Manage your System z Cross-Platform Development

An IBM Teleconference
David Lawrence
Enterprise Tools and Compilers
Rational Software
IBM Software Group
dlaw@us.ibm.com

Rational. software

Business realities
Software failure impacts the bottom line

- Airbus
  Non-compatible software used at different Airbus factories
  $6.1 billion **profit hit over the next four years, 2006**

- TJX
  Cost of data breach at TJX soars
  $256 million **cost, 2007**

- Hewlett-Packard
  Problems with ERP system
  $160 million **loss, 2004**

*Only 34% of software projects **succeed***

*Only 37% of stakeholders are **satisfied** with the **speed** of internal application development, and **just 42%** are **satisfied** with the **quality***

Sources: Forrester Research, Standish CHAOS Report, Comparative Economic Normalization Technology Study, Business Week, CEO Magazine, Computerworld, InfoWeek, Fortune, The New York Times, Time, The Wall Street Journal, Boston Globe.

Rational. software

Why is it so difficult to quickly deliver quality software?

Difficult coordination and communication

Increasing development costs

Short deadlines/ need for faster time to market

Compliance mandates

Pressure from competition

Manual, error-prone tasks

Unpredictable and unreliable processes

Distributed and disconnected teams

Lack of visibility into project status

Reduced staff

Inconsistent quality

No control or insight into development activities

Complex environments

And more!

Rational. software

# What is the business impact of these software delivery challenges?

➢ Delayed and missed releases

  ▪ Effecting the ability to compete with competition

➢ Increased development costs

  ▪ Effecting the overall company 'bottom line'

➢ Poor and unpredictable quality

  ▪ Effecting the business reputation

➢ Customer dissatisfaction

  ▪ Effecting future and current business

Rational. software

Organizations are going global

Needed: multi-platform and cross-geo collaboration and governance

.Net
Web Front End

SI Custom
App Dev

J2EE
In-house
(WW HQ)

Mainframe

C/C++
In-house
Offshore
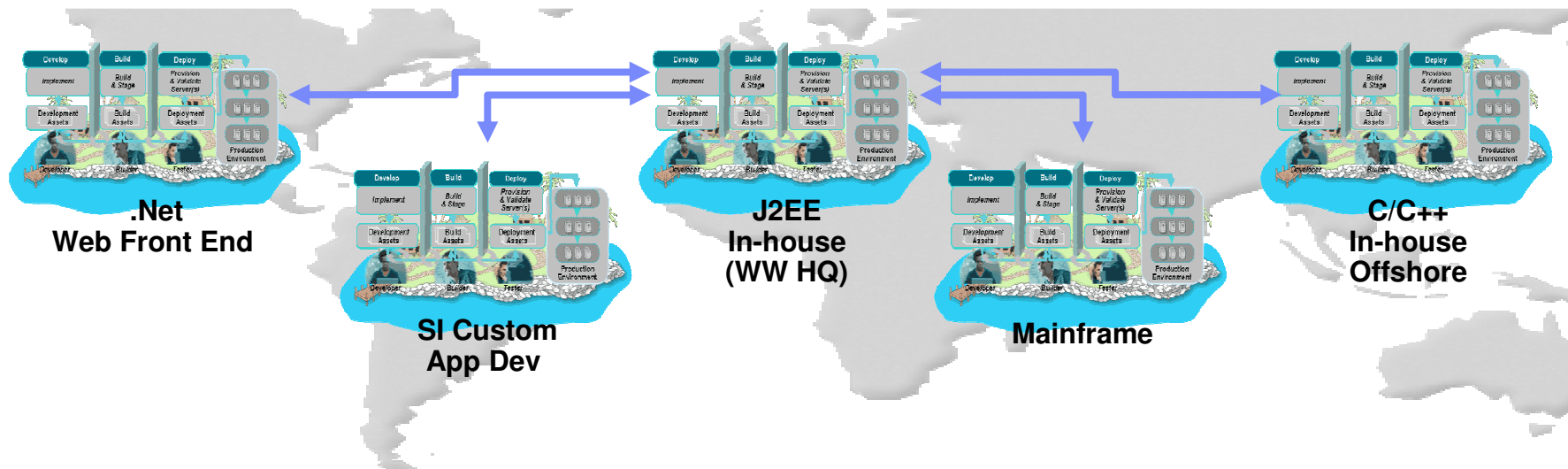
But…

There are different tools, processes and team infrastructure for each deployment platform, greatly complicating development of composite apps

Rational. **software**

Organizations want continued value from their z investment

▸ The market demands integrated, multi-platform solutions

▸ However, many think of z development as "different and unique", constraining efficiency & flexibility

▸ 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, including z

▸ With totally modern tools for System z, customers can choose their deployment platform for new applications based upon runtime requirements (e.g. QoS, proximity to data)
  … and NOT based on out-dated perceptions of z development

▸ It is time to re-think how z development is done!

Rational. software

Modernize your Skills - IDEs

I am NOT going to miss my green screen IDE
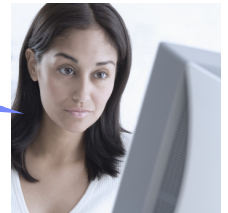
Business Challenge
Low productivity, non-competitive tools for new developers

**How can we…**

▸ Achieve higher productivity for our enterprise developers?

▸ Attract new and younger developers to backfill retiring System z and IBM i developers?

▸ Simplify license management by standardizing on a single, multi-platform development IDE?

▸ Free up System z MIPS for production use?

Solutions
Modern IDEs to achieve high productivity and attract new talent

✓ Use modern IDEs to develop and maintain code
✓ Debug and test from workstation
- *Rational Developer for System z*
- *Rational Developer for System i*
- *Rational Business Developer*
- *Rational Developer for System i for SOA Construction*
- *Rational Application Developer*

Rational software
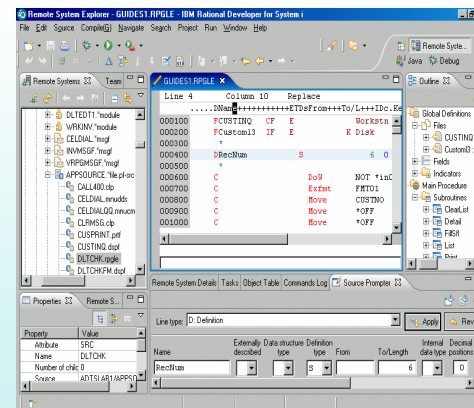
Modernize Your Team Infrastructure

The only island I want to see has palm trees

Business Challenge
### Inefficiencies and quality problems in multi-platform development

How can we…

▸ Increase quality and improve responsiveness for multi-platform development teams?

▸ Simplify management of team infrastructure for multiple development teams?

▸ Reduce team infrastructure costs across the enterprise?

Solutions
### Coordination, traceability, consistency across platforms

✓ Consolidate enterprise and distributed source code management
  – *Rational ClearCase*

✓ Automate and orchestrate defect tracking and configuration management across the enterprise
  – *Rational ClearQuest*

✓ Produce coordinated, traceable, automated, and cross-platform builds
  – *Rational BuildForge*

RDz, RDi, RBD

Enterprise
le Portal

Enterprise
Asset
Repository
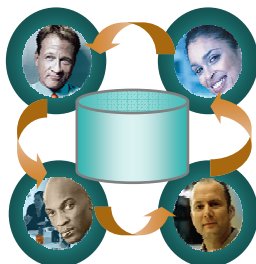
**Distributed
Development Environment**
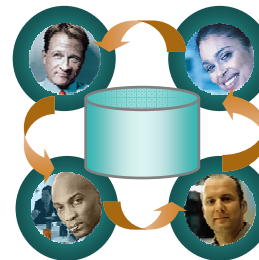
**Enterprise
Development Environment**

IBM Rational Software Delivery Platform
Accelerating software innovation for the entire *enterprise*

Solutions to help customers achieve greater value and performance from their investments in delivering software

- In-house software
- Outsource vendors
- Packaged applications
- Systems & products

- Manage Evolving Requirements
- Accelerate Change & Delivery
- Deliver Enduring Quality
- Drive Robust Architecture
- Improve Project Success

Deploy Processes, Implementation Services, & Governance Best Practices

Collaborative Application Lifecycle Management Platform
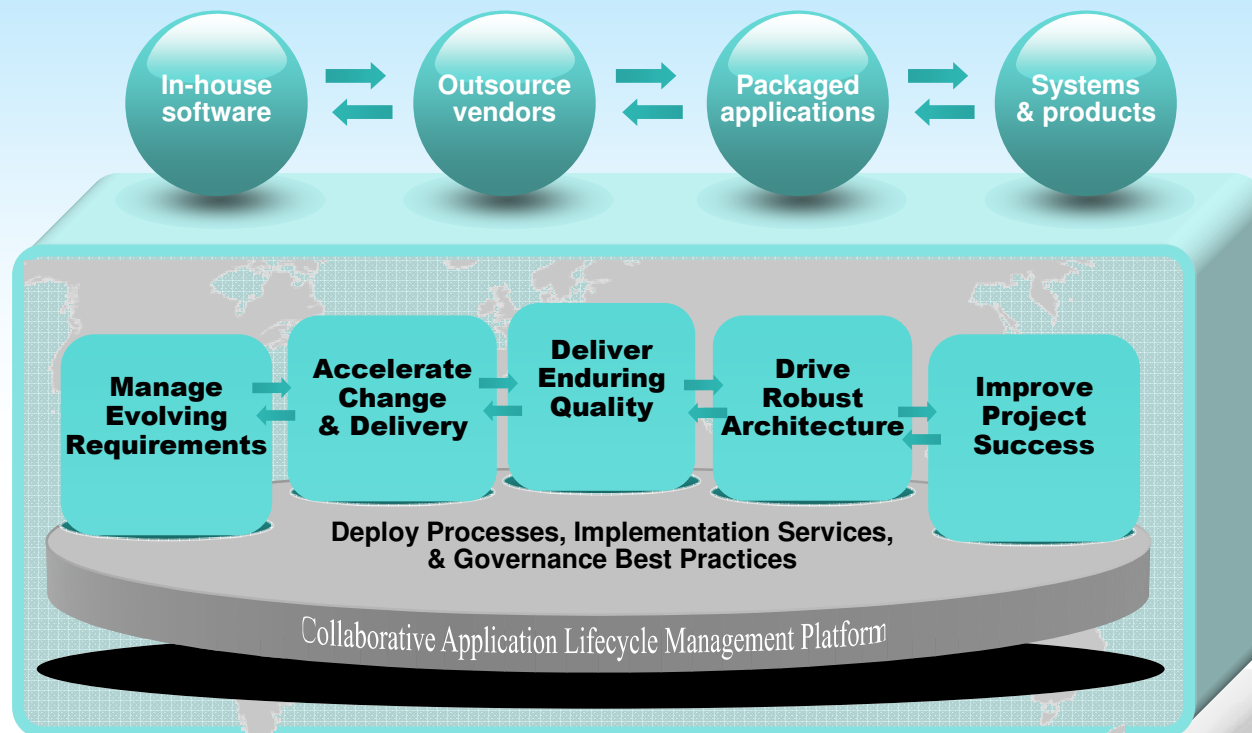
- *Enterprise Modernization and Transformation*
- *Organizational Governance*
- *Skill Development and Community*
- *Implementation Services*

Solution: Simplify your Environment
Standardize your cross-platform application development
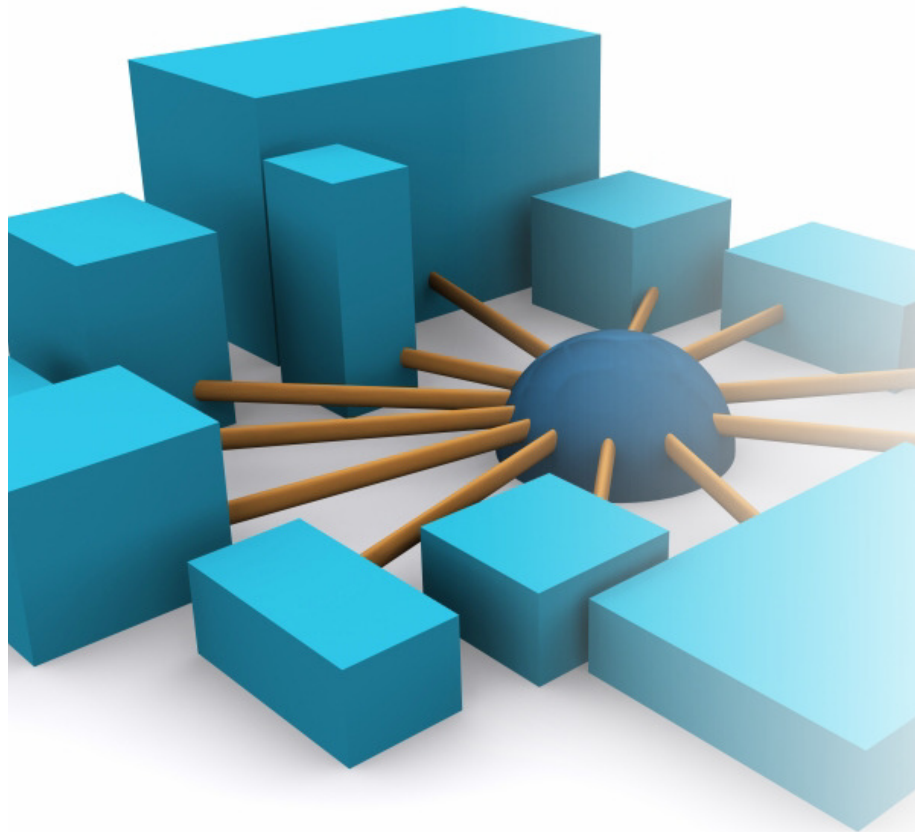
Rational Developer for System z

Integrated Host/desktop IDE

- Local COBOL/PL1 edit, syntax check
- Integrated java, C/C++ development

- Automated host/local filesystem synchronization
- Remote test, debug, job monitoring

Rational Developer for System z

Rational. software

Drive innovation with technology advancements
Build traditional and composite applications with Rational Developer for System z

IBM Rational Developer for System (RDz) provides powerful eclipse-based tools for building COBOL, PL/I, C/C++, Java, HLASM CICS, IMS and batch applications. RDz is designed to optimize and simplify application development for traditional processes, and for the SOA you're building to address your needs today and in the future—through best practices, visual tools, templates, code generation and a comprehensive development environment.

RDz 7.5

▸ Leverages service flow modeler to automate development of CICS services

▸ Develop z/OS applications and CICS and IMS Web services more productively than ever

▸ Manage core and composite artifacts from z/OS

▸ Speed software delivery with integrated, automated end-to-end processes

•Enables traditional; and modern UI's (via RBD)
•Supports local and remote development
•Creates connectivity via web services, CICS SFM, CTG, IMS Connect
•UML to COBOL speeds Model driven development
•Delivers distributed debugging support for SOA applications via Debug Tool
•Integrates to File Manager, Fault Analyzer

IBM Rational Developer for System z

Rational. software
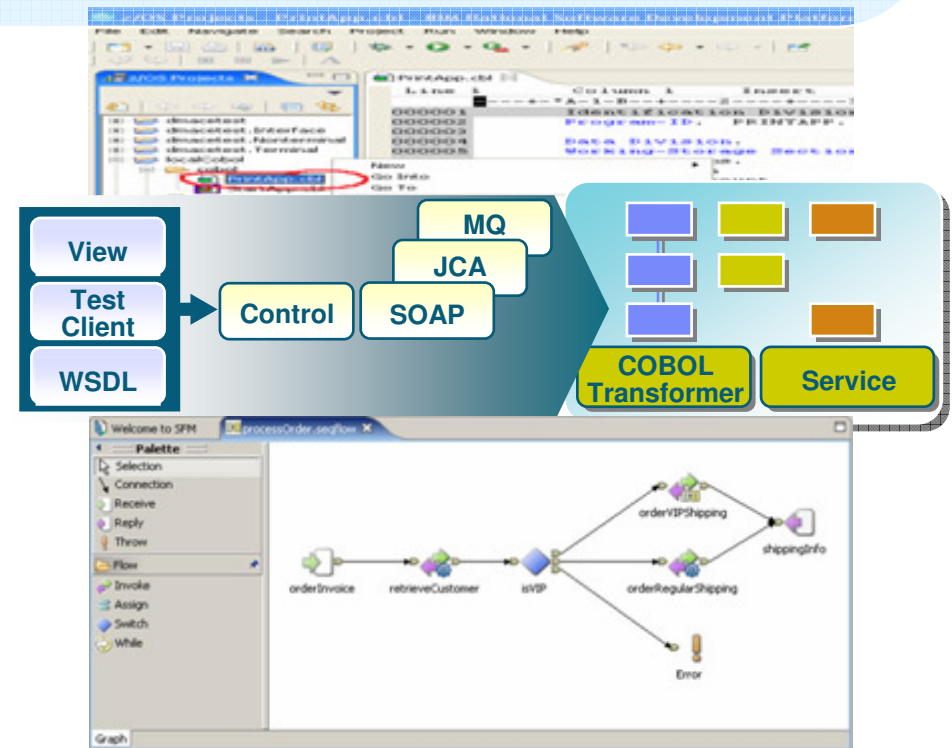
Change, Configuration and Release Management
Improving effectiveness with code-level analysis, version control, process automation, team collaboration and lifecycle traceability

Business Analyst

Create and manage software requirements
- Rational Requirements Composer
- Rational RequisitePro

Collaborate, Report and Automate

Deployment Manager

Deliver into production
- Rational ClearCase
- Rational ClearQuest
- Rational Build Forge
- Tivoli Provisioning Manager

Developer

Track and control development changes
- Rational ClearCase
- Rational ClearQuest
- Rational Team Concert

Enable static analysis code reviews
- Rational Software Analyzer

Project Manager

Automate, manage, and gain visibility in software delivery lifecycle processes
- Rational ClearQuest
- Rational Team Concert

Tester

Manage software quality
- Rational ClearQuest
- Rational Functional Tester
- Rational Performance Tester

Build Engineer

Automate software assembly processes
- Rational Build Forge

Centralize and automate software code reviews
- Rational Software Analyzer

Rational. software

Solution: Simplify your Application Lifecycle
Standardize your development process across your enterprise
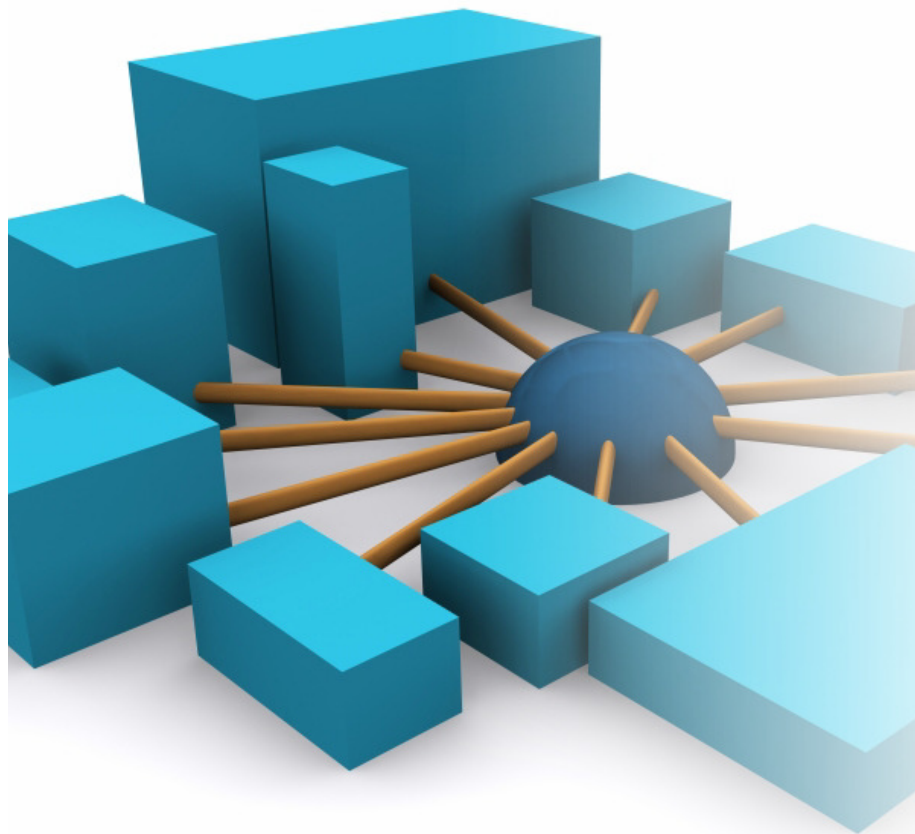
IBM Rational ClearQuest

Activity and Deployment Management

- Configurable, enforceable workflows
- Central repository, real-time status
- Graphical and text-based reporting
- RDz (Eclipse), Web, Windows clients

IBM Rational ClearQuest

Rational software

IBM Rational ClearQuest
Comprehensive Software Change Management

An industry-leading solution that provides flexible defect and change tracking, process automation, reporting and lifecycle traceability for better visibility and control of the software and systems development lifecycle

- ✓ Flexible, customizable and automated workflows provide repeatable, enforceable and predictable processes

- **NEW!** An out-of-box Application Lifecycle Management (ALM) template provides a solid foundation for ALM best practices

- ✓ Real-time reporting and metrics improves project visibility and decision making

- ✓ Access control, electronic signatures, repeatable processes and audit trails simplify compliance management

- ✓ Scales to any size team from small workgroups to distributed enterprise teams to support evolving organizational needs

- ✓ Integration with requirements, development, build, test, deployment and portfolio management tools facilitates rapid response to change

Rational software

Solution: Simplify Software Asset Management
Manage enterprise assets with a single repository solution
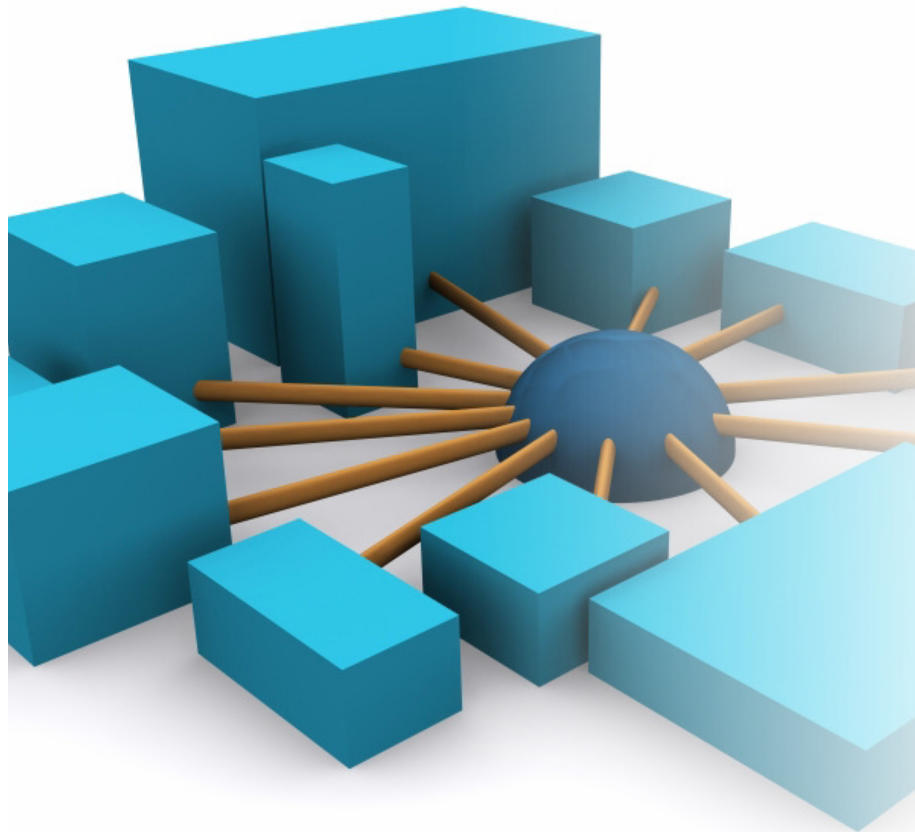
Rational ClearCase

Enterprise-level SCM

- Secure hosting of software assets
- Desktop, RDz, z/OS, web clients
- Distributed and z/OS build capability
- Built-in extensible process model

Rational ClearCase

Rational software

IBM Rational ClearCase
Complete Software Configuration Management

An industry-leading solution that provides sophisticated version control, workspace management and parallel development support to improve productivity

- ✓ Suitable for small teams, yet scales to the enterprise

- ✓ Light-weight clients, full featured Eclipse plugins enable transparent remote and local access

- ✓ Flexible out-of-box usage model based on proven best practices increases team productivity and efficiency

- ✓ Transparent real-time access to files and directories virtually anywhere in your organization, including from z/OS

- ✓ Integration with leading IDEs allows you to work in your preferred environment

- ✓ ISPF client and z/OS build management extend value to mainframe, enables enterprise-wide standardized software configuration management

Rational. software

Solution: Simplify Builds and Deployments
cross-platform application builds and deployments
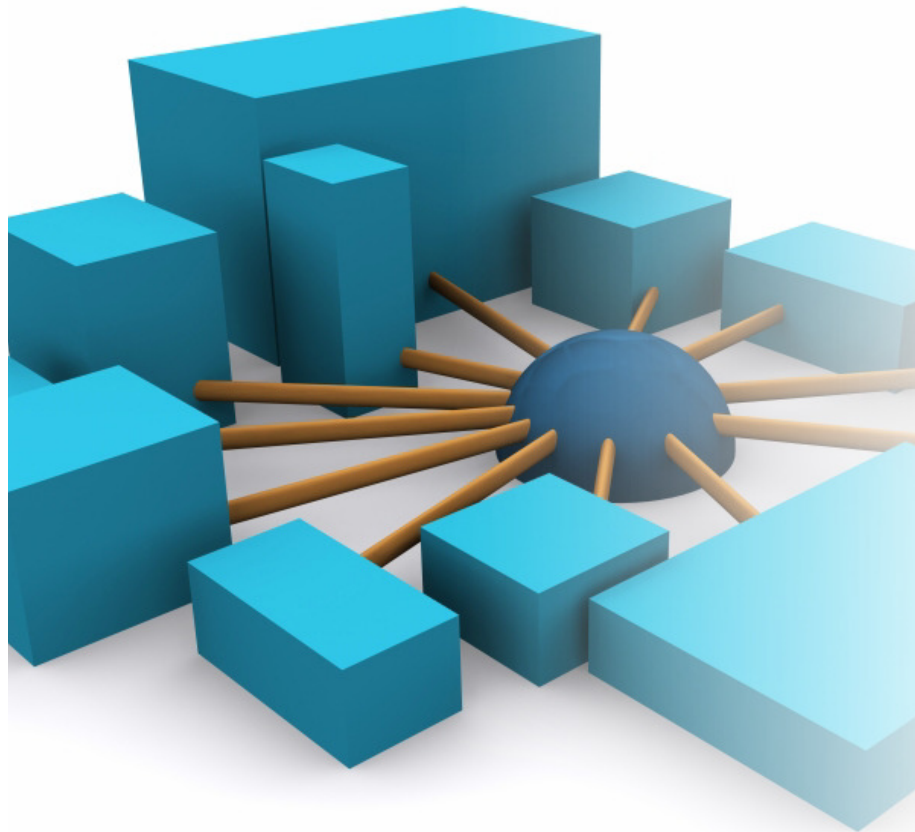
Rational Build Forge

Synchronize enterprise builds

- Centralized build management

- Local (host and distributed) agents

- RDz (Eclipse), Web clients

- Comprehensive audit trails

Rational Developer for System z

Rational. software

IBM Rational Build Forge
Centralized management across geographically distributed teams

- Web-based management console

- Consolidated, real-time project view

- Safe, secure access via user authentication

- Unicode support for international projects

Build Log Database
- **Build Statistics**
- **BOM data**

Console / Engine

Server Pool

AIX Linux Windows Solaris z/OS USS

Los Angeles

Build Log Database
- **Build Statistics**
- **BOM data**

Console / Engine

Windows Solaris Linux

Dallas

Build Log Database
- **Build Statistics**
- **BOM data**

Console / Engine

Windows Solaris Linux z/OS USS AIX Mac

Bangalore

Rational. software
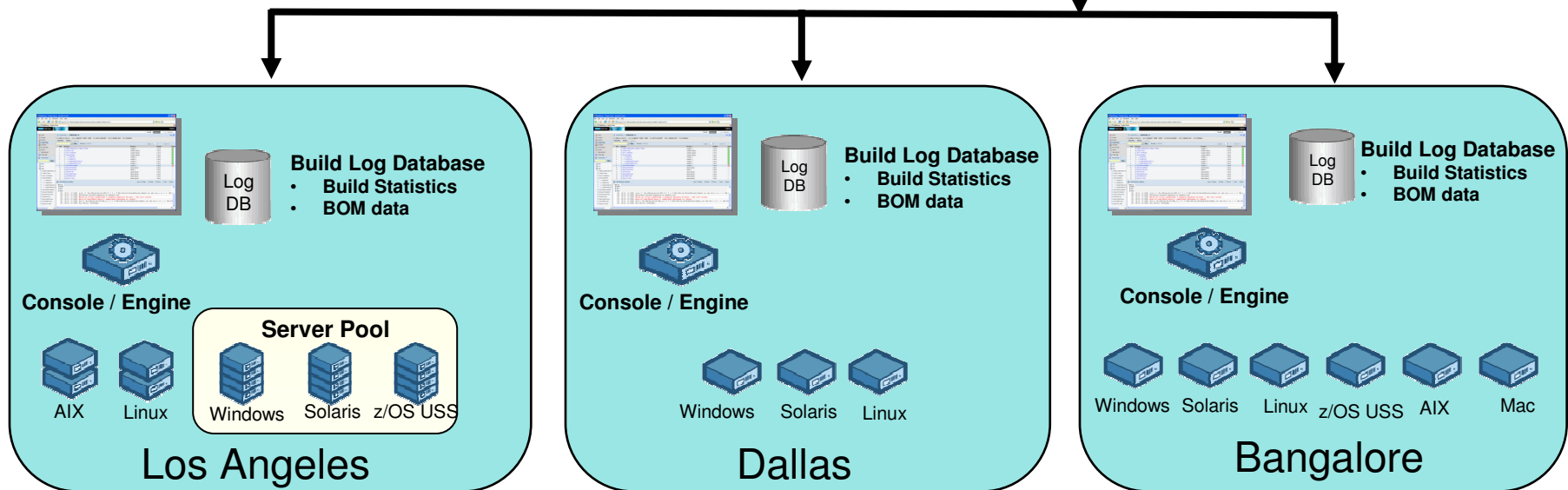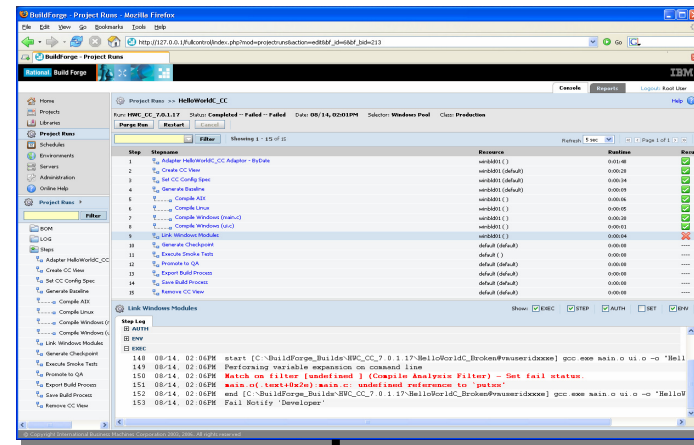
IBM Rational ClearQuest and IBM Rational ClearCase with IBM Rational Build Forge integration

- **Automated build management**

- **Detailed record of build content**

- **Support for continuous builds**

- **New IBM Rational ClearQuest build record for tracking and reporting**

Automated build management

Develop — *Implement & Iterate*

Build — *Build & Stage*

Deploy — *Provision & Validate Server(s)*

IBM Rational ClearQuest

Development Assets → Build Assets → Deployment Assets

IBM Rational Build Forge

IBM Rational ClearCase

Production Environment

Rational. software
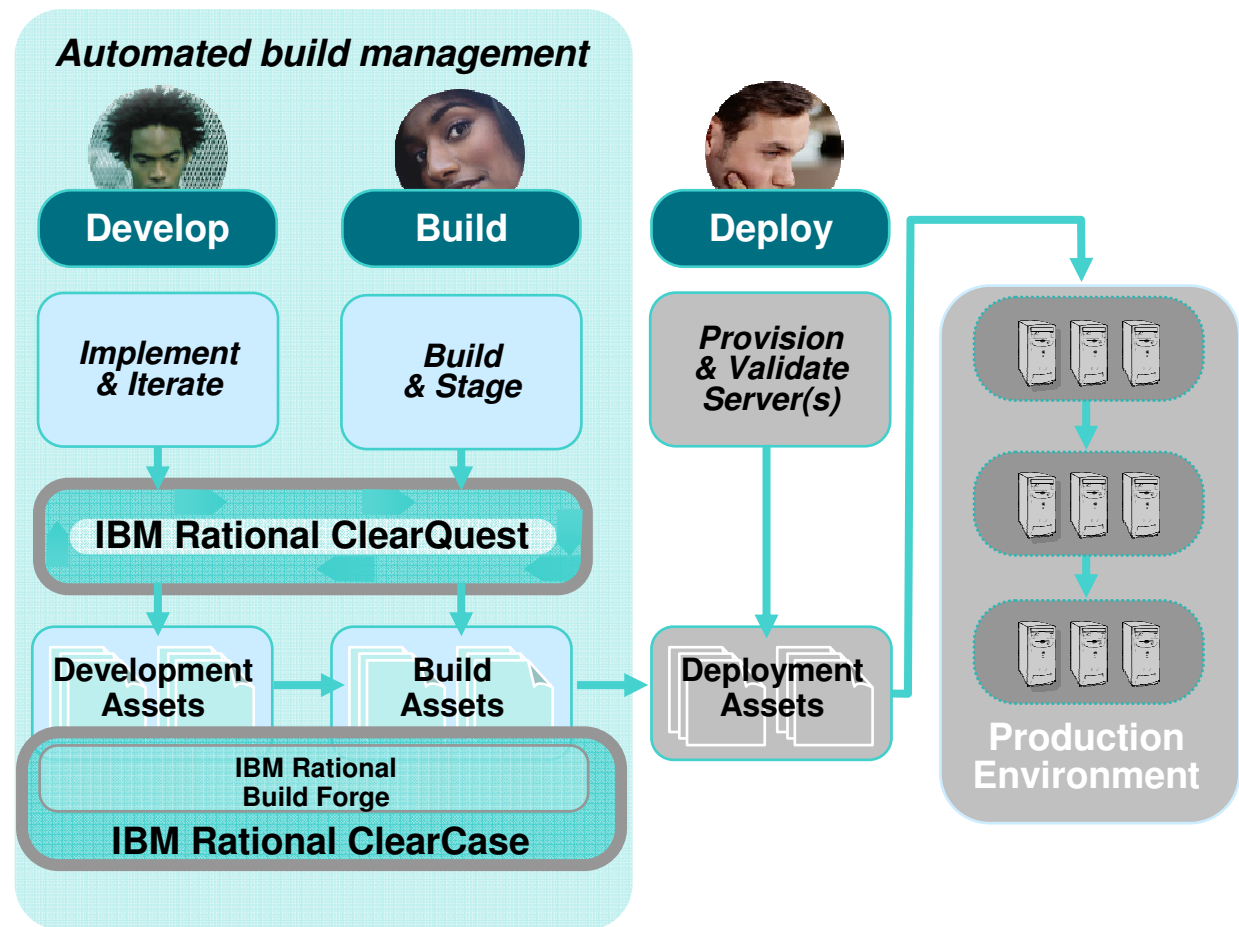
Scenario:

- **Help desk retirement application – returning errors!**

  – J2EE light desktop client

  – CICS back end

Enterprise Application Lifecycle

Birthday Calculation

Browser

WAS

z/OS COBOL DB2, CICS
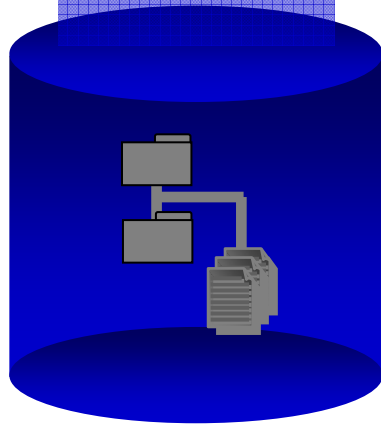
**COBOL Source,
CICS, DB2 Tables**
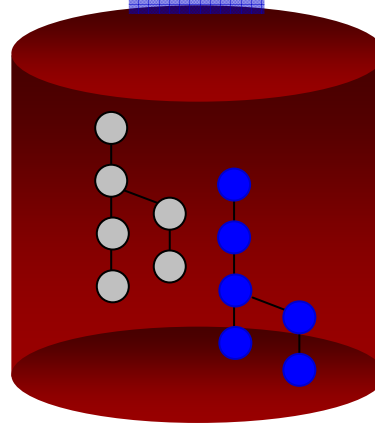
**Desktop
Java, C, C++, Struts**

**"Mixed Workload"
"Cross Platform"**

ISPF

*Linux, Windows
Desktop*

Rational. software

Production Help Desk:

- **Discovers issue**

- **Inputs issue with CQ Web client . .**

Project Lead

- **Reviews team workload**
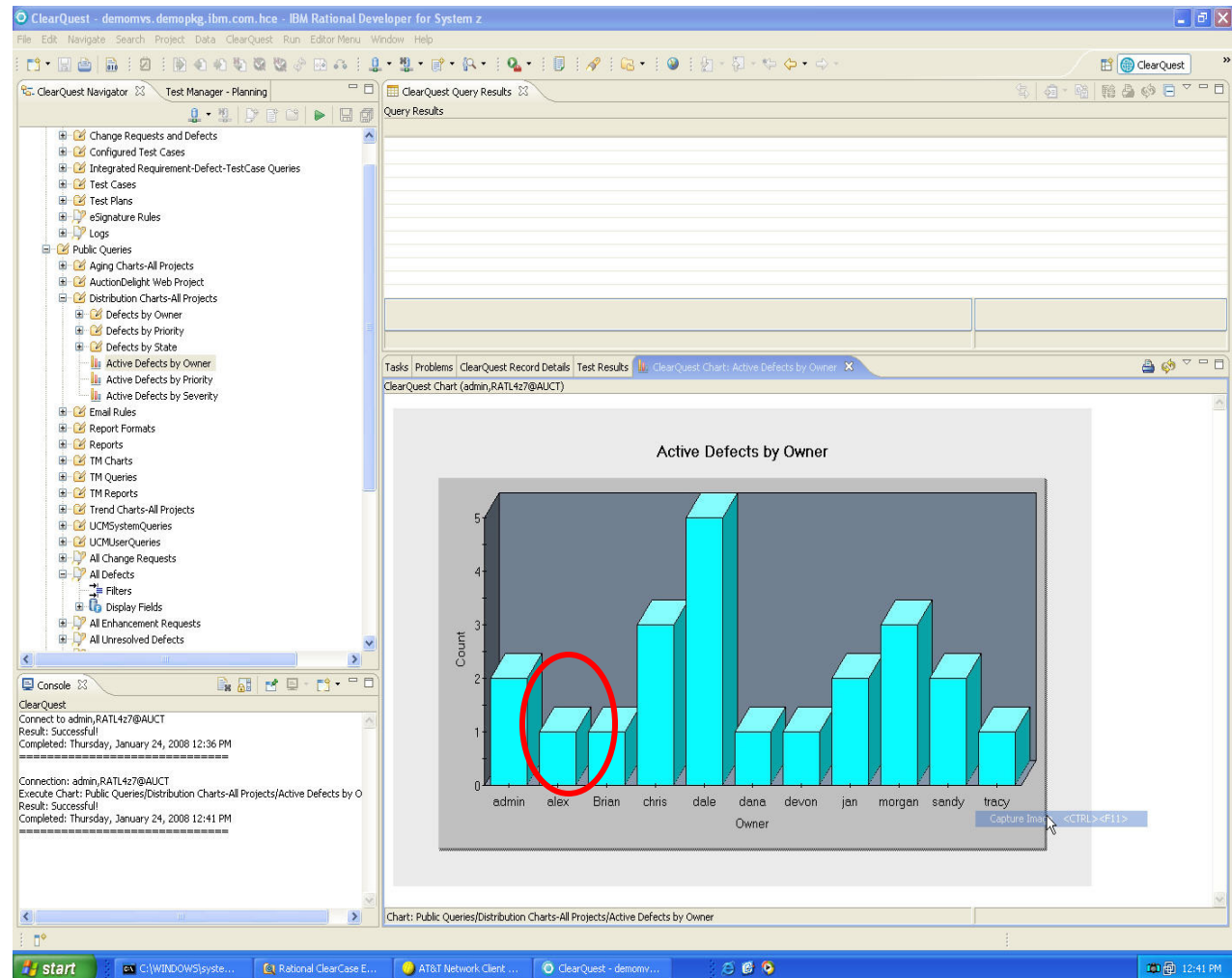
Project Lead

- **Assigns issue to "alex"**

Developer Alex:

- **Notified by:**
  - Email, or
  - ClearQuest to-do

- **Opens issue in RDz**
  - Marks it as "opened"
  - Investigates issue

Rational. software
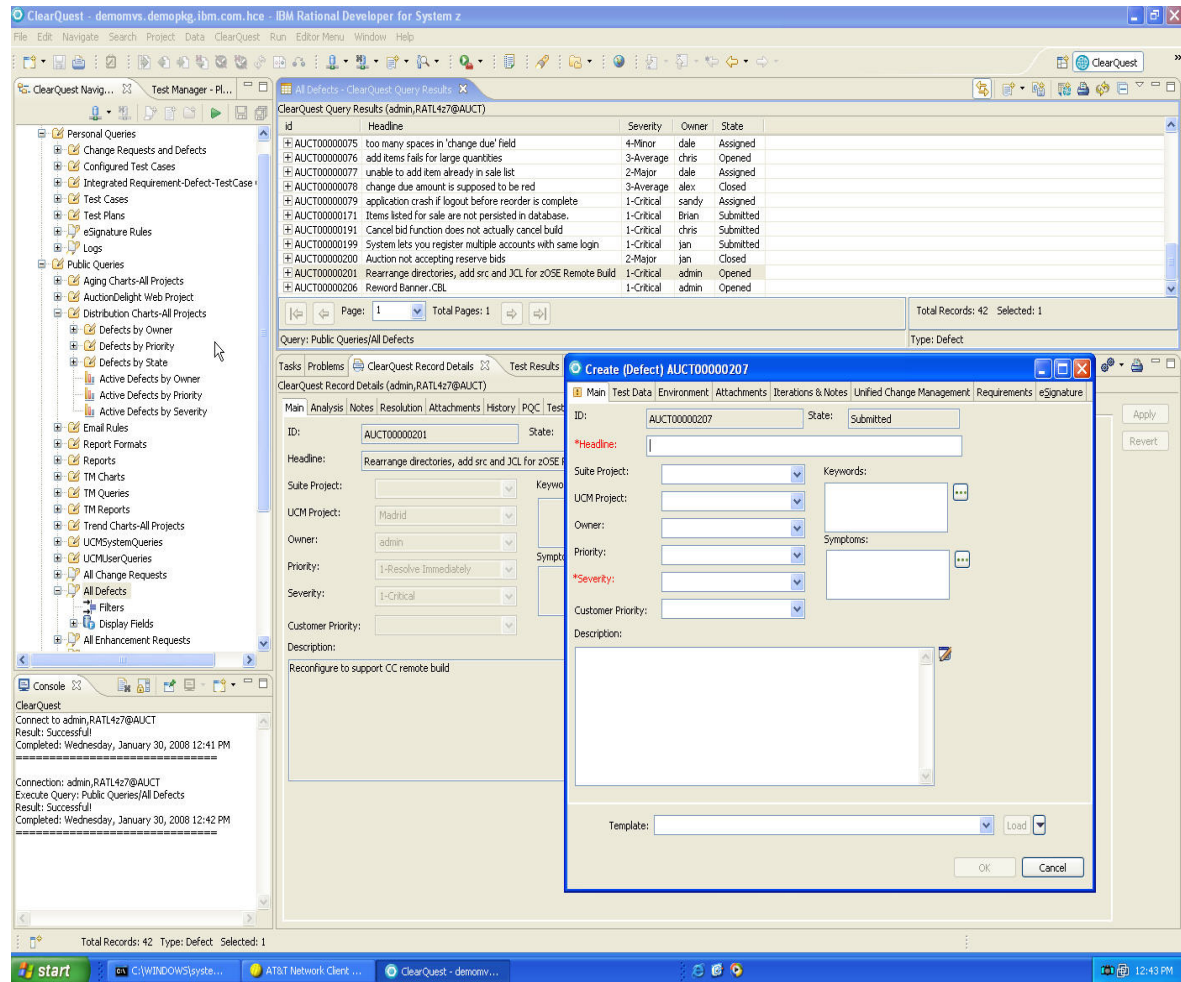
Developer Alex:

Researches problem

– Locates problem file

– Reviews history

– Determines need to migrate code to new "Service Flow"
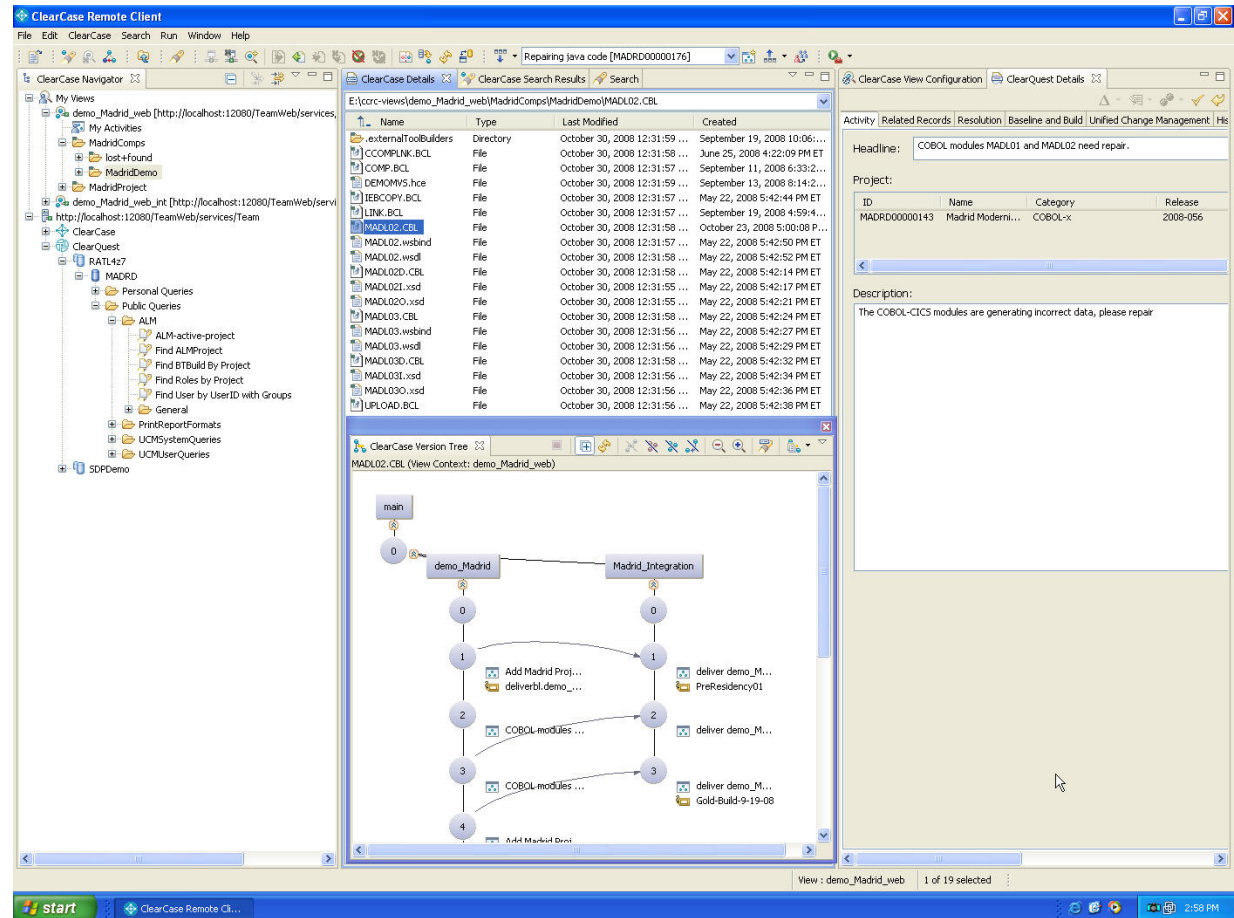
What is a Service Flow?
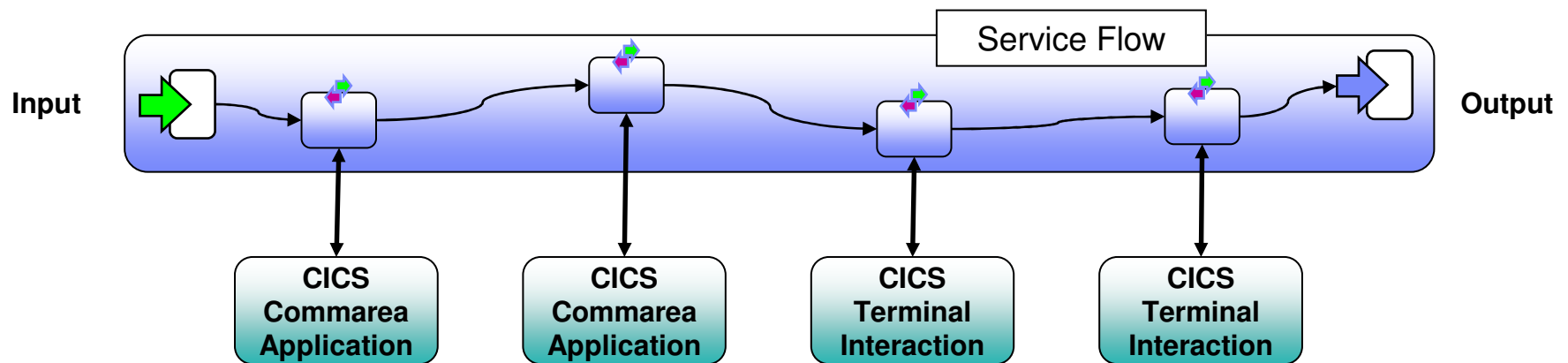
- **A service flow is a non-interruptible micro-flow that is constructed from a collection of nodes that represent the invocation of CICS resources**

- **The flow describes the navigation of the nodes and allows data mapping between the nodes**

- **A single request may cause the execution of many CICS resources**

- **Allows for the development of coarse grained services from fine grained resources**

What is Service Flow Modeler?

- **Service Flow Modeler is the tooling required to develop service flows**

- **A feature of Rational Developer for System z**

- **Model, Deploy, and Test Service Flows**
  - Aggregates multiple CICS transactions into high-level business processes through visual modeling
  - Supports CICS BMS (terminal-based) applications & CICS commarea/container/channel applications
  - Deploys to the optimized CICS Service Flow Runtime
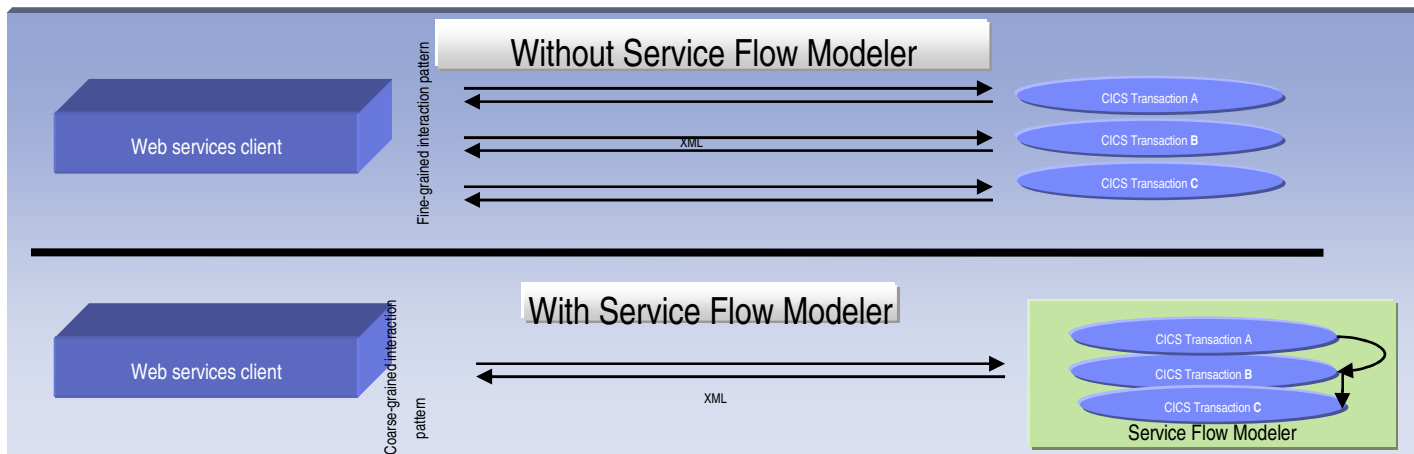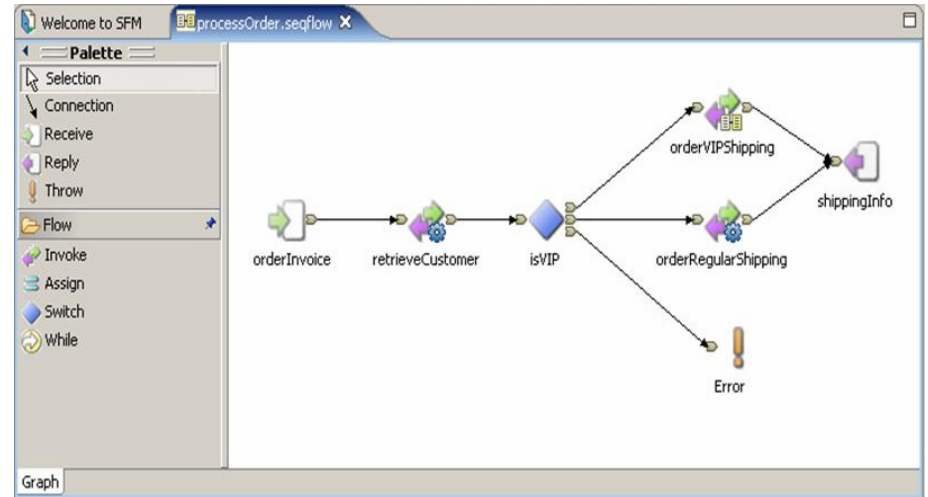
What is the Service Flow Runtime?

- **The CICS Service Flow Runtime is a no-charge, fully supported, orderable feature for CICS TS v3.X**

- **A business service integration adapter for all CICS applications**

- **Create optimized CICS services orchestrating CICS terminal, non-terminal, and web services into a composite service**

  – In a fast moving market, companies need to embrace new technologies whilst leveraging their existing assets.

  – Compose new services by aggregating these existing proven assets into new services.
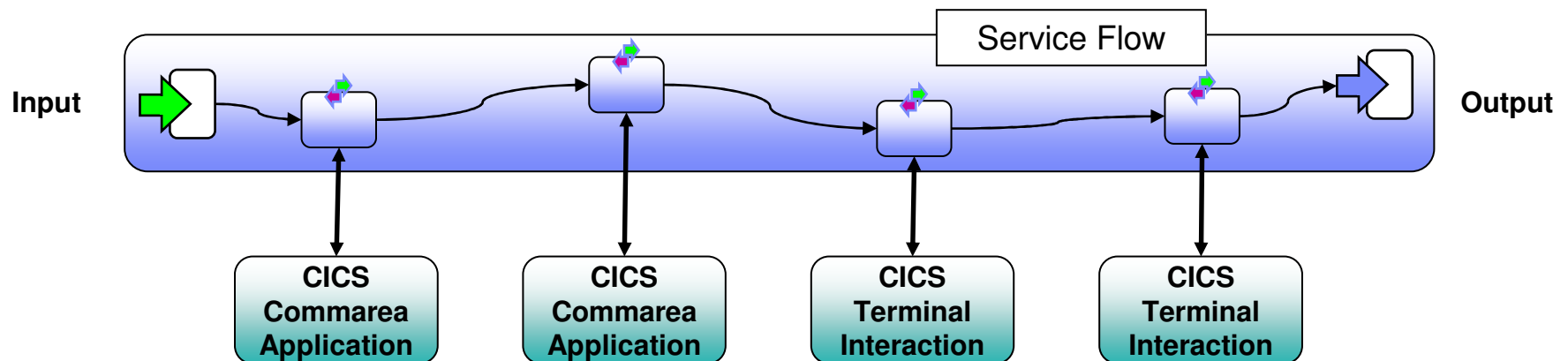
Developer Alex:

- **Implements CICS Service flow feature in MADL02.CBL**

  – Checks out file against the ClearQuest activity

  – Performs Modifications

  – Checks file back in
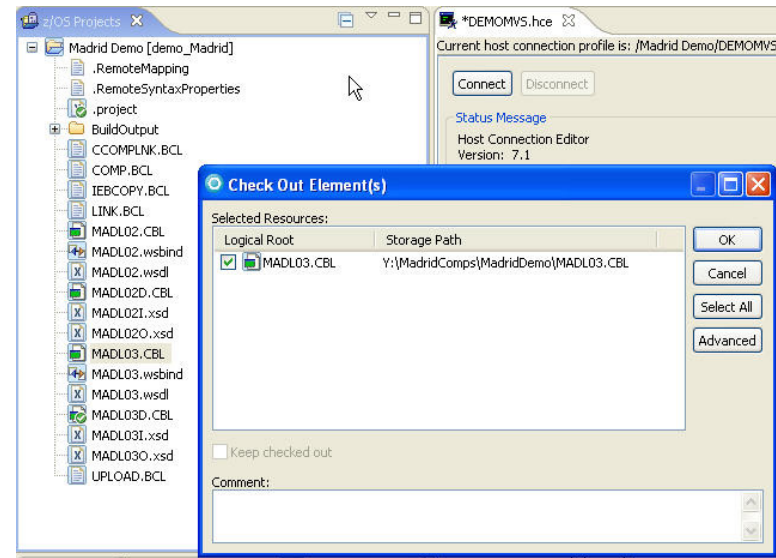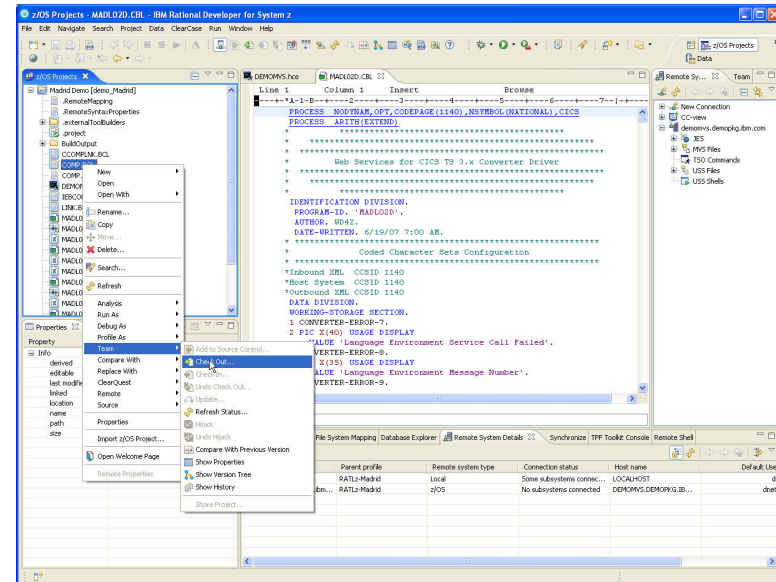
Developer Alex:

- **Tests build**

  – Local RDz syntax check

  – Host Build using ClearCase z/OS remote build feature

Rational. software
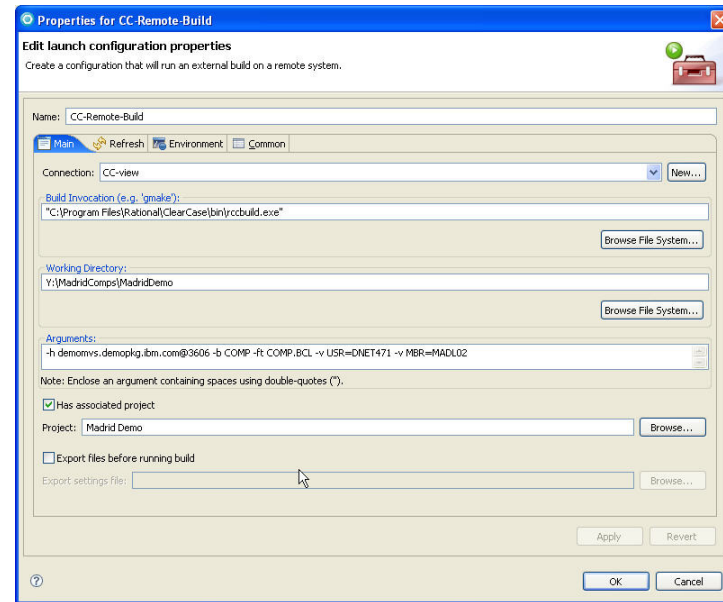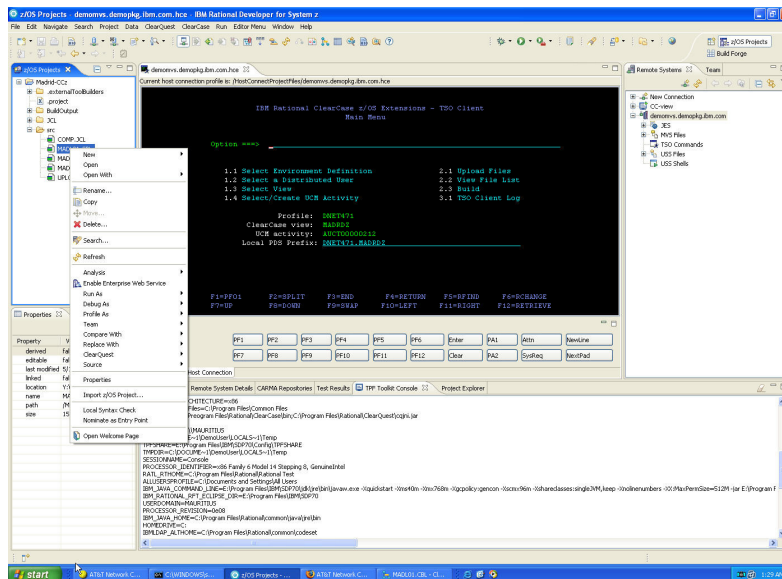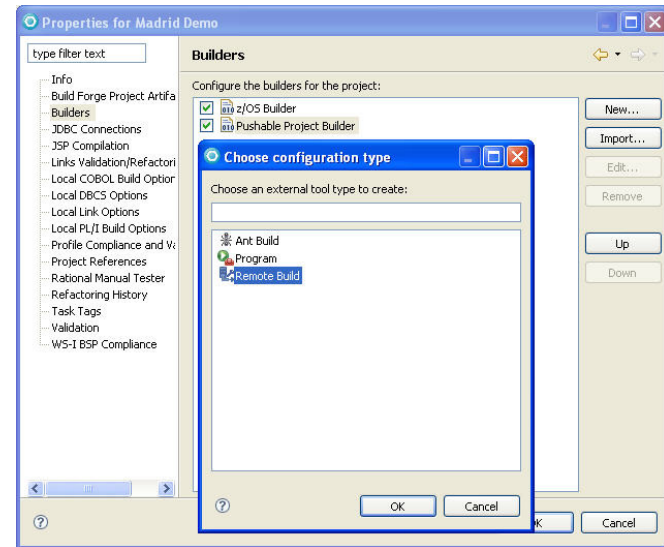
Building with RDz and ClearCase Remote Build

Build/Release Engineer

- **Verifies change set is in order**

- **Promotes issue to QA for verification**
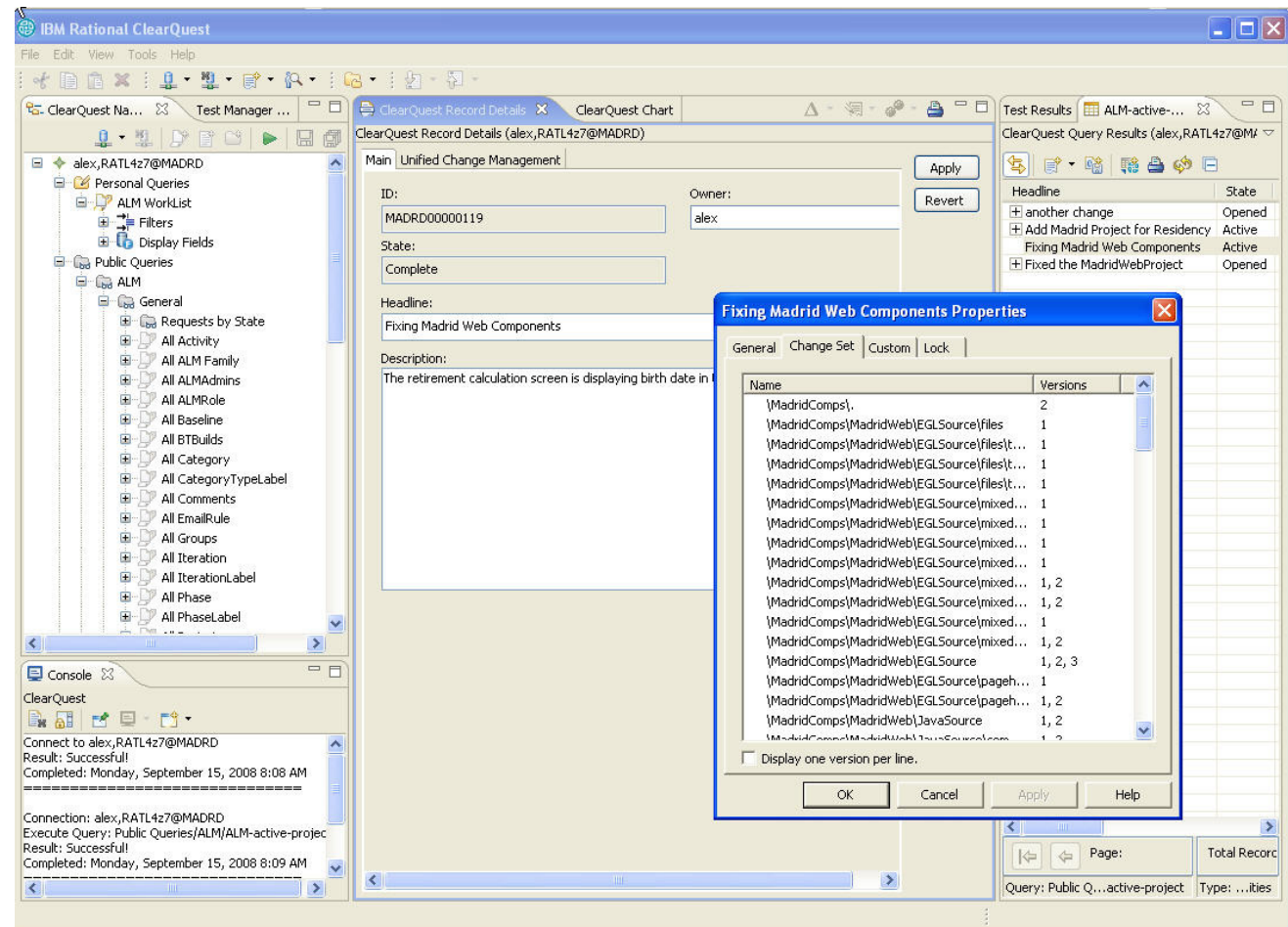
Build/Release Engineer

- **Initiates formal build**
  - Uses Rational Build Forge project console
  - Launches java and native COBOL build, CICS binds
  - Promotes ClearQuest issue to "Production Ready"

Build and Deploy Strategies

RDz Project

ClearQuest Hook

ClearCase Trigger

Build Forge Project

Build Forge Step

RDz Builder

ClearCase Helper Script

ClearCase Remote Build

Environments

QA
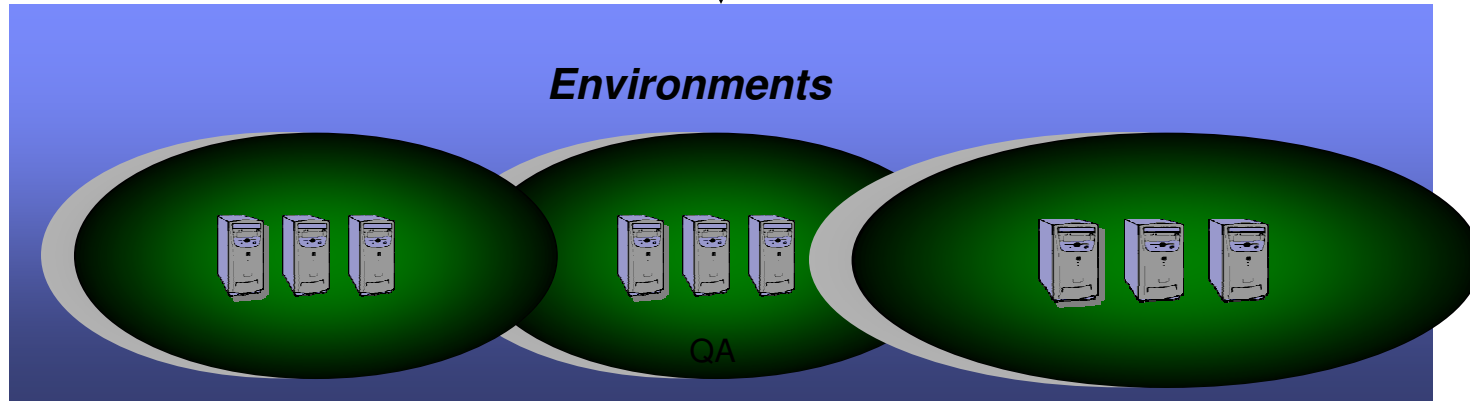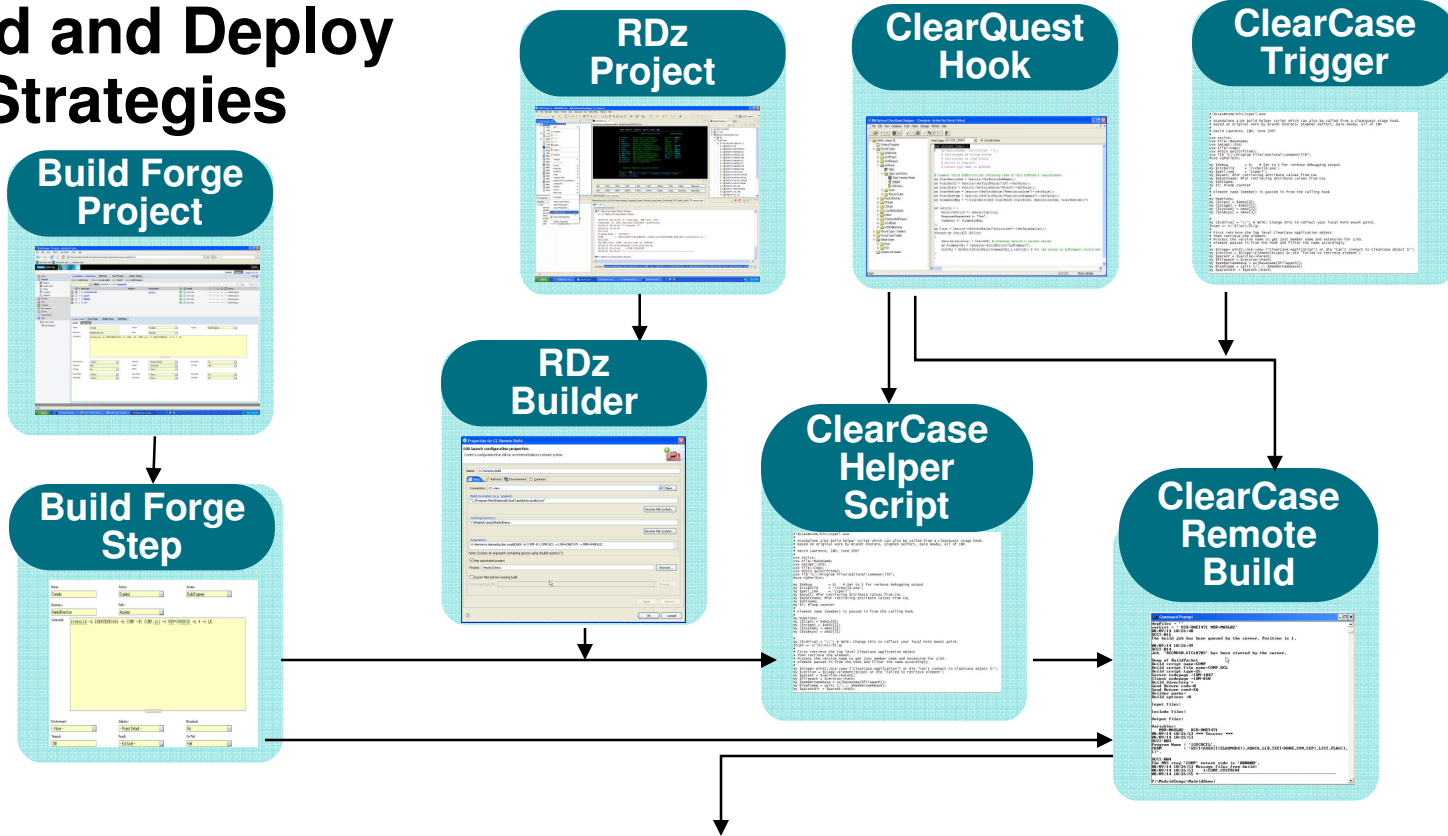
Bringing it all together . . .
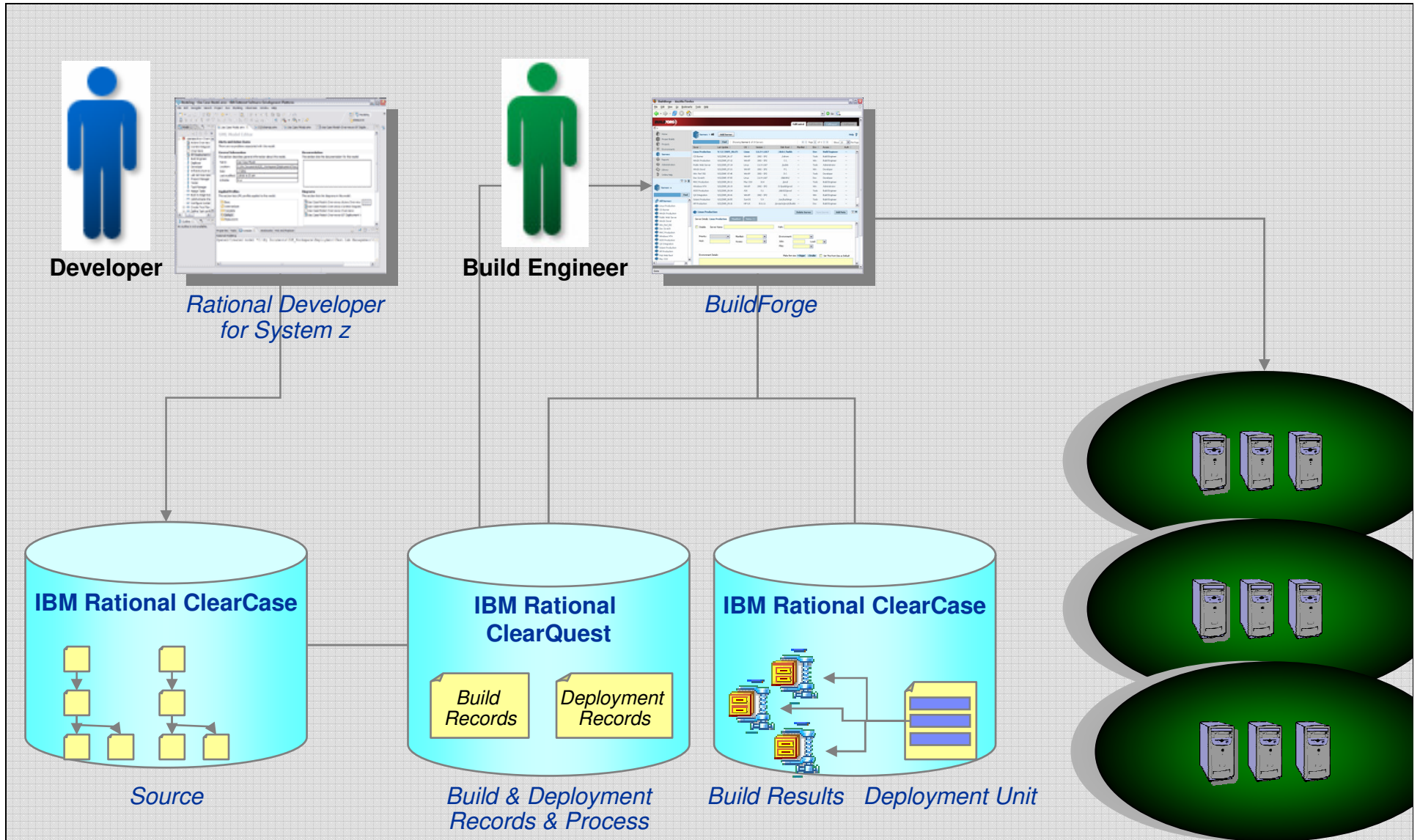
Summary
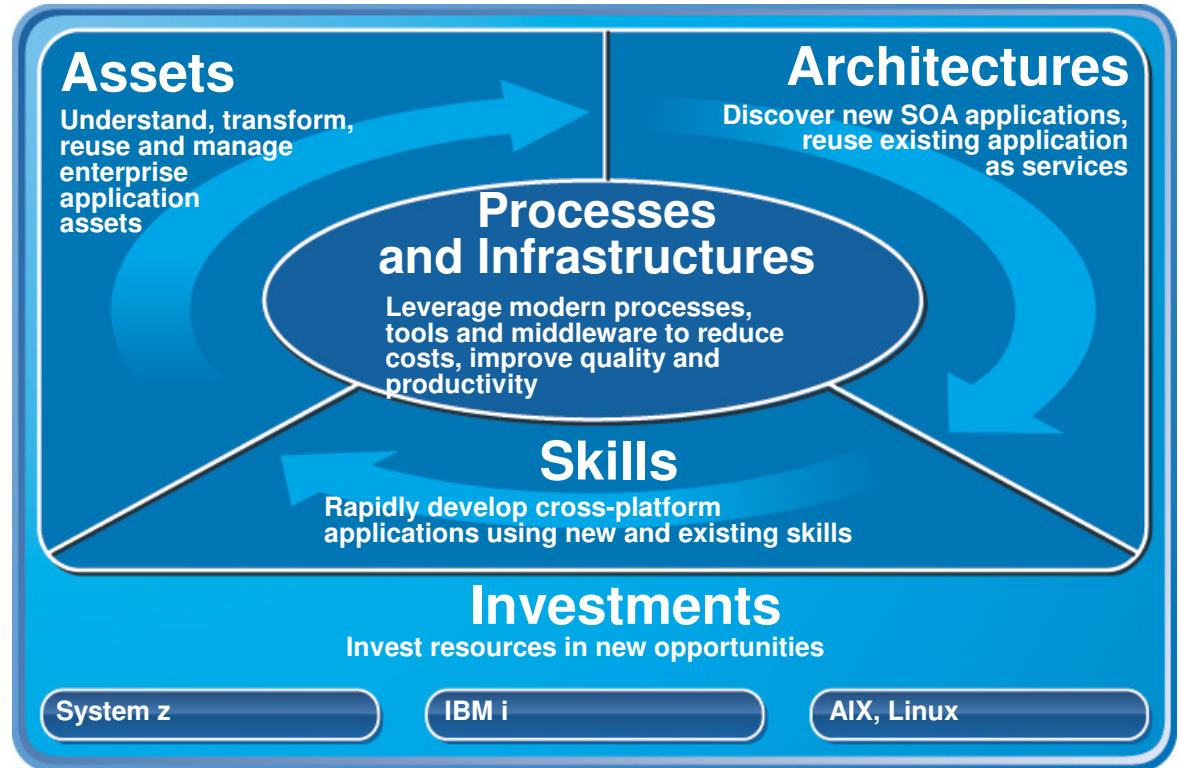
Rational …

- is working closely with the System z hardware team

- has a strong portfolio of tools for System z application development

- is investing in new tools for application development for System z

Rational. software

Want to learn more?

- **Get this complimentary kit for mainframe developers for a practical, how-to guide for making the most of an existing development environment, including the skills and infrastructure already in place at an established enterprise.**

    - Did you say mainframe? e-kit
      http://www.ibm.com/developerworks/integrate/kits/mainframe/

        • This kit contains the following:
            - **Podcast series**: Did you say mainframe?
            - **Webcasts**
            - **Tutorials**
            - **White and red papers**
            - **Demos**
            - **developerWorks articles and other resources**

- **Find more Enterprise Modernization System z resources**

    - http://www.ibm.com/software/info/developer/solutions/em/systems/z/

- **You can also find out more about other IBM Enterprise Modernization offerings at this site**

    - http://www.ibm.com/software/info/developer/solutions/em/

Rational. software

Learn more at: IBM Enterprise Modernization Solution
(http://www.ibm.com/software/info/developer/solutions/em/)

- IBM Rational software
  (http://www.ibm.com/software/rational/)

- IBM Rational Software Delivery Platform
  (http://www.ibm.com/software/info/developer/index.html)

- Change and release management
  (http://www.ibm.com/software/rational/offerings/crm/)

Rational. software

**http://www.ibm.com/developerworks/offers/techbriefings/
details/appdevwebz.html**

Rational. software

Other links for information and learning

Quality management
(http://www.ibm.com/software/rational/offerings/quality/)

Architecture management
(http://www.ibm.com/software/rational/offerings/architecture/)

Rational trial downloads
(http://www.ibm.com/developerworks/rational/downloads/?S_TACT=105AGX 23&S_CMP=RCD)

Leading Innovation Web site
(http://www.ibm.com/software/rational/leadership/leaders/)

developerWorks Rational (http://www.ibm.com/developerworks/rational)

IBM Rational Business Partners
(http://www.ibm.com/software/rational/partners/)

Rational. software