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WELCOME
IMS eBUSINESS CONNECTIVITY CLINIC

Hosted by:
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IBM Software Group

IMS Java Solutions

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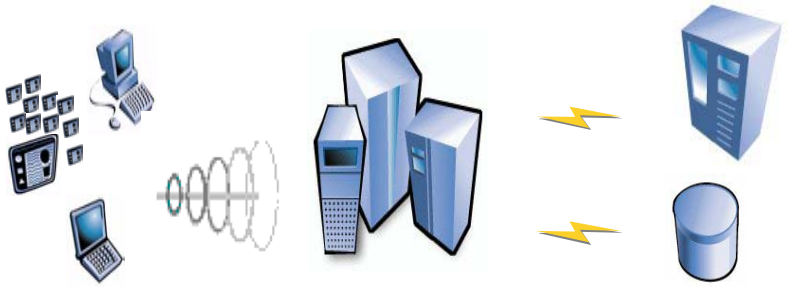
e business on demand software

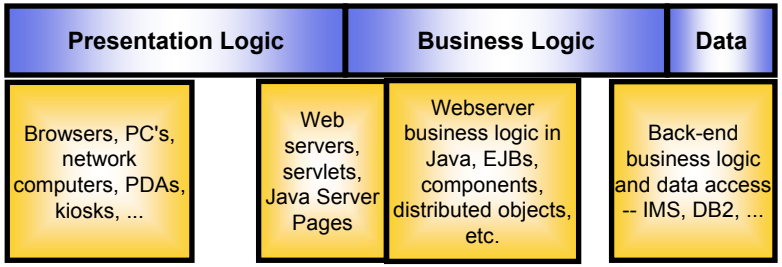
Why Java?

- Application programming trend
  - Widespread availability of education - colleges, industry, books,...
  - Relatively new and appeals to new programmers
  - Widely recognized and discussed in the industry
- Evolving as an industry standard
  - Implemented in customer environments around the world
  - Availability of many off-the-shelf applications, development toolkits, ...
  - Used widely in the web-based arena
- Program characteristics
  - Object-oriented
  - Portable and platform-neutral
    - Portable - compile once and run everywhere
  - Standard interfaces
    - Packaged classes
    - JDBC access to data

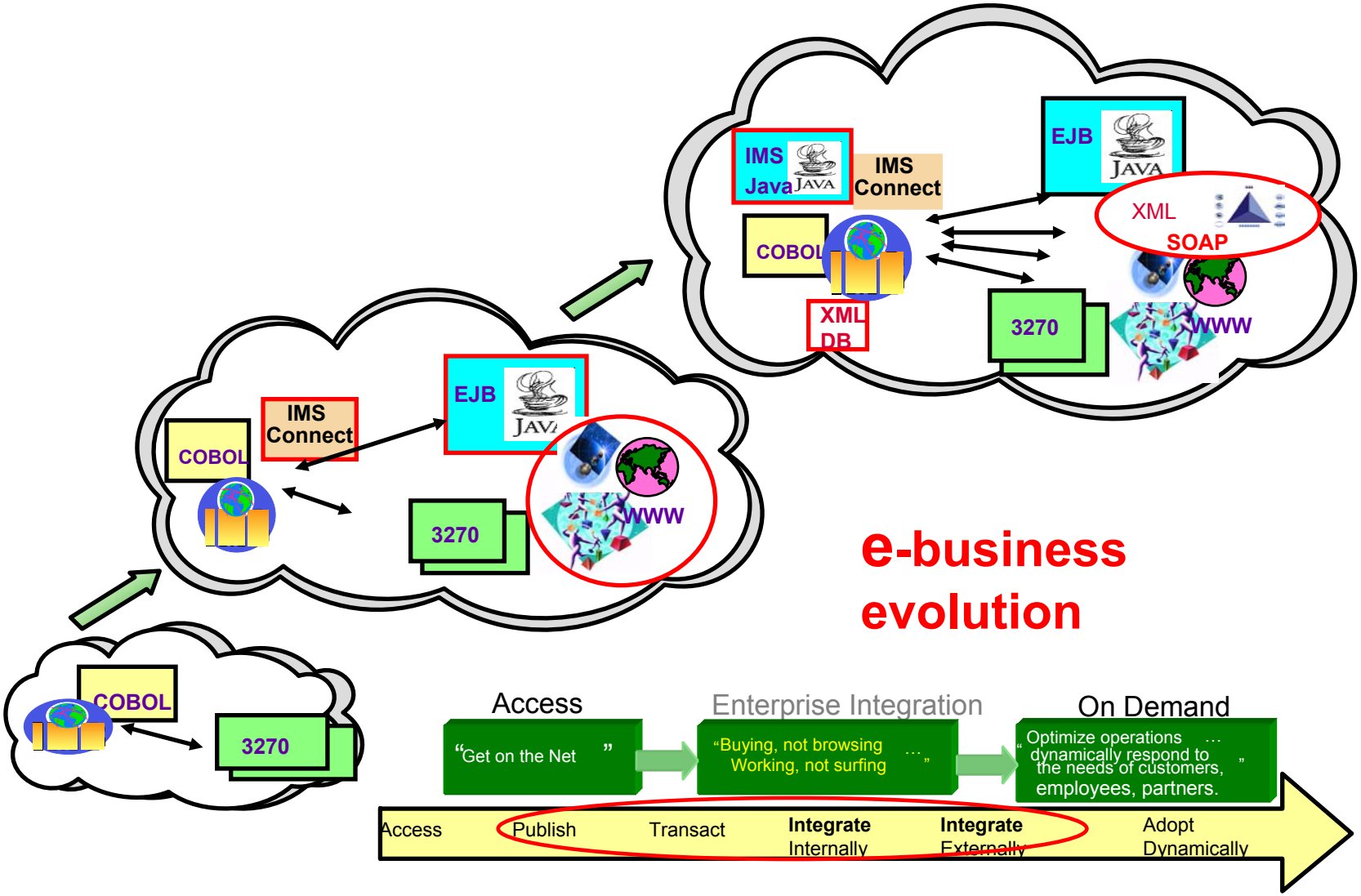
J2EE Architecture

- Java 2 Platform, Enterprise Edition
  - A standards-based architecture to enable development of multi-tier distributed applications
  - Recognizes long term dependency on existing legacy systems
    - “Enterprise Information Systems (EIS)”
  - The business logic in the middle tier runs as Enterprise Java Beans (EJB)
    - can call other EJBs (anywhere) or EIS systems
- J2EE Connector Architecture (JCA)
  - An extension of J2EE architecture
  - Enables a standard API to be used for al access to any EIS
    - eg. EJB access to an IMS Transact
- JDBC
  - Java classes for accessing databases using SQL
  - Can be used as a "data connector"
  - Provides access to IMS DBs





IMS e-business Java Strategy



Java and IMS

- Web access to IMS transactions from remote environments
  - IMS Connect
  - IMS Connector for Java
- IMS Java application support within IMS
  - Development and runtime support
  - Access to IMS resources
- Web access to IMS DB
  - From IMS and z/OS environments
    - CICS, DB2 Stored Procedures, WebSphere z/OS
  - From Remote environments
- XML, SOAP and Futures

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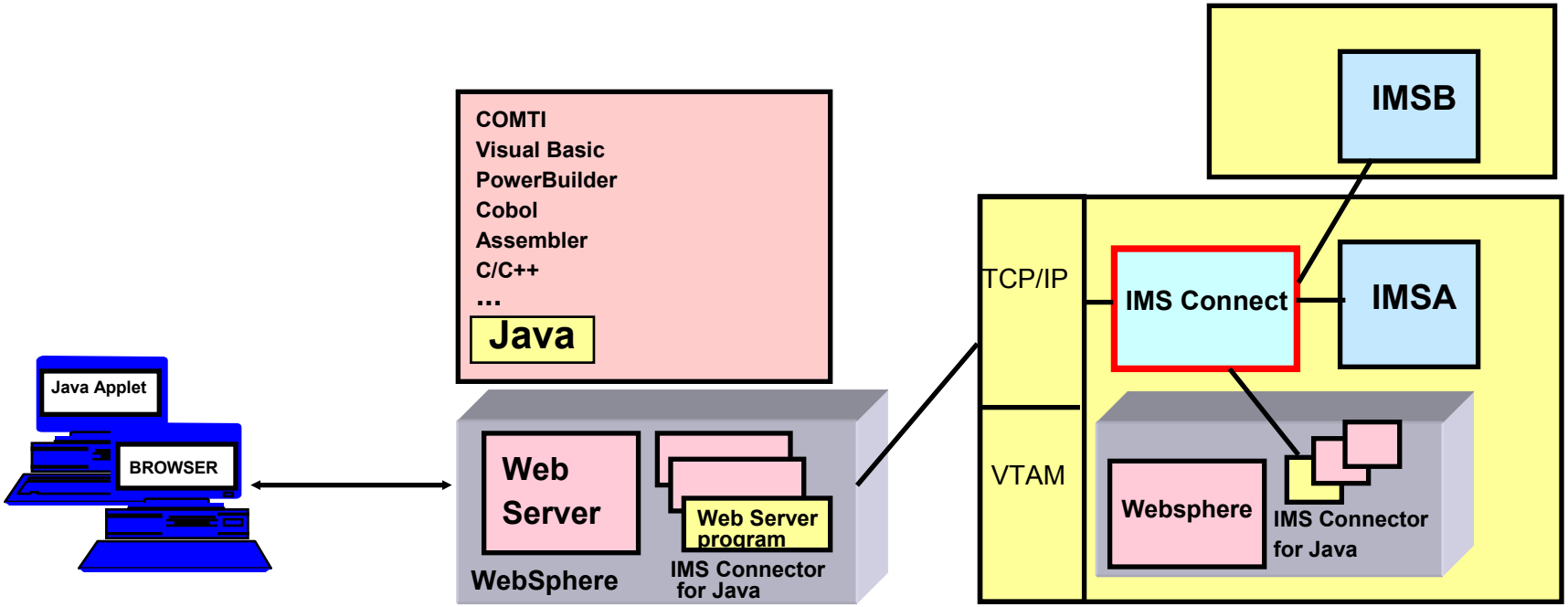
Web Access to IMS Transactions From Remote Environments

- IMS Connect
- IMS Connector for Java

IMS Connect - the Glue that Binds

- Provides TCP/IP socket access to IMS from Remote programs
  - Direct connection
    - Published interface that can be used by any sockets program
    - Supports a variety of connectors (sample programs and tools)
- Provides access to any IMS in a sysplex



IMS Connect …

- A product (5655-K52) that provides connectivity support between TCP/IP applications and IMS/TM
  - Component ID 5655E51 (service), FMID HIC2210
  - Configured on an OS/390 or z/OS server
    - SMP installed and maintained
- Benefits and Value
  - Supports TCP/IP sockets access to IMS transactions and commands
    - No requirement to modify existing IMS transactions
  - Provides a general purpose and structured interface
    - For the IMS Connectors
    - For user-written clients
  - Provides a strategic base for new connection technologies
    - IMSPLEX

IMS Connect …

- Functions
  - Persistent Sockets
  - Enhanced Dump formatting capability
  - Enhanced manageability with SMP/E Install/Maintenance
  - Asynch output capability with IMS V7
  - Send only capability: Connect, Send (sendonly) , Disconnect
  - Local/390 support
  - Unicode
  - ACK/NAK required notification support

IMS Connect …

- Functions …
  - IMS Connector for Java J2EE Runtime support for WebSphere access
    - Used with VAJava/WASADIE's IMS Connector for Java
  - Two-phase Commit Support in Local 390 environments
  - Security enhancements
    - Passticket support
    - Trusted User support
  - More Granular timeout (eg. by transaction)
  - User message exit limitation relief
  - Auto reconnect to a recycled IMS system
  - IPV6 support
  - IMS V8 support - Operations Manager distributed interface

IMS Connect …

- IMS Connect V2.1
  - PING support
    - Determines IMS Connect availability
  - J2EE XA Two-phase Commit Support
    - Distributed environments
    - z/OS environments across TCP/IP
  - SSL support
    - Enhanced security control
  - Commit mode 0 – persistent socket support
    - PQ80468

IMS Connect …

- IMS Connect V2.2 – just announced…
  - Commit Mode 0
    - Persistent socket support (delivered in V2.1 with PQ80468)
      - Extends CM0, Synclevel=confirm to persistent connections
    - Purge not deliverable support
      - New IRM_F3_PURGE flag to request that an undeliverable message be purged from the IMS message queue
  - New IMS Connect z/OS (MVS) commands
    - Modify command support - “F jobname,command”
    - Where command is in the format verb resourcetype keyword(value)
      - Verbs are: QUERY, UPDATE, SHUTDOWN, DELETE
      - Resourcetypes are: DATASTORE, PORT, MEMBER and UOR
      - Keyword and values: represent atributes, filters, etc. that apply to the command
        - e.g., F IMSCONN, QRY DATASTORE(IMSP) SHOW (ALL)

IMS Connect …

- IMS Connect V2.2 – just announced …
  - Cancel Timer support
    - New “C” flag in IRM-F4 which requests the cancel of a timer associated with a wait for data from IMS
  - New RESUME_TPIPE single with wait option
    - New flag IRM_F5_SWAIT to allow a wait for a single message if none are currently queued in IMS
    - Existing flag IRM_F5_ONE requests a single message, if none are available then a timeout occurs
  - Support for a new product IMS Connect Extensions (5655-K48)
    - Event recording for performance and data analysis
    - User Exit HWSTECL0
      - Provided by IMS Connect

IMS Connect …Reminder

- IMS Connect V1.1
  - End of Service – 11/30/2003
- IMS Connect V1.2
  - Marketing Withdrawal – 09/03/2003
  - End of Service – 04/30/2005
- IMS Connect V2.1
  - Current
- IMS Connect V2.2
  - Just announced

IMS Connect Extensions

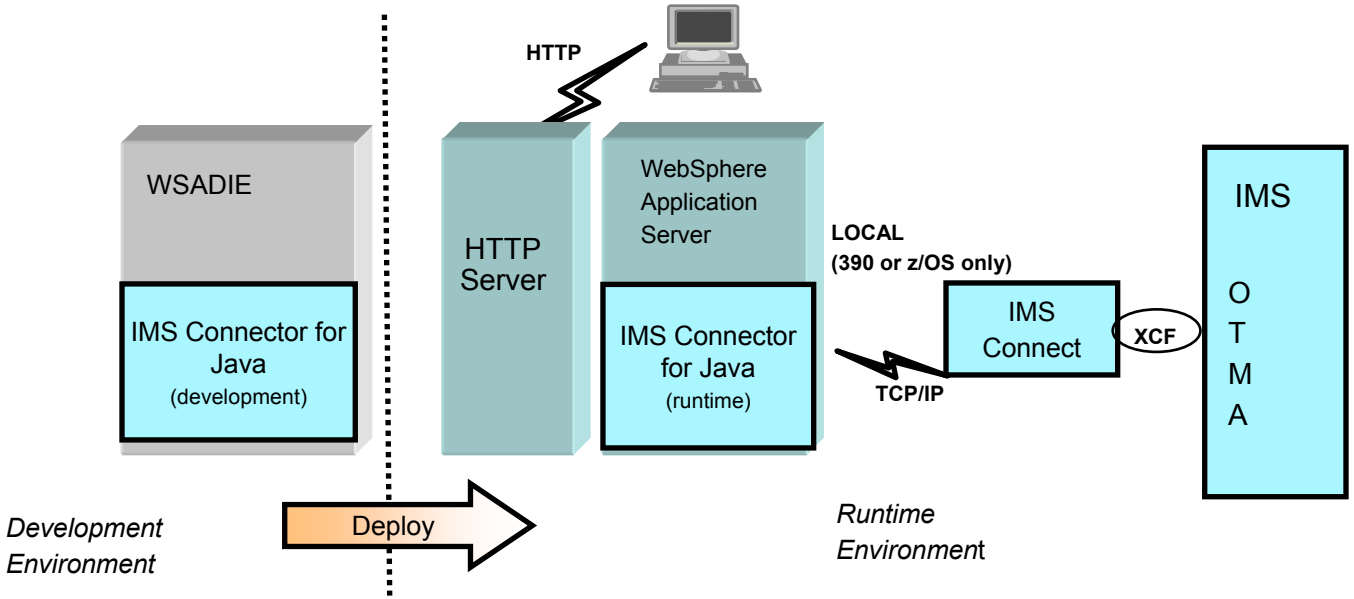
- New product 5655-K48
  - Enhances and augments the services of IBM IMS Connect:
    - Event Recording
      - Receives notification of significant events, as transactions are being processed by IMS Connect
    - Collects and reports on performance-monitoring and system availability data
  - Additional features:
    - Allows for dynamic transaction routing to alternative datastores and workload balancing
    - Supports pacing of incoming messages to datastores to prevent overloading
    - Improves security
      - Optional verification of user access to IMS Connect
      - Enhanced performance of userid/password validation by keeping ACEEs in memory
    - Supports dynamic addition, reload, deletion, disabling or enabling of user exits

Access to IMS Connect

- IMS Connect-based Solutions
  - Customer-written RYO
  - Provided by multiple vendors
  - IBM WebSphere – IMS Connector for Java 
  - …

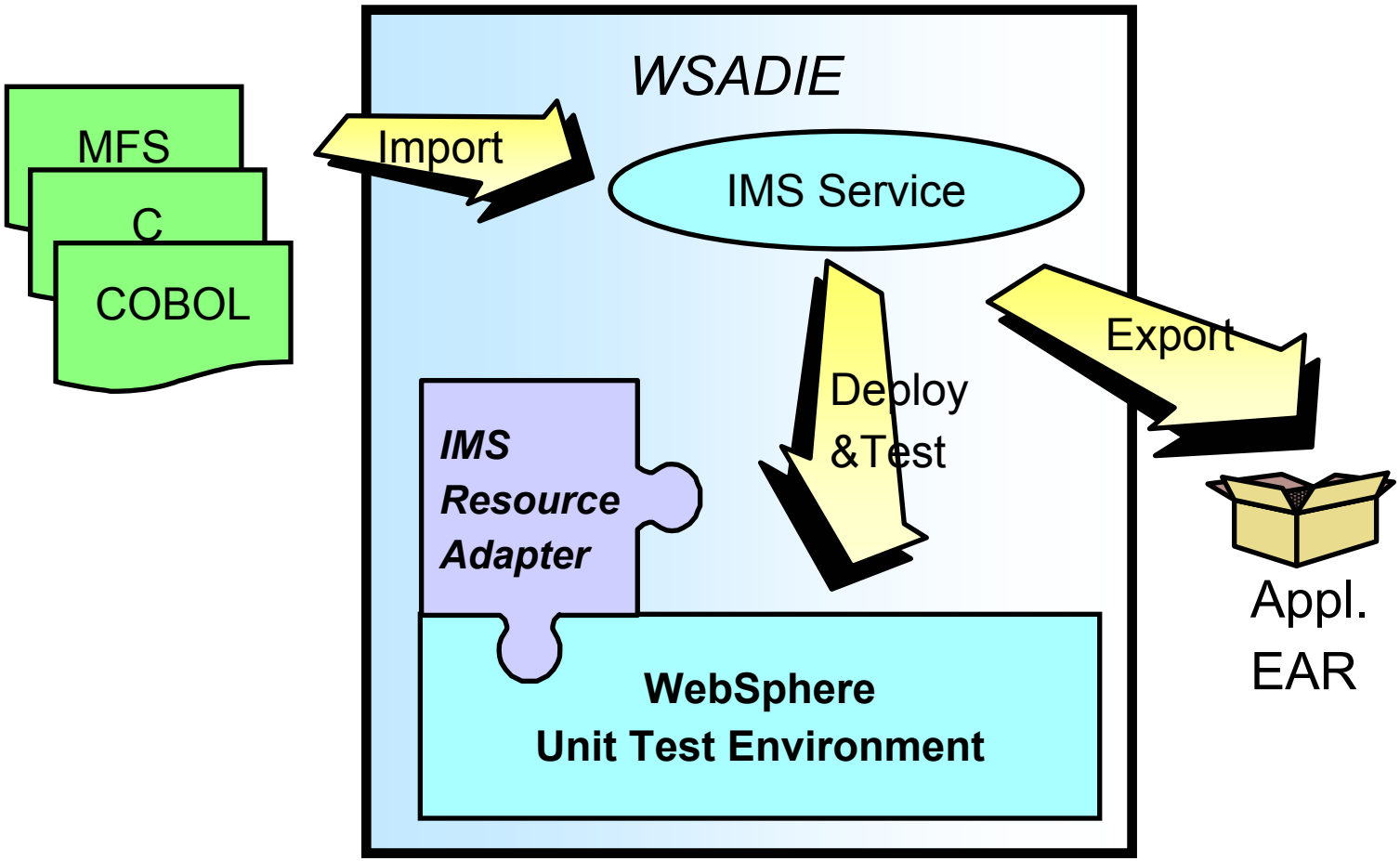
IMS Connector for Java

- Development code provided with WebSphere Studio Application Developer Integration Edition – WSADIE
  - Assists in the development of Java programs that access IMS
    - Hides the complexity of socket programming and interaction with the IMS environment from the application developer
- Runtime code (IMS JCA Resource Adapter)
  - Runs in an application server and communicates with IMS Connect

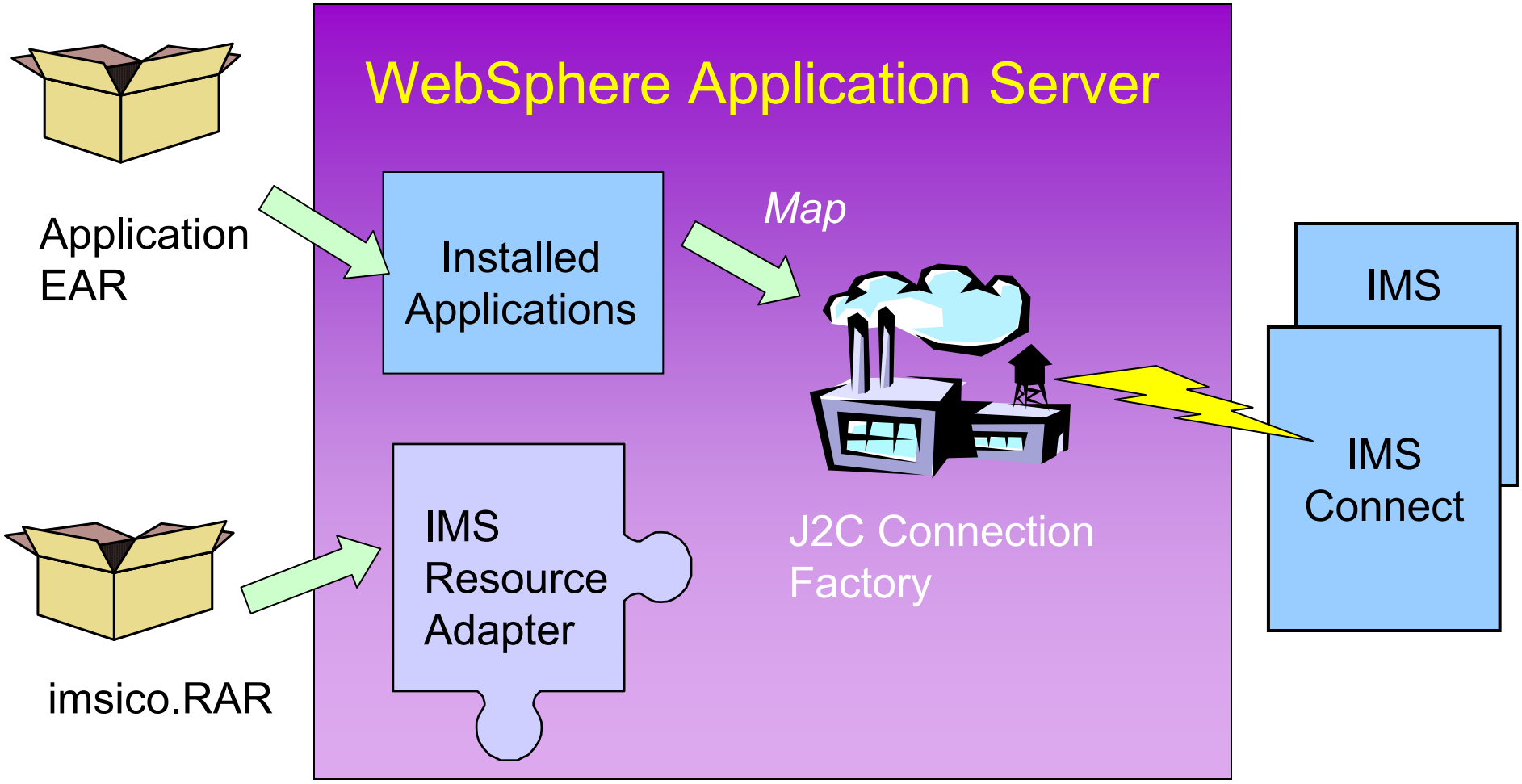


WSADIE Development

WebSphere Studio Application Developer Integration Edition



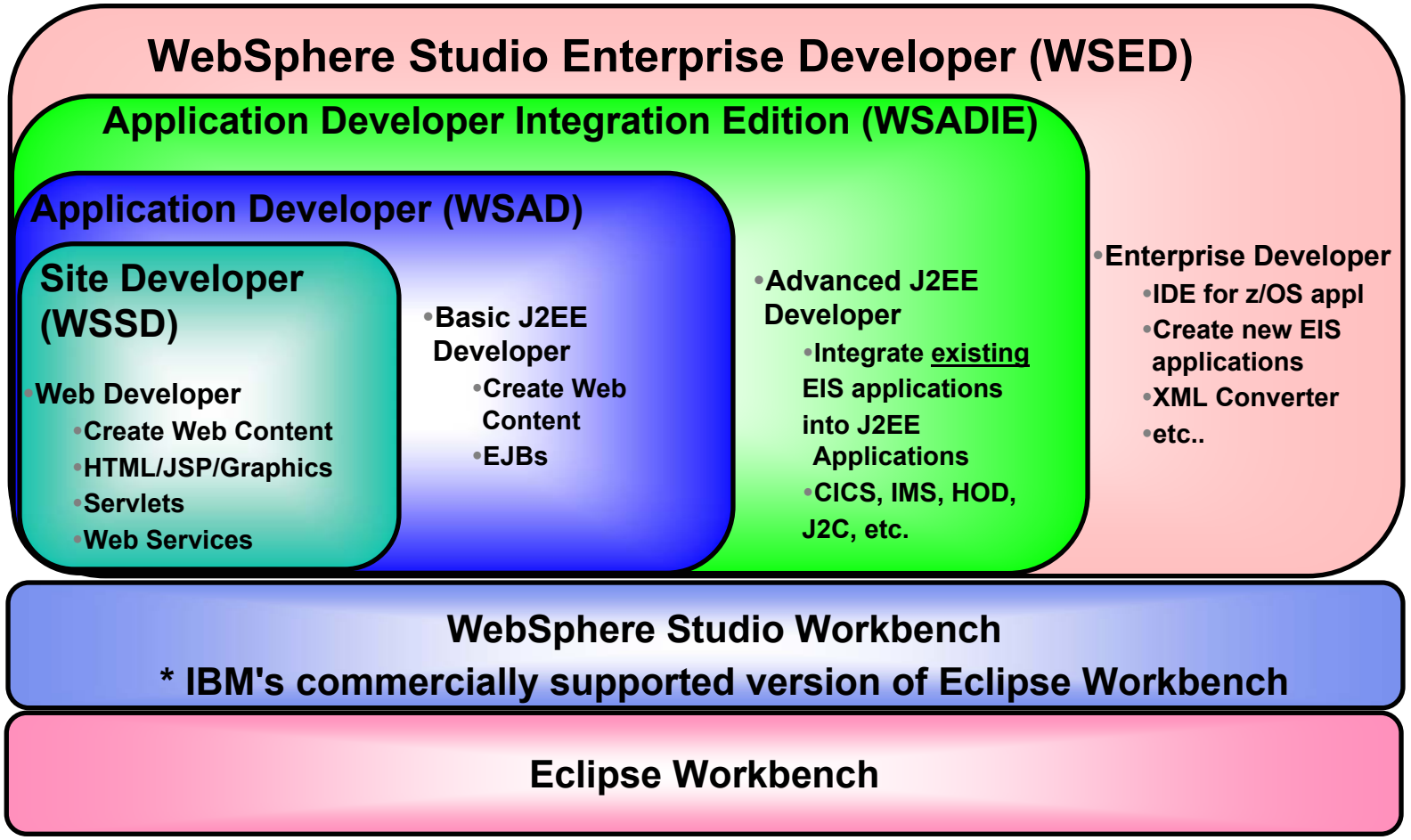
Application Deployment



IMS Connector for Java …

- The use of IMS Connector for Java with WebSphere can
  - Facilitate accessing IMS from a Web Server
  - Integrate IMS into an e-business Application
    - J2EE Architecture
    - Enterprise Java Beans
  - Support publishing an IMS transaction as a Web Service for others to find and access

Websphere Studio

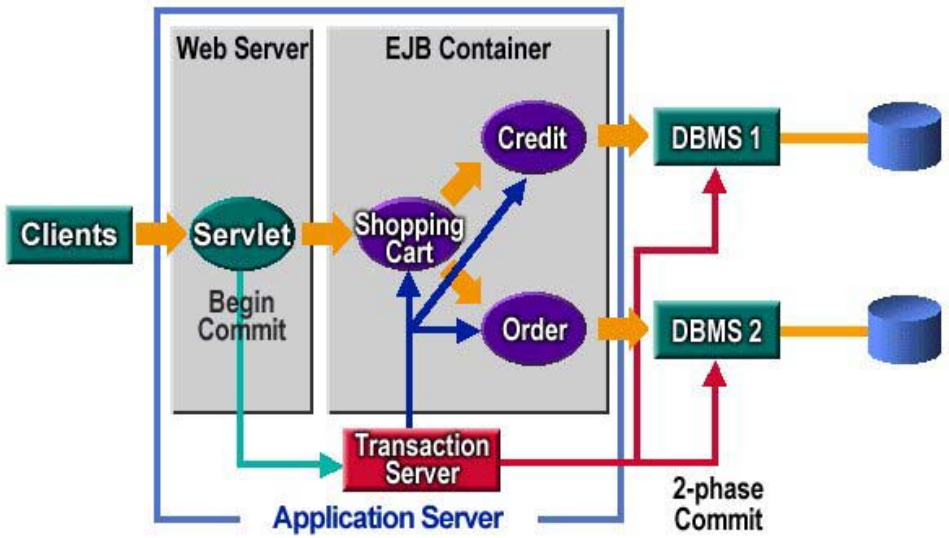


WSADIE and Enterprise Services

- WSADIE is based on the concept of an “Enterprise Service”
  - also referred to simply as a “Service”
  - For example, you use WSADIE to set up an IMS transaction as an Enterprise Service
- An Enterprise Service is not directly usable in production environments
  - It needs to be “deployed” in a way that makes it usable
- There are two key ways of deploying an IMS Enterprise Service
  - As an EJB within a J2EE application
  - As a Web Service (or SOAP Service)
  - (It could be deployed as a Servlet. But it is no longer recommended to access IMS directly from a Servlet, since there is a lack of “quality of service”)
- A Web Service is a specific implementation of an enterprise service

Enterprise Java Beans (EJB)

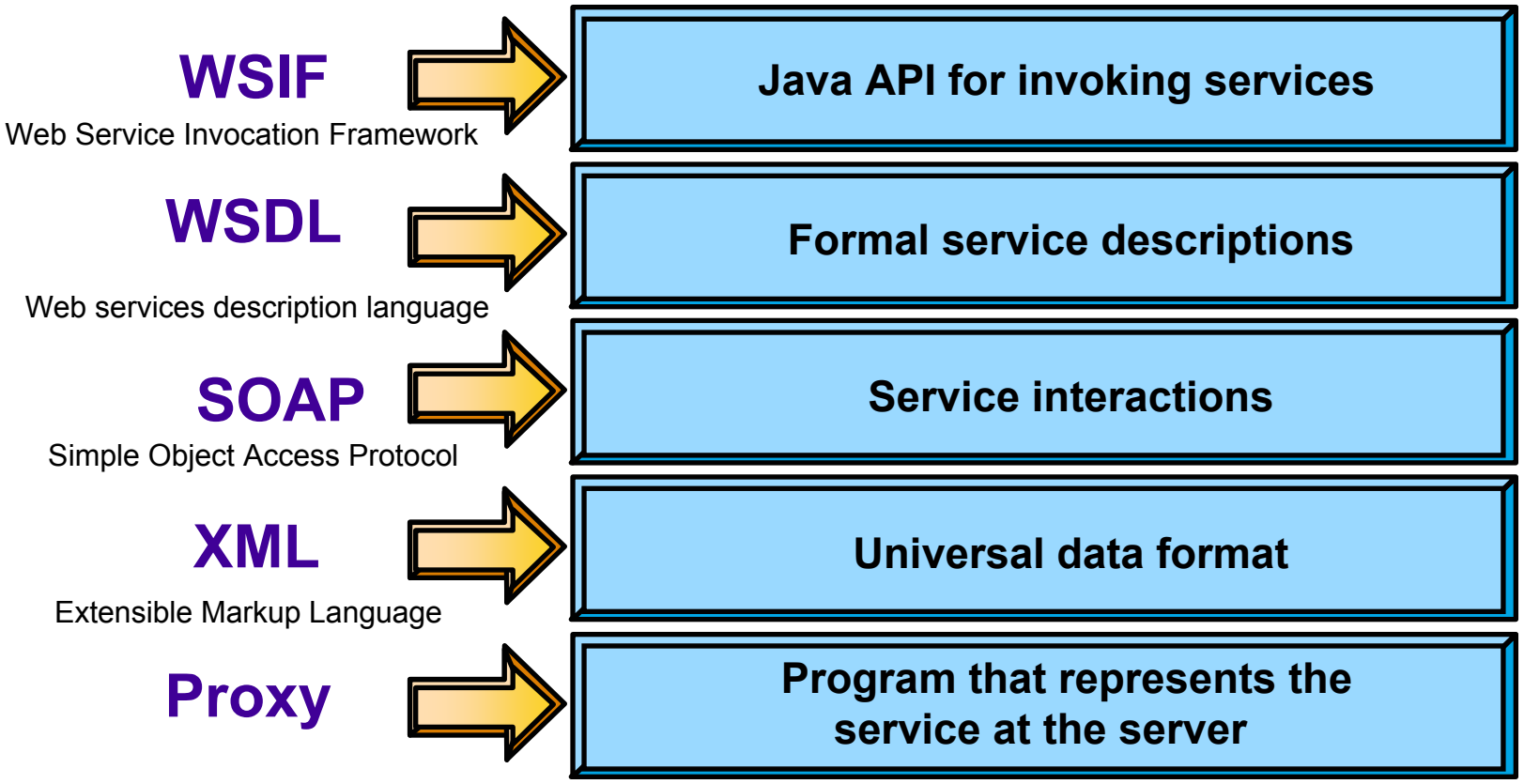
- Reusable components
- Focus on business logic
- Easy to develop and deploy
- Run in the EJB Container
  - Provides services such as:
    - Life cycle management
    - Security
    - Transactional support
    - Connection pooling
  - Similar in nature to how an IMS system provides services to transactions



Web Services

- Network programs that are accessed by sending and receiving SOAP messages over HTTP/HTTPS, with an interface defined by WSDL descriptions
  - SOAP - Simple Object Access Protocol
    - An XML protocol that defines both a message and a target application
  - UDDI - Universal Description, Discovery, Integration
    - UDDI servers act as a directory of available services and service providers
    - SOAP can be used to query UDDI for services
  - WSDL - Web Services Description Language
    - An XML format to describe the web service interface
      - Operational information about the service:
        - Service interface
        - Implementation details
        - Access protocol
        - Contact endpoints

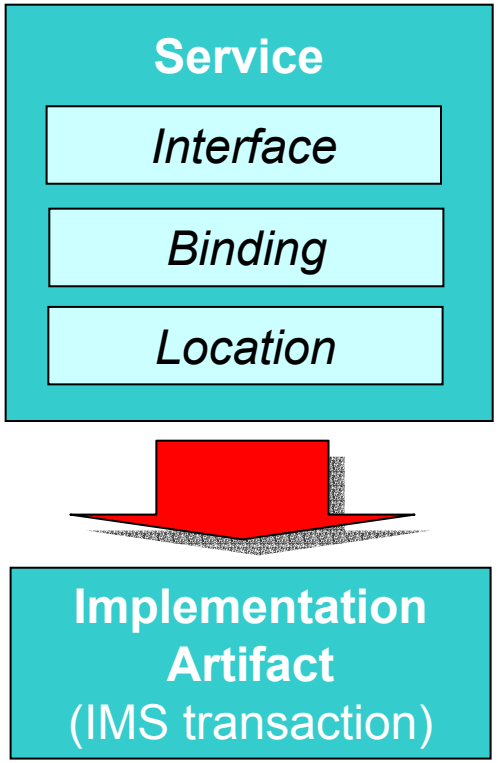
Services Fundamentals



Simple, Open, Broad Internet Support

The Service Provider Builds the Service

- A service consists of:
  - An implementation artifact (e.g., a Java class, EJB, IMS transaction, etc.)
  - 3 WSDL files that describe the service:
    - Abstract Service Interface
      - Description of the operations and the messages they exchange
      - WSDL “portType”
    - Implementation binding
      - Description of how service interface is implemented
    - Implementation service
      - Location of the service
- To Generate the service (WSDL)
  - Import C, COBOL, MFS description of transaction input and output messages
  - Provide connection, interaction properties

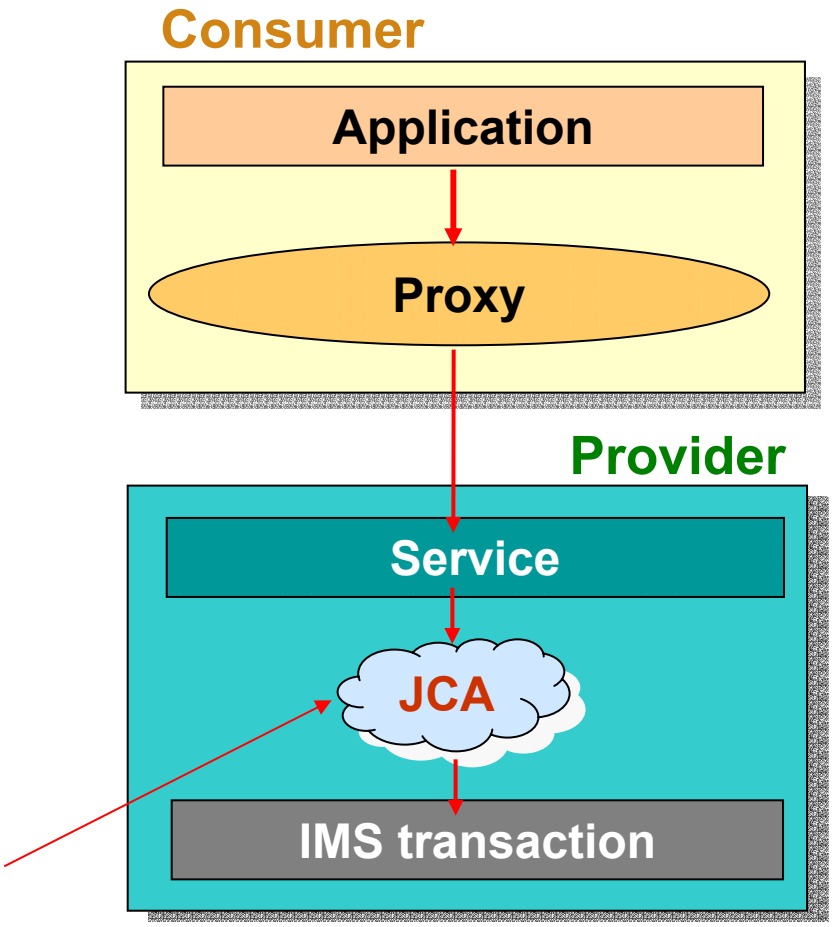


WSDL

- ServiceInterface WSDL file(interfacefilename.wsdl)
  - contains data type information
    - Input Message
    - Output Message
  - port type
    - operation
- Binding WSDL file(interfacefilenameBinding.wsdl)
  - contains transaction-specific information
    - Input/Output Message Codepage
    - operation binding properties
    - IMS Tran or IMS Command
    - Lterm name
- Service WSDL file(interfacefilenameService.wsdl)
  - contains host-specific information
    - Hostname
    - PortNumber
    - DatastoreID

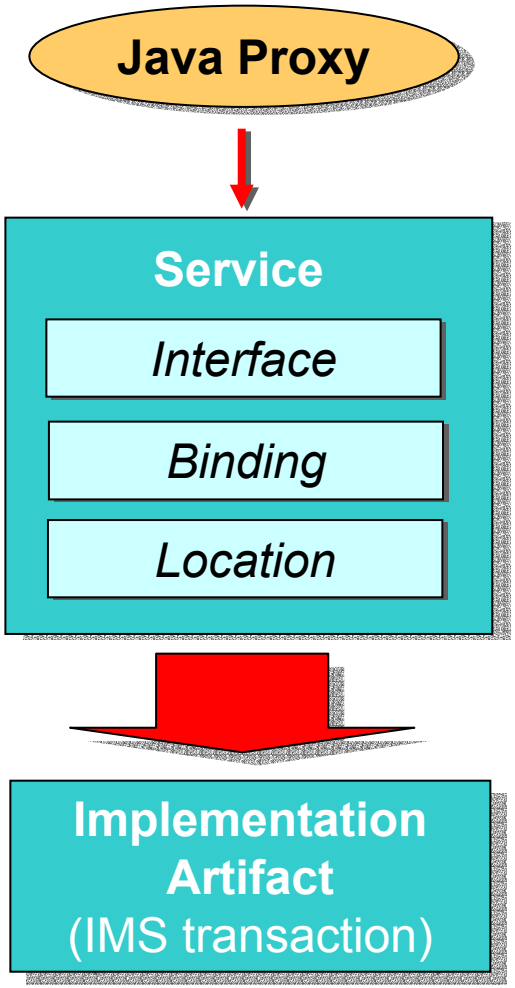
The Service Consumer uses the Service

- Generate a proxy for the consuming application to use
  - Represent the service that is deployed to the server
  - Handle the sending and receiving of data to the service
  - Expose only the methods of the service the application needs
- The proxy uses Web Services Invocation Framework (WSIF)
  - WSIF parses WSDL and dynamically calls the service



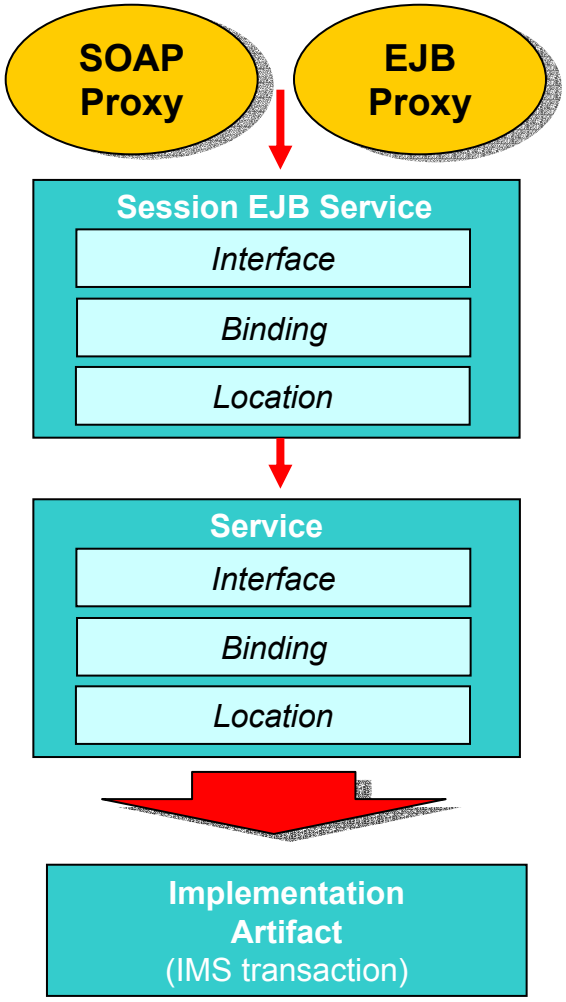
Types of Service Proxies

- Java proxy
  - Use tooling to generate a Java proxy for the enterprise service
  - Test enterprise service in “two-tier” environment
    - Invoke Java proxy from a simple Java class
    - No application server (non-managed)
    - No J2EE Quality of Service (QoS)
      - For example, no connection pooling



Types of Service Proxies

- EJB or SOAP proxy
  - Use to access a deployed service running in WebSphere Application Server (WAS)
  - Implemented by a stateless session bean (EJB)
  - EJB synchronously handles the client requests to and responses from the local service
  - J2EE component (EJB) means managed environment (e.g., connection pooling)
  - Described by inbound binding WSDL files
    - How the service is provided to consumers (clients) – SOAP or EJB
  - Wizards generate proxy and deployment descriptor for EJB



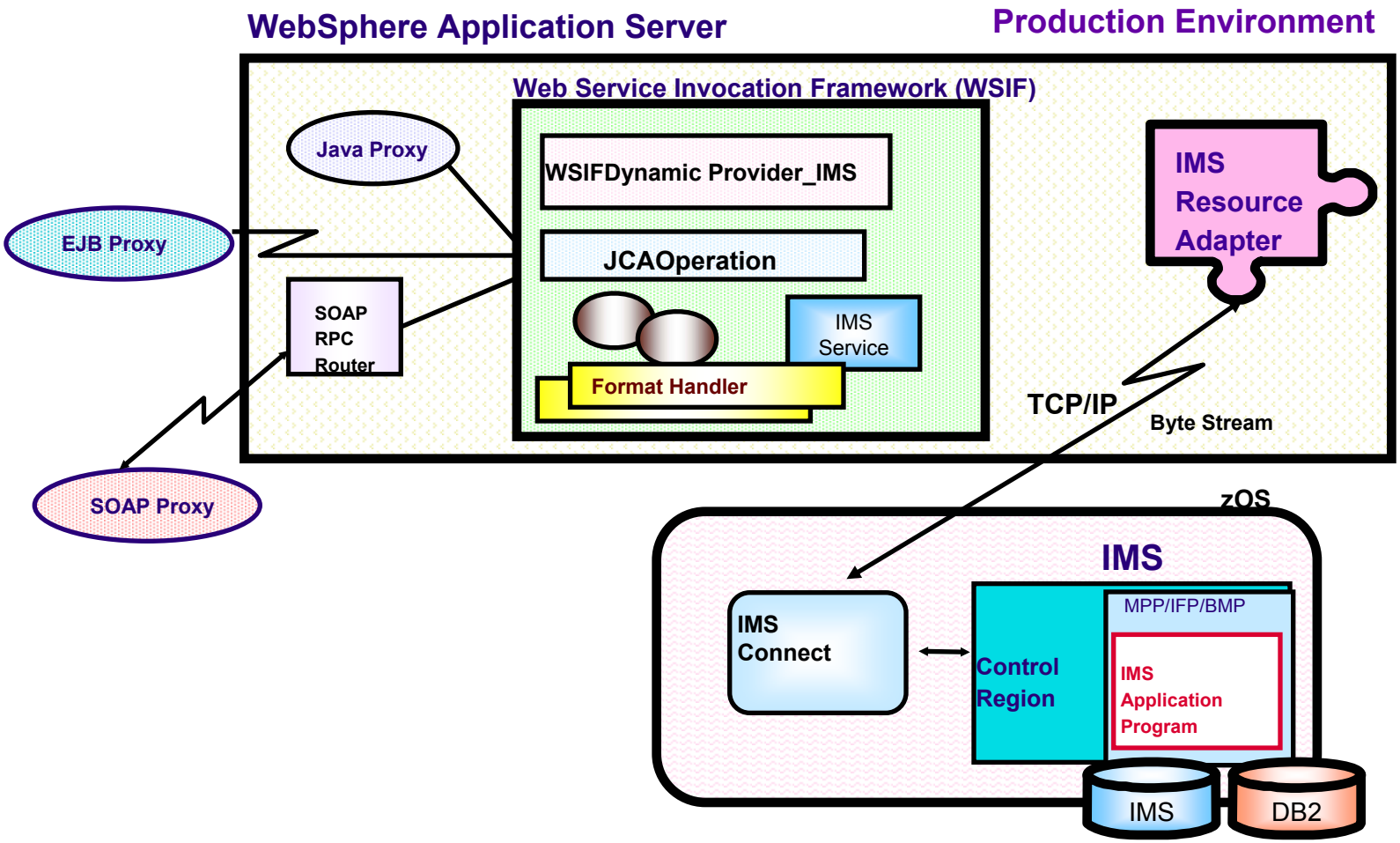
Deploying to WebSphere Application Server (WAS)

- Install the IMS Resource Adapter
  - Resource Archive (RAR) file is included in the files provided with the IMS Connector for Java runtime
- Configure a J2C IMS Connection Factory
  - Specify a JNDI name
  - Specify custom properties (host name, port, datastore, max connections, etc.)
- Install the enterprise application (EAR)
  - The Enterprise Archive (EAR) file can be created by exporting the application from WSADIE
  - Map the resource reference of the application to the configured connection factory

WAS Environment

- WAS Tooling is used to
  - Deploy IMS Connector for Java
  - Set up Connection Factories
  - Deploy J2EE applications
    - Deployment descriptor specifies sign-on and transactional requirements, together with connection factory reference information
- WAS runtime provides Qualities of Service to EJBs and IMS TM access
  - Connection pooling, signon support, distributed 2PC, etc
- Other features provided in this J2EE environment include:
  - SSL, support for Commit Modes 0 and 1, retrieval of asynchronous output (with Commit Mode 0), and timeout specification on a message by message basis

IMS Web Services & WAS



IMS Java Application Support Within IMS

- Development and runtime support
- Access to IMS

IMS Java

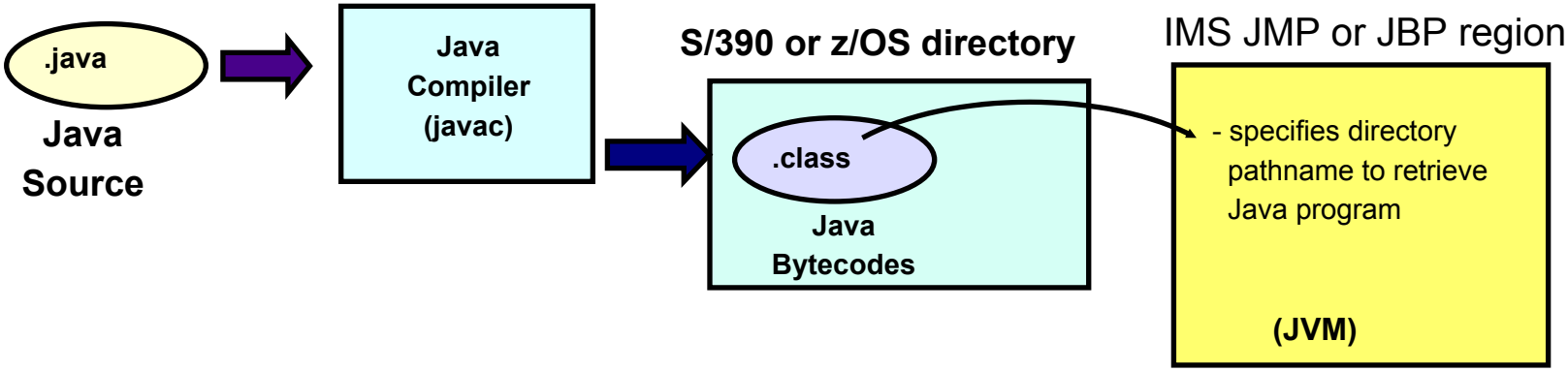
- Capability to write, compile and run IMS Java programs
  - Development environment
    - Provides a set of packages (groups of classes)
      - Allow access to IMS services
      - Support APIs familiar to Java programmers
  - Runtime environment supports dependent regions
    - JMP and JBP for JVM
- Benefit
  - Incorporation of the Java programming model into the IMS environment

Development Support

- IMS Java class library
  - A Java class is pre-written reusable code that can be invoked from a program
  - IMS Java Class Library
    - Set of packages that contain groups of classes
      - Code to access IMS message queues and databases
- Value
  - Allows Java programmers to code IMS applications
    - Requires only basic IMS knowledge
    - Supports all major IMS capabilities

Runtime Support

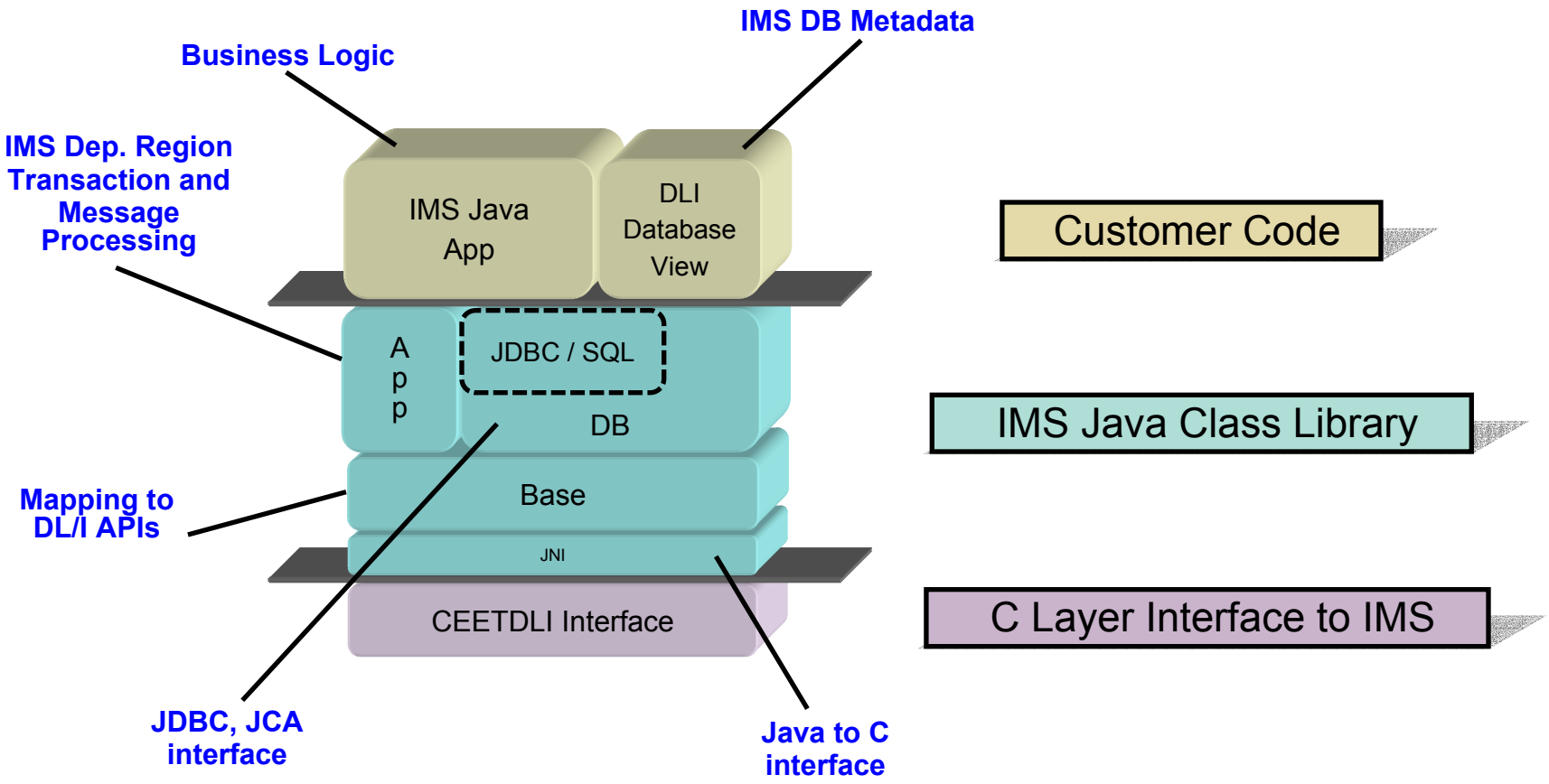
- Persistent Reusable Java Virtual Machine (JVM)
  - Supports a JVM in an IMS environment
    - Two types of dependent regions in IMS - JMP and JBP
- Value
  - Supports the traditional Java execution model



Runtime Support …

- Persistent Reusable JVM
  - Dependent on a minimum of JDK 1.3.1S
    - Packaged in "IBM Developer Kit for OS/390, Java 2 Technology Edition" plus APAR PQ55333
  - Provides:
    - Master JVM
      - establishes the JVM runtime environment
      - remains until IMS Dependent Region Termination
    - Worker JVM
      - Transaction processing JVM runtime environment
      - "reset" after transaction commit
  - For IMS, the JVM can only run in JMP for message driven programs
    - JBP for non-message driven programs (also supported in DBCTL)

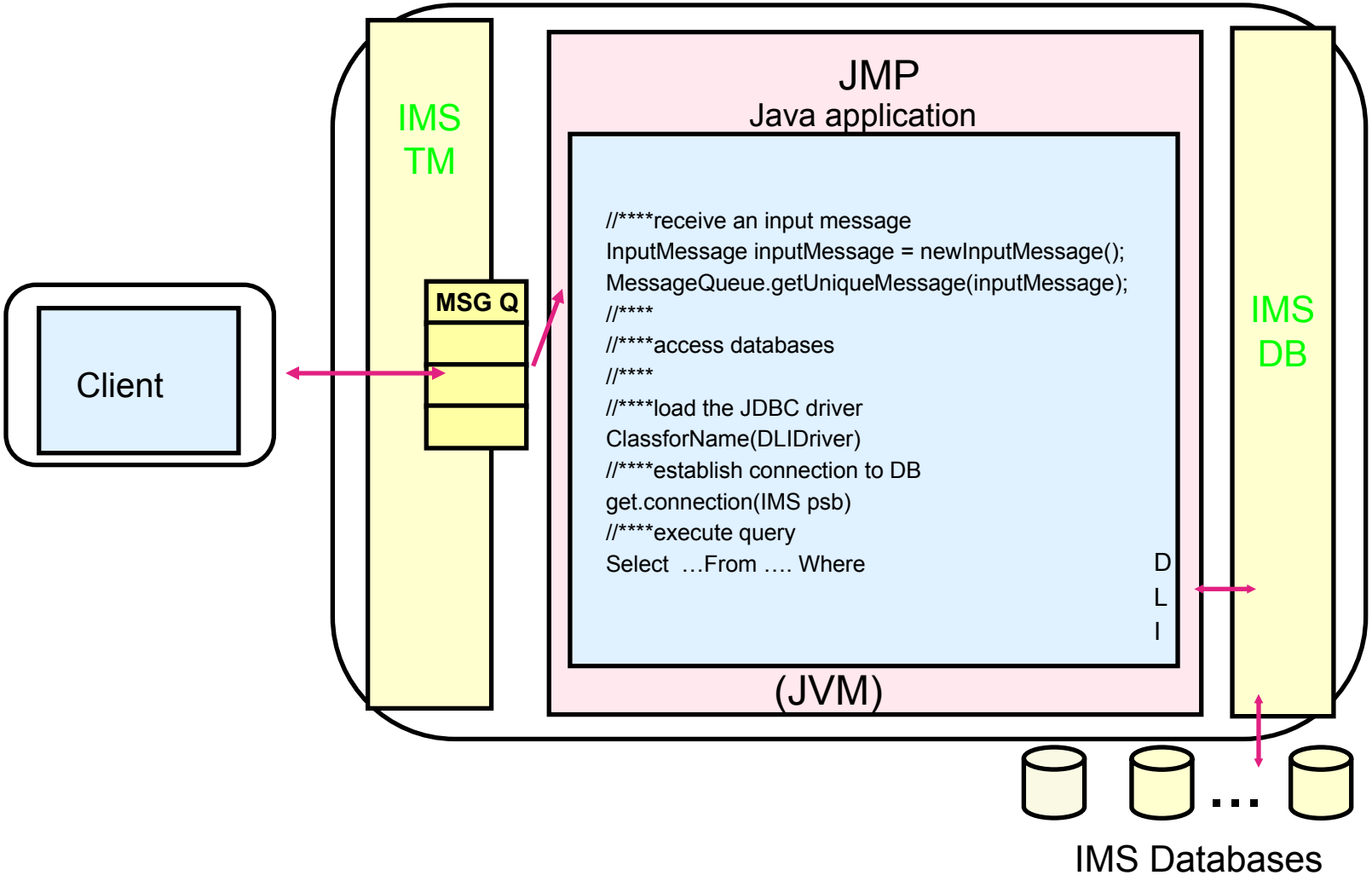
IMS Java Class Library



IMS Java APIs

- High-level standard database access methods
  - JDBC to access IMS data
    - The interface maps segments to tables and fields to columns
      - Ex. "SELECT __ FROM __ WHERE __ "
  - The IMS Java hierarchic database interface can be used to access IMS DBs in a more familiar IMS programming style
    - Ex. "connection.getUniqueSegment (mySegment , ssalist)"
- The use of the IMS Application Package classes to establish the application environment and request IMS services
  - Interface with the IMS message queues and request commit services
    - Ex. "messageQueue.getUniqueMessage (inputMessage)"
    - Ex. "trans.commit()"

IMS TM Java Access to IMS Data



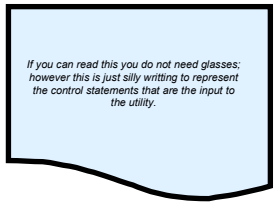
DI/I Model Utility

Control statements:

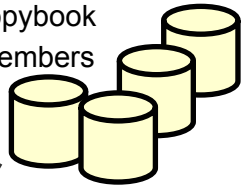
1) Choose PSBs/DBDs

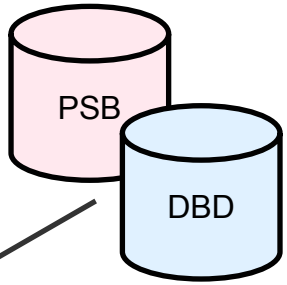
2) Choose copybook members

3) Aliases, data types, new fields.



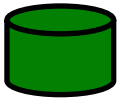
COBOL copybook members





DLIModel Utility

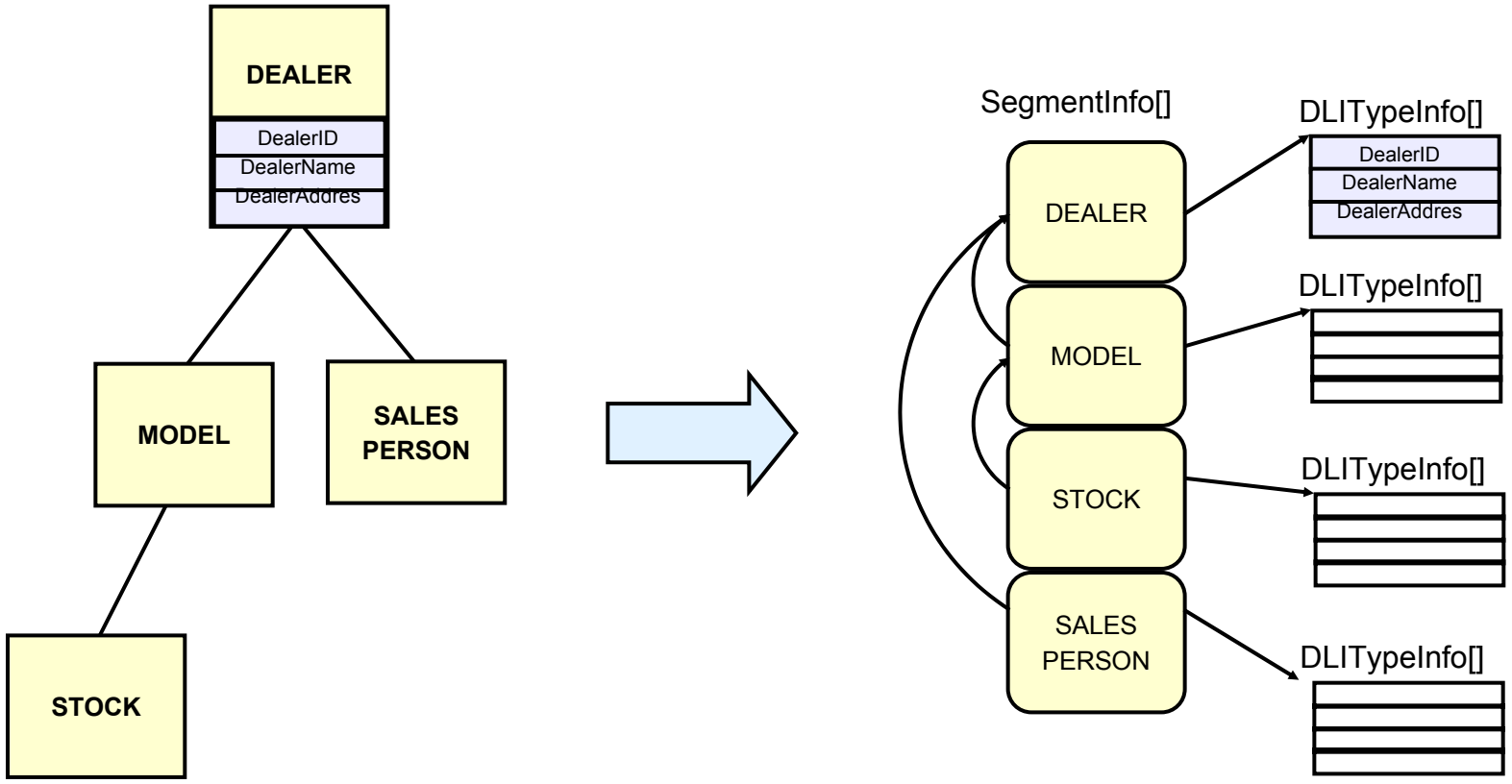
XMI 1.2



IMS Java classes

IMS Java report

IMS Metadata

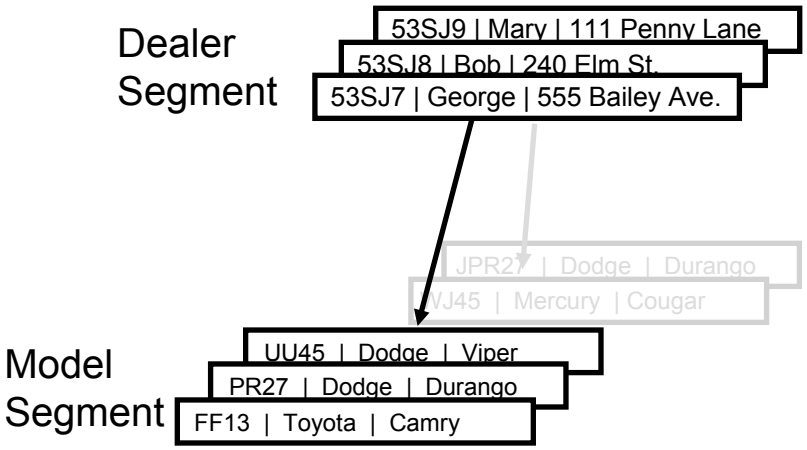


DBDLIB, PSBLIB, COPYLIB

DLIDatabaseView

Hierarchical to Relational Terminology Mapping

Hierarchical Design



Equivalent Relational Design

Dealer Table

	DealerID	DealerName	DealerAddress
0	53SJ7	George	555 Bailey Ave.
1	53SJ8	Bob	240 Elm St.
2	53SJ9	Mary	111 Penny Ln.
...	...	...	...

Relational JOIN

Model Table

ID	Make	Model	Dealer	
UU45	Dodge	Viper	53SJ7	0
PR27	Dodge	Durango	53SJ7	0
FF13	Toyota	Camry	53SJ7	0
JR27	Dodge	Durango	53SJ8	1
WJ45	Mercury	Cougar	53SJ8	1
...	...	...	...	...

Note: Segment Names ~ Table Names
Segment Instances ~ Table Rows
Field Names ~ Column Names

SQL Parsing

SQL

```
SELECT Dealer.Name, Dealer.Phone, Order.LastName
FROM SomePCB.Order
WHERE  Model.MSRP > '50000'
        AND  Order.Date >= '5/1/2003'
        AND  Order.Date <= '5/31/2003'
```

SSA List

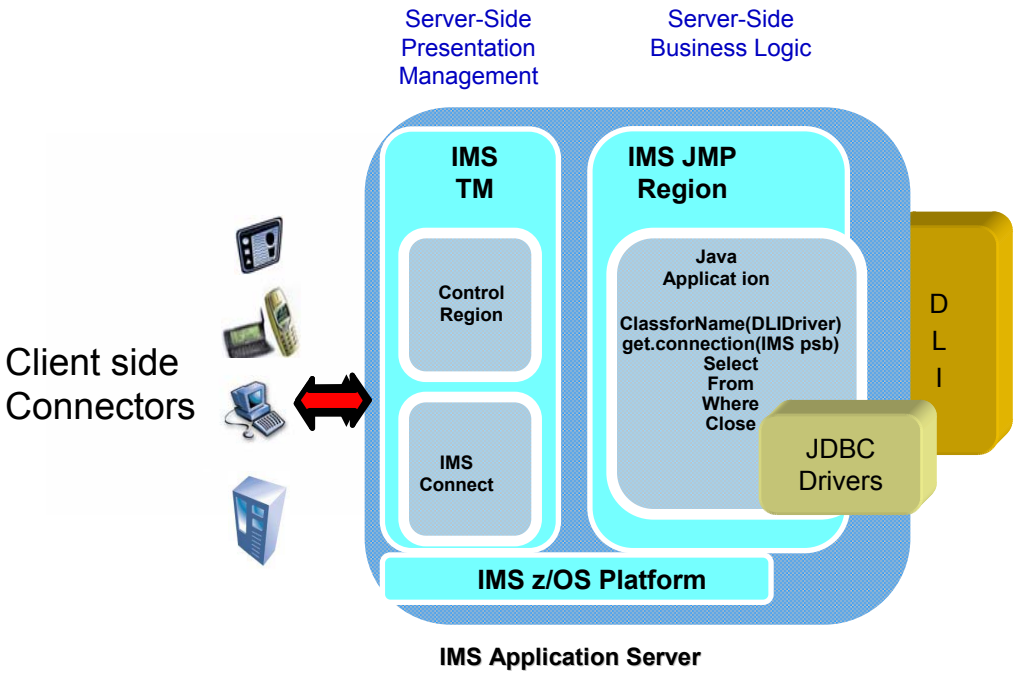
```
DEALER   **D
MODEL    (MSRP      GT50000)
ORDER    (DATE      GE20030501&
          DATE      LE20030531)
```

Web Access to IMS DB

- From IMS and z/OS environments
  - CICS, DB2 Stored Procedures,
  - WebSphere z/OS
- From Remote environments

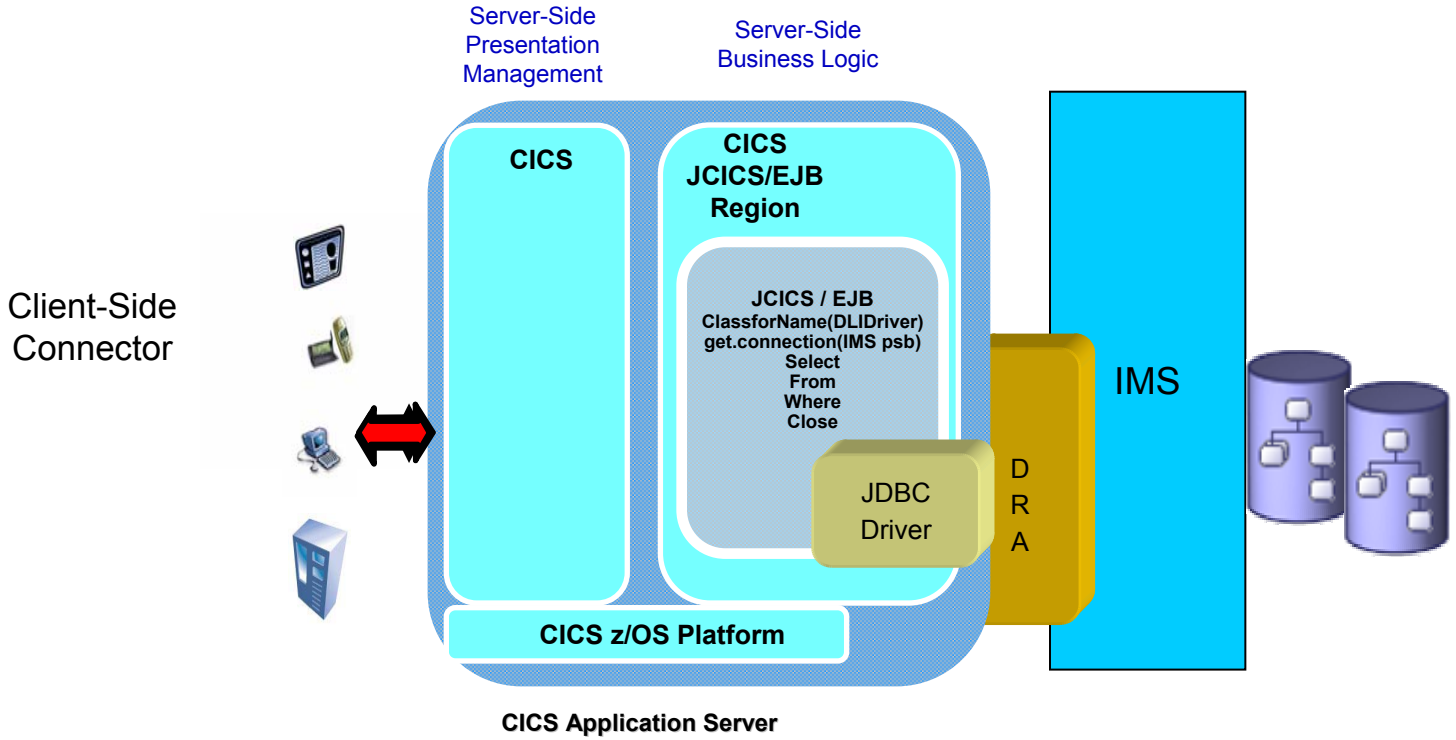
IMS TM JDBC Access to Data

- Commit/rollback of resources
  - Must be activated in the Java application by using IMSTransaction methods Managed by IMS syncpoint processing Note. When DB2 JDBC is used RRS Manages syncpoint processing



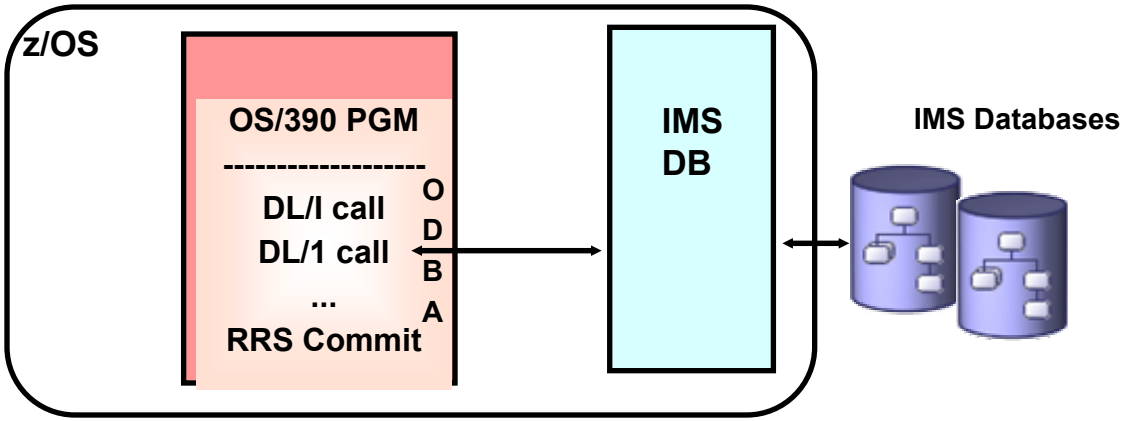
CICS and IMS JDBC Access

- Commit/rollback of resources
  - Can be activated in the Java application by closing the connection
    Managed by CICS syncpoint processing



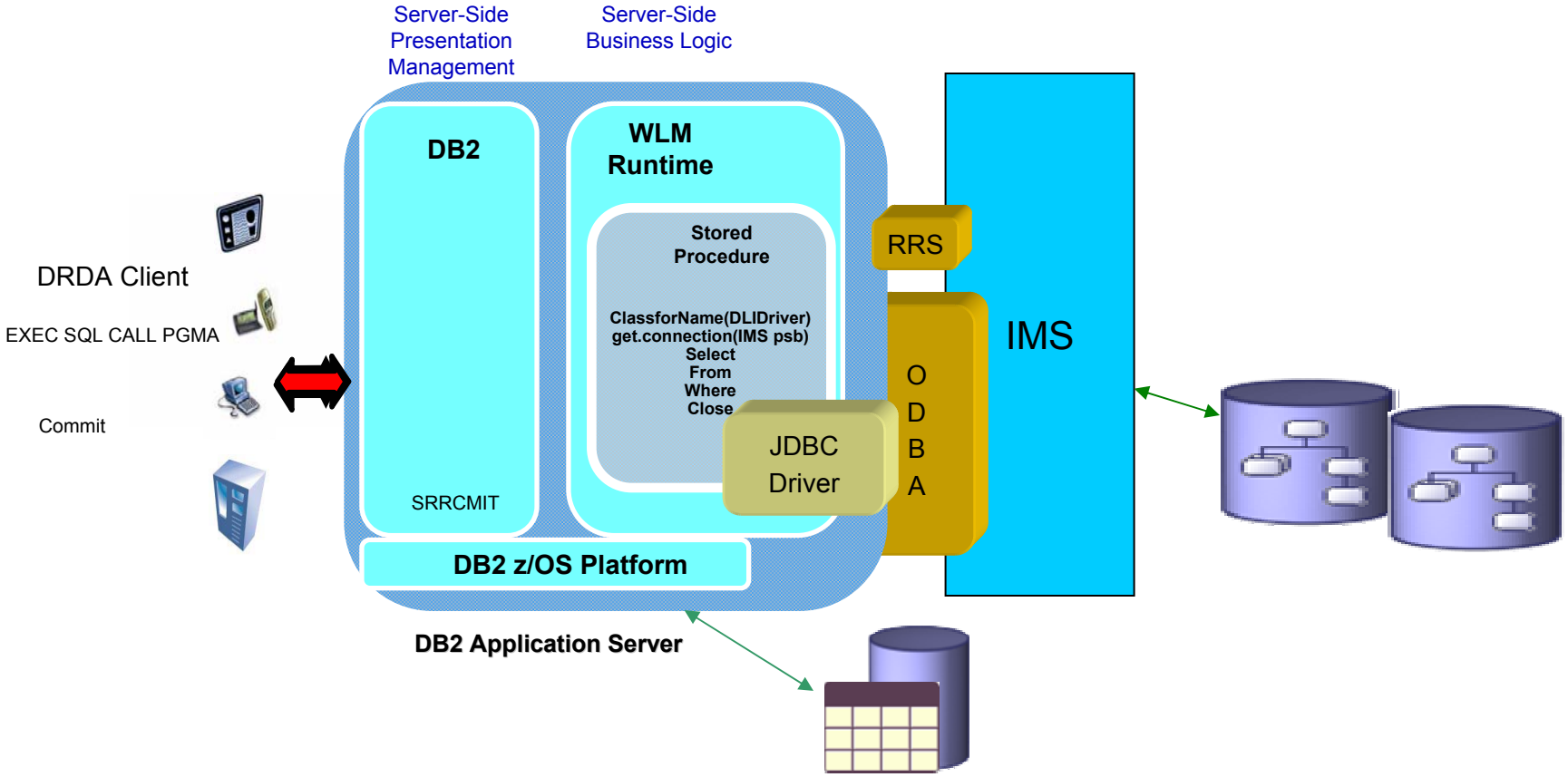
IMS Open Database Access - Background

- A callable interface to access IMS data directly
- Provides another means for IMS users to access the valuable information stored in their IMS Databases.
- Provides for failure isolation and independent resource recoverability
- Syncpoint processing is coordinated through the use of z/OS Resource Recovery Services (RRS)



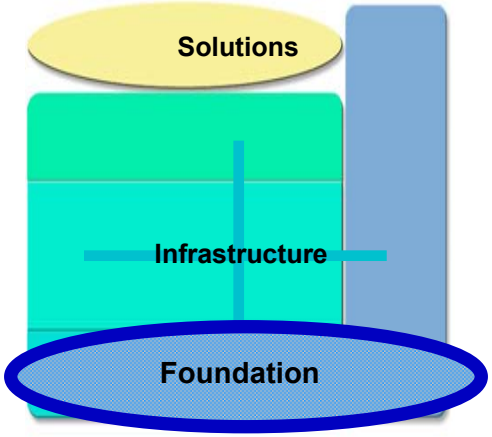
DB2 and IMS JDBC Access

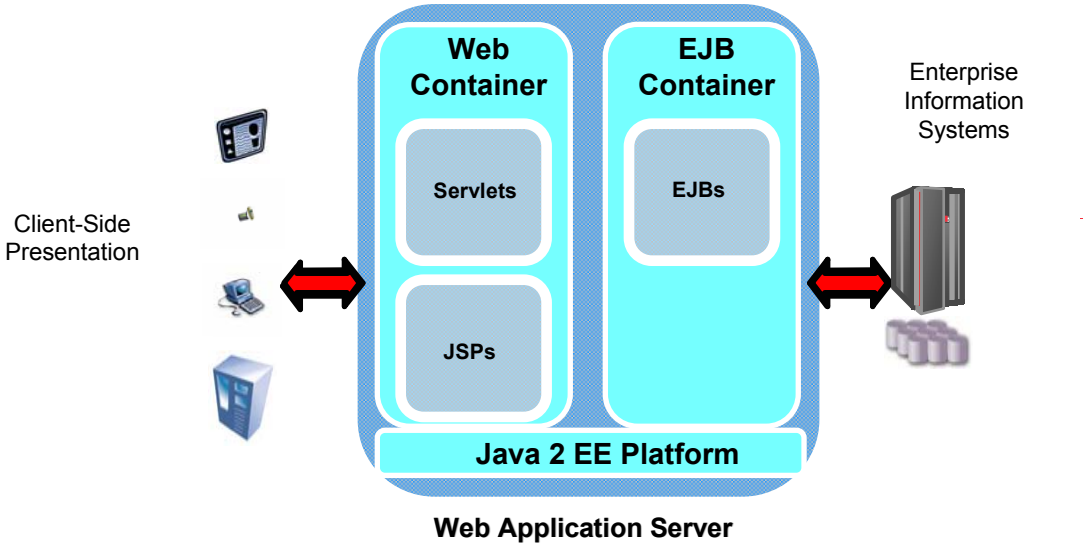
- Commit/rollback of resources
  - Activated by DB2 Managed by RRS syncpoint process



The WebSphere Software Platform

- Web infrastructure software that helps companies at each stage of e-business development
  - from startup,
  - to integrating and exploiting business processes,
  - to handling high volume Web transactions.





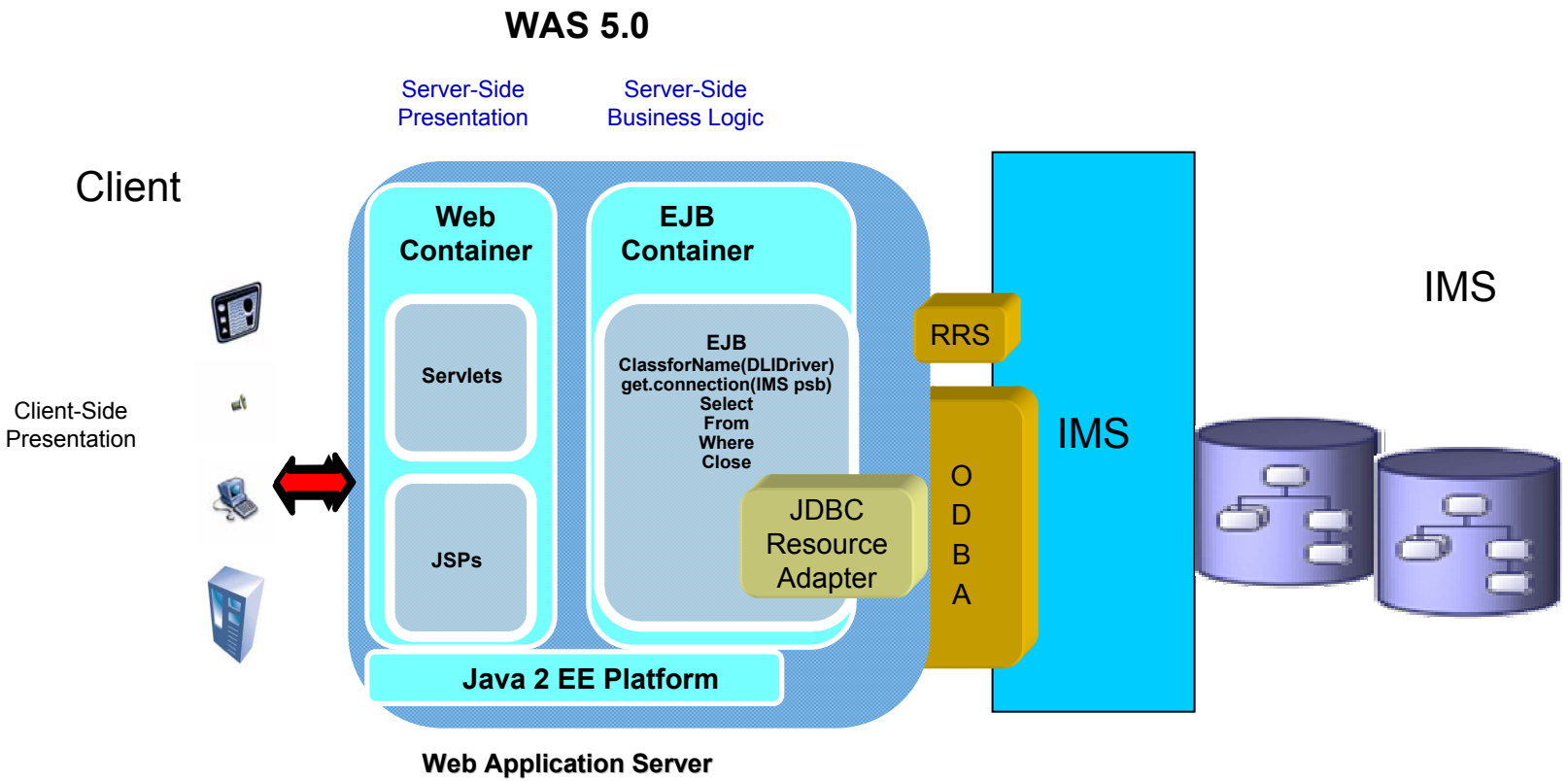
Application developers focus on business logic (components)

Containers and connectors conceal complexity and promote portability

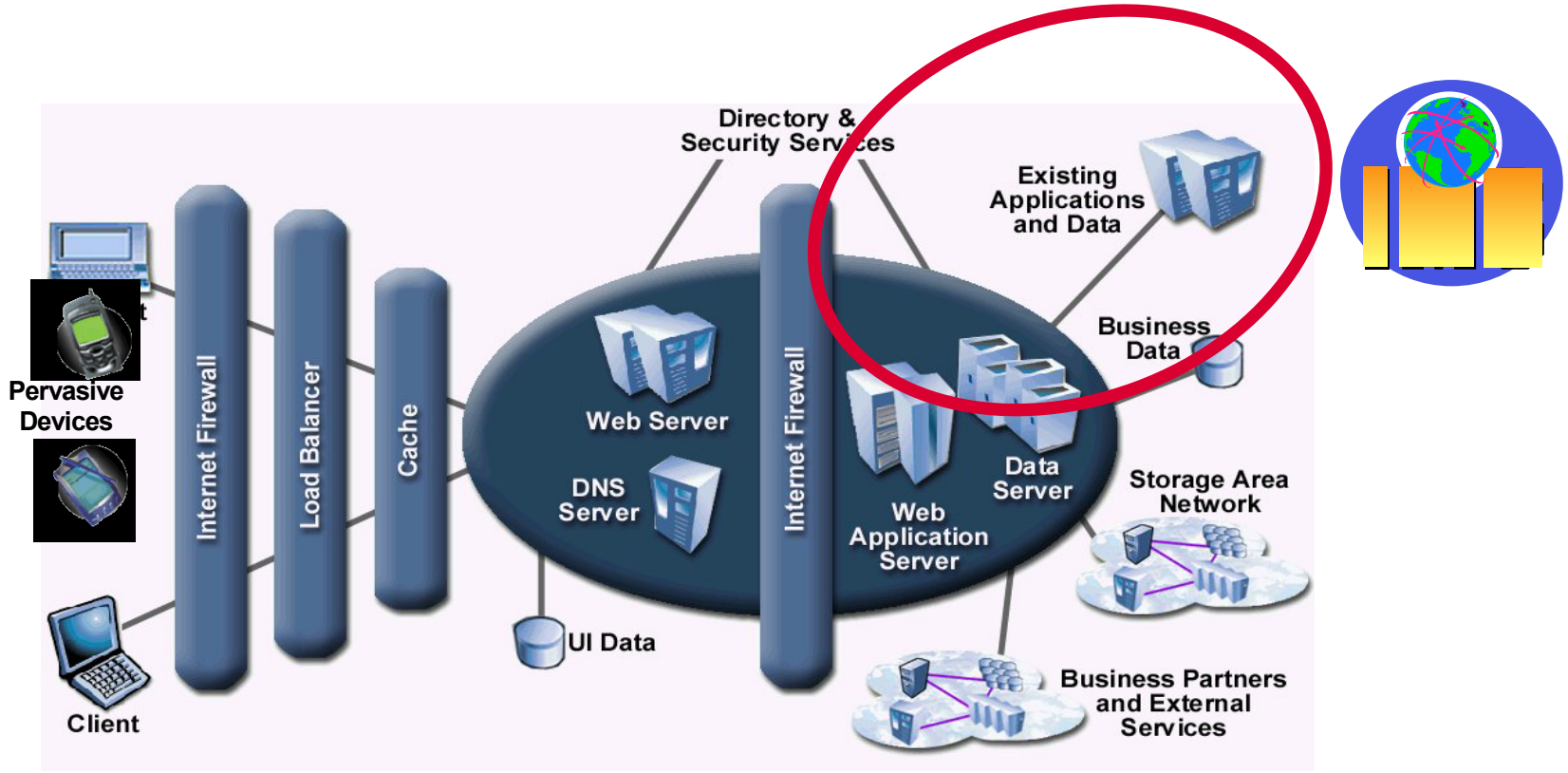
Components inherit qualities of service of the underlying platform

WebSphere z/OS and IMS JDBC Access

- Commit/rollback of resources
  - Activated by WebSphere Managed by RRS syncpoint process



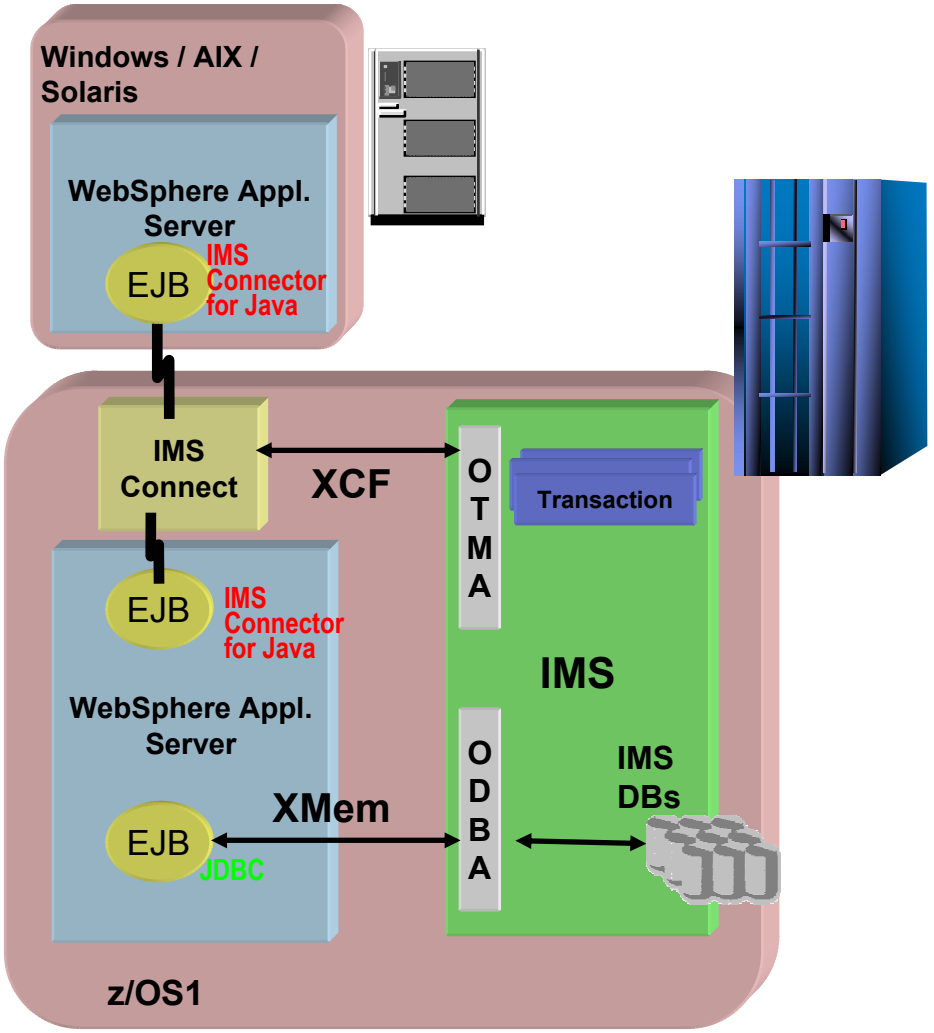
The Big Picture – IMS TM/DB



Combining the strengths of IMS Transaction and Database Managers with the flexibility of e-business technology

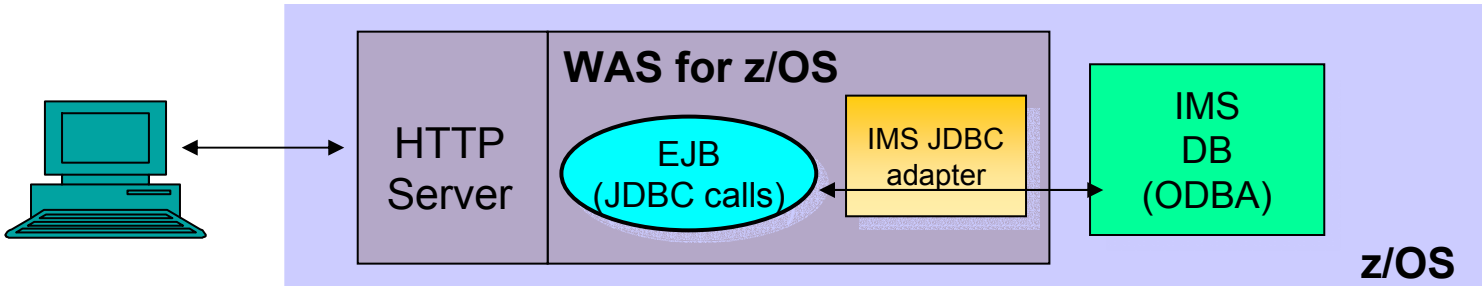
The Big Picture - EJB Access to IMS TM and DB

- EJBs can access an IMS Transaction
  - using IMS Connector for Java
  - and IMS Connect
  - from any WebSphere platform
- EJBs can access an IMS Data Base
  - using JDBC (or DL/1)
  - from WAS for z/OS with IMS V7/V8
  - from Distributed WAS with IMS V9

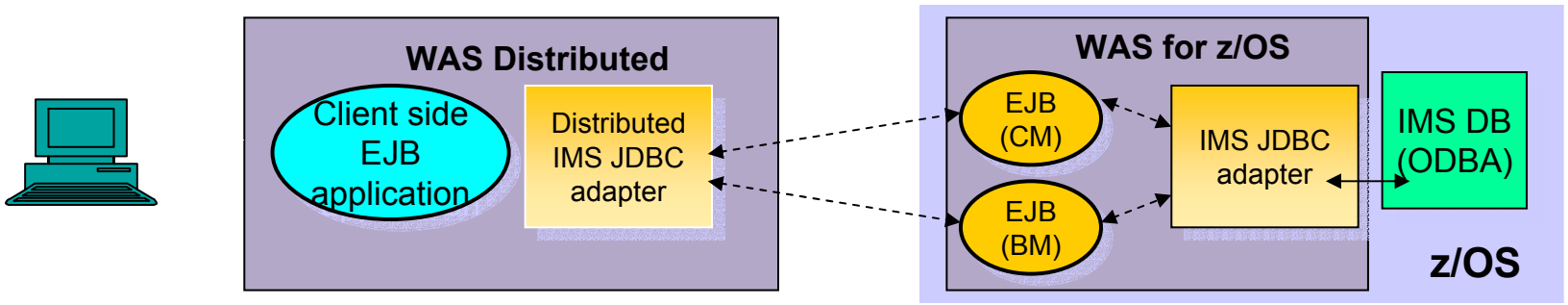


IMS Solutions

- JDBC access to IMS DB (delivered by IMS)
  - Currently supported on WebSphere z/OS and IMS Java support

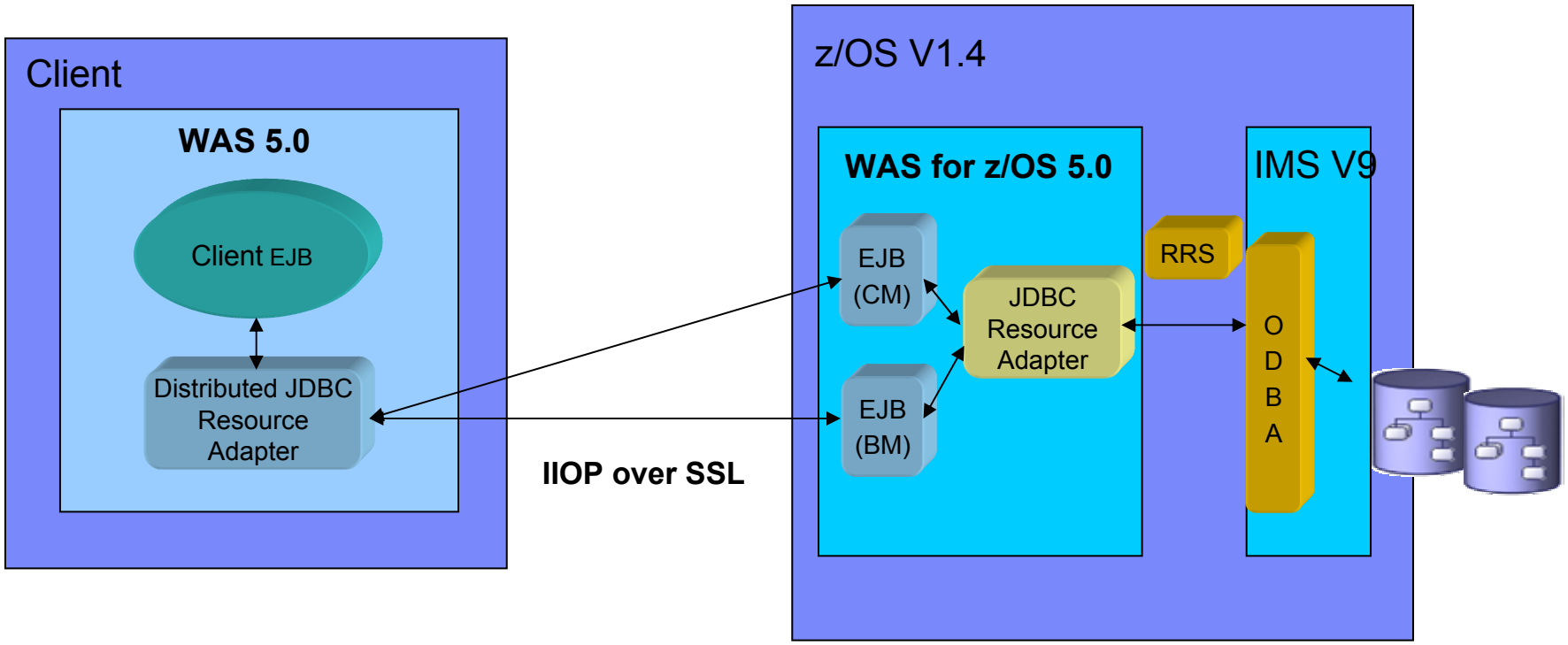


  - Future support with IMS V9 – IMS Java Remote Data Services



CM: container managed (supports global transaction semantics)
BM: bean managed (supports local transaction semantics)

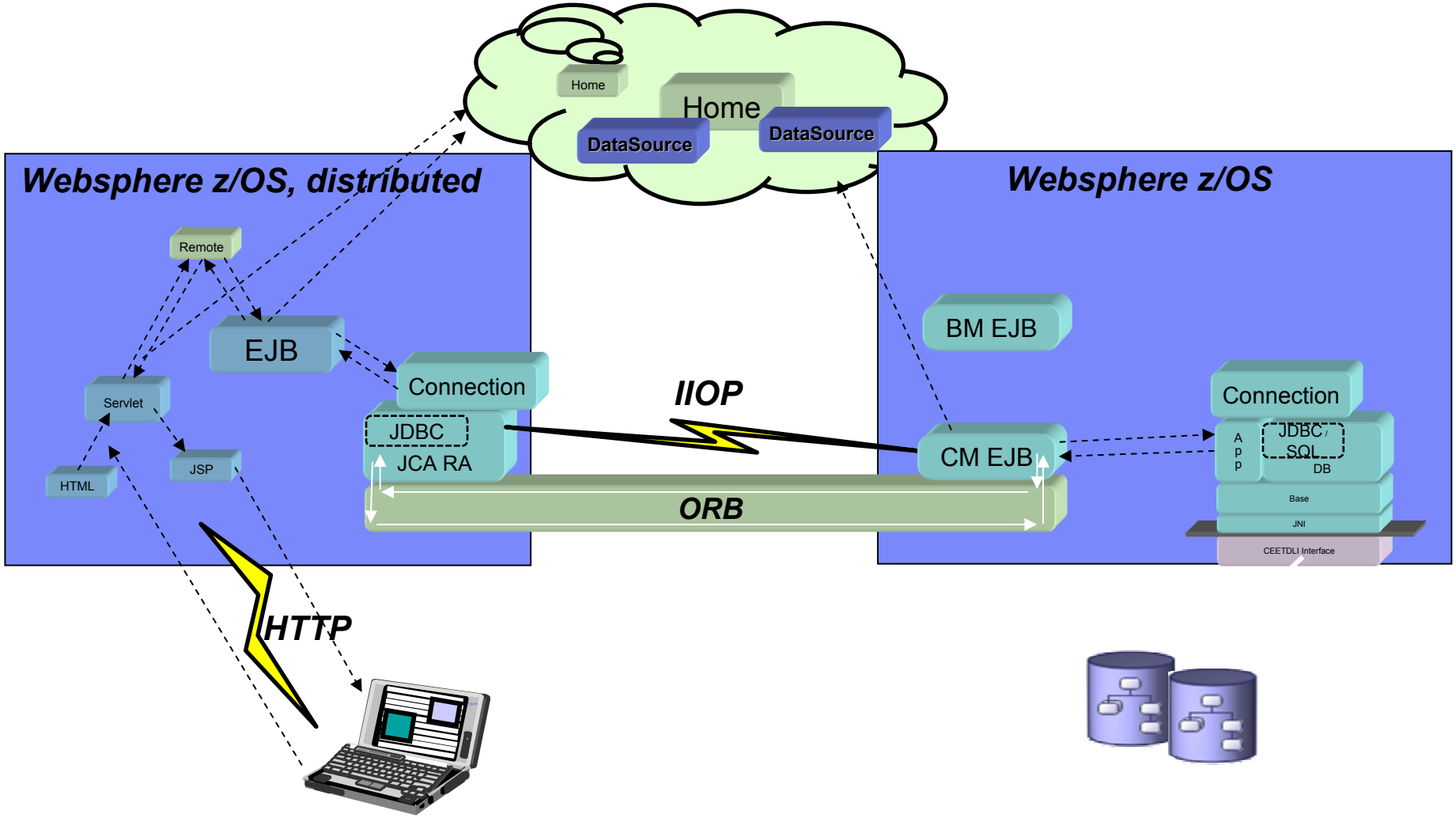
IMS V9 Java Remote Database Services



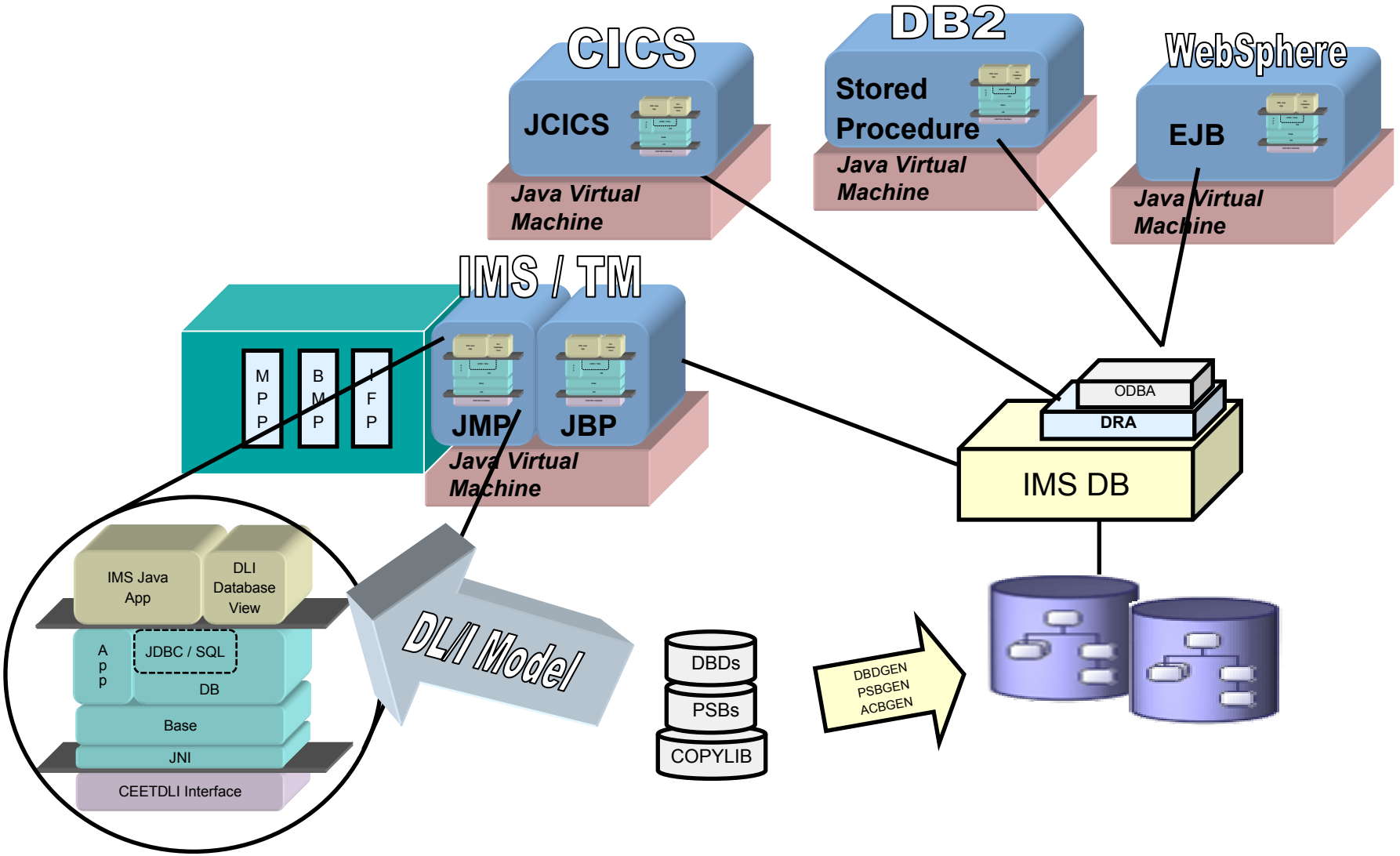
CM – Container Managed

BM – Bean Managed

WebSphere Runtime for RDS



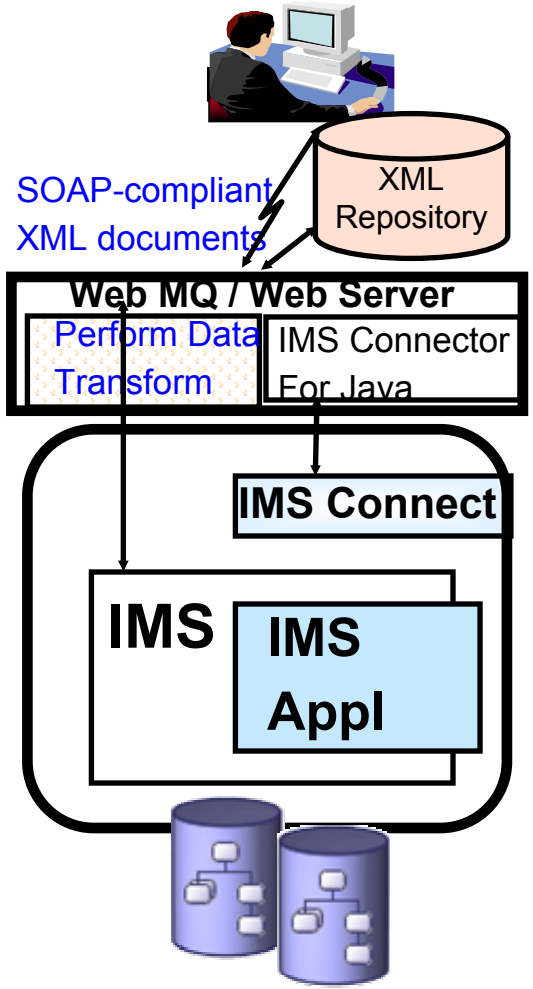
IMS JDBC – The Big Picture



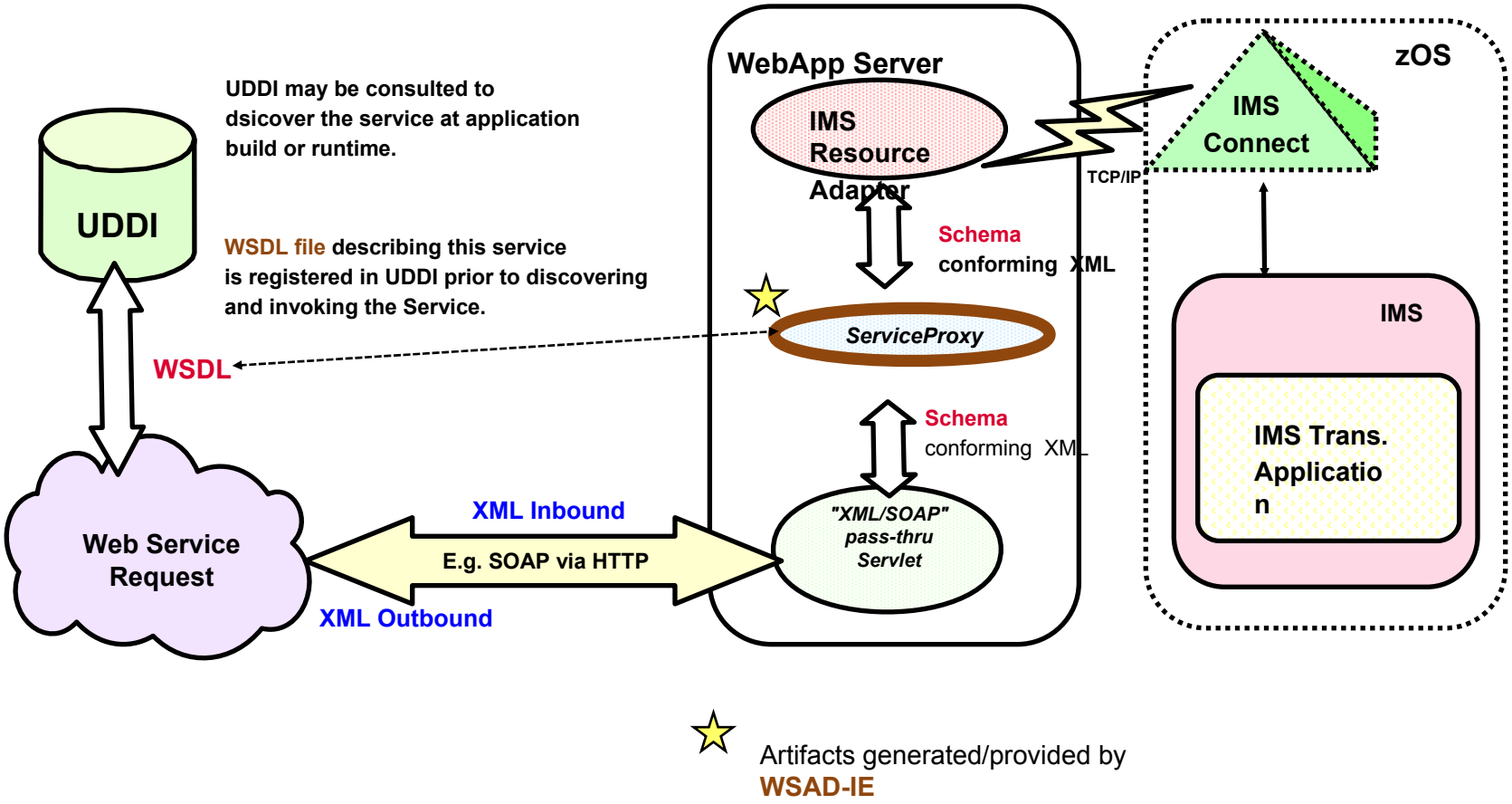
XML, SOAP and Futures

XML/IMS Transparent Application Integration

- Processing XML Documents in New IMS Applications Today
  - Customers can write IMS C++ or IMS Java applications using the XML Toolkit for OS/390
  - Customers can write IMS Cobol or PL/I application using XML support for COBOL and PL/I
- Bridging XML and Existing IMS Applications Today
  - Using WebSphere MQ Integrator Pub/Sub
  - Using IMS Connector for Java
- XML and IMS V9
  - Storing/Extracting XML documents into/from IMS Databases



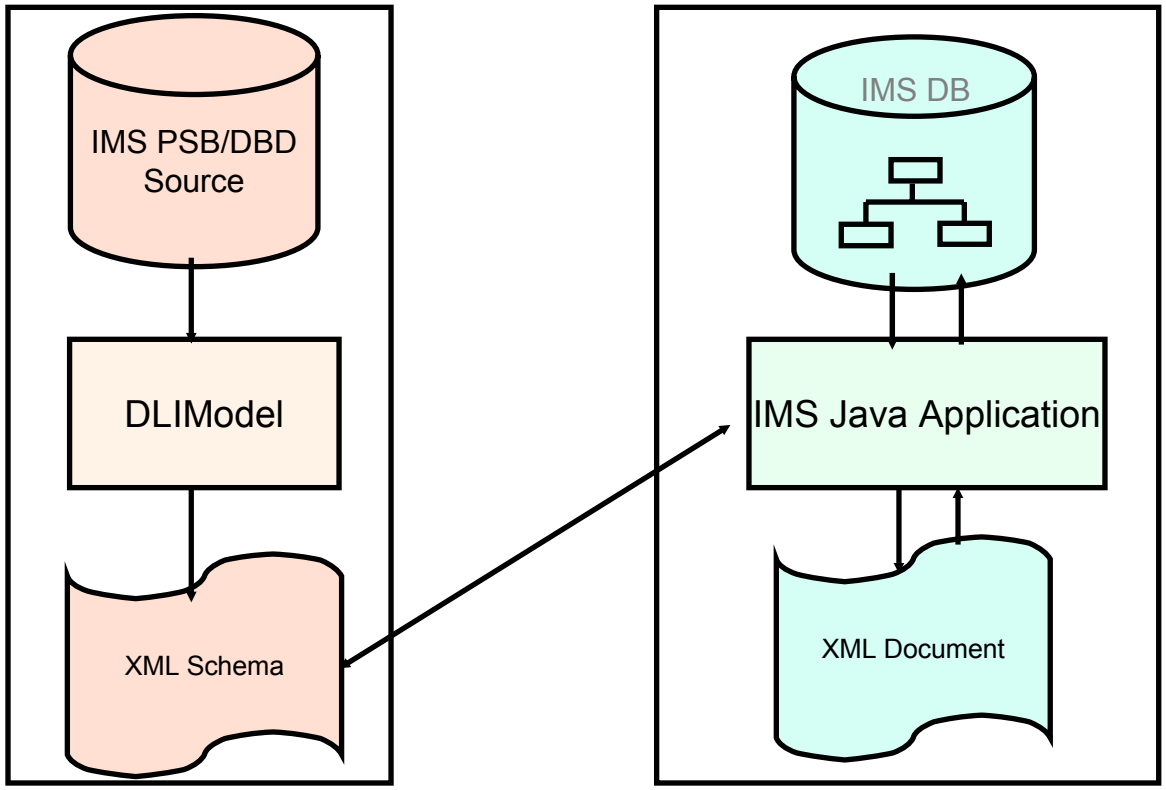
IMS XML Enablement using WSAD-IE



IMS V9 XML-DB - What is XML-DB?

- A methodology for storing and retrieving XML documents into and out of standard IMS databases
  - Language Independent Design
  - XML Schema Metadata (Structural Metadata)
  - DL/I Metadata (Physical Metadata)
  - Two storage types
- XMS Java is the Java enablement of XML-DB using an extended IMS Java JDBC interface

XML-DB Highlights Overview

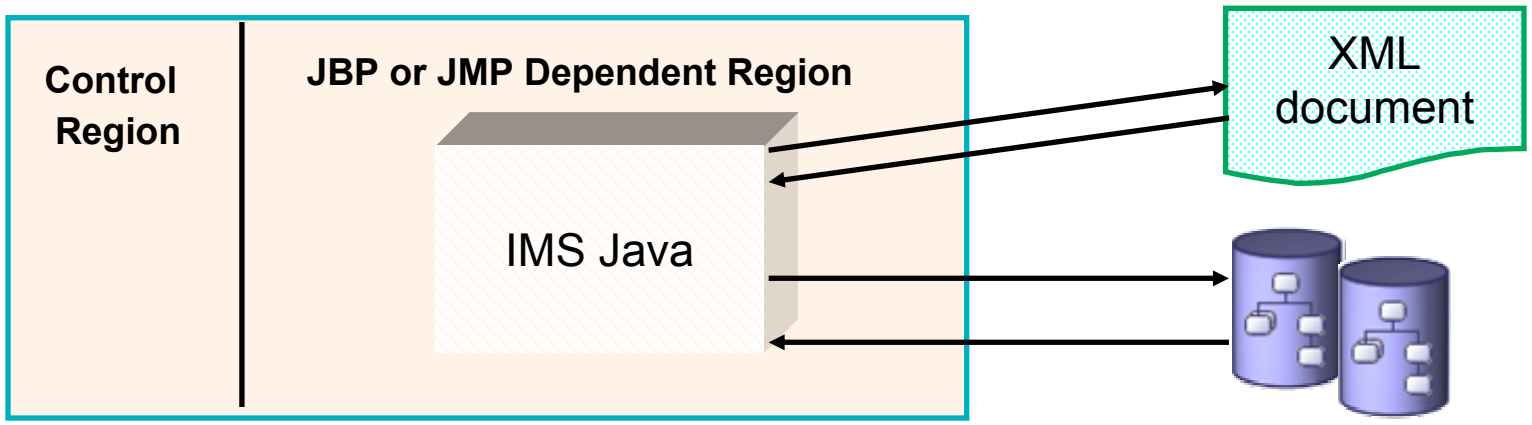


Decomposed vs. Intact Storage

- Decomposed (data-centric storage)
  - XML tags are stripped from XML data
  - Identical as current IMS storage
  - Strict data-centric XML Schema validated data
  - EBCDIC encoding
  - Searching on IMS Search Fields
- Intact (document-centric storage)
  - Entire XML document is stored (including tags)
  - Relaxed un-validated data
  - Any desired encoding is possible
  - Searching is through XPath specified and generated Secondary Indexed Side Segments

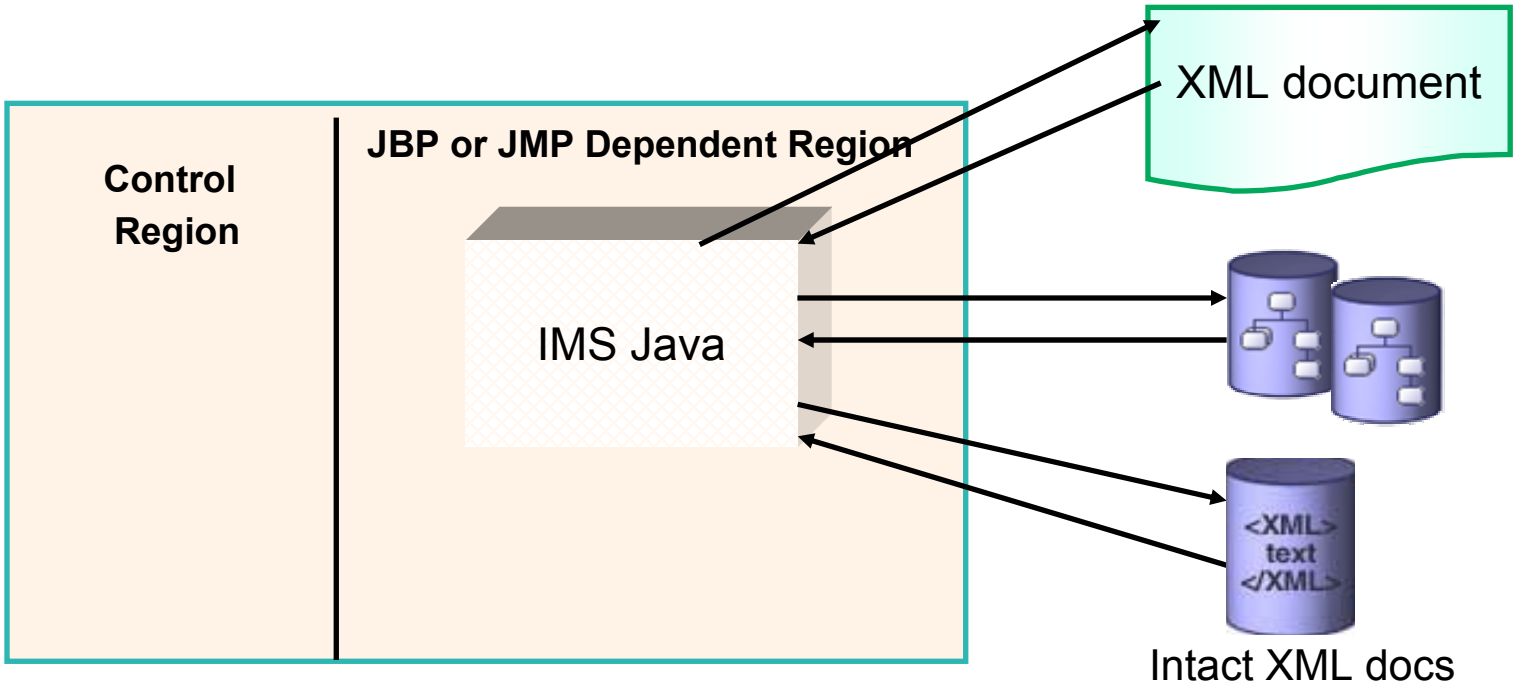
XML-DB Highlights - Decomposed Data

- Retrieve - Compose XML document from any existing traditional database.
- Insert - Decompose XML documents back into same DB.
- Same data can be read by existing IMS applications.



XML-DB Highlights - Intact Data

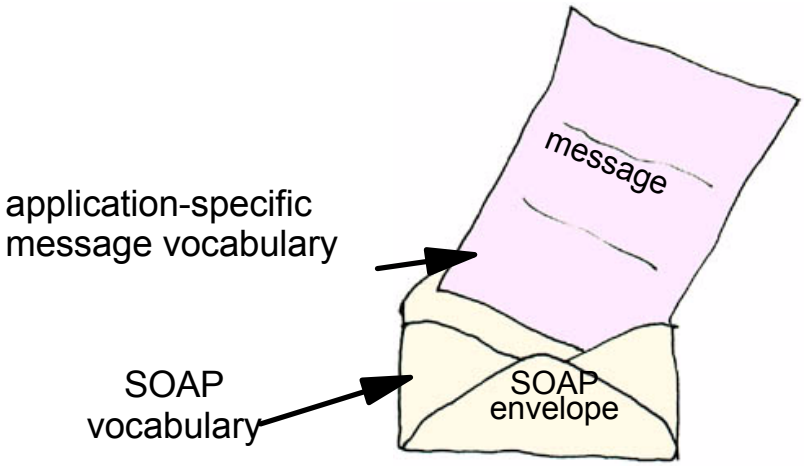
- Insert/Retrieve/Delete new XML documents INTACT in new IMS databases.
- Intact data not expected to be understood by other IMS applications.



SOAP (Simple Object Access Protocol)

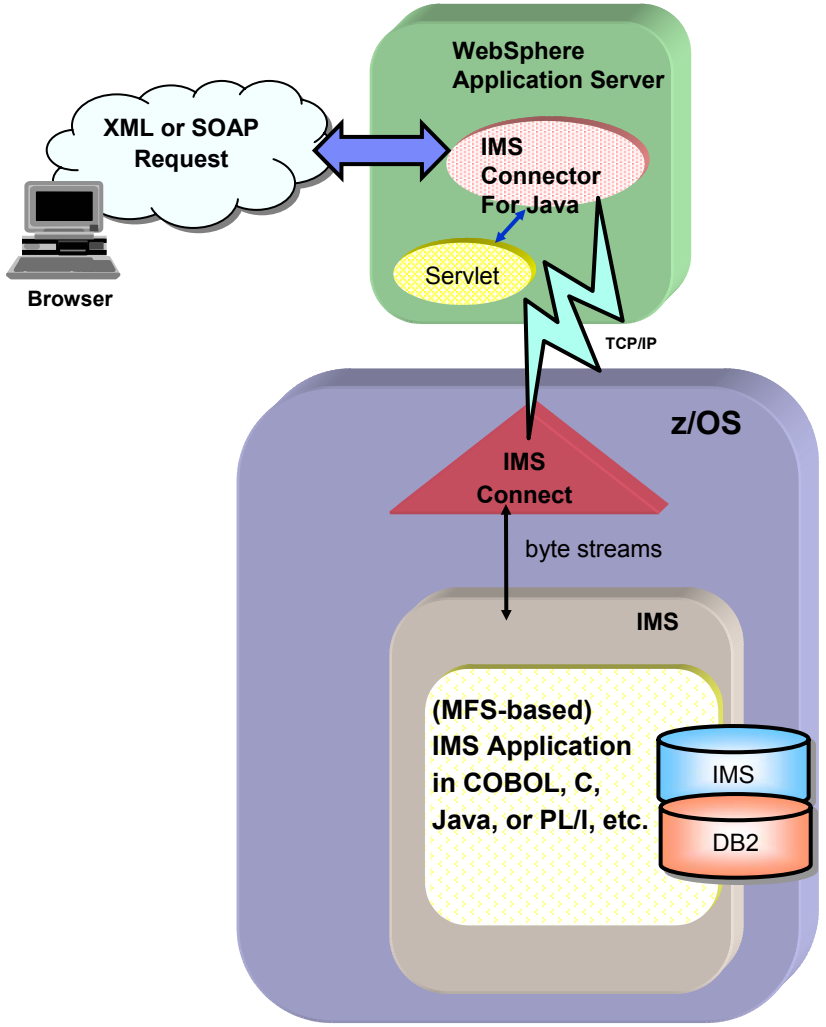
- An XML lightweight messaging protocol
- Request and Response messages
  - Request invokes a method on a remote object
  - Response returns result of running the method
- SOAP defines an "envelope"
  - "envelope" wraps the message itself
  - message is a different vocabulary
  - namespace prefix is used to distinguish the two parts

a standardized way of using XML to define both a message and the target application



Bridging SOAP and Existing IMS Applications

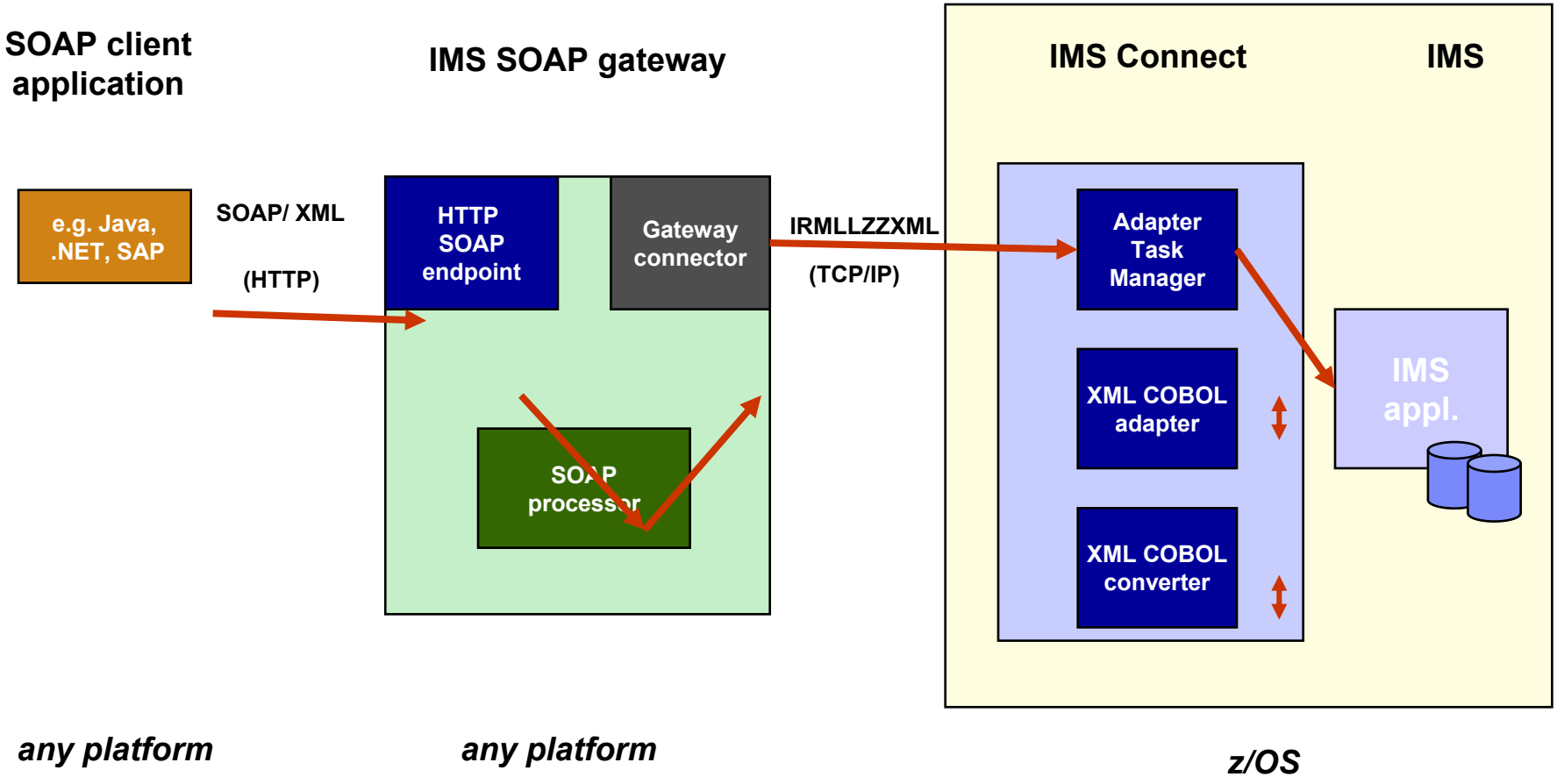
- Use WebSphere Application Server (distributed or z/OS WAS) with the SOAP Protocol
  - IMS COBOL and C applications
    - Since WSAD-IE 4.1
    - Since WASEE 4.1 & WAS zOS 4.0.4
  - IMS MFS-based applications
    - Since WSAD-IE 5.0.1
    - Since WASEE 5.0 & WAS zOS 5.0
  - IMS PL/I applications (direction)
- The IMS transaction, accessed via SOAP, can be “published” as a “Web Service”



IMS SOAP Gateway

- So far ...
  - … IMS provides services for IMS applications using (a) the WebSphere Application Server, (b) IMS Connector for Java, and (c) IMS Connect to:
    - transform existing IMS transactions into services by using e.g. WSAD-IE to create service definitions for IMS transactions
    - deploy these service definitions to WAS to make the IMS services available as Enterprise Java Bean (EJB) services or Simple Object Access Protocol (SOAP) web services
- The IMS SOAP Gateway is an XML based connectivity solution
  - enable existing/new IMS applications to communicate outside of the IMS environment using SOAP
  - provide the ability for non-WebSphere customers to access IMS-based business logic
  - retrieve IMS WSDL files out of the UDDI directory and fit them into a tool (such as Microsoft .Net tools, or Apache Axis server tools) to generate SOAP messages to be sent to the host to run IMS applications
  - also use the standard APIs, such as Java API for XML-based RPC (JAX-RPC), to create both client and server code out of the generated WSDL files (RYO)

IMS SOAP Gateway



IMS SOAP Gateway

- Technology preview (demo) available at:
  - http://www.ibm.com/ims (then look for SOAP for IMS)
- This sample demonstrates how the input SOAP message can be sent to the IMS SOAP gateway to drive a back-end IMS transaction and to send output SOAP messages back to the client

Open and Integrated IMS e-business

- Application Development/ Connectivity
  - Seamlessly integrate distinct enterprises
- B2B data exchange
  - Modernizing IMS Transactions and data
  - XML, SOAP/Web Services to access IMS transactions
  - IMS XML data storage
  - Distributed access to IMS data

XML, SOAP & Web Services = Open Integration Technologies
JDBC, ODBC = Interoperability for Application Developers

- Integration with both IBM and non-IBM solutions
  - WebSphere and J2EE compliant application server
  - Designed to support open integration technologies
  - Support collaboration among IMS and IBM and non-IBM components, both within and beyond enterprise boundaries
  - Simplify access to existing backend systems

SOAP

Web Services

IBM Software Group

IMS Tools

Janet LeBlanc
Certified Technical Sales Support
leblancj@ca.ibm.com

IMS Tools Update

- IMS Tools for zSERIES Business Overview
- Autonomic Computing
- IMS Tools Portfolio
- IMS Problem Investigator
- Summary

IMS Tools for zSERIES - Business Overview

- The IMS Tools are a unique model in the zSERIES tools industry
- Continued commitment and investment to support future needs
- Comprehensive solutions now and more coming
- Independent of database server versions (release cycles)
- Cross-tool integration
- Products tested under same configurations and workloads as the IMS engine

Not just a database tools vendor.

IMS Tools Portfolio

- Utilities Management
  - IMS Database Control Suite
  - IMS Database Repair Facility
  - IMS Fast Path Basic Tools
  - IMS Fast Path Online Tools
  - IMS High Performance Load
  - IMS High Performance Pointer Checker
  - IMS High Performance Prefix Resolution
  - IMS High Performance Unload
  - IMS Index Builder
  - IMS Parallel Reorganization
- Application Management
  - IMS Batch Backout Manager
  - IMS Batch Terminal Simulator
  - IMS Connect
  - IMS Connect Extensions
  - IMS MFS Reversal Utilities
  - IMS Program Restart Facility
  - Data Encryption for IMS and DB2 Databases
- Database Administration
  - IMS HALDB Conversion and Maintenance Aid
  - IMS Hardware Data Compression Extended
  - IMS Library Integrity Utilities
  - IMS Sequential Randomizer Generator
- Recovery Management
  - Application Recovery Tool for IMS and DB2
  - IMS DEDB Fast Recovery
  - IMS Database Recovery Facility
  - IMS High Performance Change Accumulation
  - IMS High Performance Image Copy
- TM Management
  - IMS Command Control Facility
  - IMS ETO Support
  - IMS High Performance System Generation Tools
  - IMS Multi-Dialog Manager
  - IMS Queue Control Facility
- Performance Management
  - IMS Buffer Pool Analyzer
  - IMS Performance Analyzer
  - IMS Performance Monitor for z/OS
  - IMS Problem Investigator
  - IMS Network Compression Facility
- Replication Management
  - IMS DataPropagator

IMS Connect Extensions

- Enhances IMS Connect with extended features in the areas of availability, security, and performance monitoring.
- Availability:
  - Provide enhanced services:
    - user exits,
    - transaction pacing,
    - dynamic routing,
    - workload balancing and
    - extended control and
    - reporting.
- Security:
  - Provide protection against access by unauthorized clients.
- Performance Monitoring
  - Comprehensive event recording for IMS Connect events
  - Monitor and display IMS Connect activity and utilization in real time
  - Additional reporting and analysis by IMS Performance Analyzer
- Program ID 5655-K48 GA June 25

IMS Performance Analyzer V 3.3

- Improves IMS system performance by providing a wide variety of reports that analyze performance, usage, and availability, including monitor reports, Fast Path Log reports, New Transaction Transit reports, Transaction Statistics Report, System Checkpoint Reports, Deadlock Reports,
- Extract capability which includes CPU usage and DB update activity.
- **NEW** reports and features that include comprehensive reporting for IMS Connect Extensions for z/OS event collection;
- **NEW** Dashboard report that provides a
  - Quick overview of critical system performance indicators
  - Springboard to other reports;
- **NEW** BMP Checkpoint report that measures batch checkpoint frequency that can impact online performance and system restartability;
- **NEW** Transaction History File which allows you to collect detailed transaction performance data and export it into DB2 for help with long-term capacity planning and trend analysis; and an improved Report Analysis that provides additional information to aid in the interpretation of reports.

- Program ID 5655-E15 GA June 25

IMS Problem Investigator for z/OS

- Enhances the IMS Log Formatting and Reporting capability
  - Replaces similar functionality of the IMS File Select & Formatting Print utility (DFSERA10)
- Simplifies problem determination
  - ISPF dialog with powerful log viewing facility
  - Automated routines for input log and data selection
  - Multiple options for log, trace, and monitor data selection
  - Powerful record formatting and filtering facilities
  - Log record analysis that allows drill-down to the field-level
  - Interface to IMS Performance Analyzer
- Provides unique problem investigation capabilities
- Program ID 5655-K50

IMS Multi-Dialog Manager for z/OS

- Enables IMS users to more quickly change between IMS sessions improving usability of the IMS online system while improving worker productivity.
  - Allows terminal users to suspend & resume a conversation
    - Simplified IMS HOLD and RELEASE commands
    - Single keystroke to perform functions
  - No lost information
- Complements the existing IMS support for conversational transactions by managing the process of holding and resuming conversations for the end user
  - Separate TERM names are stored for each
  - Stored IMS conversations
  - One button switch between conversations
  - Low overhead, instant response
- Enhanced support
  - Call Center reliable
  - No application changes needed
    - Uses standard IMS exits
  - ETO support
- Program ID 5697-H91

IMS Tools for zSERIES - Summary

- Focus
  - New products
  - Product enhancements
- Remain flexible and responsive to customers
  - Adjust plans to accommodate customer requirements as business dictates
  - Deliver enhancements in expeditious manner
- Ensure satisfaction of existing customers
  - Service excellence
  - Responsiveness to new requests

Summary

- Where to find additional IBM DB2 and IMS Tools Information
  - Announcements
    - http://www-3.ibm.com/software/data/db2imstools/announce.html
  - List of IBM DB2 and IMS Tools
    - http://www-3.ibm.com/software/data/db2imstools/
  - NEW News
    - http://www-3.ibm.com/software/data/db2imstools/news.html

Questions and Answers!

- We will now be conducting a Q & A session. Please press #1 so the operator can open your line to ask a question.
- IBM would like to offer more of these training sessions. Please send feedback to dbowling@us.ibm.com or reply to the email questionnaire that will be sent to you in the next few days.
- If there are other members of your team that could benefit from hearing this presentation, please have them dial in and listen to the upcoming replay that will be available early next week.

Thank you for your time!

- For more information about the DB2 an IMS Tools, please visit our website at: www.ibm.com/software/data/db2imstools/