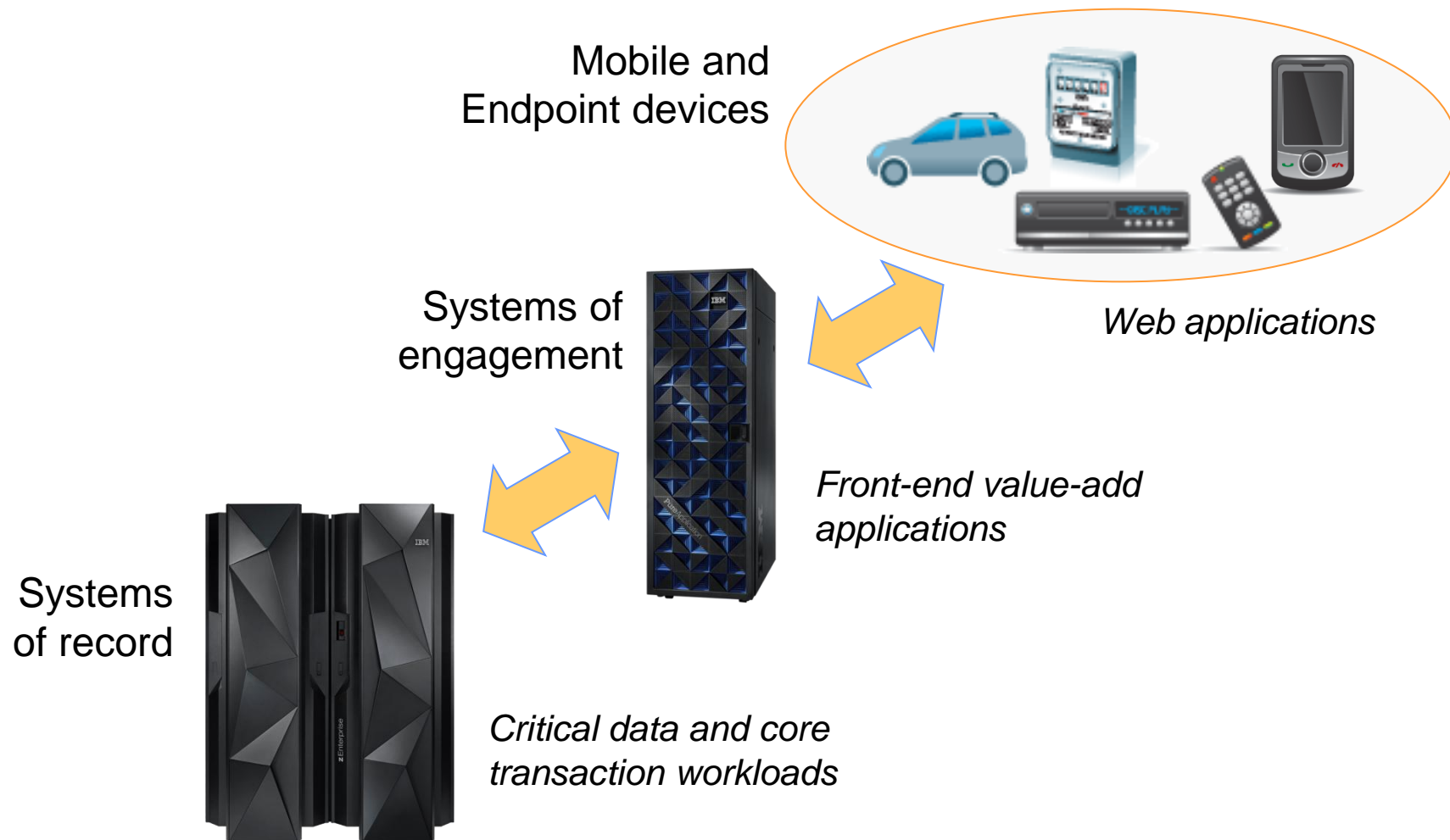




Smarter Solution Delivery On System z

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

Increasingly Today, Businesses Are Developing Cross-platform Hybrid Applications



But Traditional Development Environments Are Not Set Up To Support This

HTML
WML
iOS
Android



Mobile and
Endpoint devices



Different teams!

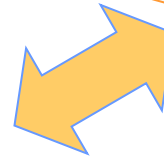
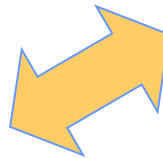
Different tools!

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

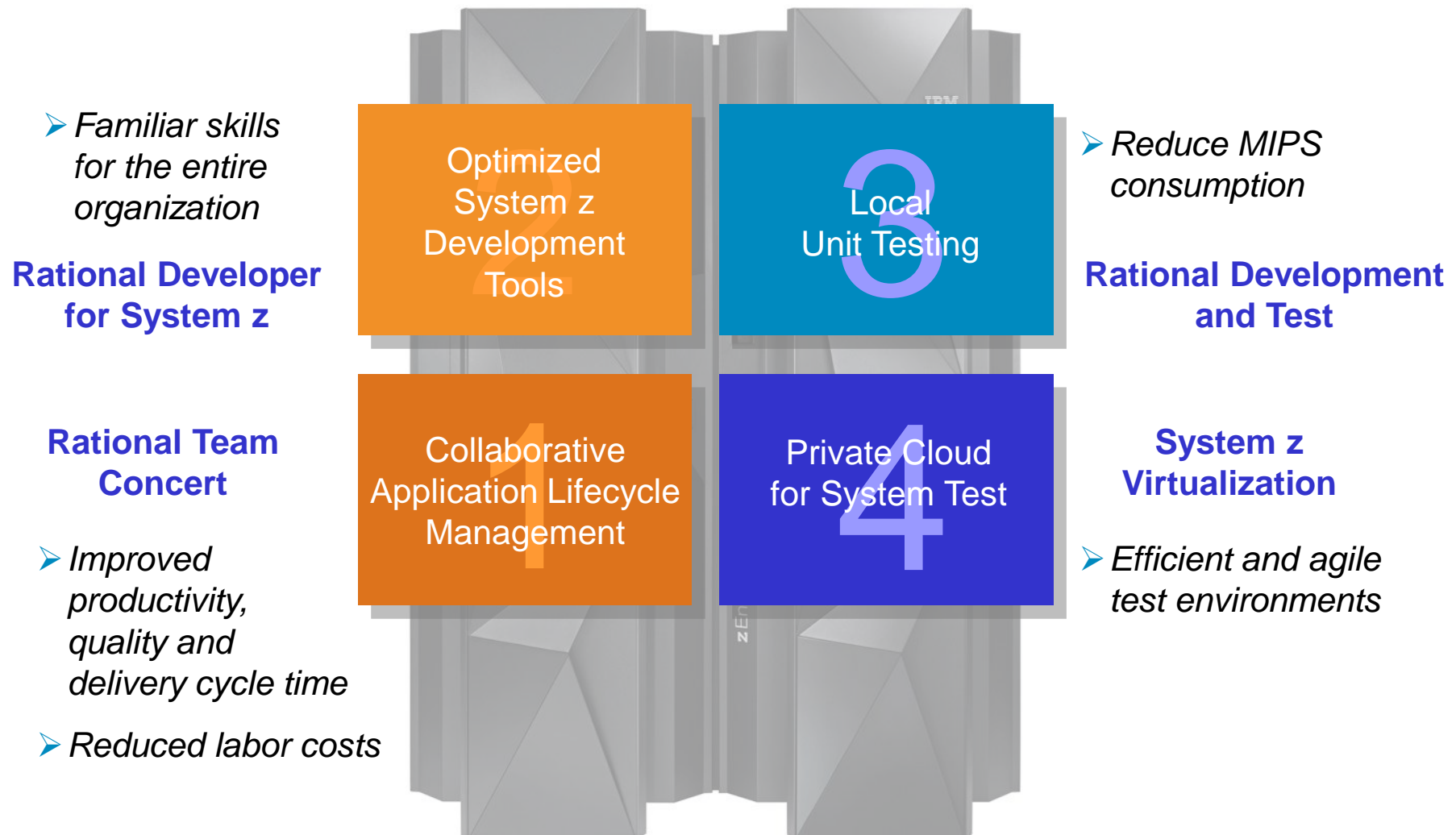
Linux



Different schedules!

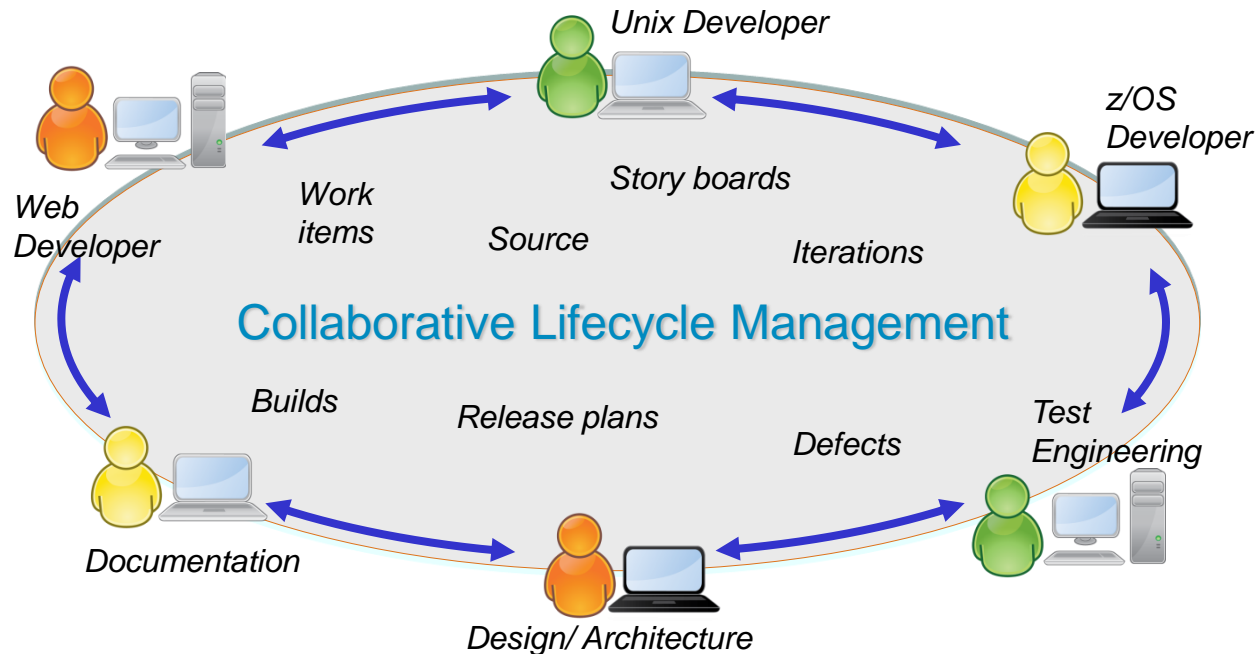
Different plans!

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

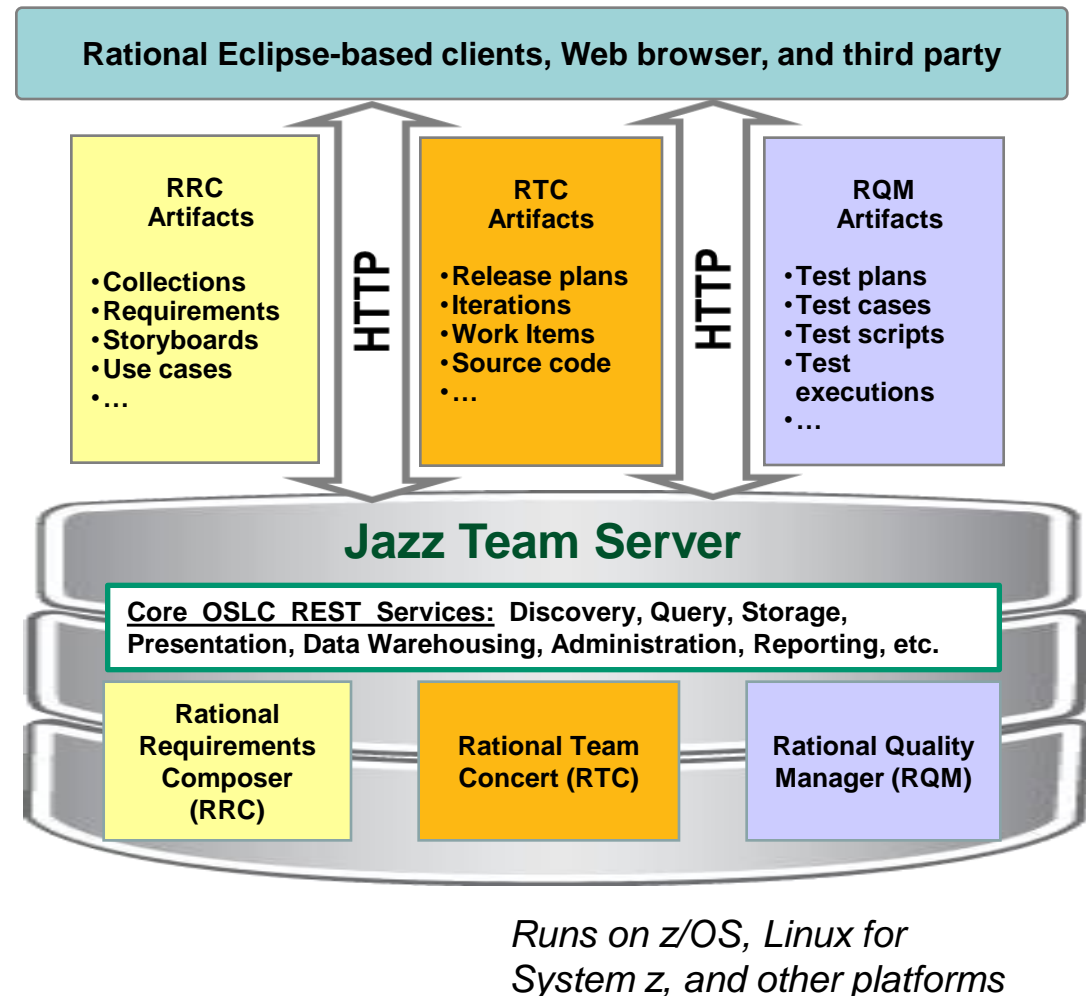
Collaborative Lifecycle Management Is Built On Proven Principles

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**

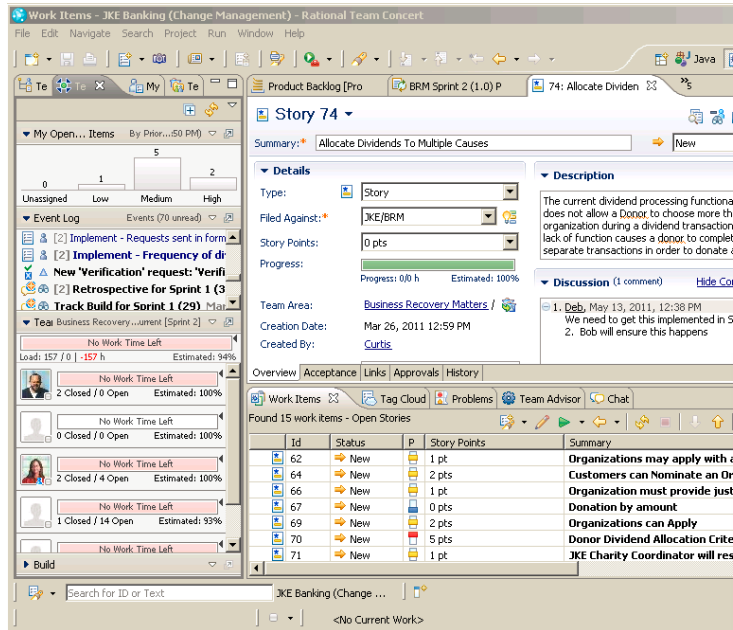


Jazz Team Server Is The Heart Of Rational's Collaborative Lifecycle Management (CLM)

- 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



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

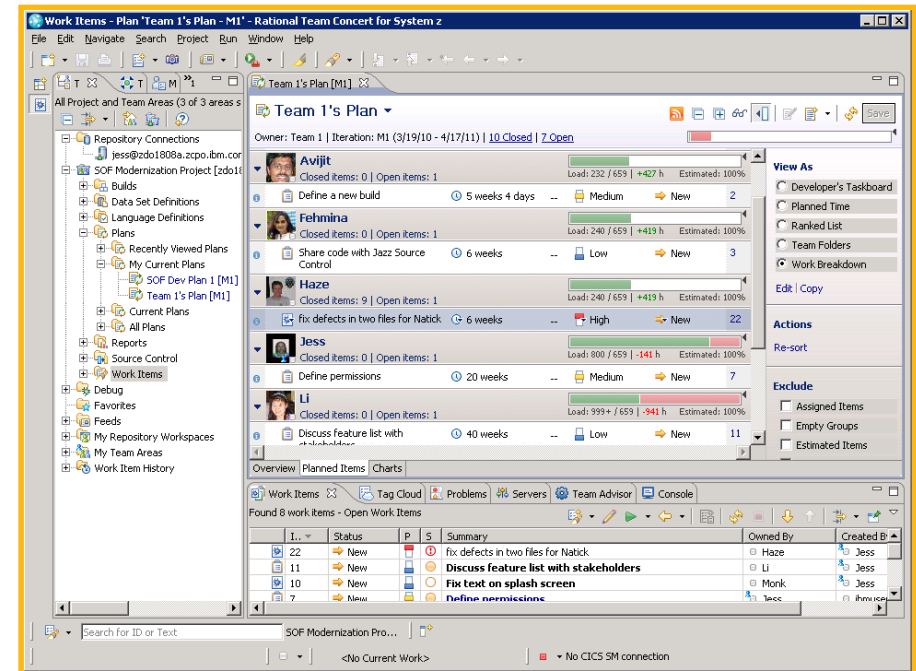
Build System

- 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...



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

Rational Developer For System z Is A Graphical Development Environment For Developers

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 Eclipse interface. The main window is titled "Remote System Explorer - ECHO.jcl - IBM Rational Software Development Platform". It features a "Remote Systems" tree on the left, a central code editor, and a "Remote System Details" window at the bottom.

Annotations with arrows point to various components:

- Disconnected -vs- Connected:** Points to the "Remote Systems" tree, which shows a tree structure for "CTFMYS07" and "CTFMYS08".
- MVS PDS members:** Points to the "SAWDUST" folder in the tree, which contains sub-folders like "MVS Files" and "USS Files".
- Data set characteristics:** Points to the "Properties" window at the bottom, which shows a table of properties for the selected object.
- Configurable Editor:** Points to the central code editor, which displays JCL code for a job named "SAWDUST1 JOB".
- USS Command Shell:** Points to the "Remote Shell" window, which shows a command prompt.
- TSO Command Shell:** Points to the "Remote Shell" window, which shows a command prompt.
- JES sub-system view:** Points to the "Job Filter" window at the bottom, which shows a list of jobs.

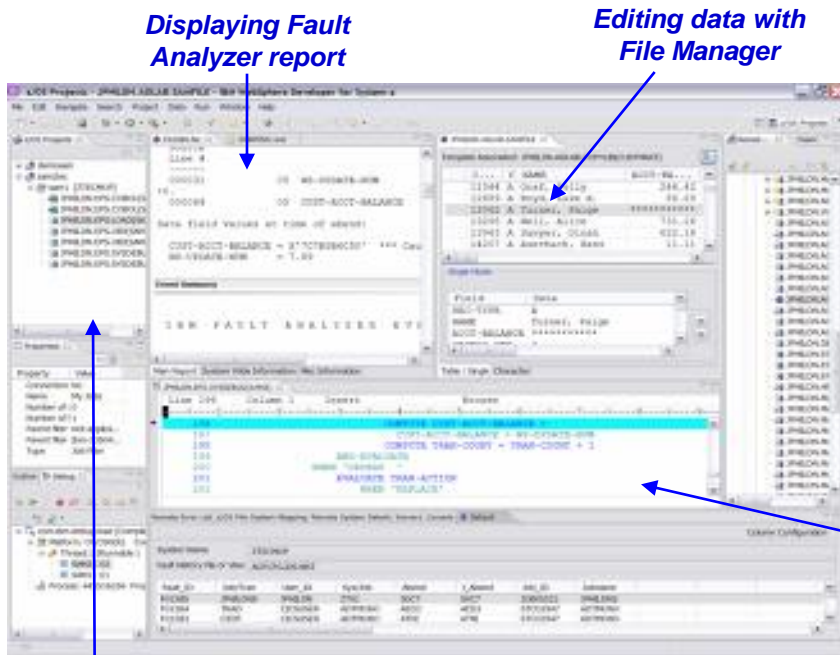
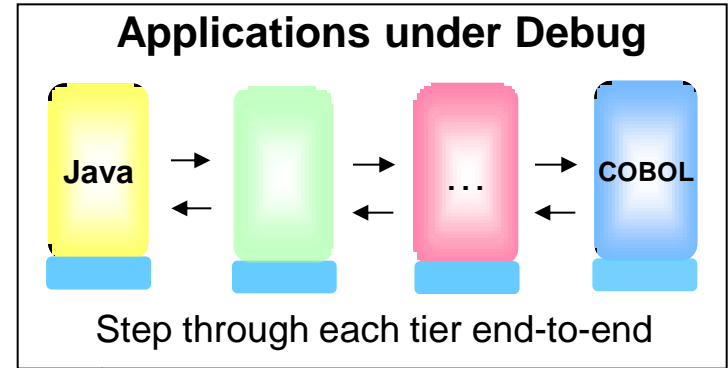
Property	Value
Context	
Name	TSO-CTFMYS08
Number of children	0
Status	Running
Type	Command Shell

```
Line 1      Column 1      Insert
1-----2-----3-----4-----5-----
//SAWDUST1 JOB ,
//STP0000 EXEC PROC=ELAXFPL1,CICS=,
//LKED EXEC PROC=ELAVLNK
MSGCLASS=H,TIME=(,4),REGION=28H,COND=(16,LT)
STP0000 EXEC PROC=ELAXFPL1,CICS=,
DB2=,
COMP=
PLI.SYSLIN DD DSN=SAWDUST.PLI0BJS.OBJ(ECHO),
DISP=SHR
PLI.SYSLIB DD DSN=SAWDUST.PLI.INCLUDE,DISP=SHR
DD DSN=CEEV2R10.SCEESAMP,DISP=SHR
PLI.SYSXMSDD DD DUMMY
PLI.SYSIN DD DSN=SAWDUST.SOURCE.PLI(ECHO),DISP=SHR
***** ADDITIONAL JCL FOR COMPILE HERE *****
LKED EXEC PROC=ELAXFLN
LINK.OBJ0000 DD DSN=SAWDUST.PLI0BJS.OBJ(ECHO),DISP=SH
LINK.SYSLIN DD *
INCLUDE OBJ0000
```

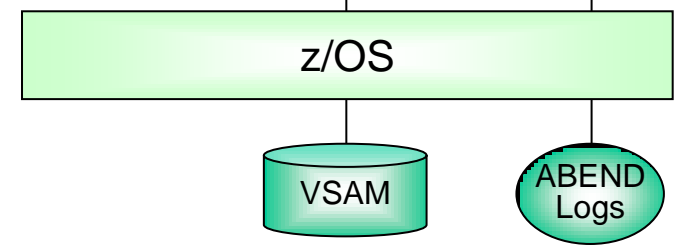
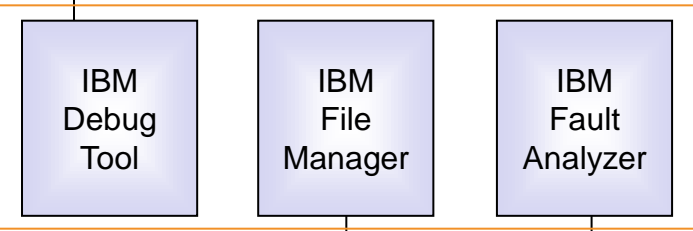
RDz Eclipse interface

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



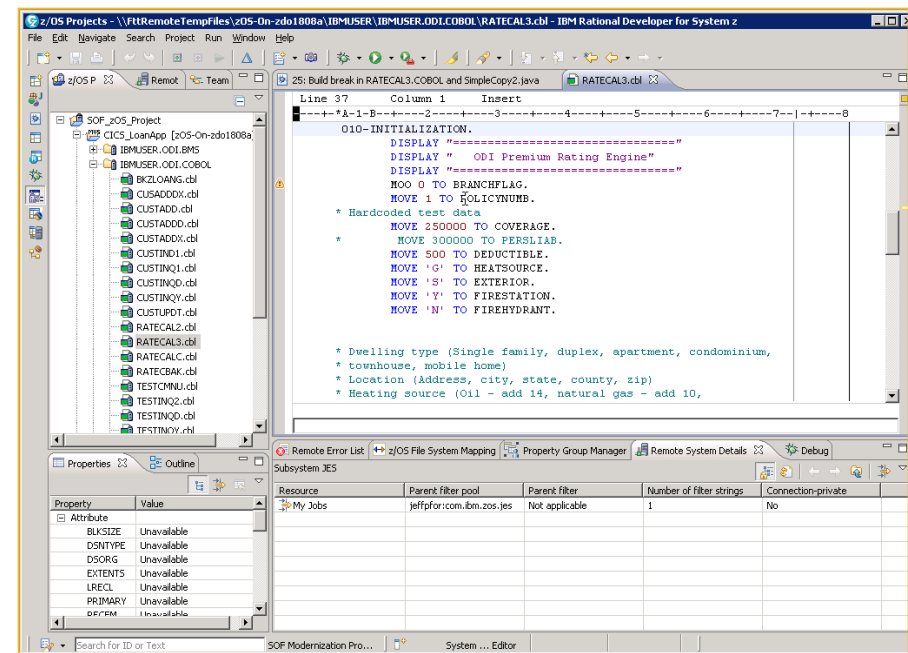
Developing System z application with RDz



- 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

If Desired, Mainframe Programmers Can Continue To 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
to 2 of 2

Workspace : Thom's repos us
ing

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
7

MEMBER : THOM.CO80L (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

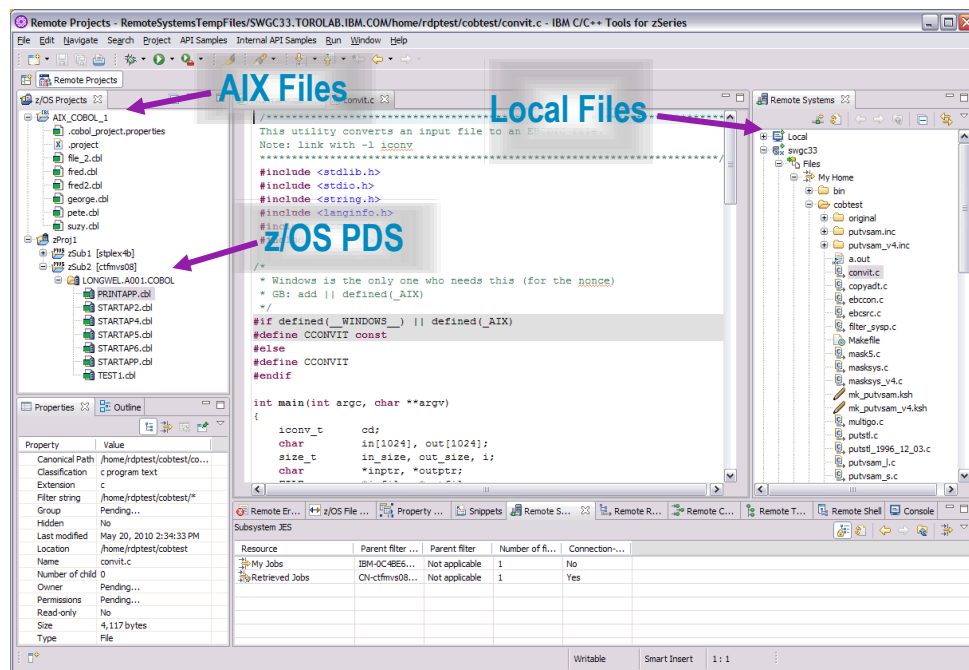
See: <http://www.youtube.com/watch?v=DFbNQNa13y0>
and <http://www.youtube.com/watch?v=g3l-pF4osbc>

Rational Packages A Solution For Integrated Development Of zEnterprise Hybrid Applications

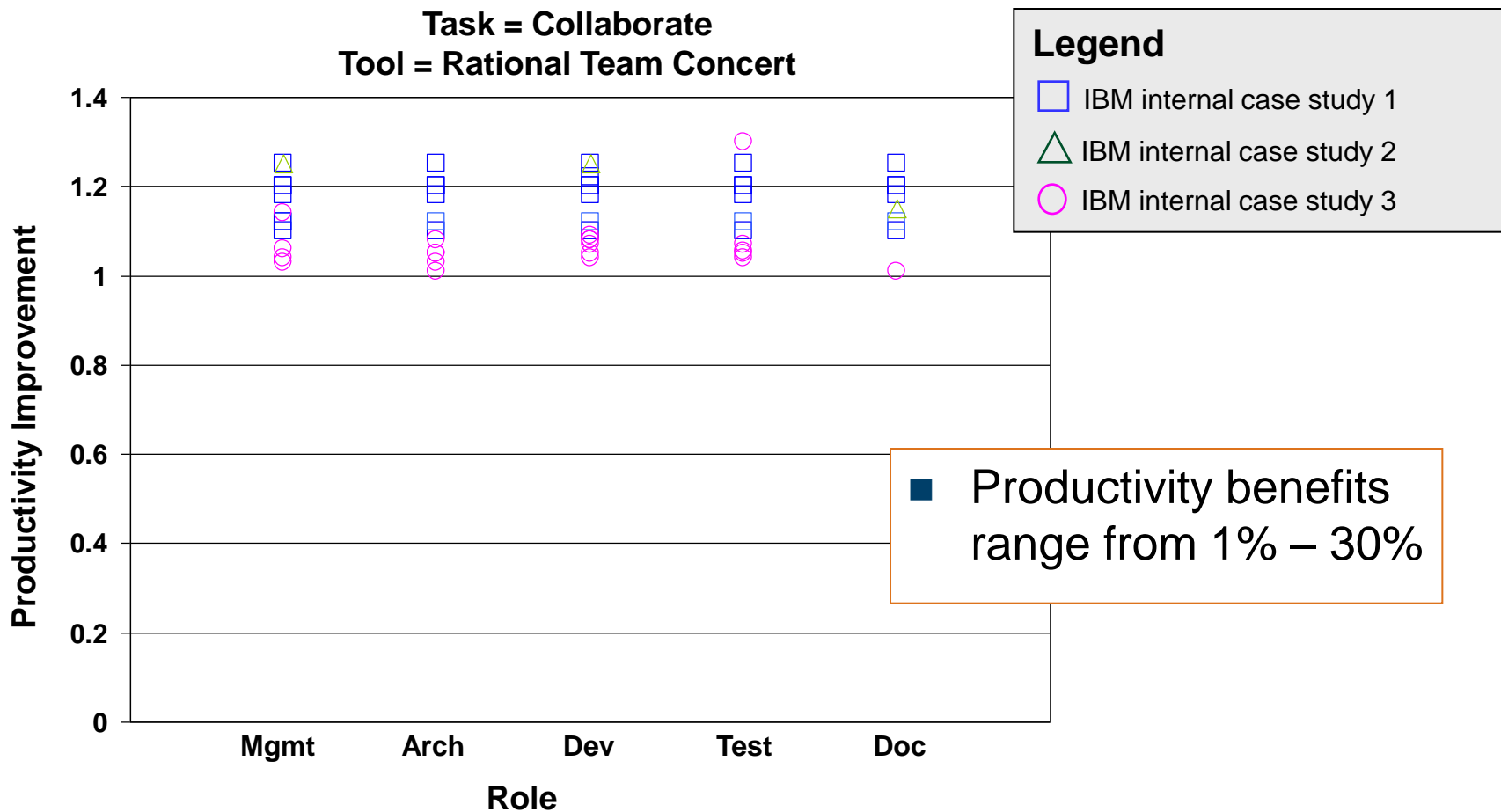
Rational Developer for zEnterprise

- 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

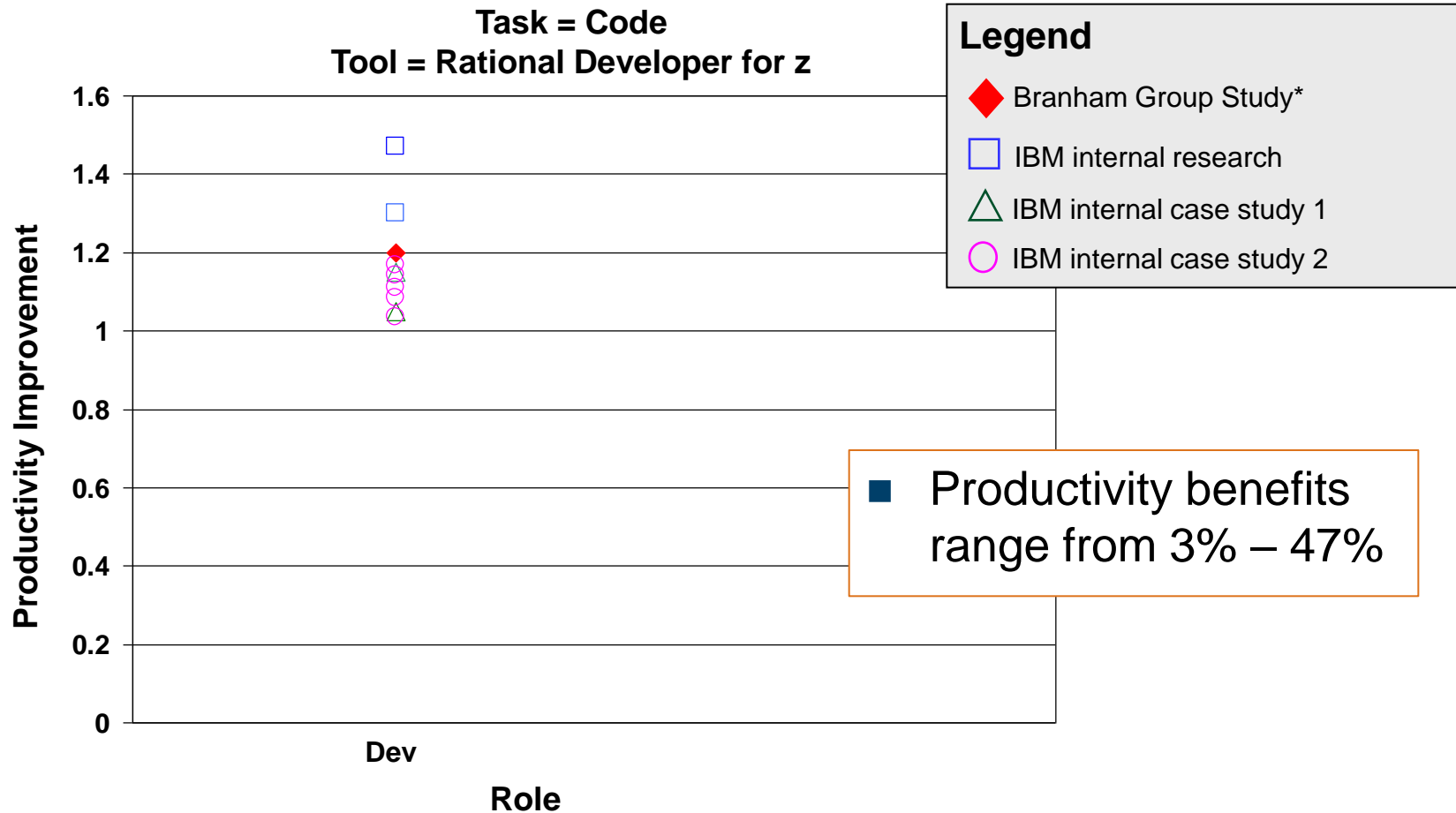
Work with artifacts on multiple platforms in one GUI



Research And Case Studies Show Rational Team Concert Improves Collaboration



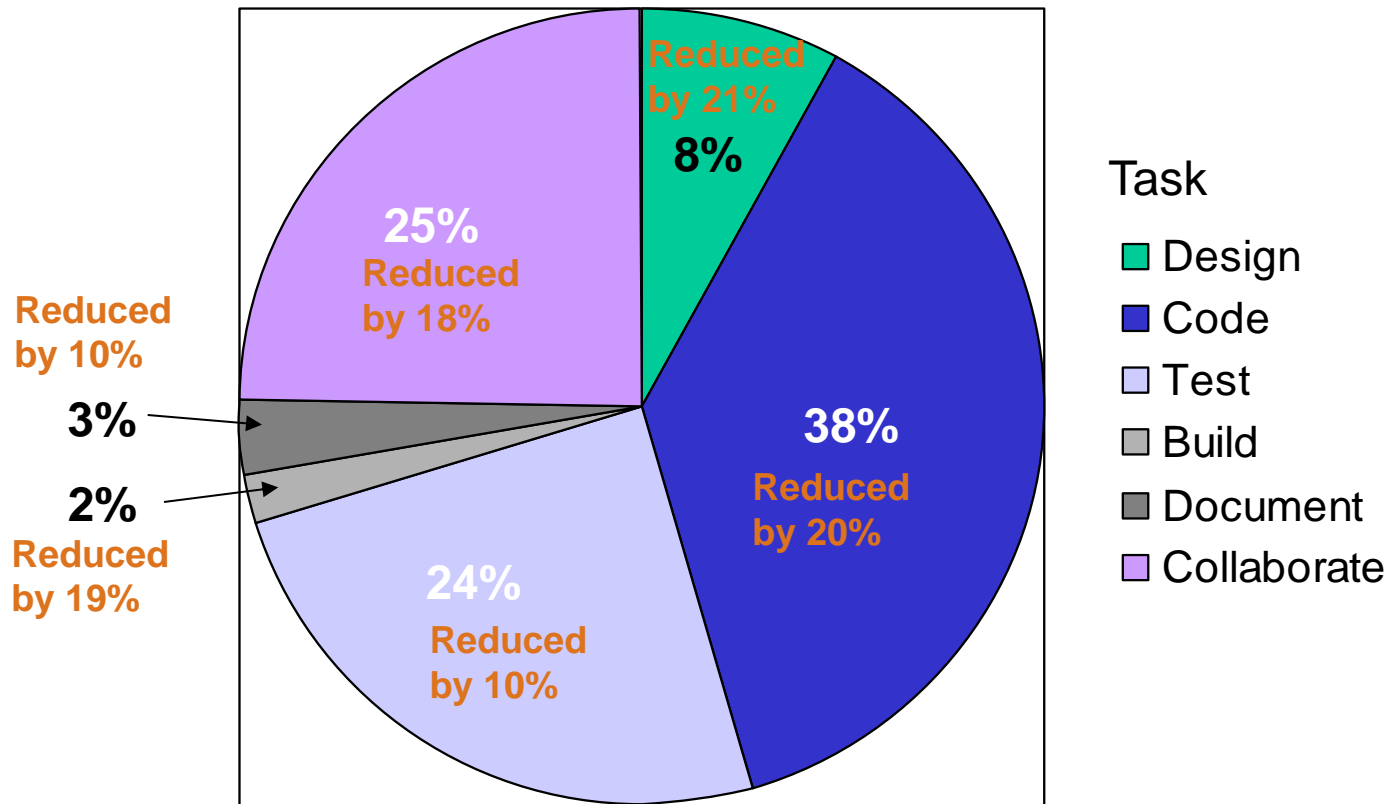
Research And Case Studies Show Rational Developer For System z Improves Development



Source: The Branham Group, Inc.

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

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



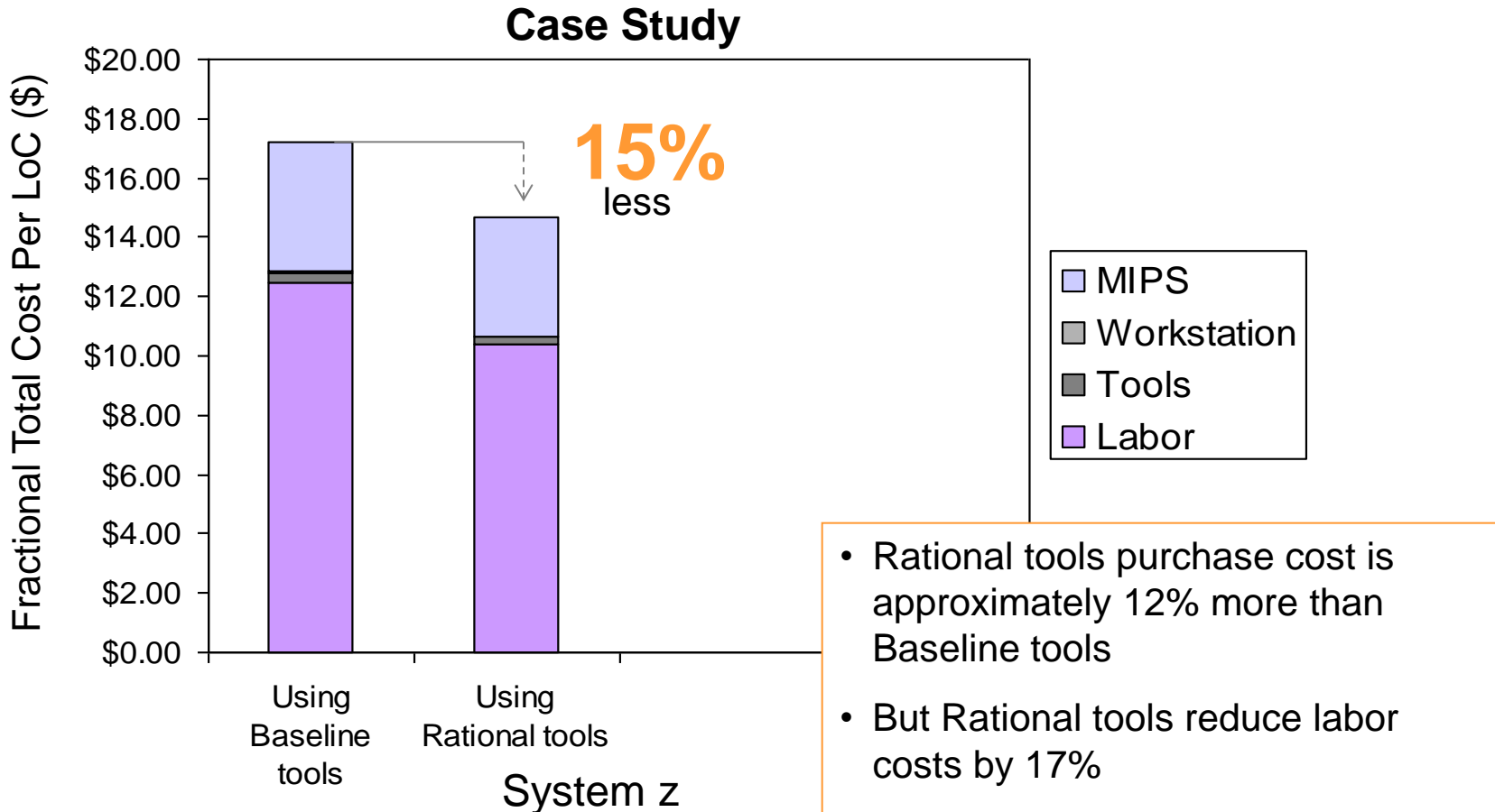
Rational Tools

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

Rational Labor Savings Far Outweigh 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 Rational Tools To Improve Productivity

IBMSystems
magazine

Rational Team Concert Energizes the CICS Development Process

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

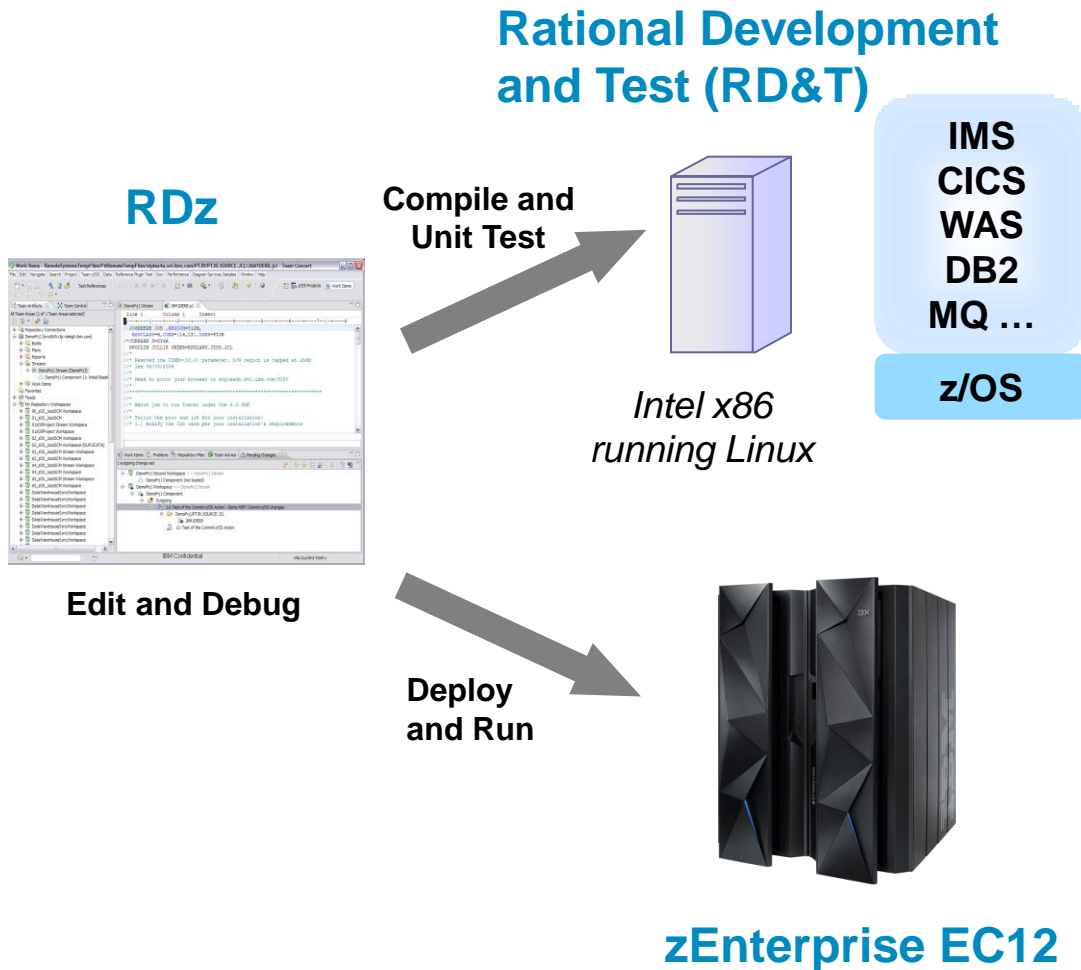


The introduction of Rational Team Concert (RTC) into the portfolio of IBM software products has enhanced the agility of IBM software development practices. Over the past two years, CICS Transaction Server for z/OS has adopted RTC, Rational Quality Manager (RQM) and Rational Developer for System z to 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

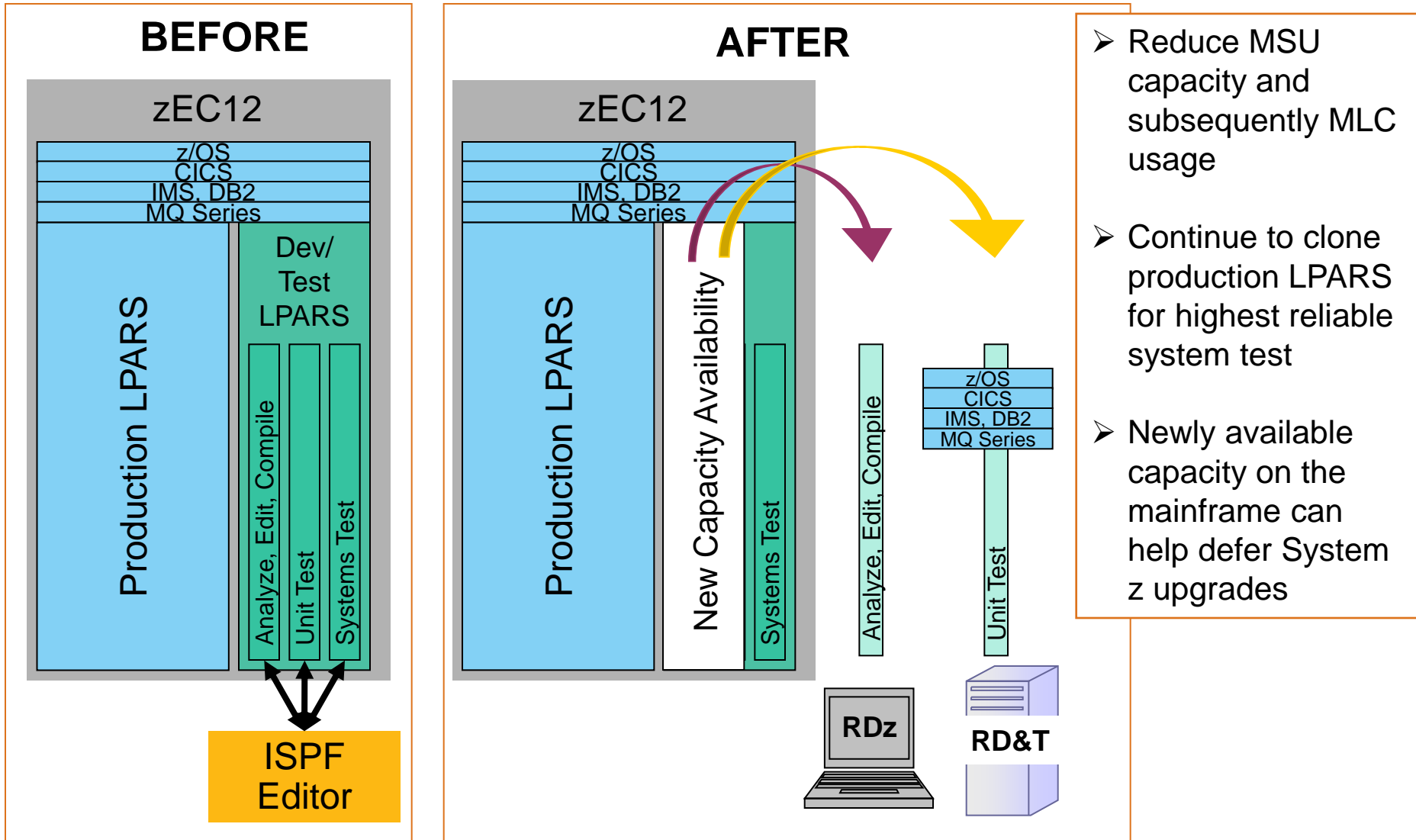
Rational tools provided agility through a more open, transparent, integrated and collaborative environment

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

Rational Developer For System z Plus Rational Development And Test Can Reduce MIPS



Customer Savings From Combined Use Of Rational Developer For z And Rational Development And Test

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

Dev and Unit Test accounted for 17% of total MIPS used. Moving it off saved \$510,000

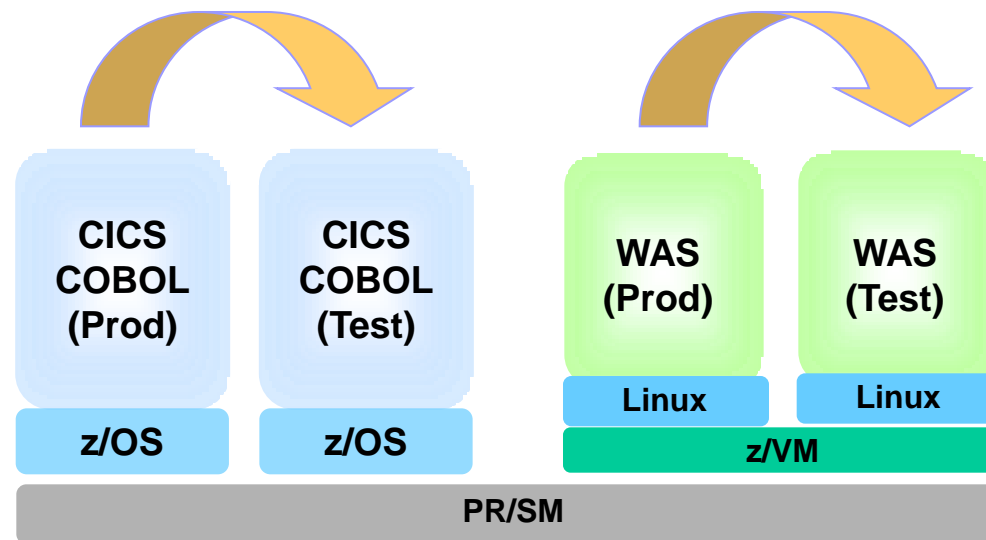
Dev and Unit Test accounted for 100% of this dedicated System z. Moving it off recovered 945 MIPS for new production

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

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

System z Virtualization And Workload Management Enable Cost Efficient 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

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



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.

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

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
- **Advertise job opportunities** to students and experienced professionals
systemzjobs.com
- **Use resources** to assist with building employees skills (internal training programs)
www.ibm.com/systems/z/education/skills_coursematerials.html
- **Build credentials** through the Mastery Test
www.ibm.com/certify/mastery_tests/ovrZ05.shtml
- **Online mainframe education** (certificates)
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.

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

Questions? Contact zSkills@us.ibm.com



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

Contact us at zskills@us.ibm.com

Important Web Sites And Contacts

- **Academic Initiative for the Mainframe**
ibm.com/university/systemz
- **Locate participating schools**
www.ibm.com/systems/z/education/academic/schools_na.html
- **IBM System z Mastery Exam**
ibm.com/certify/mastery_tests/ovrZ05.shtml
- **System z Job Board**
SystemzJobs.com
- **Stay connected and “like” the IBM System z Academic Initiative on Facebook**

Academic Initiative System z program manager: Kathy Pfeiffer, pfeiff@us.ibm.com

Questions? Contact zskills@us.ibm.com





THANK YOU