Application modernization in practice: How three organizations chose evolution over revolution

There's no doubt that the IT industry loves its multi-syllabic terms. Some of them even live up to their considerable billing.

One of the most exciting and successful is a concept called "enterprise transformation"—taking existing IT assets and programmer skills, and cost-effectively and efficiently migrating them to the new world of e-business on demand.

The popularity of the concept is no surprise. An organization spends years, or even decades, writing software code and running applications—many based on IBM® middleware software products such as CICS®, COBOL®, DB2® and IMS.®

It's jarring to consider upending all of that work, and discarding all of those valuable IT assets, and starting from scratch. After all, an entire business typically resides on a legacy system. Payroll and billing. Accounts receivable and payable. Inventory and purchasing. In a best-case scenario, the thought of moving all that to a new platform is a little daunting; worst case, it can be downright intimidating.

A third 'R' emerges

Before enterprise transformation, organizations looking to modernize their legacy systems for today's e-business opportunities have typically faced two, equally unappetizing options:

– Replace. Purchase off-the-shelf business software applications from the usual suspects, and often find that porting the new software into a legacy mainframe is an expensive and time-intensive proposition.

– Rewrite. Commit to rewriting totally new application code from scratch, using new application development tools. And again, be prepared for a time-consuming conversion process.

More and more businesses are discovering a third "R": Reuse. Instead of giving up on their current code, applications and platforms, they're finding ways to evolve them to deliver new e-business benefits. They're successfully adapting their systems from legacy to new applications, integrating systems with other systems.

Leadership from a familiar face

IBM, a longtime leader in application integration, is well positioned to provide the capabilities that IT executives require to cost-effectively evolve their legacy systems for e-business on demand. Offering "requirement to retirement" application development solutions, IBM enables businesses to adapt their processes quickly and flexibly by reusing existing applications and data. Developers can unite and leverage their skills in disparate programming languages and work within a single development environment. That is the core of enterprise modernization.

One key tool being used extensively in enterprise transformation is IBM WebSphere® Application Server for z/OS®, a comprehensive Java™ 2 Platform, Enterprise Edition (J2EE) 1.3 and Web services technology-based application server.

To increase business processes and create strategic value, organizations typically choose one of three stages of transformation, and migrate over time to more advanced stages. A key benefit of this Improve-Adapt-Innovate triad of transformation is that an organization can migrate from one stage to another, depending on a given project. IBM tools make it easy to move up the continuum.

1. Improve the user experience

For situations where application interfaces are difficult to use and user workflows are outdated, organizations are taking action to improve customers' or end users' online experience. Typically, this means improving the user interface - upgrading from old "green screens," improving site navigation, providing a simple Web-based, point-and-click interface, and adding a pre-filled fields function, so that online customers need to enter boilerplate information, such as a billing address, only once during a session.

Explore the products that enable the IMPROVE stage of transformation:

– IBM WebSphere Host Access Transformation Services (HATS)

– IBM Host Access Client Package

2. Adapt for enhanced relationships

Where legacy applications cannot easily be integrated into modern workflows, organizations are adapting their applications to participate in today's e-business on demand workflows - without incurring the risks of replacing an entire platform.

Explore the products that enable the ADAPT stage of transformation:

– IBM WebSphere Application server v5 (WAS)

– IBM CICS Transaction Gateway

– IMS™ Connect

– IBM SOAP for CICS

– IBM SOAP for IMS.

The IMS SOAP Gateway—currently in Technical Preview Status—is an XML-based connectivity solution that enables existing or new IMS applications to communicate outside of the IMS environment using SOAP.

– IBM WebSphere MQ and IBM WebSphere Business Integration Mainframe Adapters

3. Innovate for new capabilities

For situations where it's difficult to adapt mission-critical processes to changing business or market conditions, organizations are using their legacy applications to create totally new solutions. By understanding what's in their existing mission-critical applications, an organization is able to restructure and "componentize" those applications, and integrate parts of them into new, differentiated solutions and a service-oriented architecture.

Explore the products that enable the INNOVATE stage of transformation:

– IBM WebSphere Application server v5 (WAS)

– IBM WebSphere Studio Asset Analyzer (WSAA)

– IBM WebSphere Studio Enterprise Developer (WSED)

– IBM WebSphere Studio Workload Simulator (WSWS)

– IBM WebSphere Studio Application Monitor (WSAM)

Application Modernization—a closer look

In an environment for high-volume, Web-based transaction processing, WebSphere Application Server is designed to leverage IBM zSeries™ hardware and the z/OS operating system. Using its rich e-business application deployment environment, developers can build, manage and deploy e-business applications, integrate existing resources and extend host systems to the Web.

Typically, mainframe organizations have a wealth of robust, proven legacy code, often customized over many years, that efficiently and effectively handle core business application functions. These applications, typically based on IBM middleware software products such as CICS, COBOL, DB2, and/or IMS, are often an under-appreciated asset. Many, if not most, mainframe enterprises want to enhance and extend these core applications, moving to an Internet browser-based interface.

A primary value in using WebSphere Application Server for z/OS and OS/390 on the mainframe is that critical new functions can be added, and a browser-based interface can be created, that can link to and reuse the vast majority of the proven CICS/COBOL/DB2/IMS legacy code without any code changes. This can help enable an organization to effectively create a new modernized and enhanced application in a fraction of the time and a fraction of the cost of total replacement or rewriting of applications. IT departments may find that this new modernized application can be achieved by re-writing a small percentage of their code and linking to the majority of the traditional mainframe code unchanged. More over, it is also possible to selectively continue, in a non-disruptive fashion, to replace parts of the legacy code with Java based WebSphere Application Server code over time, as required. This allows for application modernization as an effective evolution, not a potentially disruptive revolution. This can be a key enabler of a renewed growth in the IBM mainframe platform, in essence, a mainframe renaissance.

Exactly how and where is the third "R" being realized? And to what benefit to business? Here are three recent cases in point.

The Iberian railroad: IBM ET for RENFE

RENFE is Spain's primary railway operator. With headquarters in Madrid and 32,000 employees, this $2 billion company offers every level of rail service, from local destinations along the Iberian peninsula to high-speed international links. To keep up with growing demand and rising international sales, RENFE needed to update its ticket sales system to handle the associated increase in transactions—and maintain its high level of customer service.

The notion of tinkering with its ticketing system was, understandably, a little unsettling to RENFE. Its reservations and ticket sales applications are clearly the most critical components of RENFE's IT infrastructure, representing the company's direct link to customers. Not to mention its principal source of income.

In addition, while the ticketing system desperately needed updating, the company didn't have a blank check. So it couldn't consider a wholesale "rip and replace" or "rewrite and redo" strategy. Rather, RENFE chose an IBM solution to leverage and evolve its existing s/390® server platform to enable the new functionality.

Using Enigma software, IBM employed CICS and WebSphere Application Server to migrate and Web-enable the company's existing ticketing system, enabling customers to book trips online.

With WebSphere Application Server running on RENFE's S/390 platform, any of the company's applications could be easily accessed from any sales point. That was crucial, because RENFE has 2,000 terminals owned by ticket agents, 1,000 more terminals for ticket sales, and another 1,000 for telesales. A central server platform was essential to bring integration to the system— integration that translates to a simple and cost-effective solution to maintain.

That's the ticket

With the IBM enterprise modernization solution now employed in 2,000 stations and 4,000 independent travel agencies throughout Spain, RENFE's reservations system is now on track to compete in the e-business world. The system completes 5 to 10 transactions per second at peak times; during Holy Week and the summer months, that number increases to 30 to 40 per second.

The new Web-enabled ticketing system also meets RENFE's objective of expanding ticket sales internationally. A customer in London can now buy a ticket from Madrid to Albacete even before arriving in Spain. That same customer can easily get information about ticket prices and place availability anywhere in the world.

Is this any way to run a railroad? To RENFE, which has realized dramatic improved efficiency, accelerated ticket sales, increased international revenues, and enhanced customer service, the answer is clear: Absolutely.

For Bekins, a smart move

For over a century, Bekins has been one of the best known movers in the world. The Hillside, Illinois company operates a nationwide network of agents with a combined operation of more than 1,600 operators, 60 distribution centers, and 2,100 tractor/trailers and straight trucks.

Among the newest of Bekins' business units is HomeDirectUSA, which provides home delivery of high-value consumer goods—such as big-screen TVs, mattresses and appliances—for some of the largest e-tailers and brick-and-mortar retailers in the country.

The delivery business, though, is one of frequent peaks and valleys in demand. And HomeDirectUSA was finding it difficult to predict when it could handle a delivery with its centrally managed fleet, and when it needed to broker it out to an independent agent.

It was easy to pinpoint the source of the problem. To tender shipments, the company was faxing or phoning agents one by one, waiting for a response, then moving down the list. The process was so slow and antiquated that it threatened the delivery guarantees that retailers

were making to their customers. HomeDirectUSA's independent agents also found the process unfair and cumbersome, since they needed to devote staff to fielding the onslaught of faxes and phone calls.

At risk of dissatisfying major customers and business partners, the company clearly needed to fix the process.

An online delivery brokerage system

To accomplish the task, Bekins moved quickly to the world of e-business, to create an automated, online delivery brokerage system. The new Tonnage Broadcast Exchange (TBE) would enable orders to be tendered online to all potential agents simultaneously. Agents could then view tenders based on selected criteria and accept the ones they wished.

To build the TBE, the company chose to bypass a time- and cost-intensive replacement of its existing IT infrastructure. Instead, it opted for the enterprise modernization route. Leveraging an IBM zSeries server and existing, proven enterprise zSeries data and business logic would mean faster deployment with fewer risks. A key to success was a user-friendly, Web-based front end—one that would permit agents to access information from multiple IT environments.

By choosing to evolve instead of rebuild its IT platform, Bekins had the new TBE system up and running in just five months. That was due in part to the productivity support available in IBM WebSphere tools, which provided a framework and sample code that Bekins could adapt to its specific needs. The development team merely had to overlay its existing business logic and methods, and the work was done. The company estimated that these tools helped cut development time by two-thirds, saving $100,000.

A win-win-win moving experience

Reaction to TBE was immediate and positive, and so were the results. Independent agents gained a faster, fairer system that lets them better plan their operations. Retailers grew confident that their goods would be delivered to customers' homes on time.

The system reduced cycle time by 25 percent and delivered full ROI in only 12 months. The improved satisfaction, coupled with greater efficiency, means Bekins can pursue brokering lower-margin shipments that are projected to grow revenue as much as $75 million annually. In addition, the system's efficiency has reduced operating costs and helped improve profitability by $1 million.

In the annals of sexy new IT system names, "Tonnage Broadcast Exchange" might not crack the top 10. But for the Bekins Company, it has vaulted them into 21st century e-business and given them a leg up on the competition.

In Wisconsin, self-serve employee benefits data

The State of Wisconsin's Department of Employee Trust Funds (ETF) administers benefits programs for nearly a half-million employees in state departments, school districts, police and fire departments, and other agencies.

A key function of ETF is to respond to state agencies' requests for information about their employees' benefits. In a typical year, ETF's staff of 180 employees was fielding 10,000 phone calls from employers requesting account status or enrollment information. And that didn't count the thousands of additional fax and mail inquires.

For every inquiry from an employer, an ETF staffer had to query Wisconsin's mainframe-based systems, then deliver the information to the requesting agency. It was a cumbersome process in the best of times. And storm clouds were on the horizon: The state's employee roster was growing, ETF's staffing was frozen, and the workload was trending toward overwhelming.

To keep pace with the growing appetite for information while making more efficient use of its staff, ETF looked to millennial methods: namely, a Web-based, self-serve solution that would enable employers to retrieve employee data themselves.

A good beginning

ETF caught a break from the start. Its current mainframe was an IBM S/390, which had already proven its readiness for prime time as a Web server. The S/390's security architecture was also key, given the highly confidential nature of the employee data being accessed.

To provide Web-based, self-service access to its back-end databases, the State of Wisconsin chose IBM technology to build a customer self-service application for the ETF.

By going the enterprise modernization route, the state could almost completely leverage its sizable investments in infrastructure and applications. Reusing and adapting current IT assets instead of buying or building from scratch, the solution was up and running in just three months. It's powered by the legacy S/390, and is supported by a combination of IBM tools—WebSphere Application Server, DB2 Universal Database and CICS—and Java™ technology employing servlets and Java Server Pages (JSP).

The new self-service application enables ETF customers to access the information they need from the Web, without assistance from administrative staff. The solution has vastly improved the efficiency with which ETF delivers benefits information to the public employers and companies that do business with the state.

By increasing the speed of the information-sharing process, ETF has saved valuable staff time. In addition, customer satisfaction has increased noticeably, with 90% of customers now interested in getting all their data through the Web.
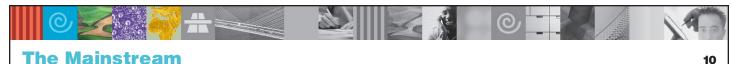
One more 'R'

All three of the above-mentioned organizations had a wealth of robust, proven legacy code, customized over many years, that efficiently and effectively handled their core business application functions.

When it came time to upgrade their systems to enable e-business, all three decided to opt for the third "R", reusing instead of replacing or rewriting. And that translated quickly to a fourth "R": ROI.

Leverage existing software assets

In today's business environment, it's more important than ever to take full advantage of existing IT resources—from hardware to personnel. With its commitment to open standards and extensible

connectivity features, WebSphere Application Server for z/OS greatly improves the ability to leverage those existing assets, enabling IT departments to develop, test and deploy Java technology and Web services applications with easy access and minimal errors.

Reduce costs with simplified deployment and administration features

For the first time, WebSphere Application Server for z/OS provides the same deployment and administration features as WebSphere Application Server on distributed platforms, reducing education and training costs. Deploying applications and transactions efficiently and effectively will increase productivity and reduce costs. WebSphere Application Server for z/OS provides a central and open management interface to help organizations administer multiple applications and components from the same environment, and reduce the complexity in application and systems management. Furthermore, agile setup options and administration features help to easily administer, deploy and manage applications, while automated application server management functions help enhance productivity and reduce administrative costs.

Meet the changing demands of e-business

Dependable system availability helps to avoid costly downtime and, in turn, build customer loyalty. The consistent, leading-edge performance and scalability of WebSphere Application Server for z/OS can help an organization maintain high responsiveness to constantly changing environments and reach new levels of reliability and performance. Through expanded database support and enhanced security, IT managers are able to ensure continuous operation of their critical enterprise Java applications.

We encourage you to join the increasing number of IBM mainframe users around the world who are finding that IBM's WebSphere Application Server for z/OS and OS/390 provides a state of the art, cost effective, and rapid time to implement enabling tool for modernizing and enhancing their legacy mainframe applications.

Download the IBM WebSphere Application Server FastTrack Resource kit from our website today. The zipped kit contains customer case studies, analyst reports, technical and overview white papers, as well as a roadmap you can use to identify further resources such as Redbooks, demos, and tutorials.