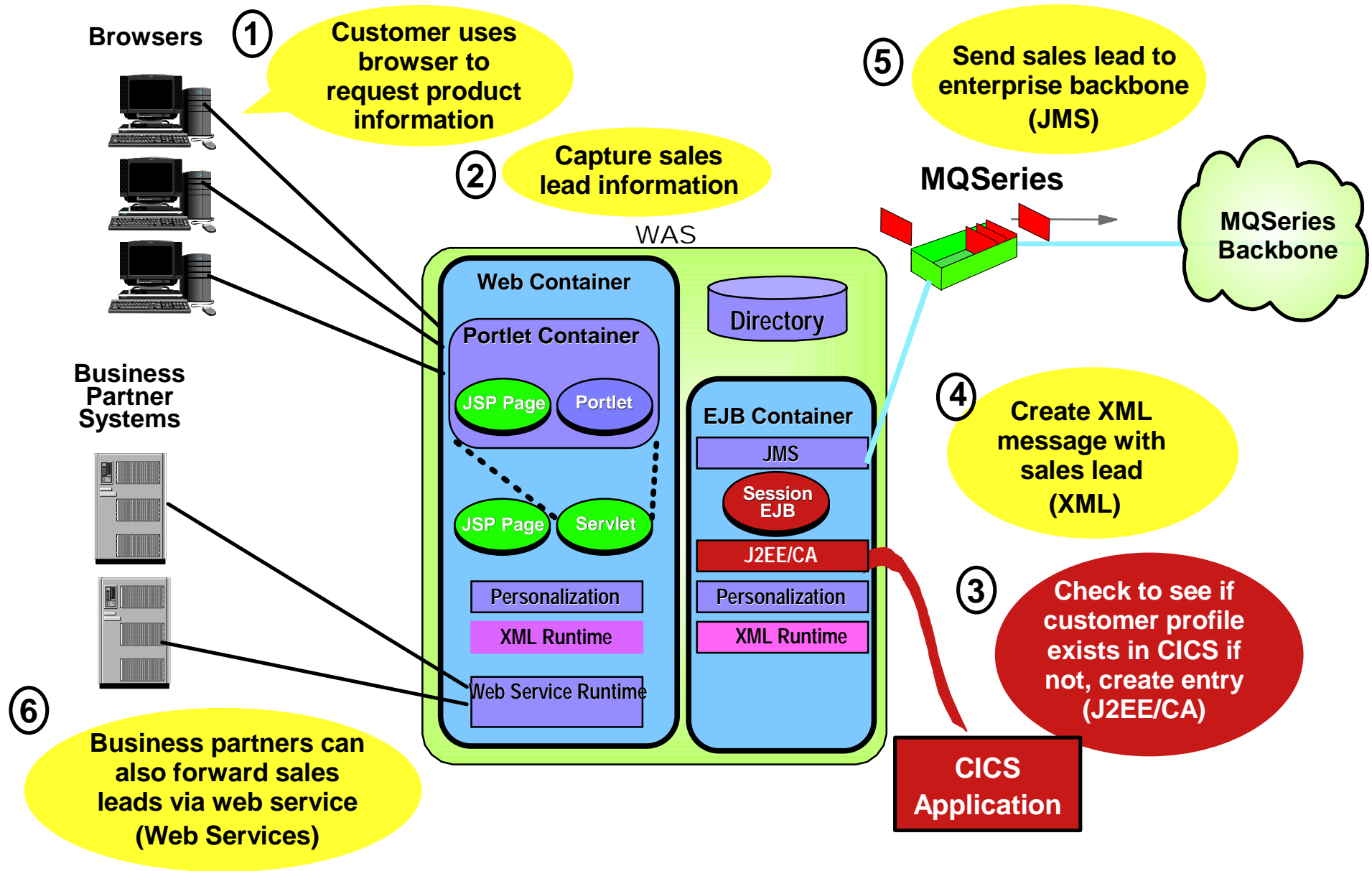


WebSphere Summit

WebSphere Integration Technologies
J2EE/CA, XML, JMS, Web Services

J2EE/CA - New Application to Capture Sales Leads

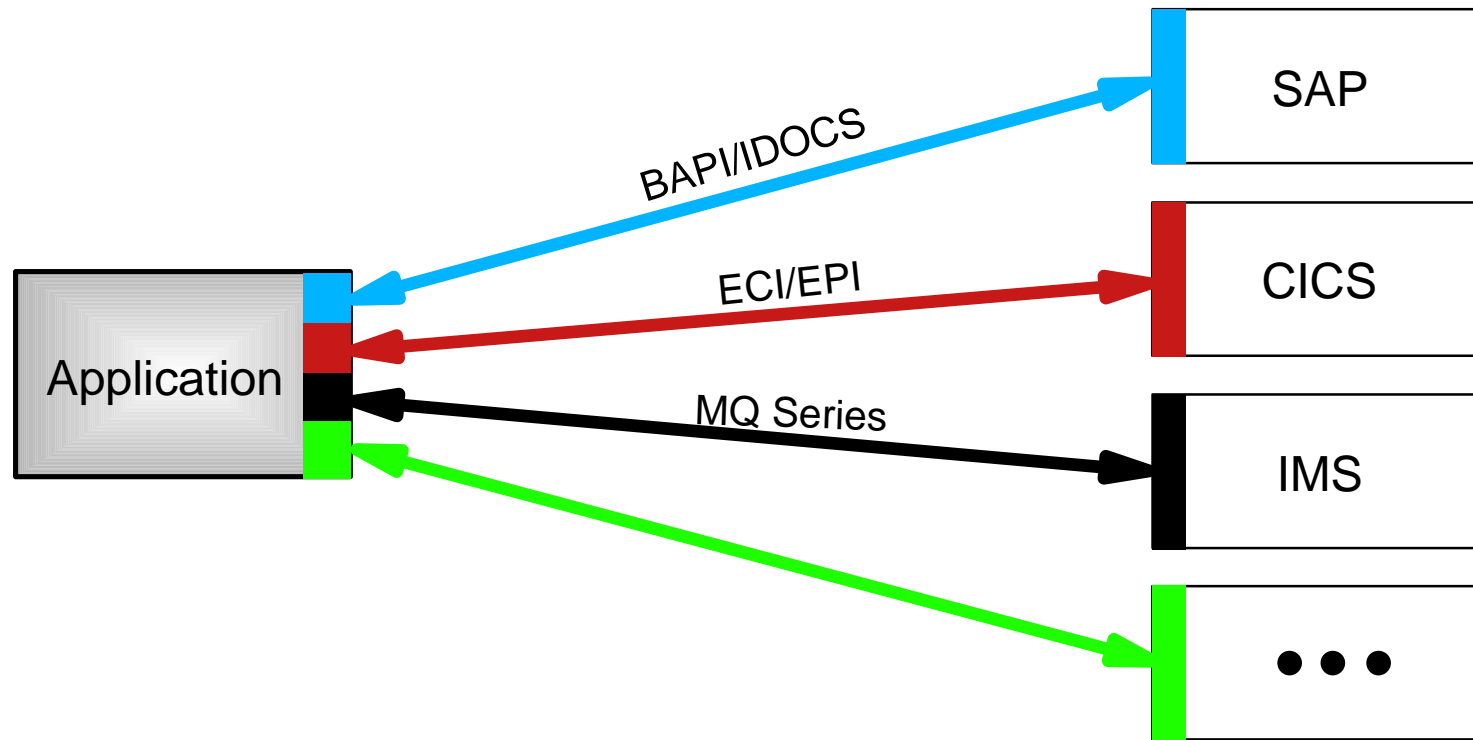


J2EE Connection Architecture (J2EE/CA) Drives Down Integration Costs

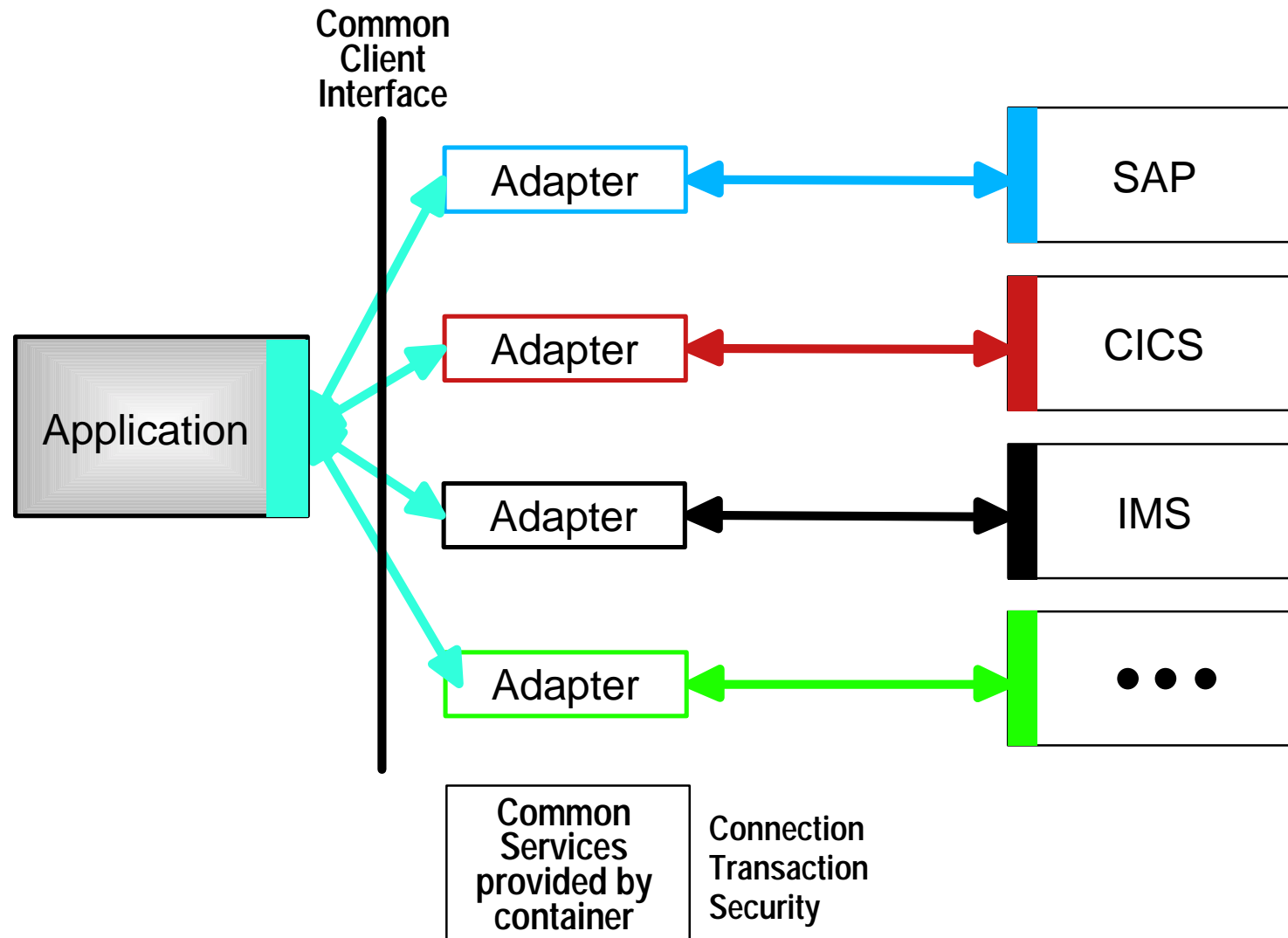
- Connection services implemented by the container
 - ▶ Connection pooling
 - ▶ Security
 - ▶ Transaction Mgmt
- Common Client Interface for all connections
 - ▶ simplifies programming
- One standard adapter for each EIS resource
 - ▶ Versus platform specific adapters

WebSphere Tools Can
Drive Down Costs Even More!

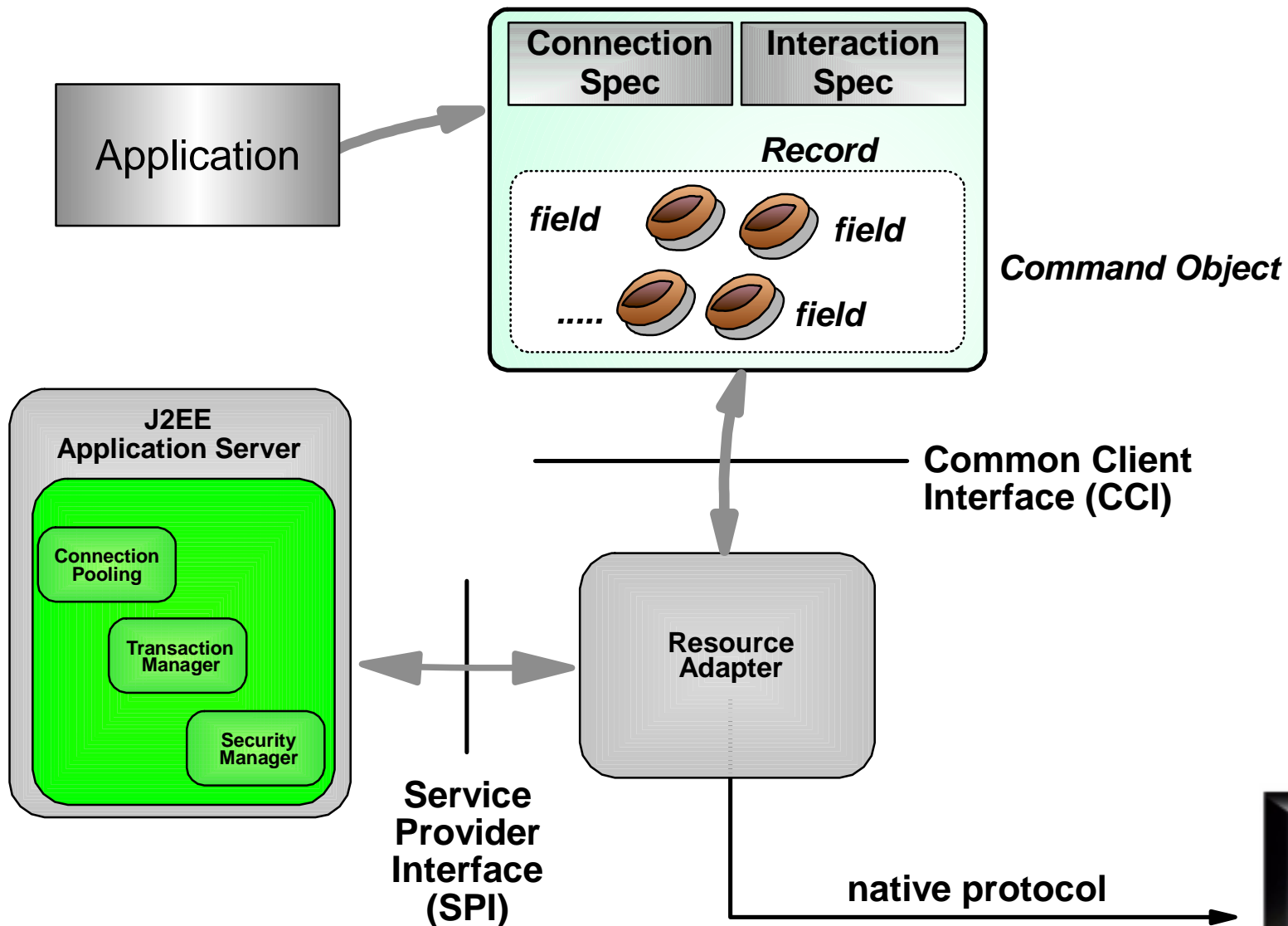
Before J2EE/CA



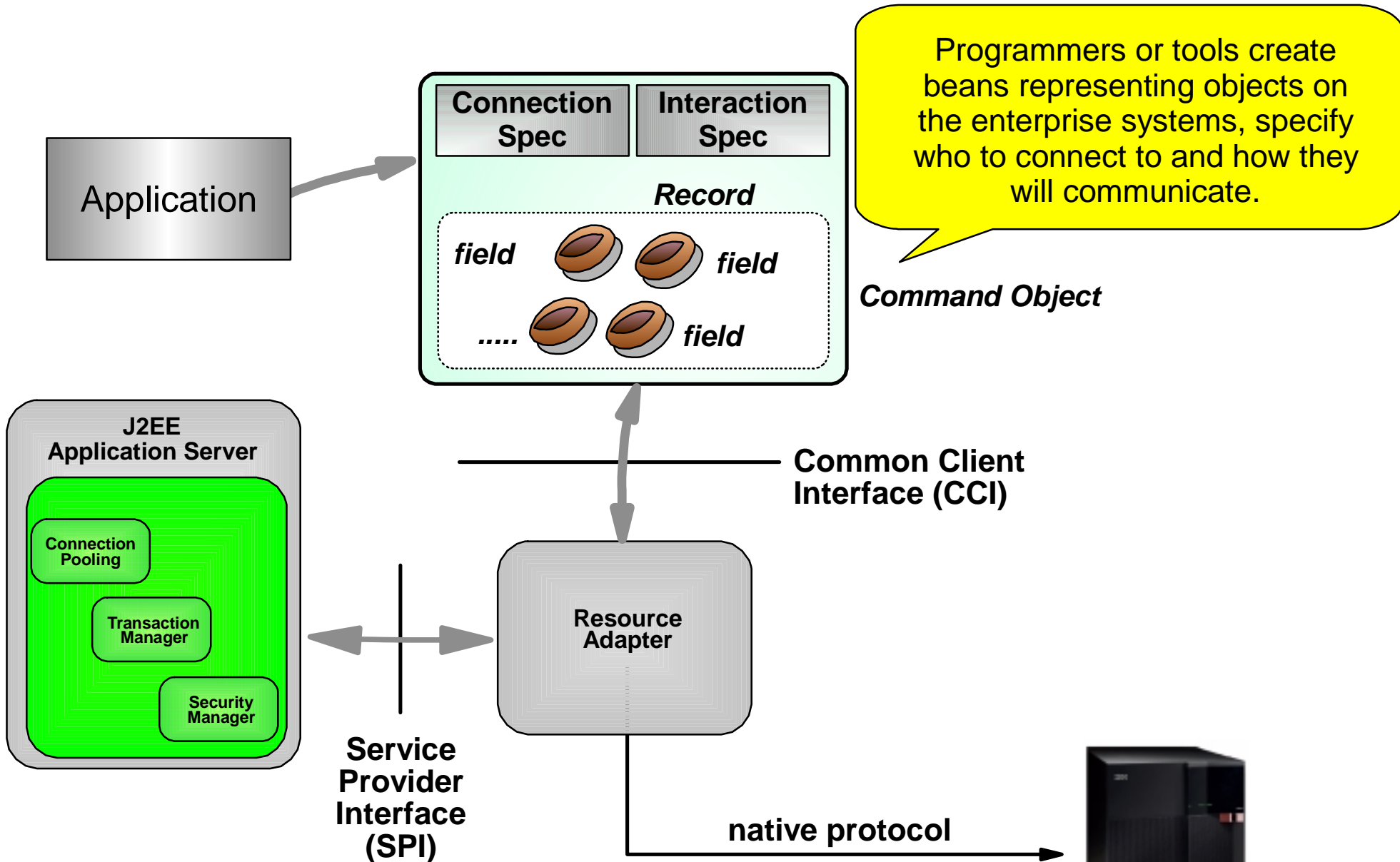
With J2EE/CA



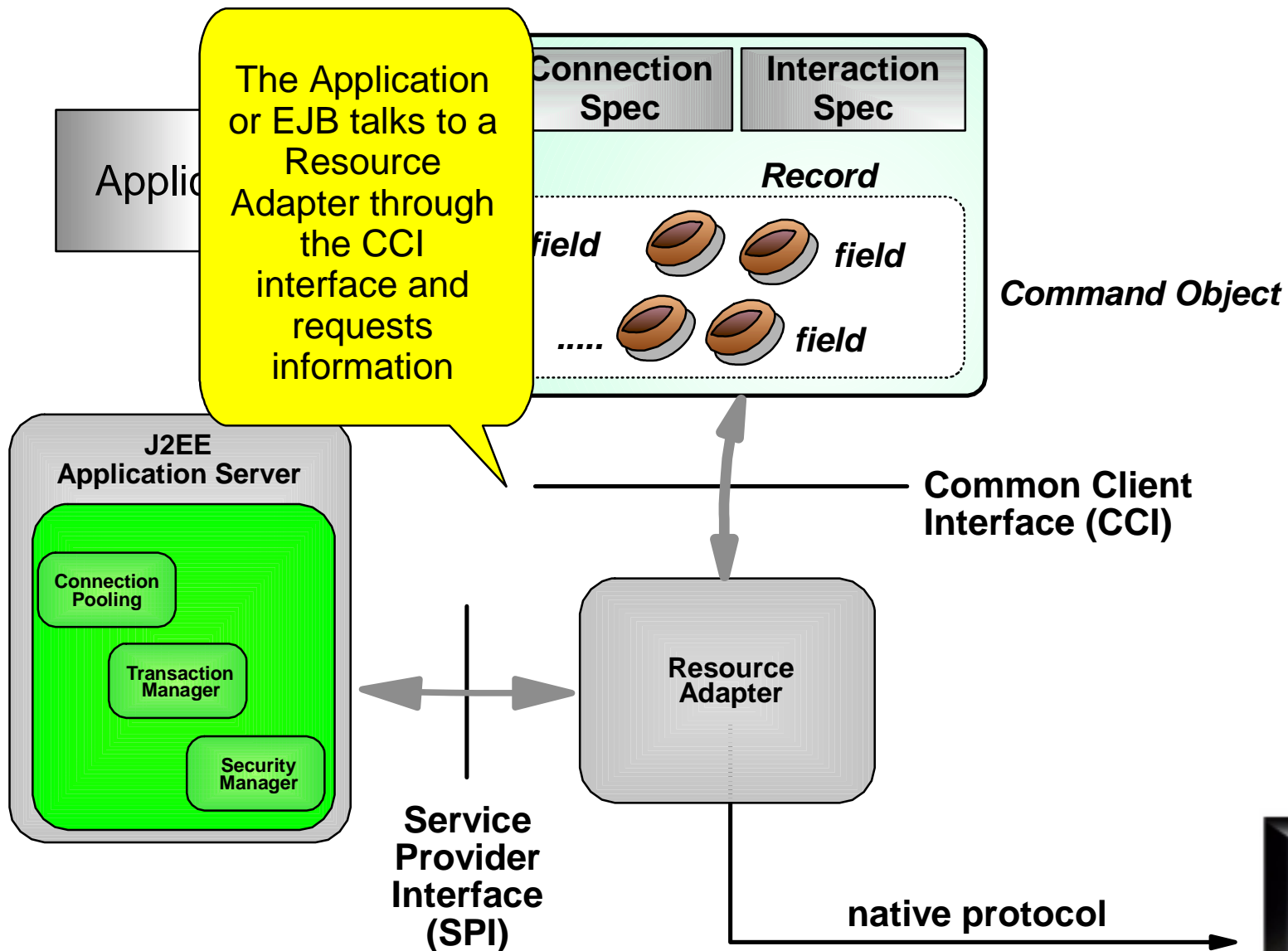
Adapters and Commands



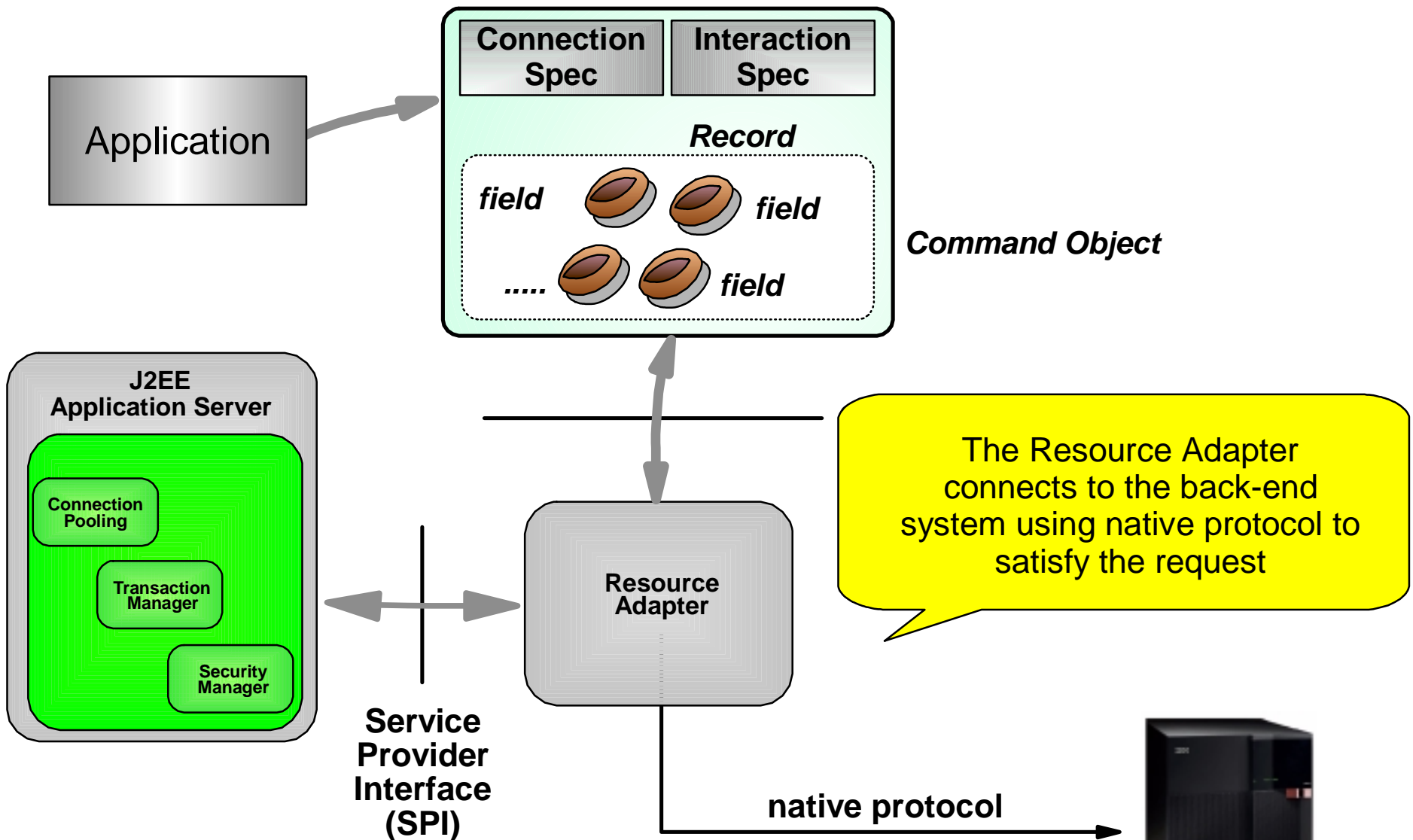
Adapters and Commands



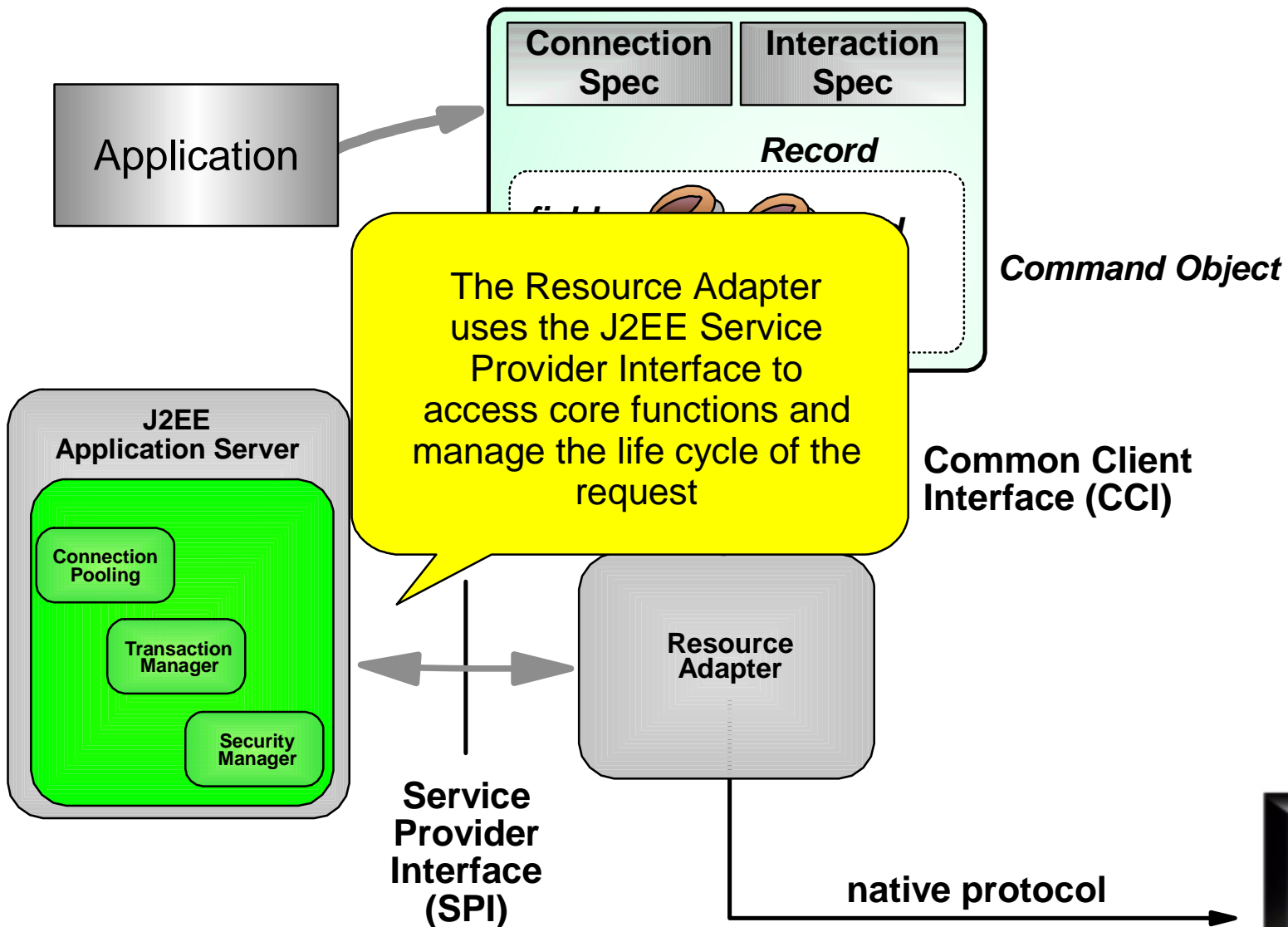
Adapters and Commands



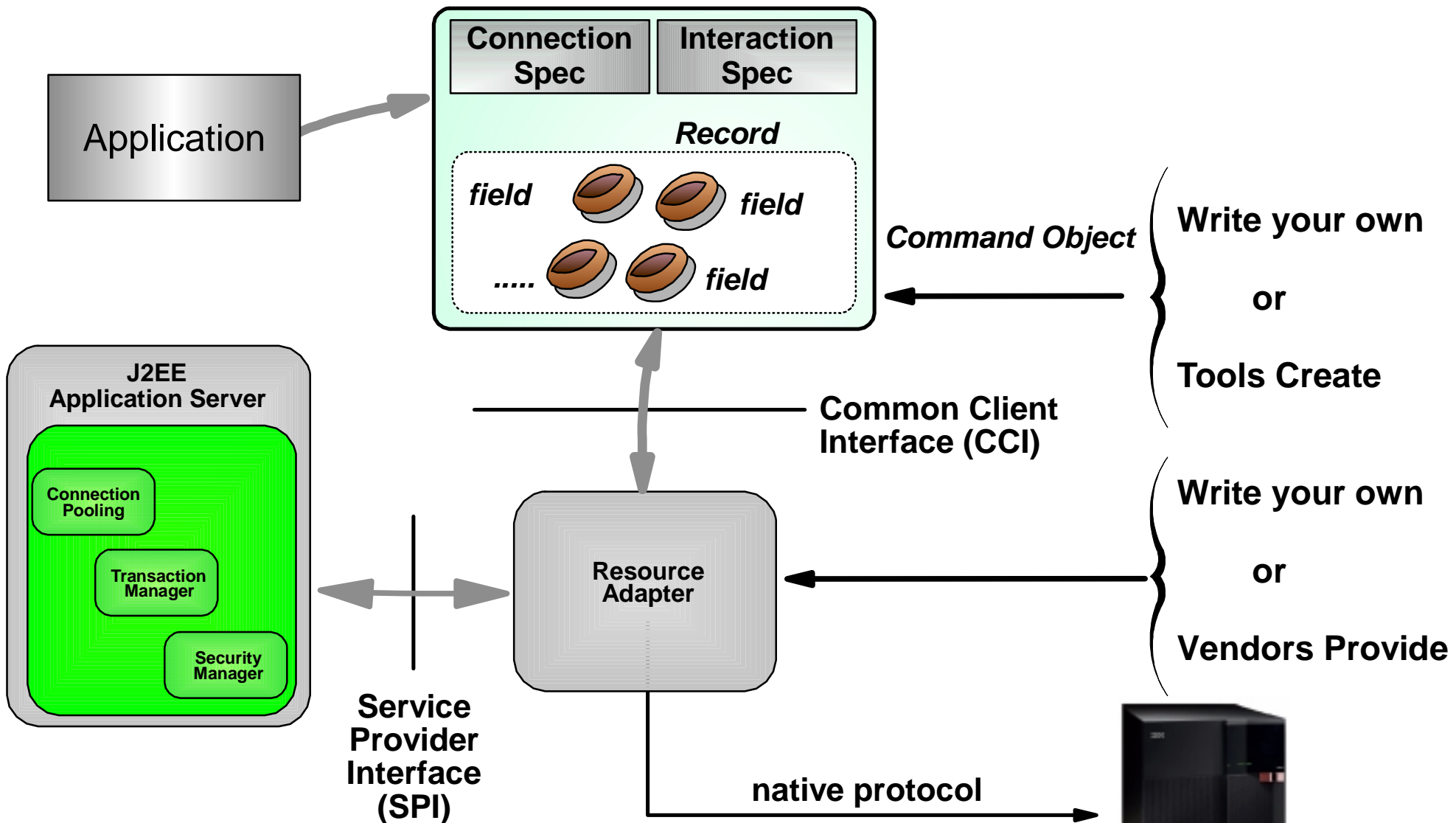
Adapters and Commands



Adapters and Commands



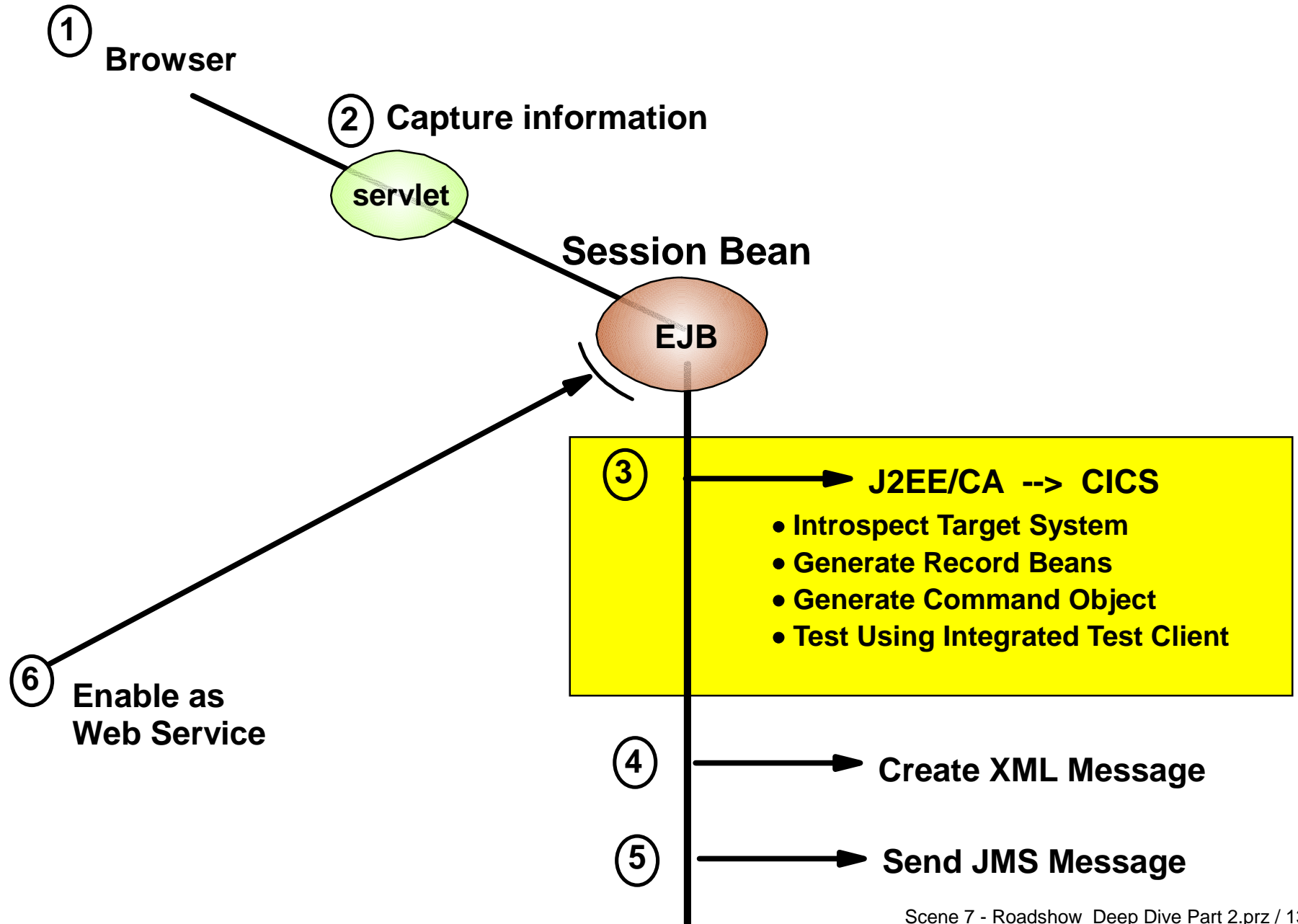
Adapters and Commands



WebSphere - The Complete Approach

- WebSphere Application Server V4.0
 - ▶ J2EE/CA Version 1.0 Support
- Pre-Built Adapters with Command Generator Tooling
 - ▶ Introspect the Target Enterprise Application
 - ▶ Retrieve Data Formats and Record Definitions
 - ▶ Generate a command for each request/response
- VisualAge for Java V4.0
 - ▶ Enterprise Adapter Builder
- WebSphere Studio Application Developer EAB available 2002

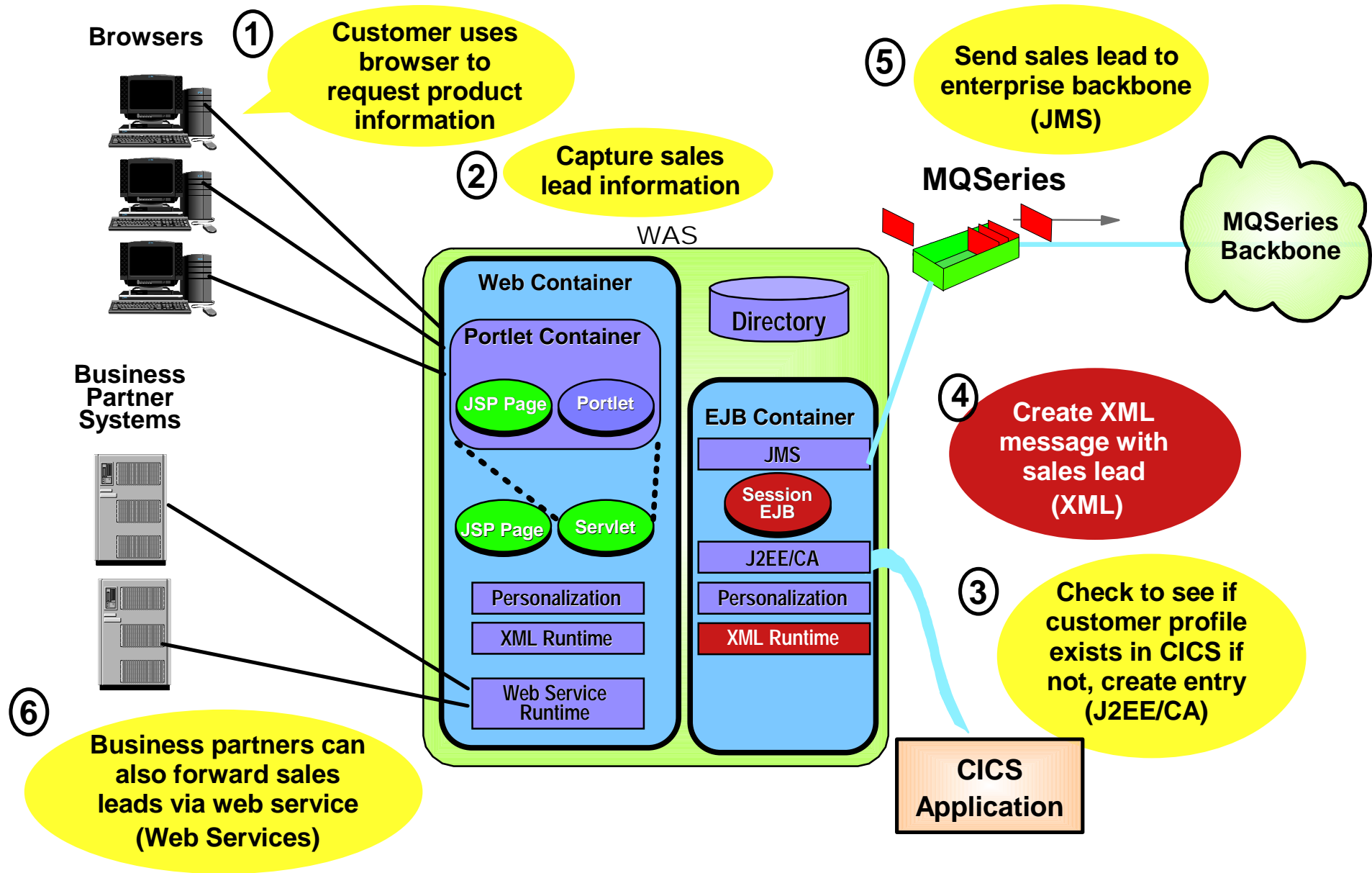
J2EE / CA Demo



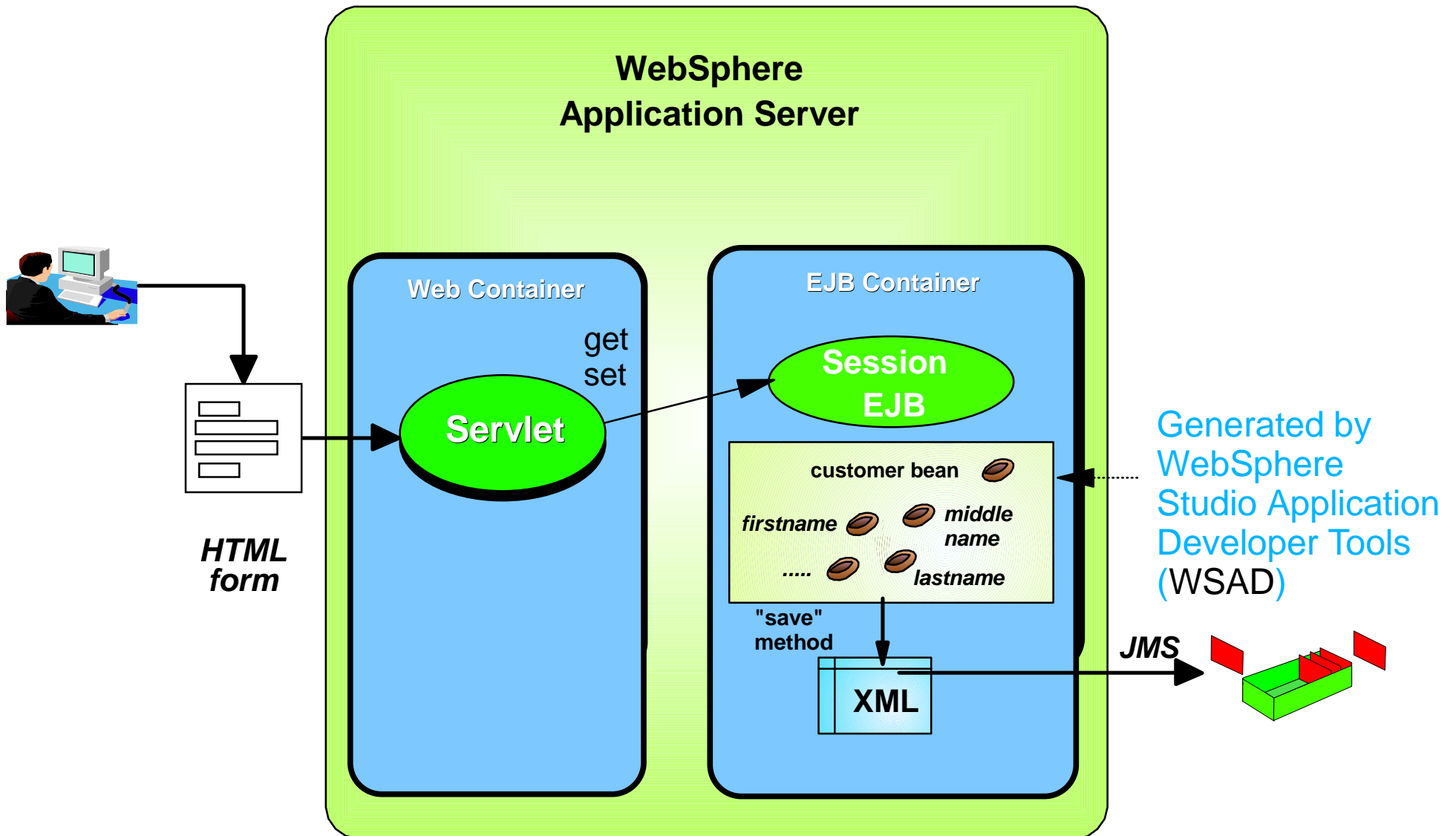
WebSphere J2EE/CA Advantages

- Deeper support for standards
 - ▶ Goal Of The Standard is Programmer Productivity
 - ▶ BEA Has Support in WLS and Missed It in Tools
 - ▶ IBM Has Total Support in WAS and Excellent Tools
- More Adapters
 - ▶ 28 J2EE/CA, 53 CCF adapter/platform combinations
- Better Tools
 - ▶ Enterprise Access Builder generates command objects
 - ▶ Increased Productivity
- Better History
 - ▶ Real World Experience
 - ▶ CCF In Use Today By Major Customers
 - ▶ IBM was the first to pass certification for J2EE 1.3 (which includes J2EE/CA 1.0)

XML - New Application to Capture Sales Leads



Friendly Finance Runtime: Generate XML Messages



Friendly Finance Buildtime Steps

Generating XML Message

Create XML message



```
<?xml version = 1.0 encoding = "UTF-8">
<customer>
  <first name>
    <John>
  </first name>
```

Define Message Structure

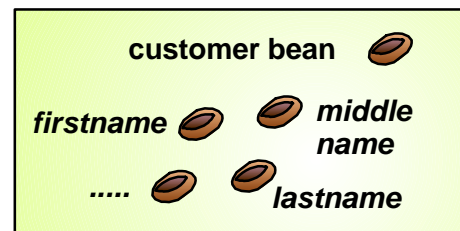


```
<?xml version = 1.0?>
<xsd: schema xmlns:xsd="http://w3.xml.org/20
  <xsd: element name="CUSTOMER">
    <xsd: element ref="FIRST_NAME" min
<!ELEMENT customer (first name, ...)
<!ELEMENT first name (#PCDATA)
<!ELEMENT middle name
(#PCDATA)
<!ELEMENT last name (#PCDATA)
```



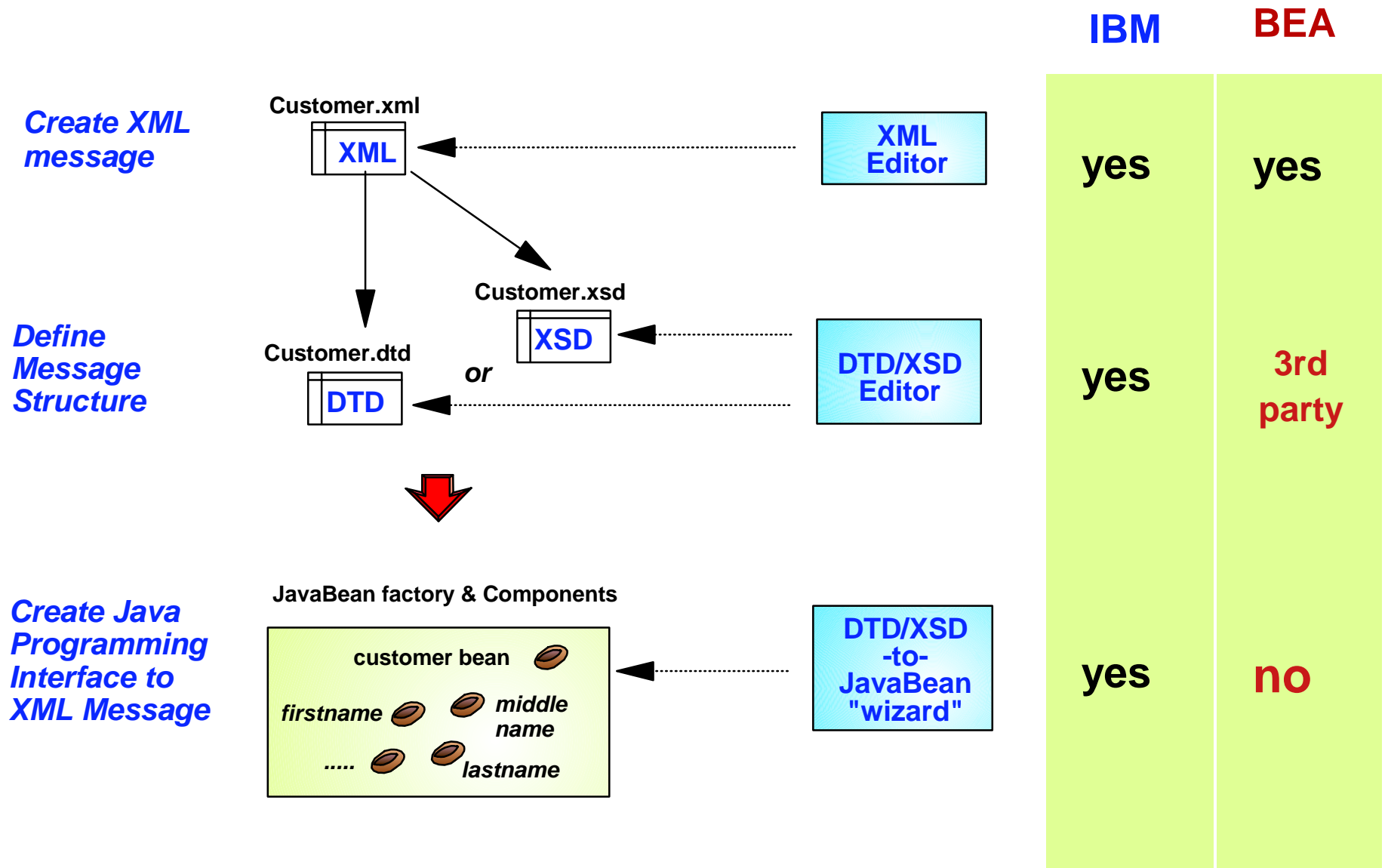
Create Java Programming Interface to XML Message

JavaBean factory & Components

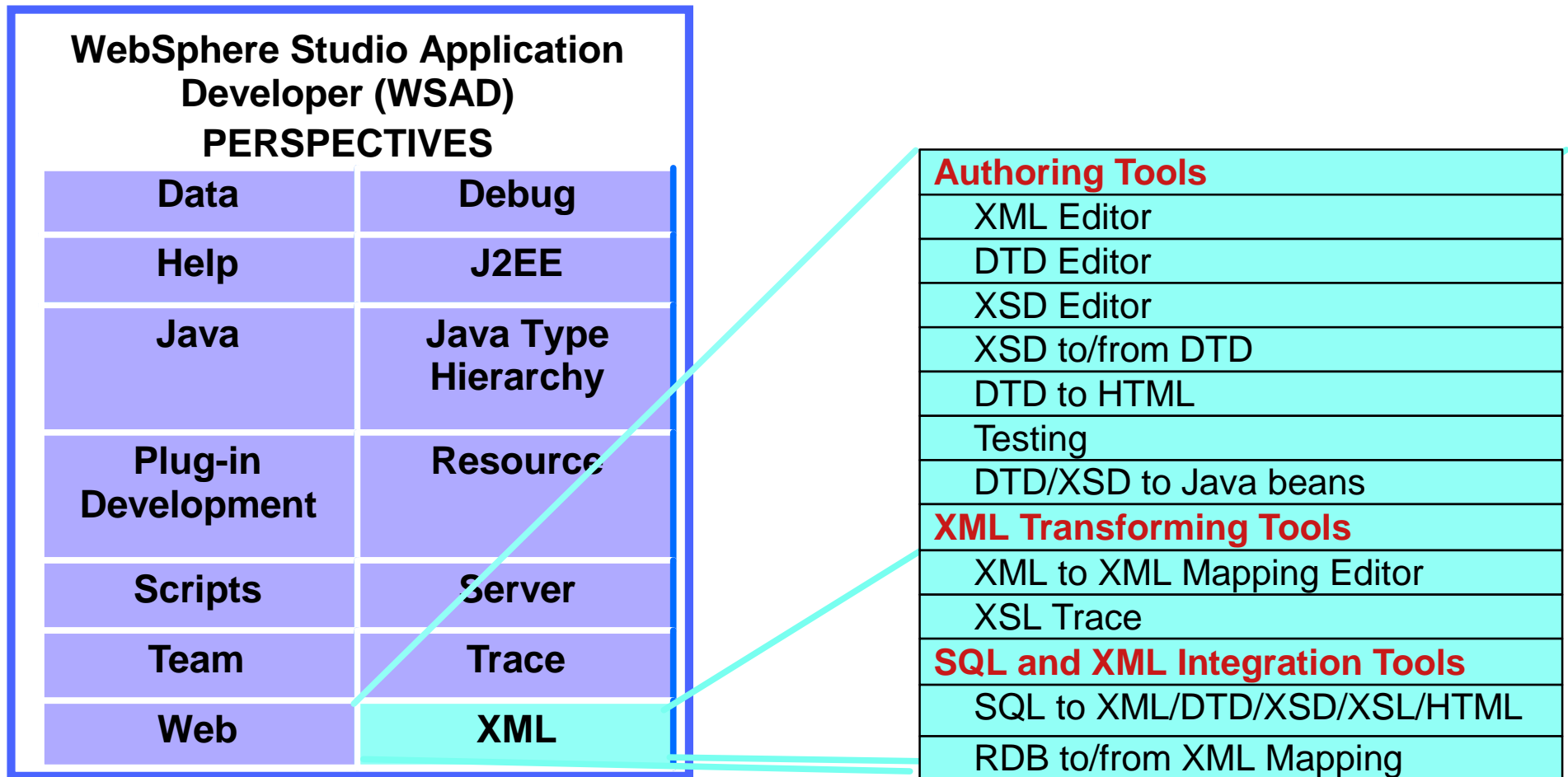


- Generate a bean for each XML element
- Generate a customer bean to coordinate the beans
- Customer bean generates XML at runtime

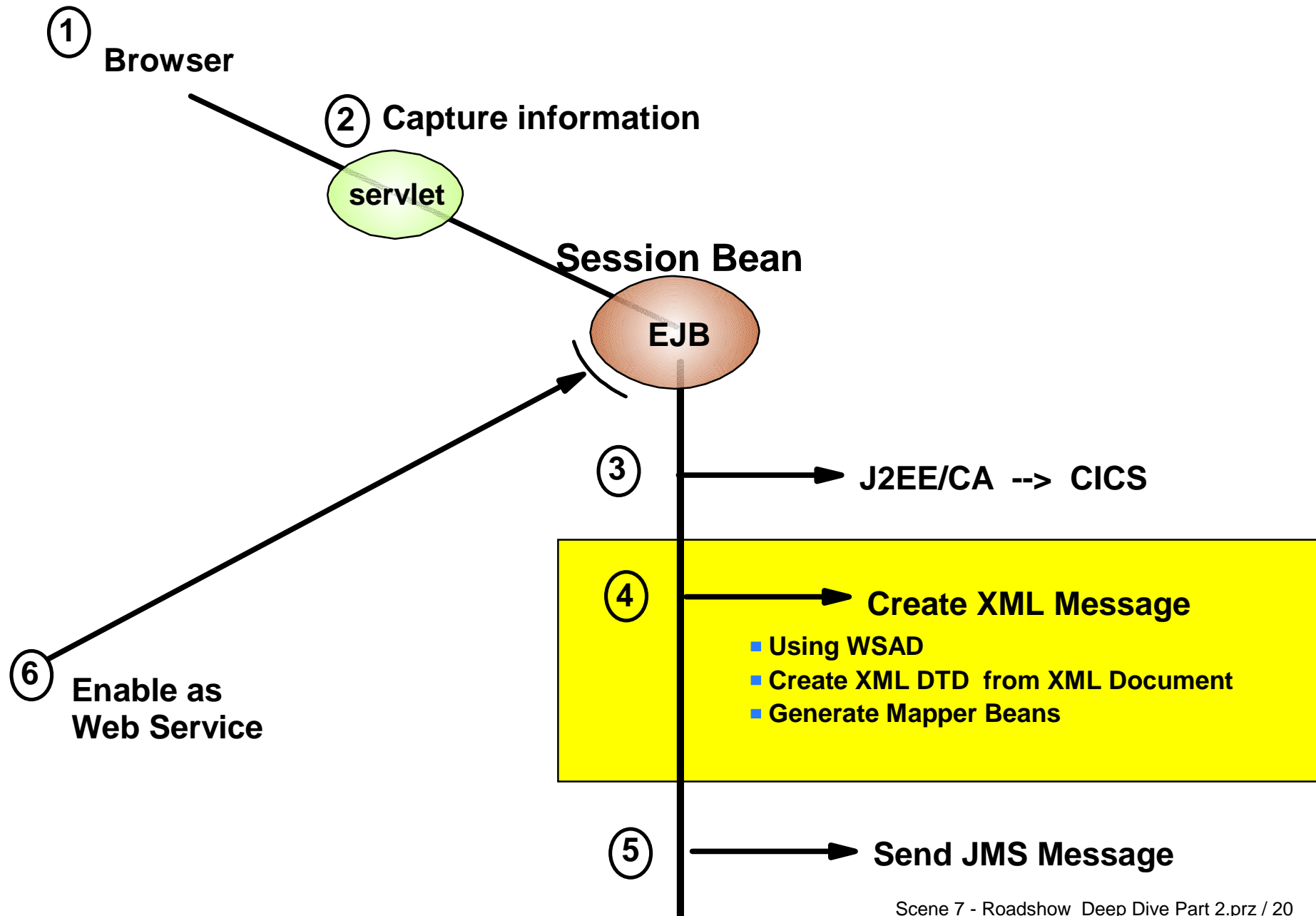
Friendly Finance Buildtime Tool Requirements



WebSphere Studio Application Developer Has a Complete Set of Integrated XML Tools



XML Demo

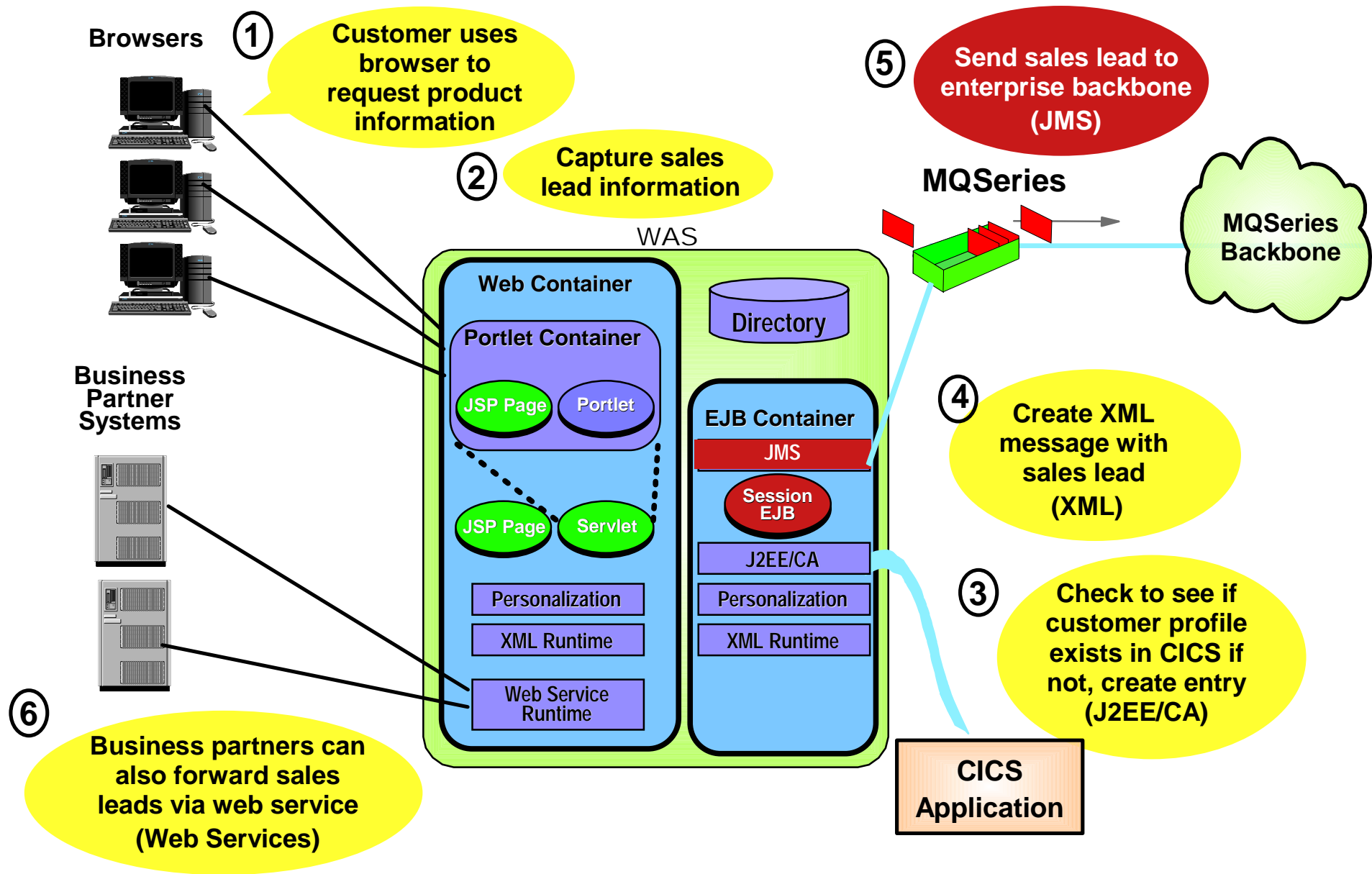


BEA is NOT a Leader in XML

- ✓ IBM offers a Complete set of integrated tools
- ✓ IBM tools provide better productivity
- ✓ BEA has a confusing set of BEA and third party tools
- ✓ Some areas have no recommended tools

XML Tools and Functions	IBM	BEA
Authoring Tools		
XML Editor	Supported	BEA, WebGain, Tibco
DTD Editor	Supported	WebGain, Tibco
XSD Editor	Supported	WebGain, Tibco
XSD to/from DTD	Supported	WebGain, Tibco
DTD to HTML form	Supported	WebGain, Tibco
Testing	Supported	Not Supported
DTD/XSD to Java beans	Supported	Not Supported
XML Transforming Tools		
XML to XML Mapping Editor	Supported	Contivo, WebGain, Tibco
XSL Trace	Supported	Not Supported
non-XML to XML	(via MQSI)	BEA, Contivo
SQL and XML Integration Tools		
SQL to XML/DTD/XSD/XSL/HTML	Supported	Not Supported
RDB to/from XML Mapping	Supported	Not Supported

JMS - New Application to Capture Sales Leads



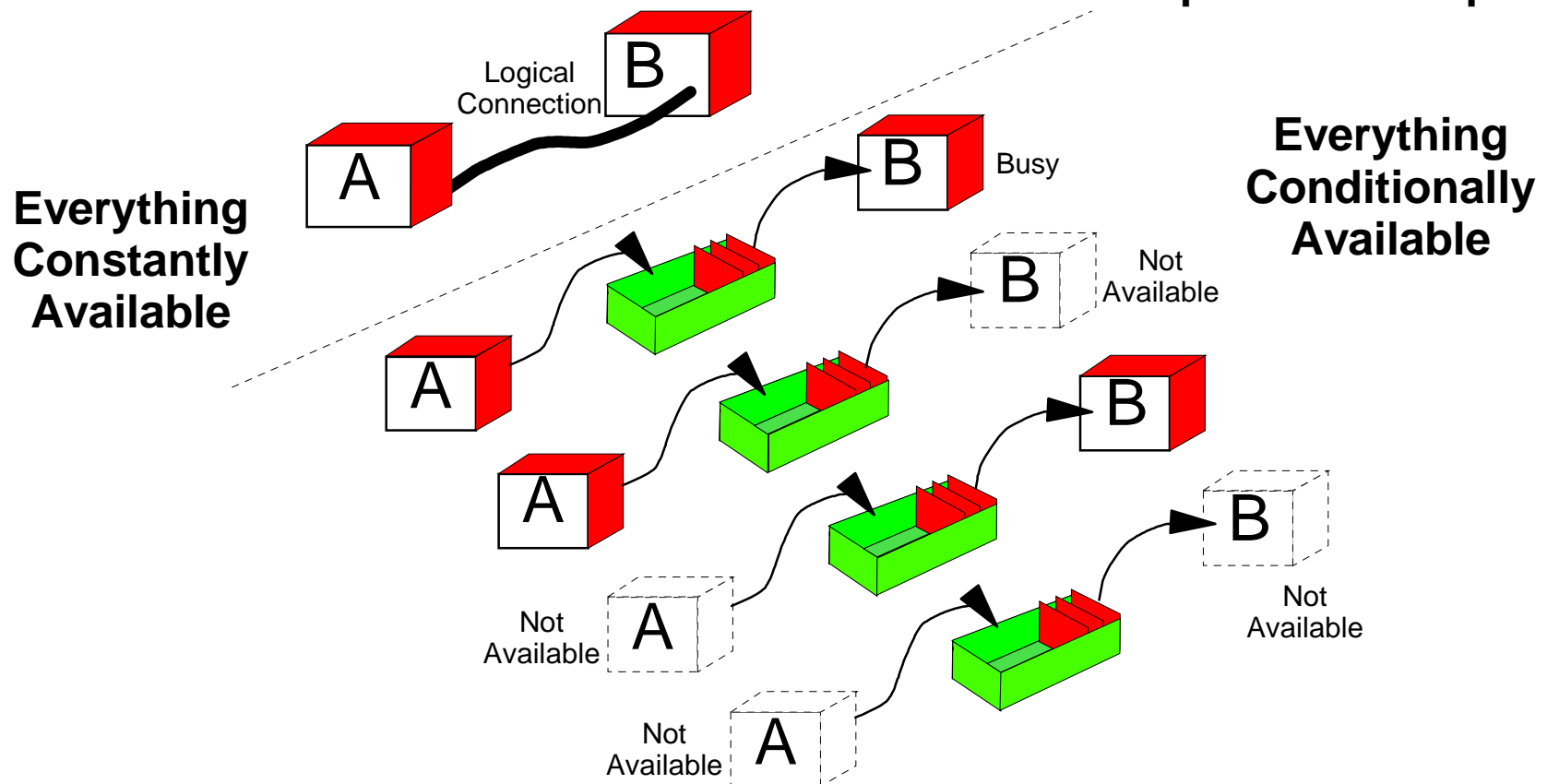
Java Message Service (JMS)

- Sun JMS specification 1.0.2
 - ▶ "JMS is an API for accessing enterprise messaging systems from Java programs."
 - ▶ "JMS provides a common way for Java programs to create, send, receive and read an enterprise messaging system's messages"
- Developed by Sun with active involvement from IBM and others
- Pure JMS applications should be portable across different JMS providers

JMS Messaging

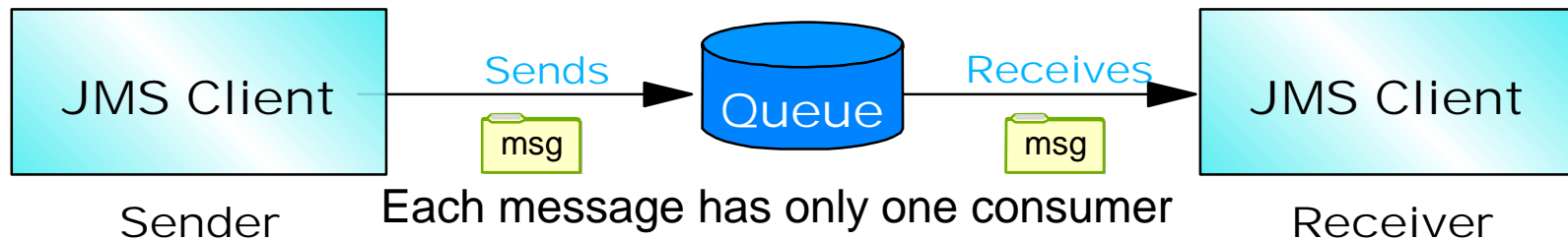
■ Benefits

- ▶ Receiver need not be up and running
- ▶ Assured message delivery and message recovery
- ▶ Cross-platform communication
- ▶ Application location transparency
- ▶ Communication protocol independence

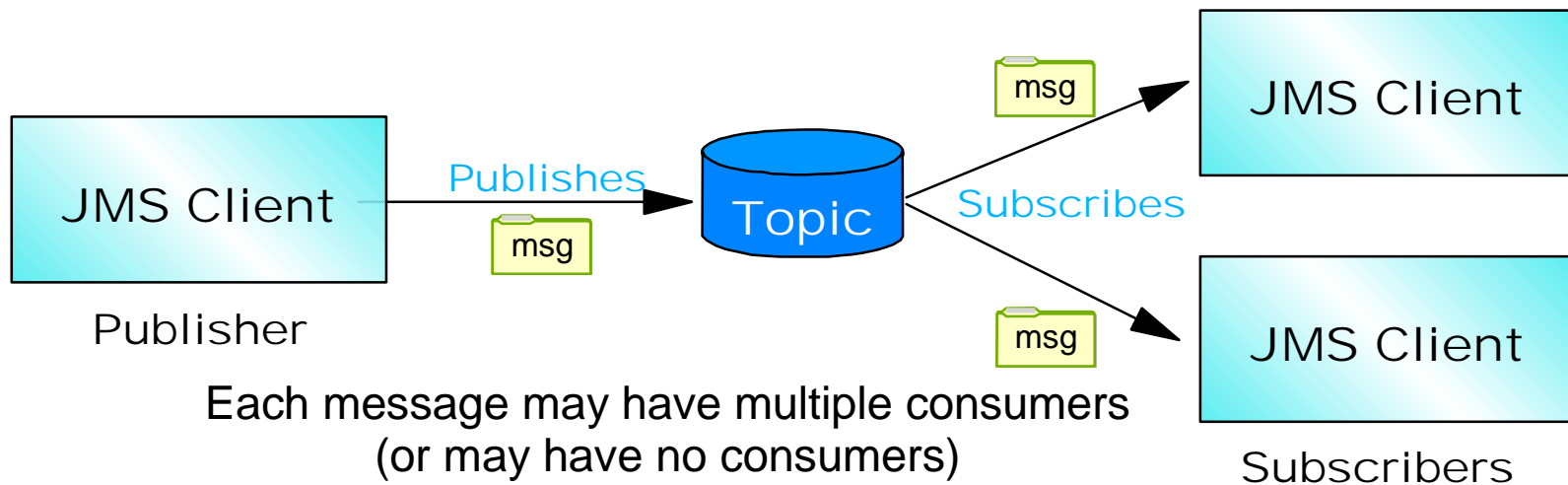


JMS Domains

Point-to-Point



Publish / Subscribe



Basic JMS Terminologies

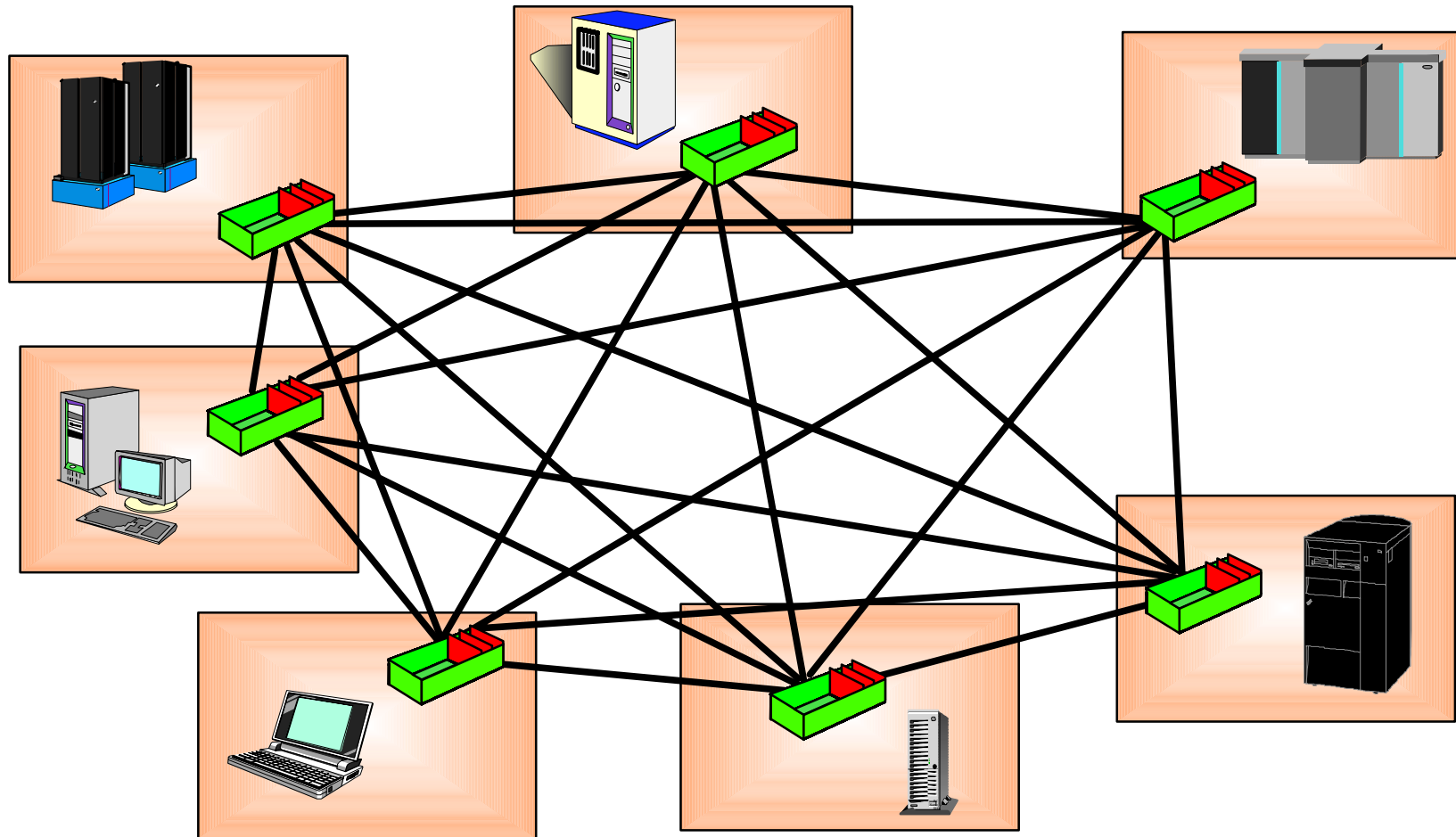
- Delivery Mode - What happens to undelivered messages to protect against server failure
 - ▶ Persistent: saved
 - ▶ Non-persistent (express): lost
 - ▶ Specified by message sender
- Transacted Messages - What can be grouped together as a unit of work
 - ▶ Local transaction: group of messages
 - ▶ Global transaction: messages become part of JTA transaction
- Subscription types - What happens to pub message if subscriber is not connected
 - ▶ Durable: message held for future delivery
 - Example: stock sales
 - ▶ Non-durable: message is discarded
 - Example: stock quote
 - ▶ Specified by subscriber

JMS Spec - What it Doesn't Cover

- Wire Protocol
- Load balancing
- Fault tolerance
- Error / advisory notification
- Network topologies
- Administration
- Security
- Message repository
- Message transformation and routing

You must rely on the message system provider (e.g., **WebSphere MQ Family**) to address these important areas.

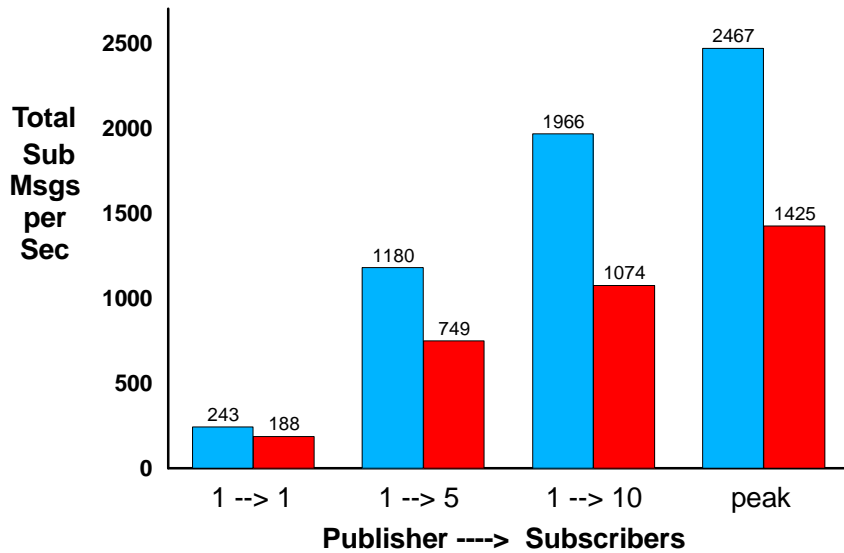
IBM JMS Has Universal Application Connectivity via WebSphere MQ



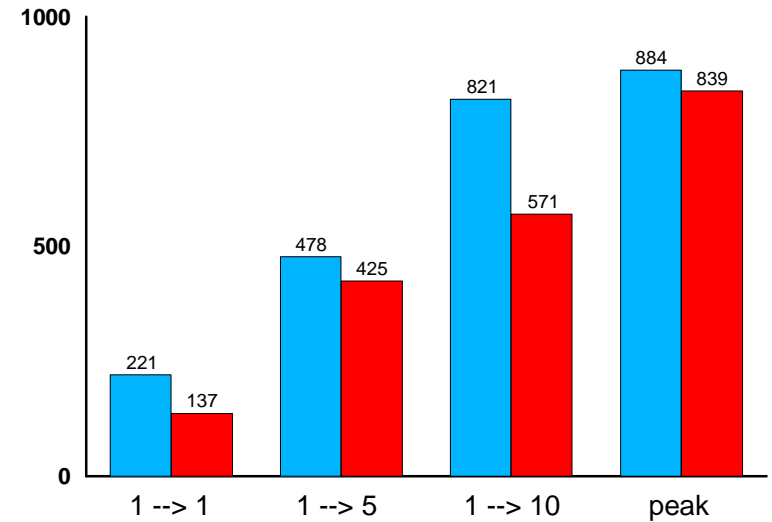
- ▶ **Connecting over 35 different platforms**
- ▶ **70% Marketshare**

JMS Pub/Sub Benchmark - WebSphere MQ Publish and Subscribe Edition Vs. WLS 6.1

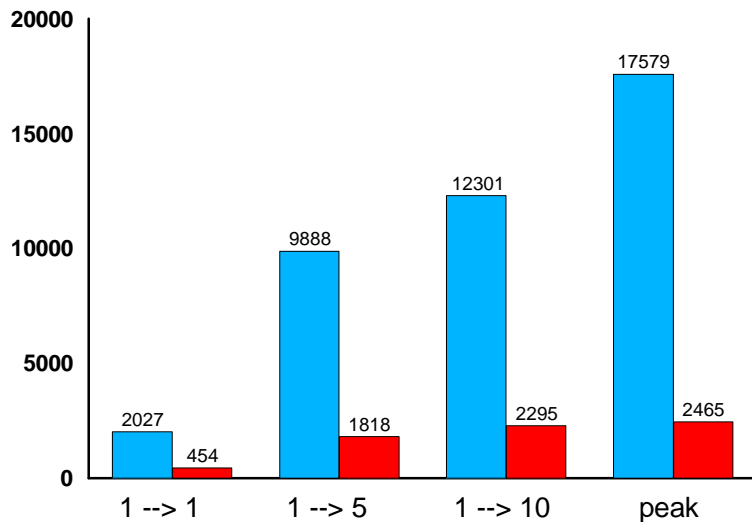
Persistent Transacted Non-Durable



Persistent Transacted Durable



Express, Non-Transacted Non-Durable



WebSphere MQ JMS

BEA WebLogic JMS

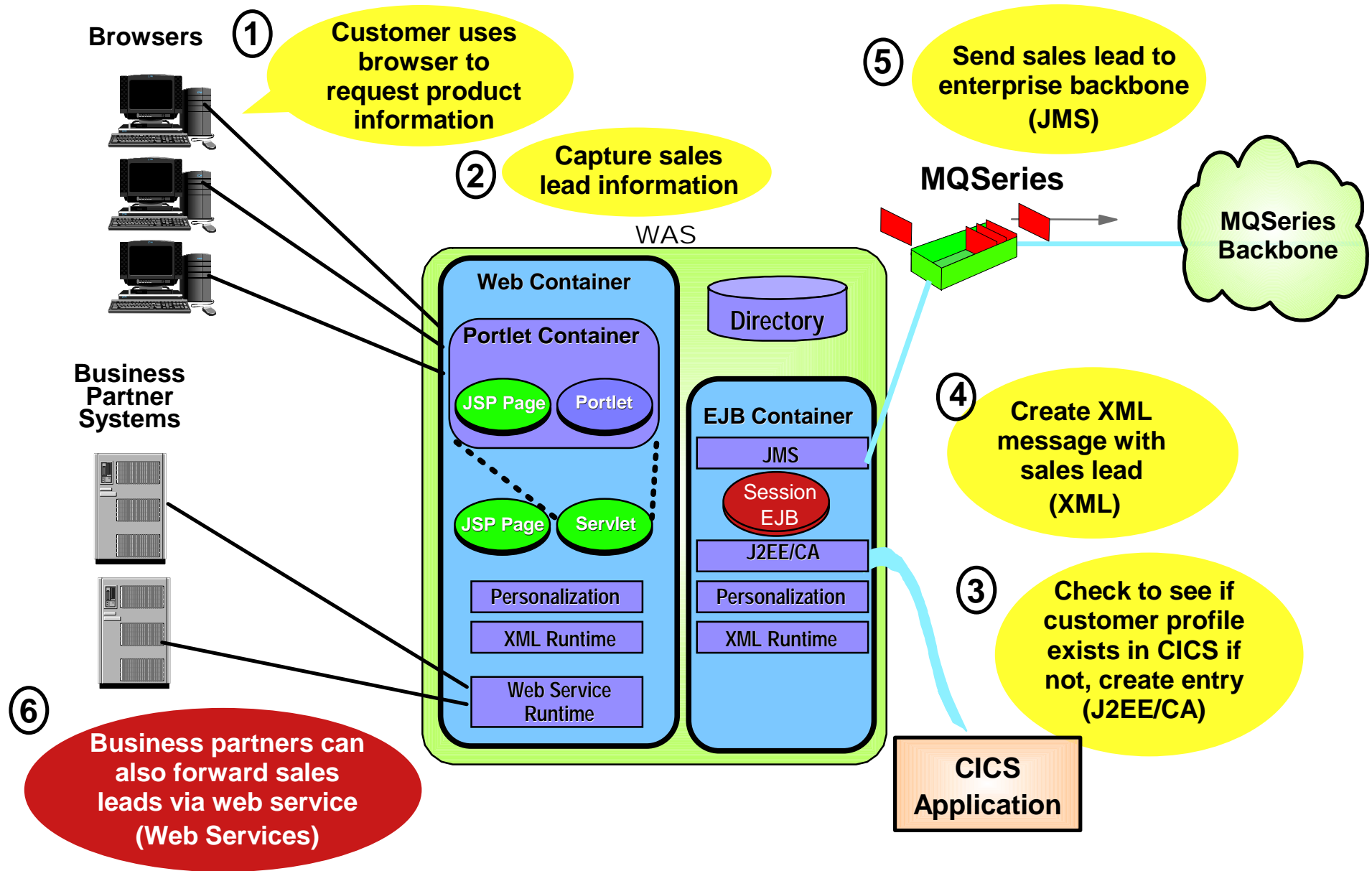
Netfinity 4 way 550 MHz, 1GB RAM,
18.2 GB SCSI, 75 GB RAID0

Message size 1000 Bytes

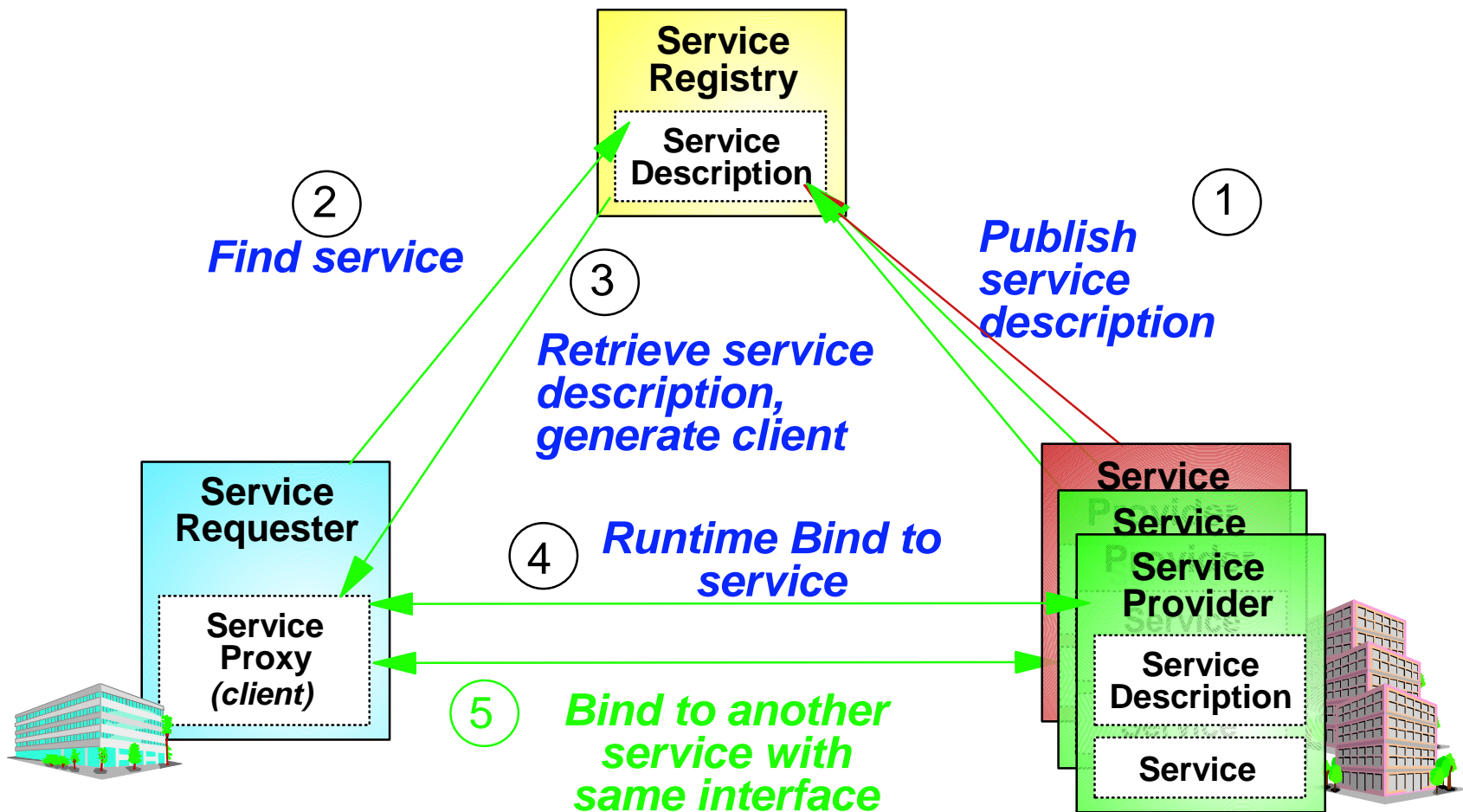
WebSphere Has Deeper Support for J2EE JMS Standards

- IBM JMS is built on WebSphere MQ (70% market share, supports 35 platforms)
 - ▶ BEA JMS is a new, native implementation that is un-tested
 - ▶ BEA JMS only interoperates with BEA in the Same Domain and Release
- IBM JMS takes a modular approach and has administration role well-defined
 - ▶ BEA JMS messaging bundled with WebLogic Server
 - Higher Price, WebLogic Server price over three times WebSphere MQ
 - Cannot separate administration responsibilities of messaging and application server
- IBM MQSeries based JMS assures message delivery
 - ▶ BEA JMS may lose persistent messages without warning if incorrectly configured
- IBM JMS implementation has superior performance over BEA

Web Services - New Application to Capture Sales Leads



The Web Services Model

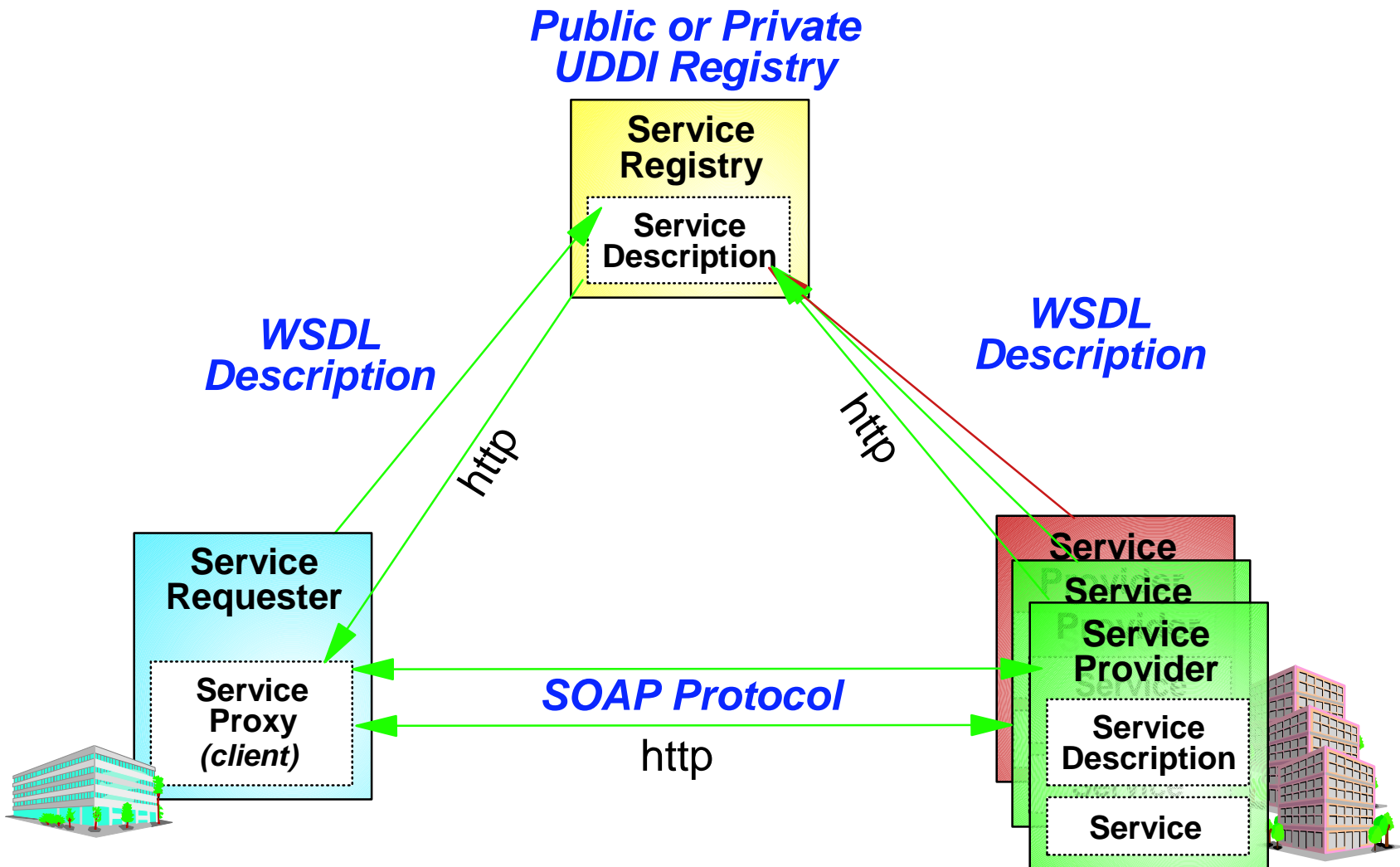


Important Standards

UDDI - Universal Description, Discovery, and Integration Specification

WSDL - Web Services Definition Language

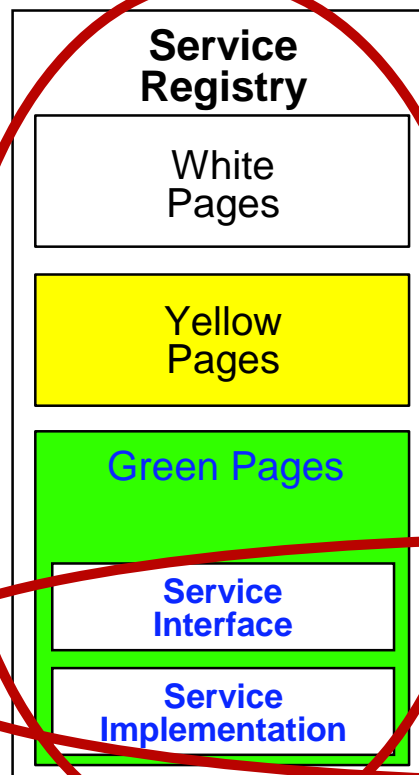
SOAP - Simple Object Access Protocol



Service Registry & Service Description

Web Services "Phone Book"

Defined by the Universal Description, Discovery, and Integration (UDDI) specification



- **Business name**
- **Text description**
- **Contact information**

- **Industry (US Government Codes)**
- **Product/Services (UN/SPSC, ECMA)**
- **Location**

- **Description of the service being provided**

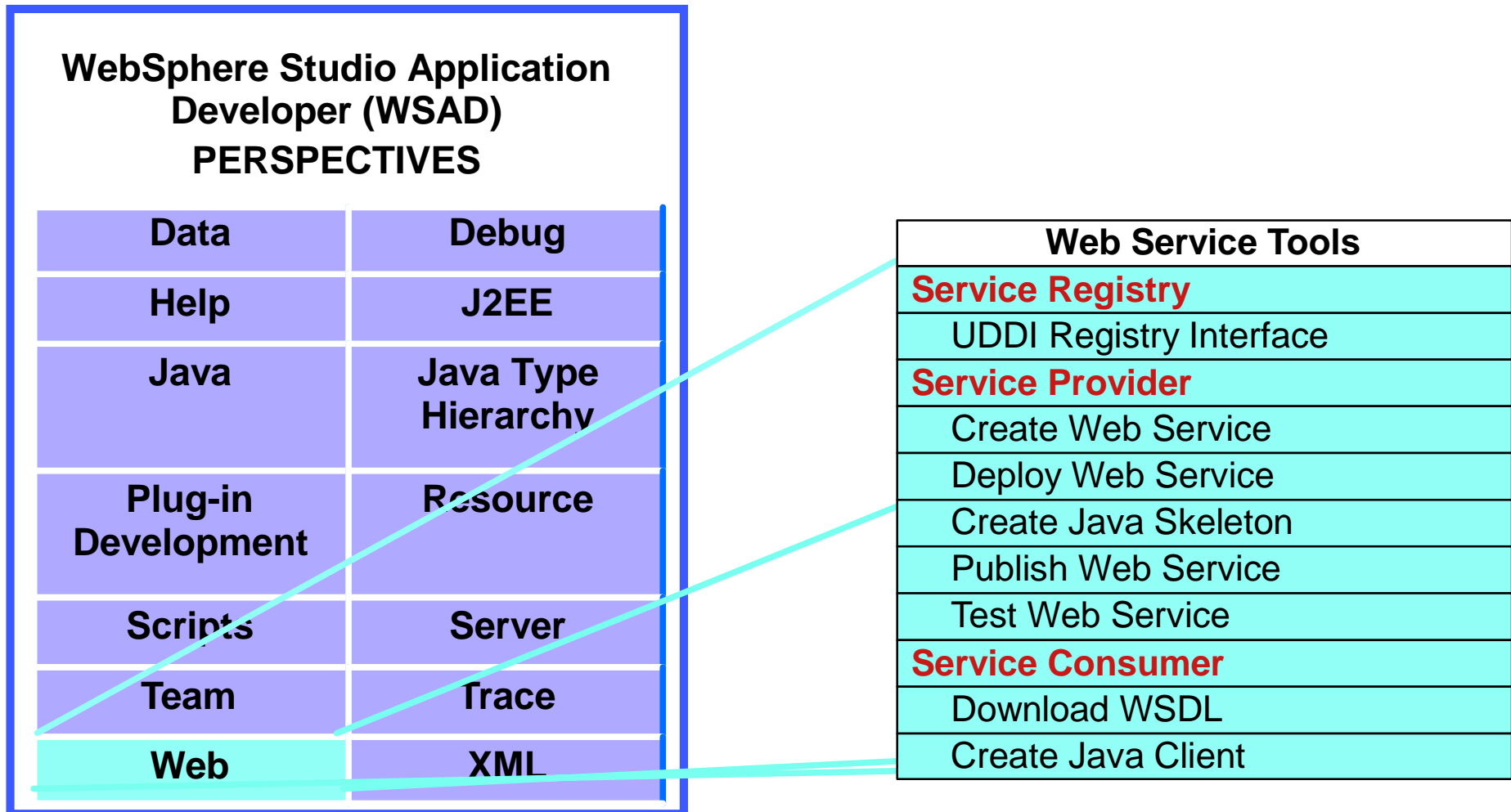
- **Information needed to create a client for this service (operations, messages,...)**

- **Information needed to connect a client to the service provider (URL,...)**

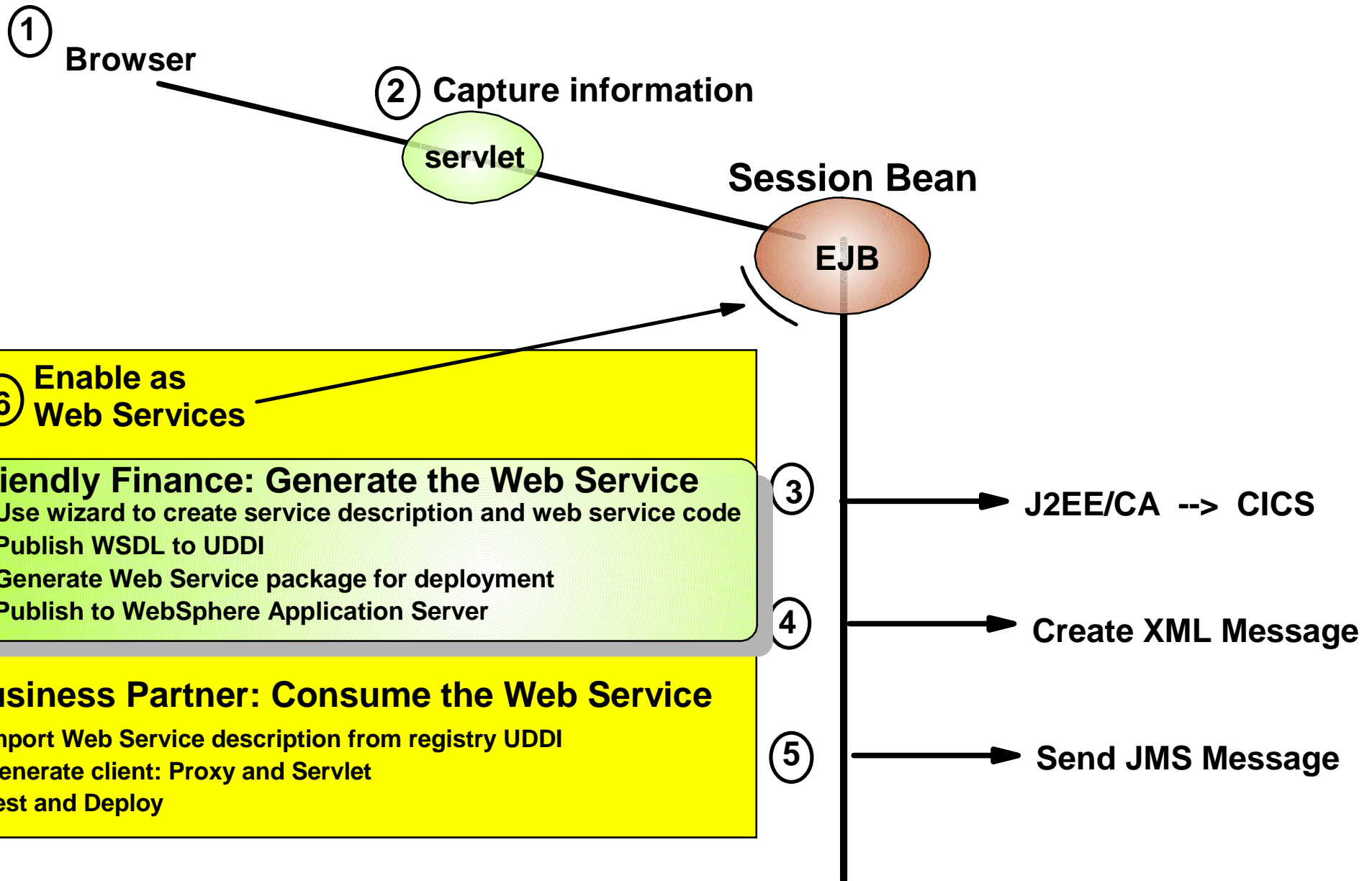
Web Services Description

Defined by the Web Services Definition Language (WSDL)

WebSphere Studio Application Developer Has a Complete Set of Integrated Web Service Tools



Web Services Demo

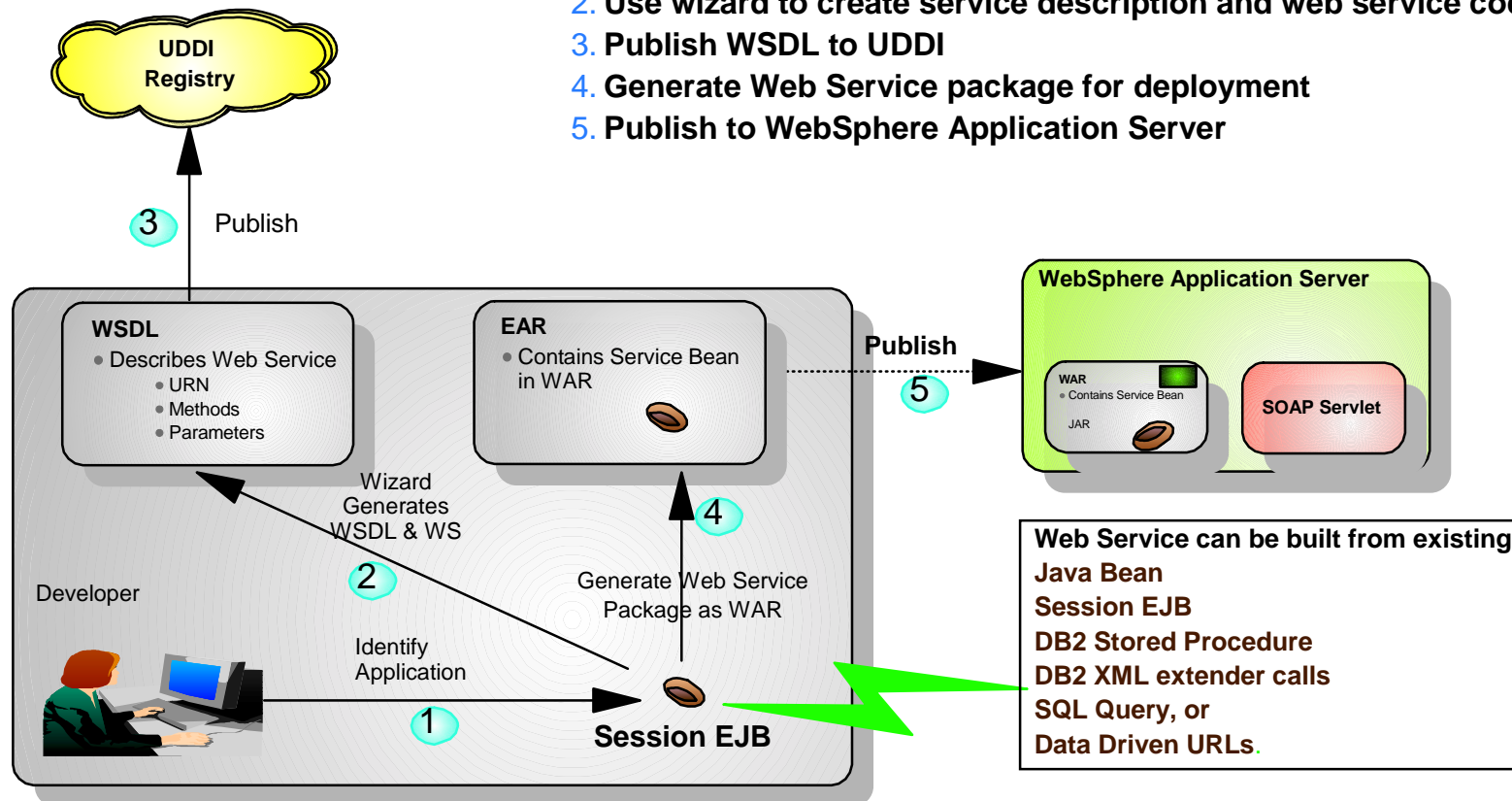


Friendly Finance : Generate the Web Service

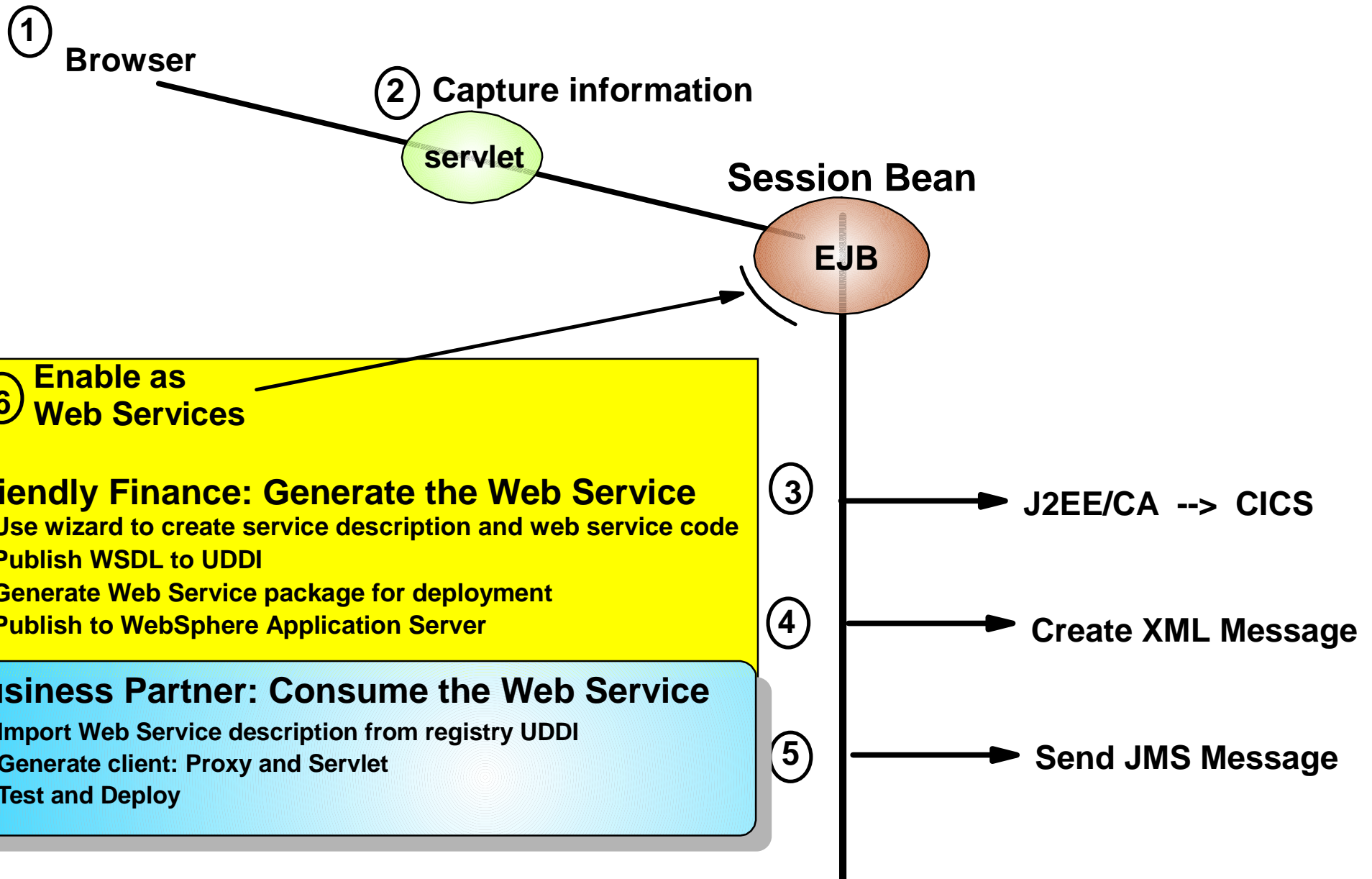
▶ Input: An Existing Session EJB

▶ Process:

1. Identify application to be exposed as web service
2. Use wizard to create service description and web service code
3. Publish WSDL to UDDI
4. Generate Web Service package for deployment
5. Publish to WebSphere Application Server

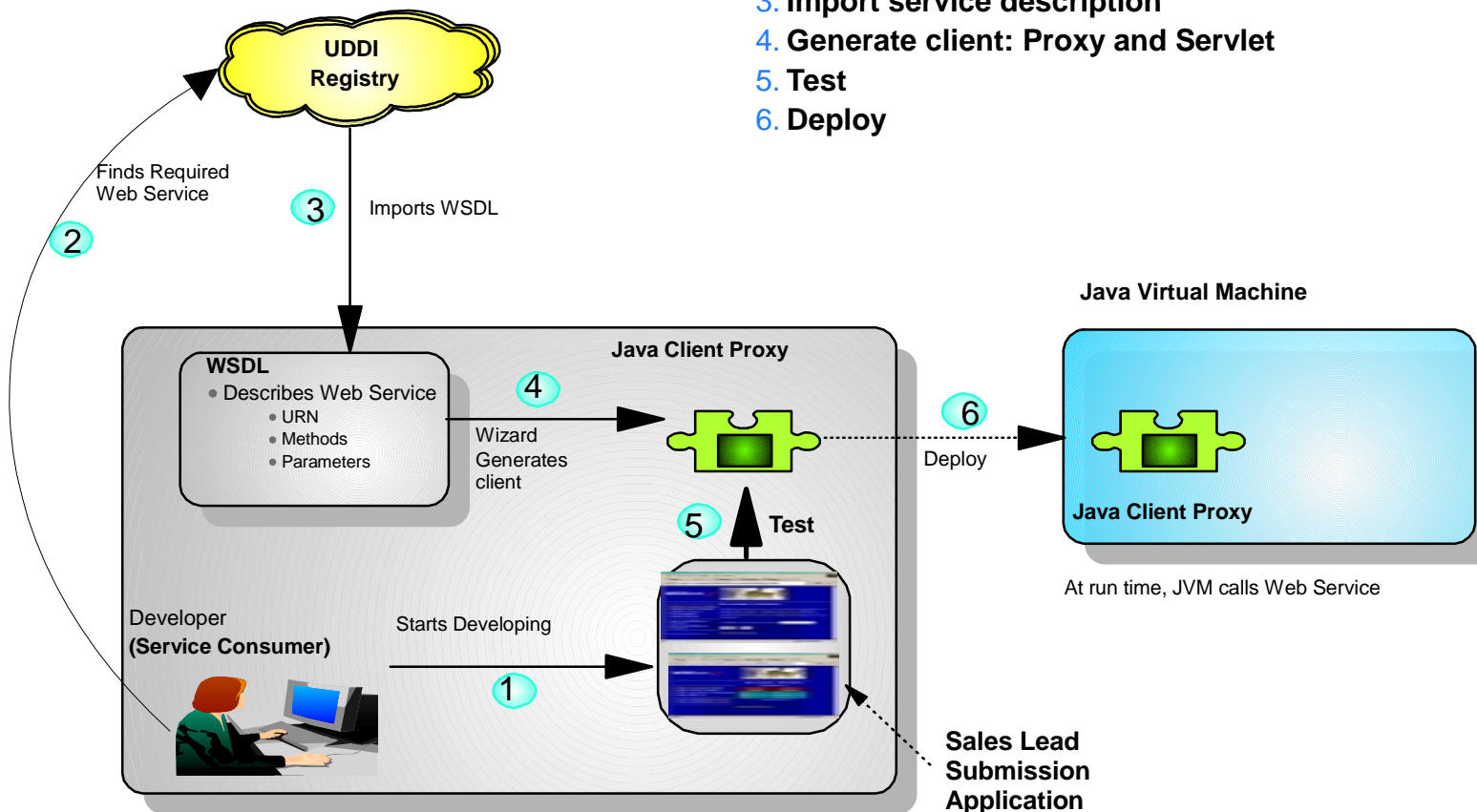


Web Services Demo

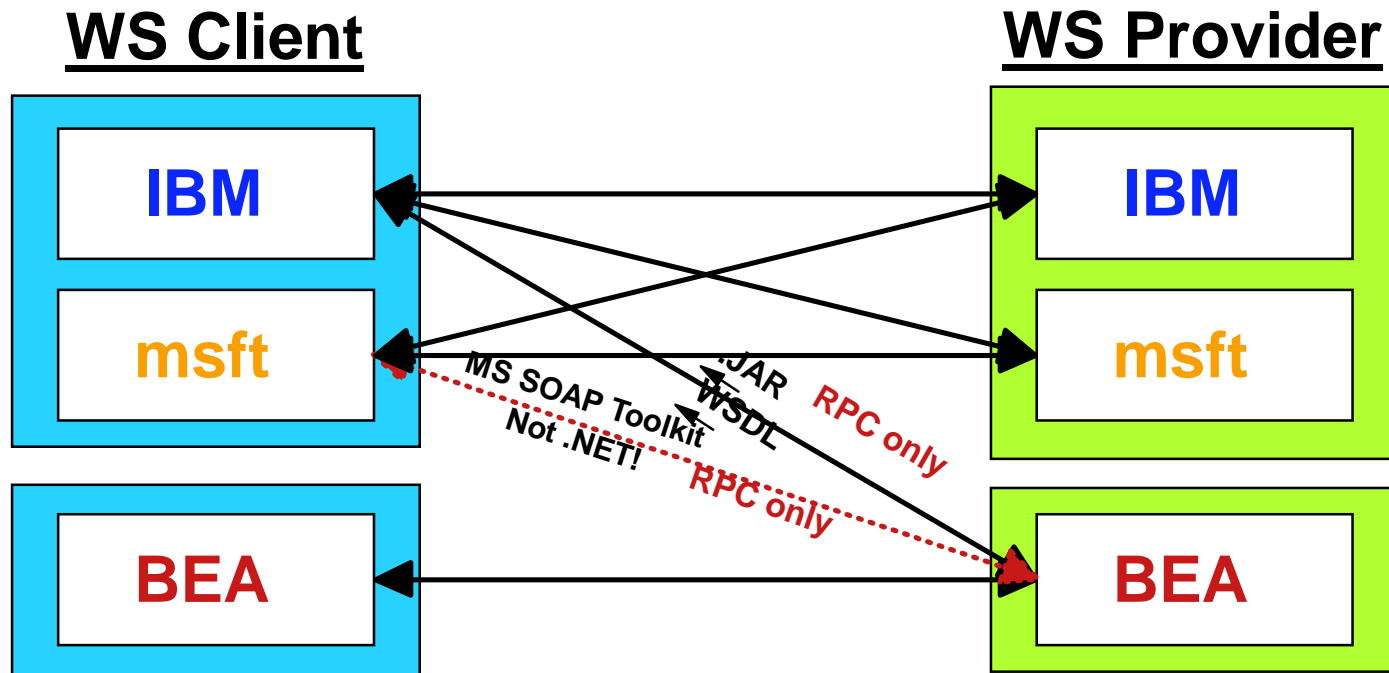


Business Partner: Consume the Web Service

- ▶ **Input:** Need to submit sales lead to web service
- ▶ **Process**
 1. Start development of Sales Lead Submission application
 2. Explore UDDI and find desired Web Service
 3. Import service description
 4. Generate client: Proxy and Servlet
 5. Test
 6. Deploy



BEA has Limited Web Service Interoperability



	Tool	Base	Creation	Testing	IDE	WS Providers
IBM	WSAD	WSDL	Wizards	Yes	Yes	General WS
msft	VS.Net	WSDL	No "import" tag			General WS
BEA		.JAR		No	No	WLS WS only

IBM is the Leader in Web Services

- IBM supports the complete Web Services business model - Service Provider, Registry, Consumer
 - **BEA has no Registry**
- IBM has full support for public & private Registry (UDDI)
 - **BEA does NOT currently support Registry (UDDI)**
- IBM IDE Tools automate and facilitate all aspects of Web Services - creation, testing, publishing, deploying, consumption
 - **BEA Web Services depends on manual coding, testing, and command line operations**
- IBM tools can generate Web Services from six artifacts (existing applications)
Java Bean, Session EJB, DB2 Stored Procedure, DB2 XML extender calls, SQL Query, Data Driven URLs
 - **BEA Web Services supports just two artifacts:**
Stateless session EJB and message-driven bean
- IBM standard-based Web Services interoperate with other Web Services easily
 - **BEA's Web Services does not interoperate without manual coding**

WebSphere Application Server Leadership in J2EE Integration Technologies

- Common Tool Environment
 - ▶ J2EE/CA
 - ▶ XML
 - ▶ JMS
 - ▶ Web Services
 - ▶ Test Capability
- J2EE/CA
 - ▶ Command Object Generation
 - ▶ Variety of Adapters Provided (28 J2EE/CA; 53 CCF)
- XML
 - ▶ Object Wrapper Generation
 - ▶ XSLT Transformation
- JMS
 - ▶ Use of WebSphere MQ Extends Reach, Reliability, and Performance
- Web Services
 - ▶ Support for Complete Model - Publishing, UDDI, Interoperability