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Getting It Done: Cutting Costs without Cutting Performance

The "Forum" in this issue of *The Business of Government* magazine discusses seven specific operational functions that can be improved significantly through the adoption of commercial best practices. By aggressively implementing these proven strategies, sustainable cost savings can be realized without significantly impacting operational performance and mission capabilities.

Who Will Do It?

The first step in a game plan for achieving significant cost saving—the "*how it will be done*" stage—is deciding *who* will do it. Imposing such change on fragmented organizational units is easy in concept, but requires political muscle, discipline, and constant follow-through. In the private sector, this would be the job of the Chief Financial Officer (CFO). But not so in the federal government, where most CFOs lack the horsepower to direct such an effort.

One answer may lie in a Senate bill intended to revamp the 17-year-old landmark Government Performance and Results Act. S. 3853 would create in each agency the position of "chief operating officer" (COO) to be the deputy agency head, who "shall be responsible for improving the management and performance of the agency." Chief operating officers were first designated during the Clinton administration and were continued as a successful innovation in subsequent administrations. By making this position statutory, Congress would raise the visibility of COOs in the federal bureaucracy. Establishing the COO position would also create a sense of permanency around the whole issue of performance and results—the sense that this is how government does business and that the COO's function is not merely an initiative of this or that president.

Six Guiding Principles

How might COOs proceed to dramatically save costs *and* improve performance? The answer is to embrace the notion that change is essential for progress. While no two organizations are alike, any government department or agency would be well served by observing six principles necessary for any successful transformation effort:

1. Start a Movement with a Vision and Sense of Urgency

In an age when new media and social media are overtaking traditional media, top-down mandates won't drive sustained transformation efforts. Employees increasingly expect to be involved in decision-making. A successful transformation begins with the active engagement of employees.

2. Establish Clear Governance

The most inspired transformation movement will fizzle without the proper governance model in place to guide and measure progress. Governance councils with senior leaders from across an organization spread accountability and buy-in for change initiatives.

3. Have a Data-Driven Discussion

Within all organizations, the volume of data continues to compound at an incredible rate. By relying on analytics to turn this data into insight, an organization creates opportunities to improve operational performance, glean better client understanding, and support smarter, more predictive business decisions.

4. Radically Simplify Business Processes

To drive transformation, an organization must be built on processes that eliminate, standardize, and automate procedures that add complexity and impede progress. Often this is called "radical simplification." Simplification from the user's point of view, elimination of steps that don't provide identifiable value, and commitment to the idea that it takes hard work to simplify, all contribute to the meaningful transformation of an enterprise.

5. Invest in Transformative Innovation

New technology alone doesn't create transformation or fix a flawed process. It can, however, accelerate progress and support people as they work in new ways. The key is to tackle problems first—then apply technology appropriately. Optimized information technology can also deliver substantial cost savings, which can be reinvested to further the transformation process.

6. Embody Creative Leadership

It will take a new form of leadership, new skills—and imagination—to influence change. It's no wonder, then, that "creativity" was pinpointed as the number one leadership quality needed in IBM's most recent Chief Executive Officers (CEO) study. The skills required of 21st century leaders must now include systemic thinking, collaboration, and the ability to continuously transform.

Conclusion

In the past, government addressed its mission and management challenges by "throwing money" at any problem while using staggeringly wasteful processes. Government must fundamentally change the way it does business. The cost of inefficiency in an era of flat or declining budgets means foregone benefits and services for the taxpayers who foot the bill. Government must become much more efficient and cost effective so that it can afford the capabilities the nation needs to meet 21st century challenges. ◘

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The Business of Government

Strategies to Cut Costs and Improve Performance

Implementing Health Care Reform

Implementation of the Recovery Act

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By Michael J. Keegan

Michael J. Keegan is Managing Editor of *The Business of Government* magazine and Host/Producer of *The Business of Government Hour*

This edition of *The Business of Government* magazine has as its background a period rife with significant challenges that go to the core of effective public management. Faced with seemingly intractable issues such as an ever growing federal deficit, economic uncertainty, unemployment, and aging infrastructure, it appears that the old adage "doing more with less" has taken on a whole new reality. Addressing the challenges arising from this new reality brings with it opportunities—to try different approaches, borrow new strategies, forgo old ways of doing things, and leverage seemingly incongruous practices to ameliorate otherwise vexing problems. Within these pages, we have assembled a varied group of leaders, innovators, practitioners, and thinkers, who in their own way offer models to follow, provide insights that can infuse theory to practice, and pave the way to shaping the business of government.

Forum on Strategies for More Effective Government

The Forum in this edition tackles many of the pressing issues facing governments at all levels, but most particularly the federal government's estimated annual structural budget deficit of $500–700 billion. The first contribution to this forum seeks to dispel belief in business as usual—outlining specific strategies government can take to cut costs and improve performance. It posits that the federal government must adopt an aggressive spending reduction program that includes reforming entitlements, eliminating low-priority programs, and adopting commercial best practices in operations. It presents successful cost-saving strategies that the federal government can use to achieve similar results. The second contribution focuses on improving the cost, quality, and performance of financial management operations and systems. It outlines 10 principles on how to best deploy financial management systems in alignment with the Office of Management and Budget's goals and policies. These principles are derived from lessons learned from multiple financial management system deployments throughout the public sector. The contributions in this forum offer practical, actionable recommendations and insights that, if pursued strategically, could help government leaders get things done and manage the public trust more effectively.

Conversation with Leaders

We feature conversations with government leaders from a wide range of disciplines, who share their extended reflections on the work they do and the service they perform. Whether it is pursuing disruptive innovation in space exploration, saving lives, finding sustainable ways to operate, or delivering a precious resource, the conversations in this edition have much to offer about leadership, government, and public service. Pursuing cutting edge technology is more important today than ever before, as NASA develops missions of increasing complexity to understand the Earth, our solar system, and the universe. We had the pleasure to speak with Dr. Bobby Braun, Chief Technologist at NASA, about his efforts to reinvigorate NASA's space technology program. Since its inception in the summer of 1949, the Air Force Medical Service (AFMS) has sought to provide service members and their families with first-rate healthcare and benefits anywhere and at any time. We spoke with Lieutenant General Bruce Green, M.D., surgeon general of the U.S. Air Force, on The Business of Government Hour about the evolution of the Air Force's aeromedical and expeditionary medical support, and his efforts at improving its life saving capabilities. In 2009, the U.S. Postal Service (USPS) collected, sorted, and delivered

more than 177 billion pieces of mail. Finding more sustainable ways to process this mail and lower the Postal Service's carbon footprint continues to be a central goal at USPS. Sam Pulcrano, VP of Sustainability at USPS, talked with us about his leadership in forging sustainable operations and being good environmental stewards. As we continue to engage government executives outside the beltway, we talked with Cas Holloway, commissioner of the NYC Department of Environmental Protection, about how the City ensures its water system is viable for the next 100 years.

Profiles in Leadership

Over the last six months, we've interviewed a number of government leaders who are changing the way government does business. As CIO at FAA, Dave Bowen leads IT coordination and efforts to make his agency's next generation air traffic system a reality. Vice Admiral Jack Dorsett outlines the Navy's efforts to make information dominance a main battery in its 21st century arsenal. At GSA, Dr. David McClure leads an office playing a key role in making the aspiration of open government real. Richard Spires, CIO at DHS, underscores that information technology is a foundational and critical element to the success of his organization and is as important as any function in assuring mission effectiveness today.

Insights on Person-Centered Human Service Delivery

We also had an opportunity to speak with many public servants who are pursuing innovative approaches to achieving their missions and serving citizens. In this edition of Insights, we focus on human service delivery with insights from Clarence Carter, Director of the District of Columbia's Department of Human Services, on his efforts to put those in need at the center. Carter is a vocal proponent of putting people first and foremost at every point in the planning, implementation, and evaluation of human service delivery.

Viewpoints

We offer compelling viewpoints on a variety of topics. John Kamensky discusses the pros and cons of regulatory partnerships between government regulators and the industries they regulate. Several recent high profile cases have put into question the benefits of such partnerships. Dan Chenok explores why innovation matters and how entrepreneurial managers who work in and with government can find ways to initiate and leverage innovation in order to achieve important results. Dr. Costas Panagopoulos provides some early insights on how the U.S. Census Bureau has adopted cloud computing in support of its mission.

This edition closes with excerpts and overviews of our most recent Center reports that focus on topics of interest ranging from the proper use of private-public partnerships, to the benefits of earned value management, and the promises and challenges of forging collaborative relationships within and outside of government. We invite you to learn more about how the Center connects research to practice. If you have yet to read these reports, we encourage you to do so by going to businessofgovernment.org and becoming a friend of the Center.

We do our best in this edition to explore and delve into this new and different terrain, the shifting contours and dangerous detours that define this moment in time. We hope you enjoy the perspectives, insights, recommendations, and profiles in leadership presented in the Fall/Winter 2010 edition of *The Business of Government* that reveal the business of government is not business as usual.

Please let us know what you think by contacting me at michael.j.keegan@us.ibm.com. I look forward to hearing from you. ◘

A Conversation with Dr. Bobby Braun Chief Technologist, National Aeronautics and Space Administration (NASA)

U.S. economic competitiveness and a high standard of living have roots in decades of investment in research and innovation. As a premier federal research and development agency, the National Aeronautics and Space Administration (NASA) has played a vital role in the nation's innovation engine—continuing to extend its proud tradition of exploration and discovery. Cutting edge technology and innovation is more important today than ever before, as NASA develops missions of increasing complexity to understand the Earth, our solar system, and the universe.

We spoke with Dr. Bobby Braun, Chief Technologist at NASA, who was a guest on The Business of Government Hour *about NASA's space technology program, its focus on research and development, forging disruptive innovation, and making a difference for the future.*

On the Office of the Chief Technologist

The office and position are new. They were created in February 2010. In the past decade, NASA's research and technology investments have been reduced as the agency has become more and more mission focused.

What makes NASA unique is its three longstanding core competencies. They date back to the formation of the agency beginning with the Space Act of 1958. NASA has a research and technology competency; a flight hardware competency (i.e., the building and developing of flight hardware); and an operations competency (i.e., operating missions in space). Over the past decade or so, the research and technology competency has slowed down. We haven't made the critical investments required for that core competency to be healthy. My objective and most of my responsibilities as the Chief Technologist are to rebuild that competency. Only if all three of these competencies are healthy will the agency be healthy, and be the cutting edge organization that the nation expects. The Obama administration and the NASA Administrator want to rebuild the research and technology competency, so they created the Office of the Chief Technologist to lead that charge.

We have two major functions. We're responsible for integrating the technology investments across the agency and across the Mission Directorates at NASA, to ensure that we're doing things in a coordinated and integrated fashion. We're also responsible for managing a new budget line in the President's Budget Request for 2011, for the Space Technology Program. While subject to Appropriations deliberations, in the president's request, it's about $572 million for 2011, and about $5 billion over a five-year period. I report to the NASA Administrator. I'm his advisor in all technology matters across the agency. Technology is a part of everything we do at NASA, whether we're talking about aeronautics, science, or exploration. I'm in all of the major policy meetings. I take more of a strategic view for the future of the agency and the importance of technology in that future.

Secondly, I'm managing the new Space Technology Program. It is focused on long-term investments. We are investing in a portfolio of technologies that are broadly applicable.

These are technologies that could affect not the next science mission or the next exploration mission, but a suite of missions five or 10 years from now.

We're building on the lessons learned from organizations like the U.S. Defense Advanced Research Projects Agency (DARPA) and the Advanced Research Projects Agency–Energy (ARPA–E). We're applying this model within NASA, really for the first time. It's very exciting.

On Challenges Facing NASA's Chief Technologist

I'd say the foremost challenge is cultural. NASA has been operating in a certain mode for the last few decades. That mode has evolved to one in which we take less risk with our missions and our systems. We still do great things in space and aeronautics, but the pace of that innovation is a little more incremental than I would like. My number one challenge is to break through some cultural barriers and improve the pace of innovation—to take, frankly, a little more risk and bring NASA back to being a cutting edge agency, as it was in the 1960s. The capability is within us. We just have to pull it out and get motivated.

The second challenge is budgetary and external. It is about building our relationships with Congress. If we're talking about technology development, we're not talking about something that's going to be produced tomorrow. We're talking about visions of the future. What's NASA going to be like a decade from now? What are we going to be doing in aeronautics or in space two decades from now? That is a very interesting challenge for Congress to wrestle with, so there's much communication and relationship building needed there.

I'd say the third biggest challenge is prioritization and selection from the many wonderful ideas that have been flowing into my office. There are a tremendous number of great ideas and many of them will influence NASA's future missions—not just NASA's missions, but the missions of other government agencies, and society as well. It is a great challenge to sort through all that data and to prioritize with the limited funding we have. We need to select just the right portfolio of technological investments for our future.

On the New Space Technology Program

NASA's Space Technology Program is going to be managed within three divisions. The first division, the Early Stage Innovation Division, is going to focus on the revolutionary ideas that could impact NASA in 10, 20, or 30 years. What we'll be looking for in these programs are people's visions of the future. We'll be making those awards in a competitive manner. These will be relatively small, dollar-value awards.

They'll be made to organizations that could include people in the government, academia, and industry. Frankly, we're looking for the best ideas, wherever those ideas may come from. I fully expect America's universities to be involved in this program. I think small business will certainly play a large role here. I think our government labs will have a big role in early stage innovation.

The Game Changing Division, the second division, is very important. It is the piece that has been missing. In the past, we've done a lot of systems analysis and concept work, but we've been missing the program that takes those innovative ideas and proves them in our laboratories, in ground-based testing. This division is specifically built upon the lessons learned from DARPA, ARPA–E, and the Intelligence Advanced Research Projects Activity (IARPA).

Disruptive technology is a technology that fundamentally changes the way NASA goes about its business. The Exploration Systems Mission Directorate (ESMD) has a roadmap for how human explorers are going to go out beyond the Earth's orbit. It is a plan based on a single set of technologies. What we want to do through the Game Changing Program is to disrupt ESMD's plans. We want to infuse new technology into that plan. We want that technology to be mature enough so it can be baselined into ESMD's plans to send humans out to an asteroid or to Mars.

These kinds of disruptive innovations occur around us all the time. The cell phone is a great example. I think we all have them, but 10 or 15 years ago, very few of us did. It has revolutionized the way we communicate. It has changed

the game. While the cell phone is an example right here on Earth, there are a number of disruptive technologies that one can envision for space exploration or aeronautics as well.

The third division in the Space Technology Program is the Crosscutting Capability Demonstration Division. This division focuses on the maturation of a small number of technologies to flight readiness. It's great to have a program where we're doing ground-based testing and laboratory testing, but our missions are still not willing to fly that technology until it's been demonstrated in a relevant space environment. Within the division, we're going to use sounding rockets and atmospheric flight testing to prove a small set of technologies. It's a little more expensive, but these demonstrations will be very important. We're going to pursue these demonstrations hand-in-hand with our Mission Directorates, so that we have an infusion path for that technology.

On Addressing Grand Challenges

Starting with NASA's strategic plan, we've been defining a set of grand challenges. We're going to be using these grand challenges to organize the Space Technology Program. In human exploration, perhaps the grandest challenge of them all—at least in my lifetime—will be to send humans to Mars. This is actually something that I know a little bit about. I've been working on it for quite a few years. Frankly, we can't do it with the existing technology. There are a number of breakthroughs that are needed to have humans walk on the surface of Mars.

I've been involved in the design of some of the robotic missions that have gone to Mars. Robotics is a great challenge in itself. However, it's one thing to land a spacecraft the size of this table on the surface of Mars; and it's quite another thing to land a two-story house, right next to perhaps

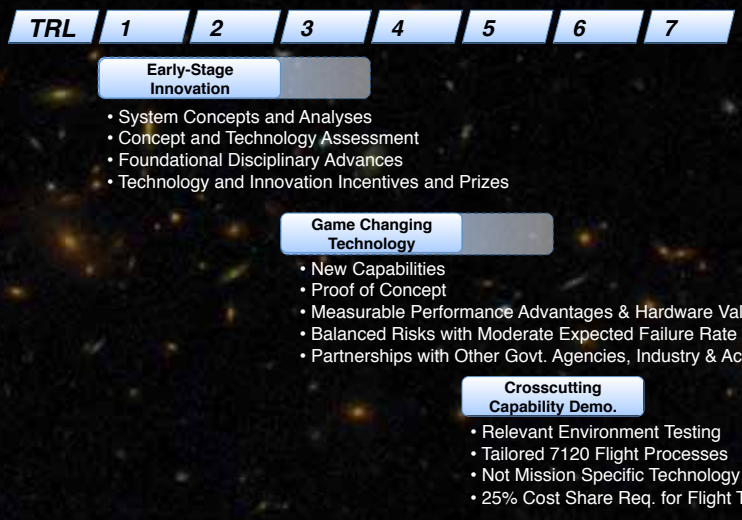
NASA's Space Technology Program Mission

GUIDING PRINCIPLES

- Advance broadly-applicable technology.
- Produce technology products for which there are multiple customers.
- Meet the nation's needs for new technologies to support future NASA missions in science and exploration.
- Employ a portfolio approach over the entire technology readiness level spectrum.
- Competitively sponsor research in academia, industry, and the NASA Centers based on the quality of the research proposed.
- Leverage the technology investments of our international, other government agency, academic, and industrial partners.
- Result in new inventions, new capabilities, and the creation of a pipeline of innovators trained to serve future national needs.

PROGRAM ELEMENTS

- **Early-Stage Innovation:** Creative ideas regarding future NASA systems and/or solutions to national needs. Includes Space Technology Graduate Fellowship program.
- **Game Changing Technology:** Prove feasibility of novel, early-stage idea that has potential to revolutionize a future NASA mission and/or fulfill national needs.
- **Crosscutting Capability Demonstration:** Maturation to flight readiness of cross-cutting capabilities that advance multiple future space missions, including flight test projects where in-space demonstration is needed before the capability can transition to direct mission application.



NASA

"I think to be a good leader today requires the ability to integrate. It's about integrating knowledge from disparate fields, learning from that knowledge, and applying it to new problems." — *Dr. Bobby Braun*

another two-story house with all the fuel and supplies humans might need for their long stay on the surface. The mass requirements or the weight requirements of such a mission are also tremendous. It makes the amazing work that we've done on the International Space Station pale in comparison.

If you look at the Science Mission Directorate, perhaps one of the grand challenges there is the question, "Are we alone?" This is something that I actually think about when I'm on the farm, away from the city. If you look up at the night sky and you see all those stars, you can't help but wonder how many planets are orbiting around those millions of stars, and how many of those planets could be Earth-like? Of those Earth-like planets, how many could be inhabited? I believe that through technology investments, we will develop robotic missions that will go out through our solar system, and one day we'll be able to tell whether there has ever been life on neighboring planets. Without technological investments, these types of things are just not in the cards.

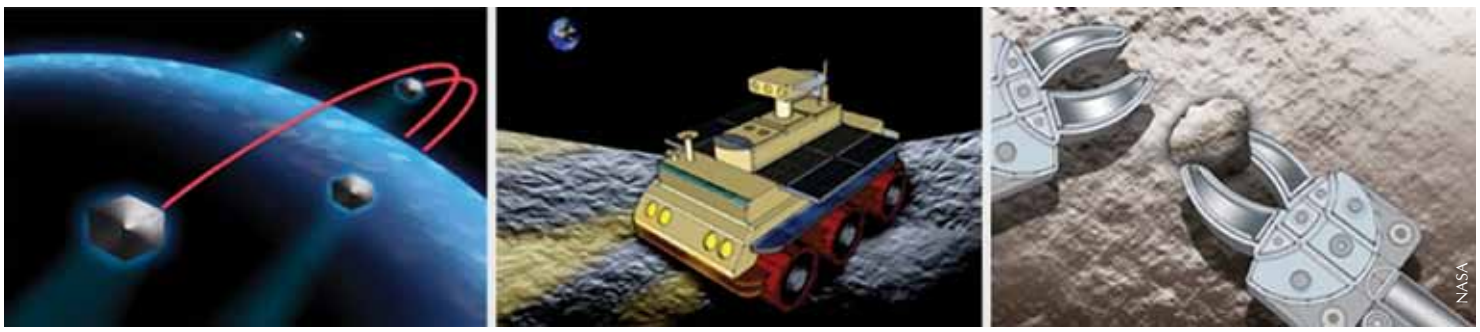
On the Benefits of NASA's Centennial Challenges Program

Centennial Challenges is a fantastic program. It's a prize competition that lays out grand challenges for the public to go after. These challenges are related to NASA's mission. For instance, there was an astronaut glove challenge that sought improvements in the efficiency and durability of these gloves. When we put out such a challenge, all kinds of people respond—the diversity of the teams is amazing. And NASA doesn't pay any of these teams; they all do it on their expense. They enter the competition and only when they meet the milestone do they receive payment. It's really the spirit of American competition and innovation that drives them.

NASA has been doing this for a few years, but now the rest of the government seems to be interested. The White House recently issued a policy paper stating that more of the government should get involved in challenge programs. They actually cited NASA and the Centennial Challenges Program as a model for what the other government agencies could be doing.

On Leadership

On the one hand, technology is making things simpler for us, but the pace of innovation and the pace of our communications and relationships are getting faster and faster. I think to be a good leader today requires the ability to integrate. It's about integrating knowledge from disparate fields, learning from that knowledge, and applying it to new problems. It's



Three new prize challenges were announced on July 13 at the Industry Forum for the NASA Office of the Chief Technologist. These are the first new challenges since 2005. From Left to Right: **The Nano-Satellite Launch Challenge:** to place a small satellite into Earth orbit, twice in one week. The prize purse is $2 million. **The Night Rover Challenge:** to demonstrate a solar-powered exploration vehicle that can operate in darkness using its own stored energy. The prize purse is $1.5 million. **The Sample Return Robot Challenge:** to demonstrate a robot that can locate and retrieve geologic samples from a wide and varied terrain without human control. The prize purse is $1.5 million.

about developing new products and new markets for those products. Those are the things that I'm focused on, and that I have been focused on throughout my career.

First, we need a clear focus on what's important. Why are we doing technology innovation? In my view, we're not doing it just to go play in the sandbox and see what kind of gadgets we can develop. We want to invest in technology at NASA because it will enable much grander missions in the future. It will enable us to explore with robotic precursors, and ultimately with humans in space, at a much faster scale and in a more sustainable manner.

Secondly, we need a stability of purpose and stability in the budget. We need consistency in our direction. We can't be moving in a certain direction in technology this year and then have a dramatic shift next year. We are making long-term investments and they take a few years to come to fruition. The only way we're going to get these disruptive and emergent technologies into our space program is through a portfolio approach, in which we make a wide variety of investments. Some of them will grow into amazing technological solutions for our future, and some will not.

We also need to have strong project management skills and expertise to be successful. It's about nourishing and nurturing investments that are flourishing and terminating those that are not. That has proven to be a challenge throughout government programs in the past. We are setting up the new Space Technology Program that way and we have Congressional backing.

On Cultivating a Risk Tolerant Environment

This is incredibly important to what we're doing. What does acceptable risk mean to a technology development program? This is part of the cultural challenge I mentioned. We need to have a tiered-risk acceptance approach in NASA. Certainly, in our human space flight programs, we need to take every precaution and prioritize safety. Failure is not an option for human space flight. We probably don't want to take a lot of risk on a multi-billion-dollar scale, single-launch mission. However, as we go to smaller missions and move into technology development, we certainly need to take more risks. Unless we take risks, we won't be developing game changing innovations.

The only way I know to innovate is to take risks. The only way I know to make progress toward a grand challenge or develop a game changing technology is to take risks. With risk comes a higher probability of failure. With the Space Technology Program, we're saying straight up that we are

going to fail. What's important is that when we fail, we fail forward and learn from that experience. When we succeed, we succeed in such a manner that a disruptive technology comes in and we skip a couple of steps along the way. That's the model that we're shooting for, and it will only occur if we take some risks.

On Advice to Future Leaders

First, I'd say go to school. Second, do something in your career that you're passionate about. I don't care whether you work on the next airplane, automobile, or an improvement to the cell phone—do something that you're passionate about. Too often in our country we talk about money and we push people into career directions for financial reasons. I really believe that you need to be passionate about your work and about your career. Third, help to build the future. In my case, I want to build the future through technological innovations and solutions, and do so with an eye towards changing the world. If we want to, we can all change the world. We just have to try. ◘

To learn more about NASA and its Office of Chief Technologist, go to http://www.nasa.gov/offices/oct/home/index.html

To hear *The Business of Government Hour's* interview with Dr. Bobby Braun, go to the Center's website at www.businessofgovernment.org.

To download the show as a podcast on your computer or MP3 player, from the Center's website at www.businessofgovernment.org, right click on an audio segment, select Save Target As, and save the file.

To read the full transcript of *The Business of Government Hour's* interview with Dr. Bobby Braun, visit the Center's website at www.businessofgovernment.org.

Conversation with Lt. General Bruce Green, M.D. Surgeon General, U.S. Air Force

Since its inception in the summer of 1949, the Air Force Medical Service (AFMS) has sought to provide service members and their families with first-rate healthcare and benefits anywhere and at any time. In support of deployed forces, the AFMS also plays a central role in the most effective joint casualty care and management system in military history—a system that has saved thousands of lives that otherwise would have been lost on the battlefield.

We spoke with Lieutenant General Bruce Green, M.D., surgeon general of the U.S. Air Force, who was a guest on The Business of Government Hour, *about the evolution of the Air Force's aeromedical and expeditionary medical support, and his efforts pursuing disruptive innovation, providing humanitarian assistance, and saving lives.*

On the Mission of the U.S. Air Force Medical Service

The Air Force Medical Service was established about two years after the Air Force was formed, in July 1949. [In fact, AFMS celebrated its 60th anniversary in 2009.] We continue with the same mission we have always had: to enable the Air Force to fly, fight, and win, by [sustaining a] healthy and fit military force. Our various missions [include] setting up hospitals, deploying our medics to faraway places, and using air evacuation to bring back casualties from all the services.

There are approximately 40,000 active duty and civilians, another 9,000 reservists, and 6,000 guardsmen functioning in the U.S. Air Force medical missions. I [manage] a budget of about $2.6 billion in defense health program funds, and another $2.5 billion in personnel accounts. We use those funds not only for the readiness mission, but also to provide healthcare. There are about 1.1 million beneficiaries actually enrolled for care within the [USAF health] system.

On Achieving "Trusted Care Anywhere"

People today seem to be tired of lengthy strategic plans and business plans. So I looked for a mantra, and I thought "Trusted Care Anywhere" really fits what we do. The challenges in achieving trusted care anywhere are: to create a system that can be taken anywhere in the world and be equally as useful whether it's [operating] in war or a humanitarian assistance capacity, to create links back to the American standard of care, and to teach others better ways [of doing things].

To do this requires an enormous amount of training and a lot of creative people putting together systems that will actually work in an austere environment. It takes some time to set up a hospital in such an environment, to create the necessary logistic routes, and to [put systems] in place. It also takes teaching others how best to request our assistance and when. The newest challenge for us is [to develop] our modular expeditionary medical capabilities. It will mean having [the capability] to see the first patient within one hour of [their arrival] and do the first surgery within three hours. Today, it

Critical-care transport team airmen prepare 9-year-old Saleh Khalaf for an aeromedical evacuation flight from Tallil Air Base, Iraq to Children's Hospital and Research Center in Oakland, CA. Saleh was critically injured by a land mine near his school in Al-Nasiriyah and had been cared for by 332nd Expeditionary Medical Squadron airmen until his flight.

takes us 12 to 24 hours to accomplish those things and to establish a hospital in a deployed setting.

On the air evac side, we're bringing people back home to the states in three days—it's tough to beat that. There are certain classes of patients that we need to be cautious with, to make sure that we don't move them too early. In regard to other patients, if there's a way to get them home to their families faster by using polar routes and alternate types of transportation, we're trying to [provide those means] as well.

On the Evolution of the Aeromedical and Expeditionary Medical Support

If we were referring to the 1991 time frame, just after Desert Storm, we would have been talking about 50-bed, air transportable hospitals, each one requiring 13 or 14 C-141 aircraft to transport them [to a deployed position]. Today, 19 years later, I can set up an initial hospital in four pallet positions and basically take all of my team with everything in place on a single aircraft. Regarding our air evac capability, we have created teams that are able to take care of critical patients [in a way similar to] a neonatal transport team here in the United States. [That means] leveraging a three-person team, taking care of three to five very critically ill patients, moving them across continents, and doing it in hours.

We've been in the [Iraq] war for nine years, so we've moved into fixed facilities. We have state-of-the-art CT [scanners], state-of-the-art endoscopy, and almost any equipment you'd see in a normal hospital in the United States. There are days where our hospital in Balad is now empty, so we're trying to pick up on the training mission to make sure that the Iraqis have the graduate medical education and skill sets to manage our equipment. In Afghanistan it's a little different. We're seeing far too many casualties still coming through there, and we'd love to see that [number] decrease. But we've also moved to fixed facilities there over the past nine years. We have our people working in these fixed facilities, as well as some tented facilities in remote areas where we're doing stabilization surgery and starting the process for the care [they'll receive] when they come back home.

The challenges in Iraq are different than they are in Afghanistan. Iraq has a very developed medical system. Over the years they have trained physicians and nurses for other Middle Eastern countries. In Afghanistan, we have seen an exodus of many native medical professionals due to their prolonged time at war, so we are really challenged to [bring]

Master Sgt. Peter Winetroub, 407th Air Expeditionary Group anti-terrorism officer, connects a mock injured patient to an IV during a combat lifesaver final exam.

expertise back into the country so we can transition [medical care] back to the Afghanis.

In addition, we're really pushing to see if we can set up [assistance] more rapidly. In the last year, I've deployed forces into Indonesia, Haiti, and Chile for humanitarian relief. Essentially, we get there within 24 to 72 hours from the time help is requested. If I can get my expeditionary assets to do this more quickly, we can be even more useful.

On the Benefits of Healthcare Informatics

Without an electronic health record, there is no continuity [of care] from site to site. The most critical infrastructure we have created is a product called TRAC2ES. This is a system that tracks patients in a way very similar to how Federal Express tracks packages. We have to know where people are in the system and what has been done to them. We need to know specifically what has happened not just when they go from port to port, if you will, but also what happens to them on board the airplanes. Our new systems—an expansion of the Theater Medical Information Program Air Force—have an electronic record that collects information in the air. We can now look on a web-based [system], know exactly where a casualty was injured yesterday, what's been done to them, and what the physician's notes are. If you don't have the capability to see what's going on as patients transit the system, you can't have the supplies and personnel ready for what needs to happen at the next stage.

Without the informatics, we couldn't be where we are. [Informatics] has the same effect at home. The electronic health record allows us to move people to any military hospital, ensure that their care is continuous, and that there are no problems with patient safety—you know exactly what's been done.

On Humanitarian Assistance

We're trying to place expeditionary medical modules [with our teams], so that we have the right equipment regardless of what we face. The modules could be pulled and pushed into the packages as easy as taking a few boxes in and out of our pallet positions. During Katrina, we found that we weren't well prepared for geriatric response. We found in South America that we weren't well prepared for obstetrics (OB) and pediatric response. With just a few hours notification, we now have modules that are set up for OB, pediatrics, or geriatrics, so they can simply be inserted without necessarily changing the weight or cube for planning purposes.

[In expeditionary care, it's also important to remember that] you don't want to sweep in and take over, but to augment

U.S. Air Force photo/Airman 1st Class Andrew Oquendo

Medics from the Air Force Theater Hospital treat emergency room patients at Balad Air Base, Iraq. The hospital provides Level 1 trauma and specialized medical care.

the systems that are in place, particularly in a humanitarian response. We've been trying to build [expeditionary] capabilities not only in this country, but in others. In Chile, we had a good idea of what we were stepping into. We placed some of the modules for OB and pediatrics there based on the population we were going to serve, and because of some work that had been done with the Chilean Air Force, they were ready to accept our expeditionary medical assets. [The Chileans] purchased that equipment, added some tents of their own, converted our 25-bed hospital into a 100-bed hospital, and they're still operating that today. We were out in about three weeks. This is the kind of activity that we think we offer when any nation really needs help.

On Pursuing Disruptive Innovation

It is a tough thing to create disruptive innovation in a bureaucracy. What I try to do is bring people in who are doing the job, and have them tell me the things that aren't working very well and how they could be done better. A misstep on my part when I first became the deputy surgeon [of the Air Force] was to try and solve issues [involving] our primary care by creating a rotational model. I learned rather quickly talking with the people in the field that there wasn't enough manpower for them to do the job as we wanted them to. After sitting down with different representatives from seven facilities, we came up with the Family Health Initiative. The

"We continue with the same mission we have always had: to enable the Air Force to fly, fight, and win, by [sustaining a] healthy and fit military force."

— Lieutenant General Bruce Green, M.D.

Family Health Initiative was a way to improve Air Force primary care practice by essentially changing it from primary care to something that was more team-based and patient-centered. This concept was similar to what the American Academy of Family Practice was calling Patient-Centered Medical Home (PCMH). We have set up PCMH at 13 facilities in 2009; this year we've added another 10 [facilities]. I hope to have all of our facilities using a PCMH [approach]. By the end of September, I'll have 330,000 patients that now have a single provider and a team of professionals that are responsible for their care. By the end of 2012, 1 million beneficiaries will have this type of access.

Why is that kind of innovation disruptive? I live in a system where my providers typically move every three years and where my patients move every three years. Trying to create continuity in [such a] system is unheard of. Since [implementing the PCMH model] two years ago, patients at those facilities are now seeing the same physician about 70 percent of the time. About 95 percent of the time they are seeing that physician or their partner, and that's what we want [for our patients]: to have the same team watch after them and create that [bond of] trust.

On Improving Resilience

We're using several programs to improve resilience. We use telemedicine initiatives to try and link our various mental health capabilities, so that they can talk between one another and share resources. We also are working with the Army and Navy on outreach for patients in remote areas, to give them the ability to link to telemental health. We also have eight sites where we've set up a computer simulation that we call Virtual Iraq, which decreases the time it takes for an experienced provider to get to those issues that are causing someone trouble. You put someone in front of a computer simulator and essentially take them back to an Iraq-type of situation. It allows them to share with the therapist and helps them to find ways to deal with what's haunting them.

Some of the efforts I've described in the patient-centered medical home [approach] are geared towards giving patients the continuity and focus we think they deserve. Beyond that, we're doing more in terms of case management and disease management to try and deal with everyday diseases. I think it helps a great deal to know that if a loved one is going over to defend this country and may be injured, we will do everything to get them home safely. We work a lot to make certain that services are available for families. We're working with the U.S. Department of Veterans Affairs to streamline our benefits systems. We've transitioned to a single physical examine shared by the Department of Defense (DoD) and the VA in determining disabilities. We've established and strengthened our airmen and family readiness centers. They have the ability to get the services that may be needed,

U.S. Air Force photo/Staff Sgt. Desiree N. Palacios

Sean Halsted shakes hands with a fan as he holds his son, Ethan, 5, after completing the slalom super G competition during the 29th National Veterans Wheelchair Games in Spokane, WA. Mr. Halsted is an Air Force veteran and resides in Rathdrum, ID.

Maria Kravchenko pauses for a photo with family friends retired Brig. Gen. James Albritton and his wife, Pat, after the general administered the oath of office to Ms. Kravchenko in Gainesville, FL. The newly commissioned 18-year-old Air Force Reserve second lieutenant will attend medical school in the fall with help from the Air Force Medical Corps Health Professions Scholarship Program.

whether it's for a short time or even for a more extended time. We're now working to try and create better databases so we can match up the skill sets that a family requires when they go from one station to another, so that there is no gap in services.

On Meeting the Challenges of Today and the Opportunities of Tomorrow

I brought in people from universities and different industries to look at the [factors] that will change our world between now and 2045, using scenario-based situations. What are the actions we must take in order to get to the outcomes we really desire? What [constitutes] better health, better care, and the best value [for that care]? We came up with a few strategic imperatives, starting with patient-centered care. The next imperative would be to tie patient-centered care to informatics, so that we can focus on precision applied, evidence-based medicine. In addition, we'll have to be agile in our institutions, because the thing that gets in the way of change and disruptive innovation is middle management. We'll also have to partner, because there's not a single solution. There's no one institution that's going to find the answer. It's really about how do we partner to try and bring this together and shape a future that we all desire.

We have also shifted our recruitment and retention into scholarships. We found that we've had less luck bringing in fully qualified people [than in the past]. As they finish their specialty and need to pay off loans, they are less willing to come into a military situation. We've increased our scholarship programs by almost 600. We've allocated those [scholarships] to different sets of expertise, not just medicine, but also nursing, pharmacy, and physical therapy. We're trying to make certain that we can attract people who are innovative and in need of scholarship opportunities.

We have a very active training program, both in graduate medical education and with industry; we have our people working in fellowships with various institutions across the country. We try and set up research agreements with different institutions, again trying to let them share our data and to help us find new evidence [that can enhance patient care.]

We also teach them how to operate in austere situations, and how to critically think their way out of a situation that no one may have faced before. Our goal is to continue to find and foster creative people with agile thinking, who are very good at lean process analysis and at making things work better. ◘

To learn more about the Air Force Medical Service go to www.sg.af.mil

To hear *The Business of Government Hour's* interview with Lieutenant General Bruce Green, M.D., go to the Center's website at www.businessofgovernment.org.

To download the show as a podcast on your computer or MP3 player, from the Center's website at www.businessofgovernment.org, right click on an audio segment, select Save Target As, and save the file.

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A Conversation with Sam Pulcrano Vice President of Sustainability, U.S. Postal Service

In 2009, the U.S. Postal Service collected, sorted, and delivered more than 177 billion pieces of mail. Finding more sustainable ways to process this mail and lower the carbon footprint of such a massive effort continues to be a central goal of the U.S. Postal Service. We spoke with Sam Pulcrano, Vice President of Sustainability at the U.S. Postal Service, about his leadership in forging sustainable operations, reducing the Postal Service's carbon footprint, being good environmental stewards, and how it is leveraging innovation in all its sustainability efforts.

On the History and Evolution of the U.S. Postal Service

The Postal Service is an independent government agency. We go back to 1775, when the Second Continental Congress first determined that we needed a postal service. The Post Office Department was born at that time. Benjamin Franklin was our first postmaster general. Today, the Postal Service is governed by an 11-member Board of Governors, nine of which are appointed by the President of the United States. Two management members, our Postmaster General, Jack Potter, and our Deputy Postmaster General and Chief Operating Officer, Pat Donahoe, are also members.

We are a self-supporting organization. We receive absolutely no tax dollars. We totally rely on the sale of our products and stamps to generate revenue for our operating expenses. Our annual revenue is about $68 billion. We deliver half of the world's mail, and we deliver to 150 million residential and business addresses every day in the United States. We have nearly 600,000 employees and 36,000 retail locations across the country. We're the most trusted government agency for five consecutive years in a row and the sixth most trusted business in the nation as determined by the Ponemon Institute.

On the Challenges Facing the U.S. Postal Service and its Sustainability Efforts

The challenges are related to the economic environment. First and foremost, how can we find some new ways of growing revenue for the organization? We've been exploring new opportunities like mail-back programs. We're piloting in 1,500 post offices providing prepaid postage envelopes for people to mail back their small electronics, including cell phones and digital cameras, [to places] where they get properly recycled. We're also working with the University of Maine, State of Maine, EPA, and DEA, [piloting a] mail back program of unused pharmaceuticals to keep them out of the hands of teenagers and out of landfills and water supplies. The other area is reducing costs and being as efficient as possible. In 2009, we had a significant drop in mail volume of about 26 billion pieces in a single year—that is a significant drop in revenue in a very short time. We had to react very quickly to reduce costs. On the sustainability side, we did that by establishing green teams [that] focus on some very specific areas [in which we can] become more efficient and reduce the overall cost of the organization.

On Leading Sustainability Efforts

My current position was established in May 2008, at the same time that we announced the formation of the U.S.

Postal Service's Office of Sustainability. I'm responsible for unifying the Postal Service's sustainability efforts across all business units and the organization. Our business units are very engaged in our green efforts. My job is just to pull it all together, facilitate, integrate their activities, and tell our corporate story.

On U.S. Postal Service Environmental Stewardship

We've always been a leader in using alternative fuel-capable vehicles and recycling. In fact, we tested our first electric vehicle back in 1895 in Buffalo, New York. We've been testing our electric vehicles for almost a hundred years now. Today, our engineering group manages the largest alternative fuel-capable vehicle fleet in the world. About 40,000 [of our vehicles] are ethanol fuel-capable as well. Given our size and [the fact] that we touch every community in the United States, we have an obligation to engage in green business [practices]. We are continually focused on adopting sustainable ways of improving and doing business, in order to create a long term value for our customers, our employees, and all of the communities that we serve. It's our objective to become known as a world class sustainability leader.

We have a corporate goal of reducing our facility energy 30 percent by 2015, our petroleum fuel use 20 percent by 2015, and also increasing our alternative fuel use 10 percent by 2015. We recently (last year) set [a] corporate goal of reducing our greenhouse gas emissions 20 percent by 2020. We also voluntarily comply with some of the laws and executive orders that define sustainability goals for the federal sector.

This year, we launched the Green Newsroom. It's a library of the Postal Service's green news, history, and information. We also have the green website at www.usps.com/green that our customers can access. We have all kinds of tips that they can use, which include resources for mailers to green their particular mail products, and [other ways] they can use to improve their environmental impact.

On Benefits of Reducing, Reusing, and Recycling

We have a slogan, "Reduce, Reuse, and Recycle," and it's becoming more than just a slogan to us. It's actually becoming our way of doing business. Our human resources group has secured lobby recycling in more than 10,000 post offices. Customers are able to come into the lobby, take their mail out of the box, go to our counter, separate the mail, take the mail that they want to keep, and then place the mail that they want to dispose of securely and safely in a locked container in that lobby. We take that product and recycle it. We make about $10–11 million dollars a year in lobby

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recycling and other mail recycling. Last year, we recycled about 270,000 tons of paper, plastics, and other waste. It's a decrease in greenhouse gas emissions of approximately 1.67 million barrels of oil.

We're also growing our online transactions. If you go to [the homepage of] our green website at www.usps.com/green, you can find a little calculator up in the right hand corner that we call "Skip the Trip." By using our online products and services, for example, you can arrange for carrier pickup [from your home or office.] We call this service "Click-N-Ship," and it includes other online services, [such as printing labels and tracking packages.] In 2009, [this area] grew an additional 13 percent—our customers are making fewer trips to the post office, therefore reducing their greenhouse gases and their fuel use as well.

In addition to that, our facilities group has completely revised how we design and construct new buildings so that they are more energy efficient. All buildings are required to have a sustainable building design as well as energy-efficient lighting and HVAC systems. We also use native plants and other sustainable landscaping at our facilities to ensure that we're helping the environment in every way.

The facilities group is also continuing to explore other alternative energy forms. They already have an array of solar photovoltaic systems [in use]. They are also using a geothermal HVAC systems. Where the price point and the return on investment are appropriate, we continue to look for opportunities to improve in those particular areas.

On Decreasing Costs and Realizing Savings

Our sustainability projects are clearly making a positive impact on the environment, but they're also helping us save money. We provide universal service at affordable rates, so

"We provide universal service at affordable rates, so reducing energy and fuel use helps us keep our costs under control as well as provide the trusted service that Americans expect." — *Sam Pulcrano*

reducing energy and fuel use helps us keep our costs under control as well as provide the trusted service that Americans expect. Many of our green initiatives focus on what we call "no cost" or "low cost" [solutions]. These include turning off lights when they're not in use, turning off your computer monitors, and adjusting thermostats in facilities and offices. All of those things help contribute to reducing our cost while enhancing our energy savings.

We also started piloting a cross-organizational green team made up of representatives from maintenance, IT, operations, and supply management. We decided to focus on five key areas: reducing energy use, lowering petroleum vehicle use, improving water efficiency, reducing the purchase of supplies, and reducing our solid waste cost as well as increasing our recycle revenues. We had great results.

We expanded this effort to our eight regional offices. In just one year, they were able to achieve a little over $5 million of savings in just nine buildings alone. Green teams are also going into some of the largest facilities and establishing teams where they see a good bang for the buck. We're

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The U.S. Postal Service's first green roof is the Morgan Processing and Distribution Center (P&DC) in NYC, a showcase of resource conservation and innovation.

[employing] Lean Six Sigma to help drive our performance. Lean focuses on reducing waste and improving the process flows, while the Six Sigma aspect concentrates on reducing variation in [process while] improving quality. When you put those two together you can get a wonderful result. Our plan is to roll it out to all 80 of our districts across the United States within the next two years.

On Developing New York City's Largest Green Roof

This is a great story. This is one of our largest environmental projects to date. It's the largest green roof in Manhattan, [at] nearly 2.5 acres. Our facilities department started construction in September 2008 and completed it in July 2009, within budget. More importantly, 90 percent of the former roof was recycled and reused in the current roof. We expect it to last about 50 years, almost twice the lifespan for a roof of that type. We're projecting that it's going to reduce our heating and cooling costs about $30,000 per year because of its great insulative factors.

The roof also has a great environmental effect, reducing the water runoff into the New York City municipal water system by 75 percent in the summer and 40 percent in the winter. It's created this wonderful environment for our employees, who are allowed to go up there on their breaks and lunch periods. We have 14 benches made of Brazilian Ipe wood, certified sustainable by the Forest Stewardship Council. The other critically important [fact] is that 59 percent of the green roof surface is vegetation and plants that are native to the northeast area.

On Providing Customers with Eco-Friendly Products

We're leading the mailing industry in green certification of our products. We are the first and only shipping or mailing company worldwide that has earned "Cradle to Cradle Certification" for its environmentally friendly design and health standards for Priority Mail and Express Mail products. When you go into the post office you will find the "Ready-Post" envelopes and mailing supplies, all of which have Cradle to Cradle Certification—they're 100 percent

recyclable. To give you some idea of the volume, in 2009 we provided nearly a billion Cradle to Cradle Certified mailing supplies to our customers.

[Receiving Cradle to Cradle Certification] is really an exhaustive process. Using the Priority Mail box as an example, the process literally gets into breaking down every single component that goes into making that box. How is the cardboard made? What are the raw products that go into making that cardboard? What are the chemicals that go into the ink? We were very pleased with the result of [the certification] and we're going to continue moving forward in that area. In fact, we're actually working right now to get our stamps Cradle to Cradle Certified.

On Expanding the Use of Alternative Fuel Vehicles

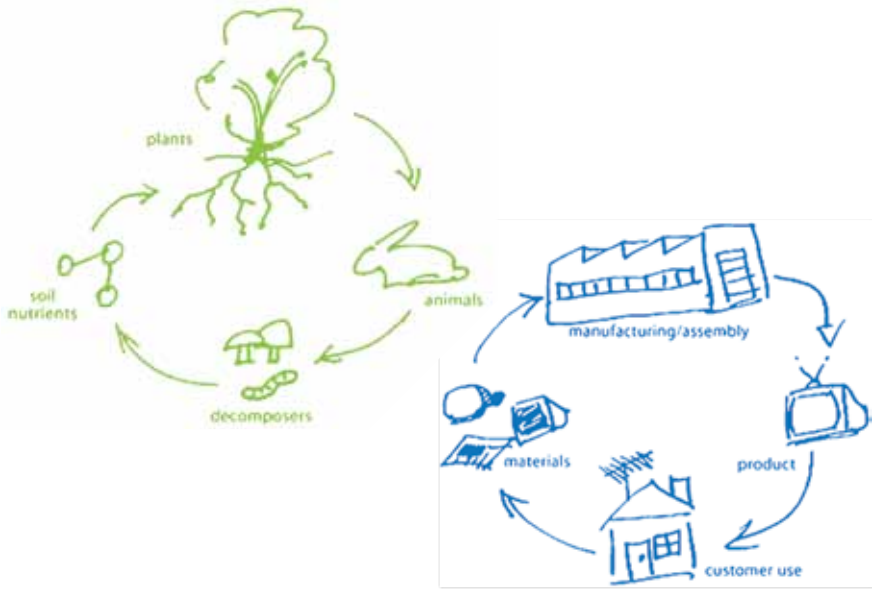
We have a very large fleet. We have about 210,000 vehicles on the road every business day. You see the postal trucks everywhere in your neighborhoods, and about 44,000 of them are alternative fuel-capable vehicles. We're focused on increasing the use of our alternative fuel, so we're testing every type of vehicle there is—natural gas, hydrogen fuel cell, etc. Our engineering group is now testing two fourth generation, Chevrolet Equinox hydrogen fuel cell vehicles. They have a partnership with General Motors and the funding is coming from another partner, the U.S. Department of Energy. We've had [a fuel cell vehicle] that delivers mail and has done so since 2006. We now have a second fuel cell vehicle operating in the Washington, DC area. In fact, we're even testing some unique three-wheeled vehicles. We've even built a little trailer for the carrier to haul his or her mail for their particular routes. We're testing [the trailers] in California, Arizona, and Florida. They cost about two cents a mile to recharge and to operate and have a range of about 40 miles.

In addition, our engineering group just announced a contract to convert our [petroleum] postal vehicles to electric. Five companies have bid on that particular project. Each one is going to create an electric motor platform and battery platform. We're very proud that we also deliver [a large quantity of] mail without the use of petroleum fuel vehicles. We

Cradle to Cradle® Certification

CM
CERTIFIED
cradletocradle

Certification permits an organization to tangibly and credibly demonstrate its efforts to design eco-effective products. Cradle to Cradle Certification is a multi-attribute Ecolabel that assesses products for their ingredients' human and environmental health characteristics, their recyclability or compostability, and their manufacturing characteristics.



This model calls for products to be developed for closed-loop systems in which every ingredient is safe and beneficial—either to biodegrade naturally and restore the soil, or be fully recycled into high-quality materials for subsequent product generations.

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USPS Alternative Transportation Solutions

Bicycle Delivery

Three-Wheeled Electric Mail Delivery Vehicles

Hydrogen Fuel Cell Vehicle

have bicycles routes in several states that save about 15,000 gallons of gasoline per year. We also have a large walking fleet: We have 9,000 routes where [the carriers] actually walk the entire route, and 80,000 of our routes are what we call park-and-loop routes.

On Achieving Corporate Sustainability

We've learned the importance of establishing goals and measuring against those goals to improve our system. The ultimate result is to drive down energy costs and greenhouse gas impact.

Let me just give you some of the things that we're most proud of as highlighted in our 2009 annual sustainability report released in May 2010.

Since 2005, we've reduced our facility energy use by 10.8 trillion British thermal units. It is a significant reduction and results in about $150 million in avoided costs per year. Since 2007, we have saved $400 million. We've also reduced our contracted fuel use by $314 million in 2009. In addition, we've changed many of our paper-based activities to online activities. Just last year alone, we saved 10 million sheets and forms by taking that paper out of our system, thanks to a human resources project. We've also taken customer barcode sorters that we were going to scrap and recycled them. They were redesigned into another piece of equipment that we can use on the workman floor, saving us $70 million. We've done a much better job of recycling our mail transport equipment. We earned $2.4 million in income by improving how we recycle damaged equipment and products that we can't use any longer. We'll continue to achieve our sustainability goals across our functions and departments. We think we're building a very solid foundation for our organization, our employees, and our customers.

Our employees are very proud of these accomplishments and the recognition that we've received. Our objective is to seek continuous improvements, so we always keep trying to raise the bar just another notch. We're in every community across America each and every day. We need to be very focused and committed to achieving our environmental goals and objectives as an organization. I think our Postmaster General, John Potter, puts it best: "Quite simply, we want to be the best. We want to be the best neighbor, we want to be the best business partner, and we want to be one of the best places to work when it comes to sustainable business practices." ◘

To learn more about the U.S. Postal Service and its sustainability efforts, go to www.usps.com/green

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A Conversation with Cas Holloway Commissioner, New York City Department of Environmental Protection

As we continue to engage government executives who are changing the way government does business, we had the pleasure of taking The Business of Government Hour *on the road to a variety of U.S. cities. New York City, perhaps more than any other, represents a complex ecosystem that requires and consumes a vast array of natural resources. Protecting such resources and the environmental health and welfare of its residents is essential for the City—for all cities to exist and thrive. We spoke with Cas Holloway, commissioner of the NYC Department of Environmental Protection (DEP), about his efforts in this area that includes an overview of the City's water system, how the City ensures its water system is viable for the next 100 years, innovative ways of managing a major capital construction portfolio, NYC's sustainability efforts, and protection of its watersheds.*

On the Mission of the New York City Department of Environmental Protection

We are primarily a water and wastewater utility. There are a couple of other important quality-of-life functions central to our mission: air quality and noise quality—many issues that are about the everyday environment and quality of life for New Yorkers.

When I think about the agency operations, it's about supplying water, which comes from our 19 reservoirs distributed over 6,000 miles of aqueducts, tunnels, and water mains. Water is then fed into the city's three main water tunnels—City Water Tunnels No. 1, No. 2, and No. 3—where it's carried to the distribution network of mains under the City's streets. It's pretty amazing. We supply about a billion gallons of drinking water every day to New Yorkers—8 million in the city and a million who are just outside the city and in some upstate counties and towns. It's also about treating [wastewater through our] 14 wastewater treatment plants. When you turn on the tap, brush your teeth, or take a shower, then we're into the collection system and the wastewater treatment side of our business. There are 7,400 miles of sewer mains in New York City. They carry the 1.3 billion gallons of wastewater that New Yorkers produce every day to one of 14 wastewater treatment plants. Each plant is a major industrial operation.

It is a heavily regulated area, as it should be. On the drinking water side, the New York State Department of Health is the primary regulator in terms of meeting drinking water quality standards. On the wastewater treatment side—[focusing on] the quality of the city's ambient waters—it is the New York State Department of Environmental Conservation.

On Challenges Facing DEP

The first challenge is performance measurement. DEP clearly does a good job. People turn on the tap. The water comes out. The water also goes away. That is the surest indicator that we're doing great. To better measure our performance, we're [setting up] a new Office of Strategic Planning to put together a comprehensive set of metrics across our four core areas. It's not just enough to break things down into your management buckets. [We need to] focus on: What are the goals within each area, and how are we going to get there? How are we performing as a utility? How do we define success across the agency, and specifically, within each of the four core


NYC Department of Environmental Protection

functions? I'm taking a very methodical approach to defining these things with the ultimate goal of driving [better] decision-making across the agency.

Challenge number two is our capital program, which is huge. Right now, we have $11 billion in construction. We have $3 billion in design. We do some very complicated work. We have to do all our projects while keeping our wastewater treatment plants running. You cannot shut down plants and divert flow to another plant, which drives up costs and makes projects more complicated. We're trying to bring more discipline to our project design and execution process. That's a huge challenge.

The third challenge is operating efficiency. Coming into the agency, [I saw] a certain degree of [operational] silos that I wanted to break down. People don't take advantage of resources. People also get it in their mind that these resources are their resources. That's not the case; they're the agency's resources. We have to figure out how best to allocate them. To better leverage the expertise across the agency, we started taking down the walls on the top floor [of our office] to build a bull pen. You can deal with things right away in that kind of environment.

The final challenge is the agency's relationship with its regulators and stakeholders. For a long time, there was an attitude that the only way to get DEP to do something was to sue it. [Mayor Bloomberg's] philosophy is if you're litigating, you've already lost. You can come up with a better, more cost effective deal, and maintain operating flexibility, if you negotiate.

In February [2010], we announced an agreement with the Natural Resources Defense Council and stakeholders in Jamaica Bay to make $115 million of investments in nitrogen reduction over the next 10 years. If we hadn't negotiated this agreement, it could have been embodied in a consent order that we would have litigated over for five years, during which time many resources would be wasted. In the end, you [could] just have something that ties your hands.

On Financing and Managing DEP

My top three responsibilities are: first, to deliver clean drinking water and to treat wastewater to the appropriate standards; second, to do this all in a way that's sustainable and to meet Mayor Bloomberg's sustainability goals; and third, tying one and two together, to do it as cost-efficiently as possible so that New Yorkers pay as little as possible for the best service.

I'm going to break the capital project priorities into two categories: mandated and non-mandated, or discretionary, projects. Mandated projects are first defined by federal laws; then rules are promulgated, and the power to enforce these rules, in most cases, is then delegated to the state. Meeting these rules is something we're required to do. In some cases, it requires massive investments. Over the last seven years, 69 percent of the $19 billion invested in our water and wastewater infrastructure has been dedicated to meeting state and federal mandates.

The financing of our operating and capital program is pretty simple. Water users are charged a rate for their water and sewer use. That rate has to be sufficient to cover four things: one is the cost of debt servicing of our capital program. We float bonds to fund capital construction. Second, there are the operations and maintenance costs, which are about a billion dollars a year. Third, there is the payment that we make to the city, the so-called rental payment, which funds essential city services. Then, finally, there's the "pay-as-you-go" capital program. We've had about $100 million in that [latter] category for the last few years.

We also have discretionary projects. The single most important [non-mandated] project is City Water Tunnel No. 3. The mayor recognized early on that this tunnel gives [the city] the capacity to distribute [water if it] needs to turn off or shut down tunnels No.1 and No. 2 for regular maintenance and upkeep. City Water Tunnel No. 1 has been going strong since 1917. Tunnel No. 2 has been [operating] since 1936. That's a long time without a break.

New York City's Water Supply System

Source: New York City Department of Environmental Protection

"DEP clearly does a good job. People turn on the tap. The water comes out. The water also goes away. That is the surest indicator that we're doing great."

— Cas Holloway

We have also about nine or 10 projects going on simultaneously. How do we make these discretionary investments? We happen to be in the midst of transform[ing] the way that we do that. [It's very important for us to] control costs. The first thing I asked our senior managers to do was to cut budget expenses by 8 percent across the board. To the credit of our managers, they've done a good job. We're in the midst of a project-by-project capital review [asking]: What are we building? Why are we building it? When are we building it? Is there an opportunity to move, stretch, or do things that will ultimately lower the burden or the need in the immediate future? If there is a need for a rate increase next year, then it will be as low as possible.

On the American Recovery and Reinvestment Act (ARRA)

We received $219 million in ARRA funding, which has enabled us to [fund] 10 projects that are underway right now that otherwise wouldn't be. Many of these projects have to do with energy efficiency. It is a welcome return of the federal government into the funding of water and wastewater infrastructure, [which] has been largely absent for the last 10 years. We basically peaked at about a billion dollars of funding from the federal government in the 1980s. That was cut in half to $522 million in the 1990s. Over the last 10 years, it's been about $44 million [annually].

New York City Water Tunnel No. 3 is the largest capital construction project in New York State's history and among the most complex engineering projects in the world today. It is intended to provide the City with a critical third connection to its Upstate New York water supply system.

On Protecting New York Watersheds from Natural Gas Drilling

When the proposal came up for natural gas drilling within the New York City watershed part of the Marcellus shale, we hired an independent expert to study this issue closely. To put the issue in context: There is a deposit known as the Marcellus shale, which covers a large part of the northeastern United States. Over time, through the development of technology and drilling methods, it's now possible to get into this rock deposit and free up natural gas. Natural gas is a good, clean energy. We're in favor of it. But questions remain: How do you get it? Where do you get it?

Our research shows that the level of industrial activity that would be required to exploit this resource would really jeopardize New York City's water quality over the long-term. The city currently does not have to filter the majority of its drinking water. This is because our source waters are so pristine. The key to keeping them this way is to sufficiently control our watershed lands. We do this by purchasing watershed property and have spent over $541 million on it so far. The research also said that given the state of technology, this drilling is not compatible with keeping our water unfiltered. We sent our findings to the state and think it's only a matter of time before the state comes to a similar conclusion. Drilling may be perfectly fine to do outside of an unfiltered watershed, but it's not okay to do in New York City's watershed. To provide some additional context, only 6 percent of the available Marcellus shale deposits in New York State are in the watershed, so that means 94 percent is outside of it.

On New York City's Sustainability Agenda and PlaNYC

Mayor Bloomberg probably has the most ambitious urban environmental agenda in the country, if not the world—PlaNYC. It sets 127 goals for 2030, which range from reducing the city's greenhouse gas emissions by 30 percent to opening up 90 percent of the city's waterways to recreation. In order to do that, you have to have high water quality. In order to have high water quality, you have to meet treatment standards, while always looking to do better either through technology or operating efficiency. DEP has a central role in PlaNYC.

One of the first things I did when I became commissioner was to create a new position, the deputy commissioner for sustainability. Our deputy commissioner, Carter Strickland, is looking at how we can bring in a more aggressive, green infrastructure approach. The basic idea is, how do we capture storm water from the buildings or the streets, and can we do it with infrastructure that also has ancillary public benefit? DEP is ahead of the curve on sustainable methods of dealing with things like storm water. This is a really exciting area. It's going to take open-mindedness on the part of our regulators for us to be successful, but we think we can capture more storm water, and do a better job overall.

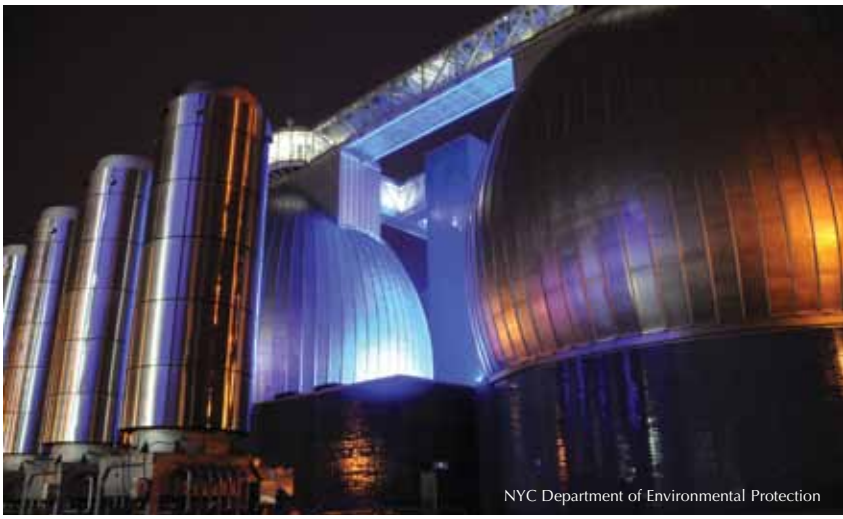
On the Importance of Forging Partnerships

DEP does not act alone. We act in partnership with our regulators and with our many environmental stakeholders. [Forging] such partnerships are an important aspect of what we do. I think it enables us to really get beyond what we would normally conceive of as DEP's jurisdiction. Pursuing partnerships is also a particular focus of the new deputy mayor for operations, Stephen Goldsmith, who is looking at how to use public/private partnerships to help deliver a service, or to help make an investment where [the city] is better off doing that in partnership than by itself.

On the Future

I think at the top of the list has to be the regulatory trend—where are we headed and in what relation to [our regulators]—the U.S. Environmental Protection Agency and the New York State Department of Environmental Conservation.

We all share the same goal: high quality drinking water and water quality standards that are going to enable recreation on our waterways. There are a couple of different approaches to [achieving] that. We're in the middle of planning our long-term control plans, [identifying] some of the things that we have to put together for New York's harbors over the next 20 years. What these plans contain and their degree of flexibility will depend on that regulatory trend.



Newtown Creek Wastewater Treatment Plant in Greenpoint, Brooklyn. The lighting scheme, designed by L'Observatoire International, subtly casts a halo of blue light around the 145-foot-high, stainless steel–clad eggs, which process as much as 1.5 million gallons of sludge every day.

In terms of technology, it also ties back to that regulatory trend. For example, nitrogen is a natural byproduct of the wastewater treatment process. It consumes a lot of oxygen that can have negative effects on aquatic life. We want to remove the nitrogen. There is promising new technology that enables us to do it more cost effectively. In fact, we're going to do one of the biggest de-nitrification technology projects anywhere in the country at one of our plants. That's really exciting.

There's also technology, like automated meter reading, that really can revolutionize our customers' ability to manage and make smart decisions. Mayor Bloomberg and Deputy Mayor Goldsmith are [proponents] of using technology to help people make their lives easier and [enable them to] make better decisions. ◘

To learn more about New York City Department of Environmental Protection, go to www.nyc.gov/html/dep/html/home/home.shtml

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Dave Bowen

Assistant Administrator for Information Services and Chief Information Officer
Federal Aviation Administration

By Michael J. Keegan

Driving IT Coordination and Innovation at the FAA

On a daily basis, 8,000 commercial and 18,000 private aircraft operate close to 50,000 flights per day in U.S. airspace. Doing this safely and efficiently involves the Federal Aviation Administration (FAA) maintaining the world's largest air navigation and communications infrastructure, which relies significantly on advances in information technology (IT). "Our mission," says Dave Bowen, Assistant Administrator for Information Services and chief information officer (CIO) at the FAA, "is quite simply to provide the safest air transportation in the world. We do this extraordinarily well. We are running record low accident rates and we continue to work to bring down those rates." Bowen explains that the FAA basically regulates everything flying in a chunk of airspace covering 15 percent of the world's surface area. "We operate in 24 million square miles of airspace, including the Continental United States, Alaska, about halfway over the Atlantic, and another 15 million square miles of airspace over almost the entire Pacific Ocean." The agency does this with an annual budget of about $16 billion, along with 43,000 employees and another 30,000 contractors.

"I act as the primary advisor to the FAA administrator on all IT matters," notes Bowen. "I'm responsible for all IT policy in the agency: research and development, cyber-security, oversight of IT investments, oversight of privacy initiatives, records, directives, and enterprise architecture, including applications and infrastructure." His organization is comprised of four offices charged with leading various initiatives under each of these operational areas. Many of these efforts dovetail with several core challenges Bowen has identified: driving IT benefits and coordination in a federated IT model, deploying cyber-security technology across the agency, and expanding oversight of IT investments and reporting.

"From a strategic standpoint, we're trying, within a federated environment, to work together to mimic a highly centralized and highly standardized kind of environment obtaining the benefits of standardization, consolidation, economies of scale, cost effectiveness, efficiencies, and speed of response," explains Bowen. He notes that the federated model allows lines of business to really focus on what their mission is and how best IT can support it. "It also has certain limitations. We tend to grow things differently, with much redundancy, duplication, and lack of efficiency." He has made it his focus to modernize and standardize the FAA's IT applications and infrastructure using the acquisition process. All IT acquisitions over $250,000 require his signature and approval. "This has given me visibility on what [FAA components] are buying across the agency, helping us reduce duplication, and leverage our purchasing power more," declares Bowen. The FAA also uses a CIO council composed of line of business CIOs, who have established operating principles that govern how investment decisions are made on an enterprise-wide level. "We discuss what we're going to standardize and how standardized it's going to be. Having made the first set of decisions, we then identify roles and responsibilities. For enterprise-wide applications, we take one line of business and establish that as the managing partner. Through discussion and collaboration, the managing partner provides that application across FAA, using performance metrics and service level agreements," explains Bowen.

As part of this enterprise-wide approach, the FAA has also pursued data center optimization. "There's a big push by the Office of Management and Budget (OMB) to inventory data centers and develop a plan to consolidate. We've actually

"Our mission is quite simply to provide the safest air transportation in the world. We do this extraordinarily well. We are running record low accident rates."

"Getting off the high risk list would provide evidence of improvement in our program management efforts and give the Congress and the taxpayers confidence in our ability to deploy the NextGen programs."

had this initiative underway now for about two years," says Bowen. With about 164 data centers, Bowen recognized that the FAA was running out of space and power, and was spreading its resources thin, so he began focusing on data center consolidation before the OMB mandate. "We've seen significant benefits. I certainly applaud OMB's efforts to curtail the number of facilities. There are going to be greater efficiencies, reduced operating costs, more standardization, greater opportunities for disaster recovery, increased server utilization, and certainly better security," declares Bowen.

Securing the FAA networks has taken on even greater emphasis. Today, rapidly evolving technology increases organizations' IT vulnerability footprint. Malicious attacks on computer systems and networks are occurring at unprecedented rates. Every radar network, link, and every phone line that makes the FAA system work could be potential targets. "Our networks are a favorite target of malicious cyber activity. We're logging about 7 million cyber alerts per day and over 2,000 of those require further investigation each and every day. Having strong walls at the boundaries is no longer enough. You need to have protection inside the networks," acknowledges Bowen.

Despite the recent economic downturn, the forecast for future air travel demand remains high. The current air traffic control system is not scalable or flexible enough to keep up with the future demand. This will result in delays and congestion. FAA facilities and infrastructure are also aging; its surveillance and navigation technologies date from the 1950s. Many of these issues are being resolved by deploying a new air traffic control system. "We call it the Next Generation Air Transportation System or NextGen," explains Bowen. "It's basically a transformation of our air management system. It impacts airspace, aircraft, procedure design, airport improvements, air-to-air communications, air-to-ground communications, weather integration, collision avoidance, new technology implementation, and even our air traffic control facilities. It's very broad—not a single initiative, but a series of programs and procedures already underway."

According to Bowen, funding for NextGen is just over $1 billion for FY2011. "Benefits include fuel savings for carriers, reduced noise around the airport, reduced carbon footprint, improved airport operations, on time arrivals and departures, and lower infrastructure operating costs." By 2018, NextGen will reduce total flight delays by about 21 percent, providing $22 billion in cumulative benefits to the traveling public, aircraft operators, and the FAA. During this same period, it is expected to save more than 1.4 billion gallons of fuel from air traffic operations alone, cutting carbon emissions by nearly 14 million tons. Bowen underscores that safety is foundational to NextGen. "In fact, it gives us the ability to improve our safety record."

The apparent Next Gen success rests on the FAA's efforts to improve program management throughout the agency. After some 14 years, the FAA achieved a significant accomplishment when it was removed from the Government Accountability Office's high risk list of federal programs. "Getting off the high risk list would provide evidence of improvement in our program management efforts and give the Congress and the taxpayers confidence in our ability to deploy the NextGen programs," notes Bowen. "I think in the upcoming years we're going to have budget challenges. We'll need to do the best we can to save money, and at least be able to put funds back into things that add more value to our mission," notes Bowen. ◘

To learn more about the FAA and its information technology strategy, go to www.faa.gov/about/office_org/headquarters_offices/aio/

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Vice Admiral Jack Dorsett

Deputy Chief of Naval Operations for Information Dominance and Director of Naval Intelligence

By Michael J. Keegan

Strengthening the U.S. Navy's Information Dominance for the 21st Century

In an increasingly interconnected and networked world, information possesses such significant power that it can no longer be viewed simply as an enabler to meeting one's mission. Whether in business or defending the nation, information can act as a serious differentiator for those who leverage it and use it to their competitive advantage. The U.S. Navy has recognized the challenges posed in the information age and has sought to evolve its warfighting capabilities to reflect this changing landscape.

Under the leadership of Admiral Gary Roughead, chief of naval operations (CNO), the U.S. Navy has elevated the role of information, making its dominance a main battery in a 21st century arsenal. For this transformation to be successful, the U.S. Navy realigned its organization, consolidating the Director of Naval Intelligence (N2), the Deputy Chief of Naval Operation for Communications Networks (N6), and other information capabilities into a single organization known today as the Office of Deputy Chief of Naval Operations for Information Dominance (N2/N6), led by Vice Admiral (VADM) Jack Dorsett. "My strategic objective," explains VADM Dorsett, "is to pioneer, field, and employ game-changing information capabilities that give information dominance over potential adversaries and decision superiority for U.S. commanders and operating forces." He is the CNO's principle advisor for all information capabilities. "My portfolio focuses on such strategic questions as: What is the future of the Navy's networks? Where are we going in terms of command and control? What is the architecture for our networks? How are we going to have ships and aircraft to communicate together? How is information going to flow?" According to VADM Dorsett, it is about integrating intelligence with operations—using networks to provide the right information to the right person, at the right time, in the right way, to quickly identify, counter, and defeat threats and dominate adversaries.

Though information has always had a tactical prominence in military execution, the proliferation of information technologies and raw volumes of data has increased the value of information and analytics—reshaping the scope, pace, and character of war. "In the Civil War, [during] the Shenandoah Valley Campaign in 1862, Stonewall Jackson did a fantastic job of knowing the territory," explains VADM Dorsett. "He knew the geography. He had a network of spies that kept track of the Union forces. In essence, he had information dominance over the Union forces," Dorsett declares. The shifting complexion of warfare reflects the features of its age. "We're basically taking that simple concept and moving it into the information age. In pre-information age days, we've had platforms that were not networked that only collected information for the sake of that particular platform. In this era you can't afford to do [that]. Information that comes from one platform on one side of the globe may be critical to a national decision back in Washington, DC," states Dorsett.

VADM Dorsett points out that the U.S. Navy is undertaking a significant transformation to better position itself for future operating environments such as cyberspace. To do that requires agility, innovation, and the right organizational structure. "When you start any endeavor you need to have a set of guiding principles. We worked pretty hard to identify these principles as we stood up the organization. We asked: What are those things that are going to guide us—[that will] be common and critical for our future?" describes VADM Dorsett. To that end, he drafted a unifying vision and some

"My strategic objective is to pioneer, field, and employ game-changing information capabilities that give information dominance over potential adversaries and decision superiority for U.S. commanders and operating forces."

"The institutional barriers are nothing unique to the Navy; they are barriers you will see anywhere when you are trying to transform an institution. We can overcome them with progress, momentum, and with success. Success builds on success."

15 guiding principles that will transform this vision into a set of concepts that will be tied to strategies and architectures. "We believe that every platform must become a sensor," declares VADM Dorsett. "If you have a ship or an aircraft out there, but you don't put a sensor or a series of sensors on those platforms, you have missed an opportunity to collect information to ensure our commanders have better situational awareness. We also think every sensor has to be networked," he says. Dorsett also posits that every sensor will be dynamically managed, and that all those at the tip of the spear will have the capability for using data derived from any sensor.

"What we are seeking," declares VADM Dorsett, "is a flourishing of innovation within the Navy, specifically associated with information capabilities." To that end, his office developed distinct roadmaps for realizing [the Navy's] ultimate goal of information dominance. "The principles are the underlying foundation. Once you get the principles down, it's easy to start building the architecture, then the road map and the vector that we want to send the Navy," he says. According to Dorsett, they are in the midst of creating road maps—basically five year game plans—in such key areas as undersea operations, intelligence, surveillance, recognizance, electronic warfare, and networks. "There is a common theme among these road maps—[they're] being interconnected."

Navy leadership recognized that to deliver dominant information capabilities requires a highly skilled, information-centric workforce. "We created the Information Dominance Corps—a cadre of information specialists—consisting of more than 44,000 active and Reserve Navy officers, enlisted and civilian professionals who possess extensive skills in information-intensive fields," explains VADM Dorsett. These [specialists] include information professional officers, information warfare officers, naval intelligence officers, meteorological and oceanography officers, space cadre officers, aerographer's mates, cryptologic technicians, intelligence specialists, information systems technicians, and civilian personnel. "We've looked at our training, education, and recruiting mechanisms and realized we needed to significantly overhaul them for the future," says VADM Dorsett. According to Dorsett, the Navy is taking an end-to-end approach to the recruiting, retention, and development of personnel in these disciplines. "We expect each individual to deepen their professional skills, to start broadening their skill sets and [their] understanding of information capabilities across more disciplines, so that by the time they become captains, they will have [a comprehensive] understanding of cyberspace, intelligence, surveillance, and recognizance, and be able to lead a future Navy that requires all these information elements [to be] brought together."

Change breeds resistance. As with any head-to-toe transformation, organizations face institutional barriers they must overcome in order to achieve success. "It brings to mind a quote from Niccolo Machiavelli," ponders VADM Dorsett. "Machiavelli said, 'There is nothing more difficult to take in hand, more perilous to conduct, or more uncertain in its success than to take the lead in the introduction of a new order of things.'" Dorsett acknowledges that the creation of Information Dominance focus is truly a revolutionary idea, and that it took Admiral Roughead's leadership to bring it all to bear and to move boldly into this arena. "The institutional barriers," admits Dorsett, "are nothing unique to the Navy; they are barriers you will see anywhere when you are trying to transform an institution. We can overcome them with progress, with momentum, and with success. Success builds on success." ◘

To learn more about the U.S. Navy, go to www.navy.mil

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Dr. David McClure

Associate Administrator, Office of Citizen Services and Innovative Technologies
U.S. General Services Administration

By Michael J. Keegan

Promoting Transparency, Participation, and Innovation in Government

On his first day in office, President Obama signed the Memorandum on Transparency and Open Government, declaring: "My administration is committed to creating an unprecedented level of openness in government. We will work together to ensure the public trust and establish a system of transparency, public participation, and collaboration." With these words, the Obama administration challenged federal agencies to become more transparent, participatory, and collaborative. These three principles taken together form the foundation of the president's Open Government Directive, issued in December 2009, requiring federal agencies to take immediate and specific steps to achieve its ends. "It has some core things that agencies are expected to do in order to meet its requirements and realize its vision," says Dr. David McClure, associate administrator of the Office of Citizen Services and Innovative Technologies (OCSIT) at the U.S. General Services Administration (GSA). The success of such an initiative rests on a fundamental change in the culture and operations of federal agencies.

To that end, Dr. McClure and the office he leads play an integral role in making the aspiration of open government real, providing government-wide solutions and assistance to federal agencies needing to fulfill both the letter and spirit of such an ambitious directive. McClure joined GSA in August 2009 as the associate administrator of its Office of Citizen Services and Communications. In mid-2010, his office was reconstituted as the Office of Citizen Services and Innovative Technologies. "We're the nation's focal point for data, information, and services offered by the federal government to citizens," explains McClure. "We also play a leadership role in identifying and applying new technologies to effective government operations and excellence in customer service." His office has become a leader in the use of social media and Web 2.0 technologies to facilitate government-wide capabilities in support of the Open Government Directive. It is also charged with increasing the use of prizes and challenges as tools for promoting open government and innovation, and supporting the implementation of the Office of Management and Budget's (OMB) cloud computing initiative. According to McClure, open government is not new to GSA. For years the agency has played a vital role in implementing government-wide policies and initiatives.

GSA has been working with OMB on a number of transparency initiatives such as Data.gov and the IT Dashboard. "I think Data.gov, for [being] just over a year old, has had an enormous amount of information loaded on to it and available to the public. Other countries have copied Data.gov and some have surpassed us in terms of the amount of information they're putting out. I think it represents a good example of delivering on the promise of transparency," admits McClure. He also points out that providing access to enormous volumes of data sets can't be an end in itself. "Our challenge with Data.gov is turning that tremendous amount of data into something more useful. There's a lot of raw data you can pull, manipulate, analyze, and use. In fact, there are some tools on that site—such as the mashup tool—that can help you navigate the data and make sense of it. If you want to know how your city ranks in terms of employment, education, pollution, or health care, you can actually take data from Data.gov, and with a simple interface on a web mash tool, create your own dashboard of how your city compares." More functionality is needed in order to make platforms such as Data.gov more useful. "Having run USA.gov, we know citizens want data that relates to where they live. The next version of Data.gov

"It's about getting data into the public domain—a push to have information that historically has been inaccessible to the public visible for the average citizen to use to gain insight into government operations, activities, and results."

"The last principle of open government is innovation. It's about not standing still, but thinking of new ways to direct activities and processes so that the government can be as innovative as possible and open to new ideas and new ways of conducting the business of government."

will be much more geospatially enabled. It's the use of the information that we want to see enriched," declares McClure.

Open government is also about increasing dialogue with the public, using various channels of participation to engage citizens in a two-way manner. "We're creating opportunities for the public and federal agencies to interact using social media and other collaboration tools," says McClure. GSA ran an online discussion for federal employees and the public to converse, share ideas, vote on ideas, and react to what others had to say. "We hosted a five week online dialogue. We had over 2,000 ideas, 20,000 votes across the entire government, and new ideas for how agencies could be more transparent and potentially improve service delivery," notes McClure. They did this rather inexpensively, using a collaboration platform that could be leveraged across the entire federal government at virtually no cost to agencies. "We conducted the market research. We stood up the technology, did the policy lift, security review, and privacy assurances, and allowed agencies to use the tool basically for free. This is unprecedented," describes McClure.

"The last principle of open government is innovation," declares McClure. "It's about not standing still, but thinking of new ways to direct activities and processes so that the government can be as innovative as possible and open to new ideas and new ways of conducting the business of government." We see this with GSA's launch of Challenge.gov—a platform for federal agencies to conduct challenges and contests to innovate and find solutions. "It's a fundamental recognition that the best ideas never reside in a single unit, office, or person. We're setting up challenges and contests for citizens and organized groups to develop new ways to deliver services, organize and use information, or develop a new product." McClure cites NASA's success in leveraging this innovative approach to finding and advancing its mission. With Challenge.gov, all federal agencies will have a readily accessible online platform they can use to post a challenge in need of a solution. "It's a fascinating and quite different [approach] than everything going through a competitive procurement. It's groundbreaking," asserts McClure.

McClure's office is involved in other similarly innovative, government-wide initiatives, such as implementing the federal cloud computing strategy. "Cloud computing provides enormous economies of scale for the federal government," explains McClure. "It gets us out of running [a] huge IT infrastructure. My role is to operationalize the cloud strategy—how to move the adoption and use of cloud computing." As part of this effort, GSA runs Apps.gov, an online source for cloud computing applications for federal agencies. Though there are plans to expand the offerings available on this site to include storage and virtualization, McClure acknowledges that security, privacy, and procurement challenges persist.

McClure recognizes that the success of open government initiatives rest on transforming culture and having the right people, with the right skills, leading in the right direction. The Web Manager University has contributed to many of these initiatives developing the necessary skills and talents of federal employees. "It's a hidden gem," declares McClure. "It started off with less than 100 people 10 years ago. Now it has between 2,500 and 3,000 web managers from across the federal government. It's a good example of an informal structure being created to capitalize on collective wisdom, problem-solving, and just getting things done." The open government working group is another vehicle for sharing best practices and lessons learned, and for creating an open dialogue on these matters. In the end, "It's not about the technology," McClure acknowledges. Open government is about finding ways to better engage citizens on issues important to them. ■

To learn more about the GSA's Office of Citizen Services and Innovative Technologies, go to www.gsa.gov/portal/category/25729

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Richard Spires

Chief Information Officer

U.S. Department of Homeland Security

By Michael J. Keegan

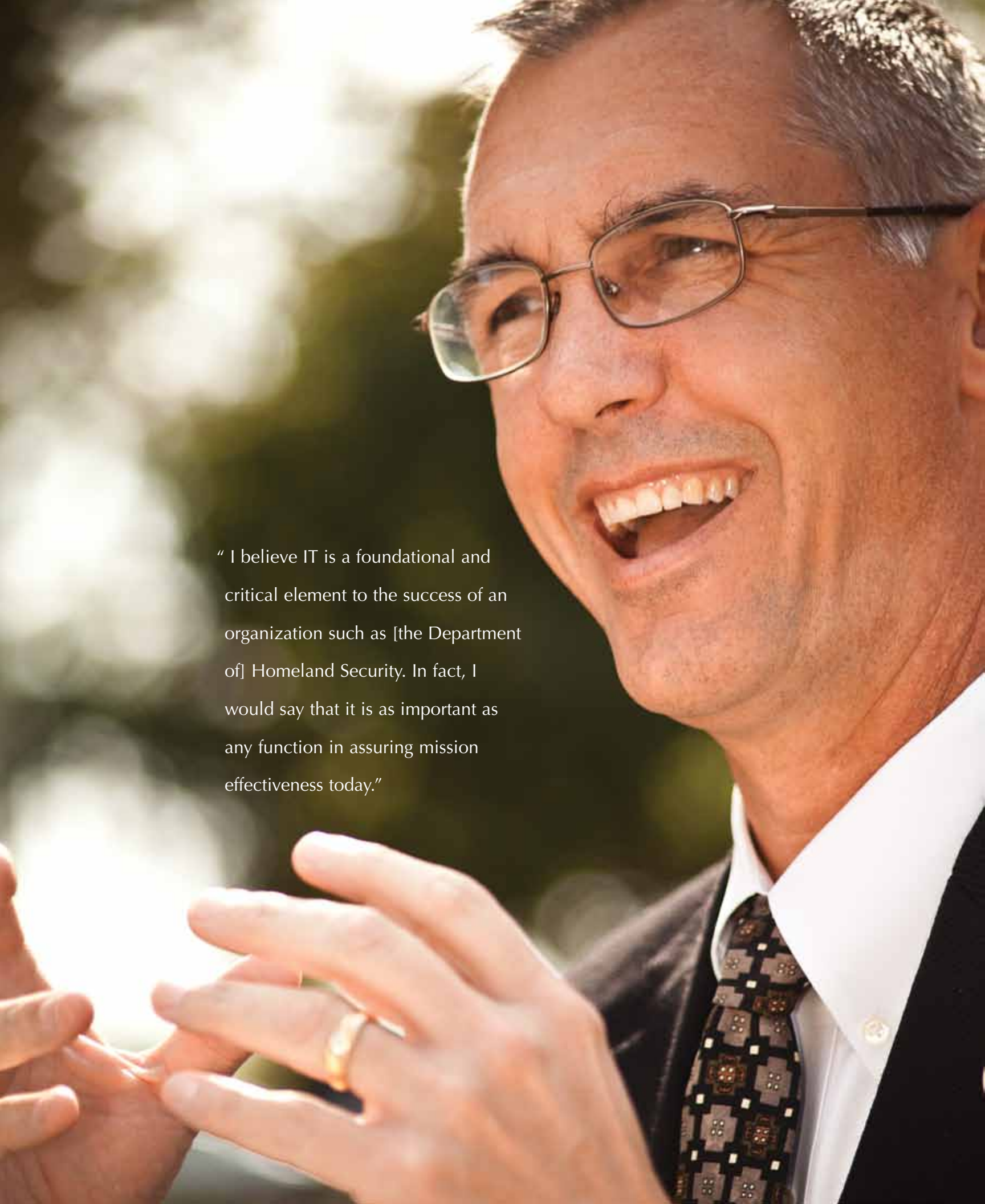
Leveraging IT to Enhance DHS Mission Effectiveness

In the midst of its seventh anniversary, the U.S. Department of Homeland Security (DHS) issued its first-ever Quadrennial Homeland Security Review (QHSR) that delineates a strategy focusing on five mission priority areas for the homeland security enterprise. "Mission one is preventing terrorism and enhancing the security of the country. Mission area two is securing and managing our borders; three, enforcing and administering our immigration laws; four, safeguarding and securing cyberspace; and then the fifth is ensuring resilience to disasters," explains Richard Spires, chief information officer (CIO) at DHS. There are many components, both in and outside of DHS, that play a role in fulfilling these missions, but it is DHS and its 230,000 employees spread over 22 operating organizations that are at the forefront. "I believe," declares Spires, "IT [information technology] is a foundational and critical element to the success of an organization such as [the Department of] Homeland Security. In fact, I would say that it is as important as any function in assuring mission effectiveness today."

Since becoming CIO in September 2009, Spires has refocused the IT strategy of the department in support of Secretary Napolitano's One DHS vision: a single enterprise, a shared vision realized through integrated, results-based operations. He has accomplished this while managing a robust IT portfolio and an investment budget of $6.4 billion. This is no small feat, given the size and diversity of DHS, its missions, and the multiple components that operate within it. Spires has spearheaded a number of critical IT initiatives to realize this vision and enhance the agency's IT functions across the enterprise. "We need to improve how we manage our largest IT investments," admits Spires. "We do have pockets of excellence, but overall we're just not managing these investments as well as we need to." This is by no means unique to DHS. Inefficient IT project management seems endemic across the federal government. For Spires, the status quo was unacceptable. To that end, he initiated an IT program review that assessed the performance of the department's major projects to identify those that were troubled, find ways to cut costs, mitigate risks, and improve overall program management.

"This is essentially my version of [the] TechStat [accountability sessions] that Vivek Kundra has [started]. I completed 81 reviews. There have been significant changes to some programs based on these reviews," acknowledges Spires. From these reviews, he has sought to integrate the right tools, processes, and standards across DHS to ensure program performance. "It's really about institutionalizing best practices and really working to make sure that the proper governance and oversight exist for these programs; that the proper disciplines are being implemented to manage them effectively." Spires has plans to set up a program management center of excellence, to assist DHS components with best practices, tools, and standards gathered from within the department, across government, and within industry.

Using best practices and standardization only strengthens IT governance, which is another priority for Richard Spires. "While we're one department, too often we still operate as 22 different component organizations," he explains. "We need to draw that line between what we should provide at the enterprise level and what should be done at the components' [level]." To reach that goal, Spires is pursuing a cross-cutting governance approach that views things from a functional or portfolio perspective. 'I'm really trying to


" I believe IT is a foundational and critical element to the success of an organization such as [the Department of] Homeland Security. In fact, I would say that it is as important as any function in assuring mission effectiveness today."

"We can't get any of this done without a really good staff. We need to have a strong government employee base within our IT functions to make this work, so getting that right balance [between contractor and employee] is really critical."

drive a governance model that helps us define where there's leverage potential across the enterprise." It's about eliminating duplication and using IT capabilities that may be thriving in one component that are applicable to others. "We're doing things from an enterprise perspective when it makes sense… IT requires a collaborative effort and that's where governance comes in. I'm a huge believer—if you get the right people at the right level around the table, with a shared sense of mission and outcome, you can really do some amazing things," declares Spires.

Under his leadership, DHS continues to pursue many things at an enterprise level, such as the acceleration of its data center consolidation as well as migration to the department's OneNet platform. These initiatives are front-and-center, presenting a host of benefits and challenges. "I think the benefits are manifold," exclaims Spires. The data consolidation initiative, for instance, involves migrating 24 disparate data centers into two. According to Spires, this migration will further standardize technology and services across DHS, while also reducing energy and operational costs. Regarding the challenges being faced, Spires explains, "It is human nature for people to want to control their own environment. We come in as the department to shut that down and move all of their systems into a new environment. It's uncomfortable. We have to build trust that we can deliver not just the same level of service, but improved service." Over the last year, DHS has begun providing e-mail as an enterprise service out of its two data centers. It has also established Microsoft SharePoint as a service offering, seeking to reposition all intranets onto a common infrastructure. "These are great synergies," declares Spires, "that we have been able to put in place within the last year. [They are] good examples of what we're doing at that enterprise level." He is also working to complete the consolidation of seven wide-area networks into one physical network infrastructure under the OneNet initiative.

Like many government agencies, DHS continues to look at the best way to properly expand its use of cloud computing technology. Cloud computing allows users to provision computing capabilities rapidly and as needed, to scale up and back as required, and to pay only for services used. For Spires, the enterprise services offered to the components reflect, in a sense, the use of a private cloud. "We're looking at what makes sense for DHS," explains Spires. "We're trying to be smart about this: Are there applications that make more sense for us to use [as] commercial-based cloud offerings or do we keep [them] in-house in our 'private cloud offerings' through our data centers? We don't want to be paying twice as much to do it inside," states Spires.

With a $6.4 billion IT budget, DHS has an inherent responsibility to be a good steward of the public funds and to invest wisely. "We need to be a smart buyer to leverage that buying power in the best way whether we pool things, negotiate enterprise license agreements, or buy in bulk where it makes sense across components. There are initiatives underway to be more efficient about how we buy things. I have also put in place a process requiring [that] expenditures in excess of $2.5 million receive my review," notes Spires.

Many of these important efforts rely on having the right people with the right skills in place to provide the proper oversight and technical knowledge. "We can't get any of this done without a really good staff," admits Spires. "We need to have a strong government employee base within our IT functions to make this work, so getting that right balance [between contractor and employee] is really critical. We're looking to rebalance our workforce, aggressively recruiting and getting very good people to join us as employees. In the end, it's all about the people," declares Spires. ■

To learn more about the U.S. Department of Homeland Security and its information technology strategy, go www.dhs.gov/index.shtm

To hear *The Business of Government Hour's* interview with Richard Spires, go to the Center's website at www.businessofgovernment.org.

To download the show as a podcast on your computer or MP3 player, from the Center's website at www.businessofgovernment.org, right click on an audio segment, select Save Target As, and save the file.

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Pursuing Person-Centric Human Services Delivery: Insights from Clarence Carter, Director, District of Columbia Department of Human Services

Over the last six month, we've had an opportunity to speak with many public servants who are pursuing innovative approaches to achieving their missions and serving their citizens. In this edition of Insights, *we focus on human service delivery and offer insights from Clarence Carter, Director of the District of Columbia Department of Human Services, on his efforts to put those in need at the center. Carter is a vocal proponent of person-centered human service delivery. It is about putting people first and foremost at every point in the planning, implementation, and evaluation of service delivery. This is an approach in which individuals are viewed as whole persons.*

Would you give us an overview of the mission, history, and evolution of D.C.'s Department of Human Services?

Clarence Carter

The D.C. Department of Human Services has gone through a metamorphosis over the past 10 years. It actually was one of the old mega agencies, [one of the] human services agencies that used to comprise the Department of Youth and Rehabilitative Services. The Department of Human Services principally focuses on income support for economically and socially challenged people, homelessness, and those programs which support fragile populations. We now have a $400 million annual operating budget and just a little short of 900 employees.

What do you see as the top challenges you face as director of D.C.'s Department of Human Services?

Clarence Carter

One challenge is managing multiple priorities. There are many different programs and initiatives the agency manages. [We're] also trying to change—fundamentally change—a system while continuing to administer it, and this is probably the biggest challenge. We're trying to set a very different trajectory for the programs and the initiatives, but we're not allowed to shut down and open up six months later. We have to continue to provide benefits, goods, and services. Also, in this economic climate, staying in front of the homelessness issue has been a real challenge.

What are the key characteristics in your mind of an effective human services leader?

Clarence Carter

One is the ability to know a little about a lot. There are many different programs and initiatives we're currently working on. There are many different moving parts, and you have to keep those parts moving all at once. I think the ability to make the complex simple [is key] because many of these programs that we operate have pretty complex rules. Yet, the public needs to understand how they work. You really do need to be able to take complex programs and explain them and operate them in a simple way.

You have worked in the federal government, state government, and now in local government. Given your perspective, what's the main difference? To what extent does each level of government require a different style of leadership in order to be effective?

Clarence Carter

The one difference from the federal level to the state and local level is that at the federal level you don't administer programs. You really create policy and the rules. The real action happens at the state and local level. At the state and local level, you have to be much more of a hands-on administrator, somebody who is able to make the [system] operate, as opposed to thinking about a policy construct or a set of rules for how it would operate.

You are an outspoken advocate for reforming the way human services are delivered. You've pursued a first-person approach to human services delivery. What are the major problems with the way services are delivered today? Would you elaborate on this person-based, client-centric approach?

Clarence Carter

The problem that I am laying out is not only a District of Columbia problem. It is literally a problem that exists across the country. The construct of the existing human services system is one that is an aggregation of individual categorical programs that were all meant to address some aspect of the human condition. Whether it is public assistance, housing, healthcare, literacy, or nutrition supports, we've developed a program to address every aspect of the human condition. We think of them euphemistically as the social safety net. Quite frankly, it's very much a misnomer; [these programs] are not knitted together at all. It is an aggregation of individual programs that don't work together to provide a comprehensive approach to enhancing the human condition. These [program] silos are the first problem.

The second problem is that the system we administer is what we call program-centric. I will give you an example. I was the administrator of the food stamp program for the country, now known as the Supplemental Nutrition Assistance Program (SNAP). It is a principle nutrition safety net for the country. It is about ensuring that there is economic assistance for low-income individuals and families so they do not starve. The three [elements] we measure for the effectiveness of the food stamp program are: did we get the benefit to the individual or family who was entitled to receive it; did we get it to them in the amount that they were entitled to receive; and did we get it to them on time? Now, you will notice that I didn't say anything about whether or not anybody was hungry. We measure the effectiveness based on goals which are only related to the program. I argue that we should [first] be focusing on human well-being, and not what's important in the program.

The third problem in the existing construct is that the system was not built around an exit strategy. It was built really around a maintenance strategy. As long as you meet the criterion to receive a particular benefit, good, or service, and there are resources to provide that service, you will receive it. My argument is that our system should focus on trying to move as many people through the system as quickly as possible. We don't want the members of our society to be in a position where they have to come to government for their basic subsistence. It's a construct that's not about growing human capacity, but is about administrating an aggregation of programs that really maintain human dysfunction.

In a person-first or person-centric system, we should understand the [present] circumstances of an individual or a family, and bring together a set of benefits, goods, and services that are dedicated to growing that individual or family beyond the need for public assistance. Quite frankly, our effectiveness should be judged on the degree to which we accomplish those objectives, on the degree to which we enhance the human condition, and not simply on providing units of service for people who are in need. It is a fundamentally different construct. We think if we focus on the individual, and grow the capacity of that individual to be as self-sufficient as possible, we can strengthen not only that individual or that family, but our society as well.

Welfare reform of the 1990s introduced a new model of reciprocal obligations and time limits for benefits eligibility, which was a departure from the classic entitlement model. Should the Temporary Assistance for Needy Families, or TANF, type of model be adopted more broadly for programs like SNAP?

Clarence Carter

I absolutely think that what we attempted to accomplish with the design of the Temporary Assistance for Needy Families program needs to expand to the rest of human services. We get uncomfortable when we talk about time limits, but from my perspective, time limits allow us to have a sense of urgency. It is a very important tenet of what the social safety net should look like. The other thing that's most important is the notion of mutual responsibility. We cannot as a society make anyone walk their life's journey. We have to create the enabling conditions, but the members of society who need

this help have to meet society halfway. We need a construct based on mutual responsibility.

The District is looking to redesign the work, training, and education portions of TANF. Would you elaborate on this effort? What are the key design elements for this prospective new program?

Clarence Carter

The tenets of welfare reform, when it was designed and enacted some 13 years ago, were to require work for benefits, and to make the issuing of benefits time-limited, to provide a 60-month lifetime cap on those benefits. The District did not want to have its vulnerable families fall off that 60-month cliff, so it created a local program that made those time limits have no impact. In the zeal to be compassionate, a system was created that provided no incentive to move through the [system]. Many of our TANF families just continue to receive benefits.

Our redesign efforts are about trying to move families through the [system]. The first thing that we will do in our redesign is to do an intensive assessment of the families, to understand their strengths and challenges. Then, we will

Department of Human Services

Mission
The Department of Human Services (DHS) coordinates and provides a range of services that collectively create the enabling conditions for economic and socially challenged residents of the District of Columbia to enhance their quality of life and achieve greater degrees of self-sufficiency.

Income Maintenance Administration (IMA)
IMA determines eligibility for benefits under the Temporary Cash Assistance for Needy Families (TANF), Medical Assistance, Supplemental Nutrition Assistance Program (SNAP) (formerly Food Stamps), Child Care Subsidy, Burial Assistance, Emergency Rental Assistance, Interim Disability Assistance, and Refugee Cash Assistance programs. In addition, IMA's Food Stamp Employment and Training Program (FSET) provides employment and training services to able-bodied adults without dependents who receive food stamps. IMA also performs monitoring, quality control, and reporting functions required by federal law and court orders.

Family Services Administration (FSA)
FSA provides protection, intervention, and social services to meet the needs of vulnerable adults and families to help reduce risk and promote self-sufficiency.

FSA administers the following social service programs and grants:

Adult Protective Services, American Recovery and Reinvestment Act—Stimulus Funds

Community Services Block Grant, D.C. Fatherhood Initiative, Emergency Shelter

Family Violence Prevention Service Grants, Homelessness Prevention and Rapid Re-housing Program, Homeless Services, Hypothermia Program, Office of Refugee Resettlement

Permanent Supportive Housing Program, Shelter Monitoring and Quality Assurance

Social Services Block Grant, Strong Families, Teen Parent Assessment Project

Temporary Shelter, Transitional Shelter, and Veterans Administration Supportive Housing Program

build an individual service plan. It's about moving that family beyond. We enter into mutual agreement with that family to move them into a [better, more self-sufficient condition] using the TANF support. Our assessment and individual service plan are a key component. Through this assessment, we will be able to assign the eligible individuals to an appropriate work or training program that meets what's important to them. This shouldn't be just about getting someone into a dead-end or no-value job. It should be about building someone's skill sets and getting them into a job opportunity that can help them grow. By having the tailored assessment, by having an individual service plan, by moving them to training and to job opportunities specifically tailored to them, we believe that we will be able to move families through an episode into greater degrees of self-sufficiency.

The most important component of moving people to self-sufficiency is intentionality. With [self-sufficiency] being your objective, you will then figure out how to achieve that objective. And quite frankly, it's been my argument that this really hasn't been the intention of the system. If we can agree that it is our intention to move that individual or family beyond, that will allow us to figure out how to reconfigure our system, test our system, and measure our system on achieving that objective.

According to the National Coalition for Homeless Veterans, veterans returning from active duty often face an array of problems during transition from military to civilian life, which places them at risk of homelessness. Would you elaborate on the programs in place to assist homeless veterans in the District and how you work with the U.S. Department of Veterans Affairs?

Clarence Carter

This is another one of the signature successes of the District's Homeless Services initiative. We were approached by D.C.'s Veterans Administration Medical Center (VAMC) a little over a year ago. They understood that we had real success in our permanent supportive housing and identifying our homeless population. They asked us to turn over the homeless veterans we had identified, so they could provide them with VA services.

In response, we asked for their assistance in housing our homeless veterans. We agreed to partner [with VA], and to take the veterans we identified and move them through our Permanent Supportive Housing Initiative. We created the first agreement of its kind in the U.S., between the VA and the District government, to house 105 veterans. We are looking to enhance that partnership with the VA. In fact, the Senate Appropriations Committee came to visit this spring to look at how this was working. In a recently released report, the committee highlighted the initiative between the District and the VA as a significant best practice for how to address the issue of veteran homelessness. We've had some real success, and we're looking forward to solidifying this partnership and actually helping other jurisdictions create similar partnerships to address veteran homelessness.

U.S. Secretary of Veterans Affairs Eric Shinseki greets volunteer Victor Metta (R) during the Winterhaven Homeless Veterans Stand Down at the VA Medical Center in Washington, D.C., January 23, 2010. The annual event brings together community agencies to provide services such as health screenings, housing and employment counseling, and psychosocial services to eligible homeless veterans.

What have been the effects of the current economic downturn on your programs and clients? How are you dealing with higher applications and increasing caseloads while facing significant budget reductions?

Clarence Carter

We've seen a 51 percent increase in homeless families over the course of the last 18 months. We've also had about an 8 percent increase in our Temporary Assistance for Needy Families caseload, about a 20 percent increase in our food stamp case load, and about a 13 percent increase in our Medicaid caseload. All across the board there has been a significant increase in applications. It has been a real challenge in a very resource-constrained time. We've done some pretty creative things. When I began, we had seven service centers. We were spending about $30 million annually in bricks and mortar. Quite frankly, a building never fed anybody, so we've reconfigured our service center mix,

getting out of leases, [and focusing on] not reducing our programs and services. Over the last three years, we've had to reduce our budget. There has been a significant increase in utilization of these programs over the course of this period of time. For the most part, we were able to be creative and put the resources into serving people—without impacting our programs.

To what extent have any of the programs in your portfolio leveraged American Recovery and Reinvestment Act (ARRA) funds? How are you tracking and reporting on some of the transparency and accountability requirements associated with that money?

Clarence Carter

The Homelessness Prevention and Rapid Re-Housing Program (HPRP) received $7.5 million available to the District that allowed us to divert some families and individuals from homelessness and help house some people. In addition to HPRP, there was an augment to the Temporary Assistance for Needy Families Program. Our annual TANF grants are about $92 million. We were able to earn an additional $46 million through the Recovery Act. We think that by the end of this year we will have drawn down a full $46 million that would not have been available to us without the Recovery Act.

The mayor has created a centralized reporting process for all ARRA expenditures, so we are required to report every dime we expend. The District aggressively reports each dollar spent and what was done with those dollars.

How do you see technology as being able to enhance the service delivery and to improve client outcomes and help move people to self-sufficiency more effectively?

Clarence Carter

Because of the construct of our existing system—the aggregation of individual programs and agencies—it is not easy to pull all of [our resources] together. Technology actually allows us to do that. The evolution of technology, through things like middleware, has allowed us to connect to systems so that instead of us ripping and replacing numbers of systems, we can link them together. I can find a customer among all of those systems simply by linking them together. It's a huge benefit to us.

What are some of the major opportunities and challenges you see your agency facing in the future? How do you envision it addressing those challenges?

Clarence Carter

I think the major challenge is twofold. It is first convincing the policymakers that the construct of our system of human services is broken. It does not serve socially and economically challenged people in the best way possible; the construct must change. The second difficulty is reconstructing a system that does so. Those are the two biggest challenges facing us today. There is a sense that our human services system fails because there's not enough money or because there's not enough will. I think we don't achieve objectives because we have a failed construct. I think the greatest challenge is explaining that and getting the groundswell that would allow for the massive change that has to take place. ■

To learn more about the District of Columbia Department of Human Services, go to www.dhs.dc.gov/dhs/site/default.asp

To hear *The Business of Government Hour's* interview with Clarence Carter, go to the Center's website at www.businessofgovernment.org.

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Introduction: Driving Performance—Strategies for More Effective Government

Change seems to come upon us faster, is more complex in its nature, and is a great deal more uncertain in its effects. Within this constant of change, the demands of government continue to grow, even as appetites for major, longer term investments lessen, especially when returns are unclear or unpredictable. With increased demand for services, constrained budgets, and growing deficits, governments are feeling the pressure to do more and better sooner, with less. Complicating matters, President Obama is demanding transparency and accountability across government functions. Clearly the stakes are high—and the most pressing question of the day is: Can government step up services to citizens while tightening budgets? This forum explores this question and more—highlighting seven strategies for cutting costs and improving performance while also outlining lessons learned on how best to implement federal financial systems.

Cutting Costs and Improving Performance

The federal government faces an estimated annual structural budget deficit of $500 billion–700 billion. Deficits of this magnitude represent a major threat to the economic health of the nation. A plan to reduce and eliminate this structural deficit is urgently needed.

Observers believe the President's National Commission on Fiscal Responsibility and Reform (The Debt Commission), which is charged with developing such a plan, may set a target of reducing the deficit by about $7 trillion over a 10-year period. If such a deficit-reduction plan is to be credible, the federal government must adopt an aggressive spending reduction program that includes reforming entitlement programs, eliminating low-priority programs, and adopting commercial best practices in government operations.

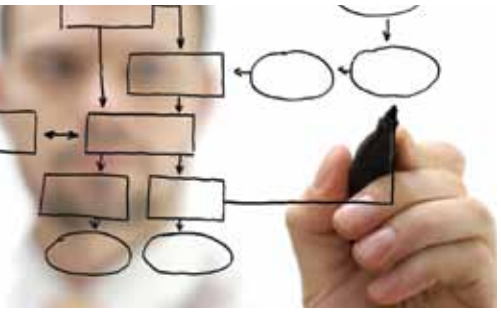
We estimate that billions of dollars in savings can be generated by adopting commercial best practices in government operations. The first contribution to this forum posits that existing technologies can significantly reduce costs and improve service quality. It presents successful cost-saving strategies directly from the commercial sector that can also be used by the federal government to achieve similar results. A brief description of each cost-saving strategy is presented on the following pages. Additional information on each strategy is provided and discussed on the IBM Center for The Business of Government website at businessofgovernment.org.

Lessons Learned from Implementing Federal Financial Systems

The second contribution to this forum focuses on another top management priority for the current administration—improving the cost, quality, and performance of financial management operations and systems. While the financial management community has made significant progress over the years, it continues to face challenges in meeting some of

the basic standards for accounting and reporting. Many agencies currently use outdated financial systems that do not support their efforts to improve financial performance and accountability. Efforts made to improve financial systems through upgrades or replacement of current financial systems must be undertaken with planning and care. The Office of Management and Budget (OMB) has recently issued Memorandum 10–26, which establishes government-wide policies associated with financial systems modernization.

As a follow-up, OMB conducted a review of agency plans for financial modernization to ensure consistency with the new policies. This forum contribution outlines 10 principles on how to best deploy financial management systems in alignment with OMB's goals and policies, with a focus on optimizing resources and information in a modernized environment. These principles are derived from lessons learned from multiple financial management system deployments throughout the public sector domestically and abroad. It is imperative that financial management systems and all of their modernization or replacement efforts be managed in an effective, efficient, and transparent manner. Leveraging the 10 principles outlined in this piece will help agencies ensure the success of these efforts. Taking a focused look on how to optimize and modernize these systems will not only yield better systems, it will yield better management and provide better accountability for taxpayer dollars.



This forum tackles serious public management issues facing government executives today. From identifying strategies for cutting costs and improving performance to implementing financial systems that improve financial performance and accountability, the contributions in this forum offer practical, actionable recommendations and insights that, if pursued strategically, could help government leaders get things done and manage the public trust more effectively. ◘

Strategies to Cut Costs and Improve Performance

By Charles L. Prow, Debra Cammer Hines, and Daniel B. Prieto

The federal government faces an estimated annual structural budget deficit of $500 billion–700 billion. Deficits of this magnitude represent a major threat to the economic health of the nation. A plan to reduce and eliminate this structural deficit is urgently needed.

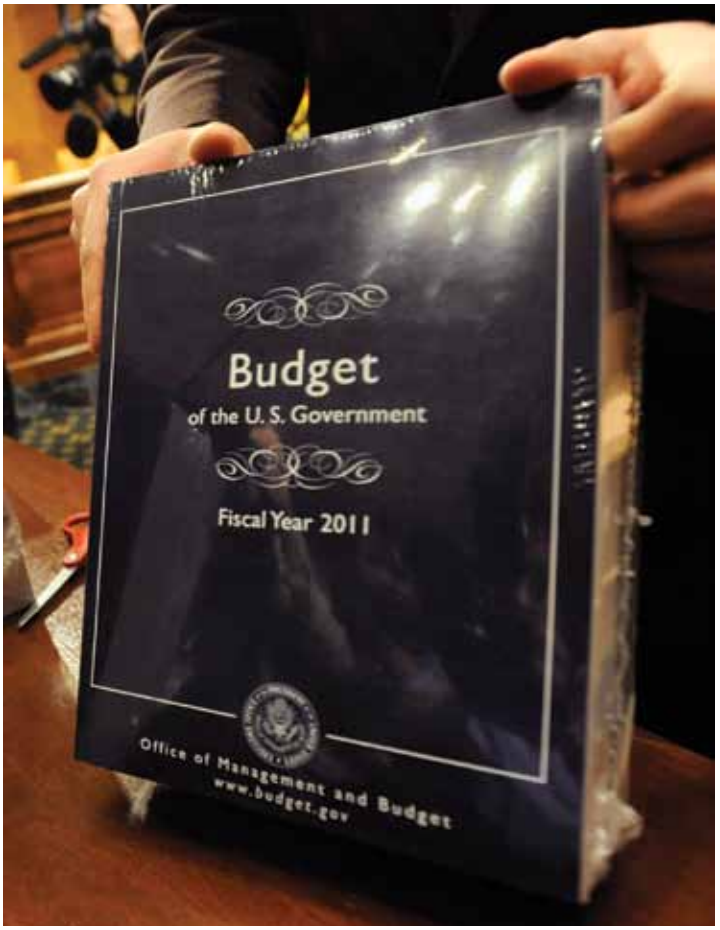
Observers believe the President's National Commission on Fiscal Responsibility and Reform (The Debt Commission), which is charged with developing such a plan, may set a target of reducing the deficit by about $7 trillion over a 10-year period. If such a deficit-reduction plan is to be credible, the federal government must adopt an aggressive spending reduction program that includes reforming entitlement programs, eliminating low-priority programs, and adopting commercial best practices in government operations.

We estimate that through a combination of spending reforms of entitlement programs, eliminating low-priority programs, and adopting commercial best practices in government operations, the federal government can save $1–1.5 trillion over five years and up to $2–3 trillion over ten years. Approximately $1 trillion of those savings can be generated by adopting commercial best practices in government operations. In real terms, government organizations at all levels are being asked not only to do more with less, but to adjust their missions to today's demands and expectations. Many commercial best practices have been adopted to help commercial organizations save money while becoming more competitive—essentially, doing more with less.

We propose pursuing new strategies that will improve performance while reducing cost and enhancing mission value provided by departments to citizens, state and local governments, and businesses.

Here is a simple way of expressing value in terms that we may intuitively understand:

$$\text{Mission Value} = \frac{\text{Quality} * \text{Service}}{\text{Cost} * \text{Time}}$$



Quality could describe more accurate refunds/payments, getting the right commodity to the right place at the right time, or intercepting bad guys before they create damage.

Service could mean organizations that can regard you as an individual across transactions over time, that anticipate your questions, and that provide service channels that are convenient and accessible.

Cost could mean cost per transaction for government, cost per citizen, or reduced operations and maintenance (O&M) costs.

Charles Prow is the IBM general manager and managing partner responsible for the Global Business Services' (GBS) Public Sector business, which includes federal, state and local government, education, and healthcare.

Time could mean shorter elapsed or active time processing applications, or a decrease in wait time.

Adjusting any of these components will improve the value provided to citizens, leaders, and other stakeholders. Using this practical approach and applying proven best practices to major aspects of the way government does business would remove costs and improve mission outcomes.

The Nature of the Challenge

According to budget projections produced by the Congressional Budget Office in January 2010, the federal government will accumulate more than $7 trillion in new debt between 2010 and 2019. These estimates suggest the government is running a structural deficit of between $500–700 billion each year. The International Monetary Fund estimates the annual structural deficit in the U.S. may even reach $1 trillion by 2015 under current policies. The scale of this fiscal challenge is unprecedented.

Such a fiscal imbalance poses a severe risk to the country. Over time, the accumulation of debt at this scale will crowd out private investment and could lead to inflationary pressures and currency instability. Under those macroeconomic conditions, the private economy will struggle to grow and create jobs. For that reason, it is imperative that the federal government adopt an aggressive plan to reduce and ultimately eliminate its structural deficit.

Any credible approach to restoring the country's fiscal condition will likely include both a reduction in spending, including entitlement reform and elimination or reduction of low-priority programs, and an increase in revenues, most importantly, through the return of a robust economy. The Office of Management and Budget (OMB) has already directed all department heads to identify program reductions or eliminations that can reduce their discretionary budget proposals by 5 percent. Secretary of Defense Robert Gates has separately directed cuts of $100 billion over the next five years. OMB has also directed agencies to identify their lowest priority programs. The strategies that follow reach beyond these directives.

Adoption of Commercial Best Practices in Government Operations

While entitlement reform and the elimination of low priority programs will be critical components of any deficit reduction strategy, without question the federal government can generate significant savings by elevating its operational performance. In 2009, McKinsey & Company published "The Case for Government Reform," which suggested that a 5–15 percent improvement in the efficiency of federal government operations could generate $450 billion–$1.3 trillion in savings over the next 10 years. In a recent *Wall Street Journal* opinion piece, New York University Professor Paul Light made a similar assertion, claiming that $1 trillion in savings over 10 years could be generated primarily through aggressive workforce reductions, particularly in the management ranks.

Debra Cammer Hines, IBM Vice President, who leads its Public Sector Consulting Business, providing services across federal, state, and local governments, and the healthcare and education industries.

While these estimates are directionally useful, they lack the specificity necessary to persuade the public that a serious performance improvement effort can yield material savings. Through a private-public partnership, we can identify specific operational functions that can be improved significantly through the adoption of commercial best practices. By aggressively implementing these strategies, sustainable cost savings can be realized while, in many cases, improving operational performance at the same time. Below is a short summary of the opportunities that could constitute a "starter list" of initiatives of this type.

Cost-Saving Initiatives

Initiative 1: Consolidate Information Technology (IT) Infrastructure

The government's costs of operating its IT infrastructure are higher than they need to be—in some cases by more than a factor of two. Significant savings can be realized if departments and agencies employ proven methods to reduce overall costs of IT ownership.

The federal government currently spends approximately $78 billion in fiscal year 2010 to support its widely-dispersed IT assets. At least 20–30 percent of that spending could be eliminated by reducing IT overhead, consolidating data centers, eliminating redundant networks, and standardizing applications.

IBM has dramatically reduced its data center operations and saved up to 40 percent in operating expenses. IBM has cut its IT expenses in half over the past five years through consolidation and standardization. Gartner Group reports that these types of efforts generally deliver a 20–30 percent reduction in costs. If the federal government could achieve similar improvements in performance, it could save $150–200 billion over the next 10 years.

Initiative 2: Streamline Government Supply Chains

The federal government procures approximately $550 billion worth of goods and services each year. These goods and services are procured largely within agencies and departments with independent procurement processes. In 2005, OMB announced a "strategic sourcing initiative" with the intent of reducing procurement costs by leveraging the purchasing scale of the government and pooling the purchases of commodity items. The anticipated benefits have not been realized primarily due to failures to reform budget and procurement processes. The effort also focused too intensively on commodity purchasing and not enough on supplier management.

Over the past decade, IBM internally consolidated 30 different supply chains and restructured its supplier network.

Daniel B. Prieto leads IBM's Public Sector Strategy and Innovation consulting practice.

The company eliminated $25 billion in costs and improved supplier performance. Given the company's scale and complexity—33,000 suppliers, 45,000 business partners, and 78,000 products with 3 million possible configurations—IBM can serve as a reasonable point of comparison to size the opportunity for savings available to the federal government.

We also know that these savings can be achieved in public sector settings. The U.S. Postal Service realized $2.5 billion in cost reductions and cost avoidance through transformation of its supply chain process. The Department of Defense is applying processes such as Lean Six Sigma to extract costs from their supply chain. In our experience, process improvements alone can improve efficiencies by 10–20 percent. If the federal government could achieve similar improvements in supply chain performance, it could save more than $500 billion over the next 10 years.

Initiative 3: Reduce Energy Use

In October 2009, the president issued Executive Order 13514, mandating federal agencies cut greenhouse gas emissions and energy/water use. One of the most effective means for reducing energy use is through facilities rationalization. IBM's experience in call center consolidation suggests that organizations can reduce IT-related energy costs by 25 percent. The aggressive adoption of voice, video, document sharing, and collaboration tools can reduce travel-related expenses by 10–20 percent. The implementation of new building management technologies can reduce energy consumption for the 3.1 billion square feet of space currently occupied by federal agencies. Advanced fleet management systems can reduce the size of the fleet and reduce energy consumption by 10–20 percent. The combination of these initiatives could generate $20 billion in savings over 10 years.

Initiative 4: Move to Shared Services for Mission-Support Activities

Every dollar spent on support activities and overhead within federal agencies is a dollar that could be spent on programming or returned to the taxpayer. Why should every agency have its own IT, finance, legal, human resources, or procurement operations? When the federal government consolidated 26 payroll systems to four, the Environmental Protection Agency reduced payroll costs from $270 to $90 per employee, saving $3.2 million a year; and the Department of Health and Human Services reduced costs from $259 to $90 per employee, saving $11 million a year. Likewise, when the government consolidated travel systems, the Department of Labor reduced its costs from $60 to $20 per travel voucher and reduced processing time from about 7 to about 3 days.

Four government cases studies from the British government suggest that 20–30 percent savings are achievable by moving to a shared services platform. If that savings rate were applied to the federal government's support services spending, $50 billion in savings could be generated over 10 years.

Initiative 5: Apply Advanced Business Analytics to Reduce Improper Payments

The administration already recognizes the magnitude of this issue. Upon signing Executive Order 13520 on reducing improper payments in November 2009, the president stated that "my administration is expanding the use of 'Payment Recapture Audits,' which have proven to be effective mechanisms for detecting and recapturing payment errors.... One approach that has worked effectively is using professional and specialized auditors on a contingency basis, with their compensation tied to the identification of misspent funds." The president followed this with an April 2010 memorandum to agencies directing them to reduce improper payments by $20 billion a year. His authority to act was reinforced when he signed the Improper Payments Elimination and Recovery Act in July 2010.

The federal government annually issues nearly $3 trillion in payments in one form or another (e.g., grants, food stamps, Medicare payments, tax refunds). The Government Accountability Office estimates that $72 billion was lost to improper payments in fiscal year 2008. OMB estimates losses approached $98 billion in 2009 ($54 billion in Medicaid and Medicare alone).

OMB issued guidance this spring to departments asking that they develop plans to reduce these improper payments by $20 billion. Industry regularly conducts recovery audits of large-scale transactions; these could be due to fraud or mistakes, or an unanticipated shift in demand. New analytical techniques can increase the identification rate to 40 percent, which would double the current anticipated savings rate and generate an incremental $200 billion over 10 years.

Initiative 6: Reduce Field Operations Footprint and Move to Electronic Self-Service

Most departments have citizen-facing operations that rely on manual, paper-based business processes. By moving as many touch points to electronic platforms as possible, and at the same time rationalizing the government's field operations footprint, the government can reduce costs and improve the citizen's experience.

Australia's CentreLink initiative provides online benefit determination and payments to individuals on behalf of 27 different government agencies. The estimated annual savings total $86 million. Similarly, the Service Canada initiative provides 70 services on behalf of 13 federal agencies through online, phone, and in-person service delivery channels. The estimated annual savings in the first year totalled $292 million.

In the U.S., there are more than 10,000 federal government forms in 173 different agencies that could be automated to allow citizens and businesses to conduct their business with government online. Reducing the citizen-related field

Implementation

How to Get Started

The White House should establish specific savings targets for each priority cost reduction initiative. We suggest that the OMB Director appoint a steering team comprised of the OMB Deputy Director for Management and a subset of departmental secretaries. A central support team would operate out of OMB (or under the direction of the President's Management Council) and would function as a program management office charged with coordinating the effort.

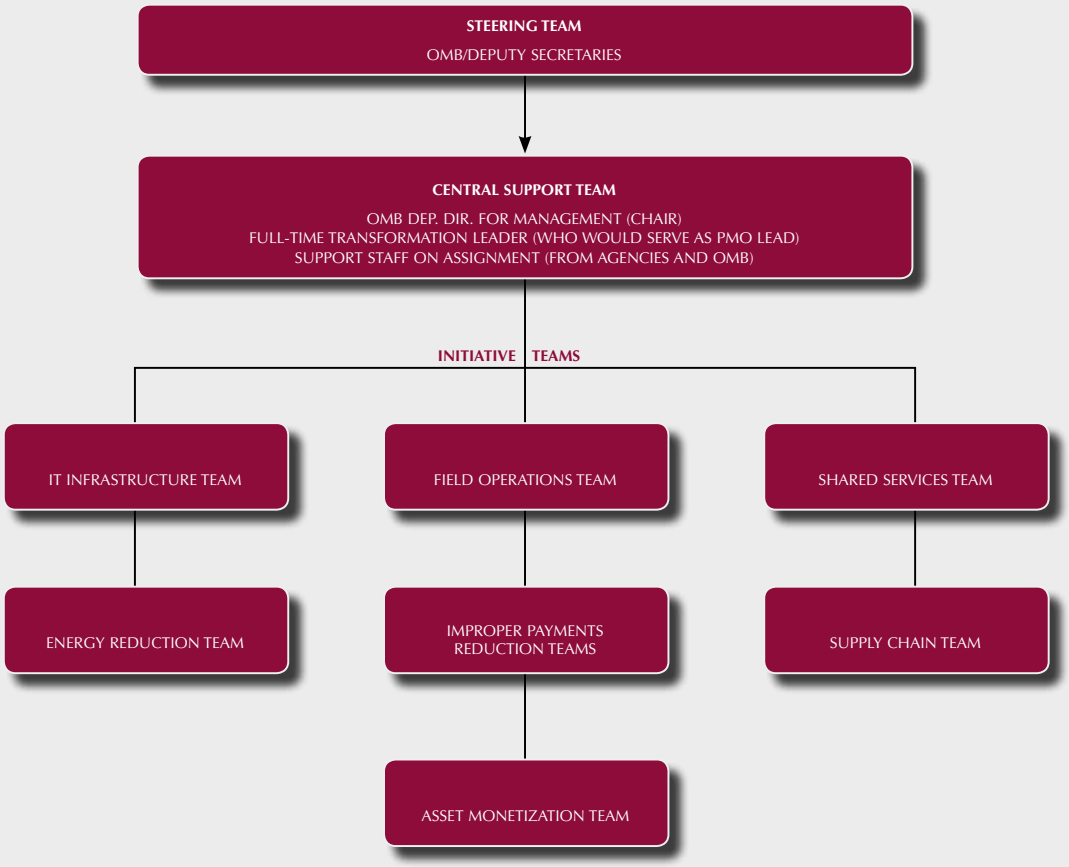
Each participating department would establish its own initiative teams in each of the seven areas. These teams would be responsible for delivering the target results in their respective departments. These teams would also work together across departments to identify government-wide savings opportunities. Each cross-cutting initiative team would work under direction of a deputy secretary.

The Time is Now and It Can be Done

The imbalance in the federal budget must be addressed. While reasonable people may disagree concerning the speed with which that imbalance is eliminated, all agree that there is an urgent need to adopt a credible plan for doing so. The business and economic risk associated with inaction is no longer tolerable.

It is possible to achieve the level of savings we have outlined here. These savings can be realized while at the same time improving service. We've seen it in industry after industry, and we've seen it in our own companies' transformations. The federal government must adopt a long-term spending strategy that is structurally sustainable, and a combination of innovative, technology-fueled efficiency and commercial best practices should be at the center of such a strategy.

OMB Steering Team



operations of the federal government and automating the government's form processing could generate $30 billion in savings over 10 years.

Initiative 7: Monetize the Government's Assets

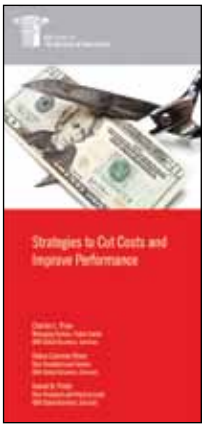
The federal government has a large inventory of assets that could be producing revenue. "Mining" the balance sheet by examining concessions agreements and other opportunities may generate significant revenues. This could include selling surplus facilities, and selling and leasing back others. For example, OMB has found 14,000 excess buildings and 55,000 underutilized buildings in the federal inventory. The federal government has other assets—such as rights-of-way for energy transmission—that could be auctioned off.

The federal government also has an array of fee-generating programs that do not recover their costs. Oftentimes, fee structures and levels are dictated by issues other than cost recovery. We suggest the federal government identify agencies that can be statutorily dependent on the fee income they generate (i.e., no longer subject to the appropriation of general revenues). For example, a number of countries have corporatized their air traffic control operations. By mining the balance sheet aggressively and corporatizing certain federal operations, the federal government could save $150 billion over 10 years.

When taken together, these initiatives could generate billions in savings in coming years. These savings would be in addition to the approximately $240 billion in savings we estimate the Department of Defense could generate over the next 10 years as a consequence of the operational improvement effort recently launched by Secretary Gates. ◘

TO LEARN MORE

Strategies to Cut Costs and Improve Performance
by Charles L. Prow, Debra Cammer Hines, and Daniel B. Prieto



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What We Know Now: Lessons Learned Implementing Federal Financial Systems Projects

By Debra Cammer Hines and Angela Carrington

This contribution outlines 10 principles designed to provide insight into effective and efficient strategies on how to best deploy financial management systems in alignment with OMB's goals and policies, with a focus on optimizing resources and information in a modernized environment. We offer these principles based upon lessons learned from multiple financial management system deployments throughout the public sector domestically and abroad.

It is imperative that financial management systems and all of their modernization or replacement efforts be managed in an effective, efficient, and transparent manner. Leveraging these 10 principles will help agencies ensure the success of these efforts. Taking a focused look at how to optimize and modernize these systems will not only yield better systems; it will yield better management and provide better accountability for taxpayer dollars.

1. Engage Stakeholders

Establish shared vision and objectives with key stakeholders.

Implementing the Principle

- Identify, develop, and articulate the goals of the project with senior management and business users so they clearly understand the benefits of successfully implementing the new system. This is one of the sponsor's most critical tasks.
- Set a strong vision that articulates the compelling reasons to change, what the new environment will be, and how stakeholders will be able to succeed. A key leader needs to motivate people, win early adopters, and sell the message through all levels of the organization, including agency leadership, the project team, and the users.
- Demonstrate commitment to change the culture, starting with senior leadership. This commitment must be sustained over time to be effective. One of the biggest errors in implementing projects is the lack of a strong sense of urgency for change.
- Provide sponsors regular updates on activities and decisions, even if they do not directly relate to the sponsor's area of influence.
- Conduct stakeholder analysis to obtain insight into reaction to change and level of influence, and use this insight to develop change-coordinator networks and leadership action plans. Actively monitor and manage stakeholders for continued commitment using stakeholder management plans integrated with communications, change management, and training plans.

The Principle in Action

On a large-scale financial system implementation project, the program sponsor joined the project when the team was preparing for the first pilot and in the early stages of the implementation of the first large component.

The program sponsor came with a new perspective for the program, one focused not only on oversight and guidance, but also on her role as program champion to gain support among various internal and external stakeholders.

Debra Cammer Hines, IBM Vice President, who leads its Public Sector Consulting Business, providing services across federal, state, and local governments, and the healthcare and education industries.

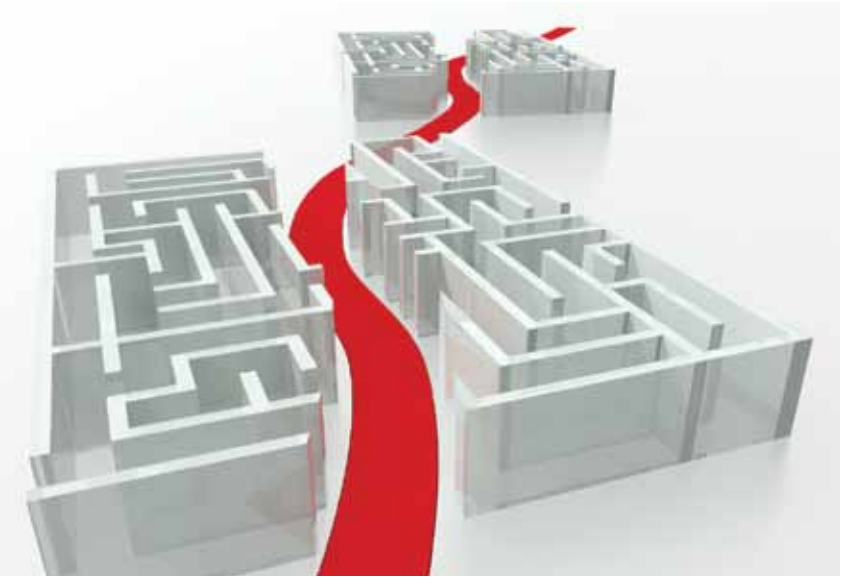
The program sponsor established regular meetings with the chief financial officer and chief information officer from each agency component to keep them engaged and to address their specific issues and concerns in a timely manner.

2. Simplify Processes

Streamline business processes and take advantage of commercial-off-the-shelf (COTS) software functionality and workflow.

Implementing the Principle

- Identify and prioritize the business processes that need to be standardized in order to optimize the use and effectiveness of commercial-off-the-shelf (COTS) software.
- Assess COTS functionality against the requirements and identify business processes that must change to use the out-of-the-box workflow.
- Educate subject matter experts (SMEs) so they understand as they develop requirements and new business processes that changing the software to fit their existing business processes adds complexity to the software, increases risk, can increase cost and scope, and is harder for the contractor to successfully implement.
- Establish and follow a configuration-management process to assess all change requests prior to approval for development.
- Use best practices and leverage government-wide processes and standards. Require SMEs/working groups to develop a business case for when the standard government-wide process or COTS process does not work for their unit. Use the governance process to enforce compliance.
- Confirm business process changes with business process owners and experienced staff prior to beginning the system design.



The Principle in Action

A financial system implementation at one agency required a review of more than 50 sets of financial processes—in both its headquarters and overseas offices. Non-standard business processes across the overseas offices were assessed against requirements and COTS workflow, then simplified and standardized. As a result, the system was implemented with one standard configuration to support all financial business processes.

3. Plan Acquisitions

Understand requirements, their connection to the mission, and how to mitigate risks in delivering the system.

Implementing the Principle

- Limit requirements to those necessary to support the mission of the agency. Requirements are not what the agency wants. Requirements are what the agency must have to conduct business effectively and efficiently in an effort to optimize resources and access to information.

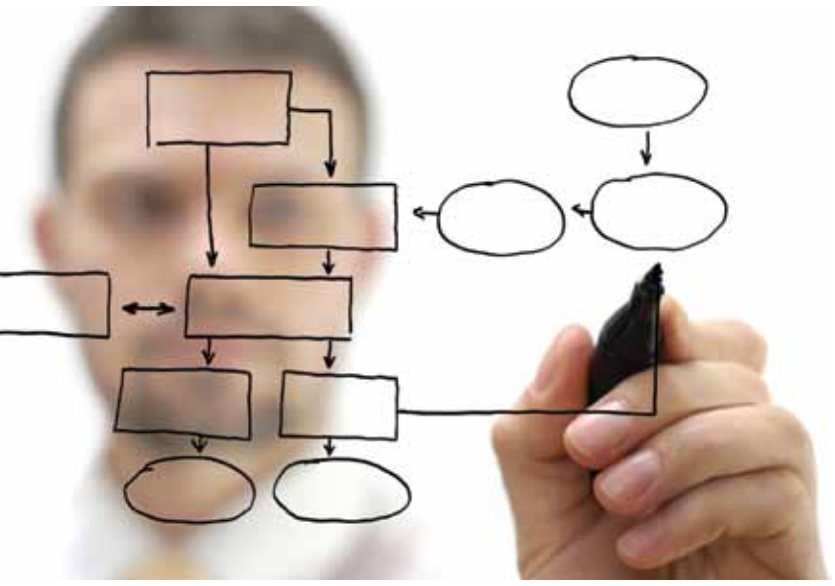
Angela Carrington, a Partner in IBM Global Business Services, is focused on IBM Public Sector Financial Management system implementations. She has more than 23 years experience in the areas of project management, financial management, procurement and contracts management, budgeting, and accounting. Ms. Carrington leads the Public Sector Finance Management Service Area.

- Involve key stakeholders in planning and articulating the new business processes the financial management system must support. Many requests for proposals (RFPs) restate the current environment. When planning to optimize and streamline business processes, involve the people that perform the work and will be the most impacted in the planning process.
- Confirm how the financial management system (accounting and budget formulation, execution, and control) fits into the agency's business framework and understand how it aligns with other business systems, including acquisition management, resource planning, grant management, and asset management.
- Determine the best mix of contract types to balance delivery risk between the contractor and the government and develop an appropriate incentive structure. Evaluate the work for the most appropriate contract type to balance the risk between the government and contractor. Consider the time and material task orders necessary for developing and documenting requirements, and a firm fixed price for implementing the software.
- Tailor the acquisitions process to improve the agency's ability to plan, budget, coordinate, and oversee acquisition activity to yield a more effective and efficient partnership between the government and contractors.

The Principle in Action

A government agency increased accountability by improving its acquisition management functions. It provided its government project managers with management and oversight responsibilities formerly held by contractors. The government agency's project managers and technical experts possess more responsibility and accountability for program outcomes.

The government agency now requires executive approval of decisions at key checkpoints in the program's life cycle in order to prevent delivery of a system without a determination of whether its planned capabilities would meet mission needs. Government project managers and decision makers now receive information needed to help manage project outcomes.

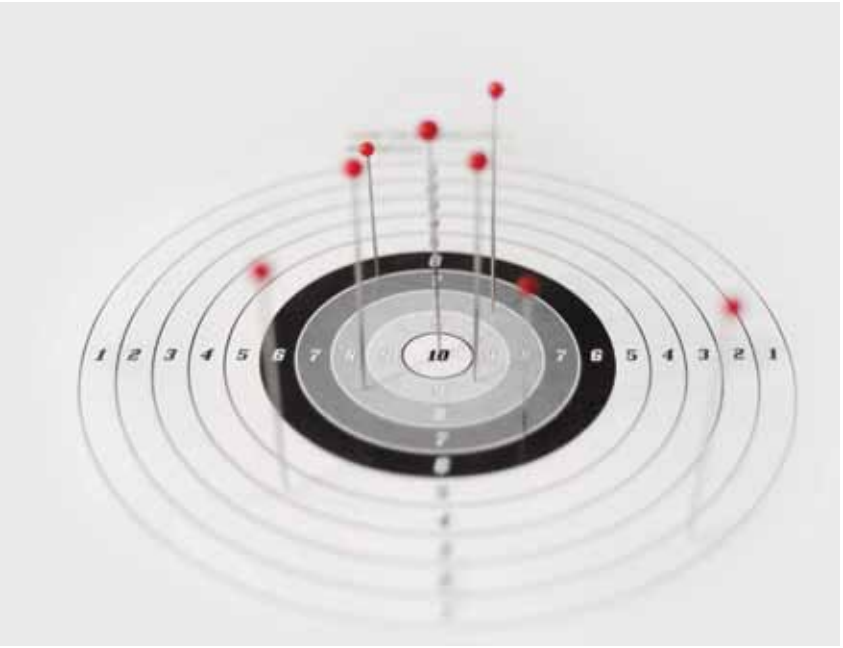


4. Tighten Scope

Deliver functionality in phased, successive "chunks" targeting specific processes and outcomes.

Implementing the Principle

- Establish clear milestones for success with specific deliverables in either 90- or 120-day increments.
- Identify and achieve early wins that demonstrate value for the project to its stakeholders.
- Concentrate on one high-priority area at a time to deliver and adopt functionality in a phased approach. An area could be a functional process area such as accounts payable or it could be an organization area such as a department, agency, or component.



- Ensure clear milestones are in place with specific performance metrics to monitor and communicate their success. These metrics must support the business case and be the basis to justify the continuation of the project.
- Apply lessons learned from prior project phases or from other projects throughout the agency as part of a broader portfolio review.
- Leverage staff from prior phases to serve as mentors during later phases.

The Principle in Action

At one decentralized agency, the system was implemented in waves, each wave consisting of several sites at a time. The first wave consisted of four pilot sites. The sites were selected based on their willingness to serve as test sites and to assist in developing standards to be used across the organization.

Following the successful implementation of the pilot sites, the approach was refined and lessons learned were incorporated. Representatives from the pilot sites assisted subsequent waves of implementations as mentors.

As the implementation progressed, each wave of sites relied on staff from prior waves who served as mentors for later waves. The mentor approach provided experienced resources during the implementation.

5. Commit Resources

Plan and deploy appropriate resources throughout the entire life cycle to fulfill project requirements.

Implementing the Principle

- Confirm the right skills, resources, and budget for both government and contractor staff with appropriate roles and responsibilities. Get a firm commitment for key staff before work begins. Otherwise, the project schedule may be jeopardized by halting work to locate more staff or attempting to perform project tasks by overworking personnel and stressing support systems.
- Avoid assigning personnel to the project who cannot be 100 percent dedicated. This may require the agency to develop and implement a Document of Understanding to leverage the required government resources. The agency and contractor staff need to develop a comprehensive staffing plan for the entire life cycle of the project. It is unrealistic to ask personnel to split time between their home offices and the project, especially if they are expected to continue home office duties.
- Only accept personnel whose skills are aligned with the needs of the project. It is difficult to justify additional personnel if team members are not being fully employed. It can also lead to resentment and dissatisfaction when team members are required to compensate for an inappropriately staffed team.
- Supplement the core government project team with key subject-matter experts and working groups, each with a clear understanding of their roles and responsibilities as well as dedicated time away from their core responsibilities and a break from day-to-day work.

The Principle in Action

A government agency created a core project team and drew upon subject matter experts from across the department to develop requirements, define the business processes, and participate in training. Details on personnel were provided to the team in advance. Department components also detailed staff members to the program management office ahead of their implementations, which has greatly benefited them and provided a subject matter expert during their financial system implementation.

6. Manage Proactively

Employ a rigorous and robust project management approach exercised by qualified program managers.

Implementing the Principle

- Streamline and consolidate oversight roles and responsibilities to promote accountability and manage risk.
- Establish a project charter with a mission statement, goals, deliverables, schedule, scope, expected business benefits, executive sponsor, and project team members. Without clear goals and expected benefits, the government cannot monitor, evaluate, and communicate project progress and performance.
- Use a proven method to guide the project. Adopt a system development life cycle (SDLC) methodology appropriate to the agency undertaking the project and follow it throughout the project life cycle.
- Establish a performance-management and risk-management framework that incorporates earned value management, supports agency performance goals and objectives, and proactively and transparently monitors and communicates areas of potential risk to stakeholders.
- Ensure that the government and contractor program and project management staff has the necessary and proven experience to oversee the project throughout the entire life cycle. Investment in a program- and project-management certification initiative will help enable the success of the project.

The Principle in Action

In reviewing projects' results, a department found that results as assessed by performance measures were inconsistent with results shown by earned value data for cost and schedule targets. A given project might have met cost and schedule targets but have fallen short in meeting performance measure targets.

For example, one project to upgrade the time and attendance system met its cost and schedule targets, but a related performance measure showed that one of the key pieces of functionality was not meeting stated requirements. Conversely, earned value data for a project to implement a new performance budgeting tool showed that the project was not meeting its cost and schedule targets but was meeting all of its performance measures, such as number of defects identified in testing.

7. Work Together

Facilitate and sustain open dialogue among government stakeholders to create a partnership with software vendors and system integrators.

Implementing the Principle

- Engage potential vendors and contractor staff, both prime and non-prime, before incorporating the final statement of work and requirements into the request for proposal. This will help yield a better execution of the statement of work once awarded.
- Meet immediately after the contract has been awarded so the software vendor, the system integrator, and the government have a common understanding of the requirements.
- Implement an Integrated Project Team (IPT) that gives both government and contractors responsibility for the system implementation project.
- Establish communication channels among key stakeholders and user-group communities so they can exchange information freely across all levels of the organization.
- Notify stakeholders and user-group communities of key decisions in an effective and efficient manner.
- Agree on the quantitative and qualitative measures of success at the onset of the project. Do not wait to "go live" to determine how to measure successful implementation.
- Develop and communicate a cyclical post-implementation review program that evaluates each deployment phase so that development efforts for new phases can benefit from lessons learned from the prior phase.

The Principle in Action

During a major upgrade, one agency benefited from close collaboration between the government, their program management office, the software vendor and integrator, and the independent system testers. Two weekly meetings, one with the system integrator, the program management office, and the test team and a second with the government and the program management office, were beneficial in helping the government prioritize fixes for the most critical incidents and plan for future releases. By openly discussing test incidents and deciding their disposition prior to the operational readiness review, the government had full insight into the scope and severity of the upgrade-related issues.

8. Guide Change

Provide stakeholders the right information at the right time throughout the entire life cycle of the effort.

Implementing the Principle

- Communicate repeatedly and relentlessly. Provide frequent, focused communication tailored for each set of stakeholders, including senior management, end-users, and project teams. Include detailed, accurate status updates to help prevent unrealistic expectations.
- Involve a representative from each user group to validate that needs are met. Without interaction from users and stakeholders, the project team is forced to make assumptions that can negatively impact the overall reception of the system.

- Combine on-demand, on-line, just-in-time training prior to "go live," and on-site user support immediately following "go live." Immediately following "go live" is when users are processing transactions for the first time and will run into problems that can slow transactions and frustrate staff. Include SMEs, who served as assistant trainers, to provide on-site user support related to policies and procedures.
- Plan for both short- and long-term training needs. Training is not a one-time event. New users will require training and existing staff will require refresher training.

The Principle in Action

On a large-scale financial system implementation project, the business transformation team established foreign and domestic coordinator networks, and used teleconferences to send key messages before and after "go live" and to solicit input from the field office on critical topics.

After "go live," they provided training assistance teams on site to provide information, training, and mentoring. Government staff held lunch-and-learn sessions to help users gain confidence and become more familiar with the new financial system. As a result, users indicated that they were comfortable using the new system thanks to having support close at hand in the first weeks of using it and being able to share real-life experiences with their peers.

9. Conduct Reviews

Pay continuous attention to proactive and disciplined risk, communication, and quality management activities to enable project success.

Implementing the Principle

- Schedule independent verification and validation (IV&V) reviews by an independent third party (one that is not involved with any of the system implementation efforts) or empower the program management office to confirm that the systems were implemented in accordance with the established business processes and standards.
- Establish a robust risk management process to minimize the likelihood of risks becoming issues which impede project success.

- Identify the quality expectations for the project in advance. Determine the review process, including stakeholder and subject matter expert reviews, to validate that all work meets the needs of the agency and conforms to the requirements.
- Establish rigorous lessons learned collection and dissemination procedures for review by the sponsor down through the users to use and implement lessons learned.

The Principle in Action

An independent verification and validation (IV&V) contractor reported that some key personnel filled multiple positions and their actual available time was inadequate to perform the allocated tasks. As a result, some personnel were overworked, which, according to the independent verification and validation contractor, could lead to poor morale. The organization chart for the project showed that the project team was understaffed and that several integral positions were vacant or filled with part-time detailees.

The IV&V report provided the justification that was needed to fund additional positions.

10. Test Thouroughly

Dry run data conversion, test business processes end-to-end, and involve users across all levels of the organization in "real life" testing.

Implementing the Principle

- Ensure that technical and functional requirements are captured using a requirements traceability matrix or requirements management system to help ensure that the testing being conducted validates that all requirements are met under all required conditions.
- Perform multiple dry runs of data conversion against a prescribed target success rate.
- Test downstream transactions against converted documents to minimize post-conversion issues.
- Create a "real-life" testing environment that supports testing all functional and technical requirements as if they are being used in the production environment and under conditions they will actually be used, including volume, timing, and interaction with other systems or sub-systems.
- Conduct end-to-end testing to cover all business processes in addition to system testing and integration testing.
- Involve users in thorough user acceptance testing and encourage them to conduct "day-in-the-life" testing to verify that the new system will support standard transactions.

The Principle in Action

Investing sufficient time in data cleanup prior to each component's "go live" provided the government with better quality data to convert. Having cleaner data allowed for more efficient dry runs and provided the data conversion team more time to focus on testing against converted data. This provided users with valid data to work with once the system went live and avoided the Herculean data cleanup efforts that many agencies face. ◘

TO LEARN MORE

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by Debra Cammer Hines and Angela Carrington

The report can be obtained:

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Regulatory Partnerships: Good or Bad?

By John M. Kamensky

Regulatory partnerships between government regulators and industry evolved in the 1990s as a way of increasing compliance while reducing administrative burdens. Several recent high profile cases have put into question the benefits of such partnerships. In a *Washington Post* article, "How the Minerals Management Service's Partnership with Industry Led to Failure," the authors chronicle the evolution of the Minerals Management Service (MMS) and the unusual relationship it cultivated with the industry it was charged to regulate. In the end, the article points out that "industry innovation, as it often does, had outrun and overpowered the government's regulatory prowess, with disastrous results. They were partners, but they were not equals."

Three recent IBM Center reports present a different perspective, showing the value of regulatory partnerships. These reports offer lessons learned on how to create and effectively maintain regulatory partnerships so they don't result in the failures highlighted in the *Post* article on the now-defunct MMS (replaced by the Bureau of Ocean Energy Management, Regulation, and Enforcement).

Why Regulatory Partnerships?

Regulatory partnerships are not new; they first rose to prominence in 1995 when their use was promoted by Vice President Al Gore's National Partnership for Reinventing Government (NRP). Up to that point, most regulatory reform efforts focused on the development of new regulations. Gore's effort shifted the reform efforts from regulatory development to an emphasis on how existing regulations are implemented. An online history of "Reinventing Regulation," written by NRP, stated:

> "Our focus is primarily on the relationships that exist between regulators and their regulated communities because we can meet important social goals—like ensuring clean air and safe food—more effectively if we target our reinvention efforts at those folks who are responsible and want to comply…. And, at the same time, we can better target those places for which a more aggressive strategy is needed."

In a recent IBM Center report on the benefits of voluntary regulatory partnerships, Russell Mills provides further background on the strategic use of such approaches, and the fears accompanying them:

> "[G]overnment managers in regulatory agencies can choose either a deterrence or a collaborative enforcement style. Deterrence enforcement styles are marked by a traditional command-and-control style of setting regulatory benchmarks, conducting inspections to ensure benchmarks are met, and issuing penalties if they are not. In an environment of shrinking budgets, deterrence enforcement becomes increasingly difficult to sustain and threatens to produce an adversarial relationship between government and firms….
>
> "….The optimal environment for government and firms is one in which the government engages in cooperation while firms self-police, as costs to both are minimal. Governments may fear that relaxed regulatory requirements will be taken as an indication of "capture" or as an open invitation to exploit a weak enforcement environment."

John M. Kamensky is a senior fellow with the IBM Center for The Business of Government. He is also an associate partner with IBM Global Business Services and a fellow of the National Academy for Public Administration.

Where and When Are Regulatory Partnerships Used?

President Bill Clinton's 1995 memo to the heads of regulatory agencies, "Regulatory Reinvention Initiative," forcefully de-emphasized the fears they might have about partnerships, and directed them to "Negotiate, Don't Dictate:"

> "While many laws and rules that limit the ability of regulators to talk with those being regulated were imposed to curb abuse, they now often serve as a barrier to meaningful communication between the regulators and the regulated. To address this problem, and to promote consensus building and a less adversarial environment, I direct you to review all of your administrative ex parte rules and eliminate any that restrict communication prior to the publication of a proposed rule…."

Gore's Reinventing Government initiative worked with more than 60 regulatory agencies, encouraging them to adopt new approaches to regulating, where it made sense. These included the regulation of the environment, small business, food safety, biotech drugs, worker safety, and pensions, among other areas.

This approach was uncomfortable to many, both inside and outside government. The head of the Food and Drug Administration (FDA), David Kessler, opposed efforts within his own agency to work more collaboratively with drug companies to streamline the FDA's approach to drug approvals. Unions opposed efforts by the Occupational Safety and Health Administration (OSHA) to work jointly with companies to improve their safety records rather than just impose fines for infractions. Some environmental groups opposed efforts by the Environmental Protection Agency (EPA) to use incentives to reduce air pollution in lieu of new regulatory standards.

Bob Stone, the head of Gore's reinvention effort, consistently pushed back. In a 1997 speech to The Conference Board, Stone declared:

> "We want to change the regulatory game. Now it's like a see-saw….Nobody gets anywhere, nobody wins. We need to find a way to let both win. And, we know that this is possible. You've been through this in your own companies….
>
> "But to work together as partners, government and business have to focus on our common interests. To begin, we must be willing to stipulate that the public and private sectors are both after the same result—that none of us wants our children breathing unsafe air, or eating contaminated food, or exposed to the drug trade."

Is This Approach Effective?

While the experience of the Minerals Management Service demonstrates the dangers of allowing industry domination of the regulatory agenda, a partnership approach does have advantages when engaged properly. For example, Stone noted in 1998 that: "In Kansas City, the OSHA team offered training and a voluntary self-inspection to meatpacking companies with high injury rates. Working in partnership with OSHA, these companies reduced lost workdays by 15 percent. Even better, in response to their training, the employees identified and corrected 840 workplace hazards—far more than [OSHA] inspectors ever could."

There were a number of other success stories as well, according to Gore's reinvention history. For example, the EPA developed a number of voluntary partnership programs, called "33/50," that encouraged and recognized environmentally friendly actions. In 1998 alone, these programs eliminated 7.8 million tons of solid waste, prevented the release of 80 million metric tons of carbon dioxide, and saved nearly 1.8 billion gallons of clean water. And through their voluntary efforts, EPA's partners also saved a great deal of money—$3.3 billion. Another example involves the Consumer Product Safety Commission (CPSC), which recognized that when it worked with responsible companies, it could do a better job of removing dangerous products from homes and the marketplace. It developed a Fast Track Product Recall program. When companies partner with CPSC to voluntarily recall their products, CPSC provides them with a streamlined process that saves time and money and prevents injuries. For example, under a traditional recall process, about 30 percent of recalled products might be returned. Under the Fast Track process, the percentage of products returned has climbed to nearly 60 percent. The program was later recognized with a Ford Foundation innovations award.

The Food Safety and Inspection Service (FSIS) also implemented the Hazard Analysis and Critical Control Points program (HACCP), a science-based, preventive system for ensuring safe meat and poultry production. In short, HACCP puts the responsibility for food safety into the hands of food producers, rather than into the hands of government inspectors. Three hundred large plants implemented HACCP in January 1998, and the improvements were seen as significant within a year. Salmonella had been reduced nearly 50 percent in chicken products, 30 percent in ground beef, and 25 percent in pork products.

Lessons on How to Use Regulatory Partnerships Effectively

According to the *Washington Post* article mentioned previously, the Minerals Management Service was at the time seen as a successful partner with industry. However, former secretary of the Interior Bruce Babbitt admitted: "It turned out that MMS was not capable of navigating its dual relationship as regulator and industry partner…."

Are there steps that agencies can take to ensure that they can effectively work in partnership with the industries they regulate, while reducing the potential for them to be "captured," and then lose their regulatory effectiveness over time? The partnership approach seems to have value for government (reduced oversight costs), industry (reduced burden), and citizens (more effective results). Do the potential dangers outweigh the benefits?

Three recent IBM Center reports examine what regulatory agencies might do to ensure effective regulatory oversight within a partnership framework:

In *Food Safety—Emerging Public-Private Approaches: A Perspective for Local, State, and Federal Government Leaders,* by Noel Greis and Monica Nogueira, the authors recommend the creation of new co-regulation strategies to shape food safety policies. This strategy would reflect mutual organizational and financial interests of both public and private sectors. But

it would not extend to all aspects of oversight. The authors suggest that co-regulation activities might include setting risk-based inspection standards and jointly establishing best practices, enforcement, and monitoring approaches. [The implementation of these standards and practices would be kept in government hands.]

In *The Promise of Collaborative Voluntary Partnerships: Lessons from the Federal Aviation Administration,* author Russell Mills concludes that collaborative voluntary partnerships should be viewed as a complement to agency regulatory activities rather than as a replacement for the traditional command-and-control approach to regulation. Viewing voluntary activities as complementary to traditional regulatory activities will require a change in an organizational culture which has long considered the command-and-control approach its major regulatory option.

Based on his research and case studies at the Federal Aviation Administration (FAA), Mills offers three lessons:

- The **administrative** lessons from the study include the importance of a regulatory agency dedicating a team to focus on the development and implementation of voluntary partnerships, and the use of collaborative processes in developing meaningful corrective actions by those being regulated.
- The **regulatory** lessons include the insight that voluntary programs should be non-punitive and provide reduced regulatory oversight by those who participate and share information openly with regulatory agencies. The voluntary programs are a complement to, not a replacement of, traditional enforcement tools.
- The **technology** lessons include the need for effective data analytic capabilities at the local and national level, along with a uniform reporting platform and a national-level database for analysis to produce safety alerts.

In *Strategies for Supporting Frontline Collaboration: Lessons from Stewardship Contracting,* author Cassandra Moseley describes collaborative partnerships created by the U.S. Forest Service and the Bureau of Land Management with both private companies and community-based nonprofit organizations, to plan and execute land management initiatives such as ecological restorations. Moseley found, as did Mills, that collaborative approaches require a major change in organizational culture in order to be more open to working together toward common goals rather than relying on a deterrence approach alone.

The Obama administration and Congress will likely assess the lessons learned from several recent high-profile cases that have put into question the effectiveness and value of regulatory partnership with industry. This effort should not start with the premise that the partnership approach is an inherently flawed model. One insight shared among all three reports outlined in this piece underscores the need for continued managerial attention during the implementation of a regulatory private-public partnership. ◘

Innovation That Matters

By Dan Chenok

Using new technologies more effectively is among the key priorities for organizations today. The federal government, led by the Obama administration, state and local governments, nonprofits, and leading private sector companies all seek ways to harness the advantages of innovation. The challenges faced by government in this environment are not new—business and technology managers have long sought to optimize how information technology (IT) supports their mission at reduced overall cost. Today, however, radical advances in computing power offer an unprecedented opportunity to reshape information and service delivery for citizens, while also streamlining program operations.

Entrepreneurial managers who work in and with government will find ways to initiate and leverage innovation in order to achieve important results: to serve more people at a similar or lower cost, while enhancing the quality of services delivered and the support of constituents for services they receive. A new breed of manager is emerging: one who embraces technological change, in areas that include cloud computing, social media, and cybersecurity, so as to improve the provision of ideas, services, and products. This breed of 21st century public sector manager leverages multiple web-based channels—not for their own sake—but to link innovation with improved mission performance. Put another way, they use innovation to make government work better.

How does this very modern manager—the "manager as innovator"—succeed? As importantly, how can these insights be shared to enhance how the public sector operates? To answer this question, I have outlined the following characteristics that drive success:

Know the Enterprise Mission

Innovators understand that their work is about delivering meaningful results. For example, the person who comes up with an interesting use of cloud computing for the Environmental Protection Agency (EPA) will achieve high value when that technology allows EPA to fulfill its mission more effectively. This can take many forms: using a cloud application can enable EPA to expand its resources to more locations without buying more computers; similarly, the cost savings derived from managing infrastructure with a cloud-based approach can be redirected from hardware to mission. In either case, the innovators must understand that what they do has direct impact on their organization in achieving its strategic objectives.

Taking an enterprise perspective is also key to success. It does not simply mean viewing the agency as the enterprise; rather, the citizen's perspective defines the enterprise. Continuing with our environmental theme, innovation can be used to make a clean energy solution more impactful. This can occur through linking data across programs from the Department of Energy, NOAA, and EPA with state-level enforcement agencies, such that regulated companies can see economic results of energy efficiency measures and citizens can determine which measures have the greatest impact for protecting their local areas. New ways to collect, share, and present data can thus accomplish multiple mission goals.

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The manager as innovator can adopt good process steps to help identify meaningful organizational imperatives, including analysis or agency or industry information, stakeholder interviews, and formal and informal brainstorms—all are useful tools for determining what really matters to an organization, and where technology can be of greatest value.

Look Down the Technology Road

Having been steeped in key enterprise priorities, the innovator can then take a long view of current and future technologies. New developments in biometrics, for example, can increase productivity significantly—this is the futuristic piece of innovation. Managers should be looking at technologies that are:

- Forward Looking (up to 10 years out)
- High impact and game-changing
- Disruptive to business/threshold crossings
- High potential to spur new business processes

In this phase, innovation reflects the challenge of harnessing new, disruptive technologies—incremental change does not have the same impact. But again, the new is only as good as how it helps organizations improve, and the manager as innovator needs to link potential breakthroughs to expected future benefits. The advent of Federal Chief Technology Officers, both in the White House and throughout agencies, holds promise that this linkage will continue to strengthen over time.

Link Stakeholders to Benefits

Many government managers and their constituencies want to make a difference, but struggle with how to move beyond current modes of operation. Public innovators can demonstrate to organizational leaders that improvements in information exchange can bring mission improvement. They

also seek out and reward successful ideas from the private sector, and show beneficiaries that they will receive better services because technology enhances operational excellence. For example, the innovator uses social media not just to share information among friends, but to get the message out about the benefits of a program, create communities of program stakeholders, and identify opportunities for streamlining within the program and across similar programs that serve the same constituents.

Perhaps even more game-changing is the capacity that innovation has to unleash the power of large groups of citizens to help improve government. The Obama administration's Open Government Initiative actively promotes this, employing collaborative tools and technologies to bring new voices and ideas in shaping program design. The General Services Administration, through its Office of Citizen Services and Innovative Technologies, is taking a lead role in this effort, and other federal agencies are following suit. These organizations increasingly leverage well-regarded private sector communities like Innocentive, which brings together experts across the globe to solve hard problems.

A companion to the Open Government Initiative is the increasing use of non-traditional public outreach, including prizes and challenges, to help solve problems in a fast, lightweight process that has traditionally been reserved for lengthy procurements. Innovative managers embrace these non-traditional venues, such as Challenge.Gov, understanding that a small investment can yield a comparatively large return.

Confront Risks Directly

For as long as people have sought to change the status quo, they have had to address interests who benefit from how things are currently structured. Those invested in the status quo can be unwilling to take on risk, whether real or perceived. The public innovator sees these challenges as opportunities to convert the naysayers; in this sense, there is a strong change management component to the innovation agenda. Obstacles to bringing change that makes government work better, and ways to overcome those obstacles, include:

- Obstacle: Funding models such as the two-year Federal budget process may constrain introduction of new ideas.
  Strategy: Working across multiple stakeholders to get funding from current operations, rather than long-term budget planning, can help get change off the ground, as occurred with many e-government initiatives in prior administrations.
- Obstacle: The agency direction or strategy is misaligned.
  Strategy: Funding commitments can keep technology connected with business strategy.
- Obstacle: Incrementalism may limit opportunity for real change.
  Strategy: Engage non-traditional sources, including the academic community.
- Obstacle: Stovepiped communications constrain the exchange of new ideas.
  Strategy: Focus specifically on methods and processes for sharing across divisions.

Reward the Pursuit of the New

Giving recognition to the impact of positive change will help innovative leaders focus attention on meaningful results. Activities that value and measure the success of technological change can drive behavior toward adopting innovations that make a difference. This includes open recognition of innovators for their achievements, such as patent achievement awards for successful patent filings and publications. Finally, reward systems should not categorize "unsuccessful projects" as failures—instead, they are learning experiences that can be leveraged in future work.

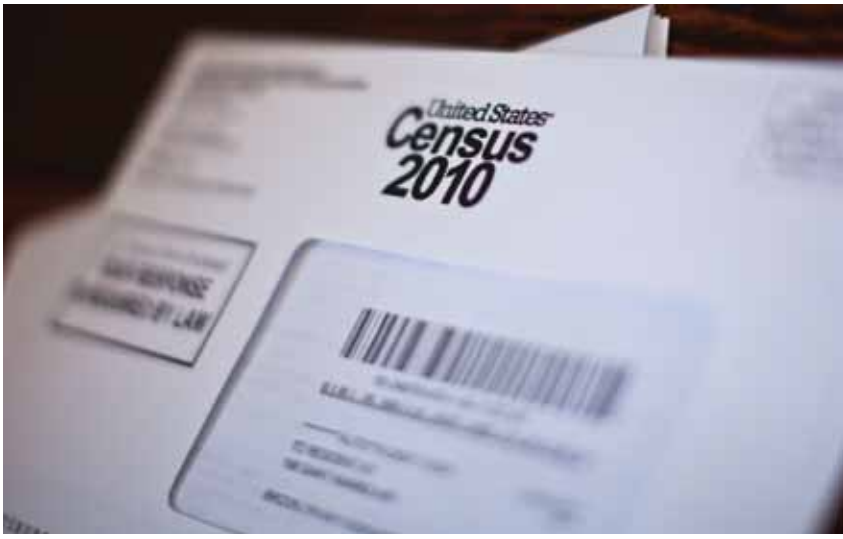
Conclusion

New technologies bring real and sustained improvement to the public sector. Leading public sector managers apply those innovations to achieve mission and program goals, and as a result have an unprecedented opportunity to make a difference. In the 21st century, promoting the manager as innovator can mean the difference between the marginal improvement in the comparatively slow process of government, and the leap ahead in the potential for large-scale productivity gains in the public sector. ◘

Counting on the Cloud: Early Reflections on the Adoption of Cloud Computing by the U.S. Census Bureau

By Costas Panagopoulos, Ph.D.

For the 23rd time since 1790, the U.S. Census Bureau has conducted the constitutionally-required, decennial national headcount in 2010. This enterprise includes mailing out 600 million forms and marshaling a network of 1.3 million temporary employees to count over 300 million people living in 130 million households. It is expected the cost of the current census will ultimately exceed $13 billion—or about $50 per person given population estimates. Against the backdrop of the economic downturn and escalated pressure on Congress and government agencies to curtail excessive spending, the Census Bureau has worked to capitalize on technological developments to meet its mission—and save money doing it. Among the many ways in which the 2010 Census features the use of cutting-edge technology, experimentation with the use of cloud computing has attracted considerable attention.



The cloud was almost tailor-made for the Census Bureau. Cloud computing enables providers to deliver computing services—applications, storage, processing, memory, and network bandwidth, for example—via the Internet, on demand, and from remote locations, thereby rendering computing location- and device-independent (Wyld 2009).

Computing tasks and information become available to users anytime, anywhere from any device, provided there is access to the Internet. Cloud computing is massively scalable with improved resource utlilization, economies of scale, and collaboration capabilities. Moreover, its capacity for on-demand infrastructure and computational power, and the decreased need for maintenance and upgrades provide further efficiencies. The cost-savings prospects are especially compelling; according to a report issued recently by the Brookings Institution, government agencies can expect to save between 25%–50% by using cloud-based computing services rather than internal IT resources. For an organization like the Census Bureau, which needs to retain and manage relationships with over 170,000 partners across the country, the cloud has offered unparalleled opportunities to significantly reduce IT costs and complexities while improving workload optimization and service delivery.

Government leaders had been heralding the potential advantages of cloud computing as agency leaders were making decisions about designing and conducting the 2010 Census.

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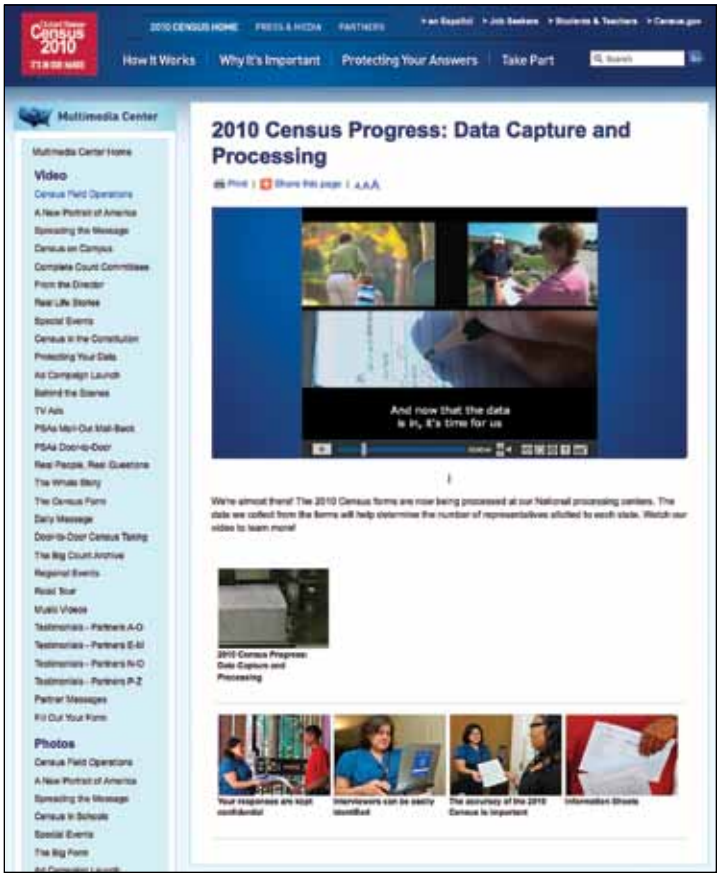
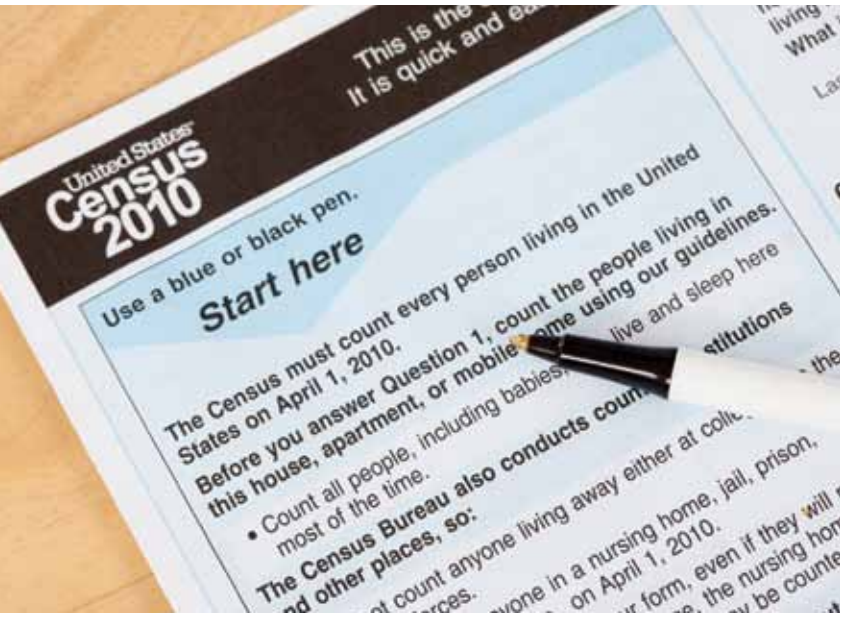
In May 2009, the nation's first chief technology officer (CTO), Aneesh Chopra, advocated "greater use of cloud computing where appropriate." Similarly, Vivek Kundra, appointed in March 2009 as America's first federal chief information officer (CIO), had indicated the deployment of cloud computing in federal IT would be a leading priority (Wyld 2009). These goals notwithstanding, a June 2009 Merlin Federal Cloud Initiative survey found that only 13 percent of federal IT managers reported using cloud technology. Anecdotally, Peter Mell, who leads NIST's cloud computing research team, had also observed there has not been widespread adoption of cloud technology in the public sphere. Against this backdrop, the Census Bureau's experience with cloud technology in 2010 is especially ripe for investigation.

So what has been the Census Bureau's experience to date in using cloud technology and what are the early lessons emerging from this experience? Initial indications suggest the Bureau's overall experience using the cloud has been quite positive (Duffy Marsan 2010). The Bureau has reportedly spent $11.8 million on cloud-related efforts to support the 2010 Census. Census CIO Brian McGrath notes the Bureau has used the cloud in eight specific instances that "provided a huge benefit for us." These include:

- The Census Bureau contracted with Akamai to enhance the performance of its redesigned website—www.census.gov. The website, which attracted 4-5 million hits per week at its peak, featured video clips, blogs, and other interactive elements aimed at citizens. McGrath has said that using the Akamai network provided a better-quality web experience to citizens for less money than building an internal network. He also noted Akamai provided an effective barrier against distributed denial-of-service (DDoS) attacks.
- The Census Bureau also used several software-as-a-service (SaaS) providers, including RightNow, which offers self-service customer support such as searchable FAQs, and GovDelivery, which provides outsourced e-mail delivery services to public sector clients.
- The Census Bureau built its Integrated Partner Contact Database upon Salesforce.com's platform, which it paid for on a subscription basis.

Though the Census Bureau has leveraged the benefits of cloud computing in 2010, many concerns about control and security remain paramount. For example, the storage of sensitive personal information could not be migrated to cloud computing without some risk. Still, the use of cloud technology in several areas during the 2010 Census process appears to have gone off relatively seamlessly, and McGrath has indicated the Bureau will expand its use of commercial, cloud-based computing services "where appropriate," and move forward with building an internal cloud.





Public managers can extract early lessons from the Census Bureau's experience. There are five initial lessons learned from the Bureau's adoption of cloud computing in ramping up for the 2010 Census:

1. **Start small.** The adoption of cloud computing need not be comprehensive, especially at first, and experimentation with the use of cloud computing for select needs can be instrumental in helping to manage expectations and assess performance. Such initiatives can also help to build internal and external support for subsequent adoption and expansion. Building an internal culture of support for cloud computing can be especially critical in public and governmental organizations. It is also crucial to evaluate performance and develop ways to measure effectiveness, efficiency, and cost-effectiveness.

2. **Partner with other agencies.** The Census Bureau was able to move quickly and speed up acquisition of cloud-based services by partnering with other federal agencies—including the National Institutes of Standards and Technology (NIST)—to choose SaaS vendors that had already been certified by another agency. "We didn't have to recertify and reaccredit the systems," noted McGrath, "and it really pushed the delivery of the services down from months to days or weeks."

3. **Tweak existing configurations.** Customized programming platforms can be costly and time-consuming. Instead, agencies can work within existing software platforms to execute goals. After the Census Bureau encountered difficulties with its previously-planned in-house database in 2010, it worked with Salesforce.com to modify its existing platform to store information on the Bureau's 170,000 partners at a fraction of the cost and time. The company was reportedly able to get the database up and running in six weeks, a task that often takes the government months or even years to accomplish.

4. **Use a public cloud while a private cloud is in development.** Private clouds offer federal agencies the promise of greater control or security as well as specialized application, but development is often complex and expensive and can take several years. The 2010 Census experience suggests public clouds can be used effectively to maximize efficiency while private cloud initiatives are underway. Moreover, the experiences and relationships cultivated with vendors in public cloud collaborations can subsequently be leveraged to build internal cloud computing resources.

5. **Lay the groundwork early.** Cloud computing initiatives can often be implemented with unprecedented speed, but preparation is still essential. One reason the Census Bureau was able to move so aggressively into cloud computing in 2010 is because it had been migrating to virtualization since early 2009. As of June 2010, the Bureau, which had spent $6.1 million on hardware and software for its Windows virtual farm, had 427 virtual machines operating on 57 server platforms. McGrath noted the Bureau's compressed hardware footprint was saving the agency $2 million per year, but it also simplified the move to cloud computing. The Census Bureau is virtualizing its Linux servers next and is also planning to homogenize and virtualize its storage platforms after that.

As the U.S. Census Bureau wraps up the 2010 survey in the coming months, as details become available, and as agency leaders and top administrators get down to the hard work of evaluating the impact of the range of initiatives adopted in this census cycle, further insight about the benefits and challenges of cloud computing in the public sector will become available. A more comprehensive overview of the 2010 Census experience will likely yield answers to key questions of practical interest to other public managers, including:

- How were decisions about cloud technology adoption made at the Census Bureau? Who was involved, what was the process, and what were the criteria used?
- Details about the costs of cloud deployment and evidence about any cost savings associated with adoption of the technology.
- How were key objections about cloud computing resolved to enable limited uses in 2010, and what specific reservations prevented further adoption of the technology?
- How was effectiveness monitored and evaluated?
- What were the experiences working with specific vendors?
- To what extent has/will the Census Bureau share its experiences with other federal agencies?

As public managers contemplate the adoption of emerging technologies in their own organizations, it is critical to inform their decision making with reliable evidence from other agencies' experiences. Given the Census Bureau's recent experience using cloud computing to more efficiently meet its mission, the Bureau is ideally positioned to offer invaluable insights to counterparts in the public sector. Stay tuned! ◘

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Food Safety—Emerging Public-Private Approaches: A Perspective for Local, State, and Federal Government Leaders

By Noel P. Greis and Monica L. Nogueira

This article is adapted from Noel P. Greis and Monica L. Nogueira, "Food Safety—Emerging Public-Private Approaches: A Perspective for Local, State, and Federal Government Leaders" (Washington, DC: IBM Center for The Business of Government, 2010).

> "The federal regulatory system for food safety, like many other federal programs and policies, evolved piecemeal, typically in response to particular health threats or economic crises. During the past 30 years, we have detailed problems with the current federal food safety system and reported that the system has caused inconsistent oversight, ineffective coordination, and inefficient use of resources. We have cited the need to integrate this fragmented system as a significant challenge for the 21st century, to be addressed in light of the nation's current deficit and growing structural fiscal imbalance."
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> *"Federal Oversight of Food Safety: High-Risk Designation Can Bring Attention to Limitations in the Government's Food Recall Programs" (April 2007) U.S. Government Accountability Office.*

A slate of recent legislative initiatives at the national level represents the most expansive reform of food safety in the U.S. since the 1930s. Spurred, in part, by recent high-profile food contaminations, new legislation is now under consideration in Congress that not only gives the U.S. Food and Drug Administration (FDA) greater regulatory powers over the nation's food providers—but also dramatically alters the food safety landscape. Four separate bills have been introduced in this session of Congress. Provisions in these bills range from new authority for mandatory recalls for the FDA, to new risk-based approaches for inspection, and to new information management responsibilities for the private sector for "trace-back" of its products in the food chain in the event of a contamination. A common theme of all the proposed bills is greater engagement between the public and private sectors in the interest of safer food.

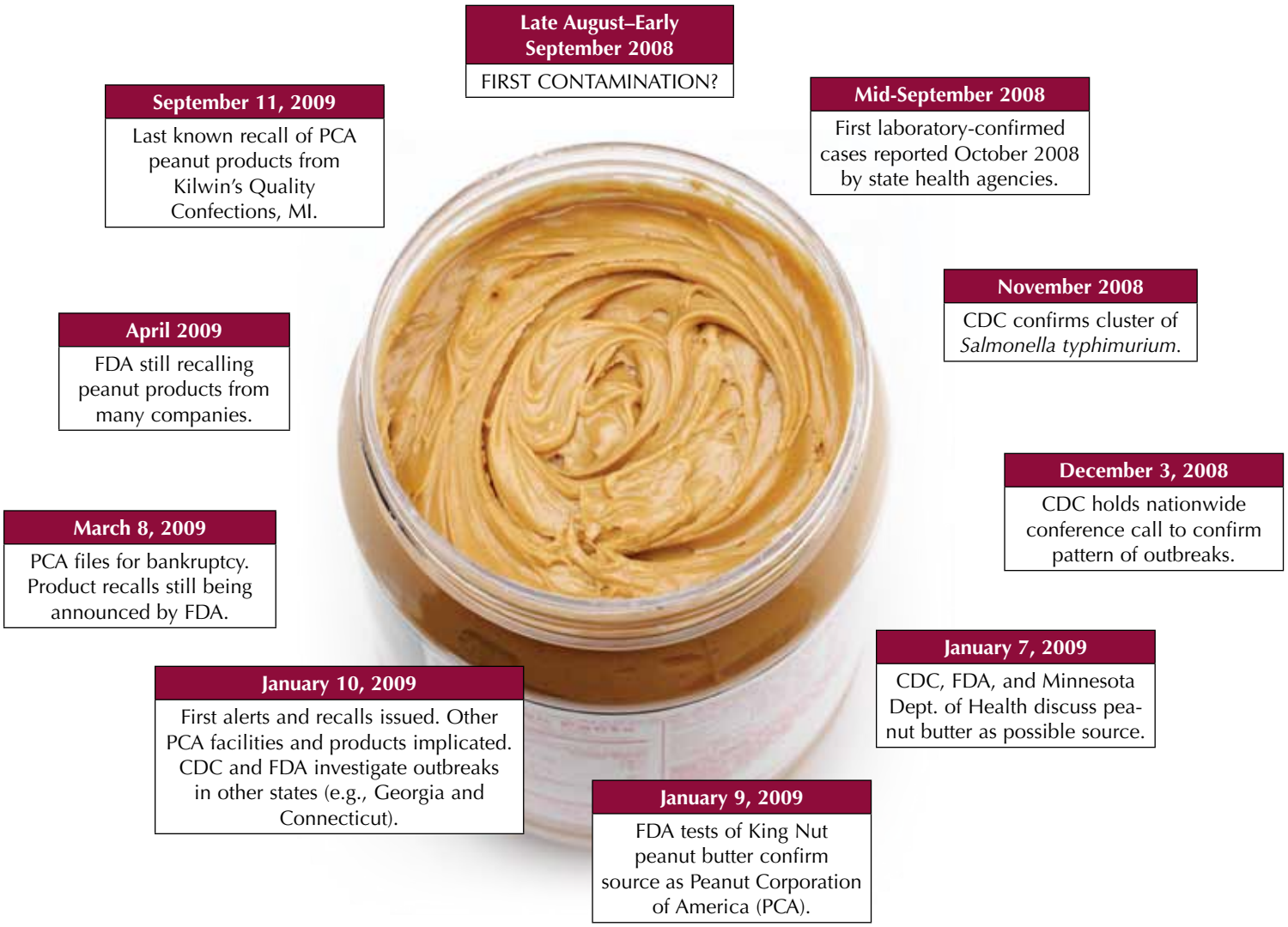
Table 1: Attribution of Foodborne Illness Cases and Death by Food Type

Food Category	Percent Of Total Cases	Percent Of Total Deaths
Produce	29.4	11.9
Seafood	24.8	7.1
Poultry	15.8	16.9
Luncheon/Other Meats	7.1	17.2
Breads and Bakery Items	4.2	0.6
Dairy	4.1	10.3
Eggs	3.5	7.2
Beverages	3.4	1.1
Beef	3.4	11.3
Pork	3.1	11.3
Game	1.1	5.2
Total Percent	100	100
Total Cases	12,908,605	1,765

Source: "Attributing U.S. Foodborne Illness to Food Consumption," Sandra A. Hoffmann, Resources, Summer 2009.

It is evident in recent history—from the 2008 *Salmonella* peanut butter contamination (see Figure 1) to the 2008 jalapeños contamination—that our food safety net has acquired large tears that continue to permit contaminated products to find their way to retail shelves, causing irreversible human harm and considerable economic damage (see Table 1). The total cost of food contamination in the U.S. was recently estimated to be $152 billion, including health and human welfare costs as well as economic damage to companies and entire industries. At the same time, the food and agriculture industry represents more than $1 trillion in economic activity—or approximately 13 percent of the gross domestic product. The Government Accountability Office has estimated that losses to the U.S. economy from halted

Figure 1: Chronology of PCA Peanut Butter Contamination



Source: Chronology of Events Related to Peanut Butter Recall Involving PCA, AIB International, www.aibonline.org/press/AIBStatement04033009/Chronology.htm, accessed October 19, 2009.

agricultural exports at the border that were attributed to food contamination exceeded $86 million in 2006.

In an effort to reduce the incidence and cost of food contamination, new thinking is emerging about the respective roles and responsibilities of the public and private sectors. A new stakeholder model is emerging in which the private sector—and even the consumer—are playing key roles in assuring safe food. Historically, food safety has been the purview of a patchwork of regulatory agencies that operate in an oversight role over the private sector. More than 15 agencies and 30 laws at the federal level are collectively responsible for food safety. These federal agencies are supported by thousands of state and local public health agencies and agricultural departments that engage in continuous surveillance and recall activities to identify, confirm, and respond to food contamination events.

Closer engagement between public and private sectors can reduce the scale and scope of food contamination events by providing enhanced prevention and improved monitoring and surveillance to ensure a more efficient response. By working together to implement risk-based and customized process controls based on mutually agreed-upon performance standards, many food contamination events can be prevented, thereby avoiding excessive costs to both industry

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and government. Better sharing of information related to suspected problems during production or processing would help to achieve earlier awareness of a foodborne disease outbreak—as well as faster determination of its cause and execution of recall activities. Co-regulation strategies have the potential to achieve safer food at a lower regulatory cost—while helping to maintain the competitiveness of a company or food industry.

These new developments are implicit in the emerging food safety landscape and are reflected in pending legislation and emerging policy. Four key organizing principles define a new framework for food safety:

1. A new stakeholder model is emerging that recognizes the role of the private sector as a key partner in both maintaining a safe food supply and responding to food contamination events.

The new framework builds on collaboration among all stakeholders—both public and private—to work together with the common goal of safer food. The private sector has strong financial incentives to protect its markets and customers, as well as the reputation of its products. However, government regulation is needed to ensure safe food because market transactions do not take into account social costs such as medical costs and lost work time. Most importantly, consumers generally cannot discern the safety of a food product before eating it. Current pressures on governments to be more active in monitoring food safety in an environment of strained budgets, and on the private sector to produce competitive products for global markets, make public-private cooperation not only desirable, but critical. Relationships are moving from an arms-length, sometimes adversarial, relationship between regulator and regulated to a cooperative partnership, wherein each sector brings its respective knowledge and skills to the food safety table.

The private sector is assuming a more visible role. For example, facilities that manufacture, process, or hold food for consumption in the U.S. now must report any problem within 24 hours through the Reportable Food Registry, the FDA's online portal, if there is a reasonable probability that the food will cause serious adverse health consequences. Increasingly, private companies are being proactive within their organizations in implementing process controls and reporting possible problems in their manufacturing processes. The online Rapid Recall Exchange service has been developed by the industry to allow companies to inform their suppliers and customers of recalls and/or withdrawals of products in a timely fashion. At the same time, consumer complaint hotlines, along with new emerging social networking systems, are providing rapid communication about potential foodborne disease.

2. Risk-based resource allocation strategies will reduce foodborne disease incidence, resulting in lower public sector costs of surveillance and response and reduced economic burden on private sector companies that have good safety records.

The constraints of the current economic climate are stretching food safety resources to the breaking point. The FDA, especially, is underfunded with respect to its mandate. In

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Table 2: Food Safety Legislation Pending in The 111th Congress

PROVISIONS IN BILL	H.R. 875 – FOOD SAFETY MODERNIZATION ACT	H.R. 759 (H.R. 2749) – FDA GLOBALIZATION ACT (FOOD SAFETY ENHANCEMENT ACT)	H.R. 1332 – SAFE FOOD ENFORCEMENT, ASSESSMENT, STANDARDS, AND TARGETING (FEAST) ACT	S. 510 – FDA FOOD SAFETY MODERNIZATION ACT
Process Controls: Require process controls for all food processors, and tie agency inspections to an audit of these systems.	X	X	X	X
Performance Standards: Set performance standards based on the best available science on hazards linked to specific food products and other public health considerations.	X	X	X	X
Inspections: Create a system of risk-based inspection, based on the type of food handled and the processes used.	X	X	X	X
Imports: Establish a system under which governments or foreign food establishments seeking to export food to the U.S. can certify their food safety systems.	X	X	X	X
Research and Education: Establish programs to support FDA regulatory programs, state food safety agencies, and the food industry's own efforts.	X	X		
Farm: Develop and enforce on-farm food safety programs.	X	X	X	X
Recall: Mandatory recall authority to ensure that recalled foods are removed from the market.	X	X		
Traceback: Authority to require products to be traceable in the supply chain.	X	X	X	X
Detention: Authority to detain and destroy unsafe food when inspectors find it.	X	X	X	X
Penalties: Establish penalties for violating food safety laws as a deterrent to future violations.	X	X		X
Whistleblower: Protection for those providing information or assisting in the investigation of a violation of a food safety law.	X	X		

Source: http://www.cspinet.org/foodsafety/legislation.html, last accessed May 4, 2010.

today's economic climate, it is not possible to inspect regularly all food production and retail organizations. Risk-based resource allocation policies, as the words imply, allocate resources where the risks are greatest. The intent of risk-based resource allocation is to:

- Identify actions that mitigate against food contamination in accordance with the risk that they present,
- Set priorities among those actions, and
- Allocate resources to implement these actions so as to minimize those risks effectively and efficiently.

For example, under risk-based resource allocation, regulating agencies would identify food products or food types that are associated with the highest risks and inspect companies that make those products more frequently. Similarly, companies that have experienced food contamination problems in the past and/or have a high inspection violations rate would be considered to be higher risks and subject to more frequent inspections. With respect to testing, the scientific focus would be on developing improved tests for pathogens most likely to cause disease, based on the recent past.

3. Food chain traceability will utilize private sector information about the food chain to speed up the recall process, thereby reducing the scale and scope of food contamination events and their associated social and private sector costs.

All of the legislation pending before Congress gives the FDA new authority to require that products be traceable in the food chain—referred to as "traceback" (see Table 2). The use of new track-and-trace technologies, with supporting information and communication technologies, enables companies not only to trace the history of a contaminated food product back up the supply chain, but also to trace forward from a contaminated supplier to all affected products that may have been shipped to customers. Thus, traceback is needed to pinpoint the source of a contamination to correct a faulty process or environmental condition; trace forward is needed to determine the location of other affected products in the event of a recall.

Clearly, the public and private sectors need to work together to achieve full food chain traceability. Companies typically have access to much of this information but have been reluctant to share it with the government for fear of revealing competitive information about manufacturing processes and suppliers. Yet traceability can yield positive benefits for companies, such as reduced costs, better service, and better supply chain control. The challenge for policy makers is to provide incentives to private sector companies that encourage those firms to implement and strengthen their traceability systems—thereby creating a win-win situation.

4. Co-regulation strategies are a win-win opportunity to shape food safety policies so as to reflect the mutual organizational and financial interests of public and private sectors alike.

Policy makers view co-regulation as a solution for bridging the gap between the social costs of *laissez-faire* market approaches and the economic costs of strict overregulation. Co-regulation can assume a variety of forms:

- **Setting Standards:** Industry, and even consumers, can provide input into the standards-setting process. In some industries, companies have established voluntary standards that are higher than the regulated standards.
- **Process Standards:** Regulatory agencies and private sector companies can work together to establish best practice standards for the processes by which foods are produced and/or transported. With co-regulation, industries are able to adapt these standards to their business environment for better alignment with their business strategy.
- **Enforcement:** Co-regulatory approaches for enforcement try to achieve a delicate balance between industry self-regulation and complete second-party oversight. Market-based regulatory mechanisms are an effective form of co-regulation. For example, the "scores on doors" approach—where inspection reports are publicly available at restaurants—serves as a market-based driver for improved performance.

- **Monitoring:** Many companies have implemented internal monitoring processes as part of their quality control programs. Companies also hire third-party inspectors—with mixed results. Voluntary certification programs can provide a broader co-regulatory base, with standards set by government and certified by industry.

Globalization and the growing complexity of the food chain demand new approaches that reflect the concerted and coordinated efforts of both public and private sector leaders—both critical stakeholders in our emerging food safety network. To be sure, contaminated food products will continue to be a concern worldwide and a threat to the health of U.S. citizens. However, a new stakeholder model that recognizes the roles and responsibilities of both government and business leaders alike is a first step in the right direction toward safer food.

"The challenge lies in designing a system in which consumers can have confidence, while avoiding the draconian measures that hamper the competitiveness of an industry with little marginal benefit for consumers. There exists a complicated mix of market, supply chain, and regulatory incentives for firms to provide safer food."

Our nation's health and the well-being of its citizens depend on a coordinated and effective web of safeguards to protect the food supply—whether it originates in China or California. Government regulations governing the private sector are a first line of defense and, combined with oversight and inspection by responsible government agencies, have provided minimally acceptable levels of protection, to date. However, this web of safeguards is being stressed as a result of increasing food imports from emerging markets, budget cutbacks, and politics.

Our research offers government officials at the local, state, and federal levels a perspective about the gaps, solutions, and emerging public-private strategies that can help to assure the safety of food that ends up on the plates of U.S. citizens. As a global leader, the U.S. can help set the standard for new models of food safety cooperation worldwide. Pending legislation provides an important step forward. In particular, the private sector can be expected to play an increasing role as we move toward new public-private approaches that recognize the private sector as an important stakeholder in a modern, integrated food safety system. ◘

TO LEARN MORE

Food Safety—Emerging Public-Private Approaches: A Perspective for Local, State, and Federal Government Leaders
by Noel P. Greis and Monica L. Nogueira

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Cybersecurity Management in the States: The Emerging Role of Chief Information Security Officers

By Marilu Goodyear, Holly T. Goerdel, Shannon Portillo, and Linda Williams

This article is adapted from Marilu Goodyear, Holly T. Goerdel, Shannon Portillo, and Linda Williams, "Cybersecurity Management in the States: The Emerging Role of Chief Information Security Officers" (Washington, DC: IBM Center for The Business of Government, 2010).

The importance of safeguarding information created and shared on computers and the Internet has increased significantly in recent years, as society has become increasingly dependent on information technology in government, business, and in their personal lives. Both corporations and government have responded by creating a new role in their organizations to lead the safeguarding efforts—chief information security officers (CISOs). The role of these officers is still under development. Do they safeguard best by using law enforcement techniques and technological tools? Or are they more effective if they serve as educators and try to influence the behaviors of technology users?

Cybersecurity has been commonly associated with three aspects of information technology: "people, process, and technology." People as users and creators of information and technology systems and defined organizational processes clearly affect the ability of any technological environment to be secured. Indeed, some would argue that convincing users to utilize secure processes when handling government information is the key solution to cybersecurity issues. Others argue that technological solutions are most important because they have the ability to define border environments as well as control the behavior of users within those environments.

Increasingly, there is recognition that it may be impossible to control the movement of data and that effective processes and data management are keys to security risk management. Will Pelgrin, director and chief cybersecurity officer of New York's State Office of Cyber Security and Critical Infrastructure Coordination, recently summed up the challenge: "[A] few short years ago we had a well defined perimeter…. [I]t has now dissolved–our job is to protect data that is resident with each and every one of us."

Definition of Cybersecurity

Cybersecurity can simply be defined as security measures being applied to information technology to provide a desired level of protection. The issue of protection can be defined using the acronym CIA for Confidentiality, Integrity, and Availability:

- **Confidentiality** refers to the property that data should only be viewable by authorized parties.
- **Integrity** refers to the principle that only authorized users are allowed to change data, and that these changes will be reflected uniformly across all aspects of the data.
- **Availability** refers to the principle that data and computer resources will always be available to authorized users.

Source: Conklin, Art and Gregory B. White. e-Government and Cyber Security: The Role of Cyber Security Exercises. Proceedings of the 39th Hawaii International Conference on System Sciences. *Kauai, Hawaii. January 4–7, 2006.*

Federal Concerns about Cybersecurity

Concerns about the security of computer systems were raised in 1976 by Thomas Rona, who saw the potential threat to information technology. As the use of technology grew, concern for security of systems and data within increased. Starting with the Clinton administration in 1998, successive presidents have devoted increased attention to cybersecurity.

Clinton Administration

Federal recognition of the cybersecurity threat came in May 1998, when the Clinton administration issued Presidential Decision Directive 63, instructing federal agencies to take steps to reduce the vulnerability of computer systems and communications networks. The directive was also intended to implement measures to mitigate threats to the commercial sector.

President Clinton appointed Richard A. Clarke as the National Coordinator for Security, Infrastructure Protection and Counter-terrorism, a Cabinet-level position.

Bush Administration

The George W. Bush administration acknowledged the importance of cybersecurity and retained Clarke as a special advisor in the NSC, although his position was no longer at the Cabinet level. The Administration began reviewing cybersecurity policy in January 2001 and in October 2001 issued Executive Order 13231, which was designed to protect critical infrastructure. In February 2003, the administration released its final plan: *The National Strategy to Secure Cyberspace*.

Obama Administration

In 2009, the Obama White House released the report *Cyberspace Policy Review: Assuring a Trusted and Resilient Information and Communications Infrastructure*. The report signals the continued importance of cybersecurity, stating clearly. "[T]hreats to cyberspace pose one of the most serious economic and national security challenges of the 21st century for the United States and our allies." The report outlines seven key points:

- Cyberspace underpins almost every facet of modern society and provides critical support for the U.S. economy.
- The *status quo* is no longer acceptable.
- A national dialogue on cybersecurity must begin today and government, with industry, should explain the challenge so that the American people appreciate the need for action.
- The United States cannot succeed in securing cyberspace if it works in isolation; public-private partnerships as well as international collaboration are necessary.

- The federal government has the responsibility to protect and defend the country, and all levels of government have the responsibility to ensure the safety and well being of citizens.
- Working with the private sector, performance and security objectives must be defined for next-generation infrastructure.
- The White House must lead the way forward.

State Concerns about Cybersecurity

Pressures to elevate cybersecurity as a national priority pose challenges for cybersecurity professionals. Whereas organizing for cybersecurity at the federal level has taken shape within the Department of Homeland Security and the Department of Defense, states have had varied success in establishing links between *cyber* protection and *physical* security, as well as in integrating cybersecurity into overall state infrastructure planning. Their varied success stems from several issues:

- First, many state offices of homeland security have only recently incorporated personnel with expertise in critical infrastructure protection, even less those with expertise in cyber infrastructure.
- Second, to the extent that cyber infrastructure specialists exist, they are mostly situated within IT organizational communities, which may or may not be (in)formally coordinated with the state's homeland security apparatus. As a result, we see more CISOs advocating for structural arrangements and policies that can effectively bridge "the chasm between the worlds of critical infrastructure protection and cyber protection."
- Third, states have demonstrated both reluctance and enthusiasm to elevate cybersecurity as a major priority and to engage legislatively or administratively on issues of cybersecurity. For some, a lack of coherent guidance and intergovernmental funding from appropriate federal agencies is a serious hindrance. For others, a bottom-up approach that places state cybersecurity professionals at the forefront of decision making and dialogue is preferable. However, this approach is rife with difficulties. Challenges include overcoming authority and status barriers between federal and state experts on matters of policy (elite-actor bias), and securing two-way communication that reaches beyond symbolism to actual participatory governance (participation-deficit).

Despite these challenges, state CISOs have been on the front-end of cybersecurity dialogue, lending expertise to identifying gaps in policies, testing strategies for remediation, and acting as laboratories of innovation for how best to organize to address threats in an evolving cybersecurity environment.

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Five Strategies Used by State Cybersecurity Officers

Data from the survey and case studies indicate there are five broad strategies utilized by state-level CISOs to advance their security programs. States are engaging in a common set of activities in relation to cybersecurity, but vary in the emphasis placed on each strategy. The strategies are:

- **Strategy One:** Development of policy and legal frameworks
- **Strategy Two:** Increased education of users
- **Strategy Three:** Use of technology and control mechanisms
- **Strategy Four:** Centralization of networks and IT services
- **Strategy Five:** Building collaborations across agencies, levels of government, and between sectors

Strategy One: Development of policy and legal frameworks. One of the most common strategies is the development of cybersecurity policies and assessment tools. All the states that responded to the survey have implemented IT governance structures that include a variety of stakeholders. As CISOs have worked within their governance structure to develop policy they have often gained the buy-in of stakeholders as well as developed robust policy.

Many states have implemented standards or procedures which provide more specific guidance for the implementation of the cybersecurity policies that are in place. Many states require regular assessments or audits to document compliance (or non-compliance) with cybersecurity policies, procedures, and standards.

Strategy Two: Increased education of users. All the states that participated in the study have active cybersecurity user education programs. These programs make full use of content shared nationally through CISO networks but also utilize content developed locally.

Strategy Three: Use of technology and control mechanisms. The application of technical controls to assist in cybersecurity is common among the states. Virtualization is providing a technical means of controlling data and access. Identity management systems are providing a means of implementing identification, authentication, and authorization schemas. Strong partnerships and outsourcing with private sector companies are assisting the states in improving their technical cybersecurity profiles.

Strategy Four: Centralization of networks and IT services. Centralization and consolidation of information technology services are also strategies utilized by the states. Centralization of networks and data centers is particularly helpful with cybersecurity efforts aimed at the protection of hardware, systems, and data.

Strategy Five: Building collaborations across agencies, levels of government, and between sectors. In order to successfully approach tangled problems, organizations need to create, lead, and participate in public sector knowledge networks (PSKNs) that are characterized not by a "need to know"

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information sharing environment but instead a "need to share" environment. Such networks treat the sharing of information and best practices as a primary purpose for existing and focus on sharing processes, practices, software, and other information technologies. Participating networks benefit from more timely, better quality, and more complete information by drawing on collective knowledge.

Recommendations

This review of the cybersecurity landscape at the state level provides a broad picture of both strategies used to build successful programs and the activities of the CISO. From our research, we draw the following five key recommendations:

Recommendation One: State cybersecurity officials should increase the use of collaboration and networks. CISOs should manage cybersecurity, in part, by identifying, mobilizing, participating in, and helping maintain public sector knowledge networks relevant to cybersecurity issues. CISOs and CIOs should recognize that the base of these networks is the development and preservation of interpersonal relationships, not a command and control perspective.

Recommendation Two: State cybersecurity officials should evaluate their formal and informal relationships with federal cybersecurity officials. In an effort to build on networks as discussed in Recommendation One, CISOs and CIOs should identify authority or status barriers between themselves and federal cybersecurity officials. Managerial efforts should then be directed towards removing, or mitigating, barriers most likely to impair bottom-up participatory governance by states regarding national cybersecurity programs.

Recommendation Three: State cybersecurity officials should devote increased attention to and receive training in multidisciplinary problem solving. Cybersecurity management requires a practical philosophy of multidisciplinary problem-solving. The development of networks across security disciplines (cybersecurity, emergency management, critical infrastructure, information fusion centers, etc.) is critical for the continued success of cybersecurity efforts. Broadening CISO networks should be a priority for CISOs and CIOs.

Recommendation Four: State cybersecurity officials should receive training in collaboration competencies and those competencies should be recognized and rewarded. Education programs for the CISO community should be focused on collaboration skill sets, beyond those technical in nature. Collaboration competencies among CISOs should be incentivized, recognized, and rewarded by CIOs.

Recommendation Five: State cybersecurity officials should devote increased attention to data management. CISOs and CIOs should build collaborations with data owners, records managers, and archivists in the development of more robust data management within the states. ◘

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Project Management in Government: An Introduction to Earned Value Management (EVM)

By Young Hoon Kwak and Frank T. Anbari

This article is adapted from Young Hoon Kwak and Frank T. Anbari, "Project Management in Government: An Introduction to Earned Value Management (EVM)" (Washington, DC: IBM Center for The Business of Government, 2010).

Management of government projects, programs, and portfolios—and the related expenditures of public funds—are major, visible areas of interest and concern. Emphasis on performance improvement in government continues to increase steadily, supported by mandates imposed by government laws and public pressure. Despite a growing understanding of the determinants of success, increasing maturity, and a stream of successful programs and projects, project failures continue at an alarming rate.

Why Is Project Management Needed in Government?

There are visible examples of failure in major public programs and projects. *Analytical Perspectives, Budget of the United States Government, Fiscal Year 2008* points out that, of the 840 major information technology (IT) investments (about $65 billion) in the U.S. federal IT portfolio in fiscal year (FY) 2008, there were 346 major IT investments (about $27 billion) that were not well planned and managed, reflecting investments on the Management Watch List as well as those rated "Unacceptable."

Earned Value Management (EVM) is a powerful methodology that gives the executive, program manager, project manager, and other stakeholders the ability to visualize a project's status at various points during the project life cycle and consequently manage projects, programs, and portfolios more effectively. EVM helps provide objective project assessments when applied appropriately, and clearly quantifies the opportunities to maintain control over cost, schedule, and specifications of various types of projects. EVM gives managers greater confidence in making evidence-based decisions about project scope, schedule, cost, resources, and risks; hence, it allows more effective control and project oversight.

Key Legislation and Regulations Related to EVM

Title V of the Federal Acquisition Streamlining Act (FASA; U.S. Congress, 1994) requires that agency heads must define and approve the cost, performance, and schedule goals for major acquisitions and achieve, on average, 90 percent of the cost, performance, and schedule goals established.

The Clinger-Cohen Act (U.S. Congress, 1996) requires the Director of the Office of Management and Budget (OMB) to develop, as part of the budget process, a process—for analyzing, tracking, and evaluating the risks and results of all major capital investments for information systems—that encompasses the entire life of each system.

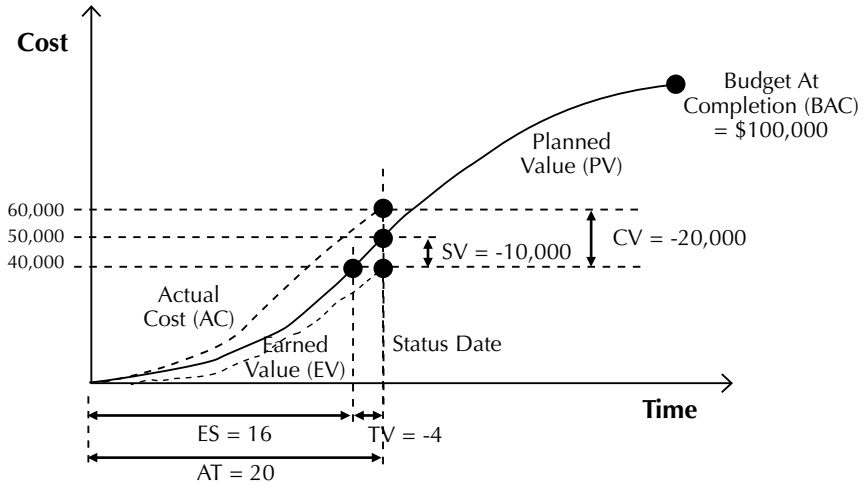
The OMB Circular A-11, Part 7 – Planning, Budgeting, Acquisition and Management of Capital Assets (OMB, 2008) and **the Capital Programming Guide** (OMB, 2006) were written to meet the requirements of FASA and the Clinger-Cohen Act. These documents set the policy, budget justifications, and reporting requirements that apply to all agencies of the executive branch of government that are subject to executive branch review. They addresses capital acquisition, require the use of EVM consistent with the American National Standards Institute ANSI/EIA 748 for both government and contractor work, and are the genesis for the EVM system (EVMS) requirements for the Federal Acquisition Regulation.

NASA is one of the leading federal agencies in the U.S. government applying project management principles consistently by implementing the use of EVM. Its mandated use through detailed, specifically delineated organizational protocols; the commitment of resources to assist in the implementation of EVM use; the standardized data analysis capabilities; and formalized reporting requirements—as well as providing the training needed to ensure meaningful use of EVM across

A Comprehensive Example

Consider a project that has a baseline Budget at Completion (BAC) of $100,000 and a baseline schedule of 40 weeks. The baseline indicates that, by the end of week 20, the project is planned to be 50 percent complete. At the end of week 20, it is reported that 40 percent of the project work has been completed at a cost of $60,000. The main components of this example are shown in the figure below.

From the example, we can conclude that this project is in serious trouble in terms of both cost and schedule performance. Corrective actions should have already been taken. It is critical to conduct an immediate review of this project, evaluate the underlying causes of the problems facing it, and make appropriate decisions promptly.



Using the EVM method:

BAC = $100,000
AT = 20 weeks
AC = $60,000

PV = 50% x $100,000 = $50,000
EV = 40% x $100,000 = $40,000

Therefore:

% Complete = EV ÷ BAC = $40,000 ÷ $100,000 = 40%
% Spent = AC ÷ BAC = $60,000 ÷ $100,000 = 60%

Cost and Schedule Variances:

CV = EV – AC = $40,000 – $60,000 = -$20,000
SV = EV – PV = $40,000 – $50,000 = -$10,000

Time Variance:

PV Rate = $100,000 ÷ 40 weeks = $2,500 per week
TV = SV ÷ PV Rate = -$10,000 ÷ $2,500 per week = -4 weeks

Performance Indices:

CPI = EV ÷ AC = $40,000 ÷ $60,000 = 0.67
SPI = EV ÷ PV = $40,000 ÷ $50,000 = 0.80

Estimate at Completion and Variance at Completion:

EAC = BAC ÷ CPI = $100,000 ÷ 0.67 = $150,000
VAC = BAC – EAC = $100,000 – $150,000 = -$50,000

Source: Adapted from Anbari, 2003.

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the agency—all clearly show how NASA is committed to incorporating EVM into its management processes. NASA adopts and applies sound project management processes in initiating, planning, executing, monitoring, controlling, and closing its programs and projects, within which the comprehensive incorporation and use of EVM techniques is one small, yet critical aspect.

Steps in EVM Implementation at NASA

NASA uses a five-step approach to implement EVM, as outlined below.

Step 1: NASA's Integrated Baseline Review

This aspect specifies standardized guidance for the NASA Integrated Baseline Review (IBR) process by providing project managers, project staff, and EVM experts with a standard guide for conducting the IBR as a technical review, ensuring that the project manager has ownership of the process, and defines IBR responsibilities.

Step 2: Schedule Health Assessment

This process allows the project manager to conduct a project schedule review, internally referred to as a schedule health assessment, that evaluates the soundness and validity of project schedules. The schedule health assessment is a quantitative, evaluative methodology that helps determine the credibility and practicality of the schedule for project management purposes. It improves the EVM process by evaluating life cycle plans.

Step 3: Integrated Information System

This information system is used to apply project review concepts through the use of an in-house EVMS. By utilizing an enhanced EVM server and database configuration, NASA provides its project managers with a practical, in-house EVMS that enhances the planning, execution, and performance management of NASA programs and projects.

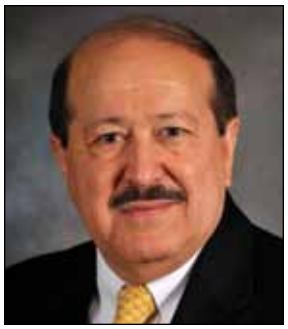
Critical Success Factors in the Implementation of EVM at NASA

The following highlights areas of strength in the implementation of EVM at NASA—as a public organization that has been utilizing EVM effectively to monitor and control its projects:

- NASA invested in the use of EVM, as demonstrated by its comprehensive policies and procedures.
- The NASA EVM website (http://evm.nasa.gov) provides a detailed clearinghouse for training, policies, and procedures.
- A dedicated team to monitor EVM deployment and use is funded.
- A single IT system for tracking and reporting exists, synchronizing cost and schedule data into a consolidated repository.
- Trend analysis is performed from day one and throughout the life cycle of the project.
- Consistent reporting structures are required, with linkages to requirements documentation as a standard operating procedure.
- EVM analysis is used to make organizational-level decisions, schedule modifications, and funding allocations, and to document lessons learned.

Step 4: Automated Data Analysis

This capability allows for continuous review of data through the use of an automated data analysis system. Through the automated analytical capability that performs EVM calculations by utilizing the above-mentioned integrated information system, timely and routine analyses of EVM data are facilitated that enable real-time, project-related decision making.



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Step 5: Organizational Investiture

Overall, the directives that NASA uses are adopted with flexibility depending on the size and complexity of specific projects. The degree of alignment to NASA project management practices is generally left up to the project manager. It is vital to NASA that viable results are achieved within budgetary constraints and that public perceptions are maintained. An entire department has been created for the use of EVM at NASA, which clearly delineates the level of investiture in this best practice.

Assessing the EVM Experience at NASA

Findings Related to the Value of Project Management and EVM at NASA

Major findings related to the value of project management and EVM at NASA are presented below.

- **Finding One:** With a project success rate of 97 percent, NASA personnel we interviewed indicated that no justification is needed for doing project management, but justification is needed if it is NOT done.
- **Finding Two:** It can be inferred that the assessment of the level of stakeholder satisfaction with project management at NASA is directly related to the tone of media coverage and public perception of NASA missions.
- **Finding Three:** NASA's leadership stressed that the degree of alignment with NASA project management practices is generally left up to the project manager.
- **Finding Four:** When discussing the ability of a project management group to be successful, one of NASA's leaders suggested that some senior government executives tend to speak about project management in terms of overall mission and obligations, and do not discuss project management on a program or portfolio level.
- **Finding Five:** Project results are well documented at NASA.
- **Finding Six:** NASA demonstrated that it had satisfactorily addressed issues related to its leadership commitment; the quality of its corrective action plan; and its capacity to implement the plan, including program/project office involvement, validation of its accomplishments, and demonstrated progress in the timely accomplishment of its milestones.
- **Finding Seven:** NASA has an extensive, thorough "lessons learned" process.
- **Finding Eight:** Project management principles at NASA are defined as working as a team, measuring performance through the use of quantitative data, collaborating extensively with global stakeholders and contractors, implementing efficient change management practices, and allocating priorities to programs and projects using portfolio management concepts.

Recommendations for Improving EVM at NASA

The following recommendations highlight potential opportunities for improvement in the implementation of EVM at NASA.

Recommendation One: NASA should apply EVM use to projects of $20 million or less. NASA stipulates the use of EVM for projects over $20M, and requires the approval of the Chief Engineer to deviate from this mandate. By developing methods to use EVM for smaller-cost projects that may not be considered as high-visibility projects, NASA would have standardized processes and procedures for all of its projects.

Recommendation Two: NASA should apply EVM to firm fixed price projects. Applications of EVM are usually conducted within cost-plus or incentive-type contracts. Typically, firm fixed price contracts are not managed using EVM because these types of contracts are seen as a risk transfer to the contractor and not to NASA.

In reality, NASA is still exposed to risk in terms of quality, schedule, and the ability to complete the project—which ultimately can impact the agency's objectives. Therefore, a modified EVM approach may have meaningful applications to protect NASA from this exposure.

Recommendation Three: NASA should develop a scope management indicator as part of EVM. Currently, NASA EVM measures only cost and schedule constraints. It may be possible to incorporate a scope management indicator to capture information on the stability of this important constraint.

Recommendation Four: NASA EVM should include a variance in time. Current EVM metrics are expressed in terms of dollar cost and not in terms of the actual time. While schedule variances need to be stated in terms of dollar cost, it may be useful to express these variances in terms of time, or represent them in terms of duration as well. The schedule variance in terms of dollars may not effectively highlight the true requirement to realign the schedule.

Recommendation for Other Government Agencies

Recommendation: EVM should be widely adopted by agencies across government. EVM is a powerful methodology that gives the manager the ability to visualize a project's status at various points during the project life cycle and consequently manage risks more effectively. EVM has given managers greater confidence in making evidence-based inferences about project resources and scope management; hence, it has allowed more project control and oversight. EVM also brings other innovations into projects. It calls for a project-oriented management structure, a learning culture in the organization, the recognition of specialized skills and expertise, and more interface and interdependence within reporting lines.

EVM has been instrumental in supporting stronger cash flow management capacity, improving transparency and governance, facilitating prevention or mitigation of conflicts, and above all helping bring several large-scope projects to completion on time and within budget. EVM is an effective management methodology that helps provide objective project assessments when applied appropriately, and clearly quantifies the opportunities to maintain control over cost and schedule aspects of various projects and programs.

EVM as a methodology has proven merits and continues to expand to several sectors. It advocates for more rigor in project planning and implementation, which are undeniably prerequisites for any successful project. Using EVM or parts of it, and tailoring it to specific situations has allowed managers to enjoy its benefits, including better cash flow management, improved relationships with clients, and successful management of project constraints. Knowledge, skills, applications, and maturity in EVM continue to grow as this powerful method is being used more widely. EVM will continue to grow as long as more of its weaknesses are known and turned into opportunities for improvement. ◘

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Strategies for Supporting Frontline Collaboration: Lessons from Stewardship Contracting

By Cassandra Moseley

This article is adapted from Cassandra Moseley, "Strategies for Supporting Frontline Collaboration: Lessons from Stewardship Contracting" (Washington, DC: IBM Center for The Business of Government, 2010).

The Obama administration's Open Government initiative places a strong emphasis on increasing collaboration—among agencies as well as with citizens and other stakeholders—to achieve more effective program and mission results. Agencies have developed their required Open Government Plans, but many of these plans lack details on how to successfully conduct collaborative efforts, especially on the front lines of government.

It is now useful to ask: are there examples in which collaboration is already being used as a part of how frontline workers do their jobs today? The answer: yes. Senior executives in the U.S. Forest Service and the Bureau of Land Management (BLM) began to ask their frontline staff to collaborate locally, beginning in the early 1990s, as they saw the potential of engaging diverse groups of stakeholders to:

- Collaboratively resolve conflict
- Solve complex problems
- Bring new technical and financial resources to the problems of land management

A decade after the initial pilot projects, and more than half a decade since the passage of the 10-year authority, the use of stewardship contracting ranges widely across the national forest system and BLM districts. Some national forests and districts have made stewardship contracts and collaboration a core part of their approach to land management, for example, the BLM High Desert District in Wyoming.

There can be a lot of location-specific reasons for why collaboration is not being used. For example, when the trust in an agency is high and citizens are relatively satisfied with current levels of engagement, an agency may have a difficult time engaging collaborators. In some cases, frontline staff sometimes may not want to collaborate and thus put no serious effort into developing it. In other instances, the local sociopolitical environment can be so toxic that efforts to collaborate quickly degenerate, as people do not act in good faith or sabotage collective action.

An agency's culture, policies, procedures, and incentives can make it either easier or more difficult for field staff to collaborate effectively. There are strategies that agency and nongovernmental leaders can use to encourage collaboration. This report offers four strategies for collaboration based on the experiences of the U.S. Department of Agriculture's U.S. Forest Service and the U.S. Department of the Interior's Bureau of Land Management. Both agencies have authorities, called "stewardship contracting," which they used to foster collaboration at the front line in their agencies. Although stewardship contracting is a set of authorities particular to the U.S. Forest Service and BLM, much of the collaboration that these two agencies have undertaken around stewardship contracting did not require any special authority. The two agencies have used stewardship contracting as a vehicle to develop a new direction and support for collaborative approaches to federal land management.

Cassandra Moseley is the Director of the Institute for a Sustainable Environment at the University of Oregon. At the institute, she developed applied research and policy education programs, and focused on community-based forestry, federal forest management, and sustainable rural development.

Key Strategies

Building on lessons from federal forest management and the use of stewardship contracting, this report offers four key strategies for fostering frontline collaboration with citizens and other stakeholders in a community.

Strategy One: Create time and space for collaboration to develop and mature. Robust collaboration requires significant investment in time, money, and social capital. Collaboration is an evolutionary process. Initial steps may involve months or even years of talking, and only result in small concrete accomplishments at the beginning. Over time, as collaboratives build trust and facility in working together, accomplishments grow. However, efforts to rush collaboration early on can risk failure.

Strategy Two: Change the rules to encourage collaboration. This can be done in several ways:

- **Prioritize funding for actions that have been collaboratively developed.** When field managers reach broad agreement for action with partners, agency executives should fund it, if at all possible. Building agreement only to have agency leadership unwilling to implement it demoralizes staff and partners, and lowers trust.
- **Expand local discretion so that field staff have the authority to stand by the agreements they reach.** It can be difficult for senior executives to feel comfortable devolving authorities because they may be doing so at a moment of change and uncertainty. In addition, field staff collaborating with external partners may develop solutions that are locally appropriate but different from what the senior executives might have envisioned. Nevertheless, local decision space is critical if field personnel and, especially, partners, are going to be willing to invest time and resources in collaboration.
- **Update existing procedures to support collaborative processes.** These procedures might include requiring early engagement in planning processes and revising grants, agreements systems, and paperwork to create more efficiencies in developing memoranda of understanding and obligating funds for agreements. It also may include clarifying directives about conflicts of interest. Engaging with field-level stakeholders in modifying authorities can help to ensure that procedures work for partners, not just for the agencies. Iterative learning and procedural changes can take advantage of and support innovations from the front line.

Strategy Three: Provide incentives to staff to collaborate—or consequences if they don't. This can be done in two ways:

- **Provide formal guidance that requires that the field units collaborate but which does not prescribe exactly how collaboration is to occur.** Requiring collaboration can be challenging, because one cannot define exactly what the collaboration will look like. On the other

Use of Stewardship Agreement by the BLM High Desert District, Wyoming

Time Frame: 2007 to present

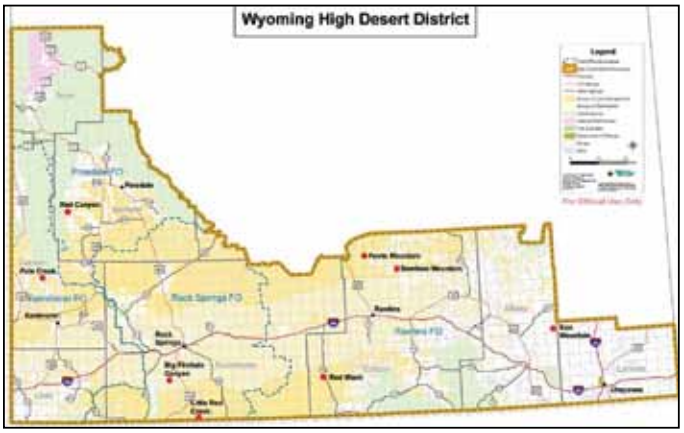
Key Actors:

- Wyoming Bureau of Land Management
- Rocky Mountain Elk Foundation (RMEF)
- Wyoming Department of Fish and Game
- Private landowners

Background: The RMEF, as with several other hunting and fishing nonprofit organizations, has long provided funding to federal land management agencies to manage for fish and wildlife habitat. Stewardship contracting authorities have allowed them to enter into longer term, more complex agreements to conduct restoration work on the ground. For example, the RMEF has entered into several 10-year stewardship agreements with the BLM and the U.S. Forest Service nationally. Among the earliest of these agreements was one for an 85,000-acre project on the Seeley Lake District of the Lolo National Forest in Montana to restore elk habitat along a key migration route.

Stewardship Contracts and Agreements: In 2007, the RMEF signed a stewardship agreement with the Wyoming state office of the BLM involving a project area of 174,000 acres of BLM land along with 57,300 acres of private lands and 12,000 acres of state lands. The overarching purpose of the Wyoming Front Aspen Restoration Project is to restore aspen stands across landownerships by removing conifer trees that have encroached upon the aspen due to wildfire exclusion and which are inhibiting aspen regeneration.

Lessons Learned: In some cases, such as this aspen project, stewardship contracting has served to strengthen and expand existing partnerships between the agencies and nongovernmental organizations. Here, stewardship contracting is not so much about trading goods for services or other contracting authorities, but rather about allowing the agency to use a cooperative agreement rather than a contract for land management activities, bringing nonfederal financial resources to the task of federal land restoration, allowing for a long-term arrangement, and permitting the removal and sale of material that needs to be taken from the restoration site for ecological reasons.



Aspen tree grove stands in front of pines, Bridger-Teton National Forest, Jackson Hole, Wyoming (part of the BLM High Desert District).

This stewardship agreement has been one of only two projects to use stewardship contracting authorities on BLM lands in Wyoming. Although the Wyoming state BLM office has a stewardship coordinator and some field staff interested in pursuing stewardship contrast, it lacks the procurement staff with the training to put together stewardship contracts and agreements. This means that program personnel have been reliant on other offices in other states to create their stewardship contracts and agreements. For example, the Oregon state BLM office put together the RMEF agreement. These other state offices, with their own workloads, naturally put requests from the Wyoming BLM office low on the priority list.

hand, providing no guidance creates a sense of insecurity and allows people who do not want to collaborate to avoid doing so. One approach is to provide something specific around which to collaborate—such as stewardship contracting—rather than simply telling staff to collaborate in general or prescribing exactly how to collaborate.

- **Align organizational and personal performance measures so that they support collaboration, or at least do not run counter to collaboration.** Performance measures that emphasize high production but neglect quality will likely create disincentives to collaborate.

Strategy Four: Invest in building the capacity of both governmental and nongovernmental partners involved in a collaborative effort. Understand where in the organizations these investments need to be made. Such investments can take several forms:

- **Create a cadre of well-trained procurement and agreements personnel who can support programmatic goals with timely, high-quality, innovative contracts and agreements.** Agencies often are called upon to engage in more complex formal arrangements—contracts and agreements—with their partners. Slow, cumbersome contracting and agreements processes can frustrate and drive away partners; poor processes cost the agency and its partners time and money.
- **Attend to the organizational and financial health of your partner organizations by providing funding for community capacity building.** This is particularly important when there is a significant interdependence between the partners and the agency and the agency is working with historically underserved or disenfranchised populations. Community organizations and collaborations may require government funding to convene and facilitate collaborative groups, and to build organizational capacity to participate effectively—especially in places where there are few nonfederal resources, such as in rural, historically underserved, and impoverished communities. In addition, businesses will be unwilling to invest in new skills and innovations when they do not trust that the agency will provide a sustainable supply of opportunities.
- **Develop and conduct training that engages agency personnel and nongovernmental partners in the same training sessions.** Joint training can help create a shared understanding of the opportunities and limits of particular opportunities and authorities. Peer-to-peer learning also can help to transfer lessons from early adaptors to other agency staff. ◘

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by Cassandra Moseley

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The Promise of Collaborative Voluntary Partnerships: Lessons from the Federal Aviation Administration

By Russell W. Mills

This article is adapted from Russell W. Mills, "The Promise of Collaborative Voluntary Partnerships: Lessons from the Federal Aviation Administration" (Washington, DC: IBM Center for The Business of Government, 2010).

Government managers in regulatory agencies seek to design regulatory programs that ensure industry compliance while fostering collaboration and trust between government and industry. Voluntary regulatory partnership programs (VRPPs) are one method used by government managers to ensure industry compliance while encouraging the flow of information between industry and government without fear of retribution. Much of the discussion over these partnership programs has focused on the traditional government role as regulator and whether that regulation should be solely a government function. Some argue that VRPPs represent industry's capture of regulatory agencies, while others claim that these programs represent a third way of ensuring industry compliance with regulation.

While the promise of collaborative regulatory partnerships has made them popular in governments at all levels, little attention has been paid to the characteristics of successful collaborative VRPPs. What are effective management practices that lead to successful collaborative voluntary partnerships, and what are some of the limitations of these partnership programs?

Since 1975, the Federal Aviation Administration (FAA) has operated voluntary safety reporting programs (VSRPs) that offer a regulatory incentive for operators to report potential safety hazards and violations within their organizations.

- **The Aviation Safety Reporting System (ASRS, started in 1975)** is a confidential voluntary reporting system operated by the National Aeronautics and Space Administration (NASA) that receives, processes, and analyzes incident reports from users of the national airspace—pilots, air traffic controllers, dispatchers, flight attendants, maintenance technicians, and others—that describe unsafe occurrences and hazardous situations. In exchange for their submissions, airspace users who meet qualifying criteria are ensured confidentiality in their reports and a waiver of penalty under Section 91.25 of the Federal Aviation Regulations (AC 00-46D).
- **The Voluntary Disclosure Reporting Program (VDRP, started in 1990)** is a program that offers air carriers reduced regulatory enforcement action if they voluntarily report systemic problems within their operation, and work collaboratively with their local FAA Certificate Holding District Office on designing a comprehensive fix to the problem.
- **The Aviation Safety Action Program (ASAP, started in 1997)** is a VSRP that allows employees of air carriers and other certificate-holding organizations to report safety-related events without the FAA or the carrier taking punitive action against the employee based on the information in the report. Unlike other voluntary programs, ASAP involves a partnership between three entities—the FAA, the air carrier, and the employee union—that is codified through a formal memorandum of understanding (MOU).

Russell W. Mills is a Ph.D. candidate in the Department of Political Science at Kent State University. His dissertation, "Collaborating with Industry to Ensure Regulatory Oversight: The Use of Voluntary Safety Programs by the Federal Aviation Administration," focuses on the structure, implementation, and oversight of the FAA's voluntary safety reporting programs.

In many regulatory agencies, VRPPs represent a paradigm shift from a culture of enforcement to one of partnership and collaboration. To assist government managers, this report outlines lessons learned from the FAA's experience with three voluntary safety-reporting programs. The lessons are broken down into three categories: administrative, regulatory, and data analysis.

Administrative Lessons

- **Lesson One:** Regulatory agencies should have a dedicated organizational entity focused on voluntary programs. This entity should have sufficient autonomy to develop program policy guidance, to conduct routine audits and evaluations of voluntary programs that ensure consistency and standardization, and to conduct analysis of data captured from these programs.
- **Lesson Two:** Regulatory agencies must dedicate adequate personnel to the implementation of VRPPs at the local level.
- **Lesson Three:** Regulatory agencies and companies should use collaborative processes to develop and implement meaningful corrective actions that remedy safety hazards. This will both advance the agency's safety mission and limit the perception that voluntary programs are "amnesty" or "get out of jail free" programs.
- **Lesson Four:** Regulatory agencies should use a variety of collaborative tools, such as third-party agreements, to foster trust and effectively implement voluntary regulatory partnership programs (VRPPs).

Regulatory Lessons

- **Lesson Five:** Voluntary programs should be truly voluntary and not forced upon companies and/or employee groups.
- **Lesson Six:** Voluntary programs should be nonpunitive, and provide reduced regulatory and company enforcement actions to all stakeholders who participate and share information with regulatory agencies.
- **Lesson Seven:** Confidentiality of voluntarily submitted data is critical to building an effective reporting culture among employees and companies, and it must be clearly defined in program guidance.
- **Lesson Eight:** Regulatory agencies should use voluntary regulatory partnership programs (VRPPs) to complement, not replace, traditional enforcement tools.

Evolution of VRPPs at a Glance

The Aviation Safety Reporting System (ASRS, started in 1975) is a voluntary incident-reporting program operated by NASA that accepts reports documenting potential safety hazards from all users of the national air space including pilots, maintenance personnel, dispatchers, and air traffic control in exchange for immunity and confidentiality.

The Voluntary Disclosure Reporting Program (VDRP, started in 1990) allows air carriers to voluntarily submit disclosures of safety violations within the company's operation found through internal audit processes to the FAA in exchange for reduced enforcement action. The FAA and the carrier work collaboratively to develop a comprehensive solution to the safety hazards identified.

The Aviation Safety Action Program (ASAP, started in 1997) is a partnership between the FAA, an individual air carrier, and an employee union that focuses on reviewing voluntarily submitted incident reports by employees to identify safety hazards within an operation and to develop corrective actions to prevent similar incidents.

Data Analysis/Information Technology Lessons

- **Lesson Nine:** To identify trends in safety hazards, regulatory agencies and companies need effective and robust data analysis capabilities at both the local and national levels.

Table 1: The Regulatory Dilemma

Government Enforcement Style	Firm Response to Enforcement Style	
	Evade	Self-Police
Deterrence (Command-and-Control Tools: Strict standards, inspections, penalties for noncompliance)	**Highest level of conflict** **Highest level of cost** In the face of a command-and-control regulatory environment, firms attempt to hide information and violations from regulators.	**Mid-level of conflict** **High level of cost** Regulators worry that over reliance on self-policing may lead to perception of capture. Agencies increase traditional oversight activities while also participating in voluntary programs.
Collaboration (Less stringent adherence to standards, focus on building trust between regulator and regulated, incentives for regulatory compliance and self-reporting of violations)	**Mid-level of conflict** **Low level of cost** While regulators are willing to act collaboratively, firms report less severe violations in hopes that government will not find severe, more extensive violations. Firms worry that self-reported violations can be used to take punitive action.	**Lowest level of conflict** **Lowest level of cost** In exchange for reduced regulatory penalties firms agree to take proactive approach to safety by self-reporting violations, which lowers regulators cost of enforcement.

Source: Adapted from Scholz 1991; Potoski and Prakash 2004

- **Lesson Ten:** Regulatory agencies should use a uniform reporting platform for all VRPPs to maximize the efficiency and timeliness of analysis and outputs.
- **Lesson Eleven:** Regulatory agencies should develop a national-level database that is used to perform analyses of voluntarily submitted data. This analysis should produce alert materials that inform system users of potential systemic safety hazards.

Recommendations for Implementing Voluntary Programs in Government Organizations

Recommendation One: In order to successfully implement voluntary regulatory partnership programs (VRPPs), agencies must work to transform their enforcement culture to view voluntary and collaboration programs as complementary to its regulatory mission.

A key component of implementing voluntary programs within an agency is to understand that to err is human—and that most errors within an organization are the result of a system, and not the people, committing the error. Traditional regulatory regimes view human error as a violation that needs to be punitively addressed in order to prevent that violation from occurring again. However, if one attempts to correct the individual making the mistake without addressing the potential larger systemic issues behind the error, violations will continue to occur and potentially lead to a larger-scale incident. In voluntary programs, the goal of regulators is to establish an environment in which firms and employees who realize that they have made an error will have an incentive to report it to the regulator instead of attempting to hide the violation.

This is a major departure from the traditional "enforcement" regulatory culture that focuses on changing behavior through punitive means. Even after more than 30 years of operating voluntary programs, the FAA still struggles with convincing its inspector workforce of the usefulness and importance of voluntary programs. Some steps managers can take to change from an enforcement culture to a partnership culture are:

- Develop a central voluntary programs office comprised of personnel with different backgrounds from those of the rest of the agency's workforce (e.g., organizational psychology, human factors, etc.).
- Publicize any and all safety enhancements resulting from voluntary disclosures to illustrate progress.
- Involve as many of the agency's inspectors as possible in the implementation of VRPPs through rotational assignments.

Table 3: Differences Between the FAA's Voluntary Safety Reporting Programs

	Aviation Safety Reporting System (ASRS)	Voluntary Disclosure Reporting Program (VDRP)	Aviation Safety Action Program (ASAP)
Year Created	1975	1990	1997
Impetus for Creation	Developed in response to NTSB investigation into crash of TWA Flight 514 on December 1, 1974	Response to pressure from air carriers over excessive fines	Developed by air carriers, adopted by FAA as result of recommendations from White House Commission on Aviation Safety following crash of ValuJet Flight 592.
Program Guidance	Advisory Circular 00-46D Federal Aviation Regulation 91.25	Advisory Circular 00-58B FAA Order 8900, Vol. 11, Ch. 1	Advisory Circular 120-66B FAA Order 8900, Vol. 11, Ch. 2 MOU
Key Actors	Any actor within the national airspace system	Air carrier and local CHDO principal inspectors	Air carrier, FAA CHDO representative, employee union representative
External FAA Partners	NASA, Booz Allen Hamilton	L3 Communications	MITRE (ASIAS Analysis of ASAP data), Universal Technical Resources Services (Web-Based Application Tool Development)
Regulatory Incentive	Full protection from certificate action by FAA	Reduced regulatory penalty from enforcement action to administrative action	**Sole-source:** Full protection from discipline from FAA and air carrier **Non-sole-source:** Protection from FAA, depending on MOU; limited protection from carrier discipline
Level of Disclosure	Individual	Company	Individual
Confidential Reports (Part 193 of Freedom of Information Act)	No	Yes	Yes
FAA Access to Reports	Unlimited through ASRS database	Online VDRP system, internal FAA database	Access is great at local CHDO level, restricted at FAA HQ level (moderated by ASIAS, MITRE and air carrier)
Included in the Aviation Safety Information Analysis and Sharing Program (ASIAS)	Yes	No	Only if carrier has agreement with MITRE and ASIAS
Holder of Discretion for Accepting Reports	ASRS Staff	CHDO PMIs and POIs	Event Review Committee
Number of Reports 2009	48,000	1,200	45,000
Program Outputs Generated	*CALLBACK* monthly publication, *Alert Bulletins*, queries to ASRS Database	Collaborative corrective fixes developed by CHDO and carrier.	Quarterly safety enhancement reports to FAA, queried reports from ASIAS, biannual INFOSHARE meetings, internal carrier publications

- Make program guidance as clear as possible to avoid confusion over the purpose of VRPPs.

Recommendation Two: Agencies should use a portfolio of voluntary programs coordinated by a dedicated organizational entity focused on the agency's collaborative voluntary partnership activities.

Many critics of voluntary regulatory partnership programs (VRPPs) have cited the recent failures of the Minerals Management Service (MMS) and the Securities and Exchange Commission (SEC) as reasons to abandon these programs and shift resources to enforcement activities. However, a look inside these agencies reveals that neither had a dedicated organizational entity with staff whose task was to develop and coordinate voluntary programs. These agencies were reliant upon one type of VRPP to provide them with information on the activities of the industries they were regulating.

One of the benefits of having a central voluntary organizational entity within an agency is that it can develop and coordinate several programs that address a variety of functions of an industry. The FAA Flight Standards Office (AFS-230) uses a portfolio of voluntary safety reporting programs (VSRPs) to give both employees and firms the opportunity to self-disclose violations.

While there are some areas of overlap between programs, AFS-230 uses each program in a specific way to give the FAA access to more safety data. The ASRS, also used by the general aviation community, gives the FAA access to data from that subgroup. The ASAP is used to gather safety reports from a variety of employee groups such as pilots, dispatchers, air traffic controllers, and maintenance and ramp operators. The VDRP is used to allow companies to self-disclose safety issues they have proactively identified in their operations. Each of these programs is coordinated through AFS-230, which helps both the FAA and industry understand how these programs complement one another.

Conclusion

This report has examined the FAA's voluntary safety reporting programs (VSRPs) and the public management lessons learned from the implementation of voluntary regulatory partnership programs (VRPPs). As industry practices become increasingly complex and government resources for oversight become more constrained, the challenge before public managers is not how to provide more command-and-control oversight, but rather how to effectively design collaborative voluntary programs with industry to ensure a shared responsibility for compliance.

The lessons, presented in this report from the FAA's 30-plus years of experience in operating VRPPs with air carriers, offer public managers a series of effective management techniques to overcome the high-profile failures of VRPPs in both the SEC and MMS. They also offer insight on how to structure incentives and programs that foster a shared responsibility for oversight. ◘

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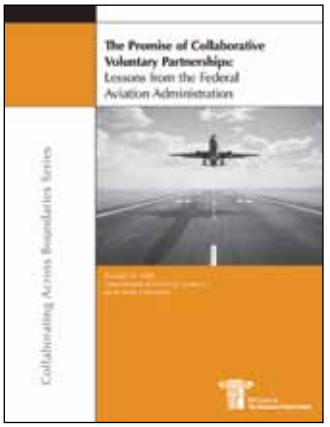

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Recently Published IBM Center Reports

Contracted Versus Internal Assembly for Complex Products: From Deepwater to the Acquisition Directorate in the U.S. Coast Guard

Trevor L. Brown, Matthew Potoski, David M. Van Slyke

This report focuses on providing lessons learned from the transition of Project Deepwater since 2008, as it has transitioned to the U.S. Coast Guard itself serving as the lead system integrator (LSI), rather than a government contractor serving in that role. It offers three recommendations for contract management staff, agency executives, and congressional and executive-level policy makers. A key message from the report is that the federal government will need to enhance its contracting capabilities (including the number of personnel working on acquisition) to manage the "assembly" of complex products.

Cybersecurity Management in the States: The Emerging Role of Chief Information Security Officers

Marilu Goodyear, Holly T. Goerdel, Shannon Portillo, Linda Williams

This report is a significant contribution to the discussion of the roles and responsibilities of chief information security officers (CISOs) in state governments across the United States. It identifies both strategies and activities used by successful state CISOs, and thereby provides a good roadmap to success for all state CISOs. The report emphasizes the need for state cybersecurity officials to devote increased attention to data management as the defined system/network perimeter has dissolved and the future success of cybersecurity relies on the CISOs, chief information officers, data owners, records managers and archivists to jointly focus on data management to achieve effective business processes.

Project Management in Government: An Introduction to Earned Value Management (EVM)

Young Hoon Kwak, Frank T. Anbari

This report describes how NASA applies EVM principles to accomplish agency objectives, strategies, and missions. By using EVM, NASA also complies with relevant federal government regulations that require continuous monitoring and control of projects and programs. Earned Value Management (EVM) is a powerful methodology that gives the executive, program manager, project manager, and other stakeholders the ability to visualize a project's status at various points during the project life cycle and consequently manage projects, programs, and portfolios more effectively. The National Aeronautics and Space Administration (NASA) has been one of the pioneers in the U.S. government in using project management principles, tools, and techniques, and consistently demonstrates the effective application of EVM to the oversight and management of its many projects and programs.

Planning for the Inevitable: The Role of the Federal Supply Chain in Preparing for National Emergencies

Robert Handfield

In this report, Professor Robert Handfield sets forth a framework in which governments can assess their supply chain preparedness prior to an emergency. Over the last decade, the importance of an effective "supply chain" has become widely accepted in the both the public and private sectors. The federal government today clearly recognizes that an effective supply chain can lead to cost savings, and in certain instances, save lives. With the creation of the U.S. Department of Defense (DoD) Logistics Agency, the U.S. military recognized the critical importance of supply chain management to facilitate its multi-missions and support its personnel. In addition to serving as an excellent introduction to supply chain management, Professor Handfield's report increases our understanding of how to assess supply chain preparedness.

Strengthening Control and Integrity: A Checklist for Government Managers

James A. Bailey

The report by Professor Bailey provides valuable information to public officials across the nation, from senior management to staff responsible for overseeing day-to-day operations, in managing financial and ethical risks inherent in most governmental activities. The best practices examples from local governments and financial oversight and integrity checklists contained in the report provide sound guidance to facilitate the strengthening of financial controls and integrity across government.

Strategies for Supporting Frontline Collaboration: Lessons from Stewardship Contracting

Cassandra Moseley

Dr. Cassandra Moseley shows how frontline collaboration happens, via a series of case studies examining the experiences of the Bureau of Land Management and the U.S. Forest Service in implementing stewardship contracts. She found that leaders in these agencies were able to change the behaviors of their hierarchically-driven culture by using four strategies to foster collaboration: (1) creating time and space for collaboration, (2) changing agency rules to encourage collaboration, (3) providing staff incentives to collaborate, and (4) building the capacity to collaborate in both the agency as well as among stakeholders.

Food Safety—Emerging Public-Private Approaches: A Perspective for Local, State, and Federal Government Leaders

Noel P. Greis, Monica L. Nogueira

Using food safety as a case study, the authors discuss new approaches to public-private partnerships. This use of new approaches to public-private partnerships is applicable to all government organizations, not just food safety agencies. This report describes the current responsibilities of key federal agencies now responsible for food safety in America, including the Food and Drug Administration, the Food Safety and Inspection Service, and the Centers for Disease Control. The report also describes legislation now pending before Congress, which would modify the current responsibilities for agencies now involved in food safety.

Realizing the Full Potential of XBRL in Government: Case Studies of XBRL Implementation

Yu-Che Chen

The message of this report is that public executives can now take the series of problems presented by the need for financial-information interoperability and turn them into significant opportunities for increasing efficiency and transparency by using the eXtensible Business Reporting Language (XBRL). Professor Chen examines six major XBRL implementation efforts in five countries and draws a number of important lessons to help executives realize the full potential of XBRL. XBRL, simply stated, is an open-source language that can enable the standardization of vast quantities of financial and business data and make the data easier to collect, organize, compare across legal entities, and use in making more timely and meaningful strategic and tactical decisions.

Realizing Value Driven e-Health Solutions

Nilmini Wickramasinghe, Jonathan L. Schaffer, M.D., M.B.A.

This report is unique, in that it brings together Professor Wickramasinghe, an IT expert, and Dr. Schaffer, a physician who is managing director of the eCleveland Clinic in Cleveland, Ohio. Together, they present a convincing case that the increased use of information and communication technology holds the promise of both improving health care and reducing health costs. The report is a good introduction to the barriers that need to be overcome in order to significantly increase the use of technology in hospitals and other health care organizations. Barriers include technological, organizational, human, and economic factors. The final section of the report presents a framework in which organizations can assess their potential for moving toward e-health and implementing new technologies.

The Promise of Collaborative Voluntary Partnerships: Lessons from the Federal Aviation Administration

Russell W. Mills

Mills argues that collaborative voluntary partnerships should be viewed as a complement to agency regulatory activities rather than as a replacement for the traditional command-and-control approach to regulation. Viewing voluntary activities as complementary to traditional regulatory activities will require a change in an organizational culture which has long considered the command-and-control approach its major regulatory option.

The focus of this report is quite timely given recent events prompting closer scrutiny of the relationship between government and industry. The Deepwater Horizon incident in the Gulf of Mexico has raised serious questions about the viability of real collaboration between the oil industry and its government regulator, the Minerals Management Service (now called the Bureau of Ocean Energy Management, Regulation, and Enforcement).

Moving to the Cloud: An Introduction to Cloud Computing in Government

David C. Wyld

This report begins with a definition of cloud computing. Dr. Wyld explains how the term, "cloud computing" has come to mean many things to many people, but the National Institute of Standards and Technology has developed a commonly accepted working definition. The study then inventories a number of applications where cloud computing has been implemented in government and shows how these have changed people's interactions with government and their expectations of technology. And finally, Dr. Wyld describes the roadblocks impeding the cloud computing revolution that need to be addressed by managers.

Moving Toward Outcome-Oriented Performance Measurement Systems

Kathe Callahan and Kathryn Kloby

The authors describe a shift taking place both within government and through independent community indicator projects devoted to developing broad, outcome-oriented indicators of how well a community is doing. They also describe the challenges public managers face in making sense out of the data they collect to inform their decision-making and also inform the public. This report provides examples of outcome-oriented performance measurement systems in place around the country, describes the authors' findings from these case studies, and offers practical recommendations on how to develop useful outcome-oriented measurement systems that other communities—either sponsored by government or community indicator projects—can act upon.

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