

Oracle FLEXCUBE BPMN Process Flow Definition Guide  
Oracle FLEXCUBE Investor Servicing  
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# 1. Introduction

## 1.1 Background

This document provides a brief idea about the BPMN components and to create new BPMN process flows using the BPMN components.

## 1.2 Difference Between BPEL and BPMN

BPEL is an XML-based language for describing a business process in which most of the tasks represent interactions between the process and external Web services. The BPEL process itself is represented as a Web service, and is realized by a BPEL engine which executes the process description. BPMN is a standard set of diagramming conventions for describing business processes. It is designed to visualize a rich set of process flow semantics within a process and the communication between independent processes. It is intended to support capture of sufficient detail to allow it to be the source of an executable process description.

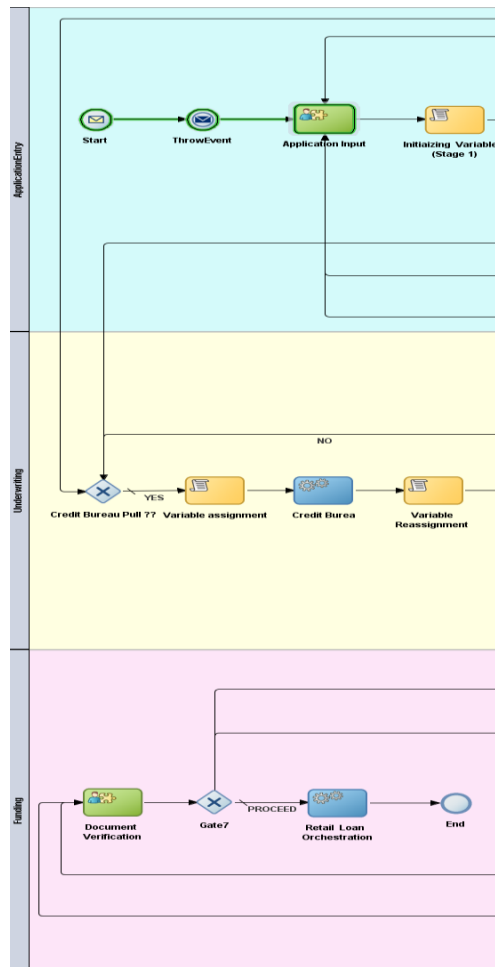
## 1.3 Advantages of BPMN over BPEL

- Simple and Understandable methodology.
- BPMN provides a standard notation for modelling Business Processes that can be used and understood by all types of Business Professionals, including the business analysts who create the processes, the technical developers who create the technology that will carry out those processes and the business managers who oversee those processes.
- Business Users will be able to easily read and understand a BPMN business process diagram
- Tasks can be linked in any form (similar to “goto” in programming languages) Where as BPEL imposes more restrictions (closer to a “real” programming language).
- Structures work that needs to be done, whether this be automated or manually.
- Resembles more like a Flow Diagram (i.e) What You See is What You Get.

## 1.4 BPMN Components

### Swimlanes

Swimlanes are used for grouping flow objects based on the roles defined within your process.



### The None Start Event:



None events are always used to define the beginning of sub-processes.

The none start event cannot have incoming sequence flows. It can only have default out-going sequence flows.

### **The None End Event**



The none end event is always used to mark the end of a sub-process and event sub-process.

### **The Message Start Event**



The message start event cannot have incoming sequence flows. Message start events require a default outgoing sequence flow.

To expose a process as a service, your process must begin with a message start event.

The message start event responds to a message sent to a specific process.

### **The Message End Event**



The message end event is used to send a message to another process or service when the process is completed.

The message end event is always used with either a message start event or message catch event.

### **The Message Throw Event**



The message throw event enables you to send a message to another process or service.

### **The Message Catch Event**



The message catch event is frequently used with the message throw event to communicate with another BPMN process.

### **The Signal Start Event**



The signal start event is a response to a signal broadcast to multiple processes.

Signals can be broadcast from a BPMN process using the signal throw event. Using a combination of signal throw and signal start events, you can invoke multiple processes simultaneously.

### **The Timer Start Event**



The timer start event triggers the creation of a process instance based on a specific time condition.

### **The Timer Catch Event**



You can use timer event as boundary events on an activity. Timer events can be defined as either interrupting or non-interrupting boundary events.

### **The Error Catch Event**



When a service or process fails with an error, the error catch event triggered. Similar to a catch in BPEL.

### **The Error End Event**









The error end event “throws” an error, which can be captured in another part of the process.

### **The Terminate Event**

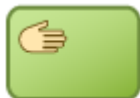


The terminate end event is used to immediately terminate a process.

## **Interactive Activities**

|   |   |
|---|---|
| <br>User         | Process participants interact with your business application using User Tasks.  |
| <br>Complex      | Uses a complex routing flow that is defined within the Human Task.  |
| <br>FYI          | Bases assignment on the participant, role, or group defined in the swimlane. Similar to the user interactive activity, but the FYI activity does not wait until completion before continuing.                     |
| <br>Group        | Uses the group vote pattern. The assignee for the is automatically set to the role/group associated with the Lane. This interactive activity can only be added to swimlanes that are assigned to roles or groups. |
| <br>Initiator  | The initiator pattern is used to create a process instance.   |
| <br>Management | Uses the management chain pattern where the assignee is set to the management chain pattern for the process participant belonging to the group or role assigned to the swim lane.                                 |

## **The Manual Task**



The manual task does not allow you to manipulate data objects. Data objects associated with the previous flow element are passed through as-is to the next flow element.

## **The Service Task**



The service task enables you to communicate with other processes and services. Process analysts can add the service task when they know that a process must invoke an external service or process.

## **The Business Rule Task**



Business rules are statements that describe business policies or describe key business decisions.

## **The Script Task**



The script task is used to change values of data objects within your process.



It is often used to set initial values of data objects at the beginning of a process.

## **The Subprocesses**






Subprocesses are contained as part of the parent subprocess. Subprocesses must begin with a start none event and must end with a none end event.

## **Gateways**

|   |  |
|---|--|
| <br>Exclusive gateways | The exclusive gateway enables you to split your process into two or more paths. However, the process only continues down one of these paths even if multiple outgoing sequence flows are present. Exclusive gateways can have conditional outgoing sequence flows and must have at least one default outgoing sequence flow. |
|                        | The inclusive gateway enables you to split your process into two or more paths. Unlike the exclusive gateway, however, a token may flow down one or more of these paths depending on how the outgoing conditional sequence flows are evaluated.  |



|   |  |
|---|--|
| Inclusive gateways  |  |
| <br>Parallel gateways    | The parallel gateway enables you to split your process into two or more paths when you want your process flow to follow all paths simultaneously. The parallel gateway is useful where your process must perform multiple tasks in parallel. |
| <br>Complex gateways     | The complex gateway splits a process similar to an inclusive gateway. However, it enables you to define a condition that determines if the instance can continue even if not all of the tokens have arrived at the complex gateway merge.    |
| <br>Event-based gateways | The event based gateway is different than other gateways in that decisions about process flow are based on an event rather than data-specific conditions.  |

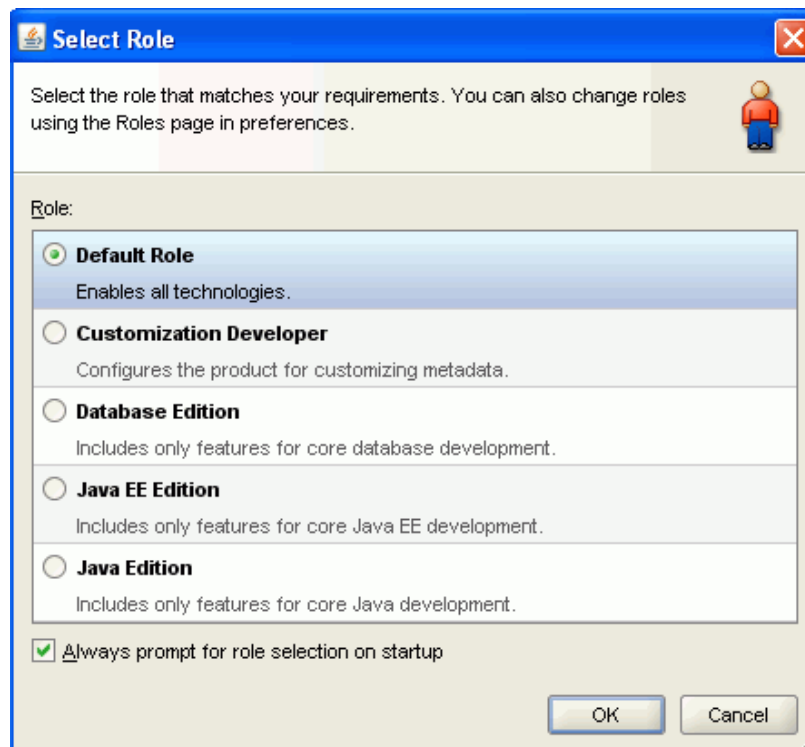
*For more Information regarding BPMN Components Refer the Link given in the **References**.*

## 1.5 Creating new BPMN Process

Follow the below steps to create a new process using the BPMN

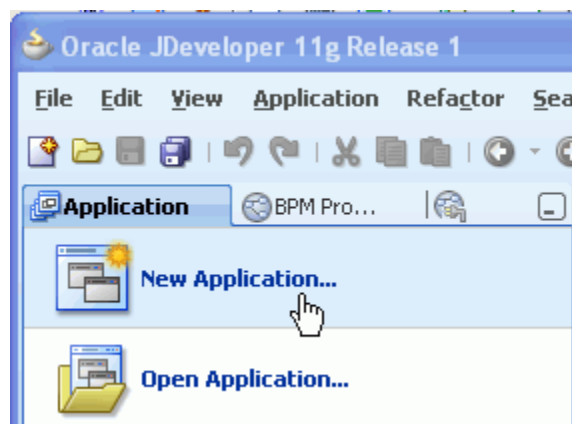
### 1.5.1 Creating a BPMN Process Model

**Step 1:** Open JDeveloper Studio from the Windows Start menu. When prompted to select a role, choose the **Default Role**. Click OK.

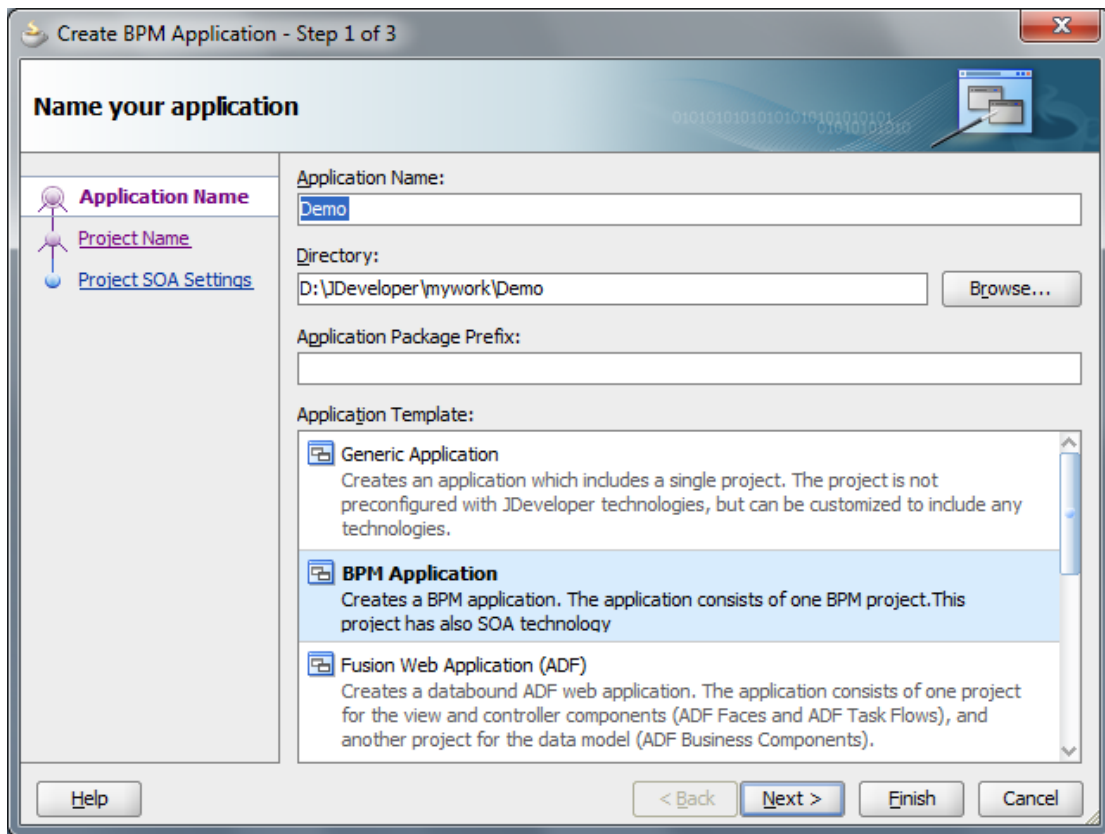


Close the Daily Tips window.

**Step 2:** Create a new application. Click the **New Application** bar in the left panel.

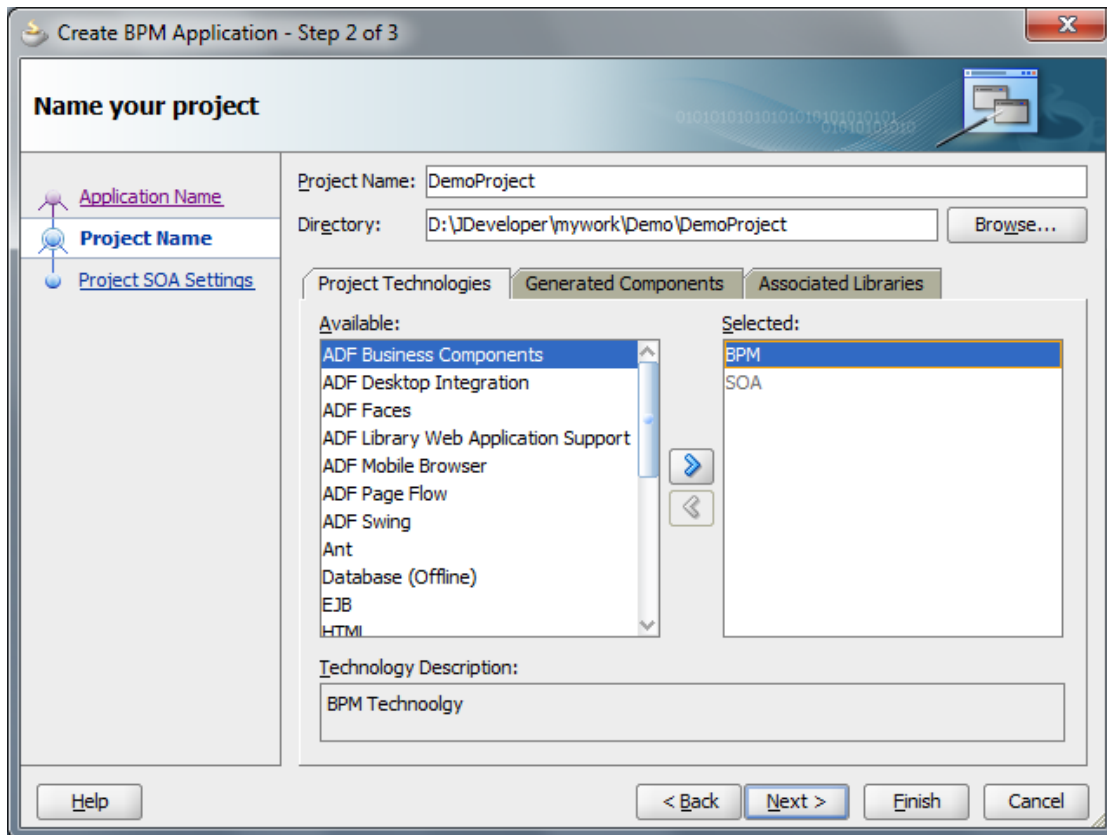


The BPM Application wizard opens. Name the application ex: "**Demo**" and accept the default directory for storing application files (C:\JDeveloper\mywork). Select BPM Application in the **Application Template** panel.



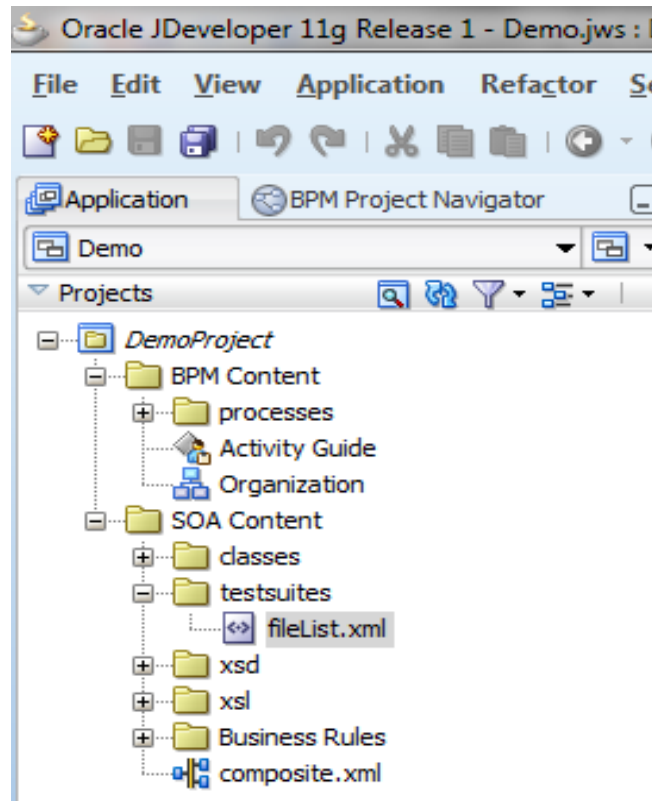
Click **Next**.

**Step 3:** Enter the Project Name ex: “**DemoProject**”. Notice that **BPM** and **SOA** are selected as project technologies by default. Click Finish.



Click Next.

**Step 4:** In the upper left corner of the JDeveloper Studio window, you see the **Navigator panel**. This contains two tabs that will be important to you as you perform this tutorial: The **Application Navigator** tab and the **BPM Project Navigator** tab. Currently the Application Navigator tab is selected by default. You can see the **Demo** application appearing in the drop-down list just above the panel and the **DemoProject** appearing as the parent node within the panel. The fact that it appears in italics indicates that there are unsaved changes.

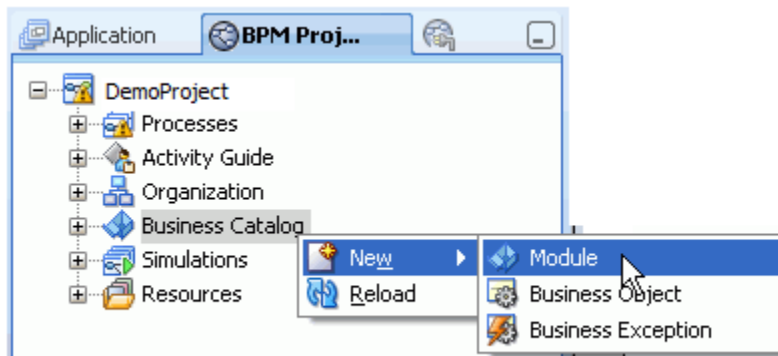


Click the Save All icon on the main toolbar.

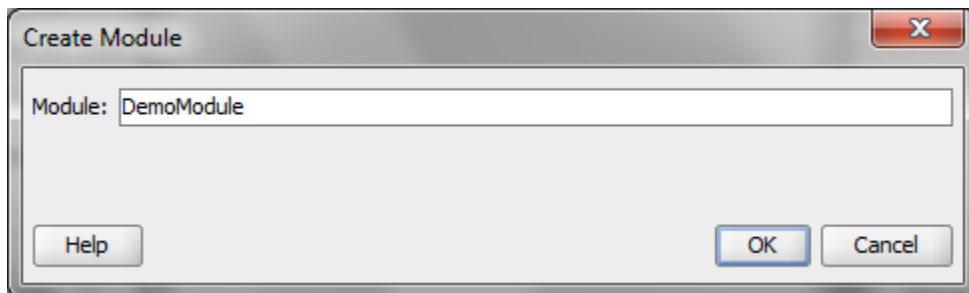
## 1.5.2 Creating the business object

**Step 5:** Now you will create a business object capable of storing multiple pieces of data.

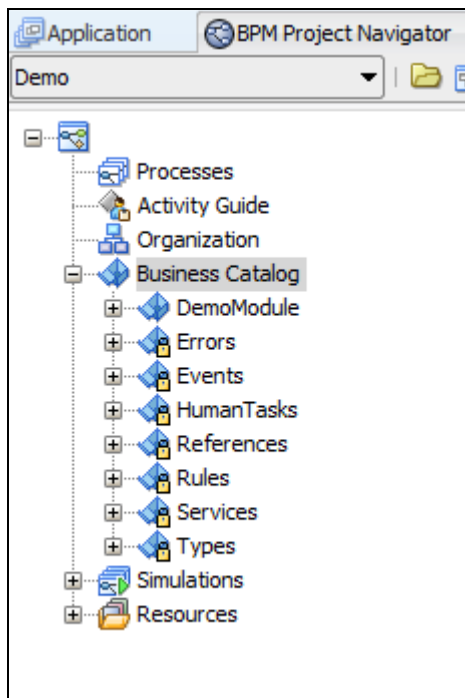
Business objects are stored in modules within the Business Catalog. In the BPM Project Navigator, expand the **DemoProject** node. Right click on Business Catalog and select **New > Module**.



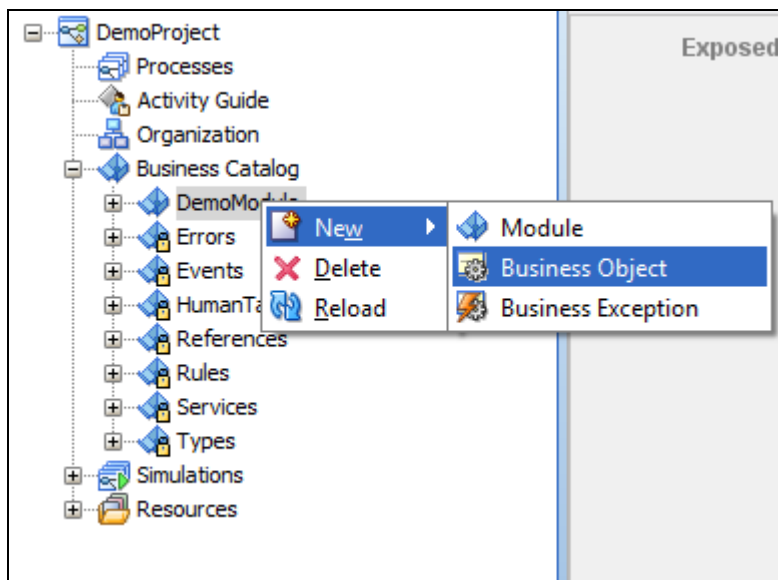
When prompted to name the new module, enter the desired name ex: "**DemoModule**" and click OK.



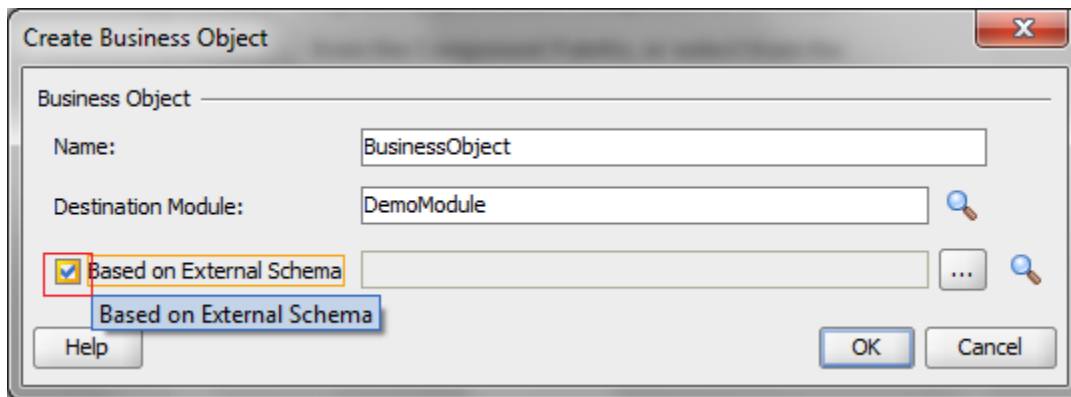
The **DemoModule** module now appears beneath the Business Catalog node.



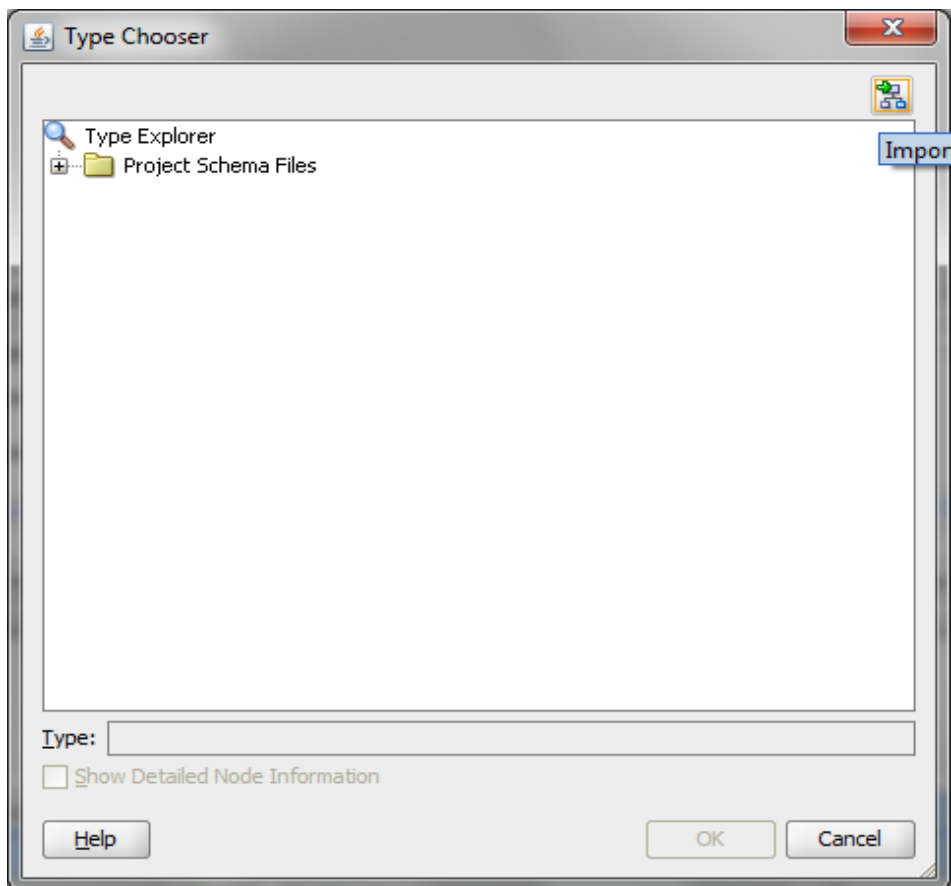
Right click the **DemoModule** module and select **New > Business Object**.



In the Create Business Object window, enter desired Name ex: “**BusinessObject**” and accept **DemoModule** as the Destination Module and check the check box and Click on the Search Icon.



On click of Search Icon the following window appears, now click on the Icon at right most Corner to browse the location of the **xsd** that is to be loaded. For example **txn.xsd** in this project is loaded. After loading the **xsd** , it prompts for the copy of the **xsd** to the project . Click Ok. So that the **xsd** is copied to the project.

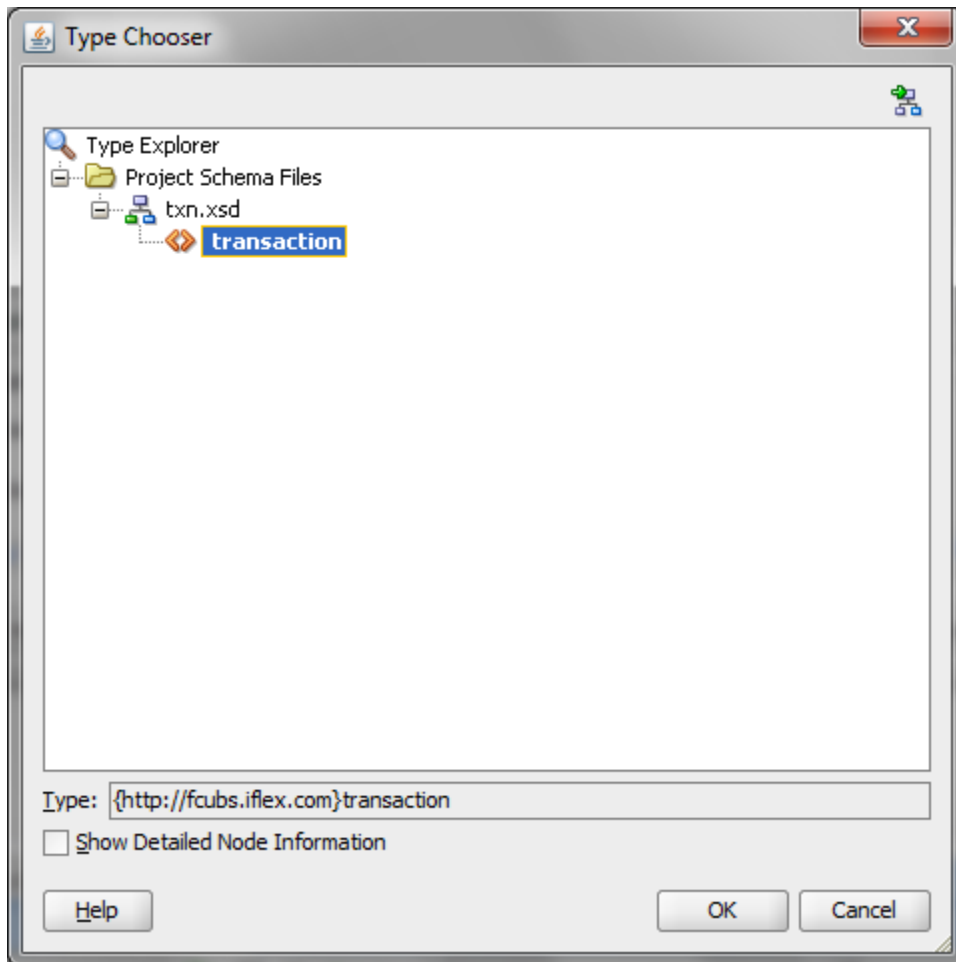




After loading the xsd, window should appear like the below and select the xsd and Click Ok.



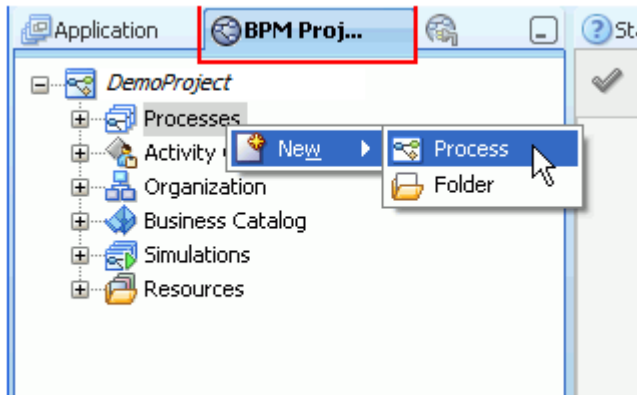
Transaction XSD →



Click OK again and Save all.

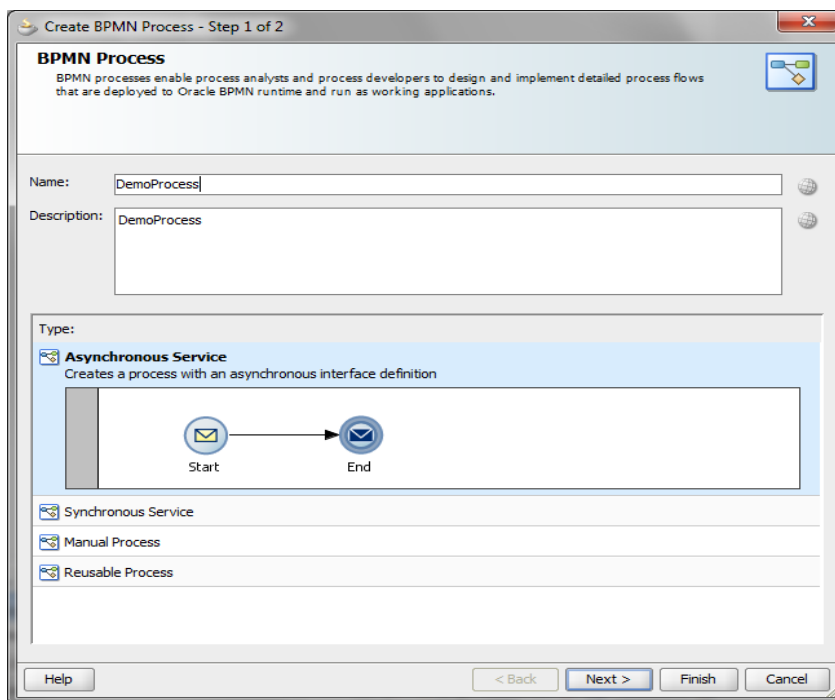
### 1.5.3 Creating a new process

**Step 6:** To create a **new** process within this project, first click the **BPM Project Navigator** tab. Then right click on Processes and select **New > Process** .

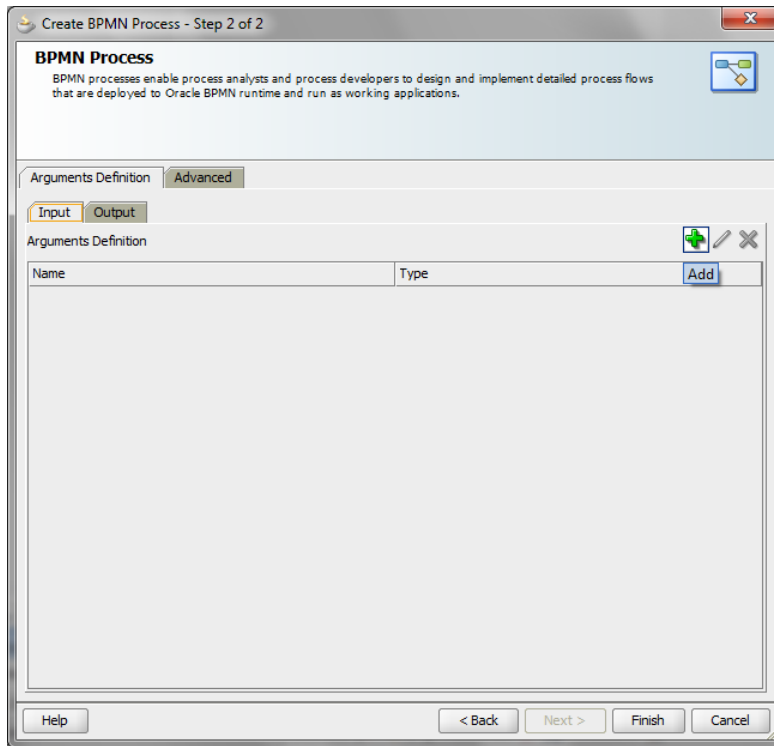


In the BPM Process wizard, select the **Asynchronous Service** pattern.

Click **Next**.



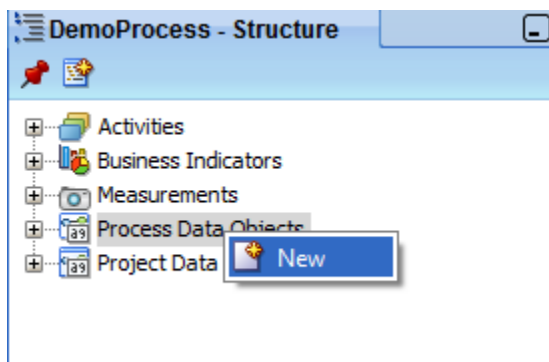
Since we will add the inputs later Click **finish**.



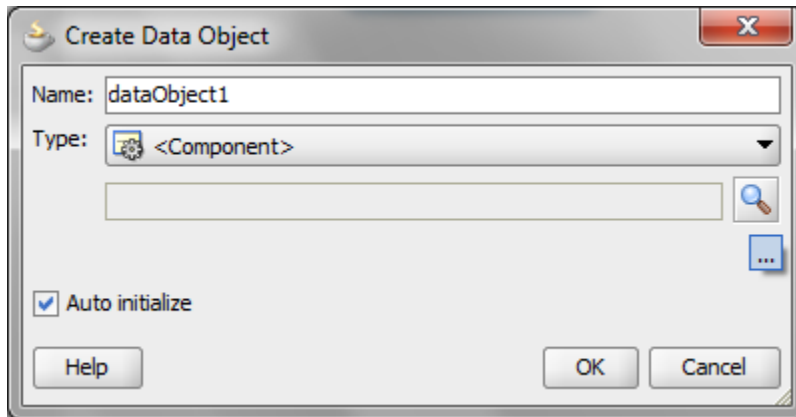
#### 1.5.4 Creating the data objects

**Step 7:** When a process has been given focus, a detailed outline of its structure appears in the Structure pane in the lower left corner of the JDeveloper window.

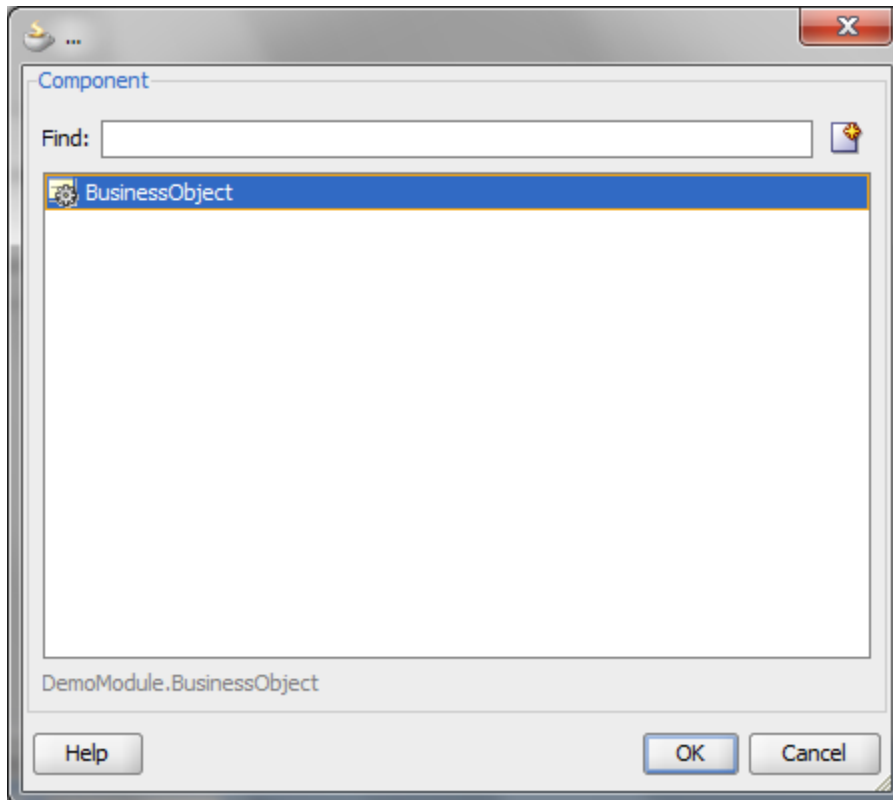
Right click on Process **Data Objects** in the Structure pane and select New.



In the Create Data Object popup, enter the Name and click the ellipses button to open another window to search for complex data types.

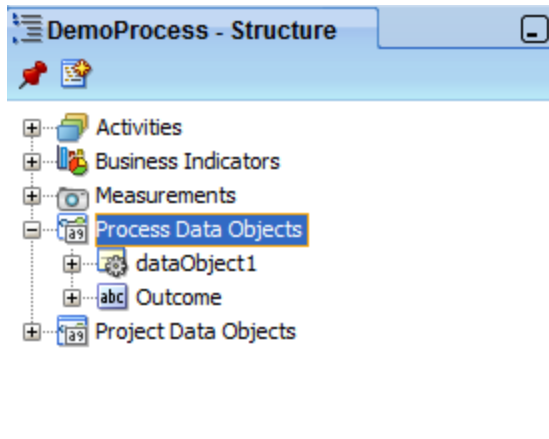


In the Browse Types window, select **<Component>** as the Type and then select **BusinessObject** from the list of components appearing below. Click OK.



Back in the Create **Data Object** window, click OK again. The data object now appears in the **Structure pane**.

Create another process **data object** of type String to hold the **Outcome**.



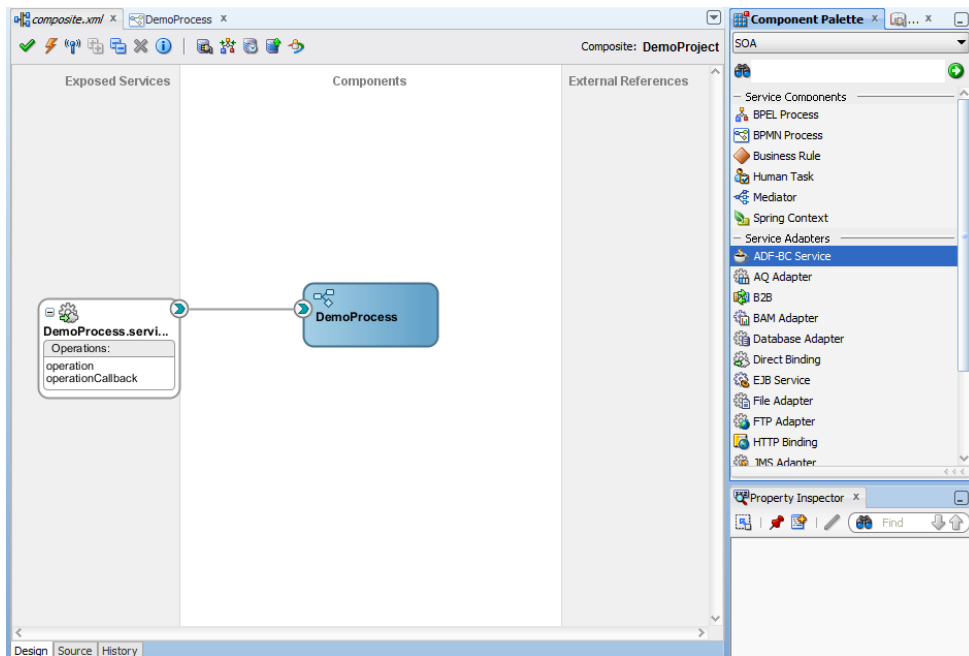
### 1.5.5 Adding a ADF BC Service Adapter



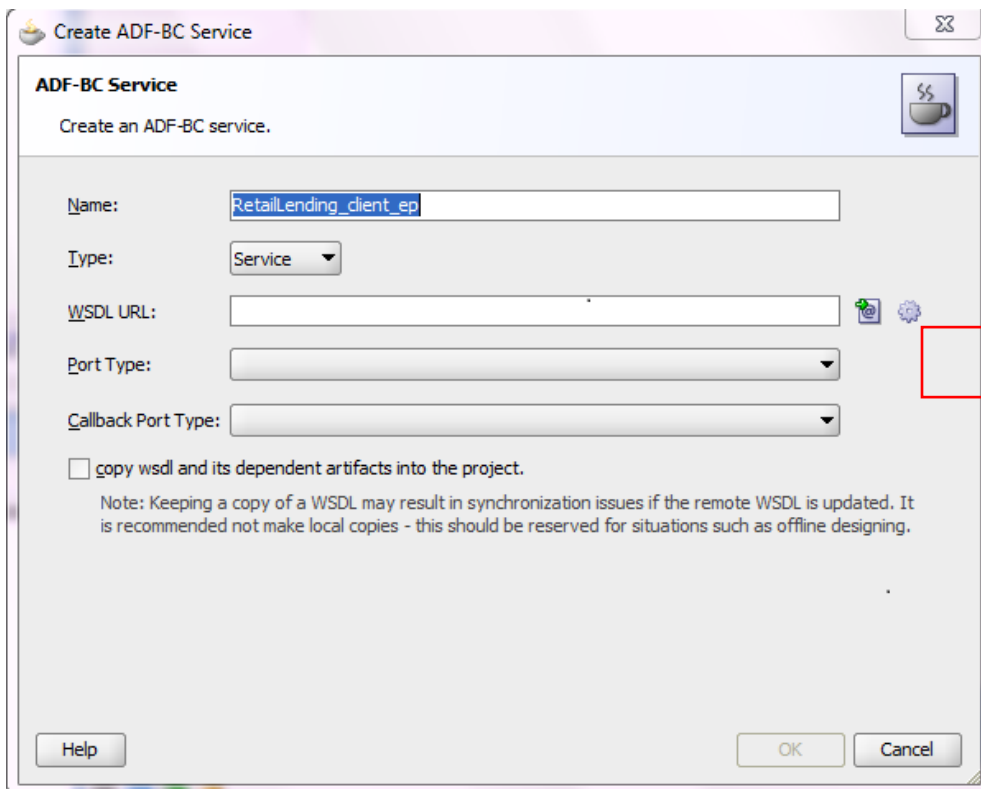
**Step 8:** Copy the **Flexcube\_interface.wsdl** to Project Location

| Name                         | Date modified     | Type                 | Size  |
|------------------------------|-------------------|----------------------|-------|
| businessCatalog              | 9/7/2012 4:25 PM  | File folder          |       |
| businessParameter            | 9/7/2012 4:13 PM  | File folder          |       |
| classes                      | 9/7/2012 4:13 PM  | File folder          |       |
| config                       | 9/7/2012 4:13 PM  | File folder          |       |
| lib                          | 9/7/2012 4:13 PM  | File folder          |       |
| processes                    | 9/7/2012 5:24 PM  | File folder          |       |
| resources                    | 9/7/2012 4:13 PM  | File folder          |       |
| SCA-INF                      | 9/7/2012 4:13 PM  | File folder          |       |
| simulations                  | 9/7/2012 4:13 PM  | File folder          |       |
| testsuites                   | 9/7/2012 4:13 PM  | File folder          |       |
| xsd                          | 9/7/2012 4:15 PM  | File folder          |       |
| xsl                          | 9/7/2012 4:13 PM  | File folder          |       |
| activityGuide.agdl           | 9/7/2012 4:13 PM  | AGDL File            | 1 KB  |
| composite.xml                | 9/7/2012 5:14 PM  | XML Document         | 1 KB  |
| default.bpmn                 | 9/7/2012 4:13 PM  | BPMN File            | 5 KB  |
| DemoProcess.componentType    | 9/7/2012 5:24 PM  | COMPONENTTYP...      | 1 KB  |
| DemoProcess.wsdl             | 9/7/2012 5:24 PM  | Web Service Descr... | 3 KB  |
| DemoProcessDocumentation.xml | 9/7/2012 5:24 PM  | XML Document         | 2 KB  |
| DemoProject.jpr              | 9/7/2012 4:24 PM  | JPR File             | 17 KB |
| Flexcube_interface.wsdl      | 8/21/2012 2:06 PM | Web Service Descr... | 2 KB  |
| measurementActions.xml       | 9/7/2012 5:24 PM  | XML Document         | 1 KB  |
| measurements.xml             | 9/7/2012 5:24 PM  | XML Document         | 1 KB  |
| organization.xml             | 9/7/2012 5:24 PM  | XML Document         | 1 KB  |

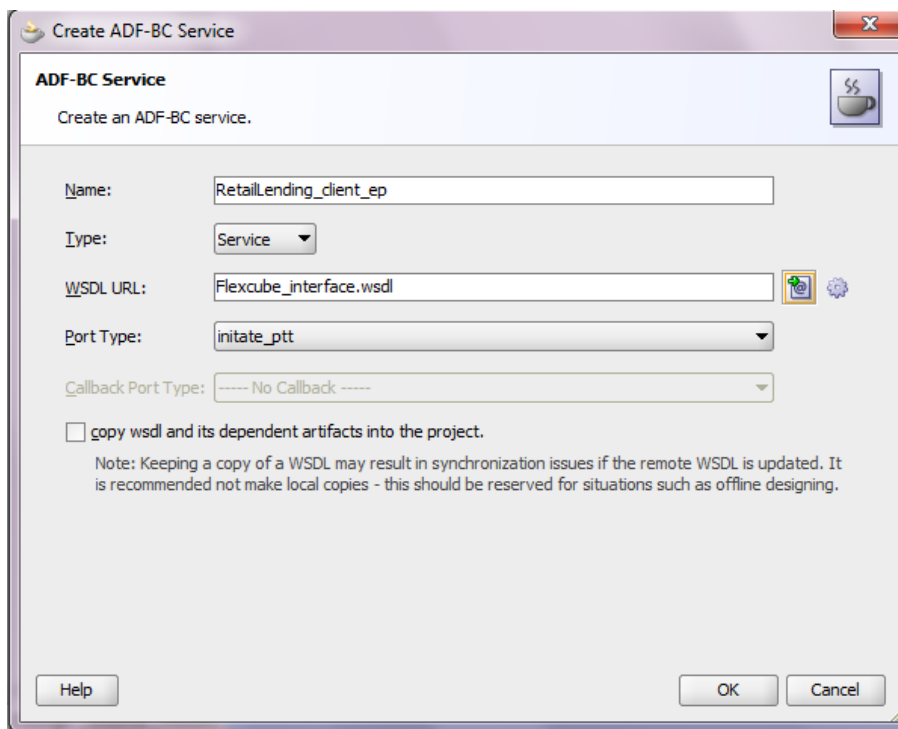
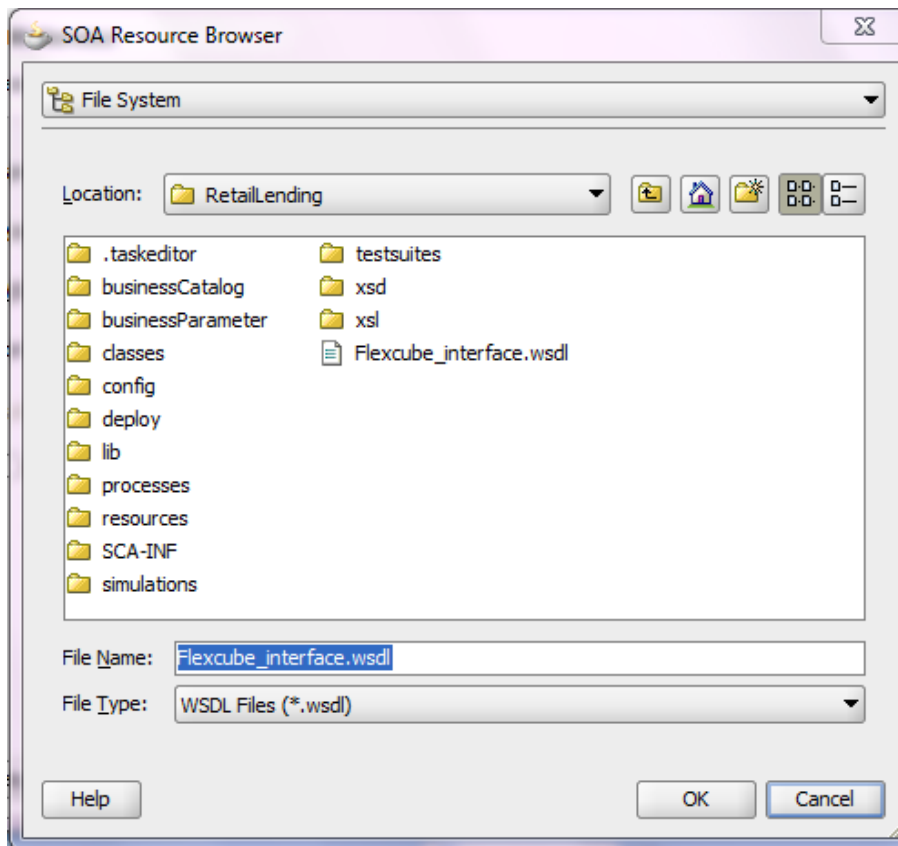
Now go to composite.xml drag and drop the ADF-BC Service Adapter from the Component Palette.



Name the Adapter as RetailLending\_client\_ep.



Now Load the **Flexcube\_interface.wsdl** from the project location.

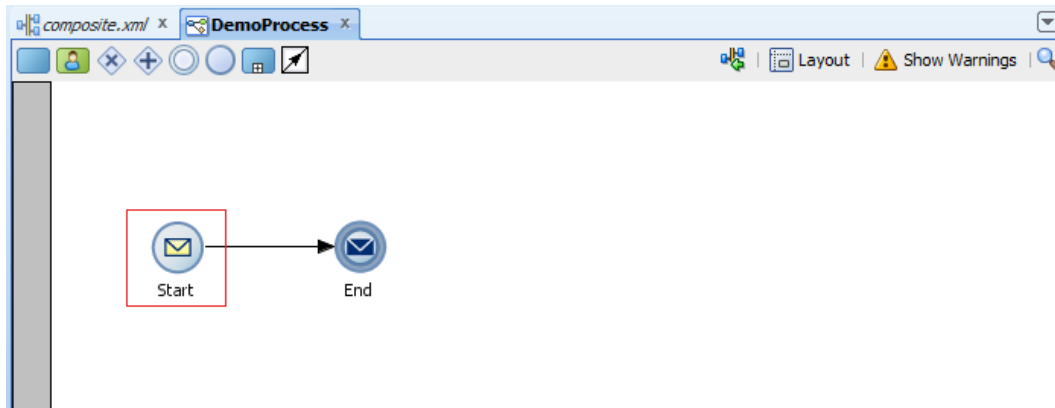




Click **OK**

### 1.5.6 Adding the Created ADF-BC Adapter to the Process

**Step 9:** Double Click the **Start Event** a Property Window Appears.



**Properties - Start**

Basic **Implementation** Service Properties

Implementation Type: Message

Conversation

☒ Initiates ☐ Continues

Properties

Implementation: Define Interface

Arguments Definition

| Name | Type |
|------|------|
|------|------|

Advanced

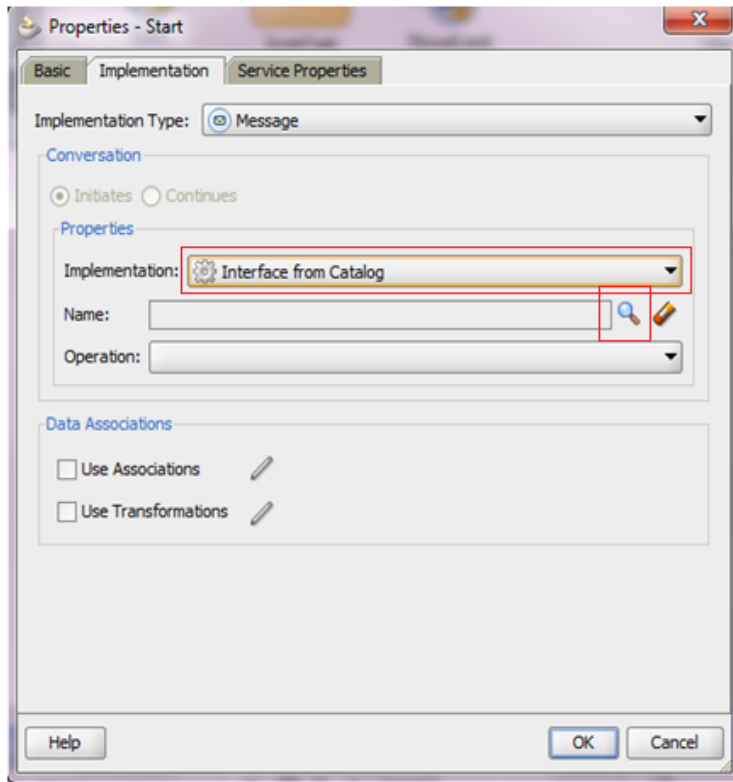
Data Associations

☐ Use Associations

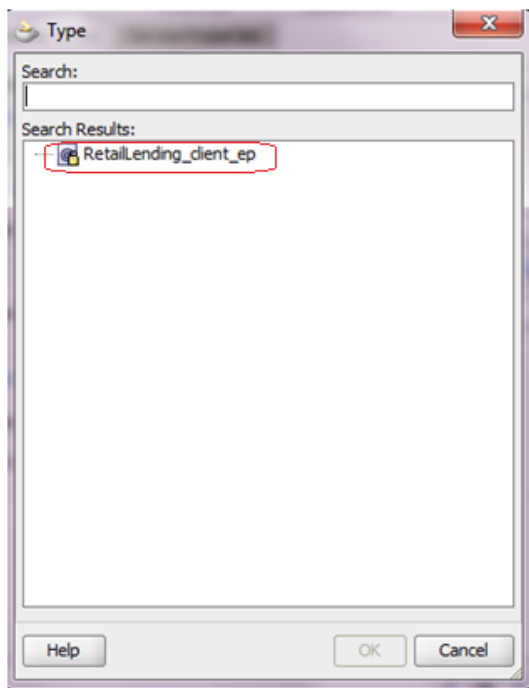
☐ Use Transformations

Help OK Cancel

**Step 10:** Now Change the **Implementation** as **Interface from Catalog** and Click the  icon.



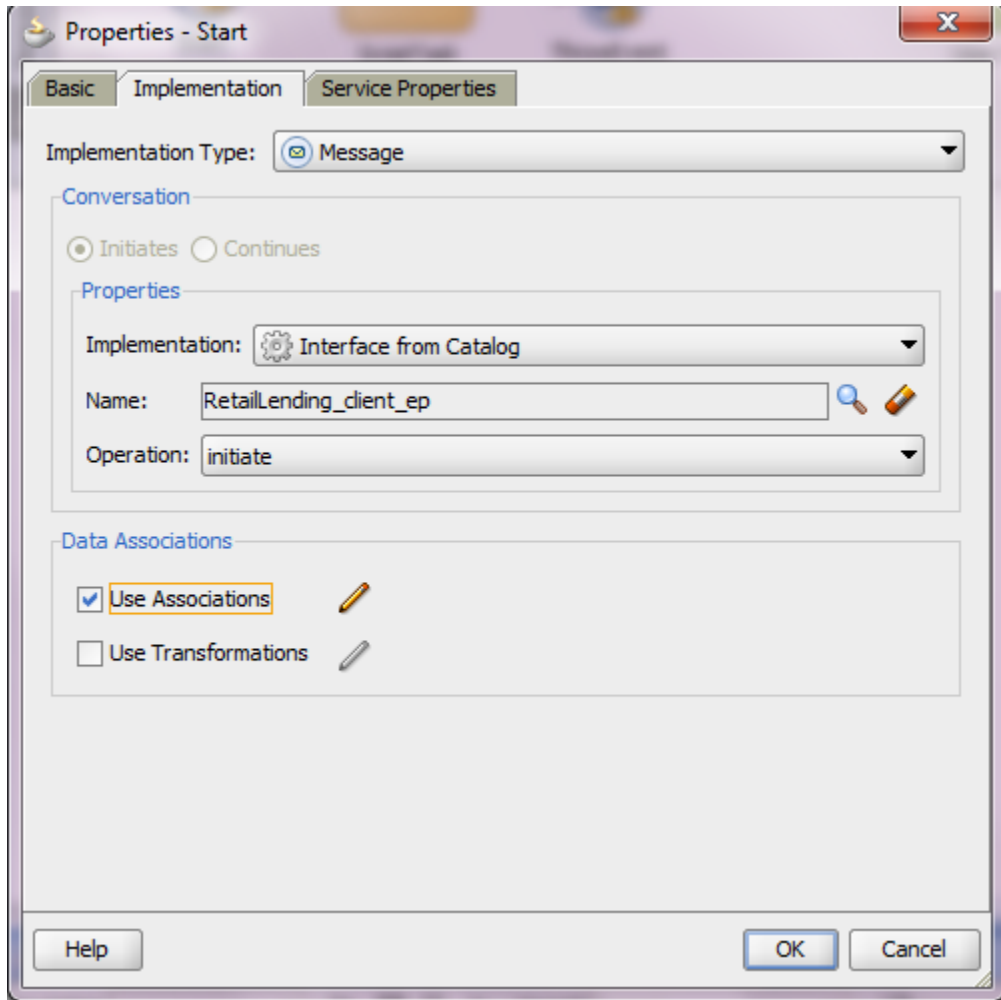
Select the Adapter from the Window



Click OK.

### 1.5.7 Assigning Inputs to the Start Node in the Process

**Step 11:** Check the **Use Association** Check Box and Click the  icon.



Properties - Start

Basic Implementation **Service Properties**

Implementation Type: Message

Conversation

☒ Initiates ☐ Continues


Properties


Implementation: Interface from Catalog

Name: RetailLending\_client\_ep


Operation: initiate

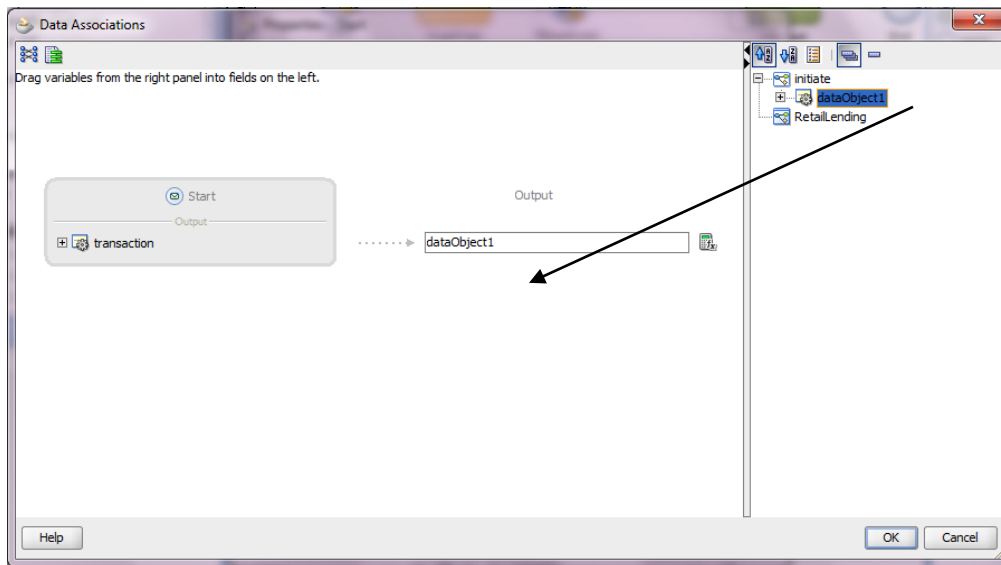
Data Associations

☒ Use Associations 

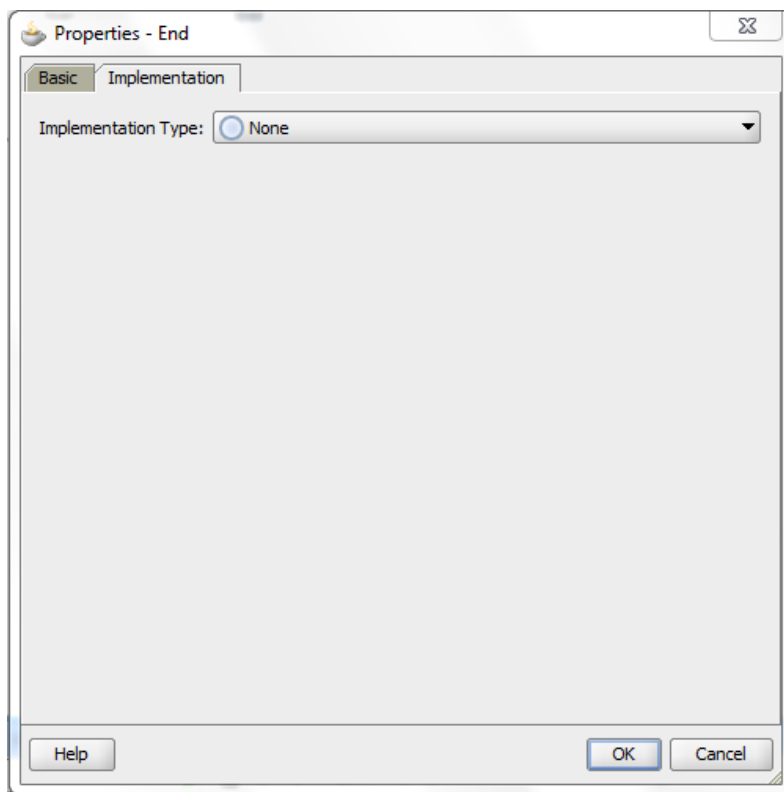
☐ Use Transformations 

Help OK Cancel

After Clicking the  icon a **Data Association** Window will appears .Drag the **business object** from the left corner to the text box mapping to the **Output**.

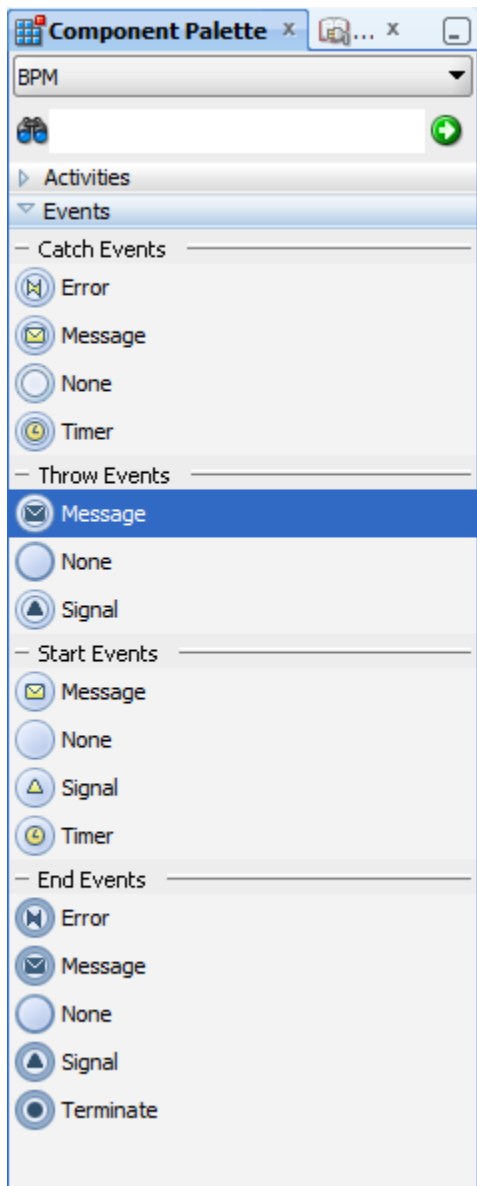


**Step 12:** Set the End Node as None by selecting **implementation type** as **none**.

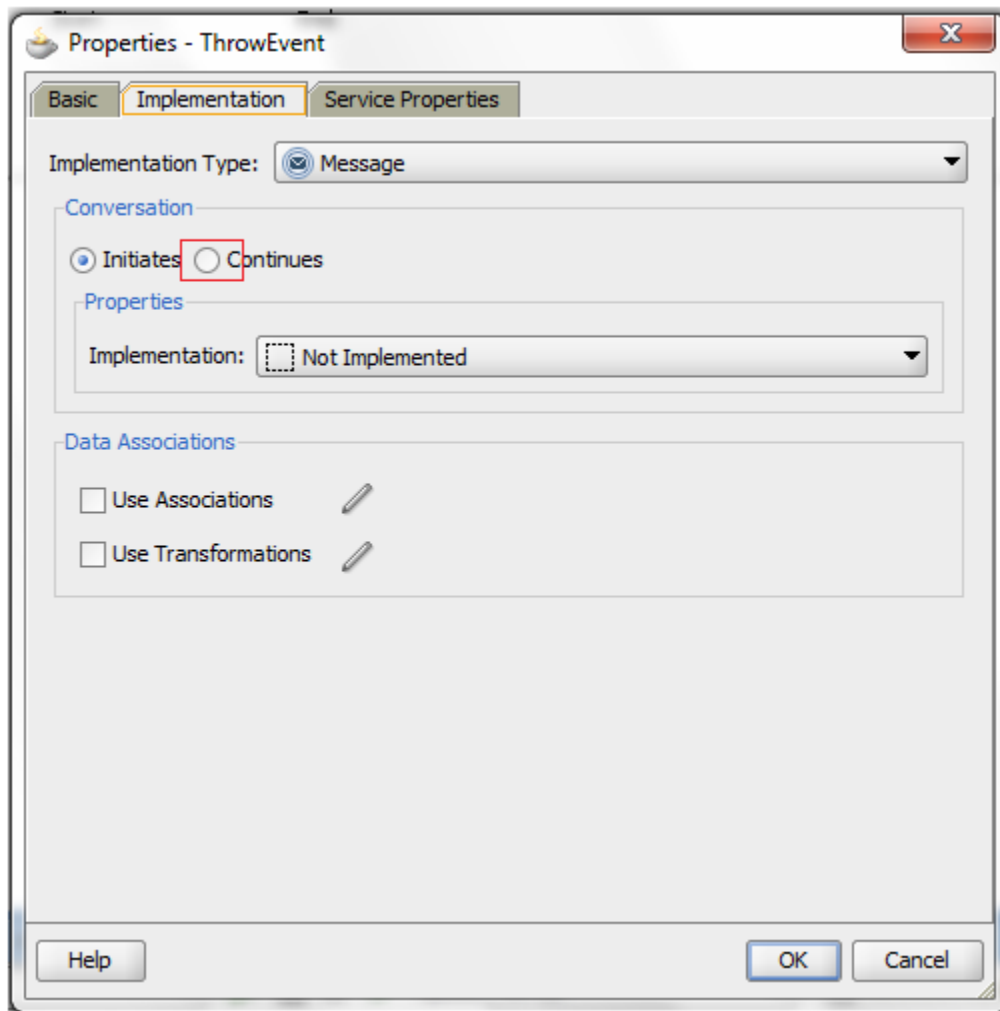


### 1.5.8 Adding a Throw Event to the Process

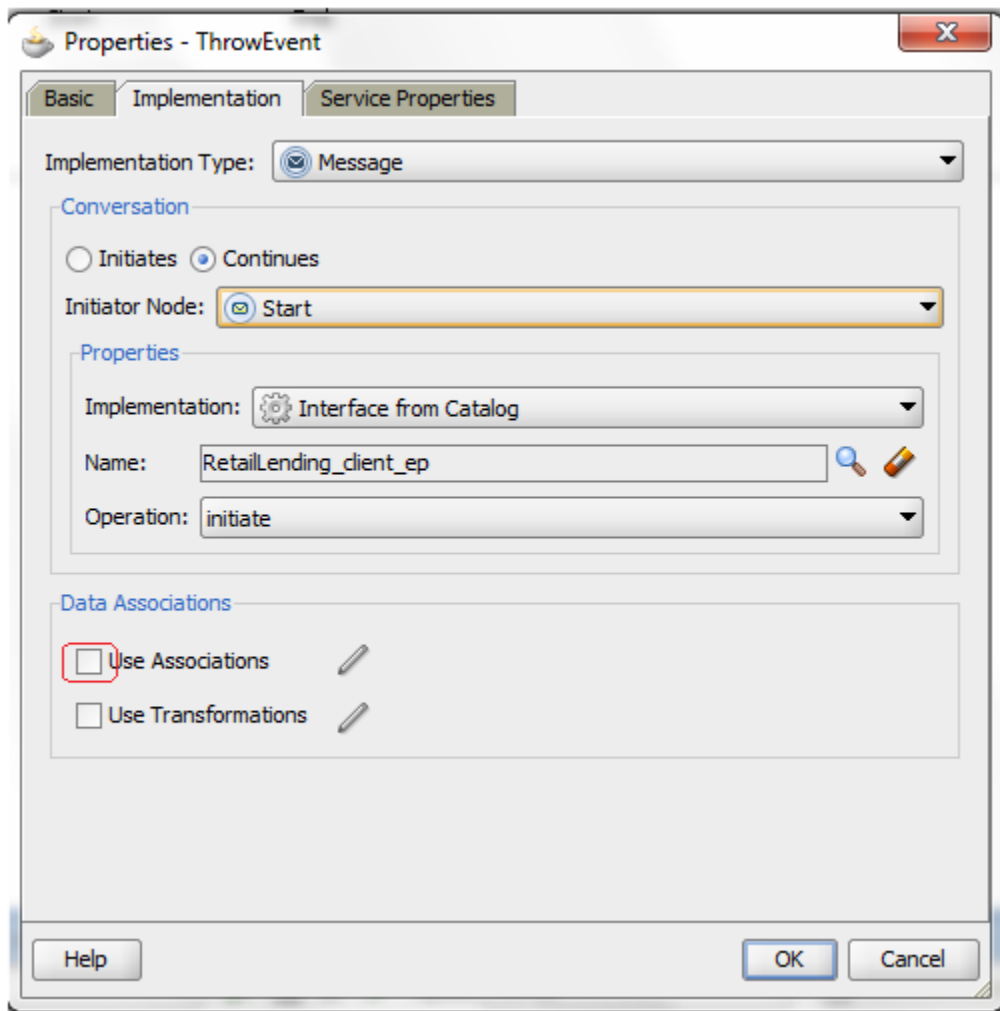
**Step 13:** Drag and Drop the Message Throw Event from Events Pane in Component Palette to the Process.



A Properties window appears. Now select the Continues Radio Button the Throw Event will be automatically Implemented.




Now click the **association** check box.

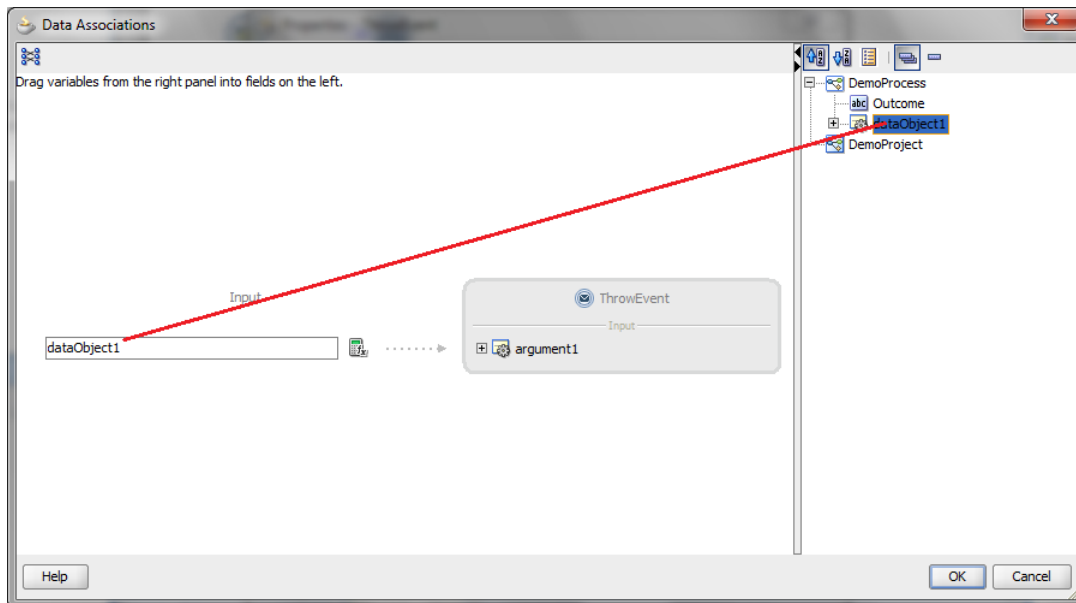


The image shows a 'Properties - ThrowEvent' dialog box with three tabs: 'Basic', 'Implementation', and 'Service Properties'. The 'Implementation' tab is selected. It contains the following sections:

- Implementation Type:** A dropdown menu set to 'Message'.
- Conversation:** Radio buttons for 'Initiates' and 'Continues' (selected). Below is an 'Initiator Node' dropdown set to 'Start'.
- Properties:** A section containing:
  - Implementation:** A dropdown menu set to 'Interface from Catalog'.
  - Name:** A text field containing 'RetailLending\_client\_ep'.
  - Operation:** A dropdown menu set to 'initiate'.
- Data Associations:** Two checkboxes:
  - ☒ Use Associations (highlighted with a red box)
  - ☐ Use Transformations

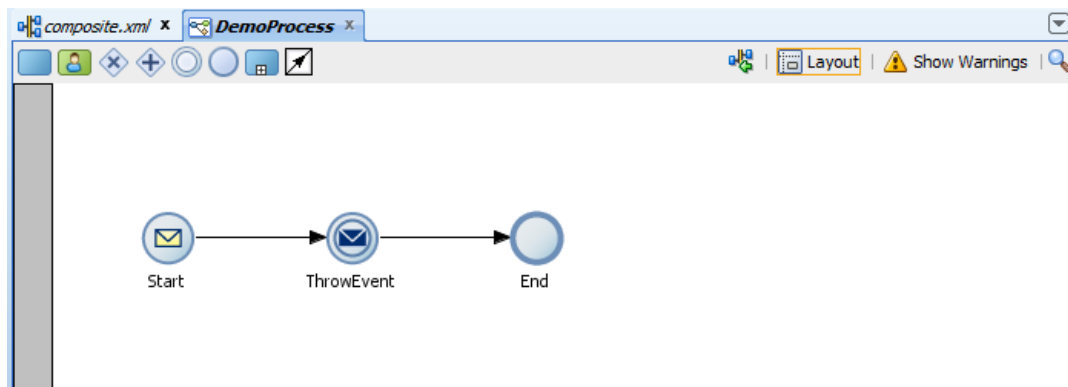
At the bottom are 'Help', 'OK', and 'Cancel' buttons.

After Clicking the  icon a **Data Association** Window will appears .Drag the **business object** from the left corner to the text box mapping to the **Input**.



Click **OK**.

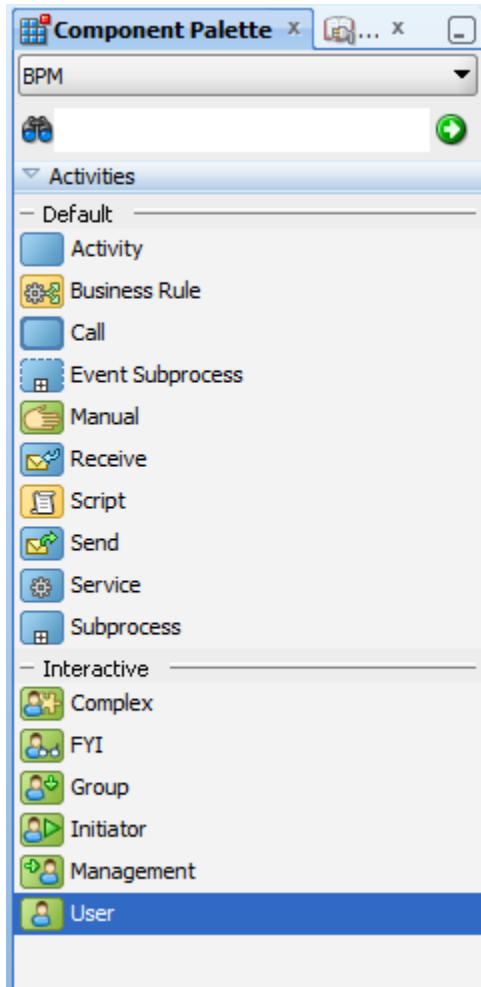
Now our Process Look Likes this





### 1.5.9 Creating and Implementing Human Tasks

**Step 14:** Expand the Activities pane in the Component Palette and from the Interactive section, click and drag a User activity, dropping it onto the sequence flow between Throw and End events.



The **user task** properties window will be opened. In the basic tab enter an appropriate name and then go to **implementation tab** and click add icon of the **Human Task** column.

The screenshot shows the 'Properties - UserTask' dialog box with the 'Implementation' tab selected. The 'Implementation Type' is set to 'User task'. The 'Human Task' field is empty, and a red box highlights the green plus icon to its right. Below this is the 'Human Task Attributes' section with an 'Add' button. The 'Title' field is set to 'Plain Text'. The 'Priority' is set to 'Literal'. There is a 'Re initiate' checkbox. The 'Advanced' section is expanded, showing 'Data Associations' with 'Use Associations' and 'Use Transformations' checkboxes. At the bottom are 'Help', 'OK', and 'Cancel' buttons.

Properties - UserTask

Basic Implementation

Implementation Type: User task

Human Task: [Red box around green plus icon]

Human Task Attributes [Add]

Title: Plain Text

Priority: Literal

☐ Re initiate

Advanced

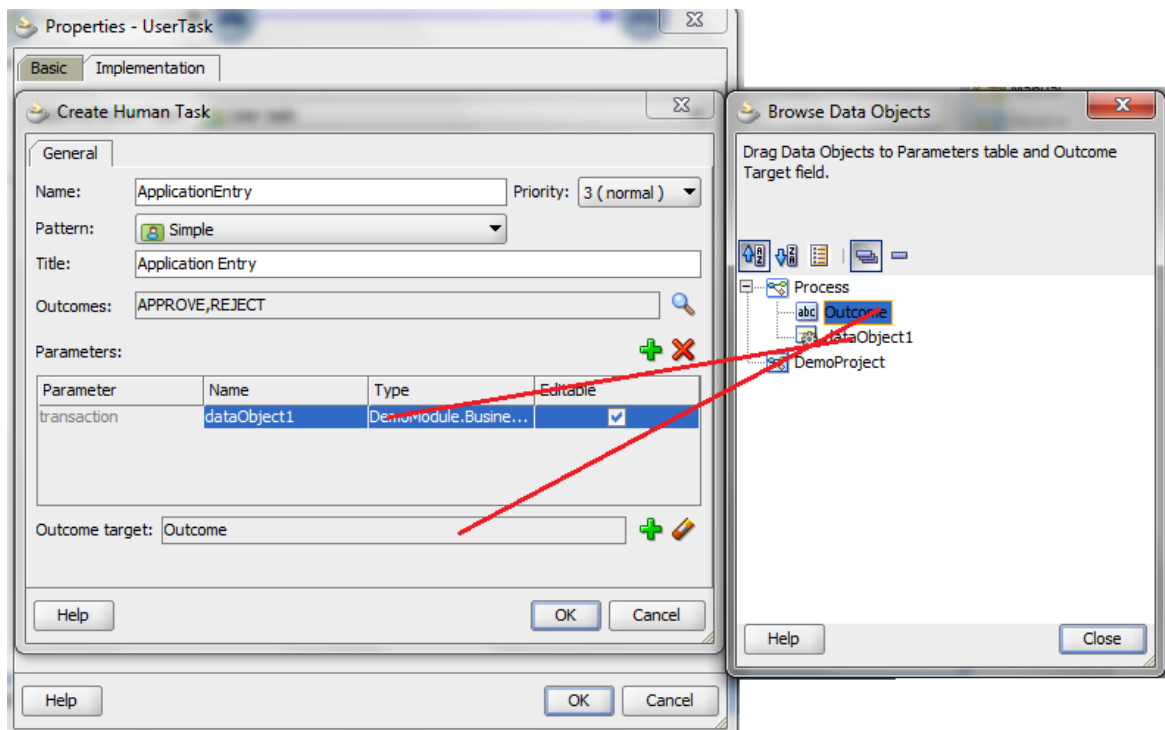
Data Associations

☐ Use Associations

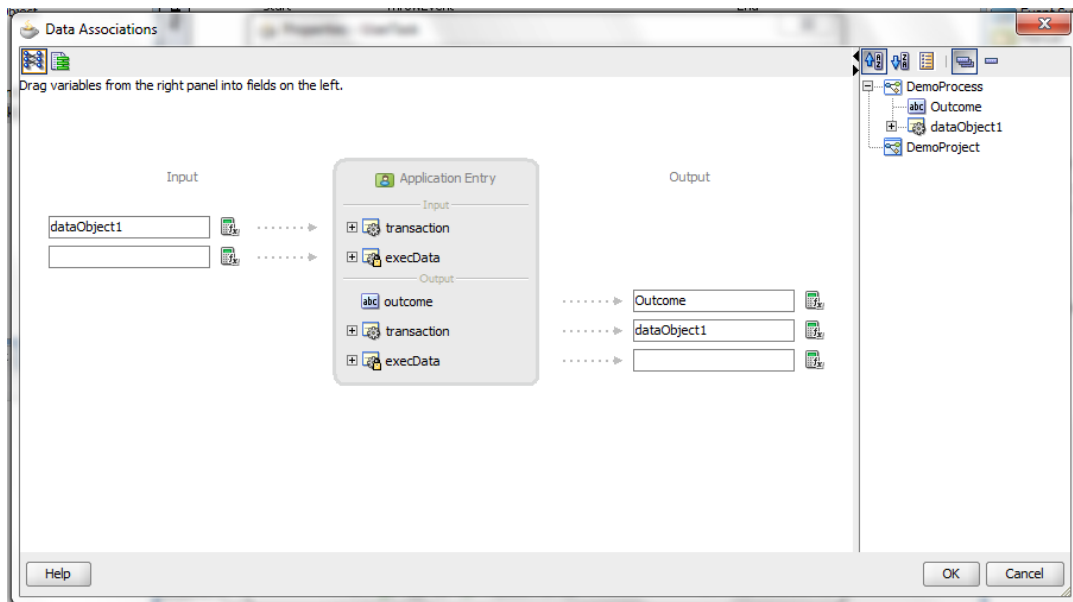
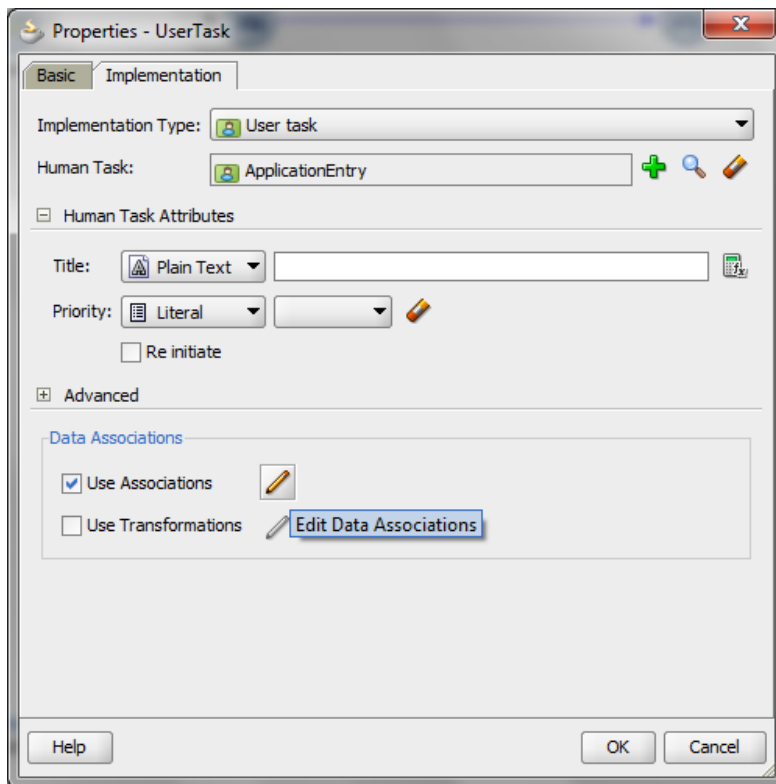
☐ Use Transformations

Help OK Cancel

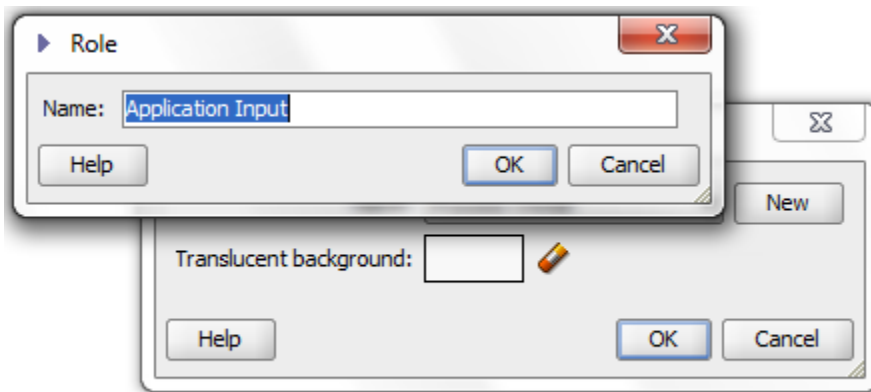
Create **human task** window is opened, Change the Name and title accordingly, Click on the add icon and map **parameter** and **outcome** target respectively and Check the editable field in the parameter slab.



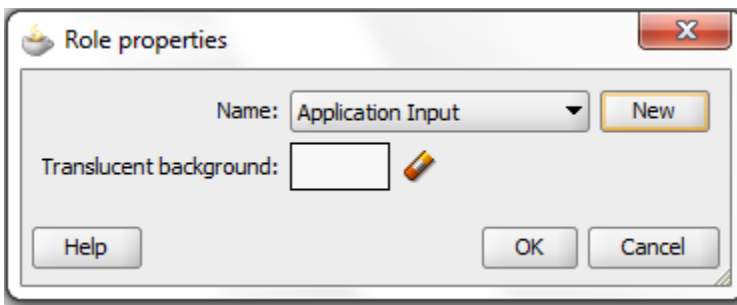
Click OK and check the **Use Associations** in the **User Task** properties window.



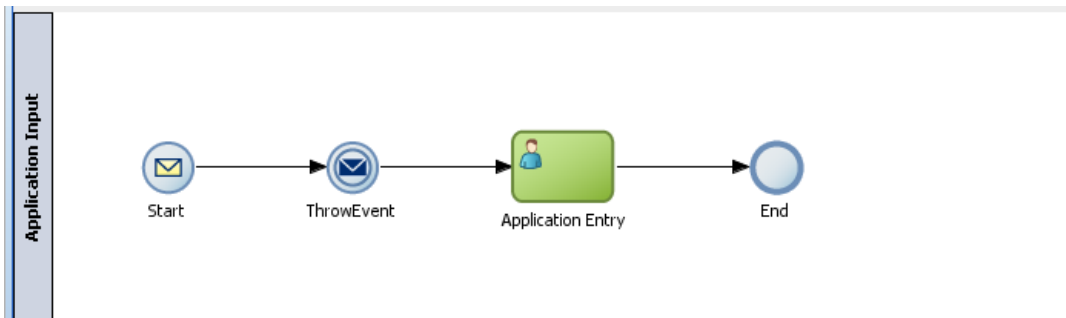
Click Ok and a **role properties** window appears.



Add a Name to the **Role** Click Ok and Save all.



Now our Process Look Likes this:



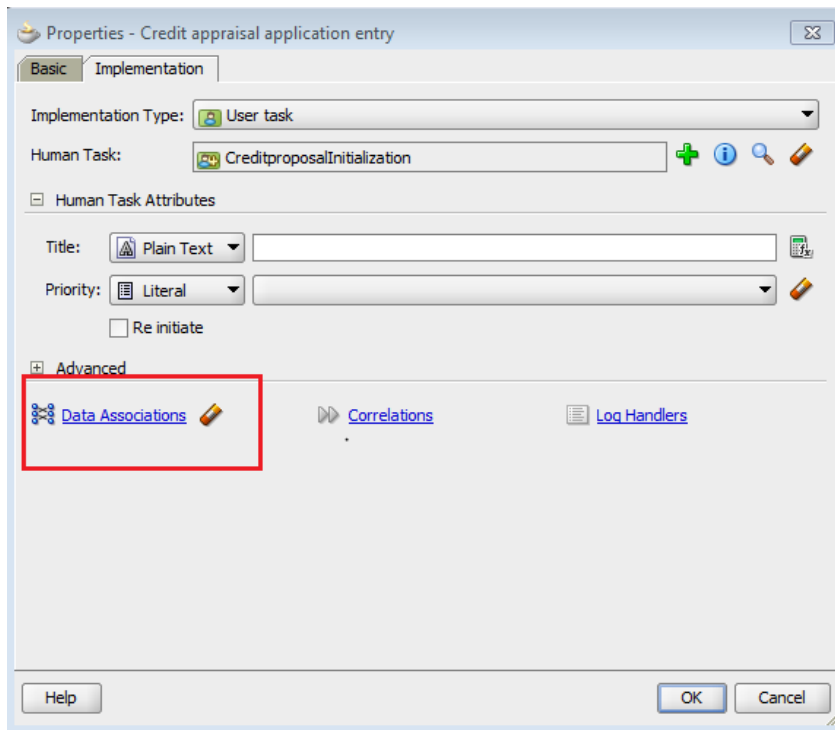
### 1.5.10 How to get the Conversation Id

To get the infra generated conversation id in the process, the below steps needs to be performed in the **first human task** of the process.

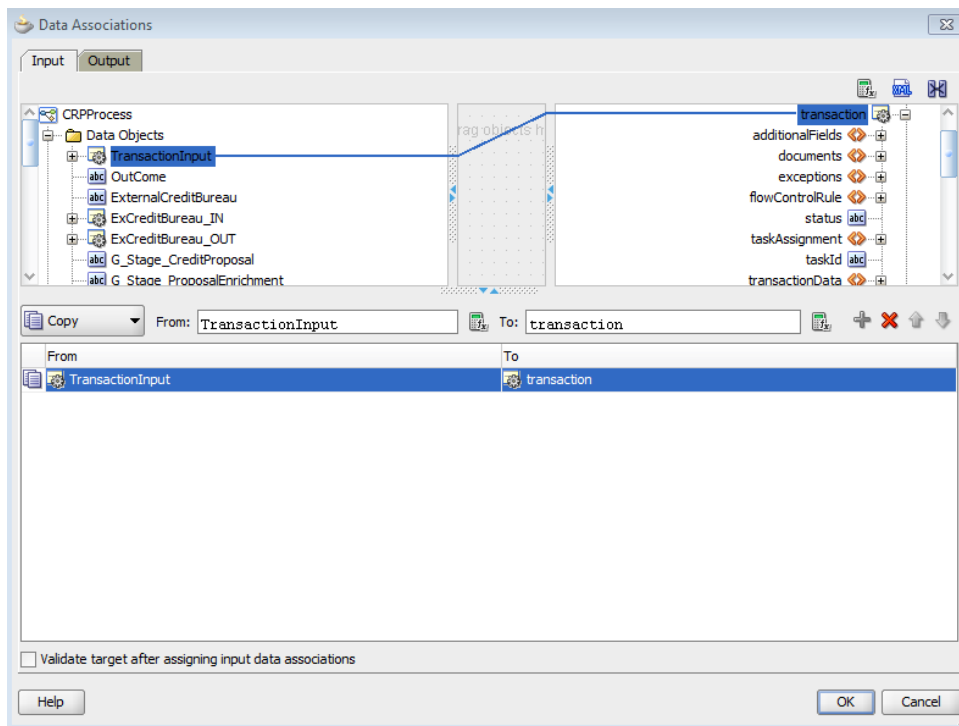
This conversation id is considered as **Application Number in each process**. Conversation id will be **unique** for each task.

**Step 1:** On double click on the first human task, you will get the below property window.

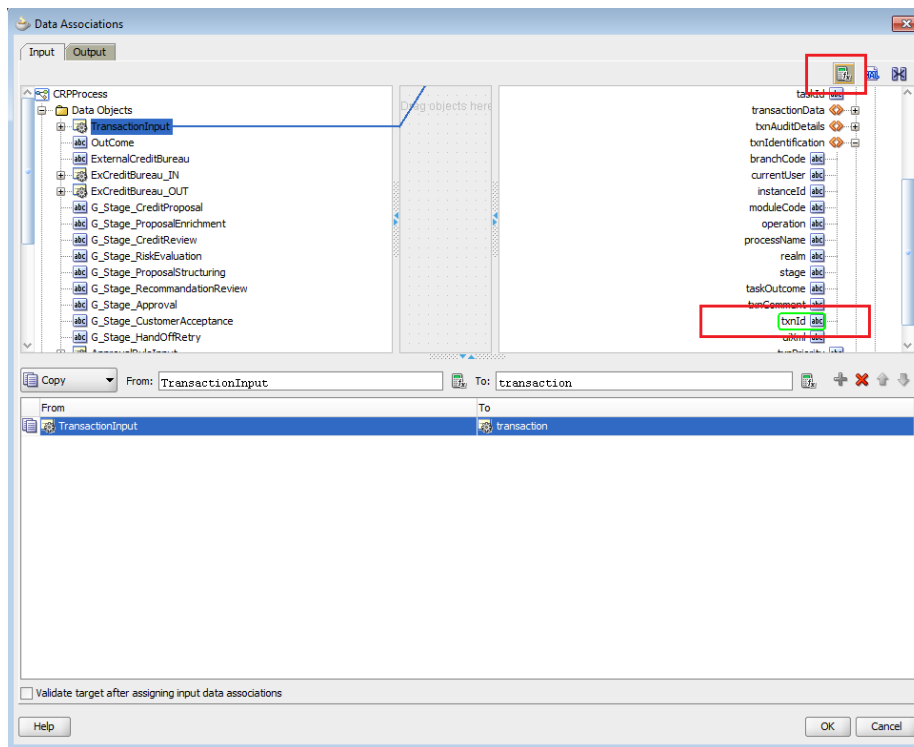
In property window, go to the implementation tab and click on the highlighted data association.



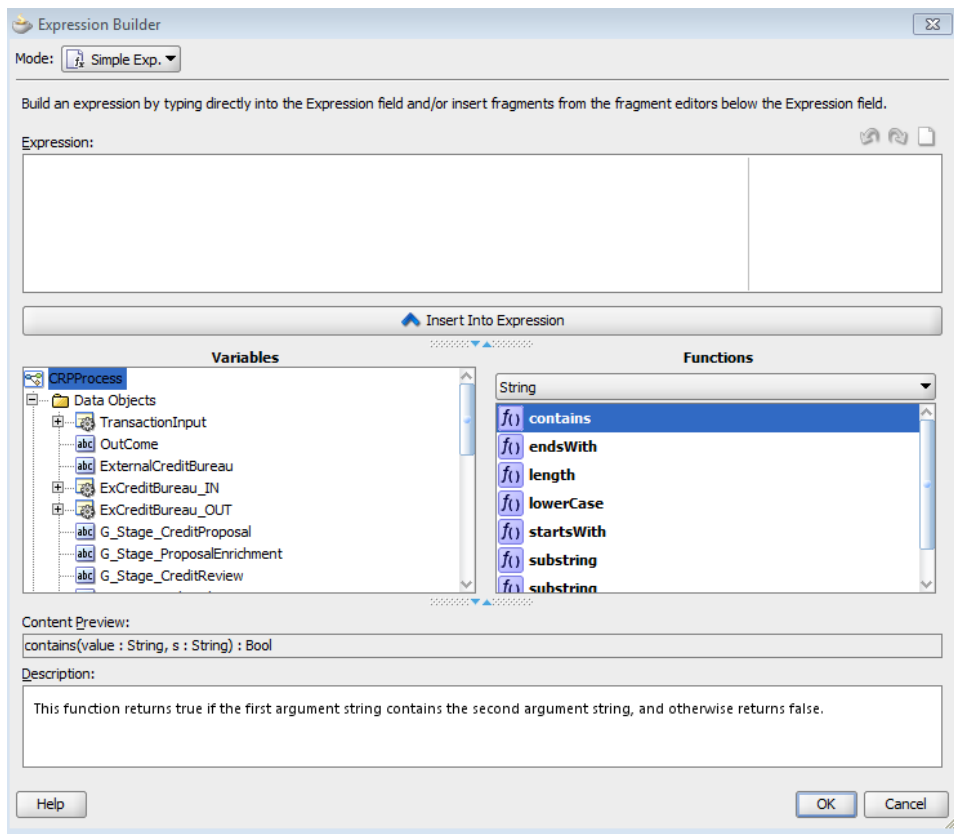
On clicking the data association, the below input/output window will be opened.



**Step 2:** Drag the highlighted expression icon to the target (**txnId**) then Expression builder window will get opened.

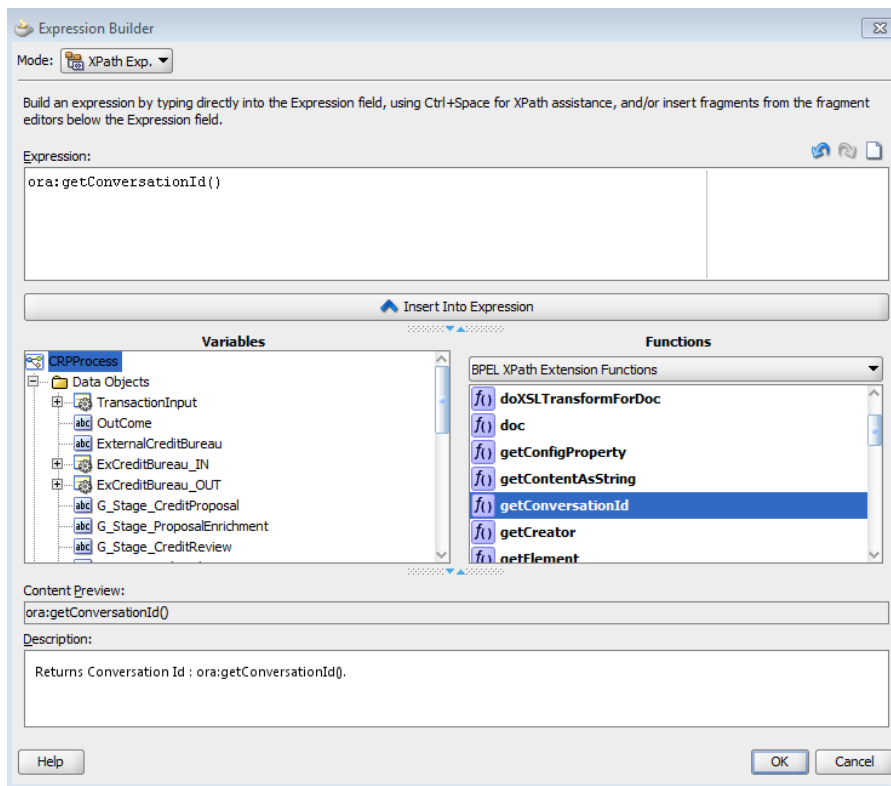


## Expression builder window

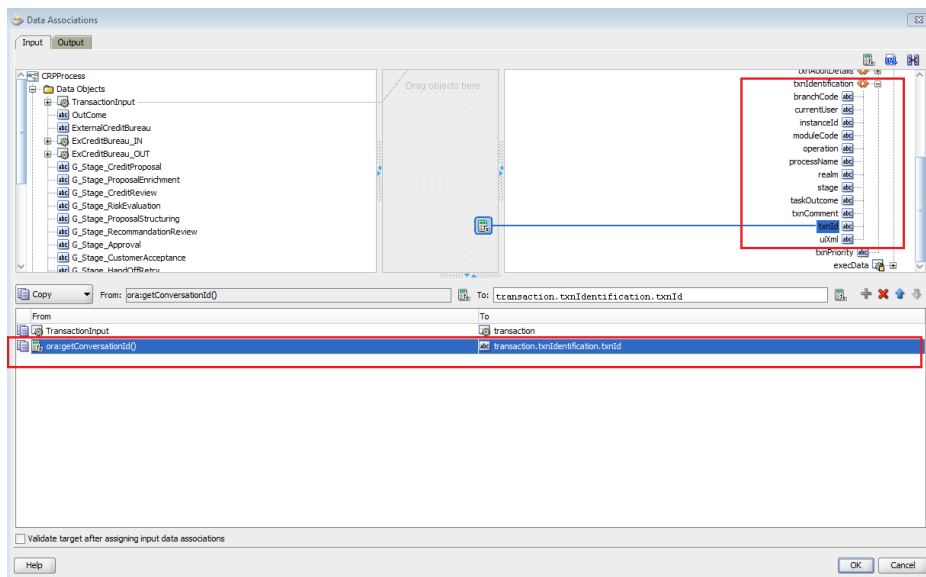




Add the “ora:getConversationId()” function from the BPEL Xpath Extension Function list



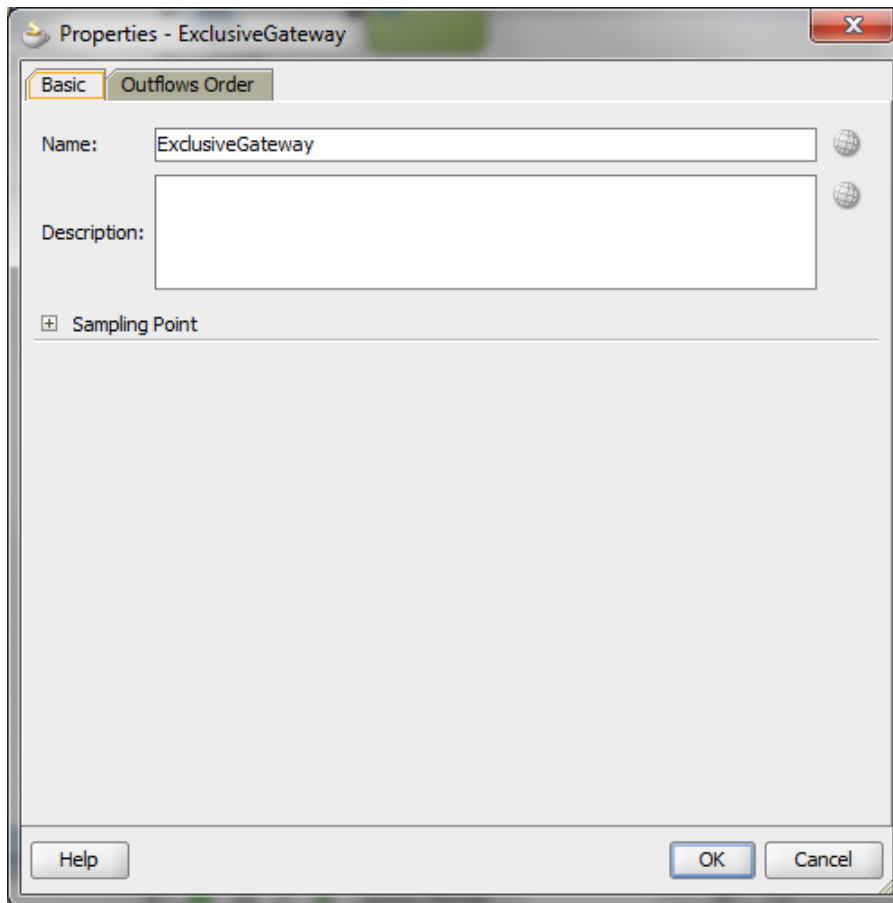
Finally Expression will be added in data association window.



### 1.5.11 Adding Gateways to the Process

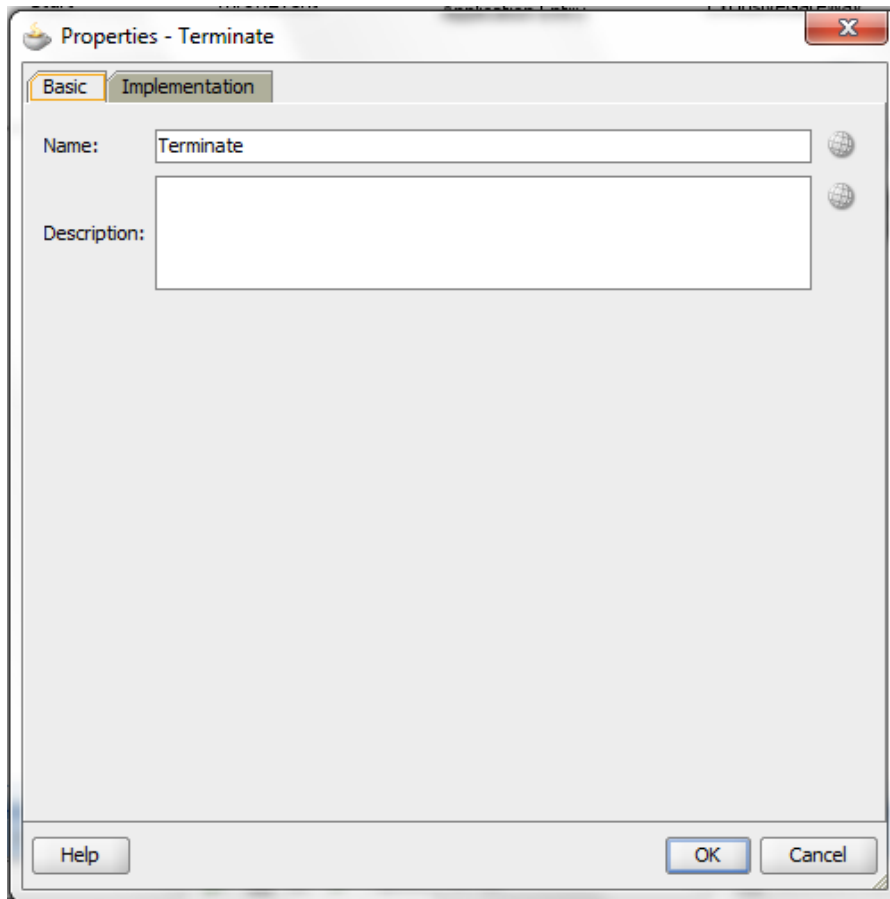
Step 15: Expand the **gateway** pane in the **Component Palette** and click and drag a **Exclusive gateway**, dropping it onto the sequence flow between **Appenty(humantask)** and **End** events.

**Properties window** opens if required change the name and click OK.

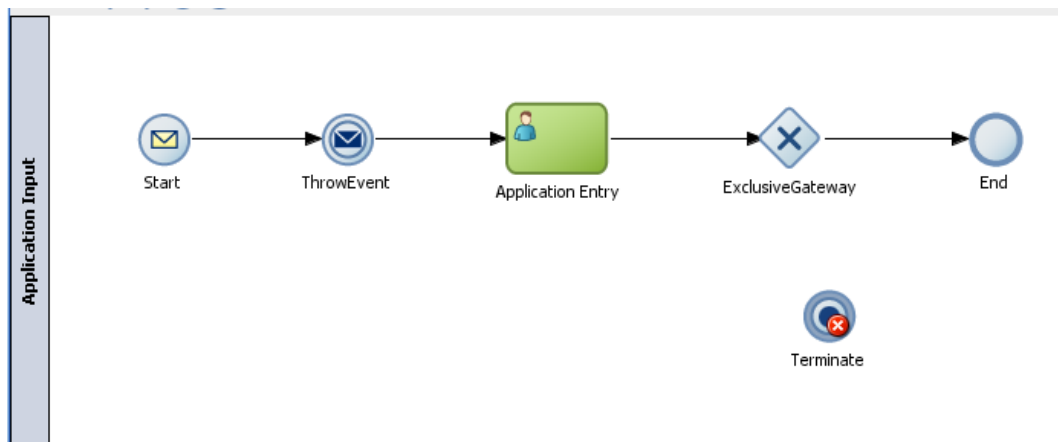


**Step 16:** Expand the **Events pane** in the **Component Palette** and from the **End events** section, click and drag a **Terminate**, **dropping** it onto the Process editor.

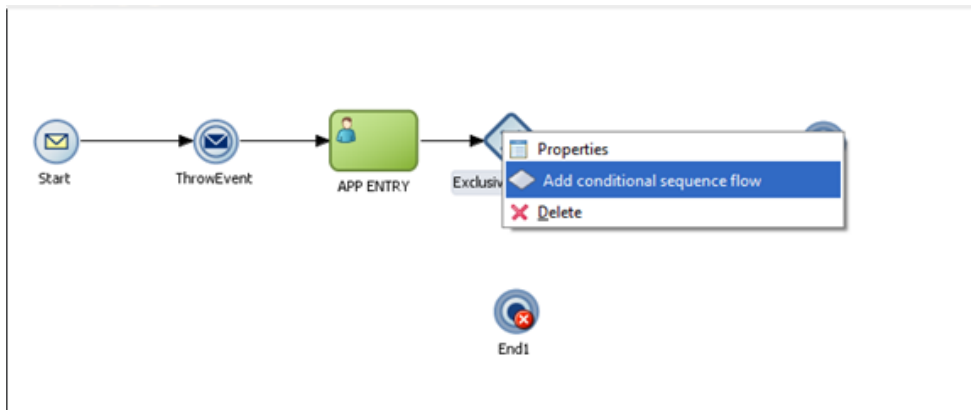
**Properties window** opens if required change the name and click OK.



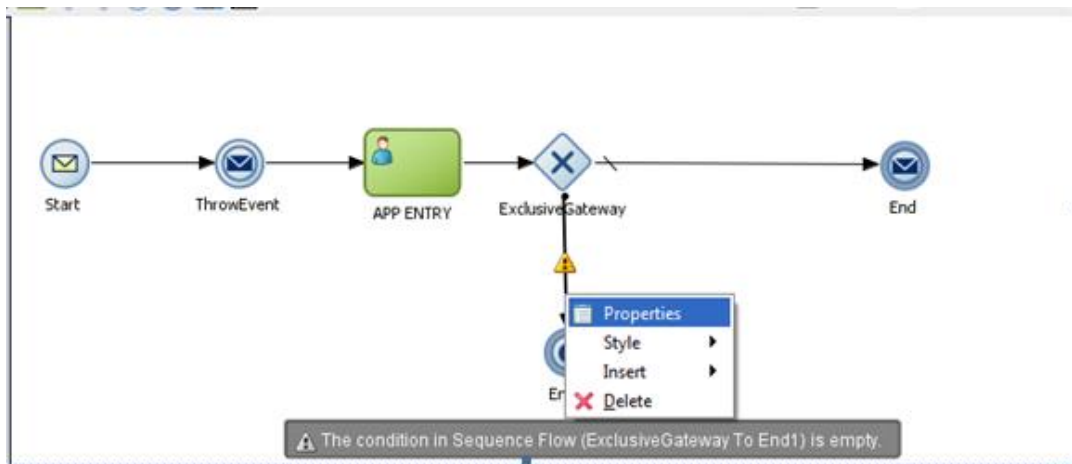
Now our Process looks likes this:



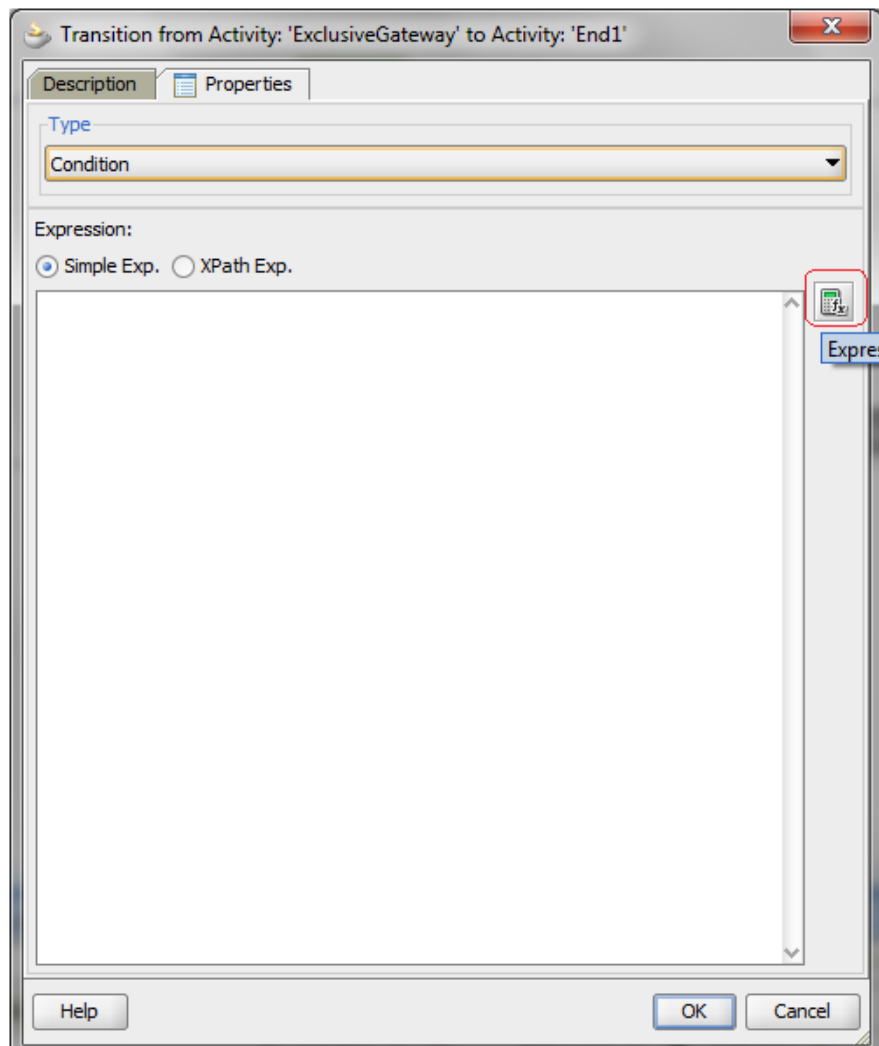
Right click on the **gateway** and select the **Add Conditional Sequence** flow, and connect the gateway to the **Terminate event**.



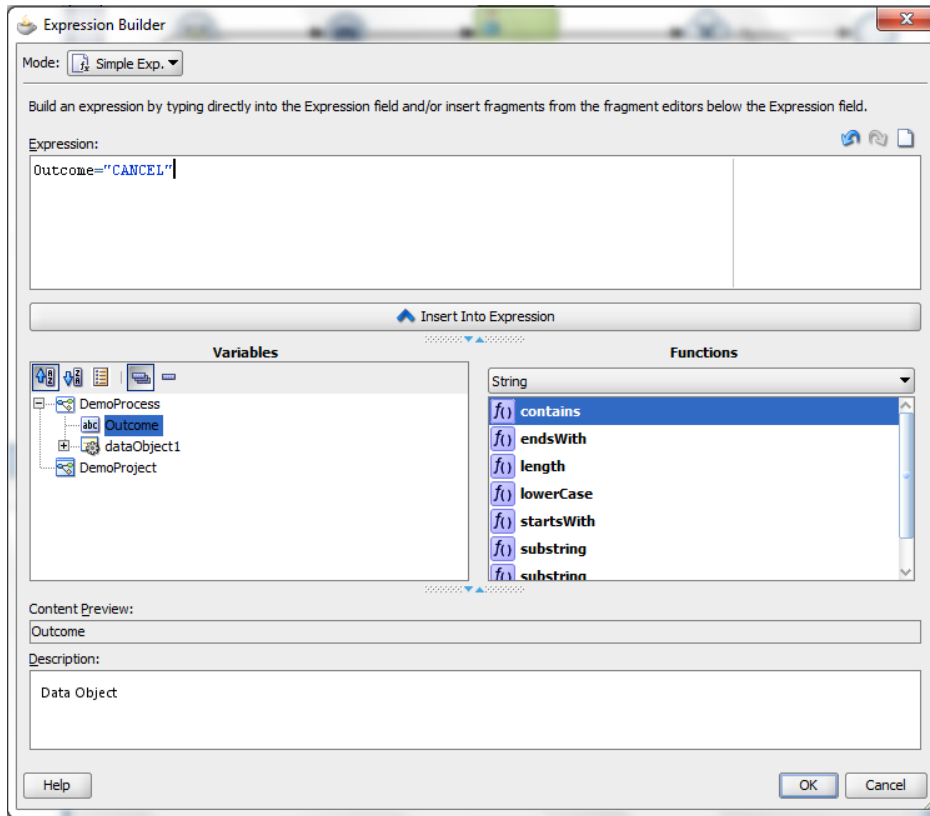
Right click on the **Sequence flow**, and select **properties**.



The **Sequence flow property** window will be opened, enter the name if required and go to properties tab, Click on the Expression Builder.



And Build the condition for the sequence flow by selecting the object from the list and click **insert into expression** or by dragging and drop the **object** in the expression tab.



Click Ok and again Click OK.

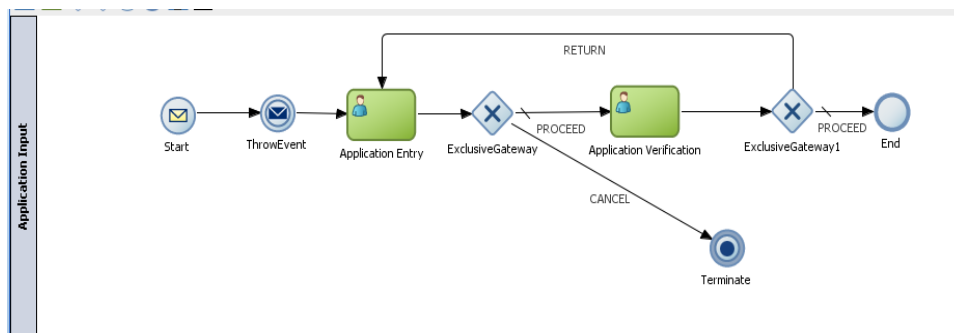
Click Save All.

Create another user activity and implement the humantask properties.(follow the same steps as done for the useractivity (**Application Entry**)).

Create another gateway event and connect the conditional end to the first human task(app entry).

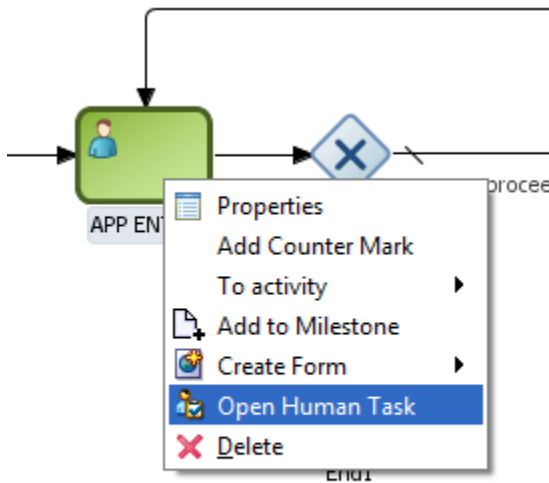
Click Save all.

Now the process looks like this:

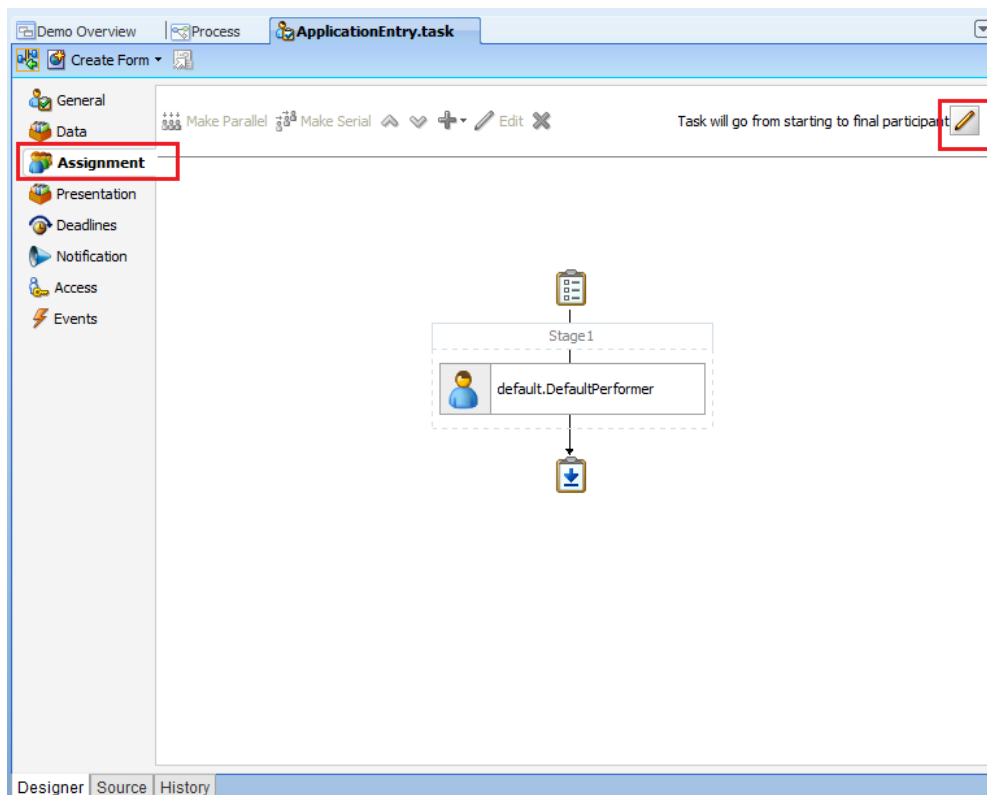


### 1.5.12 Mapping Oracle FLEXCUBE Roles to Human Task

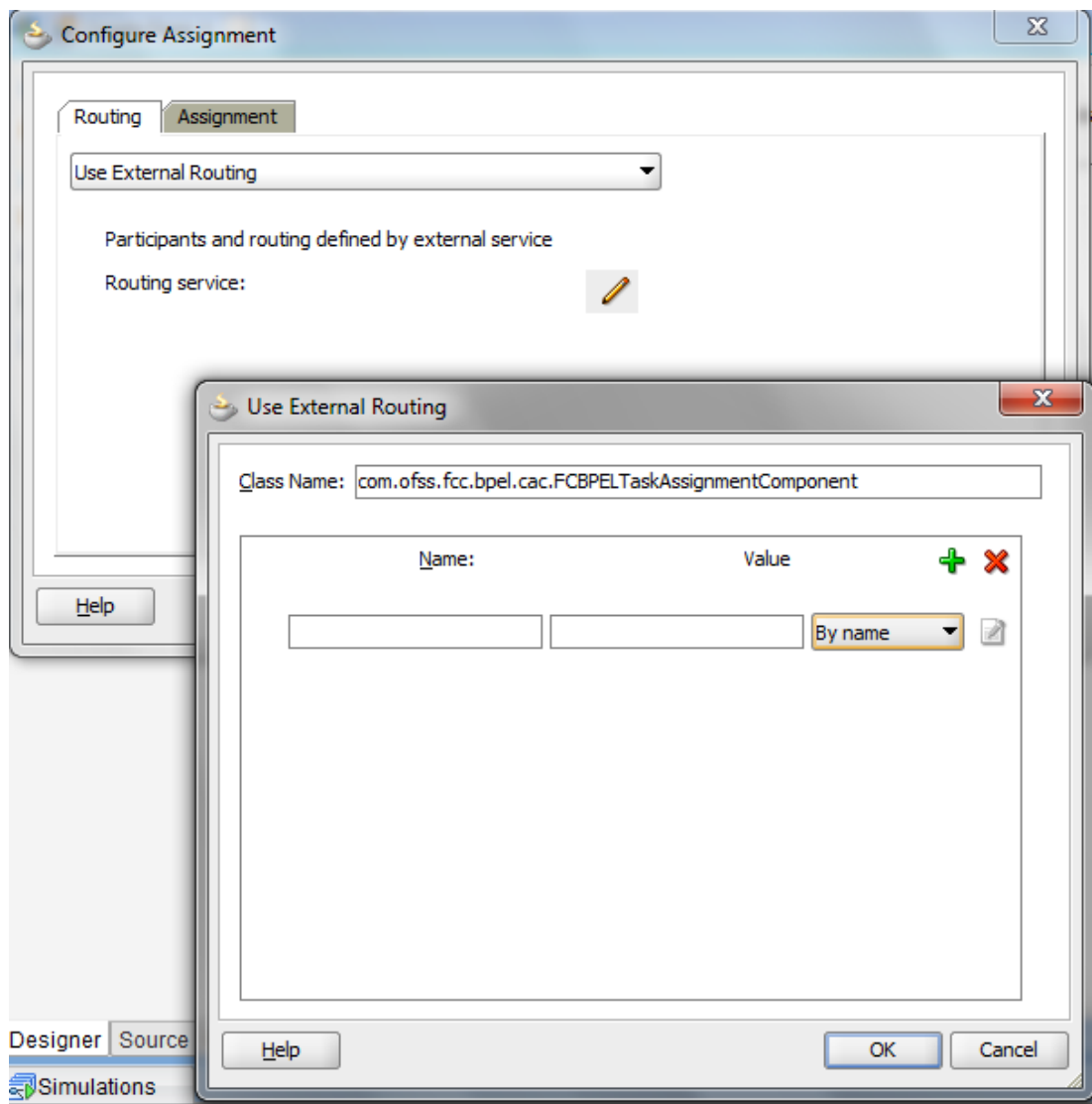
**Step 17:** Right click on the **human task** and select **Open Human Task**, it opens in new tab.



Click Assignment tab and click Edit Icon.




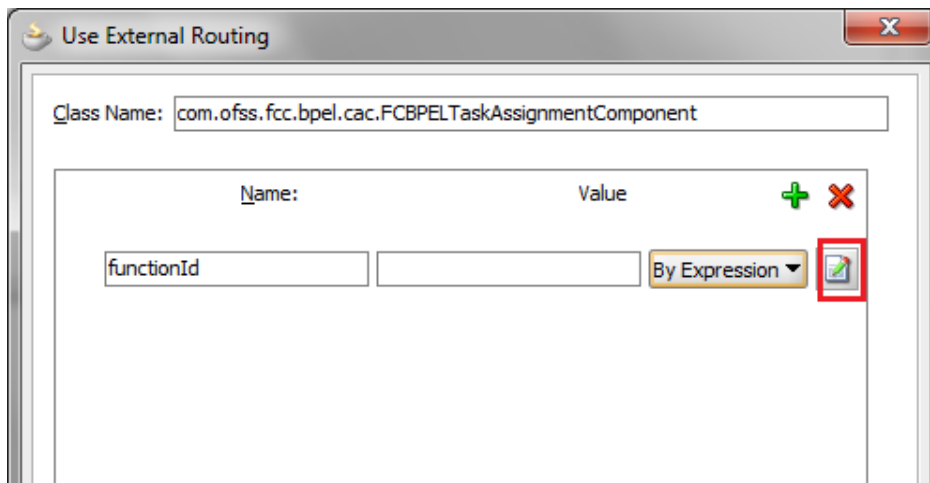
Configure Assignment window is opened, select Use External Routing from the select box and click on edit icon, Use **External Routing** window will be opened, now enter the class name as (**com.ofss.fcc.bpel.cac.FCBPELTaskAssignmentComponent**).






Enter the **name** and select by **expression** from the select box and click on Edit Icon beside it.

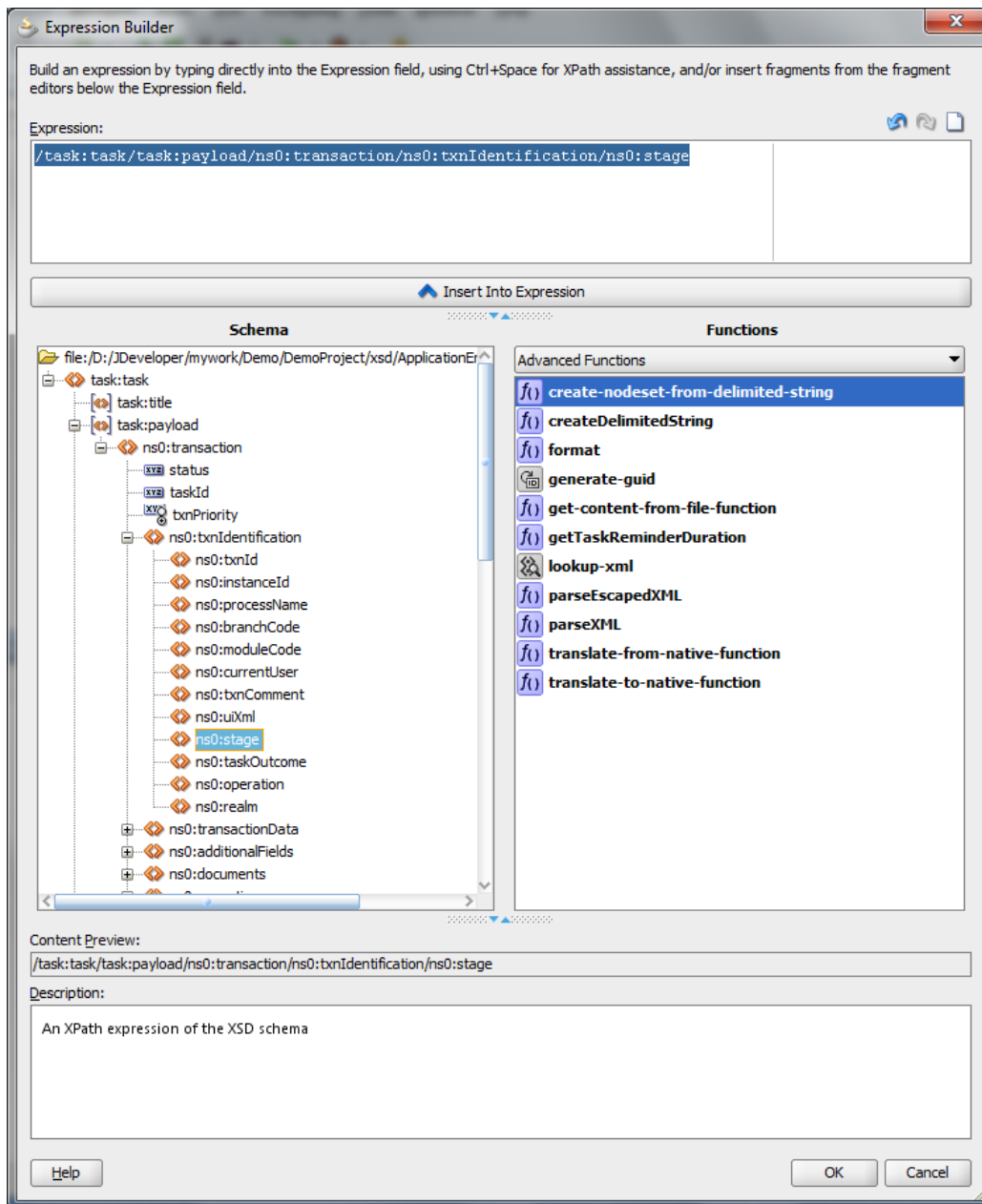
 The name specified here is Case sensitive.



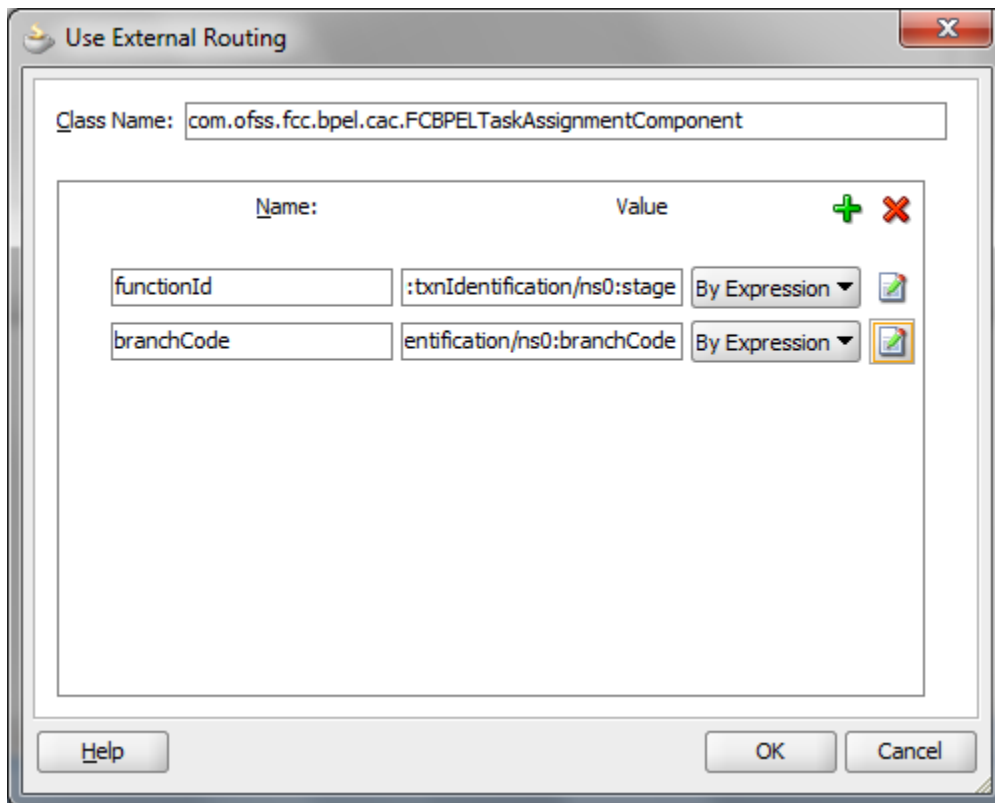
The dialog box titled "Use External Routing" contains a "Class Name" field with the value "com.ofss.fcc.bpel.cac.FCBPELTaskAssignmentComponent". Below this is a table with two columns: "Name" and "Value". The first row in the table has "functionId" in the "Name" column and an empty field in the "Value" column. To the right of the "Value" column is a dropdown menu currently set to "By Expression". To the right of the dropdown menu is a small icon of a document with a pencil, which is highlighted by a red rectangle.

| Name:      | Value |   |
|------------|-------|---|
| functionId |       | By Expression  |

Select the stage from the **task:payload** and Click insert into expression and Click OK.



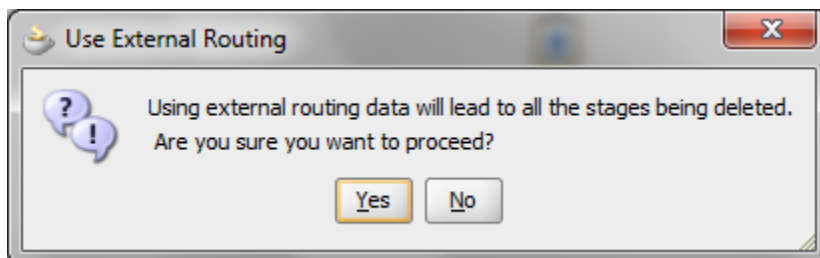
Add another element and likewise map the **branchcode** and click ok .



The "Use External Routing" dialog box is shown. It has a title bar with a close button. Inside, there is a text field for "Class Name" containing "com.ofss.fcc.bpel.cac.FCBPELTaskAssignmentComponent". Below this is a table with two columns: "Name:" and "Value". The first row has "functionId" in the "Name:" column and ":txnIdentification/ns0:stage" in the "Value" column. The second row has "branchCode" in the "Name:" column and "entification/ns0:branchCode" in the "Value" column. To the right of the "Value" column, there are two dropdown menus, both set to "By Expression", and a small icon of a document with a pencil. At the bottom of the dialog are buttons for "Help", "OK", and "Cancel".

| Name:      | Value                        |
|------------|------------------------------|
| functionId | :txnIdentification/ns0:stage |
| branchCode | entification/ns0:branchCode  |

Click ok



A warning dialog box is shown with the title "Use External Routing". It contains a question mark icon and a warning icon. The text inside says: "Using external routing data will lead to all the stages being deleted. Are you sure you want to proceed?". At the bottom are two buttons: "Yes" and "No".

Click Yes and Save all.

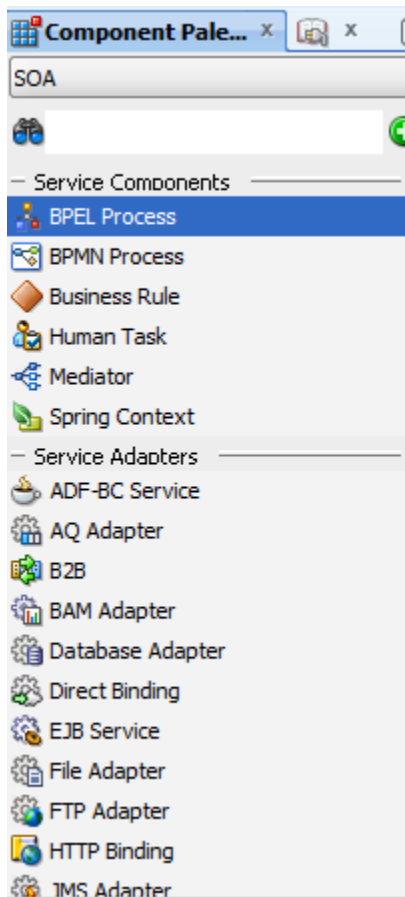
Repeat the same steps for every human task in the process.

### 1.5.13 Creating and Implementing system tasks

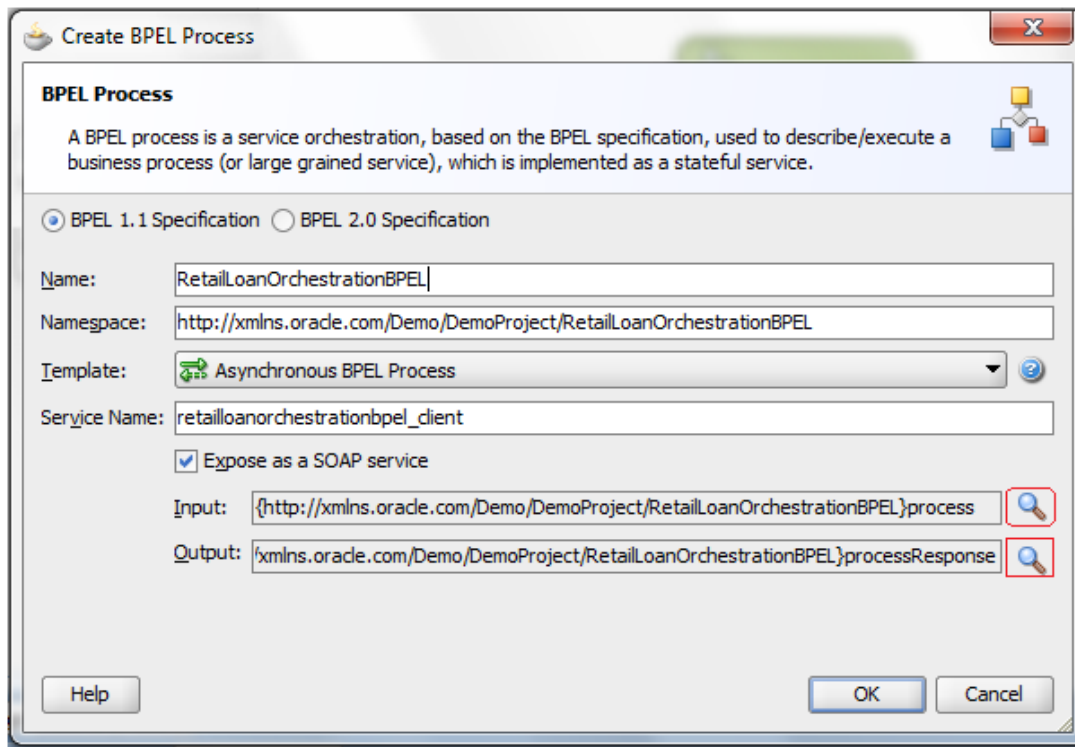
**Step 18:** Drag and Drop BPEL Process to the Composite.xml



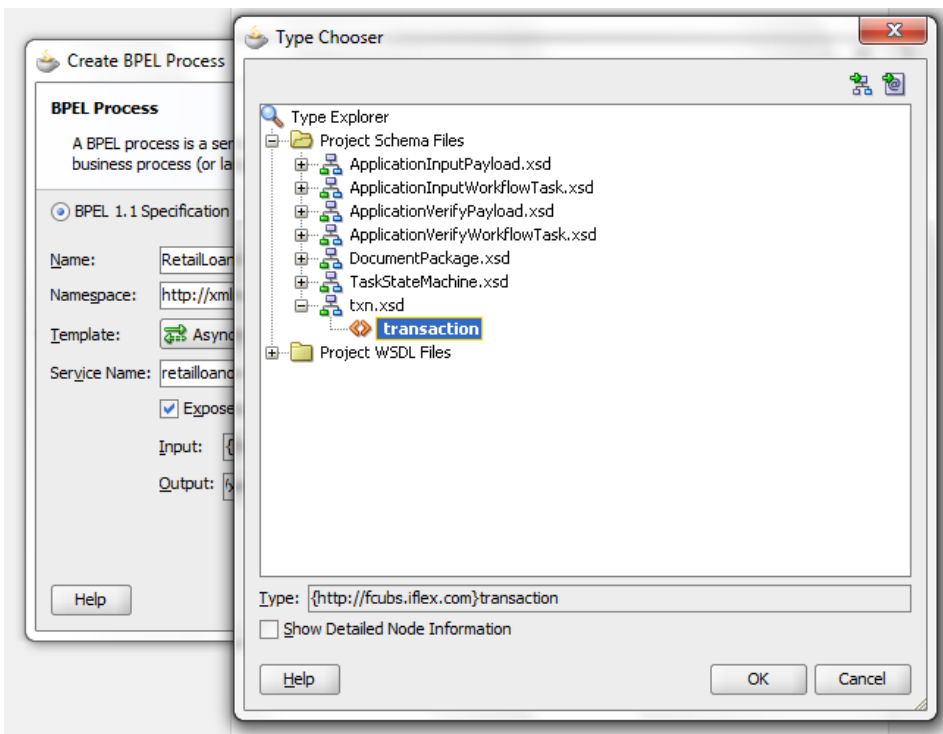
A Service Call can be **Implemented** by **Service Adapters** also.



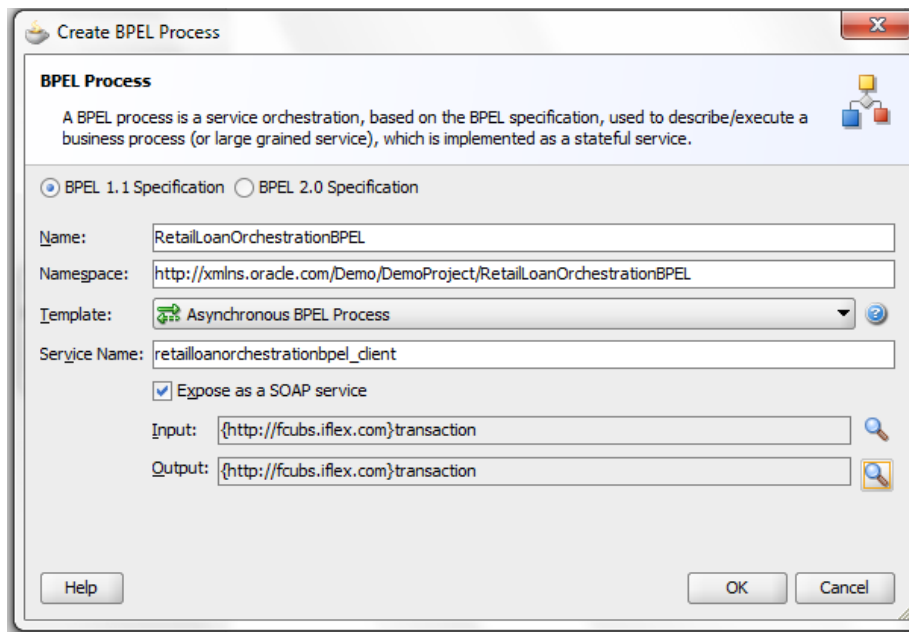
A Window appears Rename the Process with Desired name ex: **RetailLoanOrchestrationBPEL**.



Click the **Input** and **Output** and chose the element type.



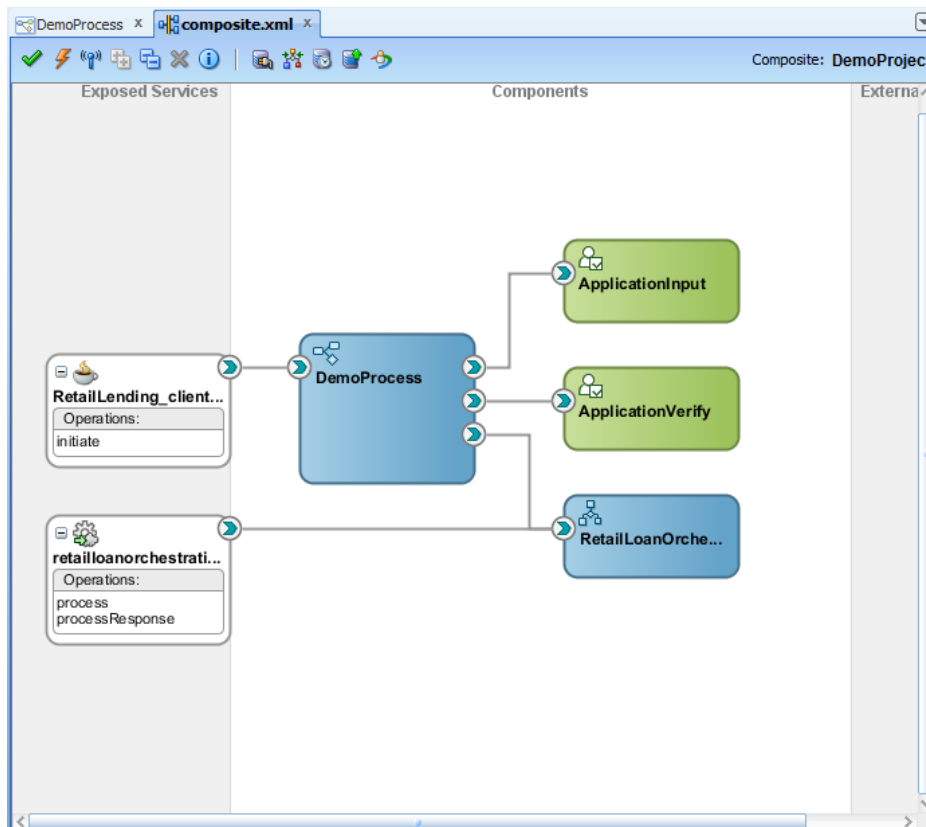
BPEL Process screen is as follows:



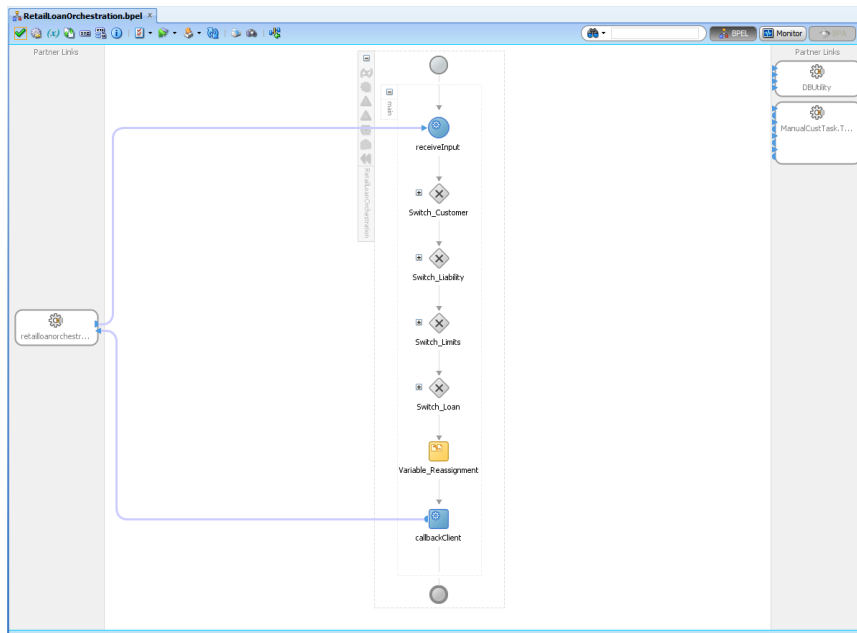
The 'Create BPEL Process' dialog box is shown. It has a title bar 'Create BPEL Process' and a close button. Below the title bar is a section 'BPEL Process' with a description: 'A BPEL process is a service orchestration, based on the BPEL specification, used to describe/execute a business process (or large grained service), which is implemented as a stateful service.' Below this is a radio button group with 'BPEL 1.1 Specification' selected and 'BPEL 2.0 Specification' unselected. There are four text input fields: 'Name:' with 'RetailLoanOrchestrationBPEL', 'Namespace:' with 'http://xmlns.oracle.com/Demo/DemoProject/RetailLoanOrchestrationBPEL', 'Template:' with a dropdown showing 'Asynchronous BPEL Process', and 'Service Name:' with 'retailloanorchestrationbpel\_client'. Below these is a checked checkbox 'Expose as a SOAP service'. There are two more text input fields: 'Input:' with '{http://fcubs.iflex.com}transaction' and 'Output:' with '{http://fcubs.iflex.com}transaction'. At the bottom are 'Help', 'OK', and 'Cancel' buttons.

Click Ok

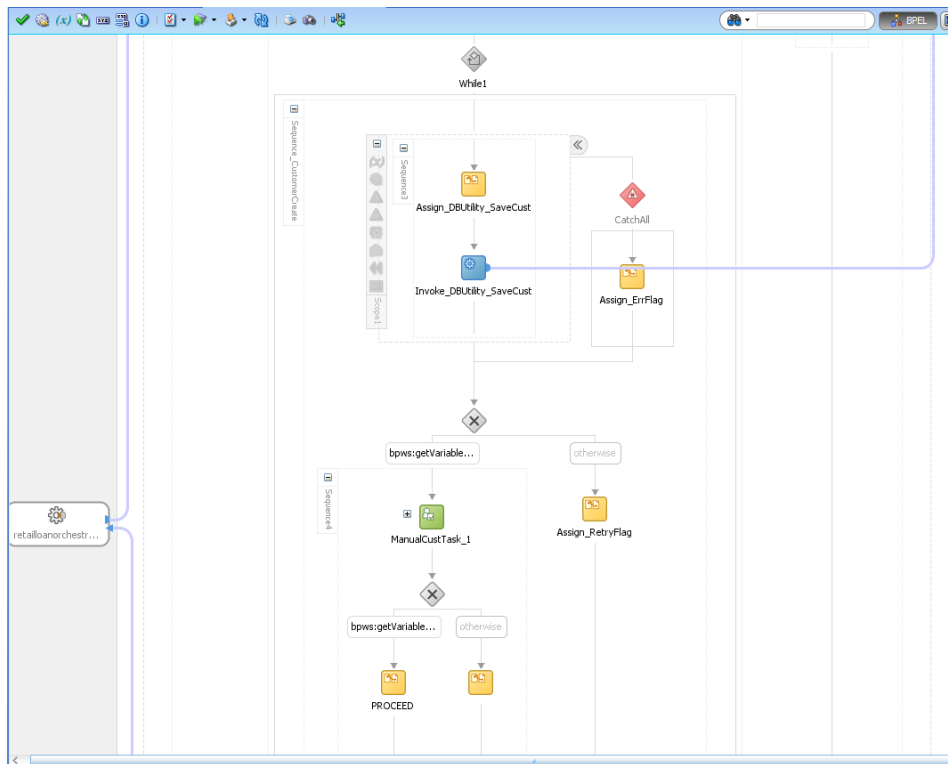
Now the **Composite.xml** looks like this



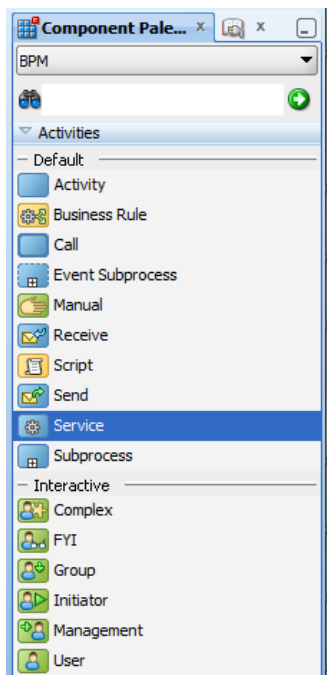
The **RetailLoanOrchestration.bpel** looks like this after Implementation.



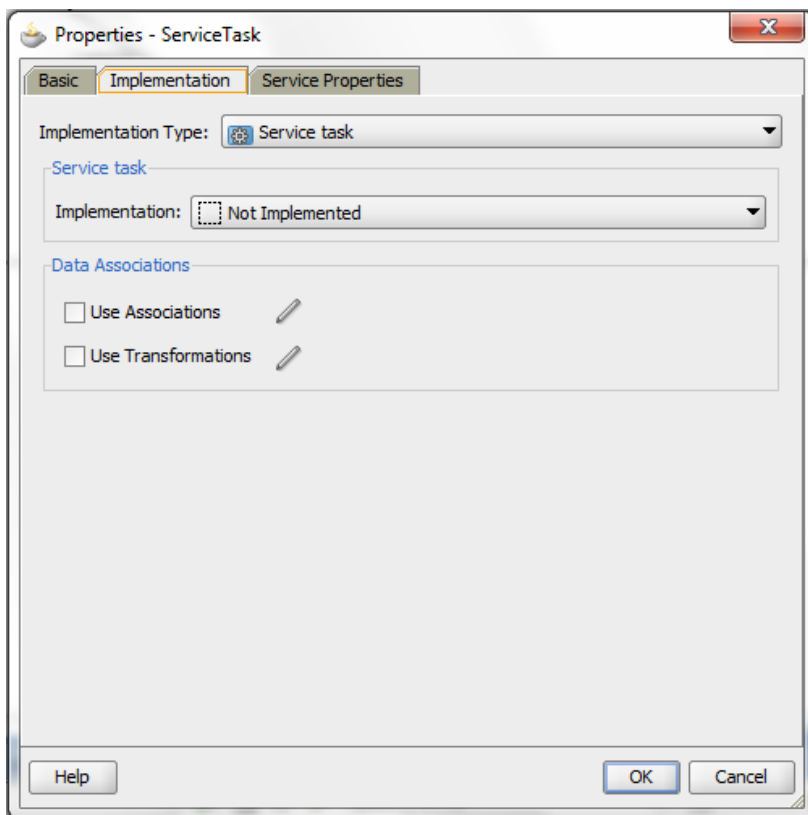
In each **Switch** node of **RetailLoanOrchestration.bpel** process **DBUtility Bpel** process is called if it fails a **manual retry task** is initiated to book the **RetailLoan**




Now go to the Process and add a **Service Task** from **component palette**.

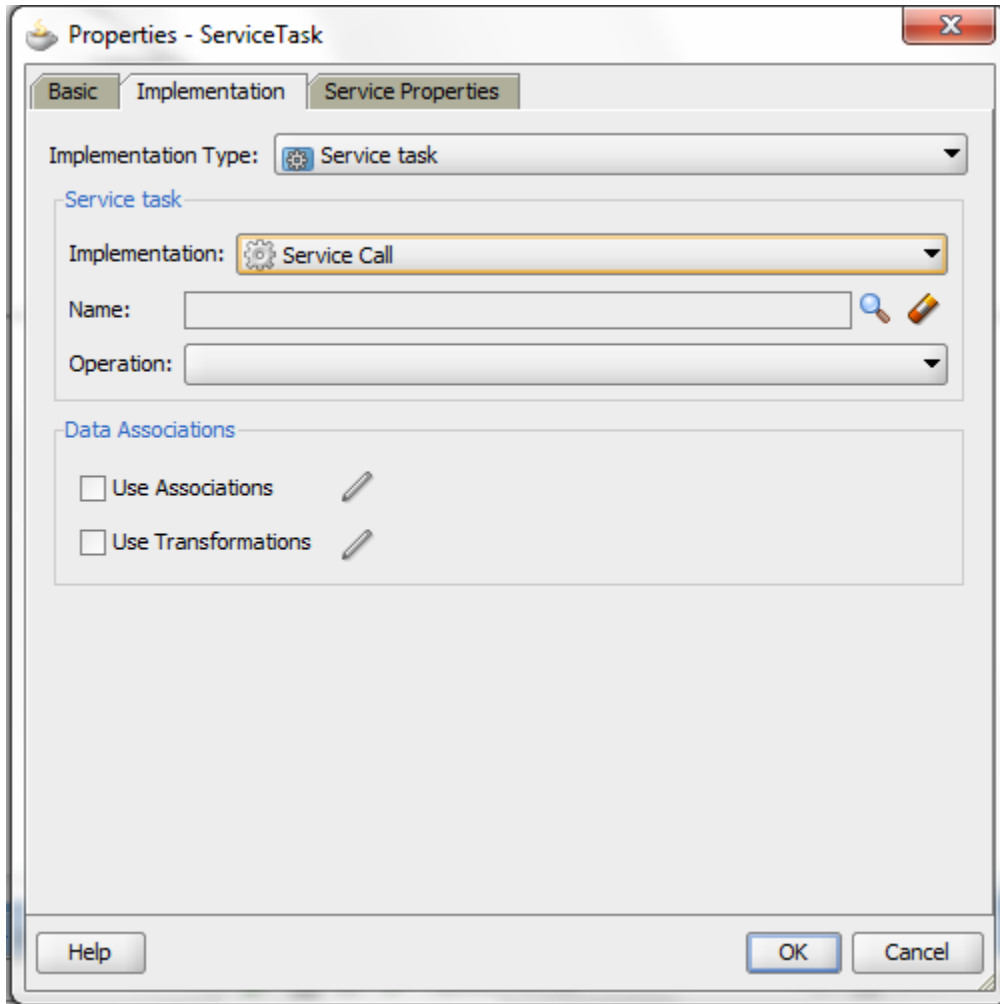


Window appears as below:





Now Select the **Implementation type** as **Service Call** and click the  icon.



The screenshot shows the 'Properties - ServiceTask' dialog box with the 'Implementation' tab selected. The 'Implementation Type' dropdown is set to 'Service task'. Under the 'Service task' section, the 'Implementation' dropdown is set to 'Service Call'. The 'Name' field is empty, and the 'Operation' dropdown is also empty. The 'Data Associations' section has two unchecked checkboxes: 'Use Associations' and 'Use Transformations'. The 'Help', 'OK', and 'Cancel' buttons are at the bottom.



Properties - ServiceTask

Basic Implementation Service Properties

Implementation Type: Service task


Service task


Implementation: Service Call

Name:  

Operation:

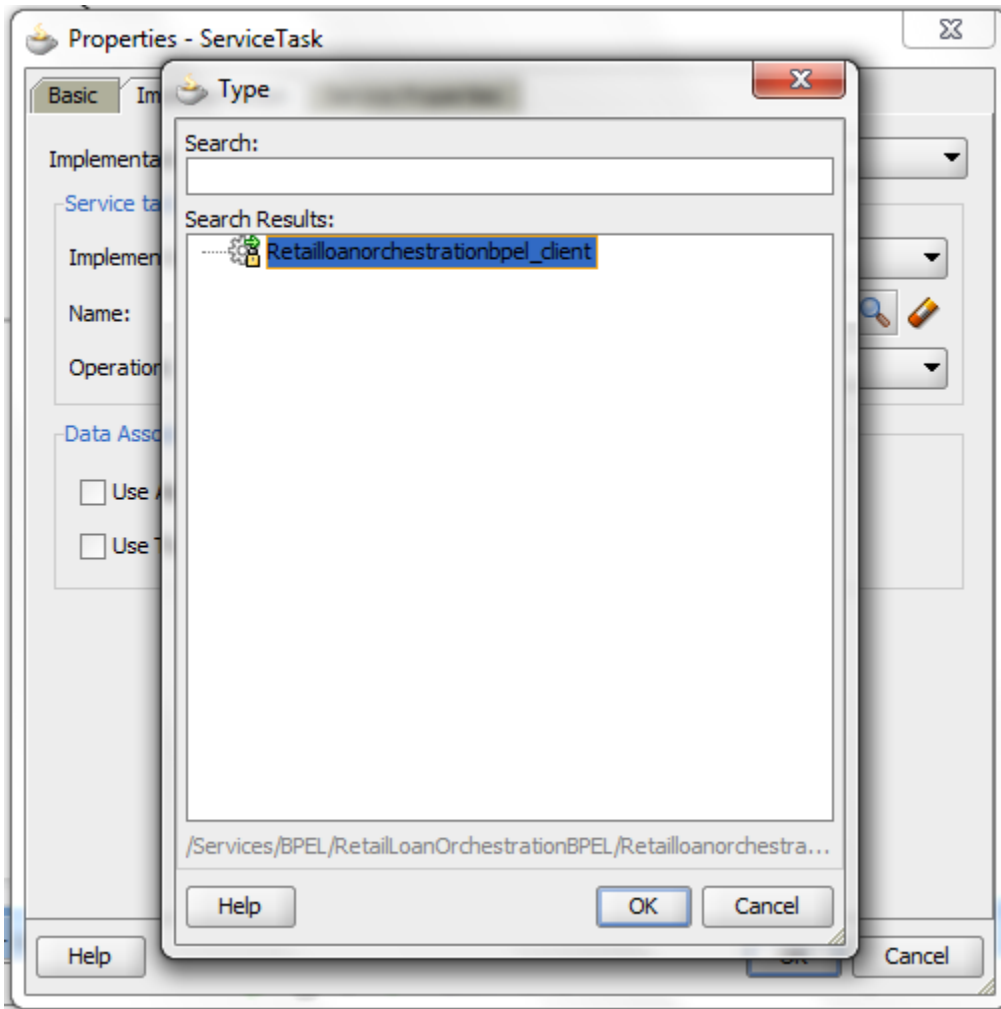
Data Associations


☐ Use Associations 

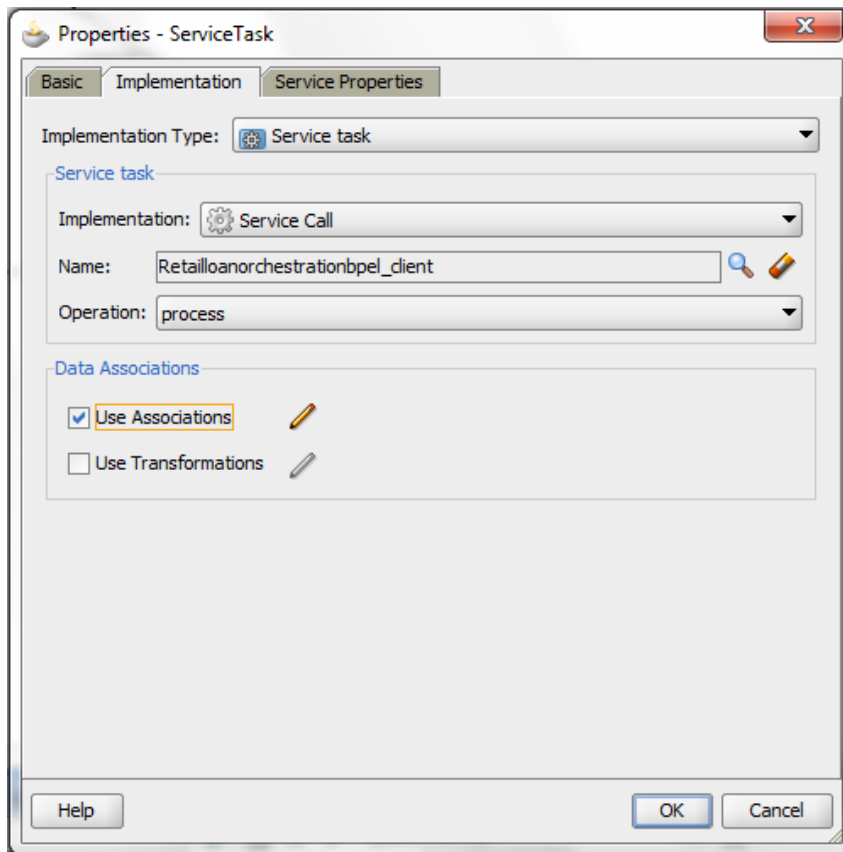
☐ Use Transformations 

Help OK Cancel

Window appears as below from that select the service **RetailLoanOrchestrationBPEL** which is listed.

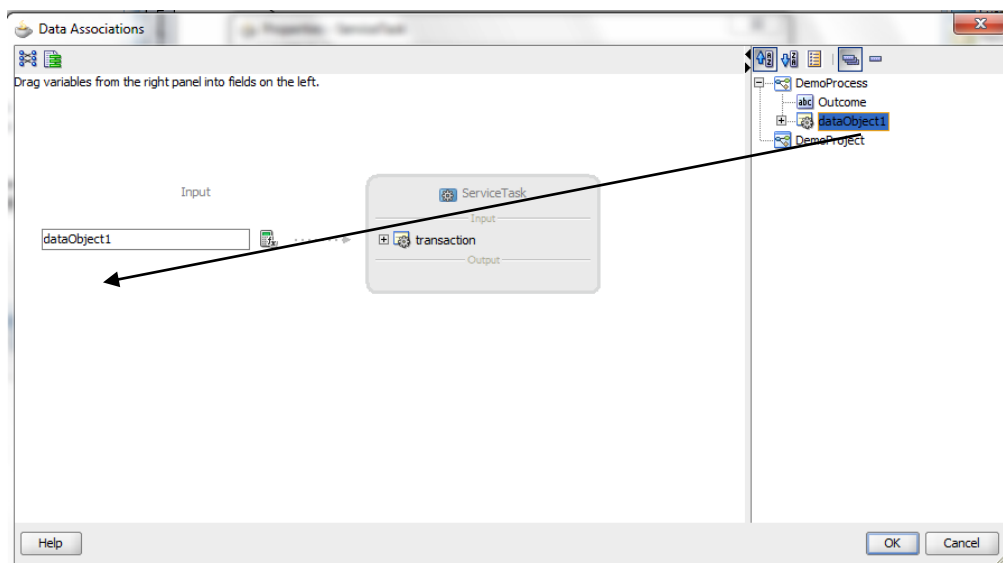


Click **Use association** check box and  icon.



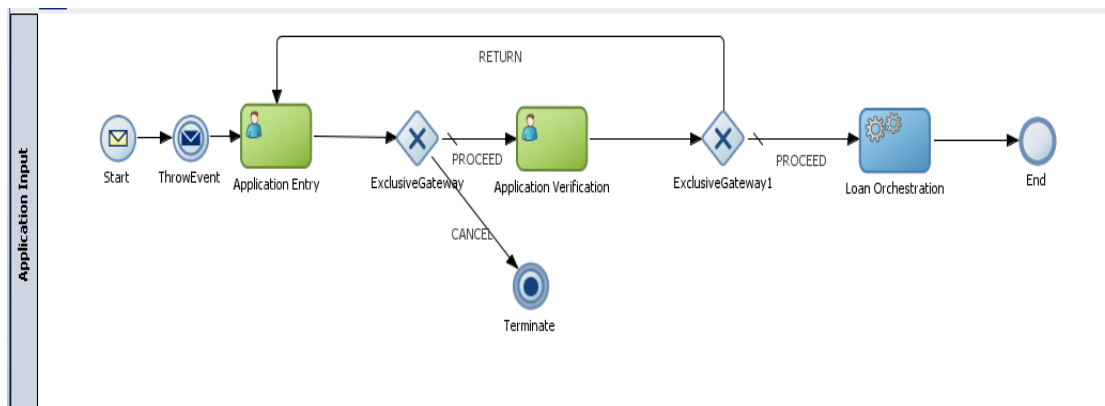
The 'Properties - ServiceTask' dialog box is shown with the 'Service Properties' tab selected. The 'Implementation Type' is set to 'Service task'. Under the 'Service task' section, 'Implementation' is 'Service Call', 'Name' is 'Retailloanorchestrationbpel\_client', and 'Operation' is 'process'. In the 'Data Associations' section, the 'Use Associations' checkbox is checked and highlighted with a yellow border, and the 'Use Transformations' checkbox is unchecked. A pencil icon is next to the 'Use Associations' checkbox. At the bottom are 'Help', 'OK', and 'Cancel' buttons.

Map the **data association** and click ok.



The 'Data Associations' dialog box is shown. It has a title bar 'Data Associations' and a subtitle 'Drag variables from the right panel into fields on the left.' The main area is divided into two panels. The left panel, labeled 'Input', contains a text box with 'dataObject1'. The right panel, labeled 'Output', contains a tree view with 'DemoProcess' expanded, showing 'Outcome', 'dataObject1', and 'DemoProject'. A black arrow points from 'dataObject1' in the right panel to the 'dataObject1' text box in the left panel. In the center, there is a 'ServiceTask' component with 'transaction' in its 'Input' field. At the bottom are 'Help', 'OK', and 'Cancel' buttons.

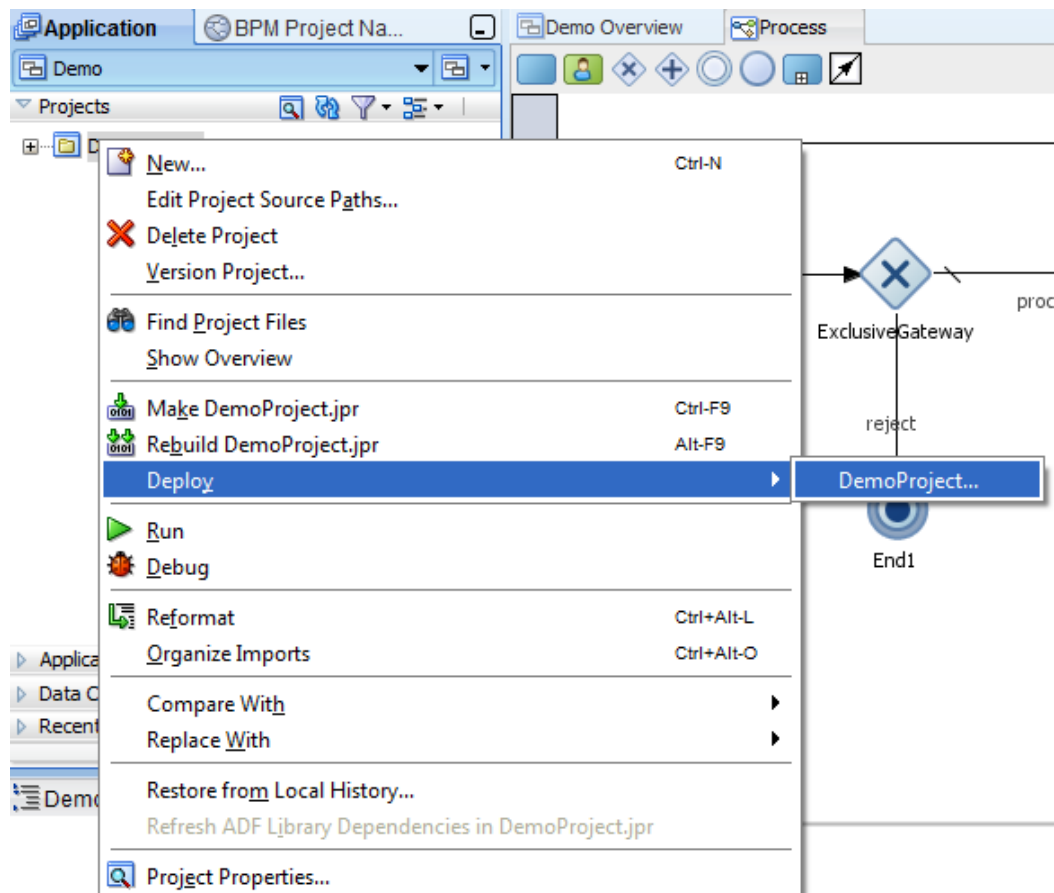
Now the process looks like this:



## 1.6 Deploying the Process

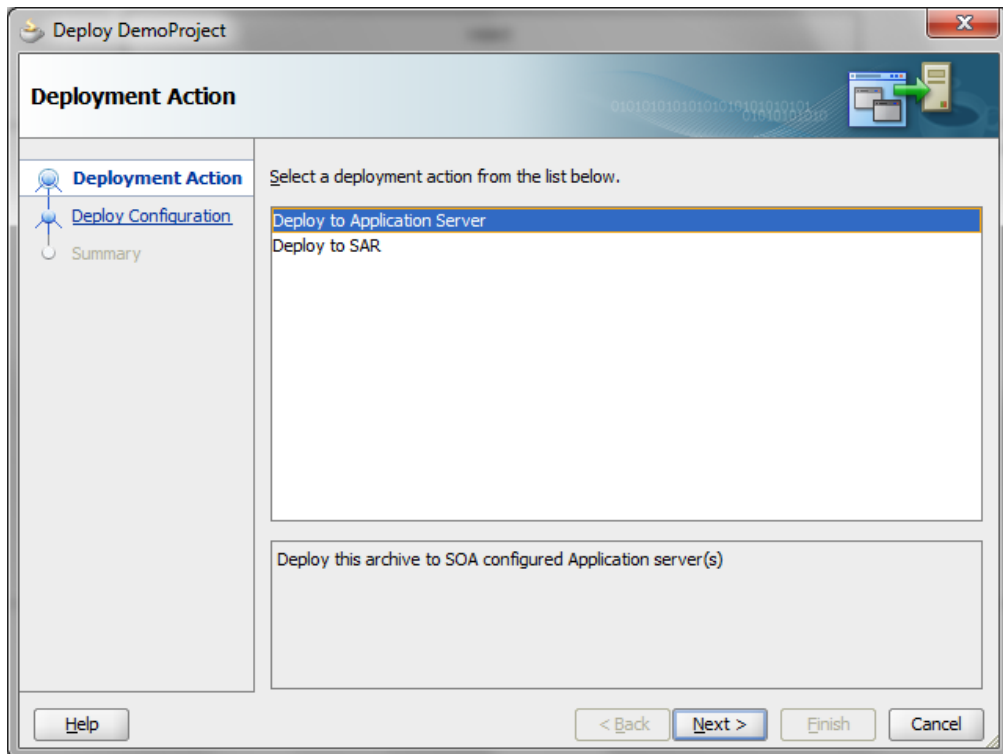
Step 19: Deploy the **DemoProject**.

In the **Application Navigator**, right click **DemoProject** and select **Deploy > DemoProject**.



The Deploy **DemoProject** wizard opens.

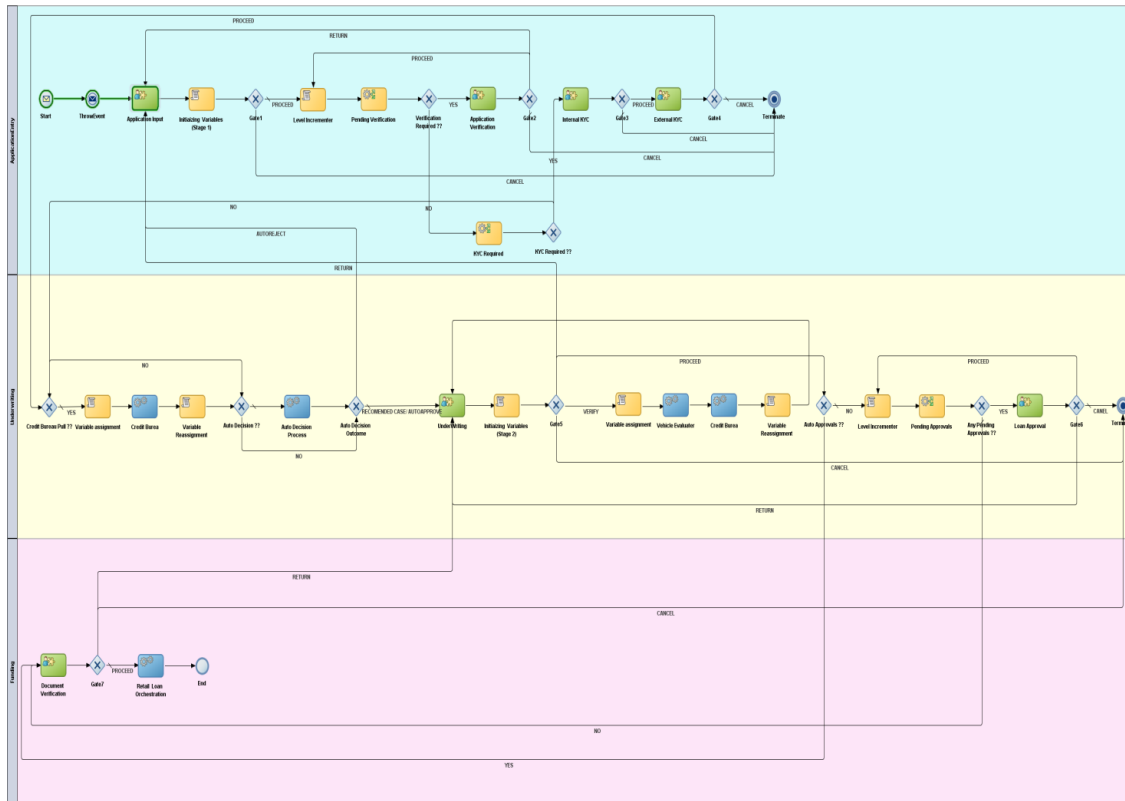
In the **Deployment Action** page of the wizard, select **Deploy to Application Server** and click **Next**.



In the **Deploy Configuration** page, click the **Overwrite any existing** composites with the same revision IDcheckbox and click Next.

## 1.7 Retail Lending BPMN Process

### 1.7.1 Retail Lending BPMN Process Flow Diagram



### 1.7.2 Guidelines followed in Retail Lending Process flow

- single data object named **transactioninput** which contains the **transaction.xsd**



is used throughout the Process Flow to map the Inputs and Outputs.

- Global Fault Handling Standard are maintained across the Process Flow.
- The Fault Handling is done separately in another BPEL Process called **RetailLoanOrchestrationBPEL**.
- Swimlanes** are used to differentiate the different Stages in the Process.



- Usage of **Flexcube\_interface.wsdl** to initiate the Process rather than using other wsdl files.
- com.ofss.fcc.bpel.cac.FCBPELTaskAssignmentComponent** class is used in all Human Tasks to map the Flexcube Roles .

- Naming Conventions are followed as per the Retail Lending Flow Diagram.
- The DBUtility Call and Manual Retry Task are done separately in RetailLoanOrchestrationBPEL BPEL Process.

### 1.7.3 **Naming Conventions Followed in Retail Landing Process Flow**

#### **Processes**

- RetailProcess(BPM)
- RetailLoan OrchestrationBPEL(BPEL)

#### **RetailProcess(BPM)**

##### **Human Tasks:**

- ApplicationInput
- ApplicationVerify
- InternalKYCTask
- ExternalKYCCheck
- UnderWriting
- UnderWriting\_Approval
- FinalVerification

##### **Business Rules:**

- VerifyAppRules
- KYCRules
- LoanApprovalRules

##### **Exposed Services:**

- RetailLending\_client\_ep

##### **External Reference:**

- VehicleEvaluator
- CreditBureau
- SelectDecisionDBAdapter

| Task Name/Event Name | Input            | Output           |
|----------------------|------------------|------------------|
| Start Event          | -                | transactioninput |
| ThrowEvent           | transactioninput | -                |
| User Tasks(all )     | transactioninput | transactioninput |
| VerifyAppRules       | VRule_IN         | VRule_ OUT       |
| KYCRules             | KYC_IN           | KYC_ OUT         |

|                       |                          |                           |
|-----------------------|--------------------------|---------------------------|
| LoanApprovalRules     | <b>UnderWrite_IN</b>     | <b>UnderWrite_ OUT</b>    |
| Credit Burea          | <b>ExCreditBureau_IN</b> | <b>ExCreditBureau_OUT</b> |
| Auto Decision Process | <b>AutoDecision_IN</b>   | <b>AutoDecision_OUT</b>   |
| Vehicle Evaluator     | <b>VEvaluator_IN</b>     | <b>VEvaluator_OUT</b>     |

|                      |        |
|----------------------|--------|
| OUTCOME              | String |
| ExternalCreditBureau | String |
| AutoDecisionReqd     | String |
| AutoDecisionOutput   | String |

### **RetailLoan OrchestrationBPEL(BPEL)**

#### **Human Tasks:**

- ManualCustTask

#### **Exposed Services:**

- retailloanorchestration\_client\_ep

#### **External Reference:**

- DBUtility

| <b>Task Name/Event Name</b>  | <b>Input</b>  | <b>Output</b>  |
|------------------------------|---|--|
| RetailLoan OrchestrationBPEL | <b>inputvariable</b>                                      | <b>outputvariable</b>                                    |
| DBUtility                    | <b>Invoke_DBUtility_SaveCust_initiate_InputVariable_1</b> | <b>Invoke_DBUtility_SaveCust_initiate_OutputVariable</b> |



## 1.8 **Acronyms and Abbreviations**

|      |                                     |
|------|-------------------------------------|
| RL   | Retail Lending                      |
| BPMN | Business Process Model and Notation |
| BPEL | Business Process Execution Language |
| SOA  | Service-Oriented Architecture       |

## 1.9 **References**

Retail Loan Origination Oracle FLEXCUBE Universal Banking Release 12.0 [May] [2012]

[http://docs.oracle.com/cd/E14571\\_01/doc.1111/e15176/model\\_bus\\_procs\\_bpmpd.htm](http://docs.oracle.com/cd/E14571_01/doc.1111/e15176/model_bus_procs_bpmpd.htm)



BPMN Process Flow Definition Guide  
[May] [2021]  
Version 14.5.0.0.0

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