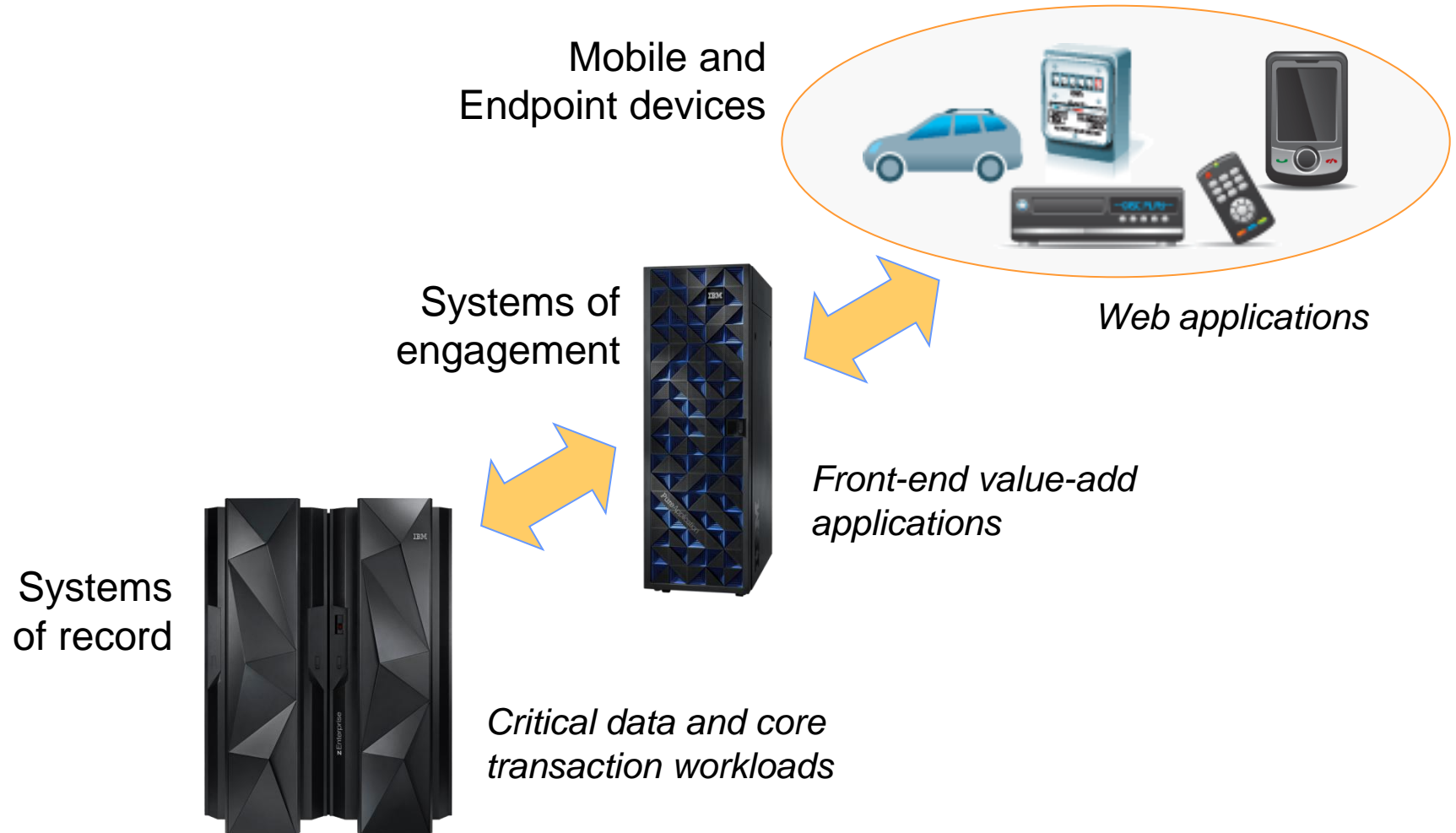


The New zEnterprise – A Cost-Busting Platform

Smarter Solution Delivery on System z



Increasingly today, businesses are developing cross-platform hybrid applications



But traditional development environments are not set up to support this

HTML
WML
iOS
Android



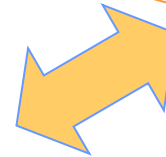
Mobile and
Endpoint devices



Different teams!

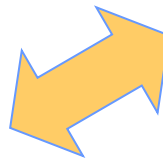
Different tools!

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 technologies

Cross-team collaboration! Optimized tools!

Shared artifacts – requirements, schedules, work items, tests and test plans, etc.

A common process and workflow!

Linux

Unix

Windows

Systems
of record

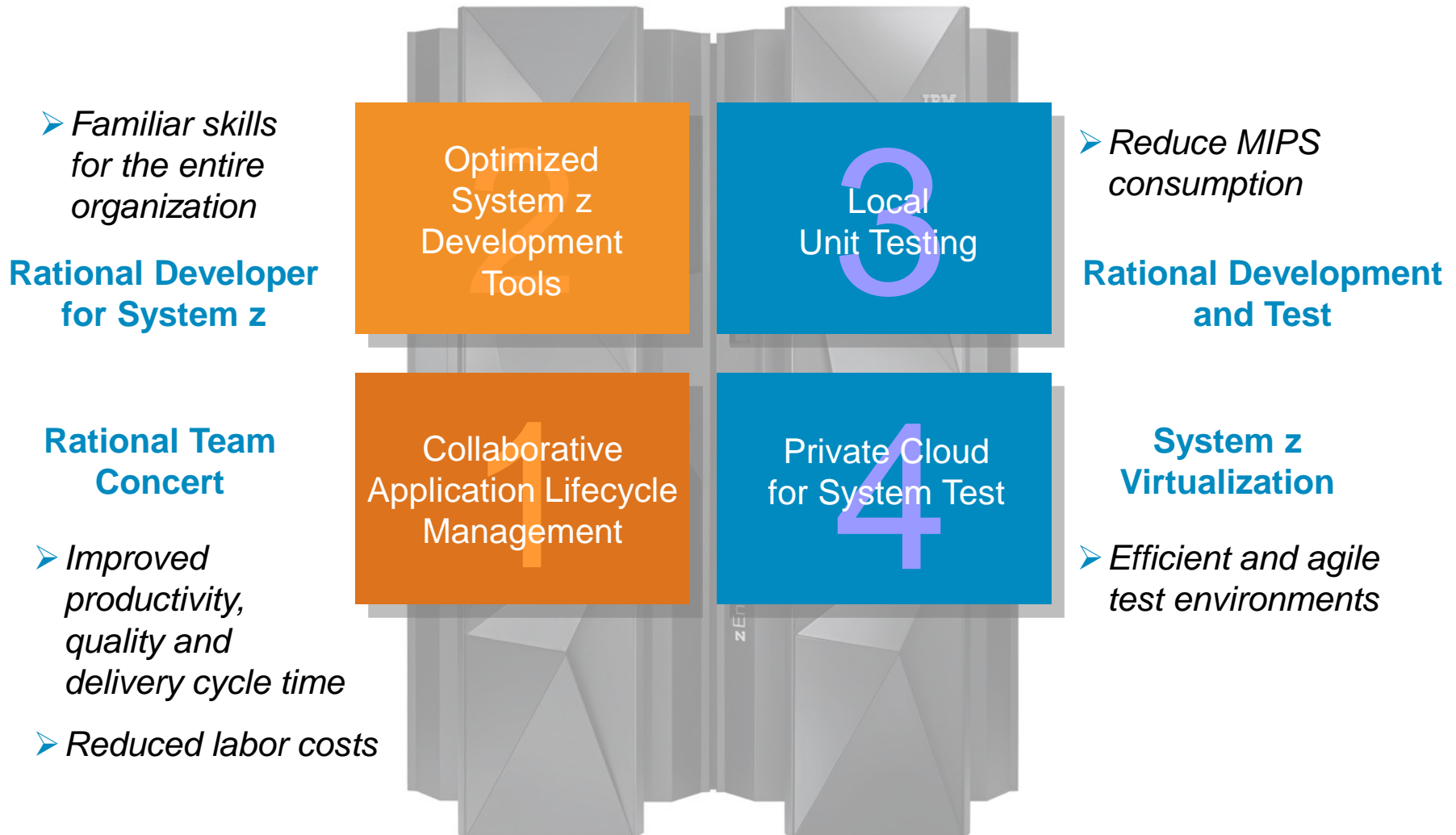
z/OS



Different schedules!

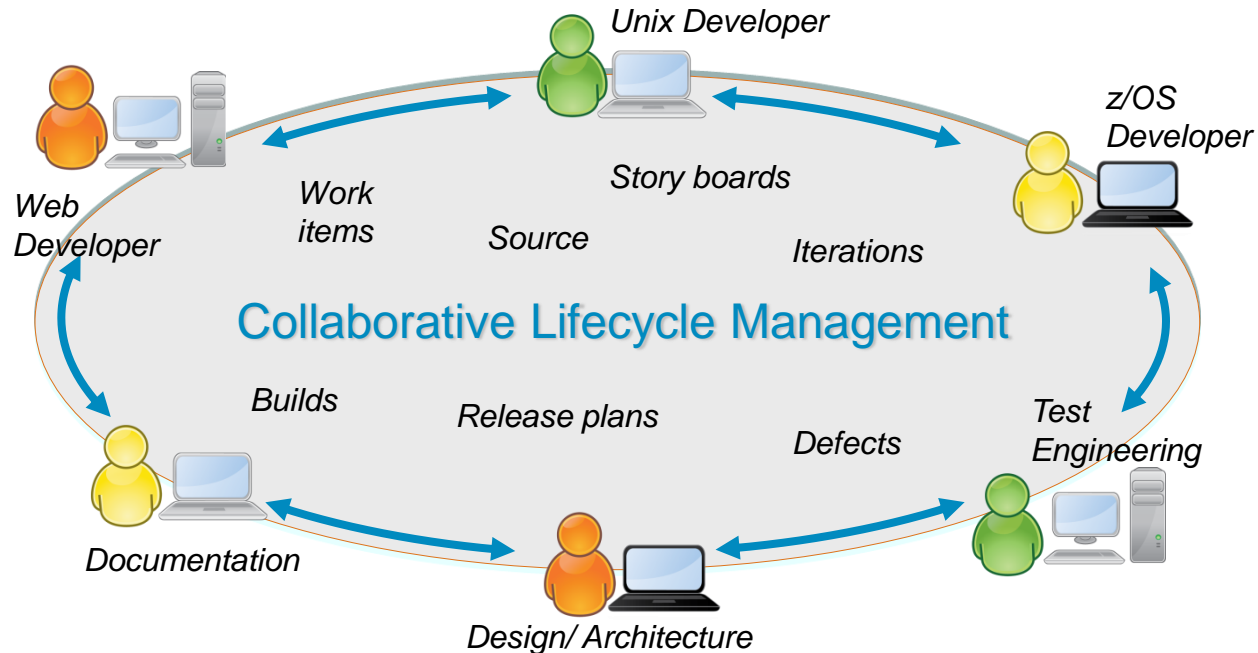
Different plans!

How can we do this for System z?



Rational tools embrace collaborative lifecycle management (CLM)

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

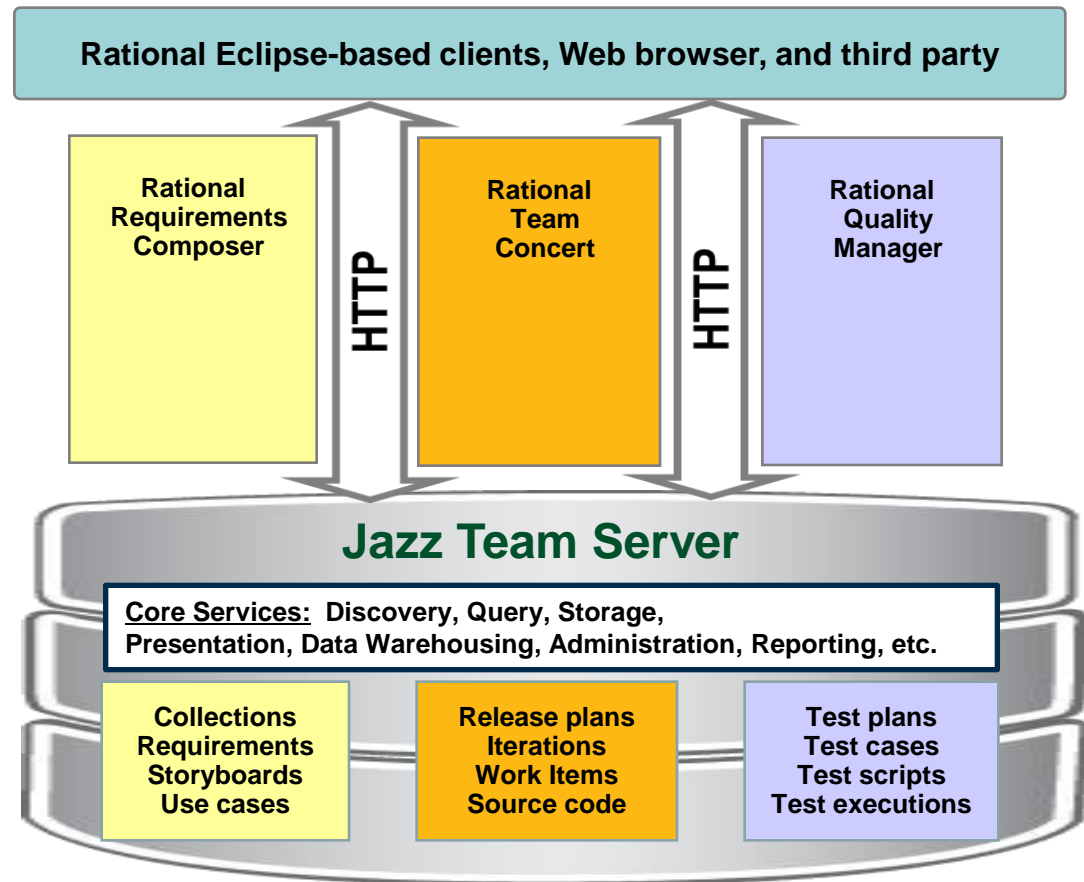


- Single, advanced graphical user interface used by all
- Enables all development teams to collaborate
- Based on a common agile process with shared and linked artifacts
- Transparent, with end-to-end governance

Jazz Team Server is the heart of Rational's collaborative lifecycle management

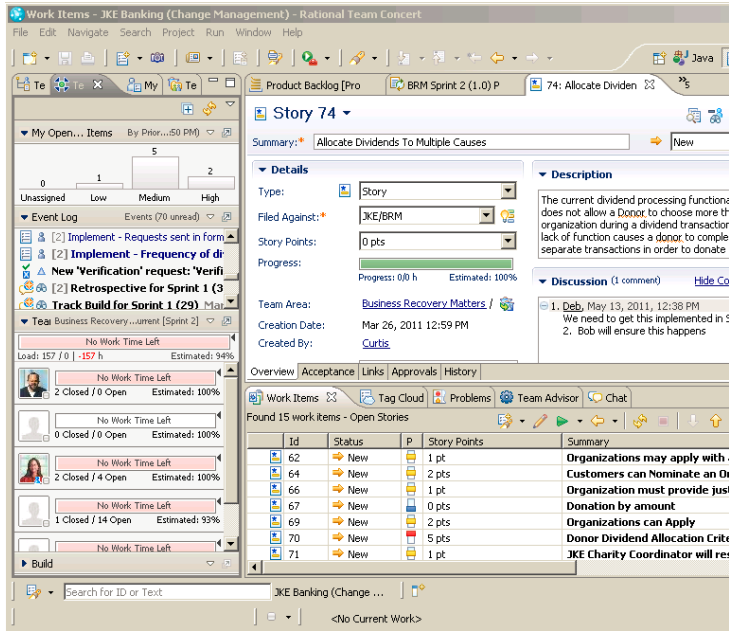
- Jazz Team Server provides a single, consolidated hub of information
 - All artifacts are shared resources addressed by URLs
 - Accessible via REST API
 - Based on Open Services for Lifecycle Collaboration (OSLC) services

- Supports three CLM applications
 - [Rational Requirements Composer](#) to define requirements
 - [Rational Team Concert](#) for team collaboration
 - [Rational Quality Manager](#) for test management



Runs on z/OS, Linux for System z, and other platforms

Rational Team Concert provides unique development environment and 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

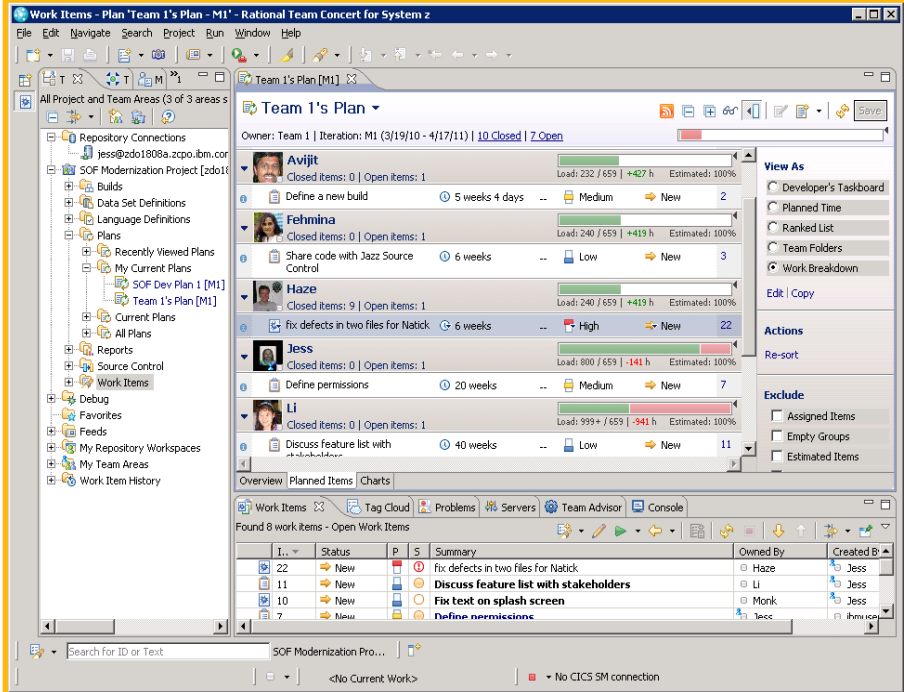
Build System

- 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 work items:

Item ID	Summary	Priority	Assignee	Status	Due Date	Load	Estimated
22	Define a new build	Medium	Avijit	New	5 weeks 4 days	232 / 659	+427 h
11	Share code with Jazz Source Control	Low	Fehmina	New	6 weeks	240 / 659	+419 h
10	fix defects in two files for Natick	High	Haze	New	6 weeks	240 / 659	+419 h
7	Define permissions	Medium	Jess	New	20 weeks	800 / 659	-141 h
11	Discuss feature list with stakeholders	Low	LI	New	40 weeks	999+ / 659	-941 h
7	Fix text on splash screen	New	Monk	New			
7	Define permissions	New	Jess	New			

The interface also shows a sidebar with navigation options like 'Repository Connections', 'SOF Modernization Project', and 'Team 1's Plan'. The bottom status bar indicates '<No Current Work>' and 'No CICS SM connection'.

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 distributed 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 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 continue to develop with ISPF and integrate with RTC

Rational Team Concert ISPF Client

- For users familiar with TSO/ISPF green screen interfaces
- Uses RTC repository for workspaces, change sets, work items, build requests, etc.
- Check-in/out, edit, build, and deliver ISPF code stored in RTC
- 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.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

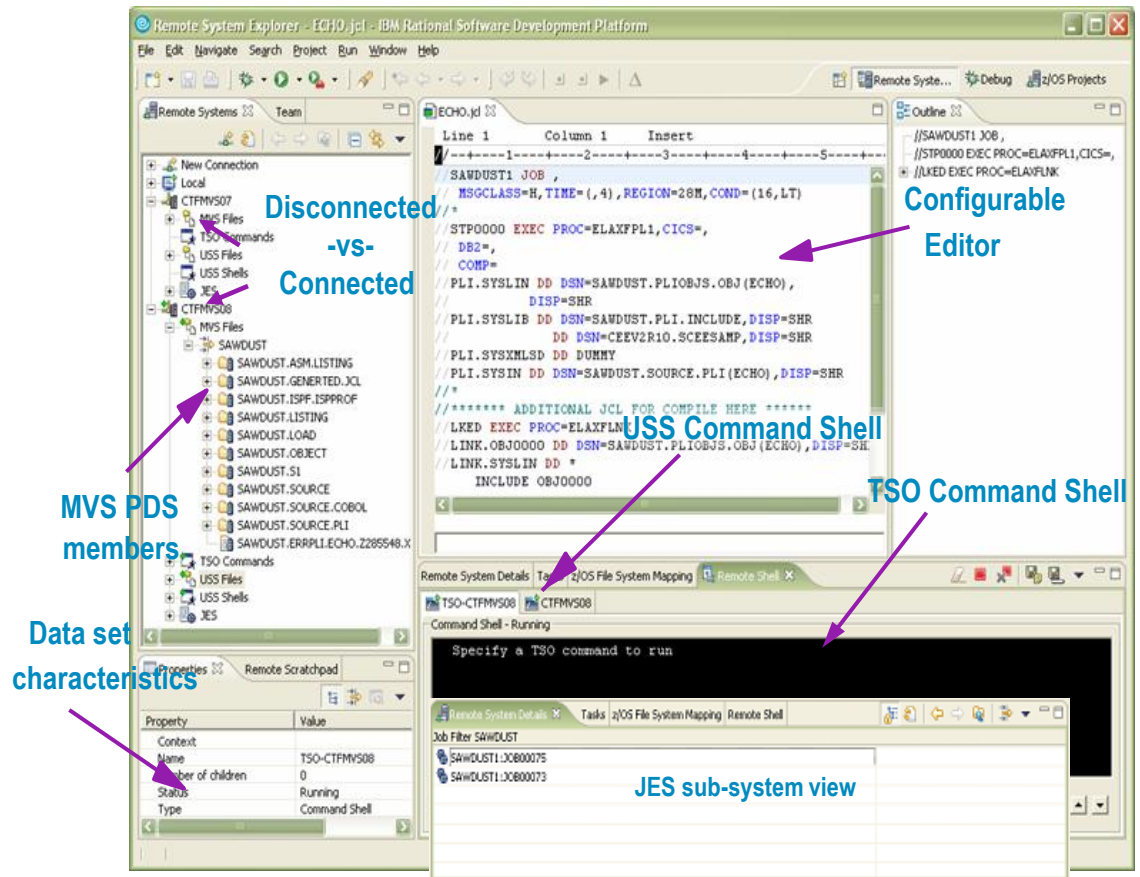
See: <http://www.youtube.com/watch?v=DFbNQNa13y0>
and <http://www.youtube.com/watch?v=g3I-pF4osbc>

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.

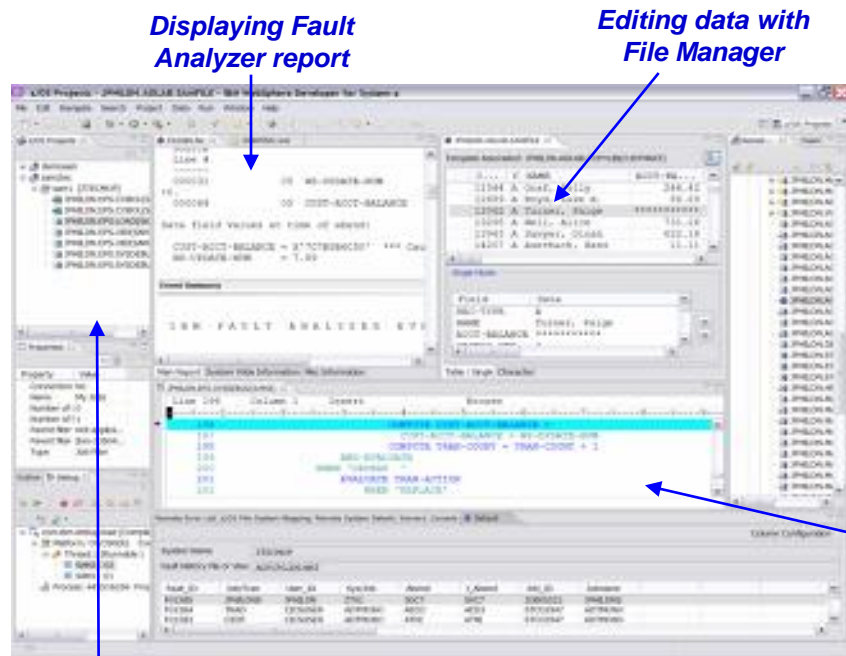
Presents a mainframe development platform that is fully consistent with the distributed environment



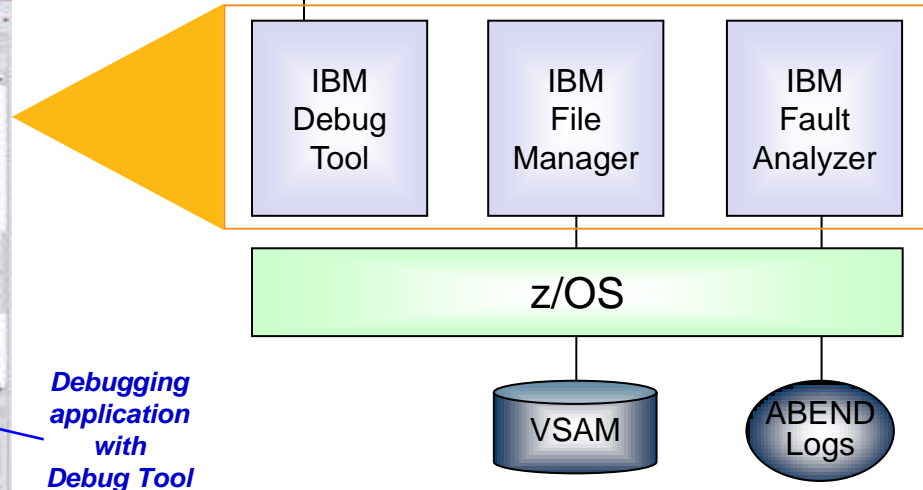
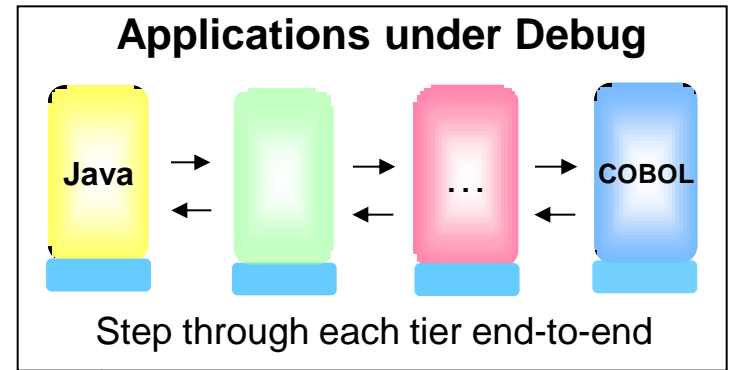
RDz Eclipse interface

Mainframe Problem Determination Tools (PDT) are integrated into the RDz environment

- Easily debug and step through multi-tier applications



Developing System z application with RDz

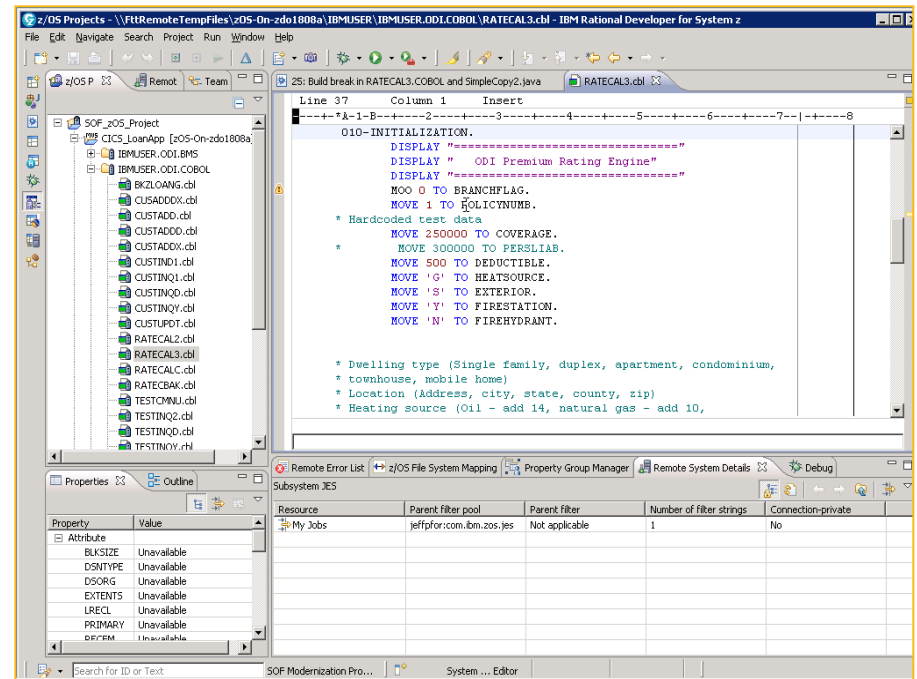


Debugging application with Debug Tool

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

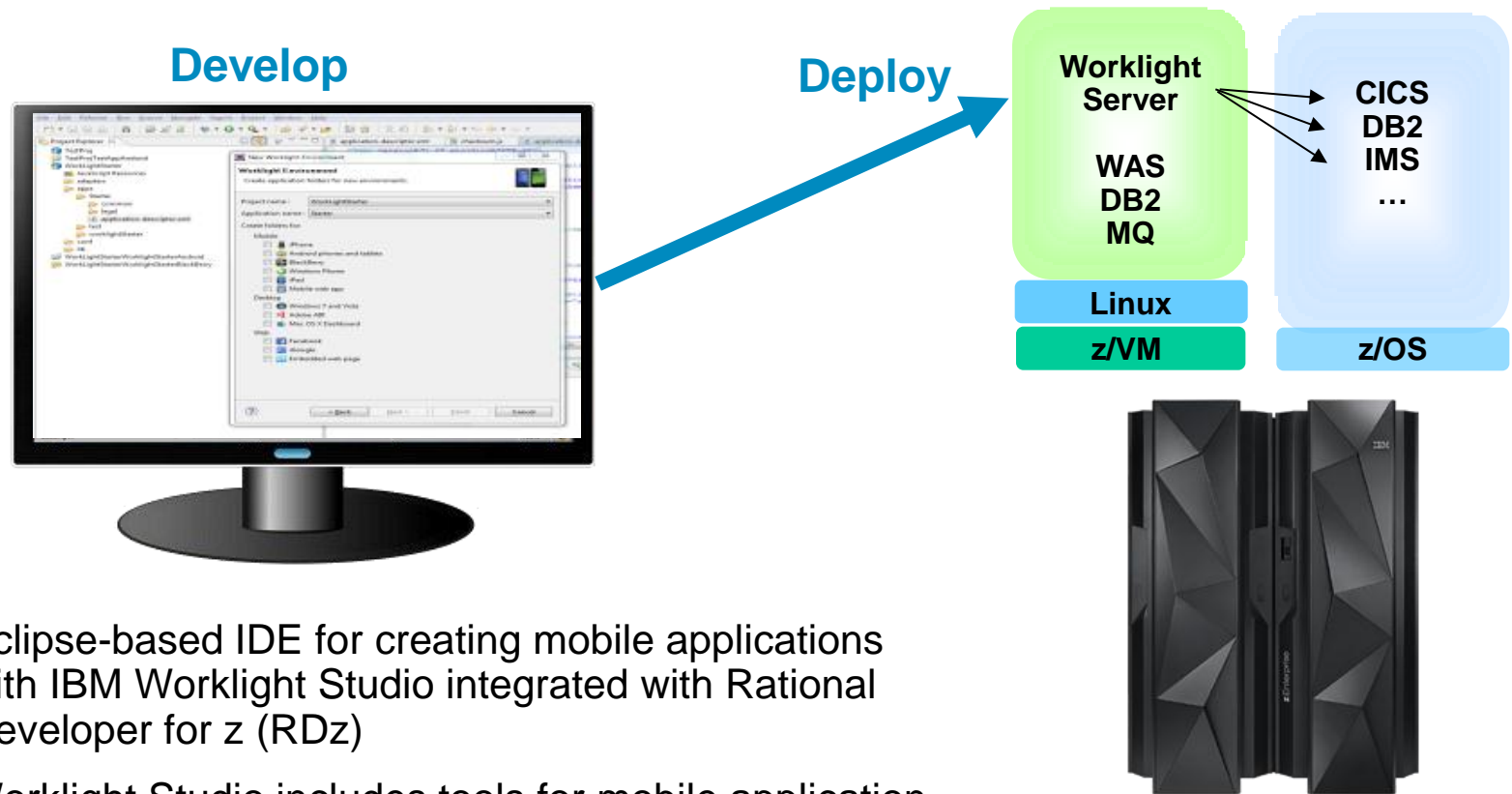
DEMO: Rational Developer For System z

- 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

Build mobile applications for System z with Worklight Studio integrated into Rational Developer for z

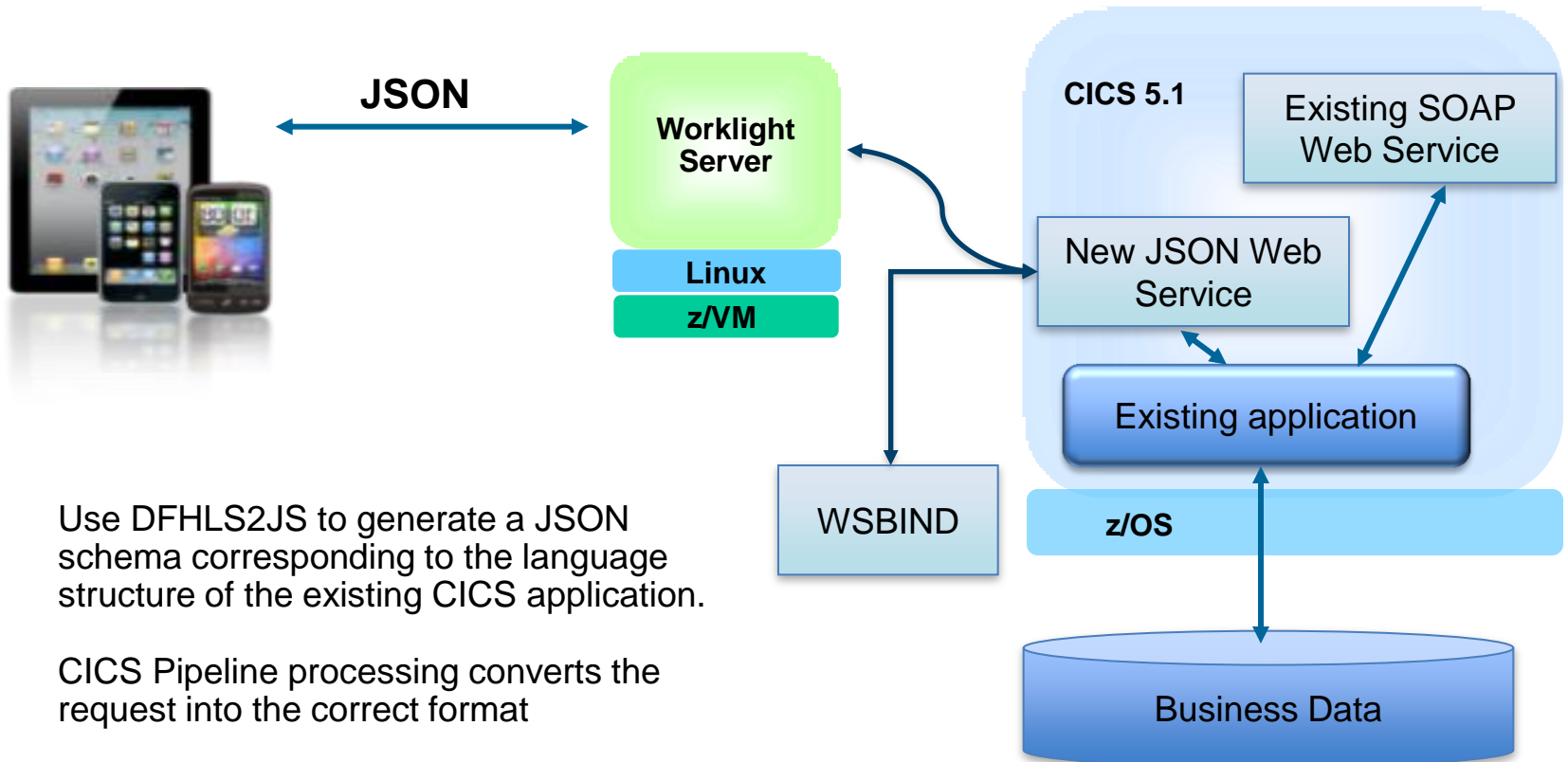


- Eclipse-based IDE for creating mobile applications with IBM Worklight Studio integrated with Rational Developer for z (RDz)
- Worklight Studio includes tools for mobile application development, with programming models and web support

CICS TS Feature Pack for Mobile Extensions enables easy creation of mobile apps for CICS

Exposing an existing CICS application as a **JSON** callable service:

Existing SOAP Web Services remain unaffected by the introduction of new mobile based clients



Use DFHLS2JS to generate a JSON schema corresponding to the language structure of the existing CICS application.

CICS Pipeline processing converts the request into the correct format

IBM CICS internal development team uses Rational tools to improve productivity



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.

Before:

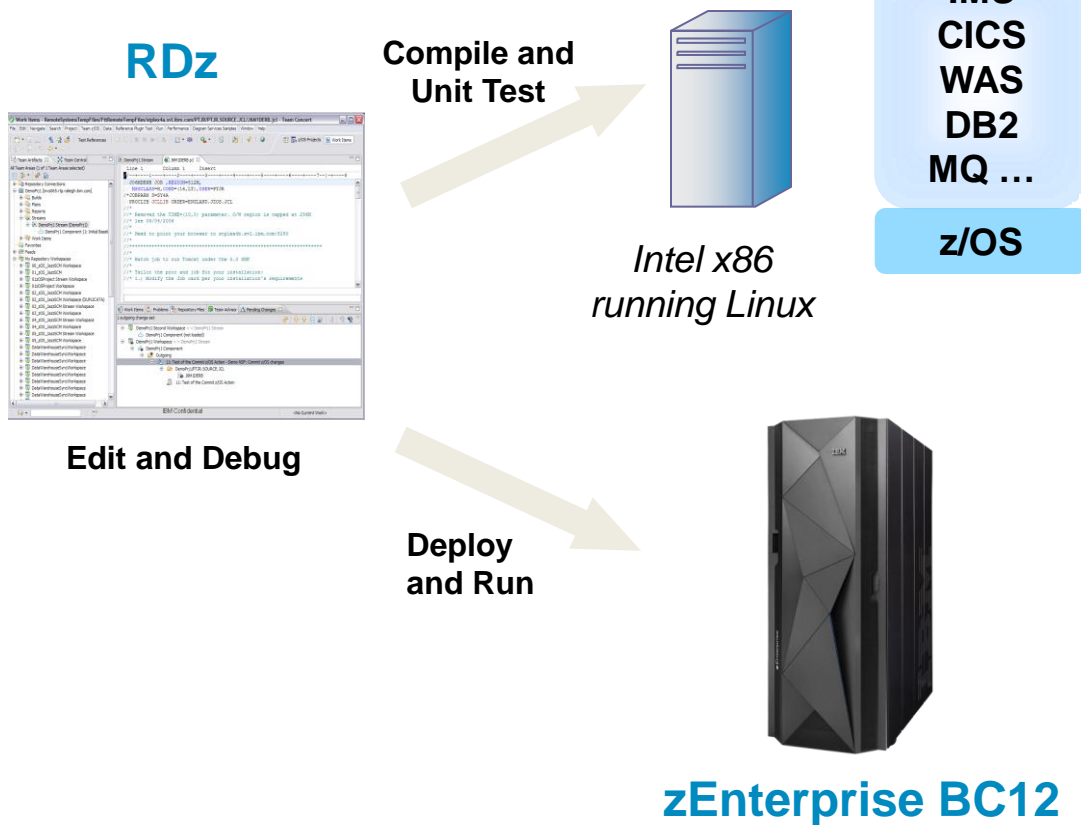
- Team operated with same specialized, proprietary and isolated environment for more than 30 years
- Skills were diminishing; tools were disparate and incompatible

Today:

- 50% of dev team is under 35
- 1/3 of all new hires are from outside computer/IT fields
- Development cycle shrunk from 24 months down to 18 months
- 2x more features per release, with 0 increase in defects
- Can now concurrently deliver tools along with new features

For further savings, offload unit testing from the mainframe to “z/OS-on-Intel”

Rational Development and Test (RD&T)

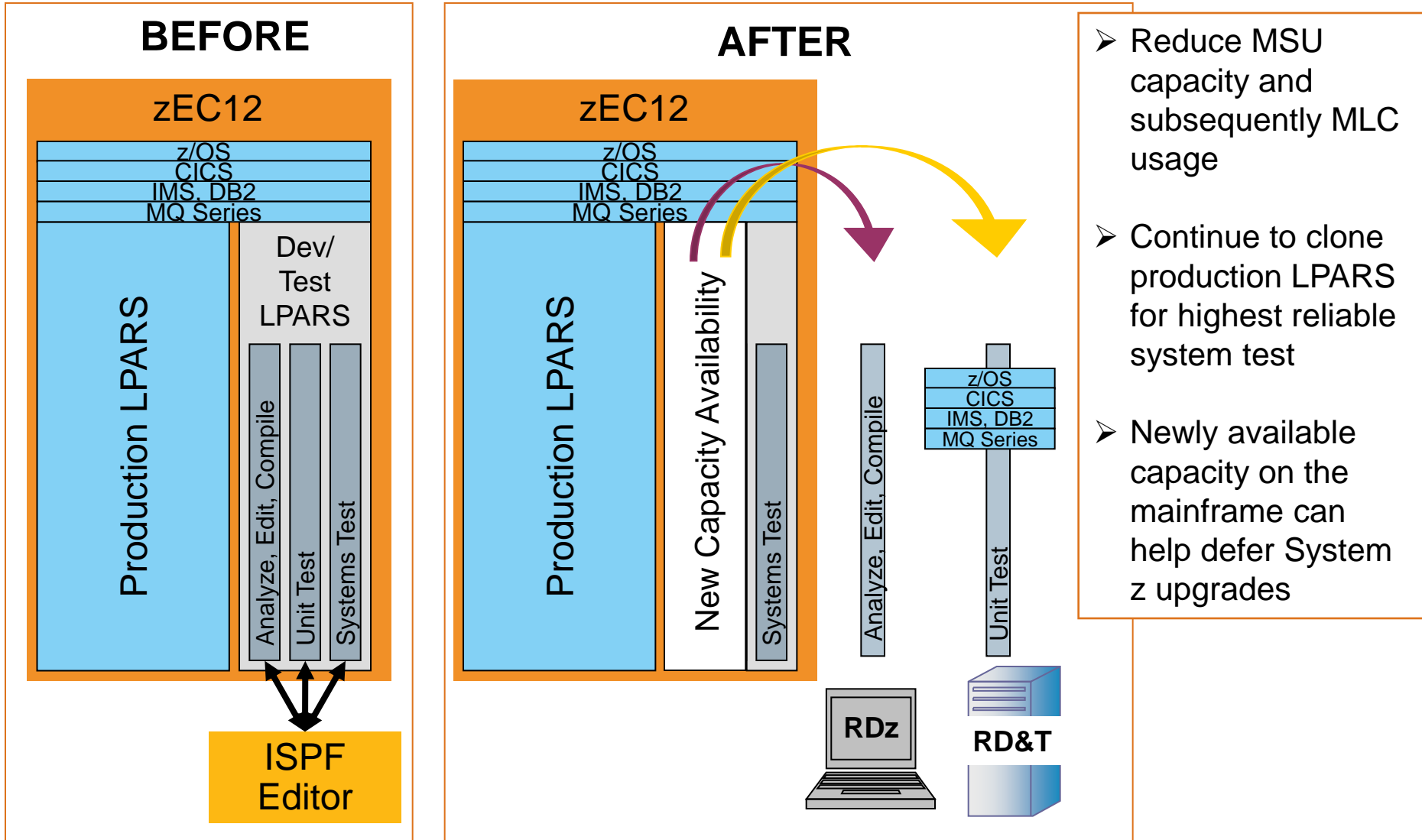


- Compile and Unit Test on an Intel x86 server running Linux
- RD&T server runs z/OS and all mainframe software
- Emulates System z architecture
- Also enables developers to rapidly prototype new applications
- Eliminates costly delays by reducing dependencies on operations staff

Rational Development & Test key capabilities

Business Challenge	Business benefit of RD&T
Application quality issues	Higher-fidelity environment than simulators provided by competitors
Cost of mainframe development	Development and Test MIPS can be re-allocated for higher value production workloads
Developer productivity affected by test system availability	More control in hands of developers – reduces dependency on test personnel
Slow time to market	Reduces delays, improves testing speed and accuracy
Competitive development costs at scale	Brings System z development and test in line with Unix and Windows

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

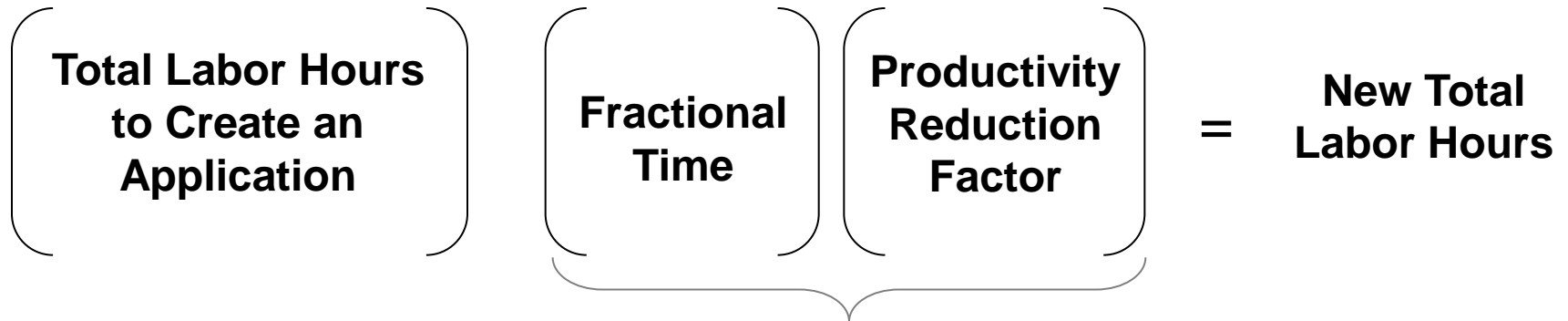
Dev and Unit Test accounted for 17% of total MIPS used. Moving it off saved \$510,000

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

A development labor model is used to calculate labor savings from Rational tools



$$H \bullet \sum_i \sum_j (T_{ij} P_{ij}) = H_N$$

- Role(i)
- Management
 - Design
 - Development
 - Test
 - Build Engineer
 - Writer

- Task(j)
- Collaborate
 - Design
 - Code
 - Test
 - Build
 - Document

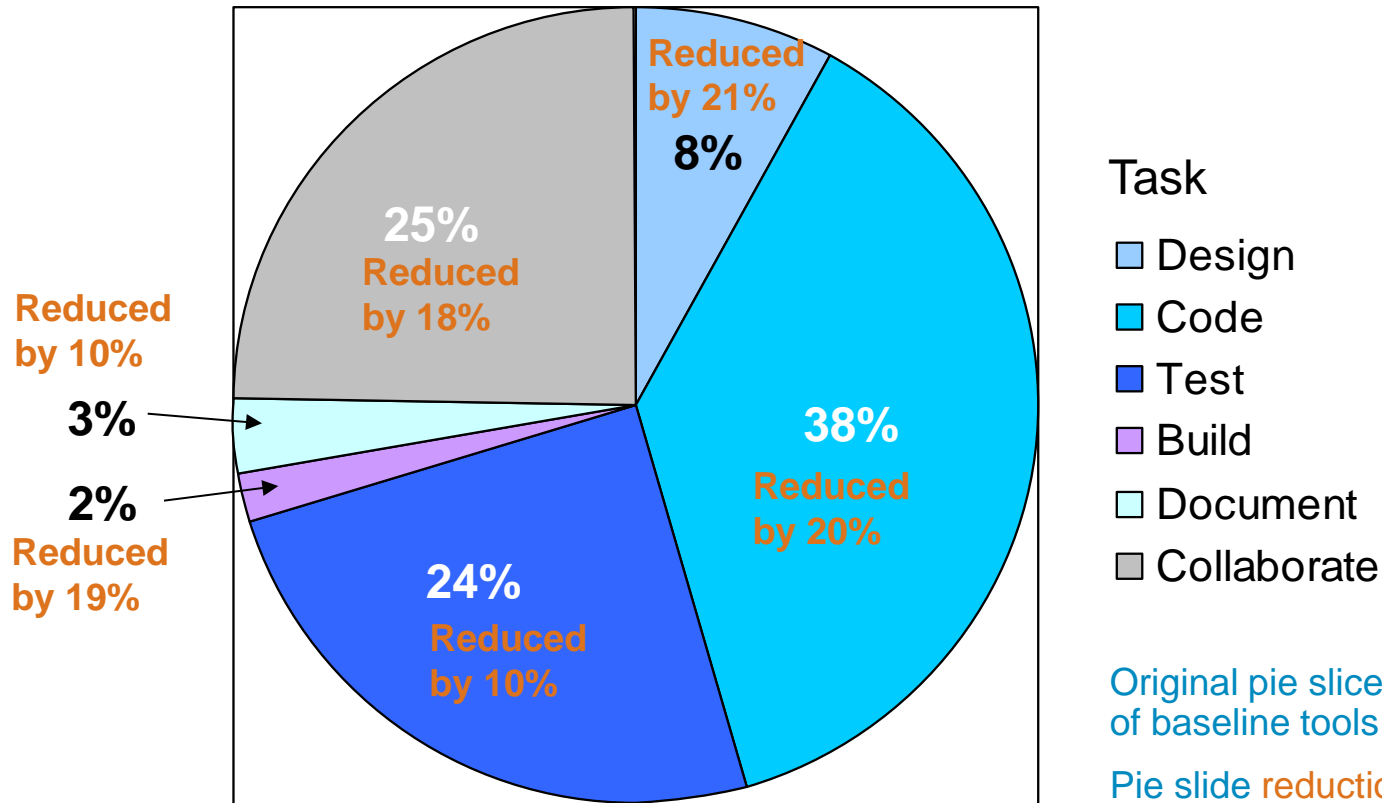
Fraction of total time spent by each role performing each task

Productivity reduction factor due to the tool set used

* Source: IBM CPO study

Model demonstrates that Rational tools can reduce total labor by 17%

Labor requirements by task for creation of one LoC
(Roles consolidated within each task)



Task

- Design
- Code
- Test
- Build
- Document
- Collaborate

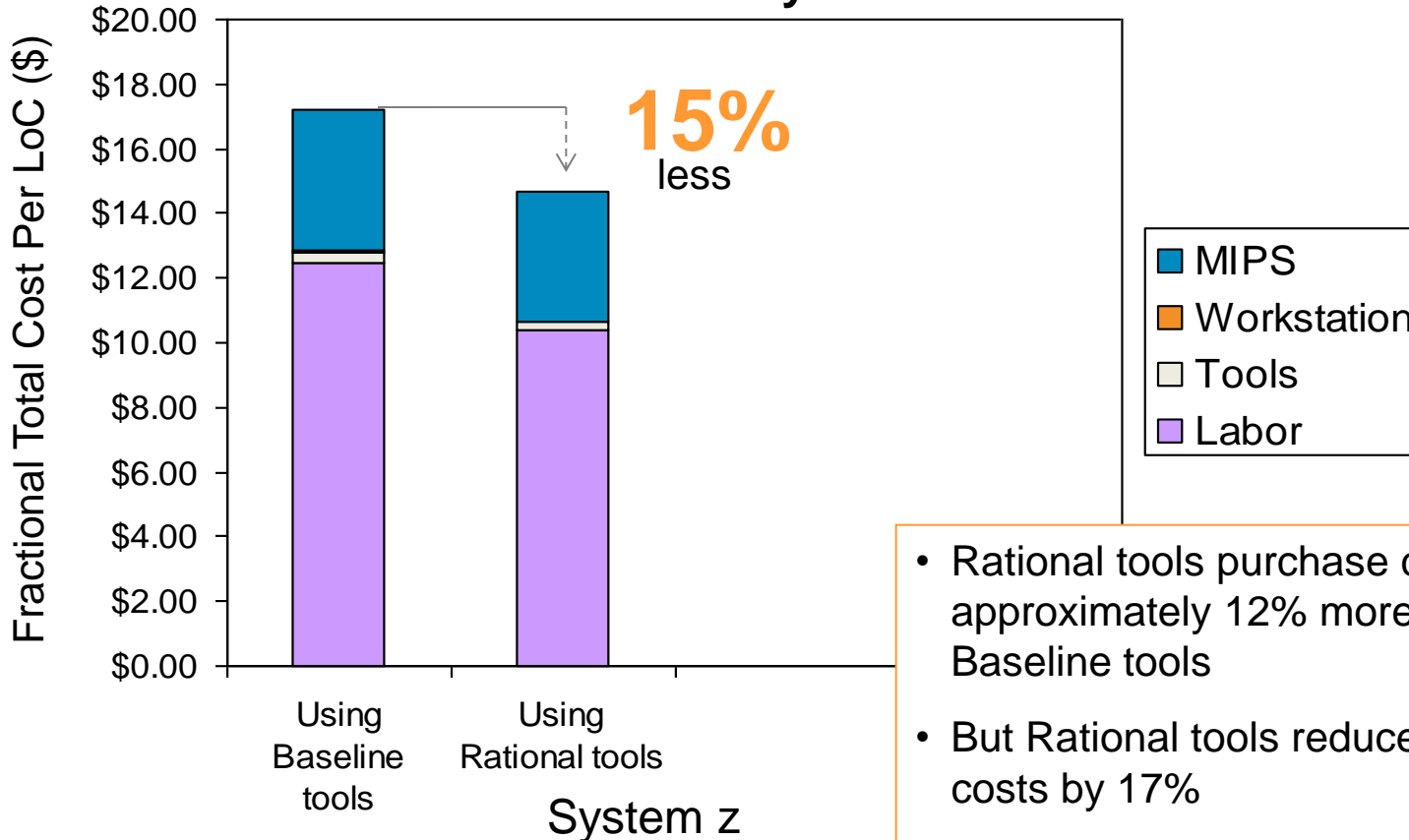
Original pie slices depict use of baseline tools

Pie slide reduction as a result of using Rational tools

May vary with customer.

Model also shows that labor savings from Rational tools far outweigh the cost of the tools

Case Study

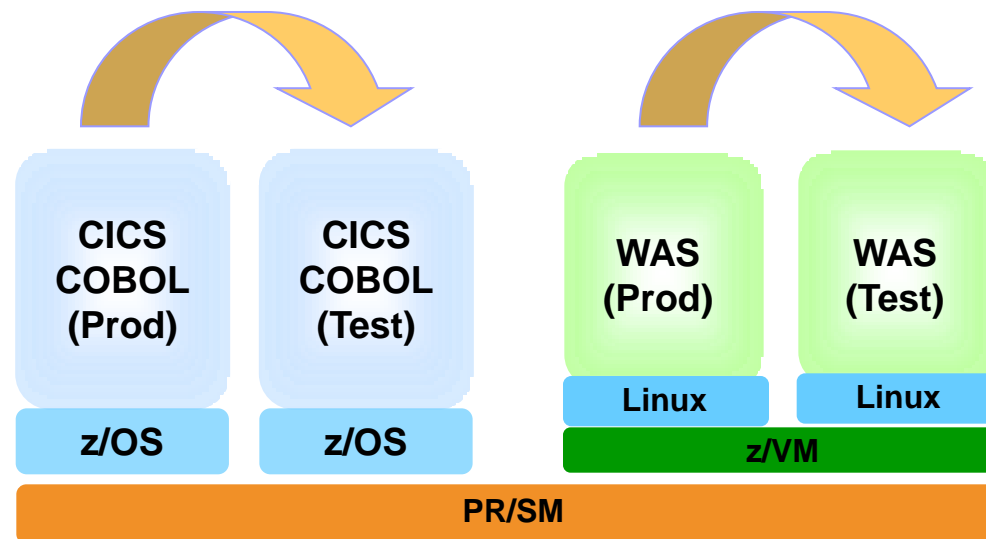


- Rational tools purchase cost is approximately 12% more than Baseline tools
- But Rational tools reduce labor costs by 17%
- Labor is the largest cost component
- Results is 15% lower cost per LOC

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.

System z virtualization and workload management enables 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

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

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IBM Academic Initiative, System z

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Questions? Contact zSkills@us.ibm.com



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- 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.**