

Get your IMS transactions in the
SOA mix!

Smart
SOA

Malaika Paquiot-Mose, IBM
Developer, IMS TM Resource Adapter

“ *The emergence of SOA based on web services represents a **shift** in the dominant software paradigm, comparable to the shift from terminal-based to client/server architectures.* ”

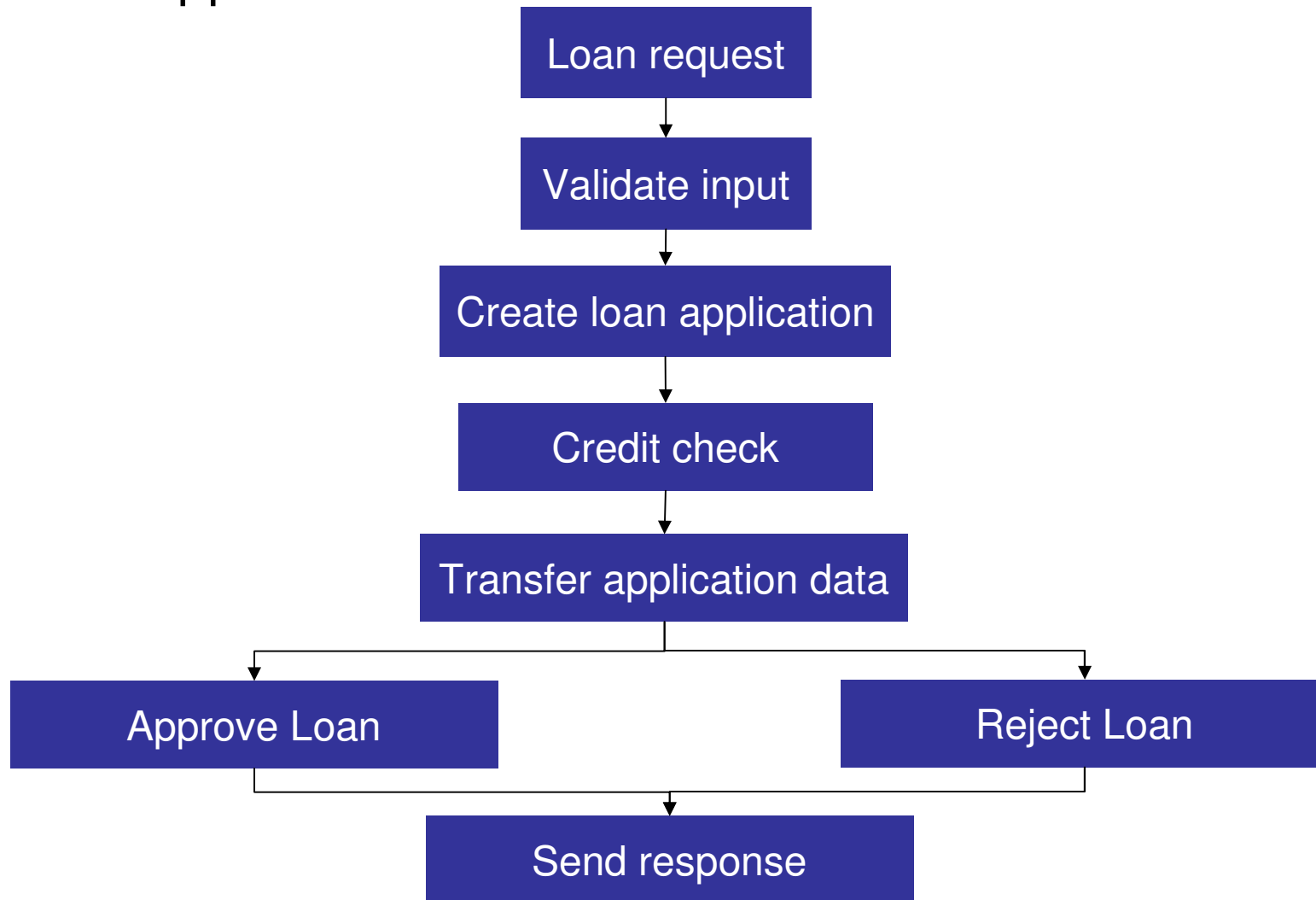
– The Gartner Group



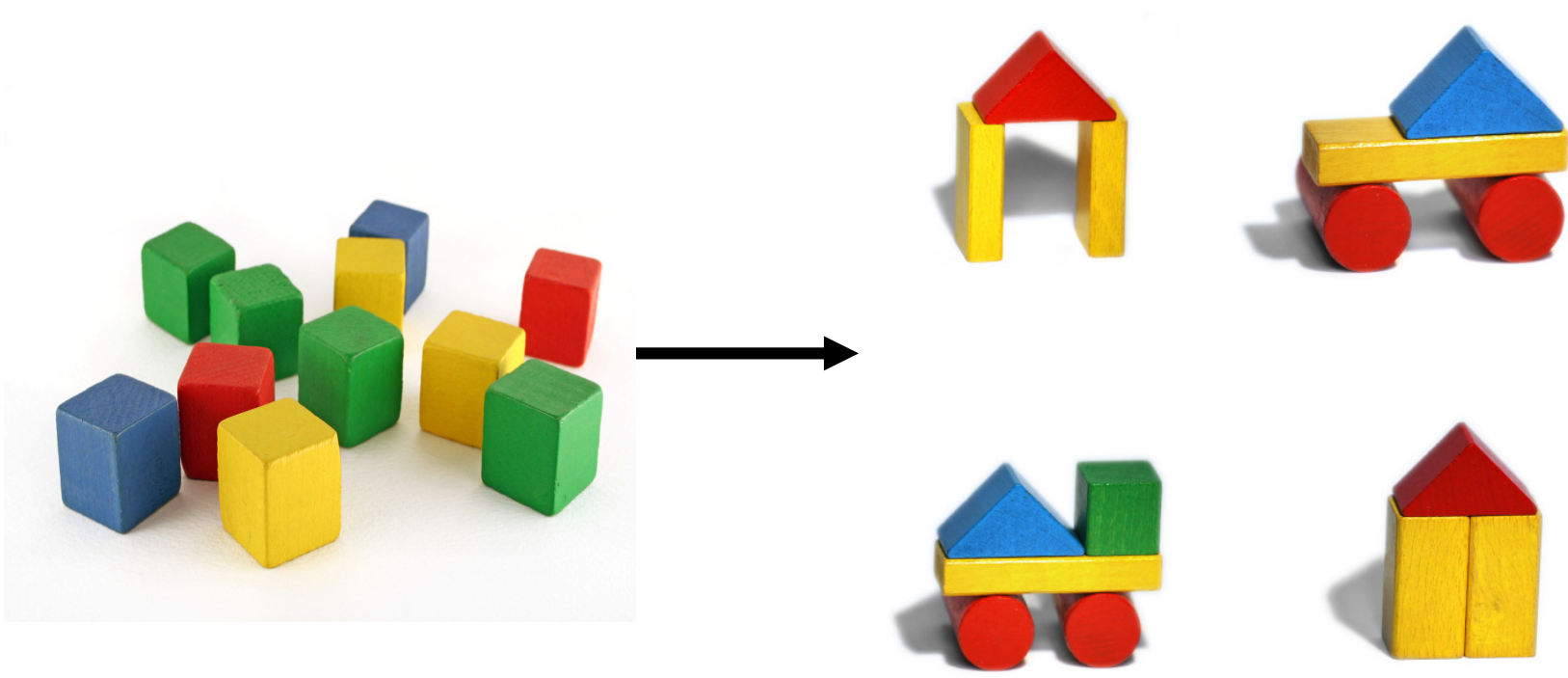
Services are functions that when invoked **accomplish some specific task.**



Loan Application Process



Composite Applications

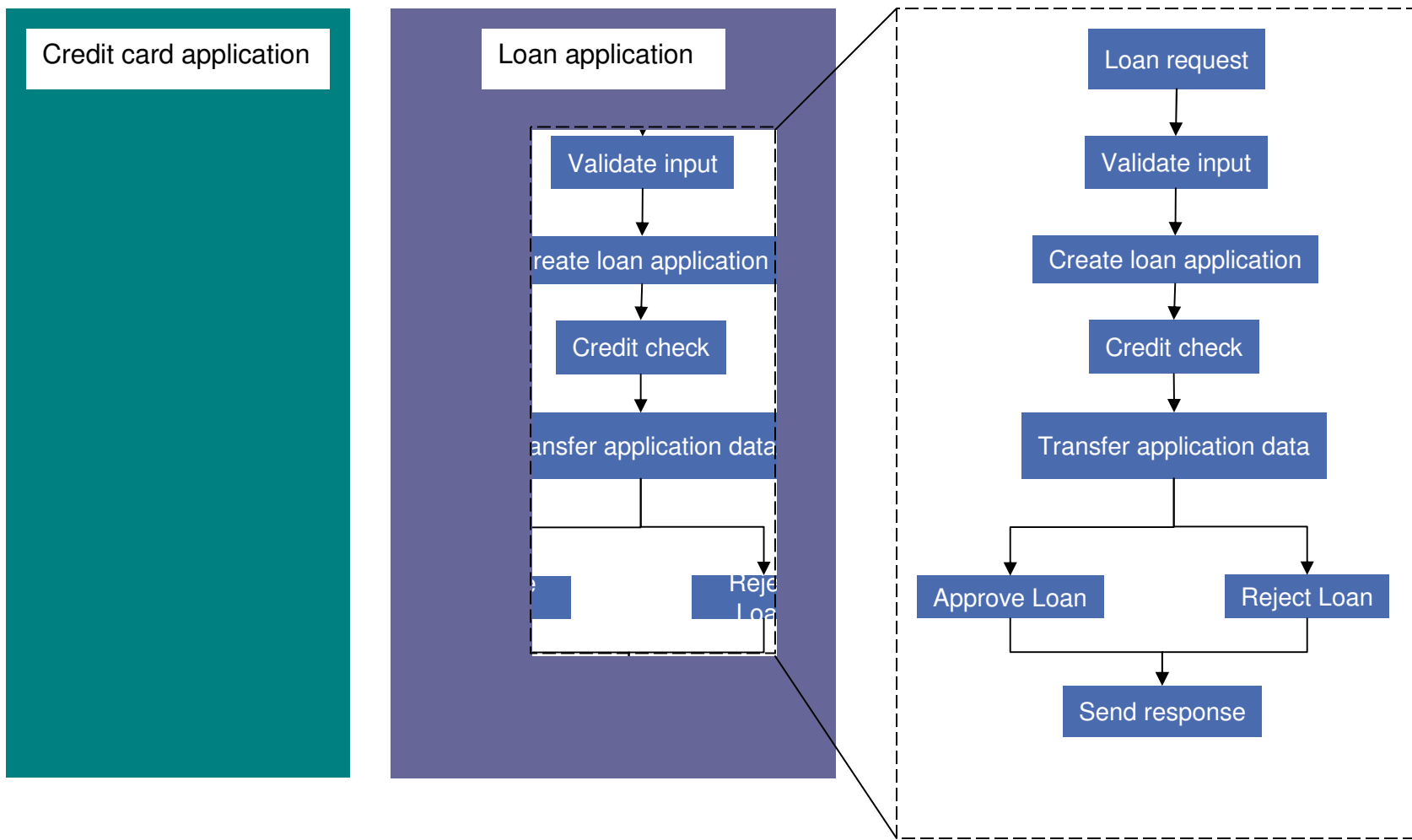


Siloed Applications

Credit card application

Loan application

Service Oriented Architecture



Web services for SOA



- Standardized access
- Loose coupling
- Application reuse

Web services



A technology that allows applications to communicate with each other in a **platform-independent** and **programming language-independent** manner.



Cathy's challenge

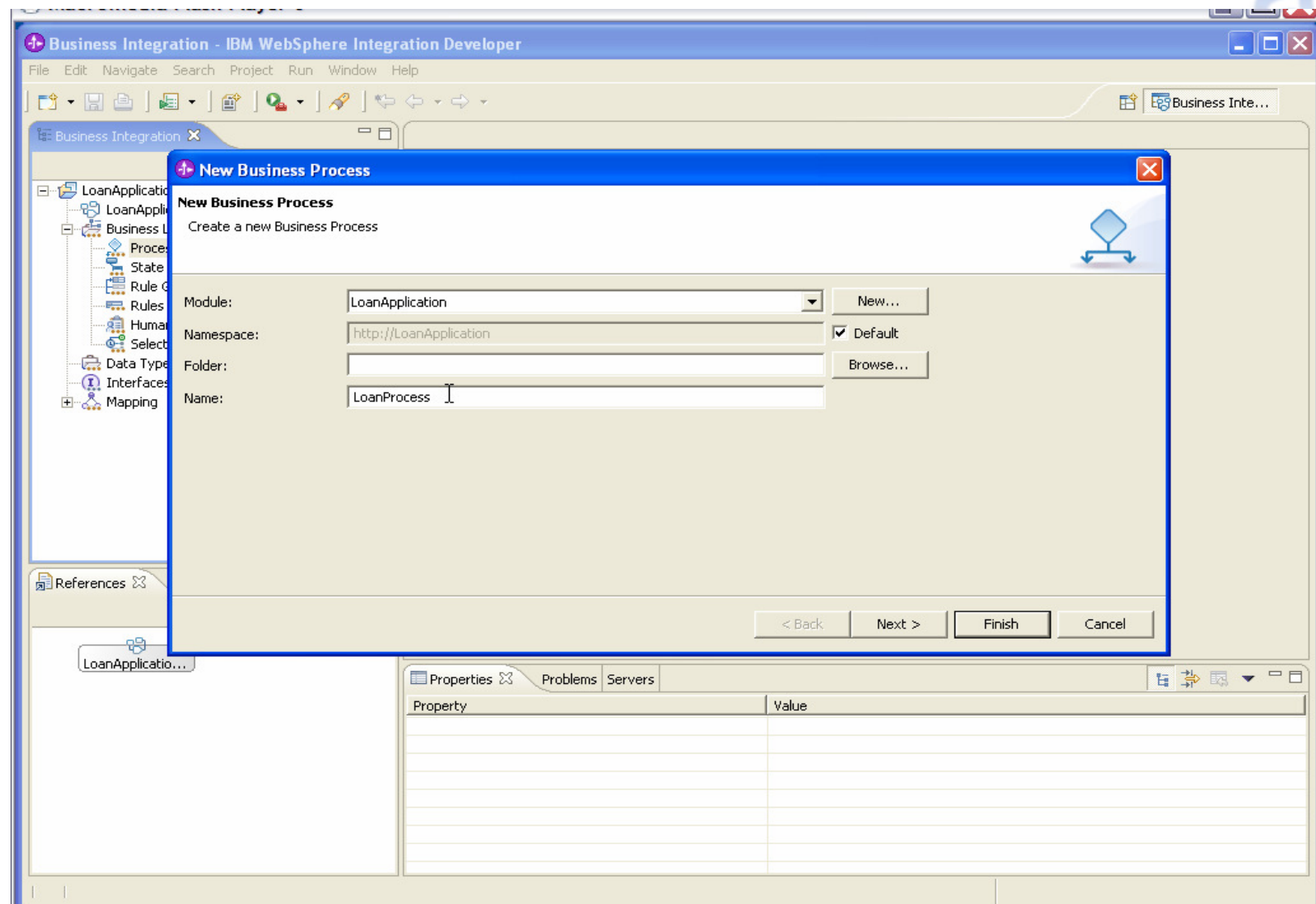
Streamline the
loan application
process?



WebSphere Integration Developer

- Eclipse-based Integrated Development Environment (IDE) for SOA-based applications
- Enables import COBOL for IMS applications for use in web services bindings without writing code
- Enables assembly of processes, mediations, adapters, or code components -- requiring minimal skills
- Enables construction of process and integration solutions using drag-and-drop technology without having a working knowledge of Java
- Enables rapid assembly of business solutions by wiring reusable service components
- Integrates testing, debugging, and deployment for solution development

Creating a loan business process



Default tasks

The screenshot displays the IBM WebSphere Integration Developer interface. The main workspace shows a BPMN diagram for a process named 'LoanProcess'. The diagram starts with a start node (green circle) leading to a 'Receive' task (green rectangle with a right-pointing arrow). Below the 'Receive' task is a 'Reply' task (blue rectangle with a left-pointing arrow), which leads to an end node (blue circle). The left-hand side contains a project explorer showing the 'LoanProcess' folder under 'Business Logic'. The right-hand side features a palette with categories like 'Interface Partners', 'Client', 'Reference Partners', 'Variables', 'Input1', and 'Correlation Sets'. At the bottom, the 'Properties' window for the selected 'Receive' task is visible, with the following details:

Property	Value
Display Name:	Receive
Name:	Receive
Description:	

Other tasks

The screenshot displays the IBM WebSphere Integration Developer interface. The main workspace shows a process diagram with a start node, a 'requestLoan' activity, a 'Reply' activity, and an end node. A red oval highlights a toolbar on the left side of the workspace, containing icons for creating and deleting activities. The left-hand 'Business Integration' tree shows a project structure with folders for LoanApplication, Business Logic, Processes, LoanProcess, State Machines, Rule Groups, Rules, Human Tasks, Selectors, Data Types, Interfaces, and Mapping. The right-hand 'Properties' pane shows the configuration for the selected 'requestLoan' activity, including fields for Display Name, Name, and Description.

Properties	requestLoan
Description	
Details	
Join Behavior	
Correlation	
Server	
Human Task	
Display Name:	requestLoan
Name:	RequestLoan
Description:	

Adding a task

The screenshot shows the IBM WebSphere Integration Developer interface. The main workspace displays a business process diagram with three tasks: 'requestLoan', 'validateInput', and 'Reply'. The 'validateInput' task is currently selected, and its properties are shown in the Properties view at the bottom. The Properties view includes fields for 'Display Name' (validateInput), 'Name' (ValidateInput), and 'Description'.

Business Process Diagram:

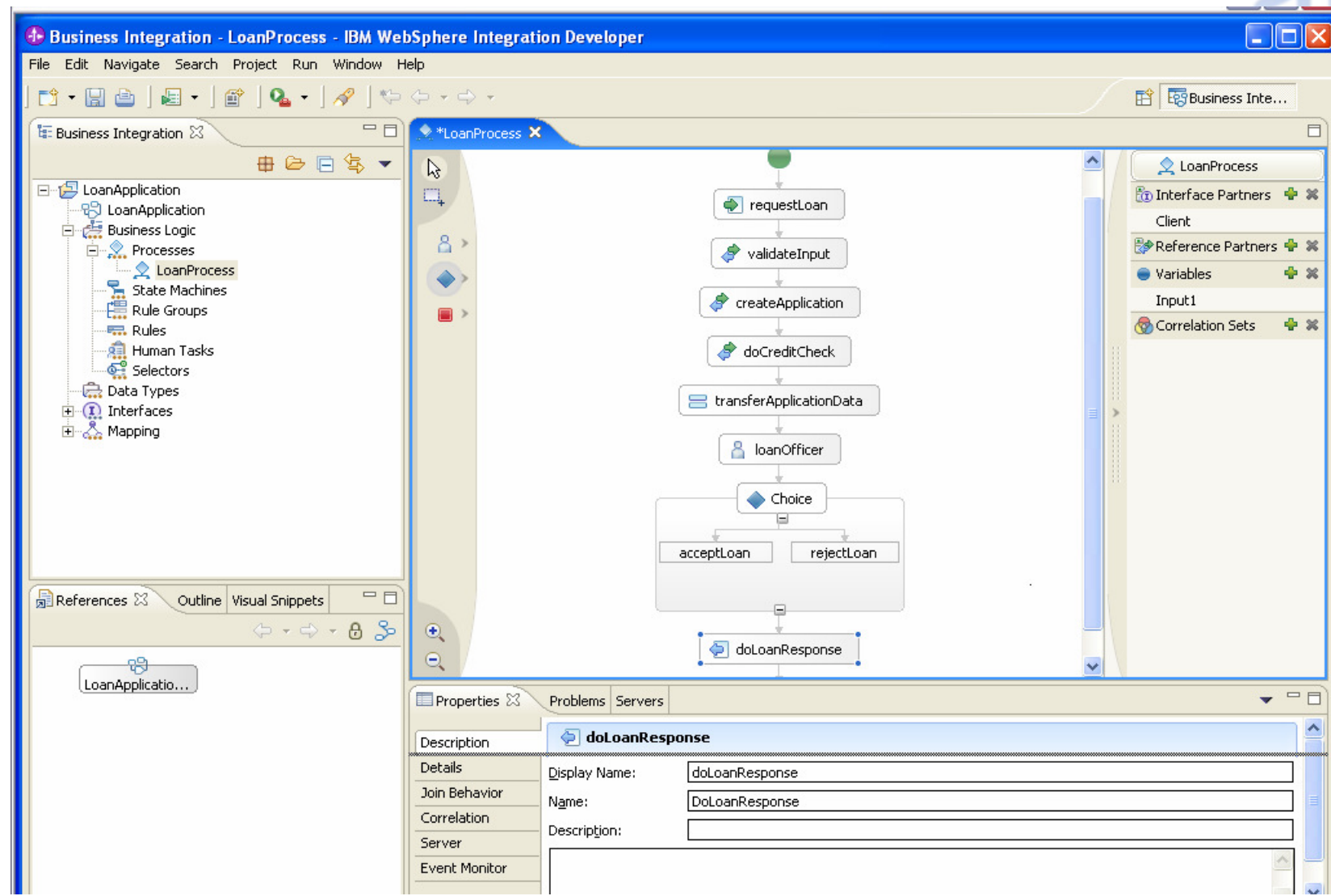
```

    graph TD
      Start(( )) --> requestLoan[requestLoan]
      requestLoan --> validateInput[validateInput]
      validateInput --> Reply[Reply]
      Reply --> End((( )))
  
```

Properties View for 'validateInput':

Description	
Details	
Compensation	
Join Behavior	
Correlation	
Expiration	
Display Name:	validateInput
Name:	ValidateInput
Description:	

Loan business process



John's challenge

How do I go from an IMS
'green screen' to a web service?



IMS TM Resource Adapter

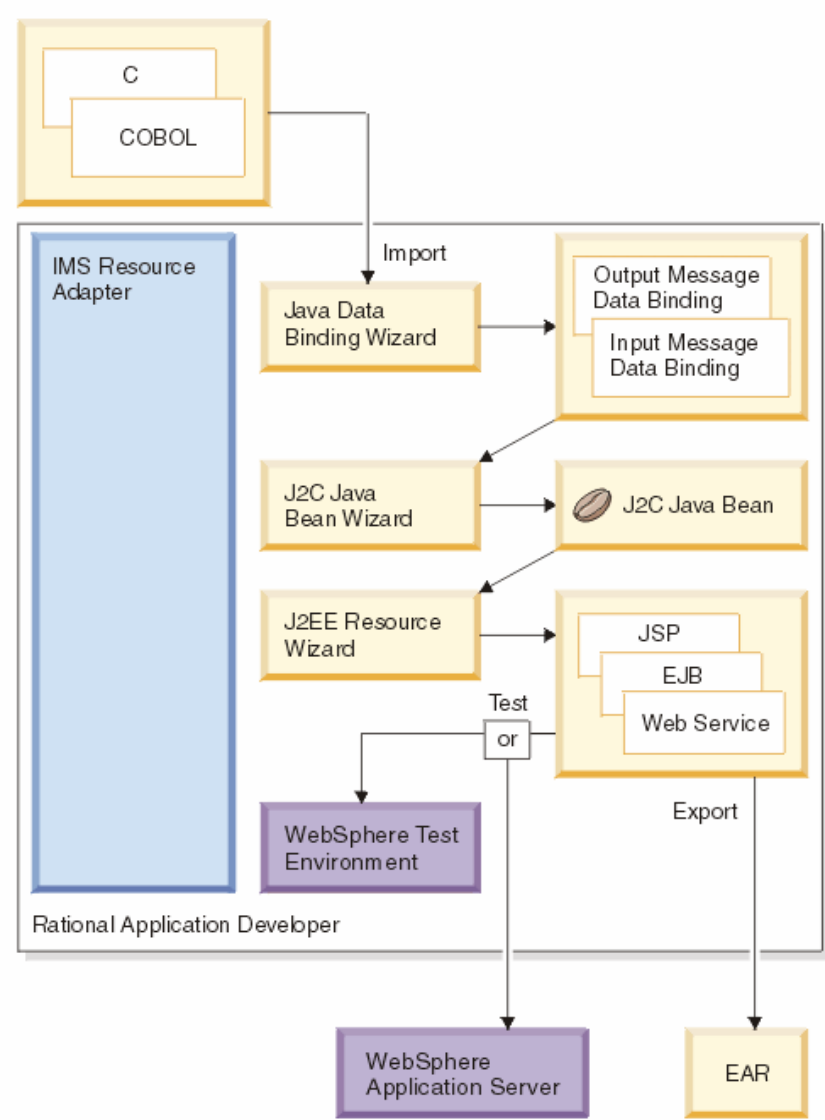


- Easy-to-use
- Robust quality of service
- Standards-based

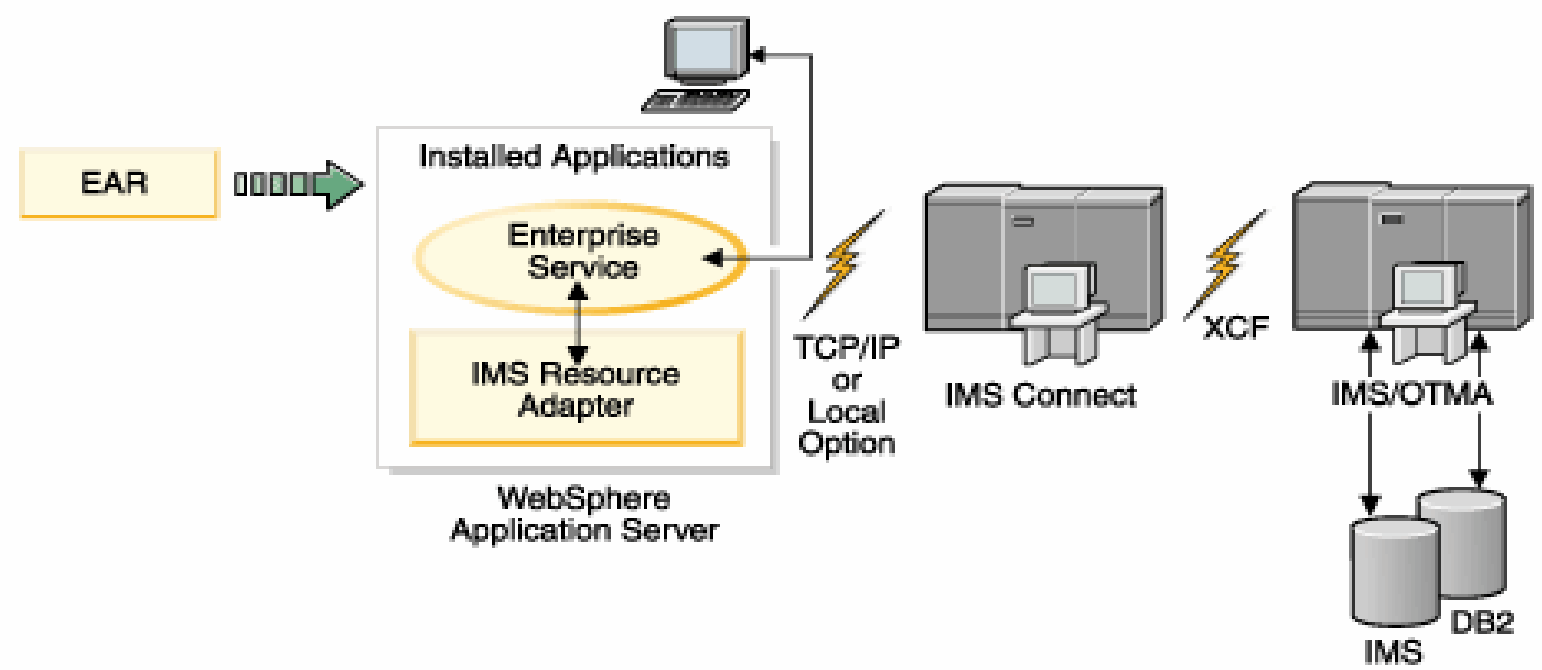
Rational Application Developer

- Eclipse-based IDE for building Java Platform Standard Edition (Java SE) and Java Platform Enterprise Edition (Java EE) applications.
- Enables visual design, construction, testing, and deployment of web services, portals, and Java 2 Enterprise Edition (J2EE) applications.
- Shortens the Java learning curve through visual design, with auto-synchronized code modeling.
- Uses robust capabilities to create SOA applications, including the ability to automatically create necessary SOA components such as WSDL and WSIL files.
- Applies visual portal development techniques to speed development.

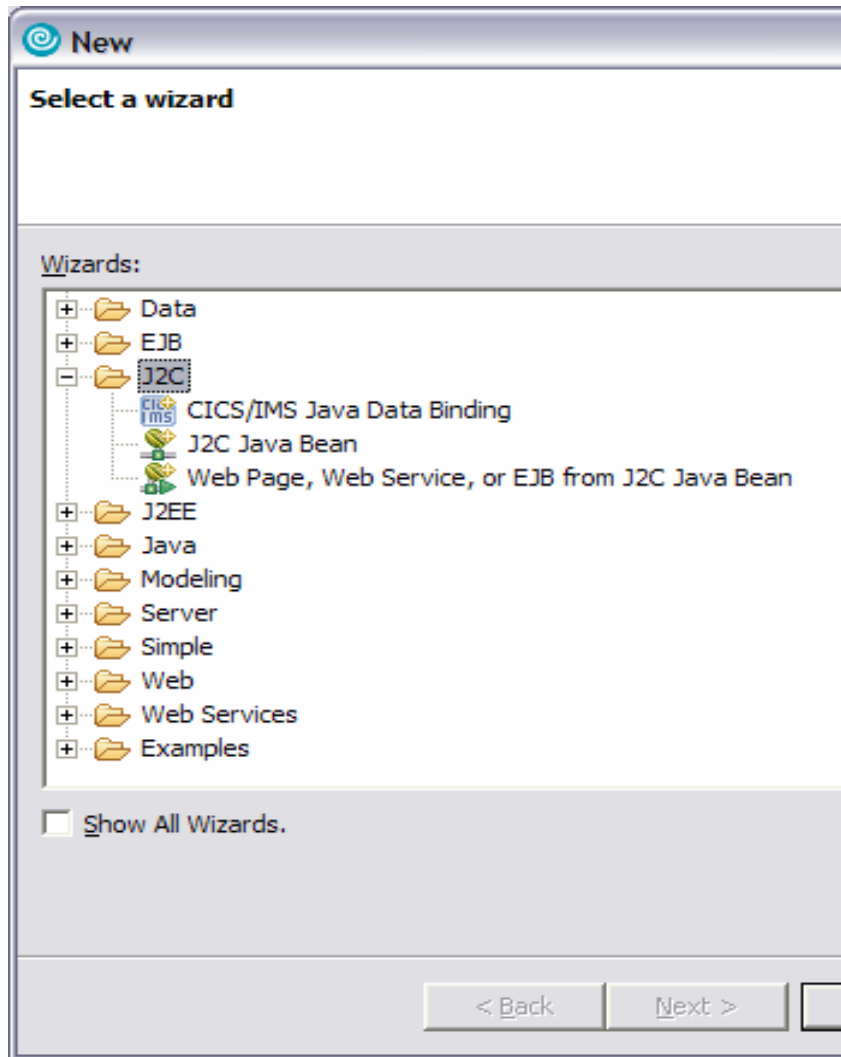
Rapid Application Development



Rapid Application Deployment



John's steps



1. Map message
2. Build the bean
3. Wrap app

Copybook represents data structures

'Green screen'

COBOL copybook

```

*****
*   IMS INSTALLATION VERIFICATION PROCEDURE   *
*****

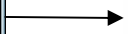
                TRANSACTION TYPE : NON-CONV (OSAM DB)
                DATE              : 04/02/04

PROCESS CODE (*1) :  DISPLAY
LAST NAME       :  LAST1
FIRST NAME      :  FIRST1
EXTENSION NUMBER :  8-111-1111
INTERNAL ZIP CODE :  D01/R01

ENTRY WAS DISPLAYED

(*1) PROCESS CODE
      ADD
      DELETE
      UPDATE
      DISPLAY
      TADD

IMSTERM1
10/034
    
```



```

LINKAGE SECTION.

01 INPUT-MSG.
   02 IN-LL          PICTURE S9(3) COMP.
   02 IN-ZZ          PICTURE S9(3) COMP.
   02 IN-TRCD        PICTURE X(10).
   02 IN-CMD         PICTURE X(8).
   02 IN-NAME1       PICTURE X(10).
   02 IN-NAME2       PICTURE X(10).
   02 IN-EXTN        PICTURE X(10).
   02 IN-ZIP         PICTURE X(7).

01 OUTPUT-MSG.
   02 OUT-LL          PICTURE S9(3) COMP VALUE +
   02 OUT-ZZ          PICTURE S9(3) COMP VALUE +
   02 OUT-MSG         PICTURE X(40) VALUE SPACES
   02 OUT-CMD         PICTURE X(8) VALUE SPACES.
   02 OUT-NAME1       PICTURE X(10) VALUE SPACES
   02 OUT-NAME2       PICTURE X(10) VALUE SPACES
   02 OUT-EXTN        PICTURE X(10) VALUE SPACES
   02 OUT-ZIP         PICTURE X(7) VALUE SPACES.
   02 OUT-SECTN       PICTURE X(1) VALUE SPACES.
    
```

Map the message... Wrap the app

Java data binding

WSDL

```

Web - INPUTMSG.java - IBM Rational Software Development Platform
File Edit Source Refactor Navigate Search Project Run Window Help
Java Web
J2EE

Web Browser Web Browser INPUTMSG.java X

/**
 * @generated
 */
public void setIn__11(short in__11) {
    if ((in__11 < -999) || (in__11 > 999))
        throw new IllegalArgumentException(MarshallResource.instance()
            .getString(MarshallResource.IWAA0127E,
                Short.toString(in__11), "in__11", "-999", "999")
            MarshallIntegerUtils.marshallTwoByteIntegerIntoBuffer(in__11, buffer_
                0, true, MarshallIntegerUtils.SIGN_CODING_TWOS_COMPLEMENT);
    }

/**
 * @generated
 * @type-descriptor.restriction lowerBound="-999" upperBound="999"
 * @type-descriptor.simple-instance-td accessor="readWrite" contentSize
 * @type-descriptor.integer-td signCoding="twosComplement"
 */
public short getIn__zz() {
    short in__zz = 0;
    in__zz = MarshallIntegerUtils.unmarshallTwoByteIntegerFromBuffer(
        buffer_ 2, true,
        MarshallIntegerUtils.SIGN_CODING_TWOS_COMPLEMENT);
    return (in__zz);
}
    
```



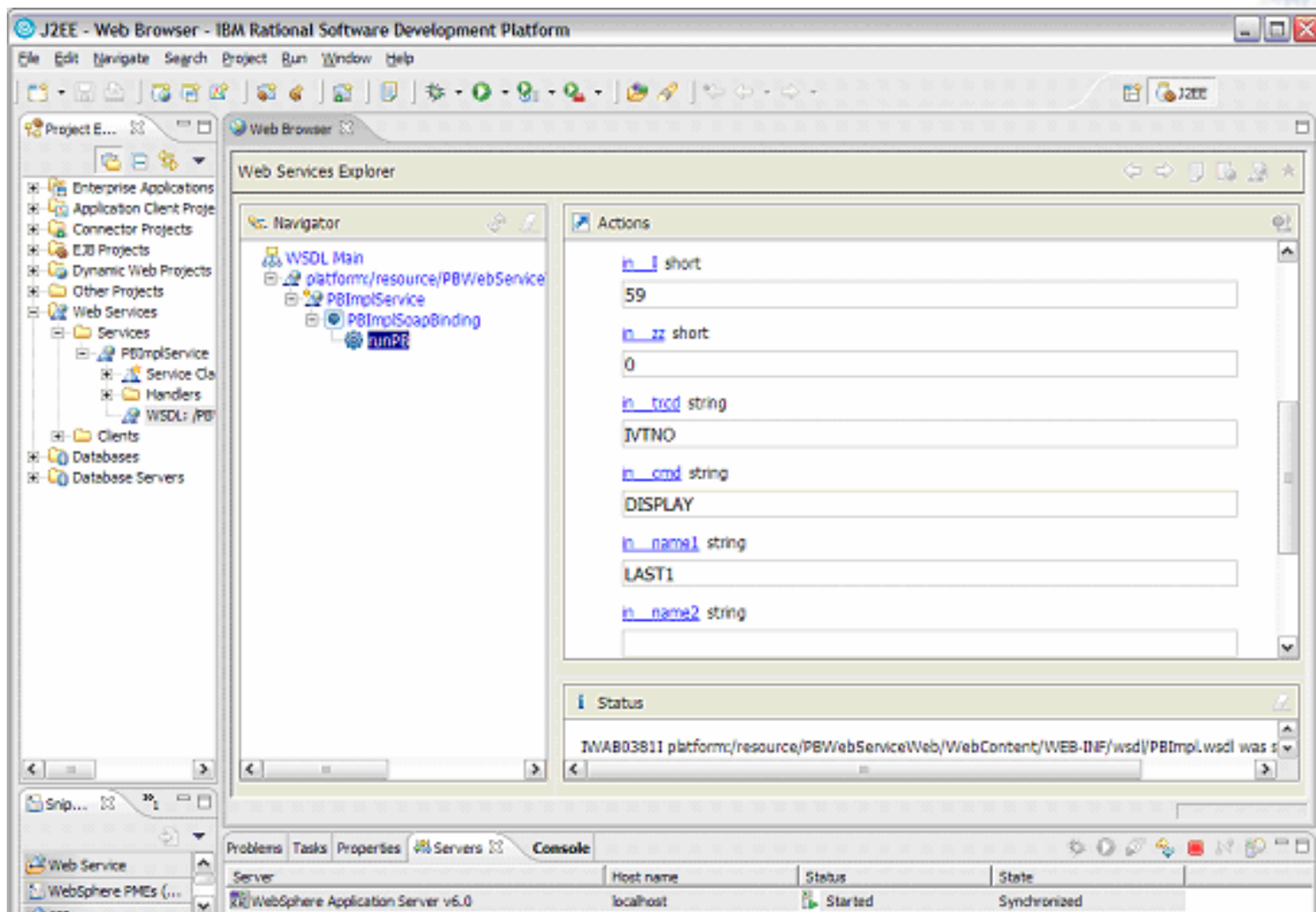
```

Web - PBIImpl.wsdl - IBM Rational Software Development Platform
File Edit Source Navigate Search Project Run WSDL Editor Window Help
Java Web
J2EE

Web Browser Web Browser PBIImpl.wsdl X

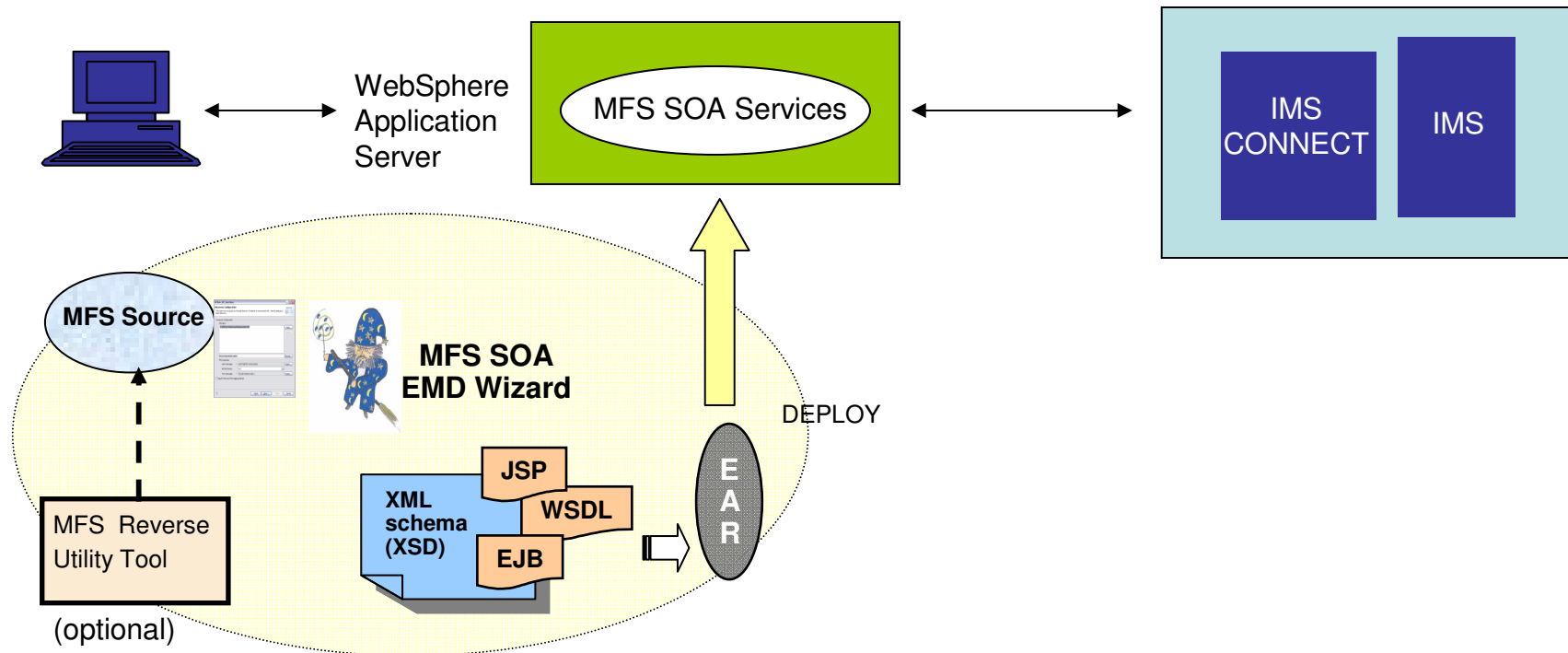
<wsdl:definitions targetNamespace="http://ims.sample" xmlns:impl="http://ims.s
<wsdl:types>
  <schema targetNamespace="http://ims.sample" xmlns="http://www.w3.org/2001/XM
  <complexType name="INPUTMSG">
    <sequence>
      <element name="recordName" nillable="true" type="xsd:string"/>
      <element name="recordShortDescription" nillable="true" type="xsd:string"/:
      <element name="bytes" type="xsd:base64Binary"/>
      <element name="in__11" type="xsd:short"/>
      <element name="in__zz" type="xsd:short"/>
      <element name="in__trocd" nillable="true" type="xsd:string"/>
      <element name="in__cmd" nillable="true" type="xsd:string"/>
      <element name="in__name1" nillable="true" type="xsd:string"/>
      <element name="in__name2" nillable="true" type="xsd:string"/>
      <element name="in__extn" nillable="true" type="xsd:string"/>
      <element name="in__zip" nillable="true" type="xsd:string"/>
    </sequence>
  </complexType>
  <element name="runPBResponse">
    <complexType>
      <sequence>
        <element name="runPBReturn" nillable="true" type="impl:OUTPUTMSG"/>
      </sequence>
    </complexType>
  </element>
    
```


Embedded Web Service Test Environment



IMS MFS SOA Support

- **M**essage **F**ormating **S**ervice SOA is designed to provide a systematic approach of transforming existing MFS-based IMS application into MFS J2C Services
- Enables MFS-based IMS transaction to be accessed from the web and reusable



Industry Standards Compliance and SOA

“

Transformation is the hard, ugly part of integration. ”

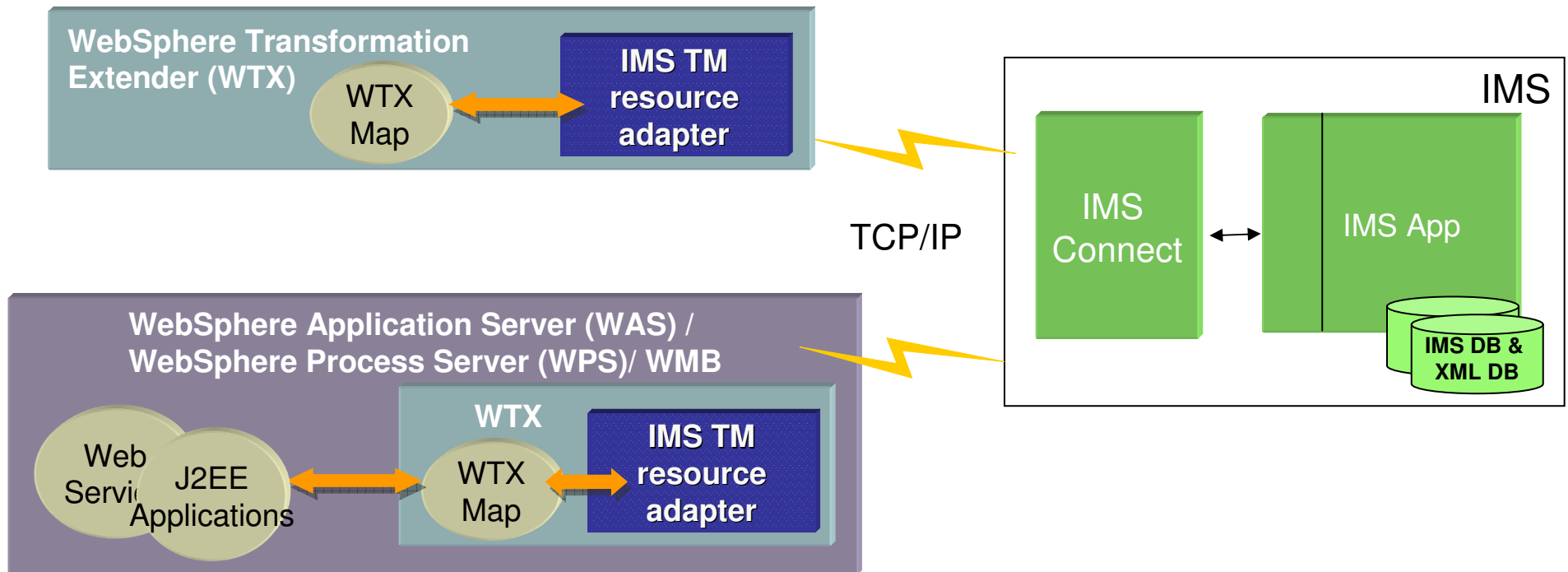
– Ted Friedman, Research VP,
The Gartner Group

WebSphere Transformation Extender and IMS



- WebSphere Transformation Extender (WTX) and IMS TM Resource Adapter enable compliance with complex data formats like
 - SEPA
 - SWIFT (financial services)
 - HIPAA (healthcare)
 - EDI (cross-industry)for IMS applications

WebSphere Transformation Extender and IMS



- Runs on

- Microsoft™ Windows™, AIX®, z/OS Batch, z/OS IMS™, z/OS UNIX® System Services, Red Hat and SUSE Linux™, Solaris, and HP-UX.

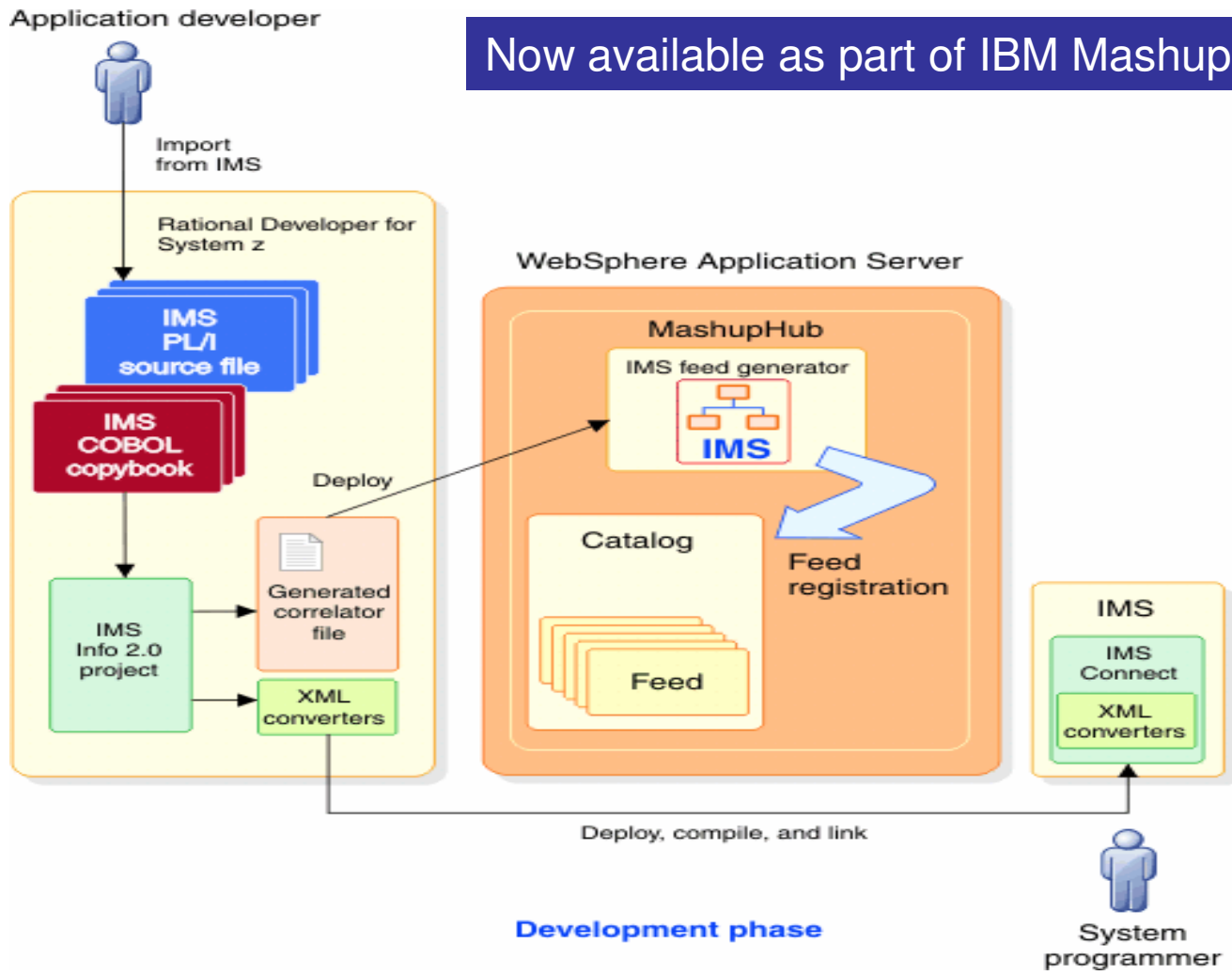
Extending SOA with Web 2.0

“ *Web 2.0 is the business revolution in the computer industry caused by the move to the internet as platform... Chief ... is this: Build applications that harness network effects to get better the more people use them.* ” – Tim O’Reilly

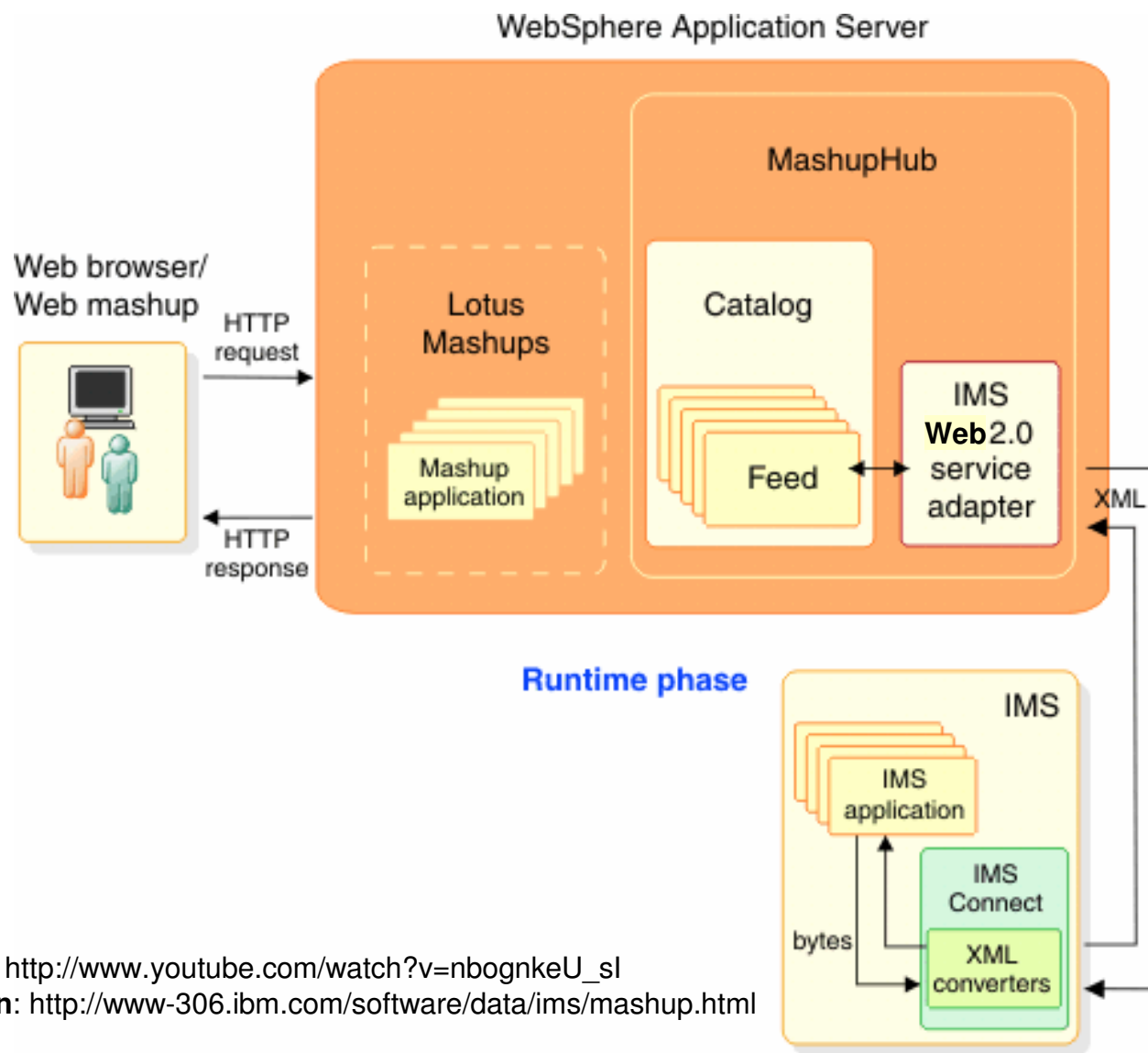
- Using Web 2.0 technologies based on an SOA can
 - reduce the overall effort of development
 - improving functionality
 - promoting data consistency
 - enhancing responsiveness to the customer

IMS Web 2.0 Solution

Now available as part of IBM Mashup Center



IMS Web 2.0 Solution



Demo on YouTube: http://www.youtube.com/watch?v=nbognkeU_sl

Detailed information: <http://www-306.ibm.com/software/data/ims/mashup.html>



IMS Web 2.0 Sample Scenario

Rapidly Extend Business Logic

- Expose an IMS transaction as an IMS RESTful service or feed
- Remix and mashup IMS data rapidly with IBM Mashup Center.

The screenshot shows a web browser displaying a mashup titled "National Tractor Company 2.0". The page content is composed of several data sources:

- Other web feed:** A product listing for an "LS450 Lawn Tractor" priced at "\$1849.00". The description mentions it is a 21-hp twin engine tractor with a 10-gauge steel frame and automatic transmission control.
- Google* web feed:** A map of the San Francisco Bay Area, showing cities like San Francisco, San Jose, and Oakland.
- IMS feed:** A table showing inventory and branch locations for various tractor companies.

name	address	phone	quantity
INDUSTRIAL EQUIPMENT LAWN N GARDEN	4100 Bohannon Dr Menlo Park CA 94025	(650) 926-6300	1
MIDSIZE TRACTORS	18880 Homestead Rd Cupertino CA 95014	(408) 863-9900	3
THE TRACTOR CO OF NOR CAL	650 Harry Road San Jose CA 95120	(408) 927-1080	2
TRACTOR EQUIPMENT CO.	19997 Shadow Creek Cir Castro Valley CA 94552	(510) 583-5092	4
TRACTOR MEDIC CO.	50 California St # 1500 an Francisco CA 94111	(415) 439-5255	3

IMS feed
Inventory and branch locations

Learn more from recorded talk! - <http://www-01.ibm.com/software/os/systemz/telecon/8apr/>

*Google is a trademark of Google Inc.

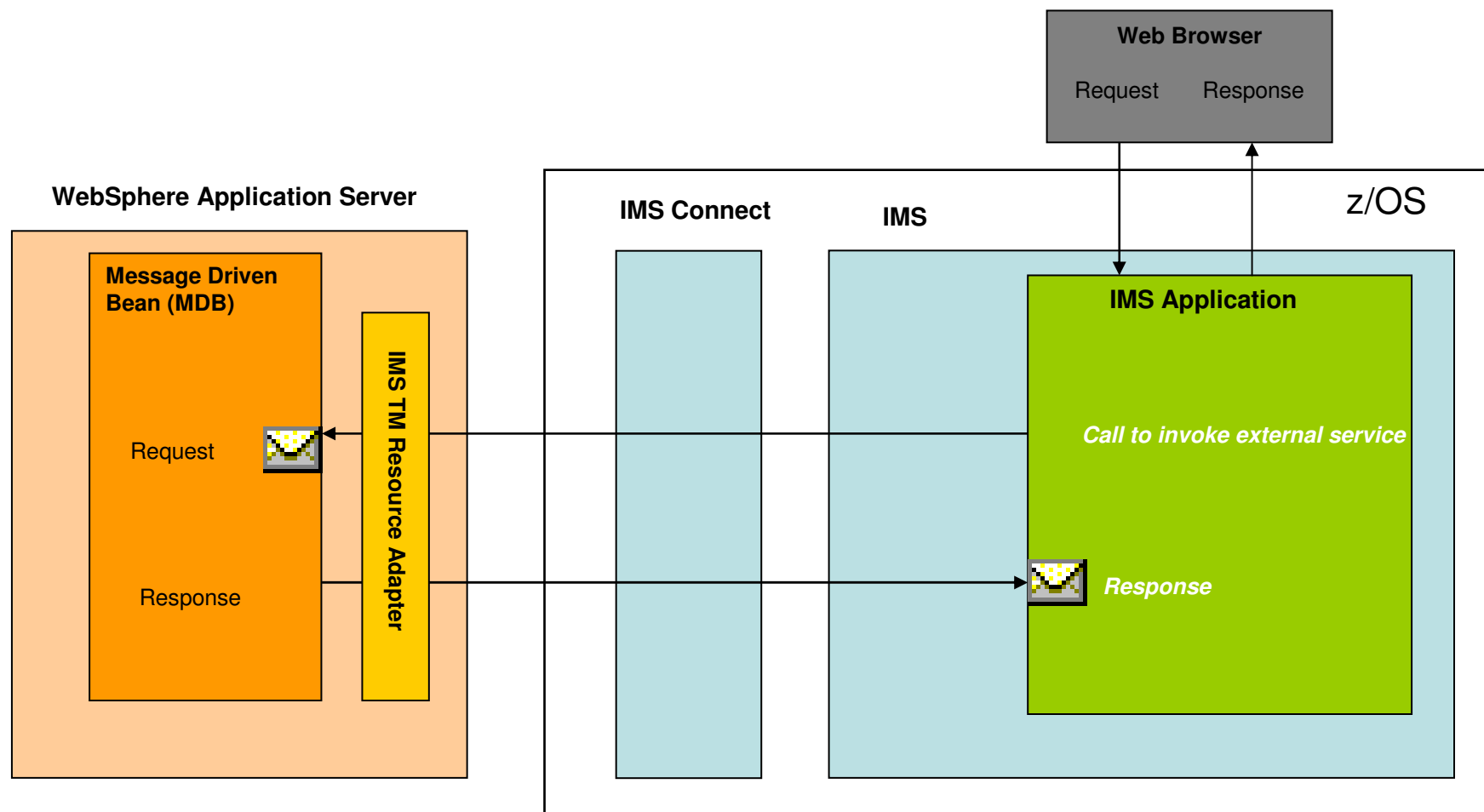


What do I need?

- Rational Application Developer v 7.1
- WebSphere Integration Developer v 6.1
- IMS TM resource adapter v 10.2
- Rational Developer for z/Series v 7.1.1
- Mashup Center 1.0
- IMS v 10
- IMS Connect v10

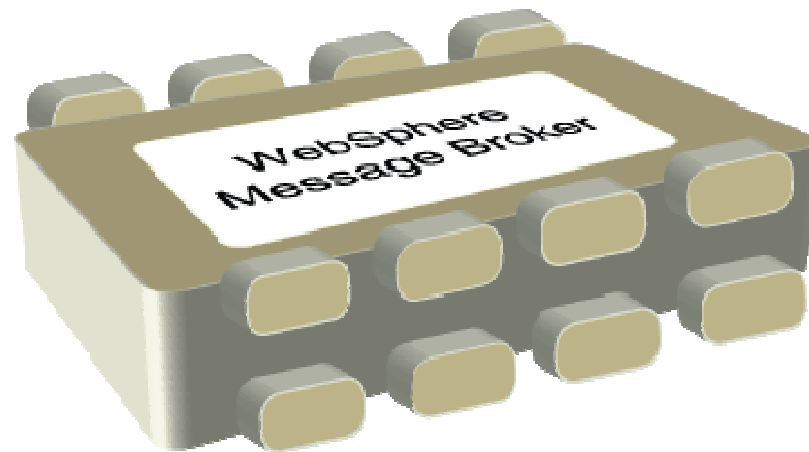
Requirement

- Allow IMS to synchronously invoke an external service



Requirement

- Support for the IMS TM Resource Adapter in IBM ESB product: WebSphere Message Broker



Help make us better!

Send us your ideas for IMS!



For more information

- **IMS TM Resource Adapter**
 - IMS Integration Solution Suite page
 - <http://www.ibm.com/software/data/ims/toolkit/>
 - Contact Malaika Paquiot-Mose (mpaquiot@us.ibm.com)
- **Rational Application Developer**
 - J2C bean generation using Rational Application Developer
 - http://www.ibm.com/developerworks/rational/library/05/0920_nigul/
- **WebSphere Integration Developer page**
 - <http://www.ibm.com/software/integration/wid/about/>
- **WebSphere Application Server**
 - <http://www.ibm.com/software/webservers/appserv/was/index.html>
- **Java 2 Connector Architecture (J2CA)**
 - <http://www.sun.com>

THANK YOU

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