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The IT Modernization Podcast Series

A Three-Part Podcast Series hosted by Guidehouse Addressing Top-of-Mind Issues in IT Modernization

Podcast Episode - IT Modernization: State of the Union

INTRO: Welcome to "Modernizing IT, the podcast where IT experts and visionaries from federal government agencies and the private sector share behind the scenes insights into the innovative world of IT modernization.

ANIL: Hi, I'm Anil Krishnananda, a director in the Advanced Solutions group at Guidehouse. Today's topic is all about taking the temperature of the State of the Union of IT Modernization. Who better to tackle this than our guest, Mark Kneidinger, a 40-year plus veteran in IT and cyber at the federal agency and private sector level. Before retiring in 2020 to set up his own IT consultancy, Mark was a former CIO at five federal agencies, including a senior executive in IT at the Department of State, Department of Homeland Security, and Department of Energy. He's also a former C-suite executive with Fortune 100 IT consulting firms in the DC area. Given Mark's track record in IT and cyber, we have some great insights to share.

To get us started, let's cast our minds back to the State of the Union of IT Modernization before the COVID-19 pandemic began. Mark, given your wealth of experience working as a CIO at the federal agency and private sector level, what were the main drivers and characteristics of IT modernization in the decade leading up to the COVID-19 pandemic?

MARK: Well, Anil, thank you for that question. Yeah, 10 years ago, IT modernization was quite different. IT modernization, in essence, was really where the CIO and the agencies were looking at expansion of their current infrastructure, primarily, to be able to support the increasing number of applications that the mission or component agencies were developing.

The role of the CIO also was somewhat different than it is today. 10 years ago, and actually up to only a few years ago, the focus has been in regards to operations, O&M, and basically focusing on their enterprise capabilities, like financial systems and HR systems. Much of the applications that the CIO had responsibility for but not at necessarily authority to were all being developed separately within the various components and mission areas. So IT modernization was basically an expansion of infrastructure to support the diverse sets of applications that the mission areas were developing.

Cybersecurity at that time was sort of a second thought perspective. Rarely was cybersecurity actually integrated within the development work of those applications. And then one of the other areas, especially when we think about how IT modernization has been defined a little bit before the pandemic and then continuing after the pandemic.

HVAs or high value assets were also a critical element of what we now call IT modernization. At that time, those assets, those critical agency assets were really being treated as all the other applications. There wasn't a lot of thinking in regards to how those assets are so different.

During the past two administrations, there were executive orders that basically started emphasizing the need for IT modernization. And within those executive orders, IT modernization from a definitional perspective became more clear in regards to where the CIOs and the agencies needed to focus their attention.

Specifically, there were four areas incorporated within those executive orders. The first was looking at consolidation of infrastructure and primarily to reduce the cyber threat fabric. Second was the increased use of cloud capabilities and migration to the cloud. Third dealt with securing those high value assets those agencies had. And then fourth was increasing access to the government data by the constituency.

Now those EOs, those executive orders from the past two administrations, unfortunately, even though there was clarity in regards to definition, there was very little additional funding that really came in support of that. So many agencies, CIOs found themselves in a situation, were given the executive order, they needed to show some progress. So basically, looking at what they could do without total disruption to their current budgets and look at where redistribution of funds could occur to begin the process, either for planning for IT modernization or, in essence, start down that road with inappropriate roadmap as to where they were heading in regards to IT modernization.

ANIL: You're bringing up a couple of good points. One is related to budgets, the other one related to not having clarity on some of the areas, like use of cloud, and also the improvements that agencies are expected to see, and the how it's done without adequate roadmap, and things like that. So with the kind of IT budgets in the agencies, either flatlining or reducing, and also, there was a need for agencies to maintain the outdated legacy systems as long as possible because funds were not there to migrate them to newer technologies. In those years, how you were able to achieve IT modernization that delivered real efficiencies and operational improvements, and improved functionalities to business or mission partners?

MARK: You raised some good points regards to all those other elements. In other words, IT modernization was focused in regards to those four categories I mentioned, operation, the legacy systems needed to be maintained, as well as looking at new technologies that could be applied in supportive of those various applications and things of that nature, all that needed to be balanced out with current budgets.

So basically, from a success perspective, one of the first things is an understanding that IT modernization isn't a one-time thing, it's a continuum. IT modernization, at least from the EO, has a very specific things that they wanted agencies to focus on, initiate, to move forward to. Basically, the EOs were pushing that because of an understanding as to the maturity level that many agencies were at, where basically they were primary legacy, and O&M-focused, and things of that type. And were not prepared for increased scalability, increased capacity, for migrating their applications to clouds, or leveraging cloud capabilities.

You really need to take a look at, overall, where the agency needs to be at to be able to support its missions. Having an understanding a very clear vision in regards to the priorities that need to be addressed within IT modernization. Inclusive of those things that were expected from the executive orders, but also in regards to how to influence or have a more positive impact regards to the capabilities that the mission is focused on or the agency is focused on.

Long-term funding is also another element. Many agencies, CIOs, had to take basically the funding and redirect funding from their current operational budgets, which delayed other things that, in essence, could actually help support the migration towards IT modernization. So basically, when long-term funding is considered and funding inclusive of not only the CIO's office but also the very dispersed IT organizations within the components, comprehensive set of capabilities and funding opportunities, that has certainly seemed to add success to an agency moving towards an IT modernization.

But for that integration or that collaboration to occur, there also needs to be clarity, especially the CIO needs to be able to provide forward the impact that that investment will have with regards to the components and mission areas. They need to be seen as an equal with a leadership, not just as a service provider. Basically, I would put the categories into understanding IT modernizations down to a one-time thing. Two, that you are effectively looking at funding from a long-term perspective. Three, that there is clarification as to the direction IT modernization's going in relationship to supporting the agency. And forth, in regards to that level of collaboration between the CIO's office or the CIO and the other leadership. Success of IT modernization is the joint responsibility of that leadership.

ANIL: Seems like during those years, the emphasis was on the mission programs, the applications, and platforms related to those things, and high value assets, turning those legacy assets into newer technology assets. But I think when pandemic hits, the priorities seem to change drastically.

That leads me to our second topic of our discussion today. The impact of pandemic and IT modernization. During the first wave of pandemic, Mark, you let digital transformation at the US Department of Energy for the CIO's office. Was a pandemic and opportunity to accelerate your modernization plans, change course, or implement technologies that previously wouldn't have got on the green light?

MARK: In regards to the Department of Energy, when I was there, we were actually a little bit ahead of the curve because about a year or two years before the pandemic, there was actually a very comprehensive IT modernization program already in place. So from an infrastructure perspective, the agency had the foundation in place to be able to effectively meet not only a lot of the expectations for the IT modernization, but the expectations for the pandemic. In other words, be able to scale up to provide remote access. And we did this across the entire agency and all of its components and capabilities. We were fully operational. There was no loss of capability or progress that was being made from the mission side.

Given the success that the Department of Energy had in being fully operational along that line, it also allowed the agency to take a look at how it could better leverage other additional tools, such as 5G and AI, more effectively, where many agencies were still having difficulty establishing that foundation to be able to meet the increased demands and not be able to take a look at those further advanced tools. So from that agency perspective, we were in very good shape at the beginning. The pandemic funding and such helped expedite it. But again, that was an example of one agency's maturities were all over across the board in regards to how they were effectively be able to leverage the pandemic fund in and for those purposes, and to be able to leverage that to assist in expansion of their IT modernization efforts.

ANIL: Glad to hear that quality of preparedness. And you also mentioned, the pandemic really accelerated the digital transformation. What are some of the helpful IT monetization trends that have emerged from the pandemic?

MARK: Yeah, I think that from a trends perspective, increasing those collaboration tools' capabilities, which, in essence, in themselves, provided the type of operational access and communication needed during the pandemic, but it also, at the same time, brought forward some cultural changes some disruption in regards to the way that management managed their staff and things of that nature. But certainly, from a trend, increased collaboration tools, infrastructure robustness in regards to having the infrastructure in place that really could be able to scale quickly. An example I gave in regards to department of Energy, that infrastructure was in place, so that scalability to be able to provide those type of remote services across the nation worked quite effectively.

Increased sophistication of leveraging knowledge management because it's not only regards to be able to talk to each other remotely, but to be able to effectively access data stores that are critical for ongoing decision making when staff is in remote access. Increase awareness of cyber vulnerabilities. Leveraging those collaboration tools also increase the threat fabric for cybersecurity vulnerabilities.

Increase collegial partnerships not only across or within the agency, but partnerships across the agencies where were some best practices that could be leveraged between agencies.

And also, from a trending perspective, looking beyond the borders of the agency, realizing the interrelationships between other agencies and also commercial partners.

And then finally, a general transition of office space, and that's really the physical space. So that transition a physical office space that has implications for your technology planning and infrastructure as well.

So those are the type of trends that I saw, Anil, as a result of the pandemic.

ANIL: I think the use of those tools and the platforms will be continuous because I don't think anybody will be moving to five days a week anytime soon. So I think that those investments will pay off over the years.

MARK: The pandemic, itself, forced a rethinking of the remote workforce. With the staff being remote, there was a significant learning curve there. How often do you meet with them? What are the expectations from performance? So there was a major cultural perspective regards to challenges as a result of the pandemic itself. But also with that what we found is that there's also a significant need in regards from an IT modernization perspective. If you're gonna be supporting that remote workforce, you also need to think about how you support everything, from printing, to the secure systems, and things of that nature. There is that increased cyber threat that needs to be considered. When you're home, you react differently to how you manage your system versus when you're in the office. So those were some of the challenges that I observed as a result of the pandemic that, in essence, influenced the capability of moving forward with the general or overall IT modernization efforts.

ANIL: Mark, the IT modernization programs you have seen within federal agencies, could you talk about few tenants of modernization success in those agencies?

MARK: Where there was strong collaboration between the CIO and the mission area executives, that really assisted the success regards to IT modernization because it was more of a collaborative type of environment that collectively there was a common vision in regards to how IT modernization was gonna be to support those mission areas, as well as a common understanding of the level of disruption that was going to occur, and understanding how that was gonna be mitigated. Reduction of redundancy to lessen cyber threat fabric.

Going back to the earlier conversation about what it was like 10 years ago, well, the infrastructure was being expanded, but there were also multiple infrastructures being supported. And that, in itself, increased the cyber vulnerability. So basically, in looking at the IT modernization success and areas of success is actually being to demonstrate reduction of redundancy and consolidation of those infrastructure areas, understand the risk tolerance of the agency for change, and the level of disruption that will occur in IT modernization.

There are situations where the extended or expanded leverage of securing various applications may be overwhelming for the mission to be successful. So you need to understand what is the tolerance, the risk tolerance, that the agency's willing to take. And well-architected infrastructure that supports the scalability as we're taking a look at leveraging remote employees, as well as accessing those knowledge management capabilities.

There are gonna be changes that are going to occur, and you need to be able to move on that in an expeditious way. A long-term plan for continued IT improvement. Again, IT improvement is not a one-time thing. When you are doing IT modernization, you are balancing the O&M activities in support of the legacy system. So the funding and the planning needs to understand, that needs to occur in parallel. And I think, in general, going back to the intent of the EOs, because the driver for those areas of IT modernization that was emphasized was specifically because of areas that agencies were very weakened. So looking at infrastructure consolidation, looking at, in essence, increased migration to the cloud and leveraging cloud capabilities, protecting HVAs, and as to how the overall data stores that the mission is responsible for, how that can be better accessed by the constituents.

And then finally, and this was more or less driven by the pandemic itself, is understanding that scalability and being able to work with a remote workforce, the capabilities and the tools that were available at the time of the pandemic when the pandemic began were sufficient, but they're not adequate. In other words, looking at how AI can be applied, how 5G can be applied, how from a cyber perspective, zero trust can be applied. So those are some of the areas that, from an observation perspective, agencies were successful when they took those things into consideration and took them seriously in regards to part of their strategy and plans.

ANIL: I'm switching to kind of flip side of the things there, meaning I would like to learn from you what were some of the risks or barriers to successful IT modernization and how can CIOs and IT leader overcome these barriers?

MARK: From an IT modernization perspective, again, it's not a one-time thing, and basically, the funding needs to reflect that. In other words, not having short-lived investments. This is a continuum that needs to be considered, but a continuum that will demonstrate effective improvements or impacts on the agency's mission. Short-lived investments are certainly something that is of significant risk, especially in, say with the pandemic funding, will the agency look at its level of investment to continue supportive IT modernization, as opposed to, okay, here was a one-time blip of funding, it helped expedite things, but it had not completed the full roadmap.

So looking at this from a longer-term perspective. Not paying attention to the increased cyber risks because of the quickly expediting support for remote workforce, that's another huge risk. Not understanding and preparing for the impact of the change and the disruption that occurs as a result of IT modernization and needing a plan for that.

Another risk is with the additional funding that had come, that was quickly and the need to be able to expedite the change in regards to infrastructure and capabilities for the remote workforce. Decisions sometimes are made too quickly without realizing the impact or the long-term impact, both physically, as well as long-term impact in regards to commitments. So one example there is quick migration to the cloud. How comprehensive are those agreements so that the agency is aware as to their ability and authorities to be able to manage that effort?

The other area is basically taking a look at the longer-term implications. So, as you're making change and as you're taking a look at the funding for that, how can scalability be constant? And looking at those, again, advanced technologies now, like AI, and 5G, and things of that nature, that can provide a much more effective means by which to support the increasing demands that we're gonna have as a result of the remote workforce, because many experts are saying, coming back in the office and you said this, Anil, five days a week, that's probably not gonna happen. So there's gonna be increase of demands on that infrastructure and the technology that needs to be addressed to be able to support that, like AI and 5G, is on the cusp in regards to being leveraged by agencies in many cases.

ANIL: So, Mark, what's the future of IT modernization? What the IT modernization in the future looks like? Because IT modernization is a broad topic, it can mean different things to different agencies and organizations. So in that context, what's the future for IT? And why Mark is optimistic for the future?

MARK: Yeah, well I'll take my crystal ball out for you, Anil. 'Cause I've been involved with it for 40 some years, I would say that some of the things that I look forward to is basically an infrastructure that definitely is gonna be more scalable to support the remote access and also for cloud environments, and not only regards of scalability, but also security. So as we're taking a look at scalability in regards to expanding the type of linkages or interrelationships that the remote workforce has with the agency, understanding that there will be that need for access restrictions, like through zero trust and things of that nature.

Too often, in many agencies, knowledge management is more of a silo effect. Everybody wants to protect their own information as opposed to taking a look at how that information collectively can be best used and support the mission. So I think knowledge management is gonna significantly improve. It's gonna have to do that to effectively provide that remote workforce, the data stores necessary to make effective decisions and to keep the mission moving forward.

5G and AI definitely are gonna be, I think, critical players in regards to the ongoing remote environment. Increase the emphasis on IoT, AI, and 5G are good examples, but in essence, and also recently within the cyber EO, IoT is a strong emphasis. We need to understand that as we're taking a look at IT modernization from an infrastructure perspective, what are those interrelationships of networks that we also need to have an effective plan to address for modernization? Be it industrial controls, which most of the agencies, large agencies, have responsibilities for. But for oftentimes, that has not fallen within the purview of the CIO to take a look at how that needs to be better secured. And we're seeing, obviously, some recent threats to that from the colonial pipeline and other things of that type.

Realization that successful technology and securing the information environment is owned by all the leadership within the agency, not just the CIO.

Also, I think the final thing is increase government and commercial collaboration. As the complexity of infrastructure, as the complexity of the scalability for meeting the needs of the agency and the remote workforce, as a complexity of cybersecurity vulnerabilities occur, the government needs to work very closely with commercial entities and research entities. Take a look at where the future is going so that basically, the investments that are being made are effectively going to be applied longer-term IT modernization because since IT modernization is a continuum, and especially in regards to the complexity of mobile demand.

So definitely, an increase in regards to government and commercial collaboration. So those are some of the predictions from a crystal ball effect. We just have to see if it's going to occur.

I am definitely optimistic in regards to where we're going from IT modernization perspective, regards to the capabilities and solutions that are starting to burgeon, regards to their capabilities. It's an exciting time. I'm excited to see where the future takes us.

ANIL: So with those insights, Mark, special thank you to you.

MARK: Well, thank you, Anil. I really appreciate the chance to speak on IT modernization, how it sort of evolved, where I see the successes are, and the exciting opportunity is where it's going.