

Accelerate software innovation on the IBM System z platform.



Highlights

- ***Extends the value of existing enterprise assets by helping you to transform them into reusable components***
- ***Helps you leverage and modernize the existing and new skills of your traditional IT professionals***
- ***Supports innovation with technology advancements while reducing time to market***
- ***Advances team collaboration and responsiveness with consistent development processes***
- ***Optimizes business flexibility and change across the software lifecycle***

Traditional IBM System z® or mainframe applications are large, complex solutions that address specific business functions. However, today's business systems increasingly involve composite applications that support a business process and include sets of related and integrated services that come from different existing application silos. While the traditional applications—along with the information and functions they contain—are invaluable to your business, they may be compartmentalizing your processes or hiding duplicate functions and information. Such inefficiencies can inhibit agility, decrease responsiveness and slow your time to market. Further, this complexity can increase application maintenance expenses, diverting valuable resources from strategic business initiatives and innovation.

Repurposing enterprise applications for today's SOA environments

A significant obstacle to building an agile business is the investment in existing applications. These applications tend to be complex, and making them more flexible, reusable and easy to maintain is a challenge. Rewriting these applications can be expensive, time consuming and risky. Replacing them with packaged solutions can also be problematic because you risk losing the intellectual capital that's buried deep in your systems.

A third, and better, option is repurposing or modernizing these existing mainframe applications. These time-tested approaches can make it possible to incorporate them into a Web services architecture, such as a service-oriented architecture (SOA). Modernizing applications in this way can make

them more agile, flexible and robust, and help you increase your organization's responsiveness to marketplace dynamics and changing business needs. Additionally, by streamlining application and operational processes, you can free up more of your resources to focus on developing new business requirements and capabilities. Best of all, modernization can be done in an evolutionary—not a revolutionary—manner, helping to minimize risks to your organization. IBM can provide the tools you need to modernize your valuable mainframe applications.

Asset modernization: extending the value of existing enterprise assets

To be successful, modernization initiatives require deep insight into targeted applications. Asset discovery and transformation tools from IBM can help development teams generate detailed reports and graphics that enable rich understanding of existing applications. Armed with this knowledge, developers can quickly identify the business rules embedded in core business processes, and they can more easily restructure code, remove dead code and create reusable components that

can be enabled as services within an SOA. In addition, asset modernization tools from IBM can improve the productivity of IT staff by helping to:

- *Manage and govern the design, development and consumption of software assets and services.*
- *Eliminate the need to research, catalog and assemble the information for each service request.*
- *Identify assets that could be affected by proposed changes.*
- *Reduce the cost of ongoing application maintenance.*
- *Shorten the learning curve for new developers.*

Analyze existing enterprise applications

The first step in asset modernization—analyzing existing applications—requires extensive discovery. Often, enterprises have hundreds of project teams simultaneously making changes to application code and data structures. An automated asset analyzer application, such as IBM Rational® Asset Analyzer and IBM WebSphere® Studio Asset Analyzer software, can help cut through the complexity of the applications and interdependencies across the enterprise so developers can

work more productively and improve product quality. With these tools, developers can easily scan and analyze mainframe and distributed software assets and store related application information in a repository on your distributed or mainframe environment.

Transform existing software assets into reusable components

IBM Rational Transformation Workbench software helps you take a key step in asset modernization—identify business rules that can be extracted from existing applications and converted into Web services. This enables development teams to move quickly to transform existing assets.

Once you begin the process of creating reusable assets, it's also important to properly manage and govern your services. By establishing a comprehensive picture of your software assets, you can improve asset reuse, which in turn can help you more quickly deliver innovative IT solutions and help you control costs, reduce application backlogs and improve business flexibility and responsiveness.

Architecture modernization: enabling future business growth

Your modernization initiative must also address the complex dimensions of architecture. Fragmented business processes, workflows, data and tightly coupled application architectures reduce flexibility. Transforming these core systems into flexible applications and services can be costly and often involve high-risk rip-and-replace approaches. Design and construction tools from IBM give you a way to work with what you already have, so you can reduce time to market, improve business alignment for growth, cut costs and limit business risk. These tools help you:

- *Improve productivity in traditional mainframe development, Web development and integrated SOA-based composite development.*
- *Speed creation of cross-platform Web 2.0 applications and Web user interfaces through Enterprise Generation Language (EGL).*
- *Reach new customers and marketplaces by extending host applications to modern user interfaces.*
- *Accelerate the adoption of SOA by rendering existing IT assets as service components, which encourages reuse and efficiency.*
- *Create enterprise data standards, verify compliance and generate compliant models.*

Accelerate delivery of new

workloads on System z

IBM Rational Developer for System z software helps speed the development of traditional mainframe, Web and composite applications. With comprehensive development tools to help create, deploy and maintain traditional enterprise and composite applications, this software enables developers with different technical backgrounds to easily participate in critical technology projects.

Rational Developer for System z with Java™ technology provides a unified development environment for heterogeneous enterprise application development with workload spanning System z run times such as IBM CICS®, IBM IMS™, IBM DB2® (database or data server) technology and batch-to-Web and Web front-end Java Platform, Enterprise Edition workloads running on IBM WebSphere Application Server software.

Exploit EGL, an advanced new business language

Larger enterprises often have numerous, disparate development platforms and skill sets. A platform-neutral development approach can help eliminate skills silos, creating a unified pool of business-oriented developers who can be freely shifted across projects according to business demands.

IBM Rational Developer for System z with EGL helps you build that platform-neutral approach by providing a unified development environment for modern System z application development, connecting traditional System z applications in COBOL, PL/I, C/C++ or high-level assembler on CICS, IMS, DB2, batch-to-Web and Web front-end applications written using EGL. This can help speed delivery of integrated high-quality code while working within the organization's development processes, tools and philosophy.

Build rich Web 2.0 applications with EGL

IBM Rational Developer for System z with EGL now gives you the tools to build rich Web 2.0–style applications in which the presentation logic runs in the browser instead of on a traditional Web application server. Data and business logic required by the application are accessed via service calls made from the browser to services running on a server. EGL can be used for developing both the user interface (UI) and UI logic, as well as the services.

Optimize application performance with the latest compiler technology

The latest C/C++ and PL/I compiler enhancements allow you to produce high-performing IBM z/OS® software-based programs that can exploit the new IBM z10™ hardware, including the Decimal Floating Point module.

The new capabilities in XL C/C++, Enterprise COBOL and Enterprise PL/I compilers help you accelerate application modernization and SOA projects by simplifying the integration of traditional mainframe applications with new XML and Web-based business processes and access to CICS, IMS and DB2 systems.

Easily extend applications to the Web with reduced cost and risk

Making existing mainframe applications available via the Web can help extend their value while increasing efficiency and promoting asset reuse. With IBM Rational Host Access Transformation Services (HATS) for Multiplatforms software, you can create Web applications—including portlets, rich client applications and applications targeted for browsers on mobile devices—that provide a standard and easy-to-use GUI for your 3270 applications running on the System z platform. You can also use Rational HATS to create Web services that provide standard programming interfaces to business logic and transactions contained within host applications. These Web services can then be reused as building blocks within your SOA solutions.

Develop an understanding and integration of heterogeneous data sources

The ever-growing complexity of enterprise databases and environments means that many companies now face numerous problems associated with enterprise data modeling and information integration. One of the biggest challenges is gaining a thorough understanding of the multitude of enterprise data assets and how they relate to one another. If you don't have a full understanding of these relationships, even simple changes can have a larger-than-anticipated impact and can result in costly redevelopment.

IBM Rational Data Architect software helps data architects design relational and federated databases, understand information assets and their relationships, and streamline database projects. Combining traditional data modeling capabilities with unique mapping capabilities and model analysis, Rational Data Architect organizes the functionalities in a modular, project-based manner. Further, the application is integrated with requirements management and team tools to help improve project time to value and facilitate enhanced consistency and accuracy in the enterprise environment.

IBM Data Studio software provides an integrated data management environment that can help you design, develop, deploy and manage database applications throughout the data lifecycle. Rational Data Architect can also be used with Data Studio to help improve collaboration between data architects, developers and database administrators.

Skills modernization: leveraging and modernizing existing and new skills

Traditional IT professionals have decades of experience and domain knowledge, but leveraging this experience to improve current enterprise applications and take advantage of the new architectures and technologies that are available on these platforms can be difficult. IBM offers several tools that support higher development productivity through the powerful, platform-neutral, business-oriented EGL. Because it's platform independent, EGL enables developers to build cross-platform applications and automatically generate and deploy native Java and COBOL code that's optimized for the target platform. EGL hides the details of the target execution platform and associated middleware, enabling developers to focus on the business problem rather than on

the underlying implementation technologies. Even developers with little or no experience with Java and Web technologies can use EGL to create enterprise-class services and applications quickly and easily.

Team infrastructure modernization: improving team collaboration and responsiveness

Organizations have traditionally managed mainframe development separately from other platform development. This separation not only can hinder collaboration and productivity across the software lifecycle, it can also lead to errors that result in application failure or downtime. IBM tools for process, quality and change and release management help automate and enforce development processes and enhance collaboration and productivity across multiple operating platforms throughout the application lifecycle. These tools help you:

- *Enforce software governance policies and procedures across functionally diverse and geographically distributed teams.*
- *Ensure that business goals and requirements drive downstream design, development and testing.*
- *Lower costs by eliminating duplicate tools and processes.*

- *Realize improved end-to-end communication and traceability across the lifecycle.*
- *Verify software builds and document the exact software versions that are deployed.*
- *Manage quality across the software delivery lifecycle.*
- *Strategically integrate application security throughout the software development lifecycle.*
- *Validate the scalability and reliability of complex applications before deployment.*

Create a consistent development process

No two software development projects are alike. Each project has different priorities, requirements and technologies. Yet on every project, you want to minimize risk, ensure predictable results and deliver high-quality software on time. IBM Rational Method Composer software is a flexible software development process platform that can help you deliver customized yet consistent process guidance to your project team. By organizing your projects by disciplines and phases, each consisting of one or more iterations, you can better address risk early and continuously.

Gain control of evolving business requirements

Software development is a team endeavor, so it's critical that team members possess a shared understanding of a project's vision, goals, specifications and requirements. But this can be difficult to achieve when project teams are geographically distributed and functionally isolated. IBM Rational Requirements Composer software can help you improve communication and facilitate better project management. It can also help enable project teams to manage their requirements, write good use cases, improve traceability, strengthen collaboration, reduce project risk and ultimately improve product quality.

Manage software change and release processes across multiple platforms

Change and release management solutions can help boost productivity, improve visibility into projects and processes, unite distributed teams, and provide audit trails and traceability across the software development lifecycle for fast delivery of high-quality software. Further, tools such as IBM Rational ClearCase® software, with its support for the IBM z/OS operating system, can unify software configuration management and software change management workflows.

They can also help manage the software development lifecycle by using built-in replication and synchronization capabilities to provide integrated version control, workflow management and defect tracking.

Enterprise change management applications such as IBM Rational ClearQuest® software can help protect your software assets globally and help ensure that changes are linked to approved requests—and that those changes are driven by a valid business requirement. IBM Rational Build Forge® software provides build and release management and helps IT groups automate repetitive tasks and enable consistent, repeatable processes. IBM Rational solutions can also help your globally dispersed teams manage the complexity of parallel development when multiple changes and releases are going back and forth.

Enable collaboration across projects and teams

IBM Rational Team Concert™ for System z software helps geographically distributed software delivery teams write, manage and deploy applications on a mainframe. Built on the IBM Jazz™ technology platform, this software improves productivity and

efficiency by enabling collaboration across platforms and technologies, while breaking down geographic or organizational boundaries. The initial release of Rational Team Concert for System z provides support for a hosted repository on System z.

Automate functional testing

Though functional testing can be performed using a purely manual approach, automation can deliver a number of benefits to your software development organization. IBM Rational Functional Tester software helps you automate functional and regression testing on a number of platforms, allowing you to create a test and execution process that's resilient in the face of application change. Functional testing solutions from IBM help reduce complexity and improve test efficiency and reuse with a set of manual and automated tools designed to address your unique needs. Additionally, IBM testing solutions can help you:

- *Free quality assurance (QA) staff from maintaining and executing basic tests, allowing them to focus on more complex or customized tests.*
- *Automate nontesting activities such as test lab machine preparation and database configuration.*
- *Reduce human error during test-step execution and test-result recording.*

Validate application scalability with performance testing

Your Web presence says a lot about your organization. To help ensure that your customers, suppliers, partners and employees can access the information they need in realtime, it's important to take steps to prevent application failure due to performance-related problems. IBM Rational Performance Tester software can help ensure that your z/OS applications scale to meet your customers', suppliers', partners' and employees' demands for realtime information.

Investments modernization: enabling business flexibility

Modernizing how you invest your development dollars is the final key to enterprise modernization. Investments modernization includes moving investments to key platforms and architectures and then training your developers to be more productive in those environments. Organizations that continue to rely on inefficient legacy applications and prerelational databases are finding that their ongoing maintenance costs are skyrocketing. To avoid this scenario, you need to make the transition to open, modular and proven software development

platforms that span the entire software delivery lifecycle. Application development offerings from IBM can help you:

- *Devote resources to new development rather than to maintenance.*
- *Move to supported platforms and leverage the capabilities of the IBM Rational Software Delivery Platform.*
- *Make incremental improvements within the context of a long-term strategic modernization plan.*

Test environments to help gain hands-on experience

Now you can get hands-on experience with IBM enterprise modernization solutions for the System z platform. Available on the ibm.com® Web site, enterprise modernization virtual test-drives allow you to evaluate solutions in modernization areas: assets, architectures, skills, team infrastructures, processes and tools. Each solution is based upon real customer experiences and offers a proven path to get you started with your modernization projects today.

This virtual technology exploration site makes it easy and fun to quickly try practical scenarios guided by self-paced exercises. Leverage exist-

ing assets, architectures and skills to quickly develop modern applications for the System z environment. You can also integrate, test and deploy applications in a live test environment.

Modernization in action: financial services organization speeds development and test time to stay competitive

For one of the largest financial services organizations in Europe, speeding development and testing time for mainframe applications was critical to staying competitive. By modernizing its mainframe application and development processes with IBM Rational Developer for System z software, the company increased development productivity by 15 percent and testing productivity by 10 percent.

Now, both COBOL and Web applications developers use a similar development environment. Among new efficiencies, debugging is much faster, and developers find it easier to learn because they don't have to memorize commands to be productive. Because the software is based on Eclipse, an open source platform, it's easy to enhance and customize, saving the company time and money. Additionally, this modernization initiative has positioned the company to move toward an even more flexible SOA architecture in the coming years.

Why enterprise modernization solutions from IBM?

With decades of leadership in enterprise modernization, IBM is well positioned to provide the capabilities you need to incrementally and cost-effectively evolve your enterprise systems toward modern architectures and technologies. Plus, IBM can help you modernize the people, assets and business intelligence you already have, and put your organization on the evolutionary—not revolutionary—track to success.

Enterprise modernization solutions from IBM are designed to help you modernize your applications while controlling costs, minimizing architectural complexity and unifying siloed teams. Offering an array of products, services and best practices, the IBM Rational Software Delivery Platform supports developers throughout the software and systems delivery lifecycle. And IBM Rational Software Delivery Platform desktop products enable global teams to better implement and manage the delivery of software and systems architectures while improving lifecycle quality. Rational software products are designed to help simplify communication and collaboration



across geographically distributed teams, allowing team members to integrate and trace requirements across the delivery lifecycle; synchronize, deploy and test assets remotely; and help ensure architectural integrity and product quality.

For more information

To learn more about IBM tools for enterprise modernization, contact your IBM representative or IBM Business Partner, or visit:

ibm.com/software/info/developer/solutions/em/systems/z

Experiment with real-world enterprise modernization solutions for the IBM System z platform by visiting:

ibm.com/developerworks/downloads/emsandbox/systemz.html

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