System z – A Smart System For A Smarter Planet

Unify Mainframe
And Distributed Development

Fit For Purpose Strategy Requires Common Development Tools

System z is a great platform but …
my Java developers don't talk to my mainframe developers

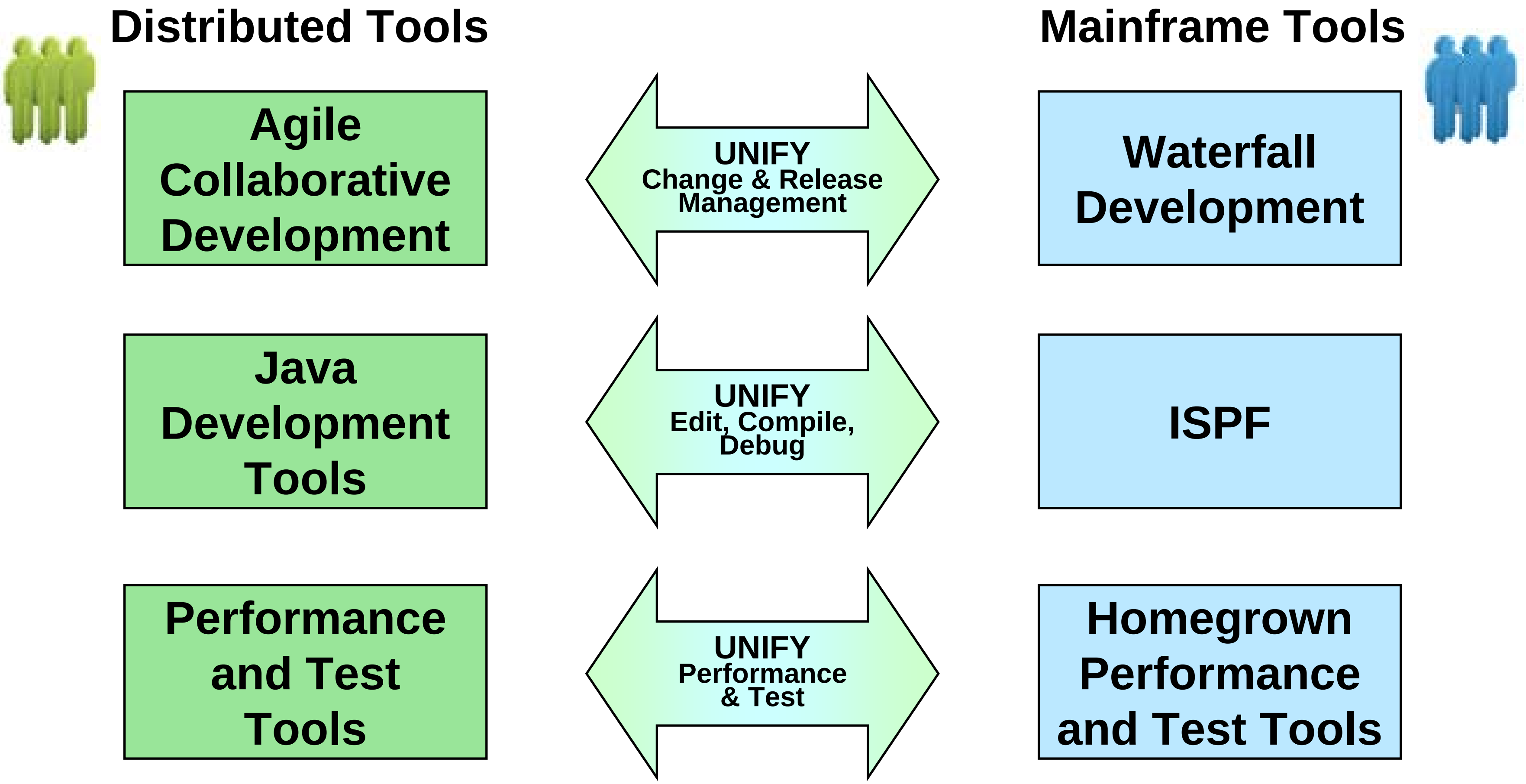
Service Oriented Finance
Development Manager

A unified development environment will enable your fit for purpose strategy . . .

And improve collaboration and skills transfer

IBM

Unify Development Environments



Distributed Tools

Mainframe Tools

Agile Collaborative Development

UNIFY Change & Release Management

Waterfall Development

Java Development Tools

UNIFY Edit, Compile, Debug

ISPF

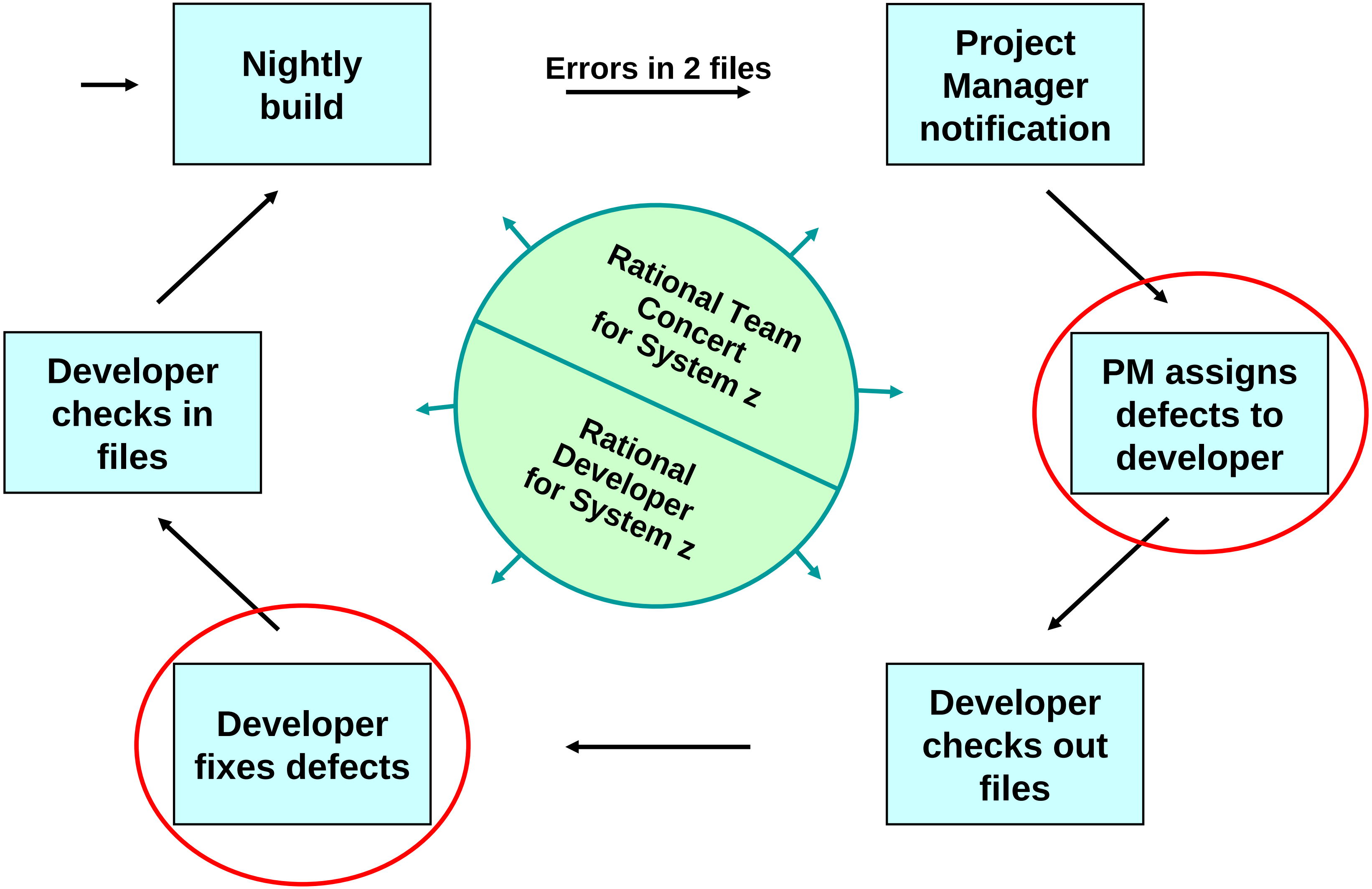
Performance and Test Tools

UNIFY Performance & Test

Homegrown Performance and Test Tools

- Common shared tools and processes that look and behave in the same way for all platforms

Demo Scenario With Integrated Tools



Nightly build

Errors in 2 files

Project Manager notification

PM assigns defects to developer

Developer checks out files

Developer fixes defects

Developer checks in files

Rational Team Concert for System z

Rational Developer for System z

Unify Change And Release Management

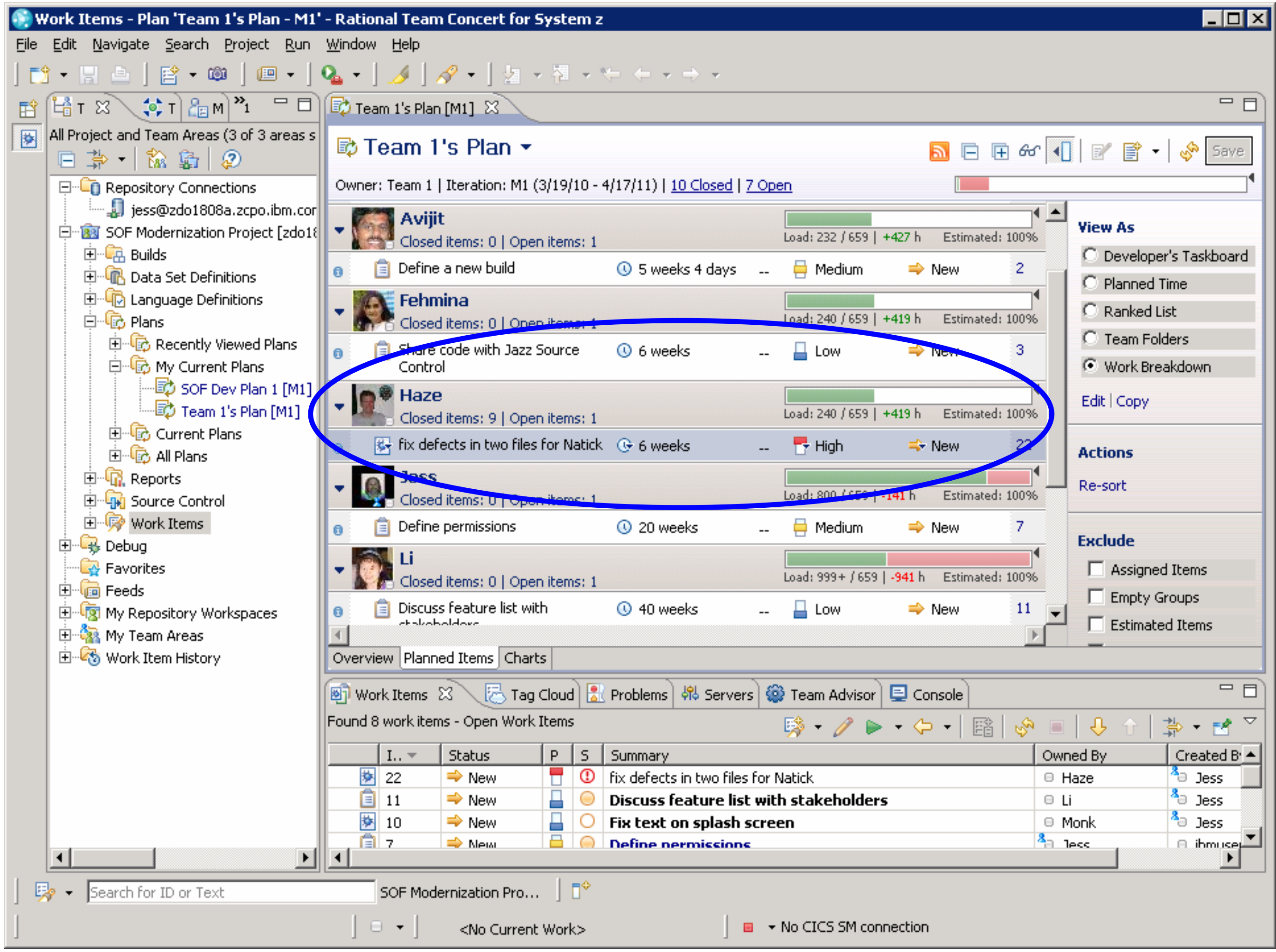
- Rational Team Concert for System z
  - Server-based collaboration software for development teams
  - Runs on z/OS, Linux on System z, or distributed servers
- Accessed from Eclipse-based tools or browsers
- Key capabilities
  - Source code control
  - Track change activity with status and visibility
  - Built-in customizable processes
  - Drive builds by activity
  - Process governance
- Can deliver unified development tools for all your development teams

RPG
JEE
Web 2.0
MAINFRAME
C/C++
Rational Software Delivery Platform powered by Jazz

Demo: Rational Team Concert For System z

1. In this demo the Project Manager will create a new Work Item and assign it to a Developer

2. In the next demo the Developer will find the newly assigned Work Item and complete it



Work Items - Plan 'Team 1's Plan - M1' - Rational Team Concert for System z

Team 1's Plan

Owner: Team 1 | Iteration: M1 (3/19/10 - 4/17/11) | 10 Closed | 7 Open

Avijit
Closed items: 0 | Open items: 1 — Load: 232 / 659 | +427 h — Estimated: 100%
Define a new build — 5 weeks 4 days — -- — Medium — New — 2

Fehmina
Closed items: 0 | Open items: 1 — Load: 240 / 659 | +419 h — Estimated: 100%
Share code with Jazz Source Control — 6 weeks — -- — Low — New — 3

Haze
Closed items: 9 | Open items: 1 — Load: 240 / 659 | +419 h — Estimated: 100%
fix defects in two files for Natick — 6 weeks — -- — High — New — 22

Jess
Closed items: 0 | Open items: 1 — Load: 800 / 659 | -141 h — Estimated: 100%
Define permissions — 20 weeks — -- — Medium — New — 7

Li
Closed items: 0 | Open items: 1 — Load: 999+ / 659 | -941 h — Estimated: 100%
Discuss feature list with stakeholders — 40 weeks — -- — Low — New — 11

View As
○ Developer's Taskboard
○ Planned Time
○ Ranked List
○ Team Folders
● Work Breakdown

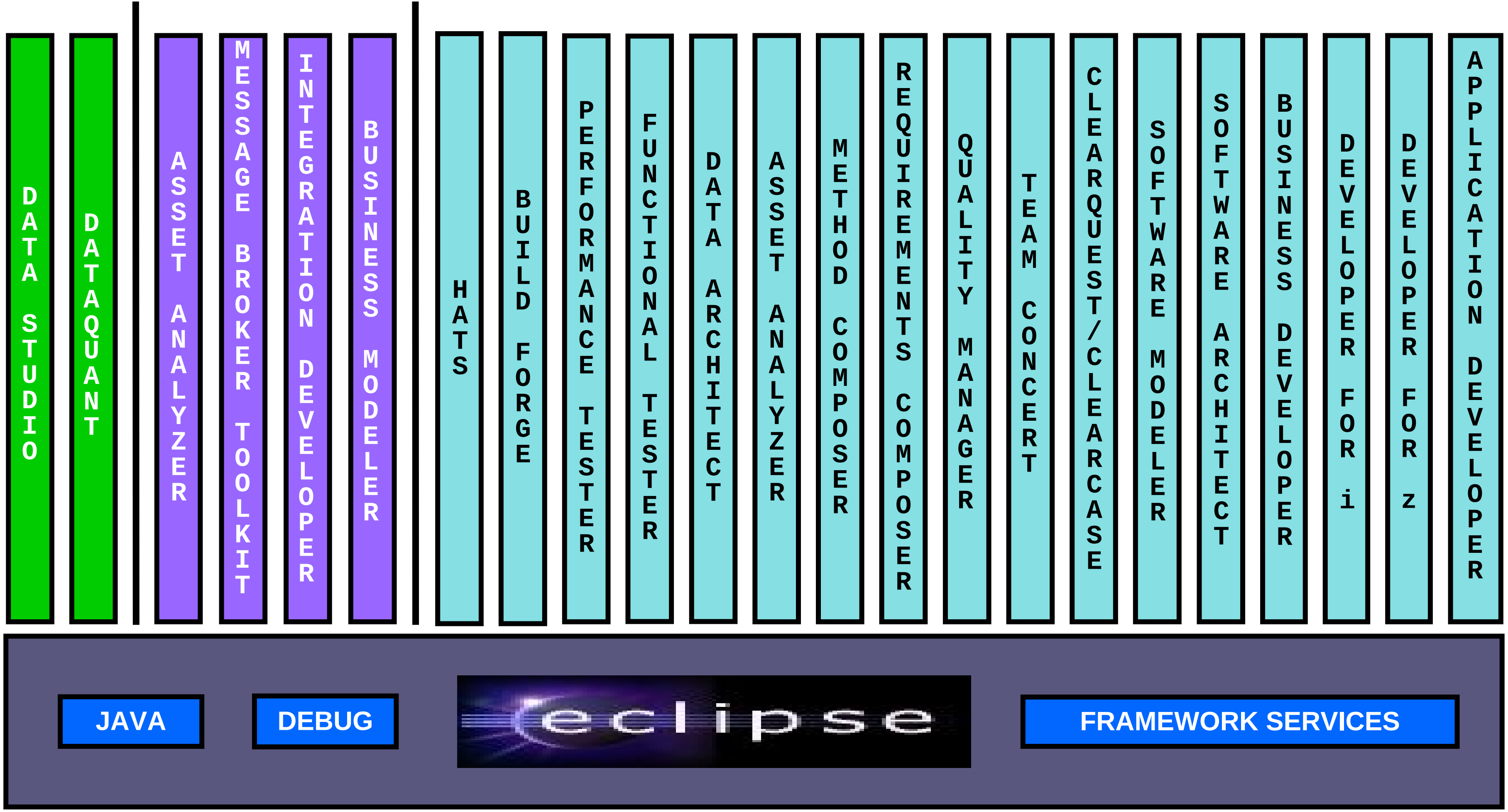
Exclude
□ Assigned Items
□ Empty Groups
□ Estimated Items

Found 8 work items - Open Work Items

I..	Status	P	S	Summary	Owned By	Created B
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	ibmuse

Unify Edit, Compile And Debug Tools

- **Rational Team Concert and Developer for System z are built on Eclipse**
- **Open Source Eclipse framework enforces consistent tool behavior and consistent user interfaces**



DATA STUDIO

DATAQUANT

ASSET ANALYZER

MESSAGE BROKER TOOLKIT

INTEGRATION DEVELOPER

BUSINESS MODELER

HATS

BUILD FORGE

PERFORMANCE TESTER

FUNCTIONAL TESTER

DATA ARCHITECT

ASSET ANALYZER

METHOD COMPOSER

REQUIREMENTS COMPOSER

QUALITY MANAGER

TEAM CONCERT

CLEARQUEST/CLEARCASE

SOFTWARE MODELER

SOFTWARE ARCHITECT

BUSINESS DEVELOPER

DEVELOPER FOR i

DEVELOPER FOR z

APPLICATION DEVELOPER

JAVA

DEBUG

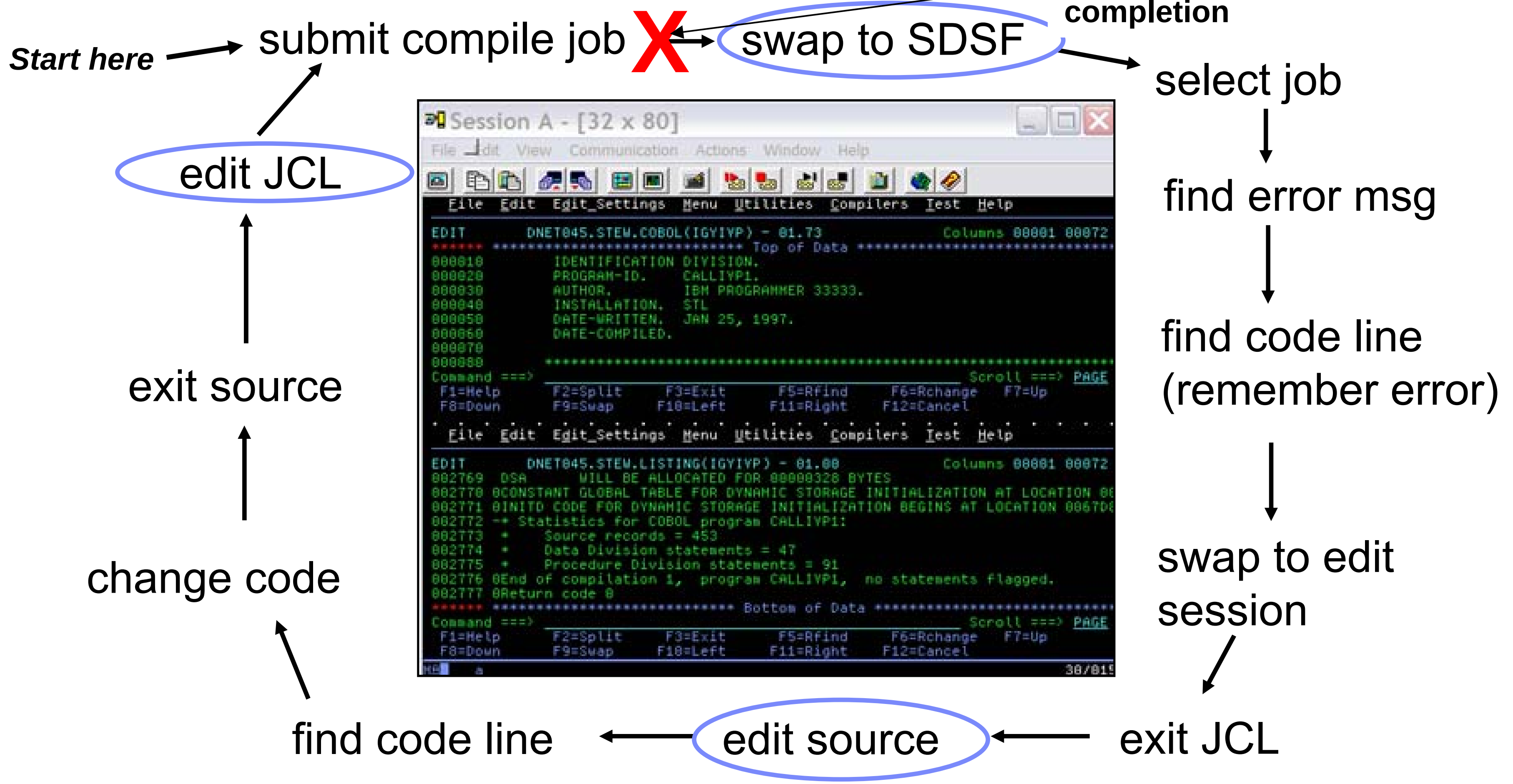
eclipse

FRAMEWORK SERVICES

A *subset* of tools is shown!

Edit, Compile And Debug With ISPF

Wait an indeterminate time for the job queue and possible failed completion



Start here

submit compile job

swap to SDSF

select job

find error msg

find code line (remember error)

swap to edit session

exit JCL

edit source

find code line

change code

exit source

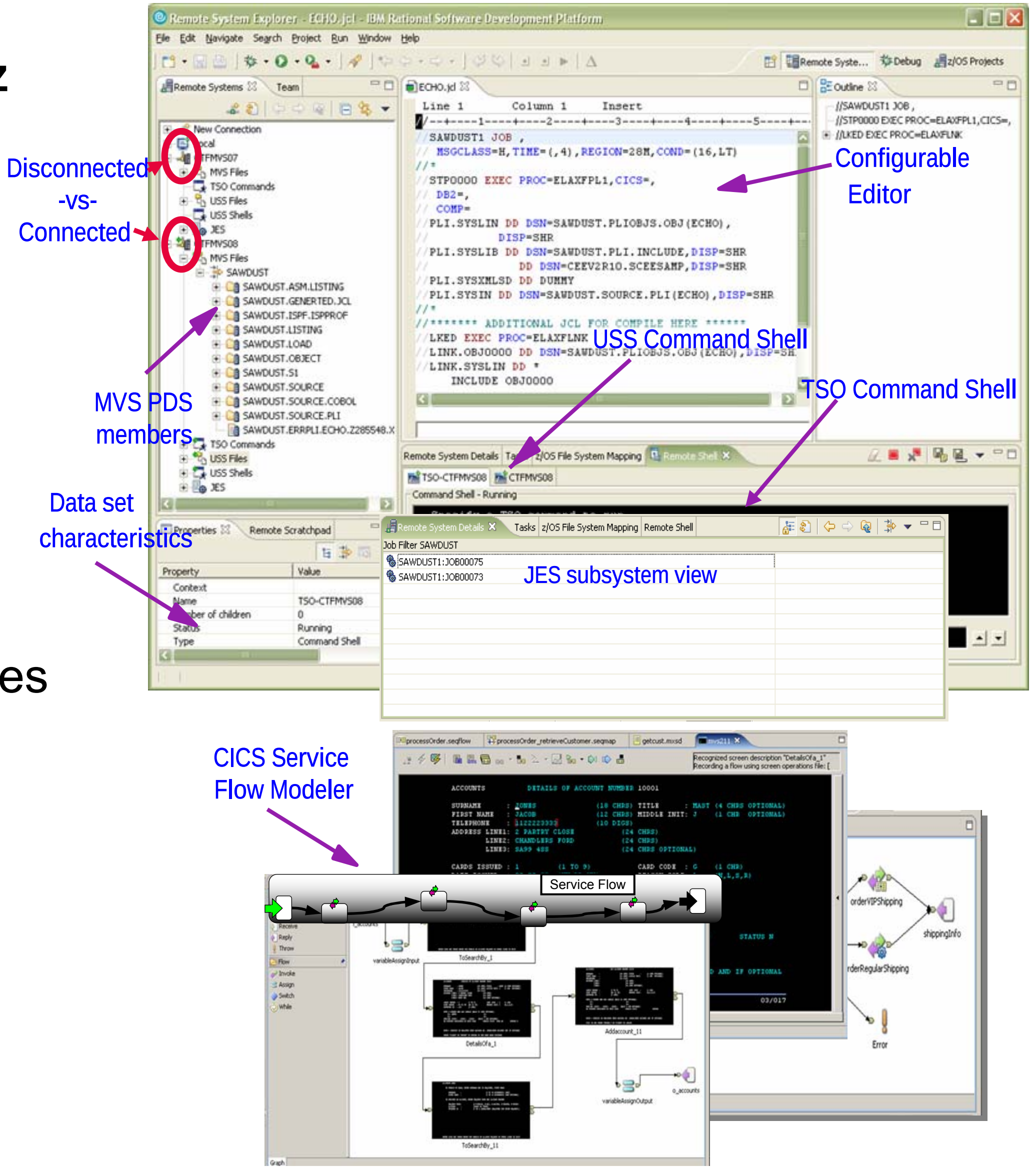
edit JCL

```
  File  Edit  Edit_Settings  Menu  Utilities  Compilers  Test  Help
EDIT       DNET045.STEW.COBOL(IGYIVP) - 01.73              Columns 00001 00072
****** ***************************** Top of Data ******************************
000010         IDENTIFICATION DIVISION.
000020         PROGRAM-ID.    CALLIVP1.
000030         AUTHOR.        IBM PROGRAMMER 33333.
000040         INSTALLATION.  STL
000050         DATE-WRITTEN.  JAN 25, 1997.
000060         DATE-COMPILED.
000070
000080        ****************************************************************
Command ===>                                                   Scroll ===> PAGE
 F1=Help      F2=Split     F3=Exit      F5=Rfind     F6=Rchange   F7=Up
 F8=Down      F9=Swap     F10=Left     F11=Right    F12=Cancel
  File  Edit  Edit_Settings  Menu  Utilities  Compilers  Test  Help
EDIT       DNET045.STEW.LISTING(IGYIVP) - 01.00            Columns 00001 00072
002769  DSA      WILL BE ALLOCATED FOR 00000328 BYTES
002770 0CONSTANT GLOBAL TABLE FOR DYNAMIC STORAGE INITIALIZATION AT LOCATION 00
002771 0INITD CODE FOR DYNAMIC STORAGE INITIALIZATION BEGINS AT LOCATION 0067D0
002772 -* Statistics for COBOL program CALLIVP1:
002773  *    Source records = 453
002774  *    Data Division statements = 47
002775  *    Procedure Division statements = 91
002776 0End of compilation 1,  program CALLIVP1,  no statements flagged.
002777 0Return code 0
****** **************************** Bottom of Data ****************************
Command ===>                                                   Scroll ===> PAGE
 F1=Help      F2=Split     F3=Exit      F5=Rfind     F6=Rchange   F7=Up
 F8=Down      F9=Swap     F10=Left     F11=Right    F12=Cancel
MB     a                                                                 30/015
```

- Programmer goes through a sequence of screens in order to get the job done
  - ISPF 3.4 listings, job listings, SDSF outputs, etc.
- Programmer is constantly flipping back and forth between these ISPF screens
  - Easy for experienced mainframe programmers but not for newbies

Edit, Compile And Debug With Rational Developer For System z

- **Modern development for System z**
  - Works like other IBM tools for distributed platforms
- **RDz supports Enterprise Modernization**
  - Support for COBOL, PL/I, C, C++, HLASM, Java, EGL and Web services
  - Supports existing and new runtimes
    - CICS, IMS, Batch, USS, DB2, WAS
  - Interactive access to z/OS for
    - Development, debug, job generation, submission, monitoring, command execution



Disconnected -vs- Connected

MVS PDS members

Data set characteristics

Configurable Editor

USS Command Shell

TSO Command Shell

JES subsystem view

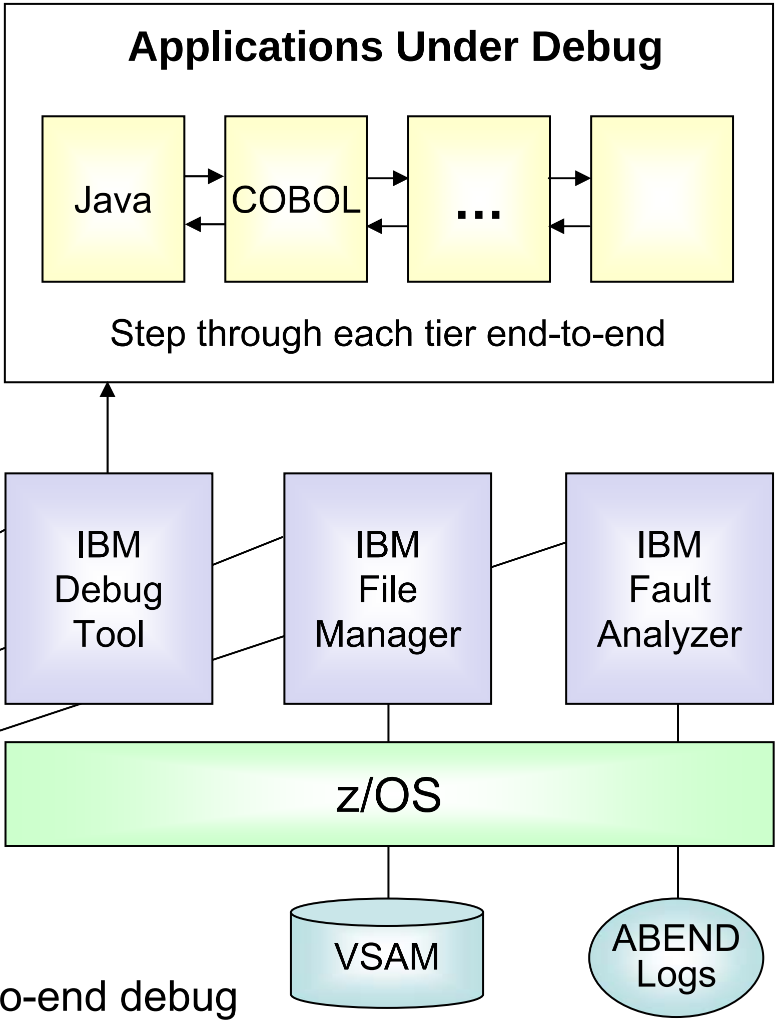
CICS Service Flow Modeler

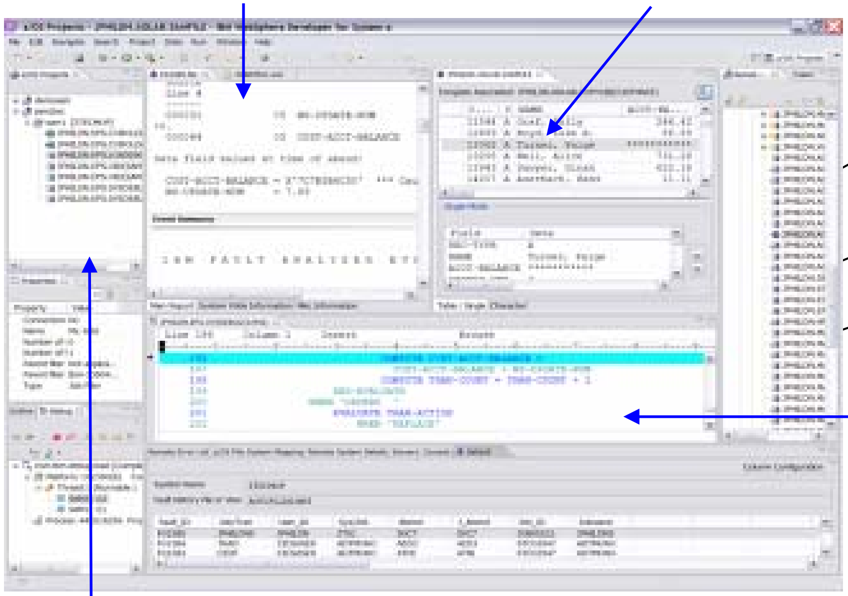
```
Line 1        Column 1      Insert
//SAWDUST1 JOB ,
// MSGCLASS=H,TIME=(,4),REGION=28M,COND=(16,LT)
//*
//STP0000 EXEC PROC=ELAXFPL1,CICS=,
// DB2=,
// COMP=
//PLI.SYSLIN DD DSN=SAWDUST.PLIOBJS.OBJ(ECHO),
//          DISP=SHR
//PLI.SYSLIB DD DSN=SAWDUST.PLI.INCLUDE,DISP=SHR
//             DD DSN=CEEV2R10.SCEESAMP,DISP=SHR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

Property	Value
Context	
Name	TSO-CTFMVS08
Number of children	0
Status	Running
Type	Command Shell

Interactive Problem Determination: RDz Integrates With Host-based Tools

- Work with the PD Tools through the RDz client
- Easy access to all three tools at the same time
- Debug and step through multi-tier applications
  - Distributed *and* mainframe
  - Same debugger as for distributed systems





Displaying Fault Analyzer report
Editing data with File Manager
Debugging application with Debug Tool
Developing System z application with RDz

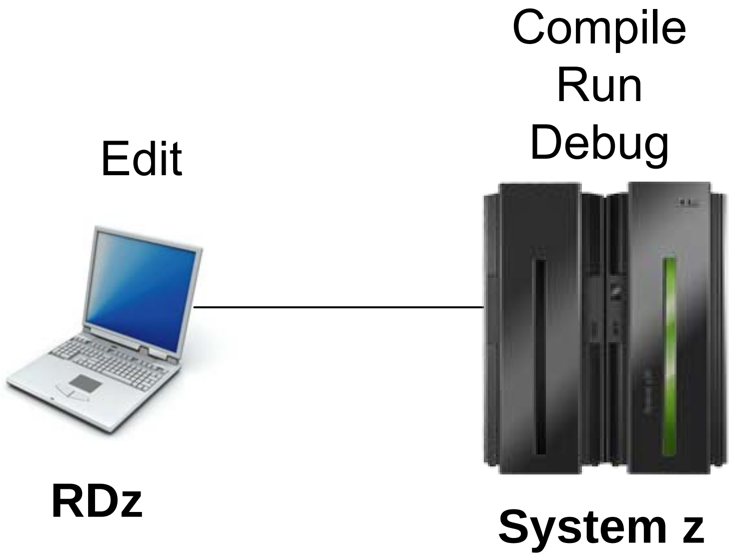
RDz Workstation

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

DEMO: Work With COBOL And Java Using Rational Developer For System z

- Perspectives and views
- Remote System Explorer
- Working with host datasets
- Productivity features

- Based on the assigned work item, the Developer will fix the problem code using the language-sensitive COBOL and Java editors



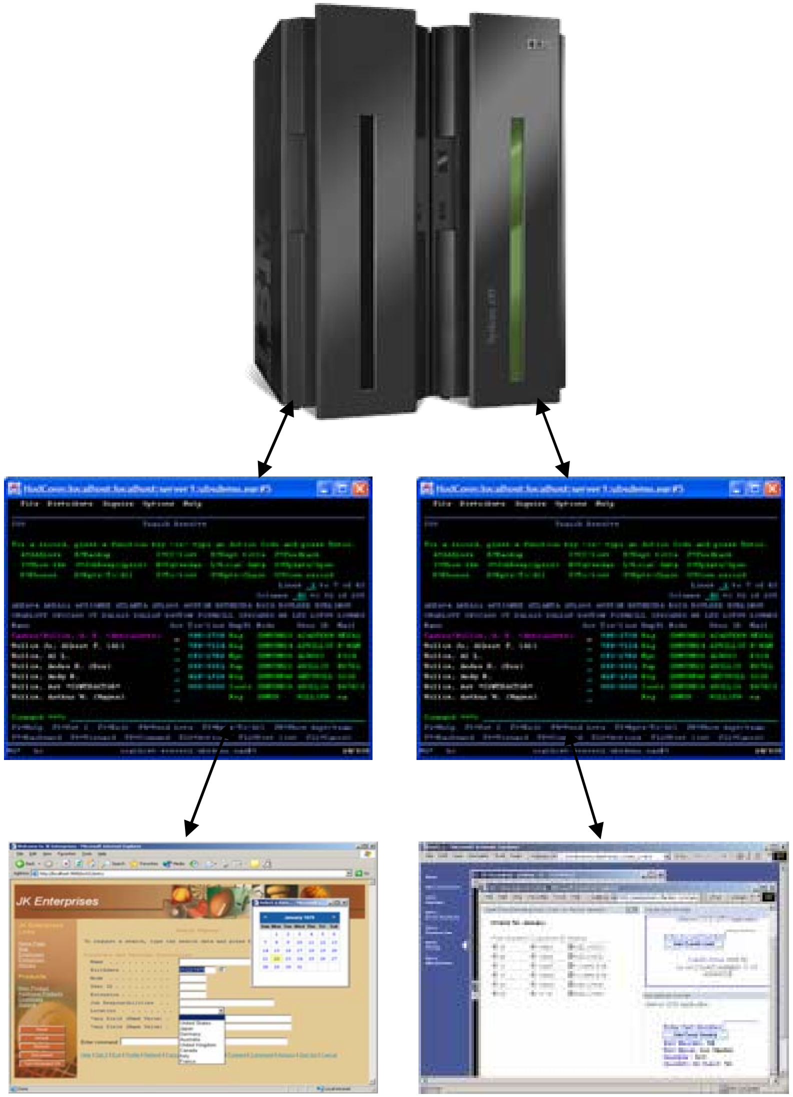
RDz Can Extend Mainframe Assets For Service Oriented Architecture

- Wizards generate Web services runtime code
  - CICS Web services
  - IMS Web services
  - Java Web services
- CICS Service Flow Modeler
  - Supports CICS Service Flow Feature
  - Wizards to build service flows out of your existing COMMAREA-, WSDL-, and Terminal-based CICS applications
  - Then expose flows as Web services
- And more…

HATS Can Also Extend Existing Applications With Minimal Cost – Host Access Transformation Services

What can you do with HATS?

- Quickly and easily create Web, portal, mobile or rich client applications from green-screen applications
  - Without programming
  - Low skills requirement
  - Transformation “on the fly”
  - Iterative development process
  - Highly customizable
  - Eclipse-based tool
- Reuse existing assets
  - As Web services, in an SOA
- Create work flow from multiple apps
- Integrate with other Web, portal, and rich client applications

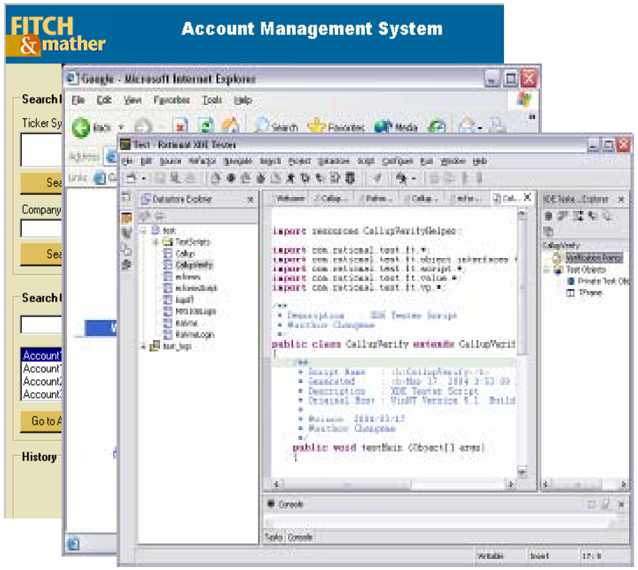


Unify Testing With Rational Functional Tester

- Use Rational Functional Tester
  - Record/Enhance/Execute scripts on Windows/Linux
  - Functional test any .NET, Web, or Java application (z or non-z)
- Eclipse-based

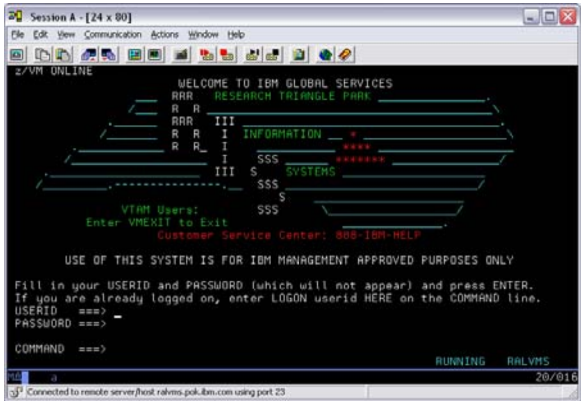
- Use Rational Functional Tester Extension for Terminal-based Applications
  - Record/Enhance/Execute scripts on Windows
  - Functional test System z terminal-based applications

.NET, Browser, Java UI


FITCH & mather
Account Management System
Google - Microsoft Internet Explorer
Test - Rational XDE Tester
Datastore Explorer
Console

```
import resources.CallupVerifyHelper;

import com.rational.test.ft.*;
import com.rational.test.ft.object.interfaces.*;
import com.rational.test.ft.script.*;
import com.rational.test.ft.value.*;
import com.rational.test.ft.vp.*;

public class CallupVerify extends CallupVerif
{
    * Description    : XDE Tester Script
    public void testMain (Object[] args)
    {
```

System z Terminal UI



```
z/VM ONLINE
                        WELCOME TO IBM GLOBAL SERVICES
                       RRR   RESEARCH TRIANGLE PARK
                       R  R
                       RRR   III
                       R  R   I  INFORMATION
                       R  R_  I
                              I    SSS
                             III  S      SYSTEMS
                                   SSS
                                      S
           VTAM Users:             SSS
      Enter VMEXIT to Exit
                 Customer Service Center: 888-IBM-HELP

        USE OF THIS SYSTEM IS FOR IBM MANAGEMENT APPROVED PURPOSES ONLY

Fill in your USERID and PASSWORD (which will not appear) and press ENTER.
If you are already logged on, enter LOGON userid HERE on the COMMAND line.
USERID   ===> _
PASSWORD ===>

COMMAND  ===>
                                                          RUNNING   RALVMS
                                                                   20/016
Connected to remote server/host ralvms.pok.ibm.com using port 23
```

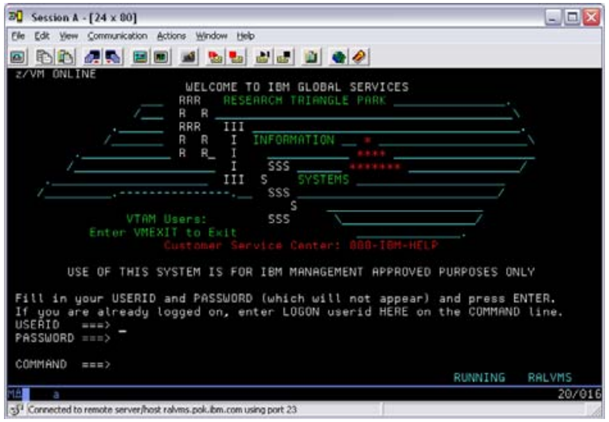
Unify Performance Testing With Rational Performance Tester And IBM Workload Simulator

- Use Rational Performance Tester for z/OS
  - Develop scripts on Windows or Linux
  - Execute scripts on z/OS
  - Performance test any Web application (z or non-z)
  - Eclipse-based
- Use IBM Workload Simulator for z/OS and OS/390
  - Develop scripts on z/OS
  - Execute scripts on z/OS
  - Performance test any System z terminal application

Any Web Application

Google - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites Media
Address http://www.google.com/
Links Customize Links IBM Intranet Google Sprint
Google
Web Images Groups Directory News
Google Search
I'm Feeling Lucky
Advanced Search
Preferences
Language Tools
Advertise with Us - Business Solutions - Services & Tools - Jobs, Press, & Help
Make Google Your Homepage!
Internet

System z Terminal Application



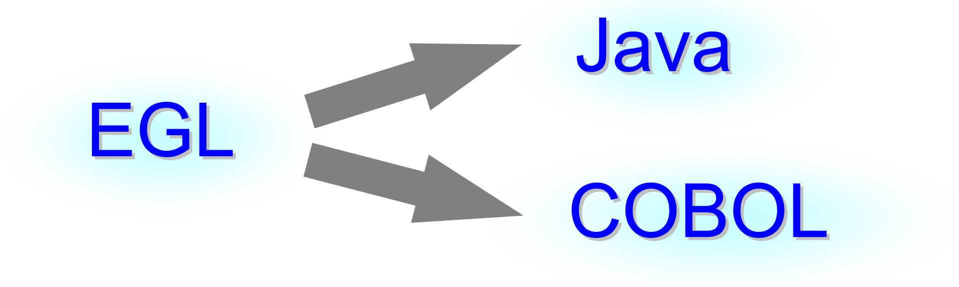
```
z/VM ONLINE
                      WELCOME TO IBM GLOBAL SERVICES
                     RRR    RESEARCH TRIANGLE PARK
                     R  R
                     RRR    III
                     R  R    I  INFORMATION     *
                     R  R_   I                 ****
                             I     SSS        *******
                            III  S     SYSTEMS
                                   SSS
                                      S
           VTAM Users:             SSS
      Enter VMEXIT to Exit
                  Customer Service Center: 888-IBM-HELP

        USE OF THIS SYSTEM IS FOR IBM MANAGEMENT APPROVED PURPOSES ONLY

Fill in your USERID and PASSWORD (which will not appear) and press ENTER.
If you are already logged on, enter LOGON userid HERE on the COMMAND line.
USERID   ===> _
PASSWORD ===>

COMMAND  ===>
                                                        RUNNING    RALVMS
MA    a                                                                20/016
```

Connected to remote server/host ralvms.pok.ibm.com using port 23

EGL – The Most Versatile Language

Enterprise Generation Language

- Cross-platform, cross-tier 4GL for all types of developers and apps
- Write in EGL, generate efficient COBOL or Object-Oriented Java



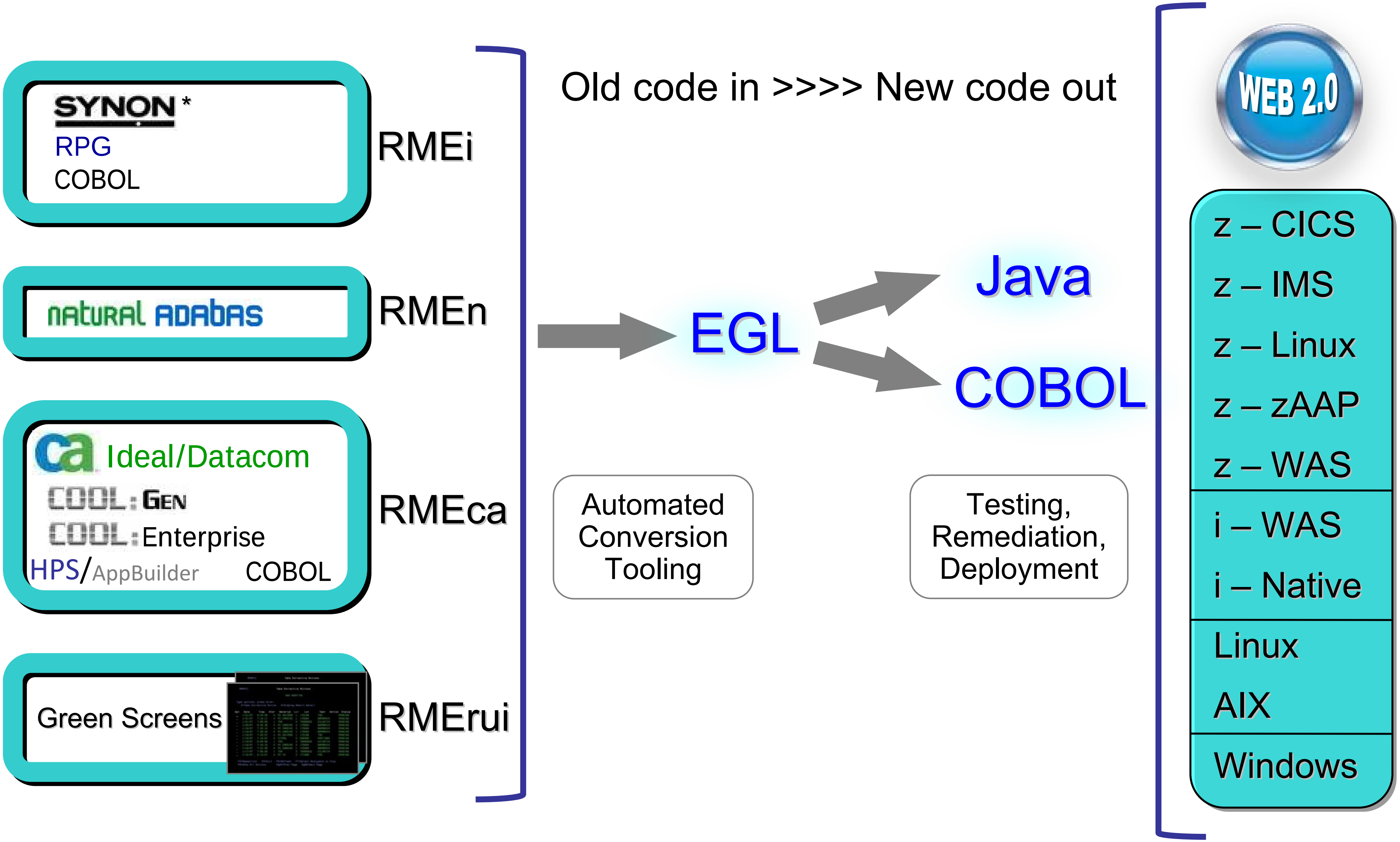
EGL

Java

COBOL

  - Choose based on requirements
  - Web 2.0 and SOA built in
    - Generate mobile GUI front ends to mainframe applications
    - For example, "Service" is a keyword in the language
- Allows mainframe programmers to become Web developers
  - Building Rich UI applications
- Modernize aging systems
  - Good target language for evolving existing Natural, Ideal, Cool:Gen, RPG, COBOL, Synon, and other applications

Use Rational Migration Extensions To Move From Expensive Third Party Software



SYNON *
RPG
COBOL

RMEi

natural ADABAS

RMEn

ca Ideal/Datacom
COOL:GEN
COOL:Enterprise
HPS/AppBuilder COBOL

RMEca

Green Screens

RMErui

Old code in >>>> New code out

EGL

Java

COBOL

Automated Conversion Tooling

Testing, Remediation, Deployment

WEB 2.0

z – CICS
z – IMS
z – Linux
z – zAAP
z – WAS

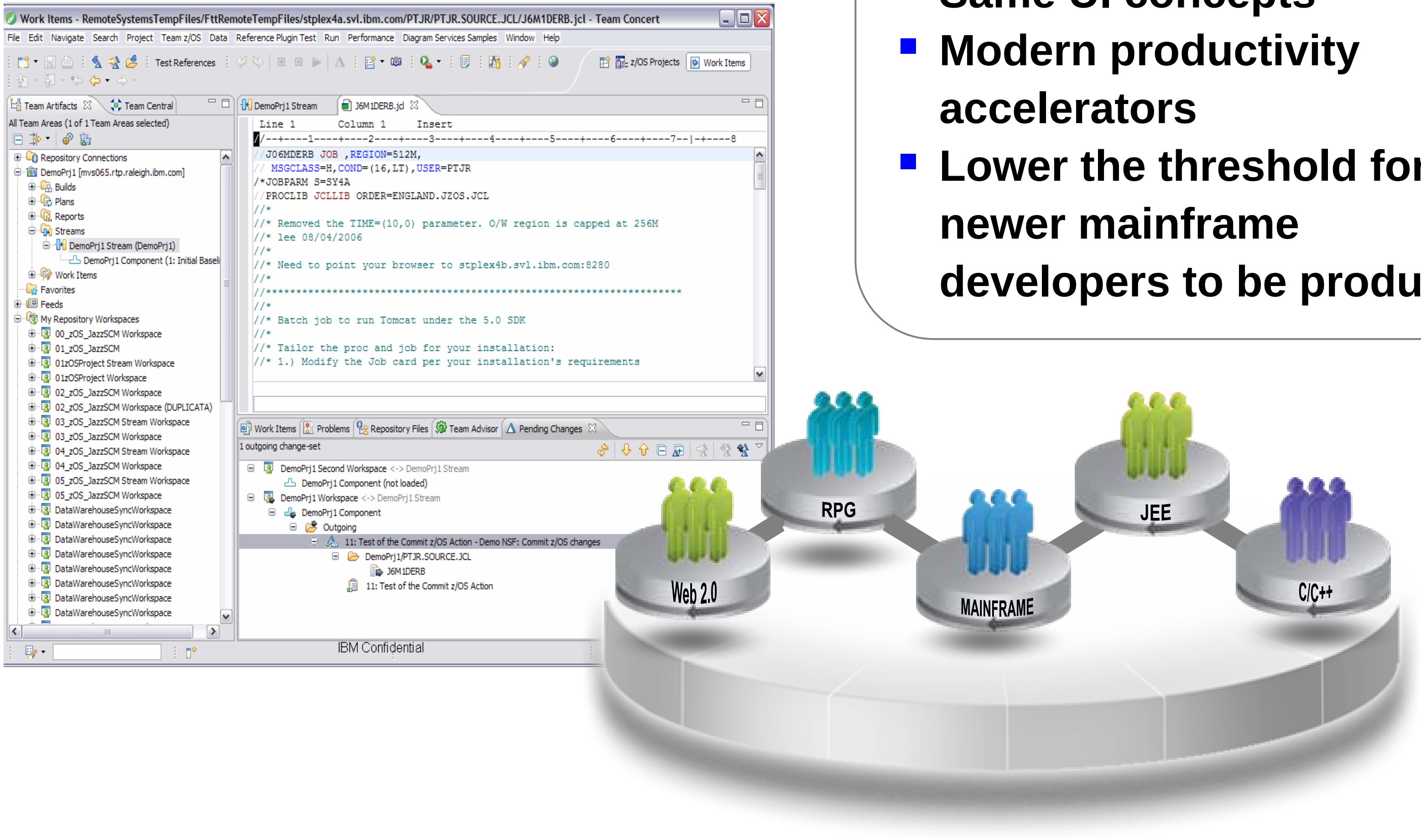
i – WAS
i – Native

Linux
AIX

Windows

One Set Of Software Delivery Tools For All Developers

- Same look and feel
- Same UI concepts
- Modern productivity accelerators
- Lower the threshold for newer mainframe developers to be productive



Work Items - RemoteSystemsTempFiles/FttRemoteTempFiles/stplex4a.svl.ibm.com/PTJR/PTJR.SOURCE.JCL/J6M1DERB.jcl - Team Concert

```
Line 1          Column 1        Insert
//--+----1----+----2----+----3----+----4----+----5----+----6----+----7--|-+----8
//J06MDERB JOB ,REGION=512M,
//  MSGCLASS=H,COND=(16,LT),USER=PTJR
/*JOBPARM S=SY4A
//PROCLIB JCLLIB ORDER=ENGLAND.JZOS.JCL
//*
//* Removed the TIME=(10,0) parameter. O/W region is capped at 256M
//* lee 08/04/2006
//*
//* Need to point your browser to stplex4b.svl.ibm.com:8280
//*
//*********************************************************************
//*
//* Batch job to run Tomcat under the 5.0 SDK
//*
//* Tailor the proc and job for your installation:
//* 1.) Modify the Job card per your installation's requirements
```

File Edit Navigate Search Project Team z/OS Data Reference Plugin Test Run Performance Diagram Services Samples Window Help
Test References
z/OS Projects
Work Items
Team Artifacts
Team Central
All Team Areas (1 of 1 Team Areas selected)
Repository Connections
DemoPrj1 [mvs065.rtp.raleigh.ibm.com]
Builds
Plans
Reports
Streams
DemoPrj1 Stream (DemoPrj1)
DemoPrj1 Component (1: Initial Baseli
Work Items
Favorites
Feeds
My Repository Workspaces
00_zOS_JazzSCM Workspace
01_zOS_JazzSCM
01zOSProject Stream Workspace
01zOSProject Workspace
02_zOS_JazzSCM Workspace
02_zOS_JazzSCM Workspace (DUPLICATA)
03_zOS_JazzSCM Stream Workspace
03_zOS_JazzSCM Workspace
04_zOS_JazzSCM Stream Workspace
04_zOS_JazzSCM Workspace
05_zOS_JazzSCM Stream Workspace
05_zOS_JazzSCM Workspace
DataWarehouseSyncWorkspace
DataWarehouseSyncWorkspace
DataWarehouseSyncWorkspace
DataWarehouseSyncWorkspace
DataWarehouseSyncWorkspace
DataWarehouseSyncWorkspace
DataWarehouseSyncWorkspace
DataWarehouseSyncWorkspace
DemoPrj1 Stream
J6M1DERB.jcl
Work Items
Problems
Repository Files
Team Advisor
Pending Changes
1 outgoing change-set
DemoPrj1 Second Workspace <-> DemoPrj1 Stream
DemoPrj1 Component (not loaded)
DemoPrj1 Workspace <-> DemoPrj1 Stream
DemoPrj1 Component
Outgoing
11: Test of the Commit z/OS Action - Demo NSF: Commit z/OS changes
DemoPrj1/PTJR.SOURCE.JCL
J6M1DERB
11: Test of the Commit z/OS Action
IBM Confidential
RPG
JEE
Web 2.0
MAINFRAME
C/C++