

IBM Rational solutions for systems and software engineering

*Driving innovation into the systems development
life cycle*



Highlights

- Improve life-cycle collaboration, coordination and automation
 - Make customer requirements the heartbeat of your projects
 - Reduce risk early with model-based systems development
 - Manage risk with requirements-driven quality management
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As technology continues to transform the world around us, key trends are emerging. The leading businesses across all industries are those that continue to deliver innovation to their respective markets. This innovation often comes from the integration of many interconnected systems, products and services producing new behaviors that offer real value to customers.

For example, in today's automobiles many of the increases in fuel efficiency are directly tied to innovative new ways of integrating electronically controlled engines, brakes, batteries, and more to maximize efficiency and eliminate waste. These interconnected systems need to harmonize with safety systems, diagnostics, and the users themselves to provide the complete experience required to meet consumer and industry demands.

A key enabler to such innovation is the increasing amount of embedded software that integrates with hardware and electronics. Not only does the software have to meet the specific footprint and performance needs of the embedded solution, it often must be developed against the strictest regulatory compliance and safety standards. Embedded software often underpins the functionality needed by the system components forming an invisible thread that will mesh with the entire system. When even a single system requirement changes, the software must account for these changes in the way it delivers functionality and interacts within its ecosystem.

The growing complexity of modern systems leads to increasing challenges in managing joint development life cycles, testing sequences and rollouts, and in monitoring and managing these systems once they are delivered.



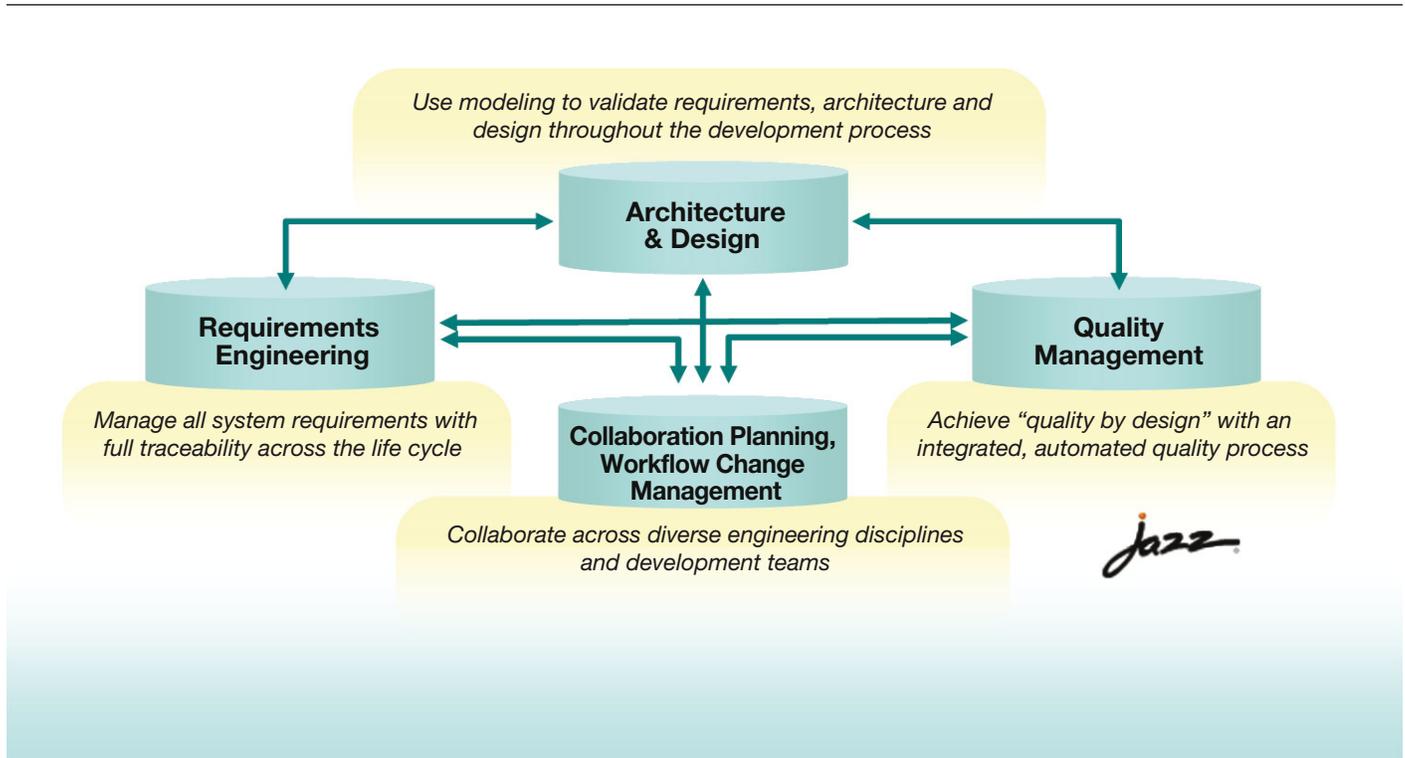


Figure 1: Rational life cycle support spanning systems and software engineering

Addressing the challenge throughout the life cycle

IBM® Rational® software is helping companies to meet this challenge by providing smarter approaches for describing, building and validating complex systems and the software that powers them. This technology supports systems, hardware, and software engineering teams to work together efficiently through more effective collaboration across the life cycle, and can help clients to deliver higher quality products, on time, with reduced risk.

The IBM Rational solution for systems and software engineering provides collaborative, integrated systems engineering and embedded software development capabilities to help organizations build systems, technology-enabled products and services. The solution delivers world class practices and tools that unite mechanical, electronic and software disciplines. Collaborative capabilities and automation are injected into project management, requirements engineering, architecture design, and quality management. Tools in the solution can share requirements, model artifacts, and other development components and provide comprehensive life-cycle management that can be tailored to your specific industry needs. The solution enacts the systems delivery workflows and task management capabilities to effectively run today's systems delivery projects.

The solution can help you to:

- **Improve your life-cycle collaboration, coordination and automation**

Unite globally distributed teams across the systems development life cycle through easily accessible, web-based support for collaboration. Coordinate the delivery of projects and work products with highly visible integrated planning, life-cycle traceability, enterprise change management, automated process workflow guidance, and real-time status reports and metrics, captured automatically in dashboards. Help improve team productivity and progress tracking with tools supporting individual participation, cross-team “in context” collaboration, and search and queries for project information.

- **Make customer requirements the heartbeat of your projects**

Adopt effective requirements engineering processes that inject customer needs into the center of your development activities. Perform effective impact and change analysis across different disciplines and subsystem views. Facilitate visibility and collaboration on requirements across the entire development organization.

- **Reduce risk early with model-based systems development**

Combine requirements, models and designs to form an iterative approach to systems engineering and software development that allows continual validation and verification. Rather than relying on the organizational abilities of one or two key design team members, the design becomes centrally accessible to the entire team. The models then become the source of the entire design—meaning system specifications are formulated from the requirements, and interface requirements and source code can be generated directly from the models. Additionally, test plans can be derived from models and documentation can be automatically generated from the models.

- **Manage risk with requirements-driven quality management**

Establish a collaborative, customizable quality management hub that can unite teams and provide an enforceable process workflow. The solutions can help manage risk in smart product development by linking verification activities directly to requirements. These activities include test management, status and results tracking; prioritizing verification activities according to risk and managing defect resolution.

Solution core products

- **IBM Rational Team Concert™**

A collaborative development environment providing system life-cycle planning, project health, integrated reporting, customizable process support, work item management, change management, source code management and build management. IBM Rational Team Concert connects dispersed development teams to increase individual and team productivity, compress development cycles, and rapidly deliver high-quality products and systems.

- **IBM Rational DOORS®**

A world leading requirements management system that contains proven capabilities to help increase quality and efficiency by optimizing requirements communication and collaboration. IBM Rational DOORS is a highly scalable solution for managing project scope and cost, helping you meet business goals, satisfy customer needs, and address applicable regulations and standards—throughout your organization and across your supply chain.

- **IBM Rational Rhapsody®**

A visual analysis and development solution for both systems engineering and embedded software development that helps to graphically abstract and simulate complex designs to aid in improving productivity and reducing costs and risk. IBM Rational Rhapsody enables industry standard model driven development (MDD), with full embedded, real-time and technical application development environments for C, C++, Ada, and Java™ based on advanced round-trip software engineering.

- **IBM Rational Quality Manager**

A robust solution which provides testing teams with the means to track and manage the whole quality life cycle. IBM Rational Quality Manager is a web-based test management environment for quality professionals who seek a collaborative and customizable solution for test planning, workflow control, tracking, and metrics reporting, designed to help unite teams by seamlessly sharing test information, accelerating project schedules and making informed release decisions.

Summary

To succeed in today's fast paced, competitive marketplace, companies must cultivate efficient and effective ways to communicate and collaborate across business and engineering domains. The IBM Rational solution for systems and software engineering is a collaboration platform that integrates a set of practices and tools for systems and software development, helping you to create and manage the life-cycle work products necessary to deliver today's smarter systems, products and services.

For more information

To learn more about the IBM Rational solution for systems and software engineering, please contact your IBM marketing representative or IBM Business Partner, or visit:

ibm.com/software/rational/workbench/systems/

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