



J-Spring

16 april 2008 Spant! - Bussum



Grafische procesbouw met Eclipse BPEL designer



Wie en Waarom

- Andy Verberne
- Java consultant bij Atos Origin
- BPEL projecten gedaan met:
 - WebSphere Integration Developer (WID)
 - WebSphere Process Server (WPS)
- (Een) Open Source variant:
 - Eclipse BPEL Designer
 - Apache ODE



Agenda

- Introductie
- Grafische BPEL snippets
- BPEL process walkthrough
- BPEL process execution
- Wrap up



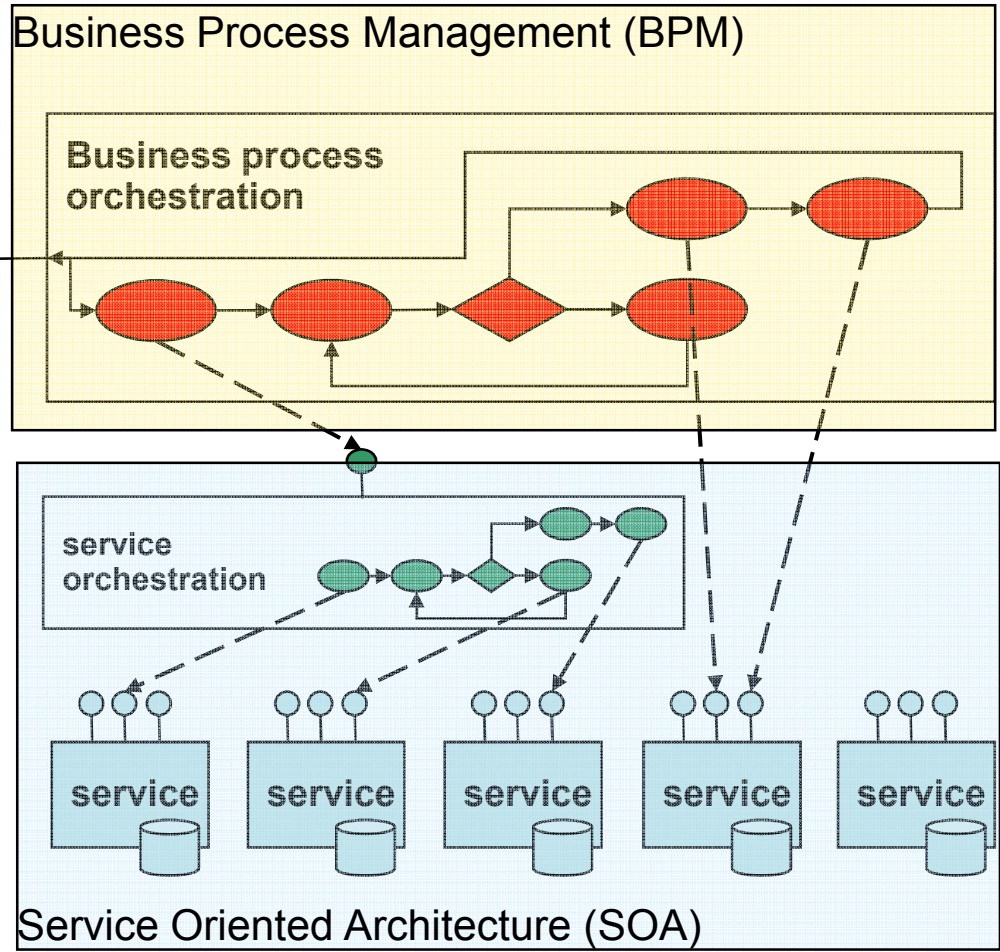
Wat is BPEL

Business Process Execution Language

- Beschrijven en programmeren van processen in XML
- OASIS standaard: WS-BPEL v2.0 (maart 2007)
- Leunt zwaar op XSD, WSDL en Xpath



Waarom BPEL

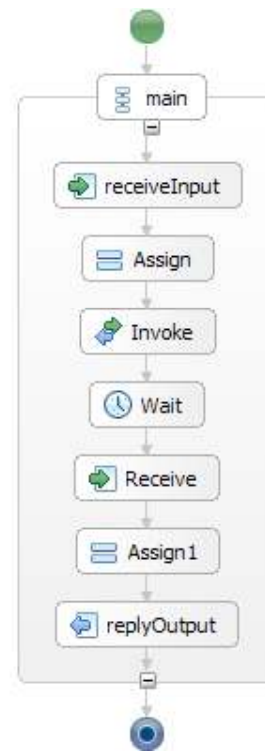


```

<?xml version="1.0" encoding="UTF-8"?>
<bpws:process exitOnStandardFault="yes" name="Consumer"
suppressJoinFailure="yes"
targetNamespace="http://sample.bpel.org/bpel/sample"
xmlns:bpws="http://docs.oasis-open.org/wsbpel/2.0/process/executable"
xmlns:ns="http://sample.bpel.org/bpel/sampleArtifacts"
xmlns:ns0="http://www.example.org/ConsumerProviderServices"
xmlns:ns1="http://www.w3.org/2001/XMLSchema" xmlns:tns="http://sample.bpel.org/bpel/sample">
<bpws:import importType="http://schemas.xmlsoap.org/wsdl/"
location="Consumer.wsdl" namespace="http://sample.bpel.org/bpel/sample"/>
<bpws:import importType="http://schemas.xmlsoap.org/wsdl/"
location="ConsumerProviderServices.wsdl" namespace="http://www.example.org/ConsumerProviderServices"/>
<bpws:import importType="http://schemas.xmlsoap.org/wsdl/"
location="ConsumerArtifacts.wsdl" namespace="http://sample.bpel.org/bpel/sampleArtifacts"/>
<bpws:partnerLinks>
<bpws:partnerLink myRole="ConsumerProvider" name="client" partnerLinkType="tns:Consumer"/>
<bpws:partnerLink myRole="consumer" name="provider"
partnerLinkType="tns:ProviderPLT" partnerRole="provider"/>
</bpws:partnerLinks>
<bpws:variables>
<bpws:variable messageType="tns:ConsumerRequestMessage" name="input"/>
<bpws:variable messageType="tns:ConsumerResponseMessage" name="output"/>
<bpws:variable messageType="ns0:echoRequest" name="providerRequest"/>
<bpws:variable messageType="ns0:echoResponse" name="providerResponse"/>
</bpws:variables>
<bpws:correlationSets>
<bpws:correlationSet name="ID" properties="ns:id"/>
</bpws:correlationSets>
<bpws:sequence name="main">
<bpws:receive createInstance="yes" name="receiveInput"
operation="process" partnerLink="client"
portType="tns:Consumer" variable="input"/>
<bpws:assign name="Assign" validate="no">
<bpws:copy>
<bpws:from>
<bpws:literal>
<echo xmlns="http://www.example.org/ConsumerProviderServices/"
<id>
<text/>
</echo>
</bpws:literal>
</bpws:from>
<bpws:to part="payload" variable="providerRequest"/>
</bpws:copy>
<bpws:copy>
<bpws:copy>
<bpws:from part="payload" variable="input">
<bpws:query queryLanguage="urn:oasis:names:tc:wsbpel:2.0:sublang:xpath1.0"><![CDATA[tns:id]]></bpws:query>
</bpws:from>
<bpws:to part="payload" variable="providerRequest">
<bpws:query queryLanguage="urn:oasis:names:tc:wsbpel:2.0:sublang:xpath1.0"><![CDATA[ns0:id]]></bpws:query>
</bpws:to>
</bpws:copy>
<bpws:copy>
<bpws:from part="payload" variable="input">
<bpws:query queryLanguage="urn:oasis:names:tc:wsbpel:2.0:sublang:xpath1.0"><![CDATA[tns:input]]></bpws:query>
</bpws:from>
<bpws:to part="payload" variable="providerRequest">
<bpws:query queryLanguage="urn:oasis:names:tc:wsbpel:2.0:sublang:xpath1.0"><![CDATA[ns0:text]]></bpws:query>
</bpws:to>
</bpws:copy>
</bpws:assign>
<bpws:invoke inputVariable="providerRequest" name="Invoke"
operation="echo" partnerLink="provider" portType="ns0:ProviderPortType">
<bpws:correlations>
<!-- The error in the following line is not an error. It has to be like this! -->
<bpws:correlation initiate="yes" pattern="out" set="ID"/>
</bpws:correlations>
</bpws:invoke>
<bpws:wait name="Wait">
<bpws:for><![CDATA[PT20S]]></bpws:for>
</bpws:wait>
<bpws:receive name="Receive" operation="echoResult"
partnerLink="provider" portType="ns0:ConsumerPortType" variable="providerResponse">
<bpws:correlations>
<bpws:correlation initiate="no" set="ID"/>
</bpws:correlations>
</bpws:receive>
<bpws:assign name="Assign1" validate="no">
<bpws:copy>
<bpws:from>
<bpws:literal>
<ConsumerResponse xmlns="http://sample.bpel.org/bpel/sample">
<result/>
</ConsumerResponse>
</bpws:literal>
</bpws:from>

```

Waarom is grafische ondersteuning noodzakelijk?

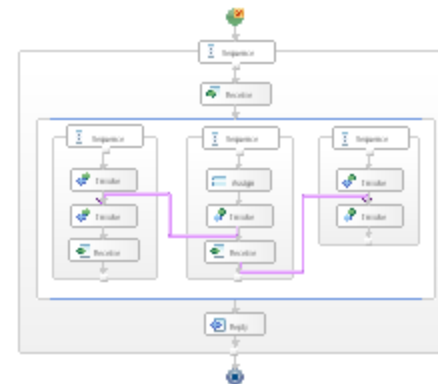




Eclipse BPEL Designer



- Open Source Eclipse 3.3 plugin
- Committers: IBM + Oracle
- Huidige versie 0.3.0 (augustus 2007)
 - grafische procesbouw
 - validatie
 - runtime framework
 - *Debugging*
- Lombok for BPEL





Apache ODE

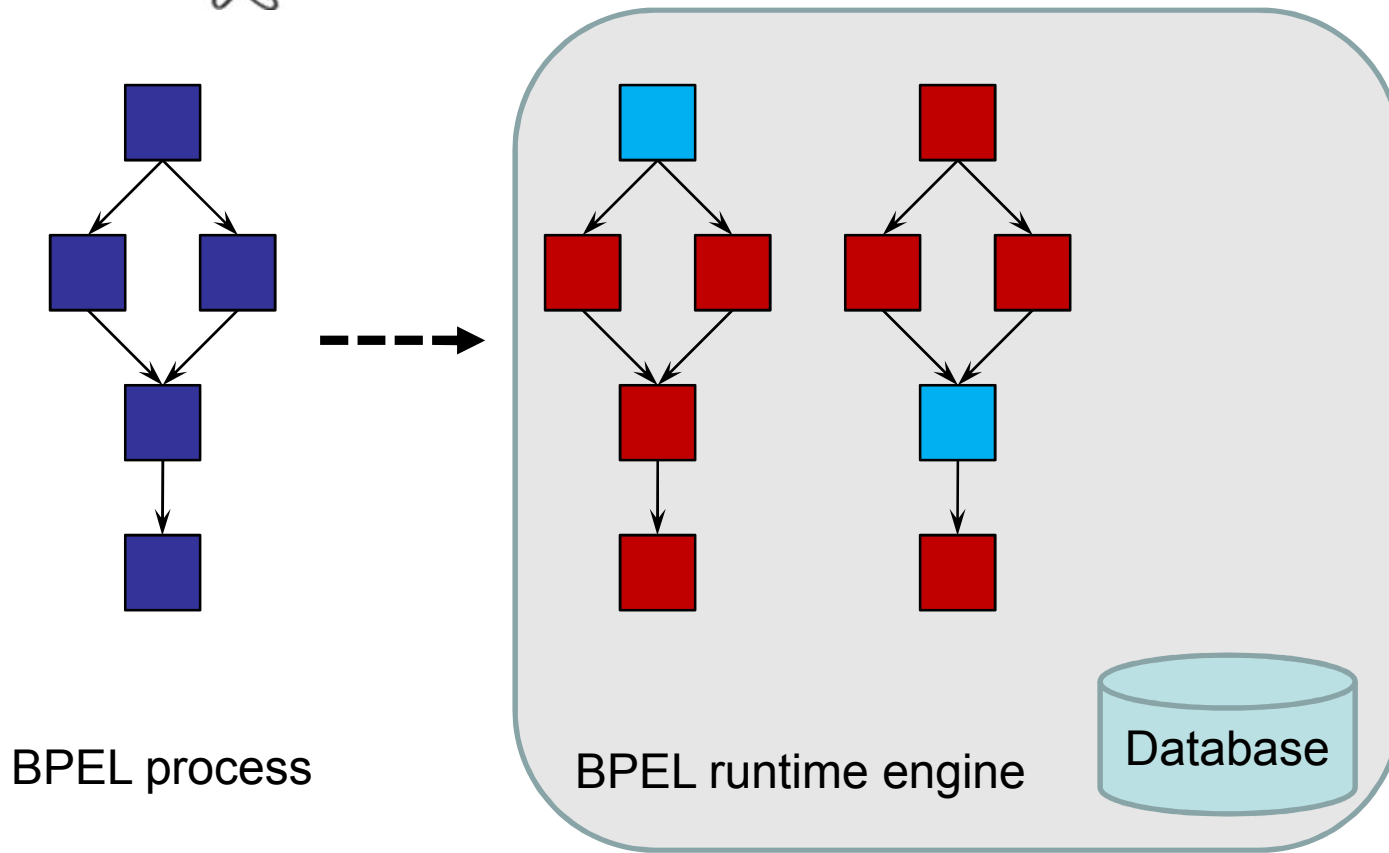


- Open Source WS-BPEL 2.0 compliant runtime engine
- Draait als:
 - JBI Service Engine (ServiceMix)
 - WAR binnen servlet container (Tomcat)





Process template / instance





Business Process Editor

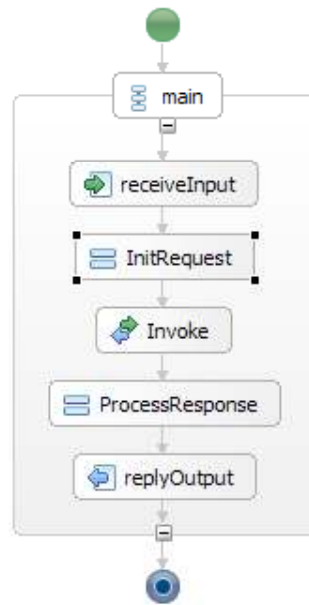
The screenshot displays the Business Process Editor interface. The main workspace shows a BPMN diagram for a process named 'EmptyProces'. The diagram starts with a start event (green circle), followed by a task named 'main' (rounded rectangle). Inside the 'main' task, there is a sequence of three activities: 'receiveInput' (rounded rectangle with a green arrow), 'DoSomething' (rounded rectangle with a blue square), and 'replyOutput' (rounded rectangle with a blue arrow). The process ends with an end event (blue circle). The left sidebar contains a 'Palette' with categories: Actions, Control, and Faults. The right sidebar shows the 'EmptyProces' details, including Partner Links (processClient), Variables (input, output), and Correlation Sets. The bottom panel shows the 'Properties' view for 'EmptyProces', with fields for Name (EmptyProces) and Target namespace (http://sample.bpel.org/bpel/sample).

EmptyProces	
Partner Links	processClient
Variables	input, output
Correlation Sets	

EmptyProces	
Description	Name: EmptyProces
Details	Target namespace: http://sample.bpel.org/bpel/sample
Join Behavior	
Imports	
Documentation	



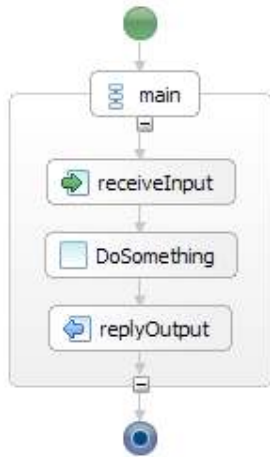
Assign and Invoke



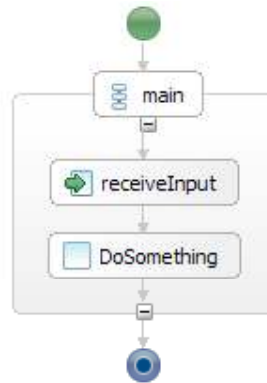
Partner Links	+ x
ProcessClient	
InvokePartner	
Variables	+ x
input	
output	
invokeRequest	
invokeResponse	



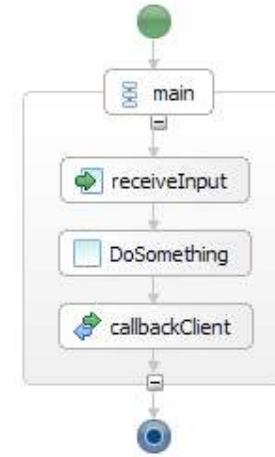
Aanroep stijlen



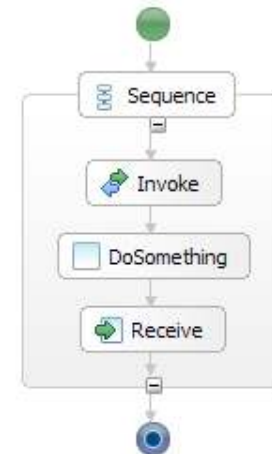
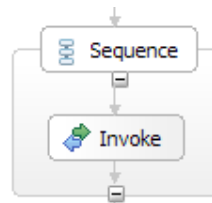
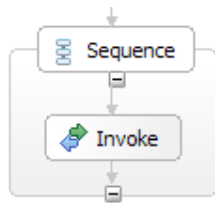
Synchronous



Fire and forget

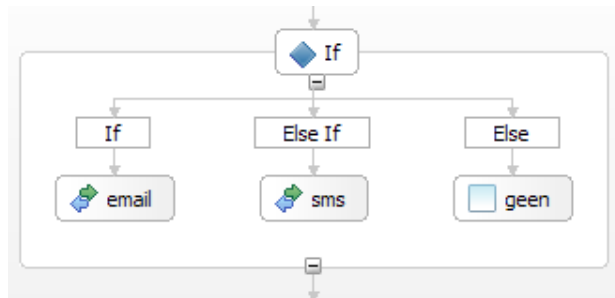


Asynchronous





If Then Else



Variables + x

- input

Variable

Description Message Type: [InputMessage](#)

Details Structure:

- InputMessage
 - payload : bestelling
 - naam : string
 - meldingStatus : string

If

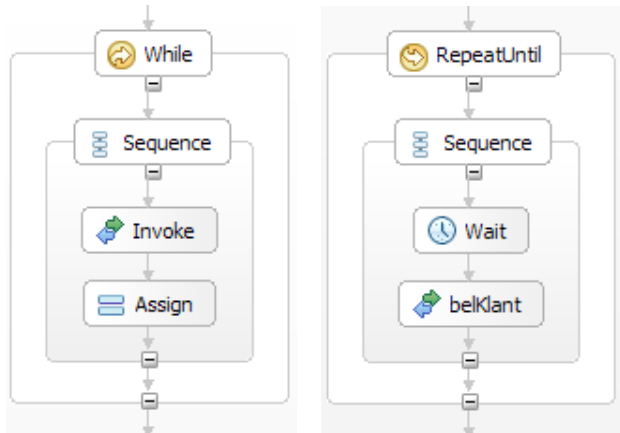
Description Expression language: Same as Process (XPath 1.0 in BPEL 2.0)

Details

```
1$input.payload/tns:meldingStatus = 'sms'
```



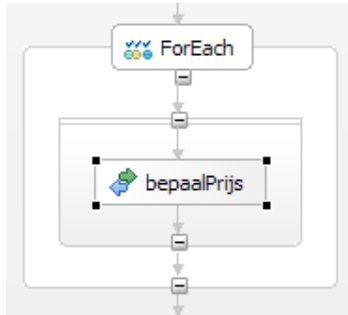
Repeterende taken (1)



RepeatUntil	
Description	Expression language: Same as Process (XPath 1.0 in BPEL 2.0)
Details	<code>1\$response.payload/tns:klantGesproken = 'false'</code>



Repeterende taken (2)



ForEach

Parallel execution

Description

Details Counter variable name:

ForEach

Description

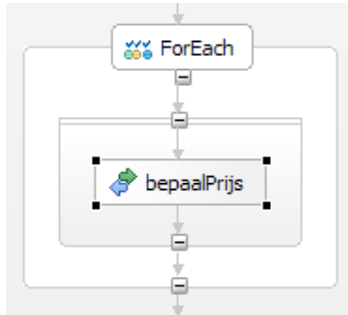
Details

Counter Values

Start Counter Value	Final Counter Value
Expression language: <input type="text" value="Same as Process (XPath 1.0 in BPEL 2.0)"/>	Expression language: <input type="text" value="Same as Process (XPath 1.0 in BPEL 2.0)"/>
<input type="text" value="11"/>	<input type="text" value="1count(\$input.payload/tns:product)"/>



Parallele executie (1)



ForEach

Parallel execution

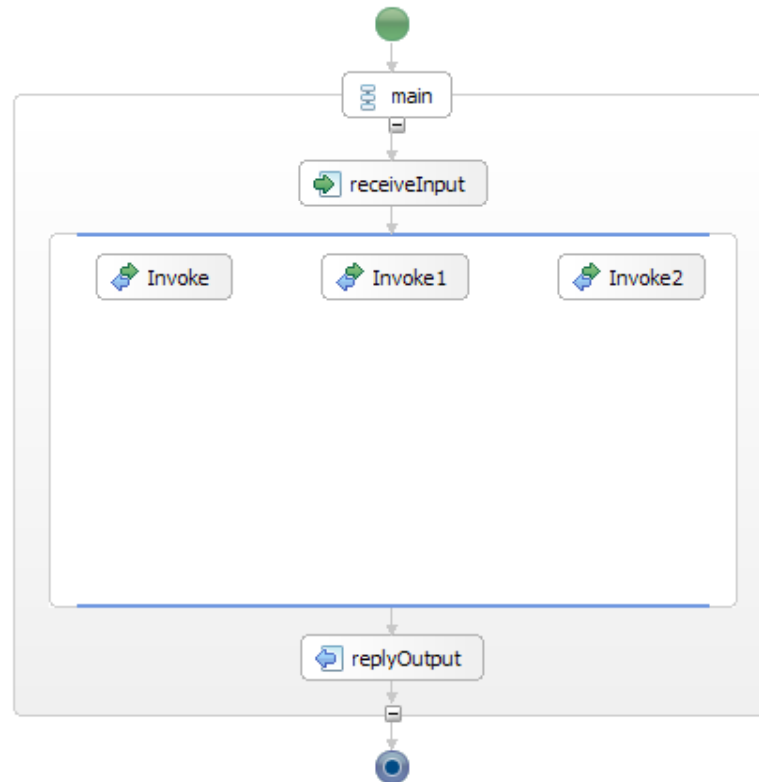
Counter variable name:

ForEach

Description	Start Counter Value	Final Counter Value
Details	Expression language: <input type="text" value="Same as Process (XPath 1.0 in BPEL 2.0)"/>	Expression language: <input type="text" value="Same as Process (XPath 1.0 in BPEL 2.0)"/>
Counter Values	<input type="text" value="11"/>	<input type="text" value="1count(\$input.payload/tns:product)"/>

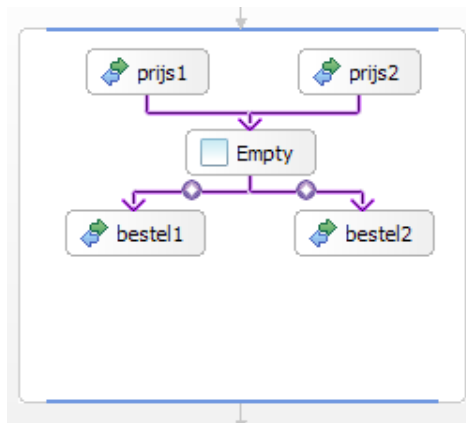


Parallele executie (2)





Flow met links



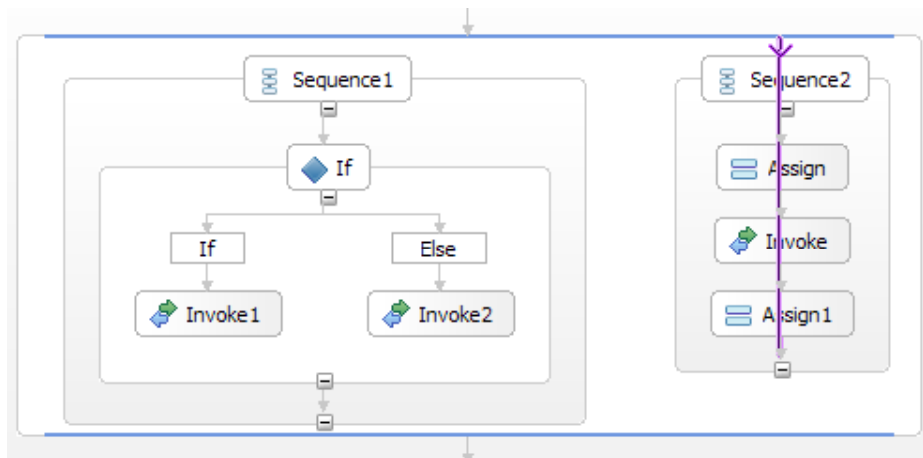
<input type="checkbox"/> Empty	Expression language: Same as Process (XPath 1.0 in BPEL 2.0)
Description	
Details	<code>1\$link1 and \$link2</code>
Join Behavior	
Documentation	
Suppress Join Failure:	<input type="radio"/> Yes <input type="radio"/> No <input checked="" type="radio"/> Use Same Value as Parent (Yes)

link3	Expression language: Same as Process (XPath 1.0 in BPEL 2.0)
Description	
Details	<code>1\$resp1.payload/tns:prijs <= \$resp2.payload/tns:prijs</code>

link4	Expression language: Same as Process (XPath 1.0 in BPEL 2.0)
Description	
Details	<code>1\$resp2.payload/tns:prijs < \$resp1.payload/tns:prijs</code>

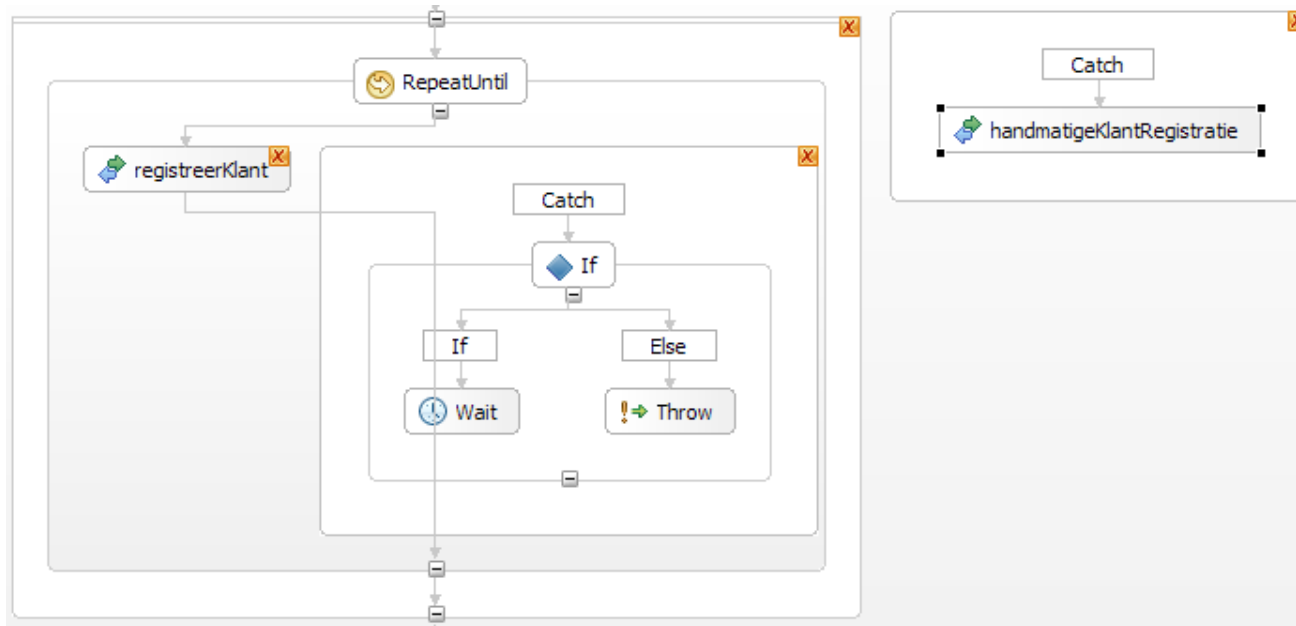


Nesting en loops



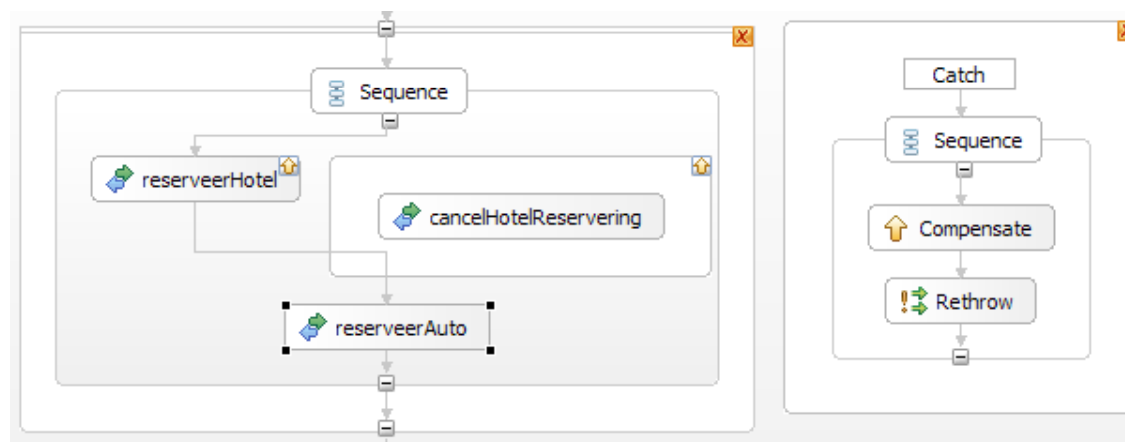


Fault handling





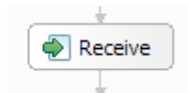
Compensation handling



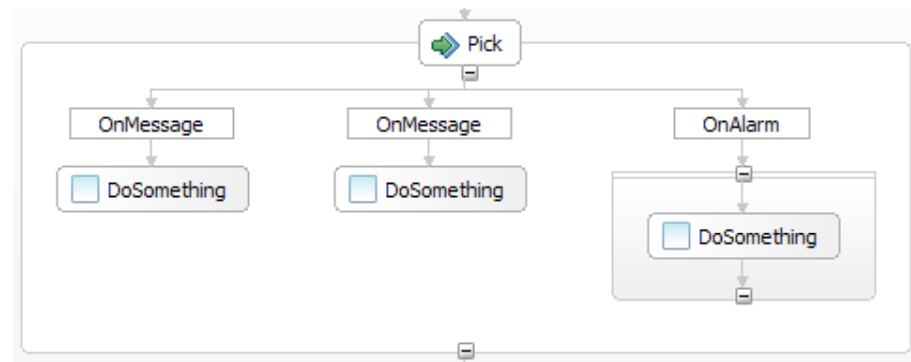


Ontvangst inkomende berichten

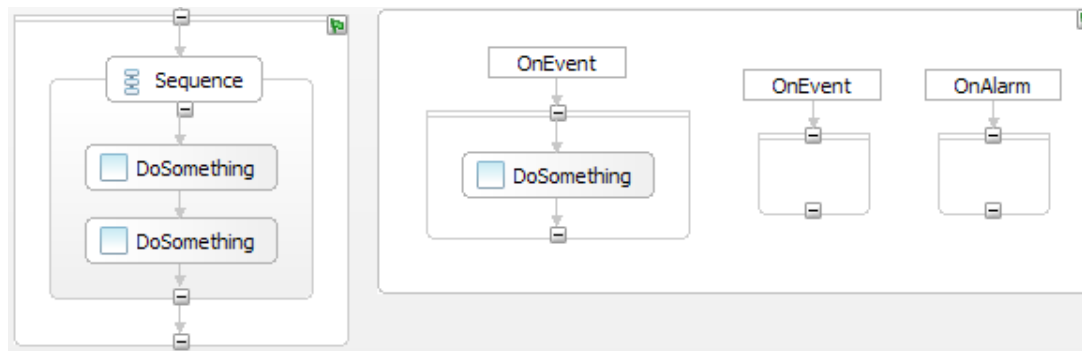
1



2

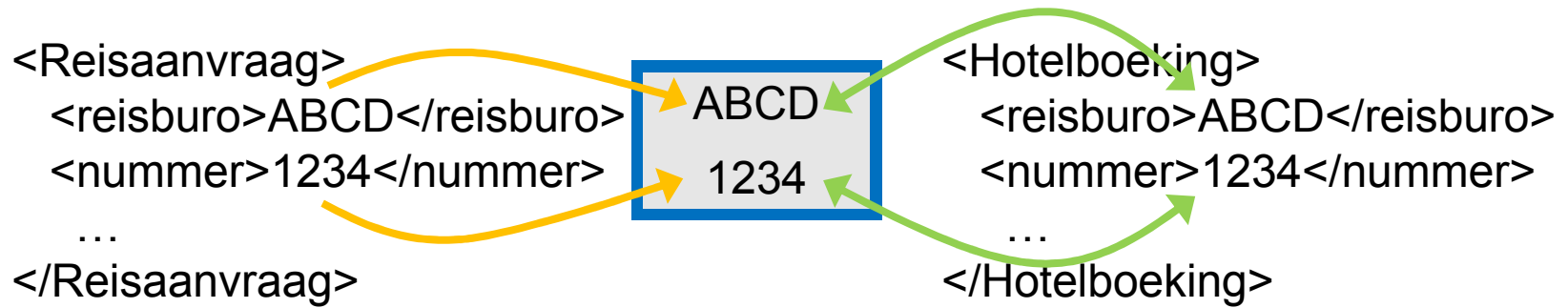


3





Correlation Set



<i>Property</i>	<i>Aliases</i>	
	<u>Reisaanvraag</u>	<u>Hotelboeking</u>
ReisburoCode	<reisburo>	<reisburcod>
ReisNummer	<nummer>	<reisnum>

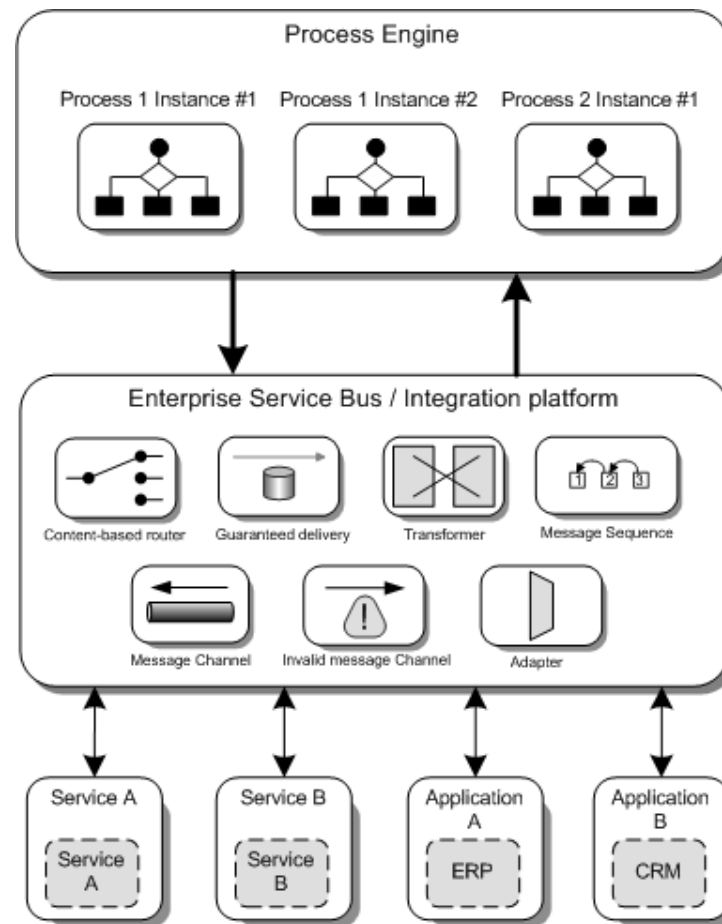


Demo

<DEMO>



BPEL + ESB





Ontbrekende functionaliteit

- Monitoring
 - BPEL Management API
 - Web Service or JMX
 - List/Suspend/Resume process Instances
- BPEL4People
 - WS-BPEL extension introducing a new activity using human tasks as an implementation
- Java snippets



More information

- <http://ode.apache.org>
- <http://www.eclipse.org/bpel>
- <http://lomboz.objectweb.org>
- <http://docs.oasis-open.org/wsbpel/2.0/Primer/wsbpel-v2.0-Primer.pdf>
- <http://www.ibm.com/developerworks/opensource/library/os-eclipse-bpel2.0>
- andy.verberne@atosorigin.com