

# PROGRESS EXCHANGE 2013

DISCOVER. DEVELOP. DELIVER.

## OpenEdge BPM

An introductory guide to the fundamentals of  
Business Process Management for OpenEdge

## Student Summary

Using a fictitious Automobile Manufacturing process as an example, we'll take you through an entertaining step-by-step guide to let you build your first BPM-enabled OpenEdge application.

In this workshop, you'll learn how to:

**Articulate your ideas** - Easily create detailed process flow diagrams that precisely describe the steps that must be performed, by whom, and exactly in what order.

**Build your application** – Using the power of BPM and OpenEdge you'll soon be building a real business application.

**Control your processes** – Start processes, get visibility into how they are executing, and look for issues and problems.

**It's as easy as learning your A, B, C's!**

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## Preface

This tutorial is designed to quickly introduce you to the basics of BPM Process Modeling, Automation and Control for use with your OpenEdge application. Although it is just an introduction remember OpenEdge BPM in a powerful platform for developing process-aware business applications.

## How to Use this Tutorial

The tutorial is designed to flow from one task to the next, with each task building on the previous. Starting with a brief overview of the basics of process modeling using Progress Developer Studio for OpenEdge BPM, we will then connect this simple model to a simple OpenEdge business logic, and finally we will use the BPM Portal to execute and control the process.

To best leverage this tutorial, it is recommended you perform the operations as you read them, taking breaks between tasks as required. After you've completed all the tasks, the tutorial will make for a practical reference that you can dive into at any point to refresh yourself on the concepts.

## Conventions Used in this Guide

This document uses the following conventions to distinguish elements of text:

- ▶ **Terms** – indicates new terms
- ▶ *Notes* – offers remarks, tips, expand on details and used to define terminology (e.g. car terms)
- ▶ Alerts – indicates key advise
- ▶ **Identifier** – reference labels of menu items, tabs, buttons, options, etc.
- ▶ **Type as shown** – Text that you need to type as shown.

## Introduction

### Just what is a business process?

A business process is defined as a collection of tasks or activities and the relationship between those tasks with the intent of producing a specific set of outcomes. It entails the execution of a sequence of one or more process steps in a predefined and particular order. A business process is defined by the inputs and outputs, all the operational steps required to produce the output, the sequential relationship between the process steps, the business decisions that are part of the event response, and the flow of material and/or information between process steps. Examples of business process are an order fulfillment process, a customer service process, a billing process, etc.

### What is the OpenEdge BPM?

Progress OpenEdge is a highly productive, highly scalable, extremely open business application development and deployment platform. It includes Progress Developer Studio for OpenEdge, which is the integrated development environment for OpenEdge, as well as the OpenEdge runtime environment and OpenEdge database for executing these business applications in a variety of configurations.

Building business process applications requires you to have not only a BPM suite to model and automate the execution of business processes. You also need a business application development platform that makes it easy to develop and deploy the core business logic that makes up the tasks and activities that are part of each step of the process.

OpenEdge BPM is an easy to use development and runtime environment for modeling and executing business processes. With the eclipse project facet “OpenEdge BPM”, Progress Developer Studio for OpenEdge is a visual, easy-to-use tool that empowers you to design processes, run simulations, and build and test processes. To put it simple, people use Progress Developer Studio for OpenEdge to “articulate the way they think” about their business and to link their thoughts into real-world applications. Progress OpenEdge BPM also includes BPM Server which is a robust, highly scalable runtime environment for executing business processes.

Whether you explain to your team how you want escalations handled, or when you want to analyse, design, simulate and document business processes prior to deployment – the process modeling capabilities of Progress Developer Studio for OpenEdge provides you the tools you need to quickly and easily accomplish your objectives. Best of all, process modeling in Progress Developer Studio for OpenEdge is easy to learn so you can build your process in just a few minutes! You can give these models directly to your development team who can immediately start to create your BPM enabled application – all within a single development environment.

This tutorial will introduce you to OpenEdge BPM and show you what it's all about.

## Much more than a flowchart designer

Let's talk a little bit more about modeling using Progress Developer Studio for OpenEdge. On initial inspection you might think Progress Developer Studio for OpenEdge's process modeling capability is a flowchart design program. But do not let its good looks fool you. It provides powerful capabilities for prototyping and running simulations of business processes and individual worksteps long before coding is needed. Once you're happy with your models, right from within the same tool you can start to build your real BPM enabled applications.

With Progress Developer Studio for OpenEdge you can:

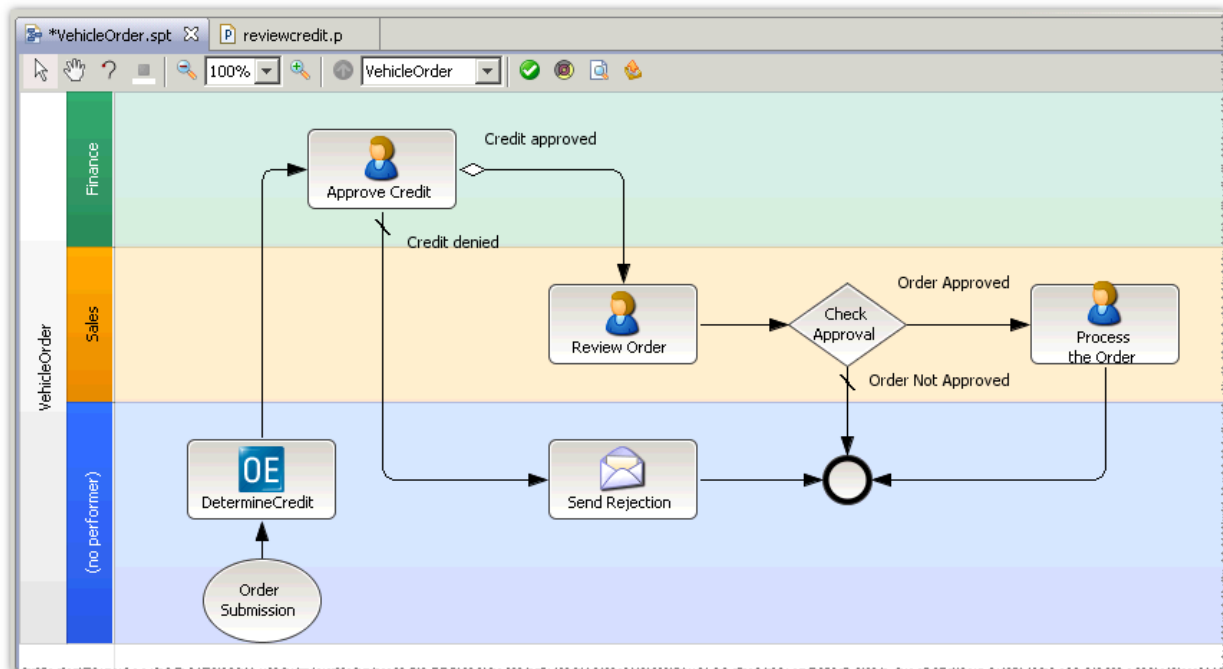
- ▶ Articulate ideas - Easily create detailed process flow diagrams with rules, events and exceptions, so you can discuss and collaborate with the rest of your team.
- ▶ Simulate reality - Review and test process designs before you implement them. Allocate costs, resources and time to your process, and then run a simulation to catch problems and bottlenecks before deployment.
- ▶ Build the application - By using the built-in adapters for email, Web services, JMS, OpenEdge and a host of others you can rapidly and easily build your OpenEdge-based business process application, based on your documented Business Processes.

## Workshop Setup

### Vehicle Order Process Overview

Progress Developer Studio for OpenEdge allows you to develop and prototype virtually any business process from supply chain management and customer care, to order taking and inventory management.

To best illustrate this, we'll take you through an example process describing how a customer can place an order for a car. While we make no claims as to the veracity of the example, it will nonetheless provide you an excellent grounding in the Progress Developer Studio for OpenEdge process modeler that you can abstract upon to quickly build and test your own business processes.



To give you an idea of what you're going to build, here is a diagram of what the finished process will look like using the industry-standard visual notation called Business Process Modeling Notation, or BPMN.

This is an overly simplified business process that lets a customer order a new car in an automated fashion. There is a Start step represented by a circle, which lets the customer place the order. A call to ABL Logic retrieves some customer financial data, needed for approving the credit. Then there is the approve credit task that will be carried out by an employee in the finance group. If the credit is not approved, the customer gets an email telling them so. Otherwise a salesperson at the car dealership has to review and approve the order. If he approves, the order will be processed.

Now, let us get started with the hands-on tasks.



## Connecting to your OpenEdge BPM Machine

At this workshop, you will use your distinct virtual machine. An OpenEdge development environment is installed. You just need to get access to your distinct machine.

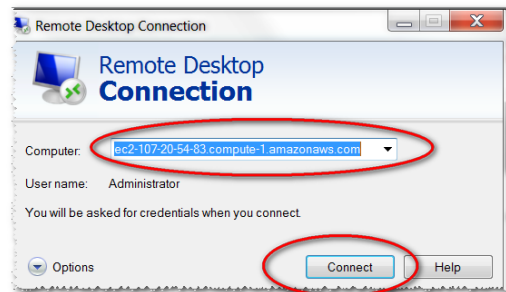
Step 1. Get the Internet Name (DNS) of your virtual machine running on ARCADE. Open a browser (Google Chrome, Mozilla Firefox or Apple Safari). Navigate to these URLs

- Morning Workshop's URL: <http://23.23.210.136:8980/WorkshopApp>
- Afternoon Workshop's URL: <http://54.225.237.144:8980/WorkshopApp>

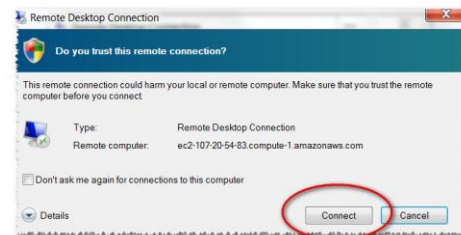
Step 2. Enter your **email address** and press the button **Get Arcade Instance**. This will give you a DNS for a running Arcade instance, which you use to connect your Remote Desktop session.

Step 3. On your laptop, open your Remote Desktop Client of choice (Windows: choose Start| Accessories| Remote Desktop Connection) and paste the obtained DNS into the **Computer** field. Click the **Connect** button.

*The Remote Desktop Connection client shown here may vary slightly depending on your operating system and version.*



Step 4. Again click the **Connect** button to say you trust this remote connection.



Step 5. The Windows Login Dialog appears. Enter your Credentials

Username: **Administrator**

Password: **Exchange2013**

*You should now be connected to your personal workshop machine running in Progress Arcade.*

*The machine instance has been setup using a default English (United States) keyboard. If your laptop has a different keyboard, you will need to set this up yourself on the machine instance through Control Panel| Region and Language settings.*



## Your Workspace

This tutorial comprises two lessons and offers an advanced lesson. The workshop time is limited and should allow you to complete the essential steps of Lesson A and B.

When starting Progress Developer Studio for OpenEdge (PDS) you will be asked to choose a **workspace**. These workspaces are all in the folder `c:\OEBPMWS`.

There are three workspaces available.

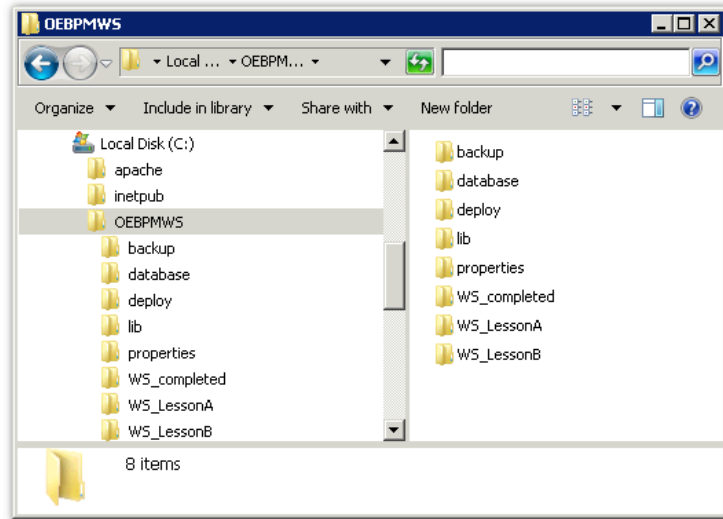
**WS\_LessonA** is empty. Please choose this workspace to begin with.

**WS\_LessonB** takes you right to the start of Lesson B. All steps of Lesson A are finished and the Setup of OpenEdge at the beginning of Lesson B is done too.

**WS\_completed** provides you with the completed workshop.

*The BP Server is not yet setup. You will do this in LessonB.*

You are now ready to start designing your process.

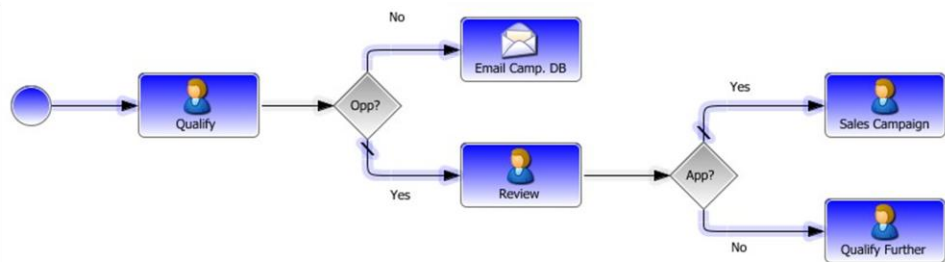


## Lesson A – Desinging your Process



Business Analyst

Define, document and analyze business processes.



*USING PROCESS MODELLING TO ARTICULATE YOUR IDEAS*

## Task 1. Creating a BPM Project and Process Template

Now that you're logged into the demonstration machine, you're ready to get started with OpenEdge BPM.

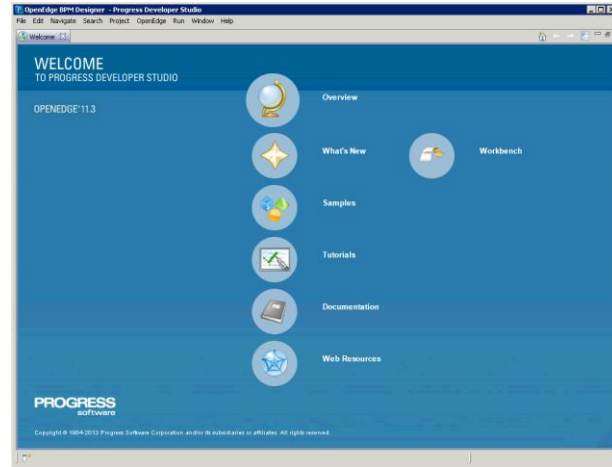
Step 1. Start Developer Studio. You find the shortcut in the Windows Start Menu **Start/Programs/Progress/OpenEdge 11.3, Name Developer Studio.**

Step 2. Choose your workspace **WS\_LessonA.** Progress Developer Studio for OpenEdge (PDS) opens.

Step 3. The **Welcome** page appears.

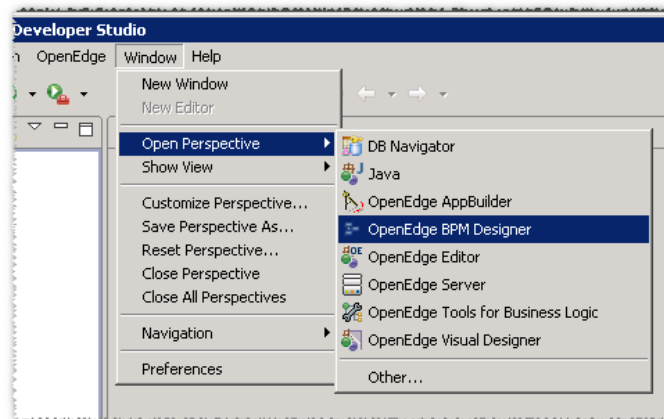
Step 4. Click **Workbench.**

*Workbench might be already open. You will simply see the chosen perspective when you closed PDS.*

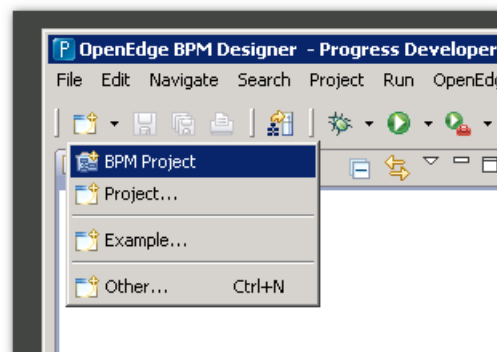


Step 5. You will now be presented with the default PDS perspective "OpenEdge Editor". It is empty since there is no open project.

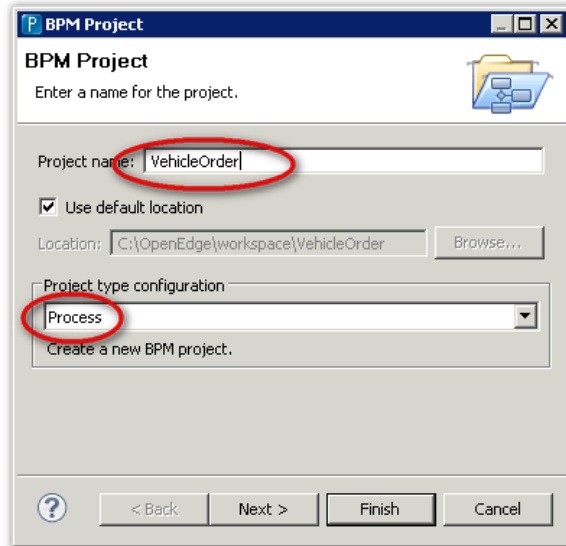
Step 6. Select the menu option Window | Open Perspective | OpenEdge BPM Designer. The BPM Designer Perspective opens. It is from here that you create different Projects.



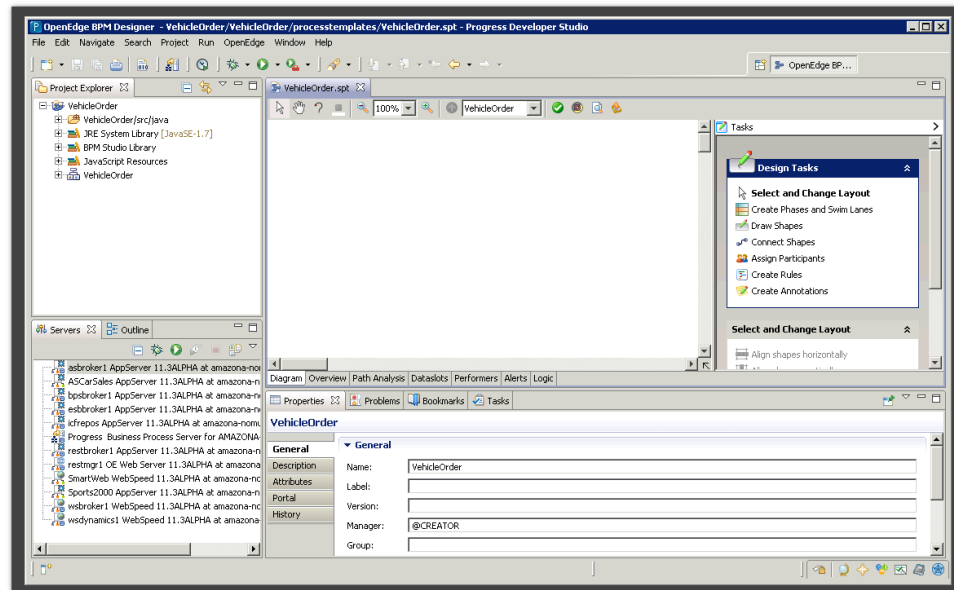
Step 7. To create a BPM Project, select the New Button and choose BPM Project.



Step 8. Name the Project VehicleOrder and then click Finish.



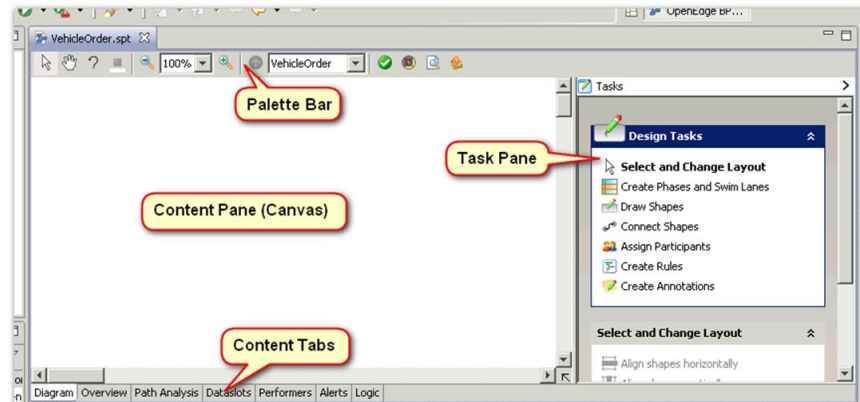
*Your OpenEdge BPM Designer Perspective will now have a VehicleOrder Project and an empty Process.*






## Task 2. Familiarize yourself with the process modeler

You've just created a new blank process template file. You're going to draw your first Business Process in a moment.

But first take a minute to familiarize yourself with the user interface.



The Palette bar contains the Select icon (  ) used to select items, the Color icon (  ) used to color the selected shapes, and the Check Diagram icon (  ), used to verify if the process template diagram is correct.

The Task pane contains the following selections Select and Change Layout, Create Phases and Swim lanes, Draw Shapes, Connect Shapes, Assign Participants, and Create Annotations. Each selection facilitates process model design and is in essence the 'paint' for your Content pane canvas.

The Content pane is the canvas on which you design your business process template by clicking and dragging elements from the Process Modeler Task pane.

The Content Tabs provides information relevant to the currently open process content pane. Tabs include:

- ▶ Diagram - The default page (as shown) for designing process template diagrams. Uses a graphical drag and drop approach.
- ▶ Overview - An alternative area for designing process template diagrams by entering the information in a tabular fashion.
- ▶ Path Analysis – A kind of Gantt diagram which displays the process flow with duration and effort by listing all possible process paths.
- ▶ Dataslots - Global variables which are used to manage information flow and for the exchange of data across worksteps in a business process. There are a few built-in dataslots and you typically define several additional dataslots that are specific to each process.

- ▶ Performers - Contains the list of performers for the current process template. This page may also be used to define new performers. A performer is a specification of who performs a particular step in a business process and may be a user (or group of users), a managed adapter, or a sub process.
- ▶ Alerts – Enables you to define alerts to notify application users when certain conditions occur in your process.
- ▶ Logic – The Graphical Event Logic Editor is a central view that gives access to all actions defined in this process template. You can easily create and edit scripted actions by point and click.

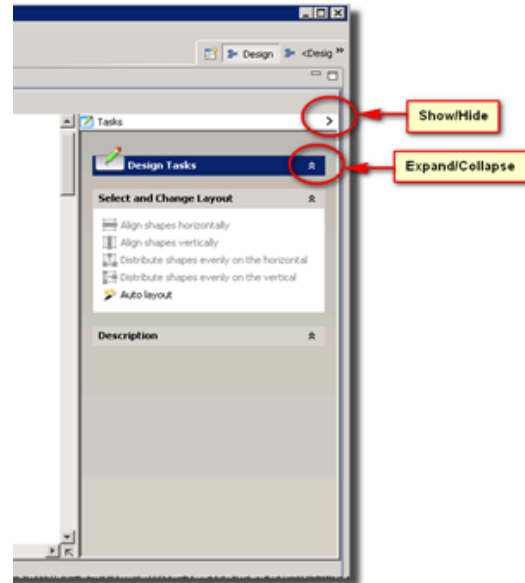
Should you require a larger view of the main content pane, other features like the Tasks pane (visible by default) can be hidden.

- ▶ To hide the Tasks pane, click the adjoining Hide icon (>).
- ▶ To show the Tasks pane again, click the Show icon (<).

You can also expand (and then collapse) any of the panels.

- ▶ To expand or collapse a panel, click the icon (⌵).

Alternatively, you can expand (or collapse) a panel by clicking the panel header.



For an extra degree of freedom (especially helpful if you use a large display or have a multi-monitor system) you can detach the various views (but not panes such as the Tasks pane) from the Process Modeler interface by selecting them with your cursor and moving them to another position on the screen.

### Task 3. Adding Performers

A business process by definition requires that someone or something is there to monitor and/or trigger the operational steps and decisions necessary to fulfill process objectives.

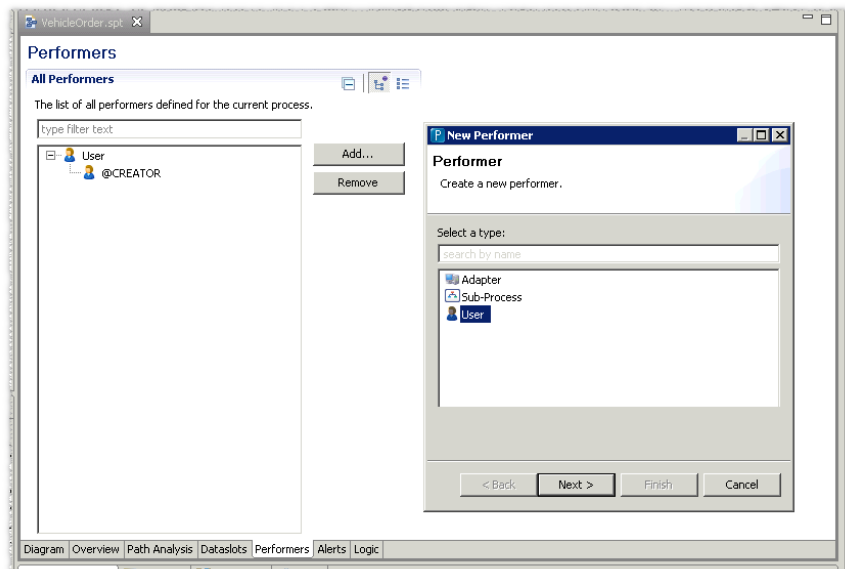
That's where Performers come in. Performers can be individual human Users (in our Vehicle Order's case: Sales, Finance, etc.); groups of human users (such as Sales Reps or Call Center Operators); Adapters (worksteps that take advantage of data from existing computer systems to perform tasks such as sending or receiving an email) or Sub processes (self-contained process templates that you've linked to your current process template).

Performers, as the name implies, specify who or what is responsible for fulfilling a particular work step in the process flow.

*Before we begin the actual process design, let's start by adding some Performers to our VehicleOrder process.*

Step 9. Select the Content Tab Performers and click the Add button. The New Performer Dialog opens up.

Step 10. Select User, in order to add human performers. Click Next.





Step 11. There are three types of human performers: A named user, users of a group and a queue, representing all users assigned to that queue at runtime. Enter the name Sales and select the type User.

*Ordinarily Sales and Finance would be defined as groups of users but we want to keep our process simple for training purposes.*

Step 12. Click Finish.

*You will now see the performer Sales added to the list of all performers. On the left you see the user details.*

*Expanding Usage you see a list of worksteps assigned to this user. Since we do not have worksteps defined yet, this list is empty.*

Step 13. Now repeat the steps to create another user called **Finance**.

## Task 4. Defining DataSlots

Just like other software applications, BPM processes need variables to store certain key data. In OpenEdge BPM we call these variables DataSlots. DataSlots can be used:

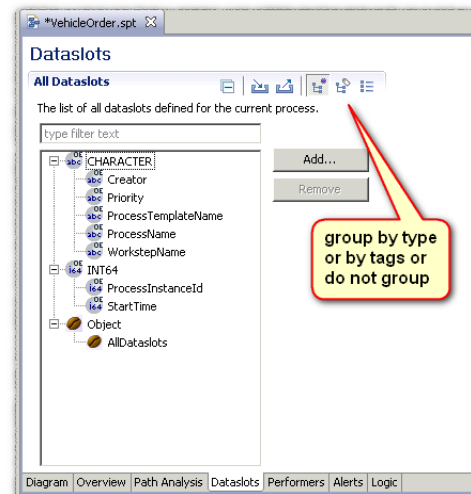
- ▶ To pass information from one activity to the next
- ▶ To read and write data to and from forms
- ▶ To read and write data to and from adapters such as Web services, Database or OpenEdge Application Server calls
- ▶ To decide on a path within a process
- ▶ To expose key process data to management dashboards and other monitoring tools

Step 14. To create dataslots, click the Content Tab DataSlots.

You see a list of all defined dataslots. Since we did not yet define any dataslots the ones listed here are System DataSlots.

Step 15. You can group dataslots either by data type or by Tags. Select the button for “group by tag” and expand the System Symbol in the dataslot list.

All currently defined dataslots are tagged with System. Tagging is a very helpful means of managing dataslots. You can attach multiple tags per dataslot. You would typically group dataslots by Business Entity, e.g. “Customer”, or by usage within the process, e.g. “ProcessControl”.

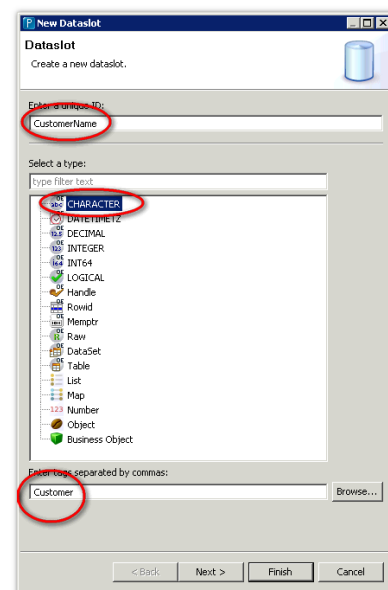


Step 16. Click the Add button on the right. The New DataSlot Dialog opens.

Step 17. Name this new dataslot CustomerName. This dataslot will be used to store the name of the customer who wishes to order a new car. As we want to allow users to enter any alphabetic text as their name, make sure to define this dataslot with a type of Character and give it a new tag called Customer.

The types listed comprise of two groups: ABL data types and legacy data types. The ABL types are listed first (CHARACTER down to TABLE) and are indicated by an icon with a little Acronym “OE”.

The legacy data types List, Map, Number, Object and Business Object are still supported for backwards compatibility and for internal purposes. Please avoid using the legacy data types.



Step 18. Click Next. You may now enter an initial value. It is not required here.

*Instead of providing an initial value, you will set such values at process instantiation time.*

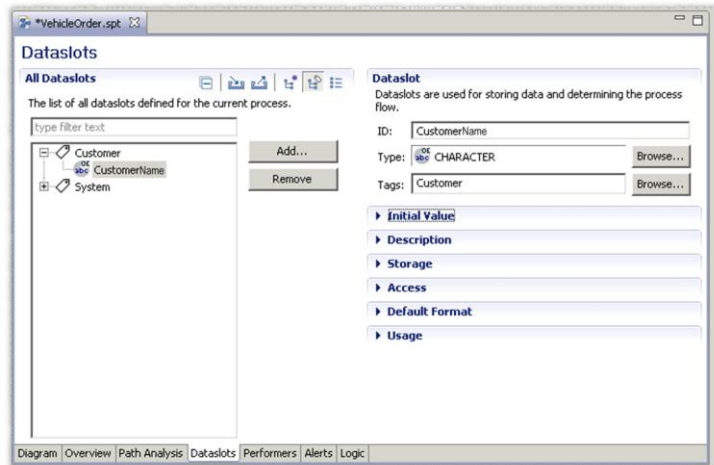
*Please note, that the ABL data types support the UNKNOWN value.*

Step 19. Click Next. For documentation and developer communication purposes you may enter a description for this data slot which.

Step 20. Click Finish.

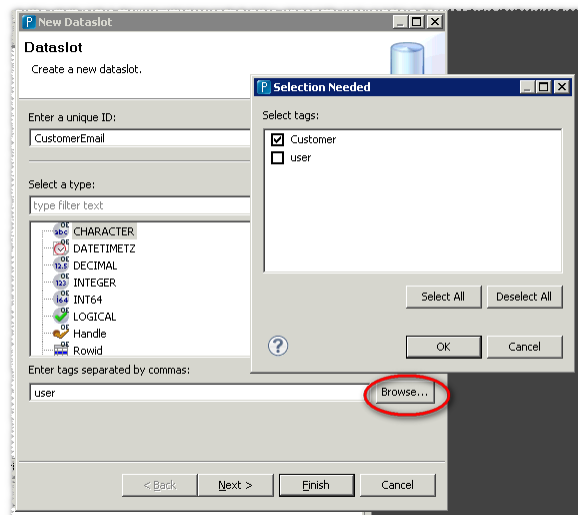
Step 21. The dialog closes and you see the new data slot CustomerName listed under the tag Customer.

On the right side of the dataslot tab you see the data slot's properties.



Step 22. Next you need to create a dataslot to store a customer's email address. Click the Add button again and call the dataslot CustomerEmail. Set its type to Character.

Step 23. In order to tag this dataslot with Customer, you either type directly into the tags field, or you click the button Browse to the right of the field and choose from the list of already used tags.



Step 24. Built into Progress Developer Studio for OpenEdge we have the ability to define Data Formats for commonly used dataslots. Select the data slot CustomerEmail to display its properties.

Expand the Default Format folder and select the Required check box to specify that this data is required.

Step 25. Select the Validation field's **Browse** button and select the validation rule Email address from the drop down.

*The changes are saved automatically.*

**Dataslot**  
 Dataslots are used for storing data and determining the process flow.

ID: CustomerEmail

Type: CHARACTER Browse...

Tags: Customer Browse...

▶ Initial Value

▶ Description

▶ Storage

▶ Access

▶ Default Format  
 Determine dataslot default format for auto-generated forms.

Type: Text Field

Validation: Email address Browse...

Options

Label:

Editable  **Required** Password

Size: 20

▶ Usage

Step 26. You need to create another dataslot called DealerName, type Character, Tag Dealer.

Step 27. This time change the default format type to Combo. This allows you to define the default display format for this dataslot as a combo box.

Click on Add on the right of the choices box, enter the label and value and label, and click OK.

Add two Label/Value pairs: SamsScubaroo, and FredsFjord.

Have the label mirror the field names.

Select the **Required** field to specify that this dataslot does not accept the **Unknown** value.

**Dataslots**  
 The list of all dataslots defined for the current process.

type filter text

Customer  
 CustomerEmail  
 CustomerName  
 Dealer  
 DealerName  
 System

Add...  
 Remove

ID: DealerName

Type: CHARACTER Browse...

Tags: Dealer Browse...

▶ Initial Value

▶ Description

▶ Storage

▶ Access

▶ Default Format  
 Determine dataslot default format for auto-generated forms.

Type: Combo

Validation: Required Browse...

Options

Label:

Editable  **Required**

Choices

Label	Value	
SamsScubaroo	SamsScubaroo	Add
FredsFjord	FredsFjord	Modify
		Remove
		Move Up
		Move Down

▶ Usage

Step 28. As a last step, take any of the choices make it the initial value of this dataslot.

Step 29. Save the process template.

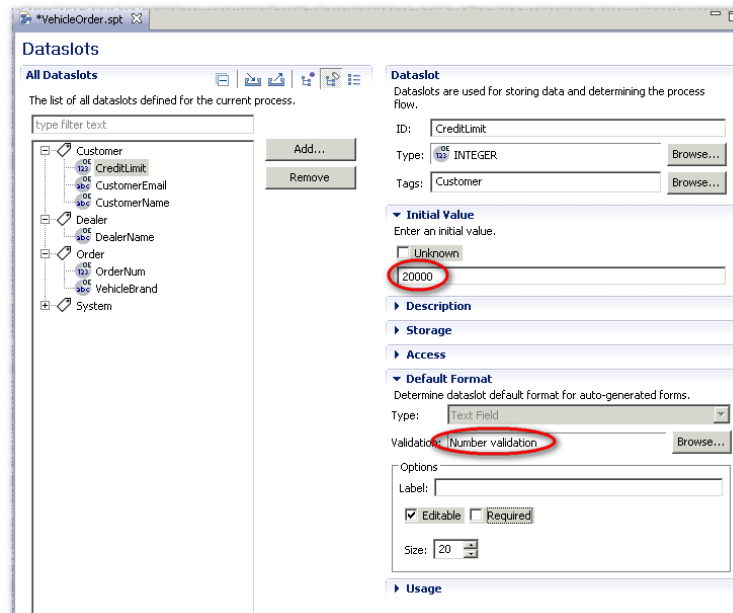


Step 30. Using what you've learned in the preceding steps, define three additional dataslots.

- ▶ Create the dataslot **VehicleBrand** of type of **Character**, tag **Order**, with a format of type **Combo**, and two values as follows: **Scubaroo** and **Fjord**. Set its **labels** to the same strings.
- ▶ Create the dataslot **OrderNum** with a type of **Integer** and tag **Order**. This is going to hold a whole number value.
- ▶ Create the dataslot **CreditLimit** with a type of **Integer** and tag **Customer**, an **initial value** of **20000**.

Step 31. Add a Validation Rule for Credit Limit. Expand the DataSlot Properties Area Default Format.

Click on Browse right to Validation and select Number Validation, Number type of Int64 with a Minimum value of 10000 and a Maximum value of 50000



With these six dataslots defined so far, you are done defining dataslots for now and you can click on the diagram content tab to return to the main canvas.

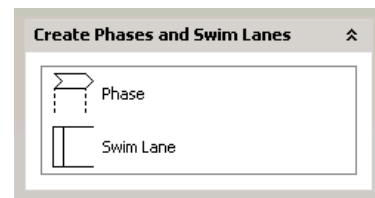
## Task 5. Adding Swim Lanes

As designing business processes can become quite involved, OpenEdge BPM employs a unique organizational metaphor called Swim Lanes to keep things manageable. Used in workflow diagrams to organize processes across functional boundaries, swim lanes are horizontal sections that delineate which performer is responsible for a group of user-type task steps. A benefit of swim lanes is that when an Activity shape is dragged to a swimlane (or moved from one swimlane to another), the shape automatically becomes a user-type task and inherits the performer assigned to the swimlane. Other non-user type tasks can be included in a swimlane for ease of reading or for documentation purposes.

*A swimlane always represents a human user-type performer and not the object of their action.*

Step 32. Click on the Diagram Content Tab to get back to the task pane. Click Create Phases and Swim Lanes in the Tasks pane. Click the Swim

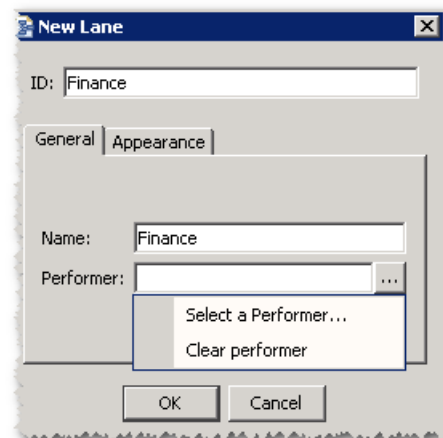
Lane icon  , opening the New Lane dialog box.



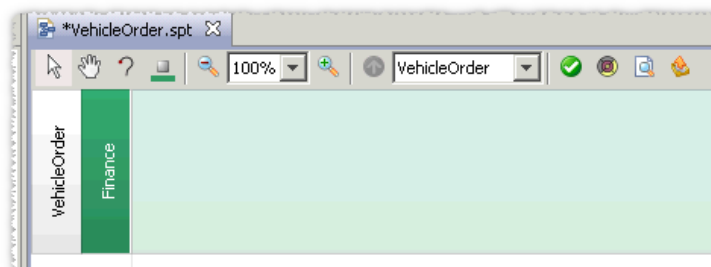
Step 33. Set the ID and Name to Finance.

Click the ellipsis button (...) next to the Performer text field, and then choose the Select a Performer option. Select Finance from the list of performers and click OK.

Click the Appearance tab and select Sea Green as a color. Then click OK.

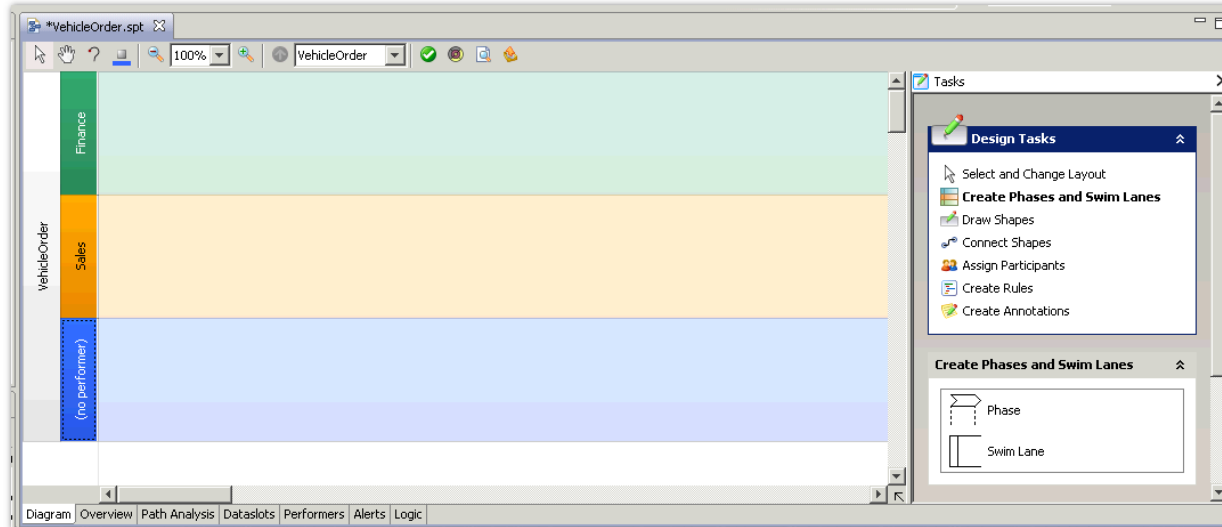


*A swimlane assigned to Finance now spans across the top of your blank Content pane. You can also use the color icon in the modeler palette to change the color of the swimlane if required.*



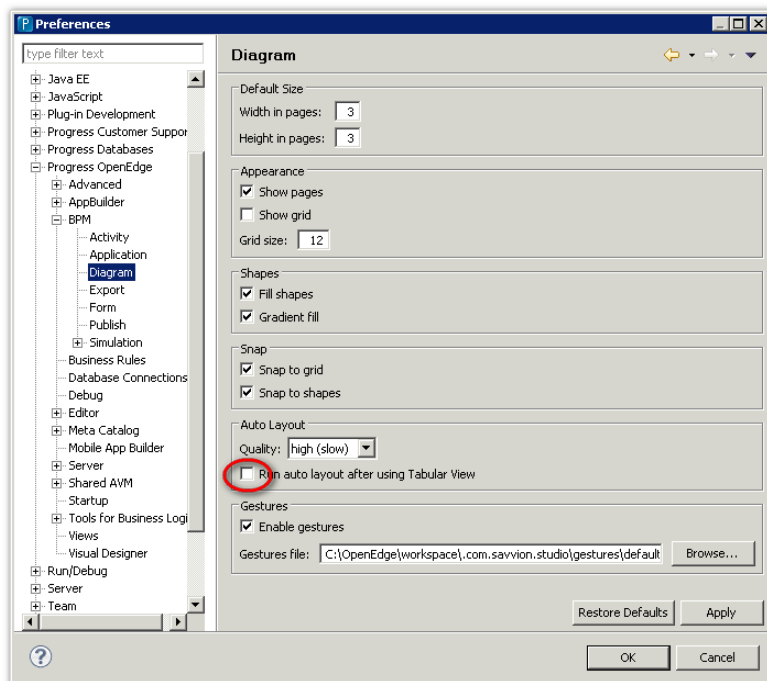
Repeat steps 1 – 4 to create swim lanes for Sales (Light orange) and NoPerformer (Light blue). For No Performer, just leave the performer field blank.

Your main canvas should now look similar to the following:



At this point you have your performers, dataslots and swim lanes defined so you're ready to start modeling the Vehicle Ordering process.

Step 34. In order to avoid unintentional changes of performers, please make sure, that the Preference (Main Menu Windows | Preferences) of Run auto layout after using Tabular View is not checked.



## Task 6. Adding Worksteps

There are two ways of modeling a process in OpenEdge BPM.

- ▶ Enter the process steps into the Overview table. This is often helpful for entering a linear process.
- ▶ You can also draw the process on the Diagram Canvas.

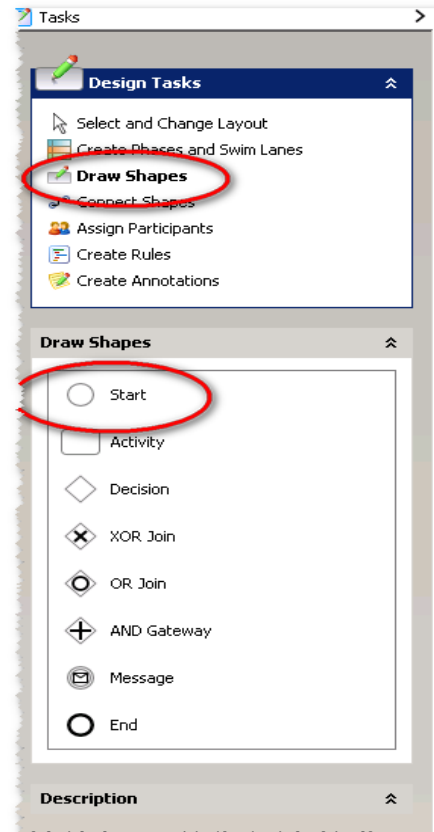
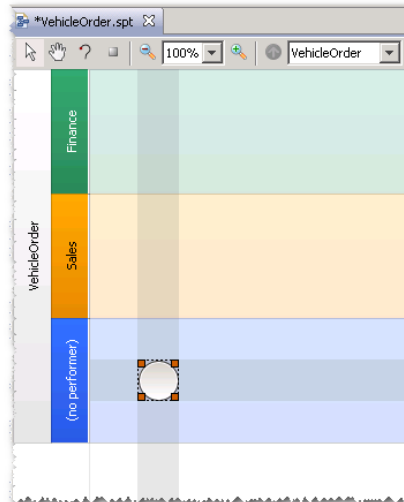
As we already defined swim lanes we go for drawing.

Step 35. All processes must have a single start step, representing the entry point into the process. To define the start step, choose the Draw Shapes task in the Design Tasks pane from the process canvas.

Drag the Start shape onto the canvas and drop it within the No Performer swimlane.

This specifies that an external user (i.e. someone who is not internally involved in the process) will initiate the process somehow.

Processes can be started in various ways, such as from the OpenEdge BPM Portal, from an external user interface such as an OpenEdge User Interface, a website, by a message, dropping a file or by schedule. For this workshop we will start processes only from the OpenEdge BPM Portal as other approaches are outside the scope of this introductory workshop.

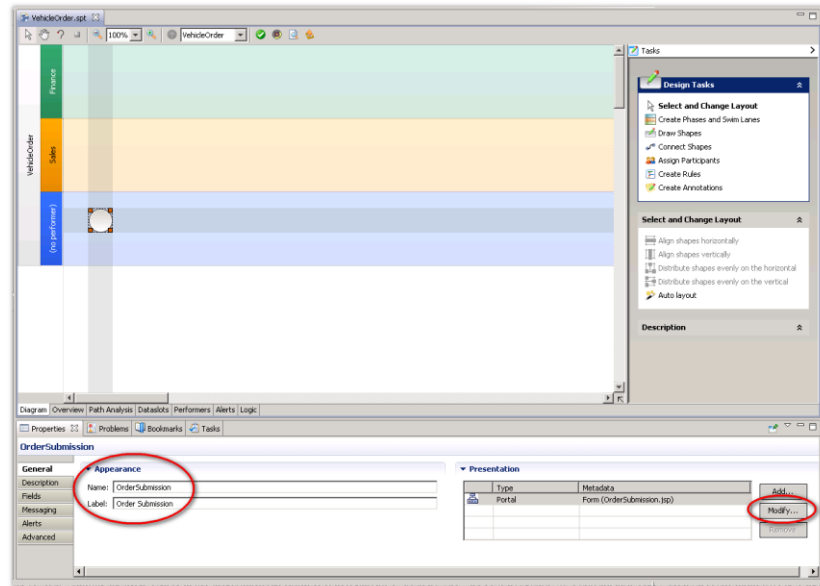




Step 36. You now want to re-name the start step so click on the Start circle. Select the Properties tab beneath the diagram. Open the Sub-Tab General and locate the Appearance section. Rename this step to OrderSubmission and give it a label of Order Submission.

*You might note that you have the choice to add and modify presentation types of each human work step. Adding types other than Portal is new to OE 11.3 and allows you to define User-Interfaces*

*for various display types, being it OE GUI, Tablet, Browser, Portal etc. We cannot discuss this feature during this workshop, but feel free to check out its power.*



*At runtime OpenEdge BPM executes processes by creating an instance based on this process template. You want to set a subset of dataslot values during instantiation to pass that instance some key data like customer reference as well as context data.*

*With the next step you define the subset of dataslots, you want to be set at initialization time.*

Step 37. Select the Fields sub-tab on the left. Click the Add button, and you will be shown a list of currently-defined dataslots. Select all dataslots items you want to add.

For this example please add the dataslots CustomerName, CustomerEmail, DealerName, VehicleBrand and OrderNum.

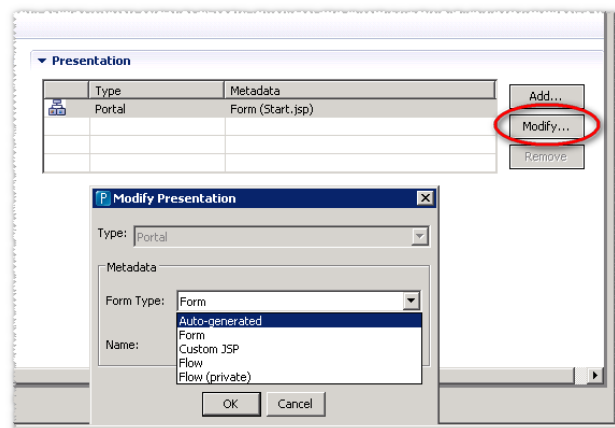
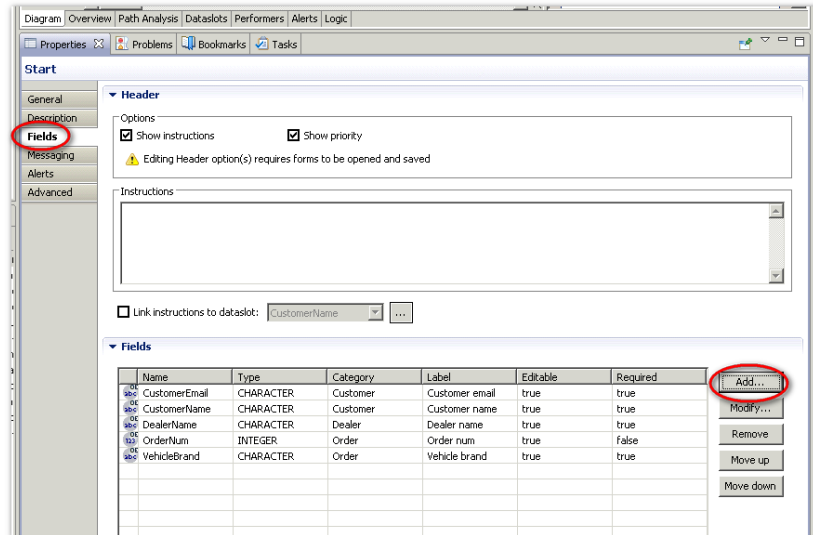
Step 38. If you picked these fields at once, then they will be added in alphabetical order as shown in the screen shot. You

have to use the **Move up** and **Move down** buttons to set field sequence as listed above. It defines the sequence in the initial form layout.

*This list of fields also defines the list of data slots which are accessible from an ABL Client or Application Server via the Progress ABL Classes Progress.BPM.\**

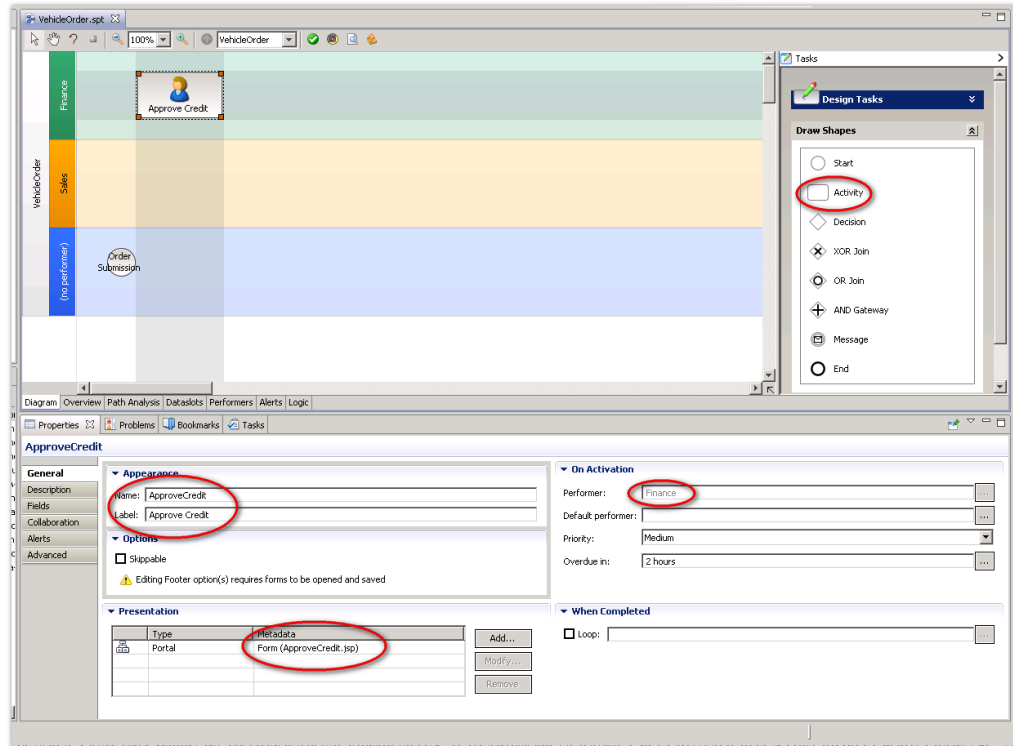
*The list of data slots is also used to pre-populate presentation forms that will be used to show work step dialogs in the BPM Portal. Use the Move up and Move down Buttons to set the sequence of fields in the pre-populated forms.*

Step 39. A default presentation or type Portal gets created for each human and the start work step. Since we need to access the start step's form just for testing purposes, we have OpenEdge BPM create an auto-generated Form. In the presentation Section select the Portal entry and click Modify. Select Auto-generated from the Form Type drop down.



Step 40. The next activity is performed by a human performer. Drag the Activity shape from the Draw Shapes palette onto the canvas within the Finance swimlane.

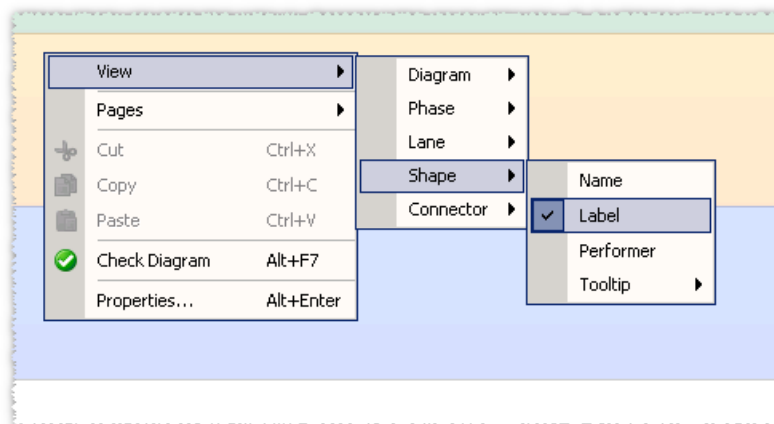
Step 41. Select the Properties Tab and therein the Sub-Tab General. Change the name of the work step to ApproveCredit and label to Approve Credit.



Step 42. Change the Presentation Form file's name to ApproveCredit.jsp.

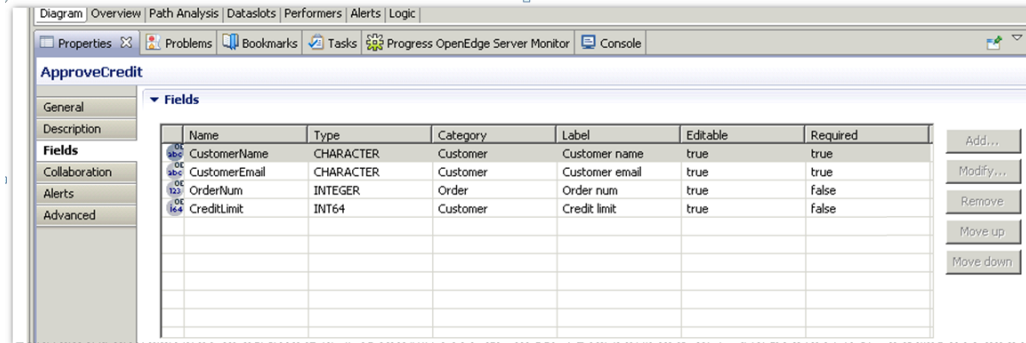
*You will notice that the performer has been set to Finance. This was done automatically for you because this activity is within the Finance swimlane.*

Step 43. You might also notice that there is a slight difference between your current screen and the screen as shown above. The Content Pane displays the shape's labels instead of the shape's names. You can adjust settings by right-clicking into the canvas, opening the pop-up menu and selecting which text to display in shapes.



## Task 7. Designing Forms of human-performed worksteps

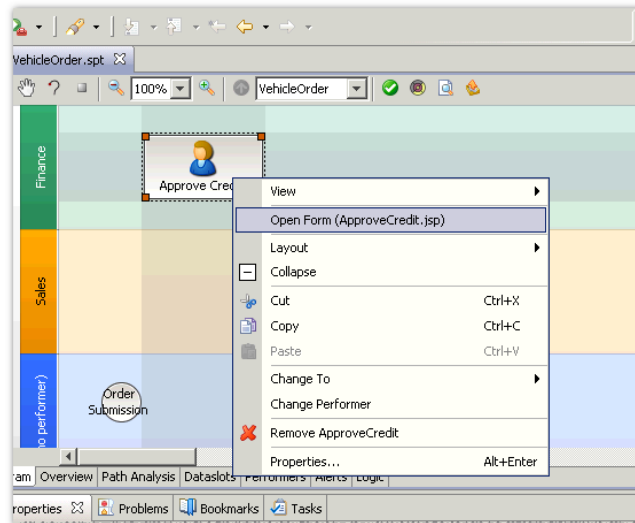
Step 44. Select the Fields sub-tab of the Approve Credit step on the left. Please add the dataslots CustomerName, CustomerEmail, OrderNum and CreditLimit.



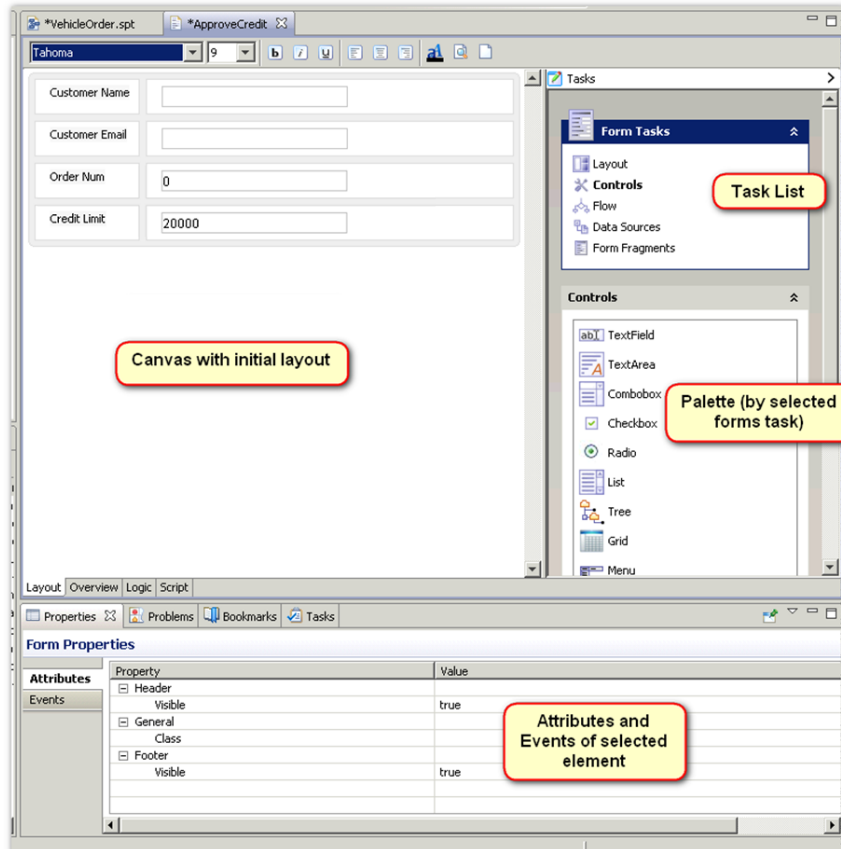
You can add the fields one by one in the sequence as listed above. You may also do a multi-select and use the Move up and Move Down Buttons to rearrange the order of these fields.

This list of fields and its order defines the list of data slots to be included in the forms initial layout.

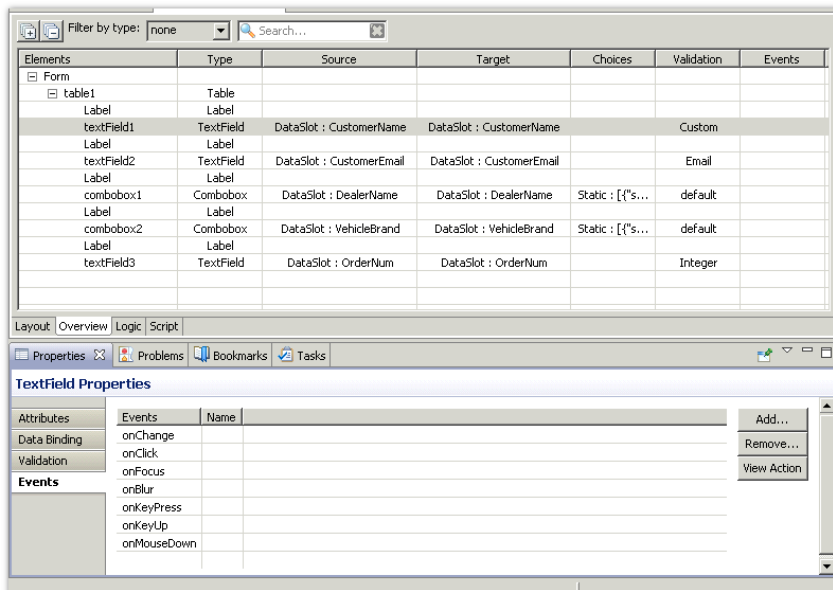
Step 45. From the main canvas, right-click the Approve Credit activity and select Open Form. Instead of using the auto-generated form as we did in the Start step, we manually design the form that is associated with this activity.



Step 46. After the initial layout is built by a generator (may take a few seconds), you will see the form opened in the form editor. You see the canvas with the initial layout, the task list and Palette with its elements based on the selected form task. At the bottom you see a list of attributes and events of the currently selected form element. Header and footer are prebuilt elements that will be visible when deployed.



Step 47. Select the Overview tab. It displays a hierarchy of form elements. For data-bound widgets it lists the source and target dataslots bound to that widget.

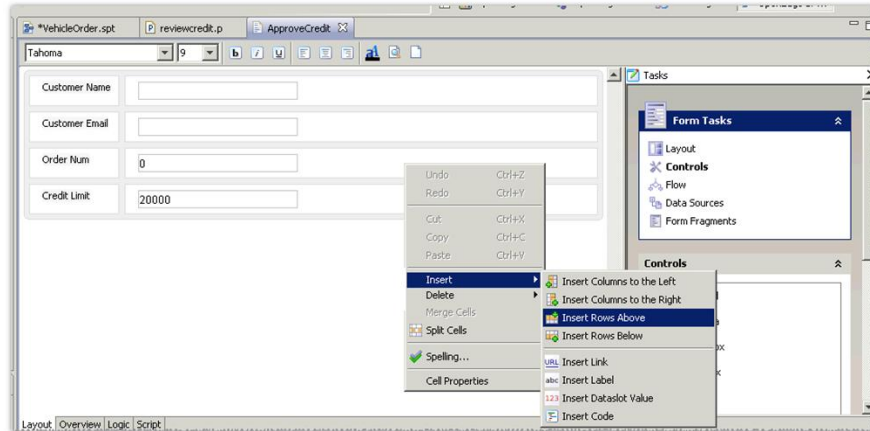


You may change the layout and to your needs. Let us for example add another field, bound to the dataslot CreditLimit.

Step 48. Right-click into the Order Num row of the html-table and select Insert Rows Above.

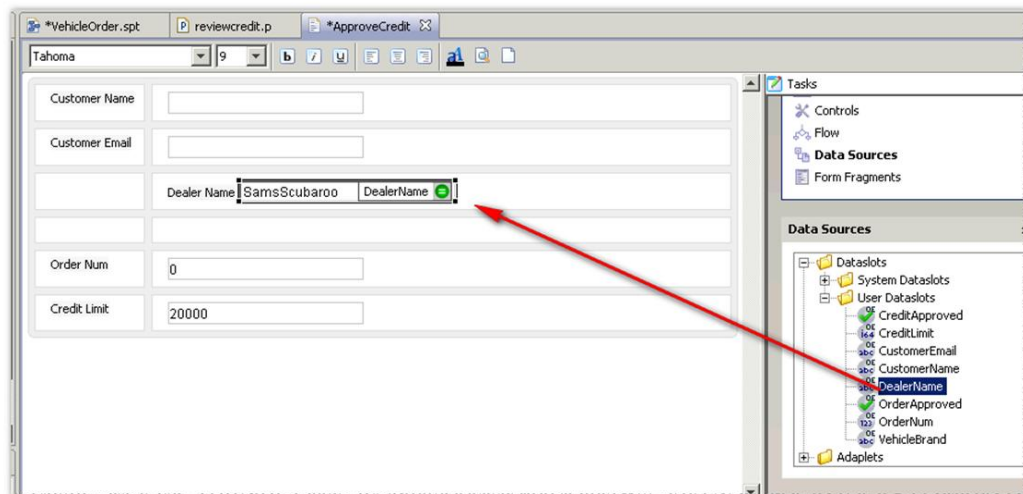
A new row is added.

Step 49. Do this twice.



Step 50. Select the Form Task Data Sources.

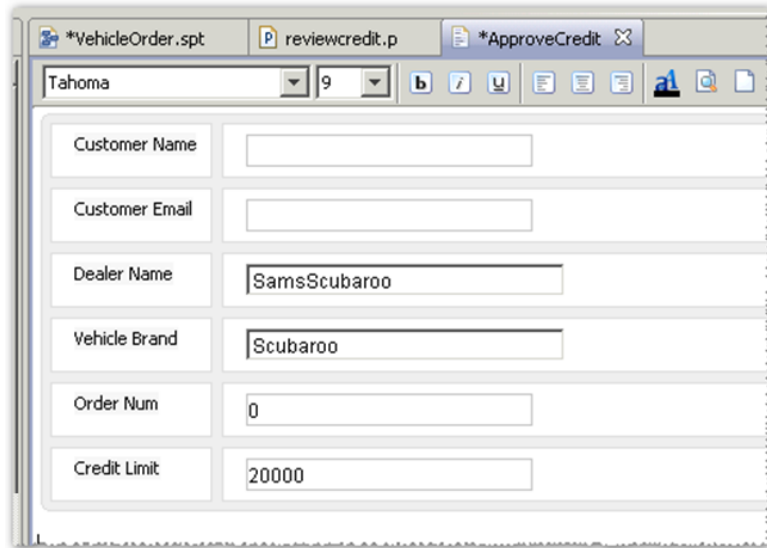
Expand the Dataslots tree. Navigate to User Dataslots and drag and drop the dataslot DealerName into the new table row. A new data-bound field with label is added.



Step 51. Return to the Layout task tab. As a final step, pick the label Dealer Name and move over to the left column similar to the labels of the rows above. (Not shown here.)

Step 52. Now add the DataSlot  
VehicleBrand the same way.

*You Form should now look like this.*



The screenshot shows a software application window with three tabs: '\*VehicleOrder.spt', 'reviewcredit.p', and '\*ApproveCredit'. The window title is 'Tahoma'. Below the title bar is a toolbar with icons for bold, italic, underline, and other text formatting options. The main area contains a form with the following fields:

Customer Name	<input type="text"/>
Customer Email	<input type="text"/>
Dealer Name	<input type="text" value="SamsScubaroo"/>
Vehicle Brand	<input type="text" value="Scubaroo"/>
Order Num	<input type="text" value="0"/>
Credit Limit	<input type="text" value="20000"/>

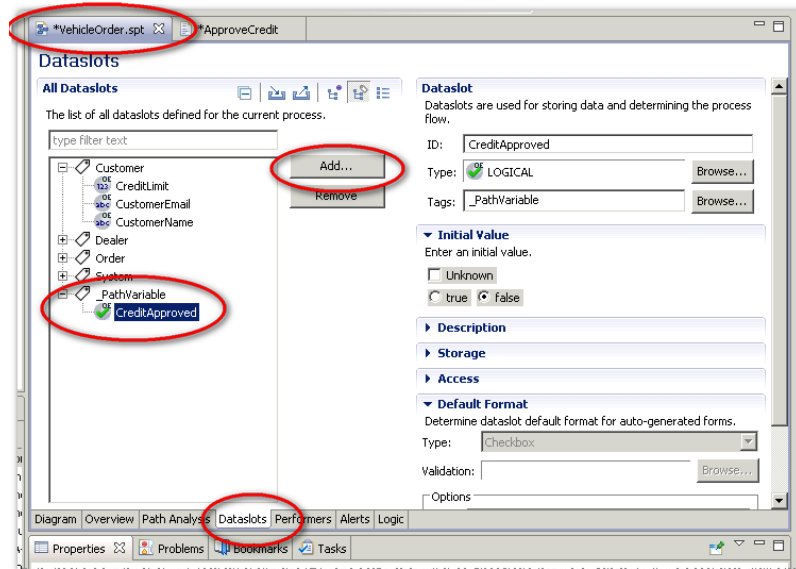
Step 53. You are finished with this example of modifying a layout manually. Save the form.

## Task 8. Controlling the process path

A simple process may be a linear sequence of worksteps. More commonly you have several process paths which are activated depending on some condition.

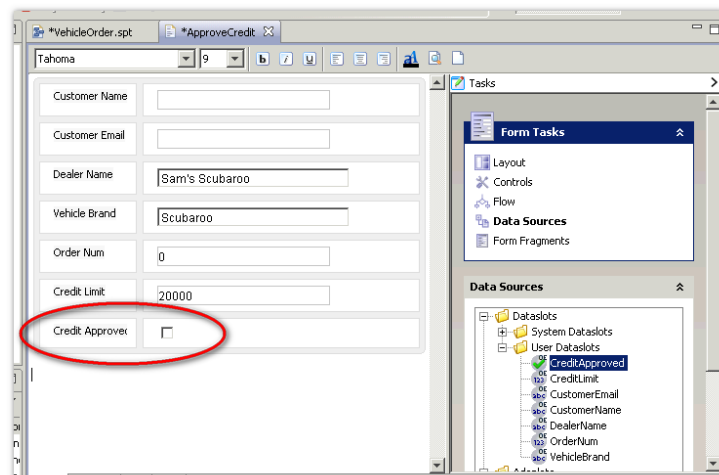
Step 54. At this point in the design process you need to add a dataslot that you will use to indicate whether a customer's credit was approved or not. Select the DataSlots Tab of the process template and add a dataslot called CreditApproved of type Logical tagged \_PathVariable.

Please recall that tags are arbitrary. It is just a means to group your dataslots by whatever structure you like.



Step 55. Add this dataslot to the form like you added Dealer Name and Vehicle Brand.

You've finished defining your form, so all that's left to do is save and close it and return to the VehicleOrder.spt process.

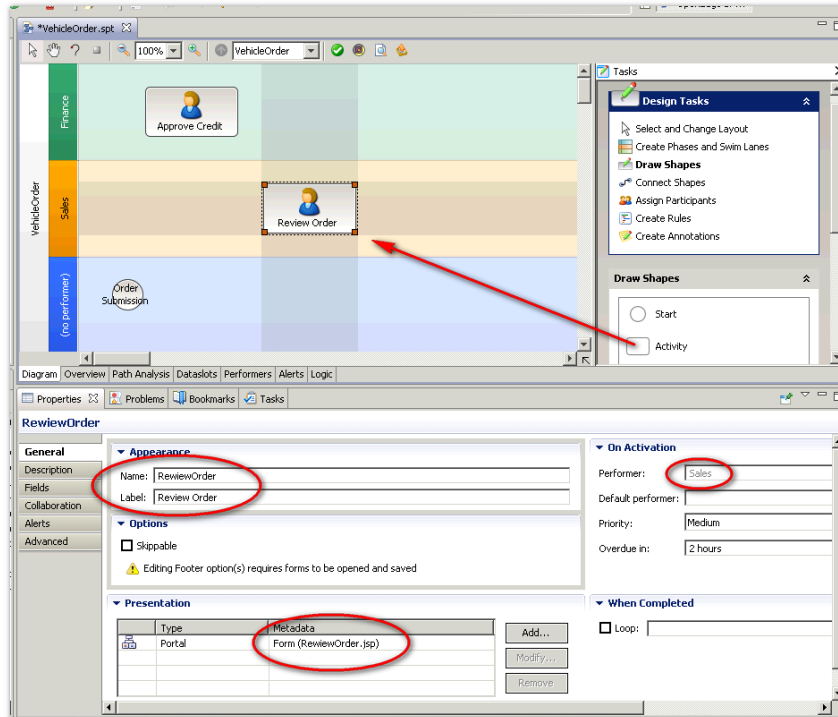




Step 56. Next you need to define the Review Order activity for the Sales performer. Drag and drop another shape of type Activity to the Sales swimlane.

*Placing an activity within a swimlane automatically assigns it to the swim lane's performer. If you weren't using swim lanes on your diagram then you could automatically assign a performer by dragging a user (design task Assign Participants) onto the canvas rather than an activity.*

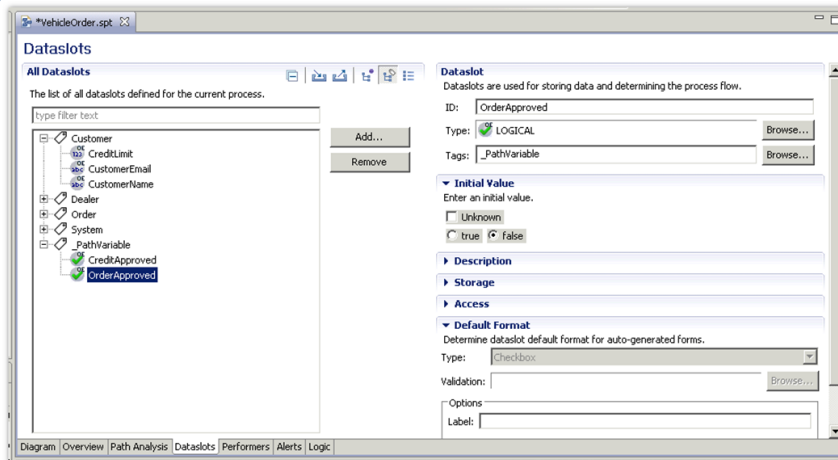
Step 57. Change some properties of the new activity: Name: ReviewOrder, Label: Review Order.



*The Form name gets automatically changed to ReviewOrder.jsp. Just accept this change.*

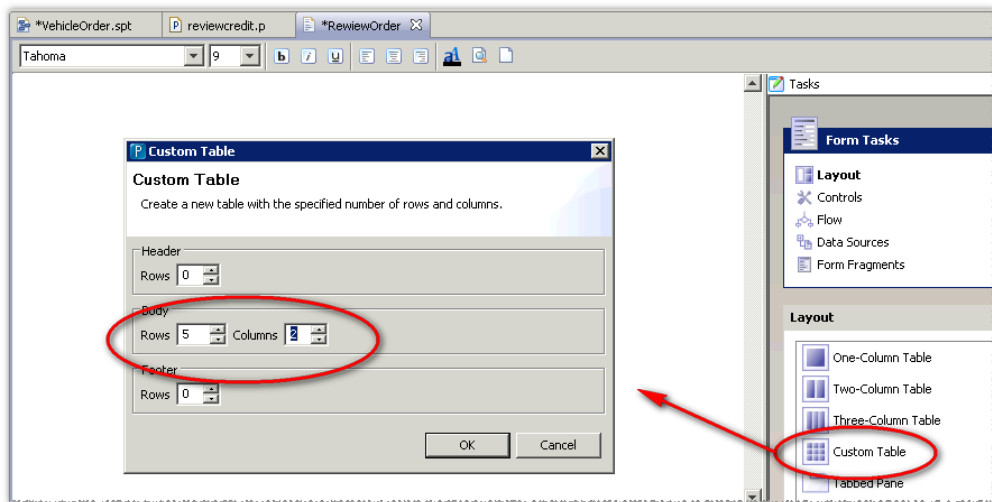
Step 58. Save the process template.

Step 59. Now let us populate the Review Order form with the necessary dataslot fields. But before we do so, let us add one new dataslot which we will use to control the process flow: Add OrderApproved of type Logical.



Let us now add the fields to the Review Order Activity Open the ReviewOrder Form. It is empty.

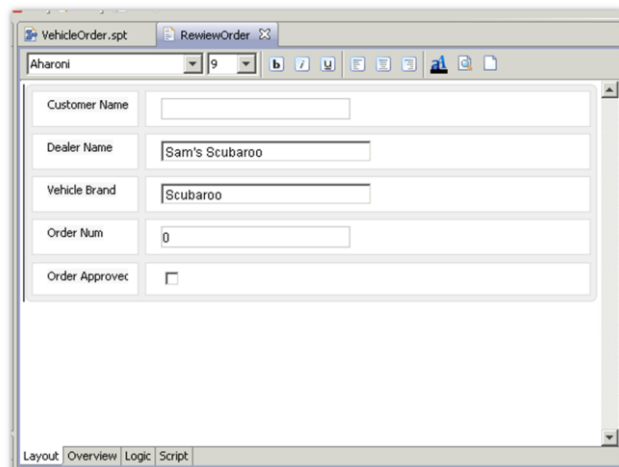
Step 60. Let us add a layout from scratch. Pick the Custom Table, drag and drop it on the canvas.



The Custom Table Dialog will appear. Create a body of 5 rows and 2 columns.

Step 61. Add the dataslots CustomerName, DealerName, VehicleBrand, OrderNum and OrderApproved manually by selecting and dragging these dataslots from the Form Task DataSources Tab.

Your ReviewOrder Form should look like this now.



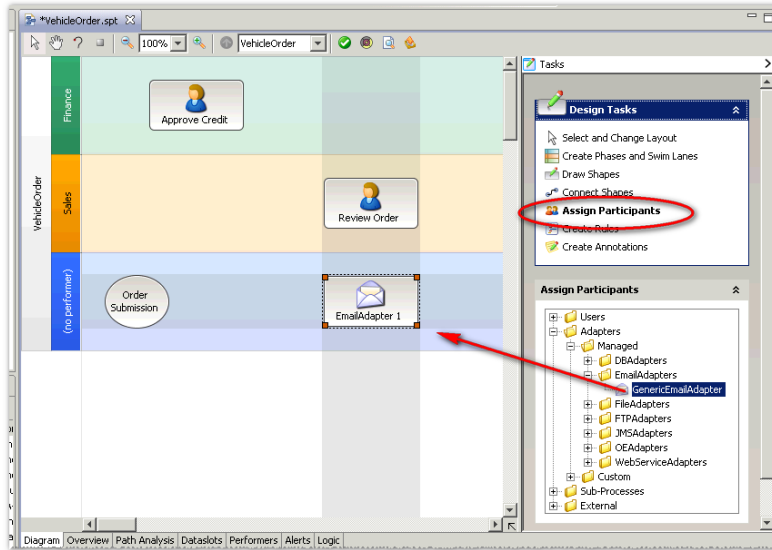
Step 62. Now close and save this form and return to the main VehicleOrder.spt process

## Task 9. Sending an Email

Step 63. If a customer fails the credit check performed by our Finance person, you want to send them an email. You do this by adding an Email Adapter to the model.

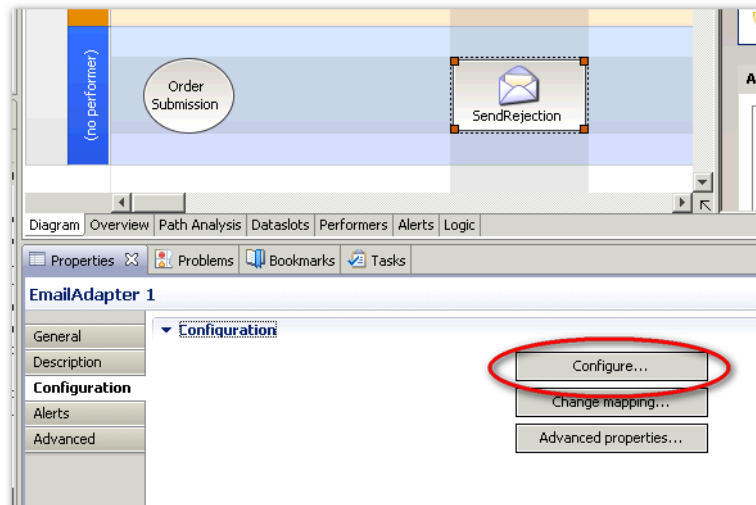
Select the design task Assign Participant.

Step 64. Expand to Adapters| Managed| EmailAdapters| GenericEmailAdapter and drag it onto the canvas within the No Performer swimlane.



Step 65. In the properties section change the EmailAdapter Name to SendRejection and Label to Send Rejection.

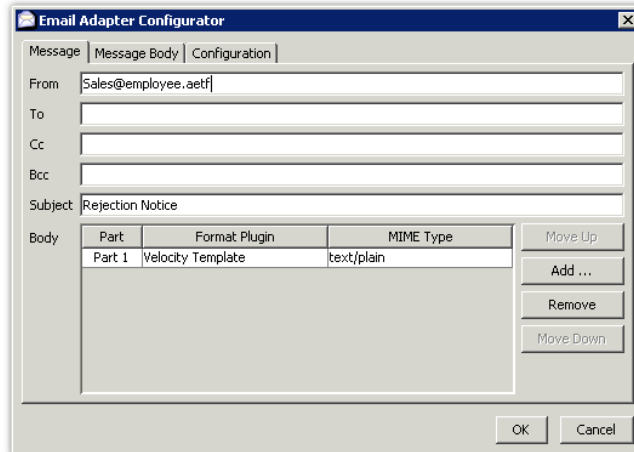
Step 66. Then select the configuration tab and within the tab the Configuration button.



Step 67. Set the From field to your own e-mail address (for testing) and the Subject field as Rejection Notice.

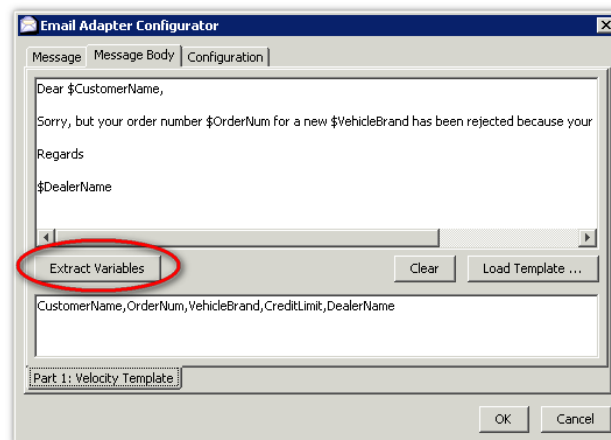
*The From Address you see in the screen shot is just an example.*

*After the workshop or during - if time permits - you may also set up a test mail server on your machine, e. g. <http://www.hmailserver.com>. And with a Mail Client like Mozilla Thunderbird, you could also setup a test mail account to receive these mails locally.*



Step 68. Select the Message Body tab and type the following in the editable text area:

**Dear \$CustomerName,**  
  
**Sorry, but your order number \$OrderNum for a new \$VehicleBrand has been rejected because your credit limit of \$CreditLimit is too low.**  
  
**Regards**  
  
**\$DealerName**

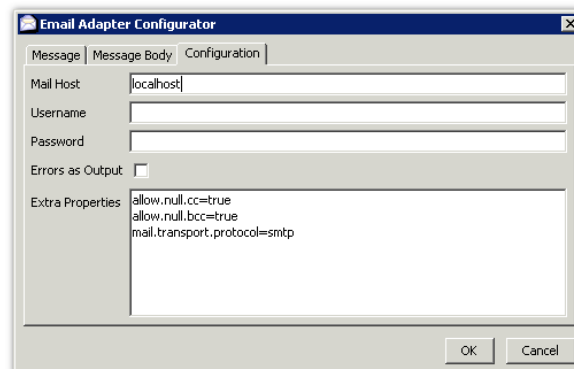


*The \$ prefix indicates an email template substitution variable which needs to be mapped to a dataslot.*

Step 69. By choosing the button Extract Variables all strings prefixed by \$ get extracted and listed below.

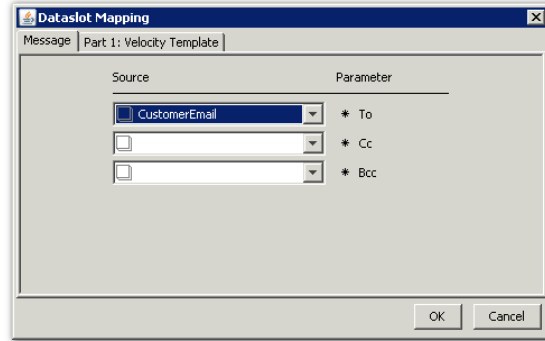
Step 70. Click the Configuration tab and enter your Mail Host name in the Mail Host field. Add your Mailbox User Credentials. Then click the OK button.

*Again, localhost is just a placeholder for you real e-mail Server. If you do not got any e-mail account, you could set the skip attribute on this step to have it skipped, that is not sending a mail.*



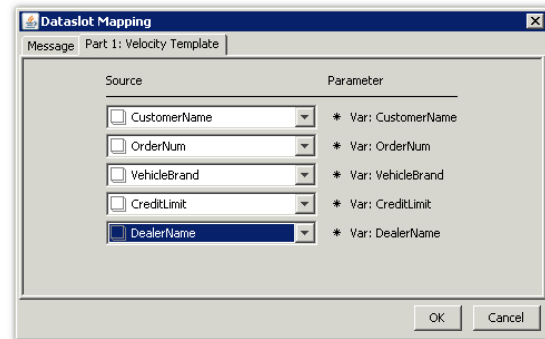
The Dataslot Mapping Dialog gets opened for you.

Step 71. Map the To address to CustomerEmail by choosing it from the drop down list.



Step 72. Next choose the tab Part1: Velocity Template. You will map each email template substitution variable to the according dataslot.

Simply map the five substitution variables (Source) to the dataslots (Parameters) of the same name.

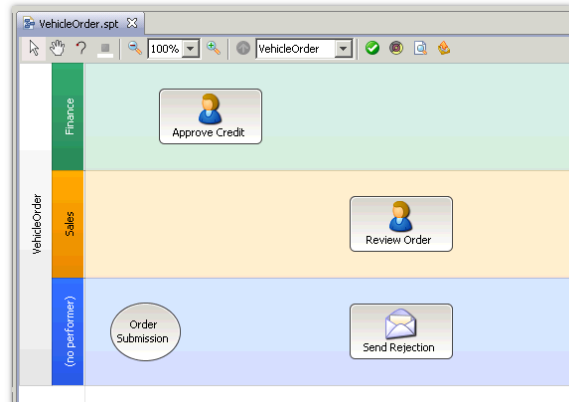


Step 73. We have now finished configuring the email adapter so you can click OK to return to the main canvas. Save the process template.

## Task 10. Working with Multiple Links and Conditions

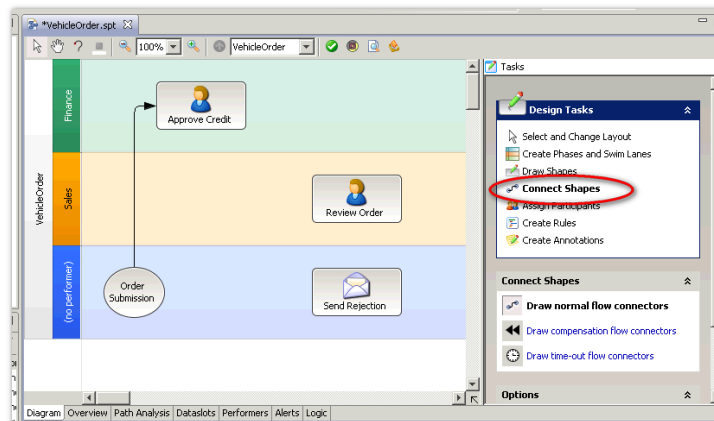
Your process should look like this.

You are now at a stage where you can start to join up each of the items that you've defined. Let's begin with simple links.



Step 74. The easiest way to link two shapes together is by selecting the Connect Shapes| Draw normal flow connectors from the palette. You then click the Start step and drag the arrow to the Approve Credit activity.

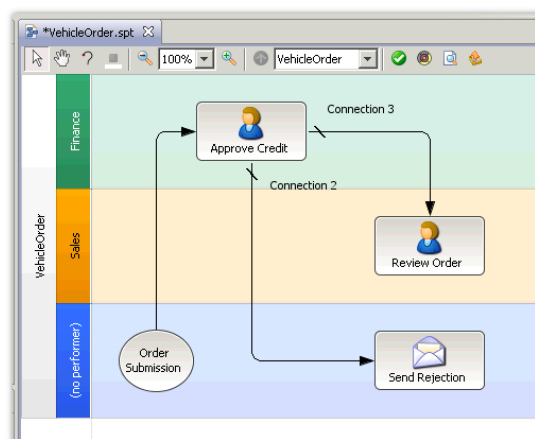
*It is also possible to connect shapes while you are in "Select and Change Layout" mode by holding down your Control Key, right-clicking on the shape you want to connect from, and dragging the arrow to the shape you want to connect to.*



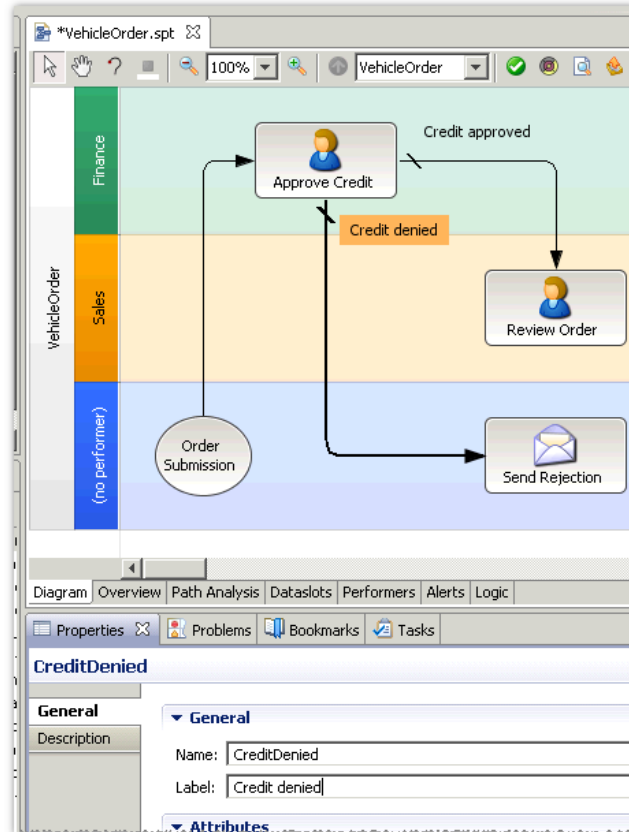
*For changing the connector layout change the mouse mode first to Select and Change Layout, then select the connector and grab the end you would like to attach to a different activity or different edge of an activity.*

Step 75. Go ahead with connecting shapes. Draw a connection from Approve Credit to Send Rejection and another one from Approve Credit to Review Order.

*Note that you created two paths from the Approve Credit work step. The slash at a connector marks it the default path. Since you only have one default, we need to add some more details.*



Step 76. But first, for the sake of readability, give each path a meaningful name. Select a connector, select the properties tab and change Name and Label to Credit Approved and Credit Denied. Omit the blank space in the name.

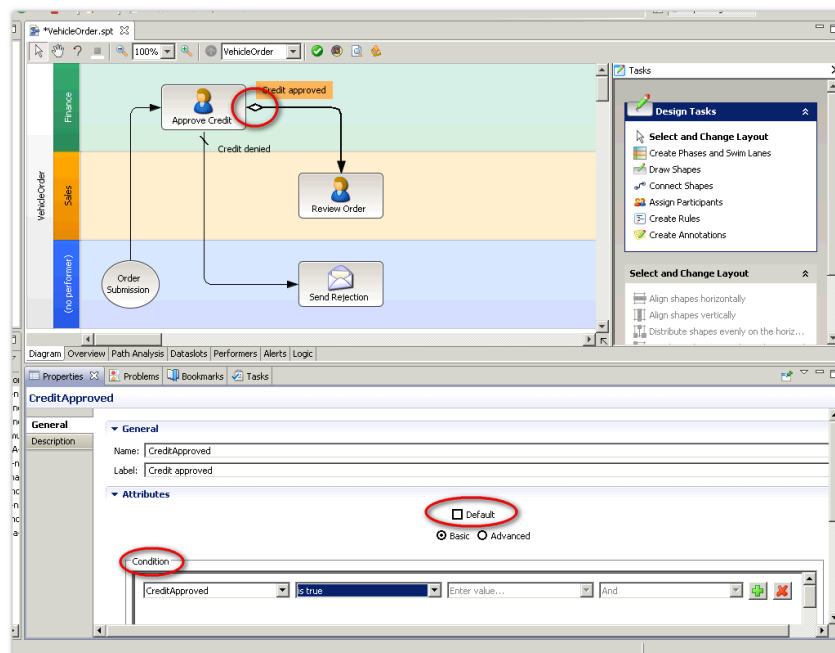


Step 77. Since we want to control the process path, we need to branch on a condition. Select the Credit Approved connector and uncheck the Default check box in the properties of this connector.

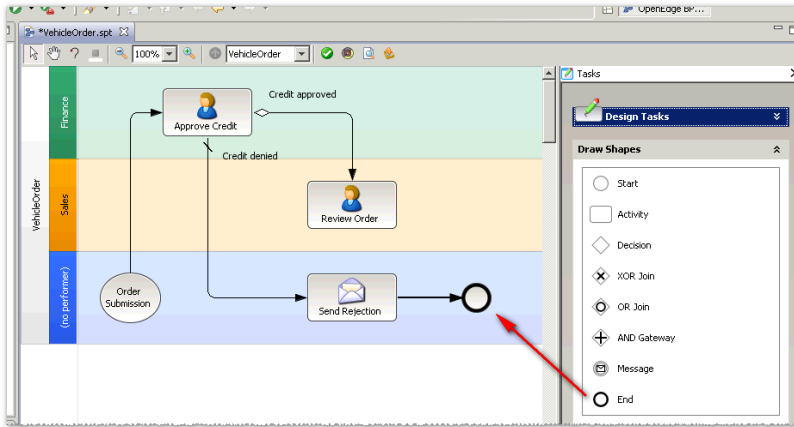
Step 78. When you unchecked the Default box, a Condition section opens below. Select the dataslot CreditApproved and the condition to is true.

Did you notice that the connector base now changes to a diamond to indicate a conditional path.

*You might need to move the focus away from the Condition editor to get the changes accepted.*



Step 79. If the Send Rejection email adapter is executed, this is the end of the process. You must add an End step to the diagram to terminate the process. Select Draw Shapes| End from the palette and drag it onto the canvas next to the Send Rejection email adapter. You should then create an unconditional link from the Send Rejection email adapter to the End step



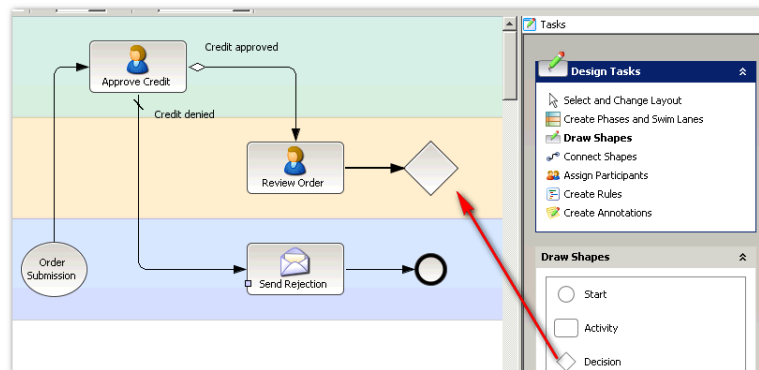


## Task 11. Adding Decision Steps

OpenEdge BPM supports a number of gateway shapes that allow the flow of a process to be forked and merged in a variety of ways, such as decision (conditional split), XOR Join, OR Join, and AND gateways. These gateways taken together allow for pretty much any forking or merging of paths that you may desire including determining the next step based on a condition, executing multiple subsequent steps in parallel and later joining them, continuing execution of multiple paths when one path has completed, etc.

For the sake of simplicity, for this workshop we are going to work only with the decision shape. In the previous lesson we defined a condition by connecting multiple links to an activity. In this lesson we will define a condition using the decision shape.

Step 80. To use a decision gateway, select Draw Shapes| Decision from the palette and drag it onto the canvas next to the Review Order activity within the Sales swimlane. Then link to it from the Review Order activity.

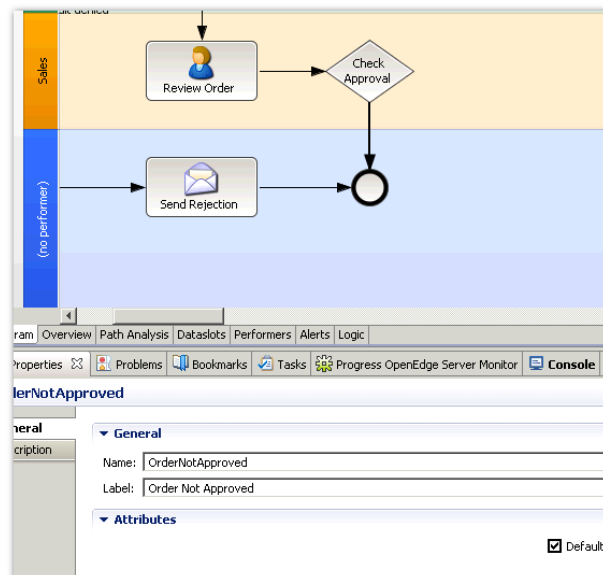


Step 81. You may want to change the name and label of the decision step to: Name =Decision\_CheckApproval, Label: Check Approval. (See next screen shot.)

This decision determines the path of the process based on whether the order was approved in the Review Order step or not.

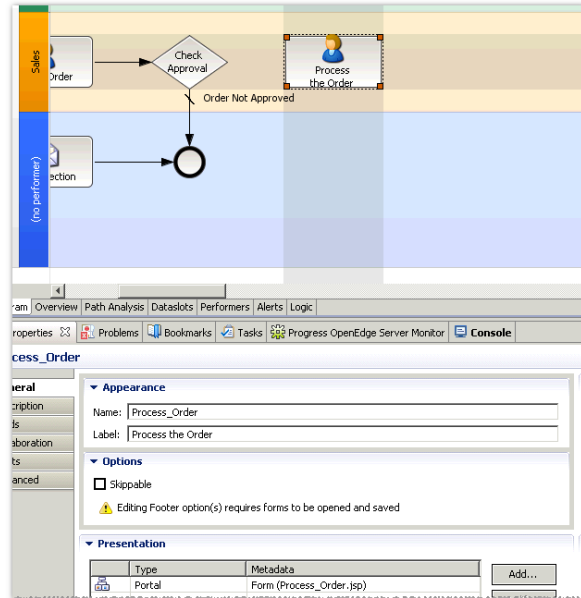
Step 82. You now need to define a link from the Review Order activity to the End event with a name and label of Order Not Approved.

This path will be chosen if the Sales performer chooses to reject the order for some reason.



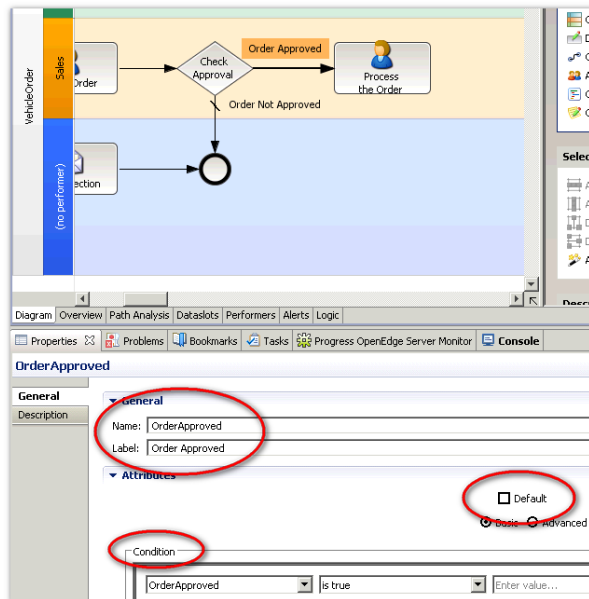
This order process is far from being complete. But for the sake of restricting the complexity of this workshop, we just add one more activity to this process example which is meant to represent all subsequent worksteps needed in real life.

Step 83. Add another Work Step Activity to the Sales Swim Lane and call it “Process the Order”.



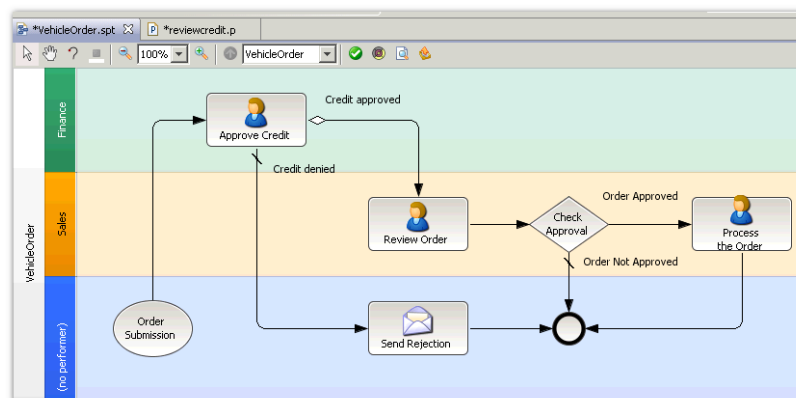
Step 84. Create a connector from the Check Approval decision step to the process the order activity. Call this connector Order Approved.

Step 85. We need to add a condition to be evaluated by the decision step. (The other connector is the default connector.) Uncheck the Default check box and set the condition to dataslot Order Approved is true by using the drop down boxes in the condition area.




Step 86. Add a last connector from the Process the Order Activity to the End step.

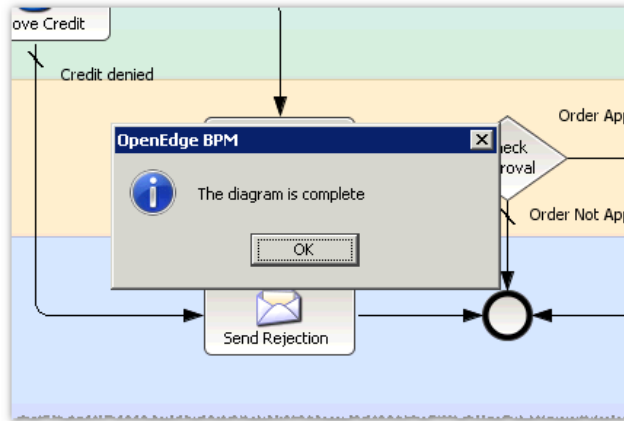
At this point your process should look like this.



Progress Developer Studio for OpenEdge BPM has a process template validator which checks for many common errors that make a process invalid. You can check your diagram to ensure that it is valid at any time.

Step 87. Click the Check Diagram icon (  ) on the tool bar.

*Double-clicking any errors in the Problems view will let you select the component that caused the error (particularly useful in large multi-workstep processes). If all is well and good you shouldn't have any errors with your diagram, so now you're ready to turn your model into a completely executable process.*



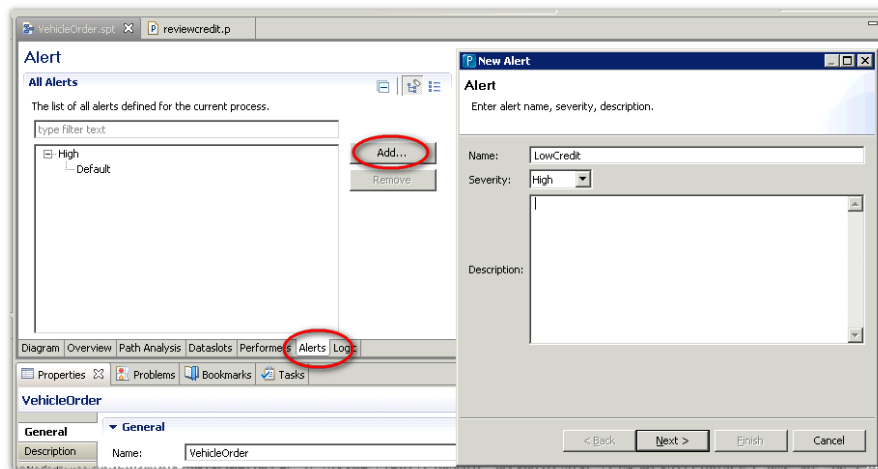
## Task 12. Defining Alerts

Alerts are a means of gaining transparency during process execution. During the normal execution of a process alerts are raised when certain activities are activated or conditions are met.

From the main VehicleOrder canvas select the Alerts tab.

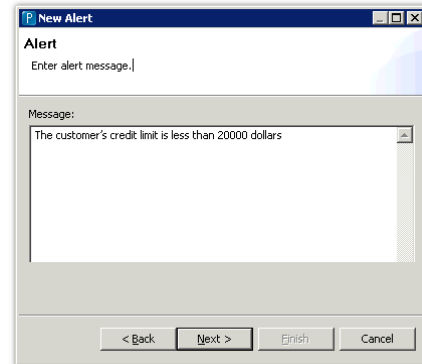
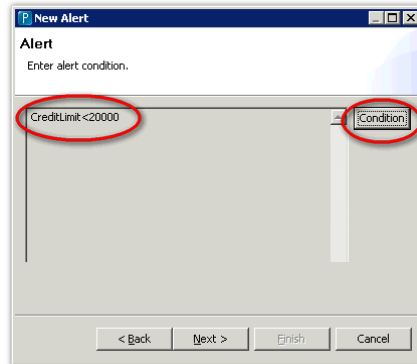
Step 88. Click the Add button to add a new alert called LowCredit. You should also set Severity to High.

Click Next.

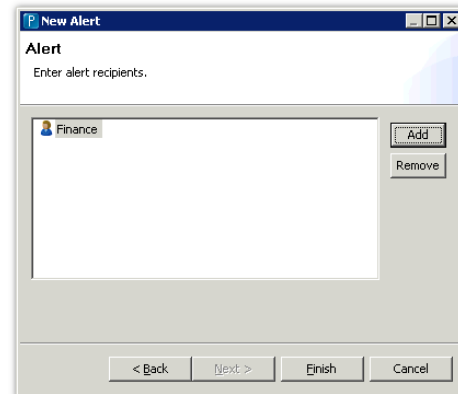


Step 89. Click the Condition Button. You will see the condition editor allowing you to add the condition `CreditLimit < 20000`. Click Next.

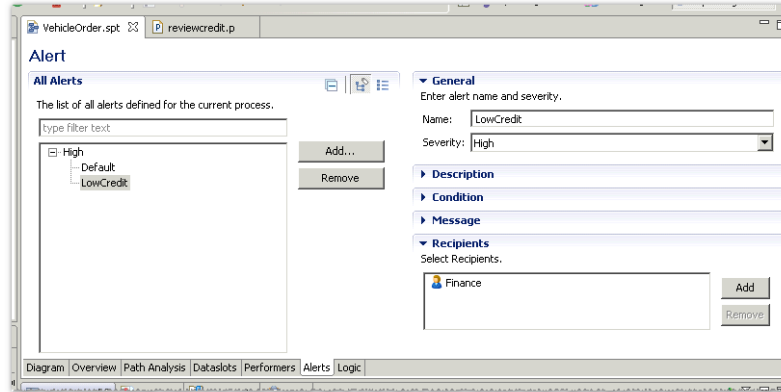
Add the message: The customer's credit limit is less than 20000 dollars. Click Next.



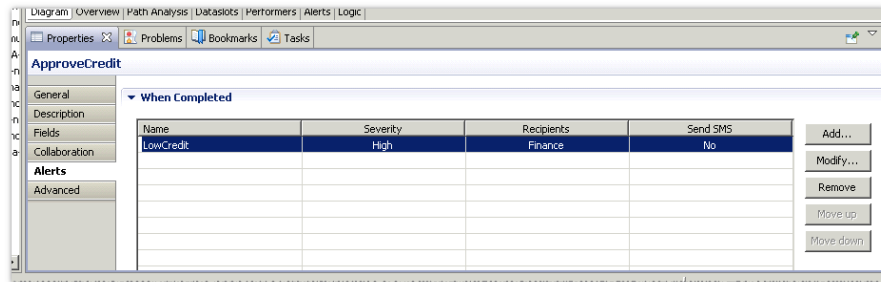
Step 90. Add Alert recipient. This alert should be sent to Finance. Click OK to save and create the alert.



Step 91. You now have a new alert that you may attach to any work step, where a CreditLimit is to be monitored.

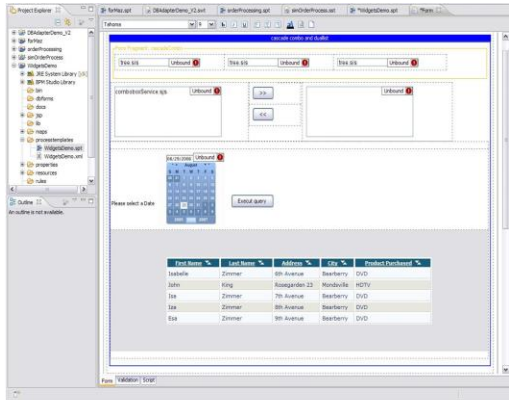


Step 92. From the main VehicleOrder canvas, select the Approve Credit activity and select the Properties| Alerts tab. Then selected the When Completed section and add the LowCredit alert you created in the previous section



## Lesson B – Deploy, Run and Manage Process

As well as building your process, OpenEdge BPM helps managers analyze the processes under their control and identify and fix problems at runtime.

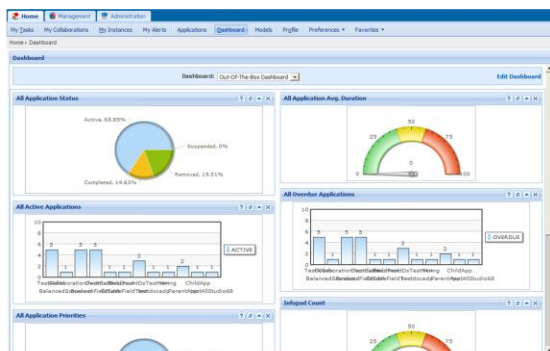


Application  
Developers



Make business process models executable by building user interfaces, and developing and/or integrating process steps

*USING DEVELOPER STUDIO TO BUILD YOUR OPENEDGE BPM APPLICATION*



Business Manager



Use reports and real-time dashboards to gain visibility and control relative to their processes and therefore their business

*USING BPM PORTAL TO CONTROL YOUR PROCESSES*

## Task 13. Configuring OpenEdge BPM

This is the start of Lesson B and you may want to switch the PDS Workspace to `WS_LessonB`, in case you did not finish all steps of Lesson A.

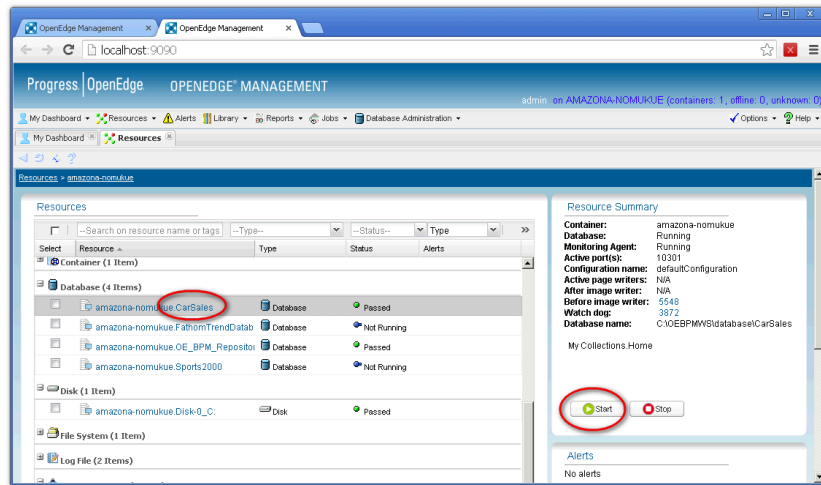
The next steps of configuring the OpenEdge BPM are already set up in `WS_Lesson B`. If you switch to the Workspace Lesson B, then take these steps for your reference only. Advance to "You will also need to add some ABL code to the VehicleOrder project" on page 51.

Step 93. Let us first make sure that the CarSales Database and AppServer are running.

The database directory has a copy of the **CarSales DB**. It is similar to the Sports2000 db with a few extensions.

Please make sure the CarSales DB is running. If not, start it with OpenEdge Explorer or Management or at the command line.

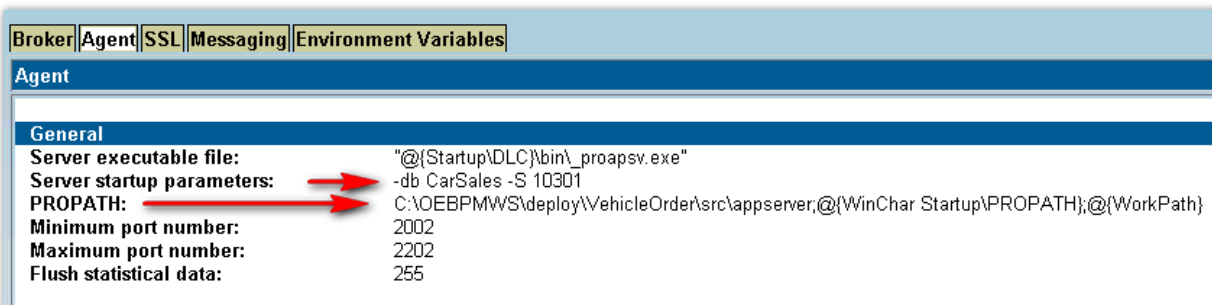
You log in to OpenEdge Explorer or Management with the credentials `admin / admin`



There is an AppServer Service called CarSales. Make sure the agent configuration contains:

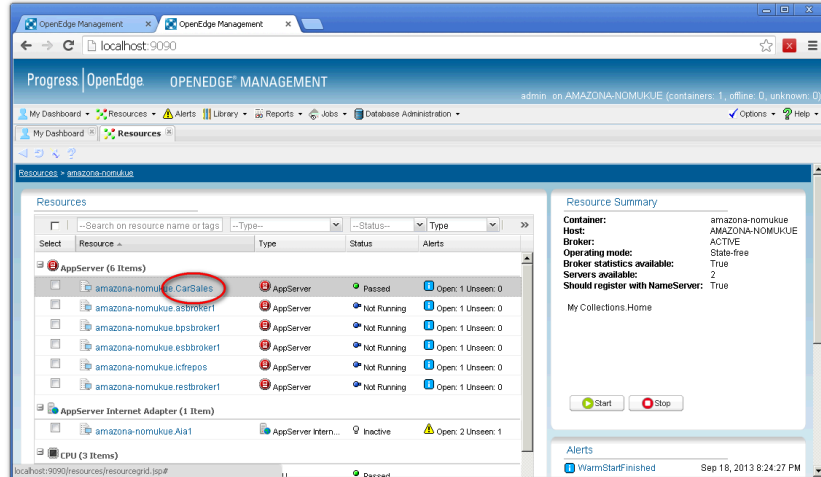
Server Startup parameters: `-db CarSales -S 10301`

(or whatever the RDBMS Broker port happens to be).



The Propath should include: `C:\OE_BPMWS\deploy\VehicleOrder\src\appserver; ...`

If not yet running, startup the Appserver CarSales.

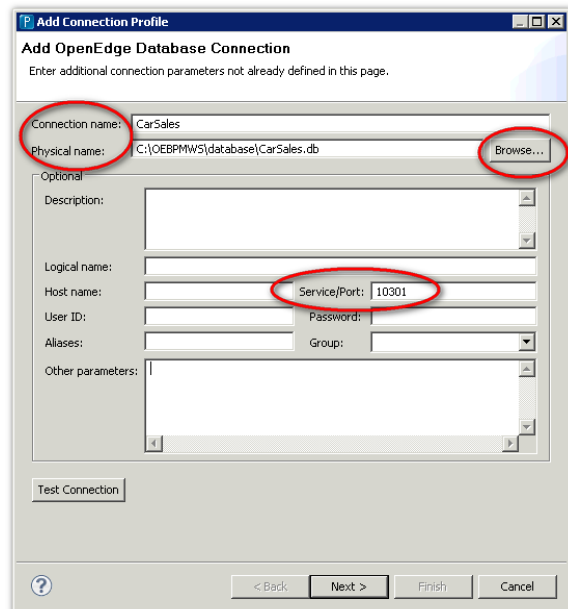


Now that we made sure, a database and Application Server is setup and started, return to the Developer Studio.

We need to the database for PDS, in order to be able to add a database connection later.

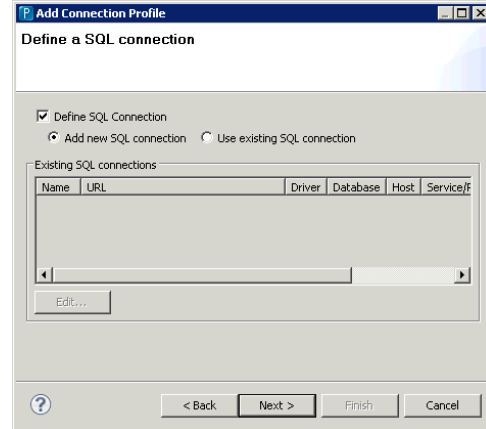
Step 94. Choose Window | Preferences from the PDS main menu. Expand Progress OpenEdge | Database Connections.

Step 95. The Add OpenEdge Database connection dialog opens. Set Connection name to CarSales. For Physical Name browse to C:\OEBPMWS\database and choose CarSales.db. Set the port to 10301.





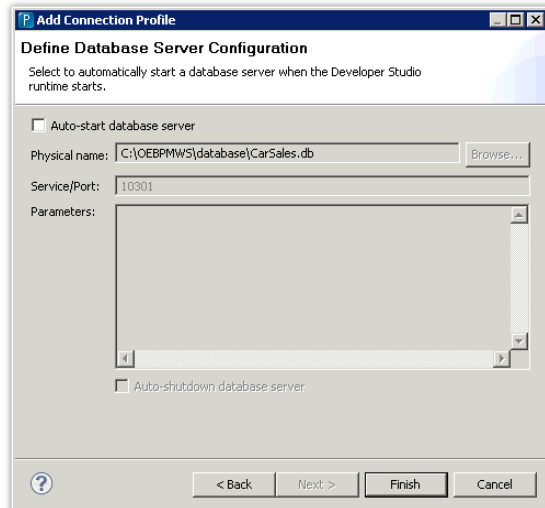
Step 96. You also want to define a new SQL Connection, which allows you to see the database structure and data in the DB Navigator. Click Next.



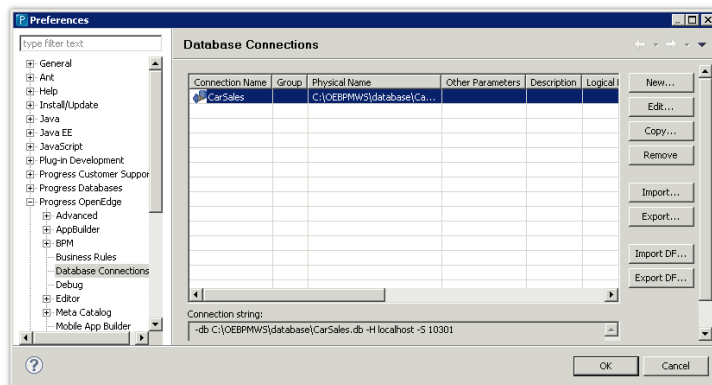
Step 97. Just accept the defaults. Click Next.



Step 98. You may check Auto-Start database server, but since we did this manually (or set to auto-start in the OpenEdge Explorer) you should uncheck it. Click Finish.



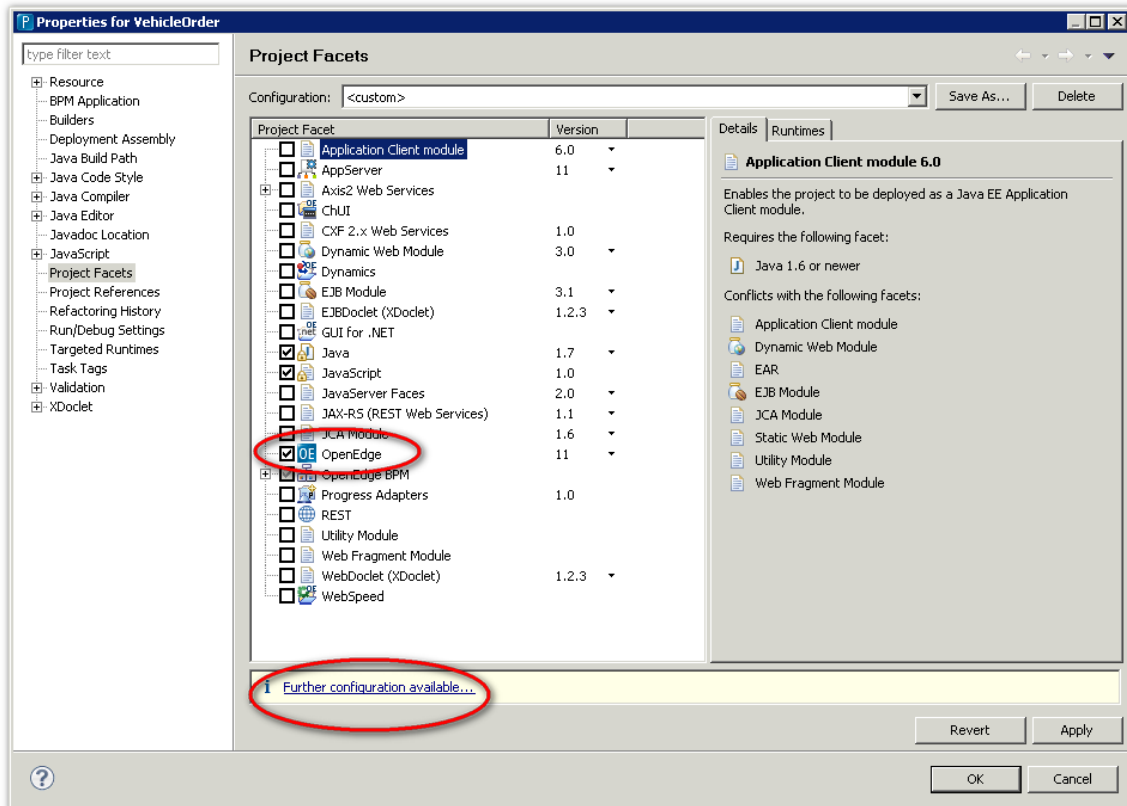
You now defined a database connection. Click OK.



OpenEdge BPM provides an integrated development environment for process enabled OpenEdge applications using Progress Developer Studio. You will add OpenEdge functionality to the existing VehicleOrder project, by adding an OpenEdge Facet.

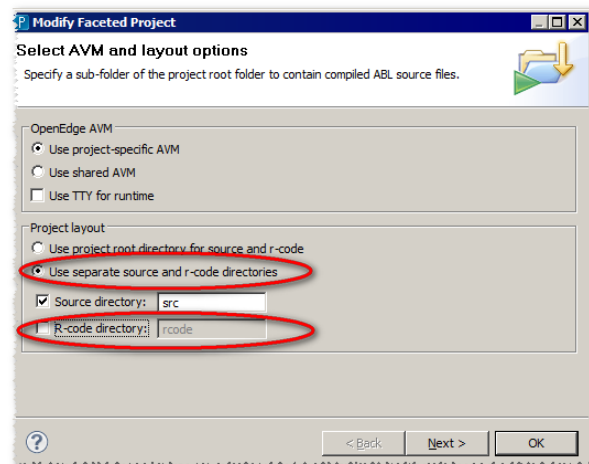
Step 99. In the Project Explorer, right-click the VehicleOrder project, and select the Properties option.

Step 100. Select the Project Facets option, and select the OpenEdge option.



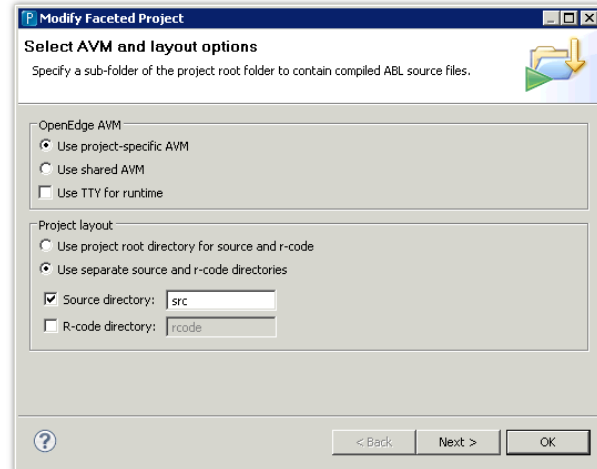
Step 101. Select the Further configuration available ... link near the bottom of the dialog.

Step 102. You will now be presented with options to configure the OpenEdge aspects or facet of the project. The first set of these determines the project's layout and AVM (ABL Virtual Machine) locations. Keep the default values for the OpenEdge AVM group



Step 103. In the Project layout group, select the 'Use separate source and r-code directories' option, and deselect the R-code directory option. Select Next to continue.

Step 104. The next screen (not shown here) allows customizations to the PROPATH; none are necessary and you can select Next.

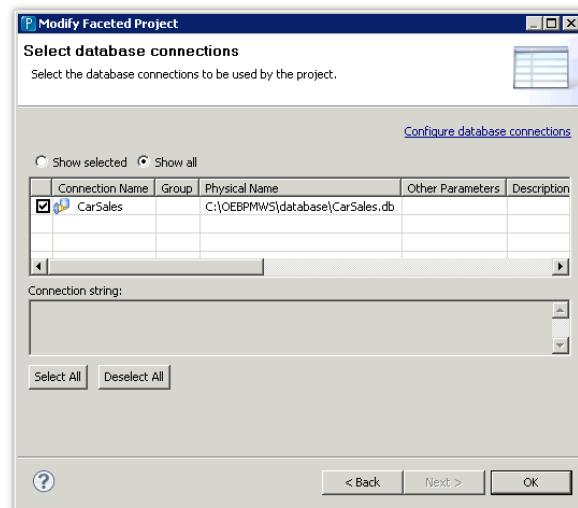


Step 105. The last configuration step is to add the CarSales database connection to the VehicleOrder project. You setup the database connection earlier and all you need to do is to select the CarSales database connection and press OK.

This will close the configuration dialog and take you back to the project properties dialog.

Step 106. Press OK here.

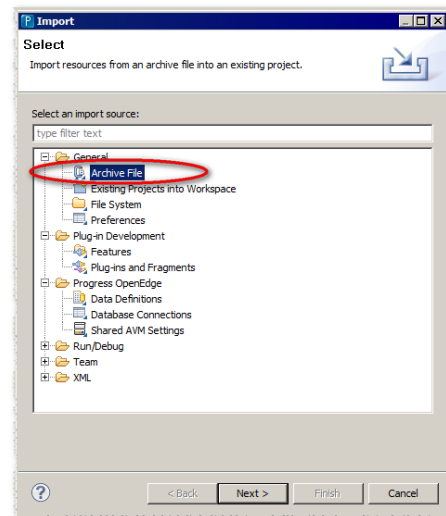
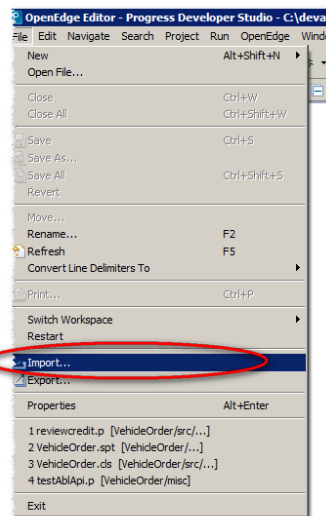
*You will see the OpenEdge splash screen briefly while the OpenEdge AVM restarts.*



You will also need to add some ABL code to the VehicleOrder project, for use in some subsequent lessons. This code is provided as an archive (zip) file, which you will import into the VehicleOrder workspace.

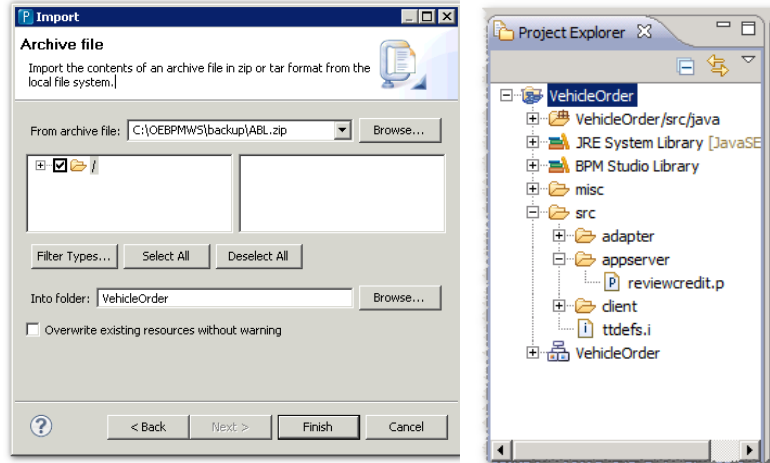
Step 107. From the workspace File menu, select Import.

Step 108. Expand the General node, and select Archive File. Click Next.



Step 109. Click the Browse Button next to the field “from Archive file” and browse to C:\OEPMWS\backup\ABL.zip. Import all its contents to the workspace root folder VehicleOrder.

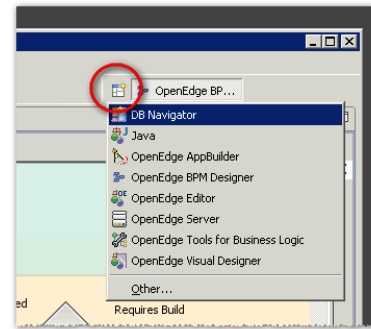
Step 110. You can validate that the import succeeded by expanding the src and appserver nodes to see the existence of the reviewcredit.p program.



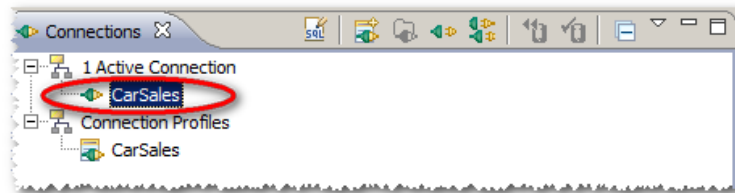
## Task 14. Viewing data in the CarSales Database

As mentioned in the previous section, a CarSales database is used as a database for this workshop.

Step 111. To view the data contained in the CarSales database, click the Open Perspective Button and choose DB Navigator.

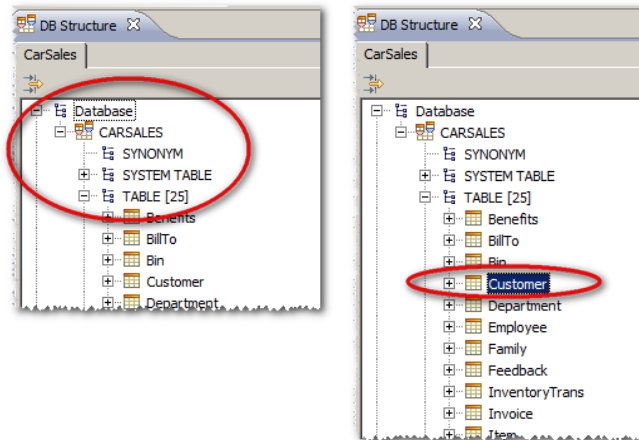


Step 112. This will open the DB Navigator perspective from where you can maintain schema and examine data contained within the CarSales database. Confirm that the database was connected automatically by examining the Active Connections in the Connections view on the lower left of the screen. If not right-click on the CarSales Connection Profile and select Open Connection ....



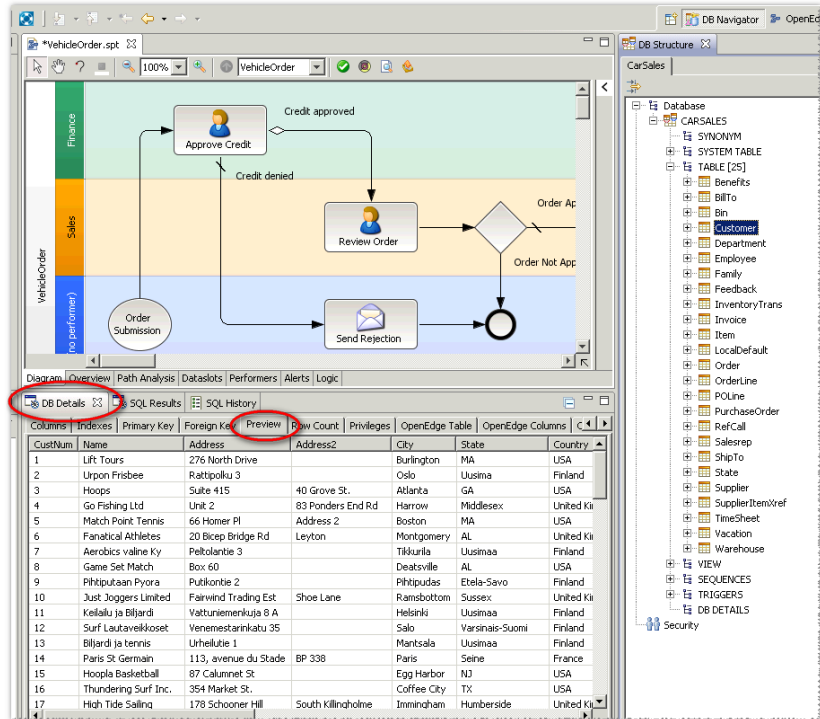
Step 113. In the DB Structure view on the right side of the screen, expand the tree view Database|CARSALES|TABLE [25].

Step 114. Next click on the Customer table to populate the DB Details view in the bottom half of the screen.



Step 115. Now click the Preview tab to display the contents of the Customer table.

You may double-click the DB Detail tab to expand the view (or use the scroll bars).



Step 116. You will see that the Credit Limit for Match Point Tennis is \$11,000 and the Credit Limit for Fanatical Athletes is \$38,900.

You're finished looking at the CarSales database data for now.

SalesRep	Comments	CreditLimit	Balance	Terms	Discount	Po
HXM	This customer is on credit hold.	66700.00	903.64	Net30	35	01
DKP	Ship all products 2nd Day Air.	27600.00	437.63	Net30	35	45
HXM	This customer is now OFF credit hold.	75000.00	1199.95	Net30	10	02
SLS		15000.00	14235.14	Net30	10	HA
JAL		11000.00	0.00	Net30	50	02
SLS	Ship C.O.D. at all times.	38900.00	1202.66	Net30	0	48
DKP		13500.00	1112.44	Net30	15	45
RDR	This customer is back on Credit Hold.	15000.00	8254.00	Net30	50	85
DKP	Call for shipping instructions.	29900.00	1242.14	Net30	10	44
SLS		22000.00	1222.11	Net30	20	BL
DKP		10900.00	1186.80	Net30	25	21

## Task 15. Adding OpenEdge ABL Code

Step 117. Open a new PDS perspective called OpenEdge Editor and find an ABL program called reviewcredit.p located within the src\appserver directory.

Step 118. Double-click this program to open it in the OpenEdge editor.

The ABL code represents simple business logic that:

- ▶ Finds a customer in the CarSales database using the ipchCustomerName variable as search criteria.
- ▶ Sets the oplgApprovedDeniedCredit variable to TRUE if the customer's Credit Limit field in the database is greater than \$20,000, otherwise set it to FALSE.
- ▶ Sets the opinCreditLimit variable to the value of the Credit Limit field.

```

File      : reviewcredit.p
Purpose   : Review Customer Credit Limit

Syntax    :

Description: Sample program used to demonstrate an OpenEdgeBPM call to an OpenEdge Appserver

Author(s) : Wouter Dupre (PSC)
Created   : Tue Mar 06 12:56:15 GMT 2012
Notes     :

/* ***** Definitions ***** */
DEFINE INPUT  PARAMETER ipchCustomerName AS CHARACTER NO-UNDO.
DEFINE OUTPUT PARAMETER oplgApprovedCredit AS LOGICAL NO-UNDO INITIAL FALSE.
DEFINE OUTPUT PARAMETER opinCreditLimit AS INT64 NO-UNDO.

/* ***** Preprocessor Definitions ***** */

/* ***** Main Block ***** */
FIND Customer NO-LOCK WHERE Customer.Name EQ ipchCustomerName NO-ERROR. A
IF AVAILABLE Customer THEN
DO:
IF Customer.CreditLimit GT 20000 THEN B
ASSIGN
oplgApprovedCredit = TRUE.
ASSIGN
opinCreditLimit = Customer.CreditLimit. C
END.

RETURN.
  
```

Step 119. Export this file into a directory that is in of the Application Servers PROPATH. Set the To Directory to C:\OEPMWS\deploy.

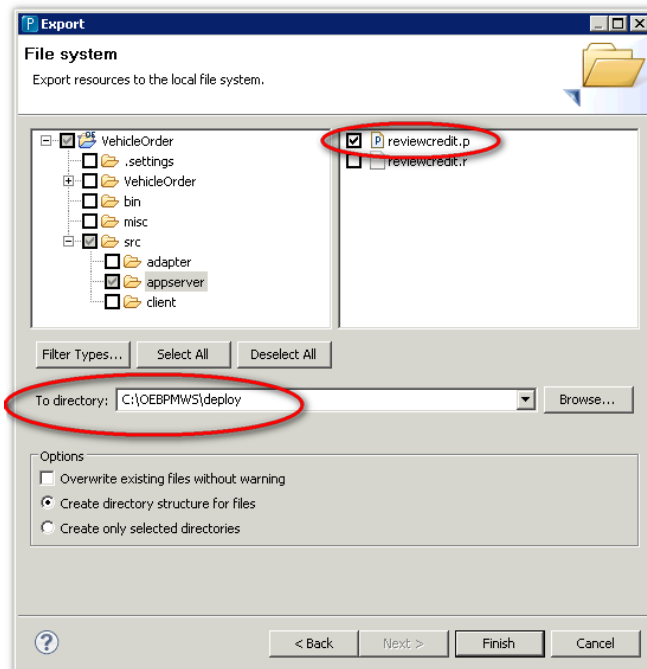
The AppServer will find this file now on its Propath.

*We added the directory*

*C:\OEPMWS\deploy\VehicleOrder\src\ to the Propath. The procedure file needs to go there.*

*Make sure you chose "Create directory structure for files" to have PDS create it for you.*

*Instead of importing those source files into the same OE-BPM Process project, you would import an AppServer project into the workspace containing that .p and deploy to the CarSales AppServer broker. That way you would just publish from the Servers tab - consistent deployment across AppServer and OE-BPM projects*



## Task 16. Linking your process to your OpenEdge application

OpenEdge BPM allows you to call ABL code hosted on an OpenEdge Application Server using the built-in OpenEdge Managed Adapter.

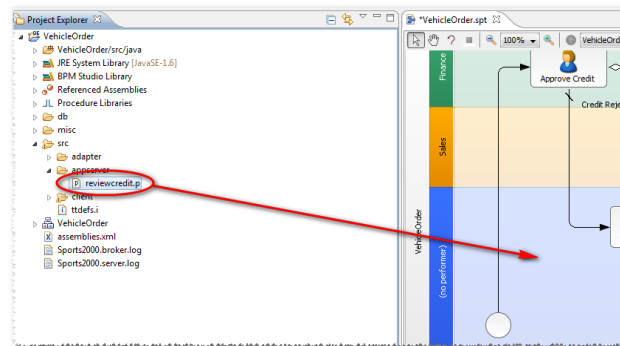
Ensure that the current perspective is set to BPM Design and open the VehicleOrder.spt process if not already open.

You are going to add a new OpenEdge Managed Adapter, a system-centric step, immediately following the Start step to call the OpenEdge program that you wrote in the previous lesson. This step will be used to perform the following:

- ▶ Take the CustomerName dataslot entered in the Start step and map it to the ipchCustomerName input parameter used to look up a Customer record in the CarSales database
- ▶ Take the oplgApprovedCredit output parameter and map it to the CreditApproved dataslot
- ▶ Take the opinCreditLimit output parameter and map it to the CreditLimit dataslot.

Step 120. Expand the No Performer swimlane to make room for an additional activity.

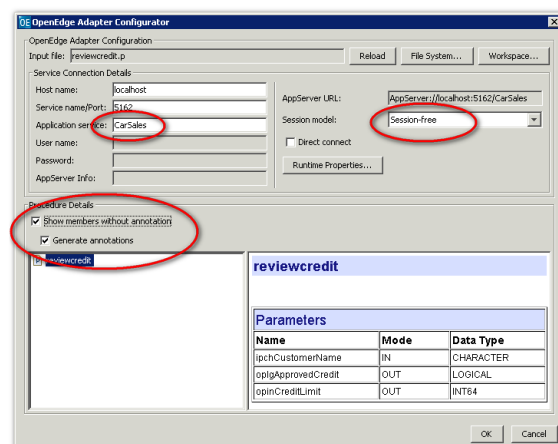
Step 121. In the Project Explorer, select the reviewcredit.p file and drag it onto the main canvas between the Start step and the Approve Credit step.



Step 122. The OpenEdge Adapter Configurator dialog will automatically appear. In the OpenEdge Adapter Configurator, set the Application service to CarSales. The session model is Session-free. This needs to be consistent with the setup of the Application Servers Session Model.

Step 123. Make sure you also set the two check boxes under Procedure Properties and Click OK.

This will add annotations to the .p file, which are needed to create an interface description file, called BIZOE file (done by PDS on the fly), which is the Interface definition for the Adapter to call the Application Server.

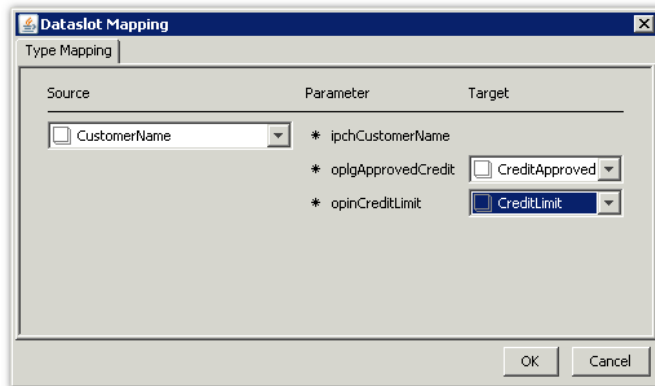




You can leave the other fields as the defaults. Information from that procedure file is shown on the lower half of the OpenEdge Adapter Configurator dialog including the name of the ABL program, reviewcredit.p, and the three parameters that are defined for the program. In this case there is one input parameter and two output parameters. You can now click OK to save the adapter configuration.

Step 124. In the Dataslot Mapping dialog map the ipchCustomerName parameter to the CustomerName dataslot in the source column and map the oplgApprovedCredit parameter to the CreditApproved dataslot and the opinCreditLimit parameter to the CreditLimit dataslot in the target column.

Click OK to save the mappings and return to the main canvas.

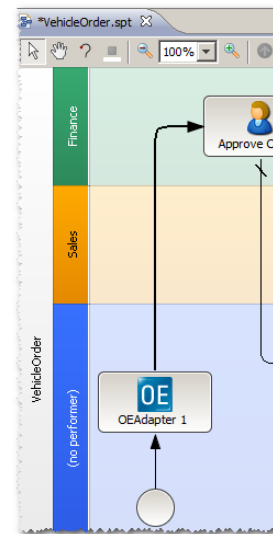


Step 125. Save the process. You will be asked to also save the reviewcredit.p file, since it got changed by adding the annotations. Accept to save it.

Step 126. Change the connectors so that the Start step connects to this new OpenEdge Adapter and this in turn connects to the Approve Credit step. Adjust the diagram layout as needed.

Step 127. Change the name and label of the OEAdapter1 step to Determine Credit.

Step 128. Save and validate the process.



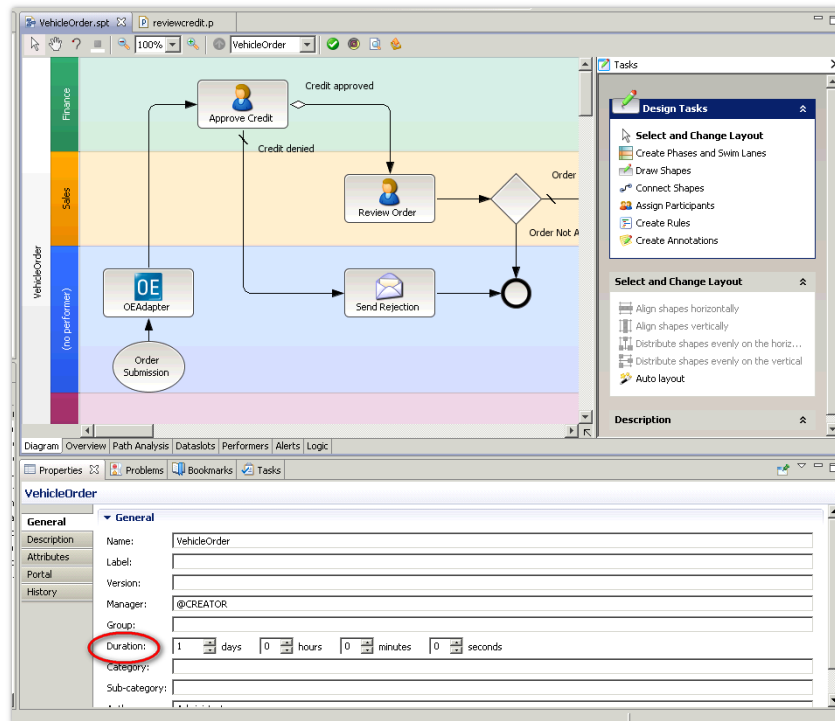
## Task 17. Timelines and Process Flows

You are now ready for publishing your process. Before doing so, let us take a brief look on other process views that PDS provides. If you (not part of this tutorial) choose to add overview flows and activities you will need to define durations on work steps and the process itself. This task shows some of these additional features.

All Processes and Activities can be allocated the amount of time they are expected to take.

Step 129. Clicking anywhere on the process canvas select the Properties tab at the bottom of your screen will display default information about the overall process.

You'll notice that the default Duration time for this process is 1 day (i.e. from the point of a customer placing an order through to it being delivered). Leave this as 1 day.



Step 130. Select the Approve Credit activity and see its Properties. You can set the amount of time (the default here being 2 hours) allocated to this activity before it is classed as being over due. You can set the value to a literal or use a dataslot which's value can be dynamically changed. Accept all of the defaults by clicking OK, which returns to the main canvas.

In addition to being able to see the overall VehicleOrder process as a diagram you can also view it in a number of other formats, for example a tabular format.

Step 131. Click the Overview tab.

As you become more proficient in process modeling you may choose to use this view of the process to define your processes, change the order of events, add additional activities, etc.

Name	Type	Successors	Duration	Priority	Performer	Milestone Alerts	Phase
<input type="radio"/> OrderSubmission	Start	OEAdapter				None	None
<input type="checkbox"/> OEAdapter	Managed	ApproveCredit			OEAdapter	None	None
<input type="checkbox"/> ApproveCredit	Activity	SendRejection, ReviewOrder	2 hours	Medium	Finance	None	None
<input type="checkbox"/> ReviewOrder	Activity	Decision 1	2 hours	Medium	Sales	None	None
<input checked="" type="checkbox"/> Decision 1	Decision	End 1, Decision 2				None	None
<input checked="" type="checkbox"/> Decision 2	Decision	BuildVehicle, End 2				None	None
<input type="checkbox"/> BuildVehicle	Activity	End 2	2 hours	Medium	Factory	None	None
<input type="radio"/> End 2	End					None	None
<input type="radio"/> End 1	End					None	None
<input type="checkbox"/> SendRejection	Managed	End 1			SendRejection	None	None

Step 132. Open the tab Path Analysis.

Path Analysis is yet another view. A useful feature of this view is to be able to see the time taken for each possible path through the process.

Name	Est. Start	Duration	Priority	Performer	Timeline
OrderSubmission	(none)				
OEAdapter	(none)			OEAdapter	
ApproveCredit	(none)	2 hours	Medium	Finance	
SendRejection		2 hours		SendRejection	
End 1		2 hours			
ReviewOrder		2 hours	Medium	Sales	
Decision 1		4 hours			
End 1		4 hours			
Decision 2		4 hours			
BuildVehicle		2 hours	Medium	Factory	
End 2		6 hours			
End 2		4 hours			

*As with the properties dialog-box for the individual activity, you can change the expected duration directly from within this view.*

You're finished looking at the other views so click on the Diagram tab to return to the main VehicleOrder canvas.

## Task 18. Publishing to your Progress Business Process Server

Once you have finished modeling and configuring your Process you're ready to publish it to the OpenEdge BP Server to test it.

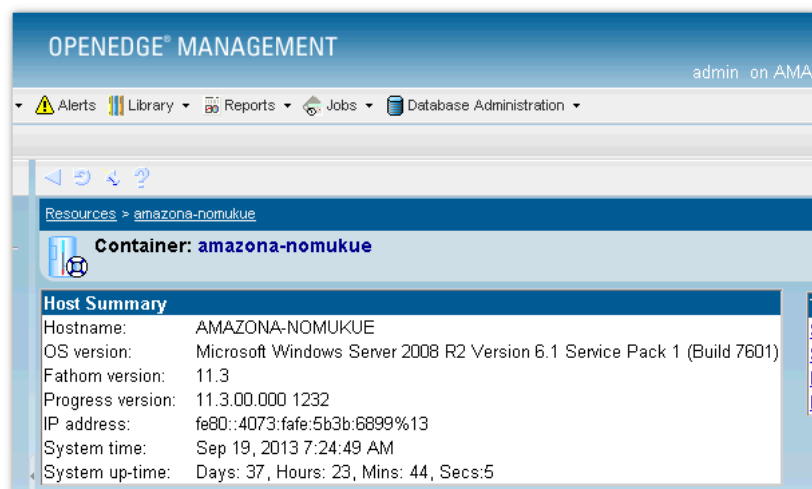
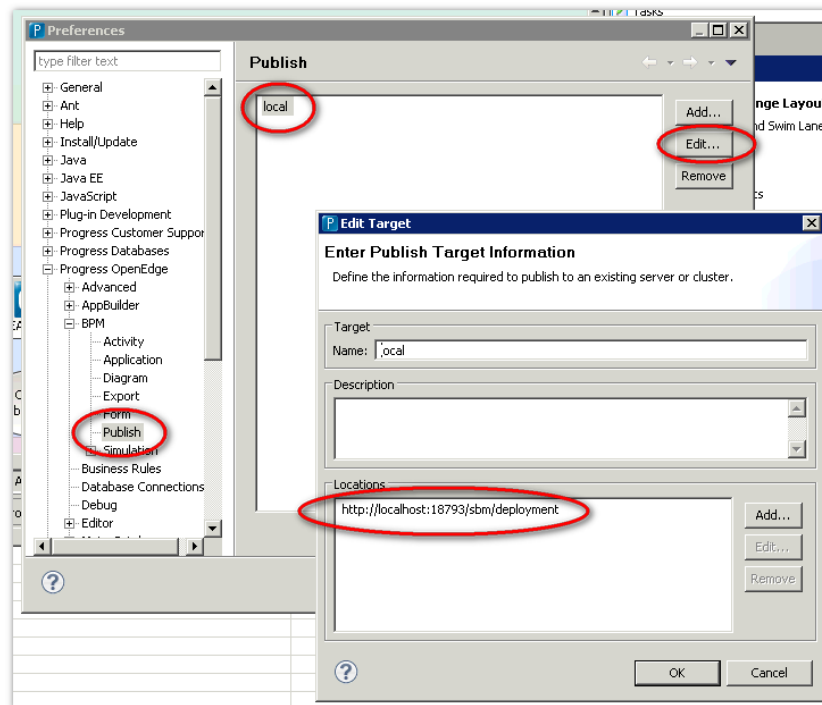
PDS for OpenEdge BPM has a built-in deployment test server that allows you to publishing and run a BPM Process with just PDS installed. You may however also deploy to other OpenEdge BPM Servers, for example on a Team Test Server.

Step 133. Check your Publish settings. In PDS open Windows | Preferences and expand Progress OpenEdge | BPM | Publish. There is one default entry called local.

Step 134. Select it and click on edit. The default location is `http://localhost:18793/sbm/deployment`. You may add more locations to publish to multiple targets in one go.

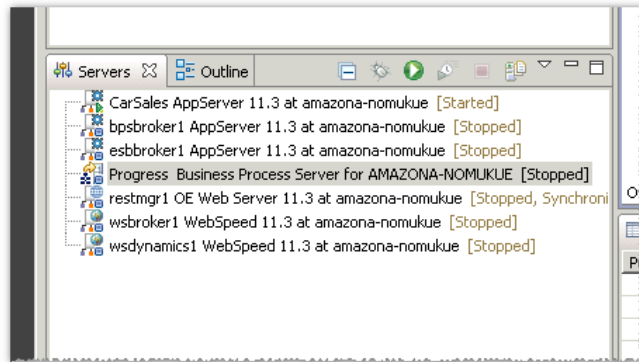
Step 135. If the host reference to localhost does not work in an environment, you may enter an IP address or a machine name, whatever works in your environment. You can simply edit the default local entry or create additional publish configurations.

*The machine name is the container name that is displayed in OpenEdge Explorer and Management.*

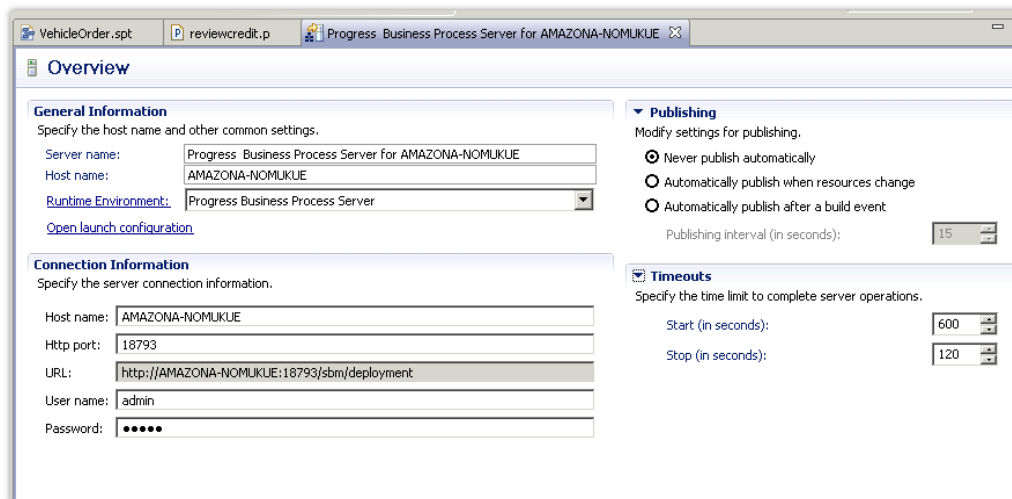


As a last setup check open the Server configuration for **Progress Business Process Server for <your machine>**.

Step 136. Navigate to the **Servers** View in the bottom left corner of the Progress Developer Studio and double-click on the **Progress Business Process Server** entry.



Step 137. You should see on **Overview** similar to this one with **connect** and **publish** information.



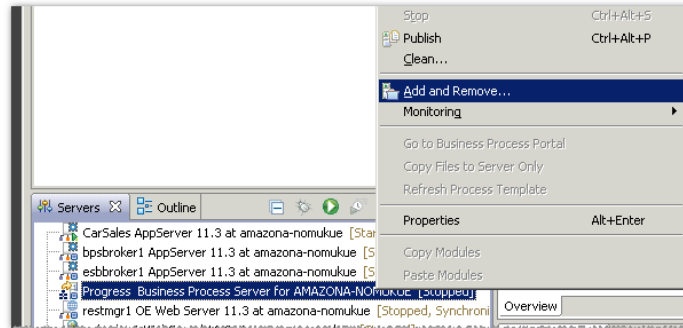
The link **Open launch configuration** give you access to the server runtime configuration.

*Your host name might differ.*

You are finished with your configuration check.

Now, let us get started with publishing your **VehicleOrder** process.

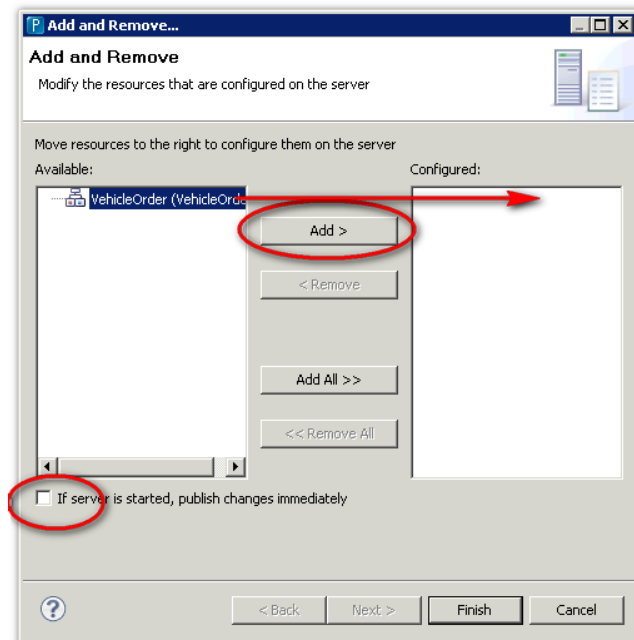
Step 138. Select the Servers view in the left bottom section of the screen, right-click on **Progress Business Process Server for <machine name>** and open **Add and Remove**.



Step 139. You will find all available resources that can be published to this server listed. Select the **VehicleOrder** Process and click on **Add >** to assign it to this server. When publishing to this server, all configured resources will be published.

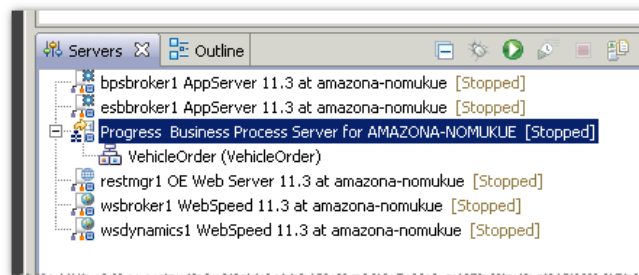
*While developing a process, automatic immediately publishing should be disabled. You need to manually publish when you are ready to test.*

*During testing and debugging it might be useful to enable it to make sure, your changes are always synchronized to the server.*



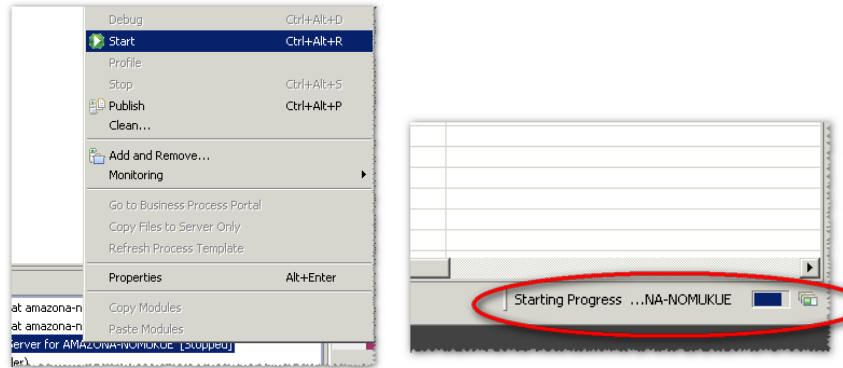
Step 140. Click **Finish** to close the dialog box.

You will now be able to expand the BP Server and find the **Vehicle Order** Process assigned for publishing with this server.



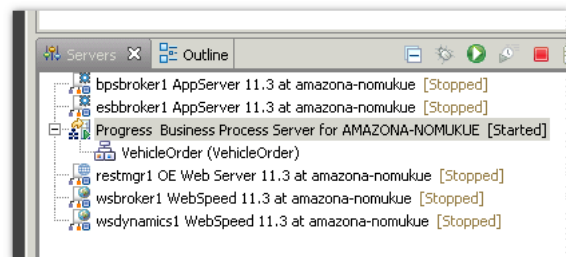
Step 141. The Process Server status is **stopped**. Right-click and select **start** from the pop up menu or press **Ctrl-Alt-R**.

In the PDS Status bar you will see an animated progress bar indicating that the server is starting.

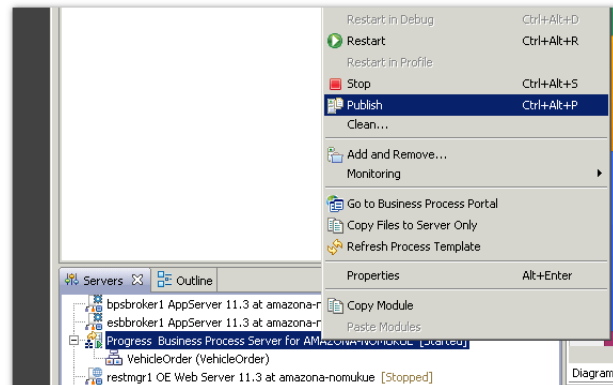


Starting the BP Server **will take a couple of minutes** depending on your machines performance. Take a break.

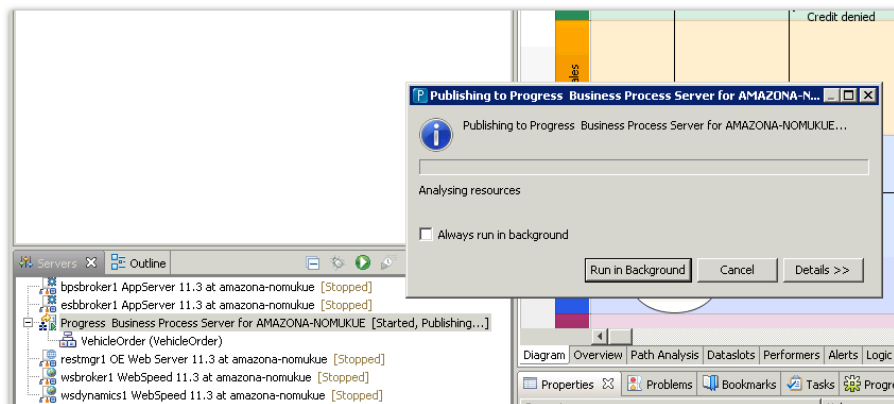
As soon as the status has changed to **started**, you may publish to this server.



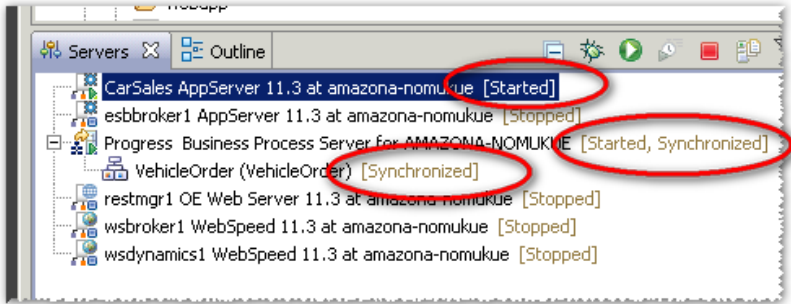
Step 142. Again right-click on the server entry and this time choose **Publish** or press **Ctrl-Alt-P**.



A progress dialog shows up. Eventually the Server status will change to **Started, Synchronized**.



Step 143. After publishing (or republishing) you should see this status picture. The Business Process Server is started and synchronized. The VehicleOrder resource is Synchronized. You should also find the CarSales AppServer being started.



*If you are not sure, then please check that the CarSales Database Server is also up and running.*

*You are now done with Publishing your application.*



## Task 19. Breakout: Re-Publishing

This Task is information only. It offers you some more information about deployment at development time.

There are no activities at this step, just read these additional details.

Using just the Development Environment (you installed PDS only), you find the development BP server in `C:\Progress\OpenEdge\loebpm\server` and all deployed processes in the `C:\Progress\OpenEdge\loebpm\server\lebmsapps` folder.

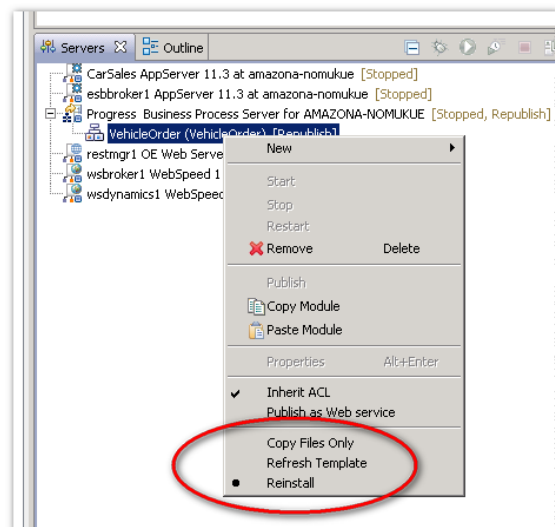
If you publish your process the very first time, the BP Server will create all necessary entities in the BP Server Database and copy all files project files to their appropriate deployment folders on the BP Server.

However, you will design your process iteratively and therefore will re-deploy your process a couple of times.

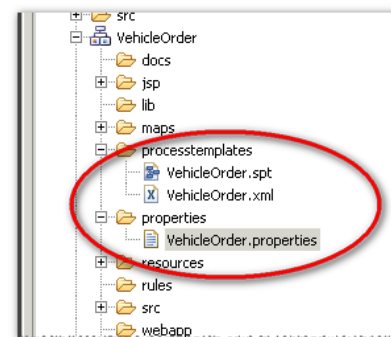
When re-deploying you have to choose the type of deployment, i. e. the scope of deployment.

Right Click on the to be deployed resource, that is the Process entry of your BP Server.

There are three modes of re-deployment:



Type 1) **Copy Files Only**: Use this type of deployment in case you did not change the process template itself; that is the files `processname.spt.xml` and `.properties` files. By just copying files, all active and new process instances will use the changed files right after synchronisation.



Type 2) **Refresh Template**: If you changed those three files, you may still try to apply the changes to currently running process instances ( and of course to any new instances). **Refresh template** tries to update the process definitions even for active process instances. It may fail to apply those changes, depending on the scope of changes. The details are beyond the scope of this tutorial.

Type 3) **Reinstall**: This will replace your current version of published process template and all its BP Server DB entries. That is, you will lose all historical data (which you do not have in case of just development anyway) and all running process instances.

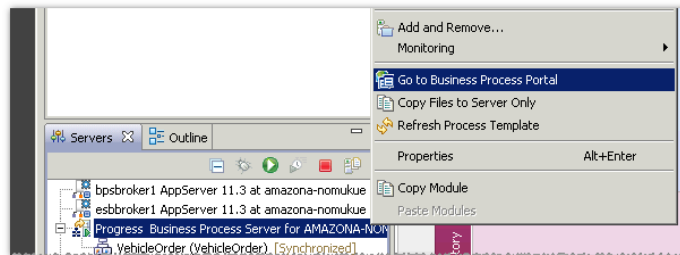
It is good practice to also force the publish mechanism to clean all deployment artifacts in the deployment folder. In order to do so, choose **Clean ...** instead of **Publish**. This cleans up the deployment and then publishes the resources in one go.

In addition to do a **Clean Reinstall**, it is also good practice to uninstall your previously deployed process first.

Go to the BPM Server Portal. There are several ways of doing so. One is to use the pop up menu.

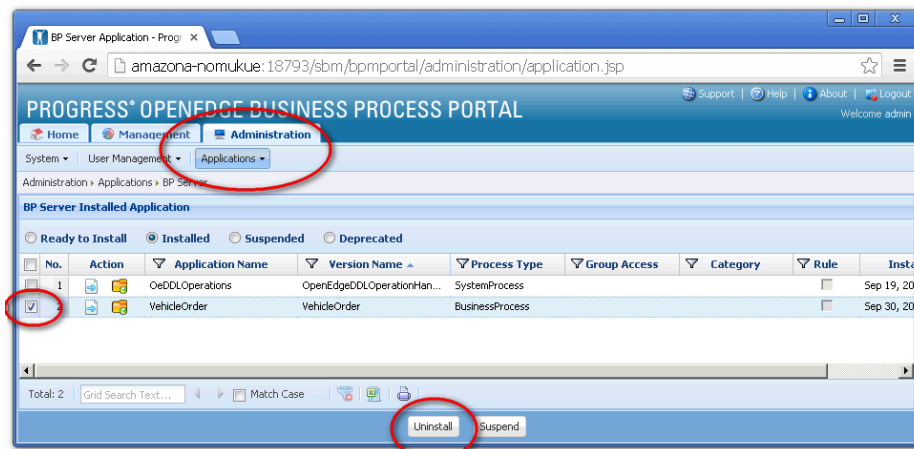
Another is to just open any browser and enter the URL

<http://localhost:18793/sbm/bpmportal>



Login in with the credentials "admin" / "admin".

Open the BPM Portal, log in as administrator, choose the tab Administration, Choose BP Server in the drop down Applications and choose the process template aka application that you need to uninstall. Click the button Uninstall.

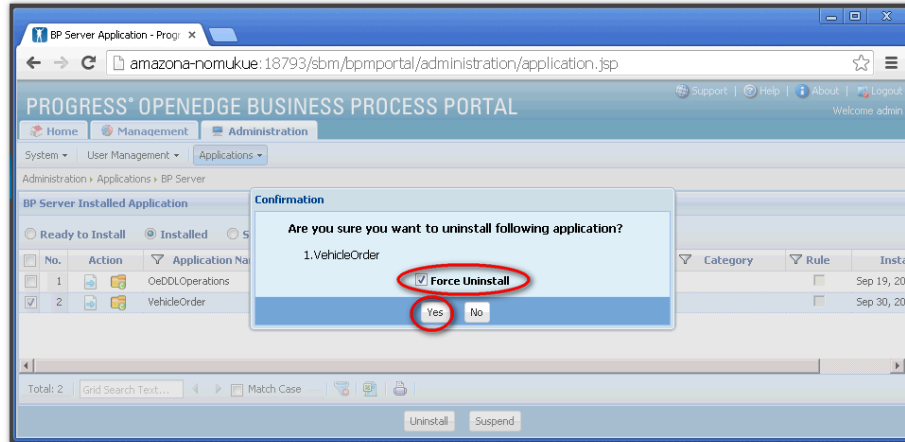


*In case you have active process instances (that is, not finished instances) you will be asked whether you want to force the systems to scratch all instances and then uninstall the process template. Choose Force Uninstall and click Yes.*

*An uninstalled process is removed from the BP*

*Server DB. (It is still in the directory ebmsapp for you to re-install it in case you would need to in a deployment scenario. At development time you would want to just replace it by a new version, that is why you should publish by choosing the **Clean** option.*

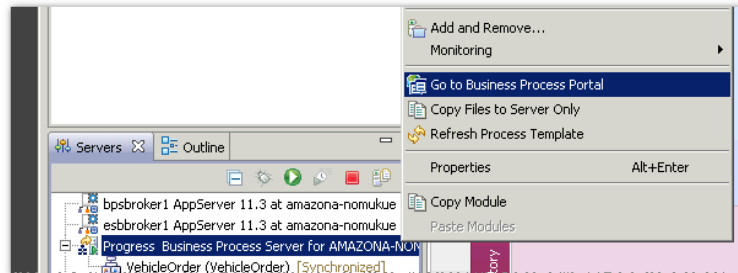
*This finishes our breakout on re-publishing.*



## Task 20. Administer the basic BP Server setup

Before we can run the process we need to some BP Server Administration. We need to at least add the users we introduced at development time.

Go to the BPM Server Portal. There are several ways of doing so. One is to use the pop up menu. Another is to just open any browser and enter the URL <http://localhost:18793/sbm/bpmportal>



Step 144. Log in to the BPM Portal as Administrator (if not yet logged in) with the credentials "admin" / "admin".

Step 145. Drill down to Administration|User Management|Users. Click **Quick Search: All**. This will list all existing user definitions. Initially you just find the **admin** entry.

No.	User Name	First Name	Last Name	Email	Phone	Group Memberships	Queue Memberships
1	Finance	Finance	Employee	finance@employee.aetf		View...	View...
2	Sales	Sales	Employee	sales@employee.aetf		View...	View...
3	admin					View...	View...
4	amy	Amy	Customer	amy@customer.aetf		View...	View...

Step 146. Add the user Finance. Click the button **Create User**.

Step 147. Give this User the **User Name Finance**. Give it a **password of password**.

Add a first and last name and e-mail address of your choice.

Step 148. Click Save.

Step 149. Create another user called **Sales**, User Name **Sales** and Password **password**.

These two users suffice for our tutorial. You are finished with administering the BP Server.

*This tutorial cannot touch the area of BP Server Administration at all. Please see the documentation and visit PSCs trainings in your region.*

**PROGRESS® OPENEDGE BUSINESS PROCESS PORTAL**

Home Management Administration

System User Management Applications

Administration > User Management > Users > Create User

**Create User**

User Details Permissions Business Process Portal Configuration

Note: The fields marked with \* are mandatory.

User Name\*: Finance

Password\*: \*\*\*\*\*

Confirm Password\*: \*\*\*\*\*

First Name\*: Finance

Last Name\*: Customer

Email\*: finance@employee.aetf

Title:

Phone:

Language: English (United States)

URL:

City:

State:

ZIP Code:

Organization:

Tenancy:

Skills:

Default Calendar: Select One

Calendar Description

No.	Dashboard Name	Description
1	Performance Dashboard	This dashboard measures the performance metrics of

Save Save & Create New Reset Cancel

## Task 21. Creating a Process Instance from a Process template

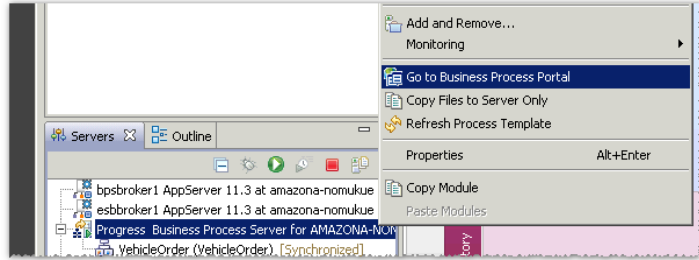
We now want to see how a business user works with OpenEdge BPM.

Typically a business user would log on to his application at the desktop, a tablet or a Browser.

Process Users that do not work within a given application, will log on to the BPM Portal via a bookmark in their browser. This bookmark would point to a URL similar to `http://localhost:18793/sbm`. The protocol, host and port might change, depending on the settings provided during installation of the BPM server.

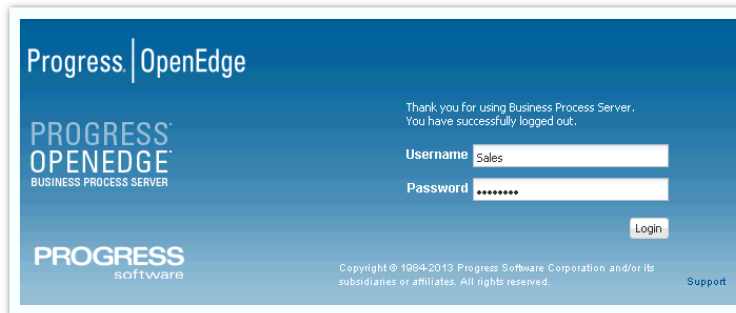
For the sake of the limited scope of this few hours, we will only show how to run a process from the BPM Portal.

And since you are already using Progress Developer Studio, you can use the handy shortcut built-in to the Server view.



Step 150. Right-click the Business Process Server and select the Go to Business Process Portal option to start the portal login.

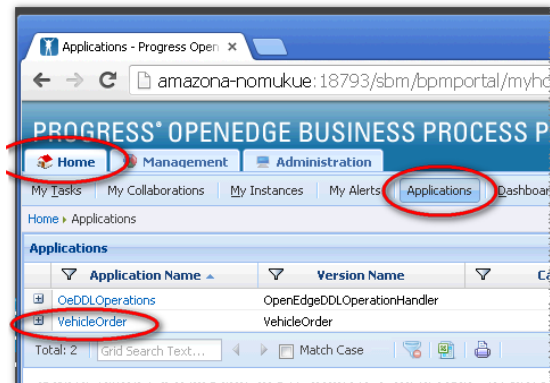
Step 151. Enter the **username Sales** and a **password password**. (both case sensitive).



Step 152. Then click the Login button.

*If the browser screen is empty not showing this dialog, then close the browser and repeat the previous step.*

Step 153. Once logged in, select the **Home | Applications** tab. You will find the published process (aka application) listed.



The *OeDDLOperations* process that you also see listed, is a helper process. This helper process is needed for the time being to address some OpenEdge RDBMS limitations. Just disregard it.

*Important:* Each deployment should have this application installed and one instance created and running. This application is provided with your OpenEdge BPM installation and the Business Process Administrator might need to install it. In order to do so, log in as BP Administrator, default login credentials "admin"/"admin" and navigate to Administration | Applications | BP Server. Select "ready to install" and install the helper process. Then create a single instance from this process.

Step 154. Click on the VehicleOrder Process Name, which is a link, that creates a new process instance.

Step 155. Enter the following details and click the Create button to create an instance of this process.

- ▶ CustomerName - Fanatical Athletes  
(please check for the exact spelling; if a customer cannot be found by name, the retrieved credit limit will be just 0.)
- ▶ CustomerEmail - <your e-mail>
- ▶ DealerName - <any choice>
- ▶ VehicleBrand – <accordingly>
- ▶ OrderNumber - <some number>

Step 156. You will see a message saying that an instance of the VehicleOrder process has been created. Click the **OK** button to continue.

An Instance "VehicleOrder#1331" has been successfully created.

OK

Step 157. You can now logout from the Portal.

Step 158. Just for your information / don't do this now:

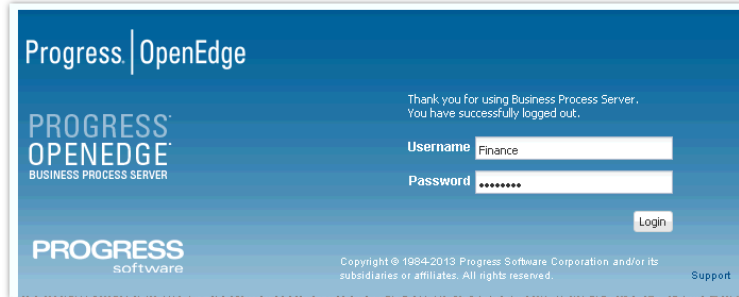
If you ever want to remove unfinished aka active instances, you can do so by logging in as Sales (the creator of the instance), go to My Instances, check the check boxes on the left for those instances you want to remove and click the button **Remove**.

No.	Application	Instance	Instance Priority	Task	Performer	Details	Priority	Assigned Date	Due Date
<input checked="" type="checkbox"/>	VehicleOrder	VehicleOrder (733)	Medium	Approve Credit	Finance		Medium	Oct 02, 2013 06:...	Oct 02, 2013 ...

## Task 22. Checking out My Tasks

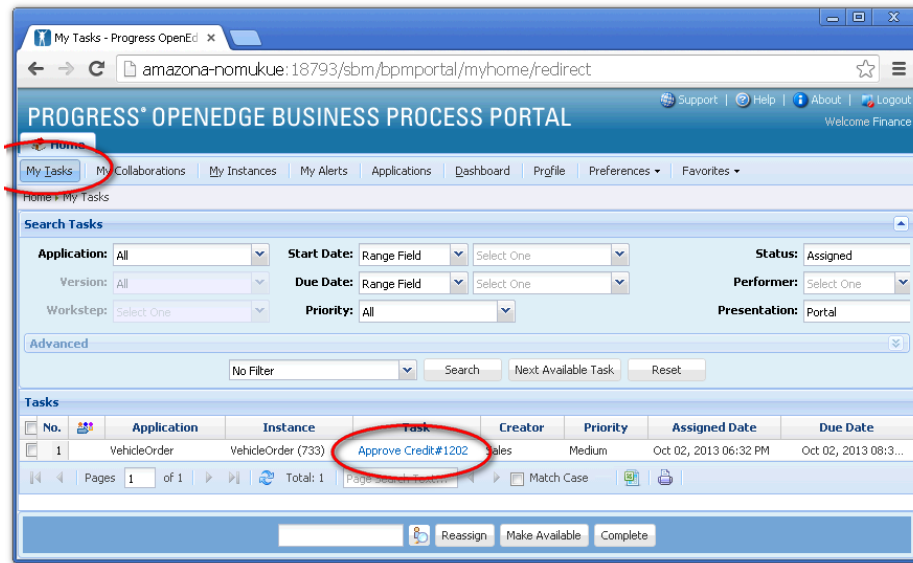
The instance of the process that you just created would in the real world just be one customer order amongst many. Users of the BPM Portal can see all of the instances assigned to them, their priority and whether they are overdue.

Step 159. Log back into the BPM Portal but this time as a **user** called **Finance** with a **password** of **password**.



By default all BPM Portal users are placed into the My Tasks tab (this can be changed by an administrator if required).

As you can see, the instance of the VehicleOrder process that you created as the Sales user is allocated to the Finance user. The task that the Finance user is expected to perform on this instance is the **Approve Credit** task.



Step 160. Click on the ApproveCredit#<instance> link.

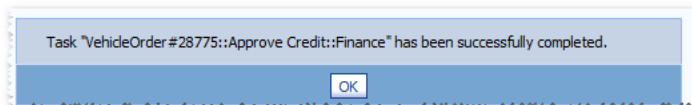


Step 161. In addition to the details that you entered as the Finance user, notice also that the **CreditLimit** and **CreditApprove** fields are populated. These values were populated from the **OpenEdge Managed Adapter** call, made as a prior **system centric** step.

The screenshot shows a web browser window with the URL: amazona-nomukue:18793/sbm/bpmportal/myhome/bizsite.task.show?bizsite\_taskNameE=56. The page title is 'PROGRESS® OPENEDGE BUSINESS PROCESS PORTAL'. The user is logged in as 'Finance'. The task details for 'VehicleOrder#735::ApproveCredit::Finance' are displayed. The 'Credit Limit' field contains the value '38900' and the 'Credit Approved' checkbox is checked. Both fields are circled in red. The 'Complete' button is visible at the bottom of the form.

Step 162. Change the value of the **CreditLimit** to 15000. Leave all other values as they are.

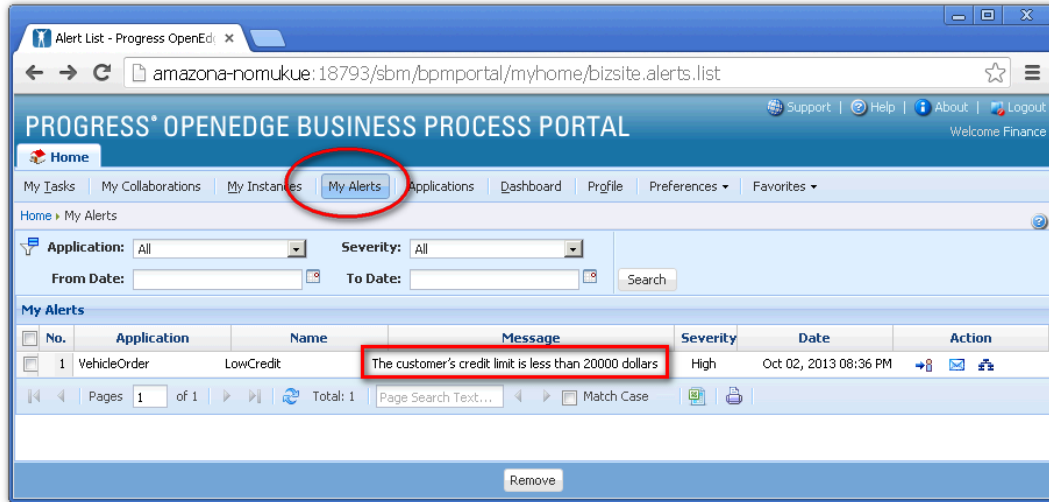
Click the **Complete** button and click **OK** on the subsequent message.



You'll notice that the **My Tasks** list is now empty. That's because the instance of the process has been **passed** to the Sales person to perform the **Review Order** step

## Task 23. Checking out My Alerts

Step 163. Click on the My Alerts tab.



Step 164. You will notice that the **LowCredit** Alert is displayed. That's because the **CreditLimit** that we entered on the Approve Credit task of **15000** is less than the condition we defined for this alert previously

## Task 24. Things to Try with the VehicleOrder Process

You may wish to “play” with the process at this point. Try creating several instances of the VehicleOrder process with different values to see the effect that it has.

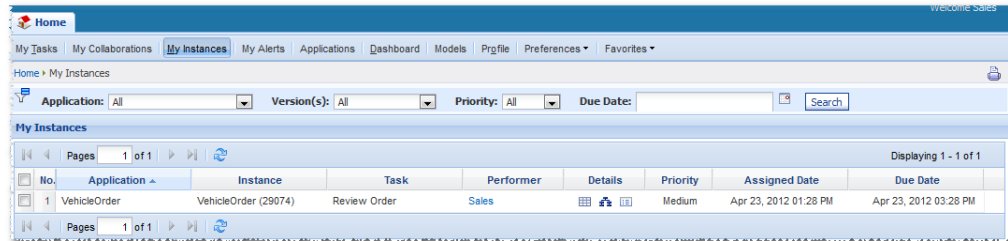
Try to enter a CreditLimit less than 10000 or greater than 50000 on the screen. What happens, and why?

Similarly, try to enter an invalid email address.

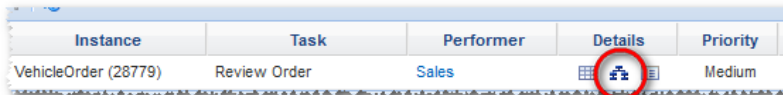
If you want to test that the email adapter works, use the customer email amy@customer.aetf. You will find a Thunderbird email client on the machine configured for this username.

## Task 25. Working with the BPM Portal Management Views

Step 165. Log into the BPM Portal once more as the **Sales** user with a password of password Select the **My Instances** tab to see all of the **instances** of the **VehicleOrder** process started or created by the Sales user.



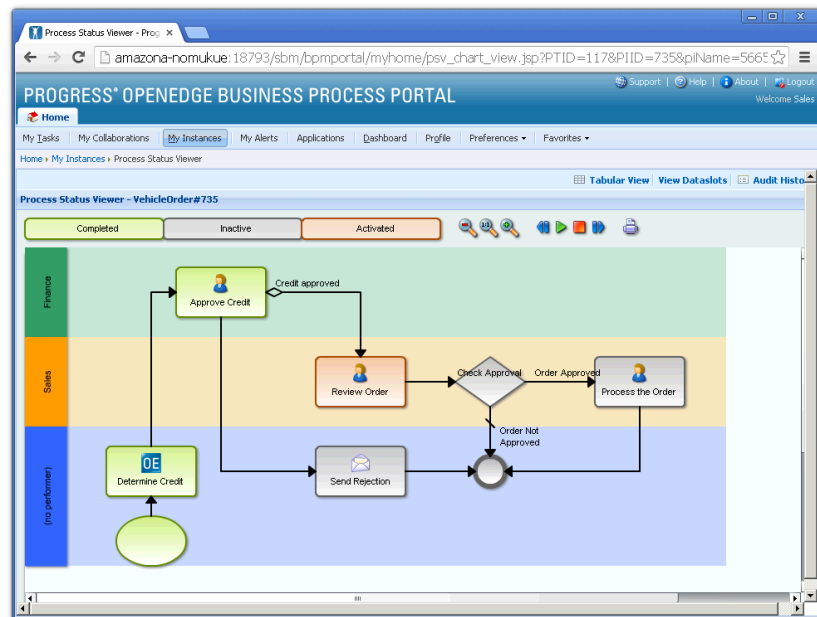
Step 166. It is useful to be able to see where a particular instance of a process currently is. You can easily see that this instance is current assigned to the Sales performer to perform the Review Order task.



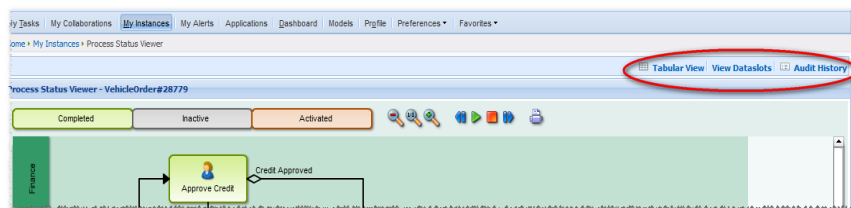
You can also see this information using the process diagram. Click on the PSV Flow View icon (the middle of the three).

Step 167. This view shows that three steps **Start**, **Review Credit**, and **Approve Credit** have all **completed** and that this particular instance is currently with the Sales performer **waiting** for the performance of the **Review Order** task.

From within this view you can also see the current values of the **datatypes**, the current status of the process in a tabular format, and a complete **Audit trail** of the tasks executed so far in this process.



Step 168. Now select the **Tabular View** option.



You can see which the current activity is and who the performer is, among other information. You can also assign the task to another performer, or complete the task.

No.	Workstep	Performer	Estimated Duration	Start Date	End Date	Priority	Status	Action
1	Order Submission	-	2 hrs	Apr 27, 2012 03:20 PM	Apr 27, 2012 03:20 PM	Medium	Completed	
2	Determine Credit	com.saviion.sbm.adapters.oe.OEAdapter	1 hrs	Apr 27, 2012 03:20 PM	Apr 27, 2012 03:26 PM	Medium	Completed	
3	Approve Credit	Finance	2 hrs	Apr 27, 2012 03:26 PM		Medium	Activated	Update Suspend Complete

Step 169. Select the View Dataslots link at the top right side. This shows all of the dataslots and their values and also allows you to change the values from a basic UI. This capability can be useful for oversight purposes, or for making updates to the process without having to start a new process.

Step 170. Change the value of the CreditLimit dataslot to 10000 to cause the Alert defined earlier to fire, when the task is completed. Select Save when you are done.

Creator:	Sales
CreditApproved:	true
CreditLimit:	10000
CustomerEmail:	amy@customer.aetf
CustomerName:	Fanabcal Athletes
DealerName:	Fred's Fjord
End Date:	
OrderApproved:	false
OrderNum:	12345
Priority:	Critical
Start Date:	Apr 27, 2012 03:20 PM
Status:	Activated
VehicleBrand:	Fjord
VehicleInStock:	false

Step 171. Switch back to the Tabular View, and complete the task, by selecting Complete from the Action dropdown, and then clicking Save at the bottom of the page.

## Task 26. Defining your Dashboards

The BPM Portal also provides customizable dashboard capabilities. The default dashboard provides insight into the current user's **Tasks**, **Alerts** and **Instances**, and can be customized to provide *additional insight* and **visibility** into your **processes**.

Step 172. Select the **Dashboard** tab in the portal, while logged in as the Sales user. The default dashboard – Performance Dashboard – is shown. Administrators can create multiple dashboards containing data visualizations and other widgets which can be specialized per user or per business function.

The screenshot shows the BPM Portal interface with the 'Dashboard' tab selected. The 'Edit Dashboard' link is circled in red. The dashboard displays the following data:

No.	Application	Instance	Task	Priority	Assigned Date	Due Date
1	VehicleOrder	VehicleOrder (29377)	Review Order#39003	Medium	Apr 27, 2012 04:1	Apr 27, 2012 06:1

No.	Application	Instance	Details	Priority	Due Date
1	VehicleOrder	VehicleOrder (29377)		Medium	Apr 27, 2012 06:07 PM
2	VehicleOrder	VehicleOrder (29378)		Medium	Apr 27, 2012 05:26 PM

No.	Application	Alert	Message	Severity	Date	Action
No data to display.						

Step 173. You can customize a dashboard by selecting the Edit Dashboard link on the right-hand side of the portal. There are a number of ways in which you can customize a Dashboard (layout, content etc). Try customizing this Dashboard.

## Advanced Lesson – Controlling your Process from the ABL

At this point, you've seen how OpenEdge ABL business logic can easily be called from OpenEdge BPM via an OpenEdge Managed Adapter. This business logic can provide data to the process for decision-making purposes, or can be used to capture data in the application database.

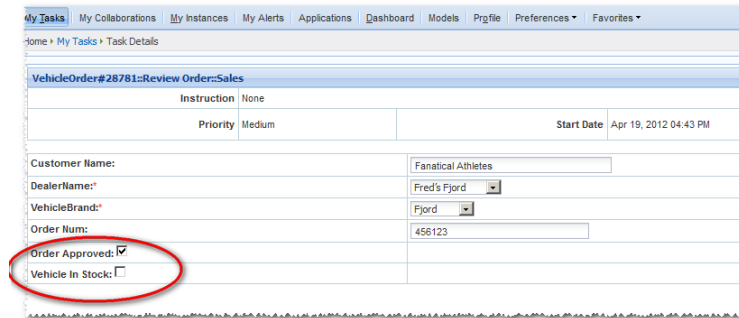
This is not the only way in which OpenEdge can interact with the process: as part of the integration of OpenEdge and BPM, an API was created which allows the ABL to easily communicate with the BPM server, using simple ABL calls. This API allows you to easily integrate the task-based workflow into your existing or new application. You might want to do this to keep a consistent UI for your users so that they don't need to switch between the ABL-based UI and the BPM Portal. Alternatively, you may also want to start processes from your ABL business logic.

At a technical level, the API allows us to start processes, view and update dataslots, and complete tasks, amongst other functions. At a more conceptual level, it allows us to create BPM processes that shadow or monitor our ABL application's processes. All business applications have processes in them. These are usually informally defined and little or no visibility into the state of these processes is available. An example of such an informal definition might be a set of menu options that should be followed in a specific order, or some "tribal knowledge" that a particular person has. BPM allows us some insight into these.

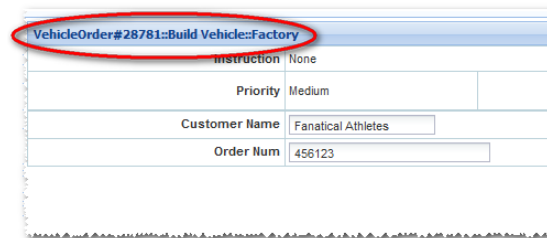
## Task 27. Showing a Task List in an ABL GUI

Step 174. Before illustrating the use of this API, you first need to make sure that there is at least one Build Vehicle task for the Factory user. Log in to the BPM Portal as Sales with a password of password, and select an available task from the list in My Tasks. Make sure that the Order Approved option is selected (checked) and the Vehicle In Stock option is not checked or selected. Complete the task by clicking on Complete.

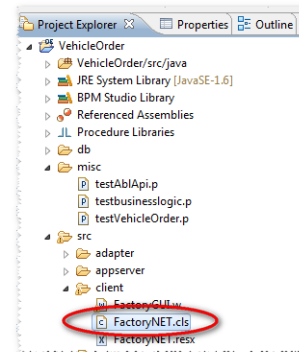
Step 175. You can now log out and log in as the Factory user, with a password of password. As you'd expect, My Tasks shows a task for that user.



Step 176. Select the task, and take a note of the Task's id, which will be something like VehicleOrder#28781::Build Vehicle::Factory.



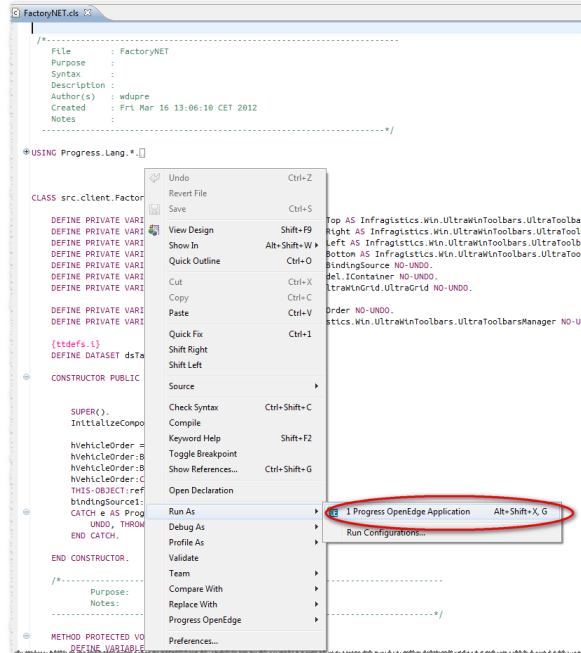
Step 177. In Progress Developer Studio, make sure you're in the OpenEdge Editor perspective, and open the FactoryNET.cls window.





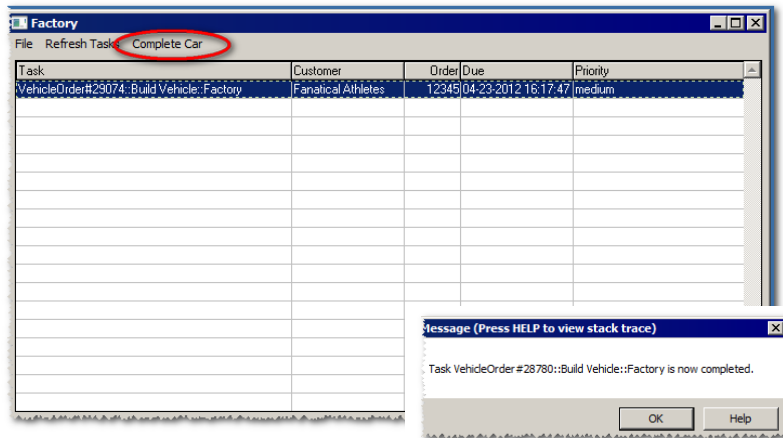
Step 178. In the Editor (code) view, right-click and select Run As | Progress OpenEdge Application.

This will launch a simple ABL GUI for .NET window containing a grid (equivalent to an ABL browser widget), which will contain at least one Task – the Build Vehicle task you just created above.



Step 179. Select a row in the browser and choose the Complete Car menu item.

You will now see a confirmation dialog from the ABL. Notice that the task name in the message is identical to the one you noted earlier, in the portal. That's because you have just completed that exact task; only this time, you did it from an ABL window instead of the BPM portal. If you check the BPM portal, you will no longer see the task appear in the list under My Tasks.



## Task 28. Using the ABL API: a walk-through

By the event-drive nature of UI code, the calls to the ABL API are interspersed with other code. For illustrative purposes, we will now walk through a simplified version of the code used in the UI above, in a single program. This code is available in the VehicleOrder project in a program called misc/testAblApi.p (shown with annotations below). The code performs the following functions:

- ▶ The first thing to do is to establish a connection to the OpenEdge BPM server, and to log in. We log in as the Factory user, using the same credentials as before.
- ▶ Once logged in, we need to retrieve a task list for the logged-in user. This task list is returned as an array of Progress.BPM.Task objects.
- ▶ We then display each Task's Name and Performer.
- ▶ The individual Task's DataSlots are now retrieved, again as an array; and
- ▶ The Name and Value of each DataSlot is displayed.
- ▶ If desired, the Task is completed.
- ▶ Once we have processed all Tasks, we log out of the BPM server and disconnect from it.

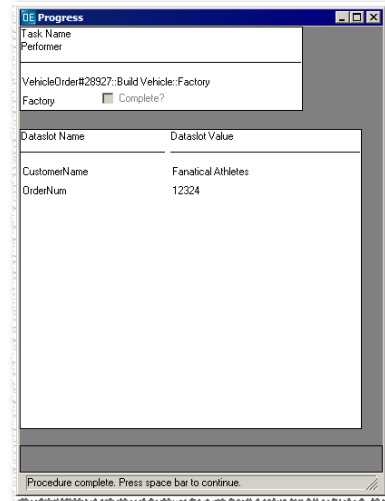
Detailed help on all the calls made in this code is available in the Help documentation, available in Progress Developer Studio.

```

P testAblApi.p
3 DEFINE VARIABLE iTaskLoop AS INTEGER NO-UNDO.
4 DEFINE VARIABLE iDatalotLoop AS INTEGER NO-UNDO.
5 DEFINE VARIABLE oTaskList AS Progress.BPM.Task EXTENT NO-UNDO.
6 DEFINE VARIABLE oDatalots AS Progress.BPM.DataSlot EXTENT NO-UNDO.
7 DEFINE VARIABLE oBpmSession AS Progress.BPM.UserSession NO-UNDO.
8 DEFINE VARIABLE lComplete AS LOGICAL NO-UNDO.
9
10 /* connect to SBM server and login */
11 oBpmSession = NEW UserSession('-URL SBMServerDC://localhost:18793'). A
12 oBpmSession:Connect('Factory', 'password').
13
14 /* Get the tasklist for the current user */
15 oTaskList = oBpmSession:GetAssignedTasks(). B
16
17 DO iTaskLoop = 1 TO EXTENT(oTaskList):
18     lComplete = FALSE. C
19     DISPLAY
20         oTaskList[iTaskLoop]:Name           LABEL 'Task Name' FORMAT 'x(60)'
21         oTaskList[iTaskLoop]:Performer      LABEL 'Performer' FORMAT 'x(15)'
22         lComplete                          LABEL 'Complete?' VIEW-AS TOGGLE-BOX
23     WITH FRAME fTask.
24     /* get dataslots for the current task */
25     oDatalots = oTaskList[iTaskLoop]:GetDataSlots(). D
26
27 DO iDatalotLoop = 1 TO EXTENT(oDatalots) WITH DOWN FRAME fDatalot:
28     DISPLAY
29         oDatalots[iDatalotLoop]:Name       LABEL 'Datalot Name' FORMAT 'x(30)'
30         STRING(oDatalots[iDatalotLoop]:Value) LABEL 'Datalot Value' FORMAT 'x(40)'
31     WITH FRAME fDatalot.
32     DOWN WITH FRAME fDatalot. E
33
34 END.
35
36 /* if required, complete the task */
37 IF lComplete THEN
38     oTaskList[iTaskLoop]:Complete(). F
39 END.
40
41 /* logout */
42 oBpmSession:Disconnect(TRUE). G

```

You can run this code, by opening the testAbtApi.p program in the editor and using the same right-click, Run As| Progress OpenEdge Application method as we used for the ABL UI. This results in a simple ABL screen, similar to the one alongside.



You can also step through the calls made in this program using the OpenEdge debugger in Progress Developer Studio.

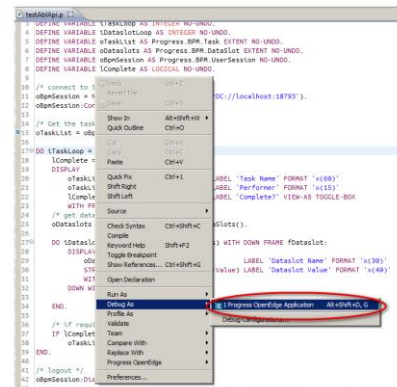
Prior to starting the **debugger**, you will need to set an initial breakpoint in the code, otherwise the code will run without giving you the opportunity to debug. To add a debugger **breakpoint**, double-click in the left-hand side gutter (the grey area in the diagram below) and you will see a blue dot appear. Set the breakpoint at line 15 (starting with oTaskList = ).

```

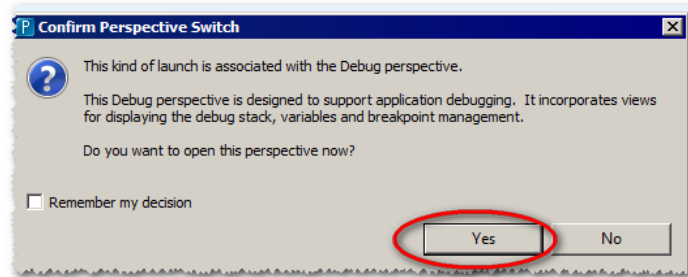
1  DEFINE VARIABLE iTaskLoop AS INTEGER NO-UNDO.
2  DEFINE VARIABLE iDataSlotLoop AS INTEGER NO-UNDO.
3  DEFINE VARIABLE oTaskList AS Progress.BPM.Task EXTENT NO-UNDO.
4  DEFINE VARIABLE oDataSlots AS Progress.BPM.DataSlot EXTENT NO-UNDO.
5  DEFINE VARIABLE oBpmSession AS Progress.BPM.UserSession NO-UNDO.
6  DEFINE VARIABLE iComplete AS LOGICAL NO-UNDO.
7
8  /* connect to SBM server and login */
9  oBpmSession = NEW UserSession('-URL SBMServerDC://localhost:18793').
10 oBpmSession:Connect('Factory', 'password').
11
12 /* Get the tasklist for the current user */
13 oTaskList = oBpmSession:GetAssignedTasks().
14
15 DO iTaskLoop = 1 TO EXTENT(oTaskList):
16     iComplete = FALSE.
17     DISPLAY
18         oTaskList[iTaskLoop]:Name          LABEL 'Task Name' FORMAT 'x(60)'
19         oTaskList[iTaskLoop]:Performer     LABEL 'Performer' FORMAT 'x(15)'
20         iComplete                          LABEL 'Complete?' VIEW-AS TOGGLE-BOX
21     WITH FRAME ftask.
22 /* get dataslots for the current task */
23 oDataSlots = oTaskList[iTaskLoop]:GetDataSlots().
24
25

```

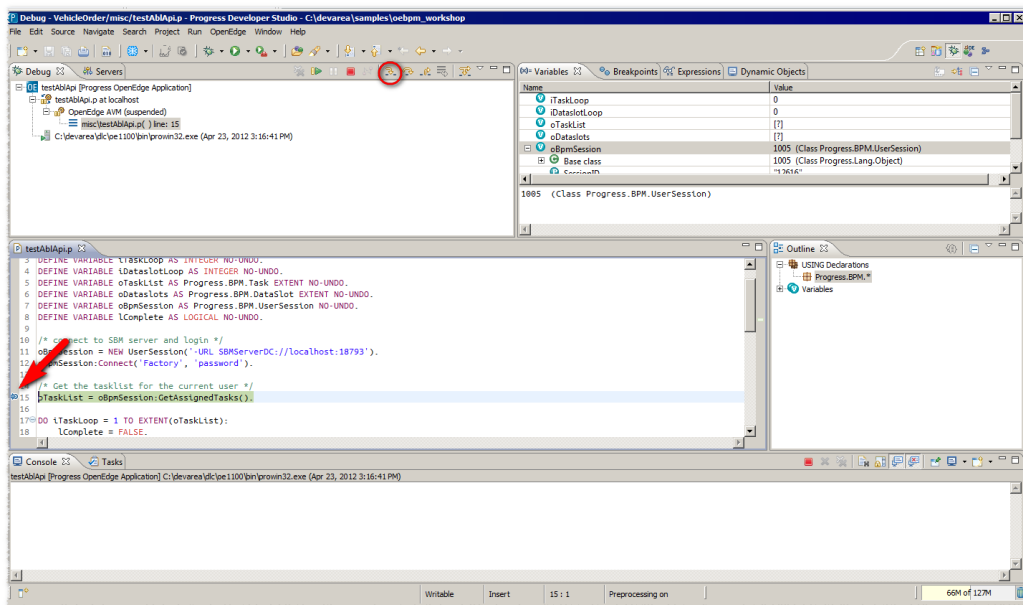
Debugging a program is as easy as running it: right-click in the editor, and select **Debug As| Progress OpenEdge Application**.



Once you have selected this option, the AVM starts a new debug session. You will be prompted to switch to the OpenEdge Debugger perspective; select Yes here. You may choose to select the Remember my decision option, to prevent being asked this question again.

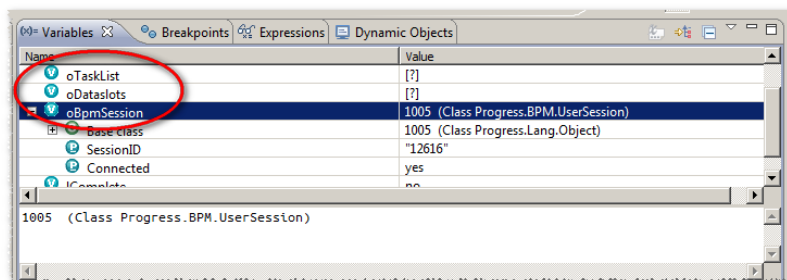


Progress Developer Studio will now switch to the Debug perspective, and pause program execution at the breakpoint you set earlier. The arrow in the diagram below indicates the breakpoint and the currently-executing line of



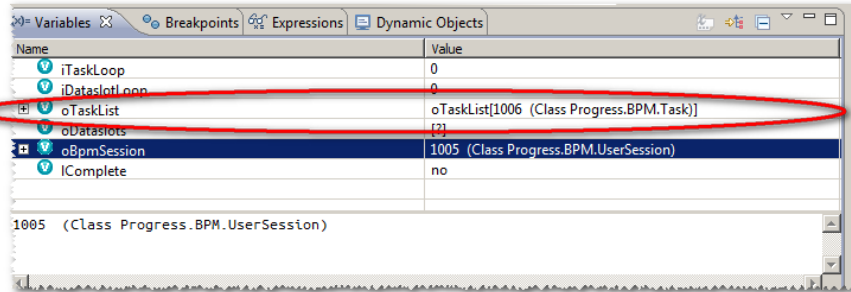
code (line 15). The circled button is for the Step Into action, which you will use to step through the program.

Take a look at the variables view in the upper right-hand side of the perspective. Notice the oTaskList and oDataSlots variable both have a value of [?], which indicates an uninitialized array. You would expect this situation for the oDataSlots variable because, by observing the code, you can see that it has not yet been populated anywhere. The oTaskList variable has not yet been assigned because debugger execution stops before the line executes, but after the last line has executed.

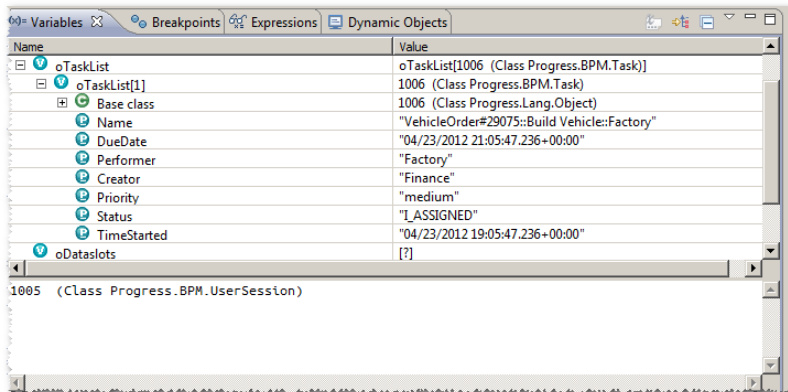


You can also see that you have a valid, connected BPM session, per the oBPMSession variable's SessionID and Connected properties

Press the Step Into button to advance to the next line (line 17). Now take a look at the variables view again. Notice that the variable value has changed. This tells us that there is now data in that variable.

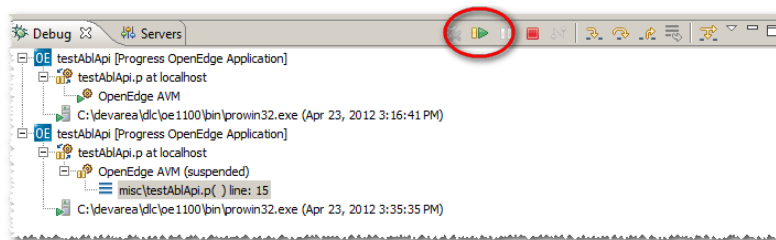


Expand the [+] icon on the left of the oTaskList variable to see the contents of the variable. You can see the array has one extent, and also the object reference to that content.



Further expansion of the oTaskList variable allows us to see the details of the Task.

Continue to step through the program line by line, inspecting the program's state by inspecting the variables' contents. You can either step through the entire program, or select the Resume button for the program to run until it ends or hits another breakpoint

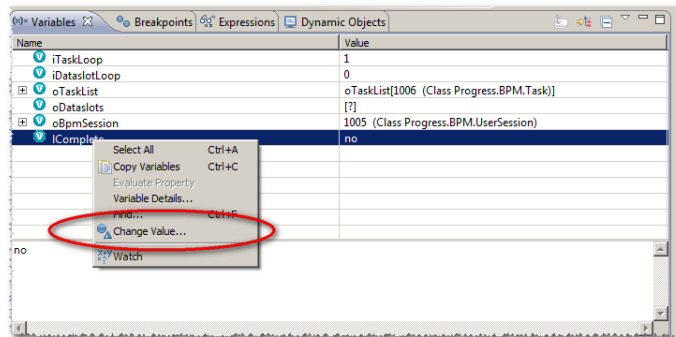


You can switch back to the OpenEdge Editor perspective using the button on the perspective bar, at the top right-hand side of Progress Developer Studio.

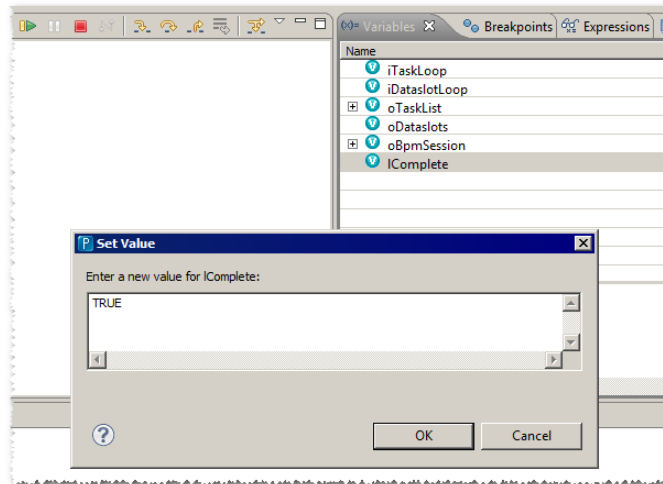
The OpenEdge debugger also allows you to alter the program flow by changing variable values while a program is executing. In this case, you will change the value of the IComplete variable from FALSE to TRUE, in order to cause the Task to be completed.

Run the testAblApi.p program with the debugger as above. The program should stop at the breakpoint you set earlier, at line 15. Press the **Step Into** button three times to advance to line 19 (DISPLAY ...).

In the Variables view, select the IComplete variable. Right-click and select the **Change Value ...** option.



In the dialog that appears, change the value to TRUE or YES, and press OK. Once you have done so, notice that the value of the ICompleted variable has changed in the Variables view, and will alter the flow of the program accordingly, especially at line 37, when the decision is made whether to Complete the task or not. Continue stepping through the program using the Step Into button, or choose Resume. You can confirm that the Task was correctly completed using the BPM Portal.



For a more advanced look at how the ABL UI uses the API, look at the src/client/FactoryNET.cls and src/adapters/VehicleOrder.cls programs. There is also a client based on the OpenEdge ABL UI available (src/client/FactoryUI.w).

## Task 29. Things to think about with your ABL business application

- ▶ How would I model my business application's processes in OEBPM?
- ▶ How would I expose a task list to my application's users? What would this replace – a set of menus? A browser or grid?

## Conclusion

As you've seen in our lessons, OpenEdge BPM allows you to conceptualize and simulate virtually any real-world business work flow no matter how esoteric. Here are some suggestions to expand upon your learning:

### Fun things to try with the automotive manufacturing example

- ▶ What worksteps could you add to the Vehicle Order process template that would ask for customer feedback after delivery of a car?
- ▶ What additional worksteps might be needed if a dealership placed an order on behalf of a customer?
- ▶ How could you define a process to allow product recalls on a given car?

### Fun things to model on your own

- ▶ How would you design a business process for a restaurant? A hospital? A realtor?
- ▶ What processes can you model and test in your business?

### Additional Training and Demonstrations

- ▶ This workshop has given you an introduction to OpenEdge BPM but there is a wealth of functionality available to you including:
  - ▶ The ability to simulate processes to help identify bottlenecks and help with resource planning
  - ▶ The ability to use data retrieved from your OpenEdge application directly in BPM forms and processes
  - ▶ How to create sub-processes to allow sections of a process to be used and reused within other processes
  - ▶ How to build Web Applications with a browser User Interface for your BPM enabled processes
  - ▶ How to integrate processes directly from your existing OpenEdge GUI, Web, and Character User Interfaces, and even for batch jobs

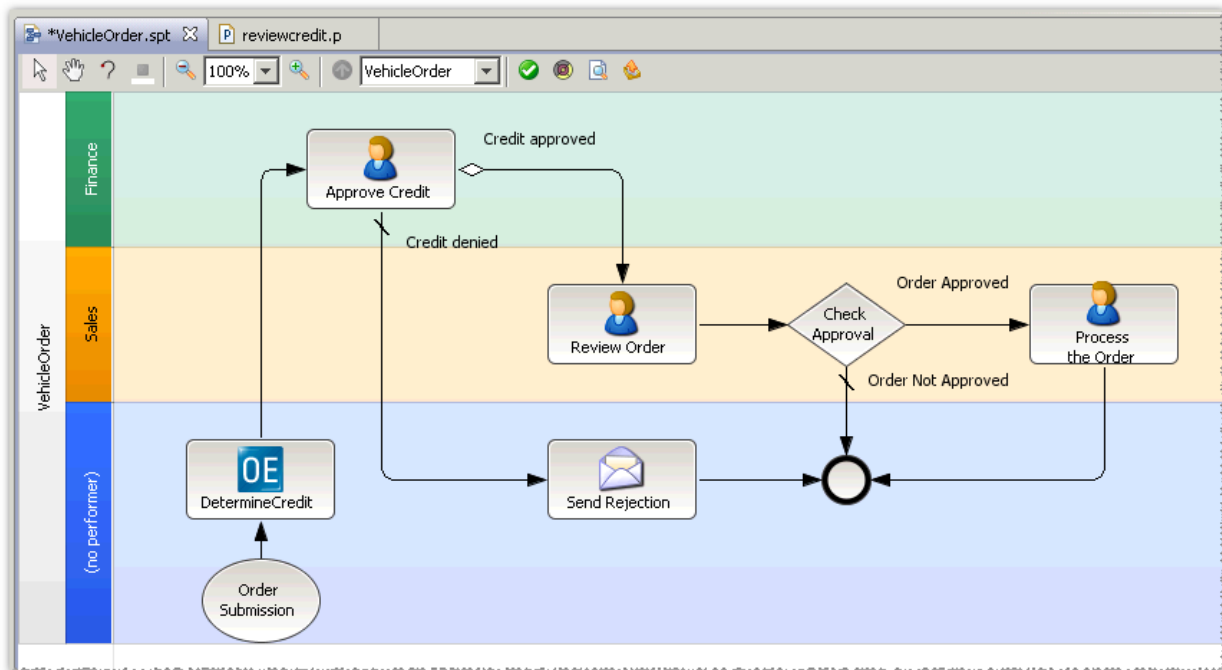
Don't forget, Videos and white-papers describing this additional functionality, including a demonstration of building the Vehicle Order process used in this workshop, are available from the Welcome Page in Progress Developer Studio, or on the Progress Communities website at <http://communities.progress.com/pcom/docs/DOC-106994>.

For details relating to architectural best practices for building your OpenEdge BPM application, based on the principles of the OpenEdge Reference Architecture (OERA), please check out the following on Progress Communities: <http://communities.progress.com/pcom/community/psdn/openedge/architecture/autoedgethefactory>.



## Appendix

### Vehicle Order process template (complete diagram)



# PROGRESS EXCHA

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## Progress Software

Progress Software Corporation (NASDAQ: PRGS) is a global software company that enables enterprises to be operationally responsive to changing conditions and customer interactions as they occur. Our goal is to enable our customers to capitalize on new opportunities, drive greater efficiencies, and reduce risk. Progress offers a comprehensive portfolio of best-in-class infrastructure software spanning event-driven visibility and real-time response, open integration, data access and integration, and application development and management—all supporting on-premises and SaaS/cloud deployments. Progress maximizes the benefits of operational responsiveness while minimizing IT complexity and total cost of ownership.

## Worldwide Headquarters

Progress Software Corporation, 14 Oak Park, Bedford, MA 01730 USA

Tel: +1 781 280-4000 Fax: +1 781 280-4095 On the Web at: [www.progress.com](http://www.progress.com)

For regional international office locations and contact information, please refer to the Web page below:  
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