



Productive, Lean, modern, agile

How IBM Rational can transform your mainframe software delivery

Rising pressures

Enterprises today face four key barriers to achieving optimal return on their past and present investments in technology. The first is the perceived cost and risk of modernizing or replacing tried-and-trusted heritage applications. The second is that significant skills gaps are beginning to emerge, both as skilled developers reach retirement age and as the sheer number of technologies splits developers into ever smaller and more specialized groups (creating so-called 'islands of skills'). The third barrier to ROI is that many development teams are still poorly integrated, leaving skilled personnel unable to collaborate effectively with each other, or with other teams. Finally, increasing complexity and inefficiency, in the form of duplicated and competing technologies, means that ongoing investments are not increasing capacity or capability as much as they should.

These four barriers can be seen in the broader context of growing pressure from the business to cut costs, minimize risk, enable new business opportunities, and use technology to drive business process optimization.

Drawing inspiration from the IBM DevOps concept, many enterprises are keen to enable continuous software delivery cycles that will maximize their ability to seize market opportunities and reduce time to market. But without a comprehensive understanding of their existing application assets, most organizations are in a poor position to achieve these aims.



This paper explains how IBM® Rational® Developer for System z® addresses the key software development challenges identified by enterprises, helping them to:

- Accelerate software delivery—for shorter time-to-value
- Balance speed, cost, quality and risk—for increased capacity to innovate
- Reduce time to customer feedback—for improved customer experience.

IBM Rational Developer for System z: four key value propositions

In a recent TechValidate survey commissioned by IBM, senior IT practitioners and managers at over 70 enterprises responded to questions about their experiences before and after deploying IBM Rational Developer for System z. The survey results point to four clear value propositions for the IBM solution across productivity, Leanness, modernization and business agility.

1. Productivity

Developer productivity emerged as the number one challenge in enterprise software development, cited by 43 percent of survey respondents. Difficulty in maintaining and modernizing heritage applications is clearly a contributory factor, as 36 percent of respondents reported that developers were spending too much of their time trying to understand heritage code.

With developers in many enterprises over-committed to application maintenance and modernization, too little resource is available for the innovation demanded by the business, and there is too little development throughput in general. As related factors, projects tend to run over schedule and over budget, which is pushing the average cost per project to unacceptably high levels.

Rational Developer for System z delivers increased productivity and frees up time for innovation and other higher-value activities. The TechValidate survey results bear this out: 61 percent of respondents measured higher developer productivity thanks to Rational Developer for System z, and 78 percent of respondents reported at least 10 percent greater speed in the development, testing and delivery of new software. For 19 percent of respondents, the speed increase was even greater, estimated at between 51 and 75 percent. Also contributing to greater productivity, 37 percent of respondents cited improved analysis, speed, agility, quality outcomes and accuracy thanks to Rational Developer for System z.

How does Rational Developer for System z deliver productivity gains?

Rational Developer for System z delivers increased productivity in several ways. Most fundamentally, as a modern graphical IDE it enables developers to see and manipulate multiple views and aspects of their work in parallel, in contrast to the more serial style of working that is afforded by older text-oriented and command line-oriented tools. That dynamic combines with:

- Graphical tools that help developers navigate and understand existing code and reach decisions more quickly (for example: code outliners, call flow diagrams, and data flow analysis diagrams)
- Assistive implementation tools that let developers implement their decisions more quickly (for example: smart editors with hover-help, auto-suggest and auto-complete, and wizards that enable code to be generated rather than hand-written)

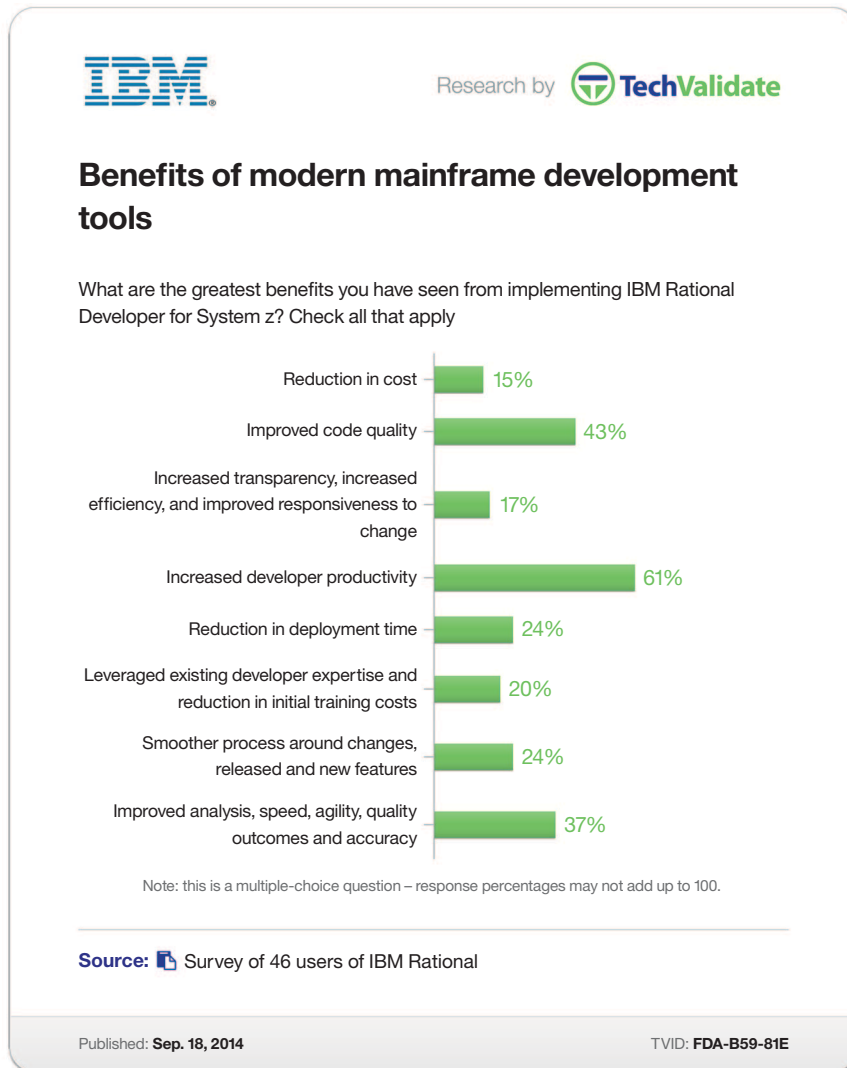


Chart 1. Results of TechValidate survey on the benefits of Rational Developer for System z

Rational Developer for System z also improves team productivity by supporting collaborative development through:

- Open APIs for integrating with non-IBM software configuration management solutions
- And, when combined with IBM Rational Team Concert™ (see feature box), by providing concurrent views of multiple aspects of the contextual lifecycle and project status, and open standards-based artifact linkages across the lifecycle

A complementary solution, Rational Team Concert extends the value of Rational Developer for System z by providing support for cross-platform, concerted team development. This helps enterprises address the growing challenges of developing large or multi-tier applications that span multiple development teams, and of coordinating and monitoring effort and status in a consistent way across all projects and teams.

2. Leanness

The second key challenge in enterprise software development is ensuring Leanness and reducing waste. The goal is to raise the quality of the initial code delivered by Development so as to reduce the incidence of repeated and wasteful re-work by QA and Operations teams. The later in the lifecycle a defect is detected and dealt with, the more costs it imposes on the business, and such costs may include customer satisfaction and revenue, not just internal inefficiencies.

The TechValidate survey confirms the benefits: some 43 percent of respondents using Rational Developer for System z saw improved code quality.

How does Rational Developer for System z promote Leanness?

Rational Developer for System z enables enterprises to become more Lean by:

- Raising the quality of initial code deliveries, thereby reducing churn (waste) in development, test, and operations
- Reducing the total number of defects sent downstream from development, thus reducing the likelihood that serious defects will bleed through to production deployments (where they will impose not only higher maintenance costs, but also potentially the costs of lost customer goodwill and perhaps even revenue).

Examples of Rational Developer for System z capabilities that contribute to higher initial and overall code quality:

- Defect prevention: static code analysis tools that enforce coding best practices (and, if desired, styles) and find various kinds of (logical) coding errors
- Defect prevention: wizards that promote the use of defect-free generated code rather than potentially buggy hand-written code
- Early and automated defect detection: support for unit testing (the zUnit framework and extensive tooling for automating the creation of unit tests and supporting test data)
- Quality risk management: code (test) coverage analysis tools
- Rapid defect take-down: a full, integrated, multi-platform/multi-language debugger (that when combined with Rational Team Concert supports “team debugging” scenarios).

3. Modernization

As enterprises look to web and mobile applications as the future for both systems of record and systems of engagement, the mainframe is coming back into its own as the source system of choice. Enterprises keen to enable new business models and improve competitiveness are increasingly hooking web, SOA, and mobile systems of engagement into heritage systems of record.

Naturally, this shift is not without its challenges. Internal and external customers expect more modern experiences, but delivering them can seem costly, risky and disruptive when it involves updating tried-and-trusted mainframe software. However, failing to move with the times can leave enterprises open to threats from newer and more agile competitors.

How Rational Developer for System z can support modernization

Rational Developer for System z helps enterprises to address the modernization challenge, providing mature tools, wizards, generators and smart editors. It also offers full support for the latest formal and *de facto* standards in software development, ensuring good traction with newly qualified software developers.

By providing a structured environment for efficient and accurate coding, Rational Developer for System z can significantly reduce the cost, risk and disruption associated with modernizing heritage applications.

To support its modernization program, a major business outsourcing and human capital management solutions provider in the U.S. evaluated solutions from several vendors before choosing IBM Rational Software Developer for System z. It used the IBM solution to quickly develop web services that enabled a new mission-critical web application to leverage its heritage back-end transaction management and business logic. The company was attracted to the IBM solution as it represented: “An integrated workbench, a single place where we could launch the product in the morning and do a whole bunch of things without having to start multiple products, split screens or suspend one session and go to another.”

4. Business agility

In an age of app stores and consumerized IT, established enterprises face a growing threat from agile competitors capable of bringing entirely new business models to market in a matter of days or weeks. By improving the speed of development, IT organizations can help the business function to seize new opportunities for revenue generation and increased market share.

The natural advantages of the mainframe in this scenario—its robustness, scalability and security—can be offset by the time it takes to bring new developers up to speed on the platform. This challenge is linked to the loss of skills as experienced developers reach retirement age, which is compelling enterprises to attract talented developers and testers from other platforms.

In the TechValidate survey, 29 percent of respondents said that attracting new talent to work on heritage applications was a challenge, and a further 25 percent cited the portability of developer skills across languages and platforms. This shows that the skills gap can cut both ways. Particularly as hybrid and SOA applications are developed, it may be necessary for experienced mainframe developers to work on projects that use other platforms, development approaches, and technologies—but their skills may also not be easily transferable.

How does Rational Developer for System z support business agility?

Rational Developer for System z can help enterprises reduce their risk and increase agility by addressing the growing skills gap. Modern tooling and support for the latest standards helps organizations to attract and retain the next generation of z developers. As does the fact that Rational Developer for System z uses the Eclipse-based user interface that is already familiar to millions of developers worldwide.

Equally, a broad array of assistive tools (for example, the smart editors mentioned above) help developers to build new skills quickly, while the consistent look-and-feel of the tooling for multiple platforms and languages ensures that skills are more portable. In these ways, Rational Developer for System z ensures that developers can get to grips faster with mainframe software development and maintenance.

Conclusion: boosting ROI

This white paper has looked at the key challenges faced by software developers in enterprises, based on responses to a recent TechValidate survey. For each of the challenge topics—productivity, Leanness, modernization and business agility—Rational Developer for System z has mature features that can help enterprises make lasting improvements.

Of course, all enterprises are ultimately driven by financial imperatives, and they will only make investments if there is a recognized benefit. As competitive pressures grow, so does the need to demonstrate ROI within short timescales. Rational Developer for System z also addresses this challenge: 31 percent of TechValidate survey respondents reported positive ROI from their investment in the solution within one to three months, and 28 percent within just two weeks to one month.

For more information

For more information on IBM Rational Developer for System z, please contact your IBM representative or visit ibm.com/software/products/en/developersystemz

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