BPEL
Oracle BPEL PM & JDeveloper
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What’s BPEL

- BPEL is Business Process Execution Language or Web Services Business Process Execution Language
- A Business process modeling language
- A Process is a composite of web services
  - a package of web services
  - programming in the large
• block-structured
  (e.g. sequence, while, pick, scope, etc.)
• BPEL builds on the foundation of XML and Web services
• XML-based language
• standardize enterprise application integration
How to build a Business Process

- specifies the exact order in which participating Web services should be invoked, either sequentially or in parallel
- Structs: Conditional, Loops
- Define a complex business process by combining all these structs
How it works

- business process receives a request
- Invoke web services
- Respond to the caller
Activities in BPEL

- `<invoke>` invoking other Web services
- `<receive>` waiting for the client to invoke the business process by sending a message
- `<reply>` generating a response for synchronous operations
- `<assign>` manipulating data variables
- `<throw>` indicating faults and exceptions
- `<wait>` waiting for some time
- `<terminate>` terminating the entire process
Structure Activities

- `<sequence>` allows us definition of a set of activities that will be invoked in an ordered sequence think about “{}”
- `<flow>` defines a set of activities that will be invoked in parallel
- `<switch>` implements branches “if... else...” or “switch... case...”
- `<while>` defines loops “for...”, “do... while” or “while”
- `<pick>` selects one of several alternative paths
BPEL Process for Business Travels

1: Request

6: Invoke

Client

portType

«invoke (sync)>>
Retrieve the employee travel status

«invoke (async)>>
Get plane ticket offer from American Airlines

«invoke (async)>>
Get plane ticket offer from Delta Airlines

[ American.price <= Delta.price ]
Select the American Airlines ticket

[ American.price > Delta.price ]
Select the Delta Airlines ticket

«reply>>
Return the best offer

2: Request

3: Reply

4.1: Invoke

4.2: Call-back

5.1: Invoke

5.2: Call-back

Employee Travel Status Web Service

American Airlines Web Service

Delta Airlines Web Service
Develop

- Inventory the Involved Web Services
- Define WSDL for the BPEL Process
- Define Partner Link Types
- Create the Business Process
- Deploy and Test
Robustness

- Fault Handling and Signaling

Benefits

- reducing the cost and complexity of process integration
Oracle BPEL

- Oracle BPEL Process Manager
  Oracle BPEL Process Manager offers a comprehensive and easy-to-use infrastructure for creating, deploying and managing BPEL business processes.
- Jdeveloper 10.1.3.4
- Eclipse? Netbeans?
<process name="LoanFlowPlus" targetNamespace="http://samples.otn.com"
  suppressJoinFailure="yes"
 xmlns="http://schemas.xmlsoap.org/ws/2003/03/business-process/"
 xmlns:u="http://xmlns.oracle.com/bpel/workflow/common"
 xmlns:tns="http://samples.otn.com"
 xmlns:xsd="http://www.w3.org/2001/XMLSchema"
 xmlns:wf="http://schemas.omg.org/bpel/extension/workflow"
 xmlns:ora="http://schemas.oracle.com/xpath/extension"
 xmlns:taskservice="http://xmlns.oracle.com/bpel/extension	askService"
 xmlns:ns1="http://schemas.oracle.com/xpath/extension/1/1day"
 xmlns:ns3="http://www.oracle.com/XSL/Transform/java/oracle.tip.pc.services.functions.XPath20"
 xmlns:bpelx="http://schemas.oracle.com/bpel/extension"
 xmlns:task="http://xmlns.oracle.com/bpel/workflow/task"
 xmlns:auto="http://www.autoloan.com/ns/autoloan"
 xmlns:services="http://services.otn.com">

<!--===============================================================================================
This process invokes a synchronous credit rating service (which throws NegativeCredit exceptions),
then it invokes two asynchronous loan processor services in parallel and finally selects the best loan
offer received and returns it (asynchronously) to its caller.
===============================================================================================-->

<partnerLinks>
  <partnerLink name="client" partnerLinkType="tns:LoanFlowPlus"
    partnerRole="LoanFlowPlusRequester"
    myRole="LoanFlowPlusProvider"/>
  <partnerLink name="customerService" partnerLinkType="tns:CustomerService"
    partnerRole="CustomerServiceProvider"/>
  <partnerLink name="creditRatingService"
    partnerLinkType="services:CreditRatingService"
    partnerRole="CreditRatingServiceProvider"/>
  <partnerLink name="UnitedLoanService" partnerLinkType="services:LoanService"
    myRole="LoanServiceRequester" partnerRole="LoanServiceProvider"/>
</partnerLinks>
Demo
Useful Resource

- BPEL Cookbook