Oracle BIEE and SOA Integration : Step by Step

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What is Service-Orientated Architecture?

- Not a technology or product, more a design approach
- Exposure of product functionality as “services”
  - Services are atomic, do not depend on other services run beforehand
  - Technology and implementation neutral - J2EE, .NET, PL/SQL
  - Services published in directories
- Services are orchestrated using declarative language (BPEL)
- Applications are “loosely coupled”
- Promotes re-use of code, assembling of applications from existing processes
- Architecture for Oracle Fusion Applications
Components of a SOA Architecture

• Business Processes
  • Declarative workflows (BPEL)
  • Service Orchestration
  • Invoked from apps, alerts and other processes

• Business Rules
  • Declarative business polices (Rules/Decisions)
  • Accessed from apps and business processes

• Business Events
  • Declarative event definition, transformations and routing (Enterprise Service Bus)
  • Generated by apps and business processes

• Business Activity Monitoring
  • Real-time, “in-flight” monitoring of business processes
Fusing SOA and Business Intelligence

• Analytic Business Processes
  • Evaluating BI conditions within BPEL workflows
  • Embed BI metrics within BPEL workflows
  • Generate and deliver reports from BPEL workflows
  • Invocation - from Dashboards, Reports and Alerts

• Analytic Business Rules
  • Embedded analytics in business rules
  • Real-time Decisions

• Analytic Business Event Routing
  • Generate business events from BI alerts
  • Generate and deliver BI reports from business events
  • Intelligent business event routing

• Business Process Optimization
  • Business Process Metrics Analysis
  • Closed loop business performance optimization
OBIEE 10.1.3.2 Web Services Interface

- OBIEE 10.1.3.2 and Siebel Analytics expose a “fine-grained” Web Services interface
  - HtmlViewService
  - iBotService
  - MetadataService
  - ReplicationService
  - ReportEditingService
  - SAWSessionService
  - SecurityService
  - WebCatalogService
  - XMLViewService

- Powerful, but requires developer to work directly with the basic functionality of OBIEE
The Easy BI Code Bridge

• Example code made available from OBIEE Development on OTN
• Set of “course-grained” Web Services for interacting with OBIEE
• Four Web Services
  • Execute a Request
  • Return a single value
  • Invoke an iBot
  • Evaluate a condition

• Speeds up development, handles setup, parsing of tokens etc
SOA and OBIEE Integration Scenario

- Order Bookings demo provided by Oracle SOA Suite Team
- Demonstrates use of ESB, BPEL, Rules etc
- Static rules, simple RDBMS lookups
- Typical “pre-existing” process
- Downloadable from OTN
Integration Step 1: Call Answers Request

- Current BPEL process retrieves customer data from RDBMS
  - Uses DB Adapter

- Objective is to replace this with call to request against DW
  - Report exists in Web Catalog
  - Easily altered or changed by end user
Execute Answers Request Step 1

• Create report, add a filter that uses a presentation variable

• Make note of presentation variable name, and location of report
Execute Answers Request Step 2

- Add EasyBI Partner Service to BPEL process
Execute Answers Request Step 3

- Add Invoke process activity to BPEL process
- Connect to Business Intelligence partner service
- Select “Execute Request”
- Create input and output variables
Execute Answers Request Step 4

- Add Assign process activity to set the report name, parameter name and (CUSTID) parameter value.
Execute Answers Request Step 5

- Transform MS Rowset XML into “regular” XML
- Import XML schema to receive transformed variable
- Use XSLT to assign results to customer variables
Integration Step 2: Call Answers Condition

- Current BPEL process calls a verification service to check credit card validity

- Replace with call to Answers report that checks for fraud
  - If rows returned, customer is valid
  - If no rows returned, customer is fraudulent
Evaluate Condition Step 1

- Ensure report is available and returns rows if “true”.
- Use presentation variable in filter
  - Web Service invocation will pass across value from previous Assign process activity
Evaluate Condition Step 2

- Add Invoke process activity, link to BI Partner Service
- Use the “Evaluate Condition” Service
- Create input and output variables
Evaluate Condition Step 3

- Add Assign activity, pass across Customer value, name of report and name of presentation variable
Evaluate Condition Step 4

- Use results of condition check in BPEL “switch”

```xml
bpws:getVariableData('InvokeCreditServiceBI_evaluateCondition_ResponseVariable','result', '/ns32:evaluateConditionResponseElement')='false'
```
Placing an Order

![Image of a computer screen showing a web page for Global Company, an online shopping mega store. The page displays item details for a PlayStation 2 Video Game System, including the name, description, category, price, product ID, and producer. There is an option to add the item to the cart with a quantity selector set to 2.]
Checking BPEL Process

Oracle Enterprise Manager 10g
BPEL Control

Title: Instance #1 of SOAOrderBooking
Reference Id: 21
BPEL Process: SOAOrderBooking (v. 1.0)

Last Modified: 27/06/07 17:52:34
State: closed.completed
Priority: 0

Visual representation of the history of this BPEL business flow

GetCustInfoFromBI

Invoked 2-way operation "executeRequest" on partner "BusinessIntelligence".

 uçCurrentLocation=xml:namespace="http://www.w3.org/2001/XMLSchema-instance" name="parameters">
  <executeRequestElement
    xmlns="http://oracle.soa.bi/types/">
    <reportPath>/Shared/RSysBT/CustomerDetails/reportPath>
    <params>
      <value>10</value>
      <name>CUSTID</name>
    </params>
  </executeRequestElement>
</messages>
</GetCustInfoFromBI:executeRequest_ReplyVariable>
Demonstration

Adding OBIEE Functionality to the Order Bookings BPEL process
Other OBIEE and SOA Integration Points

- Calling a BPEL Process from Intelligent Dashboard
- Referencing OBIEE data value in Business Rule
- Process Improvement
Calling BPEL Process from Dashboard

- “Action from Insight” - see data (insights) on dashboard, take action immediately
  - Start a sales promotion
  - Investigate a customer issue
  - Re-price a product range

- In OBIEE 10.1.3.2, accomplished through dashboard links, custom HTML pages, and Javascript that calls Java code in the Java Host Process

- In OBIEE 11g+, accomplished through new “Action Framework”
Referencing OBIEE Data in Business Rules

- Oracle Business Rules allows you to externalize business rules
  - At present, rule conditions are largely static

- OBIEE’s lets you embed key business metrics in business rules
  - Information and objective based rules
  - Leverage BI calculations, conditions and KPIs within business policies

- Examples
  - Discount policies
  - Supplier selection policies
  - Expense approval policies
  - Customer cross-sell policies

```java
If (customer.churnRisk > 50%)
{
    discount = 20%
}
else if
{
    customer.profitability_QTD > 0)
    {
        discount = 10%
    }
else
{
    discount = 0%
}
```
Summary

• Service-Orientated Architecture is a design approach that exposes application functionality as services

• Allows applications and processes to be assembled using simple standards

• OBIEE has a SOA-compatible Web Services interface

• Allows OBIEE calculations, reports, conditions and iBots to participate in business applications and business processes

• The EasyBI Web Services API simplifies the process of accessing OBIEE content

• A typical process enhanced through OBIEE is the SOA Demo Order Bookings application.
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