

Overcoming Barriers to Mainframe Modernization



Introduction

Mainframes are often the secret behind successful agencies. Whether it is processing data or other critical functions, these powerful computers fuel many public services that citizens interact with daily.

But groundbreaking applications and architectures are the new normal. While mainframes still provide unsurpassed performance and rock-solid critical applications, mainframes need to coexist with the contemporary world.

Modernizing mainframes, however, requires more than a fresh coat of paint. **To truly refresh their mainframes, agencies must also upgrade how their people, processes and technology handle data.**

Data arguably ranks among the future's most valuable resources, as it can express information ranging from finances to statistics. And agencies hoping to capitalize on their data can't afford to leave it trapped on mainframes.

During GovLoop's recent Briefing Center, government and industry experts shared best practices for modernizing and optimizing mainframes. The event was sponsored by Software AG Government Solutions, an IT software provider. Briefing Centers cover topics that are relevant to agencies through different online trainings conducted in two-hour collections.

Our mainframe-focused Briefing Center covered case studies ranging from the Internal Revenue Service (IRS) to state agencies in Connecticut and Delaware. Using lessons learned from GovLoop's thought leaders, agencies can make mainframes central to their modernization efforts. More importantly, these agencies can ultimately adopt world-class IT processes and data-driven decision-making for mission wins.

Read on to find out how some of your peers are thriving with modern mainframes.

**Watch the recorded
keynotes**

**Watch the recorded
lightning and Q&A sessions**

Speakers

Terry Milholland, former Chief Information Officer (CIO) and Chief Technology Officer (CTO), IRS

Chris Borneman, CTO, Software AG Government Solutions

Betsy Bachmurski, Application Support Project Leader, Administrative Office of the Courts (AOC), Judicial Information Center (JIC), Delaware Courts

Richard Ladendecker, President of Konigi, Inc.

Harpal Gill, Vice President (VP) of CONNX Group

David Taylor, VP, Software AG Government Solutions and former CIO, Florida

Are People at the Heart of Your Modernization Efforts?

Behind every government mainframe is an untold story.

Rarely do we hear about the employees who write code, build systems and find ways to keep the government's critical bulk transactions running. These stories rarely get attention unless something goes horribly wrong.

But dissecting these stories can unlock truths about the past that help us understand the present. They can also help us focus on the real issues at hand: data, how it is accessed and the ways it affects people.

Terry Milholland, the first-ever Chief Technology Officer (CTO) and Chief Information Officer (CIO) at the Internal Revenue Service (IRS), knows this firsthand. He described the multi-pronged approach the IRS took to free up the data buried in its legacy systems.

"It's the kind of message that all of you can take to heart, as you all undoubtedly have legacy systems where data is trapped," Milholland said.

Accessing data starts with developing a data model that is the sole authority for that information, Milholland said. Ultimately, the IRS needed one source of true tax information.

"But the real issue underneath all this is people," he said. "The people who maintained legacy systems have a vested interest. They build their careers around it, and they were dedicated to the mission."

The IRS started by having people who were closely tied to its legacy systems help design the agency's data model. Their work aimed to support taxpayers nationwide, a mission larger than any one person.

The focus was imitating well-managed private sector organizations despite the funding and political challenges that come with being a government agency.

"It enabled people to say, 'I am not just working on ancient stuff, I am helping the IRS free up data,'" Milholland said.

Next, the IRS trained employees and standardized its data model and programming language. While it worked to replace legacy systems, the agency began using application programming interfaces (APIs) to connect and retrieve data across more than 700 IRS systems. APIs are software that dictate how systems interact with one another. As the number of APIs crept up, the IRS also created standards around them, ultimately requiring staff to use webMethods, Software AG's integration platform.

Chris Borneman, CTO at Software AG Government Solutions, also shared insights about mainframe modernization.

Borneman explained how Software AG Government Solutions' technical offerings have helped agencies such as the IRS liberate data, address legislative demands and improve services. He also offered this advice for agencies seeking to replicate the IRS's modernization efforts:

- Understand the definition of success and what you're trying to accomplish.
- Show value by starting with small use cases that address your biggest pain points.
- Share successes and always keep scalability in mind.
- Approach any work with the right architecture blueprint.

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Terry Milholland

Former CIO and CTO, IRS

Why Data Drives Mainframe Modernization

Mainframes are arguably the heart of government technology. At every level, agencies use them for such vital activities as data processing and resource planning. No matter the activity, mainframes keep agencies serving citizens effectively.

But what happens when mainframes approach retirement age? For agencies, the answer is more strain on their people, processes and technology.

Fortunately, data can help agencies' mainframes enter the future. Using data, agencies can implement world-class IT processes and smarter decision-making.

But before agencies can revitalize their mainframes, they need their workforces to understand the modernization process.

"If you don't have stakeholder support throughout the life of the modernization project, you're going to have a lot of pain," said David Taylor, Vice President at Software AG Government Solutions, and Florida's former CIO. "It is really important to have people understand the value proposition by telling stories that are relevant to them."

Here are three other takeaways about mainframe modernization agencies should consider:

Live With Legacy Technology

Too often, modernizing legacy mainframes is presented as the end of an era. Delaware's Courts, however, offer proof that agencies can balance legacy and modern technology with their data.

"We can absolutely turn our legacy systems into these shiny new toys everyone wants to see on their monitors," said Betsy Bachmurski, Application Support Project Leader at the Administrative Office of the Courts (AOC), Judicial Information Center (JIC), Delaware Courts.

By understanding their data, agencies such as Bachmurski's can use it to run modern applications without removing any information from their legacy mainframes.

Map Data's Direction

Data migration can drastically impede agencies' mainframe modernizations. Subsequently, mapping where their data flows can help agencies reach their desired destination.

"The applications are going to end up being the driver for your data," said Richard Ladendecker, President of Konigi, Inc. "Data is useless without getting the rules for how to format and use it." Konigi, Inc. provides data automation and migration tools.

Ladendecker said agencies should determine how their applications will use data for the best results. This analysis will help agencies decide how much of their data should migrate from legacy to modern IT, Ladendecker said.

"It will either be an as is, one-to-one migration, a hybrid migration with some customization or a complete transformation," he said.

See the Whole Picture

Most agencies collect so much data that seeing their entire collections can seem impossible. But data visualization can present all an agency's data in one place for easy comprehension.

"In today's world, we're seeing an unrelenting demand for data," said Harpal Gill, Vice President of CONNX Group, which provides data access solutions. "The concept of visualization is multiple data sources in a single view."

Ultimately, mainframe modernization doesn't need to be a choice between legacy and modern technology. By recognizing where their data goes, there are no heights agencies' mainframes can't reach.

The Future of Mainframe Modernization

Government Mainframes, Now and Ahead

During GovLoop's Briefing Center, we surveyed our audience about their agency's mainframe modernization efforts.

First, we found about 62% of participants consider mainframes a "central component" of their agency's operations.

Next, we discovered approximately 41% believe their agencies will increase their mainframe usage going forward.

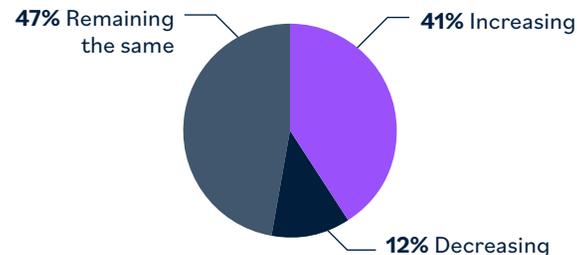
Finally, roughly 46% reported their agency has mainframe integration projects coming immediately.

Collectively, these results suggest most respondents believe that mainframes are crucial for their agencies now and in the coming years. Furthermore, our findings reveal about 62% say their agencies will begin mainframe integration projects in a year or less. With nearly 31% stating their agencies would launch similar initiatives in 18 months or more, our data proposes most governments feel pressure to integrate their mainframes sooner.

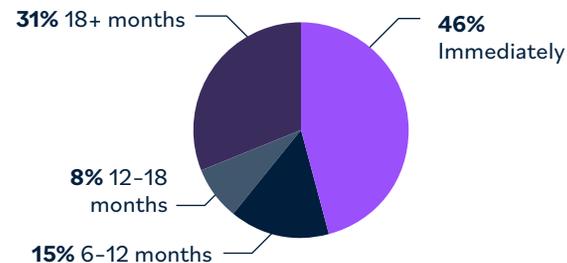
Is the mainframe a central component to running your agency?



Do you see the use of your mainframe...



Does your agency have any mainframe projects coming up?



Reflecting upon these details, what steps must your agency take to modernize its mainframe?

Below, some government and private sector thought leaders shed light on what this process might look like:

"They always say you can't teach old dogs new tricks; well, these old dogs are learning new tricks, and I think it is time to learn and to teach the younger dogs some of our old tricks."

Betsy Bachmurski, Application Support Project Leader, AOC, JIC, Delaware Courts

"The more you introduce to mainframe modernization, the harder it's going to be and the more convoluted it is going to become. Get your definition upfront of what you want to do. Try not to blue-sky. Be very cautious on that. It'll become a never-ending story."

Richard Ladendecker, President of Konigi, Inc.

"You need to do that proof of concept to show them how it's going to work, and make sure it hits the project's needs on target as exactly as possible."

Harpal Gill, VP of CONNX Group.

"Get them to describe what it is like using the existing system, what they like about it, what they don't like about it, and then help them visualize how the new solution will be better in those areas for them."

David Taylor, VP of Software AG Government Solutions and former CIO, Florida.

Achieving Mainframe Modernization

Of People, Processes and Technology

GovLoop also surveyed the audience about the biggest barriers to modernizing their agencies' mainframes.

Most participants identified legacy infrastructure as their largest obstacle, with around 47% listing that hurdle. Budgetary constraints ranked second, while security considerations rounded out the top three.

GovLoop's final poll observed half aren't sure whether their agencies rely on APIs for integrating their mainframes.

About 32% say their agencies use APIs for integrating mainframes, while nearly 19% noted they don't. These statistics hint agencies may be having mixed results deploying APIs to integrate their mainframes.

Overall, GovLoop's polling implies technology may present the most serious issue for agencies hoping to modernize their mainframes. For example, maintaining legacy technology is often costly and time-consuming for agencies. Agencies that aren't knowledgeable about modernization tools such as APIs, meanwhile, may miss major technological advantages.

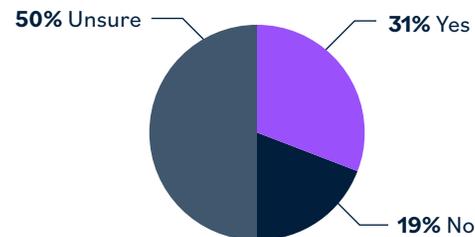
Despite this, the role people play in impeding modernization also matters. Take cybersecurity, which includes protecting sensitive citizen data. Employees who don't practice strong cyberhygiene may gradually decrease their agency's security. And agencies whose leaders don't support modernization won't ever get cutting-edge mainframes.

Processes are the last piece of the mainframe modernization puzzle. No matter how their workforces operate, agencies should revisit their processes during modernization. Gradually, the agencies that improve their routines may save energy, money and time.

What's the biggest barrier your agency faces when modernizing mainframe applications?



Does your organization rely on APIs for mainframe integration?



So how do agencies eager to modernize their mainframes circumnavigate roadblocks created by their employees, routines and tools? The following soundbites from government and industry experts provide tips:

“There were no ifs, ands or buts about this - all new development would use the same data model.”

Terry Milholland, CIO and CTO, IRS.

“What we need to do is not modernize by getting rid of the mainframe, but evolve how we interact with it, connect it to our other non-mainframe environments and allow the mainframe to connect and take advantage of other external services.”

Chris Borneman, CTO of Software AG Government Solutions

“Plan a fallback. You need to keep that old system alive. There's nothing worse than doing a cut over and not having a method to fall back on.”

Richard Ladendecker, President of Konigi, Inc.

“Knowing your legacy data, your rules, your customization, was the most important thing to start understanding modernization. It was getting the two teams, the new and the old, to sit down and nail that down.”

Betsy Bachmurski, Application Support Project Leader, AOC, JIC, Delaware Courts

How Software AG Government Solutions Can Help

Traditionally, government mainframes have been built to last. Now, agencies are finding modernization isn't easy when mainframes contain years of their manpower and money.

"Not only is the mainframe not going away, it continues to be very relevant," Borneman said. "They also represent a significant, multi-decade investment for organizations. What many mainframe customers have been missing is a way to easily unlock that data, business logic and processing power combined within the mainframe."

How do agencies get these capabilities? The answer is making existing mainframes "built to change," Borneman said.

"Now, more than ever in our daily environment, being able to respond is an important aspect of mainframe architecture," he said.

Borneman added that agencies looking to bridge the gap between their legacy and modern mainframes should

examine integration platforms. Using APIs, integration platforms can connect disparate mainframe systems whether they're on-premises, in the cloud or both. Perhaps more importantly, these platforms are adaptable, scale in real time and are fully transparent.

For instance, consider solutions such as Software AG Government Solutions' [webMethods platform](#). While many agencies have multiple IT systems and data sources fueling them, platforms such as webMethods can help agencies see their entire enterprises clearly. Even better, agencies with a trustworthy view of all their data and functions are better equipped to serve citizens.

"COVID-19 is a great example of a fast-moving demand on IT to provision data," Milholland said. "It is not just data across a single enterprise but making it available across numerous agencies at the federal, state and local levels. Since none of these systems were designed for that kind of sharing, a toolset like webMethods is a beautiful solution."

9 Points About Mainframe Modernization

Technology

- Agencies don't have to abandon their legacy tools during mainframe modernization; instead, this technology can keep performing pivotal activities until the modernization is done.
- Agencies that know where their data resides - and in what format - will typically have easier modernization journeys.
- Citizens increasingly rely on mobile devices for accessing government data, so agencies should make sure their mainframes can support this medium.

People

- Collaboration is essential for successful modernization, so agencies with teams that remain isolated from one another may struggle to finish such projects.
- Agile development involves self-organizing teams across functions so they are more adaptable and flexible; this philosophy can prove effective for modernization.
- The smoothest modernization efforts often involve agency leaders who are actively invested in completing them.

Processes

- During modernization, agencies must handle sensitive data carefully or risk cybersecurity incidents.
- When possible, agencies should digitize processes such as printing paper documents to get the biggest returns from their modernizations.
- Storyboarding the modernization process for everyone involved can help agencies get their mainframes over the finish line.

Conclusion

At the most basic level, mainframe modernization can help agencies continue their core functions whether their IT is on-premises, in the cloud or both. Over time, agencies with modern mainframes imitate the IT practices and customer experience (CX) of top-rated private sector companies. As a bonus, they can also make more intelligent decisions using all their data assets.

Perhaps the biggest advantage of modern mainframes, however, is how they can connect existing, new and future tools. Agencies that fully leverage modern mainframes picture every aspect of their missions at once. The resulting visibility can spark agility, innovation and growth at agencies of any size.

The future may be uncertain for agencies, but it doesn't need to be for their mainframes. With preparation, agencies can overcome snags from their people, processes and technology so they're always ready for change.



About Software AG Government Solutions

Software AG Government Solutions delivers leading edge software that helps the Government connect existing, new and future technologies together whether on premise or in the cloud. Leveraging our Government Integration Hub, webMethods, and our strategic IT portfolio platform, Alfabet, along with our highly effective “Prove IT First and Prove IT Fast” approach to solving mission critical IT challenges, we specialize in helping customers optimize large scale, mission critical solutions across complex extended enterprises.

Learn more at www.softwareaggov.com



About GovLoop

GovLoop’s mission is to inspire public sector professionals by serving as the knowledge network for government. GovLoop connects more than 300,000 members, fostering cross-government collaboration, solving common problems and advancing government careers. GovLoop is headquartered in Washington, D.C., with a team of dedicated professionals who share a commitment to the public sector.

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