

APPLICATION TRANSFORMATION: ACCELERATING THE NEW FACE OF GOVERNMENT

INDUSTRY PERSPECTIVE



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EXECUTIVE SUMMARY

Today's technological environment is changing rapidly. Government agencies must instantly respond to citizen needs, regulatory standards and agency goals in an IT environment that has changed and evolved over decades. One of the key issues is that legacy IT systems are holding agencies back from being able to most effectively meet these needs. Bloated and outdated IT portfolios hinder efficiency and cost public organizations millions to maintain. And archaic systems lack the built-in safeguards that can hinder a cyberattack, a perfect infiltration point for hackers and cyber thieves. Application transformation has become imperative, as the maintenance of "mature" applications has increased and thus, consumed a disproportionate share of resources.

The problem of aging applications has been recognized by every level of government, as highlighted by the OMB request for \$3.1 billion for an IT modernization fund that will be administered by the General Services Administration. This initiative is driven by Federal CIO Tony Scott, who is leading the effort toward modernization, agile, modular development and application remediation strategies to support a digital government.

So how is it that agencies ended up with these inefficient, antiquated systems? Over the years, instead of replacing outdated systems, many have simply been patched and improved incrementally – newer applications and services were only deployed where needed. This has resulted in IT sprawl, duplication of applications and siloed information systems. These disjointed enterprises are much harder to manage and integrate with newer, modern technologies, leaving public organizations to play catch-up. As agencies look to support cloud and mobility initiatives, they are faced with the stark reality that nearly half of their existing IT applications are based on legacy technologies that are in need of modernization.

Additionally, there is a growing skill set gap within the information technology realm. Staff who deployed many of the existing legacy applications are

now retiring, leaving agencies with few IT personnel who have the expertise to maintain and manage traditional IT systems. This makes it especially difficult to upgrade applications, as many are written in outdated programming languages unknown by a newer workforce and lacking in many of the features needed to launch the kind of applications expected by a tech-savvy citizenry and workforce.

Finally, a major problem that public agencies face when it comes to modernizing applications is budget constraints. Maintaining legacy systems is costly, and consumes a large portion of agencies' IT budgets. "Often over 80 percent of [public organizations'] budgets are being spent right now just sustaining the application," said DXC Technology's Stu Hammer, Director of Application Services and Program Excellence for U.S. Public Sector. "That leaves less than 20 percent for innovation to drive those new capabilities like cloud and mobility. [Public agencies are] challenged because they need to meet the citizen needs, the agency needs, the regulatory needs, but they can't really achieve that with the fact that their portfolios are old. They're barely keeping the lights on."

All of these obstacles make it especially difficult for public agencies to innovate and meet their unique missions as successfully and efficiently as possible. But application modernization is not an impossible feat. GovLoop sat down with Hammer to discuss how government can ease the process of application modernization and harness the most benefit from their IT portfolios.

In this report, we will:

- Discuss why public agencies should modernize their application
- Identify common challenges to modernization
- Offer tips for transforming your agency's applications
- Share a case study from the U.S. Army that examines how government agencies have benefited from application modernization.

WHY SHOULD AGENCIES MODERNIZE APPLICATIONS?

Simply put, updating applications and moving to more agile technologies saves agencies money in the long run. Many public organizations operate under an 80-20 spending model: They put roughly 80 percent of their IT budget toward maintaining old systems, and only devote 20 percent to newer innovations.

Taking the plunge on application modernization, however, will change that spending ratio and make more funds available for future investments. "The benefit of modernization," said Hammer, "is that then an agency can free that money up and flip it around so they can see that maybe 40 percent of that could be spent on sustainment, and 60 percent on innovation."

Not only does modernizing your agency's applications mean spending less on costly, outdated systems, it also leads to a more streamlined and agile portfolio. Modernization cuts the clutter, so to speak, and eliminates unneeded outdated applications, enabling changes and updates to be made much more rapidly and effectively throughout the enterprise.

"This results in agility: driving to a much more agile environment to be able to actively make technological changes, address the security issues and address the agency's needs for quick changes," said Hammer.

HOW TO GET STARTED

How can an agency get started on the modernization process? One piece of advice from Hammer is that agencies need a roadmap to understand the millions of lines of code in these antiquated applications. Many agencies begin the process too rapidly, without thinking critically about the long-term effects on the entire IT enterprise. "They'll jump into [modernizing an application] without knowing the impact that it might have on downstream applications or on the total cost of ownership," said Hammer.

Often, agencies are eager to make a change, and do so overnight, which can lead to major, costly adjustments to the modernization process, or an outright halt. This wastes time as well as critical funds and resources, and is especially detrimental to organizations with limited budgets and resources that need to get the biggest bang for their buck.

One way to stop wasting resources is to carefully plan the modernization process and be selective on which applications to modernize first. It is important to take time to plan out the process and carefully assess the implications of prioritizing certain applications over others. If properly scripted, application modernization can end up saving an agency millions of dollars and relieve staff burdens of maintaining outdated systems.

Additionally, many agency IT leaders don't know where to start. Many public organizations have thousands of applications. Not only is this quantity daunting, but these applications are often scattered throughout the enterprise, housed on a mix of physical and virtualized servers.

This sort of "IT sprawl" makes modernization much more technically difficult to manage, and security risks more difficult to mitigate. As security is one of the top concerns for public agencies, it is often a barrier to technological change.

"Their infrastructure is all over the place from a physical and virtual perspective," said Hammer. "Agencies then don't want to change because they are afraid of the security threats...and if they did make that change, what would that do to their security?"

In order to tackle overwhelming IT sprawl and alleviate security risks, agencies should start small with a few applications. Take stock of which applications are critical to organizational missions and which ones end users use most. Then, assess how altering or re-platforming these selected applications may affect the functionality of other applications, security protocols and overall organizational workflow.

In addition to questions about how modernizing applications will affect security, many organizations are wary of the necessary change management efforts that accompany technological change. Modernizing applications will ultimately alter how both staff members and constituents interact with the agency.

In some cases, there may be some resistance from staff members on instigating radical changes. Public organizations should make a plan for how to train personnel and demonstrate how these changes will improve their day-to-day efficiency. In addition, it is important to ensure applications are continually updated and adapted to meet user needs.



CASE STUDY: MOVING DoD APPLICATIONS TO THE CLOUD

DXC's recent work with the Department of Defense (DoD) to relocate some of its mission-support applications to the cloud illustrates how application transformation in combination with a DevOps approach can maximize IT resources and performance for a government agency.

DXC worked with the U.S. Army in a program to transform and modernize the capabilities of their Total Ammunition Management Information System (TAMIS) application, hosted in the Amazon Web Services (AWS) private GovCloud platform. TAMIS is a mission-critical web-based application that soldiers use to manage and forecast ammunition requirements around the globe. This application handles sensitive government data, so it is critical that the chosen cloud platform has the proper security qualifications to protect this information, as well as the technological capacity for the application to function to its fullest potential. In addition, the Army must frequently meet new requirements – both security and functional – so the applications must be agile enough to update rapidly and adjust to these demands.

To meet these complex needs, DXC employed an application transformation strategy and then implemented a DevOps approach when helping the Army adapt this critical application for the cloud. "When we started, we needed at least a month for testing and deploying a new release," Hammer said of the initial TAMIS platform. "So by moving to the cloud and applying an agile DevOps process, we reduced the release time from one month to one day, which significantly helped the Army address their needs."

With DXC's guidance, the Army successfully migrated its TAMIS application to AWS GovCloud. The cloud platform provided the needed security requirements, scalability, reliability and elasticity for the application to run more efficiently. Modernizing the application allowed soldiers and military personnel to more effectively use the TAMIS application from the field, and carry on their critical work from anywhere on the planet at any time.

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Stu Hammer, DXC Director of Application Services and Program Excellence for U.S. Public Sector

TRICKS OF THE TRADE: DXC'S APPROACH TO APPLICATION MODERNIZATION

It's clear that a holistic, enterprise-wide approach to application modernization fits the needs of organizations with large, complex IT portfolios. To ease the transition, DXC recommends a phased approach to modernization: advise, transform and manage.

step one

ADVISE



The first step to a successful modernization journey is developing a well thought-out roadmap and identifying the key initiatives needed for the application overhaul. This step begins with a thorough assessment of the existing applications and determining which are necessary, which can be transformed and which can be eliminated.

"We assess the IT environment – the applications, the data, the infrastructure – from a top-down and bottom-up perspective, looking at the technical and functional value of the legacy applications tied to the business," said Hammer. It is important to lay out how modernizing an application may affect other applications, total costs, portfolio integration and security threats.

Planning out the transformation also allows an agency time to build security into every step of the modernization process. Enabling more agile applications will make integrating security capabilities much easier, but building these into the roadmap from the start ensures that no security requirements fall through the cracks.

step two

TRANSFORM



After a starting point is identified and a plan mapped out, the transformation can begin. There are many options, though, for applications that need updating and it is important to keep in mind that application modernization is a tailored effort encompassing an agency's priorities. For example, it wouldn't make sense for an agency to move all of its applications to the cloud. Some applications would be better suited to remain in the existing data center, while some could be eliminated altogether.

In addition, many organizations are wary of fully eliminating an application and retiring it, but this step is critical to successfully transform the portfolio. "Being able to do that full transformation and then actually shut it off is a very important activity," said Hammer, as it can streamline the portfolio, eliminate redundancy and enable agility. In some cases, a modern, "cloud-native" application can be found to replace one heading for retirement. If not, you will need to re-architect the current application to enabling it for a "cloud-enabled" environment. ↳

For example, DXC helped an agency undertake an application modernization initiative comprising of a complete assessment of the legacy applications and an end-to-end modernization project. The client worked with DXC to replace more than 20 million lines of code, encompassing more than 19,000 separate programs. The legacy application environment is now an industry standard application and interoperable, with many common tasks now done automatically. The new hybrid IT infrastructure has helped the agency roll out new user experience portals to their clients to improve the customer experience. The project was delivered on time and on budget with more than 90 percent of the final functionality delivered within 24 months. When all was said and done, development costs were reduced by 38 percent and the overall portfolio size was reduced by 33 percent. The agency not only realized significant year-over-year cost savings, but also achieved a return on investment in 18 months.

step three

MANAGE



The modernization process does not end once all of the applications are transformed. In fact, change management is one of the more important steps that will determine the long-term success or failure of your agency's modernization journey.

Your agency will need to make a plan for change management, not only to continually monitor the technology, but to also help end users adjust to the changes. Applications will need to be continuously optimized to make sure they are working properly and meeting business functions. In addition, staff and personnel will need training in order to utilize the applications, and adjust to altered business processes.

Agencies should consider appointing a task force or individual who can govern both the technology and people, and make sure that personnel needs are being met by the modernized applications, and vice versa.

Legacy government applications that require the most change often require the most agility – such as applications that need to change for regulatory reasons or for critical mission performance.

That's why an Agile or DevOps approach is a critical step to help drive the velocity of the new modernized application and improve your quality. DevOps improves the efficiency of the transformation while decreasing the time to production. A DevOps environment can produce significant results including 30-75 percent faster release to production; great than 50 percent defects reduction; over 20-50 percent improved productivity; 40 percent better predictability; and better than 50 percent better responsiveness to business needs.

It may be beneficial for agencies that are particularly strapped by resource, personnel and budgetary restrictions to work with an outside firm during this process. DXC recognizes that application modernization is not a one-and-done task, but a continual journey. They take a "soup to nuts" approach to guiding your agency throughout the application management process.

"It's not just taking what you have and putting it somewhere else," said Hammer, "but enabling you to drive that new capability forward in a lower cost, agile environment with cloud enablement."

Overall, agencies need to take a holistic, enterprise-wide approach to application modernization. Moving a handful of applications will likely not transform your organization's functionality. But following the steps – advise, transform, manage – will help your agency develop a long-term plan to incrementally revolutionize your agency's application portfolio.

DXC's Transformation Treatments

During the transformation stage of the modernization process, applications can go through several modernization options, depending on their value to the organization and interoperability with other applications and platforms.

Here is a quick synopsis of DXC's Transformation Treatments:

Re-platform/Re-host:

Move the application from one environment to another, such as the cloud, with minimal changes

Re-architecture:

Modernize the application with a new programming language, for example COBOL to Java

Re-factor:

Move the application into a cloud environment and clean it up to make it cloud native

Replace:

Bring in a comparable, off-the-shelf product package that is designed for the cloud

Retire:

Turn the application off and stop using it

CONCLUSION

Public sector agencies need agile and powerful IT enterprises in order to thrive in today's vibrant IT environment and to adequately meet operational and constituent needs. Although many public agencies are burdened by the expense of maintaining their disparate application portfolios, modernization can fuel a more agile and responsive government.

Organizations must take a holistic approach to application modernization, and enable a strong DevOps environment. By following DXC's recommended three-level approach of advise, transform and manage, public organizations can enable agility, reduce IT maintenance costs, drive innovation and maximize their agencies' resources and efficiency.

About DXC Technology

DXC Technology (DXC: NYSE) is the world's leading independent, end-to-end IT services company, helping clients harness the power of innovation to thrive on change. Created by the merger of CSC and the Enterprise Services business of Hewlett Packard Enterprise, DXC Technology serves nearly 6,000 private and public sector clients across 70 countries. The company's technology independence, global talent and extensive partner network combine to deliver powerful next-generation IT services and solutions. DXC Technology is recognized among the best corporate citizens globally.

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GovLoop's mission is to "connect government to improve government." We aim to inspire public-sector professionals by serving as the knowledge network for government. GovLoop connects more than 250,000 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 connect and improve government.

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