample data, with AI pointing out where and how facilities are falling short. Likewise, a tax examiner could take more time to follow up with taxpayers whose returns AI identifies as potentially incorrect rather than spend hours compiling and recording routine tax returns. And an occupational safety technician might use more of the day developing recommendations for safer workplaces than on categorizing information on job injuries, based on AI's determination of which occupations are most hazardous.

AI may also enable agencies to do things in new ways: reach more people, do things faster, and do things on a larger scale. For example, the U.S. Coast Guard now uses AI to analyze satellite images to identify vessels at sea that might be smuggling humans, wildlife, drugs, or arms. This saves the Coast Guard from patrolling randomly, hoping to stumble upon criminals in action. National Aeronautics and Space Administration (NASA) scientists use AI to search for planets in data and images that space telescopes collect. In 2017, AI helped NASA discover a new planet—Kepler-90i—by analyzing more than 35,000 pieces of telescope data.

These are just a couple of examples of AI's progression in government. In the long term, the transformation of federal work will likely go beyond automating the routine and will impact the nature of jobs. For some employees, the change might mean safer jobs. For example, AI could protect the lives of law enforcement agents, who can now police high-crime areas using a video recording drone with help from AI to analyze the footage. For other federal employees, AI could lead to more engaging jobs. AI is helping the Labor Department's Bureau of Labor Statistics read and sort through hundreds of thousands of responses to an annual survey on occupational injuries and illnesses. Bureau staff can now focus on more complex tasks.

 **Recommendations.** Agency political leaders and senior executives will have to manage change if artificial intelligence transforms the federal workday as foreseen.

- Leaders should communicate with employees early and often about the potential of AI to disrupt and alter their work. Leaders and managers should learn from early adopters of AI, such as the U.S. Coast Guard, NASA, and the Department of Health and Human Services. They should find out the extent to which the workday changed for employees, what types of agency work AI helped these organizations accomplish, which tasks were automated successfully, and what kind of work employees might start doing in place of current, repetitious tasks that AI could perform.
- The Office of Management and Budget (OMB) should focus on AI in the context of cross-agency priority (CAP) goals, showing the federal workforce the “art of the possible.” Through these CAP goals, OMB and agencies should focus on governmentwide areas of concern where AI could improve mission delivery, such as helping connect health care data across agencies or identifying critical talent gaps and searching through resumes for qualified candidates. Government also

should monitor progress made toward the CAP goal to demonstrate AI's value to agency missions and reveal potential challenges agencies will need to address.

Using AI to Personalize Services

If AI, as predicted, decreases time spent on clerical work and increases the amount of information that can be collected and analyzed, employees could focus more of their attention on customer service and tailor services to the needs of individuals.

The shift toward employees engaging more with agency customers is expected to be one of several possible effects of automating administrative tasks. Personalized customer experience is the norm in the private sector, and people's expectations for good service have risen. Government lags behind in this area for the most part. Some agencies are already responding. The U.S. Agency for International Development (USAID), for example, is partnering with organizations such as Colombia's International Center for Tropical Agriculture to help farmers predict rain, drought, other weather conditions, and when and what to plant, and when to harvest. More accurate weather forecasts help with those decisions. AI enables USAID and other agencies to reach a larger number of people in an individual way and offer services geared toward individual farmers or families.

 **Recommendations.** As artificial intelligence enables employees to focus more on the customer, federal agencies should help their employees improve their customer service skills.

- Federal employees should receive training that emphasizes skills for handling interactions with agency customers with the help of AI. “Social literacy” entails skills such as active listening, communication, critical thinking, negotiation, persuasion, reading comprehension, and writing. These skills will become more important as employees are able to spend more time with customers.
- Agency recruiters and hiring managers should assess job applicants for the skills listed above. Some digital tools already enable hiring managers to assess job candidates for these capabilities. For one, USA Hire, an online skills and qualifications assessment offered to agencies by the Office of Personnel Management (OPM), measures social literacy through decision making, interpersonal skills and reading comprehension, among other skills.



AI Puts Technical and Data Skills Front and Center

Federal employees in the future will need new skills to succeed in a world with AI. Creating, understanding, managing, and working with AI requires technical, digital, and data literacy that much of the workforce currently lacks.

With less need for human beings to do clerical work, library technicians could use more of their day writing information-cataloguing software. Environmental scientists might spend more time evaluating sample data that machines compile for them, instead of on the initial steps of transferring and compiling the data. Claims specialists could use their statistical skills to discern why an AI system recommends approving or denying customers' applications for government services, rather than on transcribing paperwork.

Understanding AI means comprehending probability theory, the branch of mathematics that measures the likelihood of events occurring. AI arrives at its conclusions based on the probability of a picture showing a cat rather than dog, for example, or a person saying, "real eyes" rather than "realize."

Additionally, employees will need to understand the data AI uses, how AI algorithms work with the data, and how to interpret the results of AI's data analysis. Their work will entail evaluating the quality of data going into the system to determine if bias exists and whether AI's predictions or recommendations can be trusted.

Employees would need analytical skills to recognize the potential bias in job application data, deduce the cause, and fix the problem. Federal employees also must be able to assess whether AI presented the right conclusion, and explain how AI arrived at its conclusion, whether it's to a grant applicant whose request was denied or to a congressional committee with questions about the process. Everybody will be a bit of a data scientist in the future. It doesn't matter if

you are from HR, IT, or the business side. There's a general data literacy that we will have to have. Yet training for new job skills has not been available to the degree many federal employees would like.

 **Recommendations.** As artificial intelligence becomes more ubiquitous in federal workplaces, the federal government should emphasize expertise in technical, digital, and data skills.

- The Office of Management and Budget and Congress should provide sufficient funding for AI and related technical training. Federal employees will need extensive and ongoing training in technology, digital skills, and data analysis to succeed in an AI workplace.
- The Office of Personnel Management should consider establishing an AI occupational series in line with the proposed AI in Government Act of 2018, which directs OPM to create a new occupational series or change an existing one to focus on AI-related tasks. Employees in this AI job series would have the primary responsibility for managing AI in government.
- OMB should work with the General Services Administration to establish a team for AI talent similar to the U.S. Digital Service, an information technology talent and consulting group in government. This AI team should be governed by rules that make it easy to hire top AI talent from the private sector for time-limited stints in government, helping federal agencies that need expertise for AI projects.

Conclusion

The federal government, one of the world's largest employers, is bound to face disruption from AI. As leaders incorporate the technology into their agencies, they will have to oversee employees who will face myriad changes in their work lives. At the same time, federal employees will play a crucial role for other sectors adopting AI, whether by writing regulations on self-driving cars or ensuring malicious actors are not exploiting AI-powered algorithms. This essential role underscores the need for government to become a responsible user and customer of the technology, address ethics and transparency in AI implementation, and translate its experience with AI into guidance for other sectors. Every part of our government, from federal agencies to the White House to Congress, plays a role in ensuring this transition to an AI-augmented federal workplace is as smooth as possible and that federal employees have the skills to thrive.



More than Meets AI—Part II: Building Trust, Managing Risk

Edited by Michael J. Keegan

The next contribution to this forum explores the benefits of AI, but also underscores the importance for government agencies to manage real and perceived risks associated with AI. What follows is excerpted from the report *More Than Meets AI—Part II: Building Trust, Managing Risk*, with a focus on significant challenges such as bias, security, transparency, employee knowledge, and federal budget and procurement processes.

Introduction

Many Americans have questions about effects AI technologies may have on aspects of their lives. According to an October 2018 survey, 59 percent of respondents are “very concerned” or “somewhat concerned” with job loss and displacement worries ranking highest. They also conveyed concerns about data privacy, security, hacking, and the safety of AI systems. Although these risk factors also affected public perceptions when other technologies were introduced, leaders now need to also address these concerns to foster trust as agencies rely more on AI to carry out missions. Through an executive order, an AI summit, and the creation of a website and a White House Select Committee on AI, the Office of Management and Budget and the Office of Science and Technology Policy are leading a governmentwide effort to maximize AI’s benefits, while laying the groundwork for agencies to address risks responsibly. To increase the trust the public and federal employees have in government’s use of AI tools, the government’s strategy deals with transparency, security, technological know-how, procurement, budgeting, and risk management.

Understanding and Addressing AI Risks

As agencies integrate AI into their work, they will have to pay attention to issues ranging from the ethical to the practical. Top challenges include bias, security, transparency, employee knowledge about AI technology, and federal budget and procurement processes. Each of these challenges is discussed below, along with recommendations for how agencies could address potential concerns and develop strategies to mitigate them.



It is important for federal organizations to move forward with implementing AI technologies as they address AI risks. Their approach to lessening AI risks also must evolve rapidly if they hope to use AI to address government’s most pressing challenges.

- **Bias.** Bias in AI outcomes can stem from a number of issues, including poor-quality data, limited amounts of data, or data that doesn’t fully represent all aspects of a matter. Knowing that biased data may lead to biased results, agencies need to pay special attention to what information is being used with these new technologies. To address AI bias, federal organizations need employees with technical acumen and data analysis and interpretation skills who can detect data bias and inaccuracies. Experts in government need to understand the theory behind AI, how the algorithms work, and how conclusions are reached. Under the White House’s February 2019 AI executive order, the National Institute of Standards and Technology (NIST), researchers are

exploring ways to test and measure AI security and trustworthiness. As part of its task, the agency is working with international partners to explore the potential for global AI standards. These and similar efforts should include creating a framework for assessing bias.

- **Security.** AI is vulnerable in several ways if designed without proper security measures. AI's potentially widespread impact amplifies cybersecurity concerns. If AI systems are driving cars, fighting wars, and the like, hackers who can compromise these systems have greater capacity to do enormous damage more quickly. Attacks could alter AI training data or introduce corrupted or incorrect data that changes the conclusions of the AI tool. Hackers also could act to reveal personally identifiable information in the data on which an AI tool was trained. With security paramount, the Defense Department is investigating how to safeguard AI technology from attacks. In a 2018 strategy, the department committed to fund research and development of reliable and secure AI systems, but more work is needed to evaluate the security of AI technologies. Our government and governments in other countries could share knowledge and lessons learned, as security concerns are global in nature. Given these interconnected security implications, government has to ensure data safety and spend some time reassuring people that our cybersecurity is very much up to scratch.
- **Transparency.** With AI, agencies have the ability to accomplish activities more quickly and accurately. By making AI transparent, users can learn how and why the tool arrived at a conclusion and what data the AI technology used. Lack of transparency can pose issues when people want an explanation for why decisions were made. Some AI algorithms are proprietary; others are so complex that it is hard to explain, or for people to understand, how conclusions were reached. Without clarity about how AI produces its recommendations and conclusions or understanding from employees as to how to explain results derived from AI technology, governments may risk losing the public's trust. The AI research and development community recognizes that transparency will promote trust in AI systems. Researchers are looking into explainable AI and making AI algorithms and results less of a black box. This will enable governments and others that incorporate AI into their processes to respond to questions about the decisions involving AI technology.
- **Employee knowledge.** Maximizing AI benefits while managing AI risks hinges on hiring or training employees who understand and use the technology responsibly.

Getting enough of the workforce up to speed is critical, but government often faces funding and other challenges—and often falls short on AI training and education. The federal government should emphasize expertise in technical, digital, and data skills. It should provide extensive and ongoing training to employees so they can create, understand, manage, and work with AI technology.

- **Federal budget and procurement processes.** Outdated federal acquisition and budget processes prevent agencies from buying and deploying new technology quickly and efficiently. Since most agencies start budgeting two years in advance, they often do not have the flexibility or “clairvoyance” to buy the newest technologies. The typical acquisition process involves purchasing a finished product or service, yet many AI applications are iterative, improving over time through experience. The rapid pace of AI development and improvement can leave government lagging behind. AI is moving fast, so should governments. Agencies should obtain what they need for AI by taking full advantage of the tools and flexibilities available in the budget and procurement processes. For example, agencies could use “try before you buy” acquisitions that allow them to experiment with new tools on a small scale, or staged contracts to evaluate proposals and pilot tools before investing in full.

Lessons from Canada on Maximizing AI Benefits and Managing Risks

The AI research and development community considers Canada to be at the forefront among governments at managing AI risks. The Canadian government has taken steps to ensure its departments and agencies have tools, rules and people to use AI responsibly. Based on the Canadian government's experiences, U.S. government agencies will need to balance regulation and oversight with support for private sector research, development and innovation. Canada's example outlines potential tools, rules, and people issues for consideration.

- **Tools: Simplify buying credible AI products.** In September 2018, in order to procure AI faster and more efficiently, the Canadian government released a list of more than 70 suppliers proficient in AI and AI ethics. The government deemed these qualified vendors to have delivered a successful AI product or service.
- **Rules: Create a framework to assess the risk of using AI in government.** According to an April 2019 Canadian government directive, if a department or agency is



using automated decision-making in support of service delivery, it is required to assess the associated risks. The government developed four levels of impact an AI tool might have on society and government, ranging from little to no impact that could be “reversible and brief” to very high impact, which might lead to “irreversible” and “perpetual” changes.

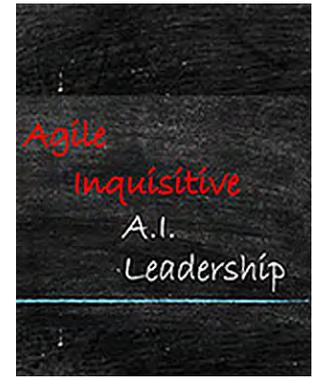
For use of AI with little or no impact on service programs, the directive allows for the possibility of automated end-to-end decision-making—in other words, making decisions without human involvement. However, it states that program officials must be able to explain how conclusions were reached. Requirements for AI used by high-impact programs, on the other hand, include a peer review by government academics, nongovernment organizations or other advisory boards; repeated training for employees using the AI tool; and documentation posted on relevant websites describing how the tool works. In addition, a person must make any final decisions based on an AI tool’s recommendation. Depending on the impact level, programs also must disclose to the citizen whether a decision affecting them is made partly or wholly by an AI tool. The directive also addresses AI transparency and the Canadian government’s right to access and test proprietary AI systems if necessary for a specific audit, investigation,

inspection, examination, enforcement action, or judicial proceeding.

- **People: Train public servants on how to use AI tools.** In January 2019, to address a skills gap and ensure government programs use AI tools responsibly, the Canada School of Public Service launched a pilot cohort of its public sector Digital Academy. It is seeking to improve the digital acumen of public servants at all levels and eventually expanding training to all public employees. Elevating the digital literacy of employees can help them get more comfortable with new technologies. Aside from providing digital, data, and AI skills, the government hopes the training eases concerns by raising awareness among public servants about the current state of AI and other digital technologies, and how they could affect their jobs and even private lives.

Conclusion

AI tools also are expected to impact the federal government substantially, with implications for federal systems and structures. To capture the benefits of AI, federal agencies must be prepared to address related risks. The Office of Management and Budget and Office of Science and Technology Policy should continue to lead efforts to manage those risks, given the technology’s potential to transform work governmentwide.



Agile and Inquisitive—AI Leadership

by Michael J. Keegan

Finally, this contribution explores two leadership qualities essential for meeting the demands and challenges of a continuously evolving technological landscape. With the promise of artificial intelligence no longer in some far-off future, government leaders must comprehend and harness both its perils and possibilities and doing that effectively will require these leaders to be agile and inquisitive—AI leadership.

The ability to adapt to change and anticipate disruption and use both to your advantage, rather than being sidetracked by either, marks the qualities of an agile leader. Coupled with this ability to pivot, inquisitive leaders investigate and probe. They guard against poor decision-making and faulty assumptions by asking questions, so they are empowered to make the best possible decisions in the situations they face. Both qualities can help leaders navigate a complex and ever disruptive world

Times of Great Change: Collusion of AI, Social Networking, and Humanity

Professor Jim Henlder, co-author of *Social Machines: The Coming Collision of Artificial Intelligence, Social Networking, and Humanity* and a recent guest on *The Business of Government Hour*, puts a finer point on why these two leadership qualities are necessary today: “Times of great change can produce great opportunities, but also significant personal stress or major societal upheaval. Many things can cause change, but technological innovation is often a facilitator.” And one challenge for people during times of change is understanding the realities of these technologies. Leaders who possess an agile and inquisitive mindset can better position the organizations they lead to realize the benefits of artificial intelligence while avoiding potential pitfalls.

Using AI to Transform Government

For purposes of definition, AI refers to the use of computers that simulate human abilities and perform tasks that people typically do. Examples include reading documents



to understand their meaning, looking at an image and recognizing the content, or making decisions. Related concepts and names include cognitive computing, predictive analytics, robotic process automation, and machine learning. AI can forever change how the world works, revolutionizing the way we perceive, think, reason, learn, and make decisions. Additionally, AI has the potential to help address many of our country's pervasive problems and advance our safety, health, and well-being.

AI has enormous potential for government. It can improve agencies' effectiveness, make data more understandable and easier to use, and help citizens navigate government services. As noted in *The Future Has Begun: Using Artificial Intelligence to Transform Government*, AI could save government up to 1.2 billion work hours and \$41.1 billion annually. No one sets out to use AI simply because it is available. Government leaders must weigh options, assess scenarios, and understand the inevitable disruption of turning

to AI to do such things as streamline processes, relieve employees of tedious tasks, and provide new insights into their agencies' work. In such a situation, that leader is better served by possessing an agile and inquisitive mindset. So, what does it mean to be an agile and inquisitive leader—and how does acting as such help one better address the realities of AI?

Agile and Inquisitive Leader

The AI revolution is here to stay, so what do leaders need to do to adapt and thrive in an AI world. Regardless of scale, introducing AI into your agency will have an impact on performance that can either derail it or take it to another level. An agile leader must meet this challenge head on, but also recognize that challenges. like opportunities. morph almost immediately. As such, leaders must always be ready to respond and be open to new ideas, pivot priorities when factors dictate, and more importantly, commitment to a new approach when circumstances warrant.

Canvassing your organization's mission and needs is critical. Not every process or activity is worthy of AI. Cost in terms of time, budget, and cultural disruption should play a significant role in whether you leverage AI. Having a vision of how you want to increase productivity or derive new value from AI is also important. That vision clarifies the best areas in which to use AI: Is it in a specific mission area to transform how you do business and achieve mission outcomes? Or is it in a mission support area where you can realize efficiencies and reallocate scarce resources towards your mission objectives.

Though AI is here to stay, it is also new, ever evolving, and no doubt disruptive. Leaders need to question, be

inquisitive: admit what they don't know and be willing to learn by asking questions rather than giving answers. Inquisitive leaders embrace ambiguity and problem solve by asking thought provoking questions. The best leaders are insatiably inquisitive. They keep asking why. They dig for answers, experiment. They're keenly aware of what they do not know—enjoying experimentation, being curious, and effectively dealing with the discomfort of change. AI has serious potential, but leaders need to manage expectations, understand implications, and develop AI solutions tailed to their agency mission and needs.

- **Define and focus your AI goals and objectives.** AI is more than just another technology. It has the potential to transform. Leaders must define and then tell people what you want to get accomplished in their AI pursuits. A key to successfully accomplishing your goals and objectives will be clearly communicating them to a variety of audiences in your own organization. Another key will be your ability to focus on a defined set of goals and to avoid being distracted by secondary issues or activities.
- **Articulate a strategy for moving forward.** Everybody will be looking to you for how to act on the organization's mission and vision. Articulating a forward-looking strategy that bridges the gap between pre-and-post AI implementation will help ensure that the organization is doing what you want it to be doing. A clear strategy provides a map of how you and your leadership team get to where you want to go, given constraints within your operating environment and the resources available. The Center's 2018 report by Kevin DeSouza, *Delivering Artificial Intelligence in Government: Challenges and Opportunities*, offers an approach to such a roadmap.
- **Engage employees.** Employees have much to offer the organization via their ideas, including innovations, to improve the performance of the agency's programs and activities. It might be best to engage people and then decide, rather than the traditional practice of "decide, then explain."
- **Involve key stakeholders.** In a similar approach to engaging employees, you must launch an active outreach program to meet with the stakeholders of your organization with whom your organization collaborates. It may better inform your overall efforts.
- **Seize the moment.** The simple fact is that you must "seize the moment" and take full advantage of the environment now surrounding your organization. You must take advantage of the moment and move as quickly as you can to implement your goals and objectives.



- **Communicate, communicate, and communicate.** Many employees will likely become uncomfortable because change creates uncertainty regarding their future. You must be sensitive to this phenomenon and repeatedly meet with employees (as well as stakeholders) to answer all of their questions and attempt to alleviate concerns to the extent possible.
- **Create alignment.** A key element of leadership is “putting it all together.” The accomplishment of your AI goals and objectives will depend on your ability to align the people in your organization around effective practices, technology, and organizational structure.
- **Expect the unexpected.** While you will have your plan in place, it is likely that an unexpected event will occur which will require that you adapt and adjust your game plan to new realities and situations. You will need to be resilient in your capacity to overcome obstacles and unexpected problems as they arise.

As exciting as this technology is, with great potential for good, it also has this potential to disrupt society as we know it today. If we are to steer the technologies between the benefits it can bring and the challenges it can create, our society needs to seriously think about and build a set of standards and policies that guide the development of these technologies. Rather than being afraid of this coming collision, we believe that people need to become more knowledgeable about what AI can, and more importantly, cannot (currently) do if we are going to make smart decisions, as individuals and as a society, as to when, where, and why we should use, or limit, these powerful technologies.

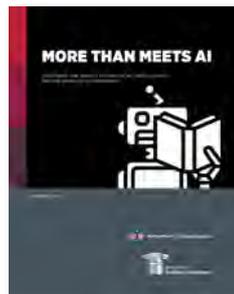
Going Forward

AI has captured the popular imagination. For some, it offers solutions to serious problems, while to others AI is seen as a threat. Professor Jim Henlder summed up for me during our conversation what’s needed going forward:

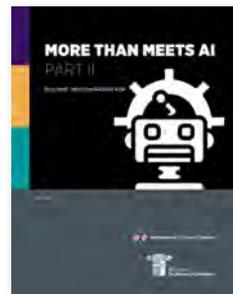
CENTER RESOURCES ON AI IN GOVERNMENT



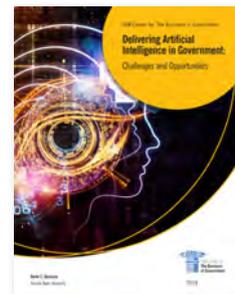
The Future Has Begun: Using Artificial Intelligence to Transform Government



More Than Meets AI: Assessing the Impact of Artificial Intelligence on the Work of Government



More than Meets AI—Part II: Building Trust, Managing Risk



Delivering Artificial Intelligence in Government: Challenges and Opportunities

For more research on AI in government visit businessofgovernment.org and search artificial intelligence.

Driving Digital Transformation: A Perspective from Erwin Rademaker, Program Manager, Port of Rotterdam Authority

By Michael J. Keegan



The Port of Rotterdam is the largest port in Europe. From all indications, the port is preparing for the future today, focusing on safety, efficiency, and sustainability. To do this successfully, the port is developing its digital twin, providing real-time situational awareness of all things static, moving, human-driven, or auto-

nous, pulling together all the geographic, sensor, and real-time information to provide port personnel a complete and current view of port activities.

Erwin Rademaker, program manager with the Port of Rotterdam Authority, joined me and my co-host, Sreeram Visvanathan, IBM global managing director for Government, Healthcare, and Life Sciences on *The Business of Government Hour*, to discuss the Port of Rotterdam’s digital transformation strategy, how it is creating its “digital twin,” and other ways the port is changing the way it does business. We conducted this interview at this year’s SPADE conference hosted in Soesterberg, the Netherlands. It brought together defense, intelligence, and security leaders from Europe and around the world in dialogue with experts from IBM and industry. This year’s theme was designing for the future of defense and security. The following is an edited excerpt of our discussion, complemented with updated and additional research.

History and Mission of the Port of Rotterdam

The Port of Rotterdam is one of the oldest and largest seaports in Europe. The port became a major seaport in 1360 after the construction of a canal to the Schie. This development allowed the port to gain access to larger cities in the north, and to facilitate the transport of goods between England and Germany. The Port of Rotterdam became the country’s second most important port after its expansion along the Meuse.

Today, the port is a strategically important distribution point in Europe. From 1962 until 2004, it was the world’s busiest port. Today, the port stretches 26 miles, docks more than 140,000 vessels annually, and handles about 460 million tons of cargo annually.

The port is operated by the Port of Rotterdam Authority, originally a municipal body of the municipality of Rotterdam, but since January 2004, a government corporation jointly owned by the municipality of Rotterdam and the Dutch State. The mission of the Port of Rotterdam Authority is to create economic and social value by working with clients and stakeholders in the realization of sustainable growth in Rotterdam’s world-class port. The objective is to enhance the port’s competitive position as a logistics hub and world-class industrial complex—not only in terms of size, but also with regard to quality. The Authority is leading the transition to sustainable energy and it is committed to digitalization in order to make the port and the supply chain more efficient. The core tasks of the Authority are to develop, manage, and exploit the port in a sustainable way and to deliver speedy, safe services for shipping.

Competitive Advantage for the Port of Rotterdam

From a historical point, our competitive advantage is location. We are a river port. The river Meuse and the Rhine, two of the biggest rivers on the European continent, are on the western side and flow into the sea at Rotterdam. Our great connection to the hinterland, rivers, and sea is a strategic advantage—so that’s one thing. At the other end, we have very deep waters. The port can accommodate ships that require deep water to offload and onload. While location and water depth are reflective of traditional competitive advantages, we also need to think about what our competitive advantages need to look like in the future. Today, we are the most connected port, both physically and now digitally, as we undergo a total digital transformation.

As a program manager, I work directly for the Port Authority, focusing on building that competitive advantage and leading our transformation effort across the port. Whether we're pursuing sustainable energy or digital transformation, we can't do it alone. We need to create a coalition of partners and stakeholders to make these big changes happen. My role is to create these partnerships and share a vision of where we are heading within the strategic mission of the port, and then execute on that.

Facing Challenges and Making Connections

We face many challenges. My most significant is finding and working with partners who share our vision of taking a long-term approach, rather than pursue the short-term of a one-year cycle of profit and loss. Engaging partners who share the port's long-term vision is challenging but necessary. This is why we look for partners who are world market leaders and invest significantly in research and development.

The other challenge is internal. On a strategic level, we make sure we connect with those responsible for port operations. They manage vessel traffic and make sure every ship is safe, into and out of the port. Port operations control all aspects of this process. When we introduce an innovative change—such as energy transition, digital transformation, or the coming of autonomous ships—these efforts can lead to major

disruptions in the current port operations. As port operators, we must understand how these changes and innovations impact the operations of our stakeholders.

Digital Transformation Strategy

In planning for the future, we had to go back to basics and ask ourselves how we should operate as a modern port. We recognized the need to improve and optimize how we do things. The Port of Rotterdam Authority aims to be the smartest port leveraging the Internet of Things (IoT)—which includes sensors and finding the easy ways to connect things using mobile devices and mobile network platforms. Generally, our initiatives either focus on better control and management of the port and port infrastructure (our core tasks) or they revolve around improved insight into, or efficiency of, logistics processes.

Our long-term strategy focuses on optimizing and coordinating the handling of ships through transparent information sharing. For instance, we're enabling clients and tenants to engage in smart planning so they can select the most efficient routes themselves. Also, we're enabling berths and dolphins to automatically indicate when they become available. We are constantly looking at new technologies to apply, even for mission critical systems like the hydro-meteo system, which we replaced with the Watson IoT platform.



“The core tasks of the Authority are to develop, manage, and exploit the port in a sustainable way and to deliver speedy, safe services for shipping.”

—Erwin Rademaker



Another trigger framing our digital transformation efforts—more automation for our port tenants. The most automated terminal in the world is the Rotterdam World Gateway terminal on the far end of the Maasvlakte 2. You don't see anyone in the terminal anymore. It's fully automated. Loading and unloading containers on vessels are completely automated. The only manual or human interference is a crane operator remotely controlling multiple cranes at the same time. With the tenants getting more and more automated and digitized, the port has to provide more and more information. This is all technology and market demand driven. As our tenants change the way they do business, we're working to accommodate those changes. We realize the demand for more integrated, real-time, and seamless information will only increase. Therefore, we developed this vision of the digital twin, which is a digital representation of our physical port.

Developing a Digital Twin

The port of Rotterdam is committed to becoming the world's smartest port and the development of the digital twin is key. It is a virtual representation of a physical object and system—across its entire lifecycle. It uses digital tools and real-time data to virtually create, test, build, and monitor the goings on at the port. The digital twin will be an exact digital replica of our operations, mirroring all of our resources and tracking ship movements, infrastructure, weather, geographical information, and water depth data—with 100 percent accuracy.

Developing the digital twin is a way to anticipate the significant transformation to the near future—the company of the digital, fully autonomous ship. We're taking a digital ecosystem approach. Our geographic information system (GIS)-powered digital twin would allow port managers to view the operations of all the primary players. It would provide an accurate, current picture of what is going on in the port—everything from the weather to how many ships are sailing about, their speed, and where they are headed. Simulations would be run digitally to improve efficiency and save money in the real port. We anticipate being able to pinpoint the best times for ships to berth and offload or take on cargo, because the digital twin simulations will give them the optimal water depths and berth vacancies, among other variables.

In the digital twin, we can predict with more precision the future water depth. Water depth in the ports consists of the water bottom, the dredging area, the dredging depth, and the water height. In Rotterdam, at the seaside, we have a tide of one to two meters. If we can predict 72 hours ahead

of a ship's arrival the exact water depth in any place in the port, container vessel owners heading to the port may better determine its safety margin and keel clearance. With precise, predictive information, the vessel may decrease that safety margin and the keel clearance 30 centimeters. This means the vessel could add 20 more cargo units on board. In having this information, we are contributing to a more sustainable world, as well as more efficient cargo transportation and less pollution.

Autonomous Ships of the Future

Autonomous ships and unmanned ships are not the same. According to international law today, vessels traveling international waters must have a captain on board. I understand that the International Maritime Organization, as part of its roadmap to autonomous shipping, may be changing this rule shortly. From that point, it will be possible to have a captain on shore remotely controlling a boat, providing he has full access to all the necessary systems. That will be the first step for autonomous shipping. The first autonomous vessel already is in production. It's a ferry called Falco in Finland. Many people might not be aware of it, but we are living in an autonomous vessel era right now. The first one is already in production. But it still has a captain on board, because regulation requires it. The essential elements of autonomous shipping include a vessel with Global Positioning System (GPS)-location technology, a smart ship equipped with active/moving sensors, a smart infrastructure equipped with passive/fixed sensors, and integrated, real-time information.



Perspective: Digital Transformation

The smart Container 42 symbolizes (semi) autonomous ships that in the near future need all kinds of new, hyper-secure and accurate information in order to perform their (semi) autonomous tasks in a safe, reliable manner. It is the smartest container this planet has ever seen equipped with sensors and communication technology, and it will travel around the world for two years to collect data that, until now, had been invisible. Vibrations, pitch, position, noise, air pollution, humidity, and temperature are among the things that will be recorded. The name was inspired by Douglas Adams, *The Hitchhikers Guide to the Galaxy*. It's a metaphor for the smart port of the future. The Container 42 platform will explore that unknown territory. The collected information will offer all parties in the supply chain more insight and the capability for further optimizing their processes.



Being True to Yourself and Your Vision

During an age of transformation, like today, the first quality a leader needs is to start with a comprehensive vision and mission. Of course, many things are unknown, so you have to embrace the unknown—it takes courage. Nor can you do it alone. You need to engage partners who share your vision and mission and align with your end goal to create a new and better future. I don't consider myself a leader. I'm just a regular guy who loves his job, but it's not everything to me. Leaders must be true to themselves. That's the lesson I teach to my children: be yourself.

You can listen to the complete version of my interview with Erwin Rademaker, Program Manager, Port of Rotterdam Authority at businessofgovernment.org/interviews. To learn more about the transformation to smartest port, go to portofrotterdam.com/en/port-forward/knowledge.



Improving Program Outcomes with Behavior Science

By John Kamensky

For years, government policymakers encouraged workers to increase their investments in tax-free retirement savings. But they were baffled by how many workers were leaving “free money” on the table by not signing up to participate in employer-matched 401K pension plans. However, when some companies changed their enrollment process from having workers “opting in” to the program vs. automatically enrolling them (and allowing them to opt out), enrollment rates increased by 50 percent.

Why did that minor change in the enrollment process make such a big difference? It turns out that a natural human tendency is to rely on the default option—that is, to take what’s given, even if that’s not the best choice. This human tendency is one of a range of human tendencies studied in what is called social “behavioral science” research.

In the private sector, insights based on behavioral science have been used extensively for years in sales, marketing, and negotiations. But there are intriguing implications for use in the public sector as well. Pioneers in government have tested strategies to entice citizens to recycle, volunteer, vote, and give to charity.

Using insights based on behavioral science isn’t new, but it has received increased prominence in the past five years at all levels of government. It is increasingly becoming an important part of policy and process design thinking because it is seen as a powerful way to improve program outcomes in lieu of traditional policy tools such as spending, taxes, and regulatory mandates.

What Is Behavioral Science?

Behavioral science research “studies how people react to changes in cues or incentives,” according to the Behavioural Insights Team, which originated as a temporary British government agency in 2010 to promote its use by government policymakers and program managers. A key premise underlying the field of behavioral science is that everyone is prone to “cognitive bias.” That is, we can’t



assume people will make decisions based on rational behaviors. Therefore, we shouldn’t assume customers or citizens will respond rationally to rationally-designed policies, systems, directives, or processes.

This premise—that people cannot be assumed to be rational and will make decisions that may not necessarily be in their own best interest—upended the field of economics in the 1990s. This same upending is in the process of happening in the field of public administration.

Understanding the insights provided through behavioral science research may help answer an age-old public administration dilemma: Why do well-constructed, rational policy initiatives fail? As a result, policymakers and program implementers can leverage this greater understanding of human behavior to better design policies and programs to avoid predictable cognitive biases. Or they could use it to leverage cognitive biases as part of a policy initiative to more effectively achieve intended outcomes.



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Some Underlying Concepts for Understanding Behavioral Science: “System 1 and System 2” Thinking and Cognitive Bias

In explaining the historical evolution of concepts underpinning behavioral science, scholars note that before the 1940s the dominant model used to describe decision making “features a rational decision maker who has clear and comprehensive knowledge of the environment, a well-organized system of preferences, and excellent computational skills to allow for the selection of optimal solutions.”

In the late 1940s and 1950s, scholars began to question the dominant decision-making model featuring a rational decision maker. An historical review of the field in a 2018 *Public Administration Review* article by Nicola Bellé and his colleagues found that “people make decisions for themselves and for others by relying on a limited number of heuristic principles [mental short cuts] that reduce the complex tasks of assessing probabilities and predicting values to simpler judgmental operations.”

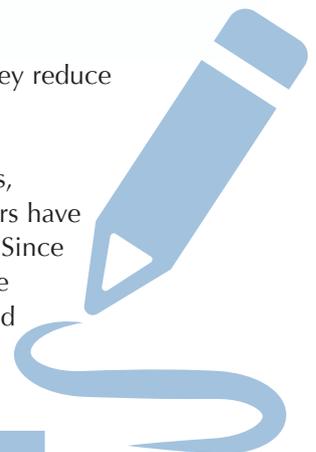
Based on this new insight, they conclude that “decision makers are prone to cognitive biases [errors in thinking] that systematically affect their estimates, judgments, and choices in any domain.”

What Is “System 1 and System 2” Thinking? Pioneering psychologists Daniel Kahneman and Amos Tversky describe the differences between the use of heuristics and rational decision making as System 1 and System 2 thinking, where:

- **System 1 thinking** is perceptual, fast, intuitive, automatic, and effortless. An example is judging the potential actions of other drivers while driving home from work using the same route each day. The advantage of this use of mental shortcuts reduces complexity and allows fast, effortless, automatic and associative decision making.
- **System 2 thinking** is reason-based, slow, takes mental effort, and is rule governed. Judgments are based on intentional and explicit processes. An example is choosing a health plan. Sometimes it involves the use of external decision support models, software, or group decision making.

Under System 1, the use of heuristics (rules of thumb/mental shortcuts) can be effective in that they reduce complexity. However, they tend to lead to systematic errors, which are called “cognitive biases.”

What is Cognitive Bias? Award-winning author on emotional intelligence, Travis Bradberry, writes, “Cognitive bias is the tendency to make irrational judgments in consistent patterns . . . Researchers have found that cognitive bias wreaks havoc by forcing people to make poor, irrational judgments . . . Since attention is a limited resource, people have to be selective about what they pay attention to in the world around them. Because of this, subtle biases can creep in and influence the way you see and think about the world.” But cognitive bias isn’t just one “thing.” One researcher has cataloged 170 different kinds of cognitive biases.



Behavioral Science in the Federal Government

The use of behavioral science tools has evolved rapidly over the past five to seven years in the public sector. This growth is in tandem with related evidence-based trends such as data and analytics, rapid cycle testing, and pressures to improve customer experience with government services.

In the U.S. federal government, these different threads intersect in the Office of Evaluation Sciences (OES). This small office in the U.S. General Services Administration (GSA) was created in 2015 to provide a cadre of talent to help agencies use these new techniques to get better results in their programs.

Interestingly, this office preceded the adoption of the Evidence Act earlier this year, which will create an even greater demand for its specialized talents as agencies are pressed to develop their own evidence and evaluation strategies, which also include the use of behavioral science techniques. For example, the Department of Labor has already developed a guide for its operational bureaus on how to best use behavioral interventions in their programs.

The Office of Evaluation Sciences

OES is a multidisciplinary team that blends a range of professional disciplines comprising the field of behavioral science. These include psychology, economics, political science, ethnography, statistics, and program evaluation. Under the leadership of Kelly Bidwell, the office conducts work that spans behavioral science, evidence, and evaluation. It supports agencies, for example, in implementing the Office of Management and Budget's



implementation guidance for the recently-passed Foundations for Evidence-Based Policymaking Act of 2018.

The office is located in GSA's Office of Governmentwide Policy and has a staff of about 15 to 20 specialists that are a mix of career civil servants and rotational staff from academia or nonprofits who serve one- to four-year terms. Staff members typically oversee two to four projects at a time. Office director Bidwell says the use of rotational staff keeps the career staff connected to cutting edge intervention design techniques such as appropriate sample size, evaluation design, analytic techniques, etc.

She also says that, because they are federal employees, they have greater access to the use of federal administrative data sets for analyses than would academics or other nonfederal researchers.

The OES team's approach is to undertake rapid cycle projects, using low-cost solutions (e.g., redesigning a notification letter). Their core deliverables are actionable results to drive better programs and policies—all projects are posted and summarized on their website.

What They Do

Agencies approach OES to help them conduct projects that require expertise that they may not have on their own staffs. OES typically works on 20 to 30 projects at a time with a wide range of agencies to help clarify identified problems (e.g., define the gap between a program's goal and reality in order to identify the key trip points), test interventions (often using randomized control trials and large existing data sets), and where successful to help agencies determine how to scale the pilot to a larger population.

According to Bidwell, many of the OES team's solutions are inexpensive to apply and can be implemented relatively quickly, based on 6- to 12-month trials. Their proposed interventions typically don't require legislation, regulatory changes, or significant funding. Where possible, they like to conduct large-scale testing using federal administrative data, develop rigorous findings and results, and use evaluation techniques. Their approach is experimental—typically iterative, and trial-and-error. Oftentimes their solutions involve changing the way a program is described, timing, and/or the sequence of choices being offered.

Bidwell says her team likes to work in partnership with agencies with the goal of transitioning ownership of the project to the agency partner. Over the long run, Bidwell

says, they hope to create an appetite for using behavioral and analytic techniques and create a new capacity for them to use.

Actions taken by their agency clients might vary from scaling up a successfully-tested intervention to advice on reorganizing their administrative data so it can be used to answer related questions or retest a successful intervention on a different population. So far, they found that agencies are more reluctant to changing a program's design (such as changing default settings on application forms) than they are to making small changes (such as fine-tuning the presentation of information). However, they hope to generate evidence on the effects of more substantial changes in the near future.

Examples of the Range of Projects They Undertake

What kind of projects does OES undertake with different federal agencies? Team members work across the government to provide end-to-end support in the design of an evidence-based programmatic change and test the change to measure its impact. Bidwell says that sustaining such change is more effective when the OES team collaborates with internal agency champions who drive the process, participate in the design and implementation of an evaluation, assist in the analysis and interpretation of results, and make decisions about scale and program implications.

Recent projects they've undertaken span a wide range of policy areas, such as:

- Simplifying applications for school lunch eligibility
- Encouraging vaccination uptake rates
- Improving participation in programs to reduce student loan defaults
- Increasing retirement savings for active duty service members

Bidwell says that lessons learned in one program are sometimes transferrable to programs in other agencies. This even includes publicly posting “null findings”—that is, when the experimental interventions failed to produce any changes.

Who Else Could Use It

Behavioral science techniques are being applied in a wide range of policy areas. And they are being used by many different government players. Peter John, in a recent book, *How Far to Nudge*, says that it should not be just a tool of technocrats but decentralized to agencies and local



governments to incorporate into their own autonomous activities where it “can help the creation of an automated and self-regulating system whereby people get to their goals and where there is a synergy between social and individual aims.”

To that end, behavioral science techniques can be useful to:

- **Policy and program design analysts** to expand their range of policy levers beyond the use of regulations, mandates, market mechanisms, tax incentives, insurance, etc.
- **Customer experience officers** to better understand and improve how agency clients interact with programs
- **Design thinking teams**, agility teams, and innovation offices
- **Citizen engagement teams** to identify ways to illicit greater participation and response
- **Chief risk officers** as a tool to assess or manage risks in implementing programs
- **Chief human capital officers** to improve employee engagement
- **Chief cybersecurity officers** to predict potential weaknesses in how individual users might be tricked into installing malware, etc.
- **Program evaluation officers** to assess why programs may not be delivering results as anticipated

How Far Can We Go?

While behavioral science has been around for a number of years in different pockets of the government, how far might its use expand? How does it fit into the context of traditional policy and implementation tools?

There may be more questions than answers at this point with regard to the need for more proof or validation. But the federal Office of Evaluation Sciences, for example, has been very good at being transparent about its projects, describing both what works and what doesn't. It certainly can't be accused of painting targets around the bullet holes!

There are opportunities to expand its use to improve the probabilities of successful program design and implementation, but probably more research needs to be done at the federal level to show how these approaches can be applied in the context of the traditions of administrative law and the Administrative Procedures Act. For example, behavior science assumes more interactive, test-and-fix approaches—while traditional administrative law assumes more linear and logical design approaches to program design and implementation. Also, the skill sets—data analysts vs. legal analysts—are different.

However, the best approach is probably to keep experimenting and engage a wide range of different talents to make it work.

Additional Resources

Bellé, Nicola, Paola Cantarelli, and Paolo Belardinelli, "Prospect Theory Goes Public: Experimental Evidence on Cognitive Biases in Public Policy and Management Decisions," *Public Administration Review* 78:6, pp. 828-840 (2018).

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Organization for Economic Cooperation and Development, *Behavioural Insights and Public Policy: Lessons from Around the World* (2017). Retrieved from: https://people.kth.se/~gryne/papers/OECD_2017.pdf

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Thaler, Richard and Cass Sunstein, *Nudge: Improving Decisions About Health, Wealth, and Happiness*, Yale University Press, 2008.

World Bank, *Behavioral Science Around the World—10 Countries* (2019). Retrieved from: <http://documents.worldbank.org/curated/en/710771543609067500/pdf/132610-REVISED-00-COUNTRY-PROFILES-dig.pdf>





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the first studies on government use of cloud computing, *Moving to the Cloud: An Introduction to Cloud Computing in Government*,¹ which described early applications, challenges, and opportunities from this emerging paradigm. The report noted that a key challenge to effective implementation was “the need for open standards and interoperability.”

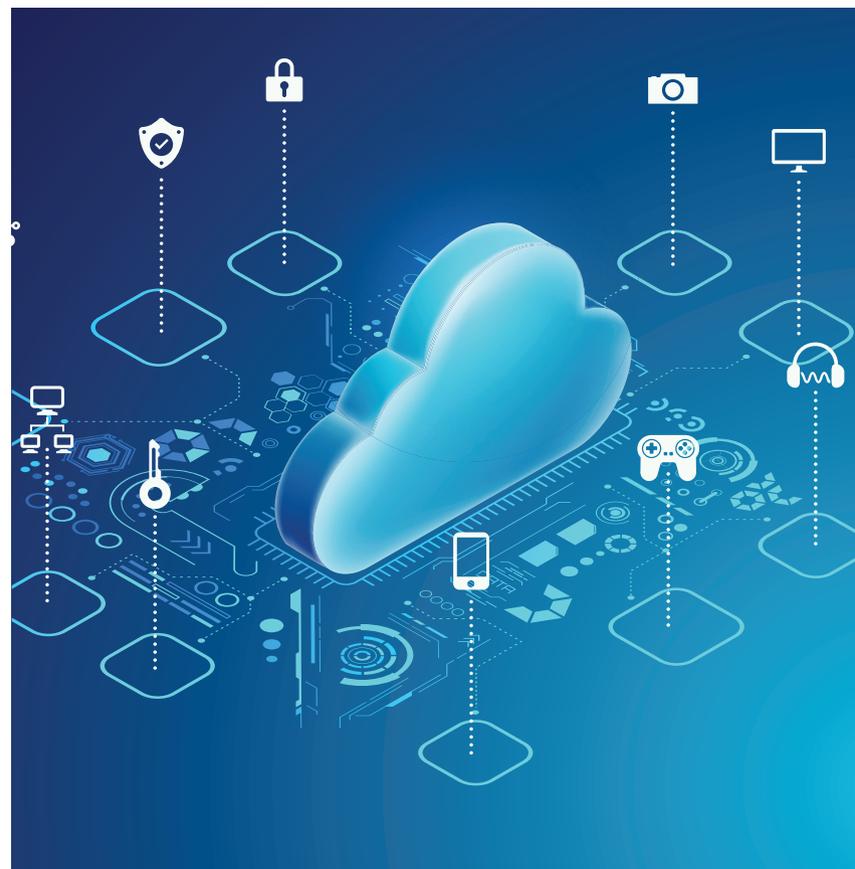
In 2011, the Office of Management and Budget (OMB) issued a Federal Cloud Strategy that included the “Cloud First” policy.² This policy provided guidance to agencies to leverage the cloud-based approaches of infrastructure, software, and platform as a service as first preferences for new IT investments. OMB noted that migration to the cloud would enable agencies to “tap into private sector innovation” and encourage an “entrepreneurial culture”— both of which are also benefits of open networks.

Cloud First remained in place until OMB updated the policy as “Cloud Smart”³ in September, 2018. Cloud Smart focused on expanded agency capacity to bolster security in the cloud, procure effective and leading-edge commercial solutions, and enhance the skills of IT workers in cloud-based applications. The update also called on agencies to “conduct regular evaluations of customer experience and user needs” and to “track their growth in areas where decisions about technology intersect other disciplines.” Both of these actions are optimized only if done as part of an open ecosystem promoting feedback and engagement.

The technology behind cloud platforms now available to government has advanced to the point where secure, effective operations can be achieved over multi-cloud networks that rely on open standards to achieve interoperability and improve portability of workloads and data between clouds. This trend applies regardless of whether agencies rely on “public” commercially available systems, “private” systems that reside inside agency computing environments, or “hybrid” systems that link the two across an agency enterprise. Importantly, multi-cloud

approaches enable development of new innovation that does not rely on a single network, expanding the scope of application development resources across open networks.

This is a key success factor behind IT modernization for agencies often still dependent on legacy systems. As noted in the IBM Center’s March 2018 report *A Roadmap for IT Modernization in Government*,⁴ federal agencies can learn from the experience of commercial and state government CIOs who embraced open innovation strategies to modernize outdated infrastructure in a phased “two-speed” approach. Such an approach enables modernization toward the cloud to proceed in phases of rapid change followed by stabilization of that change.



New Applications

Government has made recent and significant progress in building networks of practitioners interested in collaborating across a broad suite of emerging technologies. Within the government, new communities of practice have advanced around RPA and AI. In addition, government-industry collaborative associations have seen a surge of interest in groups like the American Council for Technology and Industry Advisory Council (ACT-IAC) Emerging Technology Community of Interest.⁵

Several IBM Center reports have helped identify early innovators in government use of AI and other emerging technologies, including:

- Delivering Artificial Intelligence for Government: Challenges and Opportunities⁶
- More Than Meets AI and More Than Meets AI—Part II⁷
- Financial Management for the Future: How Government Can Evolve to Meet the Demands of a Digital World⁸

A common theme across these reports involves the need to build new applications over modernized and cloud-based infrastructure. As noted in *Delivering Artificial Intelligence*,⁹ “upgrading IT infrastructure to support AI systems, leveraging cloud computing strategies” can help agencies better identify

“data intensive applications that can benefit from AI.”

Similarly, the *Financial Management for the Future*¹⁰ report finds that development of RPA applications alongside AI can drive advanced analytics through “intelligent automation”—enabling government “digital workers” who work in an open eco-system as part of an “orchestrated team capable of decision making, evaluating, and self-healing to continuously improve.”

As with the benefits of open approaches to the cloud discussed above, open application development can leverage open source software networks to accelerate the pace of innovation by bringing IT professionals together to work across an enterprise and access commercial best practice. If an agency’s IT workforce is saddled by static infrastructures and closed systems, then the introduction of new technologies will be constrained by the capacity of those systems for change. In contrast, an open approach to application development expands the playing field of ideas, prototypes, and pilots for new innovation considerably. In addition, from a workforce perspective, openness helps increase the job pool of qualified professionals as opposed to siloed applications that only a few know how to use and maintain. This is growing in importance as government employees reach retirement age at an ever-increasing rate and the public sector competes for talent with the private sector.



Government teams and stakeholders often face questions about security in an open technology ecosystem. A traditional approach to managing IT risk involves closing the aperture at the technology perimeter—building strong firewalls that protect agencies from online threats. In the evolving era of open innovation, security must be addressed as part of—rather than separate from—infrastructure and application development. The longstanding principle of “security by design” is more important than ever before in implementing open strategies for both industry and government, and remains a key element of cybersecurity risk management for government. As noted in last year’s IBM Center report, *Managing Cybersecurity Risk in Government*,¹¹ “Setting up a disconnected intranet is expensive and could stymie innovation and efficiency that occur by leveraging solutions developed on the open Internet.”

This concern is not new. In 2011, I wrote in this space an article entitled “Secure Transparency: Why Cybersecurity is Vital for Long-Term Success of Open Government,”¹² noting that if open, “public-facing information systems are disrupted through a cyberattack or their information is compromised through cyber ‘exfiltration’ . . . the online foundations of open government will be called into question as pressures mount to increase security walls and limit citizen access.” Rather than being antithetical, security must be a key part of open innovation.

The Next Phase: Advanced Computing Power

The open innovation strategies outlined above will only rise in importance, as speed and access over open networks increases considerably with the emergence of 5G to share information and quantum computing to develop systems and process data. The speed of technological change will continue to accelerate, as will government, industry, and public demand for faster response times, personalized services, and security. By embracing the benefits of open infrastructure and application development, agencies can provide a secure channel for engaging with their government and industry counterparts—enabling the development of open data that in turn fuels new innovation.

Making government open to innovation across open platforms will clearly enable everyone to be a winner in any “Innovation Open.”



Footnotes

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3. <https://cloud.cio.gov/strategy/>
4. <http://www.businessofgovernment.org/report/roadmap-it-modernization-government>
5. <https://www.actiac.org/emerging-technology-community-interest>
6. <http://www.businessofgovernment.org/report/delivering-artificial-intelligence-government-challenges-and-opportunities>
7. <http://www.businessofgovernment.org/report/more-meets-ai> and <http://www.businessofgovernment.org/report/more-meets-ai-part-ii>
8. <http://www.businessofgovernment.org/report/financial-management-future-how-government-can-evolve-meet-demands-digital-world>
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An Agile “Tipping Point” for Governments?

By G. Edward DeSeve

Introduction

Author Malcolm Gladwell popularized the expression “tipping point” as a moment “When an idea, trend, or social behavior crosses a threshold, tips, and spreads like wildfire.”

My more than 50 years of experience in and around government leads me to believe that we may be at such a point now. In the United States, trust in government at all levels and in all branches is at extremely low levels. Close to two-thirds of those polled by the Gallup organization in September 2019 indicated that they had little or no trust in the federal government’s ability to handle domestic problems. In a similar Gallup survey, state and local governments fared better with only 37 percent and 29 percent of respondents believing that their governments were not functioning well.

Internationally, there are countries where trust is higher than in the U.S. but the Organization of Cooperation and Economic Development (OECD) reports— based on the Gallup World Poll— that trust levels are declining almost everywhere.

Certainly, the political rancor at the U.S. federal level is contributing to this mistrust, but failure to deliver on key issues that the public cares about and a continued perception of inefficiency—waste, fraud, and abuse—also fuel the negativity.

The 2019 President’s Management Agenda identified five major problems at the federal level. These problems are likely to persist at the state and local level and perhaps internationally.

How will the federal government deal with these problems? In dealing with sour customers and falling profits, the private sector is increasingly turning to management methods based on the Agile Principles used in software development. In the *Age of Agile*, author Stephen Denning calls the shift to agile management principles, “An unstoppable revolution . . .

Major Challenges at the Federal Level

Accumulated Regulatory Burden: Regulations are “outdated, duplicative or unnecessary.”

Structural Issues: “Silos across federal agencies and offices can hurt cross-agency collaboration, resulting in fragmented citizen services or excessive cost to deliver the mission.”

Decision making and processes: Efficient and effective decision making is fact-based and transparent. However, government agencies do not consistently apply data-driven, decision-making practices.

Leadership and culture: Achieving beneficial outcomes that serve the public should be the government’s primary focus. Managers need sufficient direction to execute programs effectively, foster the highest-performing workforce, and solve real-time problems

Capabilities and competencies: Antiquated, unsecure technology risks can leave the public frustrated and vulnerable.

Source: President’s Management Agenda 2019
[whitehouse.gov/omb/management/pma/](https://www.whitehouse.gov/omb/management/pma/)

conducted in plain sight by some of our largest and most respected corporations.”

Interestingly, Denning spent many years at the World Bank, which has also begun an “agile journey.” Begun in 2016, and continuing through today, the Agile Bank Program is attempting to change the narrative of management reform at



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the World Bank by inspiring staff to rethink approaches to work and to develop new solutions for clients.

Let's look at what Agile Principles are, how they are being applied in corporations, in the military and in public policy development and implementation. Further, let's see what next steps might be taken to bring agile management techniques to governments around the world.

What is Agile?

In software development, agile features small, cross-functional, self-organizing teams that include customers working quickly to deliver solutions in increments that immediately provide value. The development is customer centric and networks are used for development and deployment.

What are Agile Principles?

The Agile Manifesto was developed in 2001 by a group of software developers who were frustrated by the paradigm governing their industry at the time. These principles continue to guide projects and programs of software development today. Agile developers use “scrums” and “sprints” as techniques to produce products quickly that have a high degree of customer acceptance and satisfaction.

Application of Agile Principles

Denning gives us three “laws” for the application of agile management principles. These are “The Law of the Small Team, The Law of the Customer, and the Law of the Network.” His prescription for each of these is:

- **The Law of Small Teams:** “In a VUCA (Violent, Uncertain, Complex, and Ambiguous) world, big and difficult



Viewpoints

problems need to be disaggregated into small batches and performed by small cross functional autonomous teams, working in relatively short cycles in a state of flow, with fast feedback from customers.”

- **The Law of the Customer:** Denning suggests that “the epic shift in power in the marketplace from seller to buyer (creates) a need for firms to radically accelerate their ability to make decisions and change directions in light of unexpected events.”
- **The Law of the Network:** This is the “lynch pin.” He suggests that a vertical hierarchy is no match for an interactive network. We will see support from other scholars for this point of view.

Anne-Marie Slaughter brings networks to the public realm in her book, *The Chessboard and the Web—Strategies of Connection in a Networked World*. Just as Denning contrasts vertical bureaucracies with agile organizations, Slaughter contrasts the traditional approach to diplomacy—the chessboard—with the web. She espouses “the network mind set the ability to convert three dimensional human relationships into two dimensional maps of connections, and to see the relationships between people and institutions.”

General Stanley McCrystal reinforces Slaughter’s points with his actions as head of the Joint Special Operations Forces, which confronted al Qaeda in Iraq and later the Taliban in Afghanistan. McCrystal knew that al Qaeda operated as a series of networks and he determined to change his own organization from a hierarchy into a network. He describes his successful transformation in *The Team of Teams*. McCrystal created small groups with divergent skills each of which was bound together by trust and a shared sense of purpose, which allowed them to act as a “seamless unit” exercising joint cognition in changing circumstances.

While neither Slaughter or McCrystal used the term agile to describe their prescriptions for success, they are very consistent with Denning’s findings and my own experience in implementing the American Recovery and Reinvestment Act. Our mission was clear—save the economy from further collapse. President Obama and Vice President Biden provided the top cover for our eight person Recovery Improvement Office. In a very short period of time, we were able get a set of interconnected networks at work rapidly, meeting the objectives of the Act in distributing more than \$800 billion quickly with virtually no allegations of waste, fraud, or abuse.

Central to this effort was the continuous communication by White House Chief of Staff Rahm Emanuel to other White

House staff members, by the vice president to the cabinet, governors and mayors, and the bi-weekly calls between our office and the 22 departments responsible for spending the money. Additional networks using public interest groups like the National Governor’s Association and the National Organization of State Auditors, Controllers and Treasurers created an action orientation that allowed the Recovery Act to meet its objectives of creating and saving jobs, helping those most hurt by the great recession, developing infrastructure, and making sure that states were not forced to raise taxes or cut services.

Now, the question before us is, “How do we take the lessons learned, as described above, and apply them to helping governments around the world become more agile?”

Toward Agile Government

The National Academy of Public Administration (NAPA) is in the process of considering the creation of an Agile Government Center. The Center would:

- Identify Draft Agile Government Principles in concert with many stakeholders.
- Research these principles to determine a final set for publication.



- Identify instances of agile government around the world. This will be a continuing process and cases will be made available for use by governments and researchers.
- Collaborate with governments around the world who wish to use agile in their projects, programs overall organizational design, and assist them in implementation.

At a Round Table on September 3, 2019, convened by NAPA and the IBM Center for The Business of Government, a diverse group of individuals with expertise in government management met to comment on draft Agile Government Principles. A revised copy of the principles is shown on your right. These principles will be used to obtain further comments.

The need for a movement toward “agile government” grows from the lack of public trust in government around the world. Better management is one of the factors that can improve trust in government. Agile government shares characteristics with agile software development and project management. “Agile government is mission centric, customer focused, communication and collaboration enabled, and continually demonstrates success to customers and the public.”

Agile government recognizes the values of putting the customer—both the direct and indirect beneficiaries—and the public as a whole at the center of governmental actions. Leaders serve as coordinators of the actions of small teams that include customer participation. Leaders empower these teams to take rapid action to deliver timely, transparent results that customers—who are actively included in the process—care about.

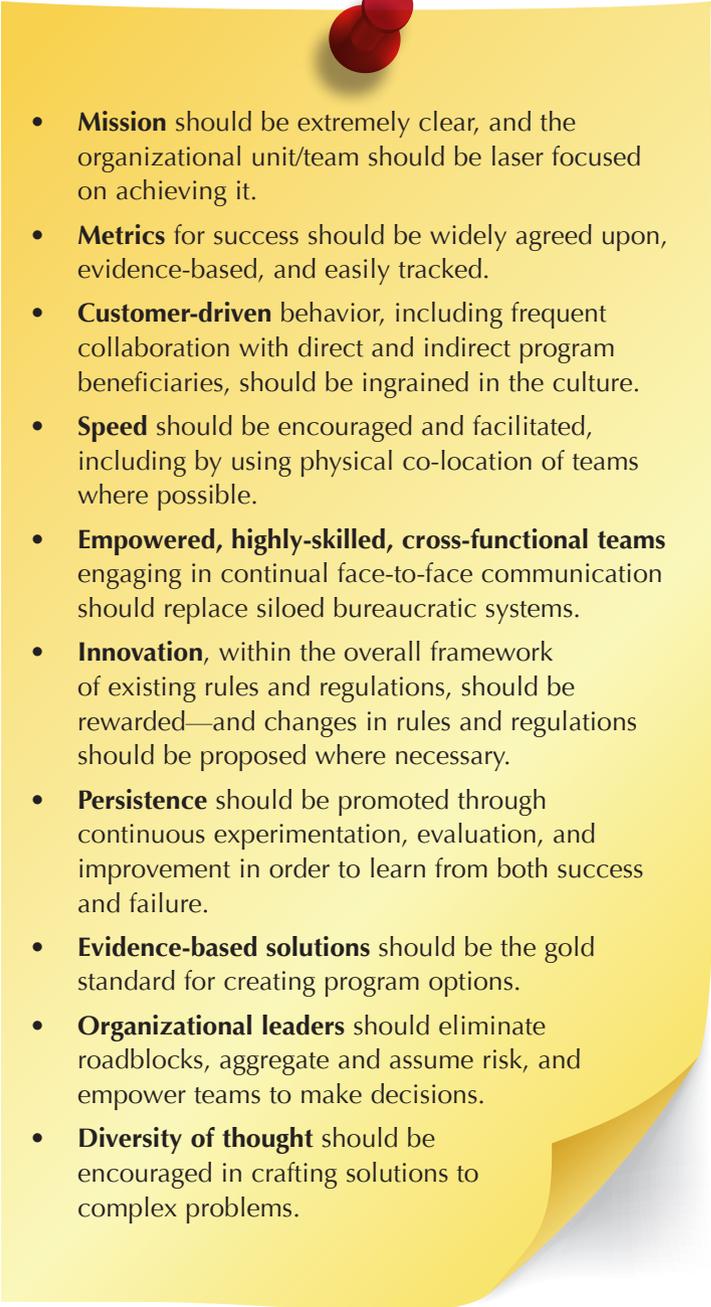
The purpose of the Agile Government Center is to develop Principles for Agile Government, to document cases where it is currently being practiced for use as reference, and to create a supportive network of users of agile government that can share their experiences.

If successful, the work of the Center will be adopted by governments around the world and lead to greater public trust.

Conclusion

In his book *Tides of Reform*, author Paul Light identified reform efforts from 1945 to 1995 that sought to improve how government operated. I believe that agile government can be a new tide that lifts governmental ships around the

world. It will require a new mindset in government and new organizational models to be successful. It may be that not every activity of government can adopt agile principles. However, the same “unstoppable revolution” that Denning describes may be headed toward the public sector.

- 
- **Mission** should be extremely clear, and the organizational unit/team should be laser focused on achieving it.
 - **Metrics** for success should be widely agreed upon, evidence-based, and easily tracked.
 - **Customer-driven** behavior, including frequent collaboration with direct and indirect program beneficiaries, should be ingrained in the culture.
 - **Speed** should be encouraged and facilitated, including by using physical co-location of teams where possible.
 - **Empowered, highly-skilled, cross-functional teams** engaging in continual face-to-face communication should replace siloed bureaucratic systems.
 - **Innovation**, within the overall framework of existing rules and regulations, should be rewarded—and changes in rules and regulations should be proposed where necessary.
 - **Persistence** should be promoted through continuous experimentation, evaluation, and improvement in order to learn from both success and failure.
 - **Evidence-based solutions** should be the gold standard for creating program options.
 - **Organizational leaders** should eliminate roadblocks, aggregate and assume risk, and empower teams to make decisions.
 - **Diversity of thought** should be encouraged in crafting solutions to complex problems.

Cognitive Enterprise: Transforming Delivery of Government Services

By Andrew Fairbanks



My favorite place to take my daughters when they were growing up was the Sony Wonder Technology Lab in New York City. The museum had a display case that included every step in the evolution of each of their core technologies: music players, cameras, phones. You could see in one 50-foot case the progression from Alexander Graham Bell's first telephone to the rotary dial phone to the first cell phone (all nine pounds of it) to current nanotechnology. It provided a fascinating "fossil record" of the fact that at each 10-year interval, we made significant transformations in technology that transformed the power and impact of technology and its impact on civilization.

Today we are in the early stages of the next step in the evolution of technology. The rapid maturation of artificial intelligence, machine learning, and sensor technology is enabling organizations across all sectors to exponentially improve the effectiveness and efficiency of their operations. Just as the advent of mobile technology changed the ways in which we communicate and digital technology changed the ways in which we take pictures, create videos,

and experience music, the implementation of "cognitive enterprise" technologies are now transforming the ways in which products are created and services are delivered.

Opportunities for Change

The government sector is one of the ripest markets for adoption of the cognitive enterprise. There are numerous use cases in which cognitive technologies can radically change the ways in which services are delivered, improving mission effectiveness while simultaneously reducing cost to taxpayers. These opportunities cut across the spectrum, from defense and homeland security to benefits administration and grants.

In the world of defense, the United States government is standing up the Joint Artificial Intelligence Center (JAIC) to explore, pilot, and deploy artificial intelligence to enhance mission readiness, improve efficacy of operations, and streamline administrative processes. Services and combatant commands are using sensor data, weather data, algorithms, natural language processing, and image recognition



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to change the ways in which they conduct predictive maintenance on their weapons systems, train and deploy personnel, execute supply chain transactions, and conduct war gaming exercises. The use of unmanned aerial vehicles and driverless land vehicles enables the military to greatly expand its impact, while reducing manpower needs and risk to military personnel.

In the world of homeland security, the application of artificial intelligence to video and image recognition is enabling the Transportation Security Administration (TSA) to improve the quality of its vetting of crews and passengers and its searches of baggage for dangerous contraband. The Federal Emergency Management Agency (FEMA) is able to use weather and sensor data to better predict and mitigate risk of damage by flood and fire. And Customs and Border Protection (CBP) agencies are able to apply biometric data to significantly improve the efficiency of border control processes.

The use of natural language processing is also enabling agencies to create automated help desk agents that enable employees and citizens to get quick and accurate answers to questions that previously required long hold times or inconvenient visits to field offices.

Healthcare is also being transformed by artificial intelligence. Systems such as Watson are able to ingest massive amounts of literature and research. The system can then be trained to analyze the information and provide insight to experts that improves diagnosis accuracy and speed. This capability augments physicians and researchers and has the potential to drive significant breakthroughs in medicine and improvements in medical care.

And in civilian agencies, the adoption of artificial intelligence to provide citizen self-service and automated reviews of application for social services and benefits is significantly reducing the backlog of benefits claims and improving the ability to detect and reduce fraud. The technology is also

enabling the automation of labor-intensive processes, which significantly reduces taxpayer costs and expedites reviews.

Ethical Considerations

The era of the cognitive enterprise is upon us and presents great opportunities for transforming the delivery of government services. We are at a moment that is analogous to the move from the Sony Walkman and Boombox and the move from the Polaroid camera to the digital smart phone. The application of cognitive technologies will change the ways in which government services are delivered in profound ways.

But unlike the worlds of music and photography, there are important ethical considerations that we must consider as we apply cognitive technologies to the delivery of government services. We must recognize that the move to automate can displace jobs; we must be mindful that the use of sensors and pervasive video can impede on individual privacy; and we must be aware that the application of technology to automate decision making in certain defense and intelligence functions without human intervention can lead to disastrous outcomes. We need mechanisms in place to ensure that we reap the advantages of these transformative technical innovations, while mitigating the risks of the unintended consequences.

Leadership's Role

To realize the full potential of cognitive technologies in the public sector, we need leaders in government and industry who do two things well. First, we must adopt a creative mindset to “imagine a world in which . . .” We need people who understand our core mission and who understand how cognitive technologies work to develop use cases and narratives for how missions and processes could be transformed through the use of artificial intelligence, machine learning, and other cognitive technologies. And secondly, we must approach decisions from an ethical posture—taking the time to understand the intended and unintended consequences of their actions to make sure that we are acting responsibly.

Algorithmic Auditing: The Key to Making Machine Learning in the Public Interest

By Sara Kassir



As the burdens for collecting enormous amounts of data decreased in recent years, advanced methods of analyzing this information rapidly developed. Machine learning, or the automation of model building, is one such method that quickly became ubiquitous and impactful across industries. For the public sector, artificially intelligent algorithms are now being deployed to solve problems that were previously viewed as insurmountable by humans. In international development, they are working to predict areas susceptible to famine; in regulation, they are detecting the sources of foodborne illness; in medicine, they are adding greater speed and precision to diagnostic processes.

The advancements presented by big data and machine learning are undeniably promising, but the technology

also poses significant risks, particularly when algorithms are assumed to be infallible. While it may be true that these applications process any information they are given “objectively,” human-generated data invariably reflects human biases. Therefore, automated tools can end up entrenching problematic simplifications about the world. Both government and private sector industry players have experienced calls to proactively address this issue.

This article argues that the risks of machine learning applications are best mitigated through a process of “algorithmic auditing,” which institutionalizes accountability and robust due diligence in the technology. By assessing the ways in which bias might emerge at each step in the development pipeline, it is possible to develop strategies



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for evaluating each aspect of a model for undue sources of influence. Further, because algorithmic audits encourage systematic engagement with the issue of bias throughout the model-building process, they can also facilitate an organization's broader shift toward socially responsible data collection and use.

What is an algorithmic audit?

Algorithmic auditing is an effort to ensure that the context and purpose surrounding machine learning applications directly inform evaluations of their utility and fairness. Stephen Hawking wrote about the limitations of abstraction in his *A Brief History of Time*: "The usual approach of science of constructing a mathematical model cannot answer the questions of why there should be a universe for the model to describe. Why does the universe go to all the bother of existing?"¹ Admittedly, the esteemed theoretical physicist was not writing about machine learning applications in the public sector, but his message on intentionality in analysis is nonetheless salient. Data, models, algorithms, and other means of simplifying the world cannot be separated from the context in which they are produced. Through audits, machine learning tools are examined with the appropriate frame of reference in mind.

What principles from auditing can be translated to machine learning?

With the professional practice dating back to the Industrial Revolution, an audit is defined as "a formal examination of an organization's accounts," initially with the intent of protecting a firm's investors from fraud.² Over the past century, these examinations have diversified to encompass goals much broader than identifying financial risk. Today, auditors may examine an organization in terms of its regulatory compliance, process efficiency, environmental impacts, or ethical standards. But regardless of the precise focus, the procedure is directed toward the establishment of legitimacy. According to sociologist Mark Suchman, this "generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some

socially constructed system of norms, values, beliefs, and definitions" is crucial to an entity being able to function within society.³

The degree of assurance that can actually be achieved through an audit obviously varies depending on the industry. For example, in recent years, the field of safety engineering has consciously attempted to signal that no audit can ever deem something like an airplane 100 percent safe. As one report from the UC Berkeley School of Information points out, "In contrast to the 'ship it and fix it later' ethos that has defined the tech industry, safety engineering requires that the developer define what must be avoided (e.g., airplane crashes, patient death) and engineer backwards from there."⁴ Machine learning applications, with their diverse consequences and potential for bias to emerge, are similarly impossible to ever deem "100 percent risk-free," and this spirit of imperfect assurance should inform how they are tested. In particular, three tenets of general auditing theory map well to the complexity of auditing algorithms specifically. These are: (1) the notion that an auditor must exercise judgement to explore the relevant details of a case; (2) the need to assess the inner-workings of process, rather than only examining its outputs; and (3) the expectation that an organization, subject to auditing endeavors, document its activities for the purposes of evaluation.



Principle 1: Marrying structure and judgment

The first auditing principle that is relevant for machine learning processes relates to the "steps" an auditor is expected to follow in completing their examination. Auditing, like any profession, is subject to ongoing debates about best practices. Scholar Michael Power, who explores the field as a principle of social organization, describes one of the industry's greatest tensions as the "structure-judgment" problem, or the notion that a tradeoff exists between auditing procedures that rely on prescribed techniques and those that give greater weight to individual judgement. Power uses the metaphors of

“mechanism” and “organism” to describe the debate.⁵ Mechanism names an aspiration for an integrative formal approach to audit, which holds out the promise of an algorithmic knowledge base. Organism assumes that the whole is always greater than the parts, and that the specificity of knowledge places limits on the mechanistic world view. In recent years, auditing firms have been increasingly pulled toward the former approach as they seek to standardize their offerings and manage human resources.⁶

“Structure” and “judgement” may appear to be at odds from the perspective of a company that performs external financial audits, but the dichotomy presented by Power and other scholars actually proves useful in the context of algorithmic auditing. For an individual attempting to evaluate a machine learning algorithm for bias, both approaches have merits. In framing the systematic investigation of bias, risks present in machine learning tools as an “audit.” It is worth noting that organizations may initially view the exercise as intrusive or punitive. As the above discussion of auditing reveals, productive evaluations require collaboration from the people who built and use the model, so it is important to actively combat this perception. Rather, the “audit-ready” organization is one that understands there are genuine benefits to having an objective “extra set of eyes” look for bias risks in a model. A few cultural aspects can help facilitate this productive exchange, including clear consensus around goals and cross-disciplinary inputs into the development process.



Principle 2: Examining outputs, as well as inputs

Another auditing principle that proves useful for evaluating algorithms is the notion that a system must be comprehensively assessed for integrity. In some ways, this framing actually contradicts the training of data scientists. As statistician Leo Breiman once wrote, “Predictive accuracy on test sets is the criterion for how good the model is.”⁷ The focus on reducing test error rate of a model—which represents performance on data that was not included in the training set—has shaped much of the progress made in machine learning over the past two decades. As one publication from the UC Berkeley School of Information notes, “A system with poor quality controls may produce good outputs by chance, but there may be a high risk of the system producing an error unless the controls are improved.”⁸ Accordingly, audits cannot assume that a seemingly correct output from a model is sufficient evidence that the appropriate inputs were used, particularly when the goal is to minimize systematic bias.

Indeed, an over-emphasis on test error rates is particularly problematic from the perspective of mitigating algorithmic bias. Consider what happens if a developer is building a model to predict the likelihood that an individual will repay a loan they are issued. During the testing process, the developer splits the population by demographic background, and notices that the model is more likely to predict a positive outcome for certain groups. One possible reason for this discrepancy could be that the training data, which is primarily comprised of the credit records of individuals and their demographic characteristics, disproportionately represents one group. To improve the error rate for other subgroups, the developer might mechanically adjust some of the model’s parameters so that it performs better across all groups. While this practice works as a “band-aid” solution for the existing population, it also means that the developer never has to question the structural features of the data that are feeding the biased results. This means such bias could reemerge as the model is deployed over new demographic subgroups.

The preceding example does not imply that the process of adjusting model parameters is inappropriate in and of itself. Rather, the practice draws attention to the fact that algorithmic audits are meant to identify sources of bias that might not be paid much attention during development. As such, it is just as important for an audit to examine inputs and their processing as it is to measure outputs (predictions) for accuracy.



Principle 3: Relying on robust internal documentation

Finally, the tenet of auditing that is perhaps the most important for evaluating algorithms is also the most difficult and controversial. Namely, this is the idea that in order for audits to occur, the organization in question must make an effort to document its activities for the purposes of later review. Power describes this process quality as “verifiability,” or the “attribute of information which allows qualified individuals working independently of one another to develop essentially similar measures or conclusions from an examination of the same evidence, data or records.”⁹ With respect to machine learning applications, “verifiability” might require keeping track of everything ranging from how the data is cleaned to how individuals are trained to interpret and act upon the model’s results.

At a high level, there are two types of challenges related to producing “auditable” machine learning applications. First,

the most sophisticated and accurate algorithms in use today (e.g., neural networks) are exceedingly complicated and cannot be effectively described through language. In short, these types of algorithms come at the cost of constraining an auditor's ability to parse out the inner-workings of a model, though providing the benefit of improved accuracy. Second, as often claimed by companies that rely on algorithms for revenue, open models allow for the possibility of "gaming" by the constituent population. While it is not necessarily inevitable that the results of an algorithmic audit are made public, organizations with this worry may hesitate in fully documenting internal procedures.

Notably, even in cases where the exact contours of an audit are subject to debate, the idea that machine learning applications should be developed with a certain degree of formal documentation is crucial for risk mitigation. Regardless of the algorithm's complexity, organizations can still commit to transparency around factors such as optimization criteria, data inputs, sampling processes, and feedback loops, all of which can limit the potential for unintentional bias to become entrenched.

Key takeaways

To summarize how the above-mentioned principles of auditing translate to practice, an algorithmic audit involves examining each part of a model's lifecycle, using a combination of standardized best practices and discretionary judgment calls, all of which are informed by the available documentation and social context. In the words of one article from *Harvard Business Review*, the process "must be interdisciplinary in order for it to succeed," relying on "social science methodology and concepts from such fields

as psychology, behavioral economics, human-centered design, and ethics."¹⁰ Such an approach is necessary in light of the fact that no complete list of "wrong" practices exists in machine learning. Rather, the goal for an auditor must be to ask if any steps of the development process are approached in a manner that does not give sufficient attention to the issue of bias, with the definition of "sufficient" obviously varying across contexts.

The public sector's potential for leadership

As society begins to grapple with the potential drawbacks of machine learning, perhaps with some of the initial fervor surrounding big data subsidizing, public sector organizations are presented with an opportunity. Rather than waiting for the issues of bias to be solved by technology companies or relying on legislators to push regulation, algorithmic auditing serves as a middle ground, balancing progress with caution. Governments should pursue innovative data analysis methods that will empower them to better serve and understand their constituencies, but in a manner that promotes accountability and equity.

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Integrating Big Data and Thick Data to Transform Public Services Delivery

By Yuen Yuen Ang



Big data has revolutionized the delivery of business and government services. But what's missing? Government can greatly enhance the value of big data by combining it with "thick" data—rich qualitative information about users, such as their values, goals, and consumption behavior, obtained by observing or interacting with them in their daily lives. Having lots of big data can be overwhelming or have little utility if the data are "thin"—that is, they lack meaning for users or fail to capture issues that matter most. By yielding insights into what citizens really care about and how they consume services, thick data can inform both the collection and analysis of big data. Whereas big data is broad and thin, thick data is narrow and rich—blending them, therefore, yields a more holistic picture of the problem at hand.

In a new report from the IBM Center for The Business of Government, *Integrating Big Data and Thick Data to Transform Public Services Delivery*, the topic of "mixed analytics" is introduced. Mixed analytics can be defined as integrating big data and thick data to transform government decision making, public services delivery, and communication. This report presents three case

studies of organizations that employ mixed analytics at the international, federal, and city level, respectively.

These case studies include:

- The World Bank Social Observatory's p-tracking (participatory tracking) project among 32,000 village residents in India
- The APHIS (Animal and Plant Health Inspection Service, a division of the United States Department of Agriculture) tailored social marketing campaign
- The LA Express Park program, featuring dynamic pricing, in downtown Los Angeles

Together, this research offers a set of transferable lessons for agencies at all levels of government:

- Lesson 1: Big data is a means to an end, rather than an end.
- Lesson 2: Thick data can identify unexpected problems or previously unexpressed needs.
- Lesson 3: Thick data can inform the analysis of big data.
- Lesson 4: Mixed analytics can offer both scale and depth.
- Lesson 5: Applying technology is a social activity, not an isolated technical task.
- Lesson 6: The best solutions are not always high-tech.

The report concludes with five actionable recommendations for public managers:

1. Make data and technology relevant to the people who use it.
2. Leverage thick data at appropriate stages of the problem-solving process.
3. Build an interdisciplinary team of quantitative and qualitative experts who work closely with stakeholders.

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- 4. Combine big and thick data to improve communication.
- 5. Improve government agencies' knowledge of mixed research methods.

Analytical Perspectives on Big data and Thick Data

Big data can be described as “massive data sets sifted by powerful analytical tools.”¹ Big data is defined not only by volume (the amount of data collected and analyzed), but also by velocity and variety. Velocity refers to the speed of data being produced, for example; streaming data is now widely available for real-time, instant analysis. Variety refers to the different forms of data collected, which can be

structured or unstructured, and the number of dimensions captured by the data.

If big data reflects volume, velocity, and variety for items that can be counted, thick data concerns information about the significance, meaning, and connections that humans assign to services or technologies, as well as the process by which they consume them. Thick data is generated through immersion in users' natural settings, rather than in laboratory-type settings.

Table 1 compares the attributes and functions of big data and thick data. Table 2 demonstrates the key characteristics of the three case studies examined.

Table 1: Big data vs. Thick Data

	Big Data	Thick Data
Format of data	Data in numerical format	Data in non-numerical, qualitative format
Volume	Usually large, even massive number of observations	Usually small number of observations
Methods of data collection	Digital records, digitized archival records, streaming data, transmission logs, numerical data scrapped from the Internet and social media	Participant observation, direct participant interviews, focus groups, small-n open-ended surveys, video recordings, qualitative data from the Internet and social media
Analysts	Research by social and computational scientists	Research by anthropologists and ethnographers
Immersion Requirement	Analysts need not be on-site to analyze the data	Usually on-site or direct observation online, and immersed in context (observing, participating, talking to people)
Role in problem solving	Generate solutions to largely known problems, such as by mapping behavioral patterns, making predictions, generating automated decisions	Identify problems that matter most to stakeholders, particularly unknown problems and previously unexpressed needs, and test solutions before scaling up
Strengths	Scale: generate insights that are generalizable to a large portion of or an entire population	Depth: identify what stakeholders care about in the first place; paint a holistic picture of certain experiences

Source: Yuen Yuen Ang

1. “The Power of Thick Data,” Wall Street Journal, March 21, 2014.

Table 2: Summary of key characteristics of case studies

	World Bank's Social Observatory	APHIS Public Outreach	LA Express Park
Actors and stakeholders	Interdisciplinary team of World Bank researchers, government actors at various levels in India (from leadership of Tamil Nadu down to villages), women's self-help groups	APHIS (agency) and researchers at Fors Marsh Group (contractor)	U.S. Department of Transportation (main funder), Los Angeles City, Xerox-PARC (contractor)
Target users	Rural residents, mostly women	Domestic and international travelers	Motorists
Big data source for quantitative analysis	Pilot census survey of 32,000 residents in Pudhu Vaazhvu, Tamil Nadu	AQIM (Agricultural Quarantine Inspection Monitoring) dataset	Real-time parking occupancy data from 6,000 smart meters
Thick data source for qualitative analysis	Researchers are embedded in communities to observe and listen to deliberations; direct participation by women self-help groups in designing survey	Input from agency experts at all stages of the research process; researchers visited airports and interviewed agency officers and travelers	Rapid ethnographic method (compressed periods of observation, interviews, direct participation, and videotaping)
Product	"P-tracking": survey designed with direct inputs from local women; collected data was visualized and shared with communities to inform deliberation and decision making	Targeted public outreach and social marketing campaign, with messages tailored by location and segment of travelers	Demand-based parking pricing, paired with mobile apps for viewing and booking parking spaces

Source: Yuen Yuen Ang



Lessons Learned

- Big data is a means to an end, rather than an end.** The ongoing focus on big data may compel public managers to feel that they need to “do something” with the data, whether or not this is necessary or useful. In the U.S., recent federal plans that link big data to the nation’s “strategic assets” may unintentionally reinforce such pressures. But while public agencies should seriously consider big data as part of their toolkit, they should not use big data just for its own sake. All three case studies illustrate big data as a means to an end, rather than an end in and of itself.
- Thick data can identify unexpected problems or previously unexpressed needs.** Clearly, thick data and ethnography can complement big data analysis—the harder work arises in specifying how. Governments can miss obvious problems if they rely only on big data and analytics, as best illustrated by the case of LA Express Park. Thick data also proves particularly useful for informing the collection of big data, as seen in the World Bank’s Social Observatory project. If public agencies invest time and effort to collect big data without first inquiring what users care most about, they may measure the wrong things.
- Thick data can inform the analysis of big data.** Thick data also informs the analysis of big data. In the APHIS case, data scientists worked closely with agency experts to understand the construction and quality of the data sets, seeking inputs for the design of statistical models and interpretation of results. The data scientists who worked with APHIS found: “Because these results were to inform the development of a campaign that would not exist in a vacuum but instead would be implemented in a mix of policy, political, and budgetary influences, the final solution could not be determined by the machine-based analysis of the results alone
- Mixed analytics can offer both scale and depth.** Given the different advantages and functions of big data and thick data, the best research teams and technology designs typically use mixed analytics (big data and thick data) and mixed research methods (quantitative and qualitative). In addition, they feature an interdisciplinary team of specialists, not just data scientists. The World Bank brought in economists, sociologists, behavioral scientists, and information system specialists. Designing LA Express Park involved both engineers and ethnographers.

- **Applying technology is a social activity, not an isolated technical task.** Applying technology is often an intensely social activity, not a job that engineers and data scientists perform in isolation. At the World Bank, the Social Observatory team mobilized entire Indian villages at all stages of its program, from designing surveys, implementing them, to sharing data with the villagers. At APHIS, data scientists worked closely with agency experts, building rapport with them, incorporating their contextual knowledge into computational analysis, and even inviting officers to present the results to the agency's leaders to instill a sense of ownership.
- **The best solutions are not always high-tech.** Being “smart” does not necessarily entail using the most advanced technology available. Reiterating Lesson 1, public managers should focus on their goals or problems to be solved, and adopt a pragmatic approach that welcomes any mixture of solutions, whether high-tech or low-tech.
- **Combine big and thick data to improve communication.** The combination of big data and thick data is especially useful for improving communication, both public and internal. Ethnography can reveal which messages resonate most with citizens and why. And data scientists who converse with agency experts and observe them in their work environment can appreciate their challenges and goals. The most effective targeted marketing campaigns do not result from the biggest dataset—they come instead from data scientists who know their context and data well.
- **Improve government agencies' knowledge of mixed research methods.** Many governments around the world put a great deal of emphasis on the need for public servants to be “future ready” and data literate, but virtually none perceive the need for literacy in mixed research methods. Using big data well requires contextual knowledge; public managers must understand more than just numbers and analytics.



Recommendations for Public Managers

- **Make data and technology relevant to the people who use it.** One common lesson that emerges from the case studies is not to use big data for its own sake. Instead, agencies should seek to make data and technology relevant to users, by combining technology with an “ask, observe, and immerse” approach.
- **Leverage thick data at appropriate stages of the problem-solving process.** Any problem-solving process has four steps: (1) Identify problems that matter to users or stakeholders, (2) propose solutions to the problems, (3) test and refine solutions on a small scale, and (4) implement solutions on a large scale. Qualitative research methods and thick data are especially useful for steps 1 and 3.
- **Build an interdisciplinary team of quantitative and qualitative experts who work closely with stakeholders.** Big data initiatives should not involve only data scientists, but should also have input from qualitative researchers or ethnographers. Ideally, such an interdisciplinary team should divide their work along the lines of recommendation 2, and it should work closely with stakeholders and clients.

Integrating Big Data and Thick Data to Transform Public Services Delivery
by Yuen Yuen Ang



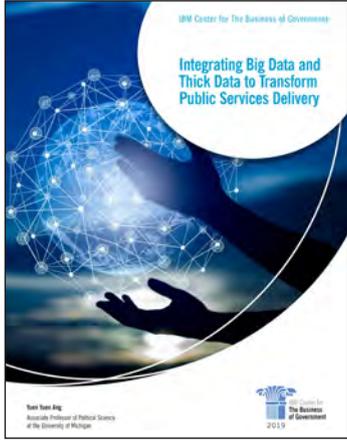
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Buying as One: Category Management Lessons From the United Kingdom

By Anne Laurent



The federal government spends about \$500 billion a year on goods and services. More than half of this amount is for goods and services common across federal agencies, such as training, overnight delivery services, copier machines, and travel services. However, these common items are often purchased individually by more than 3,300 buying offices and over 40,000 contracting officers. For example, the Office of Management and Budget (OMB) in 2016 noted that agencies spend more than \$1 billion a year on mobile devices and service contracts and that “Almost all of that spending is paid to four carriers, yet the federal government manages over 1,200 separate agreements and buys more than 200 unique services plans for voice, data, and text capability.” As a result, the federal government does not leverage its buying power as a large customer, and vendors are constantly bidding on redundant work.

A purchasing strategy adopted by the private sector three decades ago, called category management, organizes the spending on common goods and services across the enterprise into defined categories, such as travel or commercial software, from the same or similar supplier base. By “buying as one,” the Office of Management and Budget projects that the federal government can avoid up to \$18 billion in unnecessary spending by 2020.

The federal government began its category management initiative in 2014 and the administration has designated the

adoption by agencies of this approach as a high priority in coming years. The United Kingdom began its category management initiative in 2010 and its greater maturity offers some useful lessons to the U.S. government’s efforts on how to increase the adoption rate and avoid potential missteps. Furthermore, both the U.S. and U.K. efforts offer insights to other governments—states, localities, and other countries—useful perspective and insights as they consider their own category management initiatives.

Buying as One

Category management organizes procurement spending into categories of goods and services available from the same or a similar supplier base. It is a continuous, market-facing, end-to-end process that encompasses all aspects of spending, from sourcing to lifecycle management, impacting the total procurement expenditure of an entire organization.

Both the U.K. and U.S. governments focused category management on governmentwide spending for commonly purchased goods and services, such as desktop computers, telecommunication services, electrical power, furniture, and travel. In the United Kingdom, this approach has enabled the government to aggregate demand to approach suppliers as a single whole-government buyer, wielding expansive bargaining power, as opposed to multiple agencies duplicating purchases of the same goods and services at widely varying prices.

The accompanying sidebar describes the key elements of a category management framework within a government or enterprise that starts with the strategic and operational mission, and then flows to the overall procurement strategy and priorities through to the segmentation of contract spending into categories. Each category is managed by a team that employs various tools to analyze buying and spending patterns, conducts market analyses, and works with agency-level buyers to ensure they can make the best-informed purchases.

Anne Laurent is a subject-matter expert for the Consortium for Advanced Management International, for which she conducted this study. She is the principal of The Agile Mind Thought Leadership Consulting, where she puts more than 30 years' experience as a leading U.S. federal government analyst and journalist to work for companies, individuals, organizations, and agencies.

A Model of a Public Sector Category Management Framework

Categories are developed based on spend analysis. Spend analysis guides the creation and management of categories. It reveals the cost of having multiple organizations buying the same or similar goods and services from the same suppliers at different prices, terms, and conditions. This knowledge sets the stage to enable the whole of government to begin acting as a single customer. Understanding its own spending patterns, government can then aggregate demand, eliminate duplicative contracts, manage strategic suppliers, and make better choices among procurement approaches based on market behavior and procurement policy goals.

Market and supplier intelligence shape category team strategies. Supplier and market analysis help identify the best suppliers, determine at which level of the supply chain to buy, and mitigate the risks of supply chain disruption. This intelligence also helps ensure the market has the capacity to meet government's needs, manage financial risk, and match sourcing strategies to commercial practice.

Category teams set strategy and vision and employ tools to achieve them. Category teams set vision—what the category seeks to achieve in the longer term (five to 10 or more years depending on the category)—and strategy for the short- and medium-term (within three years) necessary to achieve the vision.

Tools and approaches used to implement category management. Category teams choose among category management tools and approaches to meet their strategic goals and vision. They adopt tools based on the results of spend, suppliers, and market analyses. Tools include:

- **Demand management.** Category teams help programs and agencies redirect, reshape, and reduce their demand for goods and services and refine and consolidate their requirements.
- **Strategic sourcing.** Spending analysis opens the door to consolidating demand, requirements and purchases, and to identifying the best contracts and suppliers.
- **Contract management.** Centrally managed categories of common spending generally craft governmentwide contracts. Contracts will take different forms and require more or less management depending on the levels of risk and value involved in supplier relationships.
- **Supplier management.** Supplier performance should be monitored and measured against category metrics and across categories.

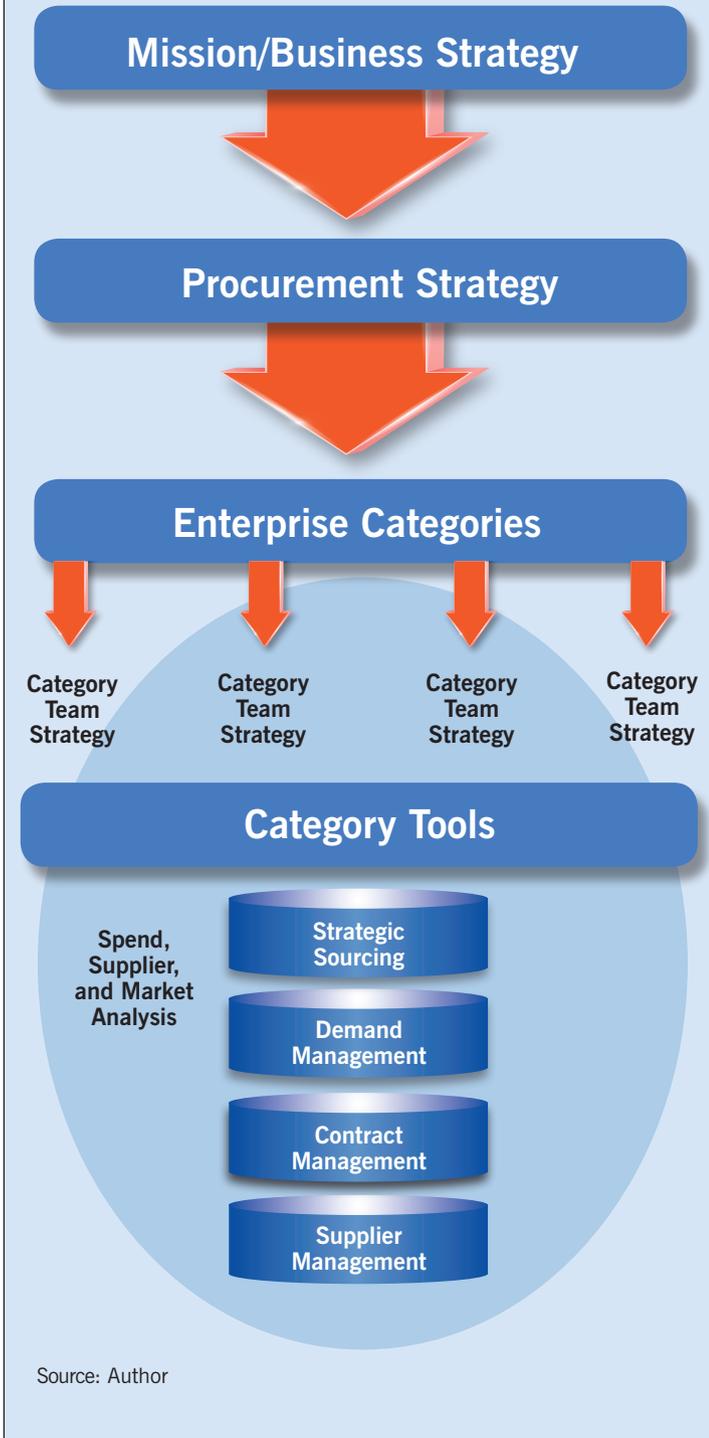
Governments use variations on this model, but similar elements tend to be reflected in most public sector category management programs. The following two sections describe how two different governments, the United Kingdom and the United States, developed their approaches. The concluding section offers insights and lessons for the U.S. program as it continues to evolve.



A Model of a Category Management Framework

Category Management Is the Delivery Method for Strategy and Policy

Category management strategies emerge from procurement strategy, which serves the overall policy and business strategy of a public sector organization.



Source: Author

The U.K. Approach to Category Management

Facing significant budget cuts, the U.K. government created a new Cabinet Office organization, the Efficiency and Reform Group in 2010, to drive the government’s cost-cutting strategy. This Office combined under one roof for the first time the management of procurement, IT, and other functions. It created the Government Procurement Service (GPS) to serve as the government’s central procurement organization, with greater power to mandate government-spending behavior than predecessor organizations.

GPS employed category management to reduce costs and improve performance. The Efficiency and Reform Group also stood up the Government Digital Service to assist in moving to digital delivery of government services. Working separately and together, GPS and the Digital Service used procurement strategies, including category management, to deliver targeted IT policy outcomes—for example:

- Breaking up monolithic contracts held by global IT companies
- Modernizing government IT and moving to cloud computing
- Transforming public services for digital delivery

Managing common spending in categories gave GPS and its customer agencies insight into and understanding of the markets within which they bought and the suppliers from which they purchased. As an initial step in category management, GPS developed an inventory of total annual U.K. public sector procurement spending, resulting in the first-ever accurate, comprehensive accounting of such spending by agency, by category, and by suppliers.

The U.S. Approach to Category Management

A strategic sourcing effort launched in 2005 led to limited efficiencies in some agencies that consolidated selected common purchases, such as office products and copy machines. In 2014, the Office of Management and Budget launched a governmentwide category management program built on the strategic sourcing initiative intended to bring the full range of common procurement spending under management.

Enforcement mechanisms had been lacking in the strategic sourcing initiative, but the category management program created and used them to drive agencies to move common spending onto specific best-in-class governmentwide contracts. Embedding the program as one of OMB’s statutorily required Cross-Agency Priority Goals, in addition

to ensuring commitment to it by a small team of dedicated career management experts, combined to enable category management to continue as an administration priority after the 2017 presidential transition.

A governmentwide Category Management Leadership Council created in late 2014 comprised representatives from the largest spending agencies: Defense, Energy, Health & Human Services, Homeland Security, Veterans Affairs, General Services Administration (GSA), and NASA. In addition, the chief financial officers from each of the 24 largest agencies designated single points of contact to coordinate governmentwide category management initiatives.

More than \$270 billion in common annual contract spending was allocated among 10 “super categories.” These include areas such as travel, facilities construction, medical supplies, and transportation services. A career senior executive was designated as the category manager for each. As of late 2016, these teams were staffed with about 350 people from 46 departments and agencies who

are identifying performance metrics and talking with top suppliers in their respective categories.

Beneath the 10 “super categories” are 50 subcategories. Each governmentwide category is governed by a team and managed from one or more executive agent agencies. These agencies provide category managers. Category and subcategory managers develop market intelligence, and buying strategies, and identify the best contract vehicles.

This initiative was carried forward into the current President’s Management Agenda which set performance targets to be achieved by FY 2020, including:

- Cumulative cost avoidance of \$18 billion
- A cumulative 60 percent of common spending managed under category management principles
- A cumulative 40 percent of addressable spending on best-in-class contracts
- A cumulative 13 percent reduction in the number of unique contracts





Six Key Insights for the U.S. from the U.K.'s Category Management Initiative

The U.K.'s initiative has been in place longer and is more mature than the U.S. effort. Its pioneering experiences offer a potential roadmap for other governments—national, state, or local—to get started, as well. Following are six key insights drawn from the U.K. program that may be helpful specifically to the U.S. category management initiative as it continues to evolve:

- To ensure the category management initiative is sustainable, it should be integrated into a broader governmentwide procurement strategy.** The U.K.'s category management initiative gained strength and compliance in part because it was the operational framework for achieving a broader transformation of the U.K. government's procurement system.
- Executing a governmentwide procurement strategy takes empowered, dogged leadership.** Sweeping and deep government management change, such as procurement transformation, requires both political sponsorship and powerful executive leadership. In the U.K., the 2008 financial crisis guaranteed political support for government spending cuts.
- Using a strategic supplier management approach can result in greater value from suppliers that contract with multiple agencies.** The U.K. has adopted a stringent performance monitoring and reporting scheme for suppliers that hold a significant number of contracts with multiple government agencies.
- Counting subcontracts enables better visibility, oversight, and deployment of spending with small businesses.** The U.K. government has set a socio-economic goal of spending 33 percent of its contract dollars with small and medium-size enterprises (SMEs) by 2020. However, the U.K. government's SME goals include spending that goes directly to SMEs as well as indirectly to those that work in the supply chains of larger businesses.
- Standardizing and leveraging usage data and buying fewer standard versions of common goods can drive savings.** This was exemplified in the U.K. in its approach to the software category where it: standardized software data; used spend analysis to negotiate with resellers and publishers as a single government buyer; created a governmentwide software exchange; and helped departments inventory their licenses by vendor size and type.
- Category management requires managing spending, not just obligations.** Detailed, accurate, and current accounting that enables spending visibility and control have led to U.K. price and demand management savings and ongoing identification of savings opportunities. In contrast, the U.S. government primarily relies on proxy spending information from a less accurate, poorly categorized database and transaction-level data from preferred category contracts.

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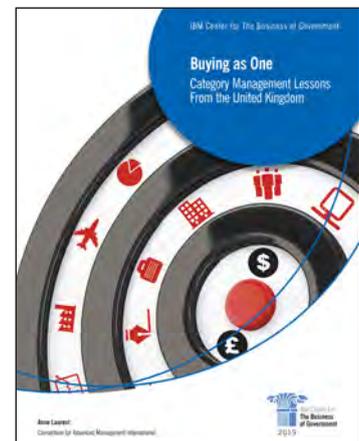
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Improving the Delivery of Services and Care for Veterans: A Case Study of Enterprise Government

By Matthew Hidek, Nathaniel Birnbaum,
Nicholas Armstrong, Zachary S. Huitink



The U.S. Department of Veterans Affairs (VA) operates the nation's largest integrated health care system and manages a wide range of federal benefits and services for veterans, their dependents, and survivors. At the same time, federal services and care for America's military veterans span across multiple agencies beyond the VA to include the Departments of Defense, Education, Health and Human Services, Labor, and the Small Business Administration, among others. Yet, while the VA leads an internal strategic planning process aimed at linking national and local action, to date, no mechanism exists to establish priorities, resources, and responsibilities across the federal government and align federal efforts with those of the broader public (state and local), private, and nonprofit sectors working to serve the veteran community.

As with other challenges characterized by such widely shared responsibility—national security, for example—in the case of veterans' affairs we would expect the federal government to use a comprehensive approach that coordinates the efforts of each agency to achieve common purposes. This model, increasingly referred to as "enterprise government," involves a coordinated cross-agency planning

and governance system that aims to achieve goals spanning organizational boundaries.

In *Improving the Delivery of Services and Care for Veterans*, we present a roadmap for developing an enterprise approach to federal veterans' services and care—one that aligns interagency planning and service delivery to support veterans holistically, and does so in a way that promotes robust engagement with communities. Specifically, the report presents five building blocks for moving toward an enterprise approach, and an accompanying set of recommendations and key action steps to put these building blocks in place.

The Enterprise Approach

Mechanisms like governmentwide planning, organization-spanning goals, and accompanying implementation initiatives—from working groups to task forces—reflect the reality that while individual agencies of government pursue specific missions, much of what they aim to do spans spheres of responsibility. Accordingly, to get things done, agencies must often work together. Across policy areas and operational functions, such teaming goes by a number of different names, but is increasingly organized and classified under the concept of enterprise government.

This report uses the term enterprise specifically in reference to situations involving multiple organizational actors (here, multiple agencies of government), and defines the enterprise approach as a system of coordinated planning and governance to pursue goals that span organizational boundaries. This definition stems from and distills recent research and practice-oriented analysis of numerous cases involving federal agencies teaming up to address shared management challenges and to tackle policy issues cutting across areas of responsibility (for example, see Fountain, 2016). In these respects, the definition accounts for two distinct types of arrangements:

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- Unifying common operations to harness economies of scale, standardize common processes, and pool resources
- Collaborating in planning and implementation to serve citizens

An Enterprise Approach to Delivering Veterans’ Services and Care

The U.S. Department of Veterans Affairs FY 2018-2024 Strategic Plan is organized around four overarching strategic goals:

Goal One: Veterans choose VA for easy access, greater choices, and clear information to make informed decisions.

Goal Two: Veterans receive timely and integrated care and support that emphasizes their well-being and independence throughout their life journey.

Goal Three: Veterans trust the VA to be consistently accountable and transparent.

Goal Four: VA will modernize systems and focus resources more efficiently to be competitive and to provide world-class capabilities to veterans and its employees.

An enterprise approach that fosters greater collaboration between the VA and its federal partners, and further aligns their collective efforts with community-based actors, is essential to achieve the vision laid out in the VA’s strategic plan.

Five Building Blocks to Create an Enterprise Approach to Serving Veterans

An enterprise approach to U.S. federal veterans’ services and care requires robust collaboration across departments and agencies with veterans-focused programs; a clear, comprehensive definition of the challenges providing supportive services and care entails; and strategic alignment of agency responsibilities, community engagement, and technology solutions. These imperatives can be distilled into five major building blocks:



Building Block One: An appropriate interagency collaboration mechanism that sustains leadership engagement and participation, effective cross-agency planning and collaboration, and accountability for implementation actions.

Building Block Two: A comprehensive understanding of the challenges to delivering effective services and care—by understanding that the challenge of supporting veterans is multi-dimensional and should be defined in terms of meeting a range of needs, such as health, education, employment, family support, housing, and income support—rather than each need in isolation from the others.

Building Block Three: A coordinated set of agency core competencies by allocating effort and responsibility across agencies based on expertise, capabilities, and mission focus.

Building Block Four: A robust engagement strategy with community-level stakeholders by regularly engaging with state and local governments, nonprofit organizations, and private sector stakeholders supporting veterans at the community level.

Building Block Five: The effective use of technology and data by harnessing technology solutions that capture the perspectives of disparate actors, facilitate sharing of information and insight, and enable data-driven decisions in strategic planning and service delivery.

Recommendations

Drawing from research and practice on strategic planning, interagency collaboration, and related areas, this report offers the following set of recommendations to move towards an enterprise approach.

- **Create and use** a broad, enterprise interagency collaboration mechanism of sufficient scope and leadership seniority to guide overall policy, planning, and implementation of federal veterans' services and care.
- **Define, plan, and monitor** progress toward the delivery of comprehensive support for veterans.
- **Ensure existing federal-wide efforts** to support veterans are engaged effectively according to agency roles, missions, and areas of comparative advantage—as well as provide sufficient leadership authority to execute their charge.
- **Create regular forums** to engage community-based stakeholders, leverage their insight and expertise, and align plans and service delivery strategies to complement and empower community-based efforts.
- **Identify, acquire, and deploy** information technology tools and data management structures to support enterprise planning.

Summary

Federal-wide planning is necessary, without question, to set clear priorities, allocate resources, and create a comprehensive approach to provide care and supportive assistance. This report presents five building blocks and related actions to improve the delivery of services and care for veterans through an enterprise approach. Foremost among them is establishing a unifying system of governance and strategic planning that spans the federal government, and integrates state and local governments, and private and nonprofit sector stakeholders, to pursue national goals.

Yet, while VA strategic plans clearly identify the need for collaborative partnerships at the federal, state, and community levels in practice, the functioning of veteran service networks at the community level still operate largely independent from a federal planning process with a deep-rooted dependence on centralized planning and policy coordination.

This report demonstrates the need for an enterprise approach that clearly defines a national strategic vision for veterans' care; identifies short-, medium-, and long-term planning goals across the federal government; and establishes formal coordination mechanisms to drive effective coordination and execution. From this follows a necessity to develop an enterprise approach that aligns efforts of the VA, its federal, state, and community partners, and the array of veteran-serving nonprofits and human service organizations across the country into the “better system” that the public and policy experts have demanded for years, if not decades (Carter, 2017).

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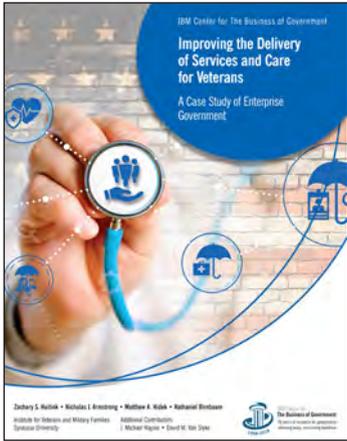
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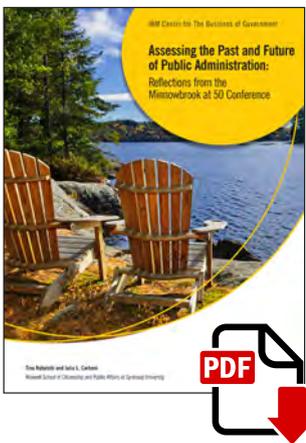
Recently Published IBM Center Reports



Preparing the Next Generation of Federal Leaders: Agency-Based Leadership Development Programs

Gordon Abner, Jenny Knowles Morrison, James L. Perry, and Bill Valdez

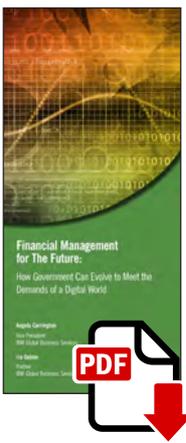
This report builds on the Center’s extensive research into federal leadership. Previous Center reports have explored how particular leaders have responded to public management challenges they faced running a government program or agency. These reports, as well as the many leadership interviews and profiles produced by the Center, focus on telling a leader’s story, outlining experience, and sharing insights. We trust that this new report will be a useful and informative guide for efforts to build the next generation of government leaders.



Assessing the Past and Future of Public Administration: Reflections from the Minnowbrook at 50 Conference

Tina Nabatchi and Julia L. Carboni

This report builds on the Center’s longstanding interest in strengthening the linkages between research and practice for the public sector. Most of our 350 reports over the past twenty-one years apply analyses and recommendations from academic experts into actionable recommendations for government. This history is reflected in the 2018 book marking the Center’s 20th anniversary, *Government for the Future: Reflection and Vision for Tomorrow’s Leaders*, which assessed trends across government over the past two decades to develop scenarios for what government may achieve in the next two decades. These trends and scenarios would not have been possible without the careful research and impactful insights of hundreds of authors from the field of public administration. The import of this connection was reinforced by the recent introduction of the Government Effectiveness Advanced Research (GEAR) Center, which similarly seeks to link academic insights with public sector innovation.



Financial Management for The Future: How Government Can Evolve to Meet the Demands of a Digital World

Angela Carrington and Ira Gebler

We hope that this special report, *Financial Management for The Future: How Government Can Evolve to Meet the Demands of a Digital World*, will help government leaders and stakeholders capitalize on the promise of new technologies and business practices to increase the value of government financial systems. ERP vendors are beginning to encourage clients to move to the cloud by adding higher-end capabilities and announcing end-dates for on-premises systems support. In addition, new technologies and capabilities, including robotic process automation (RPA), blockchain, and artificial intelligence (AI), promise to enable significant gains in productivity. The automation of RPA, the trust and security enabled by blockchain, and the cost savings provided by shared services can all deliver significant business value.

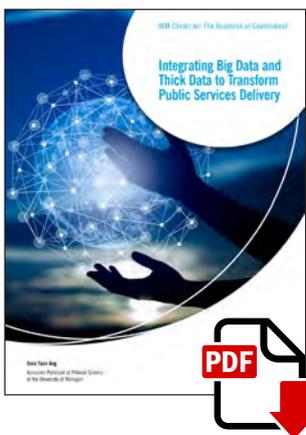
Recently Published IBM Center Reports



Responding to Global Health Crises: Lessons from the U.S. Response to the 2014-2016 West Africa Ebola Outbreak

Jennifer Widner

In 2014, an unprecedented outbreak of Ebola virus in Liberia, Sierra Leone, and Guinea shined a spotlight on global capacity to deal effectively with a fastmoving epidemic that crossed international borders. Given the seriousness of the situation, the U.S. Agency for International Development (USAID) Office of U.S. Foreign Disaster Assistance (OFDA) deployed a Disaster Assistance Response Team (DART), as an interagency platform for coordinating operations to end the outbreak. The report assesses the DART in four phases. Under each phase, the author details insights and key lessons learned that frame practical advice for effective collaboration across agencies and national governments. From this rich narrative, the author also conveys the actions taken by the DART to ameliorate and transcend core challenges in mobilizing a response to a global health crisis.



Integrating Big Data and Thick Data to Transform Public Services Delivery

Yuen Yuen Ang

In this report, Professor Ang offers a new framework to enhance government's ability to leverage big data for social and economic good by integrating the concept of thick data—defined as “rich qualitative information about users, such as their values, goals, and consumption behavior, obtained by observing or interacting with them in their daily lives.” The author reviews the differing strengths and limits of big and thick data, and suggests that governments can improve results by combining the breadth of big data with the depth of thick data—an integrative approach that she calls “mixed analytics,” which can increase accuracy in interpreting big data by adding contextual knowledge about citizen concerns.

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