The future runs on System z

Accelerating Software Innovation for System z -
Rapidly addressing Changing Business Needs

Hayden Lindsey
Vice President & Distinguished Engineer
IBM Rational Enterprise Tools & Compilers

Change is the new norm…

Changing the cost structure of IT will become a business imperative

IBM Roadrunner Super Computer…
It would take the entire population of the earth, about six billion, each of us working a handheld calculator at the rate of one second per calculation, more than 46 years to do what Roadrunner can do in one day.

"The gap between expected change and the ability to manage it has almost tripled since 2006."
– 2008 IBM CEO study

The **internet of people** is over one billion strong. The **internet of things** is almost one trillion.

By 2010, there will be **30 billion RFID tags** in circulation

Soon there will be over **2 billion people** on the web

IDC **Lowers IT Spending** Forecast for 2009

Change can be very disruptive…or an opportunity!

IT skills shortage reaches **highest level** in 10 years

All software systems crashed due to software bug when F-22 flew over international dateline

50% of outsourced projects are expected to **under perform**

"IT investments made 10 to 20 years ago are … constraining the speed with which these businesses can change and respond to industry threats."
– Gartner's Top Predictions for Industry Leaders, 2007 and Beyond

COBOL thwarts California's "Governator"

North Carolina Jobless Claims Crash State's Web Site

Ohio election web site shut down after being hacked

questia The World's Largest Online Library

#1

The world's largest online collection of complete books, journals and articles

salesforce.com. Success. Not Software.

#1

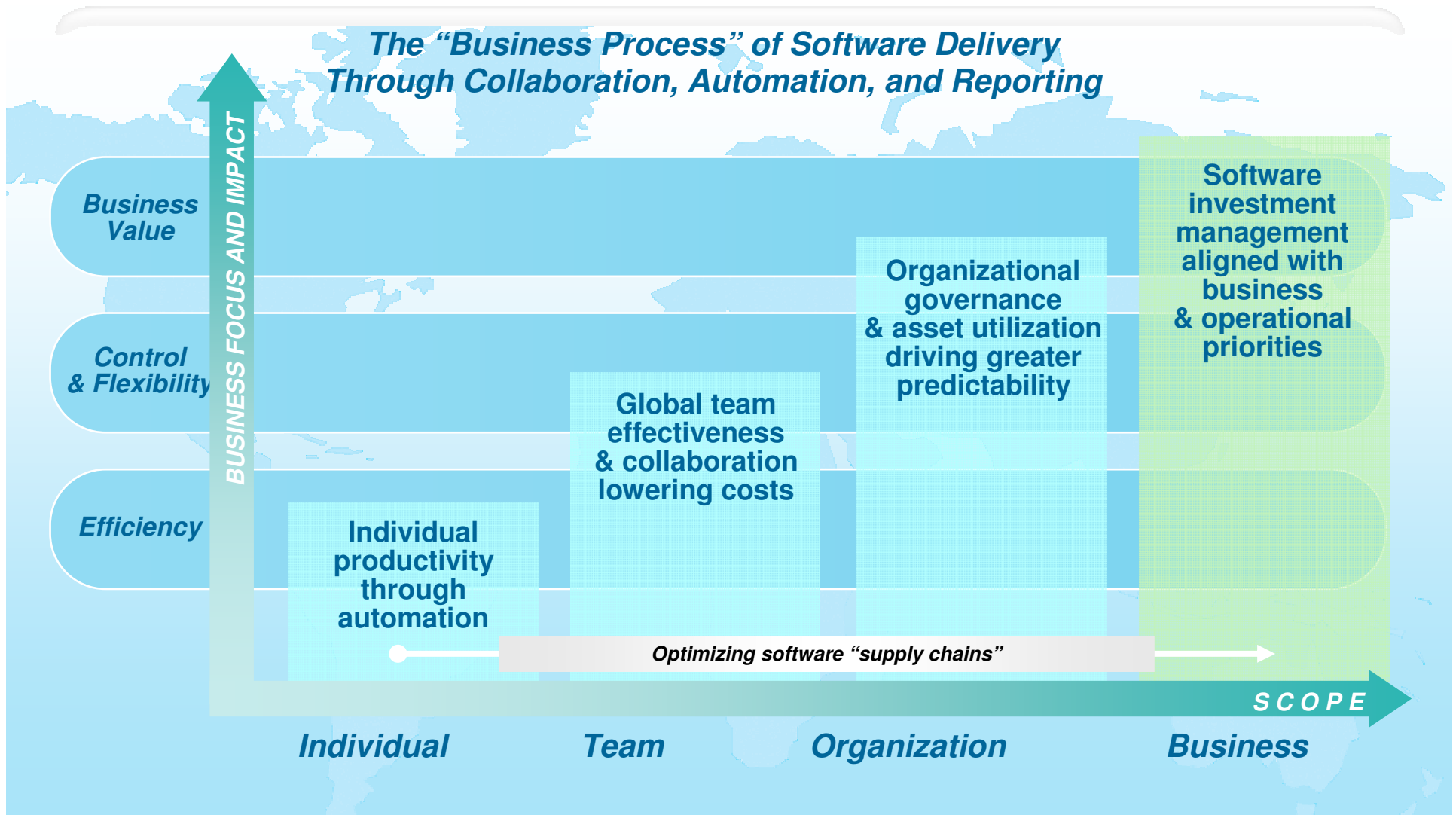**Delivers enterprise CRM applications via the web**

Software can help you exploit change

- **For businesses and institutions everywhere, there have never been so many** *new possibilities*

- **Imagine the amount of** *software* **necessary to:**
  - Deliver a green world
  - Take advantage of information base explosion
  - Communicate with a trillion devices
  - Drive on-going product differentiation
  - To seize new global market opportunities

- **Leaders everywhere are deploying** *increasingly intelligent* **software, systems and products**

- **Accelerating innovation and enabling effective change is highly dependent on our ability to** *manage effective software delivery*

Let's build a smarter planet
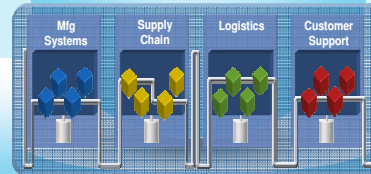
Treat software as a strategic business process

The "Business Process" of Software Delivery
Through Collaboration, Automation, and Reporting

BUSINESS FOCUS AND IMPACT

Business Value

Control & Flexibility

Efficiency

Software investment management aligned with business & operational priorities

Organizational governance & asset utilization driving greater predictability

Global team effectiveness & collaboration lowering costs

Individual productivity through automation

Optimizing software "supply chains"

S C O P E

Individual   *Team*   *Organization*   *Business*

Rational's 3 domains

Enterprise Modernization

IT Business Transformation

Complex / Embedded Systems

- **Each domain has unique characteristics**
  - Standards and technology
  - Skills and culture
  - Project scale and duration
  - Development process
  - Constraints

- **Rational's Enterprise Modernization solutions provide:**
  - a consolidated platform for multi-platform application development
  - a collaborative, integrated environment that supports innovation
  - the same power and flexibility for all types of applications, no matter what platform they are deployed on

- **A customer may be in multiple domains**
  - For example an automotive company has IT applications (e.g. payroll software) and produces products (e.g. cars, trucks)

Key modernization challenges IT organizations must address

"We don't understand the effort, risk and impact of modernizing our legacy software portfolio"

"Our skills gap just seems to keep growing. How do we stay current with all the language and technology changes?"

"Our architecture has evolved to be too complex and convoluted– we need to be flexible and agile."

"Our development teams working on different platforms are struggling to communicate. How do we collaborate in the context of our work?"

Application Challenges

- Lost application knowledge
- Architectural complexity
- Poor quality and performance
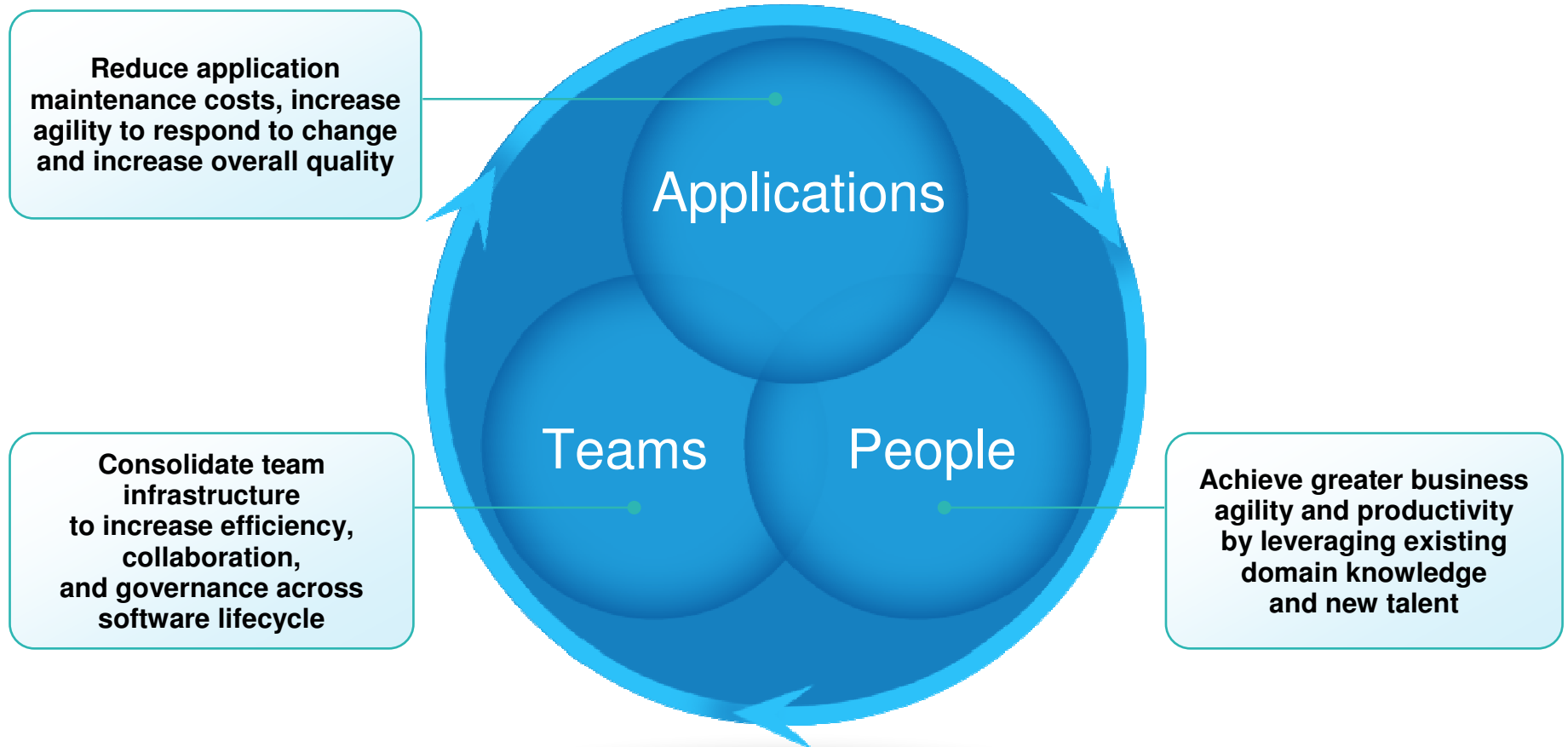- Regulatory and compliance risks

People Challenges

- Skills lock-in
- Plethora of new technologies
- Unattractive, low productivity IDEs
- Steep learning curve due to platform/language-unique tools

Team Challenges

- Poor communication
- Incompatible tools & processes across platforms
- Weak project oversight
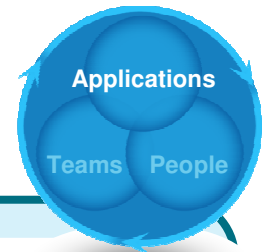- Lack of traceability across lifecycle

Enterprise Modernization solutions

A smarter way to maximize the value of your applications, people and teams

Reduce application maintenance costs, increase agility to respond to change and increase overall quality

Applications

Teams

People

Consolidate team infrastructure to increase efficiency, collaboration, and governance across software lifecycle

Achieve greater business agility and productivity by leveraging existing domain knowledge and new talent

For more information, visit:
www.ibm.com/rational/modernization

Application challenges

CIO

"I need to reduce my annual IT budget by 10 percent. Which applications can I sunset?"

Architect

"Our architecture has evolved to be too complex and convoluted – we need to be flexible and agile."

Development Lead

"Our distributed applications increasingly rely on access to mainframe data and applications. How can we determine the impact of all the changes we need to make?"

Developer

"We're using a XML to define shared data across multiple applications. Can I use XML with my older COBOL and PL/I applications?"
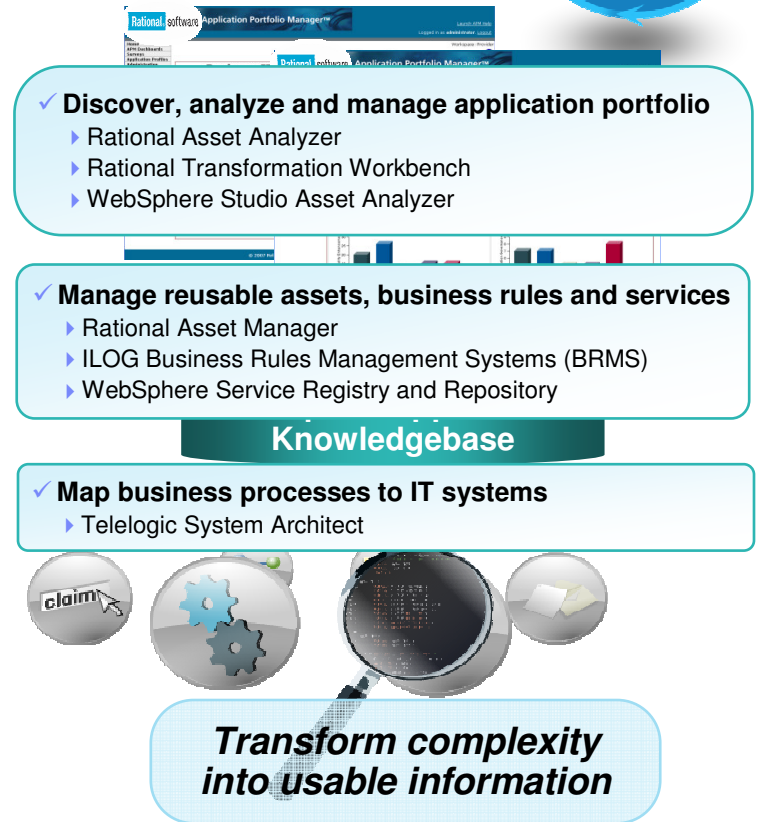
Tester

"Changes to applications have been patched together for so many years that we now have many challenges with the quality and performance of our legacy applications."

Maximize value of your application portfolio with minimum risk

Applications

Teams **People**

- **Save time and money by restoring lost application knowledge**
  - ▸ Quickly determine full impact of proposed changes
  - ▸ Identify and eliminate dead code
  - ▸ Discover business rules and potential services
  - ▸ Re-factor existing assets for reuse

- **Manage the evolution of your application portfolio**
  - ▸ Understand entire application portfolio, any dependencies, and map them to your business processes
  - ▸ Speed the efficiency of decision-making with up to date dashboards
  - ▸ Understand your enterprise architecture
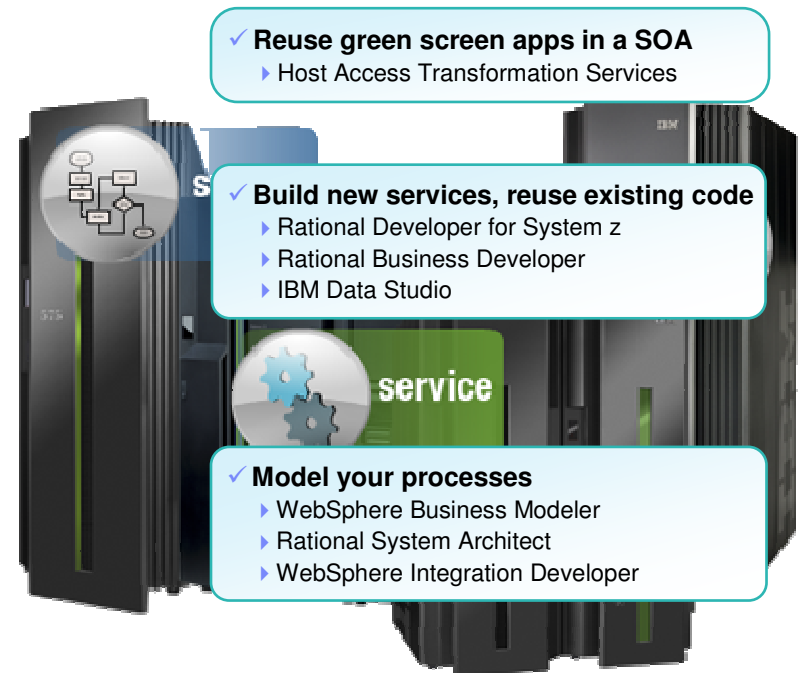   - ▪ Link applications, deployed systems, organizations, business processes

✓ **Discover, analyze and manage application portfolio**
  - ▸ Rational Asset Analyzer
  - ▸ Rational Transformation Workbench
  - ▸ WebSphere Studio Asset Analyzer

✓ **Manage reusable assets, business rules and services**
  - ▸ Rational Asset Manager
  - ▸ ILOG Business Rules Management Systems (BRMS)
  - ▸ WebSphere Service Registry and Repository

Knowledgebase

✓ **Map business processes to IT systems**
  - ▸ Telelogic System Architect

claim

Transform complexity into usable information

*Major health care payer, accelerates claims analysis
by 70% by using business rule management.*

Leverage modern architectures to reduce complexity and improve agility

Applications

Teams   People

- Cut application development time
by reusing proven assets
  - Achieve fast ROI by enabling your green screen applications for a Service Oriented Architecture
  - Quickly create web services from existing EGL, C/C++, COBOL, PL/I, and Java applications

- Accelerate deployment of new services, processes and user interfaces
  - Create new platform independent services
  - Quickly model, architecture and assemble new business processes from existing services
  - Rapidly build modern Web 2.0 interfaces

✓ **Reuse green screen apps in a SOA**
  ▶ Host Access Transformation Services

✓ **Build new services, reuse existing code**
  ▶ Rational Developer for System z
  ▶ Rational Business Developer
  ▶ IBM Data Studio

service

✓ **Model your processes**
  ▶ WebSphere Business Modeler
  ▶ Rational System Architect
  ▶ WebSphere Integration Developer

"HVB IS adopted IBM Rational® Developer for System z software to accelerate mainframe development, improve the efficiency of its COBOL development teams, and move to a similar environment for mainframe and Web development" - Almut Geiger, Product Specialist at HVB IS

HVB Information Services
UniCredit Group

Focus on quality throughout lifecycle to reduce costs and improve customer satisfaction

Applications

Teams People

- **Coordinate end-to-end quality across all tools and platforms**
  - Elicit, capture, elaborate, discuss, manage, and review requirements
  - Identify and resolve coding errors automatically, early in the development cycle
  - Consolidate and monitor test plans, test progress

- **Save time, improve quality and lower costs with automated testing**
  - Automate functional tests
  - Find performance bottlenecks
  - Expose vulnerabilities, privacy issues, and accessibility problems in web applications
  - Generate timely audit and compliance reports

✓ **Quality begins with good requirements**
  ▸ Rational Requirements Composer
  ▸ Rational RequisitePro
  ▸ Telelogic DOORS

✓ **Manage quality throughout the lifecycle**
  ▸ Rational Quality Manager

✓ **Inject quality during the coding phase**
  ▸ Rational Software Analyzer

Regression testing

✓ **Automate testing to improve quality**
  ▸ Rational Functional Tester
  ▸ Rational Manual Tester
  ▸ Rational Performance Tester

✓ **Eliminate quality exposures for your web apps**
  ▸ Rational AppScan

"AppScan has increased our team's productivity by enabling us to automate very complex and time-consuming activities as well as help substantially increase our level of quality, security and regulatory assurance."
- André Hiotis, technology security officer, NAV CANADA

NAV CANADA

Exploit latest compilation technology to achieve higher throughput
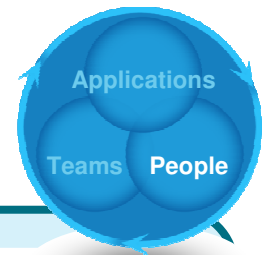

- **Increase capacity and performance without hardware upgrades**
  - Improve performance of C/C++, COBOL and PL/I applications on z/OS
  - Reduce cost of COBOL and PL/I XML parsing by offloading to zAAP specialty engine
  - Maximize application performance on new z10 server without code changes

- **Simplify legacy integration**
  - Leverage XML and Java interfaces in COBOL and PL/I applications

✓ **IBM Compilers on System z**
  ▸ IBM Enterprise COBOL
  ▸ IBM Enterprise PL/I
  ▸ z/OS IBM XL C/C++

People challenges

CIO
"My budgets keep getting reduced. How can we do more work with fewer people?"

IT Manager
"How we do we keep this application running when the developer who has worked on it for years retires?"

Project Manager
"My host programmers don't seem to communicate with my web developers. It's like they speak different languages."

Architect
"How can I architect solutions that shield developers from technical interfaces of platform and middleware technologies?"

Developer
"How can I keep pace with technology changes and keep my skills relevant to the industry?"

Use modern development environments to enhance developer productivity

- **Use common Eclipse-based tooling across multiple platforms and languages**
  - Achieve ~15% improvement in mainframe developer productivity[1]
  - Workstation syntax checking reduces host CPU usage 50%-80%[1]
  - Reduces training costs, more attractive to younger developers

- **Specialized editors and code generation wizards speed development**
  - Code assist for COBOL, PL/I, C/C++, Visual editors for BMS and MFS maps
  - Generate code from UML

System z Green Screen Editors

✓ **Produce code faster, save MIPS**
 ▸ Rational Developer for System z
 ▸ Rational Business Developer

Target Platform:
System z, IBM i, and distributed

[1] Aggregation of results from a productivity study conducted by IBM mainframe customers.

"RDz offers a uniform, open programming environment for both J2EE and PL/1 developers. "RDz accelerates PL/1 development with its local syntax checker and debugging tool."
- Dr. Axel Lömker, KfW Bankengruppe

Use existing and new staff to build multiplatform applications

- **Enable existing and new IT staff to quickly deliver multiplatform solutions**
  - Leverage abstractions to hide middleware complexity
  - Deploy to any platform, including J2EE™, System z and IBM i

- **Build modern Web 2.0 user interfaces without being a technology expert**
  - Empower existing developers to build Rich Internet Applications (RIA)
  - Eliminate need to have skills in JavaScript, Ajax, JSON, HTML and CSS, etc.

- **Get huge savings by migrating from old, stagnant languages**
  - Solutions for Natural/ADABAS and Cool:Gen

Skills

CLAIMS CENTER

✓ **Create multi-platform applications**
  ▸ Rational Developer for System z with EGL
  ▸ Rational Business Developer

Web 2.0   **SOA**

✓ **Build modern Web 2.0 UIs**
  ▸ Rational Developer for System z with EGL
  ▸ Rational Business Developer

✓ **Migrate from old languages**
  ▸ Rational Migration Extension for Natural

Target Platform:
System z, IBM i, and distributed
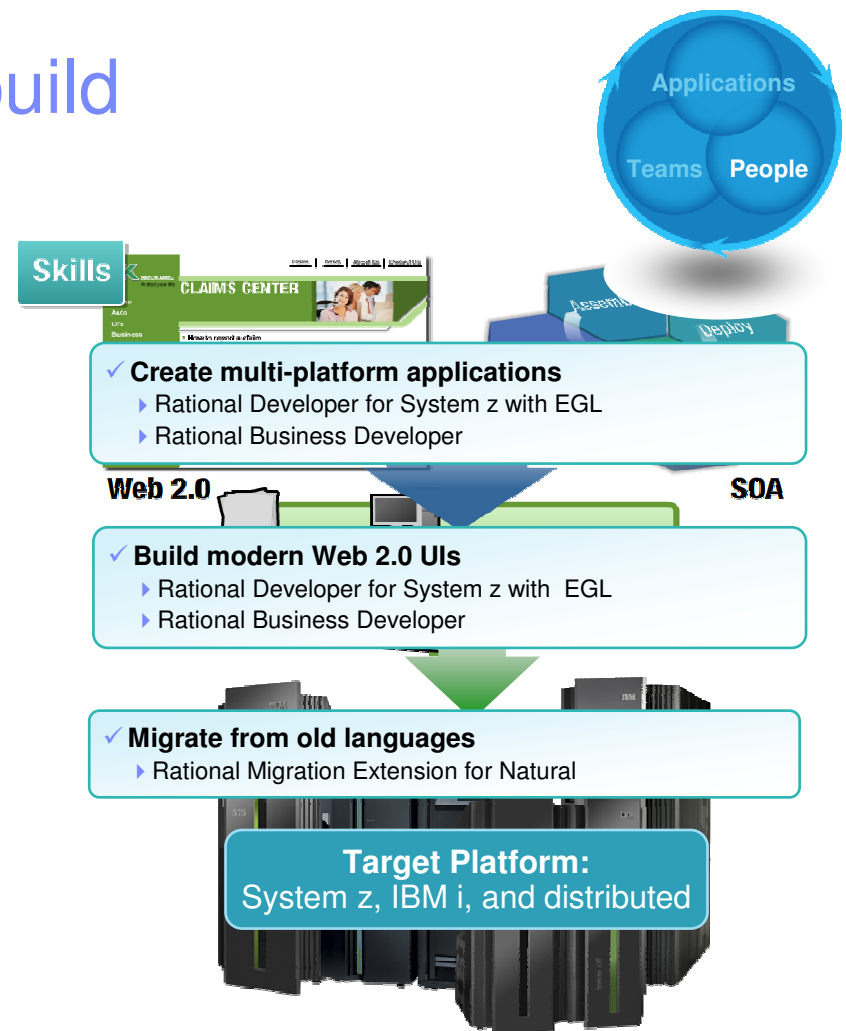
"Currently we have one set of developers for web applications, and another for batch systems. With EGL, the same developers can do both, and we can offer our clients a choice of deployment platforms,"
- Mauricio Alvarenga, IT manager at Montreal Informática

M.I. MONTREAL INFORMÁTICA

Integrando Tecnologia aos Negócios

# Extend green screen applications to the web for the fastest ROI

- **Use your existing staff to quickly Web-enable green screen applications**
  - Provide your end users with flexible, secure Web access to business applications
  - Dramatically reduce end user training and improve IT staff productivity
  - Deploy with no source code modification or application downtime

Extend Green Screen Applications

✓ **Modernize green screen applications**
  ▶ Host Access Transformation Services

Web

Portals

Mobile devices
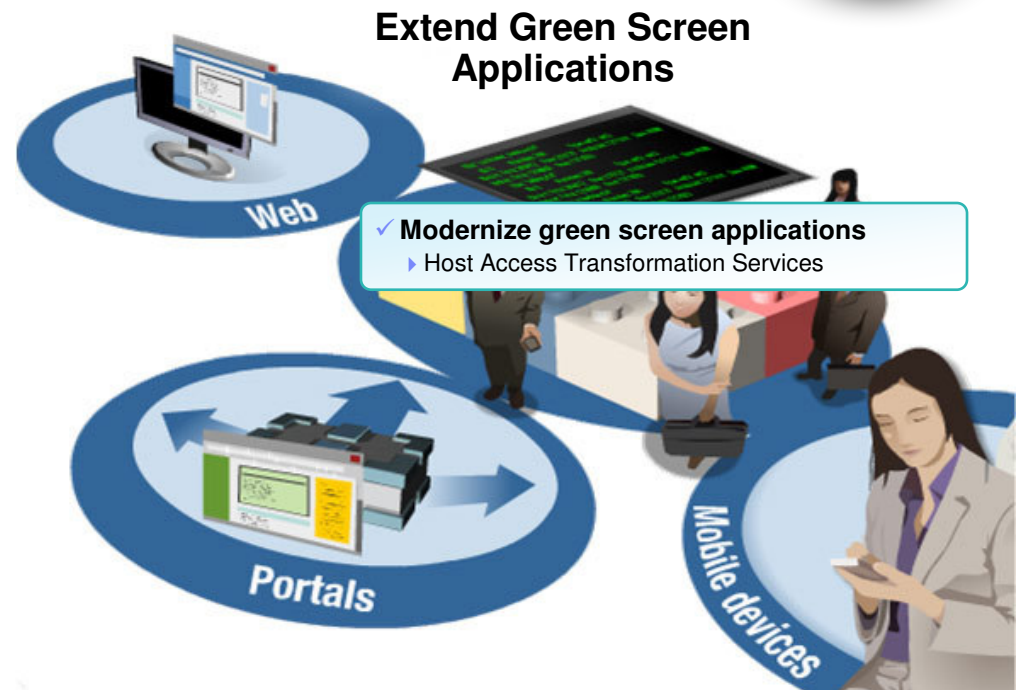
"Rational Host Access Transformation Services (HATS) makes legacy modernization a relatively easy and fast process. I estimate that HATS cut 75% of the man-hour requirements from other approaches we have used"
- Alan Jack, director of technology, Oxford International

Oxford
INTERNATIONAL

Team challenges
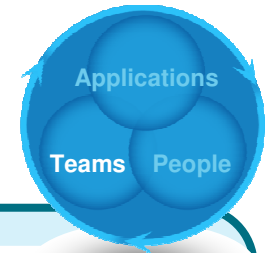
CIO
"Our global software teams working on different platforms are struggling to communicate. How do we collaborate in the context of our work?"

IT Manager
"My line of business needs better access to information about the ongoing projects."

Project Manager
"I need a dashboard that lets me easily see if my project is on track and identify any bottlenecks."

Team Leader
"Why are some developers not following the agreed upon processes?"

Developer
"Why and when was this changed? Is this the latest version that I should be using?"

Unify disparate IT infrastructures to reduce costs and improve operational efficiency

Applications

Teams People
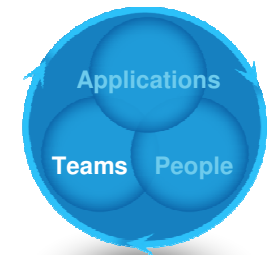
- **Consolidate team infrastructure**
  - Eliminate redundant and duplicate tools and processes
  - Unify change management for all platforms, languages, roles, and locations
  - Ensure accurate global software delivery with a single point of control

.Net
Web Front End

Mainframe

✓ **Use common team infrastructure & processes**
  ▸ Rational ClearCase
  ▸ Rational ClearQuest

✓ **Produce reliable, multi-platform builds**
  ▸ Rational BuildForge

SI Custom
App Dev

C/C++
In-house Offshore

- **Automate multi-platform builds**
  - Access a consolidated, real-time view of software assembly processes
  - Detect and resolve errors with error log filtering and automated email notifications
  - Reproduce problems quicker with a reliable and automated 'Bill of Records'
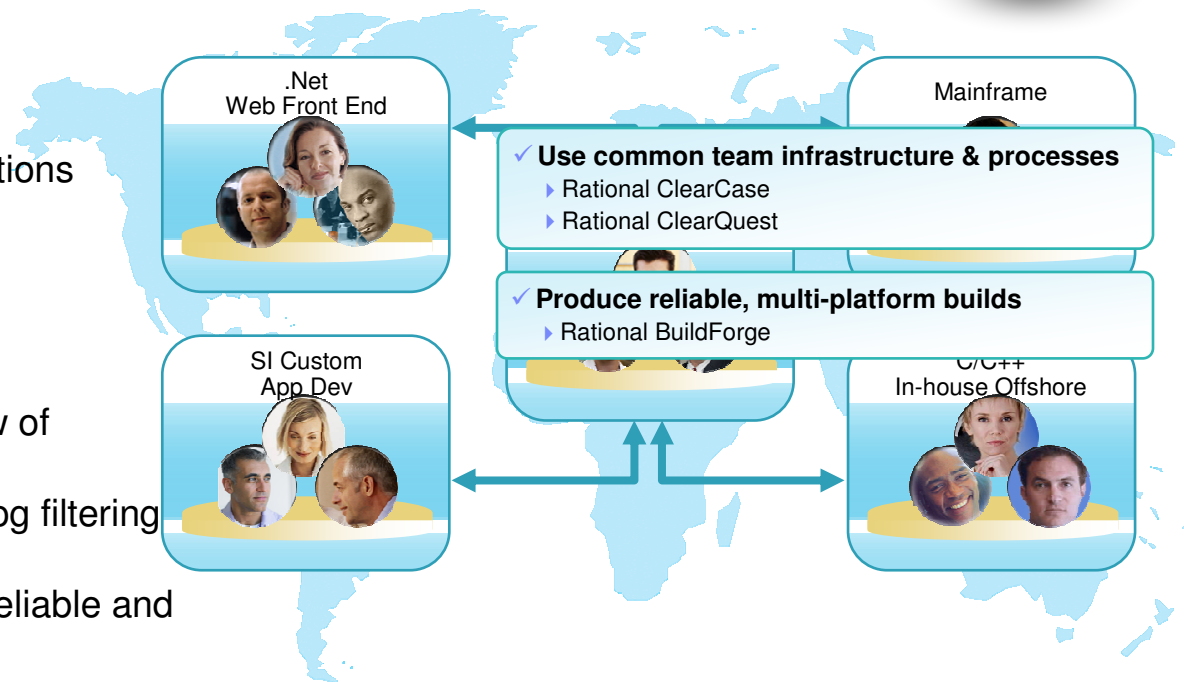
"Rational ClearCase in conjunction with Rational Developer for System z allowed us to completely centralize our software configuration and release management"
- Juergen Dimmler, Product Specialist, Kreditwerk

kreditwerk

Improve collaboration to deliver projects on time
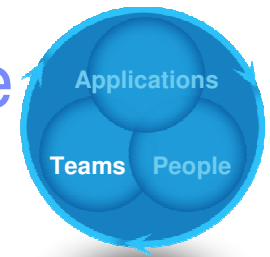
- **Collaborate in context across all platforms and geographies**
  - Make software development more automated, transparent and predictable
  - Think and work in unison with integrated source control, work item and build management

- **Assess real-time project health**
  - Capture data automatically and unobtrusively
  - Use the web for a global view of project status

- **Automate best practices**
  - Accelerate team workflow with dynamic processes
  - Leverage out-of-the-box or customized processes

✓ **Collaborate across the entire team**
  ▶ Rational Team Concert for System z
  ▶ Rational Team Concert

✓ **Do it the best way**
  ▶ Rational Method Composer
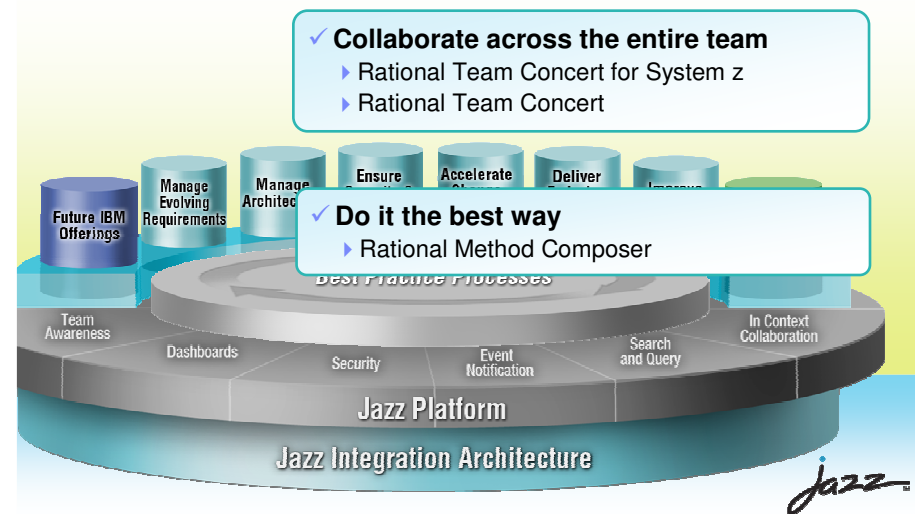
"By providing our development teams with a common platform from which to analyze, design, develop, and test, IBM Rational solutions have created opportunities to improve the quality of our software as well as our organization"
- Douglas Cook, Verizon Business

The Rational Software Delivery Platform
Accelerating software innovation for the entire enterprise

Enterprise Modernization
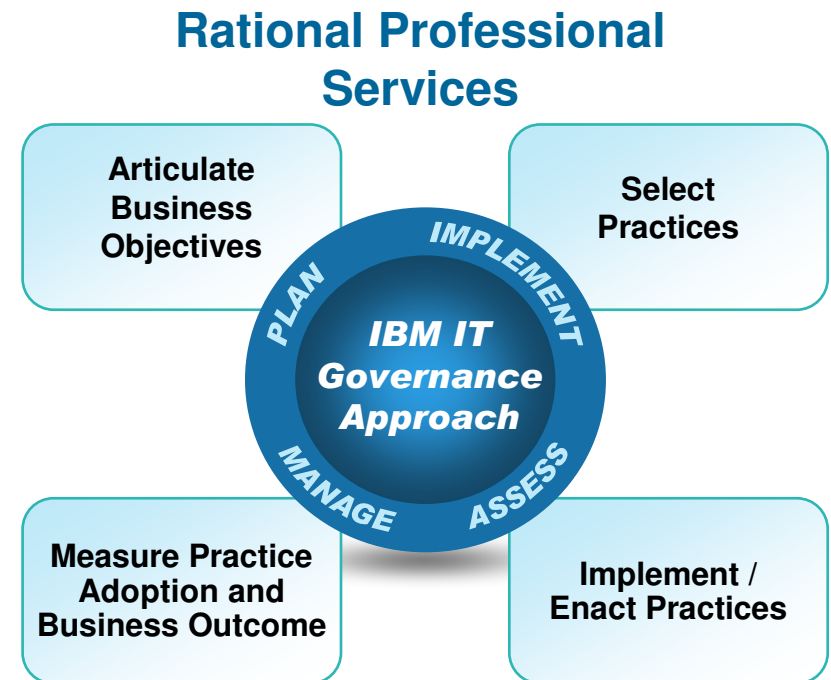
IT Business Transformation

Complex / Embedded Systems
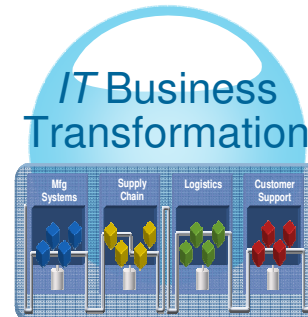
✓ Difficult times present opportunities to companies that can adapt quickly

✓ IT frequently inhibits flexibility due to fragile and poorly understood applications, limited staff productivity, poor collaboration and traceability across teams

✓ Rational Enterprise Modernization solutions deliver flexibility by:
  ▸ Improving how you build, maintain, and manage your Applications
  ▸ Helping your People be more productive
  ▸ Consolidating Teams across locations, roles, and platforms

✓ Get started today. We can help!

Learn more at: www.ibm.com/rational/modernization

Leverage IBM Services to get started today

- **Executive Services**
  - Schedule an *Enterprise Modernization Executive Planning Session* to define modernization strategies

- **Application Modernization Services**
  - Application Assessments to:
    - Develop Modernization roadmaps to resolve specific business issues
    - Improve Application Quality & Performance
    - Identify opportunities for business software delivery improvements

- **People and Team Modernization Services**
  - Provide Implementation Services for Rational Enterprise Modernization tools
  - Provide SCM migration assistance
  - SDLC Assessments to:
    - Improve Software Delivery performance
    - Implement Software Delivery Metrics to more effectively manage the software development environment

Rational Professional Services

Articulate Business Objectives

Select Practices

PLAN · IMPLEMENT · ASSESS · MANAGE

IBM IT Governance Approach

Measure Practice Adoption and Business Outcome

Implement / Enact Practices

More ways to get started

System z and IBM i Sandboxes

Example assets and best practices providing
low-risk, practical, hands-on path
to leveraging IBM solutions

▸ Full version software trials

▸ 'Try online' hosted System z environment

▸ Hands-on-exercises

Community Cafés

Harness a growing community of business
partners, customers, and IBM employees

▸ C/C++ Café
▸ EGL Café

▸ COBOL Café – coming soon

*Jump-start
your
modernization
projects!*

Education Series

**Modern Application Architecture
for COBOL Developers**
Learn how to design and integrate composite
applications across CICS and WebSphere –
leveraging existing COBOL processes

EGL Distance Learning
Eight days of training free electronically - lectures,
labs, and electronic support

**Learn more at:
www.ibm.com/rational/modernization**

VM/ESA
z/VM
Thinking about migration?

z/VSE
40 YEARS

z/OS

i for Business

Rational Software Conference Series 2009

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Real Insights.
Real Results.

May 31st – June 4th Orlando, Florida

Rational. software

Highlights

- Over **500** sessions across 20 tracks including Executive & Business Partner forums

- *New* embedded systems / PLM track integrating the Innovation2009 TELELOGIC USER GROUP CONFERENCE

- *New* application security & compliance track

- *New* enterprise architecture and SOA rich content

- *New* IBM Innovation Center (ICC) satellite events

- *1st Ever -* Software Reality TV show …

Real Customers,
Real Challenges
Real Solutions in
Real Time!

Learn more at:

- IBM Rational software
- Rational launch announcements
- Rational Software Delivery Platform
- Accelerate change & delivery
- Deliver enduring quality
- Enable enterprise modernization

- Ensure Web security & compliance
- Improve project success
- Manage architecture
- Manage evolving requirements
- Small & midsized business
- Targeted solutions

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