

IBM BUSINESS PROCESS MANAGER 7.5 – LAB EXERCISE

Developing BPEL that invokes a BPD Straight-through processing scenario

What this exercise is about	1
Lab requirements	2
What you should be able to do.....	2
Introduction.....	2
Part 1: IBM Process Designer – Build a human centric process	3
Part 2: IBM Integration Designer – Implementing the STP process application	21
Part 3: Run the STP process application.....	37
What you did in this lab exercise.....	42

What this exercise is about

IBM Business Process Manager Advanced (BPM) V7.5 is a single BPM solution that combines the best of breed human-centric and integration-centric capabilities into a unified platform.

When developing a business process that uses services between Process Designer and Integration Designer, there are three main scenarios.

Top-down: In this scenario the process developer defines the interface for the service to be called and the integration developer will then create the implementation based on the interface provided. This *top down* approach works well when the service does not already exist.

Bottom-up: The integration developer creates the service interface and the service implementation and then makes them available to the process developer. This *bottom up* approach works well when there is already a mature SOA architecture with reusable services.

Straight-through processing (STP): The main point to the straight-through processing scenario is for a BPEL process with human interaction to call a business process definition (BPD). For version 7.5, the STP scenario is one of the scenarios that integrates both legacy WebSphere Process Server functionality (BPEL) with legacy WebSphere Lombardi Edition functionality (BPD) into one runtime. The integration of a WebSphere Process Server BPEL and WebSphere Lombardi Edition processes can be achieved using existing web service technology. However, the new integration capability offered with version 7.5 is the support of the Service Component Architecture (SCA) standard by WebSphere Lombardi Edition. The SCA integration between WebSphere Process Server and WebSphere Lombardi Edition is explained, demonstrated, and executed with the sample documented in the exercise.

Lab requirements

These following products are required to run this exercise:

- IBM Business Process Manager V7.5 Server with IBM Process Center V7.5 stand-alone profile
- IBM Process Designer V7.5
- IBM Integration Designer V7.5
- DB2 V9.7.3 or higher

Throughout the lab, references to these products drop the IBM prefix and the version, calling them Process Center, Process Designer and Integration Designer.

What you should be able to do

At the end of this lab you should be able to perform the following tasks:

- As the integration developer using the Integration Designer
 - Create a human centric BPEL process
 - Integrate a BPD into a BPEL process and work with SCA artifacts associated with the BPD
 - Refresh and Publish to the Process Center
 - Use the BPC Explorer to drive/start the STP scenario
- As the process developer using the Process Designer
 - Create a process application
 - Create a process application and simple business process that uses a Coach
 - Correctly pass data through the process
 - Test the process application using the process inspector.
 - Use the Process portal to work with the Coach

Introduction

The development of a solution demonstrating the interaction of two different process development environments involves the development of processes by two user roles (personas). First, the Business Author or Process Designer named Bob, who uses the IBM Process Designer, formerly known as Lombardi Authoring Environment. Second, the IT Developer or Integration Specialist named Igor, who uses the IBM Integration Designer, formerly known as WebSphere Integration Developer. Integration Designer was enhanced in such a way that it provides a new perspective named Process Center perspective. This allows interacting with and retrieving artifacts from the Process Center by several developers for a given project rather having the project stored locally in a developer's WebSphere Integration Developer workspace. The Process Center is the central repository to store, access, and manage process artifacts held together as a single project called a process application.

In this exercise you will learn how to use the *straight through processing* approach for integrating a *Business Process Definition* into your human centric BPEL business process.

Part 1: IBM Process Designer – Build a human centric process

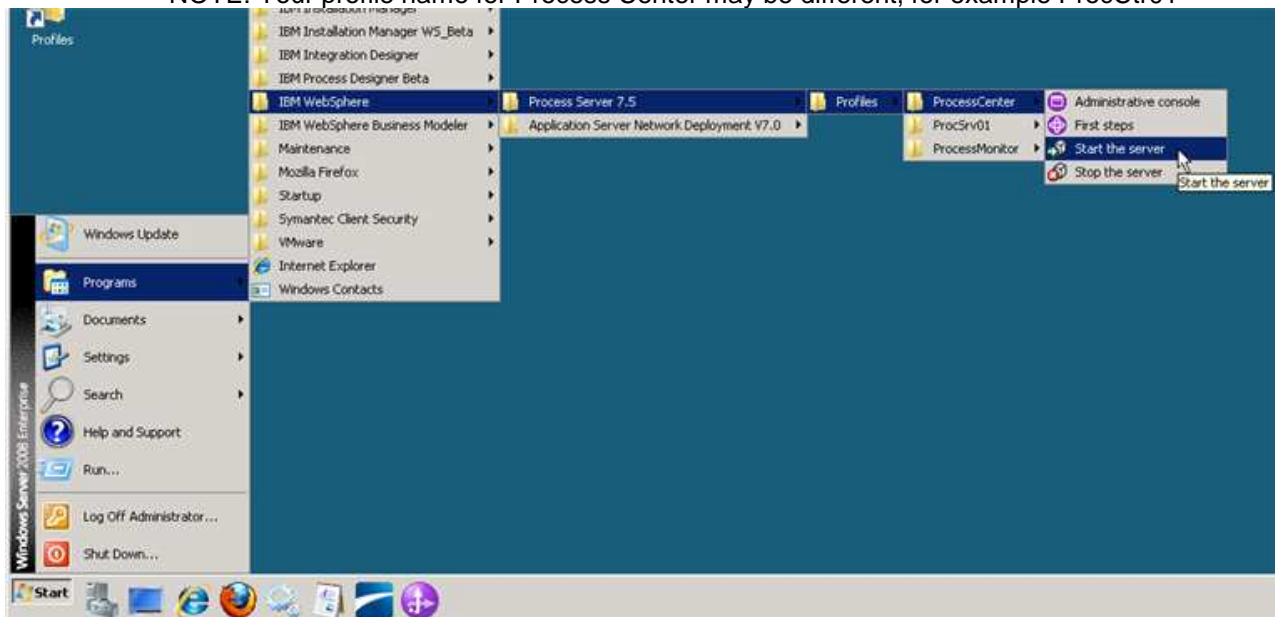
In this part of the lab exercise, you will start the Process Center and open the IBM Process Designer to start the scenario

A basic outline of this part is:

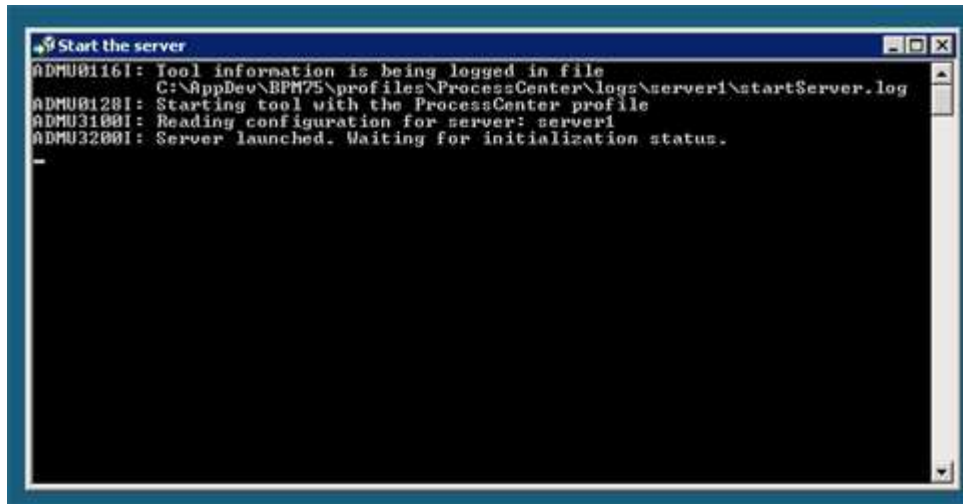
- Start the Process Center server
- Open the Process Designer development environment
- Build a human centric business process definition (with a Coach)

1. Start IBM Process Center V7.5
a. Select **Start → Programs → IBM WebSphere → Process Server 7.5 → Profiles → Process Center → Start the Server**

NOTE: Your profile name for Process Center may be different, for example ProcCtr01



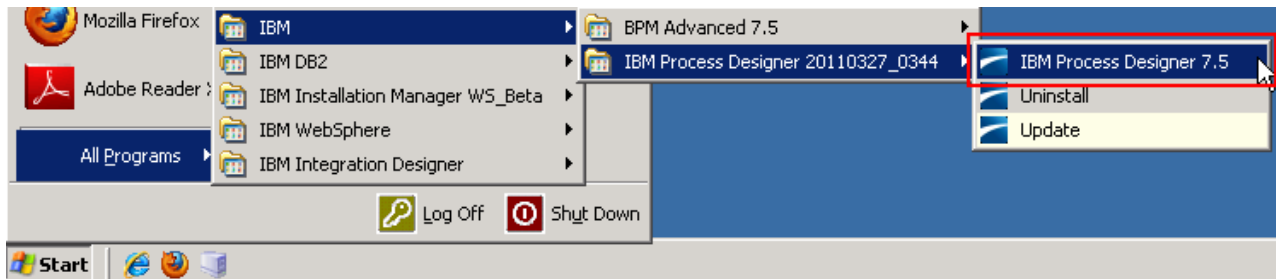
- ___ b. Wait for the server to start, which can take a few minutes. While it is starting, you should see this window:



- ___ c. When the server startup completes, you will see some additional messages in the window and then it will then close automatically. When the window disappears, you are ready to continue.

___ 2. Start Process Designer

- ___ a. Select **Start → All Programs → IBM → IBM Process Designer → IBM Process Designer 7.5.**



- ___ b. Enter the credentials (admin/admin are the default credentials, enter appropriate credentials for your Process Center)

User Name: **admin**

Password: **admin**

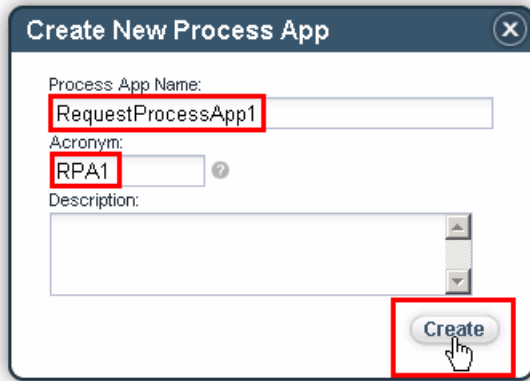
and then click the **Login** button.



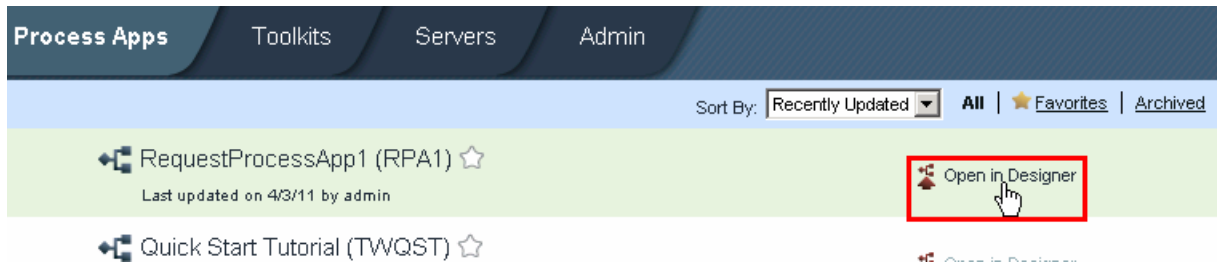
- ___ 3. Create new process application and open in Designer
 - ___ a. On the right side task menu select **Create New Process App**



- ___ b. In the Create New Process App wizard, type in the Process App Name text box **RequestProcessApp1** and then **RPA1** in the Acronym text field. Click the **Create** button.

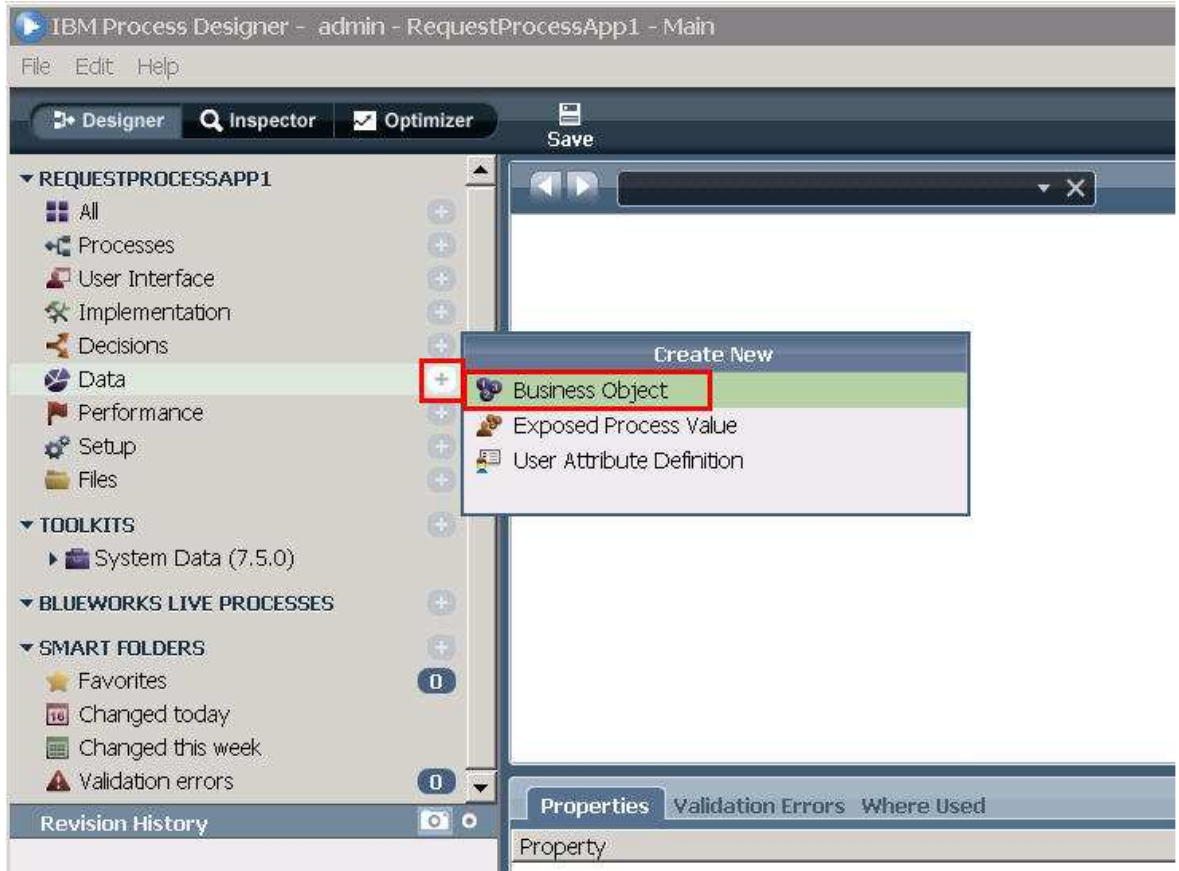


- ___ c. The first entry should be the RequestProcessApp1. Click the **Open in Designer** link parallel to RequestProcessApp1.

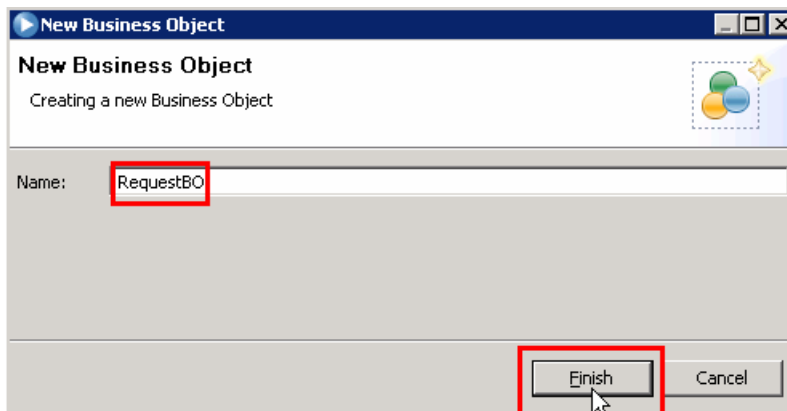


- ___ 4. Create a Business Object with parameters
 - ___ a. Once Process Designer is open, your first task is to define the business objects that will be passed in the process.

Click the + sign icon next to Data in the left list of options to bring up the Create New menu. Click **Business Object**.



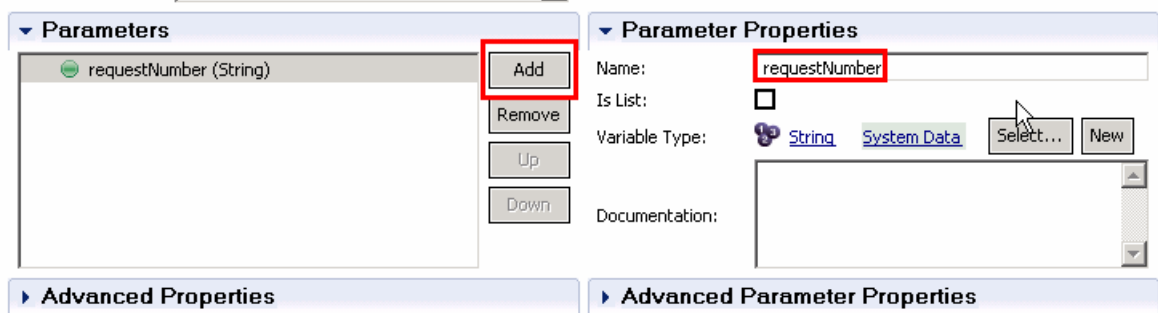
- ___ b. Name the new business object **RequestBO** and click the **Finish** button



- c. The Business Object editor opens. The main task in this editor is to define the structure and parameters to the business object. You will accept the default definition type of Complex Structure Type and add these parameters...

requestNumber (Integer)
requestDescription (String)
requestApproval (Boolean)

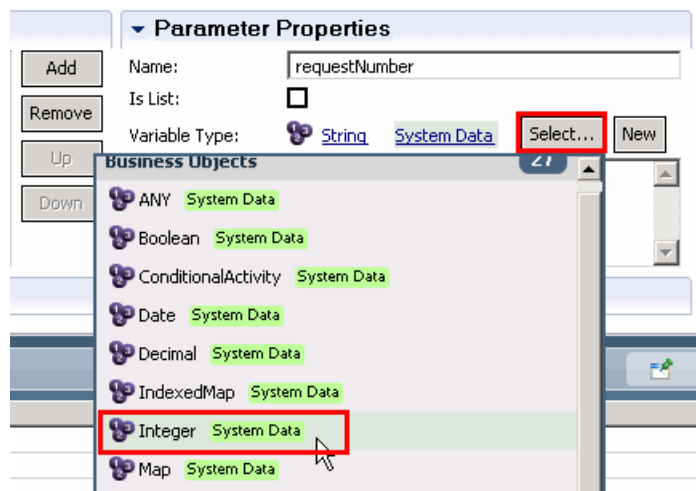
- 1) Click the **Add** button under Parameters and then type in **requestNumber** for the name in the parameter properties



- 2) Underneath the Parameter Properties section, you want to change the type of the parameter from the default string to an integer.

Click the **Select** button and then click **Integer** in the list

*hint: you can start typing the name of the type that you want and the list will auto-filter

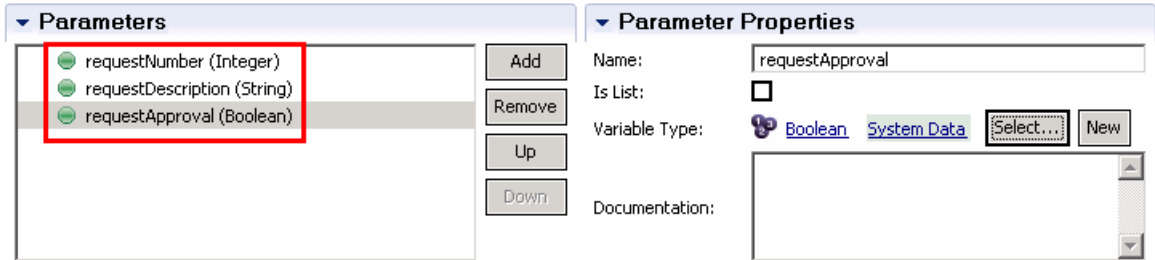


- 3) Repeat steps 1 and 2 from above (click Add, name parameter, select parameter type) in order to add two more parameters.

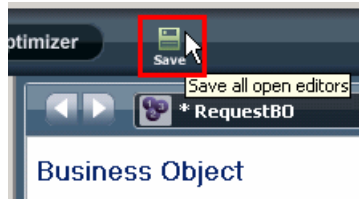
Click Add button, type requestDescription for the name and leave the default type of String.

Click the Add button, type requestApproval for the name. Click the Select button for the parameter type and click Boolean.

At the end you should see these three parameters

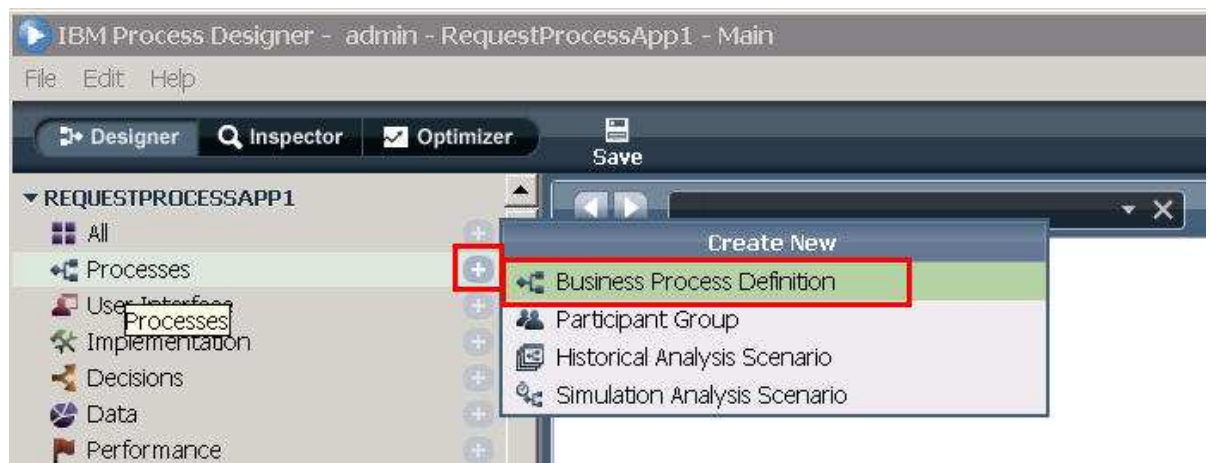


- 4) Click the Save button to save the Business Object and its parameters.

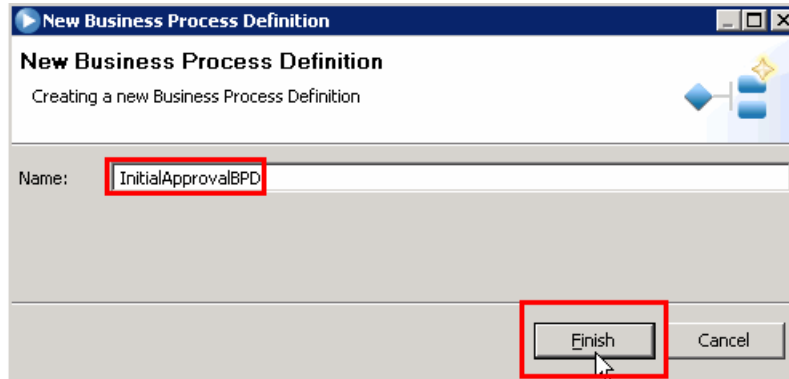


- ___ 5. Create a Business Process Definition (BPD) to wrap the initial approval coach.

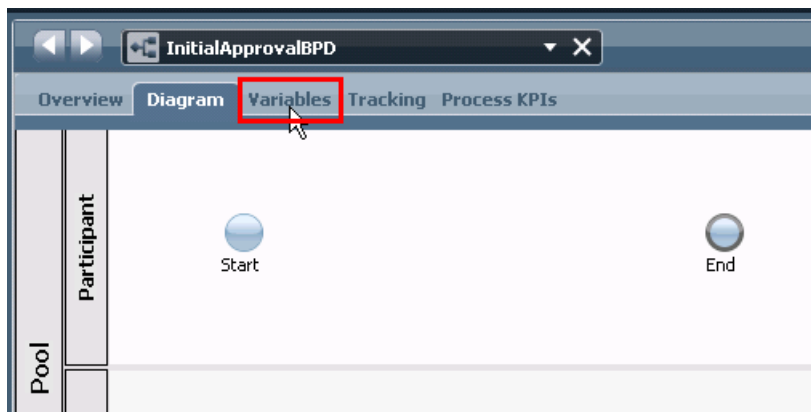
- ___ a. Click the **+ sign next to Processes** and click **Business Process Definition**



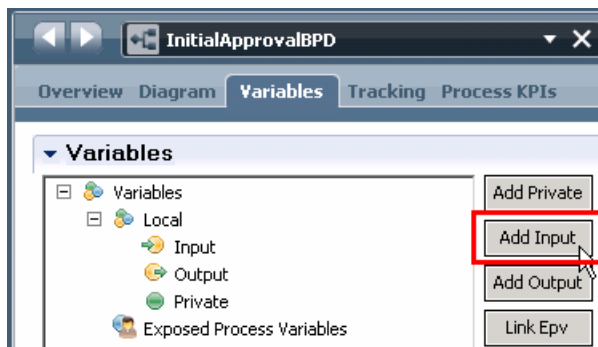
- ___ b. Enter **InitialApprovalBPD** for the name of the new Business Process Definition. Click **Finish** button.



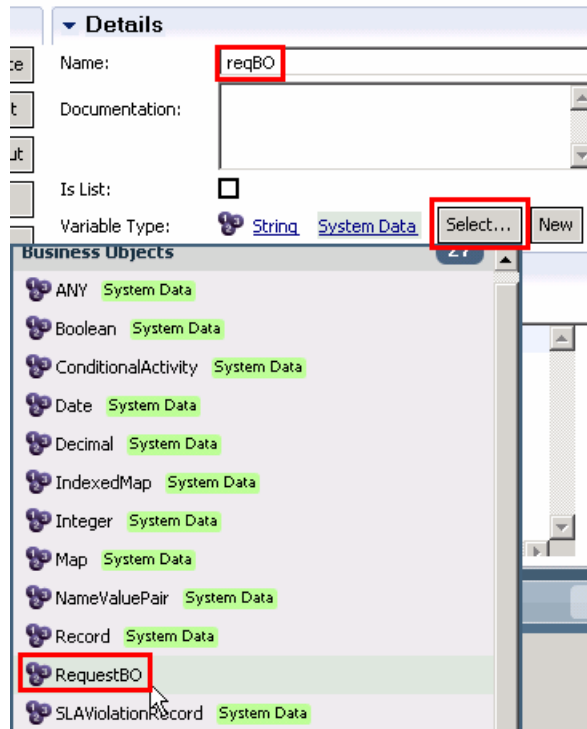
- ___ c. The BPD Diagram opens, however the first thing you need to do is set the data that the BPD will be transferring through the process. In order to take action on setting the data, click the **Variables** tab to add input and output variables.



- ___ d. Under the Variables tab, click **Add Input**.

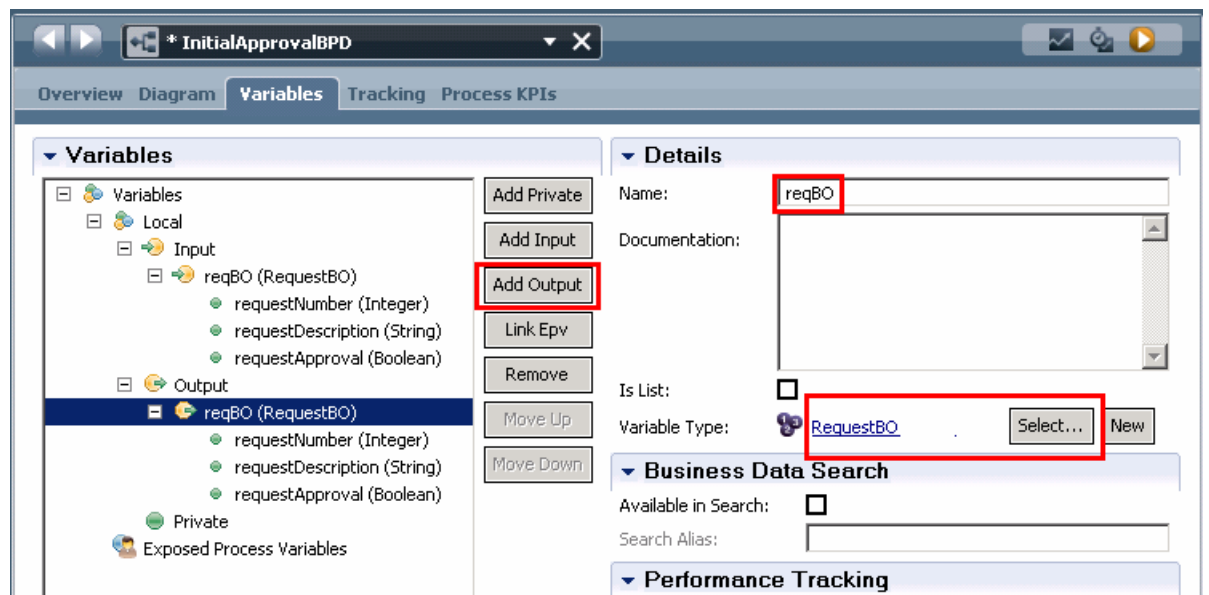


___ e. Type **reqBO** for the name, click **Select...**, and click **RequestBO**

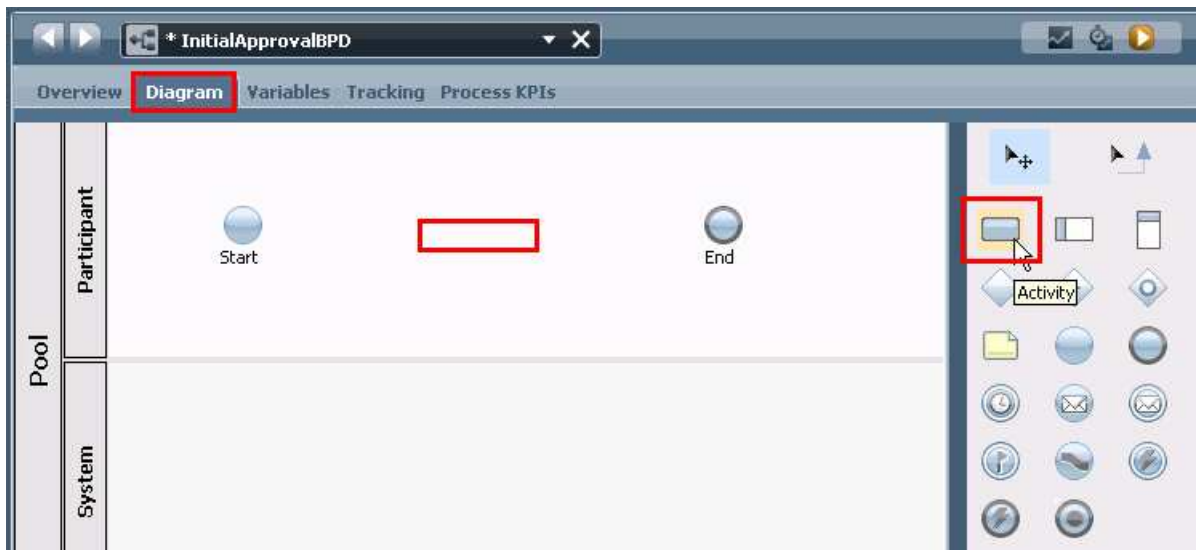


___ f. Click the **Add Output** button, and again type in **reqBO** for the name (since in this process you want to pass the same data through the process), click **Select...** button and click **RequestBO** again.

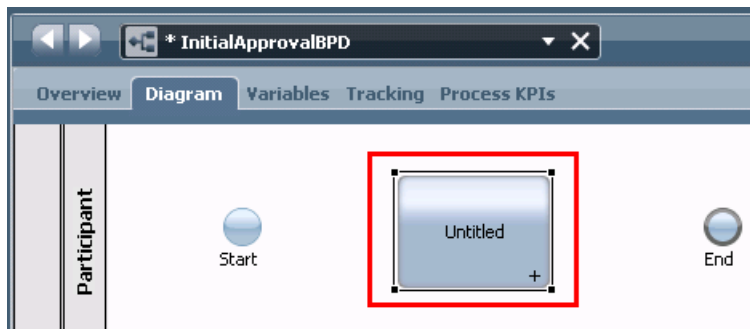
Your BPD input and output should now look like this:



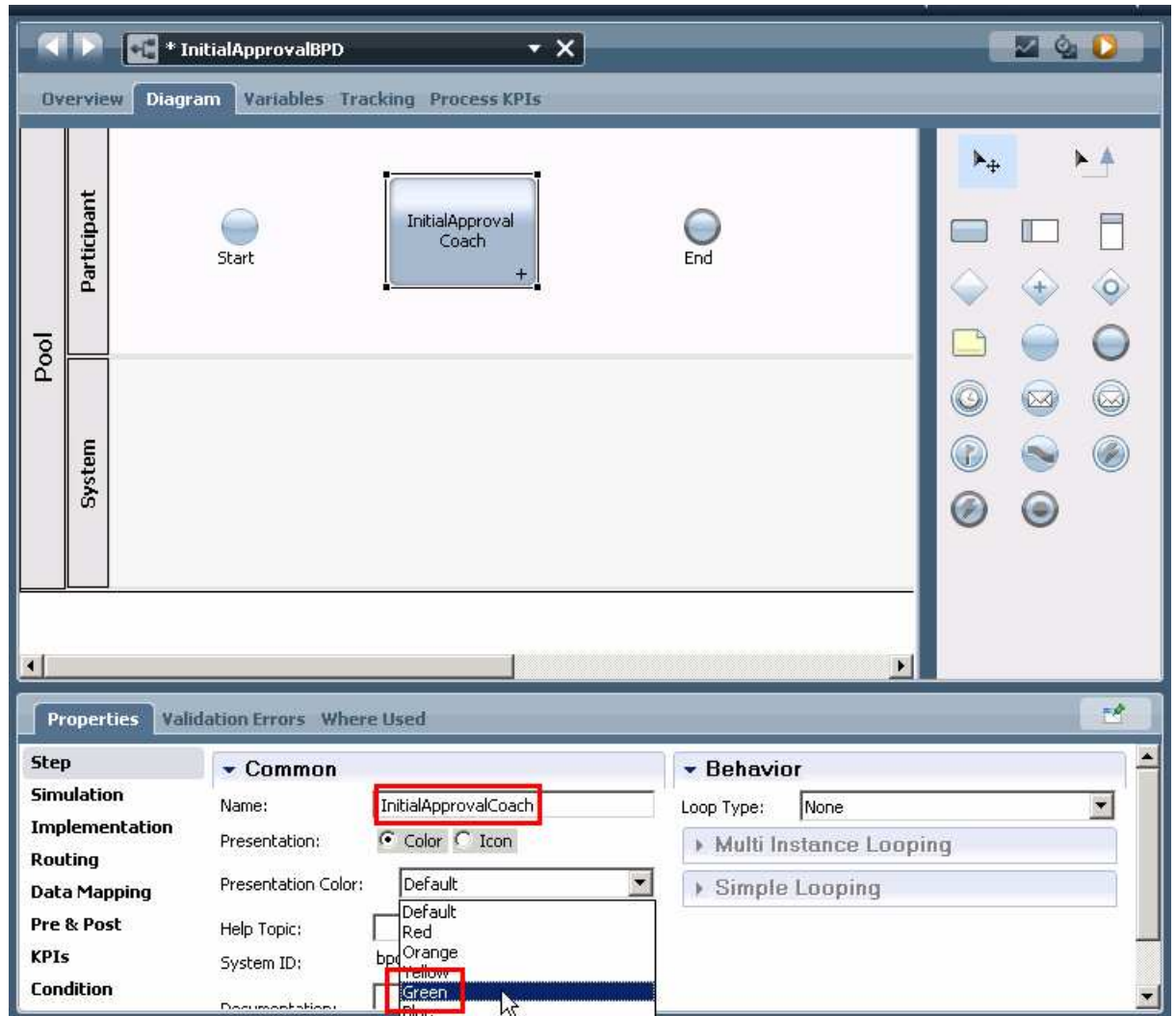
- g. Click back on the **Diagram tab** and click the **Activity** icon from the right palette. Click in the middle of the editor between the Start and End activities in the Participant swim lane.



- h. This action will drag an Activity onto the BPD editor. Once the Activity is dropped on the editor, select the **Untitled** activity.



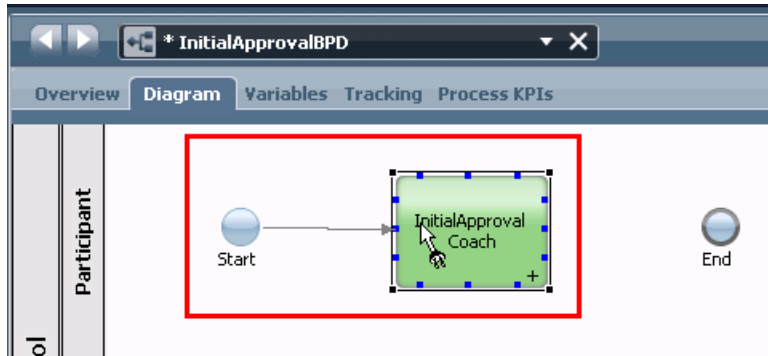
- ___ i. In the properties tab at the bottom of Process Designer, change the activity's name from "Untitled" to "**InitialApprovalCoach**" and change the presentation color to **Green**.



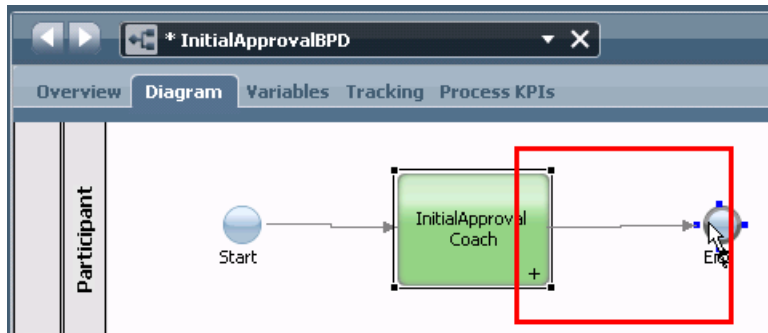
- ___ j. Once you have set the properties, it is time to connect or wire the business process together. Select the **Sequence Flow** icon in the right palette.



- ___ k. Click the right side of the **Start** icon to start the wire, then move the pointer to the left side of the **InitialApprovalCoach** and click to complete the wire, connecting the two.



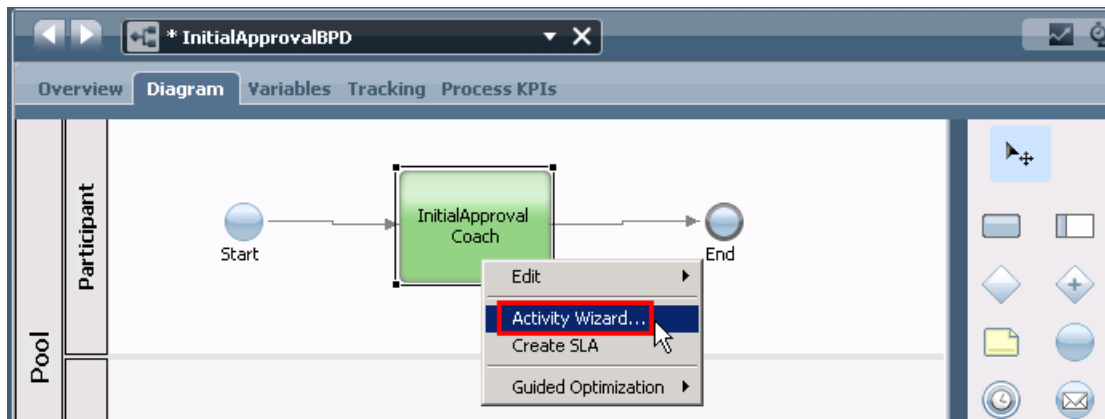
- ___ l. In the same fashion, click the right side of the **InitialApprovalCoach** and then the left side of the End icon.



- ___ m. Click the **selection tool** to be able to select items in the editor and to prepare for the next step



__ n. Right-click **InitialApprovalCoach** and select **Activity Wizard...**



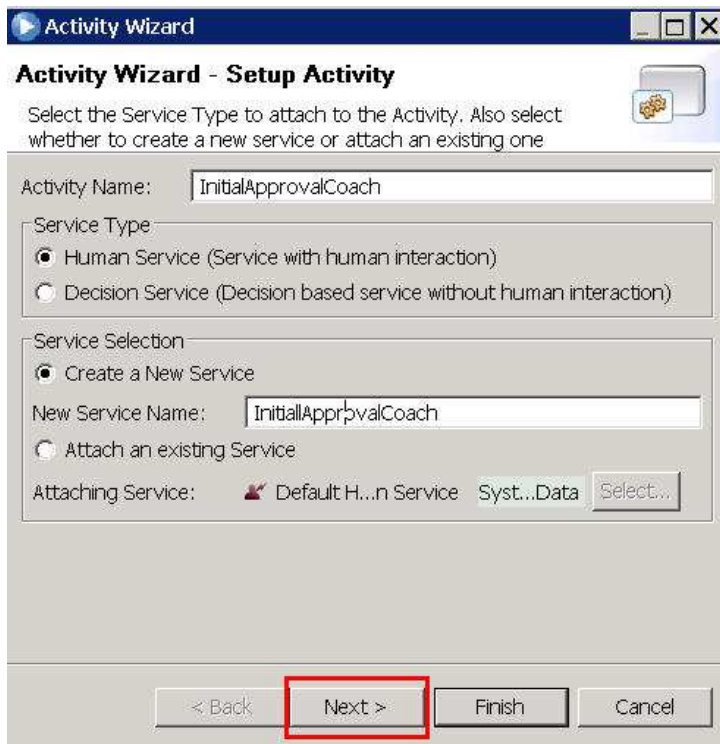
__ o. Since you named the Activity appropriately in the previous step, you will see that the Activity Name and New Service Name are already filled in.

For the Service Type, you will leave the default of a Human Service because you want this initial approval to be approved by a human being and not automated with a business rule.

For the Service Selection, leave the default of Create a New Service selected because you want to create this new initial approval coach.

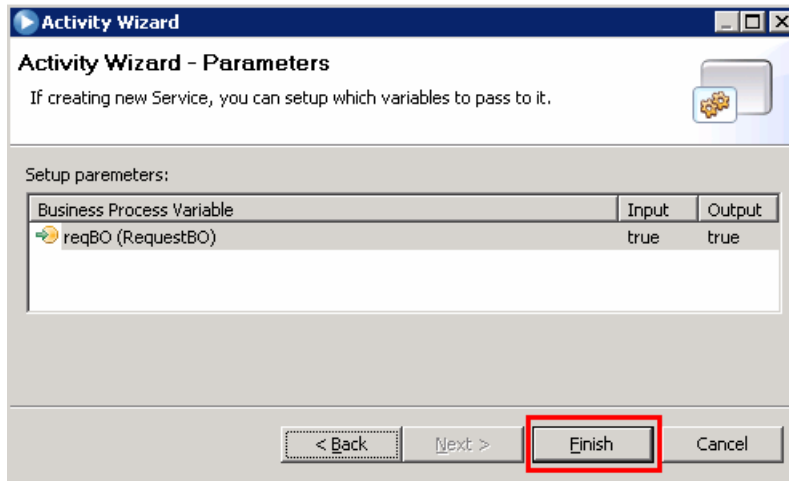
NOTE: A "Coach" is Lombardi terminology for human task.

Click **Next**.



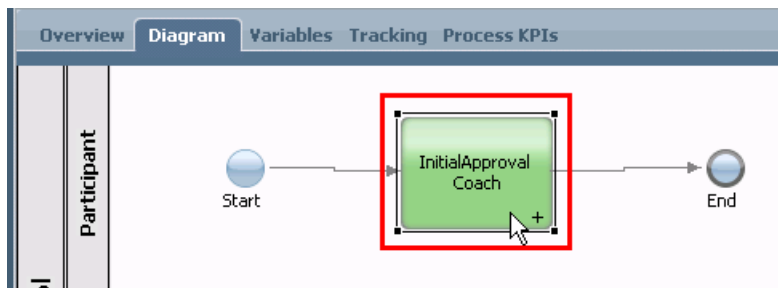
- ___ p. The second screen of the Activity Wizard is where you need to define the business objects that a BPD will use before designing the process. The input and output business objects have already been defined in the wizard due to your previous work. Leave the defaults of the inputs and outputs both being true for this business activity since you want the business object to be passed into the activity and out of the activity.

Click **Finish**.

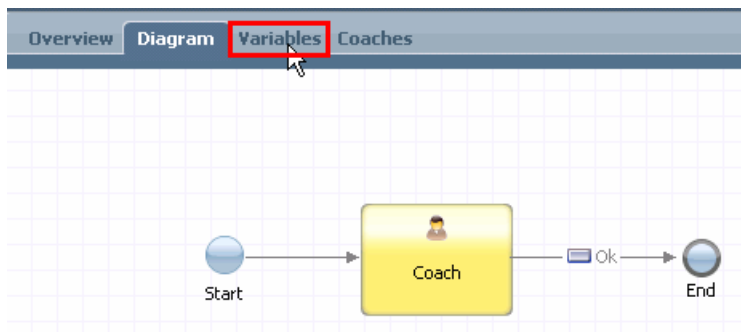


NOTE: You can click the “true” to change to false if needed. It is not needed in this scenario.

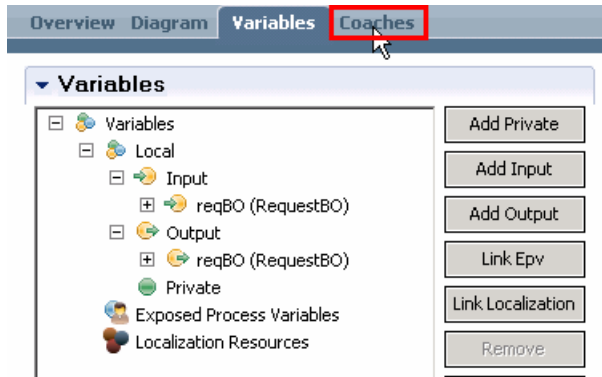
- ___ q. Double click the **InitialApprovalCoach** activity to look at the Coach



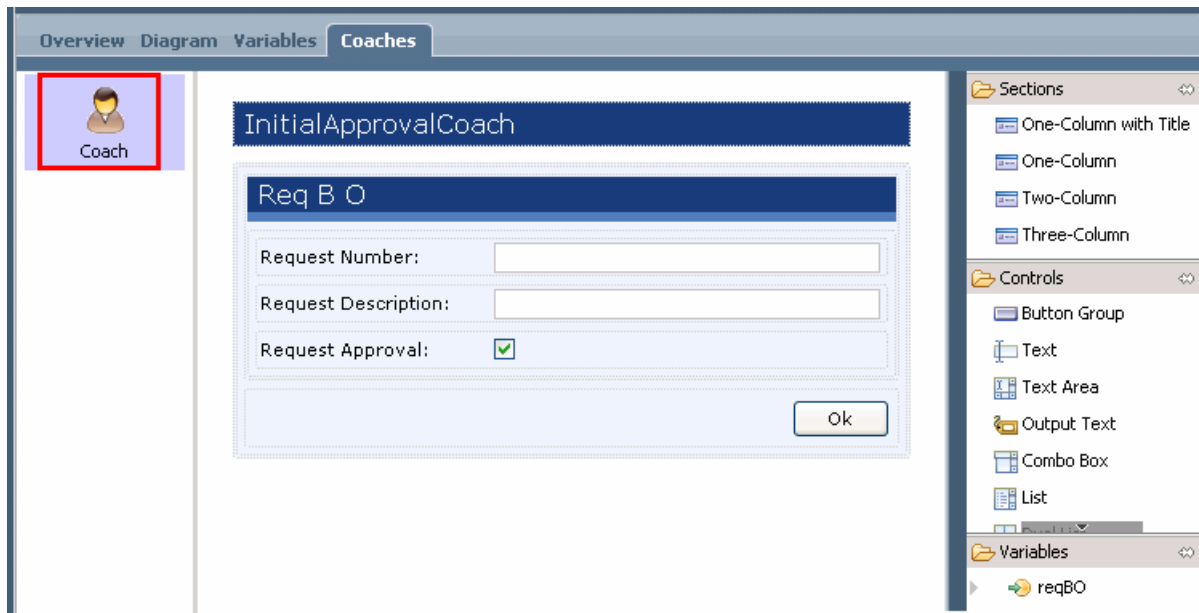
- ___ r. The Activity added one Coach. Take a look at variables that will end up passing through the Coach by clicking on the **Variables** tab.



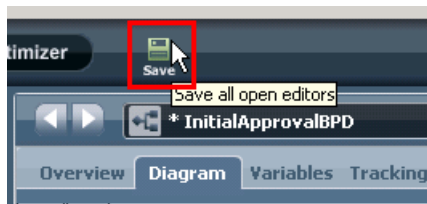
- s. In the variables tab, you will notice the same input and output variables you defined for the BPD. Take a look at what the coach will look like by clicking on the **Coaches** tab.



- t. On the Coaches tab, click the **Coach** icon on the left of the editor to see and customize your human task form. (it may take a few seconds for the human task form to open)

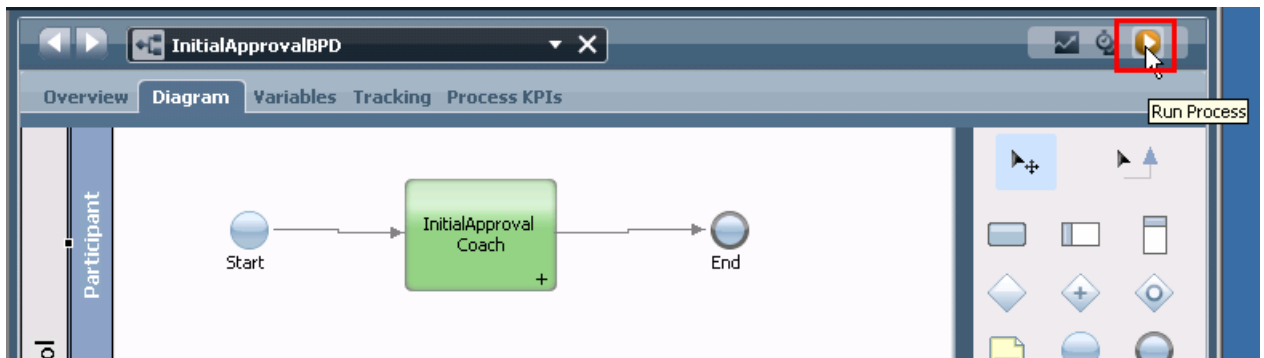


- u. Click the **Diagram** tab, and then click **Save**

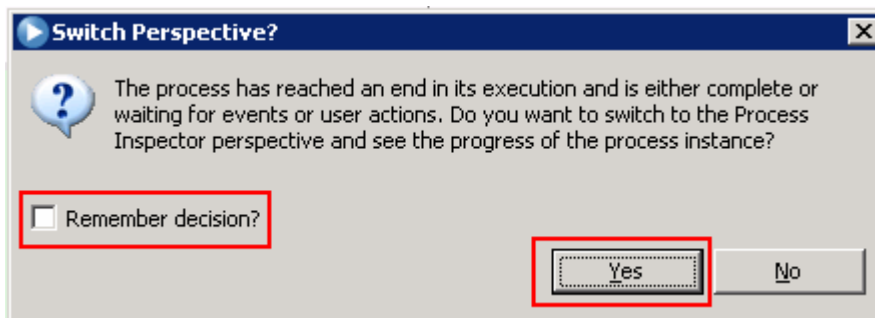


You are now done with building a Business Process Definition that has one human service (coach).

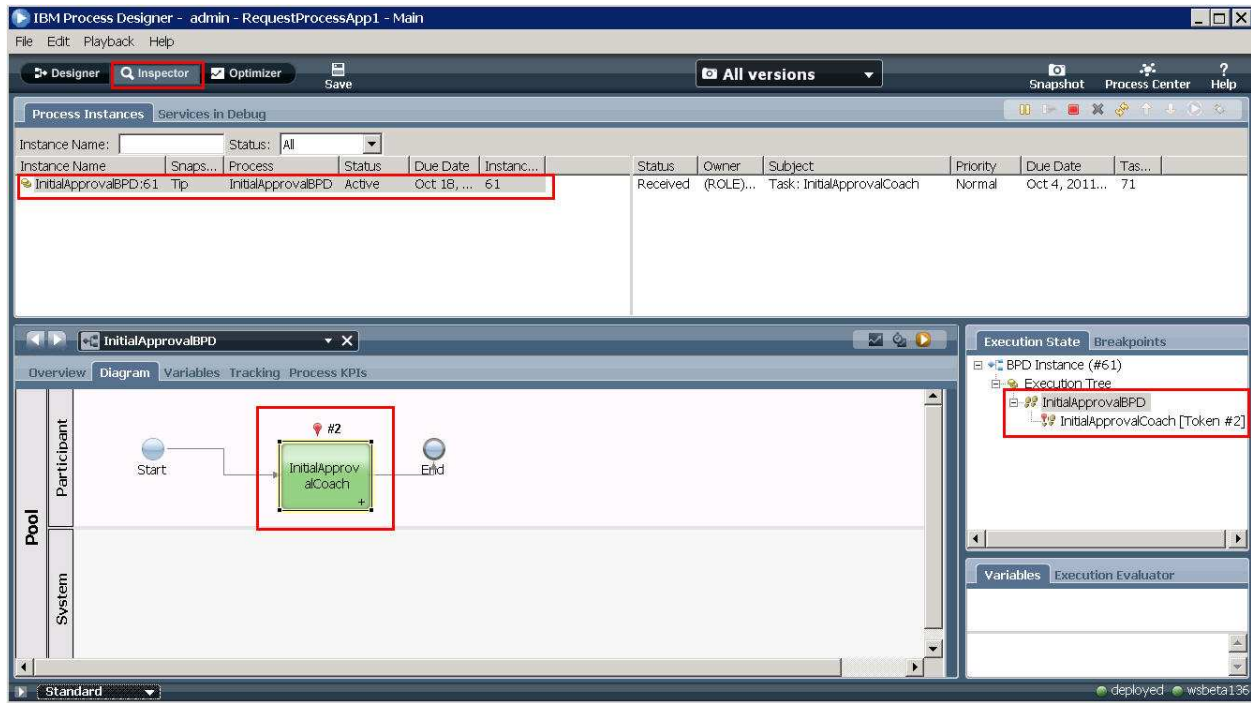
- ___ 6. Test the BPD before integrating into a BPEL process
 - ___ a. Click **Run Process** button to playback your current BPD.



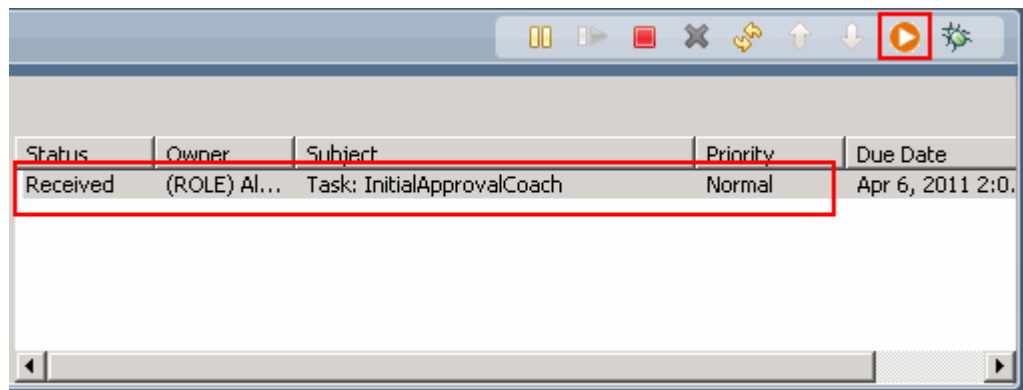
- ___ b. On the **Switch Perspective?** pop-up dialog select **Yes**. You also check **Remember decision?** if you want to switch to Inspector view for all BPD tests in the future.



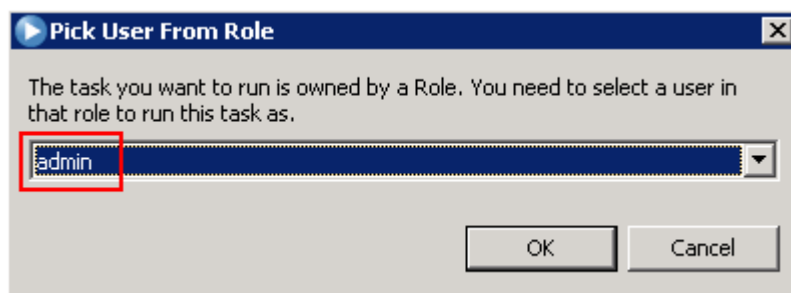
After you click **Yes** the **Inspector** view will open



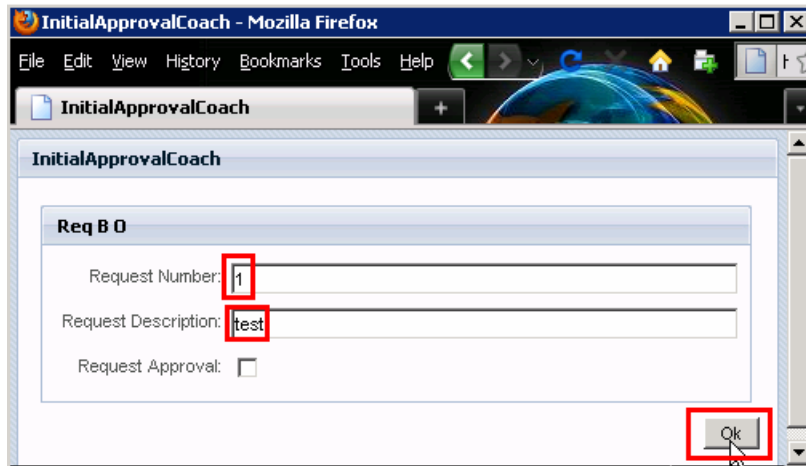
___ c. In the task list select the **InitialApprovalCoach** task and click **Run the selected task** icon.



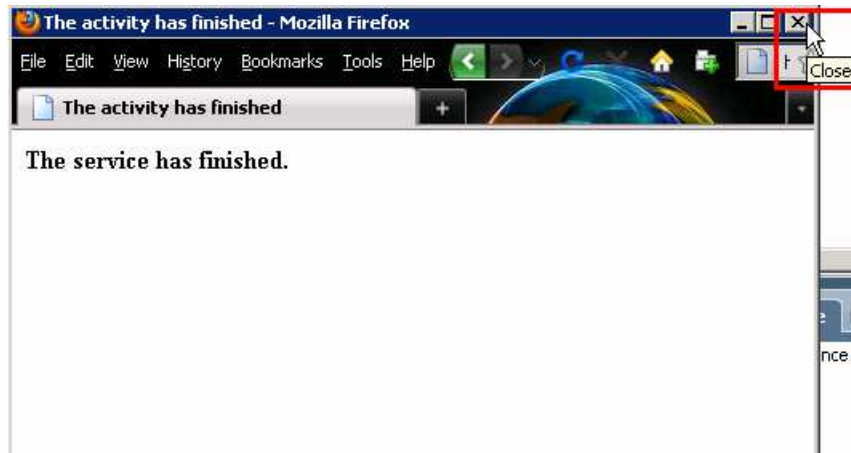
___ d. Select the user that should execute this task. For the purposes of this lab, select **admin** and **select OK**.



- ___ e. A browser pops up to enter the request details. Enter **1** for the requestNumber, **test** for requestDescription, and leave the requestApproval unchecked. Click **OK**.



- ___ f. Close the browser window by clicking the **X button** at the top right of the browser.



- ___ 7. You are finished building your BPD and Coach. You are ready to close Process Designer and open IBM Integration Designer to build and associate the BPEL that will call this BPD.

Close IBM Process Designer by clicking the **X button** at the top right.

Part 2: IBM Integration Designer – Implementing the STP process application

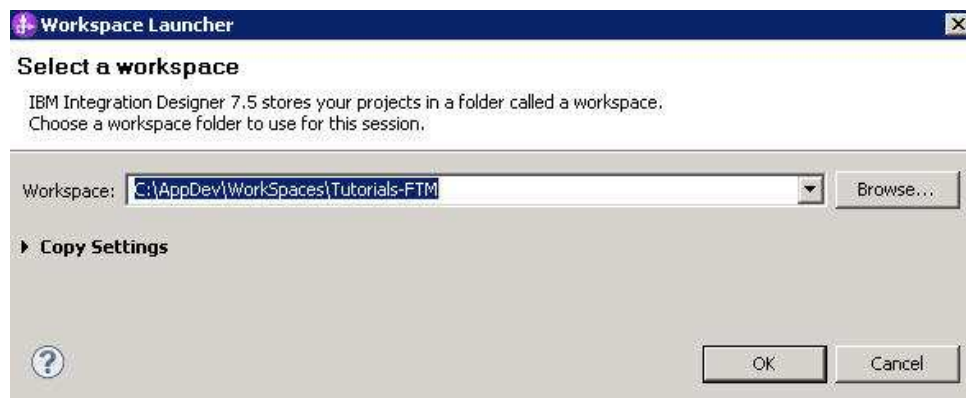
In this part of the lab exercise, you play the role of the integration developer, Igor, and work within the IBM Integration Designer development environment. A basic outline of this part is:

- Start IBM Integration Designer, connect to Process Center, and import Process App
- Create a human centric BPEL application to call both a BPD and Human Task.
- Synchronize with Process Center

1. Start IBM Integration Designer in a new workspace, connect to the Process Center and import the Process App
 - a. Start IBM Integration Designer by selecting **Start → All Programs → IBM Integration Designer → IBM Integration Designer V7.5 → IBM Integration Designer V7.5**.



- b. In the Workspace Launcher dialog, enter **C:\IBM\WorkSpaces\Tutorial-STP** for the workspace location and select **OK**.

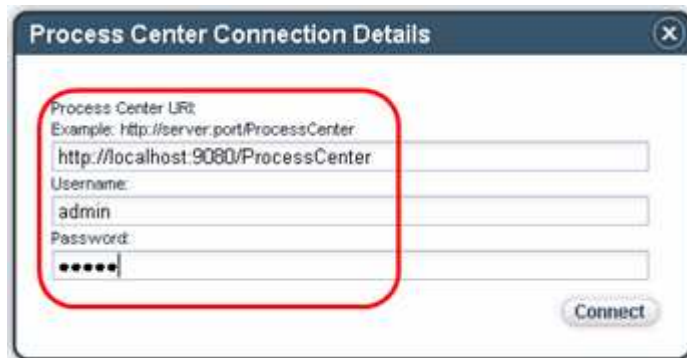


When opening with a new workspace, Integration Designer will initially open to the default Business Integration perspective but quickly switches to the Process Designer perspective in order to login to the Process Center. Logging into the Process Center first is important because you need to connect to the Process Center in order to have a target for where your work will be published. The Process Center server must be running to perform this step.

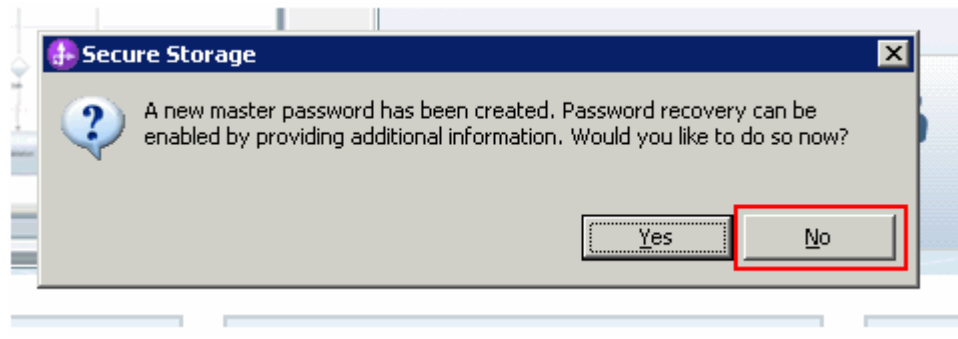
NOTE: The Process Center perspective in the Integration Designer is the integration developers' interface to the Process Center. When a process application is opened in the Integration Designer workspace, it is represented from the implementation point of view. This is different than the process application representation from the modeling point of view when it is opened in the designer view of the Process Designer.

NOTE: SCA services that are associated with a Process Center as part of a process application or toolkit are referred to as *Advanced Integration Services*.

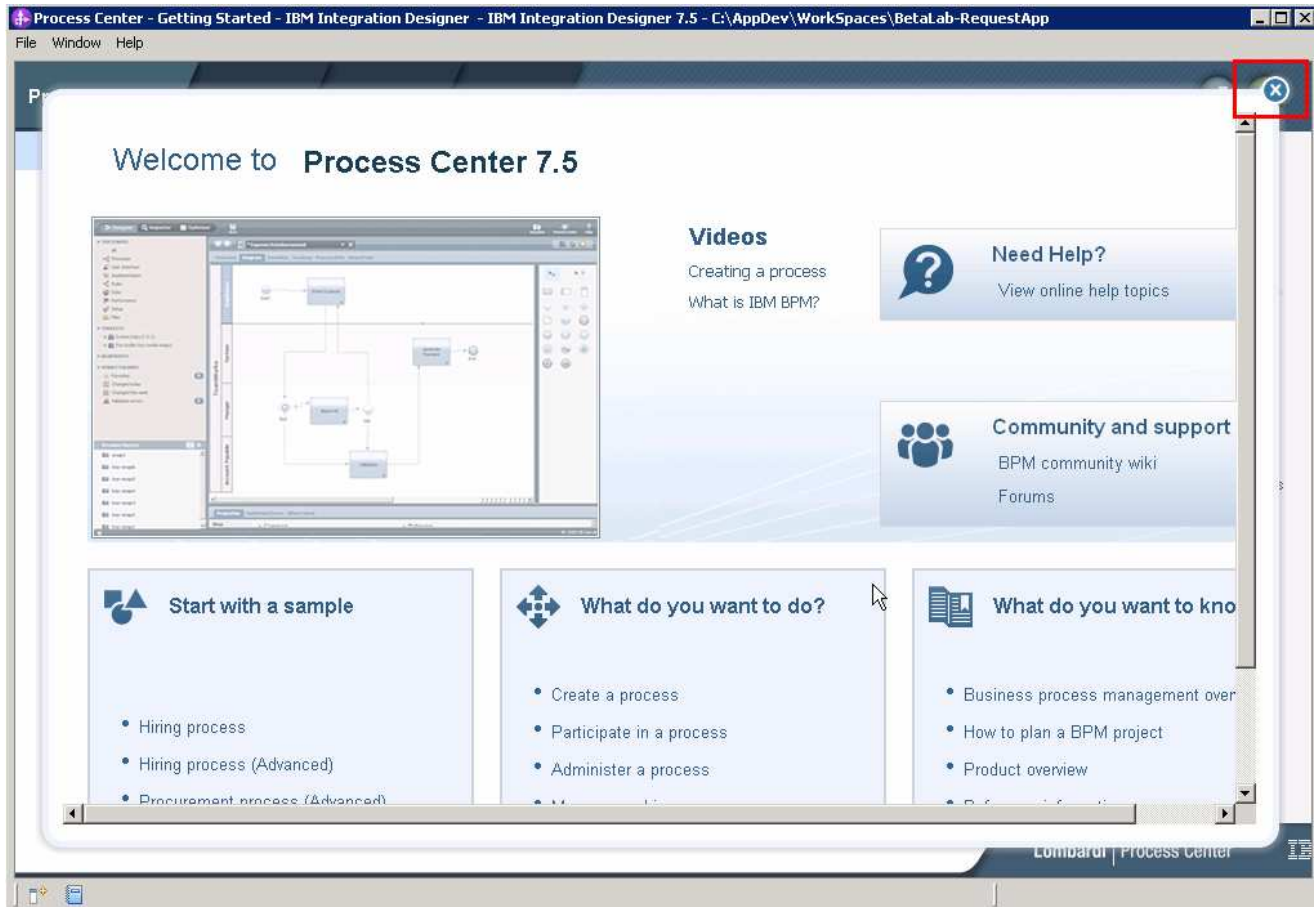
- ___ c. **Type these URL and credentials** into the Process Center Connection Details prompt and **click Connect button**: (enter the appropriate URL and credentials for your Process Center)
Process Center URL: <http://localhost:9080/ProcessCenter>
Username: admin
Password: admin



Note: If you see **Security Storage** dialog after clicking **Connect**, select **No**.

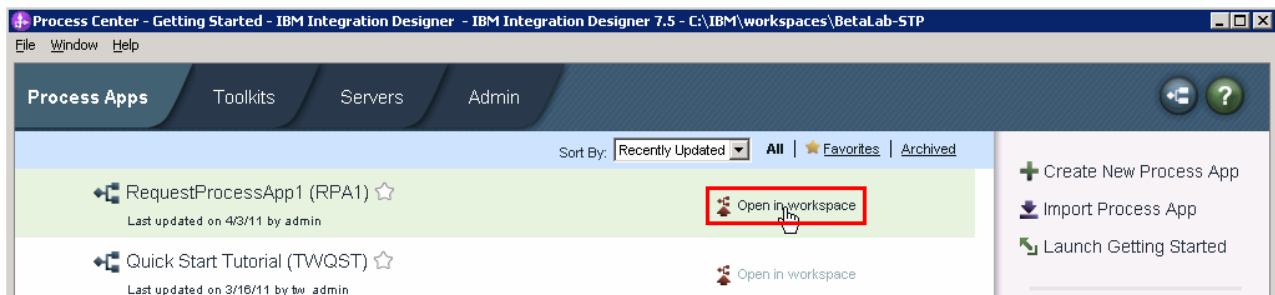


___ d. Click the **X** on the welcome dialog in the Process Center perspective to close the welcome dialog.

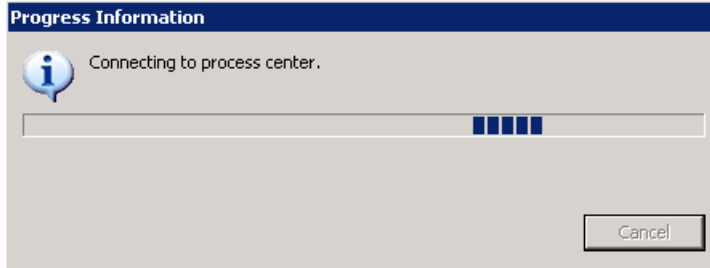


___ e. This next step is important. There will be a good amount of work going on in the background after your selection

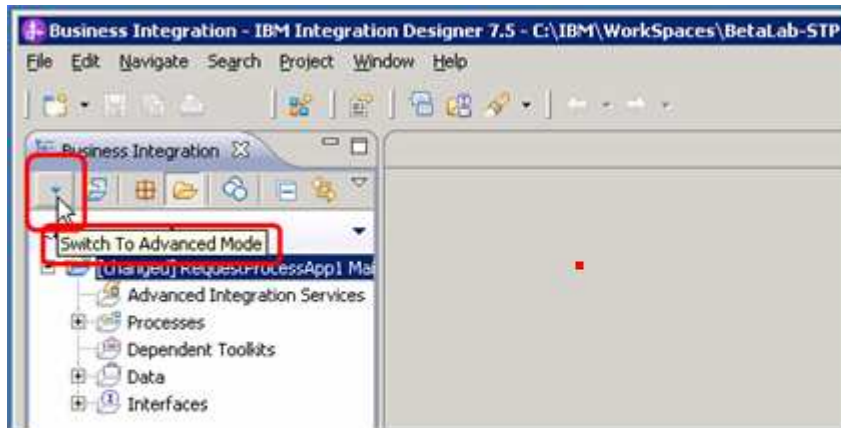
Click the **Open in workspace** link parallel to RequestProcessApp1 (RPA1).



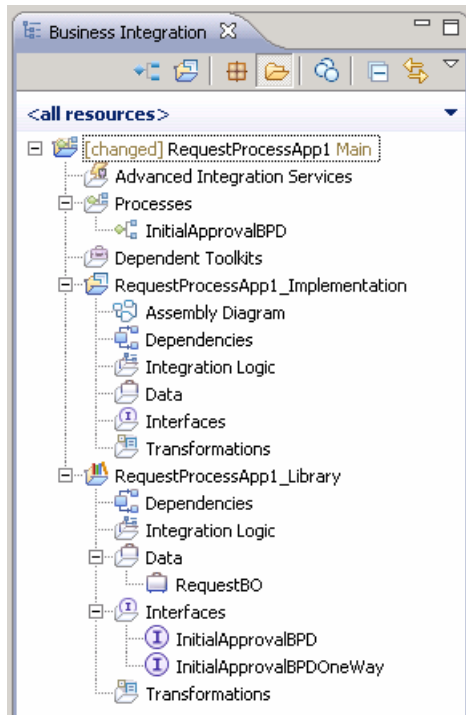
What this action does is connect to the Process Center and imports content from the process application that you created in the previous step. You will see this dialog while the import takes place:



___ f. Switch to **Advanced Mode**. This step is important to be able to work with BPEL content.

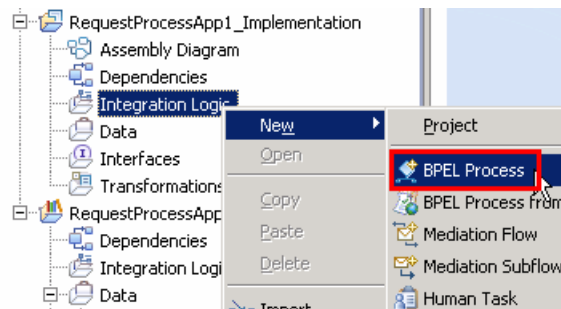


___ g. Inspect what was imported

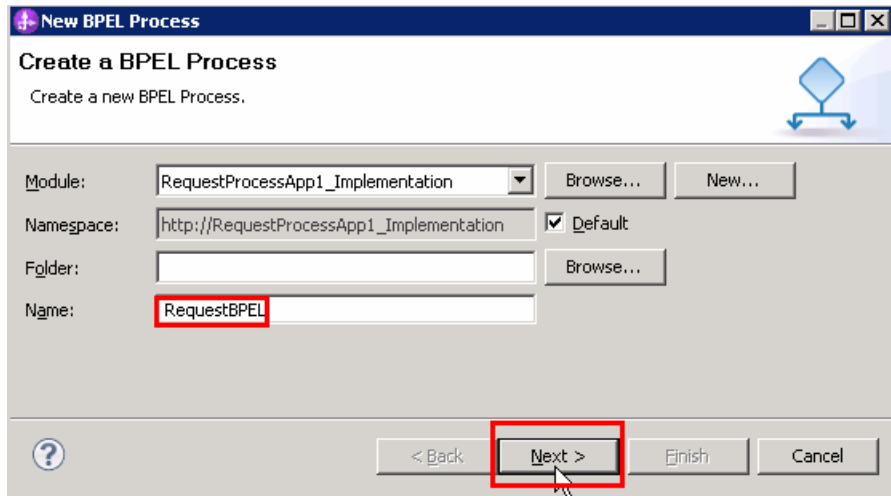


Process application is the top-level project
 No Advanced Integration Services (AIS) or dependent toolkits in this scenario.
 BPD was imported successfully as part of the process application.
 The process application has two automatically generated projects.
 RequestProcessApp1_Implementation will hold the BPEL.
 RequestProcessApp1_Library holds the interface and business objects used by the implementation project.

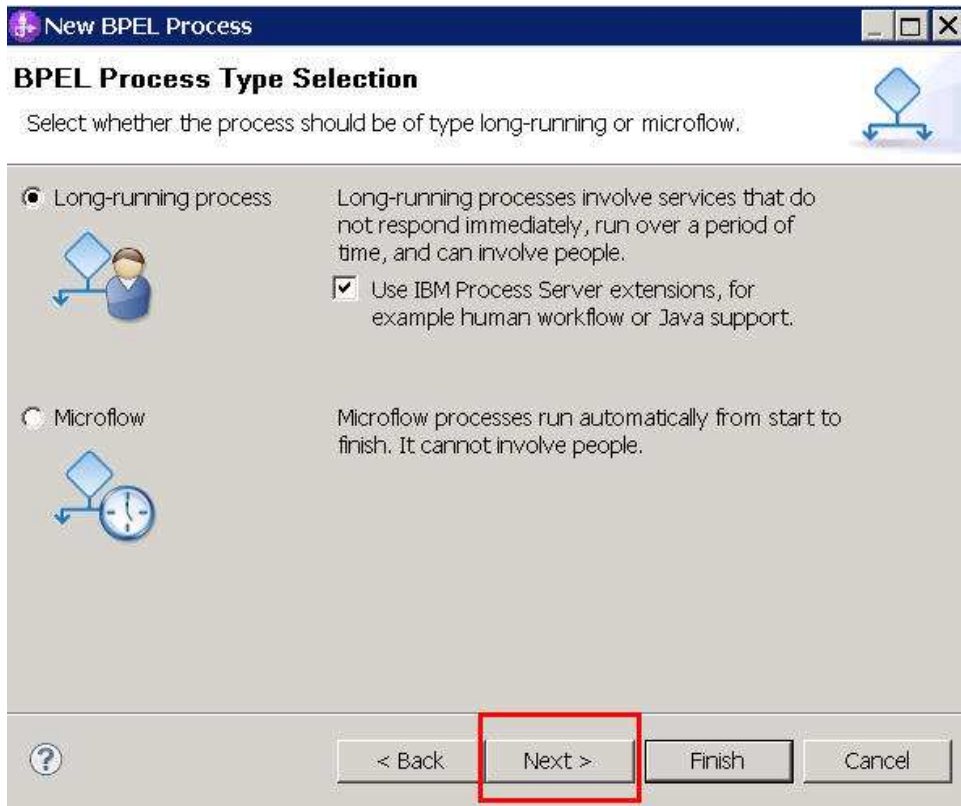
- ___ 2. Create a human centric BPEL application to call both a BPD and Human Task.
 - ___ a. Right click **Integration Logic** beneath **RequestProcessApp1_Implementation** and select **New > BPEL Process**



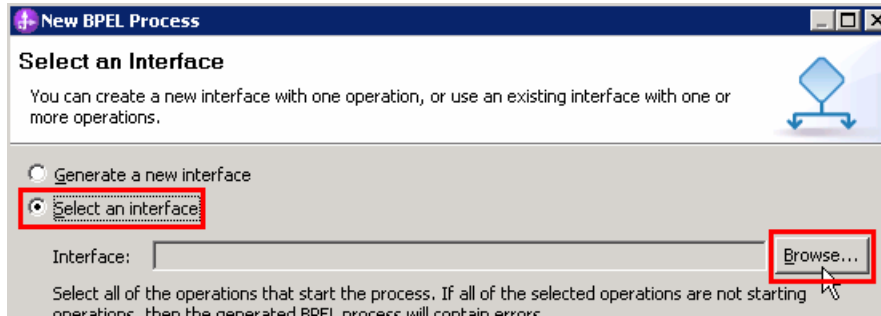
__ b. Enter **RequestBPEL** as the Name and click **Next**.



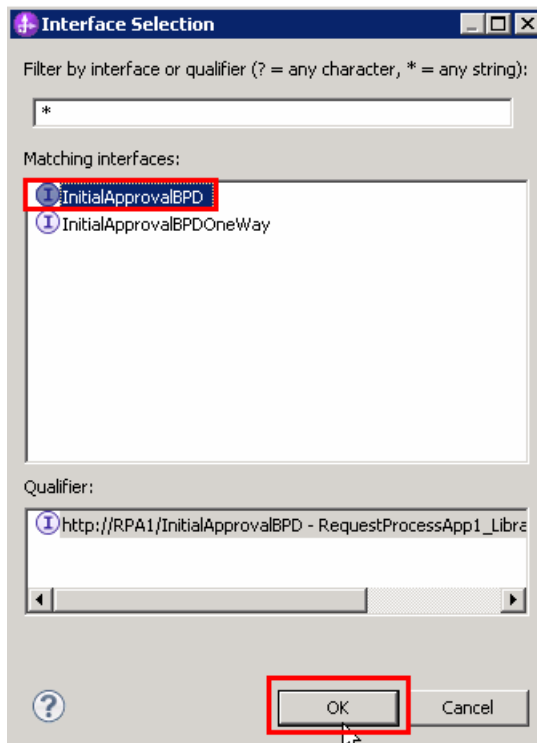
__ c. Click **Next** to keep the default of a long-running process for this example.



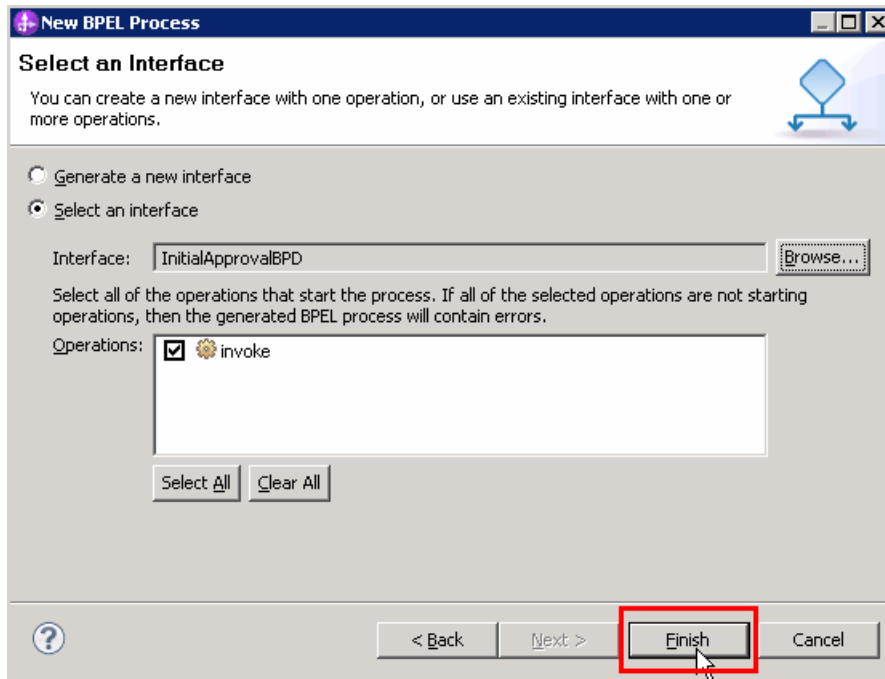
- ___ d. For this BPEL process, you want to use the interface that was imported from Process Center. Select the **Select an interface** option and click **Browse** to find the interface.



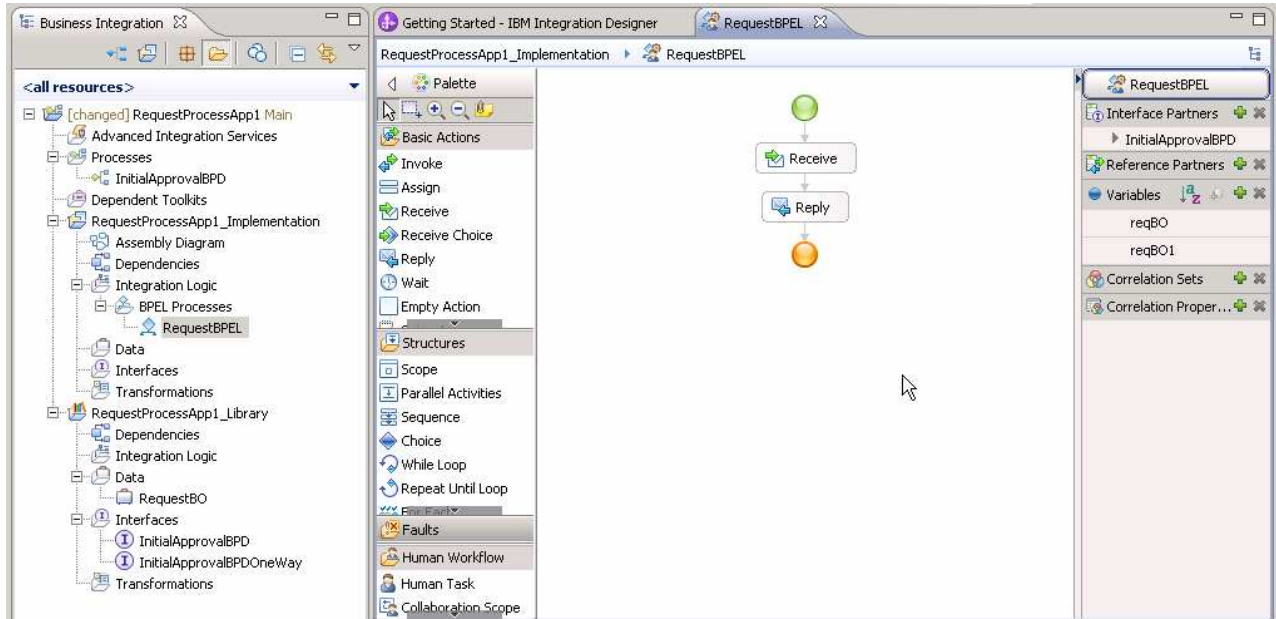
- ___ e. Select the **InitialApprovalBPD** interface and click **OK**.



___ f. Click **Finish** to finish selecting InitialApprovalBPD interface.

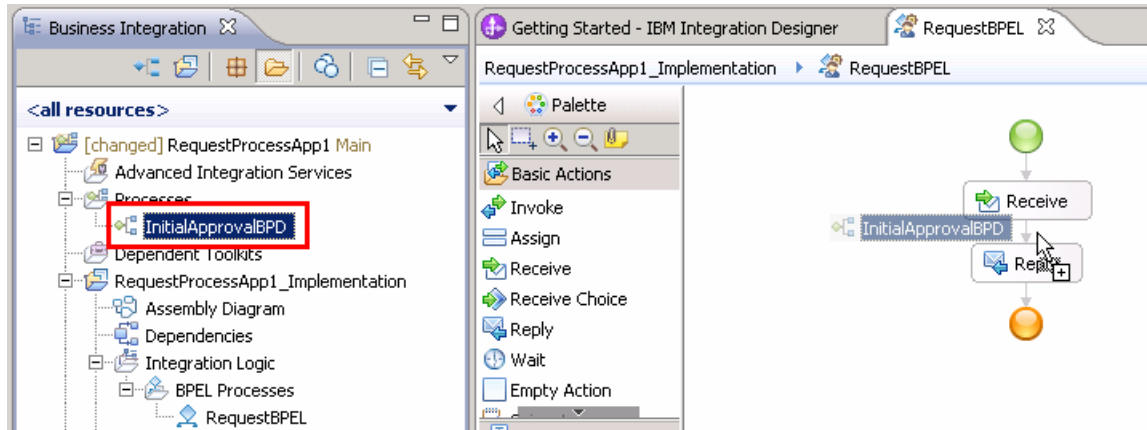


___ g. Inspect what was generated

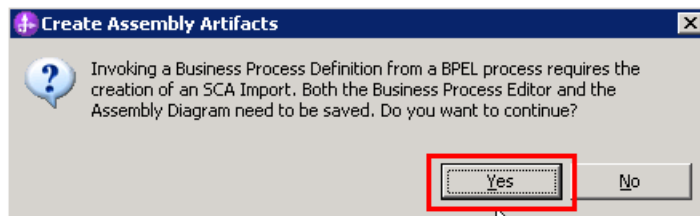


___ 3. **Drag the BPD and drop it into BPEL**

- ___ a. Click and drag the **InitialApprovalBPD** in the Business Integration view to the BPEL diagram and unclick between the Receive and Reply activities.

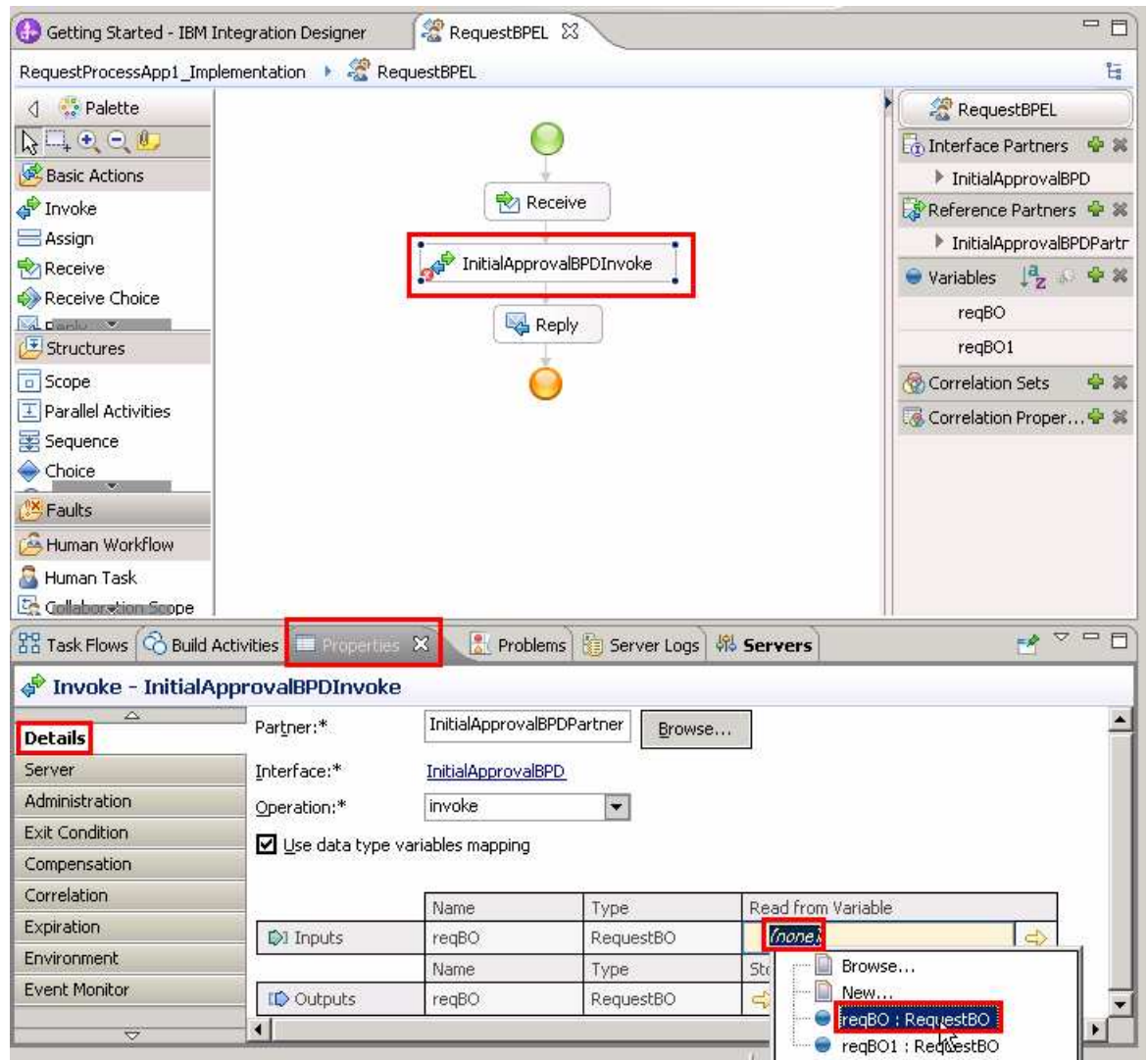


- ___ b. Click **Yes**

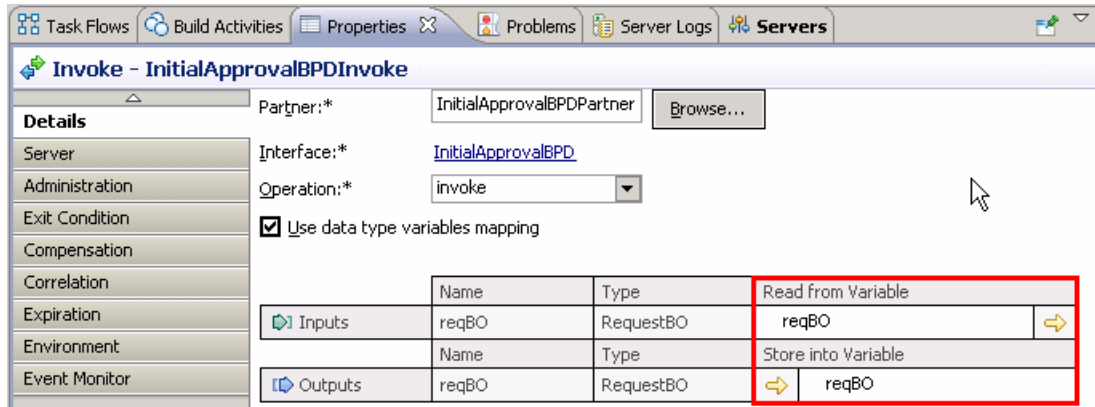


- c. Error markers appear after the project builds because the input and output variables have yet to be identified, similar to Process Designer where you defined the input and output parameters for the BPD.

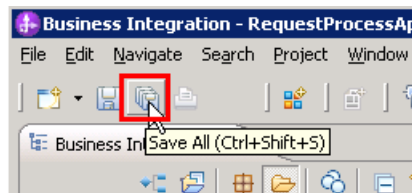
Select the **InitialApprovalBPDInvoke** → **Properties** → **Details** → **Inputs** → **Read from Variable** and then click **none**. Change to **reqBO** because you want to pass through the same business object throughout this example process.



Set the output to **reqBO** as well. Now you should have this...

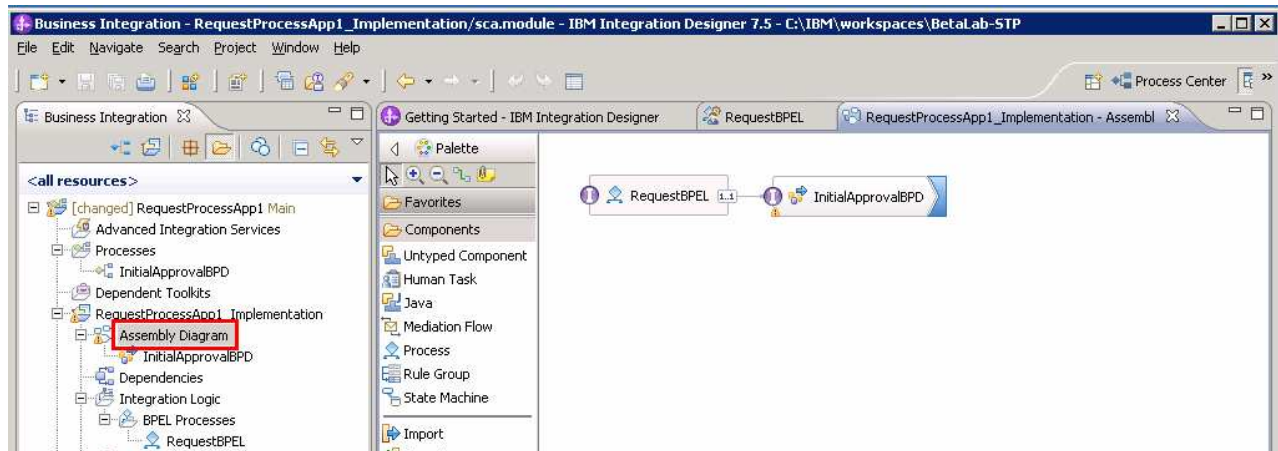


___ d. Save the BPEL in order to clear the error markers.

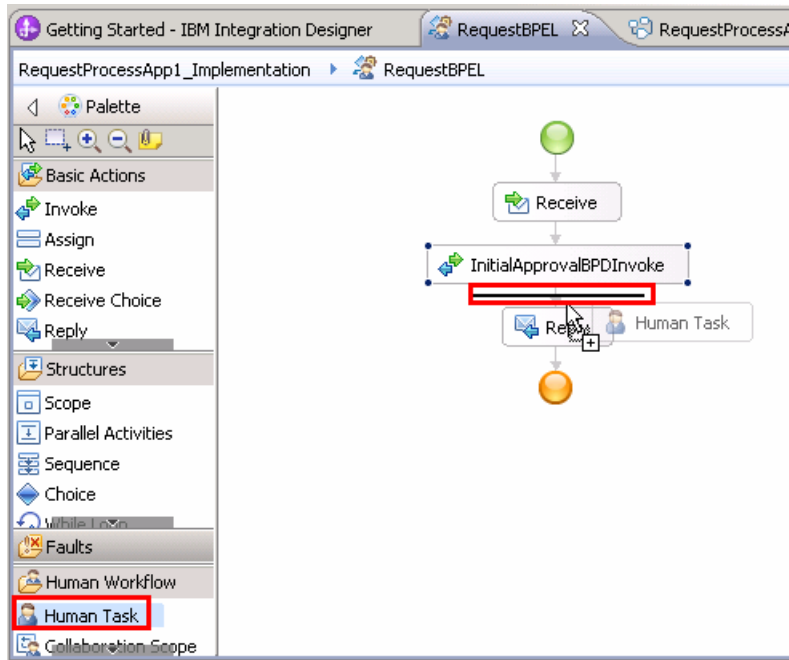


___ 4. See what was generated for you in the Assembly diagram. Double click **Assembly Diagram** in the Business Integration view.

An SCA component for the BPEL and a matching SCA Import for the BPD you are calling within the BPEL, both with the InitialApprovalBPD interface.

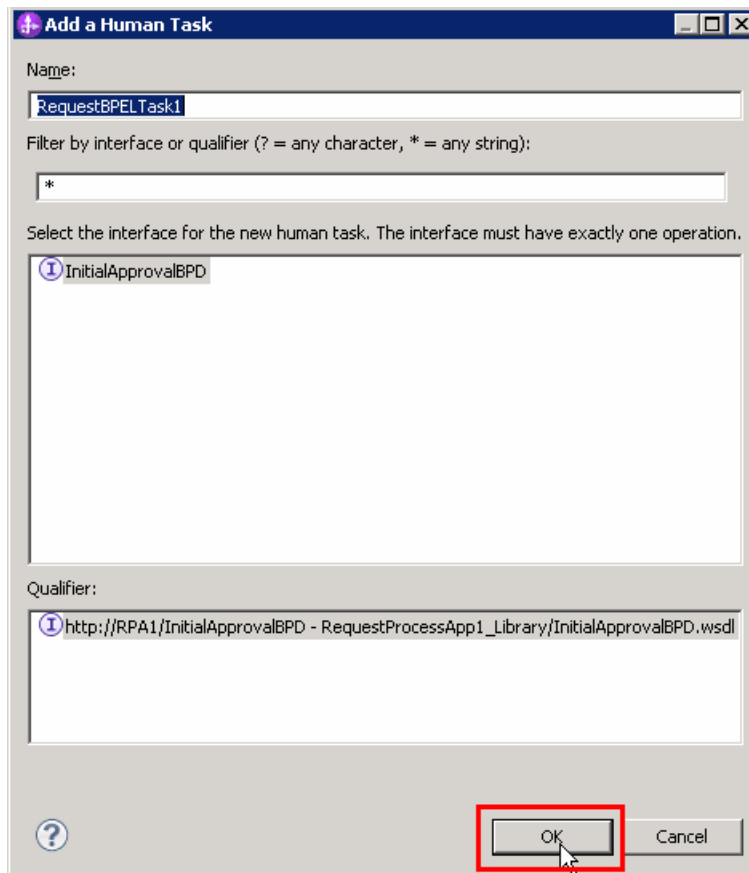


- 5. Add an inline human task to the BPEL process
 - a. Click the **RequestBPEL** tab to return to the BPEL editor.
 - b. Click Human Task in the BPEL Editor palette, drag to BPEL flow, and release between InitialApprovalBPDInvoke and the Reply activity

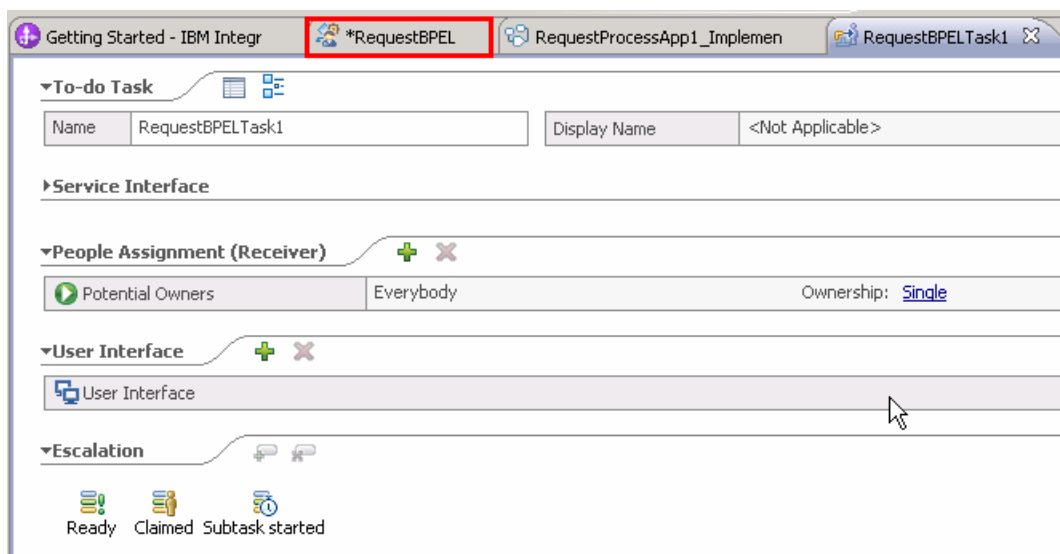


___ c. The add a human task wizard prompts you for an appropriate name and for the interface.

Accept the generated name RequestBPELTask1, clicking **OK** at the prompt



___ d. The human task editor opens. Inspect what was generated for you. Leave this up since you will come back to this human task. Click the **RequestBPEL** tab.

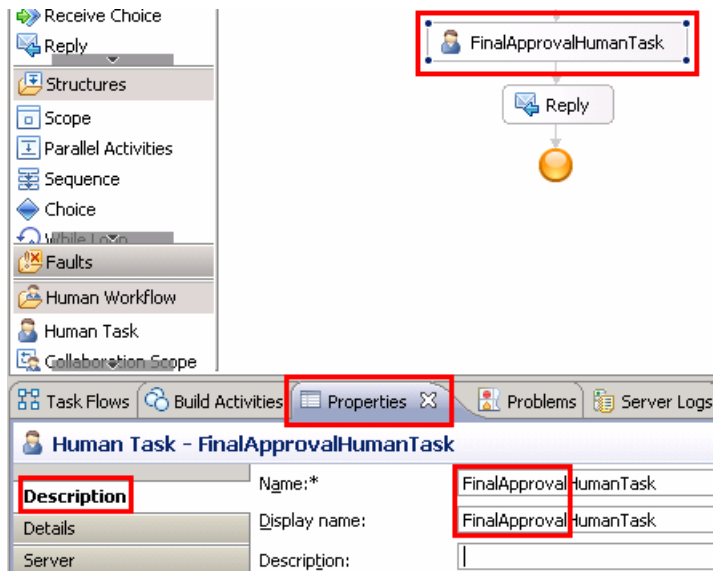


- ___ e. Select the HumanTask → Properties → Details → Inputs → Read from Variable and click **none** and change to **reqBO**.
Also do this for the Outputs. You are doing this because you want to pass through the same business object throughout this example process.

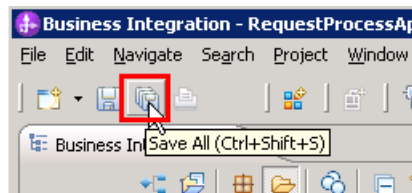
The screenshot shows the IBM Business Process Manager interface. At the top, a process diagram displays a HumanTask activity connected to a Reply activity. The Properties window for the HumanTask is open, showing the 'Details' tab. The 'Inputs' and 'Outputs' tables are visible, and the 'Read from Variable' field for the input is being edited to 'reqBO'.

	Name	Type	Read from Variable
Inputs	reqBO	RequestBO	none
Outputs	reqBO	RequestBO	reqBO

- ___ f. Change the name for the inline human task. You are already in the properties for the human task, so click the Description sub-tab and change both the name and Display name from Human Task to **FinalApprovalHumanTask**.

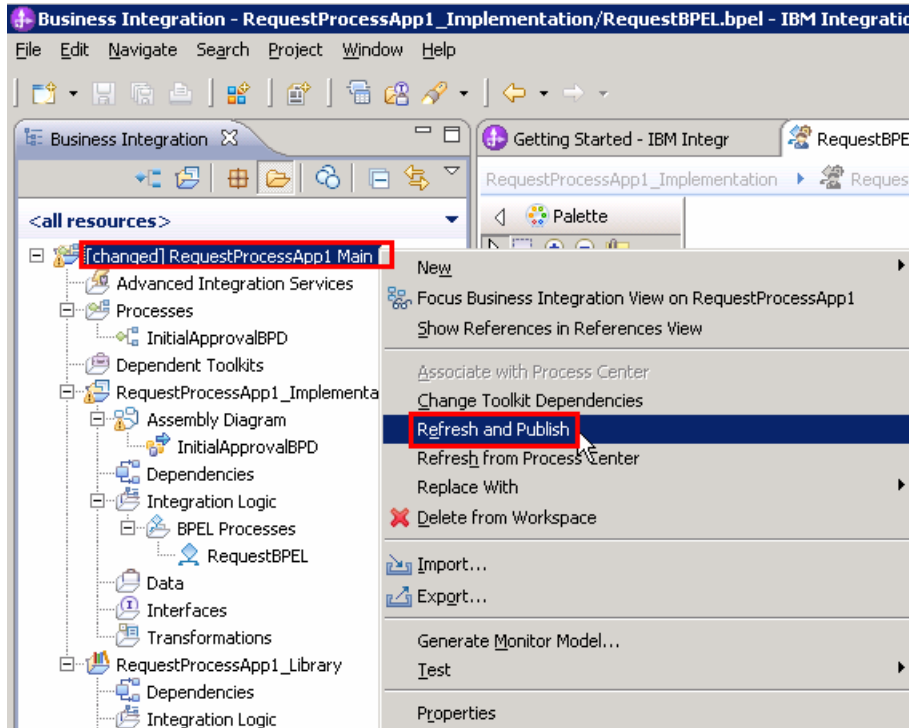


- ___ g. **Save** the BPEL

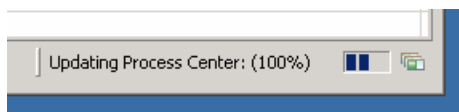


- ___ 6. Synchronize with the Process Center.
 - ___ a. You now have a BPEL process that calls a BPD and a human task. In order to run the BPEL application in a test, you must Refresh and Publish to the Process Center.

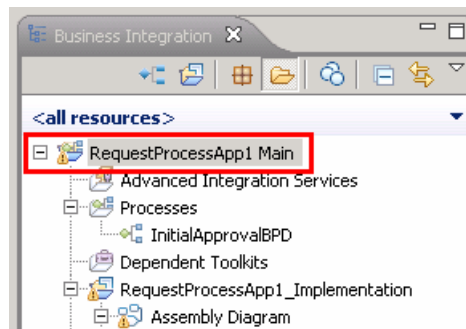
Right click the top-level process application **RequestProcessApp1** and select **Refresh and Publish**



You will notice processor activity (for example, in Task Manager on Windows) and Integration Designer will show at the bottom-right corner it is working on updating Process Center.



- ___ 7. Once the content from the workspace has finished publishing to the Process Center, you will no longer see the “changed” prefix for the top-level process application



Part 3: Run the STP process application

In this part of the lab exercise, you will run the STP scenario. A basic outline of this part is:

- Open the BPC Explorer to start the scenario
- Use the Process Portal to see and run the Coach
- Use the BPC Explorer again to see and run the Human Task

___ 1. Start the STP scenario

- ___ a. Open a browser and type the URL, <http://localhost:9080/bpc>, and press enter. This accesses the BPC Explorer application that you use to drive this application. Type these credentials and click Login:

User Name: admin
Password: admin

Business Process Choreographer Explorer

Help

Welcome to Business Process Choreographer Explorer.

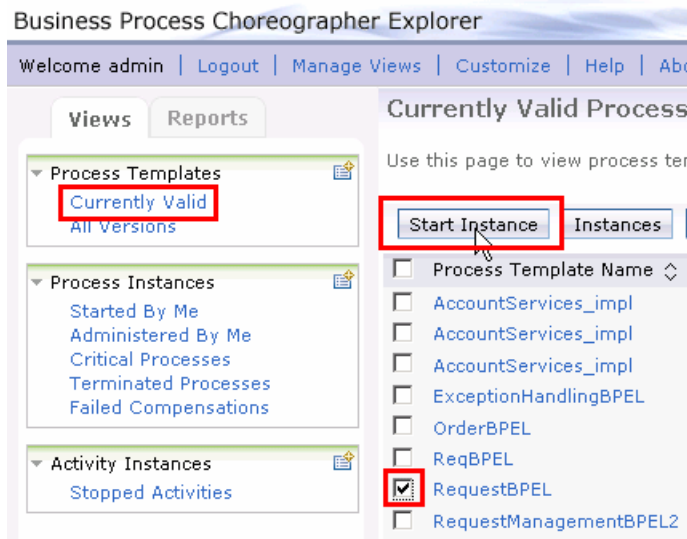
The page you requested is only available to registered users. Enter your username and password and click Login.

User Name:

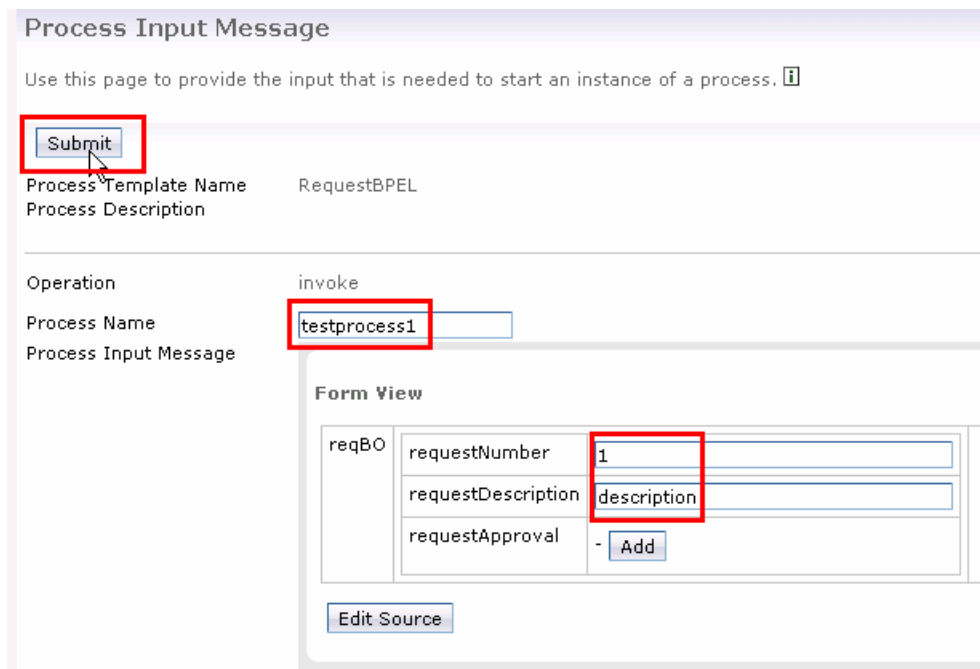
Password:

Login

___ b. Once in, click Currently Valid, click the check box for RequestBPEL, and click start instance.

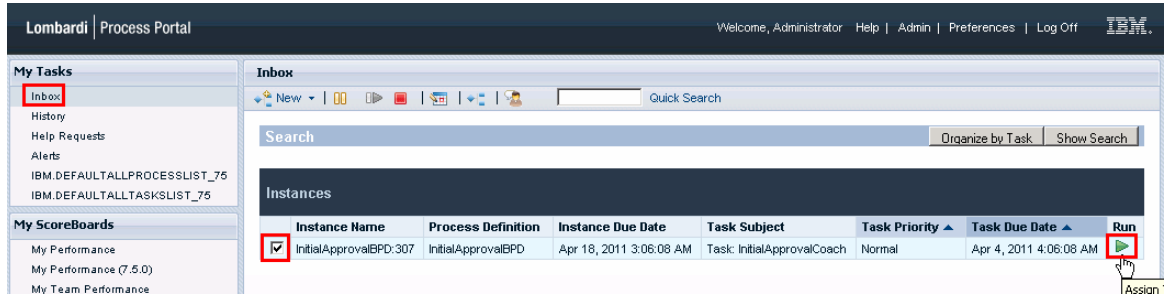


___ c. Add a process, providing a name and values for the reqBO elements requestNumber and requestDescription. For example:
Process Name – testprocess1
requestNumber – 1
requestDescription - description
Click **Submit** to start the process instance.

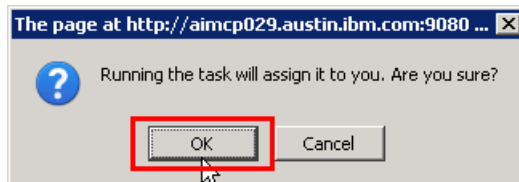


Keep BPC Explorer open. You will use it again in a minute.

- ___ 2. Open Process Portal to see and work on initial approval coach
 - ___ a. Open URL to <http://localhost:9080/portal>
 - ___ b. Notice the coach is waiting for the initial approval in your Inbox. Select the check box for the coach and click the **Run** button (green triangle).

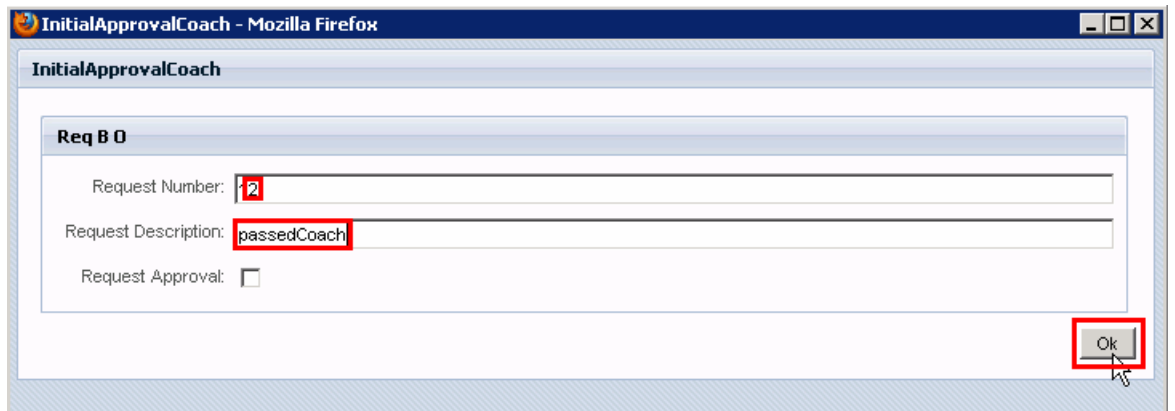


- ___ c. Click **OK** at the prompt to assign it to you.



- ___ d. Another browser window will open with the Coach form.

Change the request number (change it to 12)
 Change the description to **passedCoach**
 Click **OK**



- ___ e. The Coach will now disappear from your Inbox. Therefore, the business process has left the BPD and should now be waiting on for the BPC human task to be completed.

- ___ 3. Return to the BPC Explorer to see and work on the final approval human task
 - ___ a. To see the task, click My To-dos, select the check box for FinalApprovalHumanTask, and click the Work on button.

Business Process Choreographer Explorer

Welcome admin | Logout | Manage Views | Customize | Help | About

Views Reports

Process Templates
Currently Valid
All Versions

Process Instances
Started By Me
Administered By Me
Critical Processes
Terminated Processes
Failed Compensations

Activity Instances
Stopped Activities

Task Templates
My Task Templates

Task Instances
My To-dos
All Tasks
Initiated By Me
Administered By Me
My Escalations

My To-dos

Use this page to work on tasks that are assigned to you. [i](#)

Work on Release Transfer Start Change Business Category Refresh

<input type="checkbox"/>	Priority	Task Name	State	Kind	Owner	Originator	Escalated	Suspended
<input checked="" type="checkbox"/>	5	FinalApprovalHumanTask	Ready	To-do Task	admin	no	no	
<input type="checkbox"/>	5	InlineHumanTask	Ready	To-do Task	admin	no	no	
<input type="checkbox"/>	5	HumanTask	Ready	To-do Task	admin	no	no	
<input type="checkbox"/>	5	HumanTask	Ready	To-do Task	admin	no	no	

Items found: 4 Items selected: 1 Page 1 of 1 Items per page: 20

___ b. Once the task is open, see the updated content that came from the BPD.

- Change the requestNumber (**123**)
- Change the requestDescription to **passedhumantask**
- Click the **Add** button to verify the approval
- Click **Complete** button

The screenshot shows the Business Process Choreographer Explorer interface. On the left is a navigation pane with categories: Process Templates, Process Instances, Activity Instances, Task Templates, and Task Instances. The main area is titled 'Task Message' and contains a 'Task Input Message' section for 'FinalApprovalHumanTask'. This section has a 'Form View' table with the following data:

reqBO	Field	Value
	requestNumber	2
	requestDescription	passedCoash
	requestApproval	<input type="checkbox"/>

Below the table is a 'View Source' button. The 'Task Output Message' section also has a 'Form View' table with the following data:

reqBO	Field	Value
	requestNumber	123
	requestDescription	passedHumanTask
	requestApproval	<input type="checkbox"/>

Below this table is an 'Add' button and an 'Edit Source' button. In the 'Task Input Message' section, the 'Complete' button is highlighted with a red box. In the 'Task Output Message' section, the 'requestNumber' and 'requestDescription' input fields, and the 'Add' button, are highlighted with red boxes.

___ c. You have now finished the straight through processing scenario.

What you did in this lab exercise

In this exercise you...

- As the integration developer using the Integration Designer
 - Created a human centric BPEL process
 - Integrated a BPD into a BPEL process and worked with SCA artifacts associated with the BPD
 - Refreshed and Published to the Process Center
 - Used the BPC Explorer to drive/start the STP scenario
- As the process developer using the Process Designer
 - Created a process application
 - Created a process application and simple business process that uses a Coach
 - Correctly passed data through the process
 - Tested the process application using the Process Inspector
 - Used the Process Portal to work with the Coach