Creating a Dynamic and Agile IT Enterprise: Insights from Dr. David Bray, Chief Information Officer, Federal Communications Commission

By Michael J. Keegan

In 2013 the Federal Communications Commission (FCC) embarked on an ambitious effort to modernize its information technology infrastructure, transforming from an agency with 207 different IT systems to one with a cloud-based common data platform that would play a significant role in creating a more dynamic and agile enterprise.

Dr. David Bray, FCC's Chief Information Officer, orchestrated this transformation. He understood that making this IT vision into a reality would require introducing a myriad of challenges to how the FCC managed its IT systems and services. It would also involve affecting broader cultural change across the agency's 18 different bureaus and offices. Most importantly, Bray recognized that the resources IT spent on maintaining existing systems were unsustainable and unacceptable for an organization that was supposed to be at the forefront of 21st century communications technology. The FCC's IT division was lagging behind.

What has the FCC done to transform its IT infrastructure? How has the FCC Chief Information Officer cultivated a network of change agents? What is the FCC doing to cultivate a culture of risk-taking and experimentation? Dr. Bray, FCC Chief Information Officer, joined me on *The Business of Government Hour* to share his insights on these topics and more. The following is an edited excerpt of our discussion complemented with additional research.

How would you describe your role at the FCC?

Dr. David Bray: I am a digital diplomat and human flak jacket. The FCC had nine CIOs in eight years before I arrived in late 2013. When I arrived there were 207 different IT

systems on premise. The average age was more than 10 years old. We had server rooms that were running Sun Fire E25K servers, which gives you a sense of the size and age of our infrastructure.

I wanted the agency to operate IT as an enterprise across its 18 different bureaus and offices. This was no small feat given that the 1,750 FCC staff had been used to operating from a bureau or office perspective, not necessarily from an enterprise view. The other serious issue was that the FCC made significant IT investments in the late 1990s with little updating since. As a result, our legacy IT infrastructure required more than incremental change; it needed to be transformed. Therefore, I needed to be a digital diplomat getting folks on board with this major change, but I also needed to provide cover to the network of change agents working the edges and making this transformation a reality.

Would you highlight a few of the key challenges you've faced?

Dr. David Bray: This transformation was to be game-changing. While pushing this game-changing vision, I needed to manage the resulting friction. Any time you're going to try and initiate change, you will face resistance. People are used to what they know. It was a real challenge getting folks to see the value of my vision and recognize that the old way was unsustainable. I needed to demonstrate many small, yet successive, wins that could lead to a larger, more significant win.

The revamp of our consumer help desk represents that more significant win. FCC had a 15-year-old consumer help desk with literally 18 different forms. It was incumbent upon the user to figure out the proper form, then mail it or fax it

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to the FCC, and we somehow ingested it. Clearly, there is a better, more customer-friendly and agency-effective way to provide this service. This would involve a process redesign and a technology upgrade. Interestingly, the technology piece of doing this was only 20 percent of the issue. There are many examples for how to do this more effectively. You shouldn't have to guess which form to use. All we need to do is create an environment, similar to TurboTax, where you start answering questions posed by the system, such as who are you or what is your issue? Before you know it you've completed a form without even knowing it.

Since we were changing processes, staff was initially resistant. Fast forward three months. The same people acknowledged the added value of the new system. A vendor priced the project at $3.2 million and it would take 18 months. We did it internally in less than six months for $450,000 total, including contractor time.

My next challenge was getting the FCC IT workforce reengaged while working constructively with our stakeholders. When I came on board, the FCC IT workforce was feeling disempowered and demoralized. This sentiment also extended to the FCC bureau and offices as well as our broader public stakeholders. An example for why this was the case involved the 2010-2011 FCC.gov website, which was unfortunately designed without much stakeholder input. Given this track record, I was very cognizant of frequently engaging internal and external stakeholders. I also needed to help the FCC IT workforce recognize that what they do has real impact and enables the agency to achieve its mission.

The next challenge is communicating that we need to do things at exponentially increasing speed. In 2013, there were 7 billion network devices on the face of the planet. There were 7 billion human beings. Just two years later in 2015, we're up to 14 billion network devices, only about 7.3 billion human beings. By 2020, we're looking at anywhere between 50 and 200 billion network devices. As we modernize IT at the FCC, we also have to think about how we do the business of the FCC in an exponential era as well.

David, you've compared your IT modernization effort to performing open heart surgery on the FCC's IT infrastructure. With that as the backdrop, would you give us a sense of the vision to modernize the IT infrastructure?

Dr. David Bray: When I became CIO, the FCC had 207 different IT systems on premises that averaged 10 years in age. The maintenance of these systems consumed more than

85 percent of the FCC IT budget. The cost to maintain grew each year because as they aged, they became more expensive to maintain. Before I did anything, I spent three months listening and learning as much as I could from the different bureaus and offices. It was obvious to me that we needed to take a transformational leap.

In two years or less, we wanted to have no IT infrastructure on premise. Getting to this state involved a three-phased approach and illustrates my heart surgery metaphor. We're going to do the equivalent of a heart transplant on our servers. Obviously, there's some risk involved with this, but at the same time, in order for the patient to get better, we have no choice. The first phase of our approach was stabilization. Stabilization entailed doing good IT hygiene: getting a good sense of what we have and instilling good IT discipline. Once we stabilized, the next phase was rationalization. Prior to this phase, we rolled out a web-based e-mail system hosted off site. We did it in less than two months, which was a rather accelerated clip, but that was important because if we were going to get ready for rationalization–moving servers off site– then we needed to at least have the e-mail system in place before pulling the plug. We really were doing "open heart surgery" because we literally powered everything off at the FCC that could not be moved to the cloud right away. We put that infrastructure containing 400 terabytes of data on seven different trucks destined for an off-site facility. The rationalization phase and the server lift provided us with a complete inventory of IT materials accumulated over the last 20 years.

After the lift, we focused on the third stage: having everything off site. We now have nothing at the FCC. We've managed to reduce our maintenance spend from 85 percent to less than 50 percent. This is real savings. I also recognized the other benefits of going to a public cloud model: It's faster and more expedient. It's also more resilient because they are going to have hundreds more people focusing on the security and on the care and feeding of those systems that I possibly would have had as a small agency.

You mentioned Operation Server Lift. Would you tell us more about that effort? What were some of the successes, lessons learned, and maybe even nail-biting moments?

Dr. David Bray: It took the success of a single agency to show that such an effort is in fact possible. Now I receive frequent inquiries from other agencies about how we did Operation Server Lift. I underscore the requisite need of building a strong coalition and team. You can get all the technology right, but you are bound to face surprises and

setbacks. How you survive, thrive, and navigate when faced with these hiccups rests with the strength of the team you have built.

The next lesson I learned from Operation Server Lift is plan, plan, plan, and then even though you've planned to the nth degree, expect something will still go wrong. With the server lift, we did have a surprise. Those seven trucks filled with our servers arrived at the off-site facility, but the cabling didn't match the typology that we had at the FCC. This situation could have easily devolved into finger-pointing and blame, but that didn't happen. What happened was both our private sector partners and our government workforce rallied. This team worked for 48 hours straight with no sleep to get it right. I love this story because the key is I didn't have to ask this team to get it right. They did that on their own. That's when you really are humbled as a leader. It was only a two-day delay because we built a strong team.

I also underscore the critical importance of communication when you are doing something on such a massive scale like Operation Server Lift. You need to be open and communicative leading up to it and open and communicative afterwards too. It's better to keep folks in the loop so if an issue does arise everyone knows about it, understands the remedy, and has their expectation set.

How are you fostering a culture of risk-taking and experimentation?

Dr. David Bray: We definitely want people to take risks. We also want these risks to pan out. It is important and sensible for particularly risky actions that you make sure you have back-up plans just in case things don't pan out. I always ask people that work for me to give me three reasons why we should do something, give me three reasons we shouldn't, and mitigation plans if things don't work out.

If something is not working, pivot quickly and make sure you have good communication both laterally and up the chain, so if we need to make an adjustment we can do it really quickly. The other thing that we've done that has been really

successful at the FCC is we do what is called the boardwalk meetings. I put a chart outside my office and ask my staff to tell me from their perspectives our strengths, weaknesses, opportunities, and threats; the SWOT analysis. We've developed these rituals as a viable way to talk about things such as risks and to problem solve together as a team absent fear of retribution.

What are you doing to bring together a network of change agents across the government?

Dr. David Bray: There are many people in public service that are hungry for change. They may lack the autonomy to do so. We have a system of checks and balances. In Federalist Papers #51, James Madison wanted ambition to counter ambition. The challenge is when people complain that government is too slow. Yes, there is a trade-off; either you have checks and balances or dictatorship. That said, I am a huge proponent of fostering a network of change agents. I want to seek a new approach that takes seriously checks and balances, but also looks to empower the edge. Given we are living in an exponential era (i.e., bringing more disruption through technological advancement and innovation), public service must adapt, finding new ways to organize and perform the business of government.

At the FCC and in my previous roles, I give my change agents three things: autonomy, measurable progress, and a compelling mission. If they can embody these three things, then I invest in them and encourage them to do what they can to pursue change and be successful.

What are the characteristics of an effective leader?

Dr. David Bray: For my dissertation, I sought data that would help identify the best leadership styles, particularly in ambiguous or turbulent environments. The data show there are three things you need to embody as a leader. You need to cultivate a diversity of perspectives. In a rapidly changing environment, if you have a monoculture in which everyone is thinking the same thing, you're going to miss things. When I assemble teams, I actually look for skeptics. I like dissenters.

It's okay to professionally disagree. Perhaps Frank Lloyd Wright, a wonderful architect, could have used an engineering perspective when architecting his works. I'm a big celebrator of change agents, who are allowed to disagree, present differing views, and offer alternative solutions. I'm going to have blind spots and I welcome disagreement. I only ask that those who disagree or offer alternative solutions bring data and evidence rather than simply opinion.

A leader needs to empower the edge. In a rapidly changing environment, a traditional top-down leadership approach is not going to cut it. In today's world, waiting for the top of an organization to figure out what's going on may take too long. As a leader, you need to empower your edge as much as possible. You have to give your staff autonomy to adapt and respond to events as they unfold.

Who has influenced your leadership approach?

Dr. David Bray: I would say my parents. My father is a Methodist minister. My mom is a school teacher. The older I get the more I realize I've taken on some of their best qualities and skills. My father was good at capital planning for churches as well as healing fragmented congregations. My mother is the extrovert of the family and the hostess. There was a time early in my dad's career when the bishop was visiting. It was the 1970s, so fake nails were in style. My mom's thumb caught on fire as she was lighting a candle for

the dinner. Most people would blow out their thumb, but not my mom. She turned with her thumb on fire, looking at the bishop, and said, "Want a light?" My dad said he saw his short career pass before his eyes.

I highlight that because if you're not having fun at work and if you can't laugh at what you're doing, something is wrong. Yes, we have serious things to accomplish, but we need to smile. One of the things I do like to ask my team as a leader is what brings them joy. That's helpful for them because it puts them in a reflective state, but it also helps me figure out what they are passionate about. ◻

To learn more about the IT modernization at the Federal Communications Commission, go to www.fcc.gov/about/guest-author/dr-david-bray.

To hear *The Business of Government Hour* interview with Dr. David Bray, 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* interview with Dr. David Bray, visit the Center's website at www.businessofgovernment.org.