



Software Group

## Improve mainframe developer productivity with powerful IBM tools

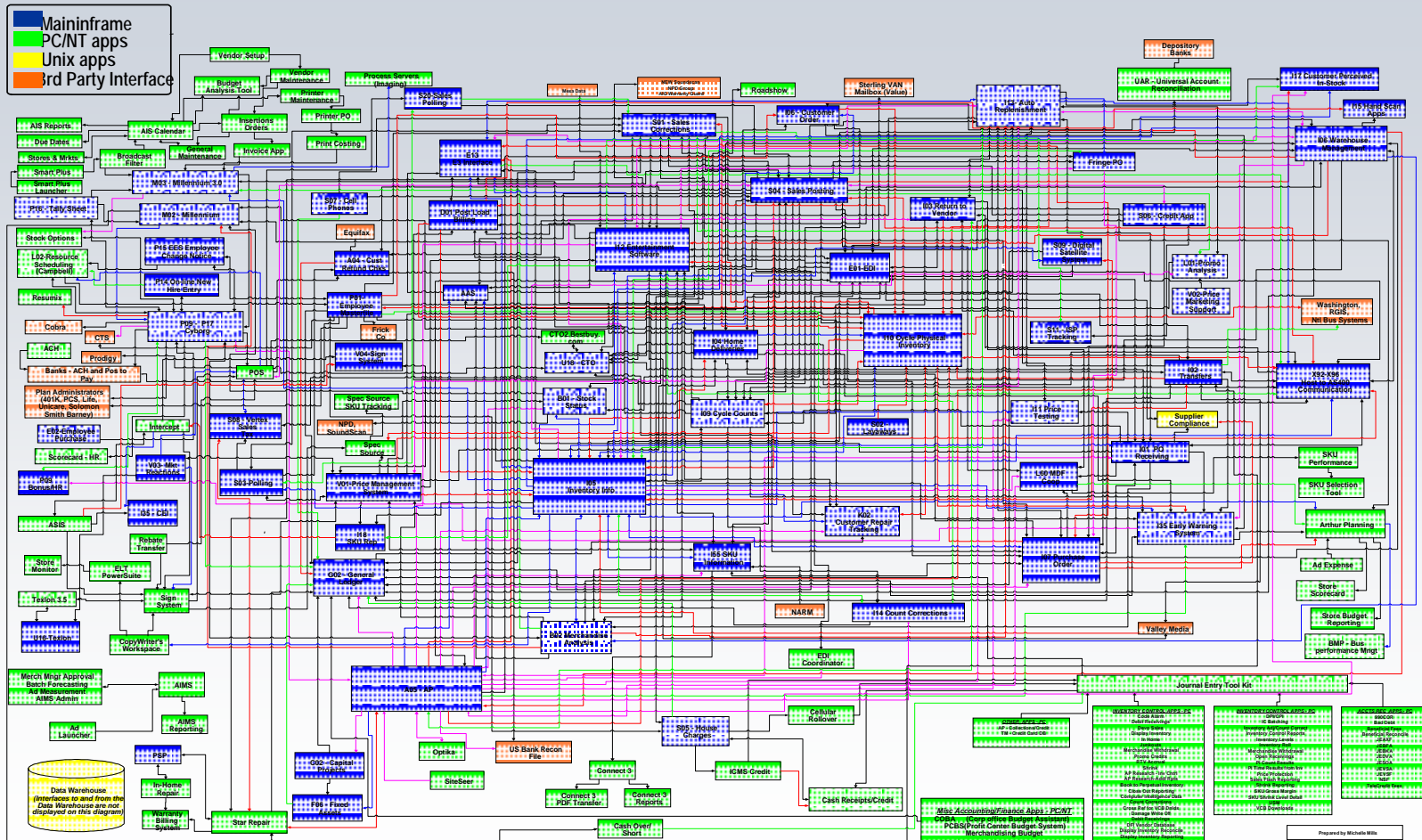
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Development Product Market Manager**  
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**ON DEMAND BUSINESS™**

# Information to be covered

- **Application Development challenges**
- **Scenario based product introduction**
  - Traditional developer working with traditional code
    - Using mainframe based tools and workstation based debugger interface
    - Using traditional functions available in a workstation based tool
  - Traditional developer working beyond his abilities – creating web components
  - Traditional developer working with composite applications
- **Summary**

# Application Complexity – The Reality



Actual Application Architecture for Consumer Electronics Company

# Developer daily activities

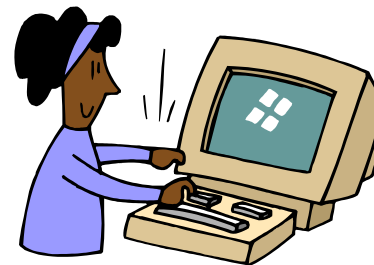
- **What percentage of your mainframe developers time is spent maintaining existing applications?**
  - Some estimates go as high as 75-80%
  - This limits the amount of funds available for other projects
- **How does the average mainframe developer spend their day?**

Activity	% of time
Analysis/Design/Understanding	35%
Editing	10%
Compiling	20%
Debugging	25%
Other	10%



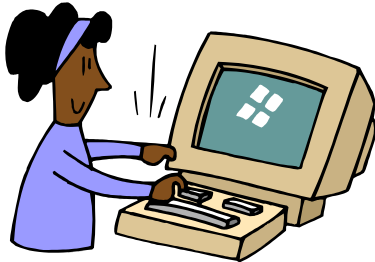
# Scenario based product introduction

- **Traditional developer working with traditional code**
  - **Using mainframe based tools and workstation based debugger interface**
  - Using traditional functions available in a workstation based tool
- Traditional developer working beyond his abilities – creating web components
- Traditional developer working with composite applications



**Meet Jane. She's has been a mainframe developer for several years.**

# Using familiar ISPF – Edit files, browse listings...



•Jane has been using the same tools during this time...ISPF, SDSF....to create, edit, and debug mainframe based COBOL applications.

•We want to give her a boost in her productivity by giving her a GUI front end to the IBM Debug Tool Utilities and Advanced Functions product

```

Menu Utilities Compilers Options Status Help
OS/390 Primary Option Menu
Option ==> o

0 Settings      Terminal and user parameters      User ID . : USGR1
1 Browse       Display source data or listings   Time . . : 15:20
V View        Display or change source data     Terminal : 3278
2 Edit        Create or change source data     Screen . : 1
3 Utilities    Perform utility functions        Language : ENGLISH
4 Foreground  Interactive language processing  Appl ID  : ISR
5 Batch       Submit job for language processing TSO logon : SPFE581
6 Command     Enter TSO or Workstation commands TSO prefix: USER1
7 Dialog Test Perform dialog testing          System ID : TVT4097
8 LM Facility Library administrator functions MVS acct. : ACCT#
9 Programs    Program Products and Tools       Release . : ISPF 5.8
10 SCLM       SM Configuration Library Manager
11 Workplace  ISPF Object/Action Workplace
S SDSF       System Display and Search Facility

SPF/E EDIT L1 TSS01.JCL.CNTL(CAZRPT1) - 01.00          Columns 00001 00072
Command ==>                                           Scroll ==> PAGE
***** Top of Data *****
c00001 //TSS01P JOB (), 'CAZRPT01 ',CLASS=A,MSGCLASS=T,NOTIFY=&SYSUID
000002 /**
000003 /**
000004 //STEP1 EXEC PGM=CAZPRINT
000005 //STEPLIB DD DISP=SHR,DSN=CAZ.V1R1M0.SCAZAUTH
000006 //SYSABEND DD SYSOUT=*
000007 //CAZLOG DD SYSOUT=*
000008 //SFIE01 DD DISP=SHR,DSN=CAZ.APA.ALLANSC.R0018.ALLANSC1.SF
000009 //PDF1 DD DISP=SHR,DSN=TSS01.PDF
000010 //CAZCTL DD *
000011 PROFILE 01 INPUT=SFIE01
000012 SECTION S01

Display Filter View Print Options Help
-----
SDSF OUTPUT DISPLAY USER1G JOB00123 DSID 4 LINE 1 COLUMNS 02- 81
COMMAND INPUT ==> browse SCROLL ==> PAGE
ICH70001I USER1 LAST ACCESS AT 21:40:18 ON THURSDAY, AUGUST 25, 2005
IEF236I ALLOC. FOR USER1G AMULTIV
IGD17070I DATA SET SPFE.GDG.VB12544.G0001V00
ALLOCATED SUCCESSFULLY WITH 1 STRIPE(S).
IGD17182I RETURN CODE (12) REASON CODE (SF01083F) RECEIVED FROM
COMPRESSION SERVICES WHILE PROCESSING DATA SET
SPFE.GDG.VB12544.G0001V00 , COMPRESSION REQUEST NOT
HONORED BECAUSE DATA SET CHARACTERISTICS DO NOT MEET COMPRESSION CRITERIA,
ALLOCATION CONTINUES
IGD101I SMS ALLOCATED TO DDNAME (MULTIVOL)
DSN (SPFE.GDG.VB12544.G0001V00 )
STORCLAS (CLASS2) MGMTCLAS ( ) DATACLAS (EXTSEQ)
VOL SER NOS= T40973
IEF142I USER1G AMULTIV - STEP WAS EXECUTED - COND CODE 0000
IGD107I SPFE.GDG.VB12544.G0001V00 ROLLED IN, DDNAME=MULTIVOL
IEF373I STEP/AMULTIV /START 2005237.2142
IEF374I STEP/AMULTIV /STOP 2005237.2142 CPU OMIN 00.00SEC SRB OMIN 00.00S
IEF375I JOB/USER1G /START 2005237.2142
IEF376I JOB/USER1G /STOP 2005237.2142 CPU OMIN 00.00SEC SRB OMIN 00.00S
***** BOTTOM OF DATA *****
a 19/009

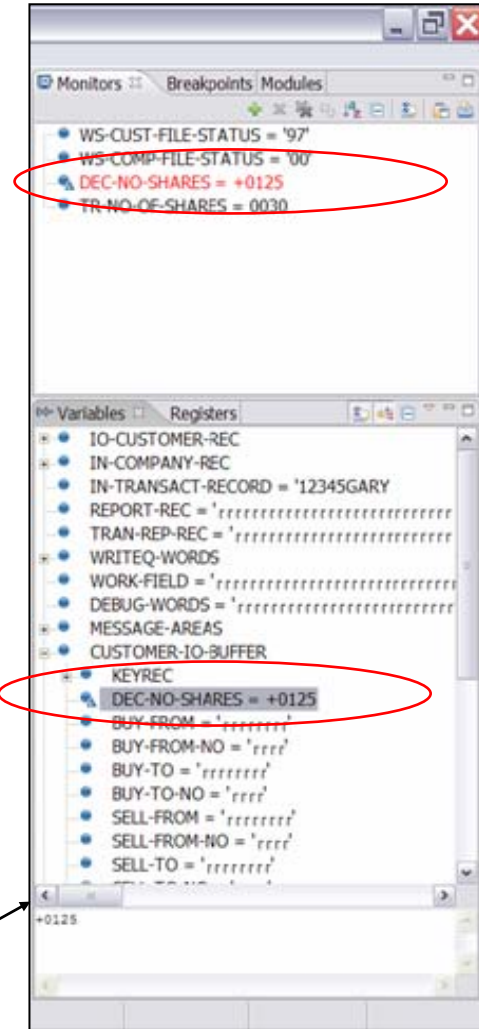
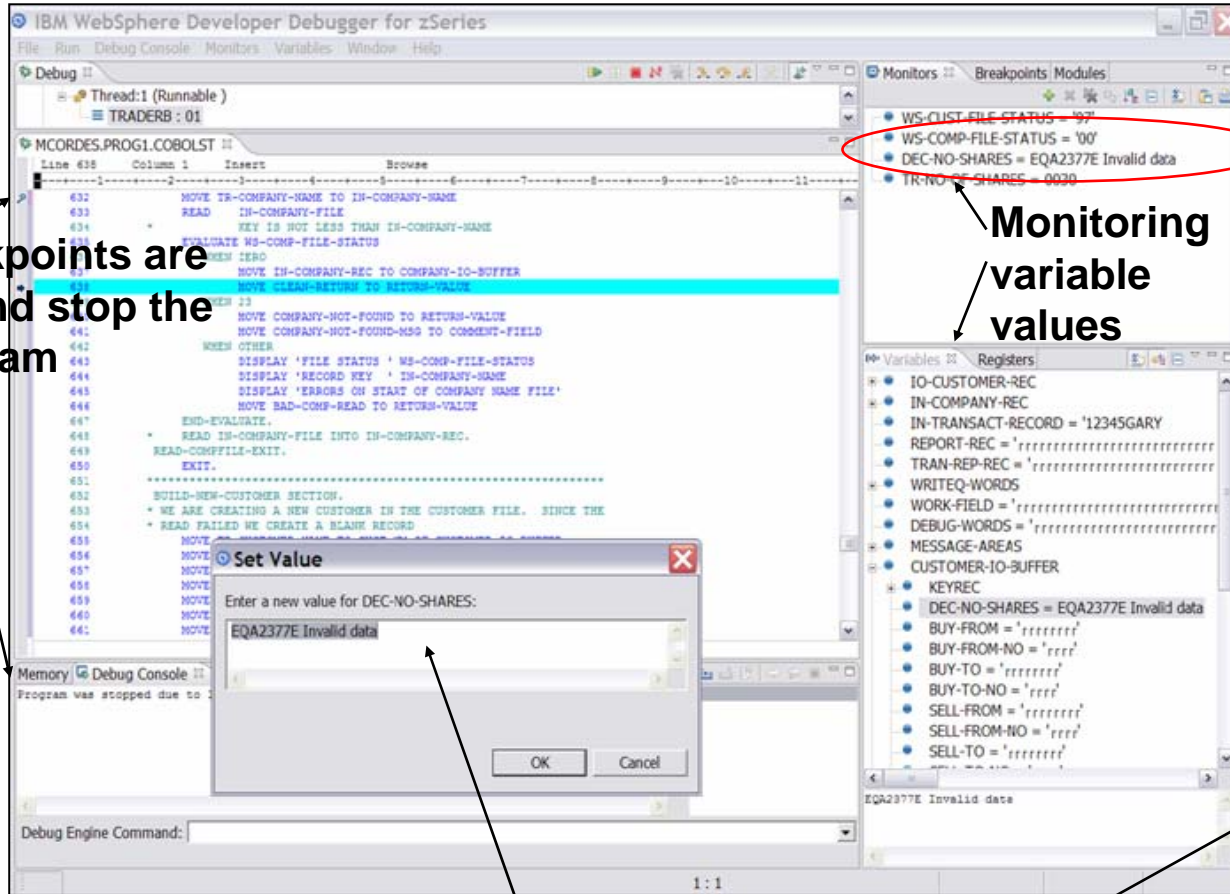
```

# Step through mainframe code using WebSphere Developer Debugger for zSeries

Breakpoints are set and stop the program

Monitoring variable values

Variable data can be changed while debugging



# WebSphere Developer Debugger for zSeries

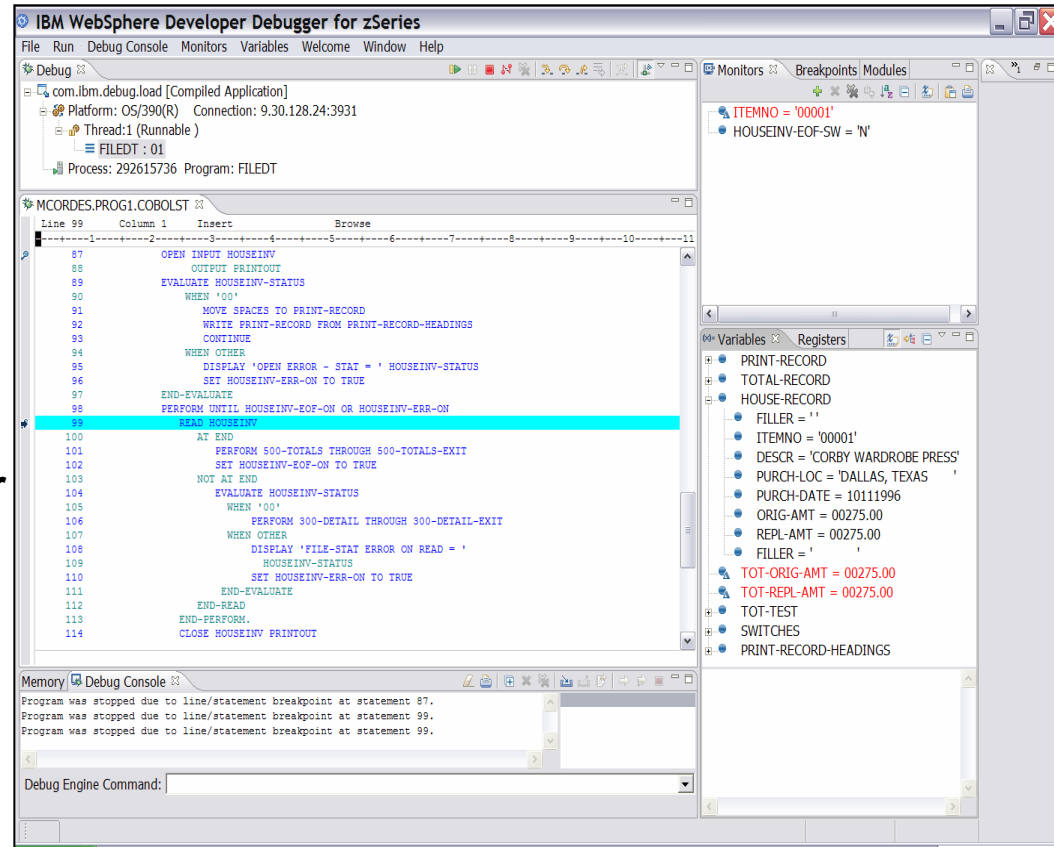
## Provides increased productivity for mainframe developers

- Affordably priced subset of IBM WebSphere Developer for zSeries functions**

- Provide a workstation-based graphical interface to IBM Debug Tool Utilities and Advanced Functions.
- Specifically designed for IBM zSeries developers who do not require the full-function WebSphere Developer for zSeries product.

- The WebSphere Developer Debugger for zSeries interface to Debug Tool Utilities is used to unit test and debug COBOL, PL/I, etc. code**

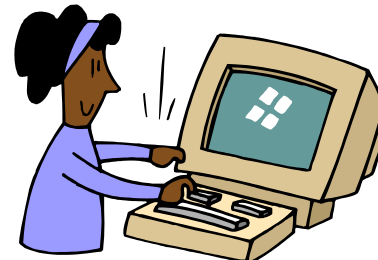
- Provides the ability to set breakpoints and view the value of various variables, while stepping through the executing code**





# Scenario based product introduction

- **Traditional developer working with traditional code**
  - Using mainframe based tools and workstation based debugger interface
  - **Using traditional functions available in a workstation based tool**
- Traditional developer working beyond his abilities – creating web components
- Traditional developer working with composite applications



**This time we want to give Jane an even bigger boost in her productivity by providing a workstation based developer tool to use.**

# WebSphere Developer for zSeries – features for traditional development

## Interactive, workstation-based environment

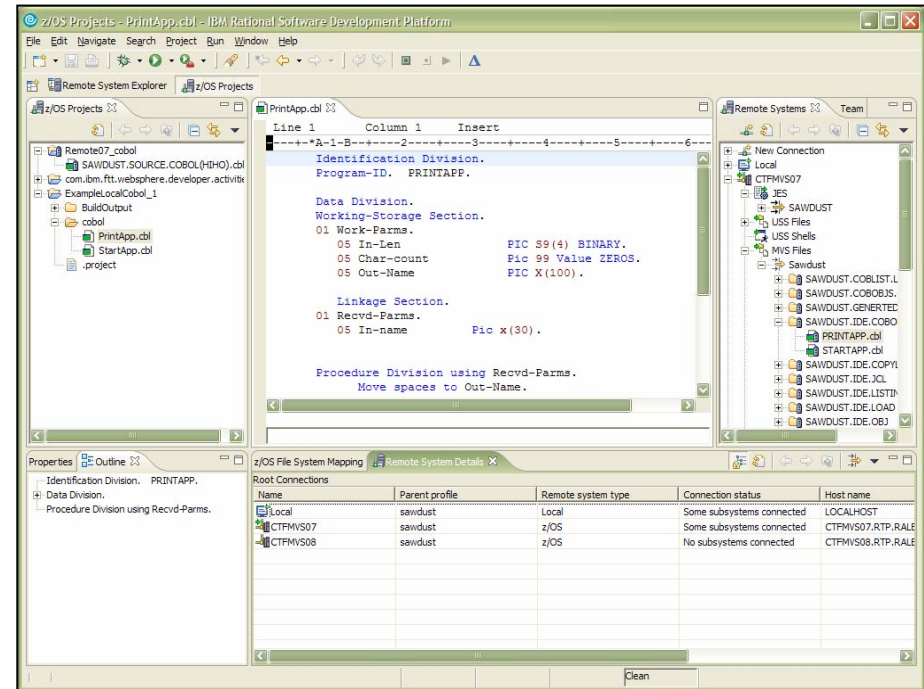
- Faster development with less errors
- Work offline or online
- Local/workstation projects

## Edit/compile/debug on the workstation

- Remote or Local
- Language sensitive editors for COBOL, PL/I, ASM, JCL
- Local syntax check
- BMS Map development

## Interactive access to zOS

- Job generation, submission, and monitoring
- Flexible build
- TSO/USS command execution
- Mainframe integration through:
  - ability to issue TSO commands or jobs from desktop
  - menu manager
  - full screen 3270 access
  - HATS integration
- Host SCM access



# z/OS development features of WDz

**z/OS Projects - ECHOCOB.cbl - IBM Rational Software Development Platform**

File Edit Navigate Search Project Run Troubleshooting Window Help

**Language sensitive editor**

```

Line 14      Column 23
-----+*A-1-B-+-----2-
File-control.
  Select the-file
    Assign to infile
      Organization is line sequential
      File status is thefile-status.
Data Division.
File section.
Fd the-file
  label records are standard
  recording mode is f
  record contains 80 characters
  block contains 0 records
  data record is the-file-input.
*
* To run this, use a ddname
* //INFILE DD DSN=ENGLAND.XMLDOC1.XML,DISP=SHR
*
01 the-file-input pic x(80).
Working-Storage Section.
01 Program-Other-Fields.
  05 Input-field Pic x(30).
01 current-element pic x(30).
    
```

**Dataset attributes**

Property	Value
Attribute	
BLKSIZE	3120
DSNTYPE	PDS
DSORG	PO
EXTENTS	7
LRECL	80
PRIMARY	3
RECFM	FB
SECONDARY	10
SPACE UN...	TRACK
VOLUME	SM4104
Info	
Created	
Last Modified	
Size	
Mapping	
Partitioned DataSet: ENGLAND.SOURCE.COBOL	

**PDS members**

- England's Source Files
  - ENGLAND.SOURCE.ASSEM
  - ENGLAND.SOURCE.C
  - ENGLAND.SOURCE.COBOL
    - ABTERM.cbl
    - CECI.cbl
    - CICSDB2.cbl
    - COBHEL.cbl
    - COBLE.cbl
    - COBSAMP.cbl
    - COBSP1.cbl
    - DB2COB.cbl
    - DFHOACTD.cbl
    - ECHOCOB.cbl
    - HELLCOB.cbl

**SDSF listings**

Name	Job ID	Job Name	Job Owner	Return Code	Return Info	System ret...	User return...	R
LEEVSAM:J0099428	J0099428	LEEVSAM	ENGLAND	U0000	NORMAL		000	C
LEEVSAM:J0099427	J0099427	LEEVSAM	ENGLAND	U0000	NORMAL		000	C
GEN001:J0099425	J0099425	GEN001	ENGLAND	U0000	NORMAL		000	C
CSINE:J0095423	J0095423	CSINE	ENGLAND	U0004	NORMAL		004	C

# Syntax checking

The screenshot displays the IBM Rational Software Development Platform interface for editing a COBOL program named REG10A.cbl. The main editor window shows the following code:

```

Line 34      Column 36      Insert
-----*A-1-B-----2-----3-----4-----5-----
000034      MOVE FIELD-A to xxx.
000035      * Initialize Program-work-fields, Program
000036      * DISPLAY "Program REG10A STARTING RB-
000037
000038
000039
000040
000041
000042      MOVE "WSED - OUTPUT" to Output-name.
  
```

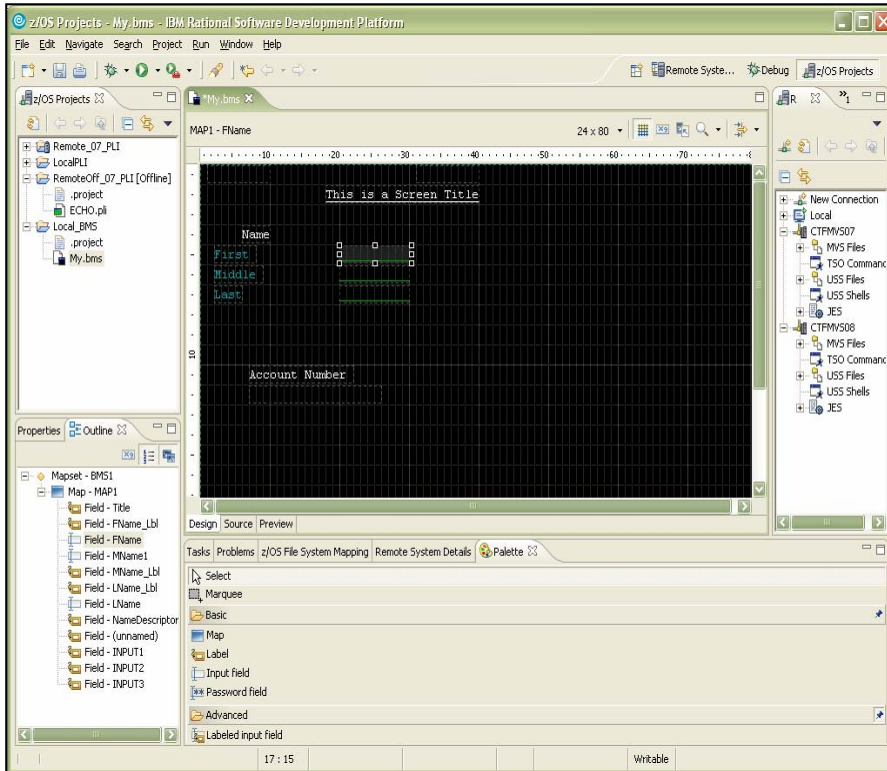
An error message is visible in the editor: "IGYPS2121-S 'XXX' was not defined as a data-...". A red arrow points from this error message to the error list at the bottom of the screen.

The error list at the bottom shows the following details:

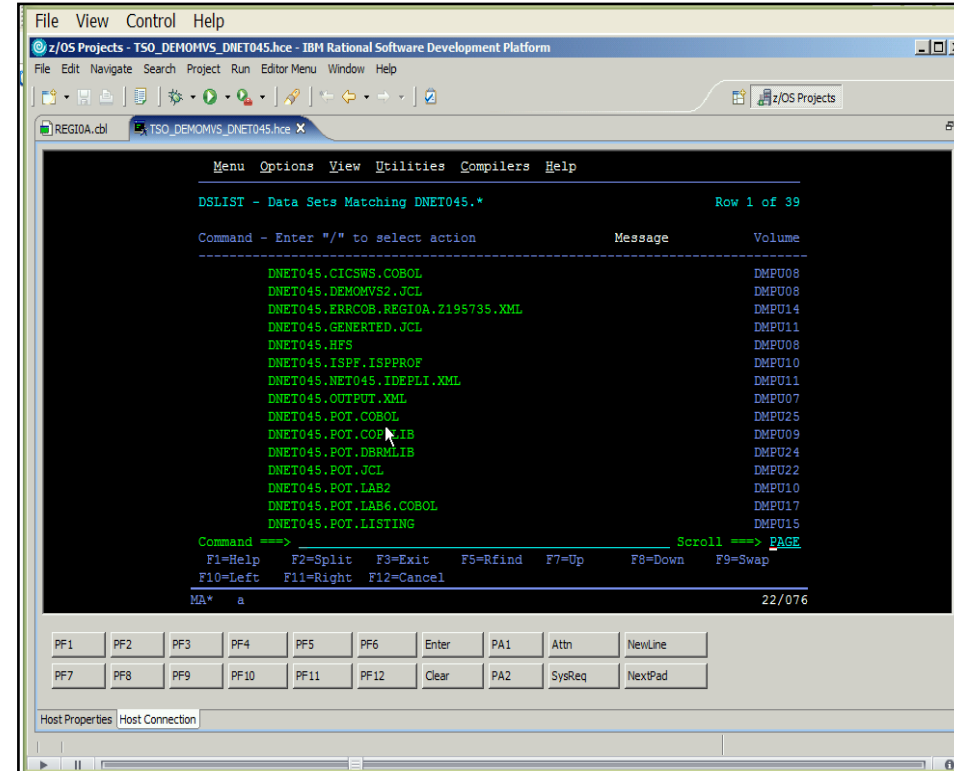
ID	Message	Se...	Line	Location	Host Name	Date
IGYPS2121	IGYPS2121-S 'XXX' was not defined as a data-...	2	34	PotCob/DNET045.PO...	DEMOMVS	Feb 6, 2006 5:37

A yellow callout box with a red arrow pointing to the error message in the editor contains the text: "Double clicking on the error message takes you to the line in question".

# BMS Map Designer and 3270 access

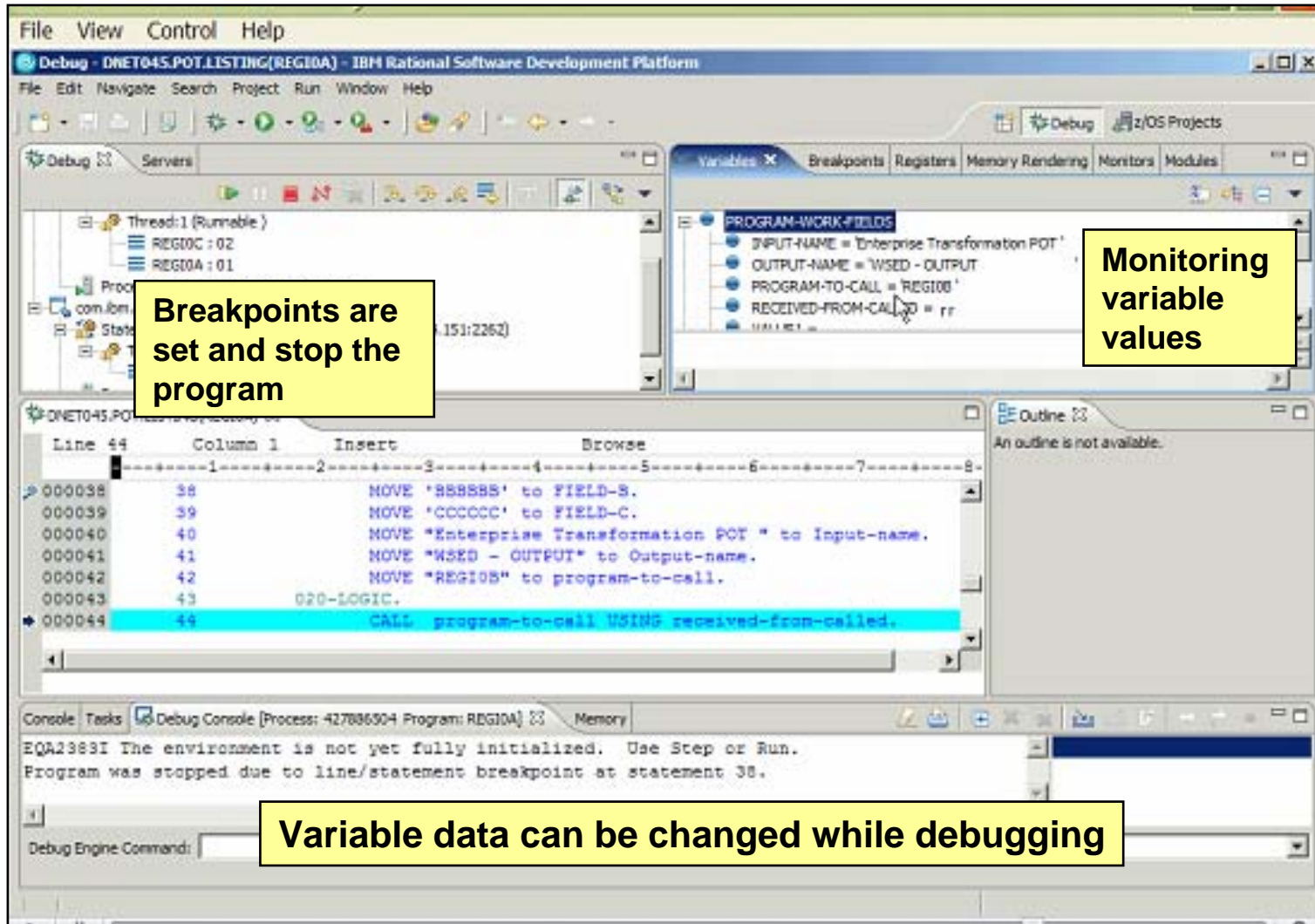


- Drag & Drop BMS editor
- Design and Source views
- Create new or edit existing BMS maps
- Begin converting to a modern Web UI



- New in 6.0.1
- 3270 emulation provided
- Use to access other development tools like Application Performance Analyzer

# Debugging mainframe applications with WDz



File View Control Help

Debug - DNET045.POT.LISTING(REG10A) - IBM Rational Software Development Platform

File Edit Navigate Search Project Run Window Help

Debug Servers

Thread:1 (Runnable)

- REG10C : 02
- REG10A : 01

Breakpoints are set and stop the program

Variables

- PROGRAM-WORK-FIELDS
  - INPUT-NAME = Enterprise Transformation POT
  - OUTPUT-NAME = WSED - OUTPUT
  - PROGRAM-TO-CALL = REG100
  - RECEIVED-FROM-CALLED = FF

Monitoring variable values

Line 44 Column 1 Insert Browse

```
000038 38 MOVE 'BBBBB' to FIELD-B.
000039 39 MOVE 'CCCCC' to FIELD-C.
000040 40 MOVE "Enterprise Transformation POT " to Input-name.
000041 41 MOVE "WSED - OUTPUT" to Output-name.
000042 42 MOVE "REG100" to program-to-call.
000043 43 O20-LOGIC.
000044 44 CALL program-to-call USING received-from-called.
```

Outline

An outline is not available.

Console Tasks Debug Console [Process: 427886504 Program: REG10A] Memory

EQR2383I The environment is not yet fully initialized. Use Step or Run.  
Program was stopped due to line/statement breakpoint at statement 38.

Debug Engine Command:

Variable data can be changed while debugging

# Viewing listings

The screenshot displays the IBM Rational Software Development Platform interface for a z/OS project. The main window shows the execution output of a program named REGIOA, which includes the text: "Program REGIOA STARTING RB\*", "The result is ... RB RB.. 33", "Thanks to Enterprise Transformation POT attending this BRANCHFLAG GREATER THAN 1", and "PROGRAM IS ENDING -- SEEYA". A yellow box labeled "SYSOUT" has an arrow pointing to the output text.

The left sidebar shows a project tree with folders like Lab6\_SOAP\_Adapter, PotCob [DEMOMVS], and DNET045.POT.COBOL. The right sidebar shows a tree of remote systems and jobs, including GEN045:JOB09551 and its sub-jobs.

The bottom panel displays a table of job steps for JES Job GEN045:JOB09551. The table has columns for Name, Dataset Name, DO Name, Step Name, Lines in File, Date Stamp, and Time Stamp. The row for GO:SYSOUT is highlighted, and an arrow points from the "SYSOUT" label to this row.

Name	Dataset Name	DO Name	Step Name	Lines in File	Date Stamp	Time Stamp
JES2:JESMSGLG	DNET045.GEN...	JESMSGLG	JES2	22		
JES2:JESJCL	DNET045.GEN...	JESJCL	JES2	210		
JES2:JESYSMSG	DNET045.GEN...	JESYSMSG	JES2	146		
LKED:SYSPRINT	DNET045.GEN...	SYSPRINT	LKED	182		
GO:SYSOUT	DNET045.GEN...	SYSOUT	GO	5		

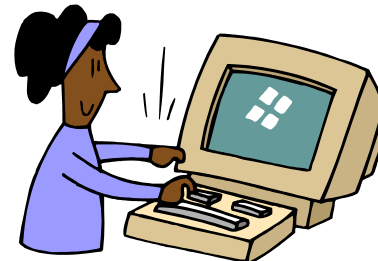
## z/OS Application Development with WDz

- **Utilizes Workbench features/tools to support COBOL, PL/1, Assembler development for the z/OS platform**
  - Simplifies development process
  - Provides consistent development environment
  - Better interface, no need for TSO
- **Provides development support for traditional runtimes**
  - CICS, IMS, DB2, batch
- Same tool for Java and COBOL or PL1



# Scenario based product introduction

- Traditional developer working with traditional code
  - Using mainframe based tools and workstation based debugger interface
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- **Traditional developer working beyond his abilities – creating web components**
- Traditional developer working with composite applications



**This time we want Jane to develop a web interface to a DB2 database, something she's never done before.**

# WebSphere Developer for zSeries

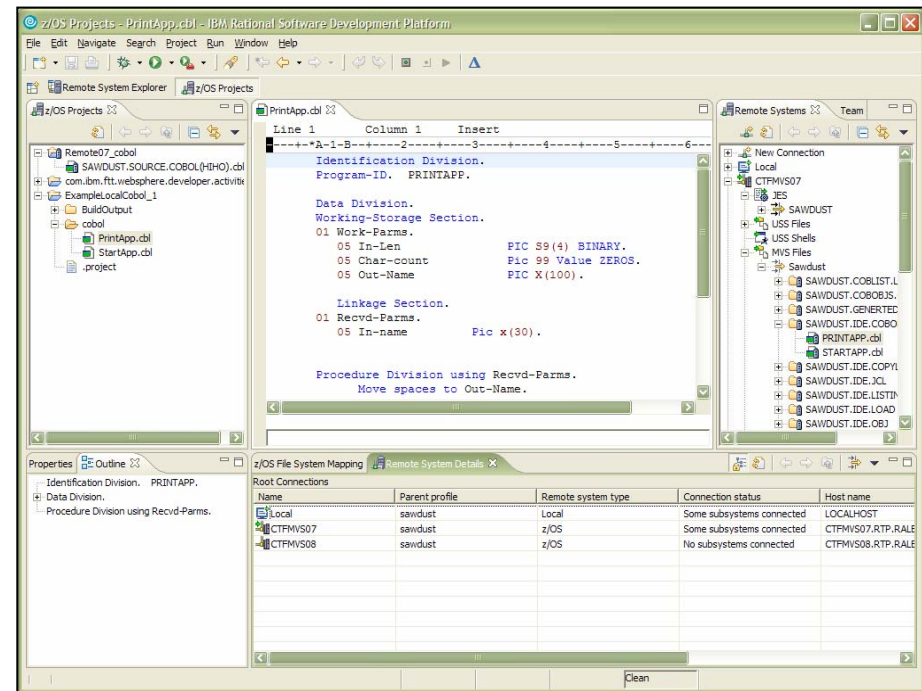
## ■ EGL 4GL Java/Web development

- High level programming specifications
- Hides complexities of implementation technology
- Generate to language of choice (Java or COBOL), but code in non-OO language

## ■ Special Parts + Scripting Language

## ■ Interactive Development and Debugging

- Environment independent language
- Built-in debugger
- Can be used for RAD development



# EGL Development Overview

## Develop

- High level abstraction specification
- Target platform neutral
- Shield complexity of target system
- Interactive test of logical specification
- Promotes Iterative development
- Strong Team support

## Generate

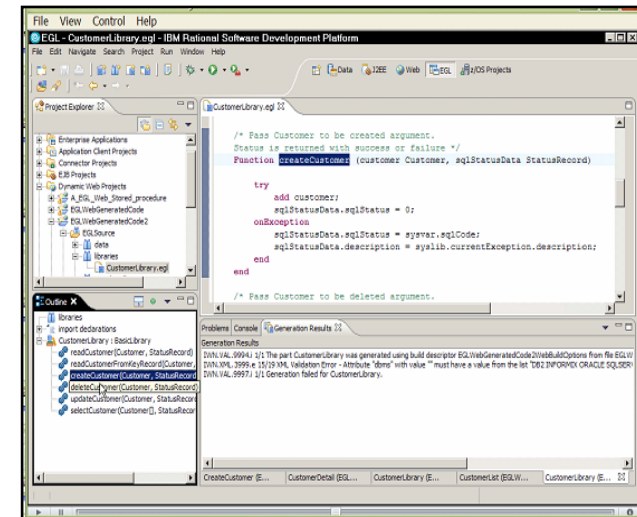
- Transform EGL logical specification into Java or COBOL (zOS)
- Create build script for zOS build server
- Create class files ready to export to JAR for deployment

## Deploy and Run

- zOS: CICS, Batch, IMS
- iSeries
- Windows
- Linux, AIX

## What types of Applications can be developed in EGL?

- Internet applications – standalone, remote calls to legacy business logic or both
- Callable Web Services – Business Rules wrapped
- Database applications
- Callable programs from traditional Java clients
- Standalone batch and/or green screen applications
- Web “User Interface, session management, and controller services
  - CICS (zOS), Linux, AIX, Windows, iSeries



# Simple Web front end to DB2 database

**Database and table list**

**Sample contents of table**

**Having selected the key and elements desired, view the actual SQL for create, read, update, etc.**

CUSTID	CUSTLN	CUSTFN	CUSTADDR	CUSTCITY
1	BAROSA	REGINALDO	111 ILHABELA	BOSTON
4	BAROSA	THIAGO L.	344 Bonair...	Sao Paulo
3	BAROSA	DANIEL	212 Cozum...	Sao Paulo
2	PAGE	MEGAN	223 Dive RD	Boston
1	...	...	...	...
1	...	...	...	...
10	Perera	Antonio	Rus de Pha...	lms 005 L...
24	Fujao	Jujao		

```

SELECT
  T1.CUSTID,
  T1.CUSTLN,
  T1.CUSTFN,
  T1.CUSTADDR,
  T1.CUSTCITY,
  T1.CUSTST,
  T1.CUSTCTRY
FROM
  ITSO4.CUSTOMER AS T1
WHERE
  T1.CUSTID = :CUSTID
    
```

# Generate the application

**Generate the Web application**  
Select the Web project that will receive the output. The list displays the components to be generated.

EGL Web project name: EGLWebGeneratedCode2  
Pagehandler package: pagehandlers  
Data package: data  
Library package: libraries  
Servlet version: 2.5

Name	Description
/EGLSource/data/StatusData EGL	Record for Status data
/EGLSource/data/CustomerRecord EGL	EGL SQL Record for Customer
/EGLSource/libraries/CustomerLibrary EGL	EGL Library for Customer
/WebContent/index.html	HTML entry page for the application
/.website-config	Site Configuration file
/EGLSource/data/DataItems EGL	Data Items
/WebContent/CustomerSelection.jsp	JSP for CustomerSelection
/EGLSource/pagehandlers/CustomerSelecti...	Page handler for CustomerSelection
/WebContent/CustomerList.jsp	JSP for CustomerList
/EGLSource/pagehandlers/CustomerList EGL	Page handler for CustomerList
/WebContent/CreateCustomer.jsp	JSP for CreateCustomer
/EGLSource/pagehandlers/CreateCustomer...	Page handler for CreateCustomer
/WebContent/CustomerDetail.jsp	JSP for CustomerDetail
/EGLSource/pagehandlers/CustomerDetail EGL	Page handler for CustomerDetail

```

/* Pass Customer to be created argument.
Status is returned with success or failure */
Function createCustomer: (customer Customer, sqlStatusData StatusRecord)

    try
        add customer;
        sqlStatusData.sqlStatus = 0;
    onException
        sqlStatusData.sqlStatus = sysvar.sqlCode;
        sqlStatusData.description = syslib.currentException.description;
    end
end

/* Pass Customer to be deleted argument.

```

Customer Detail

List

Custid:

Custn:

Custfn:

Custaddr:

Custcity:

Custst:

Custctry:

# Debugging the Generated application

The screenshot displays the IBM Rational Software Development Platform interface for debugging an EGL application. The main window is titled "Debug - ITS001A.egl - IBM Rational Software Development Platform".

**Debugging the EGL code** (highlighted in a yellow box): This text is positioned above the main workspace area.

**Monitor variables, set breakpoints** (highlighted in a yellow box): This text is positioned above the Variables and Breakpoints views.

**Variables View:** Shows the state of the `anWork` object with the following values:

- `ACTION = "xxx"`
- `CUSTID = 1`
- `CUSTLN = "BAROSA"`
- `CUSTFN = "REGINALDO"`
- `CUSTADDR = "111 Thabela Drive"`

**Code Editor:** Shows the following EGL code snippet:

```
call ITS04.SPITS04 (:anWork.ACTION, :anWork.CUSTID, :anWork.CUSTLN, :anWork.CUSTID,
:anWork.CUSTADDR, :anWork.CUSTCITY, :anWork.CUSTST, :anWork.CUSTCTRY,
:anWork.RESPONSE) );
try
get next from resultSetId into anWork.CUSTID, anWork.CUSTLN,
anWork.CUSTFN, anWork.CUSTADDR, anWork.CUSTCITY, anWork.CUSTST,
anWork.CUSTCTRY;
get next from resultSetId into anWork.CUSTID, anWork.CUSTLN,
anWork.CUSTFN, anWork.CUSTADDR, anWork.CUSTCITY, anWork.CUSTST,
anWork.CUSTCTRY;
onException
```

**Console:** Shows the following output from the WebSphere v5.1 Test Environment:

```
WebSphere v5.1 Test Environment @ localhost [WebSphere Application Server] WebSphere v5.1 Test Environment @ localhost (WebSphere v5.1)
[2/11/06 17:59:34:498 EST] 2a9f2a9f WSRdbDataSour I DSRA8203I: Database product name : DB2
[2/11/06 17:59:34:518 EST] 2a9f2a9f WSRdbDataSour I DSRA8204I: Database product version : 07.01.0002
[2/11/06 17:59:34:518 EST] 2a9f2a9f WSRdbDataSour I DSRA8205I: JDBC driver name : IBM DB2 JDBC 2.0 Type 2
[2/11/06 17:59:34:518 EST] 2a9f2a9f WSRdbDataSour I DSRA8206I: JDBC driver version : 08.02.0001
```

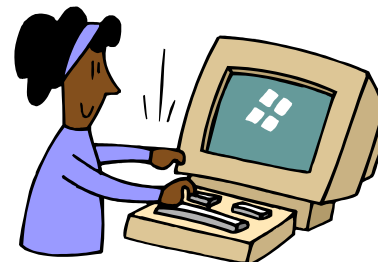
# EGL Summary

- Easy to learn, lowers skills barrier to e-business
- Maximize existing “Business Oriented” developers
- Higher productivity to deliver systems faster
- Maximum flexibility
  - Multiple platforms and topologies
  - Step to Java if required
- Bring legacy to e-business
  - Easily connect to existing resources
  - Quickly develop new functions on traditional platforms
- **For developers who need to solve Business Problems, not Technology Problems**



# Scenario based product introduction

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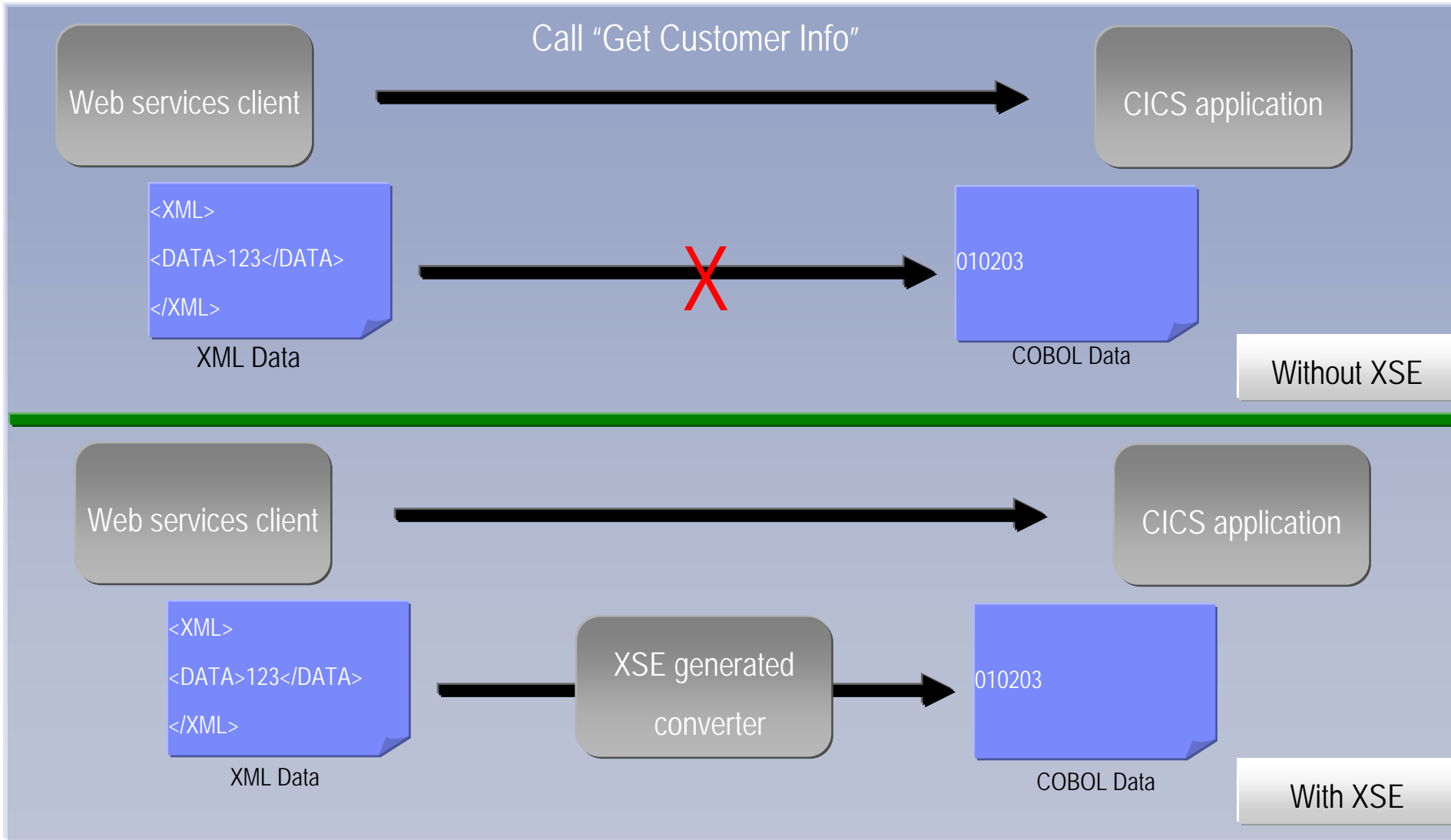


**This time we want to extend Jane's capabilities. We want her to create a web service out of an existing application. Let's see what tools she has to help her.**

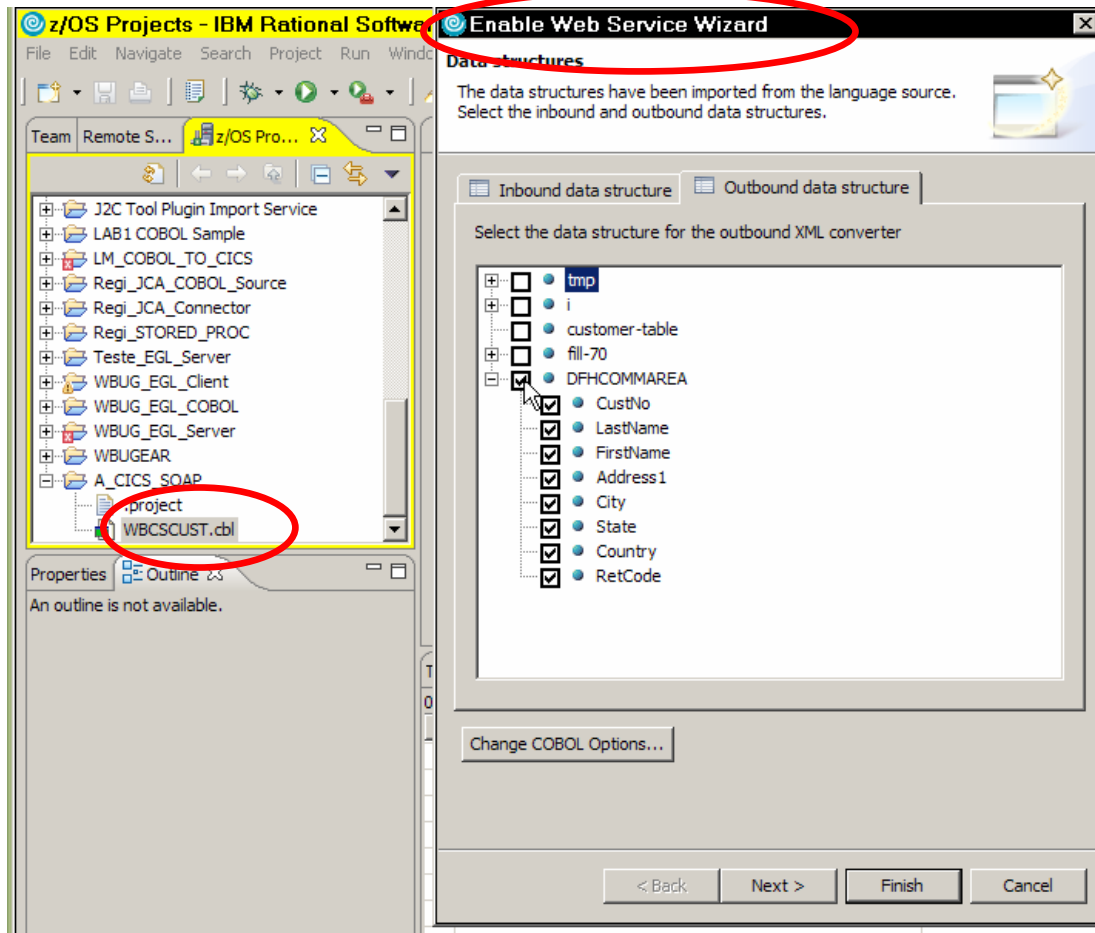
## WDz Composite Application and SOA Development tools

- In addition to the EGL support for Web user Interface, session management, and controller services, WDz also has other Composite application development tools
- XML Services for the Enterprise (XSE) - Enable Web Services and XML access to existing CICS and IMS transactions
  - Quickly maps existing COBOL interfaces to XML and Web Services.
  - No code changes for the COBOL application
  - Supports IMS, CICS BMS (terminal-based) & CICS commarea applications
- Service Flow Modeler (SFM) - Model and deploy complex CICS processes to support SOA
  - Aggregate CICS transactions into high-level business processes through visual (drag n drop) modeling
  - Highly optimized CICS COBOL runtime to increase overall throughput
  - Supports COBOL commarea-based applications and terminal-based applications
- WebSphere Host Access Transformation Services - Extends terminal applications as Web Services

# XSE



# Using XSE

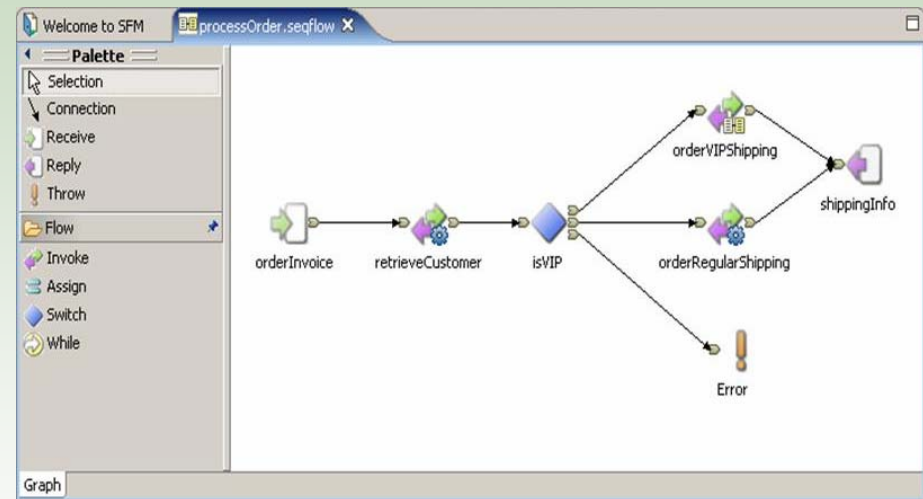


- In WDz, Right click on COBOL or copy book file
- Select 'Enable Web Service'
- Complete wizard
- Wizard generates converter and required programs

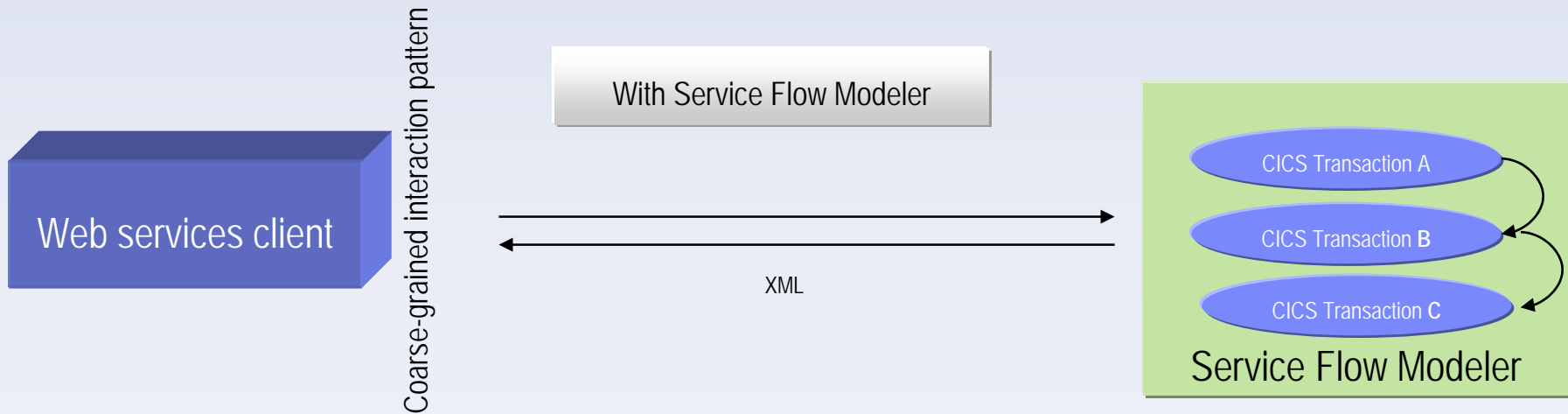
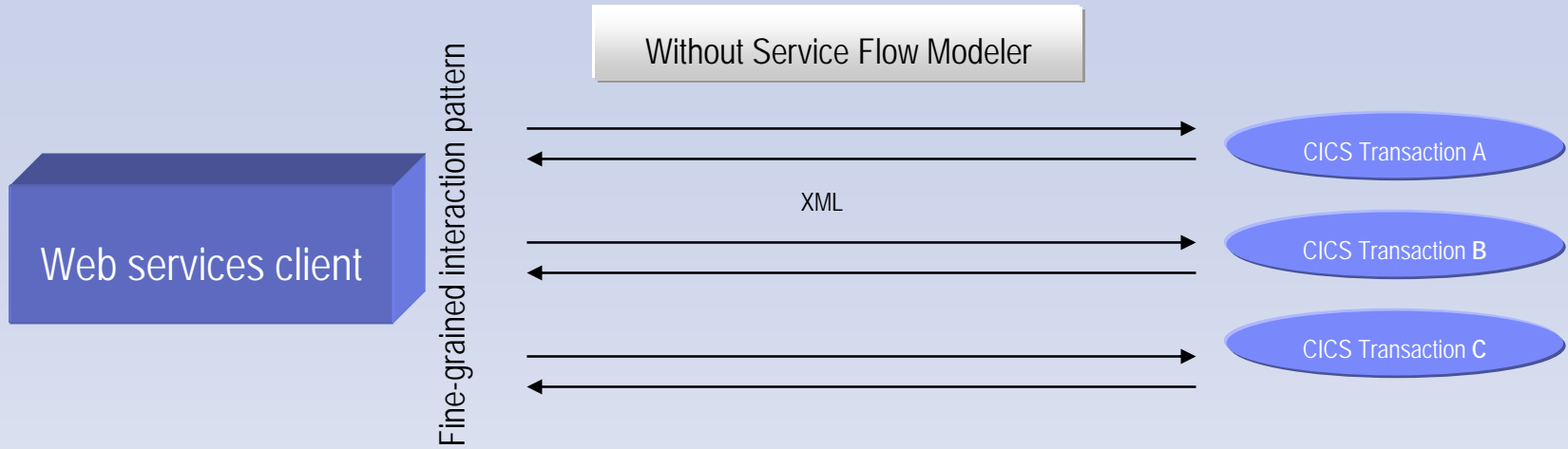
# What is Service Flow Modeler?

## *Service Flow Modeler in WebSphere Developer for zSeries*

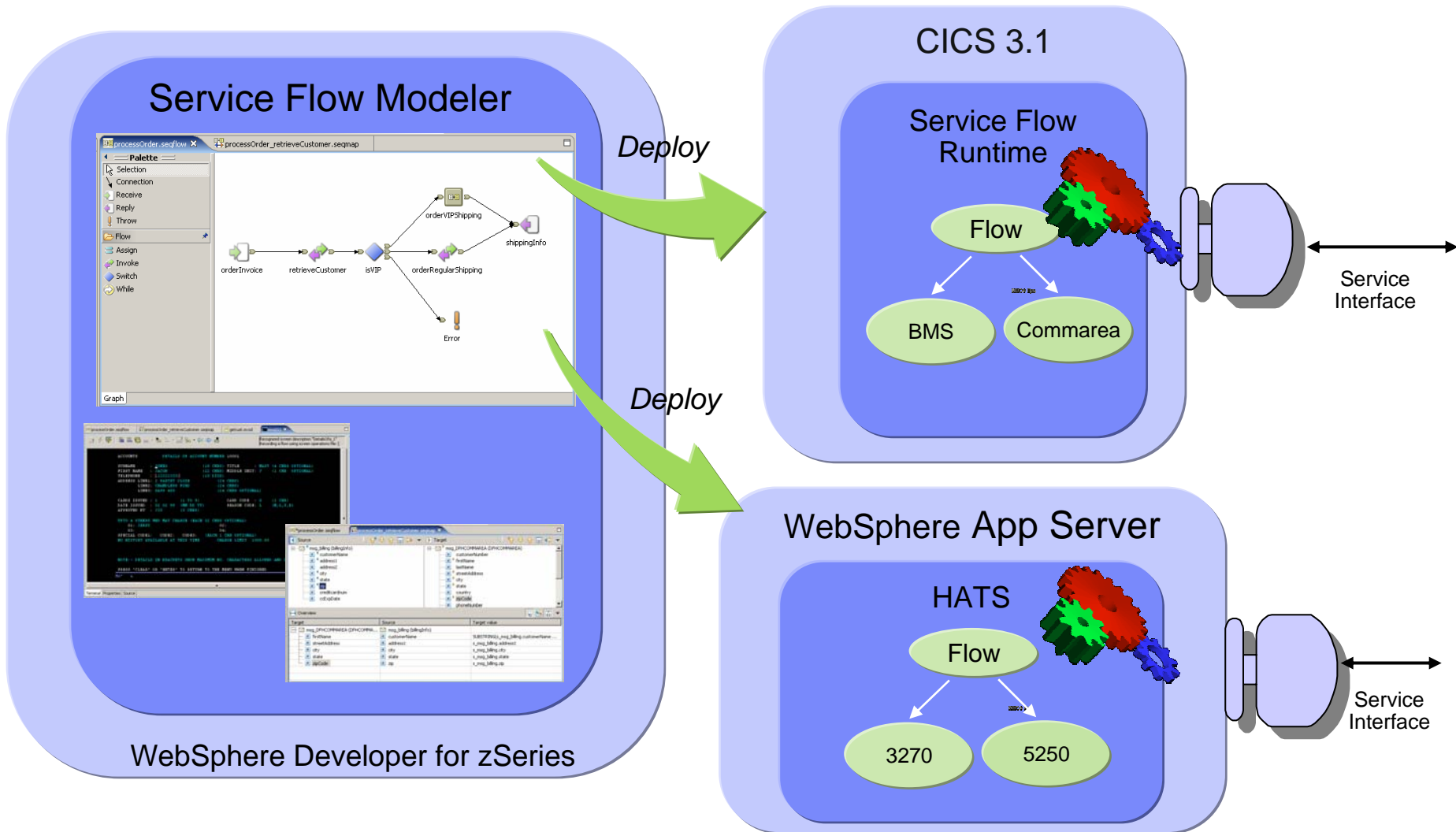
- Builds Web services from existing CICS applications
  - Aggregates multiple CICS transactions into high-level business processes through visual modeling
  - Supports CICS BMS (terminal-based) applications & CICS commarea applications
  - Highly optimized CICS runtime supporting Web services and XML interfaces



# Service Flow Modeler

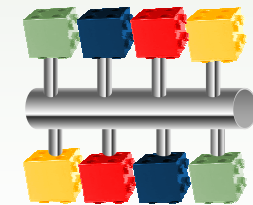
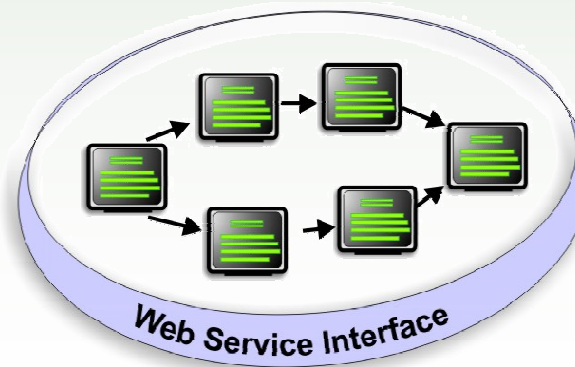
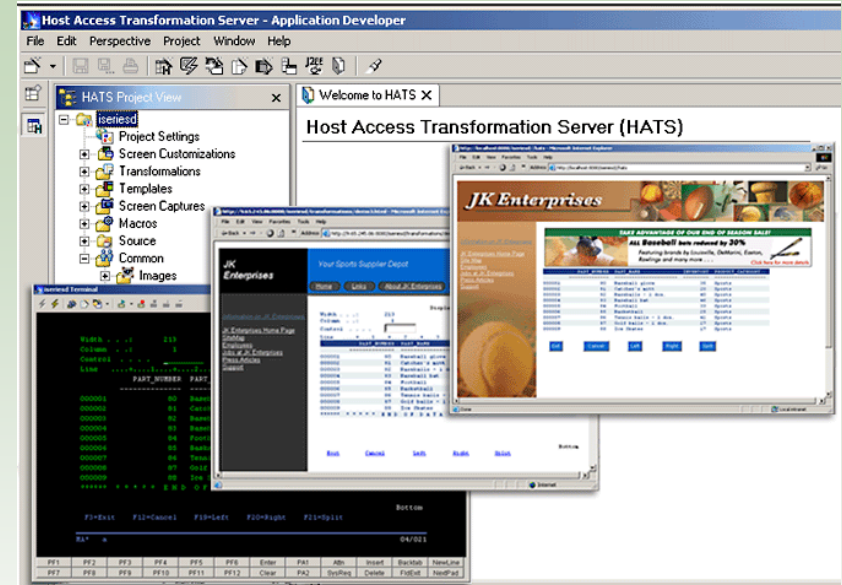


# WDz's Service Flow Modeler Deployment Options



# What is Host Access Transformation Services?

- Automatically transforms 3270 & 5250 green screen applications into HTML interfaces
- Extends terminal applications as Web Services
- Low skills requirement – no zSeries skills required
- Rules-based, highly customizable
- Iterative, eclipse-based development environment



**WebSphere** software



# How It Works - A simple example



## Input Data

```
Menu
1. Query by Name
2. Query by Address
3. Query by Phone Number

Enter Selection 1__
```

```
Customer Name John Smith
Address

Enter to continue
```

```
Query Results

1. Smith, John H - 100 Saul Rd
2. Smith, John M - 102 Cedar Ln
3. Smith, John S - 200 Kissing Ct

Press 'F8' for more...
```

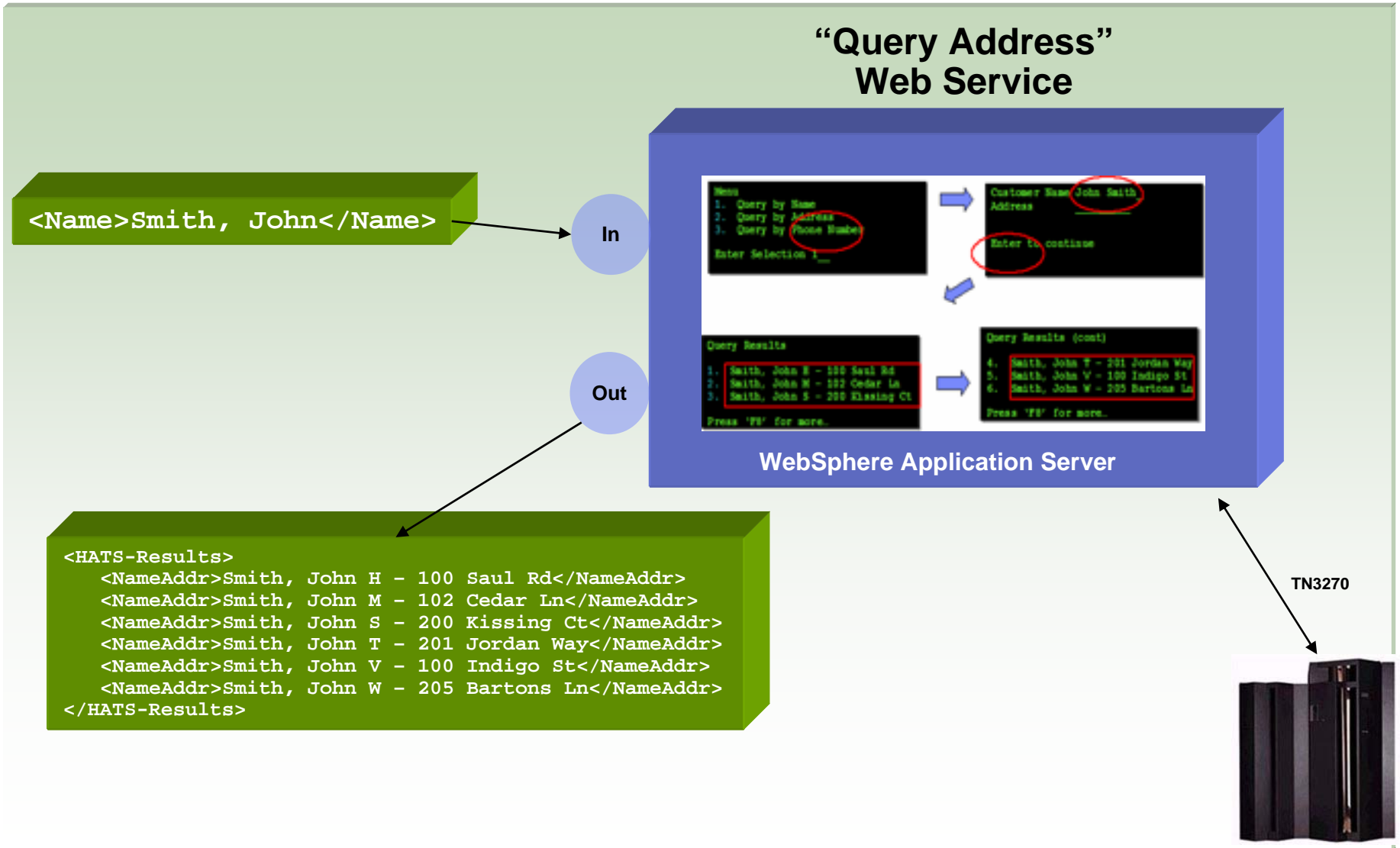
```
Query Results (cont)

4. Smith, John T - 201 Jordan Way
5. Smith, John V - 100 Indigo St
6. Smith, John W - 205 Bartons Ln

Press 'F8' for more...
```

## Output Data

# How It Works - A Simple Example (cont.)



# z/OS Composite Development tools Summary

- **Enterprise Generation Language (EGL) / JSF**
  - JSF/EGL integration for building web pages
  - Easy creation and consumption of Web Services
  - JCA Communications support for IMS and CICS through simple CALL Statement
  - Generation time deployment decision as Java on WAS or COBOL on CICS/IMS
- **XML Services for the Enterprise (XSE) - Enable Web Services and XML access to existing CICS and IMS transactions**
  - Quickly maps existing COBOL interfaces to XML and Web Services.
  - No code changes for the COBOL application
  - Supports IMS, CICS BMS (terminal-based) & CICS commarea applications
- **Service Flow Modeler (SFM) - Model and deploy complex CICS processes to support SOA**
  - Aggregate CICS transactions into high-level business processes through visual (drag n drop) modeling
  - Highly optimized CICS COBOL runtime to increase overall throughput
  - Supports COBOL commarea-based applications and terminal-based applications
- **WebSphere Host Access Transformation Services - Extends terminal applications as Web Services**

# For Application Understanding and Analysis

*"OK. I have hundreds of programs using many different technologies. How do I understand and identify the assets that would make good services for my SOA?"*



Architects, project leaders, managers, DBAs, developers, Q/A analyst

Enterprise-wide app discovery and insight; find dependencies across applications and lines of business

WebSphere Studio Asset Analyzer  
WSAA



Architects, project leaders

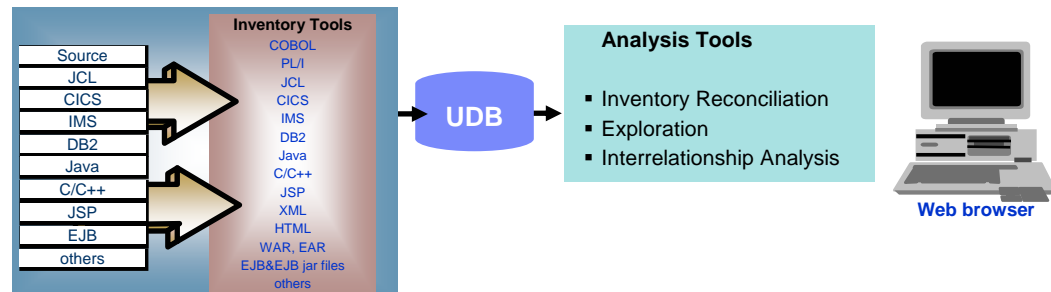
Project-level workbench for deep application analysis and transformation

Asset Transformation Workbench  
ATW

# WebSphere Studio Asset Analyzer

## Enterprise wide application understanding and impact analysis

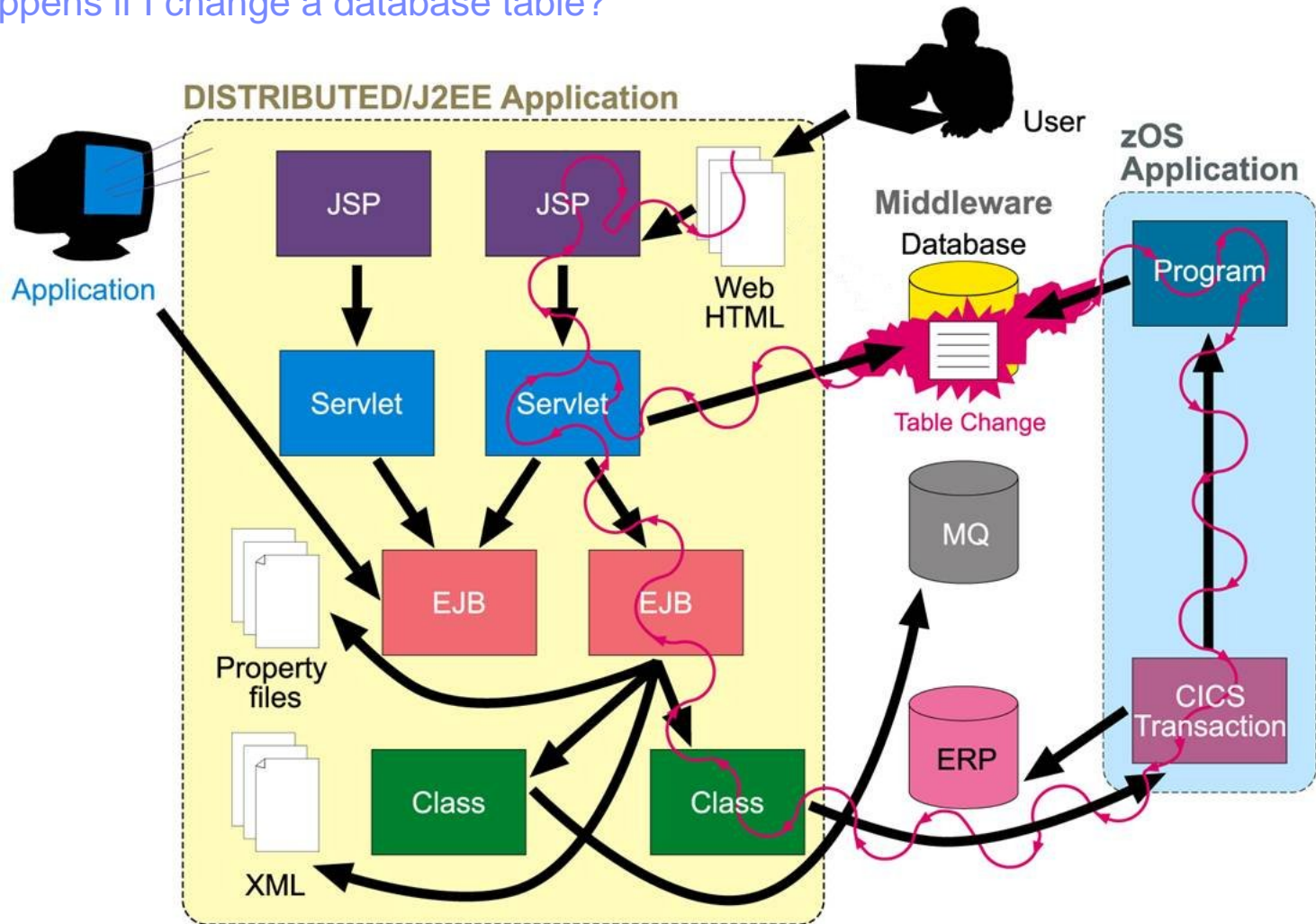
- **Provides a scalable, enterprise-wide repository of mainframe and distributed application insight**
  - Increases developer and analyst productivity by automating the discovery phase of a development cycle
  - Reduces risk in application maintenance by enabling a more thorough analysis of proposed changes – within an application and across all applications in an enterprise
  - Helps developers better understand application dependencies on a variety of levels
  - Helps reduce the complexity of software projects by delivering up-to-date knowledge of application components from the code itself
  - Improves process and team efficiency by making the same application insight available to all team members
    - Web browser interface to enterprise inventory provides access for variety of roles: developers, analysts, data administrators, quality assurance folks, etc.
  - Helps shorten the learning curve for new developers
  - Helps find existing application assets which are, or could be, components to be reused in Web or Web-services applications
- **Enables integration with other tools through its open architecture, including the IBM Asset Transformation Workbench**



# Composite Application Support Preview

## End-to-End Impact Analysis

What happens if I change a database table?



# IBM Asset Transformation Workbench

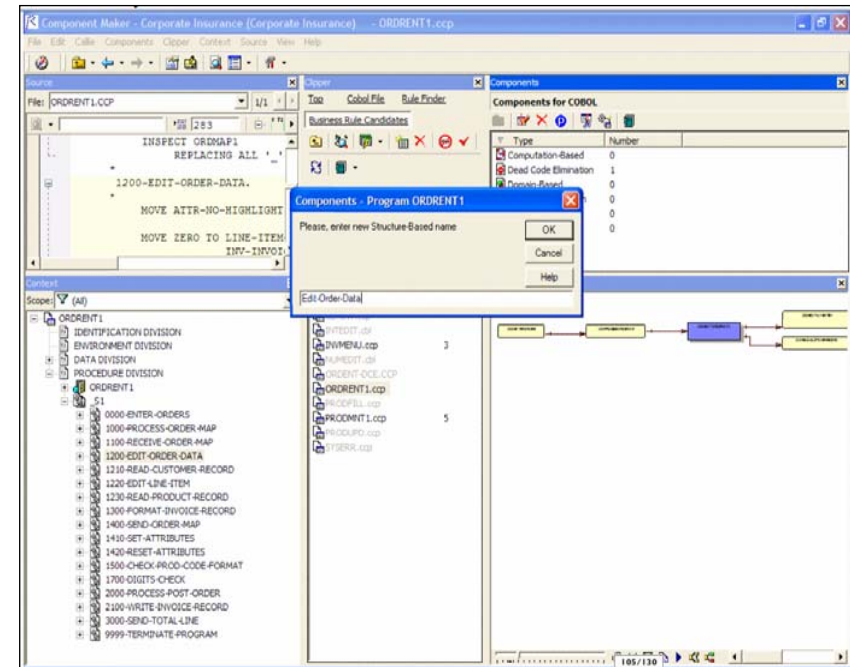
Application analysis and business rule identification and componentization

- **Workstation based tool for architects and project leaders**

- Complements the browser based, enterprise wide discovery and impact analysis provided in WebSphere Studio Asset Analyzer

- **Helps increase productivity, accelerate time-to-market, reduce risks, and lower costs**

- Generates up-to-date documentation of your complex enterprise application projects
- Discovers, documents, categorizes, and manages business rules that remain persistently associated with the relevant code
- Assists in restructuring and componentizing large applications into more manageable segments and removing dead code
- Sophisticated metrics help you identify complex programs and more accurately make project resource estimates



# IBM Debug Tool Utilities and Advanced Function

Source level debugging and testing of z/OS programs

- **Improve teaming between traditional and e-business developers**
  - Integrated debugging environment
    - Common workbench when used with WebSphere Developer for z/Series
- **Improve Q/A process**
  - Logged commands can be used to produce test scripts for regression testing
  - Deliver comprehensive application coverage information enabling risk evaluation
- **Increase user productivity**
  - Ability to eliminate “post-compiler” steps by using common compiler output options
- **Automate process to convert old OS/VS COBOL applications**
  - Provides migration opportunity during application maintenance
- **Consistent Across Languages**
  - COBOL, C/C++, PL/I, assembler
- **Environments Supported**
  - CICS, TSO, JES/Batch, IMS Including IMS/TM, DB2 Including Stored Procedures, Unix System Services (USS), MQSeries



# IBM z/Series Application Development Tools

## Fault Analyzer for z/OS V6 (FA)

- **Helps you rapidly pinpoint cause of failed application (abends)**

## File Manager for z/OS V6 (FM)

- **Data management tool supporting key file structures like VSAM, DB2, and IMS**

## Debug Tool Utilities & Advanced Functions for z/OS V6 (DTUAF)

- **Source code debugging to improve development productivity**

## Application Performance Analyzer for z/OS V1.1 (APA)

- **Helps IT (application programmers) isolate the cause of online and batch application performance bottlenecks with ability to drill down to source**

## Workload Simulator for OS/390 and z/OS V1 (WS)

- **Application stress and regression testing**

## File Export for z/OS V1 (FE)

- **Extract/manipulate related sets of production data for testing applications**

## SCLM Advanced Edition V1.1 (SCLMAE)

- **Software configuration management for mainframe and distributed assets**

## More information

- **WSAA/ATW teleconference replay**
  - Application Discovery and Reuse for IBM Mainframe Applications for SOA
  - <http://www.ibm.com/software/os/zseries/telecon/28feb/>
- **WDz demos (including Service Flow Modeler)**
  - [http://websphere.dfw.ibm.com/atdemo/atdemo\\_wsed.html](http://websphere.dfw.ibm.com/atdemo/atdemo_wsed.html)
- **HATS demos**
  - [http://websphere.dfw.ibm.com/atdemo/atdemo\\_hats.html](http://websphere.dfw.ibm.com/atdemo/atdemo_hats.html)
- **ATW demos**
  - <http://www-306.ibm.com/software/awdtools/atw/library/>
- **For more information about these or any other IBM software products**
  - <http://www.ibm.com/software>

# Summary

- **IBM provides a complete portfolio of tooling to improve the productivity of traditional mainframe developers, for both existing and new development.**
- **Websphere Developer for zSeries provides:**
  - Eclipse-based integrated development environment for developing enterprise-level, multi-tier applications (composite applications)
  - **Builds core stack zOS applications**
    - COBOL, PLI, HLASM
    - TSO/Batch, CICS, IMS, DB2
    - DB2 Stored Procedures – COBOL, PLI, Java, SQL
  - **Creates COBOL/CICS/JSF/Java/J2EE Multi-tier apps**
    - Built on Rational Application Developer
      - Includes all of the J2EE web development tools
    - Generate JSF/EGL/J2EE web front ends
    - COBOL backends running on zSeries
  - **Enables CICS and IMS applications for Web services and SOA**
    - Provides tooling to make it easy to integrate existing applications into an SOA
  - **Supports the full application lifecycle**
    - Model, Architect, Develop, Test, Deploy, and Manage



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