Create New Business Processes Using Service Oriented Architecture

On Demand Insurance Business Problems

1. We lose customers because we process new policy applications too slowly.
2. Our claims processing is time-consuming and inefficient.
3. We need to do a better job of attracting new customers.
4. We need our employees to be more productive.
5. We need to grow revenue in existing accounts, and by partnering.
6. Our development teams are always behind schedule and over budget.
7. We need to gain maximum efficiency out of our IT infrastructure.

WebSphere, and its support for SOA, can help you solve these problems. Let’s see how…

On Demand Insurance CEO

IBM
WebSphere Provides a Process Integration Capability

- Define automated business processes

Service Combining Frameworks

- People Integration
- Process Integration
- Information Integration

Enterprise Service Bus

- WSDL
- People with Clients
- Application Services
- Partner Services
- Data Services

Current Homeowners Policy Application Process

1. Complete application
2. Fax application to home office
3. Review application for completeness
4. Determine risk level of property
5. Decide whether to approve application
6. Notify customer of decision
7. Decide whether to continue with new policy
8. Enter customer information into CICS
9. Enter customer information into SAP

- Customer must visit an agent
- Paper-based process
- Delays between each step
- Limited accountability
- Limited monitoring of the process
- Manual data entry results in errors
- Expensive
- Unhappy customers
Homeowners Policy Application Process

Requirements

We want our customers to be able to apply for a policy online
- Accessible 24x7
- Provide a response within 30 minutes
- Reduce the cost of processing an application to $5

Desired Online Process

1. Complete application
2. Review application for completeness
3. Determine risk level of property
4. Decide whether to approve application
5. Notify customer of decision
6. Update customer information in SAP and CICS

- Customer can apply over the Internet
- Automated process
- No delays between steps
- Always know status of each application
- Process monitoring provided by server
- SAP and CICS are automatically updated without re-entering data
- Efficient, cost effective process?
New Online Business Process Challenges

- Define the new business process that will meet the business requirements
  - Provide a response to the applicant within 30 minutes
  - Cost less than $5 to process an application
- Determine the number of resources assigned and trained for each role in the process
- Automate tasks previously performed manually
  - Receiving the application
  - Moving work items between resources
  - Updating customer records
- Monitor the process to ensure it is performing properly

Efficient, Cost Effective Process?
Model the Desired Online Process

Solution: WebSphere Business Integration Modeler

- Designed for a business modeler
- No programming required
- Graphically design the way processes will work
  - Model current process (as-is)
  - Plan future processes (to-be)
- Can include both human and automated steps
- Business requirements are clearly defined and documented
- Simulate and analyze processes
- Project Return on Investment
- Export business models for use by IT
Model of New Homeowners Policy Application Process

- Most competitive modeling tools stop here
  - Only boxes and lines
- With WebSphere Business Integration Modeler this is only the beginning

Model Attributes – More Than Just Boxes and Lines

**Time**
- Time is assigned to tasks:
  - Time required to finish the task
  - Maximum time to wait for a resource
  - Time required for a resource to work on a task

**Cost**
- Cost is assigned to resources (roles, people, bulk items, equipment, etc.)
  - Supports overtime premiums
- Cost can also be assigned to tasks
- Manual tasks include cost for employees and may include cost for using IT Systems
- Automated tasks include cost for IT Systems only
- All national currencies can be used for costs
Improve the Process Model Using Simulation

- Simulate your model before it is deployed
- Powerful simulation engine supports
  - Conditional branching
  - Steady-state model
  - Run persistence
  - Multi-process concurrent simulation
- Simulation statistics are provided while the simulation is running
- Animation during simulation allows you to identify bottlenecks
- Simulation output provides detailed information:
  - Resource utilization levels
  - Cost calculations
  - Cycle time calculations
- Model "what if" scenarios and compare results of two different scenarios

DEMO: Model the Online Homeowners Policy Application Process

- Tour of the Business Modeling Perspective
  - Process model diagram
    - Times
    - Costs
- Run simulations
- Look at simulation analysis
- Improve the process
- Compare processes
Model Flow Needs to be Completed with Programming Assets

- Model is converted into a structured language (BPEL) flow
  - Modeler generates BPEL
- Model now needs to be completed by programmers to provide:
  - Web service for Get Risk Factor
  - Service for updating CICS and SAP
  - Data maps for each step
  - Assign role for each human step
  - Deployment to WBI Server Foundation runtime server (via EAR)
- Programmer uses WebSphere Studio Application Developer Integration Edition

Business Process Execution Language

- A specification for business process description and execution
- Invented by a core set of companies led by IBM and Microsoft
- Now progressing towards standard through OASIS (Organization for the Advancement of Structured Information Standards)
- Supported natively by WebSphere Business Integration Server Foundation
WebSphere Studio Uses SOA Programming

- Graphically describe business process flow in Business Process Execution Language (BPEL)
- Drag and drop services into process flow (automatic binding)
- Automatic human workflow support
- Built-in Unit Test Environment
- Built-in Process Debugger
- Deploy to runtime server
- Flow may be invoked as web service, EJB, or message driven bean

DEMO: Complete Homeowners Policy Application Process

Process from Modeler (in BPEL)

Customer record synchronization service

Drag and drop service into flow
Test and Debug New Process Before Deployment

- Built-in unit test and debug environment built into WSAD-IE
- WebSphere Business Integration Server Foundation runs within tool
- Universal test client for creating process instance and entering data

Deployment to Production

Where do we run the completed process?

The completed process will run on WebSphere. WebSphere Studio makes deployment easy.

IT Manager

IBM
WebSphere is IBM’s Application Server Platform

- Supports J2EE, web services, and BPEL flows on a unified code base
  - Web Applications for browsers
    - JSP’s and Servlets
  - Business logic
    - EJB’s
  - Web services
    - SOAP/HTTP
  - BPEL flows
    - Straight Through and Human workflow

Deploy the Process

- Deployment of a business process is exactly the same as for any other J2EE application and involves a single step
- Process executes immediately after deployment without server restart (hot deploy)
Monitoring is Built Into the Server

- View all running process instances (policy applications)
  - Can filter this list by:
    - State (running, finished, failed, terminated, compensated)
    - User who started the process
    - Process name
    - Date range

- Monitor individual process instances
  - Data which was originally input
  - Which steps have been completed
    - Includes who completed the step and when started/completed

- Can transfer tasks to other users

- Completed process instances can be saved for archival or further analysis

DEMO: Deploy and Run the Online Homeowners Policy Application Process

- Web-based administration for deployment
- Integration of user task lists into portal environment
- Verify customer record creation in both CICS and SAP
Transaction Compensation in Flows

- Define multiple steps as a single transaction
  - Maintain synchronization of data in the event of system failure
  - Both successfully complete or neither one is executed
- If the process fails, a compensating process automatically activates
  - Each service call in the process can have its own compensation step
  - Not necessarily just “undo”

Creating New Services

What if I need to create new services instead of re-using existing services?

WebSphere provides all of the support you need to quickly create new services.

IT Manager

IBM
Turning Components into Services with WebSphere Studio

- Create web services from these assets
- Wizards generate the code for you
- Wizards generate the WSDL interface description for you
- Created services run on WebSphere Application Server

Turning Enterprise Resources into Services with WebSphere Studio

- Easily create services from these enterprise assets
- Wizards generate the code for you
- Wizards generate the WSDL interface description for you
- Wizards generate the XSD schema for data transfer

58 IBM supplied adapters (CICS, IMS, SAP, etc …)
How Services are Created Using IBM Adapters

**Design Time**

- **Target Application** (SAP, Siebel, PeopleSoft, etc.)
- **Object Discovery Agent**
- **Business Object Designer**
- **Adapter Tooling** (Integrated with WebSphere Studio)
- **WebSphere Studio**

Introspects:
- Data
- Functions

**Runtime**

- **Target Application** (SAP, Siebel, PeopleSoft, etc.)
- **Native**
- **MQ**
- **WebSphere Business Integration Server Foundation**

Flexibility to Position IBM Adapters

- **WebSphere Business Integration Server**
  - **Runtime Adapter**
  - **Target System**
  - Microsoft BizTalk, SAP NetWeaver XI, BEA, and Oracle adapters only work this way
  - Adapter on integration server
  - No additional hardware cost
  - Assume network is reliable

- **WebSphere Business Integration Server**
  - **Runtime Adapter**
  - **Target System**
  - Adapter on intermediate server
  - Allows scale up
  - Adapters can be shared
  - Consolidation of adapters
  - Additional server costs

- **WebSphere Business Integration Server**
  - **Runtime Adapter**
  - **Target System**
  - Adapter on target system
  - Use enterprise service bus to connect
  - Secure connection
  - Assured delivery
  - Use when network is unsecured or unreliable

Source: IBM Software Group Competitive Project Office, 2005
# IBM Adapter Portfolio

* Adapter development kit available for custom adapter development

## Adapter Category

### Application
- Ariba Buyer
- Centricity Gateway
- Clarify CRM
- eMatrix
- ESRI Spatial Database
- i2
- i2 Active Data Warehouse
- IndusConnect Framework
- JD Edwards
- Manugistics
- Maximo MEA
- MetaSolv Applications
- mySAP.com
- NightFire Applications
- Oracle Applications
- PeopleSoft
- Portal Infranet
- QAD MFG/PRO
- SAP Exchange Infrastructure
- Siebel eBusiness Applications
- Spirent Applications
- SunGard FRONT ARENA
- Telcordia Applications
- WebSphere Commerce

### Technology / Data Handlers
- ACORD XML
- COM
- CORBA
- Data Handler for Complex Data
- Data Handler for XML
- Data Handler for EDI
- e-mail
- Enterprise Java Bean
- Exchange
- FIX Protocol
- Healthcare Protocols
- HTTP
- iSeries
- iSoft Commerce Suite
- JDBC
- JMS
- JText
- Lotus Domino
- SWIFT
- TCP/IP
- Trading Partner Interchange
- Web Services
- WebSphere MQ
- WebSphere MQ Workflow
- XML

### Mainframe
- ADABAS
- CICS
- DB2 Databases
- IDMS Database
- IMS Transaction Mgr.
- IMS Database Manager
- Natural
- VSAM
- IMS Transaction Mgr.
- IMS Database Manager

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## How We Created the Customer Record Synchronization Service

1. Install these adapters
2. Create with WebSphere Studio
3. Create with WebSphere Studio

This service can be invoked by other processes as a web service, EJB, or message bean.

Run on WebSphere Business Integration Server (Server Foundation)
Live connection to SAP system
Introspect the SAP repository using the Object Discovery Agent
Generate service to access customer records

CICS and SAP services are choreographed into a BPEL process flow using WebSphere Studio
The process flow is a service that can access and update both systems
Service can be invoked by itself or as part of a business process
**DEMO: Customer Record Synchronization Service**

- Choreograph CICS and SAP Customer Record services into a single service
- Supports Add, Inquiry, Update, and Delete operations
- Test new service using built-in unit test environment

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**Review of IBM Solution**

- WebSphere Business Integration Modeler with simulation & analysis
- WebSphere Studio Application Developer Integration Edition
  - SOA programming
    - Create services from exiting assets
    - Create/modify business processes
    - Drag & drop services into processes
  - Test and deployment wizards
- WebSphere Business Integration Server Foundation
  - Standards-based (J2EE & BPEL)
  - Human workflow support built-in
  - Task lists for employees in portlets
  - Adapter Object Discovery Agents
  - Flexible adapter placement
  - Transaction compensation
  - Enterprise Service Bus

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**Diagram of IBM Solution**

- WebSphere Business Integration Server Foundation
- WebSphere Portal Server
- Enterprise Service Bus
- Employees
- SAP
- CICS
Microsoft is Missing Major Elements of the Solution

- No modeling simulation and analysis tools
  - Visio is only a diagramming tool
- BizTalk development tools do not support SOA programming
  - Creating services from exiting assets
  - Drag & drop services into processes
- No test and deployment wizards
- Only runs on Windows
- No Enterprise Service Bus

- BizTalk human workflows are more difficult to create
  - Require extensive programming
  - Ad-hoc only, not structured
  - User task lists not available in portal
  - No support for roles
  - No end-to-end monitoring

- Adapters must run inside BizTalk
- Host Integration Server is used to connect to CICS instead of an adapter

BizTalk Does Not Support Structured Human Workflow

- Defined as one workflow definition
- Each instance managed as one flow
  - End-to-end monitor
  - State tracking

- Defined as four independent orchestrations
- Each sub-flow managed independently
  - No end-to-end monitoring
  - No state tracking

Source: IBM Software Group Competitive Project Office, 2005
SAP NetWeaver is Missing Major Elements of the Solution

- No modeling simulation and analysis tools
- Developer tools must be connected to servers
  - No offline development possible
- NetWeaver XI is primarily implemented in 25-year-old ABAP technology
- No Enterprise Service Bus
- SAP NetWeaver XI does not support human workflow
- Must program transaction compensation
- Only SAP adapters are available from SAP
  - Must use 3rd party adapter for CICS

Old Technology

SAP NetWeaver Exchange Infrastructure (XI)

Enterprise Portal

Network

Source: IBM Software Group Competitive Project Office, 2005

NetWeaver XI – Based on Proprietary ABAP Technology

- Primary functions implemented in ABAP
- J2EE used only as a façade – mapping, adapters and tools

Source: IBM Software Group Competitive Project Office, 2005
BEA WebLogic Integration is Missing Major Elements of the Solution

- No modeling simulation and analysis tools
- WebLogic Workshop is not Eclipse-based
- Must program transaction compensation
- No Enterprise Service Bus
- Adapters must run inside WebLogic Server
- Adapters do not have Object Discovery Agent capabilities (introspection)
- Only SAP, Siebel, Peoplesoft, and Oracle Applications adapters available from BEA
  - Must use 3rd party adapter for CICS

WebSphere Solved the Problem

WebSphere made it easy to create the new homeowners application process. It provided us with:
- Tooling to create and simulate the business process
- Monitoring functions for the deployed process
- A process which exceeds the business requirements

Using WebSphere we implemented a flexible process
- The business process is now a set of services
- Creating services from existing assets was easy
- Simple deployment to the runtime server
- The process can now be modified quickly if needed

WebSphere made it easy for business and IT to work together to solve the business problem
Don’t Cut Your Data Into Pieces