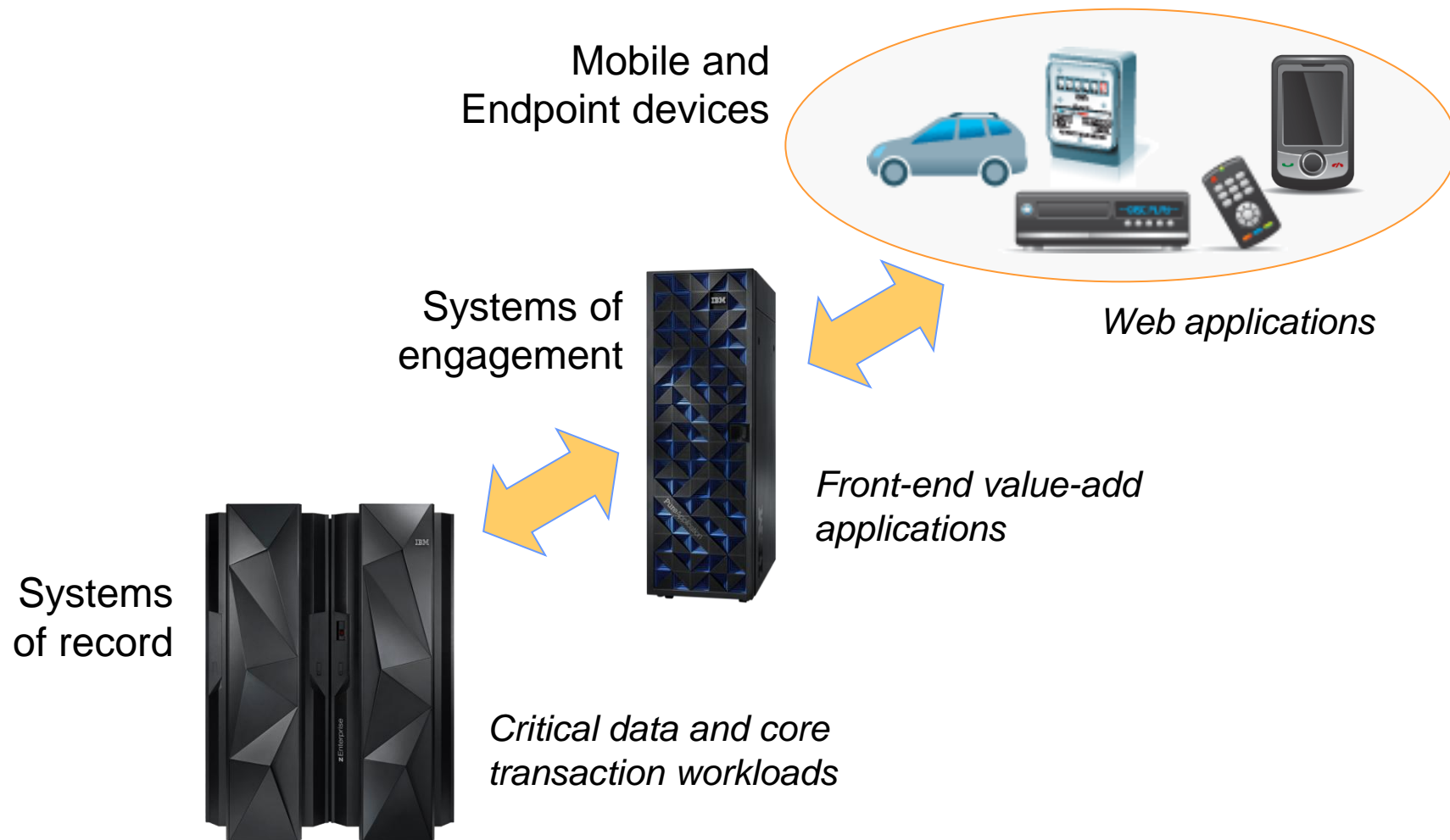




# **Smarter Solution Delivery On System z**

**The New zEnterprise –  
A Cost-Busting Platform**

# Increasingly Today, Businesses Are Developing Cross-platform Hybrid Applications



# But A Typical Traditional Environment Is Not Set Up To Support These

HTML  
WML  
iOS  
Android



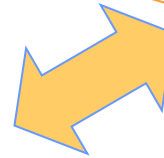
Mobile and  
Endpoint devices



**Different teams!**

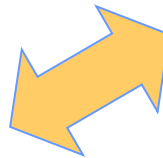
**Different tools!**

Systems of  
engagement



Systems  
of record

z/OS  
Linux



Unix  
Windows

**Different schedules!**

**Different plans!**

# What's Needed?

HTML  
WML  
iOS  
Android



Mobile and  
Endpoint devices



Different teams

Different tools

*Cross-team collaboration! Optimized tools!  
Shared artifacts – requirements, schedules,  
work items, tests and test plans, etc.  
A common process and workflow!*

Unix

Windows

Systems  
of record

z/OS

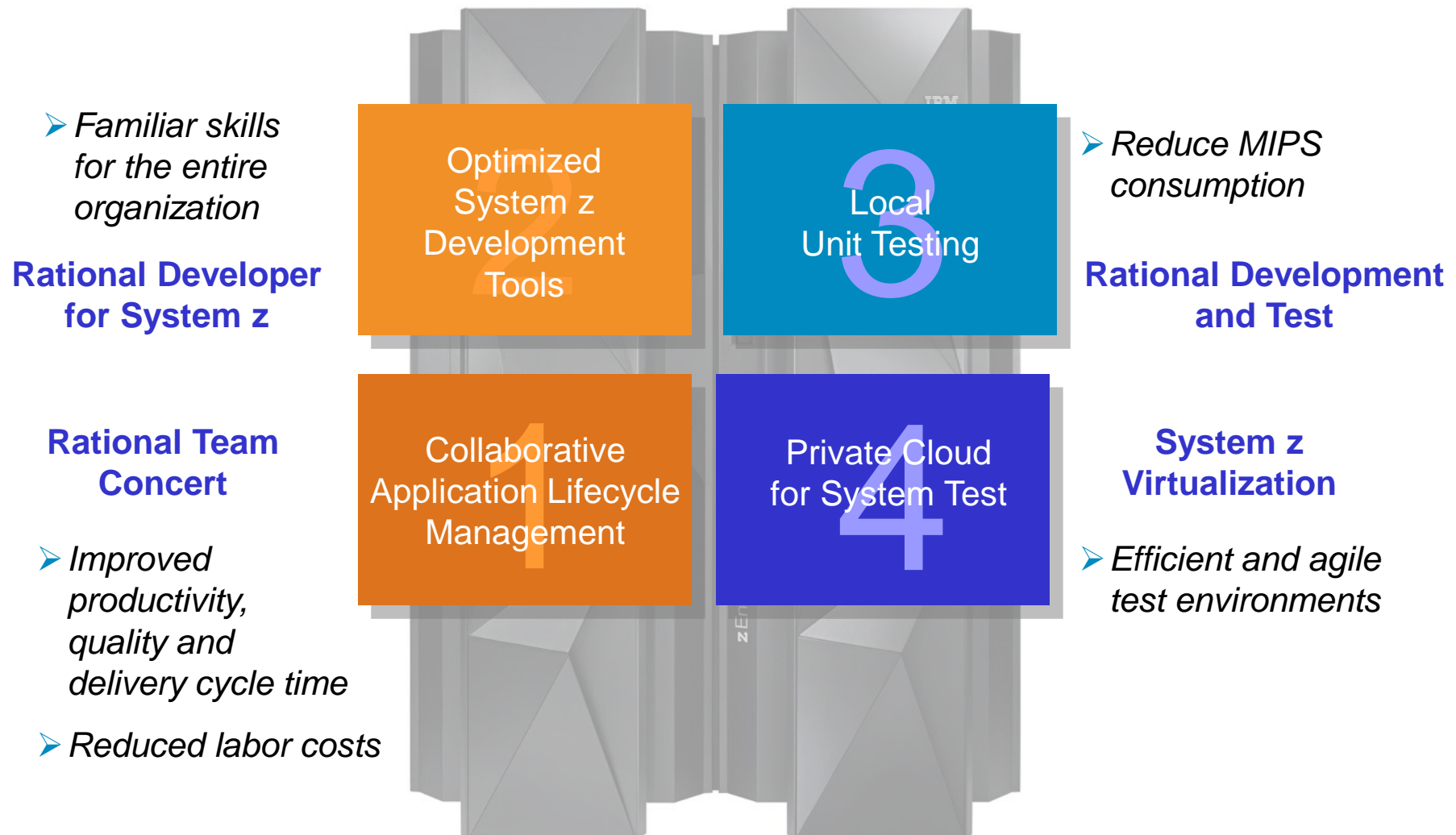
Linux



Different schedules!

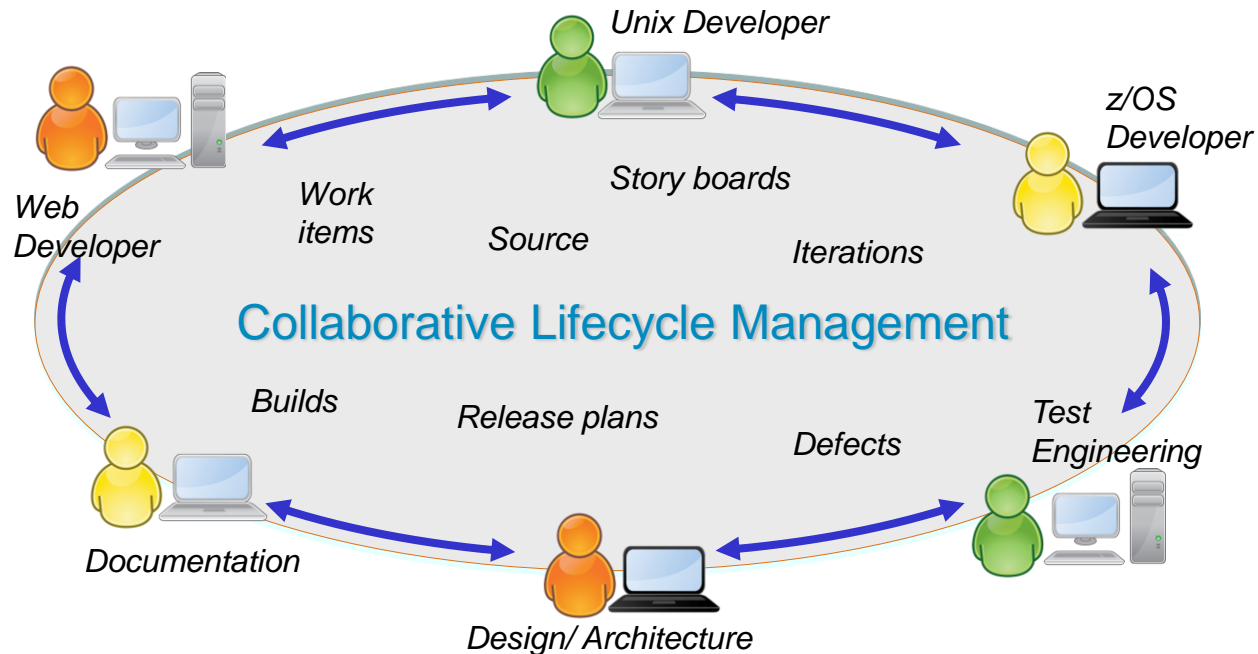
Different plans!

# How Can We Do This For System z?



# Rational Jazz Provides The Foundation For Collaborative Lifecycle Management

A whole-team, whole-view approach for hybrid applications development:



- Single, advanced graphical user interface used by all
- Enables all development teams to collaborate
- Based on a common agile process with shared and linked artifacts
- Transparent, with end-to-end governance

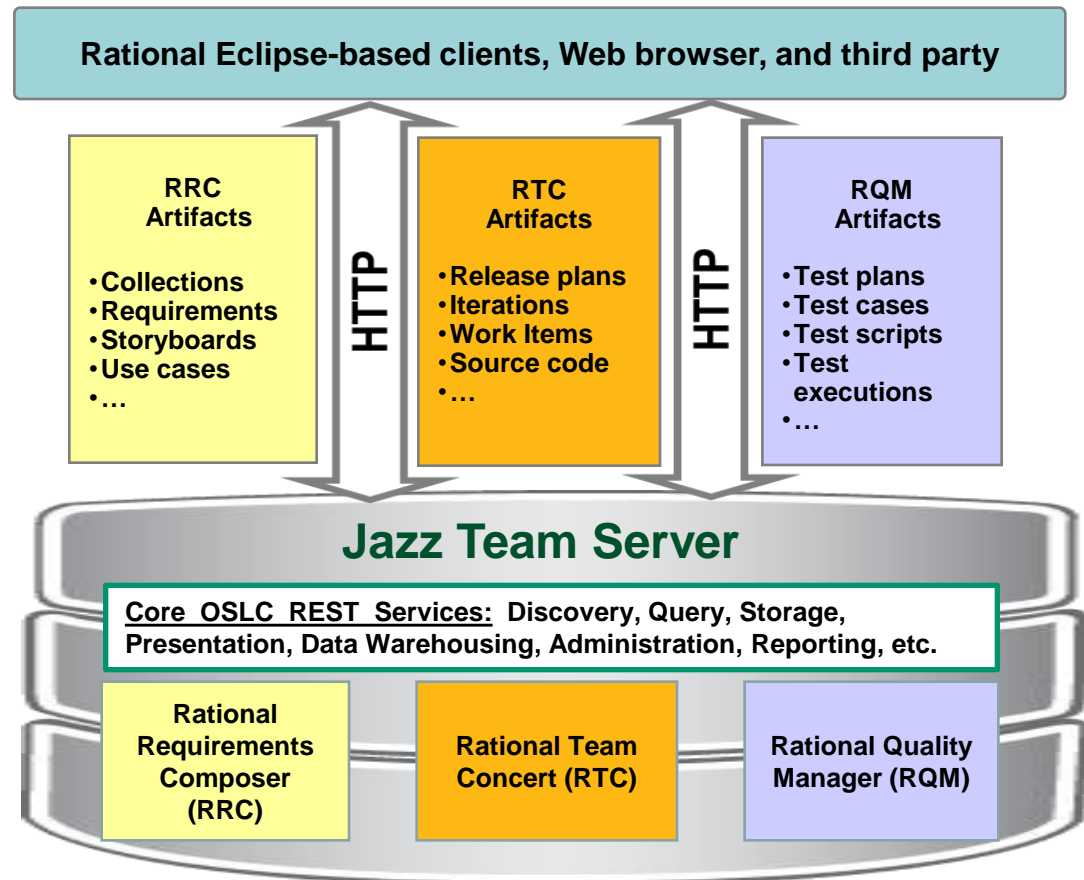
# Collaborative Lifecycle Management Is Built On Proven Principles

1. Accelerated time to delivery with **Real-time Planning**
2. Improved quality with **Lifecycle Traceability**
3. Maximized product value with **In-Context Collaboration**
4. Refined predictability with **Development Intelligence**
5. Reduced costs with **Continuous Improvement**



# Jazz Team Server Is The Heart Of Rational's Collaborative Lifecycle Management (CLM)

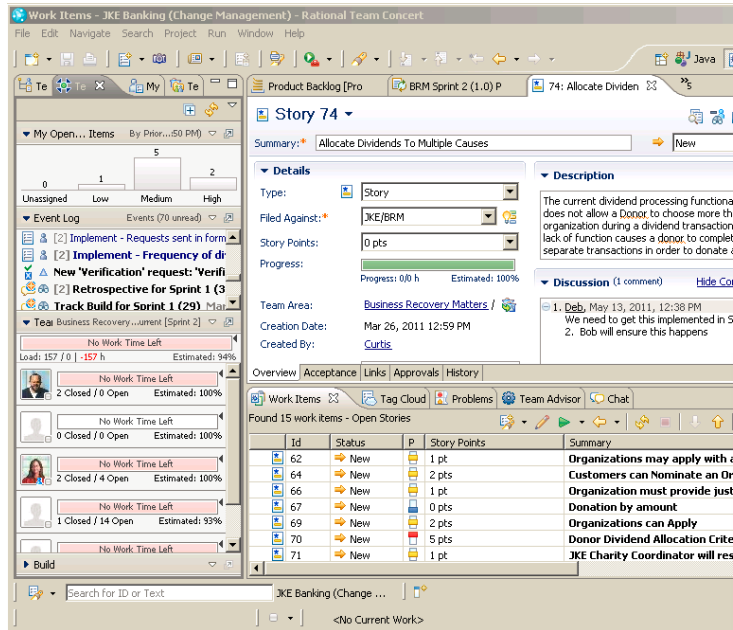
- Jazz Team Server provides a single, consolidated hub of information
  - ▶ All artifacts are shared resources addressed by URLs
  - ▶ Accessible via REST API
  - ▶ Based on Open Services for Lifecycle Collaboration (OSLC)
- Supports three CLM applications
  - ▶ Rational Requirements Composer to define requirements
  - ▶ Rational Team Concert for team collaboration
  - ▶ Rational Quality Manager for test management



*Runs on Linux for System z,  
as well as other platforms*



# Rational Team Concert (RTC) Enables Team Collaboration



RTC Eclipse interface

## Rational Team Concert

### Work Items

- Planning and execution items link project artifacts
- Easy wizard-driven creation interface
- Includes full, in-context collaboration features

### Project Management

- Iteration process tracking
- Easy work load balancing
- Planning at daily, iteration and release levels
- Reporting and dashboards

### Configuration Mgmt

- Secure storage of processes and methodologies
- Versioning, tracking, baselining for milestones
- Simultaneous editing by multiple developers

### Build System

- Automated build process
- Continuous build status updates
- Build results link to change sets and work items



# DEMO: Rational Team Concert

- Intuitive Eclipse-based graphical interface
- Easy to view and manage all project work items, and current team activity
- Project Manager can quickly determine who is the best person to fix a defect...

The screenshot displays the Rational Team Concert interface. The main window shows a team plan for 'Team 1's Plan' with the following details:

- Owner: Team 1 | Iteration: M1 (3/19/10 - 4/17/11) | 10 Closed | 7 Open
- Team Members and Work Items:
  - Avijit**: Closed Items: 0 | Open Items: 1. Work Item: Define a new build (5 weeks 4 days, Medium, New, 2).
  - Fehmina**: Closed Items: 0 | Open Items: 1. Work Item: Share code with Jazz Source Control (6 weeks, Low, New, 3).
  - Haze**: Closed Items: 9 | Open Items: 1. Work Item: fix defects in two files for Natick (6 weeks, High, New, 22).
  - Jess**: Closed Items: 0 | Open Items: 1. Work Item: Define permissions (20 weeks, Medium, New, 7).
  - Li**: Closed Items: 0 | Open Items: 1. Work Item: Discuss Feature list with stakeholders (40 weeks, Low, New, 11).

The bottom section shows a table of work items:

I	Status	P	S	Summary	Owned By	Created By
22	New			fix defects in two files for Natick	Haze	Jess
11	New			Discuss feature list with stakeholders	Li	Jess
10	New			Fix text on splash screen	Monk	Jess
7	New			Define permissions	Jess	Jess

*Rational Team Concert*

# Rational Team Concert Brings Unity And Consistency Across The Entire Team

z/OS  
Developer



*Document requirements using textual and visual techniques*

Project  
Manager



*Leverage real-time planning techniques to make plans instantly executable and resilient to change*

Unix Developer



*Assign development tasks and address team's technical concerns*

- Analysts, Managers, Developers, and Testers working on the same project collaborate from within the context of their tools
- All work items are linked and visible to everyone on the team, enabling instant and dynamic communication
- RTC includes project-wide planning capability and governance

Architect



*Automate software delivery tasks and accelerate handoff to Operations*

Test  
Engineer



*Achieve quality by design with an integrated, automated testing process*

Web  
Developer



*Collaborate across diverse disciplines and teams to meet business requirements*

# CACEIS Boosts Collaboration With Rational Team Concert

*...Driving down development costs  
and speeding time to market*



## Disconnected teams

To minimize bugs and reduce time to market, Caceis needed to establish more effective communication between its open platform and mainframe teams, which were spread out in three separate countries.

## Comprehensive collaboration

Caceis implemented IBM Rational Team Concert software to support its teams with features such as communication in context, event feeds, integrated chat and automated traceability.

## Benefits

- Improves communication and collaboration between development teams, resulting in greater productivity and reduced costs
- Reduces the time required to debug applications through a common communication platform, improving operational efficiency
- Helps increase revenue potential with shortened time to market for new product development

*“Thanks to Rational Team Concert software, our teams can collaborate and develop programs that are increasingly robust in a minimum of time, helping us meet the needs of our clients at a lower cost.”*

*—Bertrand Avé, architect,  
open programs, CACEIS*

## Solution components:

- IBM Rational Team Concert
- IBM System z platform

# If Desired, Mainframe Programmers Can Develop With ISPF And Integrate With RTC

## Rational Team Concert ISPF Client

- For users familiar with TSO/ISPF green screen interfaces
- Has a subset of the Eclipse client function tailored to SCM interaction
- Uses RTC repository workspaces, change sets, links to work items, build requests, etc.
- Provides an interface to edit, check-in/out, deliver, and build ISPF code that is stored in a RTC repository
- Facilitates phased implementation of Eclipse-based tools for mainframe developers

```
Menu Help
Rational Team Concert Primary Option Menu

0 Settings Terminal and user parameters      ***** Logged in *****
1 Connections Work with connections to source  User ID . . . : thom
2 Workspaces Work with repository workspaces  Server . . .  : red037.rtp.ra
3 Edit       Work with source data           Project . . .  : Mortgage PA
4 Build      Work with build options          Release . . .  : 3.0 RCD
X Exit      Exit client
```

```
Menu Help
Repository Workspace List Actions

Workspace : Thom's repos us

WORKSPACE Action
1. Delete
2. Jump
3. Load
4. Unload
5. Edit
6. Incoming Change Sets
7. Outgoing Change Sets
8. Reload
9. Resolve Conflicts
10. Repair Metadata

Select a choice and press ENTER to process action.

F1=Help      F2=Split      F3=Exit      F7=Backward
F8=Forward   F9=Swap
```

```
Menu Help
Member List Actions

MEMBER : THOM.COBO.L (EPSCSMRT)

MEMBER Action
1. Edit
2. Check-in
3. History
4. Share
5. Lock
6. Unlock
7. Info
8. Revert
9. Delete
10. Move

Select a choice and press ENTER to process action.

F1=Help      F2=Split      F3=Exit      F7=Backward      F8=Forward
F9=Swap      F12=Cancel
```

Command ==> Scroll ==> PAGE  
F1=Help F2=Split F3=Exit F7=Backward F8=Forward F9=Swap  
F10=Actions F12=Cancel

See: <http://www.youtube.com/watch?v=DFbNQN13y0>  
and <http://www.youtube.com/watch?v=g3l-pF4osbc>

# When Ready, Rational Developer For System z Offers A Graphical IDE That Moves Beyond ISPF

## Rational Developer for System z

- Fully supports development and reuse of all mainframe assets
- Supports mainframe languages and runtimes
- Includes interactive access to z/OS for debug, job generation, submission, monitoring, command execution, etc.

Presents a mainframe development platform that is fully consistent with the distributed environment

The screenshot displays the Rational Developer for System z IDE interface. Key components are annotated with blue text and arrows:

- Remote System Explorer:** Shows a tree view of remote systems and data sets. Annotations include "Disconnected -vs- Connected" and "MVS PDS members".
- Configurable Editor:** Displays a JCL program with annotations for "Configurable Editor", "USS Command Shell", and "TSO Command Shell".
- Remote System Details:** Shows a table of system details with annotations for "Data set characteristics" and "JES sub-system view".

Property	Value
Context	
Name	TSO-CTFMYS08
Number of children	0
Status	Running
Type	Command Shell

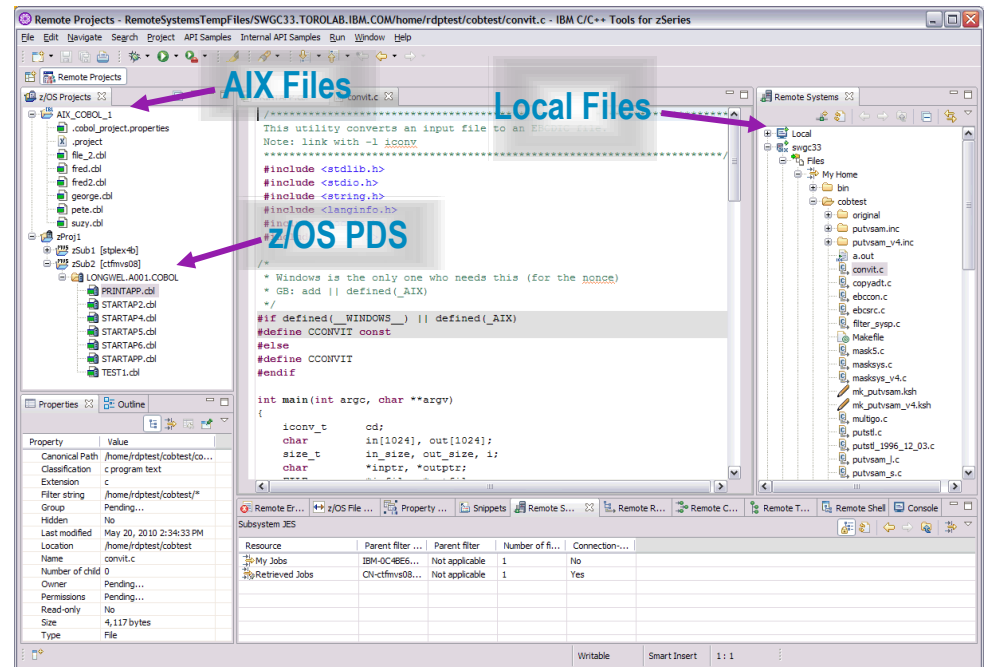
RDz Eclipse interface

# Rational Packages A Solution For Integrated Development Of zEnterprise Hybrid Applications

## Rational Developer for zEnterprise

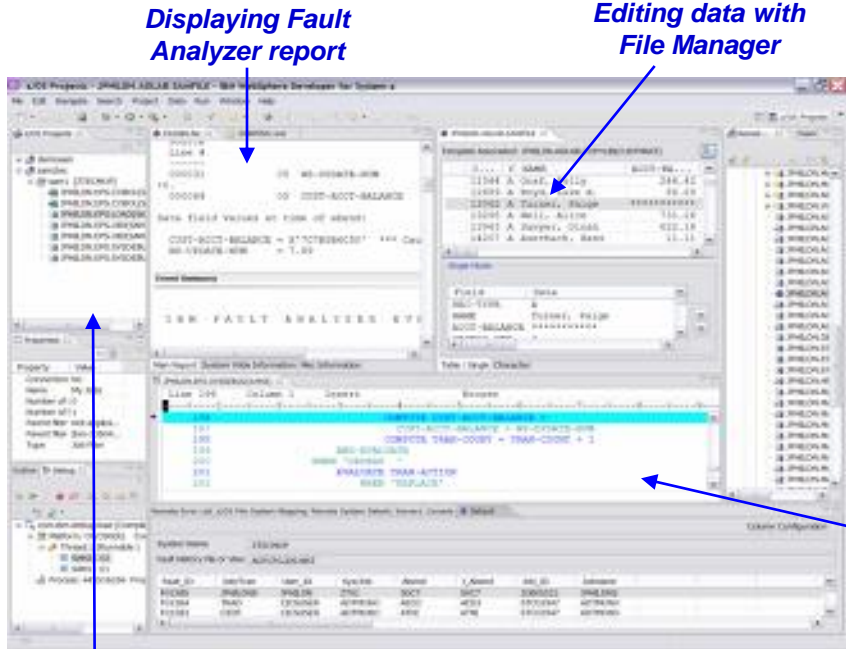
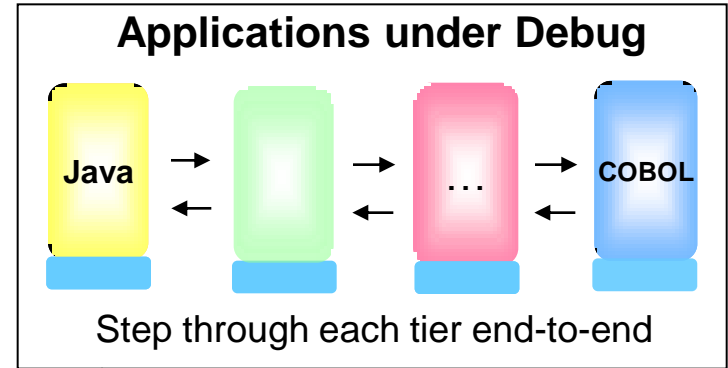
- A comprehensive, integrated development environment for heterogeneous enterprise application development
- Spans zEnterprise architectures (z/OS, Linux for System z, x86 and Power)
- Languages supported: Java, COBOL, PL/I, Assembler, EGL, C/C++ and JCL
- Runtimes supported: AIX, Linux for System z, Linux on Power, x86 Linux, CICS, IMS, DB2 and Batch

Work with artifacts on multiple platforms in one GUI

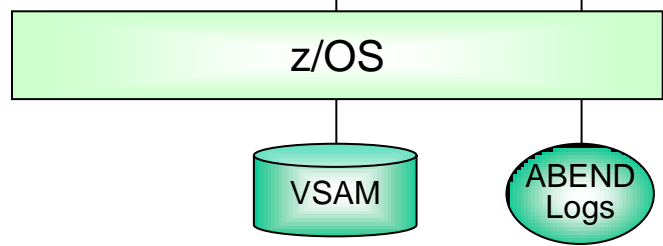
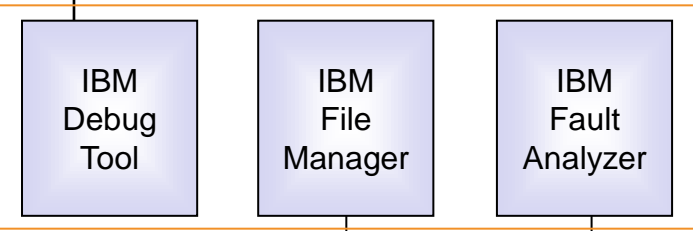


# Mainframe Problem Determination Tools Are Integrated Into The RDz Environment

- Easily debug and step through multi-tier applications
  - ▶ Across distributed *and* mainframe
  - ▶ With the same debugger



Developing System z application with RDz

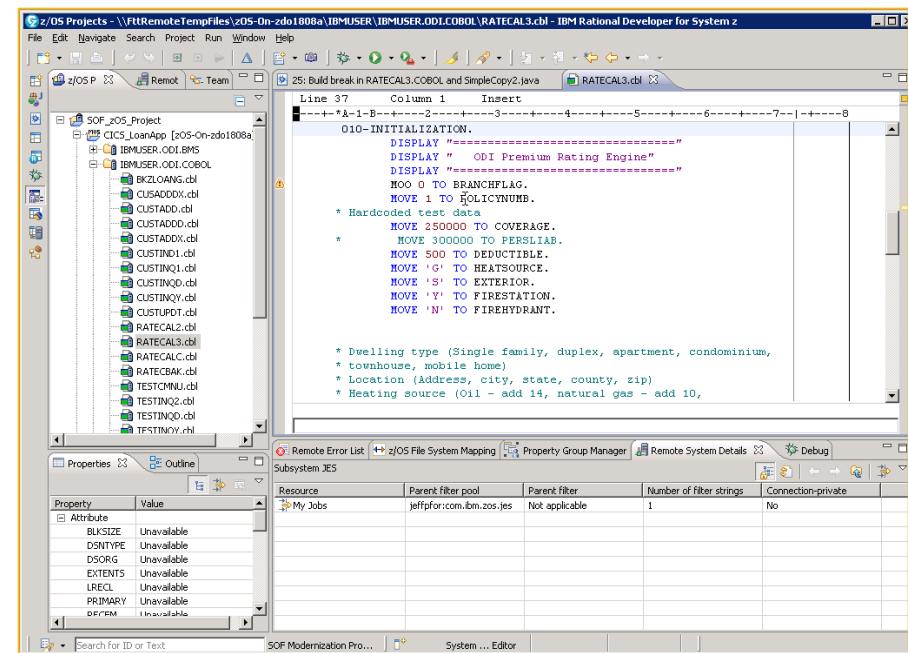


- End-to-end debug
- Edit VSAM data
- Analyze ABEND logs!



# DEMO: Rational Developer For System z

- Automatic notification of pending work items
- Easy to move between different development tasks using Eclipse perspectives
- Breeds familiarity for all developers
- A Java developer can easily edit and fix a COBOL defect...

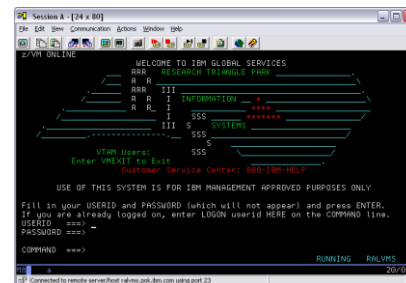
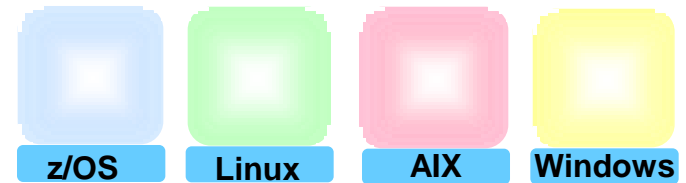
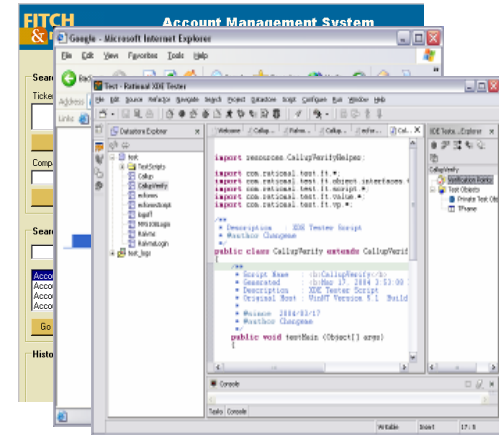


*Rational Developer for z*

# Test All Aspects Of A Hybrid Application With Integrated Quality Management Tools

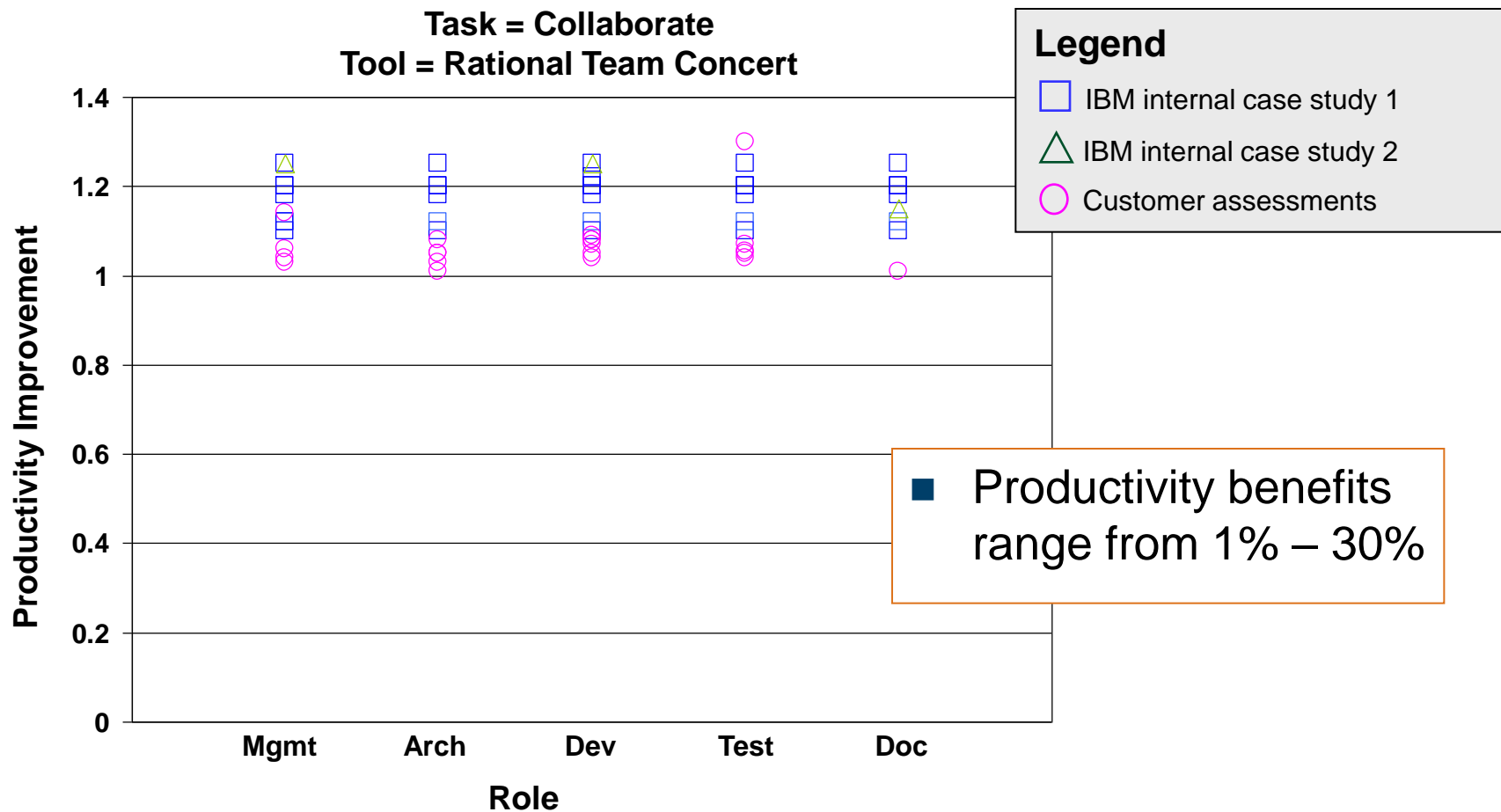
- Record/playback scripts on Windows or Linux for functional and regression testing
  - ▶ Rational Functional Tester
  - ▶ Rational Functional Tester Extension for Terminal-based Applications
- Performance test any Web application (z or non-z)
  - ▶ Develop scripts on Windows/Linux and execute scripts on z/OS
  - ▶ Rational Performance Tester for z/OS
  - ▶ IBM Workload Simulator for z/OS and OS/390 to test terminal-based applications

## Web and GUI Applications

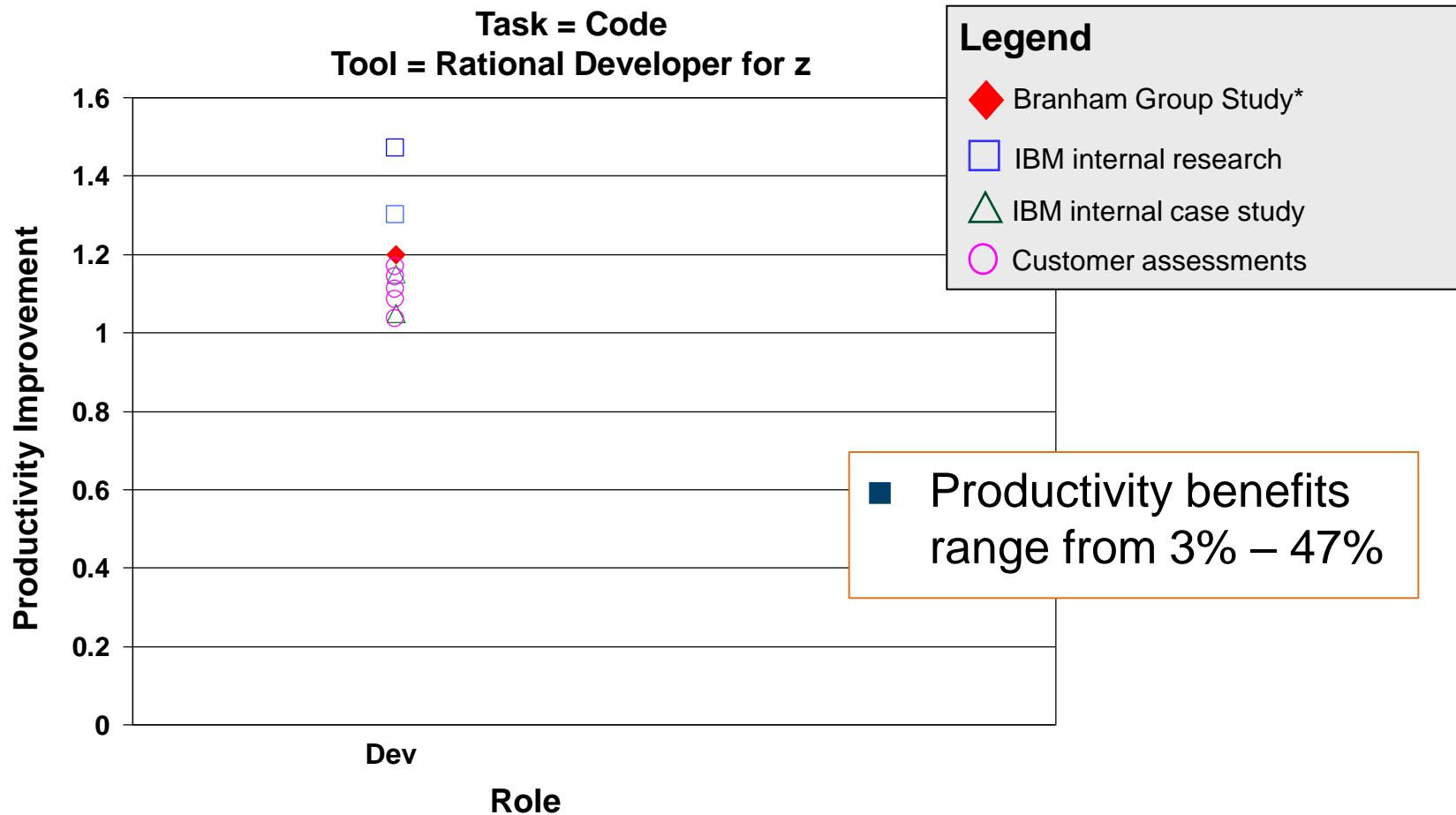


## System z Terminal UI

# Research And Case Studies Show Rational Team Concert Improves Collaboration



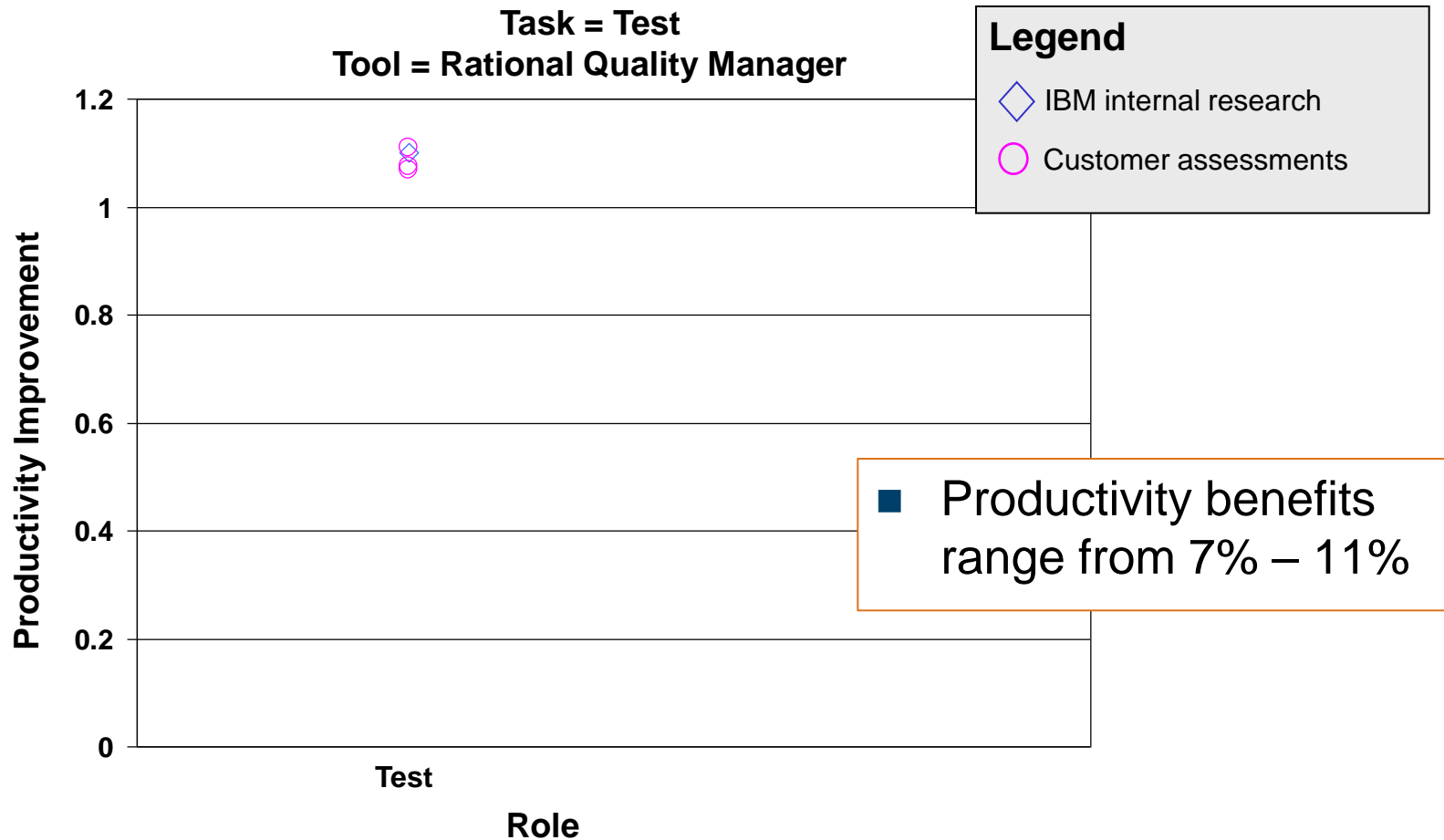
# Research And Case Studies Show Rational Developer For System z Improves Development



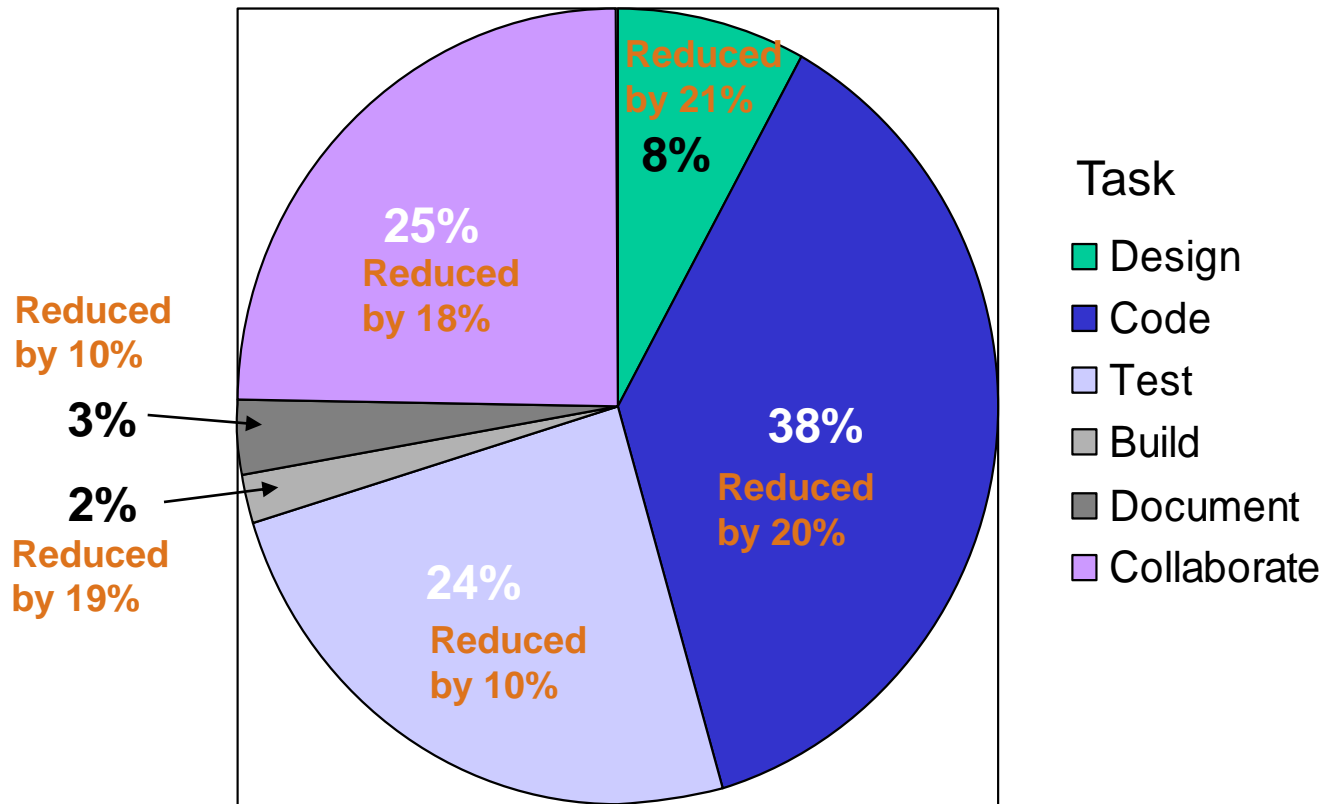
Source: The Branham Group, Inc.

<http://www.branhamgroup.com/CustomContentRetrieve.aspx?ID=2002290&A=SearchResult&SearchID=2196098&ObjectID=2002290&ObjectType=35>

# Research And Case Studies Show Rational Quality Manager Improves Product Quality



# When Data Is Best Fit To A Model, Rational Tools Shown To Reduce Total Labor By 17%



## Rational Tools

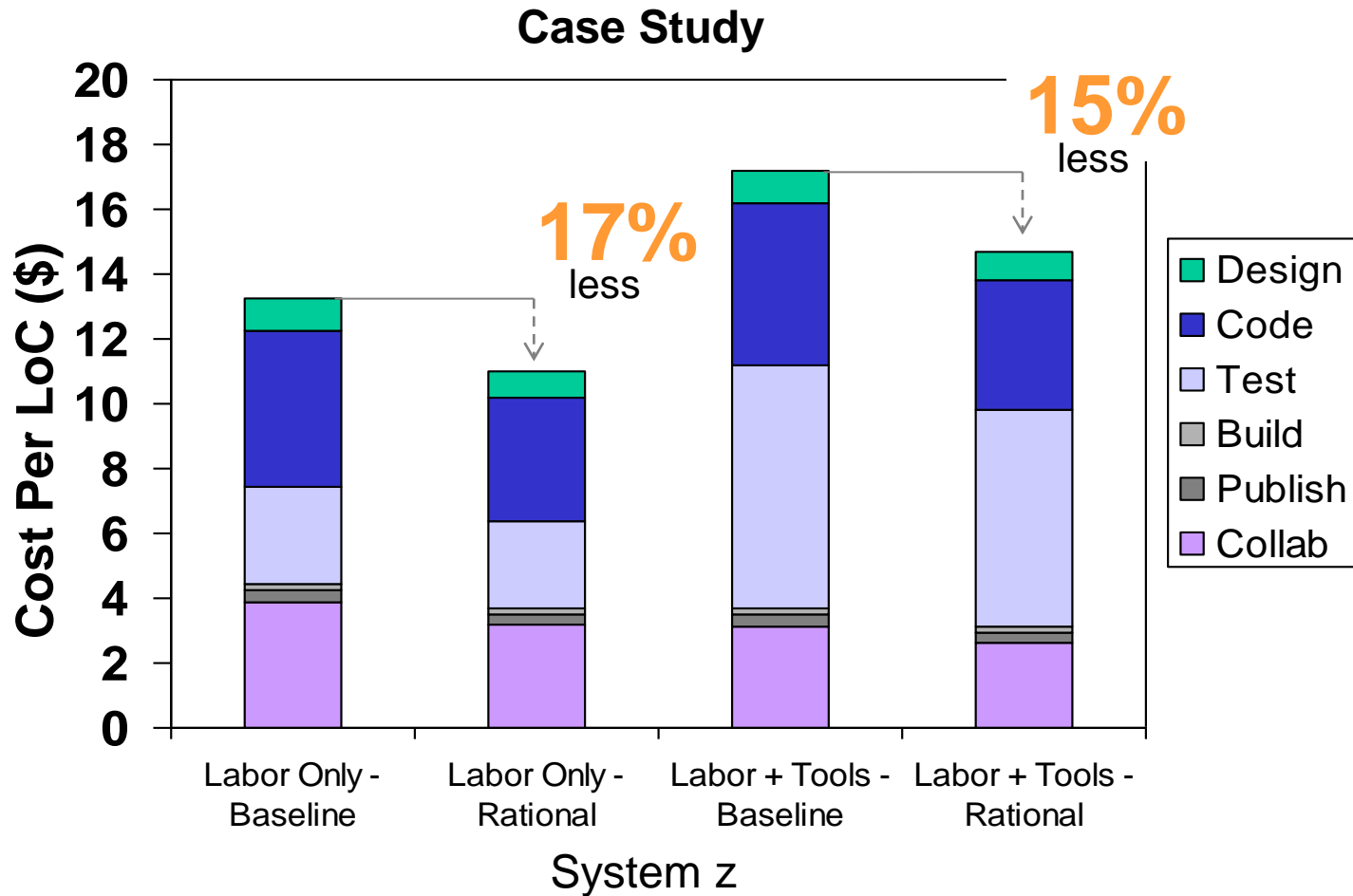
Rational Software Architect  
 Rational Developer for z  
 Rational Quality Manager  
 Rational Functional Tester  
 Rational Performance Tester  
 Rational Team Concert

## Baseline Tools

ISPF  
 Microsoft Word  
 Microsoft Excel  
 Microsoft Project  
 Microsoft Visio

May vary with customer.

# Rational Labor Savings Far Outweighs The Cost Of The Tools



Costs include labor, cost of individual workstations, development software tools, and system test environment. Testing software included Rational Functional Tester and Rational Performance Tester. Labor calculated at rate of \$150,000 per year for all contributors. Cost of 1 MIPS per year = \$1,750. Base rate of 1000 LoC per person per month

# IBM CICS Internal Development Team Uses RTC, RQM, And RDz To Improve Productivity

**IBM**Systems  
magazine

## Rational Team Concert Energizes the CICS Development Process

November 2011 | by Ian Hodges, Kevin Bowkett, Nigel Hopper,



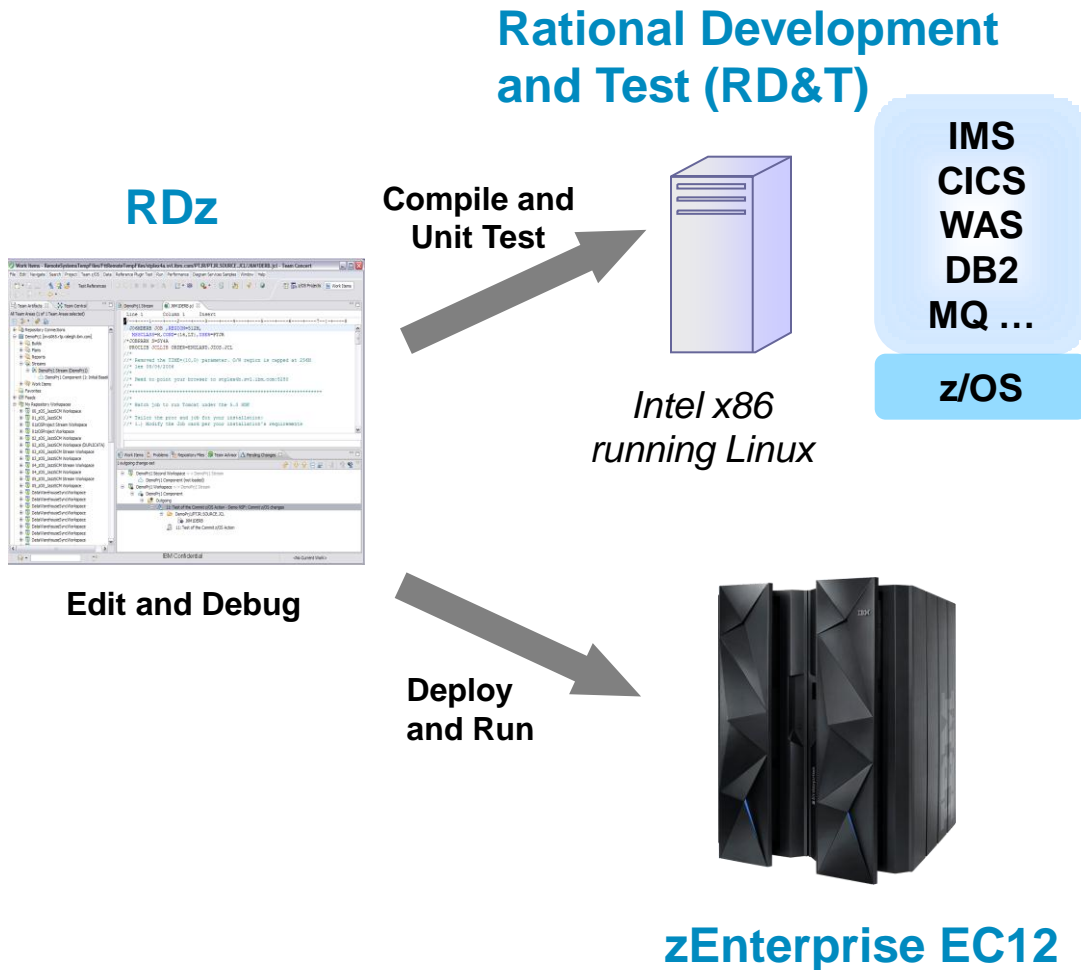
The introduction of Rational Team Concert (RTC) into the portfolio of IBM software products has enhanced the agility of IBM software development practices. Over the past two years, CICS Transaction Server for z/OS has adopted RTC, Rational Quality Manager (RQM) and Rational Developer for System z to modernize its development and service environment. This resulting success story proves it's possible for established products to adopt the Rational tool set.

- CICS team had operated with largely the same specialized, proprietary and isolated environment for more than 30 years
- Skills were diminishing, tools were disparate and incompatible, understanding project status and traceability of work was complex and time-consuming
- The needs and demands of the business required a more flexible environment

**Rational tools provided agility through a more open, transparent, integrated and collaborative environment**

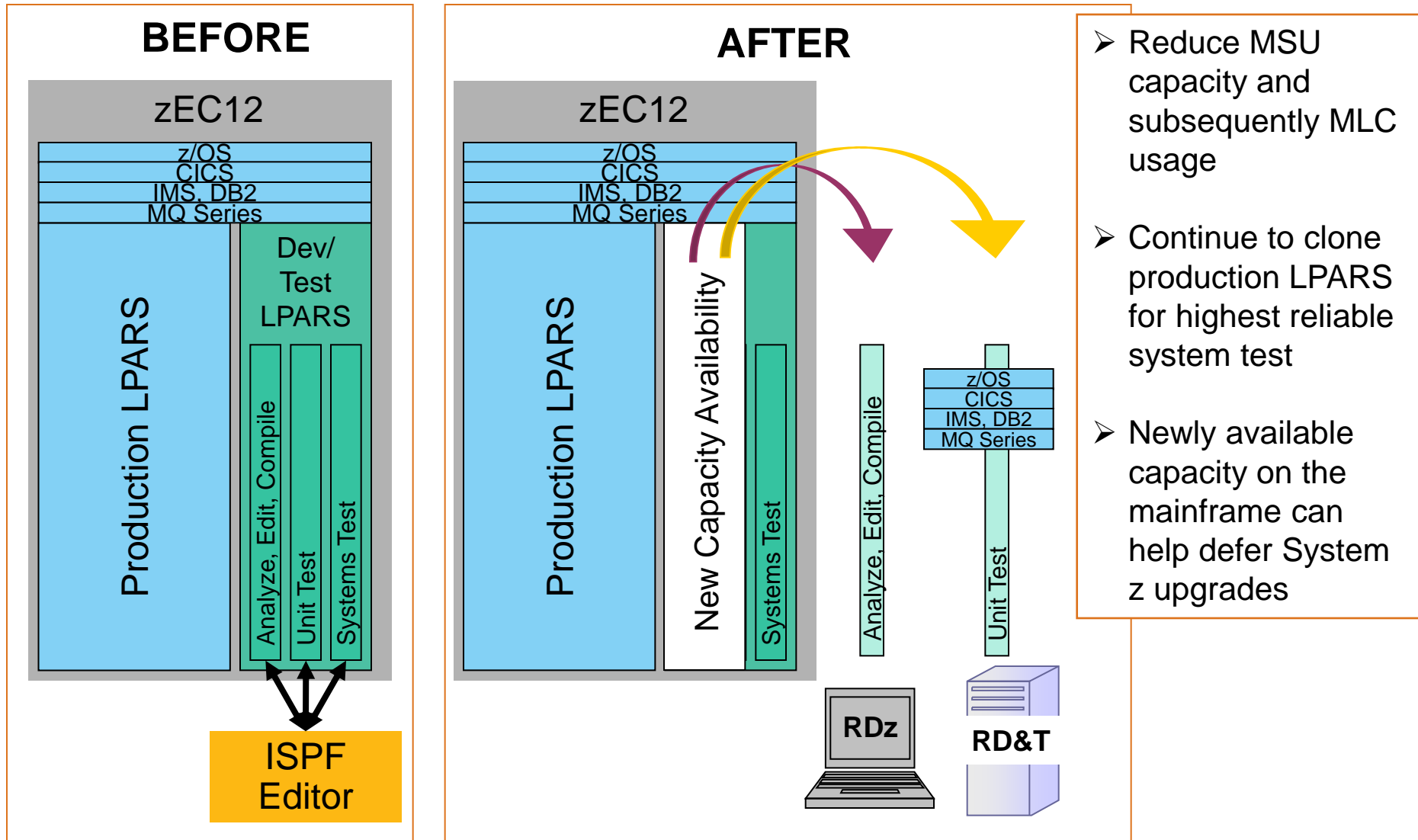


# For Further Savings, Offload Unit Testing From The Mainframe To “z/OS-on-Intel”



- Compile and Unit Test on an Intel x86 server running Linux
- RD&T server runs z/OS and all mainframe software
- Enables developers to rapidly prototype new applications
- Can significantly reduce MIPS consumption
- Eliminates costly delays by reducing dependencies on operations staff

# A Combination Of RDz And RD&T Can Reduce MIPS



# Customer Assessments Of Combined RDz And RD&T Value Indicate Tremendous Savings Are Possible

Customer	Percentage of Total MIPS Offloaded with RDz and/or RD&T	Annual Savings
1. Insurance	17	\$510,000
2. Communications	100	\$2,721,600
3. Financial	14.3	\$1,124,479
4. Healthcare Services	9.4	\$582,511
5. Financial	12.4	\$851,200
6. Banking	9	\$540,000
7. Healthcare Services	8	\$1,765,029

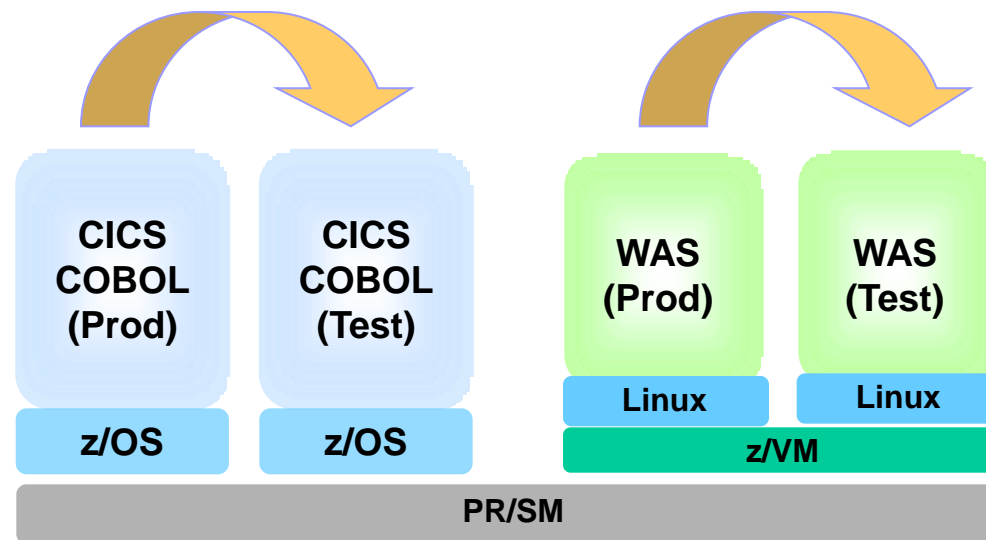
Moved *all* Dev and Unit Test off a dedicated mainframe and recovered 945 MIPS for new production

Moved only 50% of Dev and 50% of Unit Test, but still recovered almost \$1.8M

**All customers anticipated payback from RDz and RD&T investments within 8-20 months**

# The Mainframe Is An Extremely Cost Effective Platform For System Testing

- Development + Unit Test + System Test typically consumes ONLY about 20% - 30% of total capacity\*
- Virtualization makes it easy to clone and synchronize LPARs
- Exact clones reduce errors in system testing



\* Before offload to RDz and RD&T. Source: Internal IBM customer assessments and Eagle Team studies

# Rational Solution Packages Make Adoption Easy And Complete

For development teams...

## Integrated Solution for System z Development

*Rational Developer  
for System z*

*Rational Asset  
Analyzer*

*Rational Team  
Concert*

*Rational Development  
and Test*



For test teams...

## Continuous Integration Solution for System z

*Rational Team  
Concert*

*Rational Development  
and Test*

*Rational Quality  
Manager*

*Rational Test  
Workbench*



# Academic Initiative for System z Skills

## The New zEnterprise

### 2013 Update



IBM Academic Initiative >

# IBM Academic Initiative

Building skills for a Smarter Planet



Membership in the IBM Academic Initiative is free and open to individual faculty members.

## ***A skills initiative –***

An IBM program that partners with academic institutions worldwide to build a pipeline of skilled students for the IT jobs of tomorrow and for a smarter planet.

[ibm.com/university/systemz](http://ibm.com/university/systemz)

---

### Take advantage of our offerings



#### Explore our teaching topics

Resources to enhance IT, computer science, and business curricula



#### Use our courseware

Teaching materials for IBM products, open source technologies, tools



#### Access IBM software and systems

Hundreds of IBM products, virtual access to IBM systems and solutions

---

## Program goals and overview

- Assist and enable the Mainframe community with skills (Mainframe access, courses, training, certification, etc.)
- Explore enterprise systems education alternatives
- Not selling IBM products
- Not asking educators to teach a predefined training program
- Resources available at no charge
- Build important relationships with educators, clients, and partners
- Participation continues to increase
- Wide variety of schools in the program
- Different level of participation
- All programs are unique
- Designed to provide flexibility to the school to meet their requirements and capabilities

### IBM Academic Initiative

Open standards, open source and IBM resources for academia



**I'd like to bring critical thinking on global issues into my classroom.**

→ How can IBM help?

-  Bring critical thinking into the classroom
-  Help students gain real-world experience
-  Get course material to teach competitive skills



# Program Resources To Assist And Enable Educators



**Remote  
access to  
mainframes  
worldwide for  
teaching**

Full software  
stack available

Program  
membership  
takes 10  
minutes



Courses and z/OS Mastery Exams  
*to validate z knowledge*



z Skills Help Desk  
*to assist the community*  
[zskills@us.ibm.com](mailto:zskills@us.ibm.com)



Student Mainframe Contests  
*to generate interest*



Faculty skills development and  
education

Roundtables on Campus  
*to get industry input*

# Locate schools teaching Enterprise Systems

## System z

Academic Initiative program

US & Canada

Europe, Middle East, Africa

Latin America

Asia Pac

Educators from all over the world are currently investigating or actively teaching mainframe technologies. This is a partial listing of the most active schools in the United States and Canada. The schools are listed alphabetically by state or province.

If you are interested in locating and recruiting new talent for internship and [job opportunities](#), reach out to the educator listed as the school contact.

For general inquires about the IBM Academic Initiative program or if you're an educator that would like to be included in this list, contact the System z Academic Initiative team at [zskills@us.ibm.com](mailto:zskills@us.ibm.com).

### States and provinces with participating schools

- |                           |                 |                  |
|---------------------------|-----------------|------------------|
| ↓ Multiple U.S. locations | ↓ Illinois      | ↓ New York       |
| ↓ Alabama                 | ↓ Indiana       | ↓ North Carolina |
| ↓ Arkansas                | ↓ Iowa          | ↓ Ohio           |
| ↓ California              | ↓ Louisiana     | ↓ Pennsylvania   |
| ↓ Colorado                | ↓ Maryland      | ↓ South Carolina |
| ↓ Delaware                | ↓ Massachusetts | ↓ South Dakota   |
| ↓ Florida                 | ↓ Minnesota     | ↓ Texas          |

[www.ibm.com/systems/z/education/academic/schools\\_na.html](http://www.ibm.com/systems/z/education/academic/schools_na.html)

# We Want Every Mainframe Client to Know...

*Use the Academic Initiative to build and locate skills*

- **Locate schools** teaching enterprise systems to recruit new talent
- **Partner with IBM** to build new skills for your business  
[zskills@us.ibm.com](mailto:zskills@us.ibm.com)
- **Advertise job opportunities** to students and experienced professionals  
[systemzjobs.com](http://systemzjobs.com)
- **Use resources** to assist with building employees skills (internal training programs)  
[www.ibm.com/systems/z/education/skills\\_coursematerials.html](http://www.ibm.com/systems/z/education/skills_coursematerials.html)
- **Build credentials** through the Mastery Test  
[www.ibm.com/certify/mastery\\_tests/ovrZ05.shtml](http://www.ibm.com/certify/mastery_tests/ovrZ05.shtml)
- **Online mainframe education** (certificates)  
[www.idcp.org/learnzos.html](http://www.idcp.org/learnzos.html)
- **Stay connected** with through communities and social media. “Like” us on Facebook.

# Partner with IBM to build new skills for your business

**IBM will assist and enable a school of your choice to teach enterprise systems**

Follow these steps:

1. Identify a school of your choice and ask yourself these questions:

- Where does your company recruit new talent today?
- Do you have an existing relationship with someone at a college or university?
- Don't limit your thinking to Computer Science.  
Consider IT, MIS, IS, CSE and Business majors.  
IBM has courses and modules that can be included in various majors to expose students to enterprise systems thinking

2. Contact IBM at [zSkills@us.ibm.com](mailto:zSkills@us.ibm.com).

# Use IBM's Job Board - SystemzJobs.com

Lets employers post detailed job requirements for job seekers of all experience levels to review and apply  
Global pool of talent specializing in mainframe technology, including both students and experienced professionals

## Benefits of using SystemzJobs.com

- Free, secure, and easy to use
- Fast access to mainframe jobs and talent
- Global

## Getting started

Follow these steps at SystemzJobs.com to get started:

1. Create a secure account
2. Post or Search for jobs
3. Connects students and industry

**Sponsored by the  
IBM Academic Initiative, System z**

Visit: [ibm.com/university/systemz](http://ibm.com/university/systemz)

*Questions? Contact [zSkills@us.ibm.com](mailto:zSkills@us.ibm.com)*



IBM can assist **you** with Enterprise Systems Skills

Contact us at [zskills@us.ibm.com](mailto:zskills@us.ibm.com)

## Important Web Sites And Contacts

- **Academic Initiative for the Mainframe**  
[ibm.com/university/systemz](http://ibm.com/university/systemz)
- **Locate participating schools**  
[www.ibm.com/systems/z/education/academic/schools\\_na.html](http://www.ibm.com/systems/z/education/academic/schools_na.html)
- **IBM System z Mastery Exam**  
[ibm.com/certify/mastery\\_tests/ovrZ05.shtml](http://ibm.com/certify/mastery_tests/ovrZ05.shtml)
- **System z Job Board**  
[SystemzJobs.com](http://SystemzJobs.com)
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