

# 1 Process Modeling

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## 1.1 Introduction

**Note:** The solution for this chapter can be found in `c:\bpm\solutions\01-modeling`.

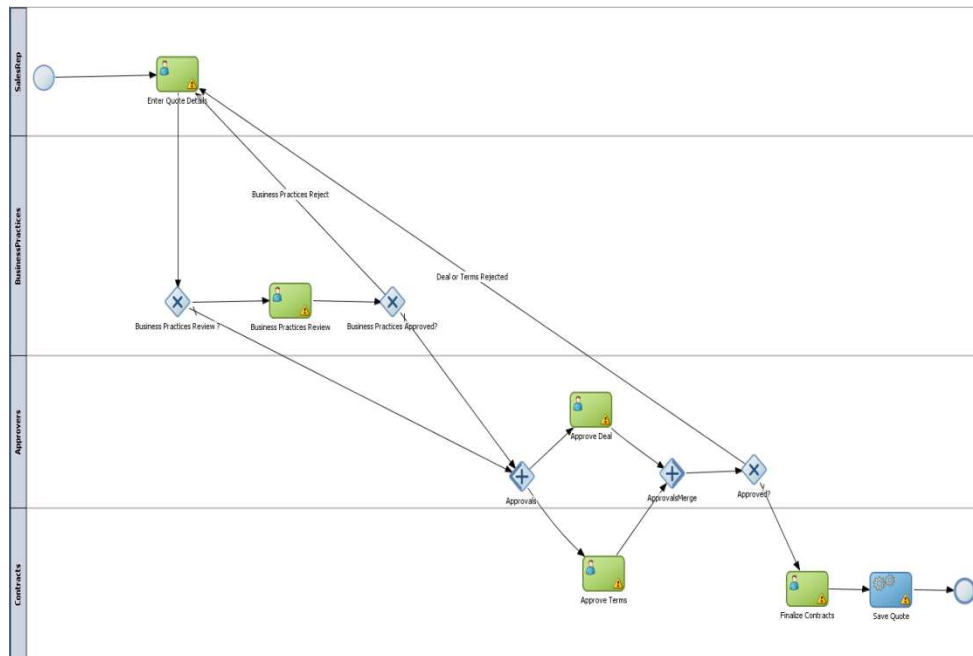
The first exercise is based on building the Sales Quote Process model. You first create an outline of the process flow as a BPMN model using the Oracle BPM Studio. Oracle JDeveloper with the BPMN Editor extension is called Oracle BPM Studio. Implementation details are added in a later exercise.

The Sales Quote scenario is as follows:

- The business process implements a solution for Sales Representatives to submit Sales Quotes and manage all the approvals within a particular Sales organization. A quick recap on the business process definition and its flow is detailed below.
- The Business Process is triggered by a Sales Representative creating a Task to Enter the Quote details in the “Enter Quote” interactive step.
- The next step is to determine the list of approvers for the Quote using business rules and also to determine whether additional review by Business Practices is required. This is accomplished through the “Determine Approval Rules” step.
- After the rules have been evaluated, the next step is to check whether “Business Practices Review” is required and if “yes” go through the “Business Practices Review” step.
- The Quote then has to get approved for the deal structure and terms. After the “Business Practices Review” has been completed, the process instance moves to the “Approve Quote” and “Approve Terms” activities that are executed in parallel.
- The “Approve Quote” activity is executed by approvers in the “Approvers” role and the “Approve Terms” by individuals that have been assigned the “Contracts” role in the organization.

- Once these 2 steps in the business process have been completed successfully, the process instance moves on to the “Finalize Contracts” step and waits for its final approval by an individual in the “Contracts” role.

The complete flow is shown in the figure below.

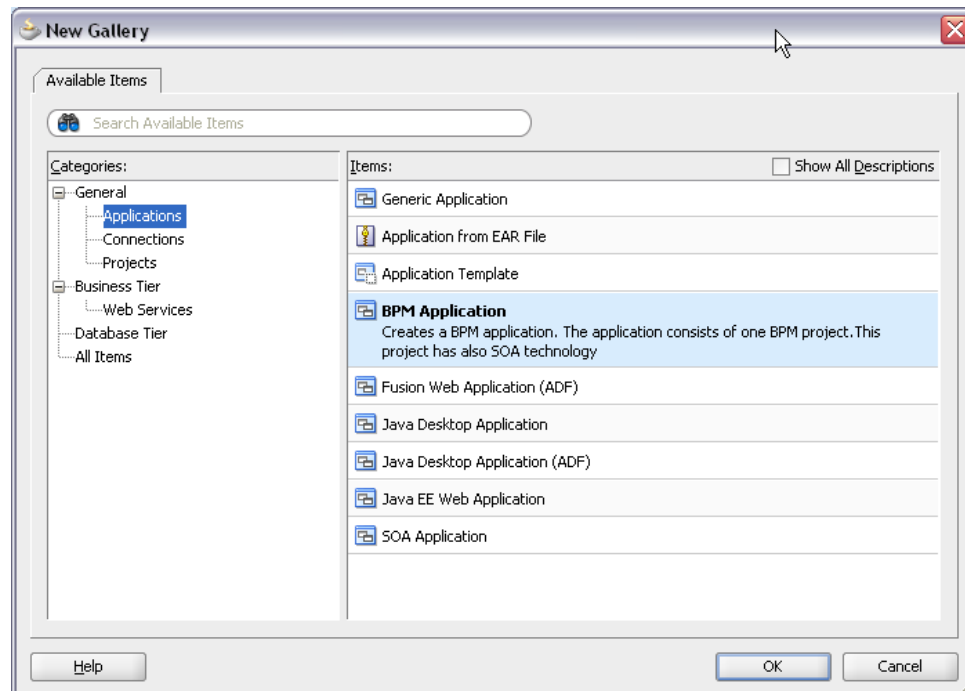


## 1.2 Naming Convention

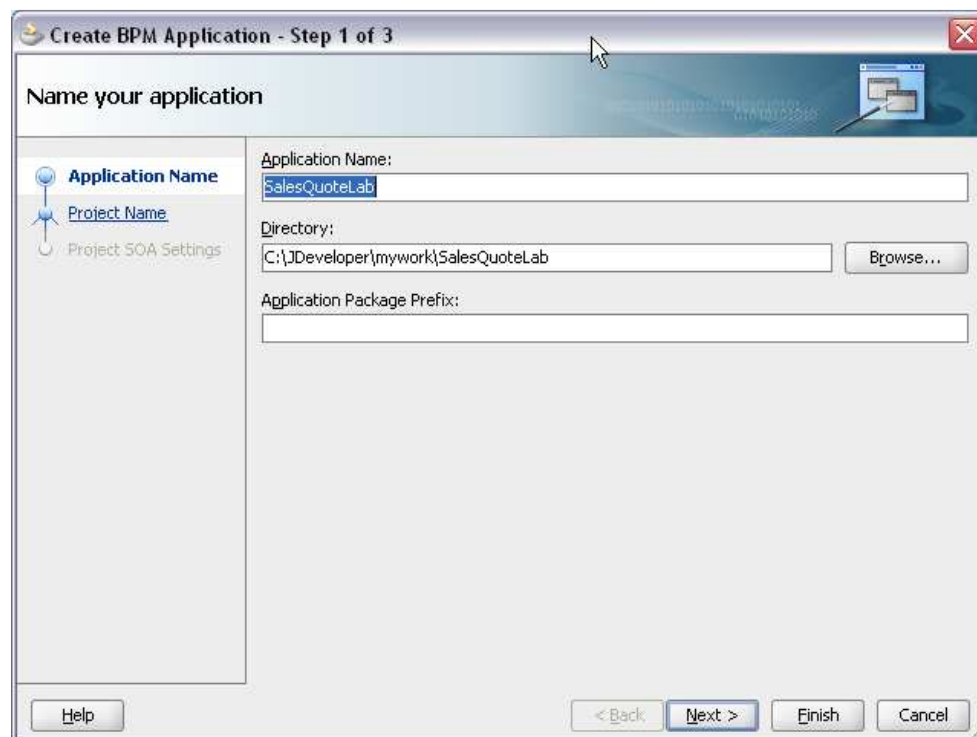
- The folder and the application should be called SalesQuoteLab
- The project and the composite should be called QuoteProcessLab
- The process should be called RequestQuoteLab
- The UI project folders should all end with Lab, e.g. EnterQuoteUILab
- The UI EAR should end with Lab

## 1.3 Creating the BPM Project for Quote Process

- Open **BPM Studio** and select the **Default** mode when you start JDeveloper.
- Go to **File**→**New** to launch the **New Gallery** wizard.
- In the **New Gallery** window, select **Applications** under **General** in the **Categories** panel and select **BPM Application** in the **Items** panel.

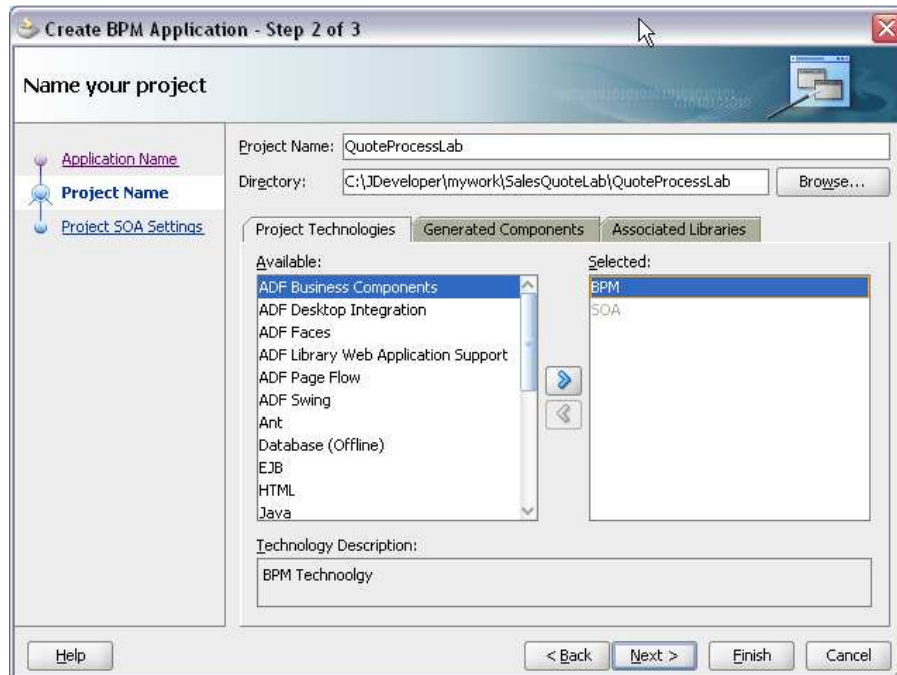


4. Click **OK**.
5. Specify the **Application Name** – “**SalesQuoteLab**”, the folder name is also set to **SalesQuoteLab**. Confirm the **Directory** location is where you want to create the application.

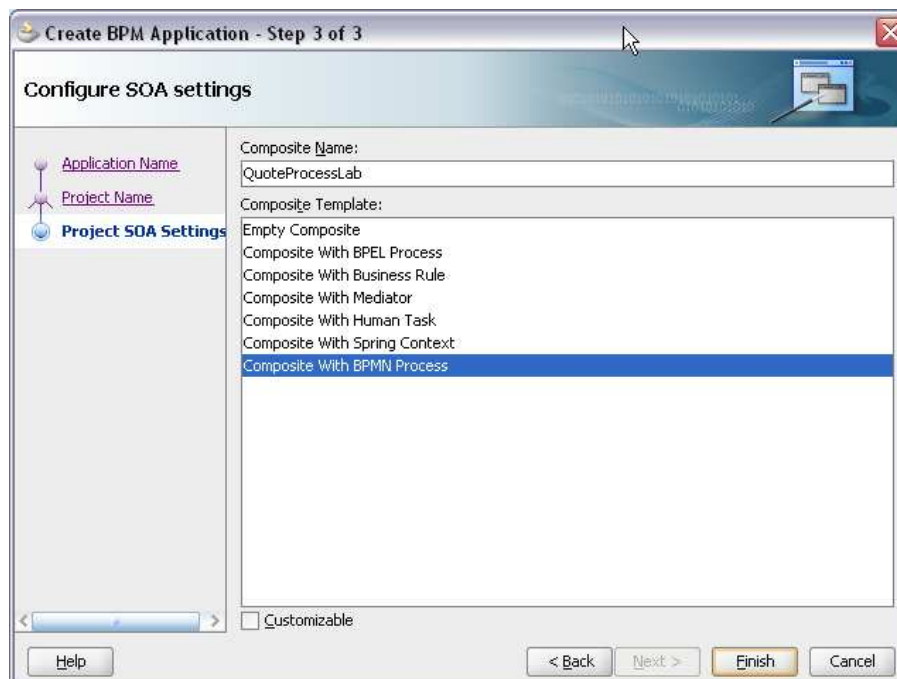


6. Click **Next**

- Enter **QuoteProcessLab** for the **Project Name**. **BPM** is selected by default for **Project Technologies**



- Click **Next**.
- Select the Composite Template **Composite with BPMN Process**. This creates your composite application with a BPMN process.

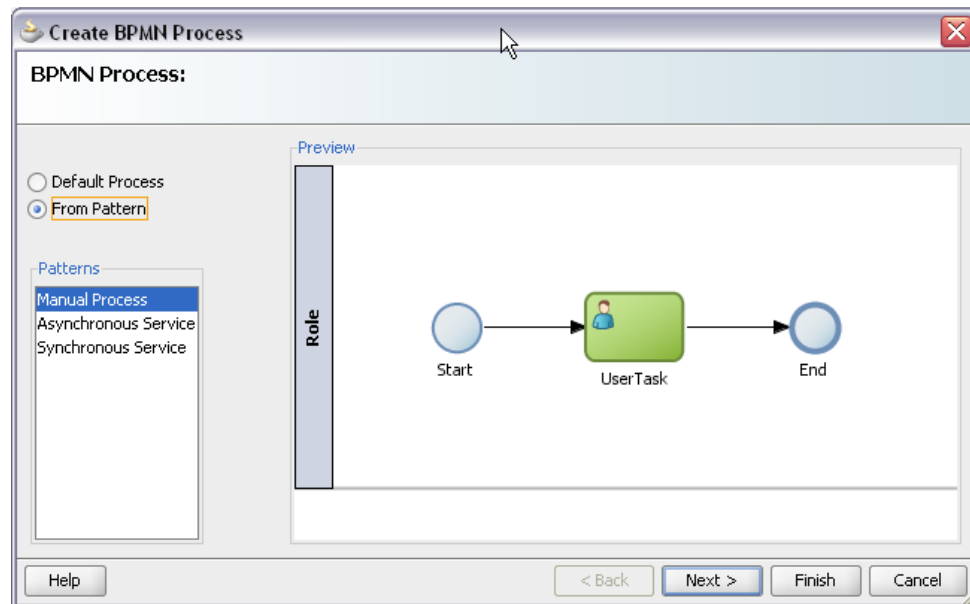


- Click **Finish**.

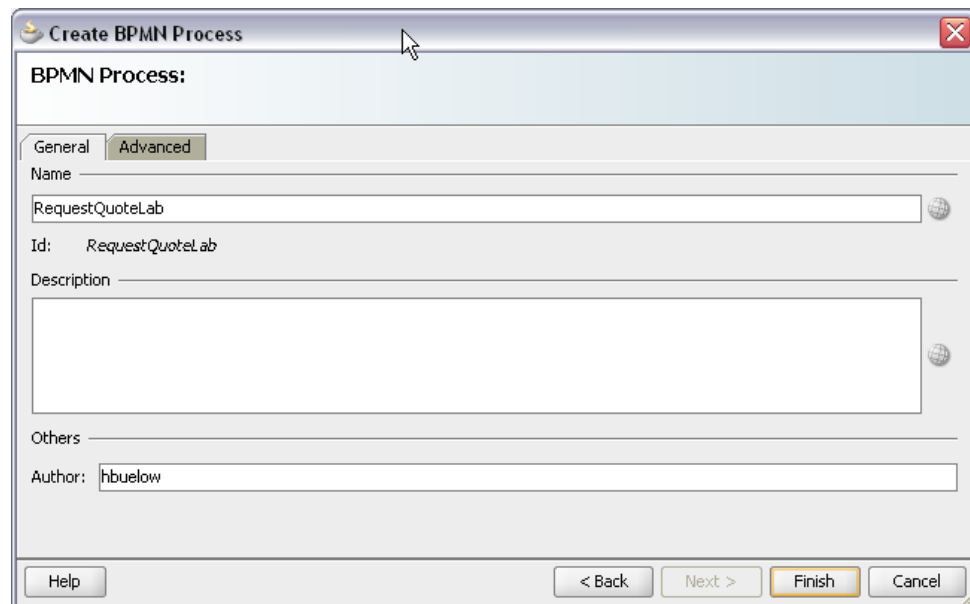
### 1.3.1 Creating the high-level outline of the BPMN process

The **Create BPMN Process** wizard starts automatically.

1. Select **From Pattern** » **Manual Process**.



2. Click **Next**
3. Specify the name for the Process – **“RequestQuoteLab”**. Click **Finish**.



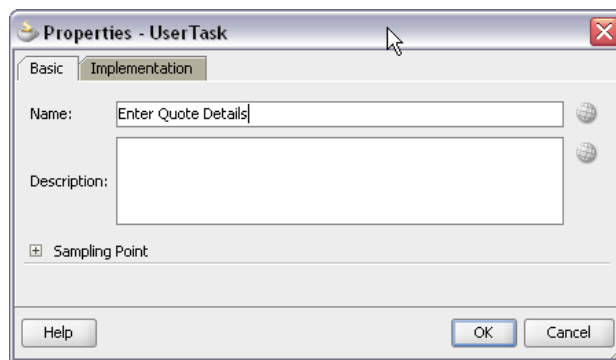
This creates a **RequestQuoteLab** process with a **Start Event** (thin circle) and **End Event** (thicker circle) of type **“None”** with an **Interactive Task** of type **User Task** in between. The Start Event of type **“None”** signifies that there is no external event triggering the process. The first activity after the Start Event creates the process instance.

In addition, a default swim lane – **Role** gets created and the swim lane points to the default logical role – **“Role”**.

**Note:** In **BPM Studio**, the swim lanes in the BPMN process point to logical Roles. A logical role represents a process participant (user or group) and needs to be mapped to physical roles (LDAP users/groups) before the process is deployed. This will be addressed in Lab 2 .

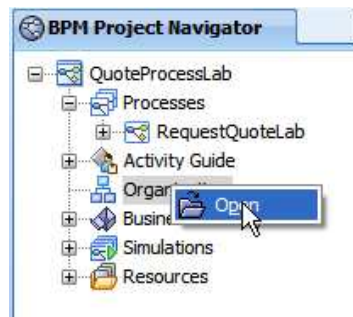
The **Interactive Task** refers to a step that is managed by the workflow engine. The **Performers** represent the business users who need to carry out the Interactive Task. The associated Task (work to be performed) is shown in the inbox of the assigned **Performers** when the **Interactive Task** is triggered. The actual work is performed only when the **Performer** executes on his Task. The Task is presented to the **Performers** through a browser based worklist application. In BPM Studio, the **Performer** is set to the “Role” associated with the swim lane into which the **Interactive Task** is dropped.

- Right click on the **User Task** step, select **Properties** and specify name “**Enter Quote Details**” for the step. Click **OK**.

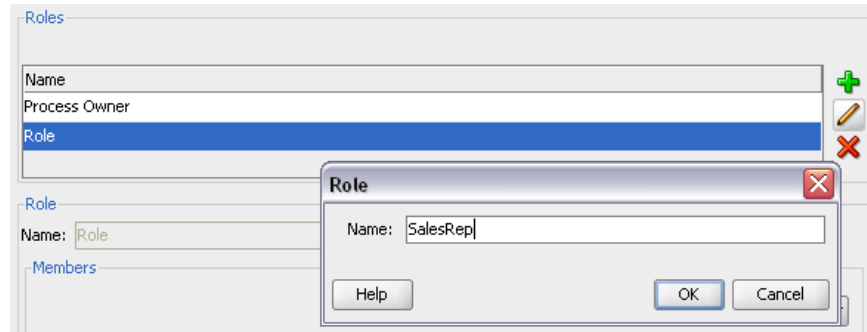


Now, change the name of the default role **Role** to “**SalesRep**” by going to **QuoteProcessLab/ Organization node**.

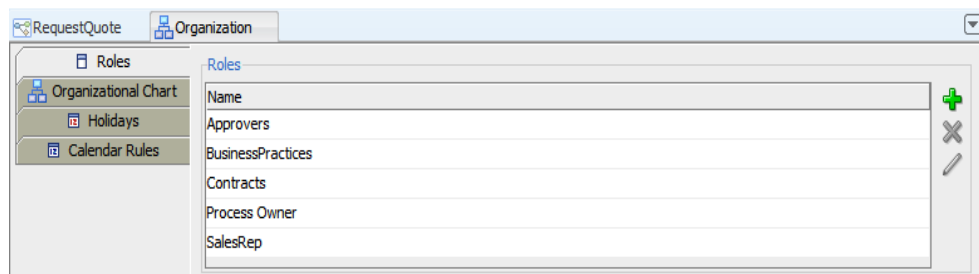
- In the left navigation bar, select **BPM Project Navigator** to view the contents of the BPM project. Right-click on **Organization** node and select open. This opens up the **Organization** pane.



- Highlight the default role named “**Role**” and use the pencil icon to edit it to be “**SalesRep**”. Click **OK**.

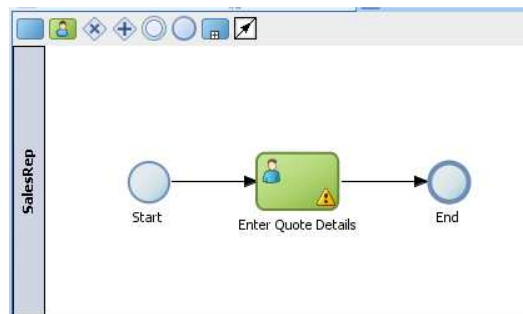


7. Click on the “+” sign to add the following Roles – “**Approvers**”, “**Business Practices**” and “**Contracts**”.
8. Save and close the **Organization** window.

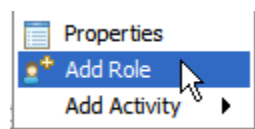


The performer or assignee for the **Enter Quote Details – User Task** is now set to the “**SalesRep**” Role.

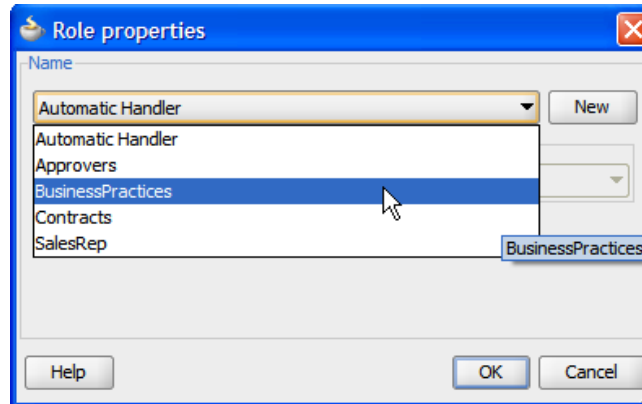
9. Ignore the yellow triangular warning symbol with the exclamation for now. It indicates that certain configuration information is missing for the activity. You will visit this during the Implementation lab.



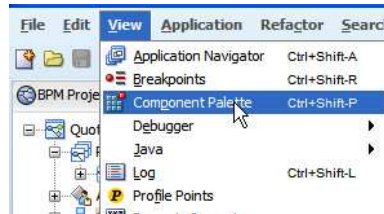
10. Right-click on the process diagram just below the **SalesRep** swimlane. Choose the “**Add Role**” option.



11. Select “**Business Practices**” from the list of options available. Click OK.

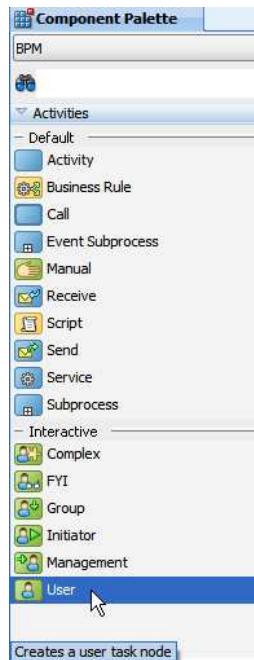


12. If the Component Palette is not visible, select it from **View->Component Palette**.



13. You will be placing some activities on the process canvas after the Enter Quote Details user task so drag the **End** event out to the right to make some room.

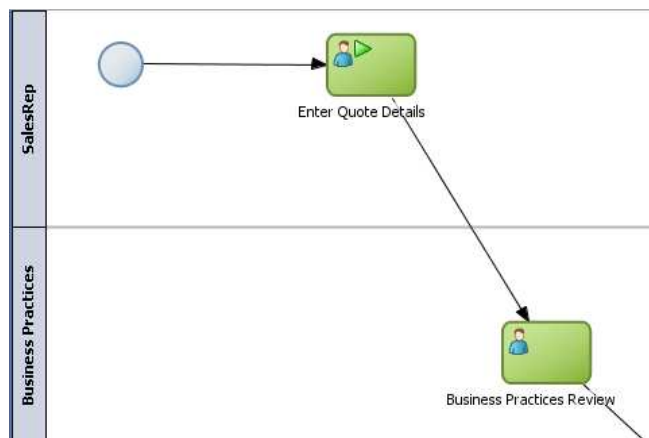
14. Click on **User Task** from the **BPM Component Palette** in the **Activities** section.



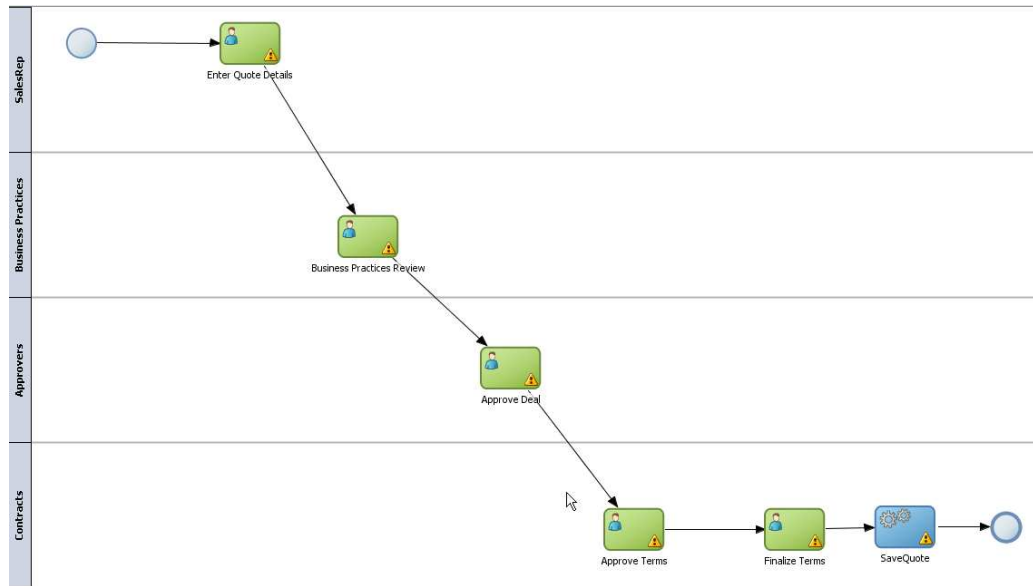


**Important:** Note that you can use a drag-and-drop action or a click-and-drop action to place items in the process canvas from the component palette. The click-and-drop action from Component Palette to process canvas works a bit differently than other drag-and-drop actions - you have to release the mouse button after the click to select the component in the palette (instead of holding down the mouse button) and then click in the process canvas to drop it.

15. Drop this new **User Task** after the existing **Enter Quote Details** user task by hovering on the center of the connector between **Enter Quote Details** and **End** until the connector turns blue. Then click the mouse button to drop the **Task**.
16. Name this **User Task**, "**Business Practices Review**" and click **OK**. The connection lines are automatically created.
17. Drag the new **Business Practices Review** user task to the **Business Practices** lane. The performer or assignee for the **Business Practices Review** user task is set to **Business Practices** role.



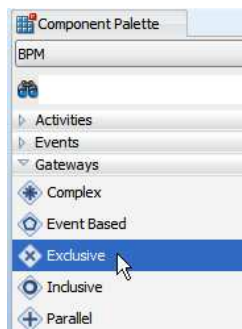
18. Create two more lanes for **Approvers** and **Contracts**.
19. Drag the **End** activity to the far right side of the **Contracts** lane.
20. Drag & drop 3 **User Tasks** on to the process diagram, one following the other, and name them – "**Approve Deal**", "**Approve Terms**" and "**Finalize Contracts**" respectively. Remember to place them on the connector line and drop them when the line turns blue so the connections are made automatically for you.
21. Move the "**Approve Deal**" to the "**Approvers**" Lane.
22. Move the other 2 User Tasks – "**Approve Terms**" and "**Finalize Contracts**" to the "**Contracts**" Lane.
23. Finally add a **Service Task** right after the "**Finalize Contracts – User Task**" from the **BPM Component Palette** and name it "**Save Quote**". The modified diagram should look something like this:



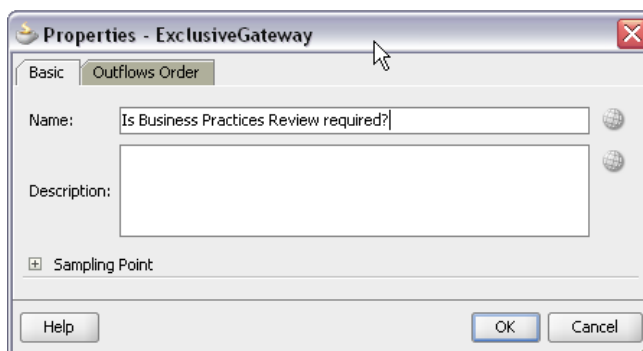
### 1.3.2 Adding conditional split for Business Practices Review Step

You now have a high-level outline of the process. You can now start adding the conditional branching to include the scenario where the Business Practices Review step can be completely bypassed.

1. Click & drop an **Exclusive (XOR) Gateway** from the **Gateways Pane** and add it to the process right before (to the left of) the **Business Practices Review** step and not on top of a connector.



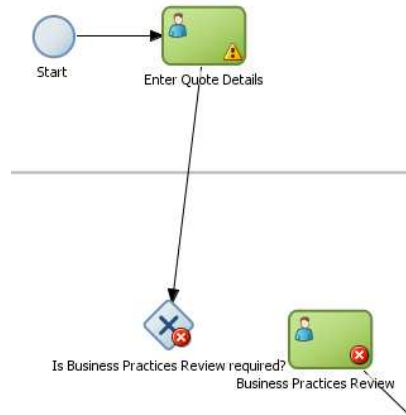
2. In the **Properties Editor** set the Name to “Is Business Practices Review required?”



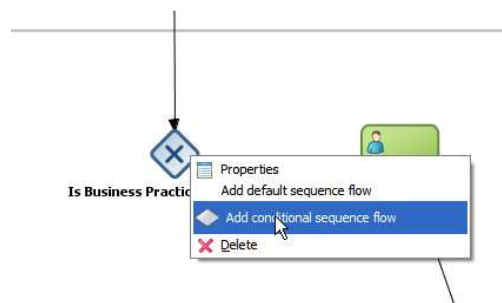
24. Click **OK**.

25. This **Is Business Practices Required?** gateway will have 2 outgoing branches – the conditional one leads to **Business Practices Review** and the default branch directly joins with the **Approve Deal** step.

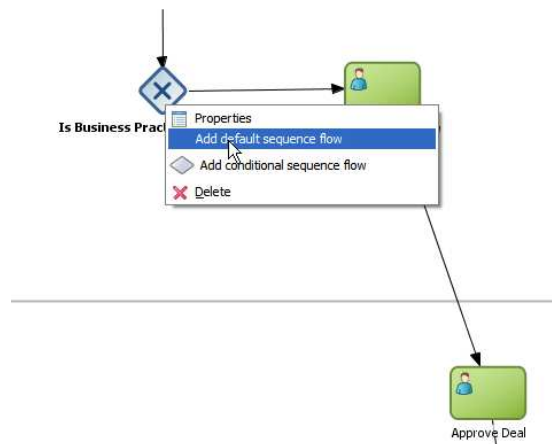
26. First, select the connector coming from **Enter Quote Details** (currently connected to **Business Practices Review**) and drag it to the gateway.



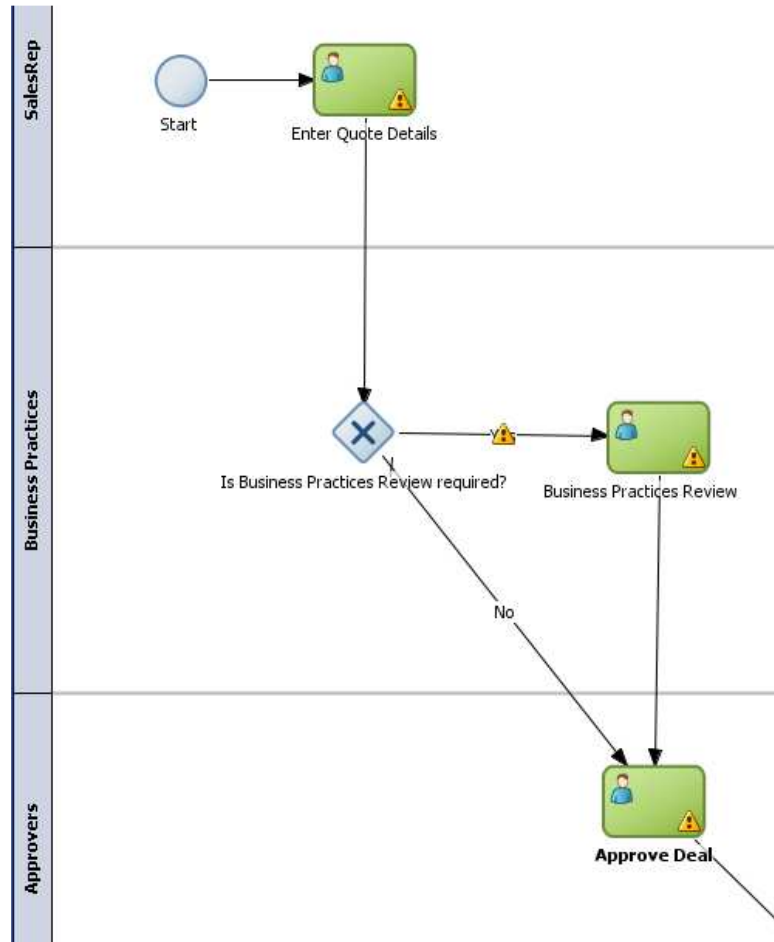
27. Next, right-click on the gateway and select **Add Conditional Sequence Flow** and click on **Business Practices Review**.



28. Finally, right-click on the gateway again and select **Add Default Sequence Flow** and click on **Approve Deal**.



29. Right-click on the outgoing connections and select **Properties**. Name the conditional path “Yes” and the default path “No”.



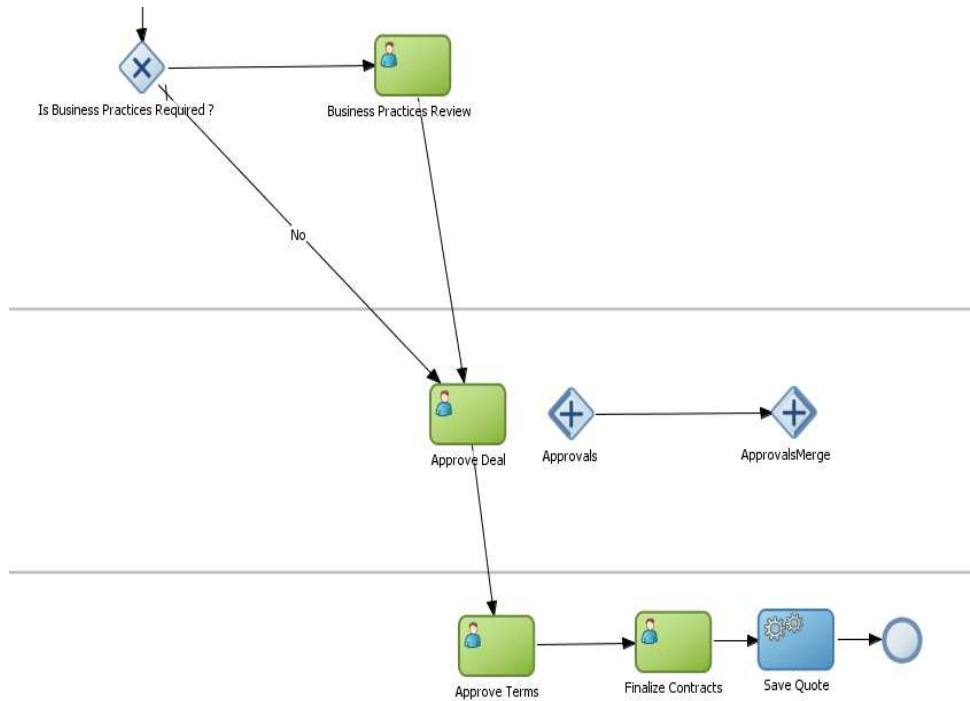
### 1.3.3 Adding parallel paths for approvals

Now you need to modify the process flow further to make **Approve Deal** and **Approve Terms** steps as parallel and concurrent activities. This can be achieved through a **Parallel (AND) Gateway**.

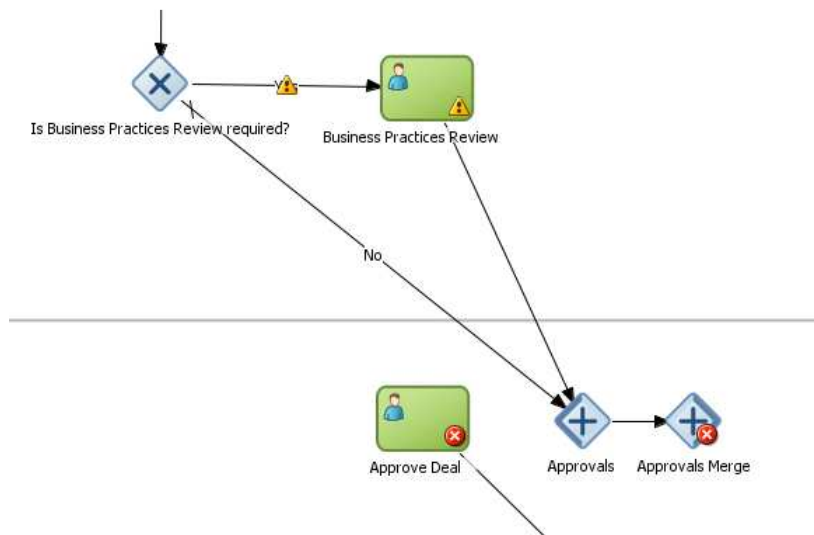
1. Click & drop a **Parallel Gateway** from the **Gateway Pane** and place to the right of the **Approve Deal** step in the process (not on a connector).
2. In the **Properties Editor** set the **Name** to “**Approvals**”. Click **OK**.

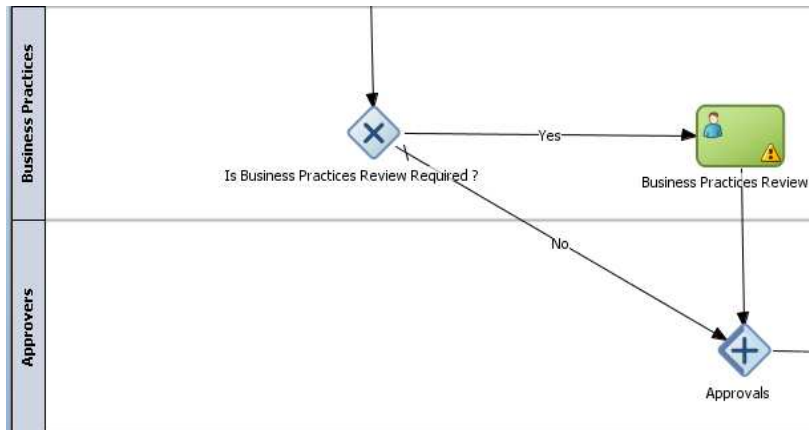
This creates a pair of **Parallel Gateways** to indicate the parallel split and parallel join (merge).

3. Right-click on the **Parallel Merge Gateway** to bring up the **Properties Editor** and set the **Name** to “**Approvals Merge**”.

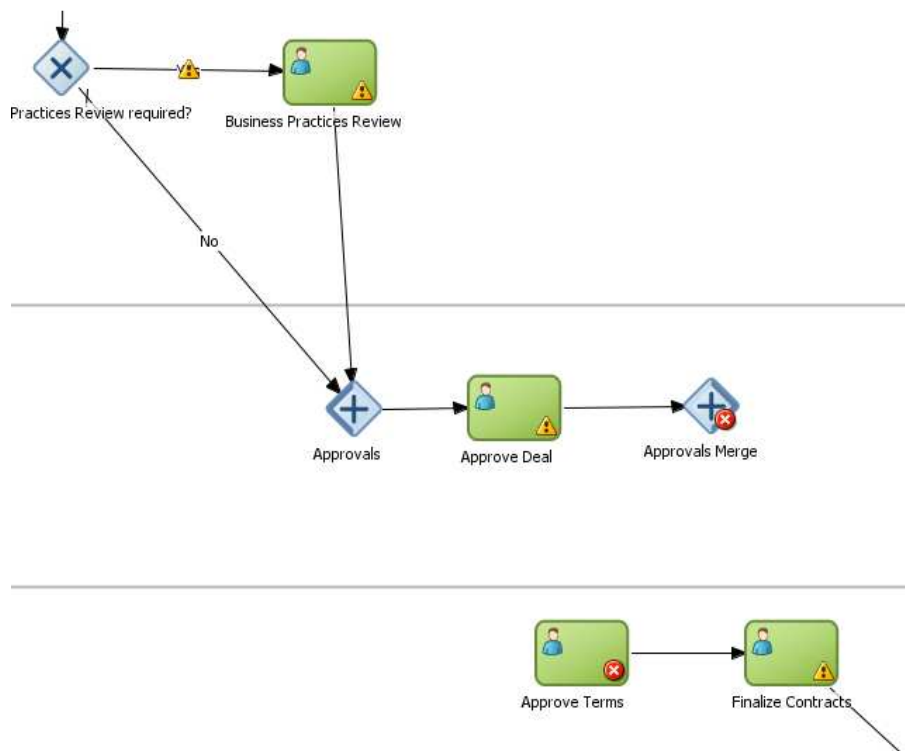


4. Rewire the outgoing connections from both the **Is Business Practices Review Required? – Gateway** and **Business Practices Review** steps to point to the **Approvals** Gateway.

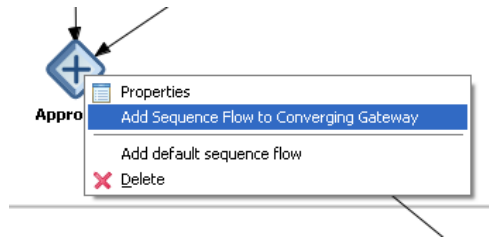




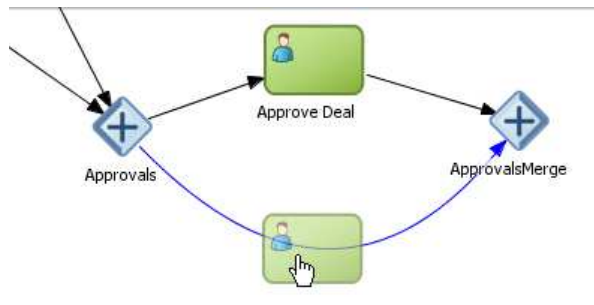
5. On the **Approve Deal** step, select the connector coming from the activity. Right-click and choose the **delete** option to delete the sequence flow going out of **Approve Deal** step.
6. Drag the **Approve Deal** User Task and drop it on the connector between the **Approvals** and **Approvals Merge** Gateways.



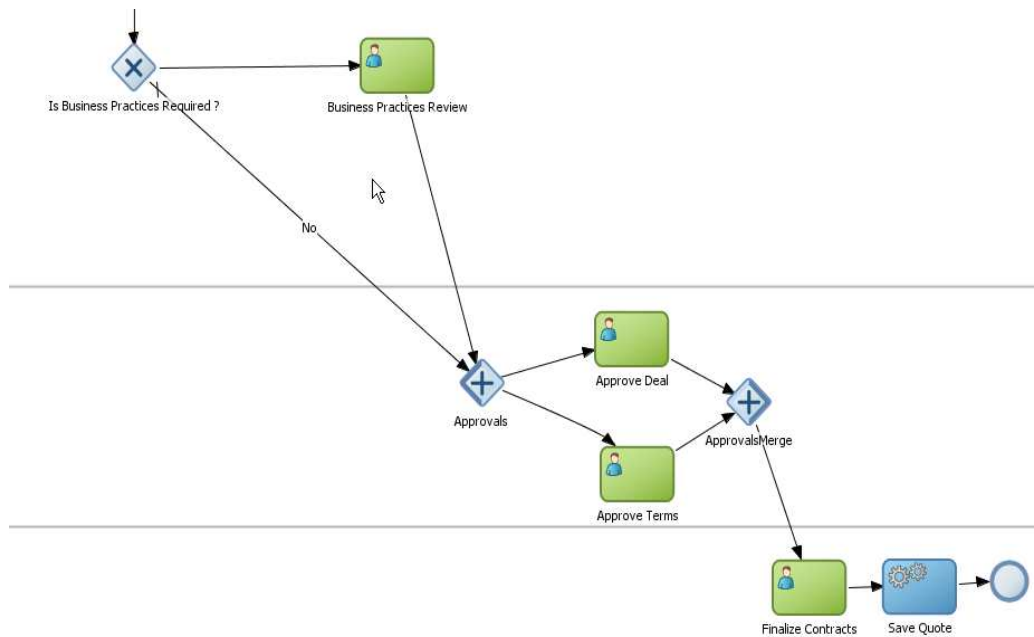
7. Right-click on the **Approvals** Gateway and select the **“Add sequence flow to converging gateway”** option to create a parallel path.



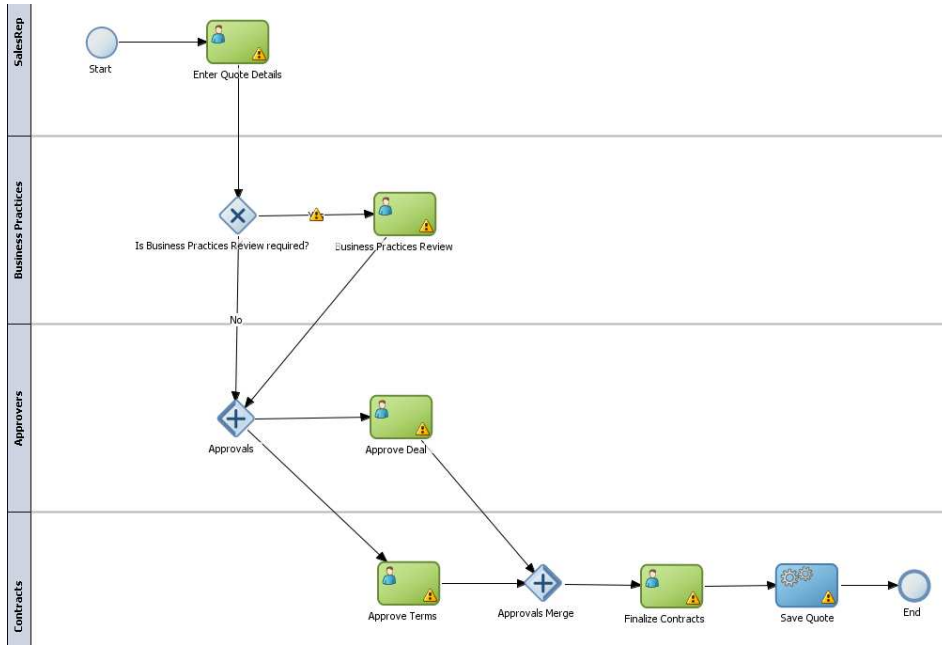
8. Delete the outgoing sequence flow from **Approve Terms** step.
9. Now drop the **Approve Terms** step to the newly created parallel path between **Approvals** and **Approvals Merge** gateways.



10. Rewire the connections such that the outgoing default sequence flow from the **Approvals Merge** gateway is now pointing to the **Finalize Contracts** step.



11. Move the user tasks into their appropriate swim lanes if necessary.
- Now, the modified process diagram looks like the figure below:

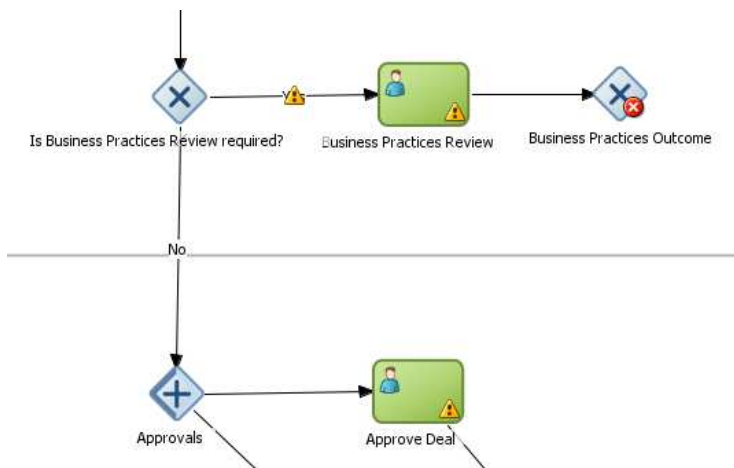


### 1.3.4 Adding loops for redo of Quote

There is one last modification to be done before we complete the outline. The **Business Practices Review**, **Approve Deal** and **Approve Terms** user tasks can have 2 possible outcomes – **APPROVE** or **REJECT**. The **APPROVE** outcome continues the process along the main path, also called the happy path. On the other hand, the **REJECT** outcome should redirect the process back to the **Enter Quote Details** activity so that the Sales Representative can refine the quote and resubmit.

The **Exclusive (XOR) Gateway** is required to create a loop.

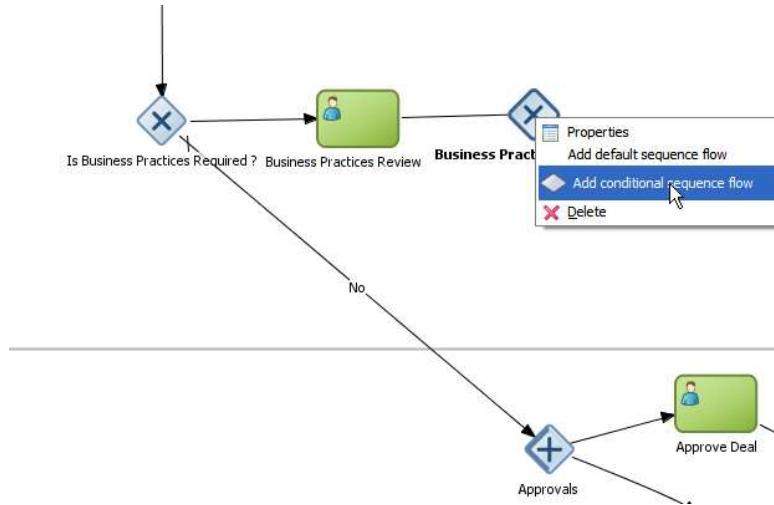
1. Click & drop an **Exclusive Gateway** just after the **Business Practices Review** step and name it *Business Practices Outcome*.
2. Drag the outgoing sequence flow from **Business Practices Review** to **Business Practices Outcome** gateway.



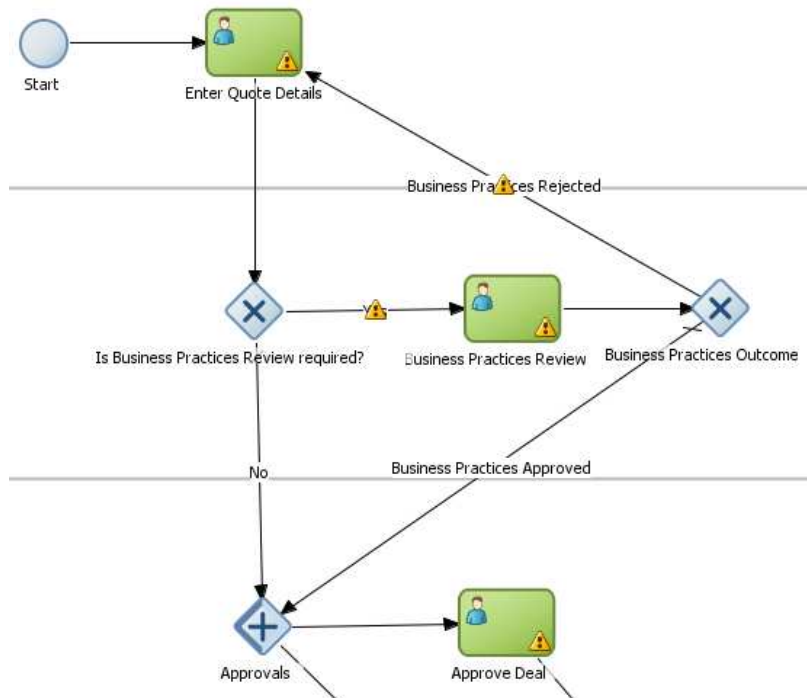
The outgoing business exception path from the newly added Exclusive Gateway should redirect the process flow to the **Enter Quote Details** step.



3. Select the **Business Practices Outcome** gateway, right-click and add the conditional path to **Enter Quote Details** step. Name the conditional path as *Business Practices Rejected*.

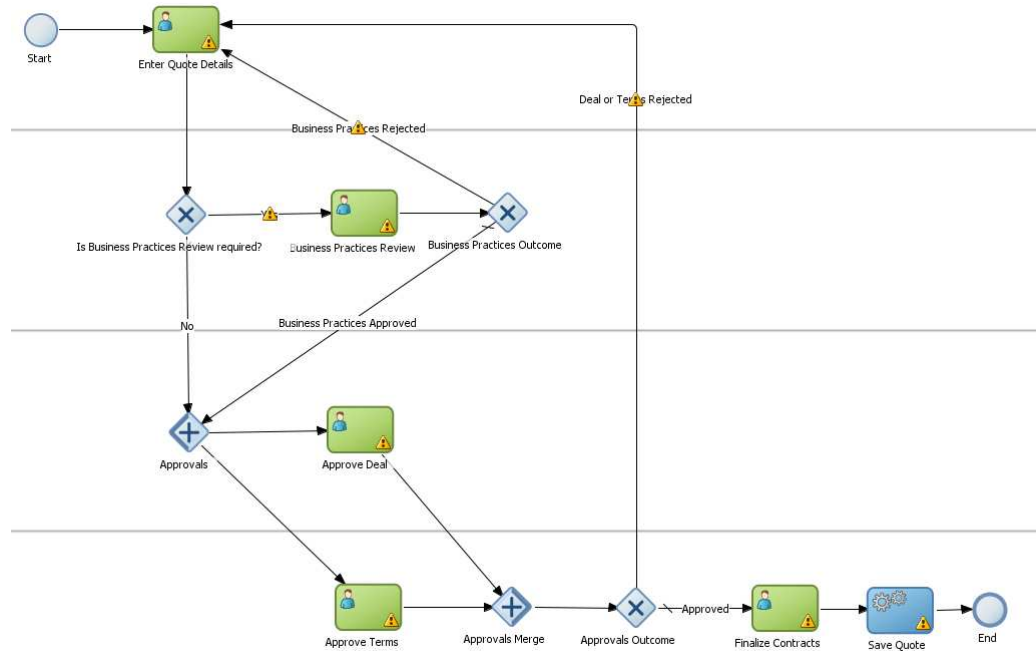


4. Select the **Business Practices Outcome** gateway again, right-click and add the default path to the **Approvals** gateway. Name the default path *Business Practices Approved*.



Similarly, the process flow should go back to the **Enter Quote Details** step if the **Approve Terms** or **Approve Deal** outcome is **REJECT**.

5. Drag & drop an **Exclusive Gateway** to just after the **Approvals Merge** step and name it *Approvals Outcome*. Place it on the connector and drop it when the connector turns blue to set the connections automatically.
6. Draw a default sequence flow from **Approvals Outcome** gateway to **Finalize Contracts** step. Name this branch *Approved*.
7. Draw a conditional sequence flow from **Approvals Outcome** gateway to **Enter Quote Details** step. Name this branch to *Deal or Terms Rejected*.
8. The completed process outline looks like the following diagram.



12. Save the process.