



IBM Software Group

Rational Developer for System z Overview, Demo and Hands-on

An IBM Proof of Technology

Powered by IMS Development at Silicon Valley Lab, California



Application Development for IMS

© 2009 IBM Corporation

Agenda for this session

- Rational Developer for System z (RDz) overview
- Live Demo
- Hands-on Lab



Overview



Rational Developer for System z (RDz) overview

▶ What is RDz

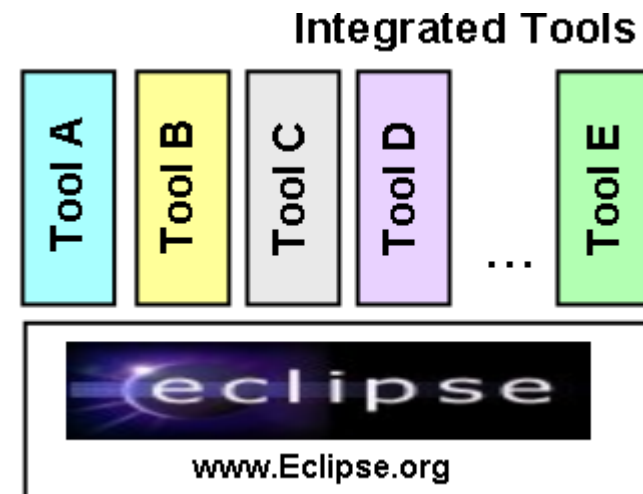
- Eclipse-based IDE
- IDE (Integrated Development Environment) - make developing faster and easier

▶ RDz supports development in the z/OS systems

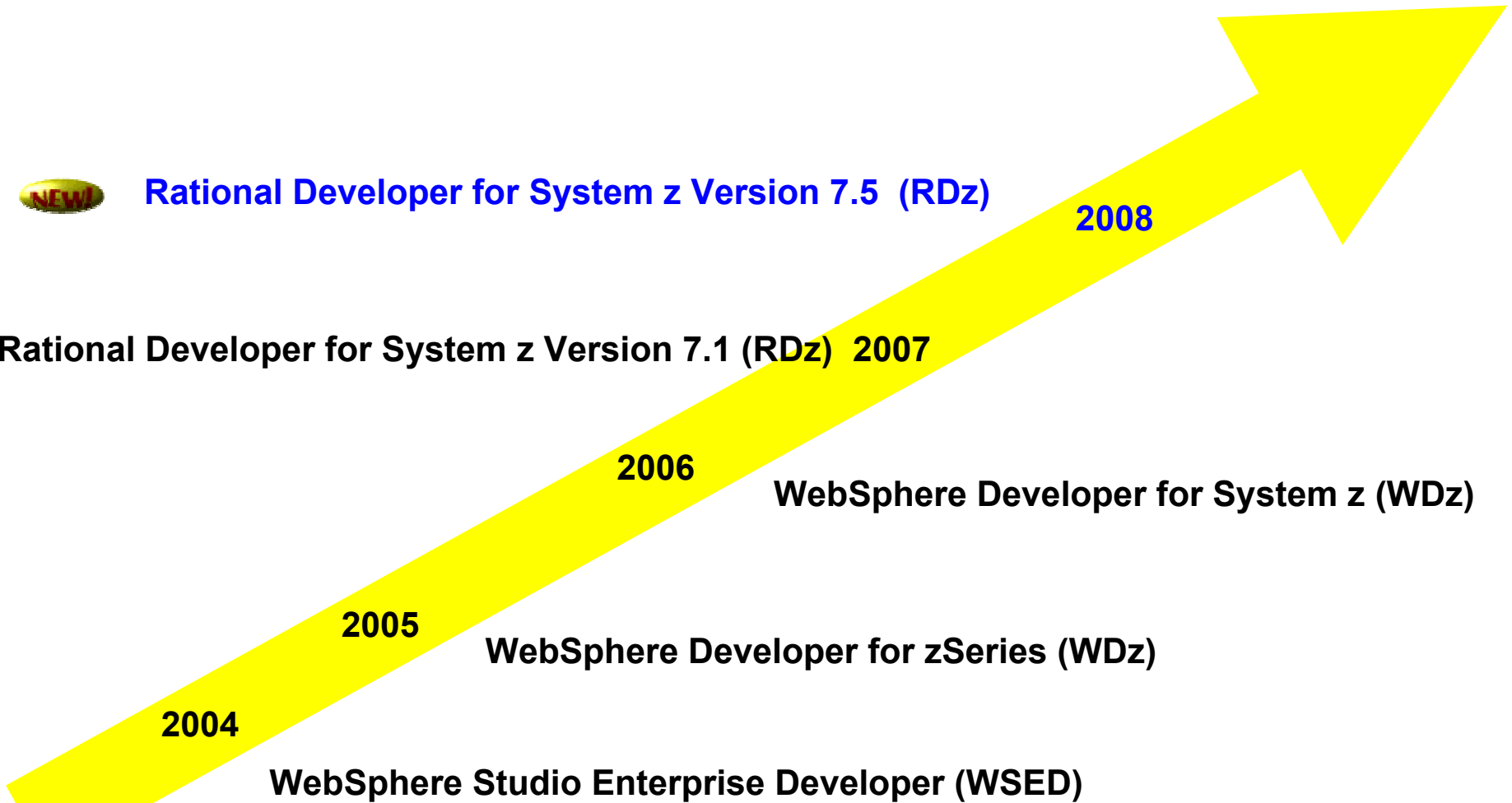
- COBOL, PL/I, C, C++, HL ASSEMBLER, Java, and Web Services
- Provides interactive access to z/OS systems
- Supports CICS, IMS, Batch, USS, DB2 Stored Procedure, Application Servers.

▶ RDz supports SOA

- Enables CICS and IMS applications for Web Services and SOA

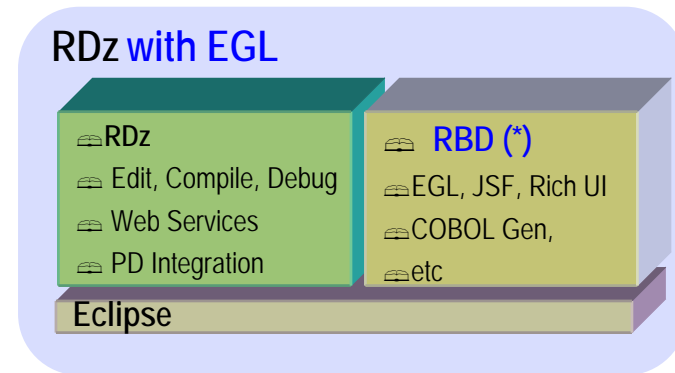


History of Rational Developer for System z

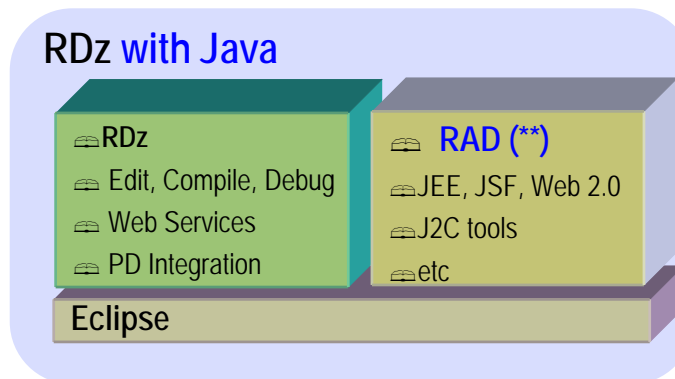


Two Rational Developer for System z (RDz) Offerings

- IBM Rational Developer for System z with EGL (Enterprise Generation Language)**
 - Bundles RDz capability with Rational Business Developer (RBD)
 - Best for creating System z applications with **EGL** web or Rich UI front-end applications (Web 2.0)



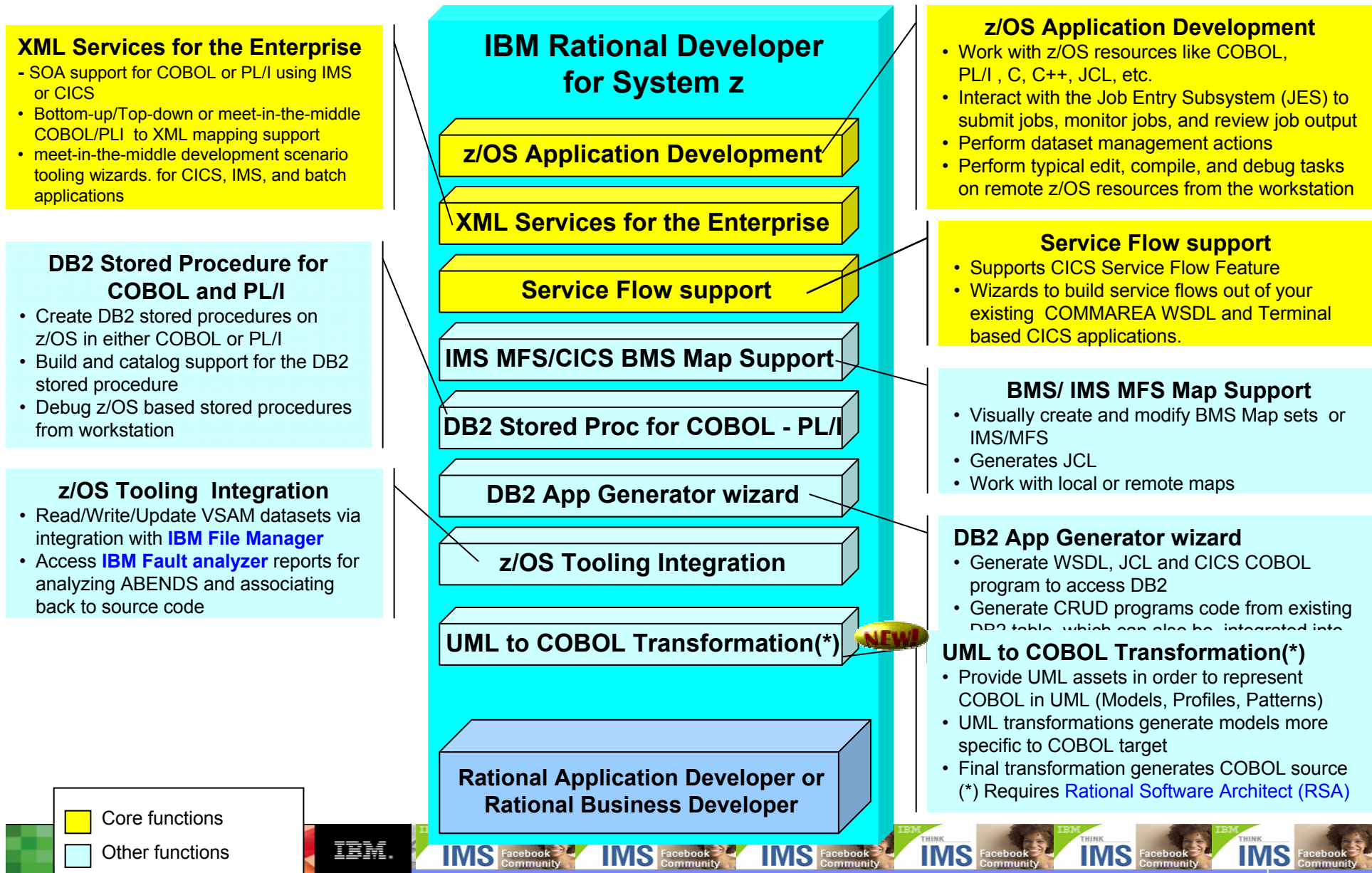
- IBM Rational Developer for System z with Java**
 - Bundles RDz capability with Rational Application Developer (RAD)
 - Best for creating System z applications combined with **Java Enterprise Edition** front-end applications



* RBD = Rational Business Developer

** RAD = Rational Application Developer

IBM Rational Developer for System z version 7.5



ISPF based z/OS development environment



```

Session B - [24 x 80]
File Edit View Communication Actions Window Help
File Edit Edit_Settings Menu Utilities Compilers Test Help

EDIT      DNET045.POT.COBOL(REGIOA) - 02.26      Columns 00001 00072
*****  ***** Top of Data *****
000001      IDENTIFICATION DIVISION.
000002      PROGRAM-ID.      REGIOA.
000003      AUTHOR.         Reginaldo. Barosa.
Command ==>
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.POT.LISTING(REGIOA) - 01.00      Columns 00001 00072
000070      000001      IDENTIFICATION DIVISION.
000071      000002      PROGRAM-ID.      REGIOA.
000072      000003      AUTHOR.         Reginaldo. Barosa.
000073      000004      ENVIRONMENT DIVISION.
000074      000005      *****
000075      000006      * This program calls 2 other programs.
000076      000007      * > REGIOB is called as dynamic and returns a v
Command ==>
F1=Help      F2=Split      F3=Exit      F5=Rfind      F6=Rchange      F7=Up
F8=Down      F9=Swap      F10=Left     F11=Right     F12=Cancel

M&A      b
22/015
Connected to remote server/host demovs.demopkg.ibm.com using lu/pool TCP00020 and port 23
  
```



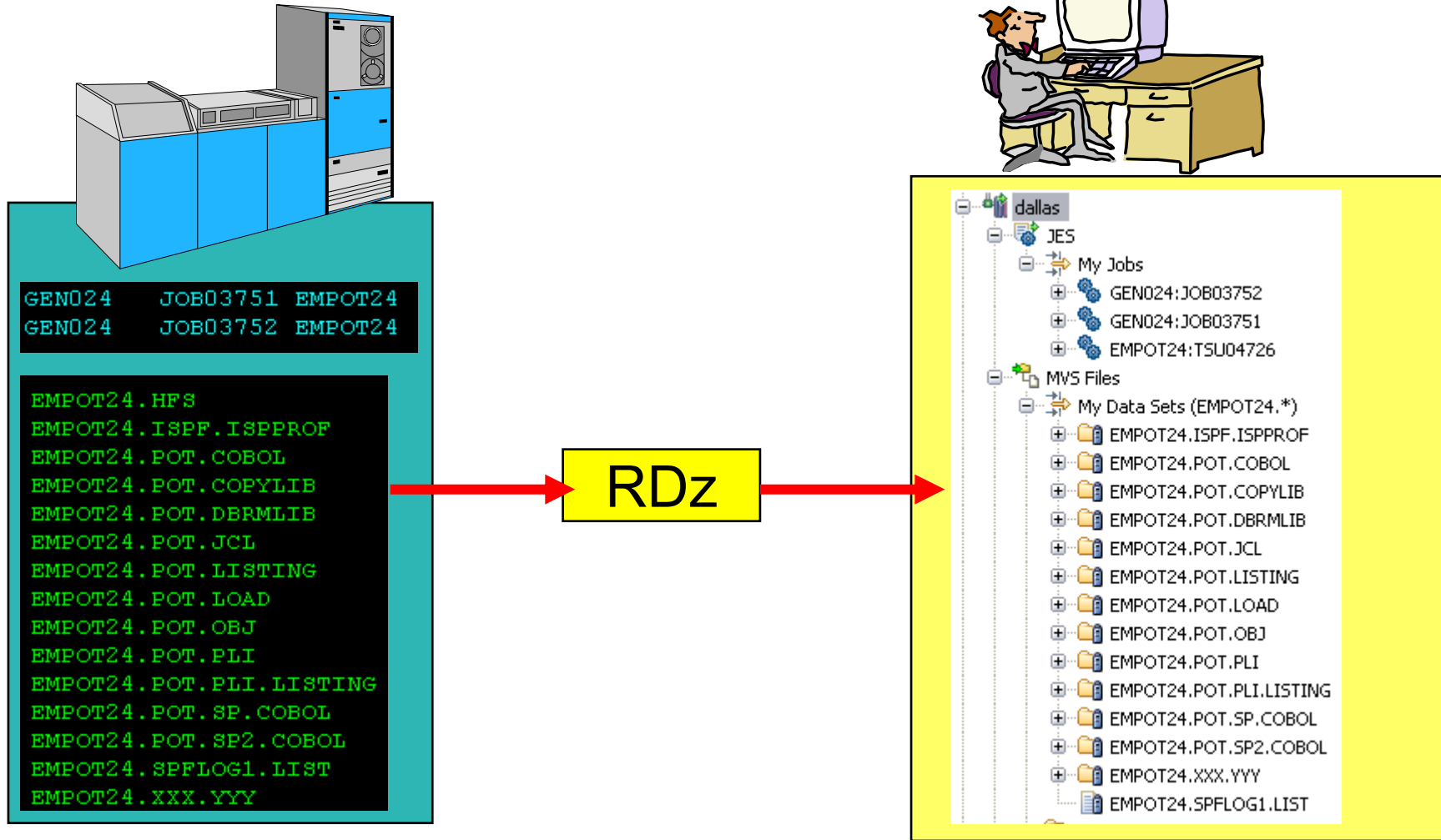
RDz based z/OS development environment

- Common development environment for COBOL, PL/I, C/C++, and Java

The screenshot shows the IBM Rational z/OS Projects IDE interface. The main editor window displays COBOL source code for 'REGIOA.cbl'. A red box highlights the source code, with a callout 'Edit Source' pointing to it. Another red box highlights the 'DISPLAI' statement on line 35, with a callout 'Statement in error indicated in source'. The 'Problems' view at the bottom shows an error: 'IGYPS2072-S "DISPLAI" was invalid. Skipped to the next verb, period or procedure-name d'. A callout 'Double-Click on the Error' points to this error. The 'Outline' view on the left shows the COBOL structure, with '010-INITIALIZATION.' highlighted. A callout 'Outline view presents COBOL structure' points to it. The 'Properties' view shows 'REGIOA.cbl' selected. A callout 'Syntax Check' points to the toolbar. A callout 'Submit jobs, access job output, or open source members with a single click' points to the project tree. A callout 'Open and edit multiple source and JCL members simultaneously' points to the top toolbar. A callout 'Error list in Problems view' points to the 'Problems' view.



Host Workstation Overview



Files on the host look as they are workstation files

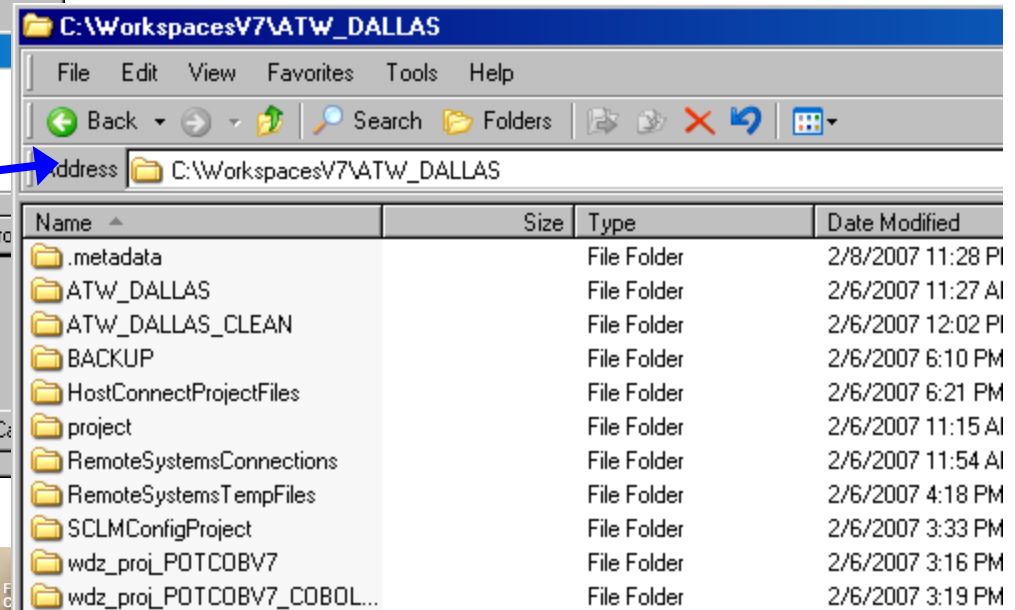
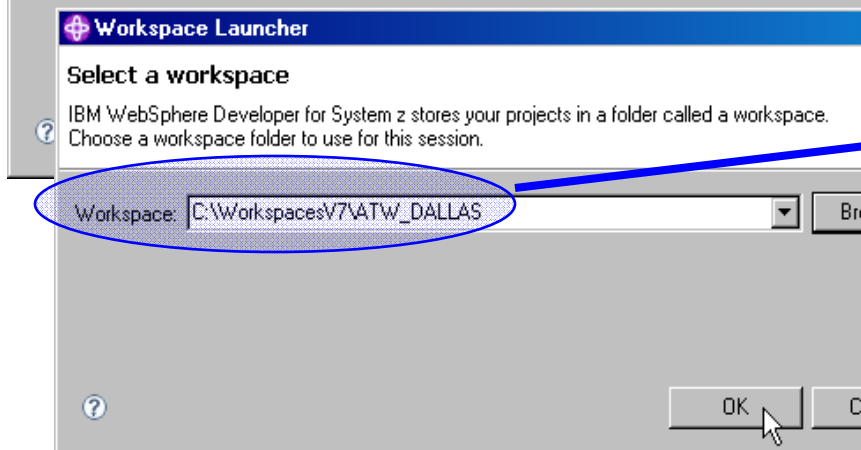
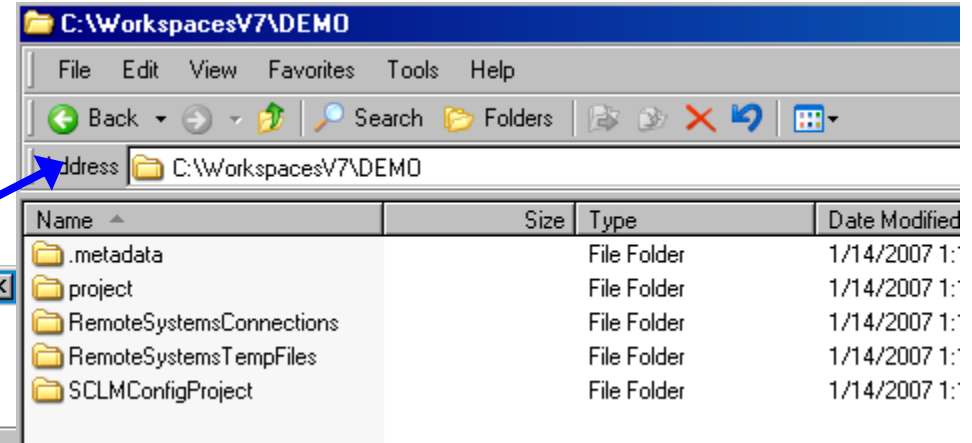
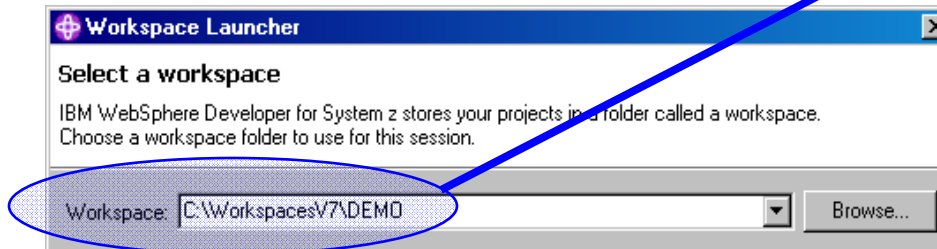


DEMO



Workspace - Introduction

- The workspace is where Application Developer stores project data files
- Application Developer stores metadata about the developer's work in the workspace
- Typically a different workspace is used for different projects or for different releases



User Assistance Features Tour

- Multimedia addition: User Assistance Tour provides an overview of user assistance features
- Embedded in the Welcome and in the Information Center
- Also available from the IBM Education Assistant
- Features audio and close-captioned text
- Translated into 4 languages
 - 📄 Brazilian Portuguese
 - 📄 French
 - 📄 German
 - 📄 Japanese

User Assistance features tour
This tour is an overview that will show you how to use the Information Center and other user assistance features that are available when using IBM Rational Developer for System z.

Develop z/OS applications
Learn key skills to help you develop z/OS applications.

Transform z/OS applications into Web services
Learn how you can transform your z/OS applications into Web services.

Create an EGL Hello World Web application
This cheat sheet guides you through creating a simple EGL Web application with two Web pages that forward data between each other.

Create an EGL Web service client
This cheat sheet shows you how to create an EGL application that uses a service provided by another application.

Create a Web service with EGL
This cheat sheet helps you create an EGL service application.

What's New
Read about major advances in product features and technology since our last release. For more details, look in the release notes.

IBM Rational Developer for System z workbench

The screenshot displays the IBM Rational Developer for System z workbench interface. The main window is titled "z/OS Projects - IGYIVP.cbl - IBM Rational Developer for System z - C:\WDZLabs\Workspace". The interface includes a menu bar (File, Edit, Navigate, Search, Project, Data, Run, Window, Help), a toolbar, and several panes:

- Left Pane (z/OS Projects):** Shows a project tree with folders like LocalCOBOL, LocalCOBOLDB2, and zOSProject. A yellow circle labeled "2" highlights the project structure.
- Code Editor (IGYIVP.cbl):** Displays COBOL code with columns for Line 1, Column 1, and Insert. A yellow circle labeled "5" highlights the code content.
- Right Pane (Remote Systems):** Shows a tree view of remote systems including Local, DEMOMVS, ZSERVEROS, and JES. A yellow circle labeled "1" highlights this pane.
- Bottom Left (Properties):** Shows the properties of the selected program, including IDENTIFICATION DIVISION, ENVIRONMENT DIVISION, DATA DIVISION, and PROCEDURE DIVISION. A yellow circle labeled "3" highlights this pane.
- Bottom Right (Remote Error List):** Shows a table of error messages. A yellow circle labeled "4" highlights the error list table.

The error list table contains the following data:

| ID | Message | S... | Line | Location |
|-----------|---|------|------|-----------------------|
| IGYPS2072 | IGYPS2072-S "DIISPLAY" was invalid. Skipped ... | 2 | 95 | zOSProject/MVSProj... |

The status bar at the bottom indicates "JES Job: DDS00691:JOB09469".



Perspectives and Views

- Always ONE or MORE **VIEWS** in ONE **PERSPECTIVE**

The screenshot displays the IBM Rational Developer for System z interface. The title bar shows 'z/OS Projects - CUSBATCH.cbl - IBM Rational Developer for System z'. The interface is divided into several views:

- Project Explorer:** Shows the project structure for 'z/OS Projects', including folders like 'LAB1_LOCAL_COBOL', 'BuildOutput', 'cobol', and files like 'CUSBATCH.cbl' and 'REGIOC.cbl'.
- Code Editor:** Displays the source code for 'CUSBATCH.cbl'. The code includes a header section with 'PROGRAM-ID, CUSBATCH.', 'AUTHOR, R. Barosa.', 'ENVIRONMENT DIVISION.', 'DATA DIVISION.', and 'WORKING-STORAGE SECTION.'. Below this is a '01 Program-Work-Fields.' section with sub-entries for '03 Input-name', '03 Output-name', and '03 program-to-call'.
- Properties View:** Shows the properties for the selected 'PROGRAM: CUSBATCH.', including 'IDENTIFICATION DIVISION.', 'ENVIRONMENT DIVISION.', 'DATA DIVISION.', and 'WORKING-STORAGE SECT'.
- Remote System Explorer:** Shows a list of remote systems: 'Local', 'dallas', and 'demomvs'.
- Remote Error List:** Displays a message: 'IGYGR1130 IGYGR1130-I "RECORD KEY" or "ALTERNATE KEY" "CUST-...' with columns for ID, Message, S., L., Location, and Host.

Red boxes highlight the 'z/OS Projects' title bar and the 'Remote System Explorer' view. A red arrow points from the text 'ONE or MORE VIEWS in ONE PERSPECTIVE' to the 'z/OS Projects' view.

| ID | Message | S.. | L.. | Location | Host ... |
|-----------|---|-----|-----|---------------|-----------|
| IGYGR1130 | IGYGR1130-I "RECORD KEY" or "ALTERNATE KEY" "CUST-... | 0 | 11 | PotCOB_DEM... | demomvs N |

z/OS Projects Perspective

The screenshot displays the IBM Rational Developer for System z interface in the z/OS Projects perspective. The main window shows a project named 'CUSVSAM.cbl' with a code editor displaying COBOL code. The left-hand side contains a project explorer with a tree view of the project structure, including local files and remote projects. The right-hand side shows a remote system browser for 'dallas' with various file systems like JES, MVS Files, and USS. The bottom of the interface features a console window with error messages and a program outline.

z/OS Projects (points to the top toolbar)

Local Project (points to the project tree)

Local files (points to local files in the project tree)

Remote Project (points to a remote project in the project tree)

Remote MVS Files (points to MVS Files in the remote system browser)

Local file LPEX editor - ISPF, LPEX, Xedit, etc.. (points to the code editor)

Remote z/OS JES, MVS Files, USS (points to the remote system browser)

Errors, Warnings, etc.. (points to the console window)

Program outline (points to the program outline pane)

Remote Systems Explorer Perspective

Remote System Explorer

Remote file LPEX editor
- ISPF
- LPEX,
- Xedit, etc..

Remote Properties

Program outline

Remote System Details

| Name | Extension | Transfer | Host Code ... | Local Code... | Local Bidi F... | Size |
|--------------|-----------|----------|---------------|---------------|-----------------|--------|
| CUSVSAM.cbl | cbl | text | IBM-037 | Cp1252 | Default | 7706 |
| IGYIVP.cbl | cbl | text | IBM-037 | Cp1252 | Default | 37308 |
| IGYTSALE.cbl | cbl | text | IBM-037 | Cp1252 | Default | 333000 |
| LAB3POT.cbl | cbl | 52 | | Default | 8362 | |
| REGIOB.cbl | cbl | text | IBM-037 | Cp1252 | Default | 1392 |
| REGIOC.cbl | cbl | text | IBM-037 | Cp1252 | Default | 2294 |

Remote Sys... Team

Property Value

Attribute

BLKSIZE 8000

DSNTYP PDS

DSORG PO

EXTENT: 1

LRECL 80

PRIMAR 2

RECFM FB

SECCOL 1

Created Date

Remote JES, MVS Files, USS

JES = Job Entry Subsystem

Interactive access to z/OS

The screenshot displays the IBM Rational Developer for System z interface. The main window is the LPEX Editor, showing a COBOL program with the following code:

```

Line 4      Column 1      Insert
-----*A-1-B-----2-----3-----4-----5-----
IDENTIFICATION DIVISION.
PROGRAM-ID.      REGIOA.
AUTHOR.          Reginald
ENVIRONMENT DIVISION.
*****
* This program calls z
* > REGIOB is called as
* in a division. This
* and exception since
* > REGIOC prints the output using display
*****
The quick mark was set at the cursor location.
    
```

Yellow callout boxes highlight key features:

- Files on workstation:** Points to the local file system tree in the Remote Systems Explorer.
- JES Listings:** Points to the JES job listings in the Remote Systems Explorer.
- MVS Files:** Points to the MVS file system in the Remote Systems Explorer.
- MVS datasets:** Points to the MVS dataset tree in the Remote Systems Explorer.
- LPEX Editor:** Points to the main code editor window.
- MVS datasets mapping:** Points to the mapping table below.
- member mapping:** Points to the 'COB**' entry in the mapping table.

| Mapping Criterion | Workstation File Extension | Transfer Mode | Host Code Page | Local Code Page |
|-------------------|----------------------------|------------------|------------------|-------------------|
| **COBOL | cbl | text | IBM-037 (inhe... | Cp1252 (inheri... |
| **COBCOPY | cpy | text | IBM-037 (inhe... | Cp1252 (inheri... |
| **PLI | pli | text | IBM-037 (inhe... | Cp1252 (inheri... |
| **ASSEMBLE | asm | | 7 (inhe... | Cp1252 (inheri... |
| **OBJ | obj | | 7 (inhe... | Cp1252 (inheri... |
| **LOAD | exe | | 7 (inhe... | Cp1252 (inheri... |
| **CLIST | cmd | text | IBM-037 (inhe... | Cp1252 (inheri... |
| **JCL | jcl | text | IBM-037 (inhe... | Cp1252 (inheri... |
| **SIGYCLST | cmd | text | IBM-037 (inhe... | Cp1252 (inheri... |
| **CNTL | jcl | text | IBM-037 (inhe... | Cp1252 (inheri... |
| **FILES | <undefined> | text | IBM-037 (inhe... | Cp1252 (inheri... |
| COB** | CBL | text (inherited) | IBM-037 (inhe... | Cp1252 (inheri... |
| JCL** | JCL | text (inherited) | IBM-037 (inhe... | Cp1252 (inheri... |
| BMS** | BMS | text (inherited) | IBM-037 (inhe... | Cp1252 (inheri... |
| **LISTING | lst | text | IBM-037 (inhe... | Cp1252 (inheri... |
| **OUTLIST | out | text | IBM-037 (inhe... | Cp1252 (inheri... |
| **INCLUDE | inc | text | IBM-037 (inhe... | Cp1252 (inheri... |



Lab





IBM Software Group

Lab: COBOL application development in z/OS using RDz

Maria Querales – querales@us.ibm.com

An IBM Proof of Technology

Powered by IMS Development at Silicon Valley Lab, California



LAB: COBOL application development in z/OS using RDz

Overview of development tasks

1. Connect to a z/OS System:

→ Prepare your Workspace to connect to the z/OS system, defining a Remote System and connecting to it

2. Allocate z/OS Data sets:

→ Allocate and load assets required for this lab.

4. Send the COBOL or PL/I program to the z/OS

→ You will copy a COBOL or PL/I program from the workstation to the z/OS

5. Create a z/OS Project

→ Specify which data sets you will use in this tutorial, specify properties, etc..

6. Work with z/OS remote assets – edit, syntax check, submit, execute and see the output.

7. (Optional) Working offline using z/OS Projects



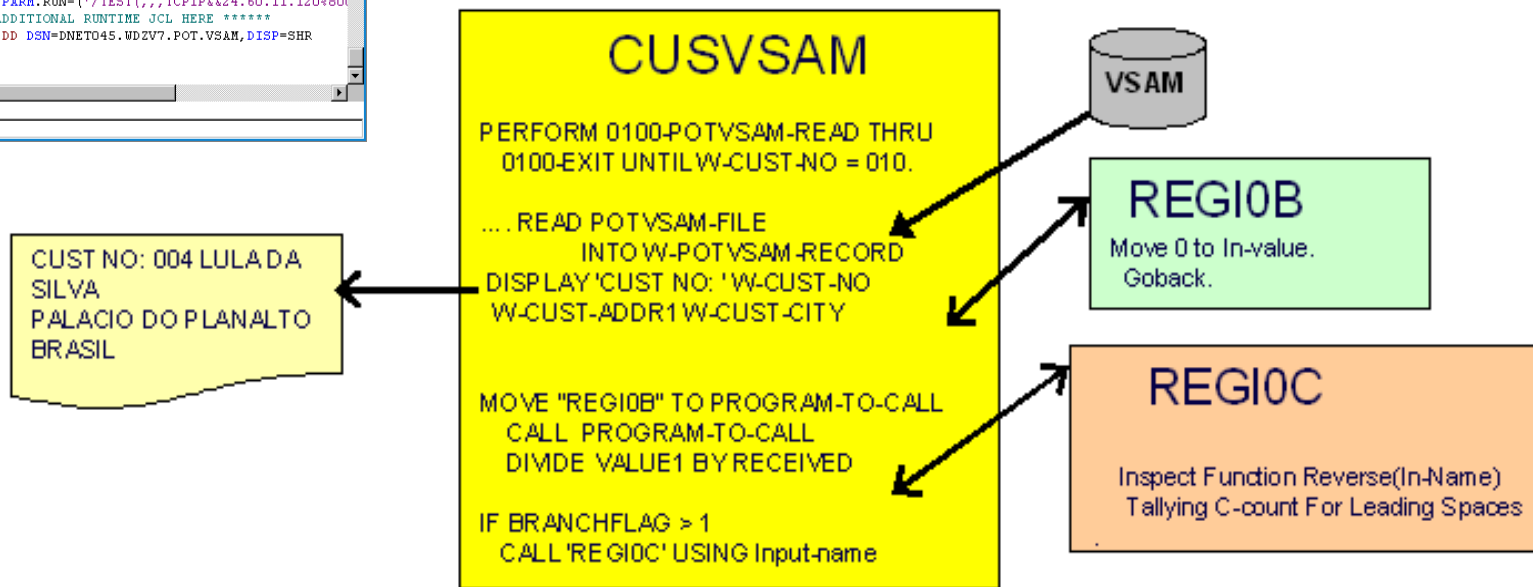
LAB: COBOL application development in z/OS using RDz

The Display Application

```

CUSVSAM.jcl
Line 29      Column 1      Insert
-----1-----2-----3-----4-----5-----
000029 //GO EXEC  PROC=ELAXFGO,GO=CUSVSAM,
000030 //      LOADDSN=EMPOT24.POT.LOAD,
000031 //      PARM.RUN=('/TEST(,,,TCP/IP:624.60.11.120*800
000032 //***** ADDITIONAL RUNTIME JCL HERE *****
000033 //POTVSAM DD DSN=DNET045.WDZV7.POT.VSAM,DISP=SHR
000034 //
000035 //
    
```

Batch execution



IBM® Enterprise Modernization Sandbox

- The Enterprise Modernization sandboxes let you evaluate the IBM Enterprise Modernization solutions
- Sandboxes make it easy and fun to quickly try practical scenarios guided by self-paced exercises
 - You can integrate, test, and deploy applications in a live test environment
- IBM provides a mix of full version software trials and "try online" hosted environments
- Sandboxes are available to everyone



Where to find EM4Z

- [Enterprise Modernization Sandbox for System z \(EM4Z\)](#)
- <http://www.ibm.com/developerworks/downloads/emsandbox/>
- ibm.com/ims

Software > Information Management > Data Management >

IMS family

Information Management System

- Announcing IMS 11. Learn more.
- Nov 18 Teleconference. IMS 11 - Move Your Business Forward.
- YouTube: Mainframe Art of IT Team Building.
- IBM Information On Demand 2008. October 26-31, 2008. Register Today!

Information Management

Why IBM

Information Management System (IMS) is IBM's premier transaction & hierarchical database management system. It is a leading capability for enabling SOA, virtualization, and your investment without? Our teleconference

- Database Magazine features IMS 40th Anniversary and IMS 11
- IMS 11: Move Your Business Forward, Nov 18 Teleconference
- InfoWeek features IMS 11
- IMS 11
- IMS 10

We're here to help

Easy ways to get the answers you need.

- Call me now
- Request a quote
- E-mail IBM

or call us at 977 6-37

(300KB)

- Presentations
- **IMS SOAP Gateway demo**
- **IMS TM Resource Adapter Demo**



LAB: COBOL application development in z/OS using RDz

Each of you gets **two** different set of credentials:

- **The sandbox credentials** – Use it to start the lab and connect to the image in the sandbox. This image is a windows systems with RDz installed. You get an ip port, ID and password
- **The z/OS ID credentials** - Use it during the lab it to connect to the remote z/OS systems. You get an z/OS ID and password



LAB: COBOL application development in z/OS using RDz

Credentials for the lab

You get **two** different set of credentials:

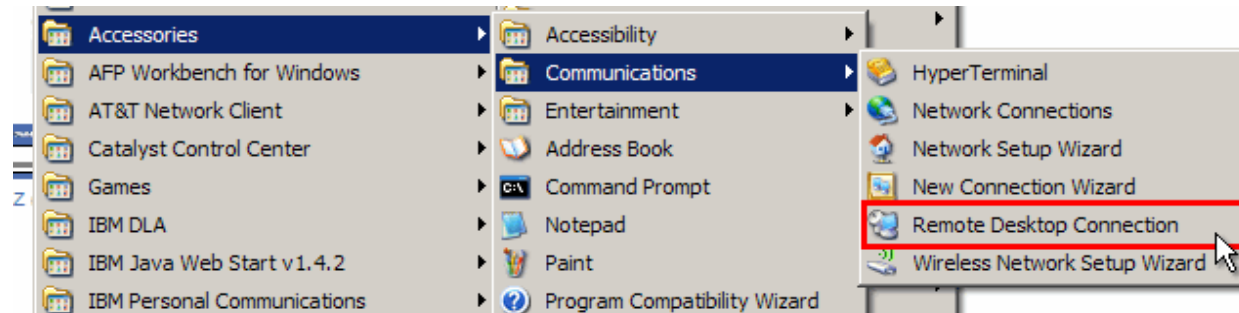
- **The sandbox credentials –**
Computer: 204.90.115.210:111xx
ID: db2admin
Password: xxxxxxxxxxx

RDP computer

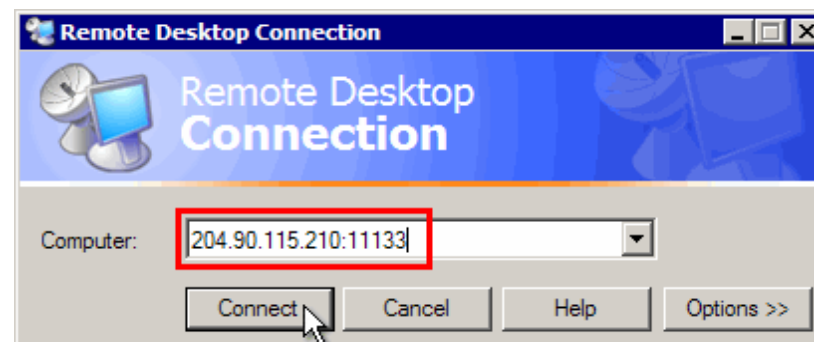
- **The z/OS credentials –**
ID: IMPOTxx
Password: IMSxx

Connecting to EM4Z (RDP)

- Click **Start** → **All Programs** → **Accessories** → **Communications** → **Remote Desktop Connection**



- Enter RDP computer (**204.90.115.210:11XYZ**)
- Click **Connect**



Thank
YOU

