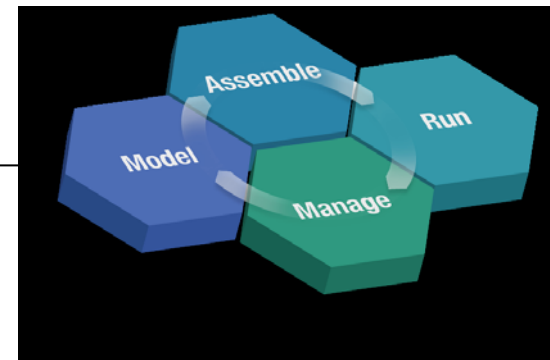# WebSphere Developer for zSeries or Integrating zSeries in an SOA A Product Overview

Enterprise Platform Software Product Management
IBM Software Group
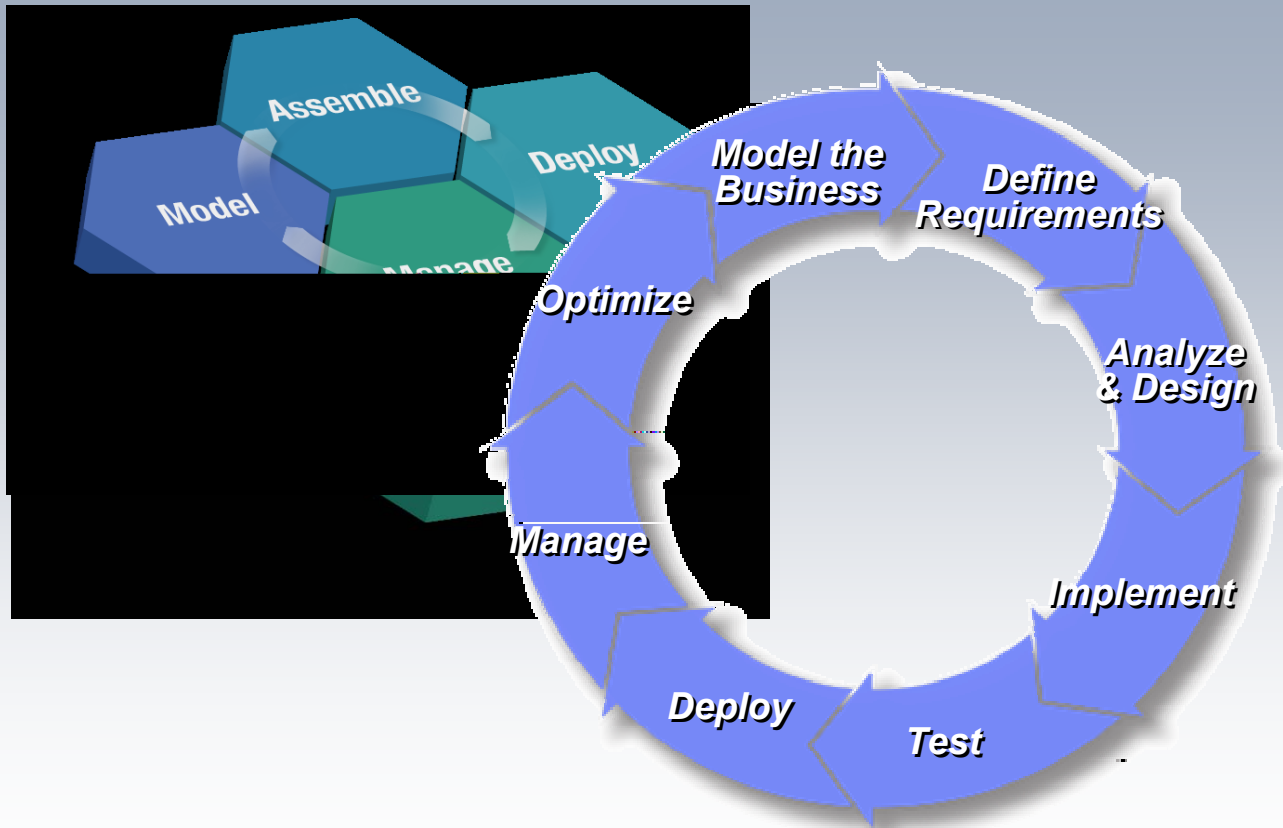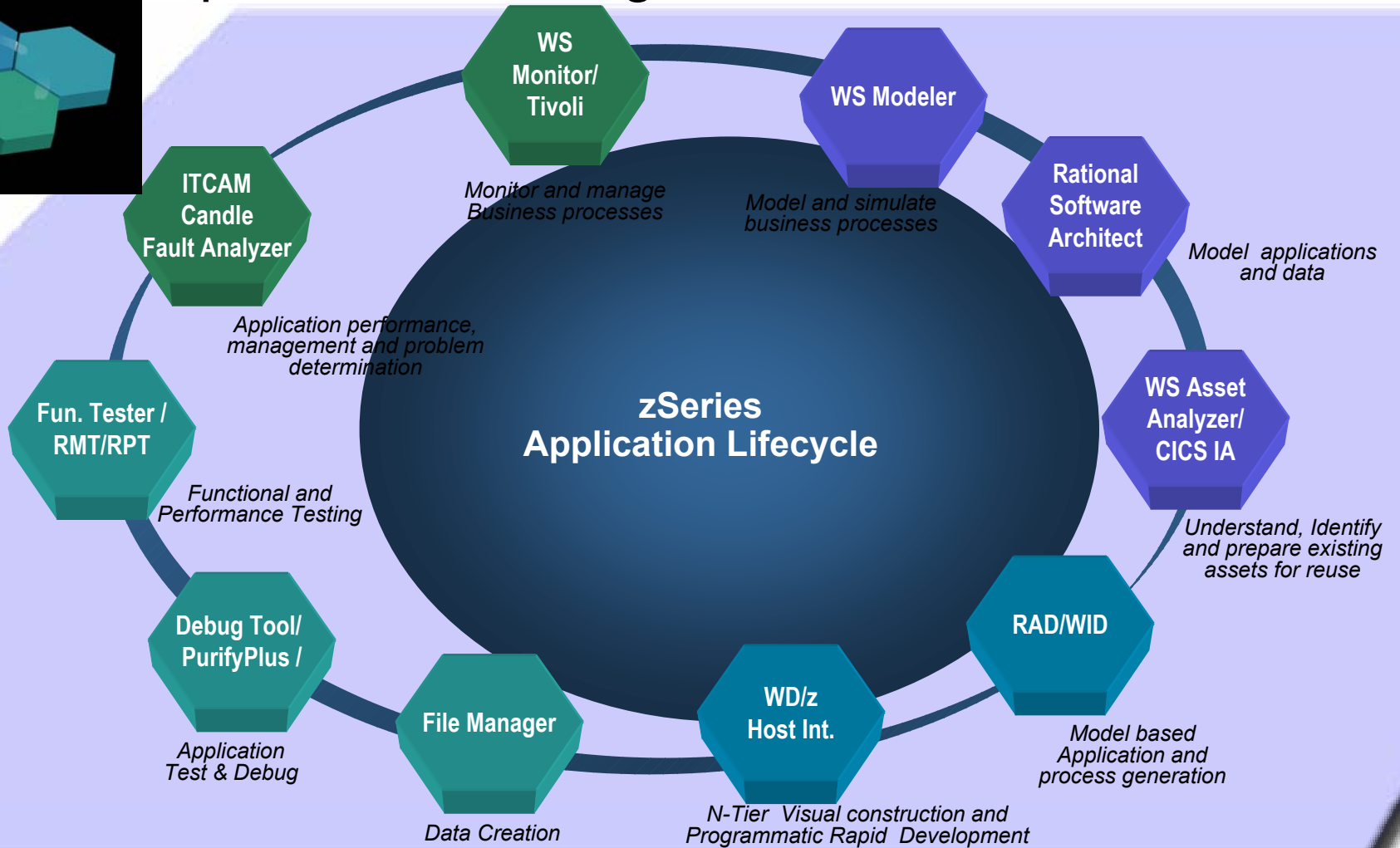Jan 2006

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Agenda

- Where do we fit

- **Introduction SOA and WDz**

- **Introduction to tool concepts**

- **Detail information and demonstration of ZOS development**

Enterprise Platform – Life Cycle

IBM zSeries process and integrated workflow

zSeries Application Lifecycle

WS Monitor/ Tivoli
Monitor and manage Business processes

WS Modeler
Model and simulate business processes

Rational Software Architect
Model applications and data

ITCAM Candle Fault Analyzer
Application performance, management and problem determination

WS Asset Analyzer/ CICS IA
Understand, Identify and prepare existing assets for reuse

Fun. Tester / RMT/RPT
Functional and Performance Testing

Debug Tool/ PurifyPlus /
Application Test & Debug

File Manager
Data Creation

WD/z Host Int.
N-Tier Visual construction and Programmatic Rapid Development

RAD/WID
Model based Application and process generation

Common Process and Guidance – Reqpro, ClearQuest, Rational Method Composer

Software Configuration Management – *ClearCase, ClearQuest, SCLM*

SOA Reference Architecture

Supporting your SOA Lifecycle

Enabling a robust, flexible SOA runtime environment
While maximizing the value of existing assets *Fully SOA capable!*

WebSphere Application Server V6 | **March 2005**

- Extend existing Java assets with support for Web Services standards and standards-based messaging
- Help ensure 24x7 availability of business-critical applications with clustering and high availability
- Build and deploy Web Services quickly and easily with rapid development and deployment features

CICS Transaction Server V3.1 | **March 2005**

- Exploit provider/requestor Web service support for CICS assets, based on full Web service standards
- Extend the value of CICS transactions in a mixed language environment
- Build Web services from CICS transactions with no change to existing applications.

IMS Transaction and Database V9 | **October 2004**

- Exploit Web service support for IMS assets, based on full Web service standards
- Extend the value of IMS transactions in a mixed language environment
- Build Web services from IMS transactions with no change to existing applications

Life Ins. Dept.

Home Ins. Dept.

Auto Ins. Dept.

Claims Adjustment

Preferred Partners
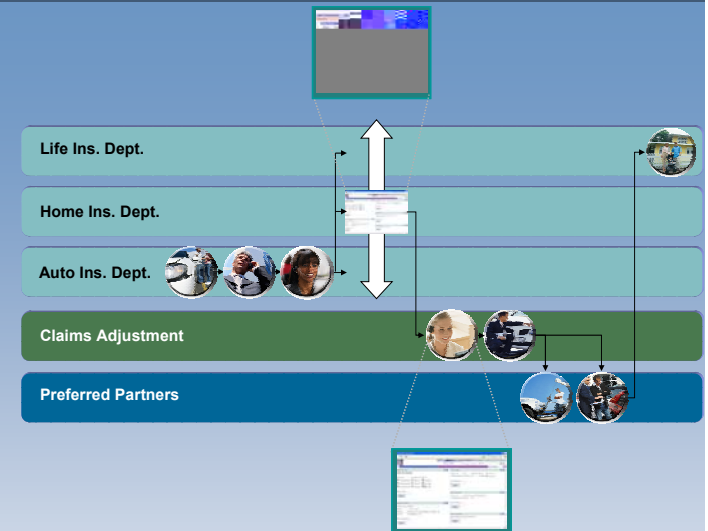
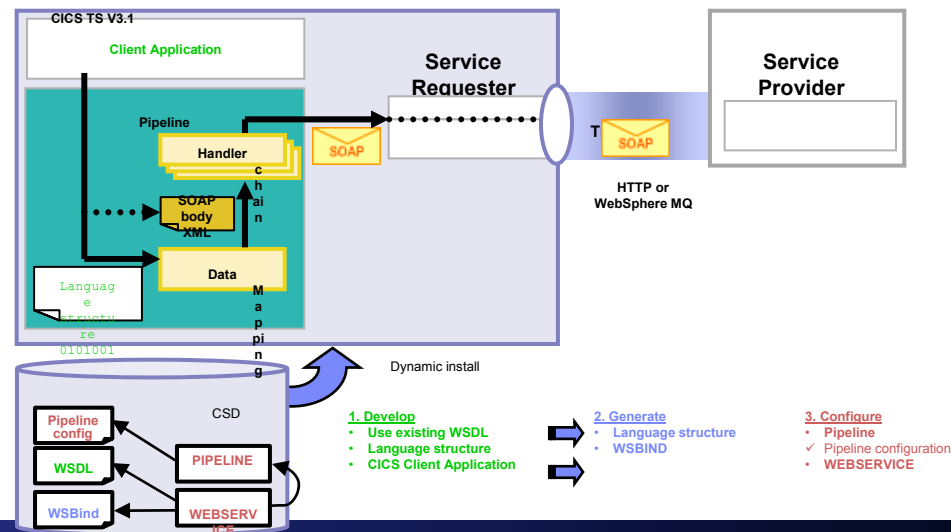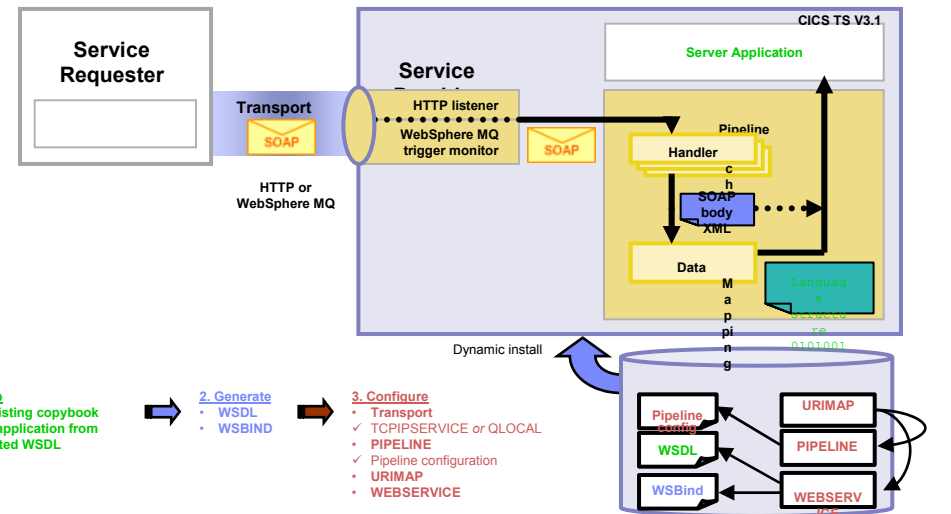**#1 in market share for Application Server software**

IBM WebSphere Application Server comes out on top

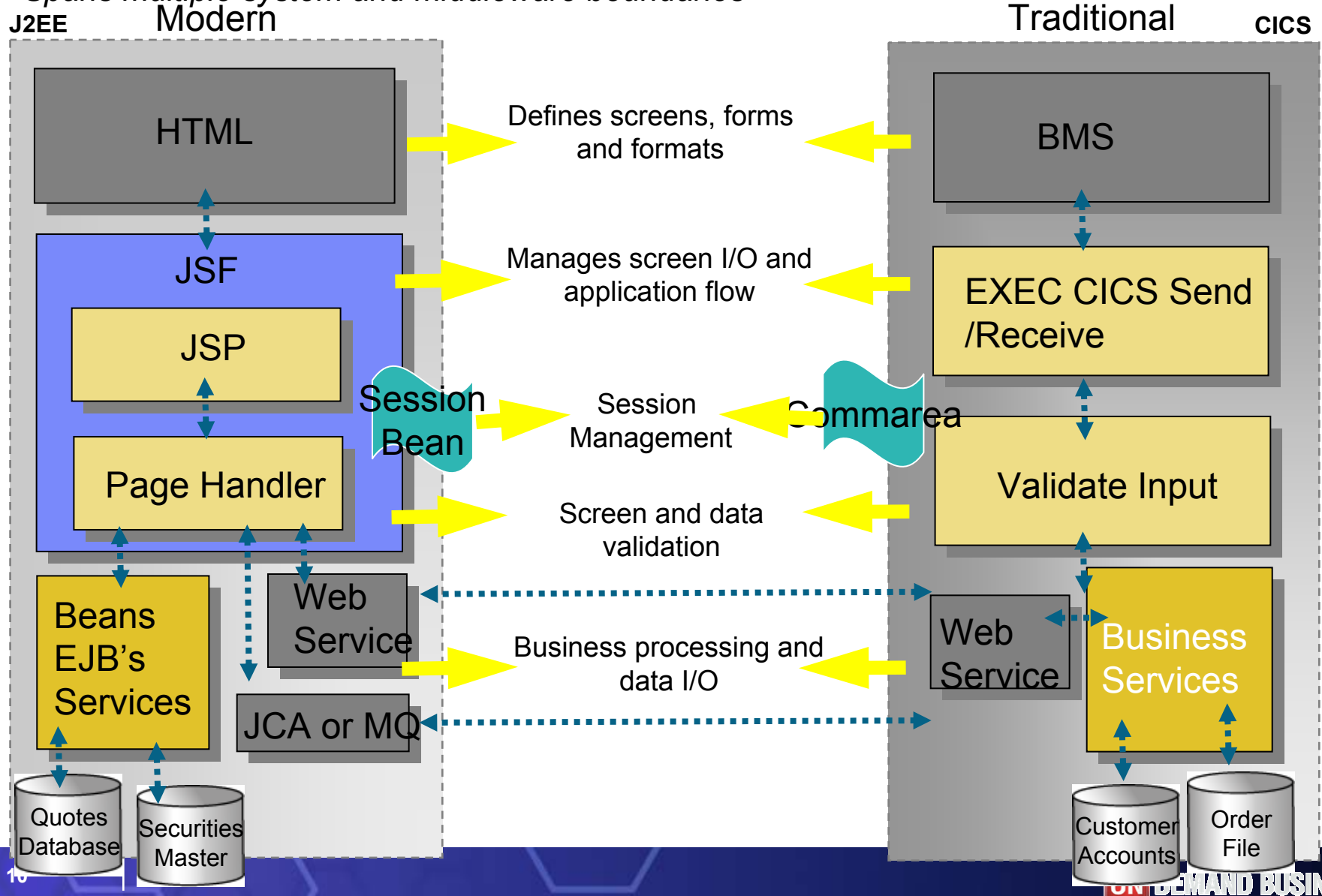**35+ years of maturity and innovation in transaction and data systems**

CICS Web Services

- Web services capabilities extend CICS applications directly to a Service Oriented Architecture
  - A CICS application can now be a Web service provider and requester

- Evolution of SOAP for CICS feature
  - Simplification of pipeline and system management
  - Fully integrated into CICS
    - RDO, problem determination, monitoring & statistics
    - New tooling support for easier application development
  - Guidance provided to assist migration from the SOAP for CICS Feature

- Rich set of Web services standards supported
  1. SOAP 1.1 and 1.2 to send and receive Web services messages
  2. WS-I Basic Profile 1.0a for interoperability with between providers and requesters using SOAP
  3. WS-Coordination extensible coordination framework, and specific coordination of transactions
  4. WS-AtomicTransaction for transaction coordination
  5. WS-Security for authentication and encryption of all or part of a message
     SOAP Message Security, Username Token Profile 1.0, X.509 Certificate Token

- Both HTTP and WebSphere MQ network layers supported
  - For flexible deployment options dependant on application and IT requirements
  - CICS applications acting as providers or requesters are agnostic to the transport mechanism used

It's not that different
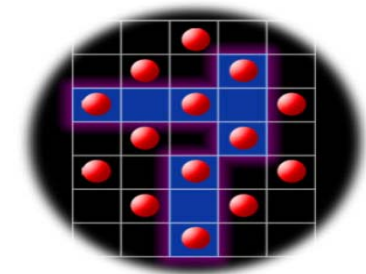*Spans multiple system and middleware boundaries*

| J2EE | Modern | | Traditional | CICS |

Modern (J2EE)		**Traditional (CICS)**
HTML	Defines screens, forms and formats	BMS
JSF	Manages screen I/O and application flow	EXEC CICS Send /Receive
JSP		
Session Bean → Session Management ← Commarea		Validate Input
Page Handler	Screen and data validation	
Beans EJB's Services	Business processing and data I/O	Web Service ← Business Services
Web Service		
JCA or MQ		

Quotes Database
Securities Master

Customer Accounts
Order File

10

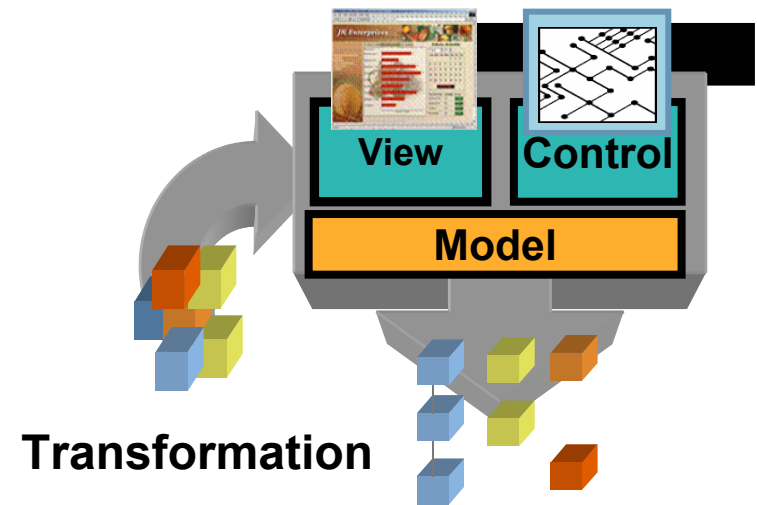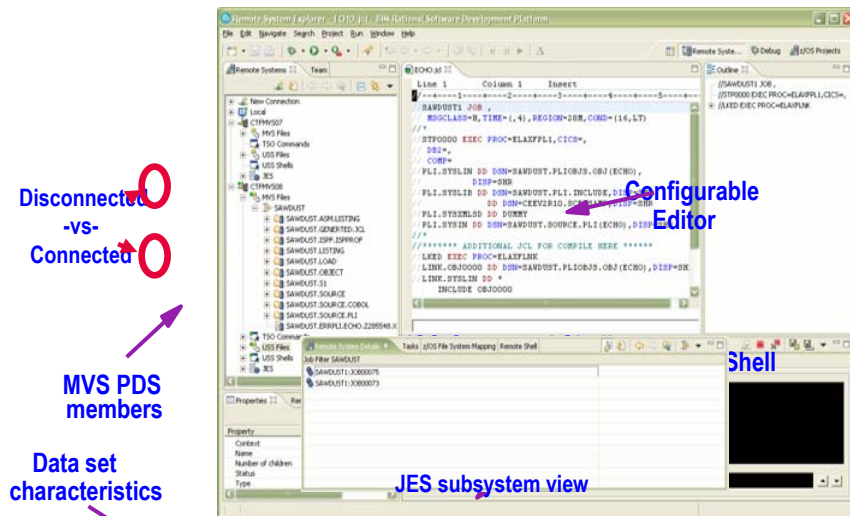# zOS Application Development tools

- 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
  - BMS Map development

- Interactive access to zOS
  - Job generation, submission, and monitoring
  - TSO/USS command execution

Traditional applications and COBOL/PL/I Services

Disconnected
-vs-
Connected

MVS PDS members

Data set characteristics

Configurable Editor

Shell

JES subsystem view

View   Control

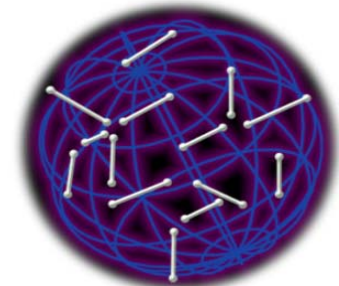Model

Transformation

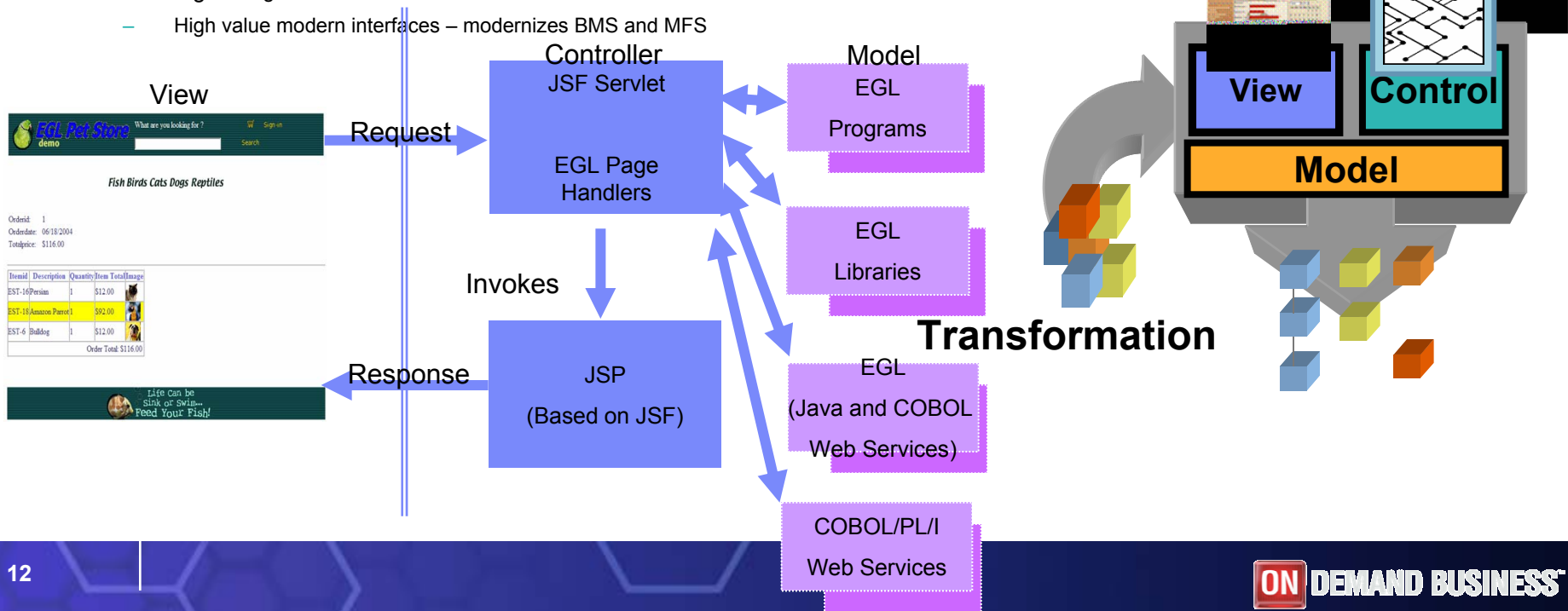ON DEMAND BUSINESS™

Web Development tools

- Interactive, Web development
  - Static and Dynamic Web development
  - XML

- Java Development
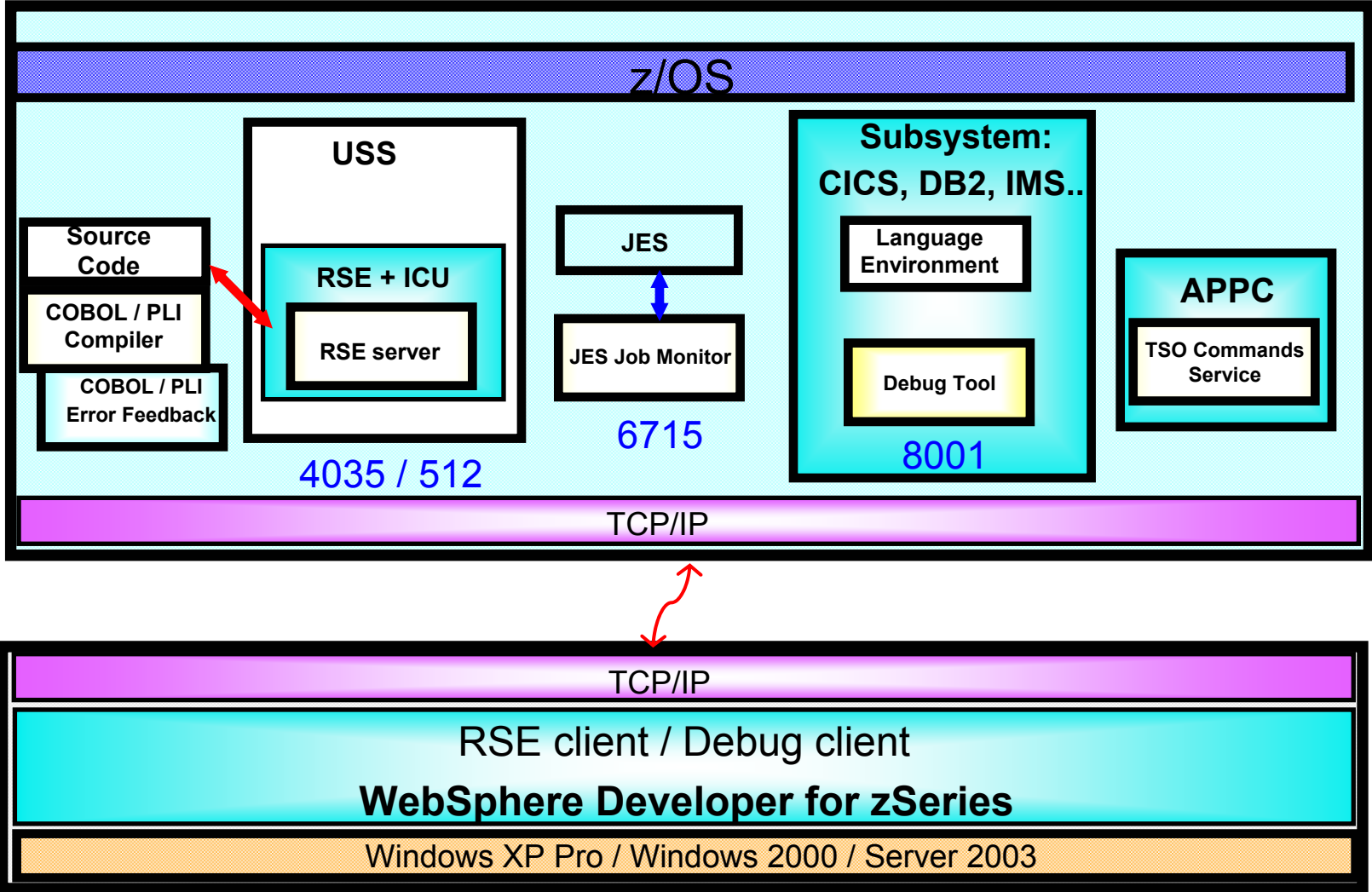 - Java and J2EE development
  - Java Server Faces
  - Struts

- EGL 4GL Java/Web development
  - Generate to language of Choice
  - Tight integration to JSF
  - High value modern interfaces – modernizes BMS and MFS

Web applications and services

View

EGL Pet Store demo	What are you looking for ?	Sign-on

Search

Fish Birds Cats Dogs Reptiles

Orderid: 1
Orderdate: 06/18/2004
Totalprice: $116.00

Itemid	Description	Quantity	Item Total	Image
EST-16	Persian	1	$12.00	
EST-18	Amazon Parrot	1	$92.00	
EST-6	Bulldog	1	$12.00	

Order Total: $116.00

Life Can be Sink or Swim... Feed Your Fish!

Controller

JSF Servlet

EGL Page Handlers

Request

Invokes

Response

JSP
(Based on JSF)

Model

EGL
Programs

EGL
Libraries

EGL
(Java and COBOL
Web Services)

COBOL/PL/I
Web Services

Transformation

View   **Control**

Model

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Host / Client Interaction

z/OS

USS
RSE + ICU
RSE server

4035 / 512

Source Code
COBOL / PLI Compiler
COBOL / PLI Error Feedback

JES
JES Job Monitor

6715

Subsystem: CICS, DB2, IMS..
Language Environment
Debug Tool

8001

APPC
TSO Commands Service

TCP/IP

TCP/IP
RSE client / Debug client
WebSphere Developer for zSeries
Windows XP Pro / Windows 2000 / Server 2003

Integrated Editor

- Language Sensitive editing (COBOL, PLI, JCL, etc)

- Code Assist for COBOL, PL/I, HLASM, JCL source
  - language construct completion
  - variable completion

- Open Copybook/Include/Macro
  - Name is resolved via standard search order.

- Both Local and Remote Syntax Check or Compiles / integration with task list
  - Similar to Java, click on task list entry, opens editor on source file

- User extensible via Java

- Used by the debug Perspective to set breakpoints, etc

- Outline view of source for ease of navigation

COBOL and PL/I Content Assist

Benefit: Developers complete code more accurately and efficiently.

JCL Generation and Submission

Benefit: Developers focused on business logic and not on writing JCL

Monitoring Job Output / Issuing Commands

Benefit: Developers do not have to continually switch between systems

z/OS Dataset Management
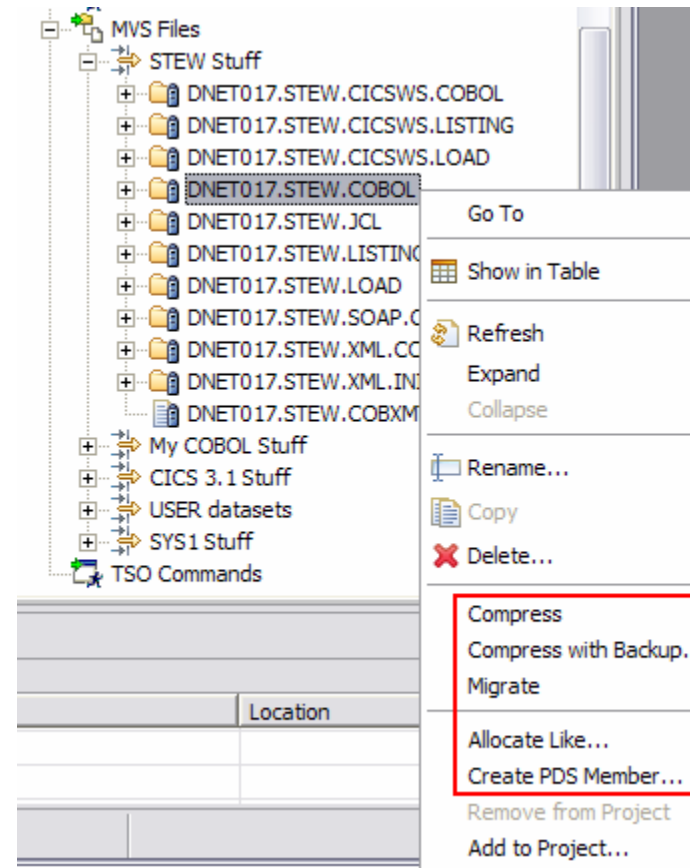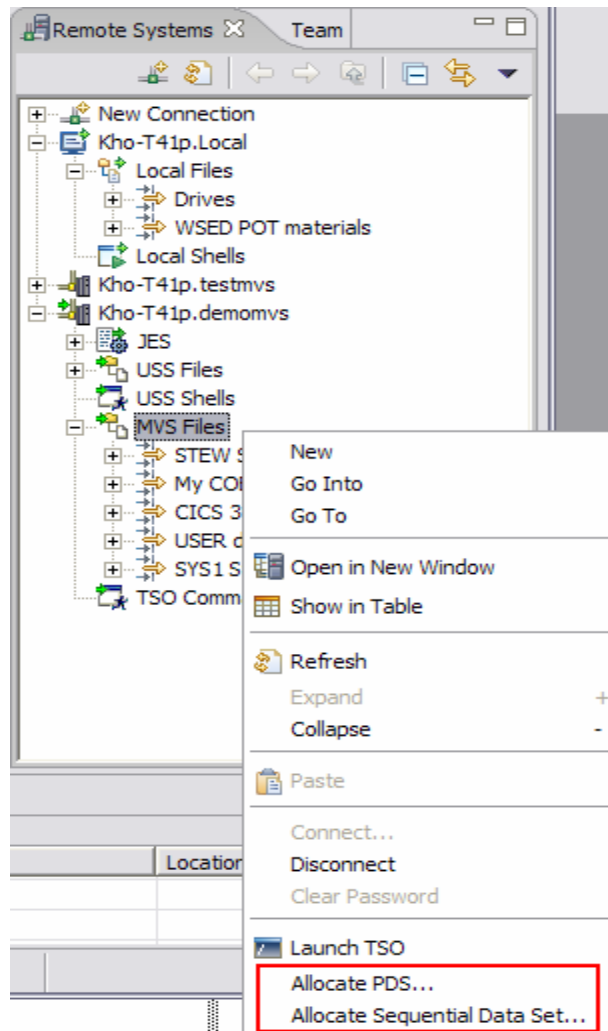
Using Enterprise COBOL to service-enable z/OS

CICS/IMS/Batch/DB2 COBOL

- **What's new …**
  - XML Language based generation from COBOL data structure
    - XMLGenerate Verb
  - WebSphere EJB support
  - DB2 V8 preprocessor
  - CICS preprocessor

- High speed XML Sax based parsing
  - XMLParse
  - XMLGenerate
  - Related verbs

- Object Oriented Support for Java COBOL Interoperability

- Unicode support

- Similar XML parsing support available in Enterprise PL/I

XML/
SOAP

WD/z
XML
Support

XMLParse Document

```
XMLDoc-Handler
 Evaluate xml-action
  when 'START-OF-DOC'
   ...
  when 'END-OF-DOC'
   ...
  when 'START-OF-ELEMENT
   ...
  when 'ATTRIBUTE-NAME'
   ...
  when 'ATTRIBUTE-CHAR'
   ...
  when 'END-ELEMENT
  when 'START-OF-CDATA-Section'
  when 'CONTENT-CHARACTER
  when 'PROCESSING-INSTRUCTION-TARGET'
  when 'PROCESSING-INSTRUCTION-DATA'
```

XMLGenerate Document

```
XML GENERATE XML-OUTPUT FROM SOURCE-REC
COUNT IN XML-CHAR-COUNT
ON EXCEPTION
DISPLAY 'XML generation error 'XML-CODE
STOP RUN
NOT ON EXCEPTION
DISPLAY 'XML document was successfully generated.'
END-XML|
```

XML Services for the Enterprise (XSE)

- **Provide tools to adapt COBOL based applications**

    - Process and produce XML messages

        - ➢ Web Services
        - ➢ Participate in a larger system that uses XML

- **Web Services Enablement wizard**

    - Generate Web Service interface from existing COBOL application

    - Bottom-up approach since COBOL at the bottom (base) of the creation process

- **XML to COBOL Mapping tool**

    - Map existing Web Service interface or XML to existing COBOL app.

    - Meet-in-the-middle since Web Services/XML definition "meets" or maps to the existing COBOL interface

- **Batch processor**

    - Runs unattended or in batch mode using the bottom-up approach
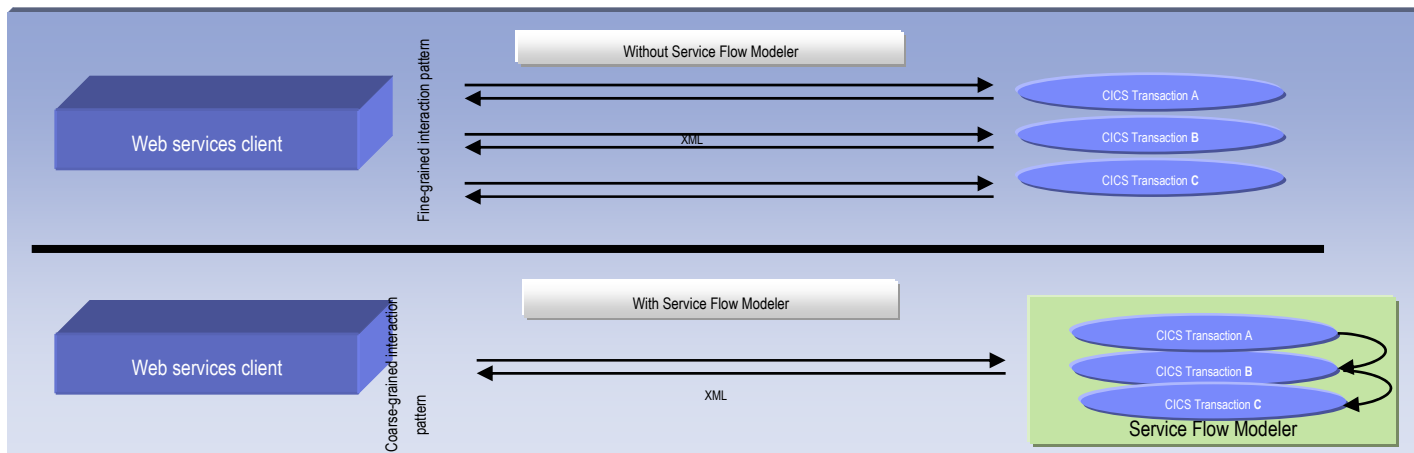
XML and Web Services Enablement

Enables COBOL-based applications to consume and produce XML messages

- Leverages XML parsing capabilities of IBM Enterprise COBOL V3.1
- Creates COBOL converter programs
  - Inbound to convert XML messages into native COBOL data
  - Outbound to convert native COBOL data into XML messages
- Creates COBOL driver program
  - Illustrate the invocation of converters
  - Illustrate the interaction with existing application
- Creates WSDL that describes COBOL based service
- Enables communication with XML based systems
- Batch interface to Web Services Enablement Tool for COBOL
  - Create COBOL adapters and WSDL via command line

What is Service Flow Modeler?

New Feature! *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
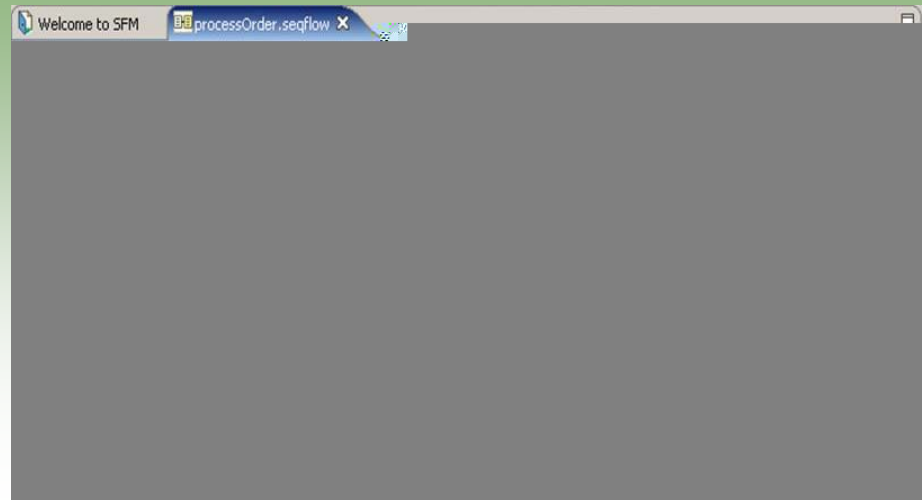
WDz's Service Flow Modeler Deployment Options

Service Flow Modeler

Deploy →

CICS 3.1

Service Flow Runtime

Flow

BMS   Commarea

Service Interface

Deploy →

WebSphere App Server

HATS

Flow

3270   5250

Service Interface

WebSphere Developer for zSeries
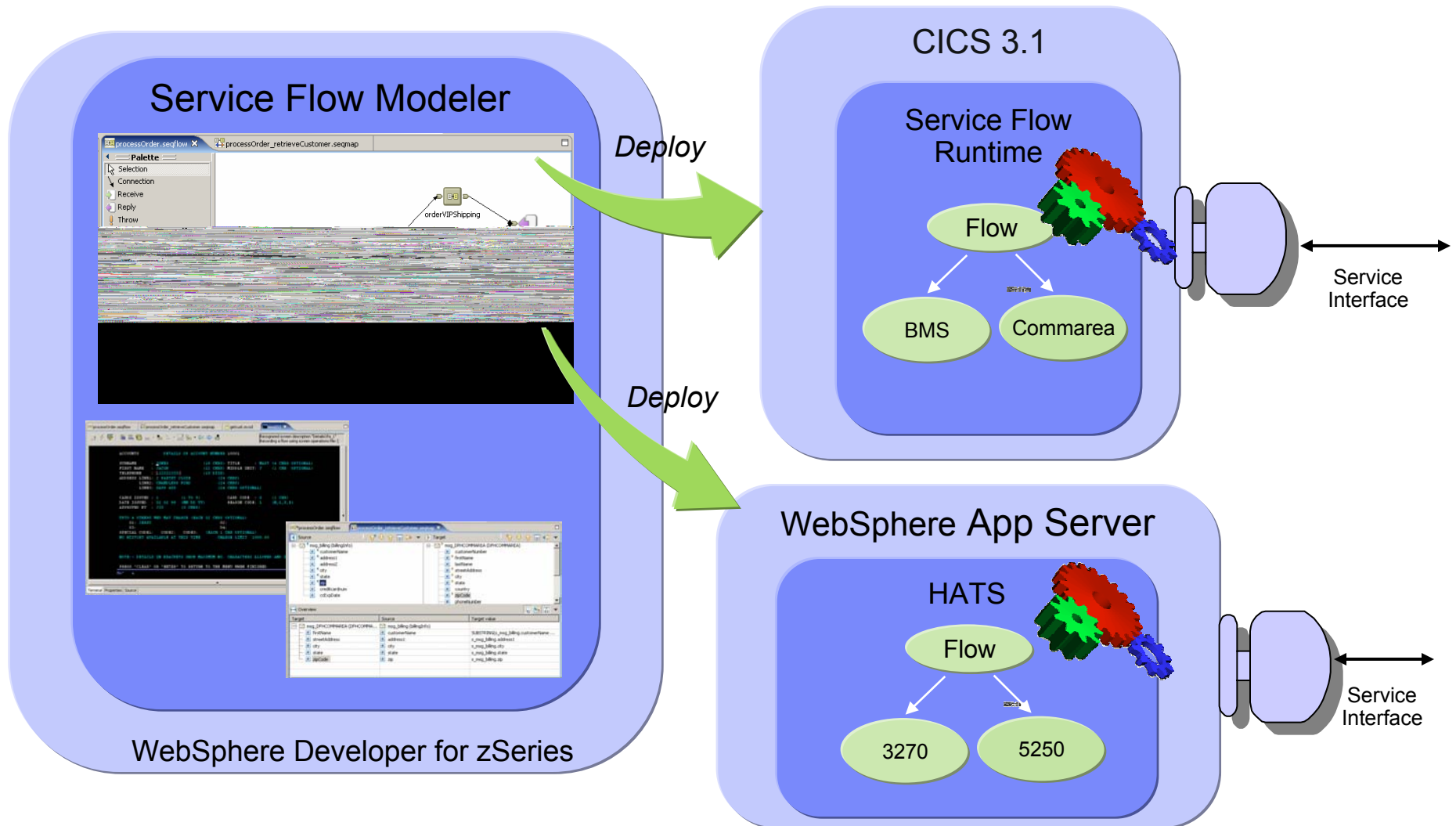
Test and Problem Determination
Integration speeds time to market

WS Enterprise Developer

Debug Tool

Fault Analyzer

File Manager

DB2 | VSAM | QSAM | PDS | Tape | IMS/DB

Native Data Manipulation

Object and Data Management
Create Edit Browse
Extract Copy Print
COBOL / PLI

Application Mapped Data Manipulation

Testing/QA Analyst

Development Manager

Application Developer

Application Support Analyst

Systems Support Manager

Systems Programmer

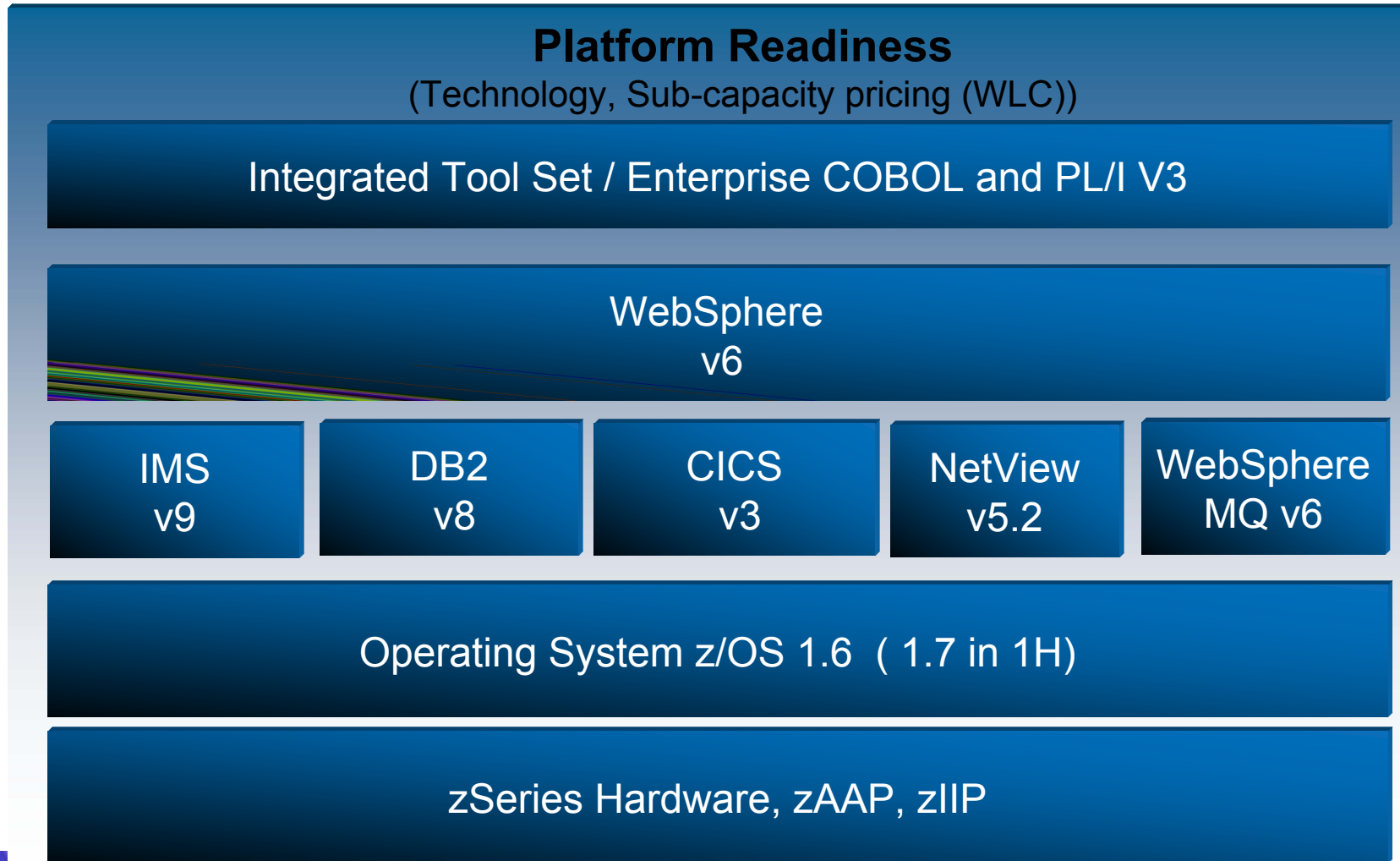Data Center Operator

Benefits:
- **Simplify development of zSeries test cases**
  - ▸ **Data creation for DB2, IMS/DB, VSAM, and QSAM**
  - ▸ **Extract and load**
- **Reduced deployment complexity**
  - ▸ **Production data validation and creation**
- **Common environment**
  - ▸ **Reuse of skills across e-bus and traditional applications**

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Gartner: Best Practices for Mainframe SOA

- **Act tactical, think strategic**

- **Evaluate tools that provide good microflow orchestration**

- **Create services that utilize function from across existing application boundaries.**

- **Build a reuse culture and technology infrastructure.**

- **Work with operations to create management/performance-monitoring support.**

- **Use code understanding/inventory/restructuring tools to improve service granularity.**

- **Define the role of the mainframe in future application architecture.**

IBM zSeries Software Solutions
Platform Readiness is Key

Platform Readiness
(Technology, Sub-capacity pricing (WLC))

Integrated Tool Set / Enterprise COBOL and PL/I V3

WebSphere
v6

| IMS v9 | DB2 v8 | CICS v3 | NetView v5.2 | WebSphere MQ v6 |

Operating System z/OS 1.6 (1.7 in 1H)

zSeries Hardware, zAAP, zIIP

End Game: A Single Point of Access for People and Projects: *Moving to The Developer Dashboard*
Simplify organizational management in mixed workload and distributed environments