



>> Government IT: Finding the Path to Modernization

IT modernization is a particular challenge for government entities that are not only saddled with legacy systems and applications, but also face the wide-scale retirement of the Boomer employees who maintain them. But modernizing IT will lead to more agile, efficient organizations better able to serve the public, often at a lower cost. *By Mindy Blodgett*

Executive Summary

The pressures on IT management today are unprecedented, and are particularly acute in government. Today's government IT organizations are trying to cut costs and meet the growing demands from their constituents for responsive, swifter technologies and the kinds of self-service systems they have become accustomed to using elsewhere—the types of systems that promise to ease interactions between the public and government organizations. At the same time, government IT managers are wrestling with the maintenance of legacy applications and platforms while simultaneously facing the pending retirement of vast numbers of the IT workforce, many of whom have kept these systems humming for years. The solution to these issues is for government IT organizations to undertake the modernization of infrastructure and applications—but the question remains, which is the best route to updating and upgrading?

Glut of Legacy Systems Weighing Down Government IT

There is no question that government IT is seriously lagging behind the modernization curve. Legacy applications and aging infrastructures are weighing down government IT and slowing the vital switch to newer technologies. In the process, government IT organizations have become expert at maintaining their outdated legacy systems and making the most of what they have.

But pressures on government IT to build more sophisticated, advanced systems, including providing safe and secure self-service interactions and more Web-based access, has accelerated the move to modernization.

It's not that modernizing IT in any sector, public or private, has been easy or cheap. The history of new developments in computer technology is full of examples of advances that didn't work with existing systems: mainframes not communicating with PCs; websites that don't connect effectively with back-end

and back-office systems. At the same time, the costs of simply maintaining IT have never drifted higher. Research shows that something like 80% of current IT resources goes to the maintenance of existing IT operations and systems.

"What we talk about with our customers is that there is a high cost to doing nothing," says Lance Knowlton, vice president of Modernization Solutions at Oracle Corp. "They want to think that it won't cost anything if they just stay where they are today, and keep their legacy systems operating. But there really is a cost to just staying put.

"The legacy platforms they are spending a lot of money on maintaining are outdated, and the proprietary vendors who produced them are fading away, driving the costs up further," Knowlton continues. "Not only can there be great operational cost benefits to modernizing, the state of doing nothing can also cost an organization much more. Organizations need to



start building their modernization plans now. It's just a matter of deciding the best approach."

The risks to holding onto legacy systems are many. For instance, legacy software is rife with inflexible applications that seriously reduce agility. This makes it very difficult for government IT to integrate applications across different government agencies. In addition, outages are happening more often, with problems in bringing systems back up rising as well. Increasingly, legacy software is supported by employees whose skill sets are disappearing, as these IT professionals retire from the workforce. Finally, legacy systems need highly skilled, and often highly paid, personnel, and they are supported by proprietary hardware and software vendors. These proprietary vendors lack products with open standards, and so they are raising the prices of their products to make up for the shrinking pool of new and current customers.

Modernizing the IT infrastructure, by moving to open standards or using service-oriented architecture (SOA), will increase efficiency and transparency, and as a result will transform government service delivery, Knowlton says.

But one of the most immediate challenges government IT organizations are facing while they tackle modernization is the aging of a suitably skilled IT workforce.

Accenture predicts that as many as 60% of the government workforce will be eligible for retirement in the next five to 10 years. In addition, many workers are expected to retire well before age 65. This diaspora of skilled employees will hit government IT particularly hard, where these workers' knowledge of legacy systems, including outdated COBOL programs, is needed to keep the lights on. Application software engineers and programmers knowledgeable about mainframes, to name just a few, are all projected to be leaving the workforce soon.

Modernization Solutions to Legacy Problem

Government IT organizations face some thorny choices when

assessing their readiness for modernization:

- **Go on as before:** Organizations may choose to not act, to continue monitoring and maintaining existing systems and infrastructure. But as stated above, there are costs to this choice, and increasingly, without adequately trained staff, doing nothing is becoming harder.
- **Retire and replace the systems:** For some organizations, this can be part of a rip and replace approach, but this approach can be expensive, too. Here is where turning to SOA can be a wise decision.
- **Modernization:** This can take many forms, including using SOA to extend some of the legacy data via web services and rehosting. But migration to new languages and new platforms must be undertaken deliberately and with experienced partners.

Before choosing the modernization path, however, Oracle advises that IT managers need to take the important first step of understanding and assessing current IT assets, according to Knowlton.

"We believe that customers need to determine which assets provide the highest value and which provide the ways and means forward to a new, modern, open system," Knowlton says. "We don't believe that simply taking these legacy systems and recoding them from scratch is the way to go—you need to know where to modernize and then craft the process to take the organization and the best applications and bring them forward in a phased approach. It's not rip and replace; it's not big bang—but [it] is meant to produce an end result over time to leverage the value of your applications."

One way to do this is through Application Portfolio Management (APM). The premise of APM is that before prescribing remediation of a legacy system, customers need to know what they have currently. APM provides the ability to assess the complexity of assets. APM can be done in as lightweight a way as simply filling spreadsheets with code counts—or to seek help from vendors and partners.



“APM gives IT predefined models of what they can derive from existing applications,” Knowlton says. “APM can bridge the gap between knowing what you have and moving the assets forward.”

How to Fit SOA into the Picture

Enabling SOA can extend legacy applications and systems via web services. Using SOA as part of an integration strategy allows users to take advantage of existing data by putting SOA on top of current systems, creating access to data in different ways. The beauty of SOA is that it allows users to modernize processes over time while moving them to open platforms. Another way to move off outdated platforms is to use automated migration, say to switch from legacy applications to something like a web portal. Here are two examples of these approaches:

Case Study: SOA Enablement in Insurance Industry

A large insurer and Oracle customer was on a legacy system written in COBOL, which had served the company well for many years. But the landscape in the industry was changing, and the company found that the system was preventing it from reacting quickly to competitive forces. It was taking four to six months to change just one line of code in production.

The insurer turned to Oracle, which helped the company utilize SOA to keep 80% to 90% of its existing applications written in COBOL, but move the part of the application that needed rapid changes the most to a business rules engine. This enabled the firm to make necessary changes in code in a secure way, reducing time to market by 75%, lowering total cost of ownership (TCO), and creating a plug-and-play environment for future changes. The company gained increased business agility and most of all, confidence in its ability to be more nimble in responding to industry demands.

Case Study: Automated Migration in Government

The Economic and Business Affairs department of a government agency was holding onto several legacy applications, including an IBM mainframe, a business registration appli-

cation and 2,700 NATURAL/ADABAS programs. The agency decided to move to a Web-based Linux system with an Oracle DB and J2EE. As a result, the agency was able to eliminate the mainframe. It also achieved 50% in operational cost savings and eased web access. By consolidating to an Oracle database, the agency ended its reliance on NATURAL/ADABAS skill sets.

Oracle Solutions to IT Modernization

The Oracle approach to modernization, in its Oracle iGovernment solution, includes the following attributes:

- Oracle database grid
- Oracle Fusion Middleware
- Oracle Applications
- Third-party partner products
- Architectures based on Maximum Availability Architecture (MAA) and Application Integration Architecture (AIA)

In addition, Oracle works with systems integrators, third-party vendors and specialty modernization vendors in the Oracle Modernization Alliance (OMA) in approaching modernization, including CSC, Accenture and Unisys.

Knowlton says that Oracle has observed some best practices when clients move to modernization, including:

- **An integration strategy:** taking current data and putting SOA on top in order to access existing data via web services.
- **Use of COTS (commercial off-the-shelf) products:** to replace legacy coding. This is particularly common when replacing HR management—customers are migrating from older, proprietary HR software to COTS software or Software as a Service (SaaS).
- **Rehosting:** migrating existing legacy platforms “as is” to open platforms, such as Linux.
- **Rearchitecting:** extracting legacy artifacts into models and transforming. For instance, a number of customers are redoing their legacy coding into Java.
- **Automated migration:** transforming from something



like NATURAL/ADABAS and an IBM mainframe to a web portal, an Oracle database and Linux, for instance.

threats to business continuity and success, as well as the risks inherent in not modernizing government IT, are far greater, and will lead to this vital transformation. <<

The challenge of modernization is a difficult one for government IT organizations as they grapple with the costs of upgrading and improving, as well as the time it will take to sufficiently modernize. But proponents of IT modernization believe that the

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—Lance Knowlton, Vice President of Modernization Solutions, Oracle Corp.

Pathways to Modernization

By modernizing existing technology to Oracle Database, Oracle Fusion Middleware, and Oracle Applications, organizations can reduce costs, increase agility, eliminate reliance on legacy skill sets, and satisfy compliance requirements while preserving business-specific data and functionality.

