

IBM Business Process Manager  
Version 8 Release 5

*Hiring Tutorial*



**Note**

Before using this information and the product it supports, read the information in Notices.

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## Hiring tutorial

In this tutorial, you use the tools in IBM® Process Designer to re-create the Hiring Sample process application that is in IBM Process Center.

This tutorial gets you started using Process Designer tool by having you iteratively model and test an instance of a hiring process. As you complete the lessons, you learn about Process Designer so that you can build your own processes.

**Note:** This tutorial is a learning exercise that describes one way of modeling, implementing, and testing a process. Depending on your process and process application, other techniques might be more appropriate.

This tutorial contains the following modules:

- Hiring tutorial: Model the process
- Hiring tutorial: Implement the process
- Hiring tutorial: create the user interface
- Hiring tutorial: integrate the process with services
- Hiring tutorial: Conduct the final playback

After you complete this tutorial, you will be able to do the following tasks:

- Model a process that is based on the process requirements.
- Implement the process, including data variables and services that are required by the process.
- Create the user interface for the process.
- Conduct playbacks at each phase to validate the work that you completed.
- Run and review the process.

Each module in this tutorial contains lessons and builds on the previous module so that you can work with the tutorial from beginning to end.

**Note:** The process application that you are creating in this tutorial is called the My Hiring Sample, and the process application that is included in Process Center is called the Hiring Sample.

To skip lessons, you can copy the required artifacts from the Hiring Sample process application that is in Process Center by following these steps:

1. Start the Process Designer desktop editor.
2. Enter your user name and password and click **Log In**. When Process Designer opens, the Process Apps window displays the list of process applications that are available in Process Center.
3. Open the Hiring Sample process application in the Designer.
4. In the library, click **All** to view the list of artifacts.
5. Right-click each artifact that you want to copy and select **Copy item to > My Hiring Sample**.
6. Review the artifacts that refer to the copied artifacts in the My Hiring Sample and fix any errors that are caused by copying. Errors can occur because the copied artifacts are not the same as the artifacts in the My Hiring Sample even though they have the same name. For example, if you copied the Person business object, check all bindings or references to this business object. If you see an error, clear the binding or reference, and then reselect the business object from the list that opens.

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## Process requirements

The process that you are going to model is called the Standard HR Open New Position process. This process covers how to fill a job position by submitting, approving, and routing a job requisition to the Human Resources (HR) department to search for job candidates.

The Standard HR Open New Position process includes the following requirements:

- The hiring manager must either fill a new position or replace an employee who is departing from an existing position.
- The hiring manager must determine the position requirements and prepare a job requisition to be submitted to the HR department. For a new position, the hiring manager can provide the following information:
  - An ID for the job requisition
  - Name of the hiring manager
  - Title of the position
  - Name of the department that requires the job requisition
  - Number of employees that are required to fill the position
  - Whether the job requisition is for a new or existing position
  - Whether the job is part-time, full-time, or contract
  - When the position starts
  - Where the position is located

For an existing position, the hiring manager must provide the following information about the person who will be replaced:

- First name
- Last name
- The person's manager or supervisor
- The person's pay grade or level
- The person's classification for taxation
- Comments regarding the person
- The hiring manager reviews and approves the job requisition before the hiring procedure starts.
  - If the job requisition is to fill an existing position, the hiring manager must send the job requisition directly to HR. When HR receives the job requisition, they search for candidates.
  - If the job request is to fill a new position, the hiring manager must send it to the general manager (GM) for approval.
- The GM must evaluate the job requisition and either approve or reject it.
  - If the GM approves the job requisition, it then goes to HR so that HR can find job candidates.
  - If the GM rejects the job requisition, the hiring manager is notified and the job requisition process is terminated.
  - If the GM does not handle the request by the due date, the GM is notified.

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## Hiring tutorial PDF

The hiring tutorial is also available in PDF in the IBM Business Process Manager Library.

To view and print the hiring tutorial PDF, click the following link:

IBM Business Process Manager Library.

**Note:** You need Adobe Acrobat to view it. A free version of this software is available from [www.adobe.com](http://www.adobe.com).

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## Model the process

In this module, you use the process requirements to model the Standard HR Open New Position process and then conduct a playback called Playback Zero. During Playback Zero, you uncover new requirements and review the process with the business stakeholders.

### Learning objectives

After you complete the lessons in this module, you will understand the concepts and know how to do the following tasks:

- Create a process application.
- Create a business process definition (BPD).
- Model teams by adding lanes and assigning teams to the BPD.
- Add activities, events, and gateways to the BPD.
- Add sequence flows to connect the activities, events, and gateways.
- Add a timer intermediate event to the BPD.
- Create process variables.
- Run Playback Zero.

### Prerequisites

You must have Process Designer installed and running on your computer. You must also understand the information in Process requirements.

## Create the process application

In this lesson, you create the process application to contain the Standard HR Open New Position process.

To perform this task, you must be in the IBM Process Designer desktop editor.

You must create the process application before you create the Standard HR Open New Position process. The process application is stored in the Process Center repository, which you can access from Process Designer.

**Remember:** Ensure that you are connected to Process Center whenever you work with Process Designer because there is no workspace or repository on your local system. All the work that you do is stored in Process Center.

This lesson uses the following concepts:

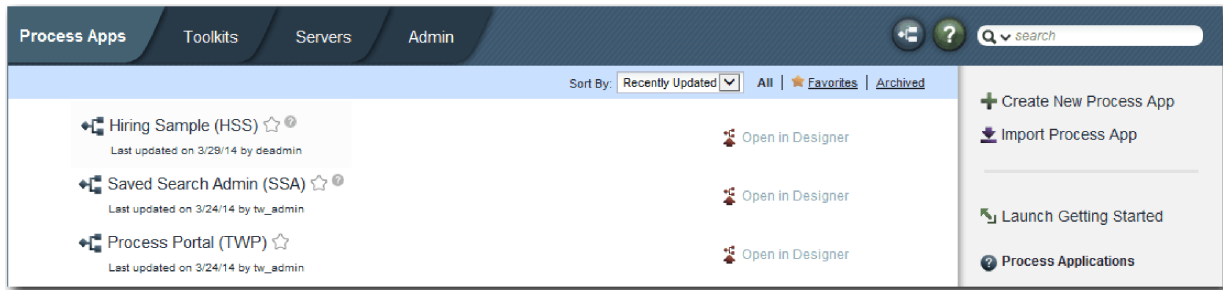
Concept	Description
process application	A container in the Process Center repository that stores process models and supporting implementations. A process application typically includes business process definitions (BPDs), the services to handle implementation of activities and integration with other systems, and any other items that are required to run the processes. Each process application can include one or more tracks.
Process Center	A central repository for all project assets that are created in Process Designer. When multiple Process Designer clients connect to Process Center, users can share items, such as processes and services. Users can also see changes that other users make as they happen.

Concept	Description
Process Designer	An authoring tool that you use to model and implement your business processes and demonstrate a process design and flow during development.

Create the process application:

1. Open the Process Designer desktop editor. When Process Designer opens, the **Process Apps** page displays the list of process applications that are available in Process Center.

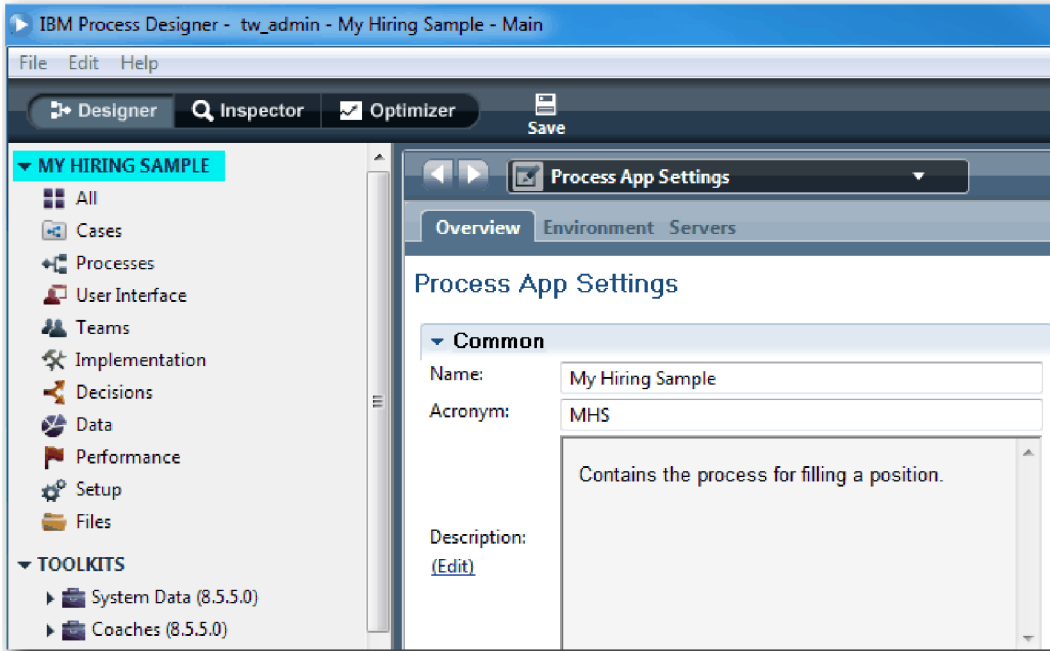
The following Standard Hiring Sample process application is the one that is shipped with the product. You are creating your own process application for this tutorial.



2. Click the **Create New Process App** link on the right panel of Process Center.
3. Enter the following information:
  - Process App Name: My Hiring Sample
  - Acronym: MHS
  - Description: Contains the process for filling a position.



4. Click **Create**. The process application is now in your list of process apps.
5. To open the My Hiring Sample process application, locate the process application in Process Center and click **Open in Designer**. A Process Designer page opens, displaying the **Process App Settings**.



The highlighted area shows the process application that you are editing. Notice that this page gives you the opportunity to edit the process application settings, such as the name, acronym, and description. For now, leave the settings as they are and continue modeling the process.

## Lesson checkpoint

You created a process application to contain the Standard HR Open New Position process.

In this lesson, you learned

- How to start Process Designer
- How to create a process model container, which is known as the process application in Process Center
- That your workspace is in Process Center
- That the process application contains the process model that is created in Process Designer

In the next lesson, you create a business process definition.

## Related Links

- Process applications
- Creating new process applications

## Create the business process definition (BPD)

In this lesson, you create a business process definition (BPD) for the Standard HR Open New Position process.

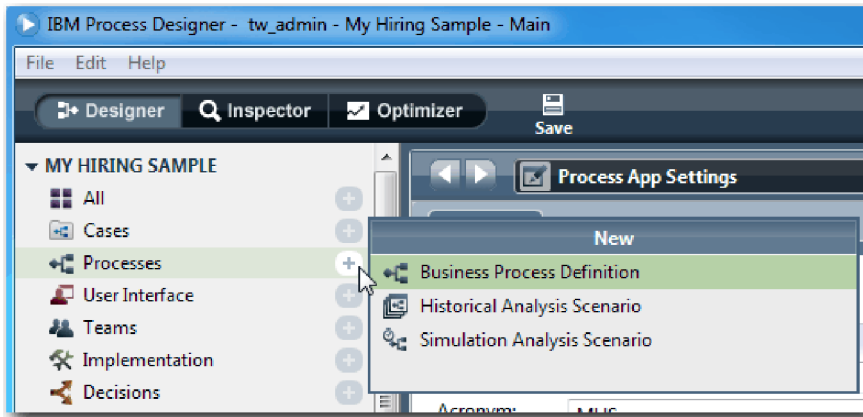
To create a model in the My Hiring Sample process application, you must create a BPD for the Standard HR Open New Position process. After you name the BPD, you model it by defining lanes and teams and then adding flow objects such as activities, events, and gateways.

This lesson uses the following concept:

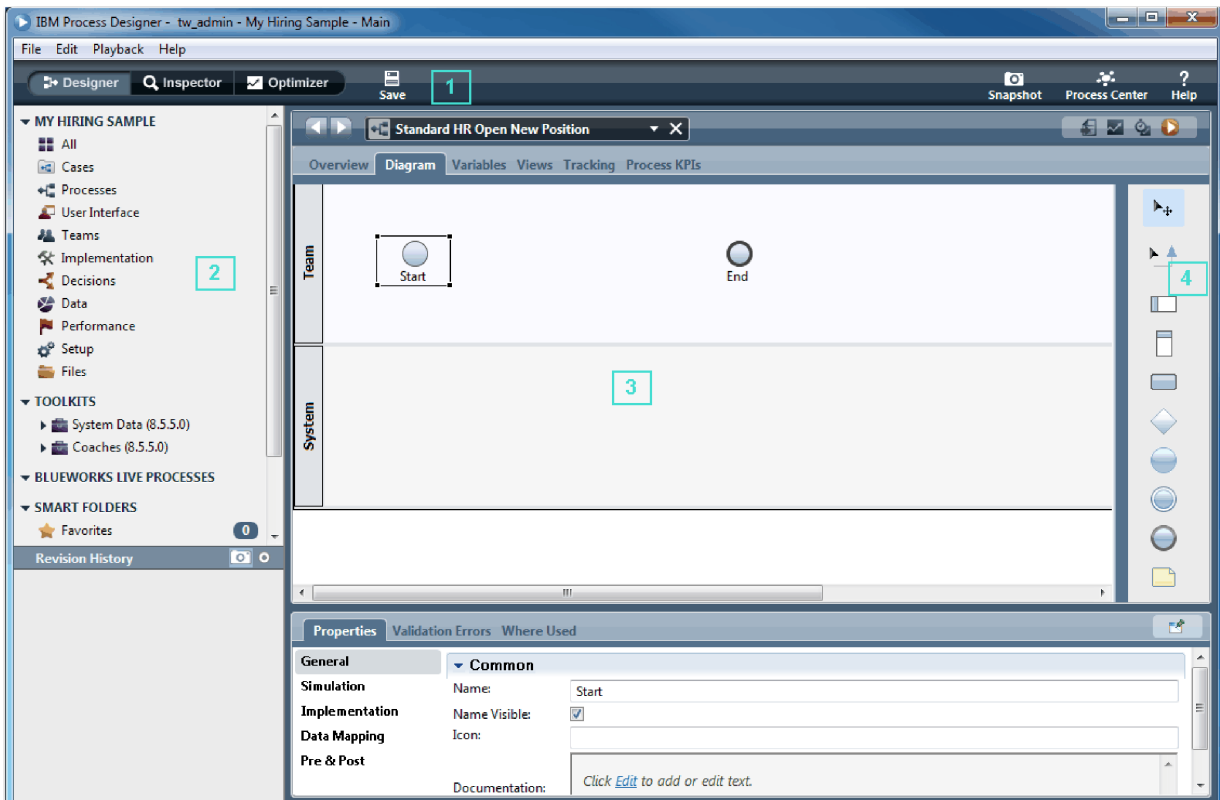
Concept	Description
business process definition (BPD)	A reusable process diagram or model that defines what is common to all runtime instances of that process model.

Create the Standard HR Open New Position BPD:

1. Make sure that the My Hiring Sample (MHS) process application is open in the Process Designer desktop editor.
2. In the Designer library, click the plus sign next to **Processes** and select **Business Process Definition**.



3. Type Standard HR Open New Position and click **Finish**. The BPD is created and the process diagram opens showing the following modeling constructs:



Number	Area	Description
1	Main toolbar	Provides access to Designer, Inspector, Optimizer, and Process Center. The main toolbar is also where you go to save all open editors, take a snapshot, and view web help.
2	Library	Provides access to the library items for the current process application.

Number	Area	Description
3	Main canvas	The area in which you can graphically model your process. Each BPD automatically includes a start event and an end event. Two default lanes are included for user and system tasks.
4	Palette	Provides elements that you can use to model your process. You can hide the palette by clicking the colored border to the left of the available elements. To restore the palette and view the available components, click the same border.

## Lesson checkpoint

You created the Standard HR Open New Position BPD.

In this lesson, you learned

- About the Process Designer user interface
- How to create a BPD

In the next lesson, you model teams.

## Related Links

- Business process definitions (BPDs)
- Creating a business process definition (BPD)

## Model teams

In this lesson, you model the teams that participate in the Standard HR Open New Position process.

Teams that are assigned to activities and lanes determine which users can work on tasks in IBM Process Portal. If a team is assigned to a lane, members of that team can work on all the tasks that are part of that lane.

Based on the Process requirements, you must create a team for each of the identified user roles: hiring manager, general manager, and human resources manager. To model the teams, you add lanes and assign teams to the BPD. Each lane contains the activities that the associated team or system completes. You also define the teams by specifying the cost per hour, members, and managers.

When you create a BPD, Process Designer generates two lanes: Team and System. For the Standard HR Open New Position BPD, you must have the following lanes and teams:

Lane	Team title	Team properties
Hiring Manager	Hiring Managers	Cost per Hour: 65.00, Members: Standard Members (tw_allusers), Managers: Managers of All Users
General Manager	General Managers	Cost per Hour: 75.00, Members: Standard Members (tw_allusers), Managers: Managers of All Users
Human Resources	Human Resource Managers	Cost per Hour: 50.00, Members: Standard Members (tw_allusers), Managers: Managers of All Users
System	System	Because the activities in the system lane are completed by the system, there is no associated team.

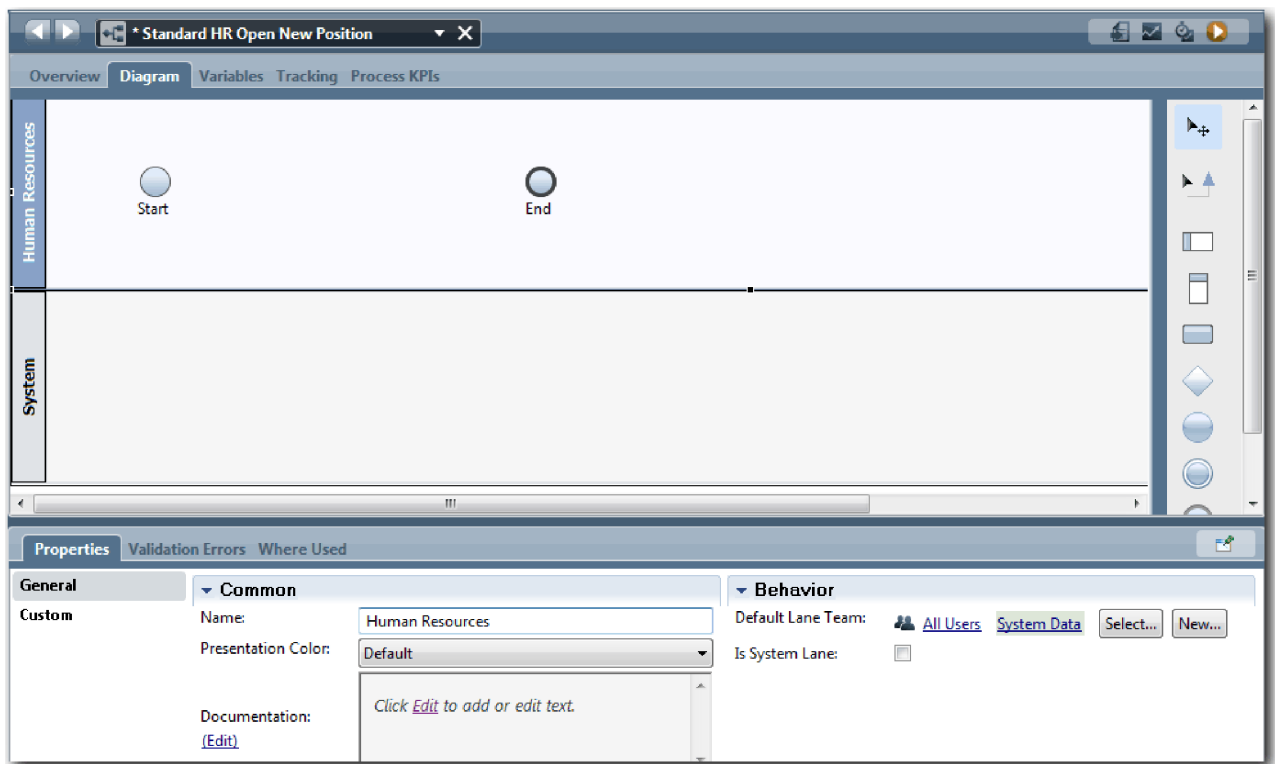
The system lane contains the activities that IBM Business Process Manager completes.

This lesson uses the following concepts:

Concept	Description
lanes	Provide context for a process model. Each lane contains a series of activities that are assigned to a specific team or system.
teams	Contain the members who complete the runtime activities that are modeled in each lane.
members	User groups or individual users that are part of a team.
managers	The team whose members can use the Team Performance dashboard in Process Portal to manage this team and its tasks.

Model the teams:

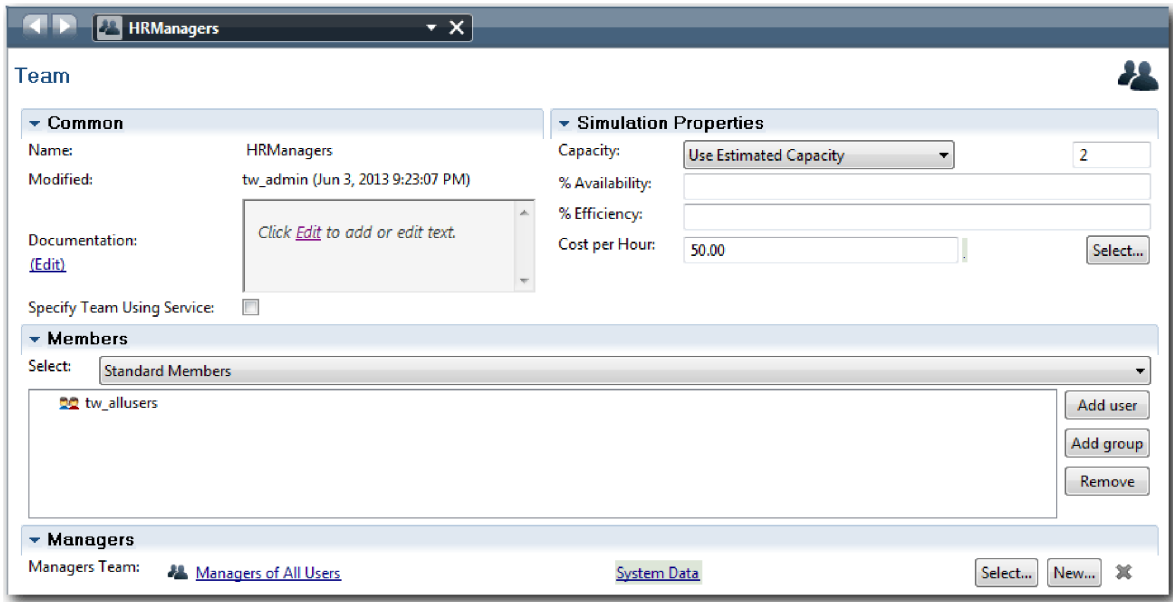
1. Make sure that the Standard HR Open New Position process is open and the **Diagram** tab is selected.
2. Click the **Team** lane and, in the **Properties** tab, change the name to Human Resources.



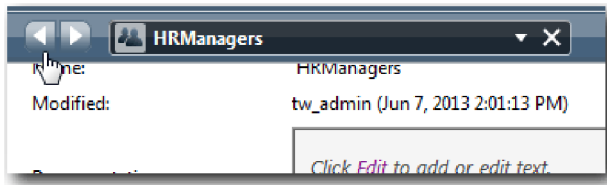
3. Create the HR Managers team:
  - a. In the Behavior section of the team properties, for **Default Lane Team** click **New**.
  - b. Type HRManagers for the name and click **Finish**.
  - c. In the Simulation Properties section, for **Cost per Hour** type 50.00.
  - d. In the Members section, click the list to select **Standard Members**.
  - e. Click **Add group** and select **tw\_allusers**.

**Note:** The group tw\_allusers is created automatically when you install IBM Business Process Manager. All registered users are part of tw\_allusers.

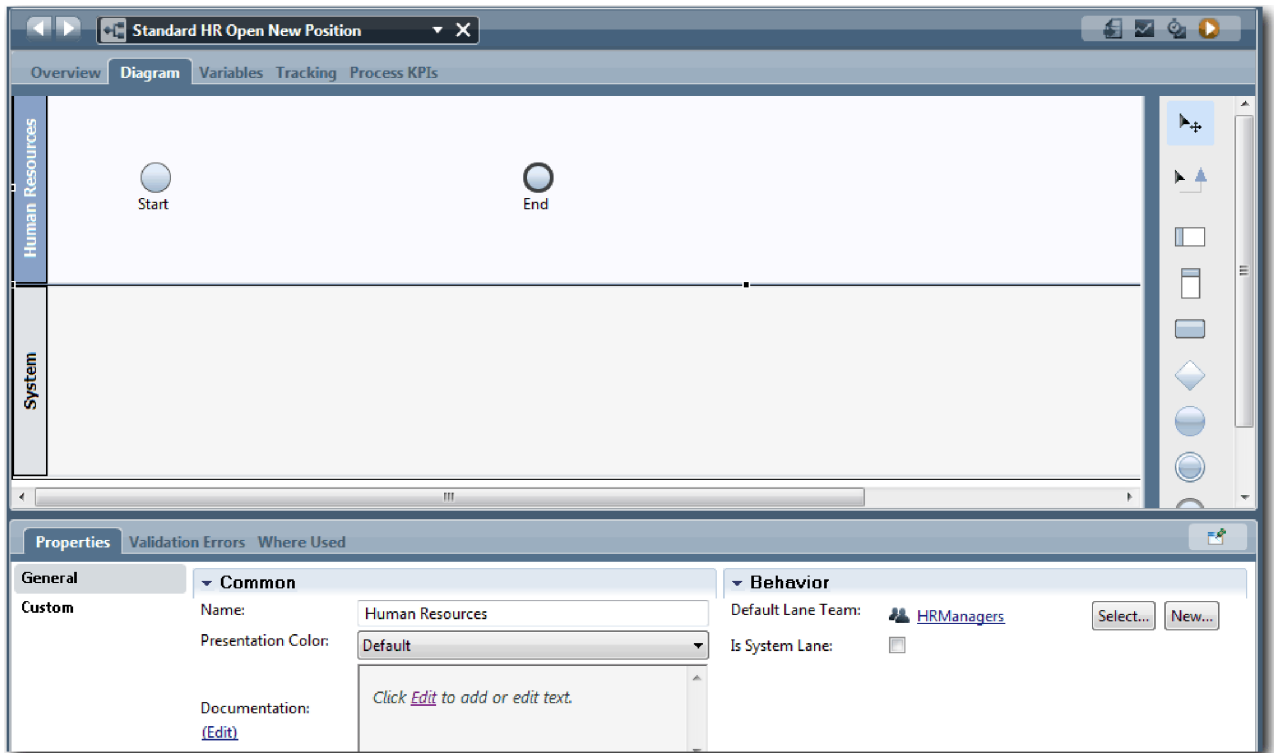
- f. In the Managers section, click **Select** and select **Managers of All Users**.



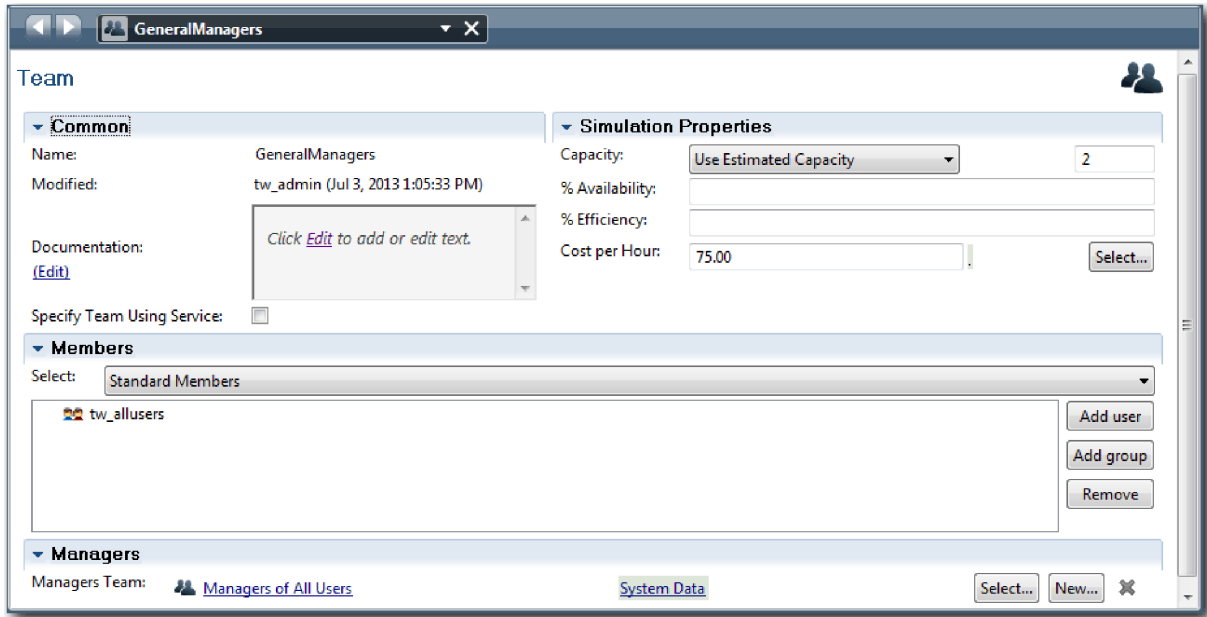
- g. Click **Save**.
4. Click the back arrow to return to the Standard HR Open New Position process.



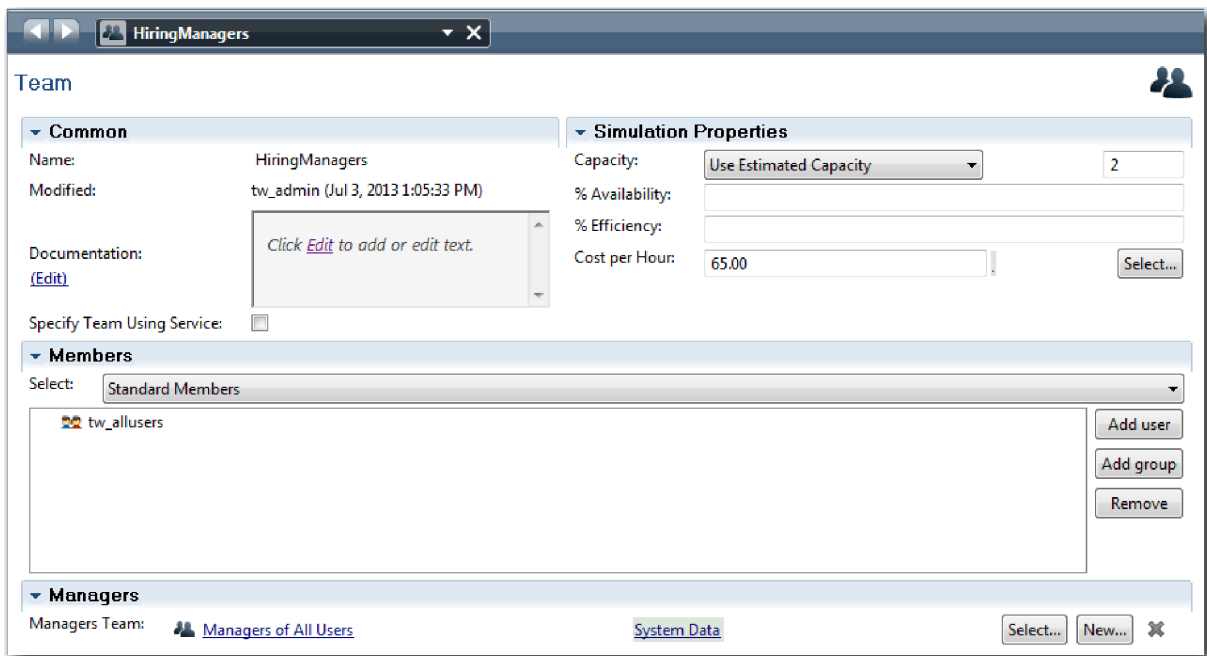
**Tip:** You can also click the list in the **HRManagers** field to view the artifacts that are open. You are now back in the main canvas of the Standard HR Open New Position process.



5. Add a General Manager lane:
  - a. Drag a lane from the palette onto the diagram.
  - b. Name the lane General Manager.
  - c. In the **Properties** tab, select **Blue** from the **Presentation Color** list. Changing its color means that it is easier to distinguish this lane from other lanes in the diagram.
6. Create the General Managers team that is associated with the General Manager lane. Include the following properties:
  - Name: GeneralManagers
  - Cost per Hour: 75.00
  - Members: Standard Members (tw\_allusers)
  - Managers: Managers of All Users



7. Click **Save**.
8. In the Standard HR Open New Position diagram, add a Hiring Manager lane. Select **Green** from the **Presentation Color** list.
9. Create the Hiring Managers team that is associated with the Hiring Manager lane. Include the following properties:
  - Name: HiringManagers
  - Cost per Hour: 65.00
  - Members: Standard Members (group tw\_allusers)
  - Managers: Managers of All Users

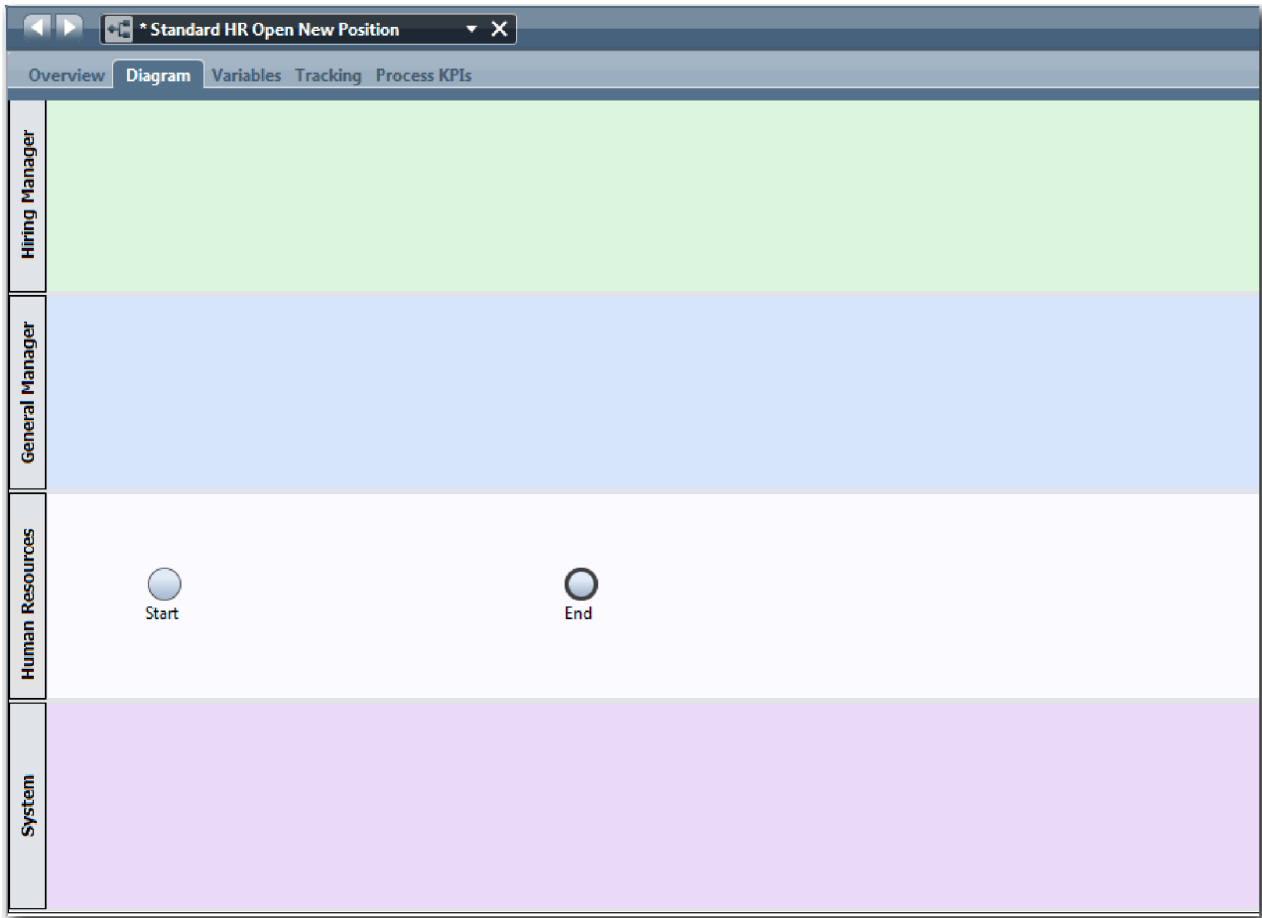


10. Click **Save**.

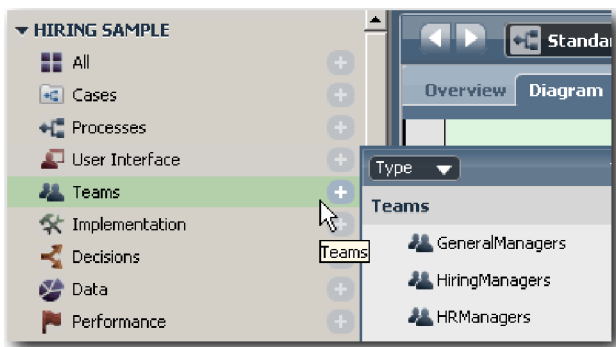
11. In the Standard HR Open New Position diagram, click the **System** lane. In the **Properties** tab, select **Purple** from the **Presentation Color** list.

**Tip:** To reorder lanes, you can right-click a lane and select **Move Lane Down** until it is positioned where you want it.

Your diagram matches the following image:



12. Save your work.
13. To view the teams you created, click **Teams** in the library.



## Lesson checkpoint

You modeled the teams and created the foundation for the BPD by adding the appropriate lanes and associating and defining teams.

In this lesson, you learned

- How to add lanes to a BPD
- How to associate a team to a lane
- How to define a team

In the next lesson, you use sequence flows to connect the activities and events to establish the process flow.

### Related Links

- Creating a team
- Assigning teams to BPDs and lanes

## Add activities and events

In this lesson, you add activities and events to the lanes in the Standard HR Open New Position BPD to establish the correct process flow.

To model the activities and events, use the Process requirements.

When you add activities and events, follow these guidelines:

- Ensure that activities represent logical units of work that are assigned to a participant of a process.
- Create multiple concurrent workflow steps that are assigned to one responsible role into one activity or task.
- Use verb-noun statements to label activities, such as “Submit job requisition”.
- Apply a top-down, left-to-right flow to your BPD so that it is easier to read.

This lesson uses the following concepts:

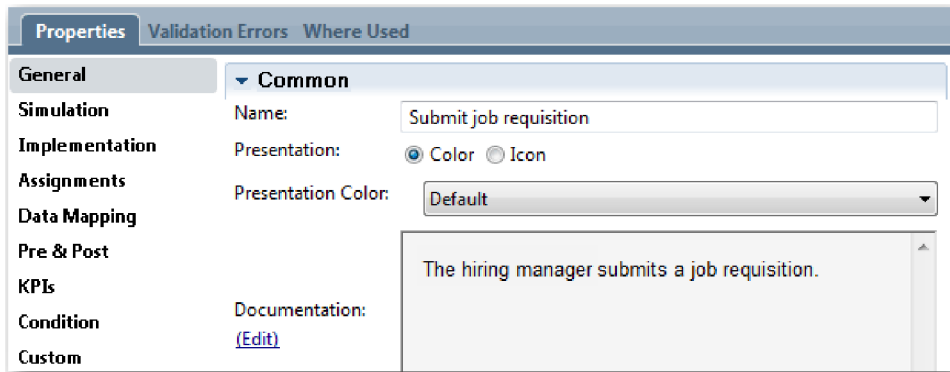
Concept	Description
event	Controls flow objects for a process model. An event is something that occurs during a process.
start event	Triggers the initiation of the process through a manual or automatic input. There are three types of start events: standard, message, and ad hoc. In a BPD, a standard start event is created automatically and only one instance is allowed in the model. To start a process when an external signal is received, add a message or ad hoc start event to the BPD.
end event	Occurs in a process when a final decision from all activities or a partial set of activities is reached. There are four types of end events: standard (none), message, error, and terminate. You can have multiple standard end events.
activity	A single work task that a participant, whether the participant is a person or a system, accomplishes from beginning to end during a process. There are five types of activities: none, user task, system task, script, and decision task.
none activity	An activity that has no implementation. A none activity can be useful when you are unsure of the implementation of an activity. For example, the Find job candidates is a none activity.
user task	An activity is implemented as a user task when a user or human starts or completes the activity. For example, the Submit job requisition is a user task.
system task	An activity is implemented as a system task when an automated system or service completes an activity. For example, the Notify hiring manager activity is a system task.
script task	An activity that uses JavaScript to access and manipulate data.
decision task	An activity with a decision or condition in a business rule to determine which process implementation is started.

Add the activities and events:

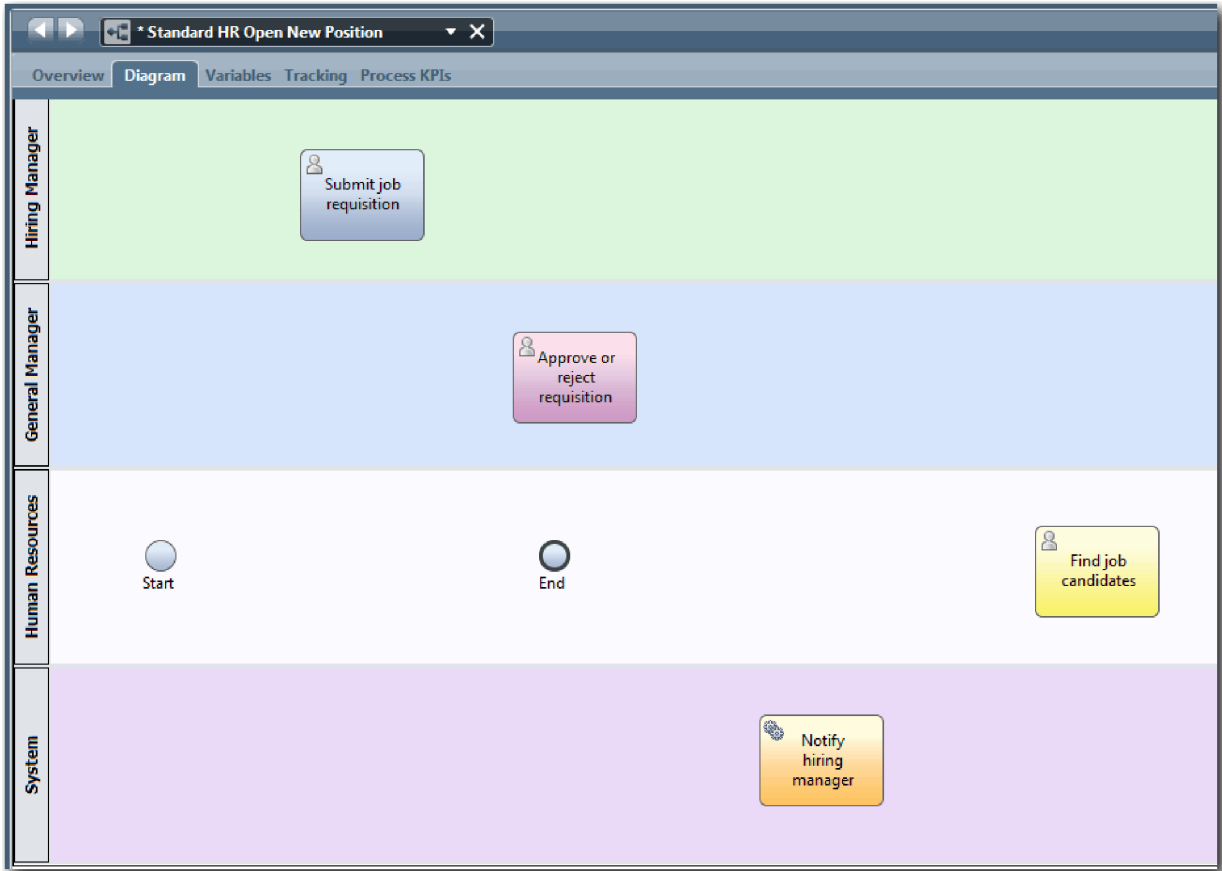
1. Determine which team conducts each of the four activities: Submit job requisition, Approve or reject requisition, Find job candidate, and Notify hiring manager. See the following table for the activities and events that are associated with each lane:

Lane	Activities, color, and description	Events
Hiring Manager	Submit job requisition Presentation Color: Default Description: The hiring manager submits a job requisition.	Start
General Manager	Approve or reject requisition Presentation Color: Purple Description: The GM evaluates the submitted job requisition and either approves or rejects it.	
Human Resources	Find job candidates Presentation Color: Yellow Description: HR searches for job candidates.	End
System	Notify hiring manager Presentation Color: Orange Description: If the GM rejects the job requisition, the hiring manager is notified of the rejection and the job requisition is terminated.	Requisition terminated (end event)

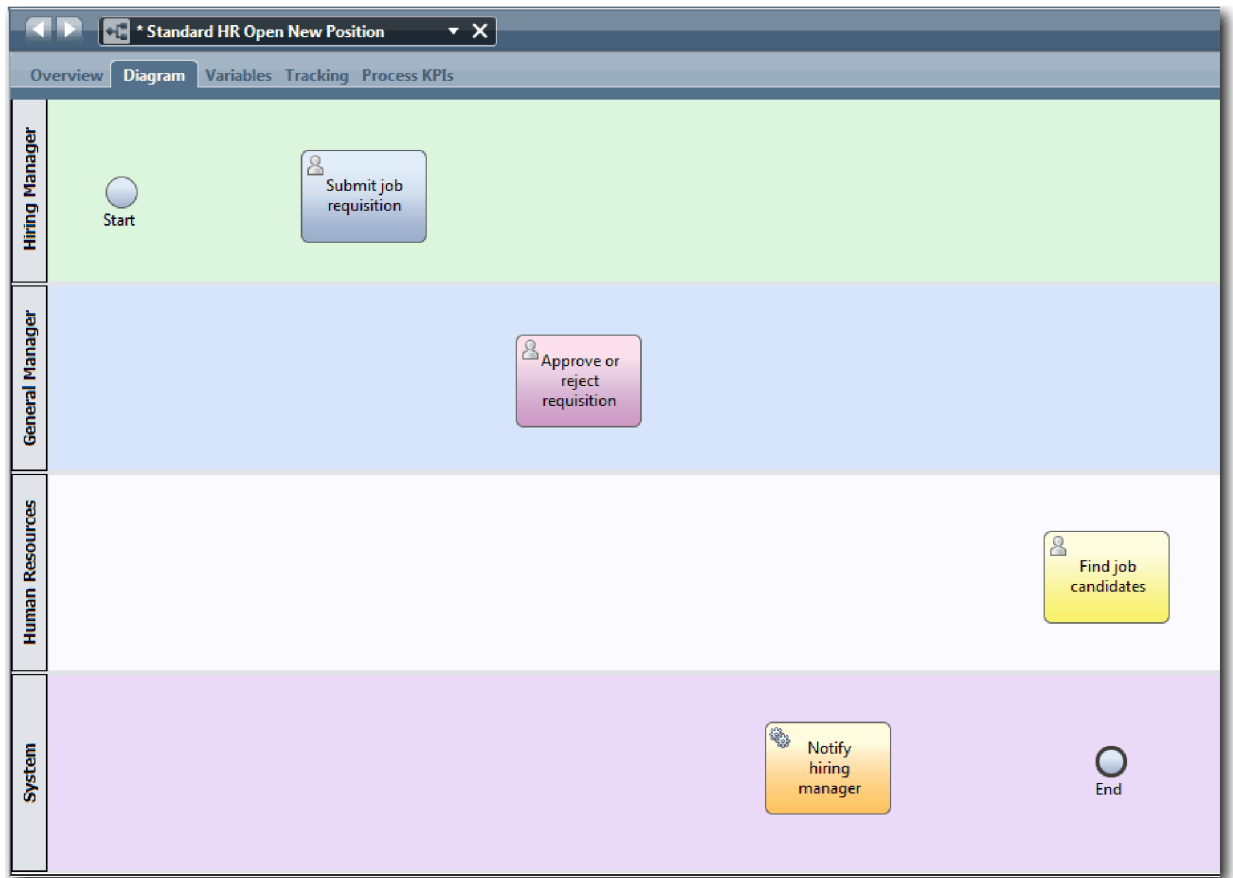
2. Make sure that the Standard HR Open New Position process is open and the **Diagram** tab is selected.
3. Drag an **Activity** from the palette into the **Hiring Manager** lane and type Submit job requisition in the text box that displays over the activity.
4. In the **Properties** tab, select **Default** as the **Presentation Color** and click **Edit** under **Documentation** to add a description of the activity.



5. Add the remaining activities that are listed in the table in step 1 to the process diagram. Your diagram matches the following image:



6. Move the **Start** event to the left of the first activity, **Submit job requisition**.
7. Move the **End** event to the right of the **Notify hiring manager** activity. Your diagram matches the following image:



**Tip:** To facilitate testing, you can start the process with a Script task in the **System** lane to initialize your data.

8. Save your work.

## Lesson checkpoint

You added activities and events to the Standard HR Open New Position BPD.

In this lesson, you learned

- How to translate process requirements into activities
- How to add activities and events to a BPD

In the next lesson, you sequence the activities and events to establish the process flow.

## Related Links

- Adding activities to a BPD
- Adding events to a BPD

## Add sequence flows

In this lesson, you use sequence flows to connect the activities and events to establish the process flow in the Standard HR Open New Position BPD.




Now that activities and events are in the process model, you must provide the basic control and flow from these objects. This type of diagram communicates how the process flows from one activity to another and who completes these activities.

At this stage of the process model, it is necessary only to sequence the expected flow of the process from the start to the end events.


**Note:** If more than one sequence flow leaves the same flow object, the first one that you add is the default sequence flow. Subsequent sequence flows that originate from the same object are followed only under certain conditions. For an example, see the sequence flows that originate from the Submit job requisition activity.

Typically, you add process flow controls, which are known as *gateways*, when there is more than one flow out of an activity. In this lesson, you sequence only the activities and events. In the next lesson, you add the gateways.

This lesson introduces the following concepts:

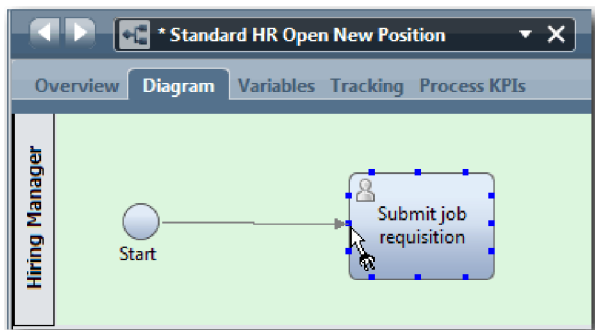
Concept	Description
normal sequence flow	 A plain arrow that indicates that the BPD progresses to the next step in the process as soon as the first step is completed.
conditional sequence flow	 A plain arrow that indicates the conditional expressions that are evaluated to determine which path the flow is going to take. Conditional sequence flows are followed only when the conditions are met.
default sequence flow	 A plain arrow with a back slash at the beginning of the flow line. A default sequence flow is required and is automatically created when there is a conditional sequence flow. The default sequence flow indicates a processing path to follow when none of the conditions on the conditional sequence flows are true. The default sequence flow ensures that there is at least one processing path (the default path) for the business process to follow.

Add sequence flows:

1. Make sure that the Standard HR Open New Position process is open and the **Diagram** tab is selected.
2. Select the **Sequence Flow** tool  in the palette.

**Tip:** The **Sequence Flow** tool remains active so that you can connect all of your activities and events quickly. To deactivate the **Sequence Flow** tool, select the **Selection Tool** or press **Esc**.

3. In the process diagram, move your mouse to the **Start** event and click a selection point to place the beginning of the flow arrow.
4. Move your mouse to a selection point on the **Submit job requisition** activity and click again.

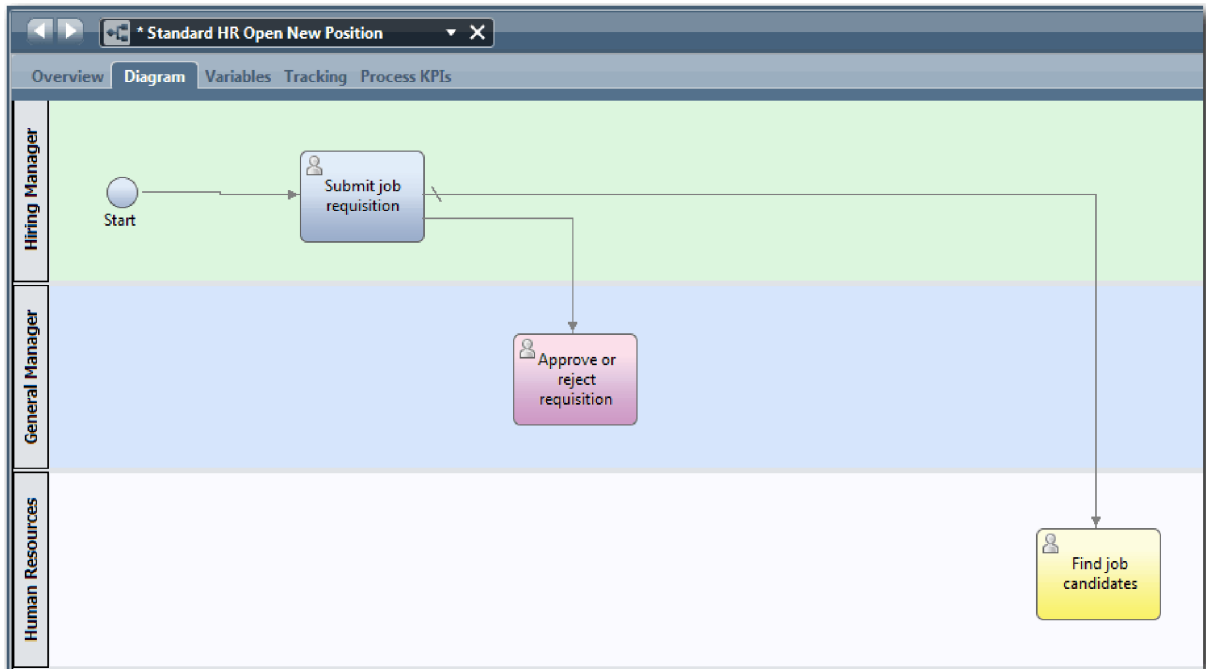


5. Connect the **Submit job requisition** activity to the **Find job candidates** activity and then to the **Approve or reject requisition** activity.

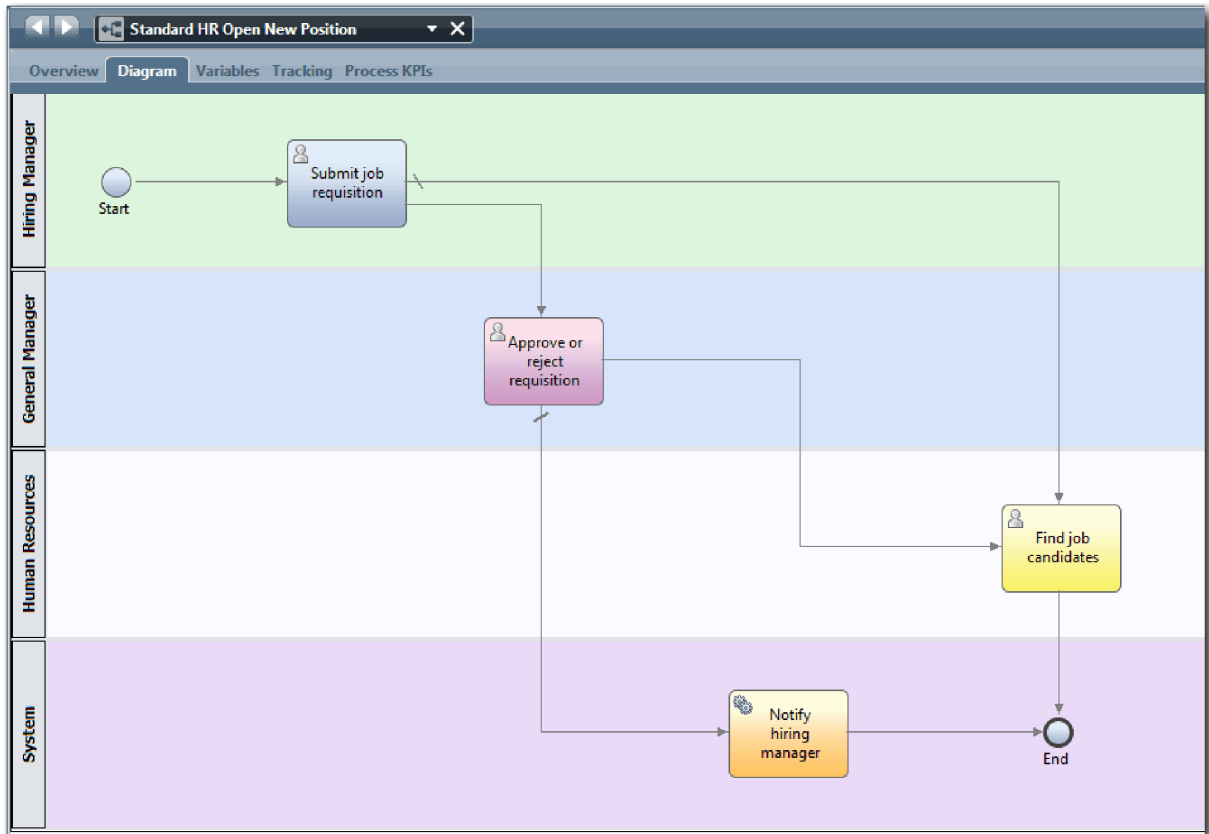
Notice that the flow line that goes to the **Find job candidates** activity is marked as the default flow line.

**Tips:**

- If more than one sequence flow leaves the same flow object, the first one that you add is the default sequence flow.
- If your sequence is incorrect and you have the wrong default line, delete all the sequence flow lines from the activity and redo them.
- To straighten flow lines, you can realign an activity or event on the diagram by selecting it and holding down **Ctrl** press the arrow keys.



6. Connect the **Find job candidates** activity to the **End** event.
7. Connect the **Approve or reject requisition** activity to the **Notify hiring manager** activity and to the **Find job candidates** activity.
8. Connect the **Notify hiring manager** activity to the **End** event.



9. Click the **Selection Tool** in the palette or press **Esc** to return to the normal selection mode in the process diagram.
10. Save your work.

### Lesson checkpoint

You established the process flow in the Standard HR Open New Position BPD.

In this lesson, you learned

- About process flow
- How to communicate the expected flow of the process from the start event to the end events
- About types of sequence flows

In the next lesson, you add gateways to model points in the process execution.

### Related Links

- Modeling process execution paths by using sequence flows

### Add event gateways

In this lesson, you create two event gateways to model points in the Standard HR Open New Position process execution.

In the previous lesson, you added a sequence flow line for each potential path from an activity. Now you add gateways to control the divergence and convergence of the sequence flow lines and to determine the branching of the paths that the process can take.

An event gateway represents a branching point in a process where only one of several flows can be followed, depending on the events that occur. To simplify the diagram, the gateway is labeled in the form of a question and the outgoing flows are labeled with a response. For the Standard HR Open New Position BPD, you need the following gateways:

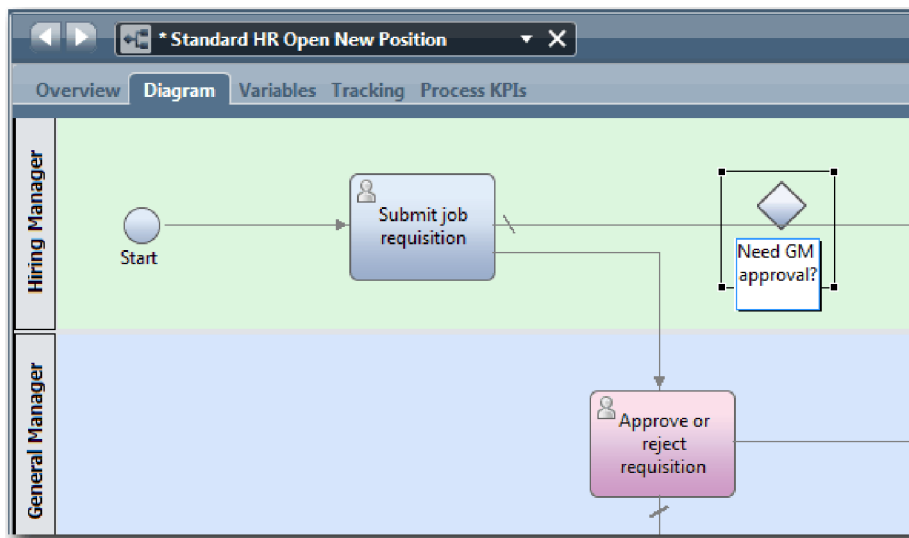
- **Need GM approval?:** If the job request is to fill an existing position, the requisition is routed directly from the hiring manager to HR. If the request is to fill a new position, the requisition is routed to the General Manager (GM) for approval.
- **GM approved?:** The GM evaluates the requisition and either approves or rejects it. If the GM approves the requisition, it is routed to the HR manager, who can then search for job candidates. If the GM rejects the requisition, the hiring manager is notified and the requisition is terminated.

This lesson uses the following concepts:

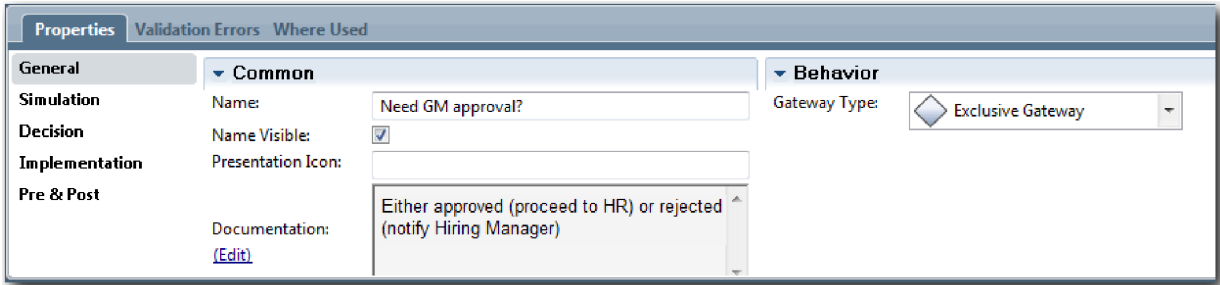
Concept	Description
gateway	Controls the flow of a process, such as the divergence and convergence of sequence lines, determining, branching, and merging the flows that a process can take. There are two gateway modes: <i>split</i> and <i>join</i> . A gateway can split an incoming flow into multiple outgoing flows, or it can join incoming flows into one outgoing flow. There are two types of gateways: exclusive and parallel. This tutorial uses exclusive gateways.
exclusive gateway	Sends the process through only one of the available flows. After a process condition is met, only one conditional sequence flow is followed, and evaluation of subsequent outgoing sequence flow conditions stop. If no conditions are met, the default processing flow is followed.
parallel gateway	Has split modes that are called <i>parallel split</i> and <i>parallel join</i> . Parallel split gateways direct the process flow along every sequence flow in parallel. There are no conditional or default flows. With a parallel join gateway, you can model any number of incoming sequence flows. After all incoming sequence flows reach the parallel join, the outgoing sequence flow is followed.

Add event gateways:

1. Make sure that the Standard HR Open New Position process is open and the **Diagram** tab is selected.
2. Drag a gateway from the palette to the right of the **Submit job requisition** activity on the process diagram. Type **Need GM approval?** in the text box that displays over the gateway.

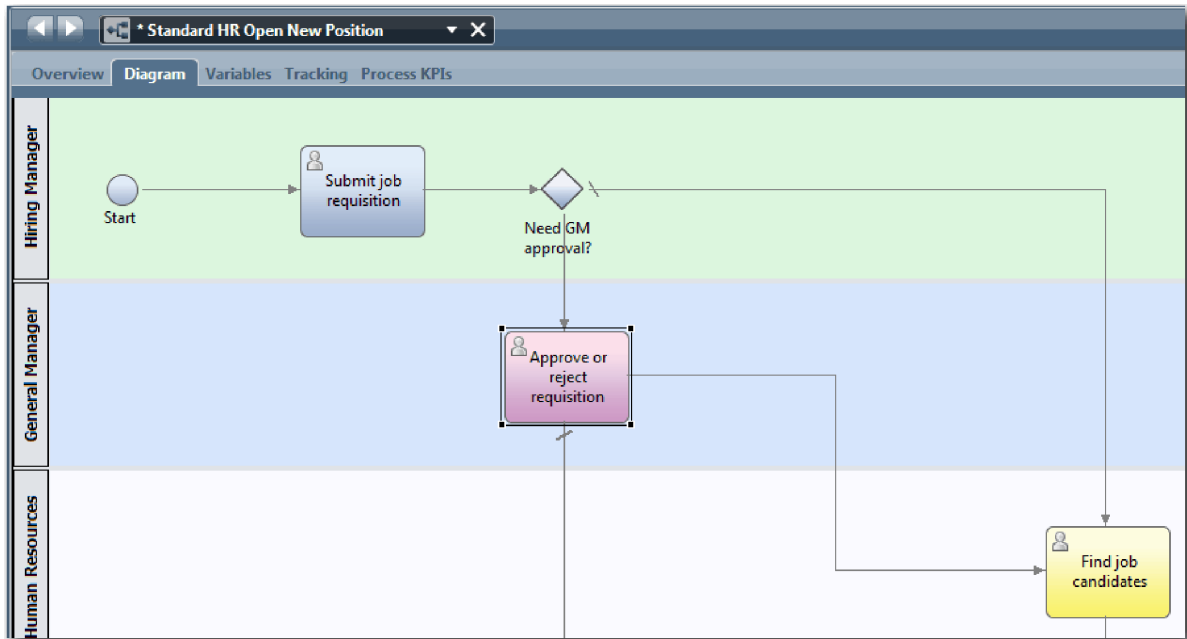


3. In the **Properties** tab, make sure that **Name Visible** is selected and verify that **Exclusive Gateway** is the gateway type. Click **Edit** under **Documentation** to add a description of the gateway.

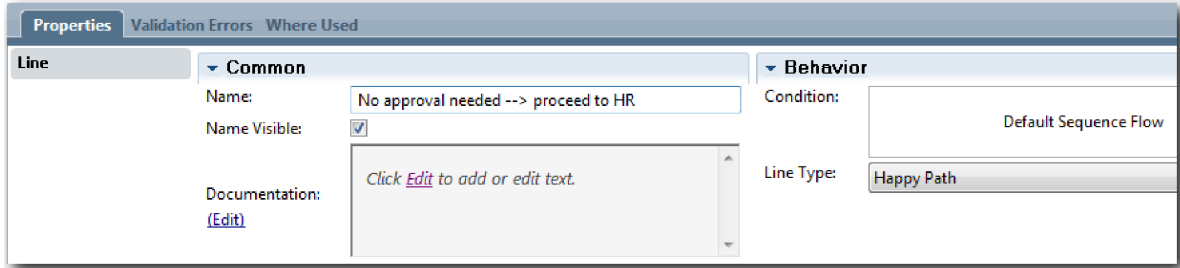


**Tip:** You can click any activity or event to move it around in the diagram.

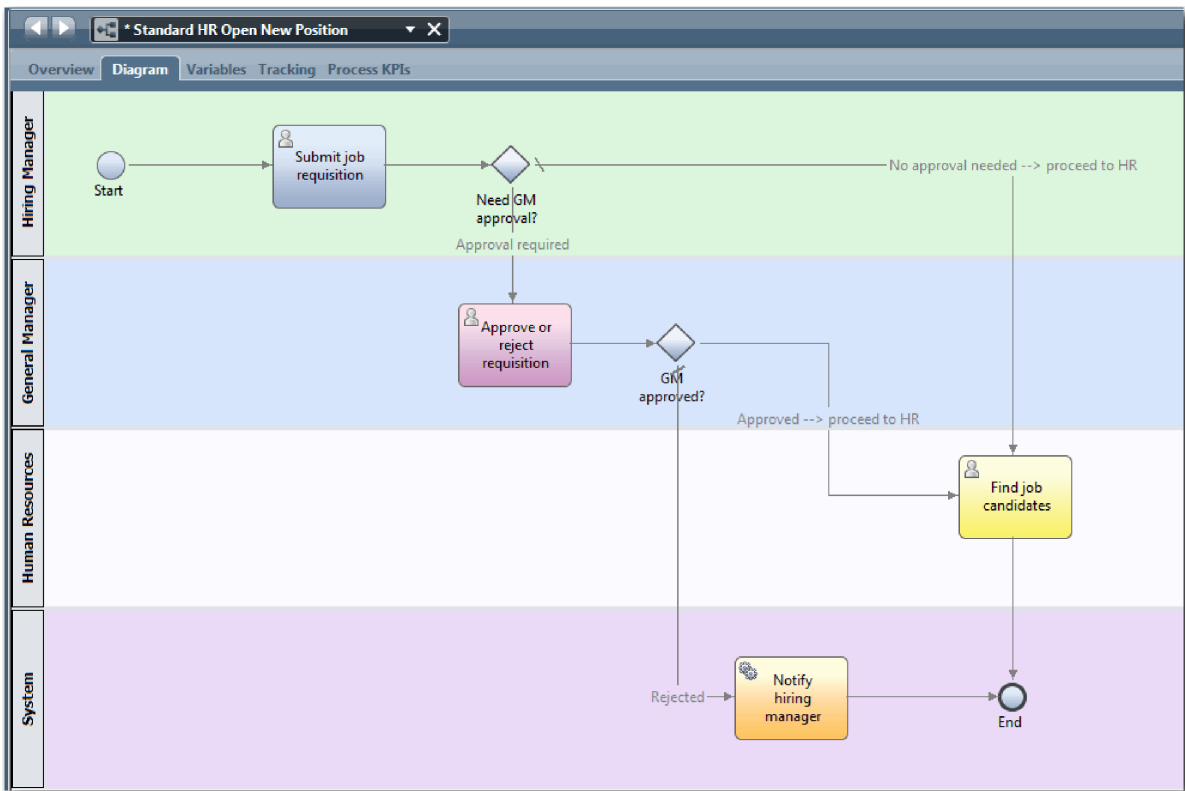
4. Connect the **Need GM approval?** gateway:
  - a. Click to select the sequence flow between the **Submit job requisition** and the **Find job candidates** activities and press the **Delete** key (or right-click and select **Edit > Delete**).
  - b. Delete the sequence flow between the **Submit job requisition** and **Approve or reject requisition** activities.
  - c. Select the sequence flow icon from the palette.
  - d. Connect the **Submit job requisition** activity to the **Need GM approval?** gateway.
  - e. Connect the **Need GM approval?** gateway to the top of the **Find job candidates** activity and then to the top of the **Approve or reject requisition** activity.
  - f. Click the **Selection Tool** in the palette or press **Esc** to return to the normal selection mode in the process diagram.



5. Name the sequence flow lines:
  - a. Click the sequence flow between the **Need GM approval?** gateway and the **Find job candidates** activity.
  - b. In the **Properties** tab, type **No approval needed --> proceed to HR** as the name, and select **Name Visible**.



- c. Click the sequence flow between **Need GM approval?** and **Approve or reject requisition**.
- d. In the **Properties** tab, type Approval required as the name, and select **Name Visible**.
6. Drag a gateway from the palette to the left of the **Approve or reject requisition** activity on the process diagram. Type GM approval? in the text box that displays over the gateway. For the documentation, type Either approved (proceed to HR) or rejected (notify Hiring Manager).
7. Connect the **GM approved?** gateway:
  - a. Delete the sequence flow between the **Approve or reject requisition** and the **Find job candidates** activities.
  - b. Delete the sequence flow between the **Approve or reject requisition** and **Notify hiring manager** activities.
  - c. Select the sequence flow icon from the palette.
  - d. Connect the **Approve or reject requisition** activity to the **GM approved?** gateway.
  - e. Connect the **GM approved?** gateway to the **Notify hiring manager** activity and the **Find job candidates** activity.
  - f. Name the sequence flow lines to Rejected and Approved --> proceed to HR. Your process model matches the following image:



8. Save your work.

## Lesson checkpoint

You added event gateways to the Standard HR Open New Position BPD.

In this lesson, you learned

- How to add event gateways
- How to model appropriate sequence flows for each gateway
- How to name sequence flow lines

In the next lesson, you add a timer intermediate event.

## Related Links

- Modeling event gateways

## Add a timer intermediate event

In this lesson, you model an escalation path with an attached timer intermediate event to satisfy process requirements for the Standard HR Open New Position BPD.

Based on the Process requirements, the General Manager (GM) evaluates the submitted job requisition and either approves it or rejects it. If the job requisition is not handled by the due date, the timer intermediate event is triggered and the system sends an escalation notice to the GM.

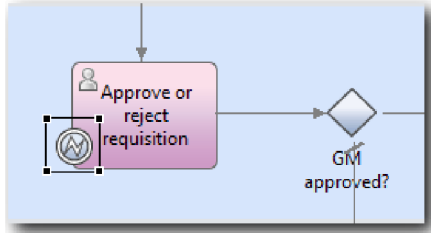
In this lesson, you add the timer intermediate event, and in the Hiring tutorial: Implement the process module, you implement the timer intermediate event.

This lesson uses the following concepts:

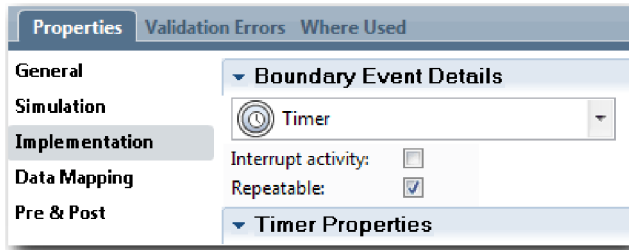
Concept	Description
intermediate event	Occurs between a start event and end event in the BPD. There are three types of intermediate events: timer, message, and error. Use the intermediate event to indicate a point in a service when you want Process Designer to capture the runtime data for reporting purposes. Intermediate events can be in a sequence flow or attached to the boundary of an activity.
timer intermediate event	Use a timer intermediate event to specify a time before or after an activity occurs. Timer intermediate events, which you use to model escalation paths or delays in the BPD, can occur either between activities or attached to an activity.
attached timer intermediate event	When a running process instance reaches an activity with an attached timer intermediate event, a timer starts. The interval for the timer is calculated according to the configuration that you specify in the implementation properties for the timer intermediate event. When the specified interval elapses, the process follows the path from the attached timer intermediate event to the subsequent activity.
message intermediate event	Used to model a message that is received or sent while a process is running.
error intermediate event	Used to identify exceptions that occur while a process runs and handle those exceptions by using an error handler activity, subprocess, or flow.

Add a timer intermediate event:

1. Make sure that the Standard HR Open New Position process is open and the **Diagram** tab is selected.
2. Drag an intermediate event from the palette onto the lower-left boundary of the **Approve or reject requisition** activity and type **Overdue approval** as the name.



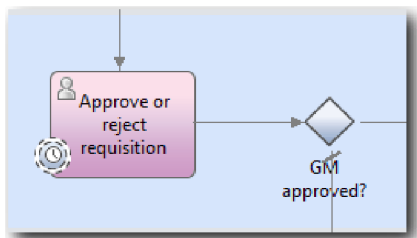
3. In the **Properties** tab, select **Implementation**. In the Boundary Event Details section, select **Timer** and clear **Interrupt activity**. Keep **Repeatable** selected.



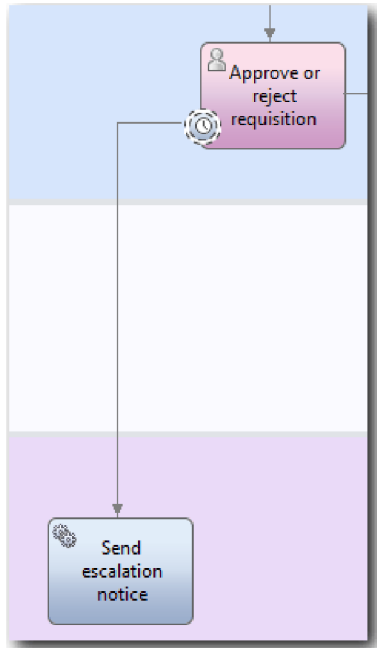
**Note:**

- If the **Interrupt activity** is selected, the attached activity is closed when the timer event is triggered. For this tutorial, you clear **Interrupt activity** because the GM completes the activity upon receiving the escalation notice.
- If **Repeatable** is not selected, the escalation notice is sent only once. When the timer is set to **Repeatable**, an escalation notice is sent each time that the specified interval elapses until the activity is completed.

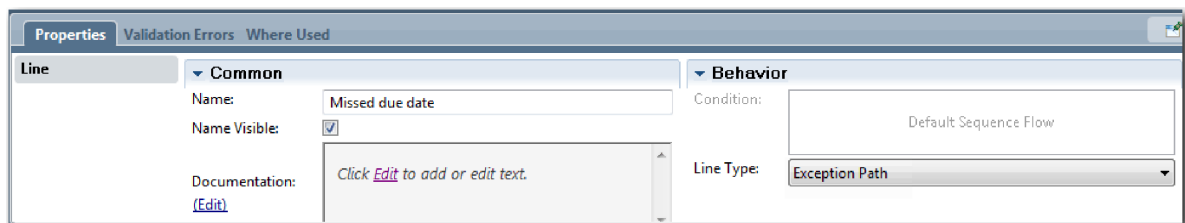
You set the other properties during implementation. Notice how the intermediate event icon on the Approve or reject requisition activity now shows a timer.



4. Add the Send escalation activity:
  - a. Drag an activity from the palette to the **System** lane to the left of the **Notify hiring manager** activity.
  - b. Name the activity Send escalation notice.
5. Connect the attached timer intermediate event to the Send escalation notice activity:
  - a. Select the sequence flow icon from the palette.
  - b. Connect the **Overdue approval** timer intermediate event to the **Send escalation notice** activity.
  - c. Click the **Selection Tool** in the palette or press **Esc** to switch back to the normal selection mode in the process diagram.



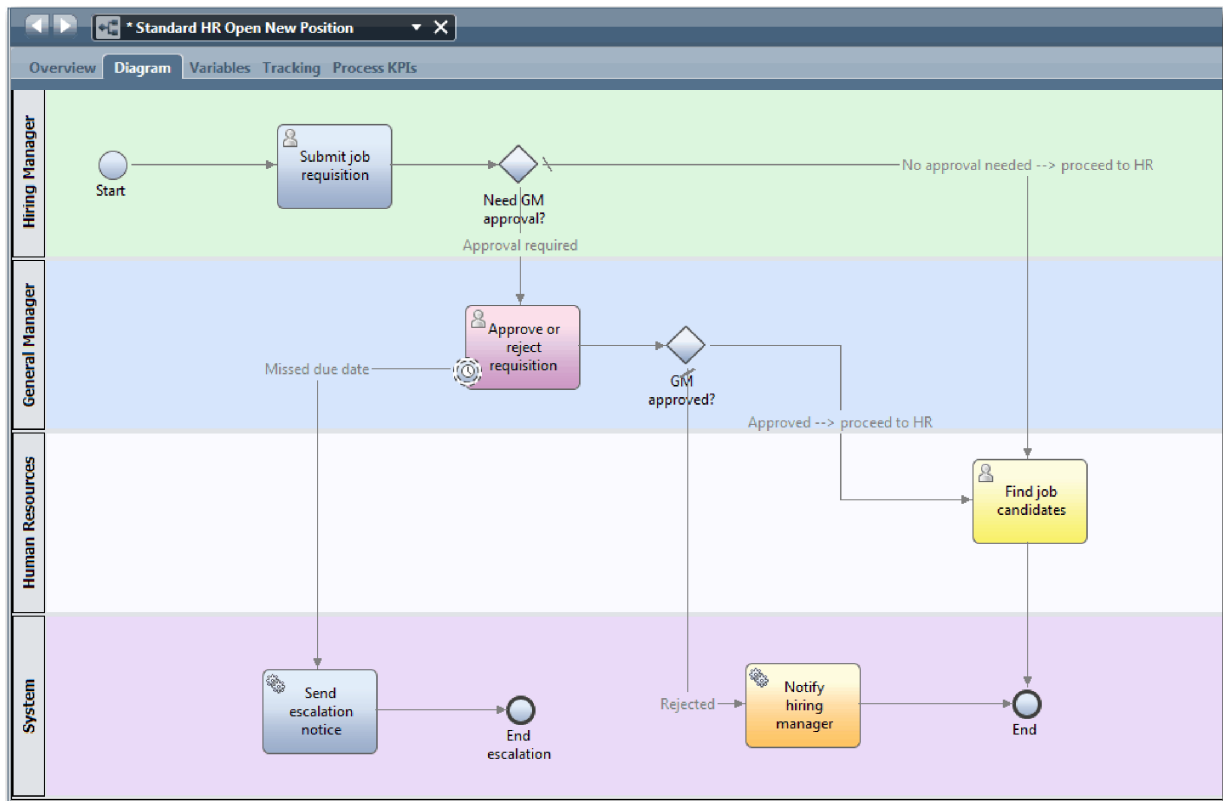
6. Name the sequence flow line:
  - a. Click the sequence flow between the **Overdue approval** timer intermediate event and **Send escalation notice** activity.
  - b. In the **Properties** tab, type Missed due date as the name and select **Name Visible** box.
  - c. In the **Behavior** section, for **Line Type** select **Exception Path**.



7. Add an End event to end the exception path. Drag an **End** event from the palette onto the canvas to the right of **Send escalation notice** and type End escalation.
8. Connect the **Send escalation notice** activity to the **End escalation** event.

**Tip:** You can complete the escalation path by building an underlying service to implement the **Send escalation notice** activity. Typically, this activity is implemented as a send and chase design pattern that is modeled in a separate BPD.

Your diagram matches the following image:



9. Save your work.

### Lesson checkpoint

You added an attached timer event to the Standard HR Open New Position BPD.

In this lesson, you learned

- How to attach a timer intermediate event to an activity
- How to model an escalation path in a BPD
- How to add a system activity
- How to add an end event

In the next lesson, you create process variables.

### Related Links

- Modeling timer events
- Send and Chase Pattern

### Create process variables

In this lesson, you create the process variables to implement the gateway logic.

To implement the two gateways in the Standard HR Open New Position business process definition (BPD), you need two private variables:

- *requisition*
- *currentPosition*

You select private variables because these variables are used only by this BPD and possibly passed to linked BPDs. Then you assign a variable type called *placeholder* to each of them. The *placeholder* is a

temporary variable type. When you implement the process, you associate the variables *requisition* and *currentPosition* with business objects that you will create.

When you create variables, follow these guidelines:

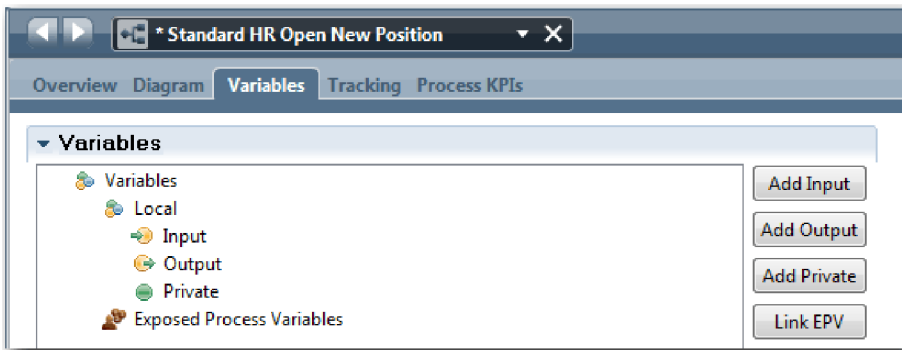
- Create variable names that begin with a lowercase letter.
- Capitalize the first letter of a variable type.
- If the variable name is only one word, spell that word in all lowercase letters.
- If the variable name consists of more than one word, capitalize the first letter of each subsequent word.
- Remember that variable names are case sensitive.

This lesson uses the following concepts:

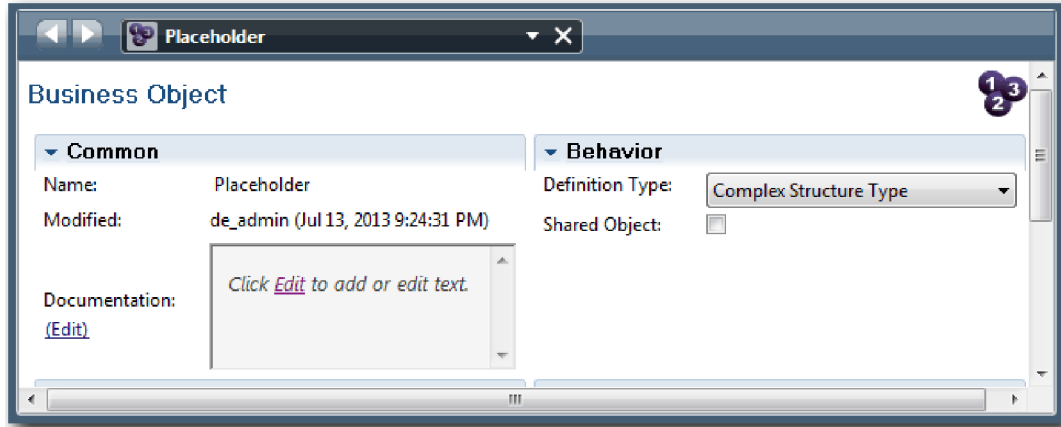
Concept	Description
variables	Data that provides the business context to a running process. Using variables, the business process passes data from one step to another. Private, input, and output are kinds of variables.
private variables	Values that the current BPD or service requires.
input variables	Values that pass into the current BPD or service.
output variables	Values that are passed from a BPD to a parent BPD or service.

Create the variables:

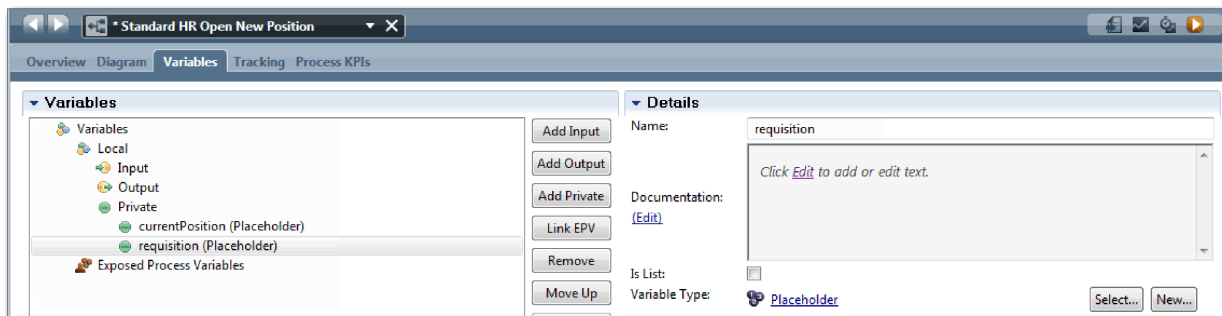
1. Click the **Variables** tab in the main canvas of the Standard HR Open New Position process.



2. In the Variables section, click **Add Private** and type `currentPosition` for the name.
3. In the Details section, click **New** and type `Placeholder` for the business object.



4. Click the back arrow to return to the Standard HR Open New Position process.
5. Click **Add Private** and type requisition for the name.
6. In the Details section, click **Select** to select the **Placeholder** for the variable type. Your private variables match the following image:



7. Save your work.
8. Click the **Diagram** tab in the main canvas of the Standard HR Open New Position process to return to the model.

## Lesson checkpoint

You added process variables to the Standard HR Open New Position BPD.

In this lesson, you learned

- How to add private variables to a BPD
- How to create a simple placeholder variable type

In the next lesson, you conduct Playback Zero.

## Related Links

- Accessing variables in Process Designer

## Conduct Playback Zero

In this lesson, you learn about playbacks, conduct Playback Zero by reviewing the process model with the stakeholders and taking a snapshot of the process.

During a playback for business stakeholders, users, and development, the process model is examined at a designated development phase to establish process goals, achieve consensus, collaboratively improve the

process model, and, ultimately, approve the process model. By using playbacks, you can develop a process application iteratively. For the My Hiring Sample process application, there are four playbacks. Here is what happens during these playbacks:

- Playback Zero: Reviewing the process model
- Playback One: Using the Inspector to validate paths in the process that flow from the decision gateways
- Playback Two: Checking that the individual human services are working as expected
- Playback Three: Checking that the services are running correctly
- Final Playback: Following one instance of the process from beginning to end in IBM Process Portal

Playback Zero is an important milestone in a Business Process Manager project-development lifecycle because it is during Playback Zero that a business process is identified and analyzed as a good candidate for a business process management project. During Playback Zero, the business process is defined, modeled, refined, and reviewed through discussion, discovery, and process analysis.

Typically, a process-analysis phase also precedes Playback Zero that takes two to three weeks. If the review is complete and the process model is approved, refining the process requirements can occur during the implementation playbacks, such as Playback One. Even if your team decides not to proceed with the development of the process, you have a documented process.

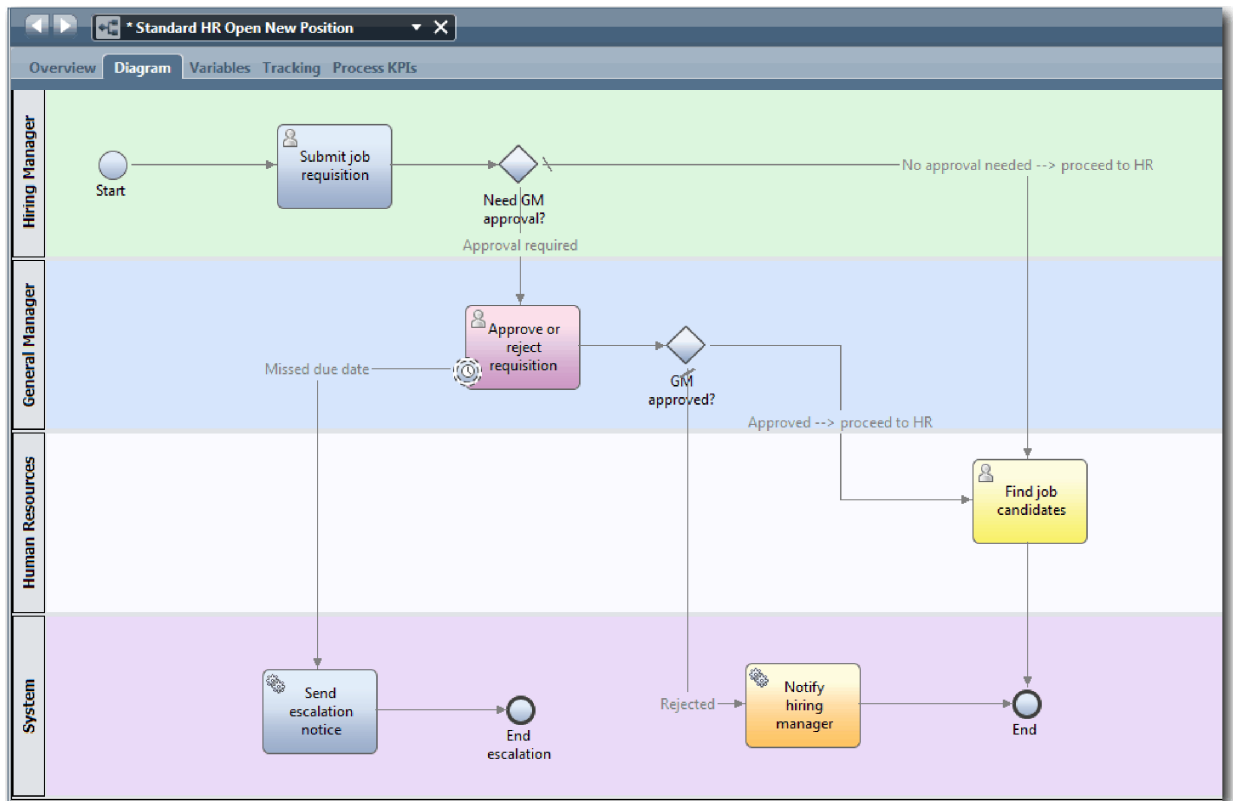
After you complete a playback, take a snapshot of the process. Snapshots record the state of library items in a process application at a specific time. You can use a snapshot to return to a previous state in the project; therefore, take snapshots often. You can also compare two snapshots to identify changes. When you finish your project, you create a final snapshot that you deploy.


This lesson introduces the following concepts:

Concept	Description
Playback	The act of demonstrating or running a process. A development team can use the Inspector in Process Designer to demonstrate the current process design and implementation in playback sessions. Playback sessions help capture important information from different stakeholders in a process, such as management, users, and business analysts.
Snapshot	Records of the state of library items in a process application or track of a process at a specific time. You can create snapshots in the Process Center console or in the Designer view. You install, export, and archive snapshots in the Process Center console.

Conduct playback zero:

1. Make sure that the Standard HR Open New Position process is open and the **Diagram** tab is selected.
2. Review the process model by checking that your process model matches the following image:



3. Step through the process to simulate a playback, explaining your process model to a colleague.
4. Add new process requirements to the Standard HR Open New Position business process definition (BPD). For this tutorial, no additional requirements go into the BPD. The process model is now ready for implementation.
5. Create a snapshot of your process application:
  - a. Click the  icon in the main toolbar.
  - b. Type Playback Zero as the snapshot name and click **OK**.
  - c. For the description, type This is a snapshot of the process application up to Playback zero.

You can view the snapshot by opening Process Center and selecting the process application.

### Lesson checkpoint

You reviewed the process model with playback zero and took a snapshot of the process application.

In this lesson, you learned

- How to describe the playback zero validation goals and requirements
- How to check that the business process reflects the requirements
- How to implement playback feedback and new process requirements
- How to take a snapshot of the process application

In the next module, you implement the process.

### Related Links

- BPM Playback Best Practices
- Managing snapshots

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## Implement the process

In this module, you implement the Standard HR Open process BPD that was validated in Playback Zero.

### Learning objectives

After you complete the lessons in this module, you will understand the concepts and know how to do the following tasks:

- Create custom business objects to organize your process-specific data.
- Implement timer intermediate events.
- Implement gateways.
- Run Playback One in the Inspector.

### Prerequisites

You must complete all the lessons in the Hiring tutorial: Model the process module.

## Create business objects

In this lesson, you create custom business objects to organize your process-specific data for the Standard HR Open New Position business process definition (BPD).

Business objects represent the business data that is relevant to the BPD. For this lesson, you need the following custom business objects:

- *Person*
- *Position*
- *Requisition*

For each business object, you define parameters to specify the data structure. A parameter is assigned a variable type that can be a simple type or a business object. In this lesson, you create the business objects that are required for this model. When you create the user interface, you bind elements of the user interface to these business objects.

When you create business objects, follow these guidelines:

- Start business object names with an uppercase letter.
- If the name of the business object consists of more than one word, capitalize the first letter of each word, for example *NewPerson*.
- Remember that the names of business objects are case sensitive.
- Add documentation details to business objects and parameters to clarify their use to other users. These details display in the context-sensitive help windows when someone selects the business objects for use with variables.

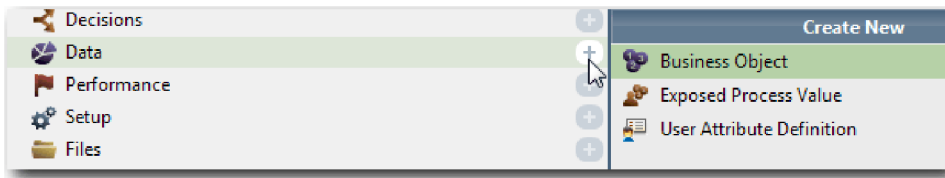
This lesson uses the following concepts:

Concept	Description
business objects	A variable that represents business data that is relevant in the context of a BPD.

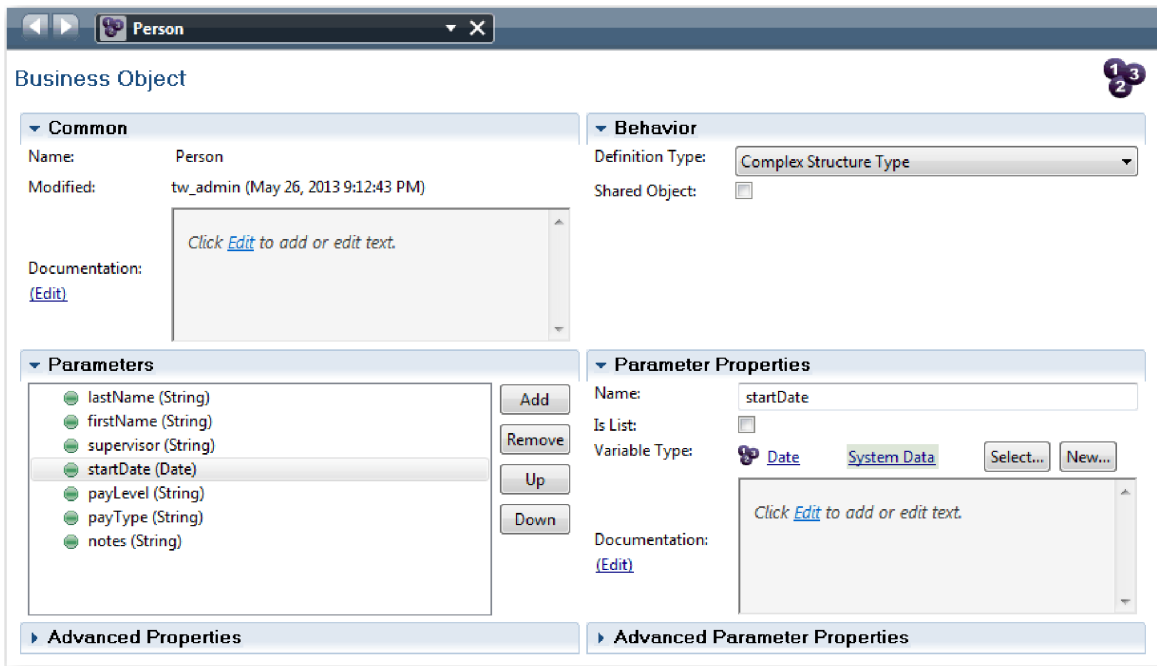
Create the business objects:

1. Make sure that the My Hiring Sample (MHS) process application is open in the Process Designer desktop editor.
2. Create a *Person* business object:

- a. In the Designer library, click the plus sign next to **Data** and select **Business Object**.

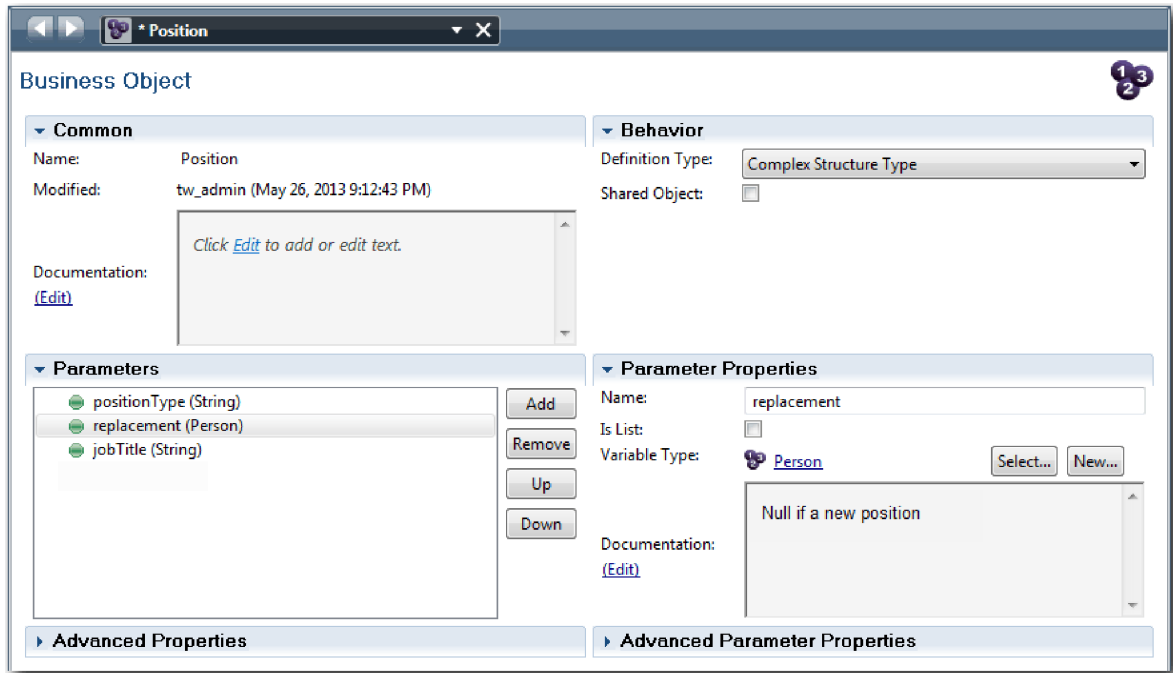


- b. Type Person for the business object name and click **Finish**.
- c. In the Parameters section, click **Add**.
- d. Type lastName for the parameter name and keep the variable type as **String**. To change the variable type, click **Select** next to **Variable Type** to select one of the variable types in the system toolkit.
- e. Continue to add the following parameters:
  - **firstName (String)**
  - **supervisor (String)**
  - **startDate (Date)**
  - **payLevel (String)**
  - **payType (String)**
  - **notes (String)**

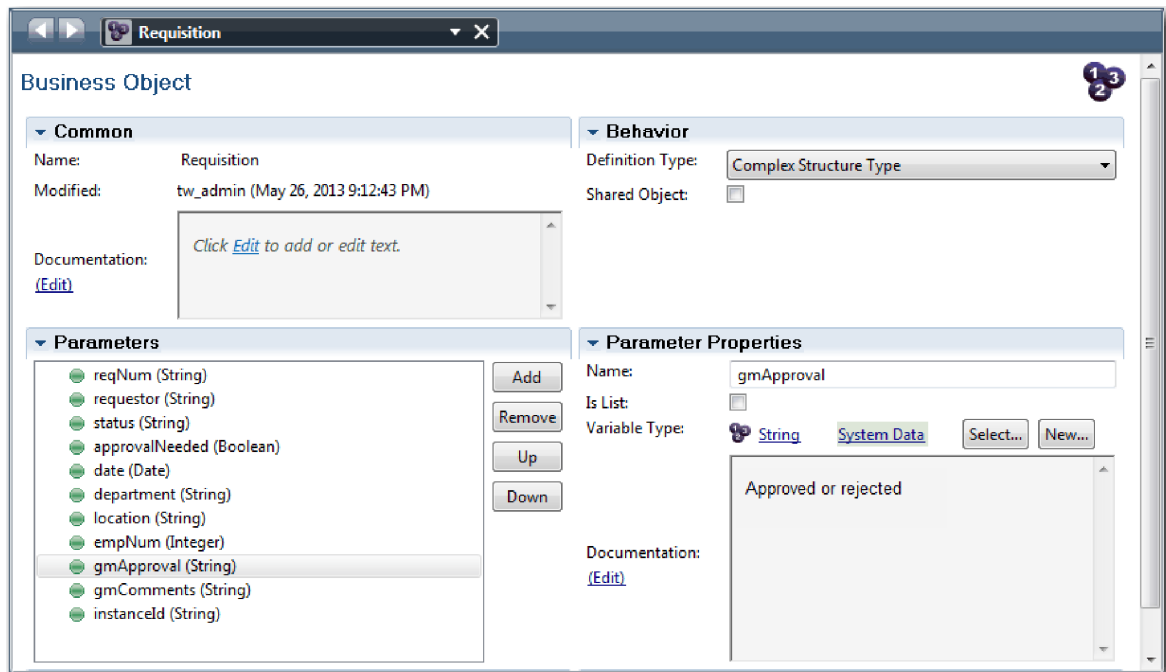


3. Save your work.
4. Create a *Position* business object:
  - a. In the Designer library, click the plus sign next to **Data** and select **Business Object**.
  - b. Type Position for the business object name and click **Finish**.
  - c. In the Parameters section, click **Add**.
  - d. Type positionType for the parameter name and keep the variable type as **String**.
  - e. Click **Edit** under **Documentation** and type New or existing position.
  - f. Continue to add the following parameters:

- **replacement (Person)**, Documentation: **Null if a new position**
- **jobTitle (String)**

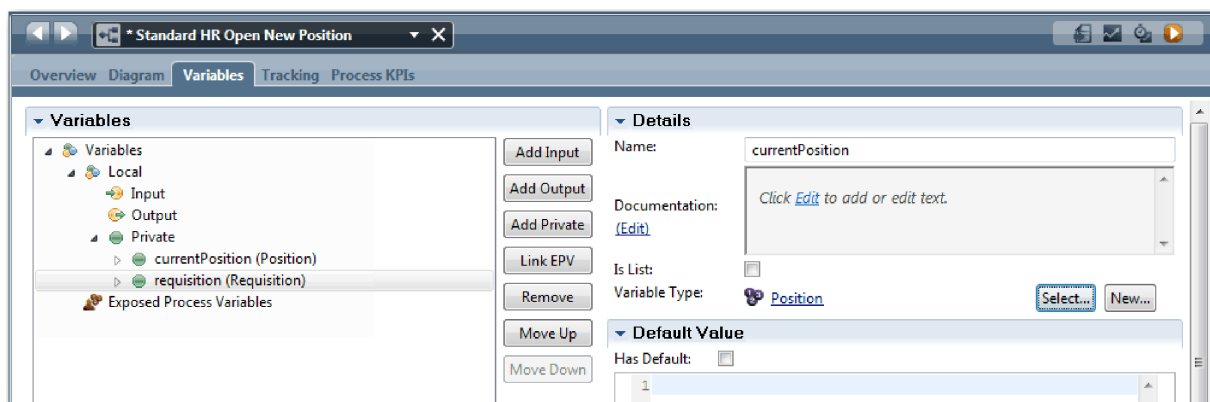


5. Save your work.
6. Create a *Requisition* business object:
  - a. In the Designer library, click the plus sign next to **Data** and select **Business Object**.
  - b. Type *Requisition* for the business object name and click **Finish**.
  - c. In the Parameters section, click **Add**.
  - d. Type reqNum for the parameter name and keep the variable type as **String**.
  - e. Continue to add the following parameters:
    - **requestor (String)**
    - **status (String)**
    - **approvalNeeded (Boolean)**
    - **date (Date)**
    - **department (String)**
    - **location (String)**
    - **empNum (Integer)**
    - **gmApproval (String)**, Documentation: **Approved or rejected**
    - **gmComments (String)**
    - **instanceId (String)**



7. Save your work.
8. Click the back arrow until you return to the Standard HR Open New Position process. When you modeled the process, you created variables to model the decision gateway logic and associated the variables to a temporary type called *placeholder*. Now, change the type of these variables to the types of the business objects that you created.
9. In the main canvas of the Standard HR Open New Position process, click the **Variables** tab.
10. Change the variable type of the *currentPosition* private variable from *Placeholder* to *Position* by clicking **Select** and then **Position**.
11. Change the variable type of the *requisition* private variable from *Placeholder* to *Requisition* by clicking **Select** and then **Requisition**.

Your private variables match the following image:



12. Save your work.
13. Click the **Diagram** tab to return to the Standard HR Open New Position process diagram.

## Lesson checkpoint

You created business objects and replaced the placeholder variables with the business objects.

In this lesson, you learned

- How to add business objects
- How to set a variable's type to a particular business object

In the next lesson, you implement the timer intermediate event.

## Related Links

- Creating custom business objects in Process Designer
- Constructor Design Pattern

## Implement the timer intermediate event

In this lesson, you implement the timer intermediate event that you modeled in the Standard HR Open New Position business process definition (BPD).

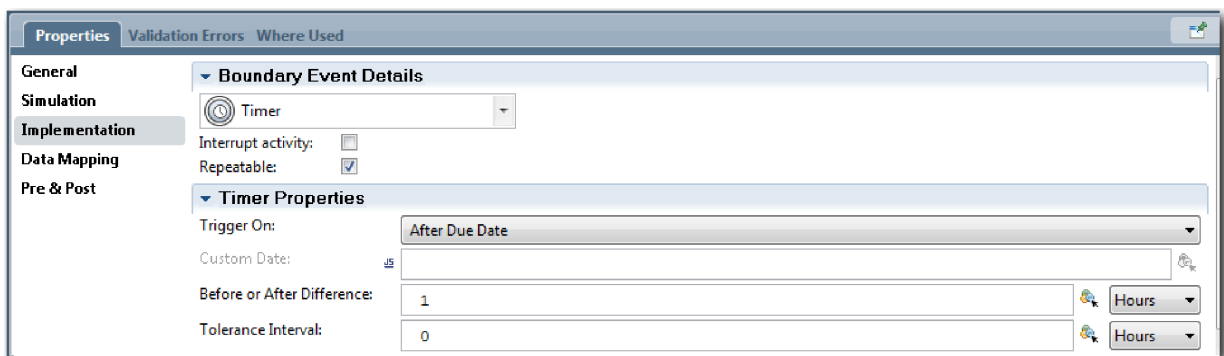
When you implement the timer intermediate event that you attached to the boundary of the **Approve or reject requisition** activity, you can set the following details:

- *Trigger on* - Specifies when the timer intermediate event starts.
- *Before or After difference* - Specifies the amount of time that is allowed to pass after the due date before the timer is activated.

Implement the timer intermediate event:

1. Make sure that the Standard HR Open New Position process is open and the **Diagram** tab is selected.
2. Click the timer intermediate event that is attached to the **Approve or reject requisition** activity.
3. In the **Properties** tab, select **Implementation**.
4. Make sure that **Interrupt Activity** is not selected and **Repeatable** is selected.
5. In the Timer Properties section, specify the following values:
  - **Trigger On** - After Due Date. This selection causes the event to trigger after the due date for the activity.
  - **Before or After Difference** - 1 Day. This selection causes the event to trigger one day after the due date.

**Note:** When you select to run the timer event repeatedly, make sure that you set the **Before or after difference** to at least 1 minute. When the timer is set to **Repeatable** and the before or after interval is 0, it causes high CPU load because the escalation notices are sent continuously, without an interval, until the activity completes.



6. Save your work.

## Lesson checkpoint

You implemented the timer intermediate event that was modeled in the Standard HR Open New Position BPD.

In this lesson, you learned how to implement a timer intermediate event.

In the next lesson, you implement the gateways.

## Related Links

- Modeling timer events

## Implement gateways

In this lesson, you implement the exclusive gateways, Need GM approval and GM approved, that you modeled in the Standard HR Open New Position business process definition (BPD).

When you specify the implementation for a gateway, you define conditions that control whether a path is followed during the running process.

**Note:** This lesson assumes the default IBM Process Designer setting, not the Advanced.

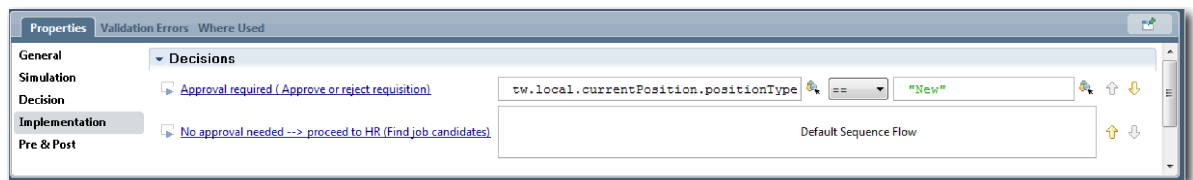
Implement the gateways:

1. Make sure that the Standard HR Open New Position process is open and the **Diagram** tab is selected.
2. Implement the **Need GM approval?** gateway:
  - a. Click the **Need GM approval?** gateway.
  - b. In the **Properties** tab, select **Implementation**.
  - c. In the Decisions section, make sure that the order of the sequence flow starts with **Approval required** at the top and **No approval needed --> proceed to HR** at the bottom. You can reorder the sequence flow by using the up and down arrows on the right.
  - d. In the first box to the right of **Approval required**, click the **Select a variable** icon.



- e. Select **positionType** under **currentPosition**.
- f. Change the list item to **==**.
- g. In the last box type "New".

**Note:** You must include quotation marks because the *positionType* is a string.  
The implementation matches the following image:



3. Save your work.
4. Implement the **GM approved?** gateway:
  - a. Click the **GM approved?** gateway.
  - b. In the **Properties** tab, select **Implementation**.
  - c. In the Decisions section, make sure that the order of the sequence flow starts with **Approved --> proceed to HR** at the top and **Rejected** at the bottom.
  - d. In the first box to the right of **Approved --> proceed to HR**, click the **Select a variable** icon.
  - e. Select **gmApproval** under **requisition**.

- f. Change the list item to ==.
- g. In the last box type "Approved".

The implementation matches the following image:



5. Save your work.

## Lesson checkpoint

You implemented the gateways that were modeled in the Standard HR Open New Position BPD.

In this lesson, you learned how to implement gateways.

In the next lesson, you conduct Playback One.

## Related Links

- Modeling event gateways

## Conduct Playback One


In this lesson, you conduct Playback One by validating the different paths in the process and taking a snapshot of the process.

In Playback One, you validate the process as it is defined in Playback Zero and demonstrate changes to the business stakeholders, users, and development. During this playback, you uncover errors in the process flow or in the logic that is used to evaluate the data.

In this lesson, you validate the following paths in the Inspector:

- The hiring manager submits a job requisition to fill a new position.
  - After the job is submitted, the job requisition is routed to the general manager (GM) for approval.
    - The GM does not complete the task on time.
    - The GM approves the requisition and it is routed to HR.
- The hiring manager submits a requisition to fill an existing position.
  - After the job is submitted, the requisition is routed to HR.

This lesson introduces the following concepts:

Concept	Description
Inspector	A tool in Process Designer that is integral to an iterative approach to process development. Using the Inspector, developers can run processes and services on the Process Center server or remote runtime process servers. You can also step through and debug a process instance in the Inspector.
process instance	A specific instance of a process. For example, when you run a business process definition (BPD), Business Process Manager creates a default name for the process instance. This name is visible to business users in Process Portal, allowing them to distinguish between different instances of a process as they complete their work.
task	A step or activity in a process.
token	A marker that progresses through a process instance and indicates which element is running. A process instance can generate several tokens. A token can take only one path. In the Inspector, a red balloon  indicates a token.

Concept	Description
snapshot	A record of the state of library items in a process application or track at a specific point in time. You can create snapshots in the Process Center console or in the Designer view. You install, export, and archive snapshots by using the Process Center console.

## Start the process instance

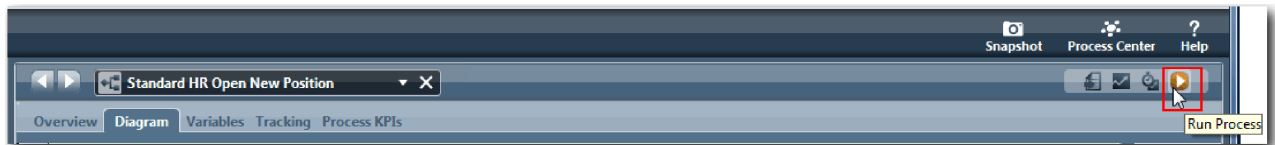
Set up the playback by starting the process instance:

1. Make sure that the Standard HR Open New Position process is open on the **Diagram** page.
2. To test the event, accelerate the triggering of the timer on the Approve or reject requisition activity. When you created the timer intermediate event, you set it to trigger one hour after the due date. The **Due In** property of activity sets the due date, which has a default value of 1 hour. For testing purposes, these times are too long to wait.
  - a. In the process diagram, click the **Approve or reject job requisition** activity and switch to the Properties Implementation page.
  - b. Under Priority Settings, change the value of **Due In** to one minute.
  - c. Click the timer intermediate event on the **Approve or reject job requisition** activity and switch to the Properties Implementation page.
  - d. Under Timer Properties, change the value of **Before or After Difference** to one minute.
  - e. Save your changes.

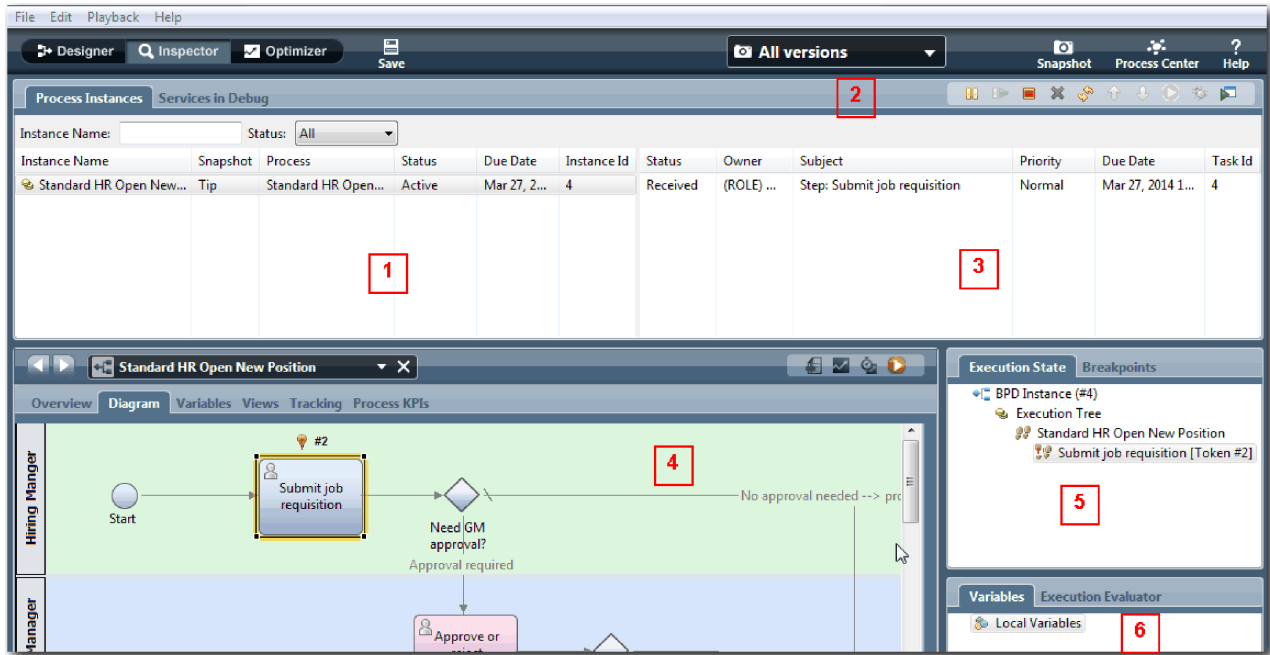
**Note:** Because the timer is set to be repeatable, an event is created every minute until the Approve or reject job requisition activity is completed.

**Remember:** When you have completed your testing, set the Due In property to 1 day so that the escalation notice task occurs daily instead of every minute.

3. To run an instance of the process, click the **Run Process** icon.



4. When you are prompted to switch to the Inspector, click **Yes**. The process diagram displays in the Inspector:

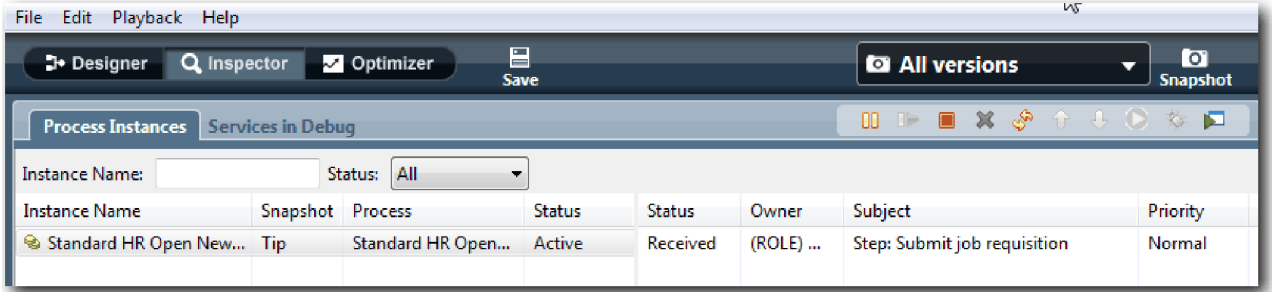


Number	Description
1	Shows the currently active and previously run process instances on the Process Center server or on a connected Process Server. The highlighted instance is the currently selected instance. Your actions and data that is shown in the other areas of the Inspector apply to this instance.
2	Use the toolbar icons to manage process instances, run tasks, or debug services.
3	Tasks for the selected process instance. In this case, the current task is the first task in the BPD called Submit job requisition. You can click the task to select it and then run the task so that you can step through the BPD.
4	The BPD diagram for the selected instance. The current task is highlighted so that you know where you are as the process runs. To view other information about the BPD for the selected instance, click the other available tabs, such as <b>Overview</b> and <b>Variables</b> .
5	The navigation tree of the progress for the selected instance. In this lesson, you can see the first step in the instance (the start event) and the active second step, which is indicated by the red token. The navigation tree continues to expand when you run the task and step through the entire process in the Inspector.
6	The variables that are used in the current step. To view and manipulate variable values, right-click a variable and then select <b>Show In Execution Evaluator</b> .

## Test the path for filling a new position

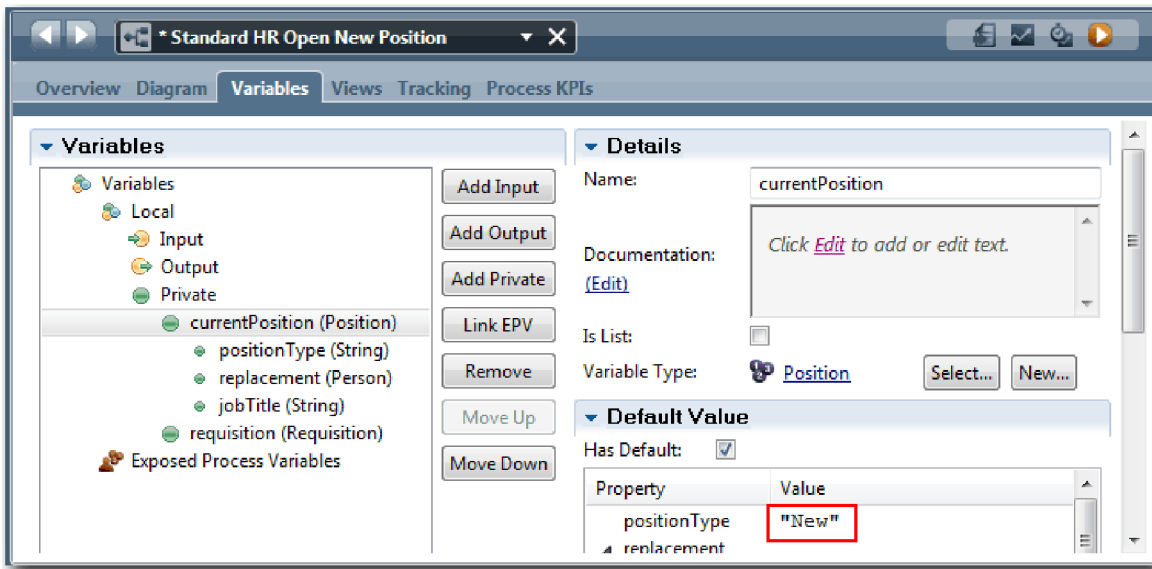
You are now ready to test the path in which the user chooses to fill a new position, which requires GM approval.

In the Inspector, all active, completed, and currently running instances of your process are shown on the **Process Instances** tab. You can see that a new, active process instance is started.

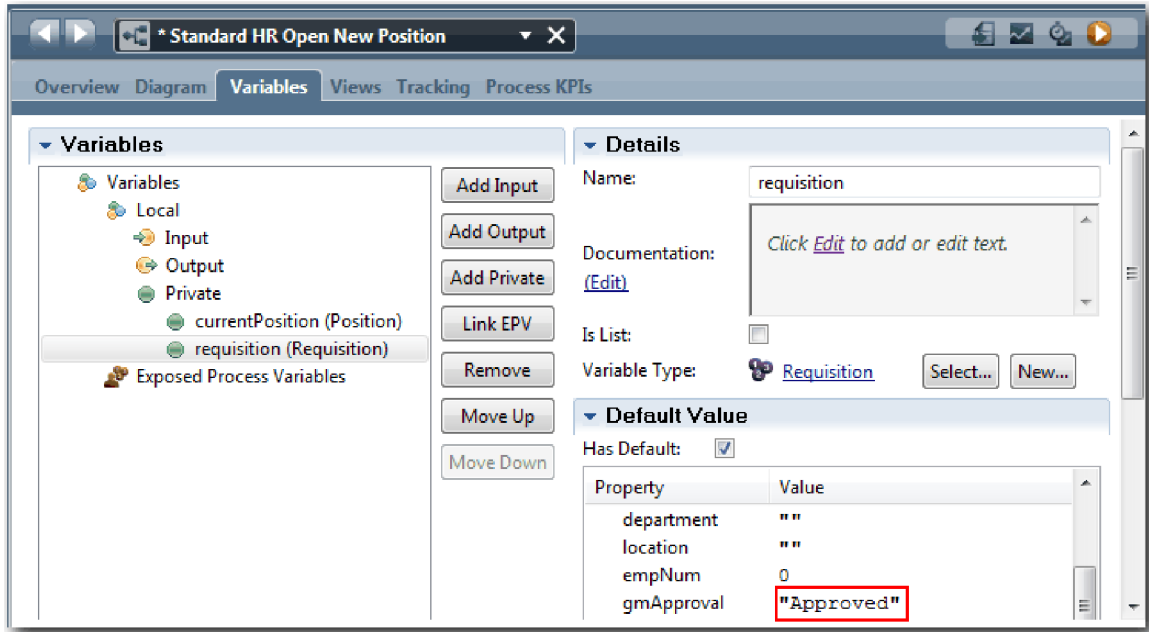


Test the path for a new position requisition:

1. To run the path, you must enter data. In the lower-left window that shows the process, switch to the **Variables** tab:
  - a. Click the **currentPosition** variable.
  - b. Under Default Value, select **Has Default**.
  - c. For **positionType**, enter the value "New", including the quotation marks.



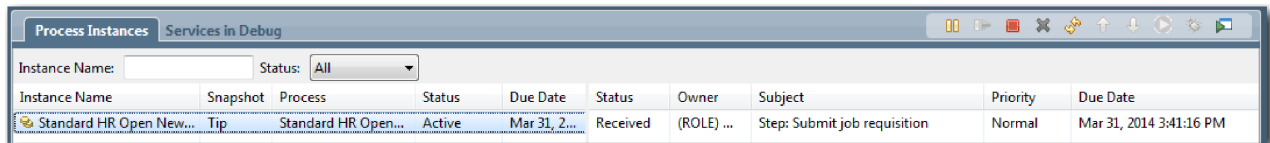
- d. Similarly, click the **requisition** variable and select **Has Default**. For **gmApproval**, enter the value "Approved", including the quotation marks.



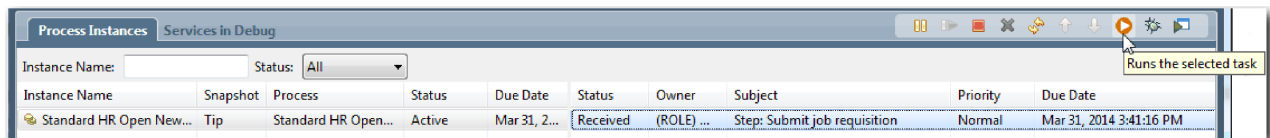
e. Save your changes.

**Note:** Typically, you do not enter test data here. You start the process with a script activity in the System lane to initialize your data. You also use a test script to test your data that the user interaction coach elements eventually capture. Because this sample does not have a script activity, you must enter mock data so that you can run Playback One and validate the process flow.

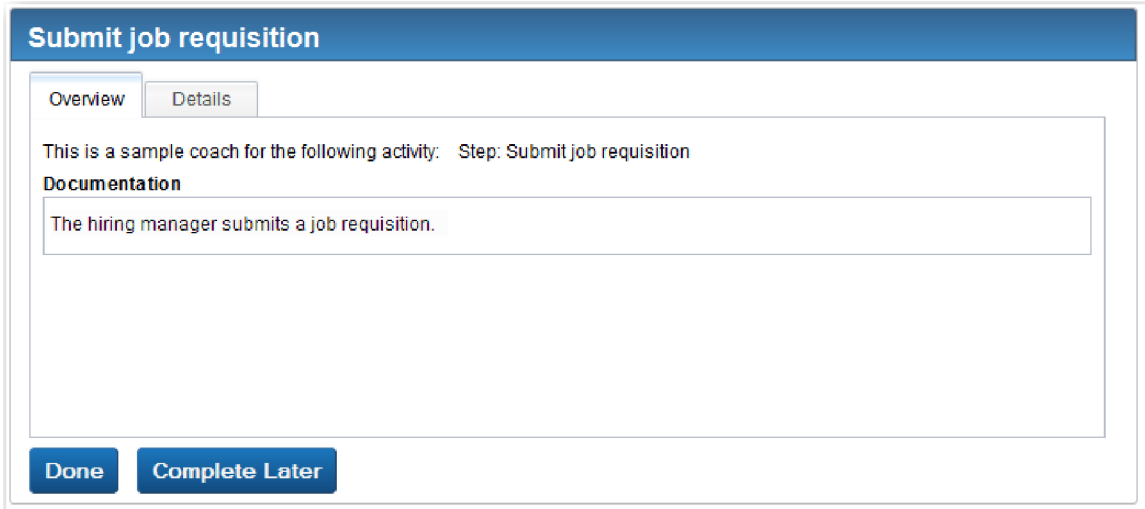
2. To display the new Submit job requisition task, click the active instance of the Standard HR Open New Position process.




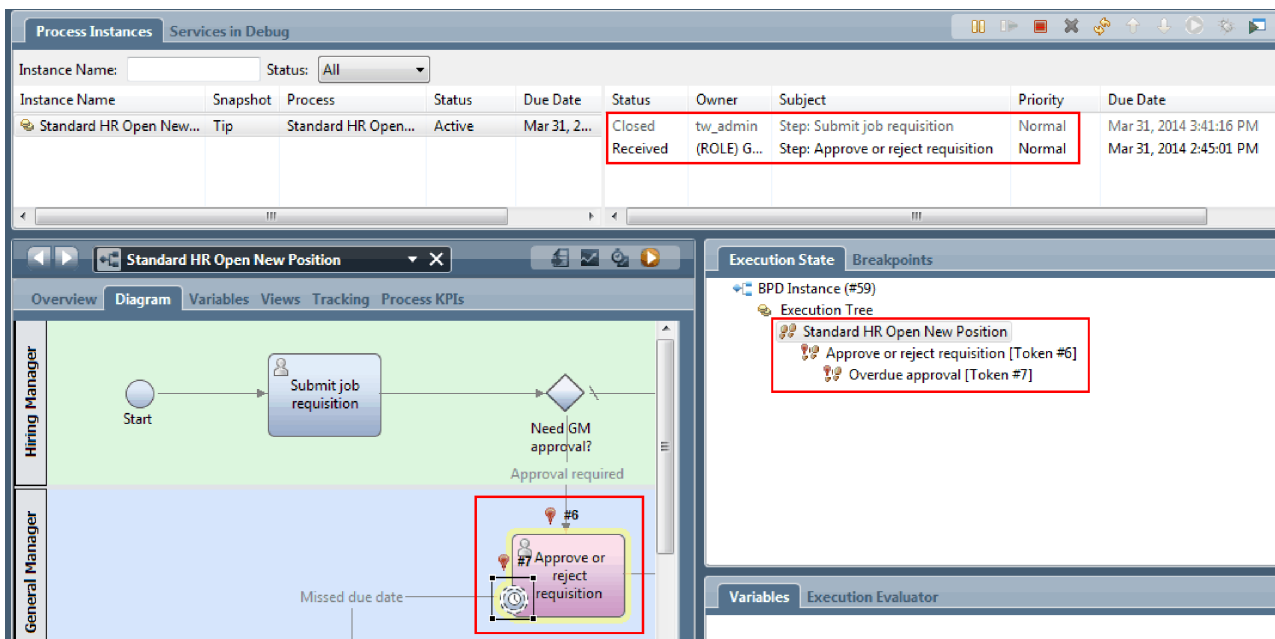
3. Click the **Submit job requisition** task to make the task runnable. The **Run the selected task** icon becomes available.
4. Click the **Run the selected task** icon in the toolbar.



**Note:** If you are prompted to select a user to run the task, select a user and click **OK**. Depending on the user you select, you might need to type in the user password. Because you modeled the tw\_allusers group to run all the tasks, all users are included in the list of available user names. A generated Submit job requisition page opens in a web browser so that you can proceed with your test even though the user interface for the tasks is not created yet. You create the user interface later, in the Hiring tutorial: create the user interface module.

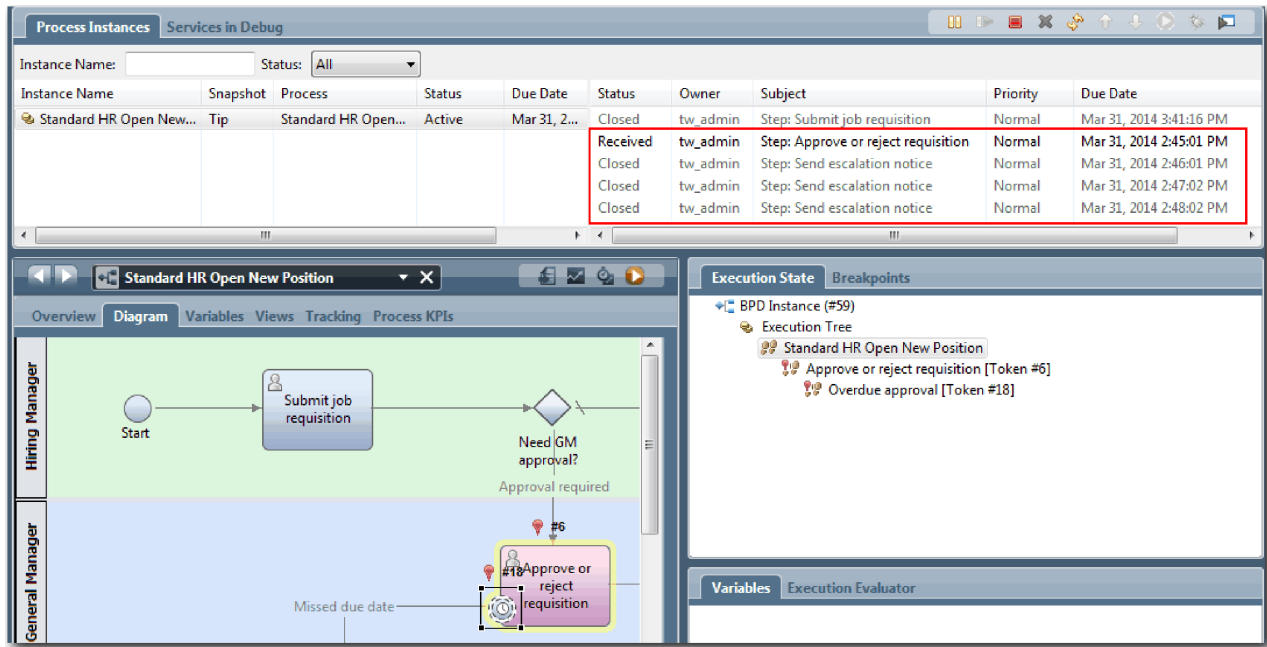


- Acting as the hiring manager, click **Done** on the Submit job requisition page in the web browser. The web browser now displays the text The service has finished, indicating that the hiring manager's task is complete. Close the web browser.
- Switch to the Process Designer desktop editor in the Inspector view and click  in the toolbar to update the Process Instances view. You can see that the Submit job requisition task is now closed. Because the position type was set to New, simulating a request to fill a new position, the GM must approve the job requisition before it is routed to HR. The process instance moves to the next activity and generates the Approve or reject requisition task for the GM.



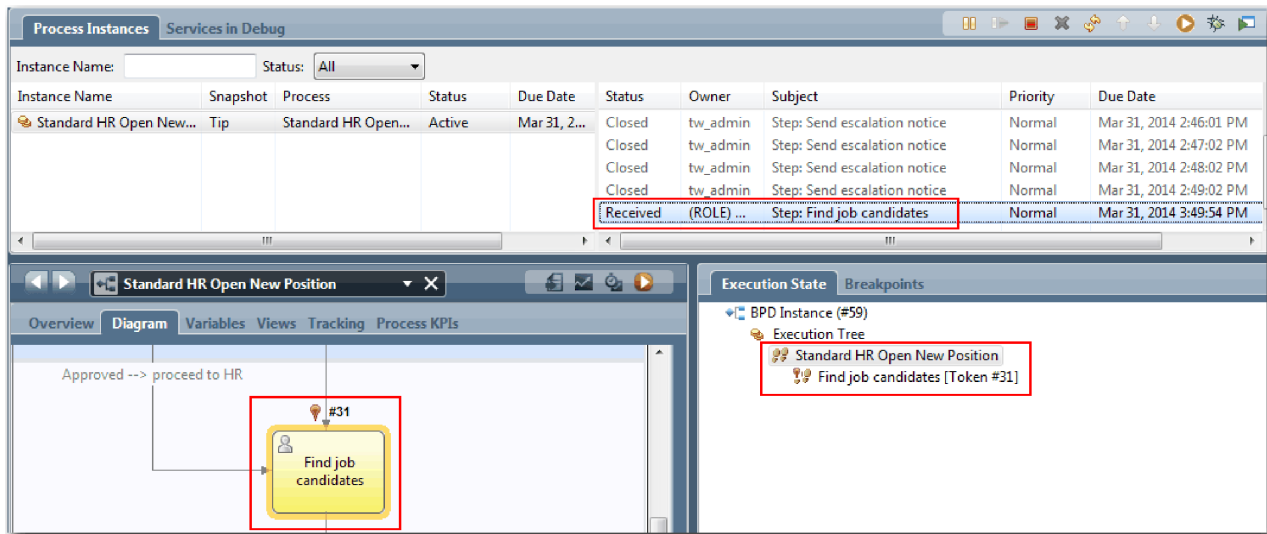
Notice that the token is now on **Approve or reject requisition** in the process diagram and in the execution tree.

- Allow at least two minutes to elapse, and then run the **Approve or reject requisition** task and refresh the Inspector view.



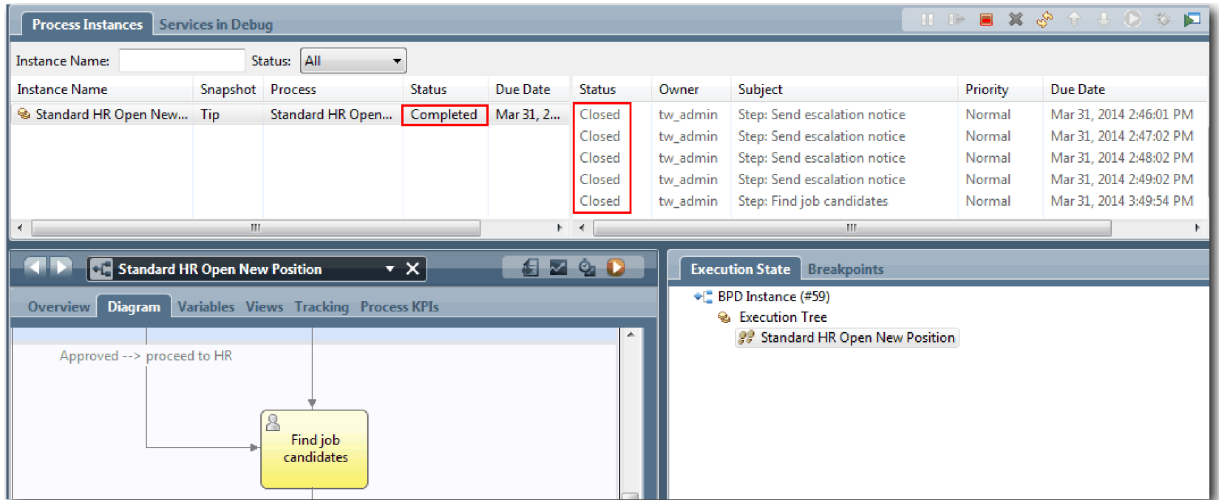
Notice that the task list shows a **Send escalation notice** system task for each minute that elapsed since the task became overdue.

8. In the web browser, acting as the GM, click **Done** on the Approve or reject requisition page. The web browser now displays the text The service has finished, indicating that the GM's task is complete.
9. Return to the Inspector, and then refresh the page.



You can see the Approve or reject requisition task and escalation task are closed and the Find job candidates task is active.

10. Run the Find job candidates task, and complete the task in the web browser.
11. In the Inspector, refresh the page.




The process instance is now complete.

Now that you tested one path in the Inspector, you can test the other path.

### Test the path for filling an existing position

You are now ready to test the path in which the user chooses to fill an existing position, which does not require GM approval.

Using the method that is described in testing the path for a new position, test the second work flow:

1. Start a new instance of the Standard HR Open New Position process.
2. In the *currentPosition* variable, set the default value of **positionType** to **Existing**.
3. Run the Submit job requisition task and complete the task in the web browser.
4. Return to Inspector and then refresh the page.
5. Run the Find job candidates task and complete the task in the web browser.
6. Return to Inspector and then refresh the page. You can see that the process instance is now complete.
7. Take a snapshot of the process application by clicking the  icon in the main toolbar.
8. Type Playback One as the snapshot name and click **OK**.
9. For the description, type This is a snapshot of the process application up to Playback One.

### Summary

For a real project, you run and test all the scenarios that you modeled in the process to ensure that all the flow paths are correct. You can determine the test scenarios from the number of decision gateways, events, and timers that are unique to a specific flow.

Because of its two decision gateways, which have two possible outcomes each, the Standard HR Open New Position process has four possible outcomes. It also has one timer. Therefore, you need at least the following scenarios to test the possible flow pathways through the process. You also need different user accounts as members of the different teams to confirm that the correct users can access the correct tasks.

- The hiring manager creates a job requisition that needs GM Approval. A “send and chase” timer is triggered to create a notification a defined number of times in a specific period. The request is not approved by the GM and the hiring manager is notified.
- The hiring manager creates a job requisition that does not need GM Approval and the requisition is sent to HR.
- The hiring manager creates a job requisition that needs GM Approval. The request is approved by the GM and sent to HR.

- The hiring manager creates job requisition that needs GM Approval. A “send and chase” timer is triggered to create a notification a defined number of times in a specific period. The request is approved by the GM after the third notification and the job requisition is sent to HR.
- The hiring manager creates a job requisition that needs GM approval. The request is not approved by the GM and the hiring manager is notified.

## Lesson checkpoint

You validated the paths of the process and the decision gateways with Playback One. You also took a snapshot of the process application.

In this lesson, you learned

- How to run process instances and tasks in the Inspector
- How to follow a process by looking at tokens
- How to test timer events
- How to take a snapshot of the process application

In the next module, you create the user interface.

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## Create the user interface

In this module, you create the user interface that the hiring manager and the general manager (GM) use to interact with the process.

A user interface is a set of coaches in one or more human services. A heritage human service is the implementation of a BPD activity in which a user interacts with the system.

## Learning objectives

After you complete the lessons in this module, you will know how to do the following tasks:

- Create coach views.
- Create heritage human services.
- Create the flow in a heritage human service from one coach to another.

## Prerequisites

You must complete all lessons in these modules:

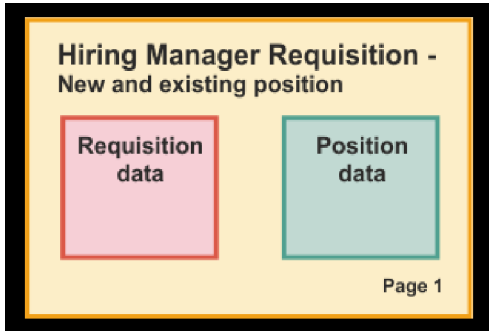
- Hiring tutorial: Model the process
- Hiring tutorial: Implement the process

## Plan the user interface

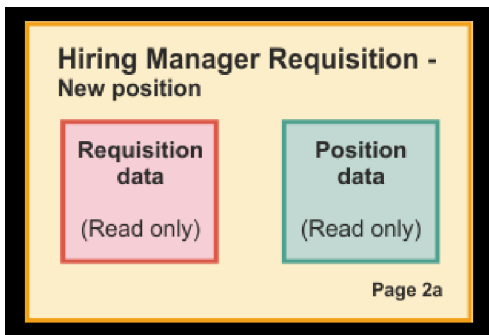
In this lesson, you use the process requirements to determine the user interface elements that you need to create and which ones you can reuse.

At the beginning of the tutorial, you reviewed the Process requirements. In this lesson, you use the process requirements to plan your user interface pages.

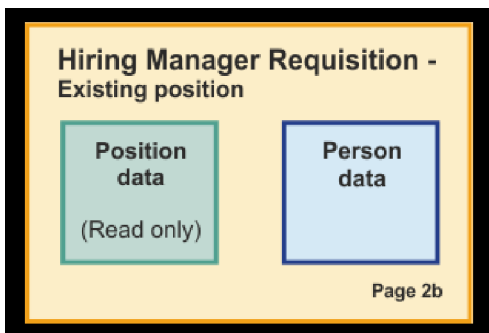
In the process requirements, the hiring manager must prepare a job requisition. In the first page of the job requisition, the hiring manager enters information that is common to both a new and existing position. This data includes information about the requisition and the position that must be filled.



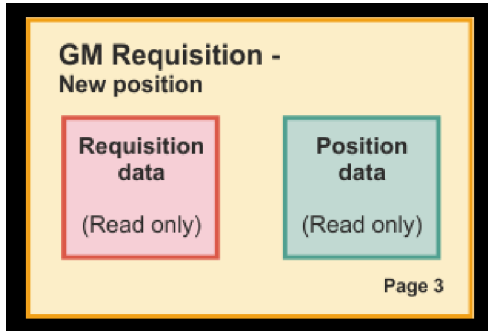
The hiring manager then goes to the next page of the job requisition. If the job requisition is for a new position, the hiring manager does not need to enter further data. This page contains the same data as the first page, but it is read only so that the hiring manager can review it before submitting the request. If the data is incorrect, the hiring manager goes to the previous page to correct the data and submit the request again.



If the job requisition is for an existing position, the hiring manager confirms only the position data and enters the data of the person who currently holds the existing position.



The general manager (GM) reviews the requisition if it is for a new position. All of the requisition information is read only. The GM must approve or reject the requisition. The GM can also add comments.



Now that you have the pages planned, you can examine them to determine whether you can reuse parts of the user interface, such as certain business objects. The following list describes what you can reuse:

- In the requirements, the position type (new or existing) and position title are on every page. This information is the position data part of the requisition. The Position business object contains the information for this part of the user interface.
- The remaining requisition information displays only when a job requisition is created or when the hiring manager or GM reviews a new position requisition. This information is the job requisition data part of the job requisition. The Requisition business object contains the information for this part of the user interface.
- For existing positions, the hiring manager also enters data about the person. This information is the person data part of the requisition. The Person business object contains the information for this part of the user interface.

### Lesson checkpoint

You analyzed the process requirements to identify the parts of the user interface. You also identified the elements that can be reused.

In this lesson, you learned how to plan the user interface using process requirements.

In the next lesson, you create the coach views for job requisition data.

## Create the coach view for job requisition data

In this lesson, you create the coach view that displays requisition data, such as the hiring manager, the department, and the starting date.

The coach view in this lesson binds to the *Requisition* business object. For information about this business object and how to create it, see Hiring tutorial: Create business objects.

This lesson uses the following concepts:

Concept	Description
coach view	A reusable piece of user interface that users use to interact with a business object or service. Coach views can contain other coach views to build a user interface.
stock control	A coach view that is provided in the coaches toolkit. Stock controls include basic user interface artifacts, such as buttons and text fields.
configuration option	The options that you define in a coach view definition so users can customize an instance of the coach view. When users add an instance to a coach or coach view, they see these configuration options as configuration properties.

The previous lesson, Hiring tutorial: Plan the user interface, explained that the My Hiring Sample process can use a set of coach views. The following table lists these coach views and their implementation names:

Label	Name
Position data	Position CV
Job requisition data	Requisition CV
Person data	Person CV

This lesson describes how to create the Requisition CV coach view.

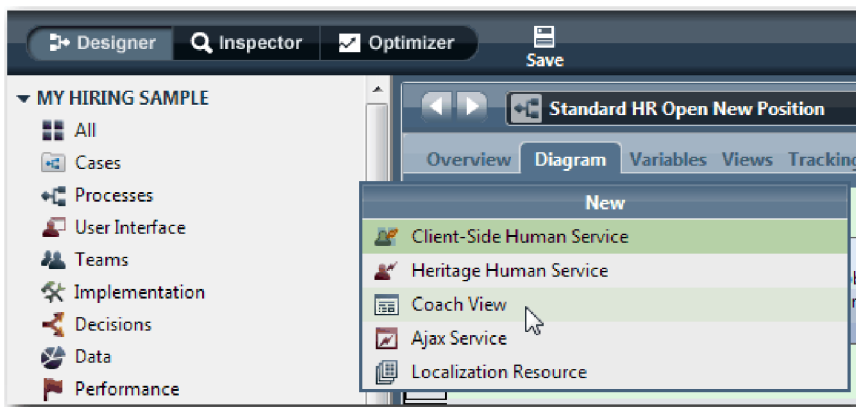
The Requisition CV coach view consists of a horizontal section that provides the title for the form. Inside the horizontal section, three vertical sections create three columns. The titles of the vertical sections are the titles for the columns. Each column contains two or three stock controls, which are also coach views.

The screenshot shows a form titled "Requisition data" with three main sections:

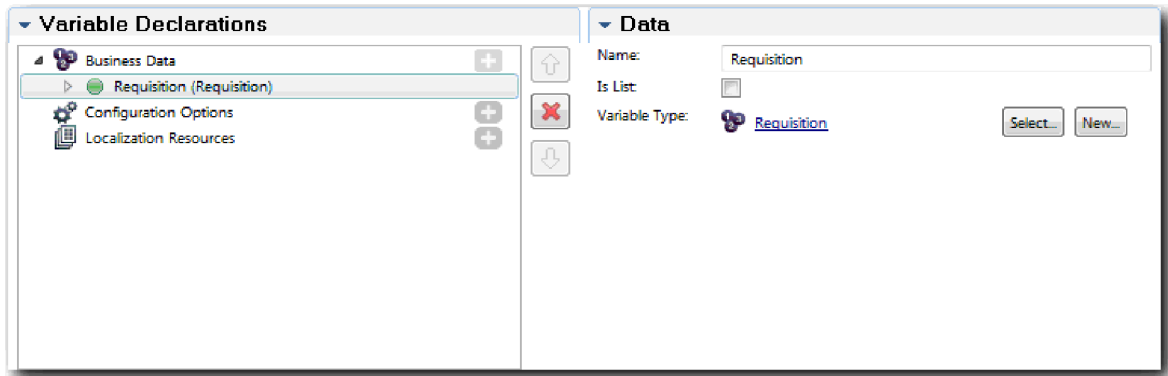
- Requester:** Contains "Requisition number" and "Hiring manager" text boxes.
- Requested position:** Contains "Employment status" (with a search icon), "Department" (with a search icon), and "Number of employees required" text boxes.
- Position date and location:** Contains "Planned starting date" (with a date picker showing 8/8/2012) and "Location" (with a search icon).

Create the Requisition CV coach view:

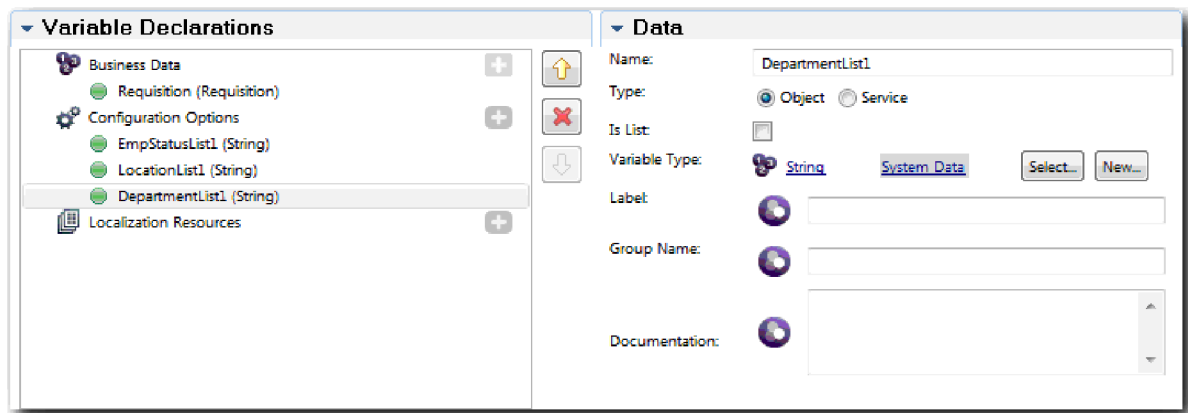
1. Make sure that the My Hiring Sample process application is open in Process Designer.
2. In the library, click the plus sign next to **User Interface** and select **Coach View**.



3. Type Requisition CV as the name and click **Finish**. You can now edit the coach view that you created.
4. Bind the coach view to the *Requisition* business object by creating a Requisition variable and assigning the Requisition business object as its type:
  - a. Select the **Variables** tab.
  - b. Click the plus sign next to **Business Data**.
  - c. Type Requisition as the name.
  - d. For the variable type, click **Select** and then select the **Requisition** business object.



5. Add configuration options so that you can customize this coach view when you add it to a coach:
  - a. Click the plus sign next to **Configuration Options**.
  - b. Type EmpStatusList1 as the name. For now, leave the type as **Object** and the variable type as **String**. You change the type to **Service** and specify the service in Hiring tutorial: create Ajax services.
  - c. In the same way, add the **LocationList1** and **DepartmentList1** configuration options.



6. Click the **Layout** tab and then, from the palette, add a horizontal section to the layout canvas and change the label to Requisition data. By using a horizontal section, you can create side-by-side columns of information. Your diagram matches the following image:

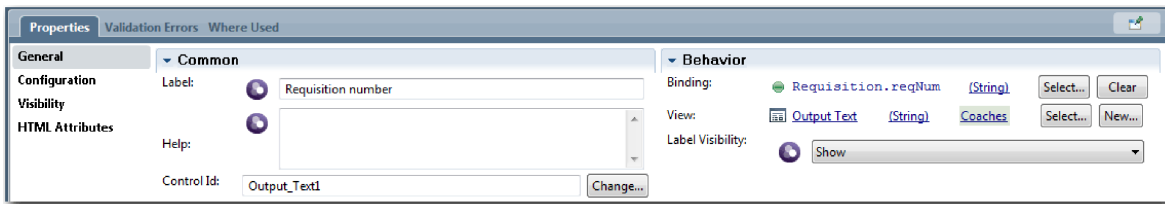


7. Create the **Requester** column:
  - a. Drop a vertical section onto the **Drop additional content here** area of the requisition data section. Rename the vertical section to Requester.
  - b. In the vertical section, add an output text control and a text control. Rename the output text control to Requisition number and the text control to Hiring manager.

**Tip:** When you add a control to a section that already has a control, drop the new control onto an existing control instead of beside it. The Designer adds the new control under or to the right of the existing control, depending on the section type. Your diagram matches the following image:



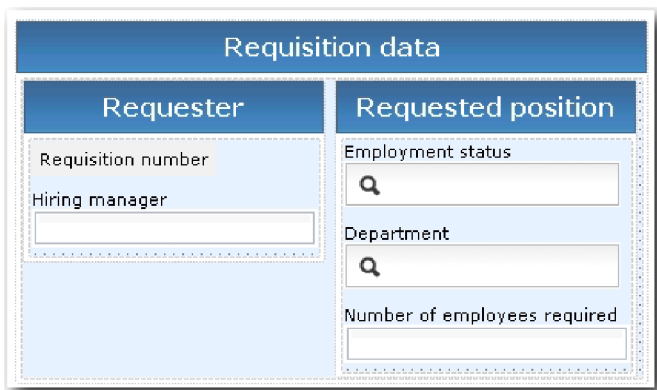
- c. Select the requisition number control. In its general properties, click **Select** for its binding and then select **reqNum** from the list. The control is now bound to the **reqNum** parameter of the *Requisition* business object.



- d. In the same way, bind the hiring manager control to the *Requisition.requestor* parameter.
8. Create the requested job position column:
- a. Add a vertical section to the requisition data section and rename the new vertical section to Requested position.
  - b. Add the following controls to the column:

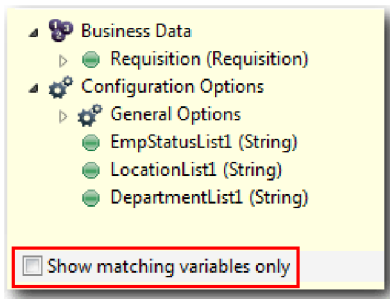
Stock control type	Label	Binding
Select	Employment status	None
Select	Department	None
Integer	Number of employees required	<i>Requisition.empNum</i>

Your diagram matches the following image:



- c. Select the **Employment status** control.

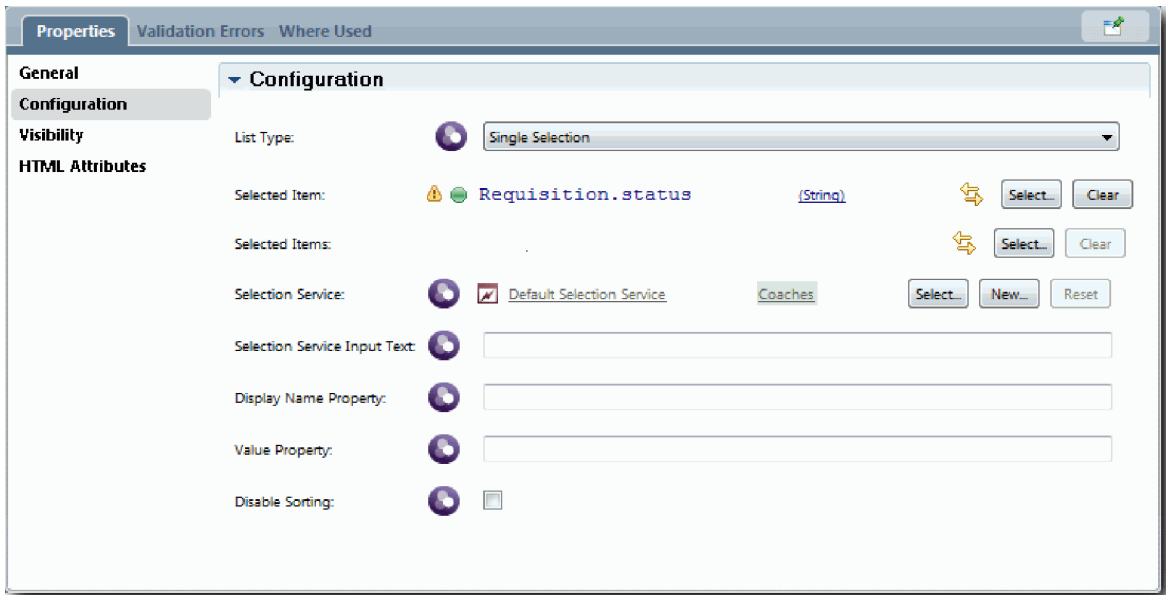
- d. In the **Properties** tab, select **Configuration**. For **Selected Item**, click **Select**. In the window that opens, clear **Show matching variables only**.



**Important:**

Clearing the check box is necessary because the type for the Selected Item configuration option is **ANY** and does not match the type for *Requisition.status*, which is set to **String**. In this case, the type mismatch is acceptable because this configuration option can be of any type.

- e. Expand **Requisition** and select **status**.



- f. Select the **Department** control and open its configuration properties.
- g. Set the **Selected Item** to **Requisition.department**.
9. Create the position date and location column:
- Add a vertical section to the requisition data section and rename the new vertical section to Position date and location.
  - Add the following controls to the column:

Stock control type	Label	Binding
Date Time Picker	Planned starting date	Requisition.date
Select	Location	None

Your diagram matches the following image:

The screenshot shows a form titled "Requisition data" with three main sections:

- Requester:** Contains "Requisition number" and "Hiring manager" text boxes.
- Requested position:** Contains "Employment status" (with a search icon), "Department" (with a search icon), and "Number of employees required" text boxes.
- Position date and location:** Contains "Planned starting date" (with a date picker showing 8/8/2012) and "Location" (with a search icon) text boxes.

c. Select the **Location** control and open its configuration properties. Set the **Selected Item** to **Requisition.location**.

10. Save your work.

### Lesson checkpoint

You created the Requisition CV coach view that you use in the job requisition user interface.

In this lesson, you learned

- How to create the UI for the form as a coach view
- How to associate human service data with some of the stock controls that display that data
- How to configure other controls with data

In the next lesson, you create the coach view for position data.

### Create the coach view for position data

In this lesson, you create the coach view that displays position data, such as the position type and title.

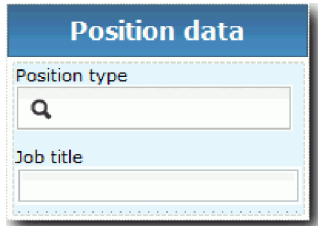
You must have the Position business object because the coach view in this lesson binds to the Position business object. If this business object is not already created, see Hiring tutorial: Create business objects.

The Hiring tutorial: Plan the user interface lesson identified that the My Hiring Sample process can use a set of coach views. The following table lists these coach views and their implementation names:

Label	Name
Position data	Position CV
Job requisition data	Requisition CV
Person data	Person CV

This lesson teaches you how to create the position data coach view, which is called the *Position CV*. If you want more information, see the equivalent steps in Hiring tutorial: create the coach view for job requisition data.

The Position CV coach view consists of a horizontal section that provides the title for the form. Inside the horizontal section, you use a vertical section to create a column. The title of the vertical section is the title for the column. The column contains two stock controls, which are also coach views.



The following table lists the contents of the Position CV coach view, along with their bindings or configuration options. You can use this information to create the coach view or use the steps in the procedure.

Name	Type of control	Binding	Configuration options
Position data	Vertical section	<i>Position</i>	None
Position type	Select	None	<b>Selected Item:</b> Position.positionType <b>Tip:</b> You assign the selection service in a later lesson. Use the default service for now.
Job title	Text	<i>Position.jobTitle</i>	None

Create the Position CV coach view:

1. Create a coach view and name it Position CV.
2. Bind the coach view to business data:
  - a. Select the **Variables** tab.
  - b. Add the *Position* variable as the business data variable and set its type to the **Position** business object.
3. Add the PositionList1 configuration option. For now, leave the type as **Object** and the variable type as **String**. You change the type to **Service** and specify the service in Hiring tutorial: create Ajax services.
4. Click the **Layout** tab and then, from the palette, add a vertical section to the layout canvas and rename it to Position data.
5. Bind the vertical section to the **Position** business object.
6. Add the following controls to the vertical section:

Stock control type	Label	Binding
Select	Position type	None
Text	Job title	<i>Position.jobTitle</i>

7. Select the **Position type** control and open its configuration properties. Set the **Selected Item** to Position.positionType. You created the Position CV coach view.
8. Save your work.

## Lesson checkpoint

You created the Position CV coach view.

In this lesson, you learned

- How to create the UI for the form as a coach view
- How to configure other controls with data

In the next lesson, you create the coach view for person data.

## Create the coach view for person data

In this lesson, you create the coach view that displays person data, such as family name and pay level.

You must have the Position business object because the coach view in this lesson binds to the Position business object. If this business object is not already created, see [Hiring tutorial: Create business objects](#).

The [Hiring tutorial: Plan the user interface](#) lesson explained that the My Hiring Sample process can use a set of coach views. The following table lists these coach views and their implementation names:

Label	Name
Position data	Position CV
Job requisition data	Requisition CV
Person data	Person CV

This lesson teaches you how to create the coach view for person data. It provides basic information for each step. If you want more information, see the steps in [Hiring tutorial: create the coach view for job requisition data](#).

The Person CV coach view consists of a vertical section that contains three text stock controls and a text area stock control.

The following table lists the contents of the Person CV coach view and their bindings or configuration options. You can use this information to create the coach view or use the steps in the procedure.

Name	Type of control	Binding	Configuration options
Person data	Vertical section	<i>Person</i>	None
Given name	Text	<i>Person.firstName</i>	None
Family name	Text	<i>Person.lastName</i>	None
Manager	Text	<i>Person.supervisor</i>	None
Comments	Text area	<i>Person.notes</i>	None

Create the Person CV coach view:

1. Create a coach view and name it Person CV.
2. Bind the view to business data:

- a. Select the **Variables** tab.
  - b. Add the *Person* variable as the business data variable and set its type to the **Person** business object.
3. Click the **Layout** tab and then, from the palette, add a vertical section to the layout canvas and rename it to Person data.
  4. Bind the vertical section to the **Person** business object.
  5. Add the following controls to the vertical section:

Name	Type of control	Binding
Given name	Text	<i>Person.firstName</i>
Family name	Text	<i>Person.lastName</i>
Manager	Text	<i>Person.supervisor</i>
Comments	Text area	<i>Person.notes</i>

6. Save your work.

### Lesson checkpoint

You created the Person CV coach view. You now have the coach views that you need to build the coaches that are used in the My Hiring Sample.

In this lesson, you learned

- How to create the UI for the form as a coach view
- How to configure other controls with data
- How to associate the coach view to business data

In the next lesson, you create the Submit Requisition HS human service.

## Create the Submit Requisition HS heritage human service

In this lesson, you create the heritage human service that contains the user interface that the hiring manager uses for the job requisition.

This lesson uses the artifacts that are created in the Hiring tutorial: Model the process and Hiring tutorial: Implement the process modules. If you did not complete these modules, copy the following artifacts from the Hiring Sample process application into the My Hiring Sample process application:

- Standard HR Open New Position business process definition (BPD)
- The Requisition business object
- The Position business object

In the Standard HR Open New Position process, the hiring manager completes a submit job requisition activity. In IBM Business Process Manager, you implement the activities that the hiring manager complete as a heritage human service. In this tutorial, the heritage human service must meet the following requirements for the Standard HR Open New Position process:

- The hiring manager submits a requisition either to fill a new position or to replace a departing employee in an existing position.
- The hiring manager determines the position requirements and prepares a job requisition for submission to the Human Resources department.

To fulfill these process requirements, you must create a heritage human service that has a user interface. This user interface consists of many forms. In IBM Business Process Manager, these forms are created

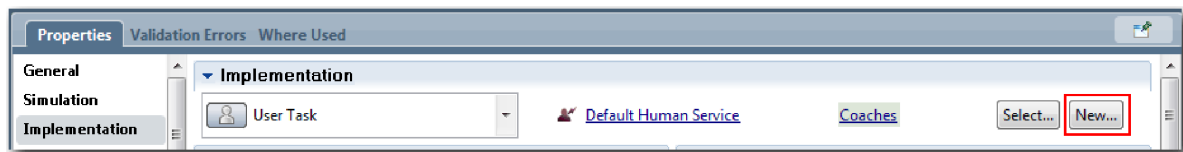
using coaches in the heritage human service. The data that these coaches uses are variables of the heritage human service. In this lesson, you define the data that the heritage human service uses and prepare it for the user interface.

This lesson uses the following concepts:

Concept	Description
human service	A service flow that provides user interfaces for managing process and case work in web-based applications, such as Process Portal. Heritage human services and client-side human services are types of human services.
client-side human service	A human service that runs in the web browser and can call the server to obtain data. You use a client-side human service to implement an interactive task, a dashboard, or a user interface for a case or process instance that users can use to manage cases or processes in an application.
heritage human service	A human service that runs on the server and provides user interfaces to the web browser. You can use a heritage human service to implement an interactive task or dashboard that users can use in an application. Heritage human services provide user interface support for process management by using existing artifacts and technology that you are familiar with. You create and edit heritage human services in the Process Designer desktop editor, run them on the server, and supply user interfaces to web-based applications such as Process Portal.

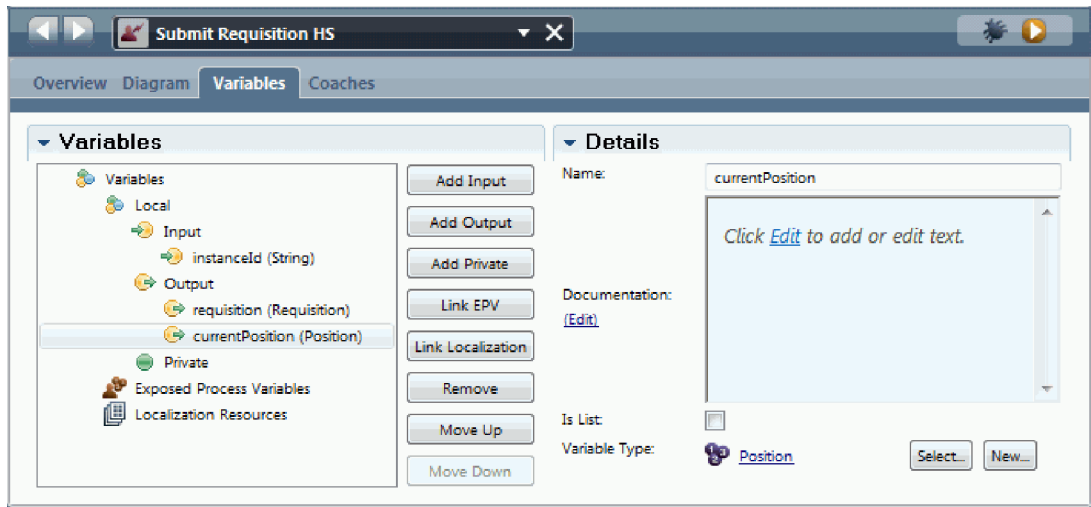
Create the Submit Requisition HS heritage human service:

1. Create the heritage human service for the submit job requisition activity.
  - a. Make sure that the My Hiring Sample process application is open in Process Designer.
  - b. In the Standard HR Open New Position BPD, select the **Submit job requisition** activity. In the **Properties** tab, select **Implementation**.
  - c. Create the heritage human service by clicking **New**.



The heritage human service that you create replaces the default human service.

- d. Type **Submit Requisition HS** and keep **Create a heritage human service** selected. Click **Finish**. The **Submit Requisition HS** heritage human service opens.
2. Add the data input and output variables:
  - a. Select the **Variables** tab.
  - b. Add *instanceId* as an input variable. Its variable type is **String**, which is the default type.
  - c. Add *requisition* and *currentPosition* as output variables. For their type, click **Select** to select the **Requisition** and **Position** variable types that you created in Hiring tutorial: Create business objects.



If you select the **Submit job requisition activity** from the **Standard HR Open New Position BPD** and open the **Data Mapping** properties, the maps now list these variables.



3. Add elements to the heritage human service diagram to create its flow:
  - a. Select the **Diagram** tab.
  - b. To create a script to initialize the variables that the heritage human service uses, drag a server script item from the palette onto the diagram.
  - c. Rename the server script to Initialize Output.
  - d. Select the script item and then add the following code to its implementation properties:

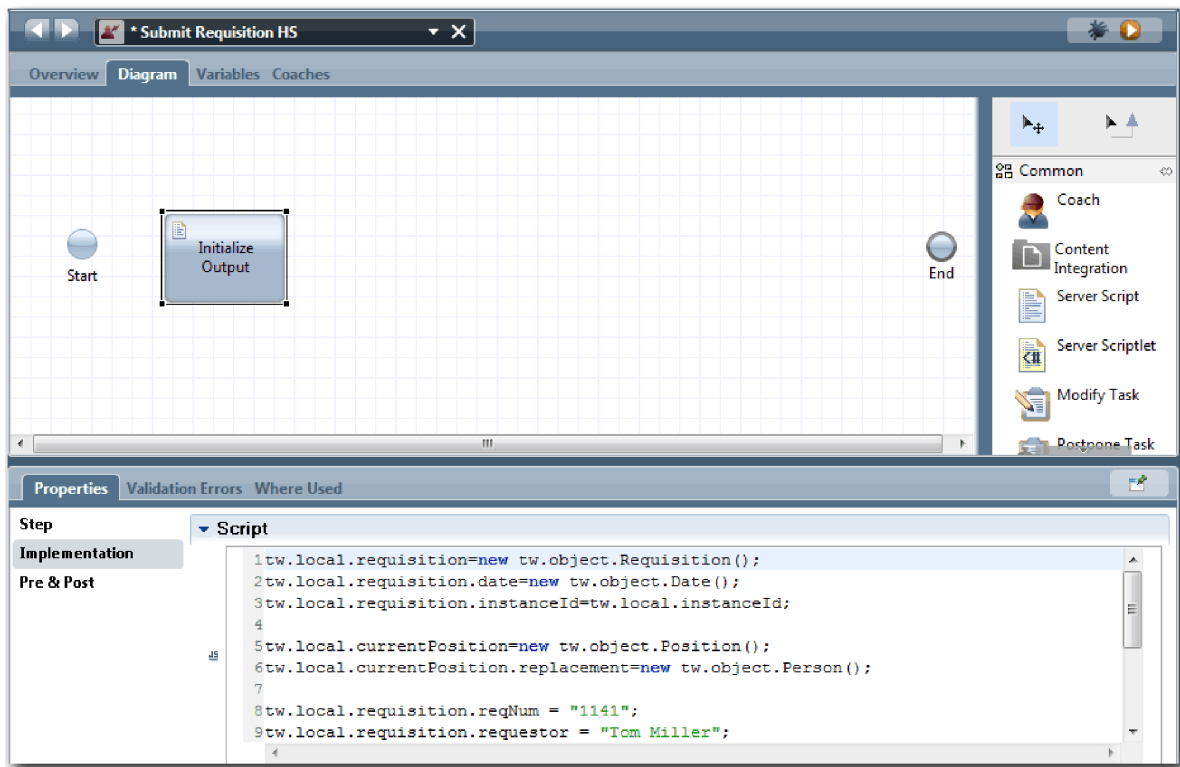
```
tw.local.requisition=new tw.object.Requisition();
tw.local.requisition.date=new tw.object.Date();
tw.local.requisition.instanceId=tw.local.instanceId;

tw.local.currentPosition=new tw.object.Position();
tw.local.currentPosition.replacement=new tw.object.Person();

tw.local.requisition.reqNum = "1141";
tw.local.requisition.requestor = "Tom Miller";
tw.local.requisition.empNum = 1;
tw.local.requisition.department = "Software Engineering";
tw.local.currentPosition.jobTitle = "Head of Product Development";
tw.local.currentPosition.replacement.lastName = "Smith";
tw.local.currentPosition.replacement.firstName = "Bob";
tw.local.currentPosition.replacement.supervisor = "Ann Fisher";
tw.local.currentPosition.replacement.payLevel = "8";
tw.local.currentPosition.replacement.payType = "Exempt";
```


When you run the sample, the fields in the requisition form contain this data.

**Tip:** If you see warnings, check for typographical errors in the business object parameters.

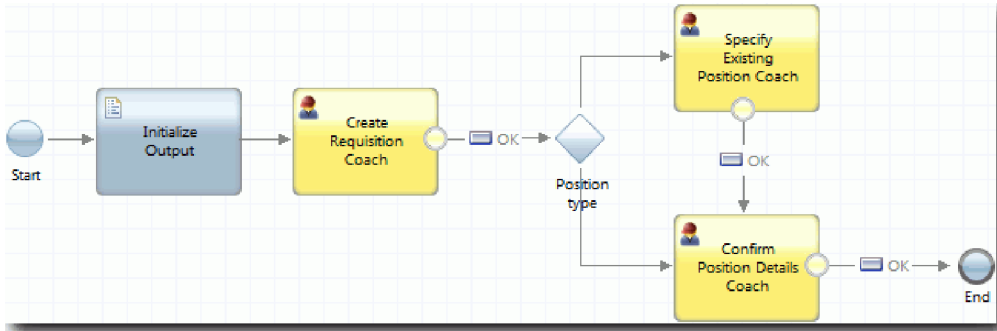


- e. Add three coaches to the diagram. Rename the coaches with the following names:
- Create Requisition Coach
  - Specify Existing Position Coach
  - Confirm Position Details Coach

The first coach contains the form that the hiring manager completes to request a new position or to fill an existing position. The second coach contains the form that has information about the existing position. The third coach contains the form with the requisition information that the hiring manager reviews.

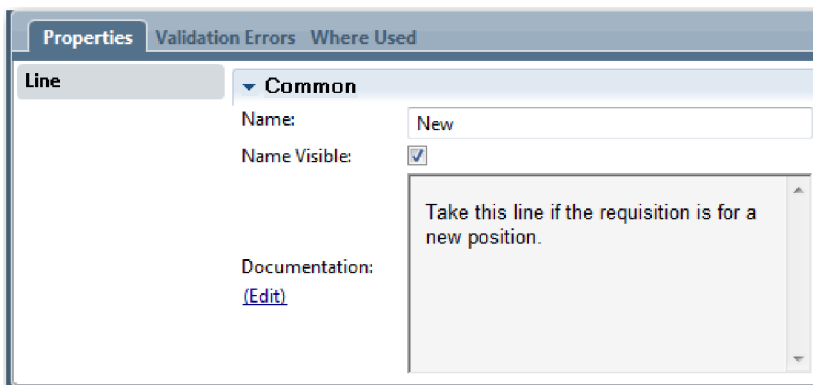
- f. Add a decision gateway to the diagram.
- g. Rename the decision to **Position type**. The implementation for the decision does not contain any paths. The Designer adds these paths when you connect the decision to other nodes in the diagram.
4. In the palette, select the sequence flow icon  and make the following connections:
- The **Start** event to the **Initialize Output** server script.
  - **Initialize Output** to the **Create Requisition Coach**.
  - **Create Requisition Coach** to the **position type** decision.
  - The top selection point of the **position type** decision to the **Specify Existing Position Coach**. Although you can use any selection point, use the top selection point for a tidier diagram.
  - The bottom selection point of the **position type** decision to the **Confirm Position Details Coach**. Having different selection points for the two paths makes it easier to see the two flows in the diagram.
  - **Specify Existing Position Coach** to the **Confirm Position Details Coach**.
  - The **Confirm Position Details Coach** to the **End** event.

Rearrange the elements in the diagram to make it easier to read. Your diagram resembles the following image:

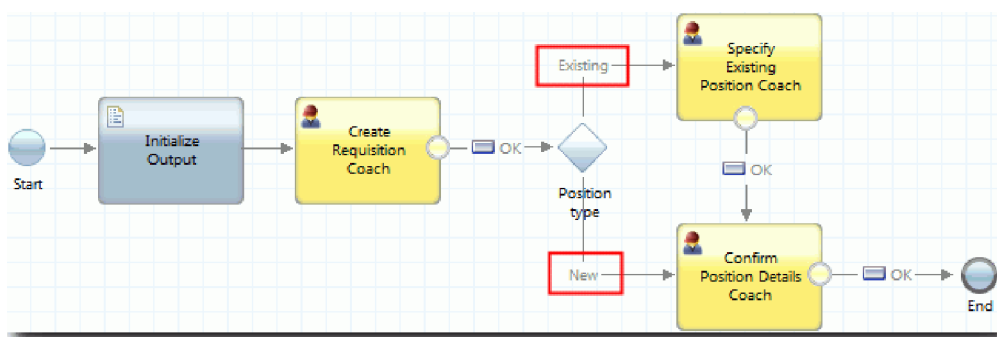


The flow lines that exit from the coaches use the **OK** button that is provided in the default coaches.

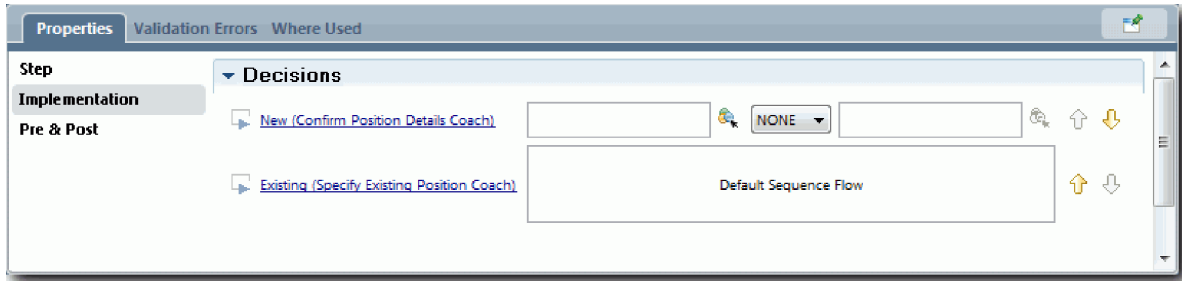
5. Define the branches for the decision. In the process requirements, the flow that the job requisition takes depends on whether the position is new or exists. If the position exists, the hiring manager must provide information about the existing position. The hiring manager then reviews the job requisition and submits it. To implement the split paths, you use the decision control.
  - a. Select the line that flows from the bottom of the **Position type** decision to the **Confirm Position Details Coach**. In the line properties, type its name as **New** and select **Name Visible**. Labeling the line helps you identify the branches in the decision and in the diagram.




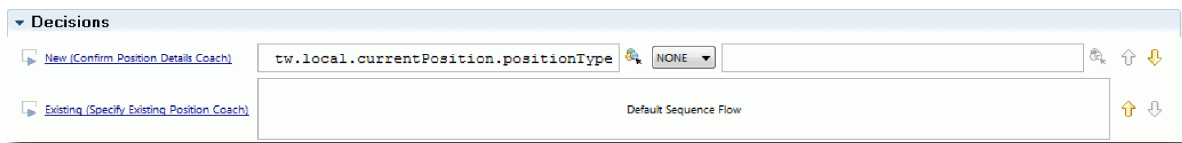
- b. In the same way, label the line that flows from the **Position type** decision to the **Specify Existing Position Coach** to **Existing** and select **Name Visible**. The lines now have labels. Your diagram resembles the following image:



- c. Select the **Position type** decision and open its implementation properties.

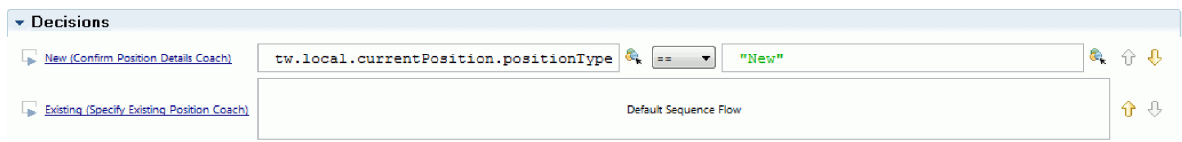


- d. For the **New (Confirm Position Details Coach)**, click the **Select a variable** icon  and select the `currentPosition.positionType` variable. The first field contains the variable name.



The `tw.local` part of the name is the namespace that the system uses to store values.

- e. Because you want the flow to take this line only if the position is new (or `currentPosition.positionType == "New"`), set the operation to `==` and the second field to `"New"`. Because `currentPosition.positionType` is a string, include the quotation marks to turn the value into a string.



The flow takes the New line when the `positionType` variable has a value of `"New"`. The flow takes the Existing line when the `positionType` variable has any other value.

6. Save your work.

You partially created the Submit Requisition HS heritage human service. You are now ready to create the coaches that are the user interfaces for the heritage human service.

## Lesson checkpoint

You created a heritage human service to implement the submit job requisition activity in the BPD. You defined the data that the heritage human service uses and created most of its flow.

In this lesson, you learned

- How to add data that the heritage human service uses
- How to create the flow for the heritage human service, which includes how to use data to determine the path that the flow takes

In the next lesson, you complete the flow for the Submit Requisition HS heritage human service by creating the coaches that are the user interfaces for the heritage human service.

## Create the coaches for the Submit Requisition HS heritage human service

In this lesson, you create the user interface that the hiring manager uses to create a job requisition.

You must have the following artifacts:

- The **Submit job requisition activity** in the Standard HR Open New Position business process definition (BPD).

- The Requisition and Position business objects.
- The Requisition CV, Position CV, and Person CV coach views that are used in the user interface.

In the Standard HR Open New Position process, the hiring manager completes the submit job requisition activity, which is a heritage human service. To enable the hiring manager to complete the activity, you create the user interface in IBM Business Process Manager by using one or more coaches and then bind its elements to data. The data that these coaches interact with are variables of the heritage human service.

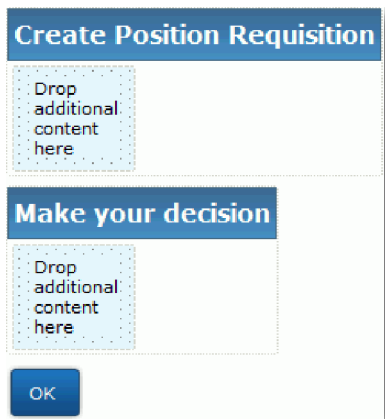
This lesson uses the following concept:

Concept	Description
coaches	The user interfaces for human services.

In this lesson, you start by creating the **Create Requisition Coach**. This coach is where the hiring manager enters information about the position. The coach looks like the following image when it is complete:

Create the coaches for the Submit Requisition HS heritage human service:

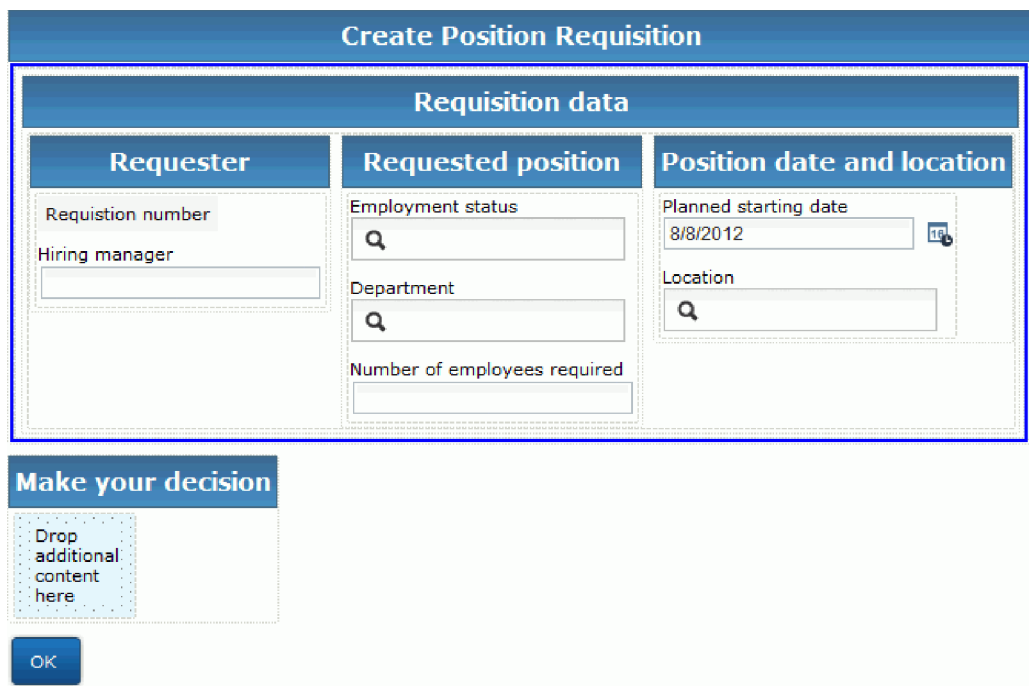
1. Create the **Confirm Position Details Coach**.
  - a. In the Submit Requisition HS heritage human service, select the **Coaches** tab and then select the **Create Requisition Coach**.
  - b. Drop two horizontal sections onto the layout area above the **OK** button.
  - c. Rename the first horizontal section to Create Position Requisition and rename the second horizontal section to Make your decision.



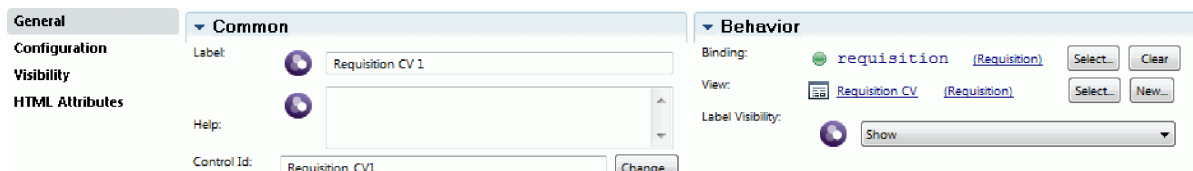
The first section contains the form that the hiring manager reads or enters data about the position. The second section will contain the button that the user clicks to move to the next step in the heritage human service flow.

2. Create the form part of the coach:
  - a. From the palette, add the **Requisition CV** coach view to the **Create Position Requisition** section. When you create a coach view, it is added to the palette so that you can add it to other coach views.

**Tip:** If you cannot see the **Requisition CV** coach view on the palette, it is filtered out. Click **Filter** and then select **Show All**.



The Requisition CV coach view is already bound to the requisition variable.



- b. Add the **Position CV** coach view to the **Create Position Requisition** section.

The Position CV coach view is already bound to the *currentPosition* variable.

3. Create the action part of the coach:
  - a. Drag the **OK** button onto the **Make your decision** section.
  - b. Rename the button to Next.
4. Save your work.
5. Create the **Confirm Position Details Coach**.

The Confirm Position Details Coach page is where the hiring manager reviews the requisition. It is similar to the Create Requisition Coach page except for the following changes:

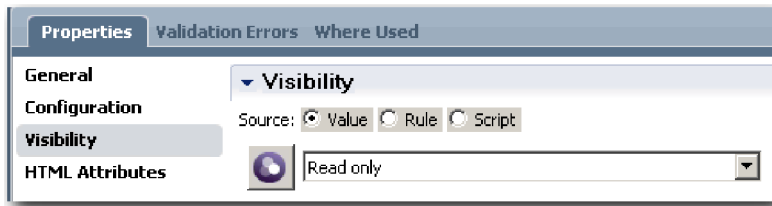
- The label for the horizontal section is **Confirm Position Details**
- The action part of the coach has a **Back** and a **Submit** button instead of a **Next** button.

- a. Select the **Create Position Details Coach**.
- b. Create the layout to match the following image:

- c. For the controls and bindings to include, consult the following table:

Name	Type of control	Binding
Confirm Position Details	Horizontal section	None
Requisition data	Requisition CV	<i>requisition</i>
Position data	Position CV	<i>currentPosition</i>
Make your decision	Horizontal section	None
Back	Button	None
Submit	Button (Control Id: OK_1)	None

- d. In the **Confirm Position Details Coach**, select the Requisition CV coach view. In the **Visibility** properties, set the source to **Value** and select **Read only**.



- e. Set the visibility properties in the **Position CV** coach view to **Read only**.
6. Save your work.
7. Create the **Specify Existing Position Coach**. The Specify Existing Position Coach is where the hiring manager enters information about an existing position and the person currently filling that position.
- Select the **Specify Existing Position Coach**.
  - Create the layout to match the following image:

- c. For the controls and bindings to include, consult the following table:

Name	Type of control	Binding
Detail Existing Position	Horizontal section	None

Name	Type of control	Binding
Position data	Position CV	<i>currentPosition</i>
Person data	Person CV	<i>currentPosition.replacement</i>
Make your decision	Horizontal section	None
Back	Button	None
Next	Button (Control Id: OK_1)	None

**Tip:** In this case, the Person CV coach view is not automatically bound to a business object. You create the binding yourself.

d. Set the visibility properties in the **Position CV** coach view to **Read only**.

8. Save your work.

You created the coaches for the Submit Requisition HS heritage human service.

### Lesson checkpoint

You created the user interface that the hiring manager uses to create a position requisition.

In this lesson, you learned

- How to assemble a coach from a set of coach views and controls
- How to change the visibility of a coach view

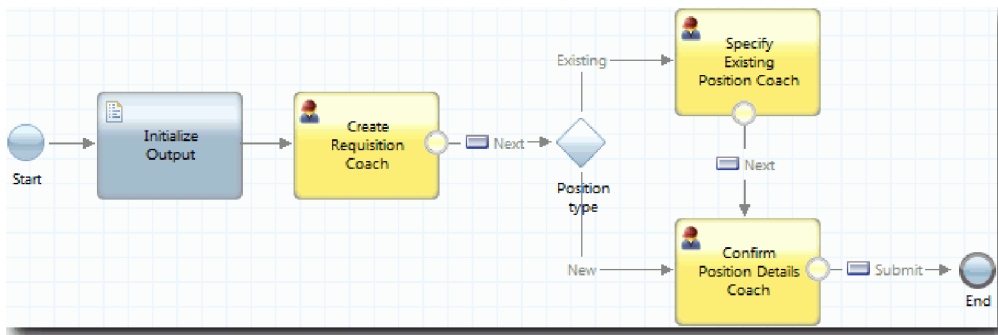
In the next lesson, you will create the complete the flow for the Submit Requisition HS heritage human service.

## Complete the flow for the Submit Requisition HS heritage human service

In this lesson, you enable the hiring manager to return to the editable job requisition form by adding two **Back** buttons.

Ensure that you have the coaches in the Submit Requisition HS heritage human service.


In the Submit Requisition HS heritage human service, there are three coaches. When you connected the coaches in the human service flow, their default **OK** buttons provided the boundary event to move the flow to the next step. As part of creating the user interface in the coaches, you renamed the **OK** buttons to **Next** or **Submit**. The human service diagram depicts this change.



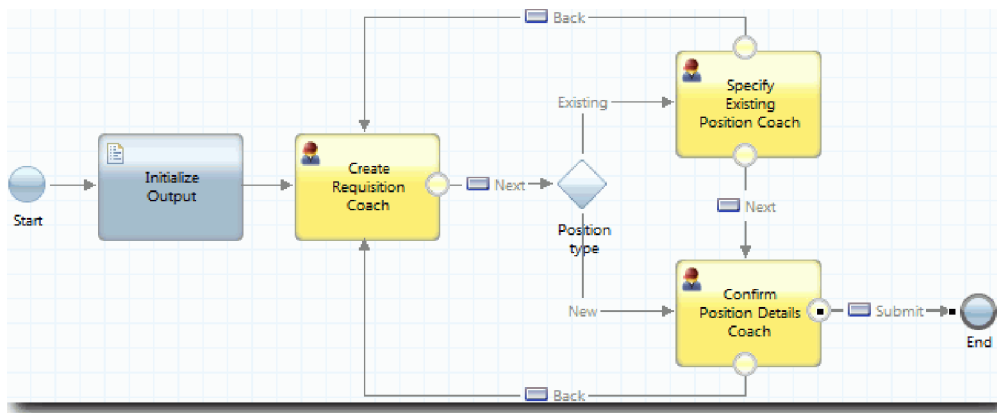
When a user clicks **Next** in the **Create Requisition Coach**, the flow leaves that coach and enters the decision. The flow then enters one of the other two coaches. The **Specify Existing Position Coach**

contains two buttons. If the user clicks **Next**, the flow goes to the **Confirm Position Details Coach**. If the user clicks **Back**, nothing happens. In this lesson, you create a boundary event that causes this second flow to go back to the **Create Requisition Coach**.

Create the flow for the Submit Requisition HS heritage human service:

1. In the Submit Requisition HS heritage human service, select the **Diagram** tab.
2. In the palette, select the **Sequence flow** icon  and make the following connections:
  - The **Specify Existing Position Coach** to the **Create Requisition Coach**
  - The **Confirm Position Details Coach** to the **Create Requisition Coach**

**Tip:** If the button between the two nodes in the diagram does not say **Back**, select the line. In the properties for the line, click **Select** for the endpoint binding. In the diagram, select the **Back** button. The diagram now has flow lines that return the flow to the **Create Requisition Coach** when the user clicks **Back**.



**Tip:** Both coaches have two coach views that fire boundary events: the **Next** button and the **Back** button. The **Next** button already has a binding for its boundary event. The **Back** button does not have a binding so the **Back** button is used to create the flow.

3. Save your work.

## Lesson checkpoint

You have flow lines that return hiring managers to the editable requisition form when they click **Back** in the coaches.

In this lesson, you learned how to create more flow lines to direct the flow according to which button the user clicks.

In the next lesson, you create the GM Approval HS heritage human service.

## Create the GM Approval HS heritage human service

In this lesson, you create the heritage human service that the general manager (GM) uses to review the job requisition. The heritage human service includes one coach that provides the user interface. The GM can then approve or reject the requisition.

This lesson uses the artifacts that are created in the Hiring tutorial: Model the process and Hiring tutorial: Implement the process modules. If you did not complete these modules, copy the following artifacts from the Hiring Sample process application into the My Hiring Sample process application:

- Standard HR Open New Position BPD
- The Requisition business object

- The Person business object

In the Standard HR Open New Position process, the GM completes the approve or reject job requisition activity. In IBM Business Process Manager, you implement activities that people complete as a heritage human service. In this tutorial, the heritage human service must fulfill the requirement that requisitions for new positions are routed to the GM for approval. The GM evaluates each requisition and either approves it or rejects it.

To fulfill this requirement, you must create a heritage human service that has a user interface so the GM can use a form to review the job requisition. The user interface also includes a way for the GM to approve or reject the requisition. In this lesson, you create the GM Approval HS heritage human service and its user interface, the **Requisition Approval Coach**. The diagram for the heritage human service looks like the following image:

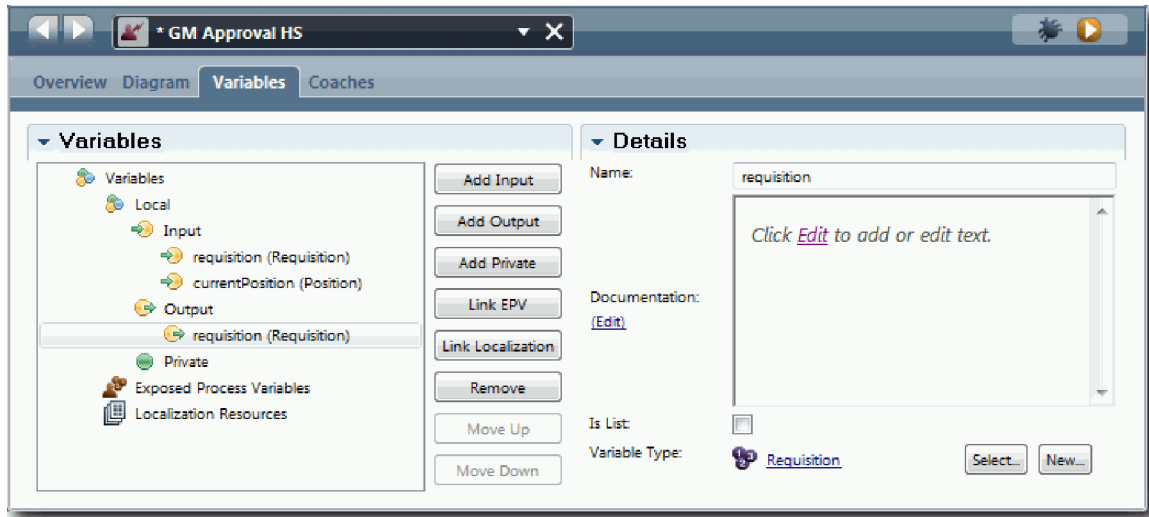



The **Requisition Approval Coach** in the heritage human service looks like the following image:

Create the GM Approval HS heritage human service:

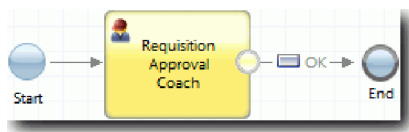
1. Create the heritage human service for the **Approve or reject job requisition** activity.
  - a. Make sure that the My Hiring Sample process application is open in the Process Designer desktop editor.
  - b. Select the **Approve or reject job requisition** activity. In the **Properties** tab, select **Implementation**.
  - c. Create the heritage human service by clicking **New**.
  - d. Type GM Approval HS and then click **Finish**. The GM Approval HS heritage human service opens.
2. Add the data input and output to the heritage human service:
  - a. Select the **Variables** tab.

- b. Add *requisition* and *currentPosition* as input variables. For their type, click **Select** and then select the Requisition and Position variable types that you created in Hiring tutorial: Create business objects.
- c. Add **requisition** as an output variable. You might notice that an error occurs when you create this variable. You cannot have two variables with the same name and a different type. You fix the error when you click **Select** and then select the Requisition variable type that you created in Hiring tutorial: Create business objects.



- 3. Add elements to the heritage human service diagram to create its flow:
  - a. Select the **Diagram** tab.
  - b. Add a coach to the diagram and rename it to Requisition Approval Coach.
- 4. In the palette, select the sequence flow icon  and make the following connections:
  - The Start event to the Requisition Approval Coach
  - The Requisition Approval Coach to the End event

The diagram for the heritage human service looks like the following image:

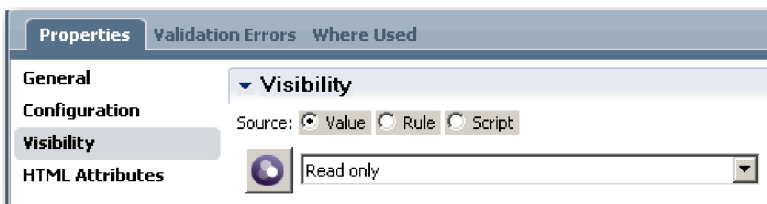


- 5. Create the **Requisition Approval Coach**. If you need help, follow the steps in Hiring tutorial: create the coaches for the Submit Requisition HS human service and consult the table later in this step. The layout for the **Requisition Approval Coach** matches the following image:

For the controls and bindings to include, consult the following table:

Name	Type of control	Binding	Configuration options
Position Requisition Approval	Horizontal section	None	No changes
Requisition data	Requisition CV	<i>requisition</i>	No changes
Position data	Position CV	<i>currentPosition</i>	No changes
Make your decision	Horizontal section	None	No changes
Approved?	Checkbox	<i>requisition.approvalNeeded</i>	<ul style="list-style-type: none"> <li>• <b>Show As:</b> Two Radio Buttons</li> <li>• <b>True Label:</b> Approved</li> <li>• <b>False Label:</b> Rejected</li> </ul>
GM comment	Text area	<i>requisition.gmComment</i>	No changes
Submit	Button	None	No changes

6. Select the **Requisition CV** coach view. In the **Visibility** properties, set the source to **Value** and set the value to **Read only**.



7. Set the visibility property of the **Position CV** coach view to **Read only**.
8. Save your work.

You created the GM Approval HS heritage human service and its user interface: the Requisition Approval Coach.

## Lesson checkpoint

You created the heritage human service that the GM uses to review information on a new position. The GM then approves or rejects the heritage human service.

In this lesson, you learned how to create a heritage human service.

In the next lesson, you conduct Playback Two.

## Conduct Playback Two

In this lesson, you conduct Playback Two by checking that the individual heritage human services are working as expected and that the coaches display correctly, and you take a snapshot.

You must have the following artifacts:

- The **Submit Requisition HS** heritage human service with the **Create Requisition Coach**
- The **Detail Existing Position Coach**
- The **Confirm Position Details Coache**
- The **GM Approval HS** heritage human service with the **Requisition Approval Coach**

In Playback Two, you verify all the heritage human services and coaches in the process by testing the following scenarios:

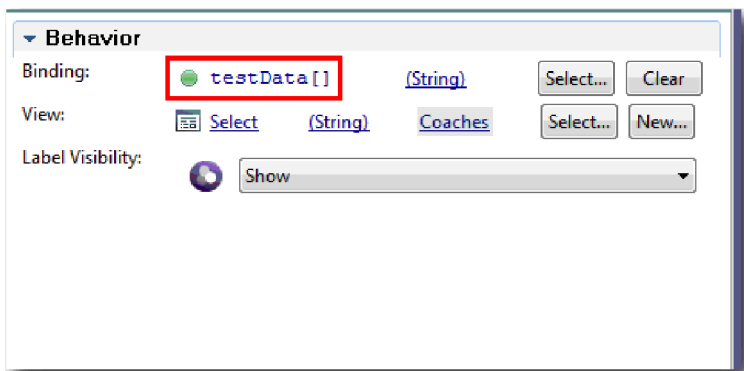
- The hiring manager requests a replacement for an existing position.
- The hiring manager creates a request for a new position.
- The general manager (GM) approves the request for a new position.
- The GM rejects the request for a new position.

## Add temporary test data

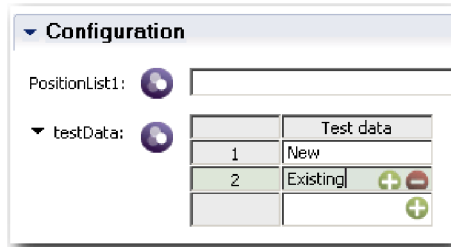
Because there is no data yet for the services, you must add test data for the **Position type** field. Adding the data determines the next page that displays in the Create Requisition coach.

Add the test data:

1. Open the **Position CV** coach view.
2. In the **Variables** tab, add a configuration option for your test data:
  - a. Click the plus sign next to **Configuration Options**.
  - b. In the Data section, type `testData` for the name.
  - c. Select **Is List**.
3. Switch to the **Layout** tab.
4. Select the **Position type** control and open its configuration properties. Select **testData** for the binding.



5. Save your changes.
6. Open the **Submit Requisition HS** heritage human service.
7. Double-click the **Create Requisition Coach**.
8. In the coach, click the **Position data** view.
9. Switch to the **Configuration** properties.
10. Expand **testData** and click the plus signs and type the values New and Existing in the Data columns.



11. Save your changes.

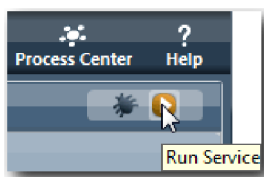
Now you can run the heritage human services in the web browser.

## Run the heritage human services

Run the heritage human services in the web browser:

Play back the simplest path, which is the path of the hiring manager requesting a replacement for an existing position:

1. In the Standard HR Open New Position BPD, double-click the **Submit job requisition** activity, which is implemented as a heritage human service. The Heritage Human Service editor opens.
2. Click **Run Service**.



The Create Position Requisition page opens in your default web browser. Verify that the page matches the following image:

**Create Position Requisition**

Requisition data			Position data
<b>Requester</b>	<b>Requested position</b>	<b>Position date and location</b>	<b>Position type</b> <input type="text" value=""/>
<b>Requisition number</b> 1141 <b>Hiring manager</b> <input type="text" value="Tom Miller"/>	<b>Employment type</b> <input type="text" value=""/> <b>Department</b> <input type="text" value=""/> <b>Number of employees required</b> <input type="text" value="1"/>	<b>Planned starting date</b> <input type="text" value="10/3/2013"/> <b>Location</b> <input type="text" value=""/>	<b>Job title</b> <input type="text" value="Head of Product Development"/>

**Make your decision**

3. From the **Position type** list, select **Existing**.

- Click **Next**. The Detail Existing Position form opens. Verify that the form matches the following image:

- Verify that the **Back** button works correctly, and then return to the Detail Existing Position page.
- Enter data in the fields under Person data and click **Next**. The Confirm Position Details page opens. Verify that the form matches the following image:

- Click **Submit**. You see the following message: “The service has finished.” Play back the path where the hiring manager requests approval for a new position:
- In Process Designer, run the **Submit Requisition HS** heritage human service.
- Enter data in the **Create Requisition** form. In the **Position type** field, select **New**.
- Click **Next**. The Confirm position details page opens.
- Click **Submit**. You see the following message: “The service has finished.” You submitted the request successfully.
- Switch to Process Designer and run the **GM Approval HS** service. The **Position Requisition Approval** page opens in your default web browser. Verify that the page matches the following image:

**Position Requisition Approval**

Requisition data			Position data
<b>Requester</b>	<b>Requested position</b>	<b>Position date and location</b>	
Requisition number Hiring manager	Employment type <no selection>  Department <no selection>  Number of employees required	Planned starting date <input type="text"/>  Location <no selection>	
<b>Make your decision</b>			Position type <no selection>  Job title
Approved? <input type="radio"/> Approved <input checked="" type="radio"/> Rejected		GM comment <input type="text"/>	<input type="button" value="Submit"/>

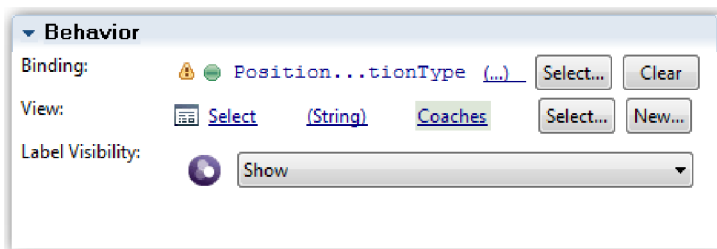
13. Click **Approved** and then click **Submit**. You see the following message: "The service has finished."
14. Run the service again from Process Designer.
15. In the **GM approval** form in the web browser, click **Rejected** and then click **Submit**. You see the following message: "The service has finished." You successfully tested the path for a new job requisition.

Next, return the **Position CV** coach view to its original configuration:

### Reconfigure the Position CV coach view

Return the **Position CV** coach view to its original configuration:


1. Open the **Position CV** coach view and click the **Layout** tab.
2. Click the **Position type** select control.
3. In the General properties, click **Clear** to remove the **testData** binding.



4. Save your changes.

### Take a snapshot

Take a snapshot of the process application:

1. In Process Designer, click the  icon in the main toolbar.
2. Type Playback Two as the snapshot name and click **OK**.
3. For the description, type This is a snapshot of the process application up to Playback Two.

### Lesson checkpoint

You conducted Playback Two by checking that the individual heritage human services are working as expected and that the coaches display correctly. You also took a snapshot of the process application.

In this lesson, you learned

- How to play back a heritage human service
- How to take a snapshot of the process application

**Tip:** In this lesson, you tested the services individually. To test the services within the process, you follow the procedure that is described in Playback One with one exception: you enter the data by using the coach configuration option as described in this lesson rather than entering the test date in the Inspector as you did in Playback One.

In the next module, you integrate the process application with services.

---

## Integrate the process with services

In this module, you integrate the process with the service components that provide the data that the process uses.

This tutorial uses services that contain scripts. These scripts create the data that the hiring sample uses. An implementation of a process application might access many different service components. In the Designer view, you author services to act as the interface to these service components. The implementation of the services depends on the service component that the process application accesses and what data or functions it needs from the service component.

### Learning objectives

After you complete the lessons in this module, you will understand the concepts and know how to create a service as an example of integrating service components inside a process.

### Prerequisites

You must complete all lessons in these modules:

- Hiring tutorial: Model the process
- Hiring tutorial: Implement the process
- Hiring tutorial: create the user interface

## Create Ajax services

In this lesson, you create Ajax services that create the data that the process uses. You then configure coach views to call these services.

The following coach views use an Ajax service to populate one or more of its controls:

- Person CV
- Position CV
- Requisition CV

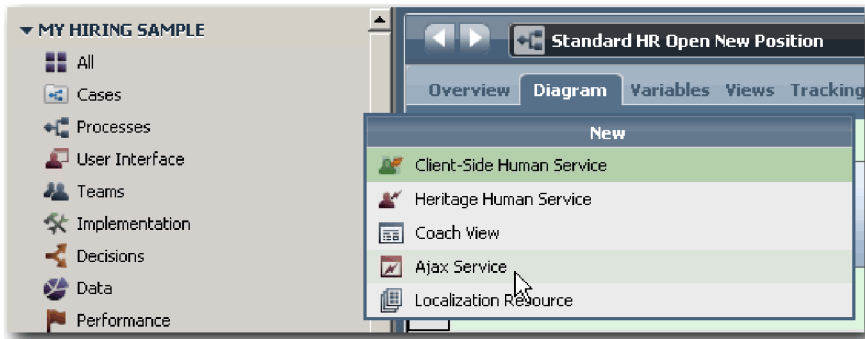
The coach views in My Hiring Sample display data to the hiring manager and to the general manager (GM). This lesson describes how to create the data and configure the coach view controls to display it.

This lesson uses the following concepts:

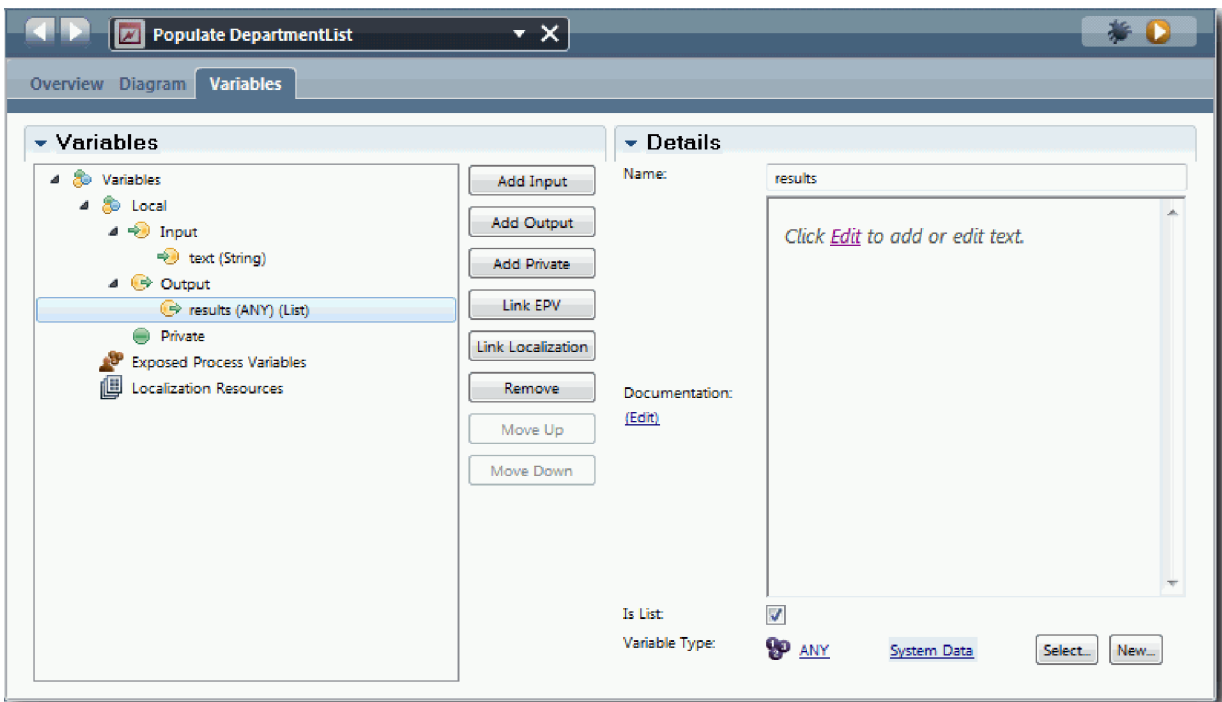
Concept	Description
Ajax services	A service that asynchronously sends or retrieves data from a data source, such as a database.

Create an Ajax service:

1. Make sure that the My Hiring Sample process application is open in Process Designer.
2. In the Designer library, click the plus sign next to **User Interface** and select **Ajax Service**.



3. Type `Populate DepartmentList` and then click **Finish**. You can now edit the Ajax service that you created.
4. Set the input and output of the service:
  - a. Select the **Variables** tab.
  - b. Click **Add Input**. In the **Name** field, type `text`. For the type, use the default type, which is **String**.
  - c. Click **Add Output**. In the **Name** field, type `results`.
  - d. For the variable type of the output, click **Select** and then select the **ANY** type from the list. By selecting **ANY**, you are setting the output to be of any type.
  - e. Select **Is List** so that service returns a list of items.




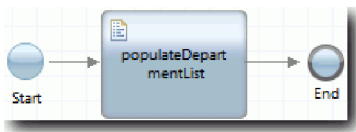
5. Create the service flow:
  - a. Click the **Diagram** tab and then, from the palette, add a server script to the process diagram and rename it to `populateDepartmentList`.
  - b. In the **Properties** tab, select **Implementation** and add the following code:

```

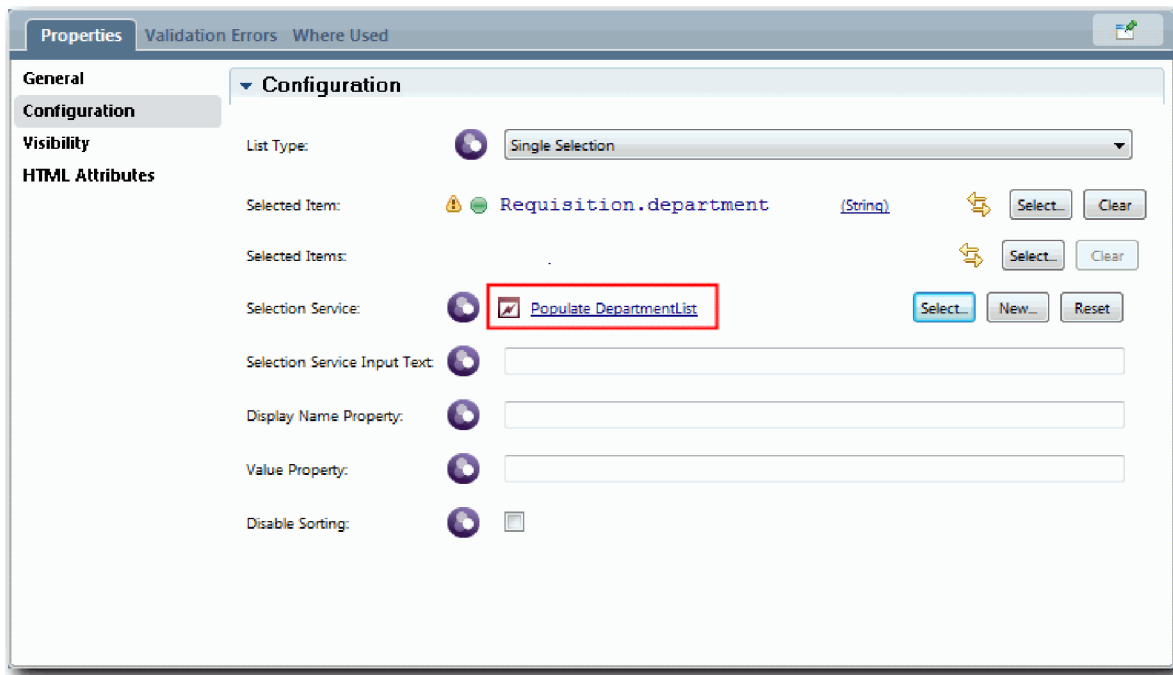
tw.local.results = new tw.object.listOf.String();
tw.local.results[0] = "Finance";
tw.local.results[1] = "Marketing";
tw.local.results[2] = "Product Development";
tw.local.results[3] = "Human Resources";
tw.local.results[4] = "Sales";
tw.local.results[5] = "Customer Service";
tw.local.results[6] = "Business Partner Service";
tw.local.results[7] = "Business Strategies";
tw.local.results.listAddSelected(0);

```

- c. In the palette, select the **Sequence Flow** tool icon . Make the following connections:
- **Start** event to the **populateDepartmentList** server script
  - **populateDepartmentList** server script to the **End** event



6. Save your work.
7. Configure the Department stock control so that it uses the Ajax service to get its contents.
  - a. Open the Requisition CV coach view and select the **Department** control.
  - b. In the Configuration properties, click **Select** for the selection service. Select the **Populate DepartmentList** Ajax service.



8. Create the other Ajax services with the information in the following table:

Service name	Script in the service	Script code
Populate EmploymentTypeList	populateStatusList	<pre> tw.local.results = new tw.object.listOf.String(); tw.local.results[0] = "Full-time"; tw.local.results[1] = "Part-time"; tw.local.results[2] = "Contract"; tw.local.results.listAddSelected(0); </pre>

Service name	Script in the service	Script code
Populate LocationList	populateLocationList	<pre>tw.local.results = new tw.object.listOf.String(); tw.local.results[0] = "Atlanta"; tw.local.results[1] = "Boston"; tw.local.results[2] = "Chicago"; tw.local.results[3] = "Cincinatti"; tw.local.results[4] = "Dallas"; tw.local.results[5] = "Denver"; tw.local.results[6] = "Des Moines"; tw.local.results.listAddSelected(2);</pre>
Populate PositiontypeList	populatePositionTypeList	<pre>tw.local.results = new tw.object.listOf.String(); tw.local.results[0] = "New"; tw.local.results[1] = "Existing"; tw.local.results.listAddSelected(0);</pre>

9. Configure the stock controls that use a service to get their content. The following table lists these stock controls and the Ajax service that you select for the Selection Service configuration option:

Coach view	Stock control	Service name
Position CV	Position type	Populate PositiontypeList
Requisition CV	Location	Populate LocationList
Requisition CV	Employment status	Populate EmploymentTypeList

## Lesson checkpoint

You created Ajax services and configured the select controls to use the services to get data.

In this lesson, you learned

- How to create an Ajax service
- How to configure a coach view to use that Ajax service

In the next lesson, you add validation to the Create Requisition Coach.

## Add validation to the Create Requisition Coach

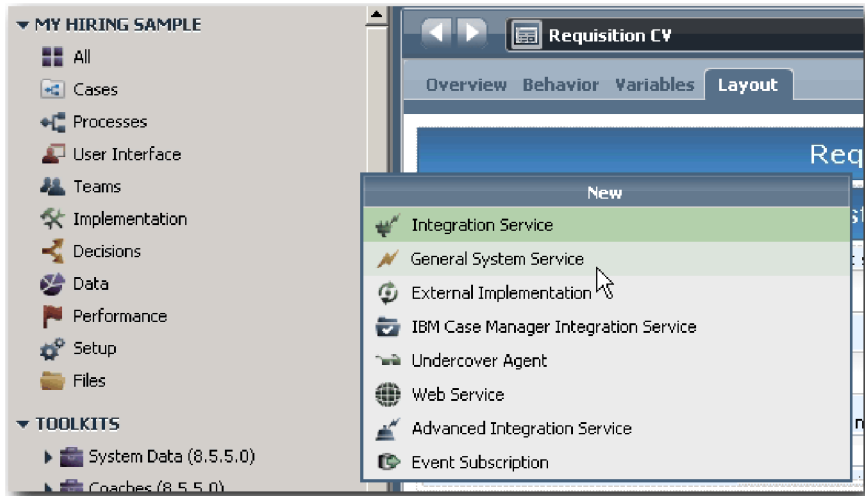
In this lesson, you create a validation service to ensure that the Create Requisition Coach contains valid data when the user clicks **Next**.

This lesson builds on the artifacts that are created in the Hiring tutorial: Model the process and Hiring tutorial: Implement the process modules. If you did not complete these modules, copy the Submit Requisition HS heritage human service from the Hiring Sample process application into the My Hiring Sample process application:

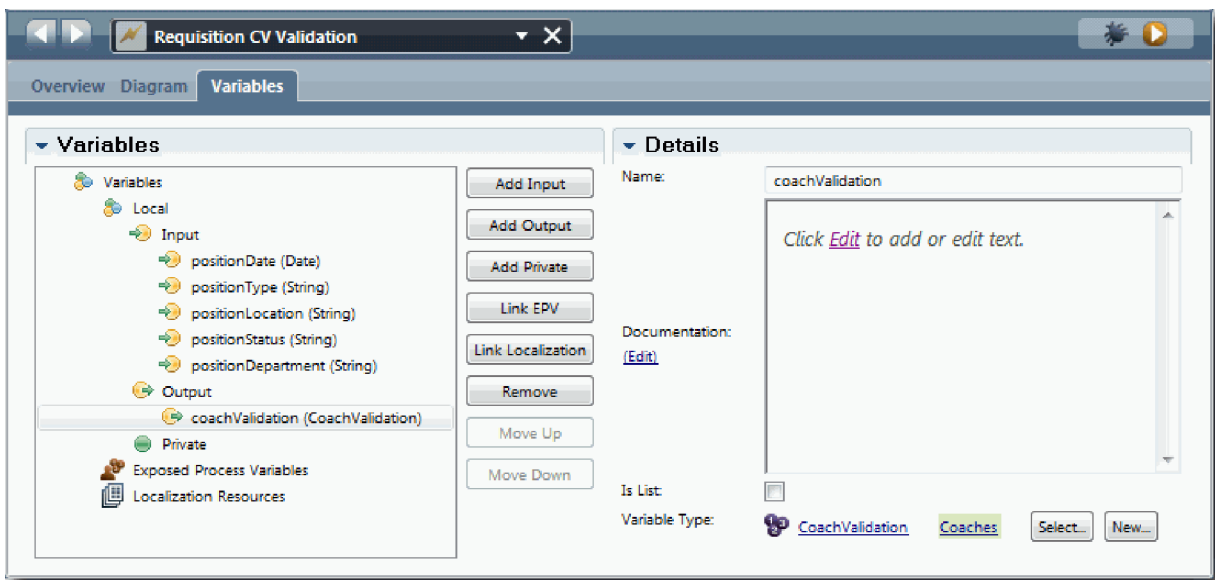
The Create Requisition Coach contains fields in which users might enter invalid data or where users must make a choice. The planned starting date field is an example of where users might enter invalid data because user must not enter past dates. The position type field is an example of where users must make a choice because the service flow depends on whether the user selects a new position or an existing position. You create a validation service to check the data in the coach. The service validates the data in several controls and prevents the flow from leaving the coach until the data in these controls is valid.

Add validation to the Create Requisition coach:

1. Make sure that the My Hiring Sample process application is open in Process Designer.
2. In the Designer library, click the plus sign next to **Implementation** and select **General System Service**. You can use any service to do the validation. In this case, the sample uses a general system service.



3. Type Requisition CV Validation and then click **Finish**. You can now edit the service that you created.
4. Set the input and output of the service. The inputs are the data that you want validated and the output is always a **CoachValidation** object.
  - a. Select the **Variables** tab.
  - b. Click **Add Input**.
  - c. In the **Name** field, type positionDate. For the type, use the type of the data object that is bound to the control that is being validated. In this case, the planned starting date control is bound to **Requisition.date**, which is a **Date** type.
  - d. In the same way, add the following input variables:
    - **positionType (String)**
    - **positionLocation (String)**
    - **positionStatus (String)**
    - **positionDepartment (String)**
  - e. Click **Add Output**.
  - f. In the **Name** field, type coachValidation.
  - g. Bind **coachValidation** to the **CoachValidation** type.



5. Create the service flow:

a. Click the **Diagram** tab and then, from the palette, add a server script to the process diagram and rename it to Set Data.

b. In the **Properties** tab, select **Implementation** and add the following code:

```
tw.local.coachValidation = new tw.object.CoachValidation();
tw.local.coachValidation.validationErrors = new tw.object.listOf.CoachValidationError();

function checkString(value) {
    return value != null && value == "";
}

function checkDate(value) {
    var date = new TWDate();
    return value == null || ( date.getTime() > value.getTime() );
}


if ( checkString(tw.local.positionType) ){
    tw.system.addCoachValidationError(tw.local.coachValidation, "tw.local.currentPosition.positionType", "You must select a position type");
}

if ( checkString(tw.local.positionLocation) ){
    tw.system.addCoachValidationError(tw.local.coachValidation, "tw.local.requisition.location", "You must select a location");
}

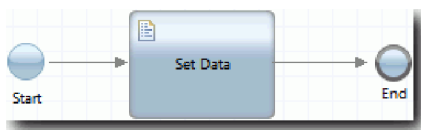
if ( checkDate(tw.local.positionDate) ){
    tw.system.addCoachValidationError(tw.local.coachValidation, "tw.local.requisition.date", "You must select a date");
}

if ( checkString(tw.local.positionStatus) ){
    tw.system.addCoachValidationError(tw.local.coachValidation, "tw.local.requisition.status", "You must select an employment status");
}

if ( checkString(tw.local.positionDepartment) ){
    tw.system.addCoachValidationError(tw.local.coachValidation, "tw.local.requisition.department", "You must select a department");
}
```

c. In the palette, select the **Sequence Flow** tool icon  and make the following connections:

- The **Start** event to the **Set Data** server script
- The **Set Data** server script to the **End** event

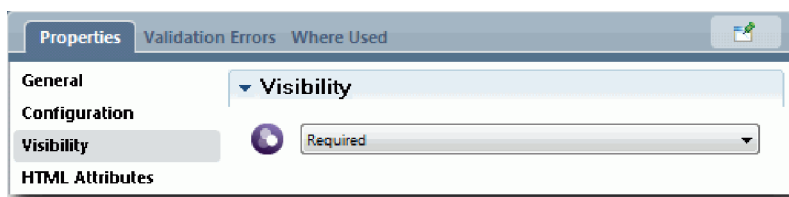


6. Add the required decorators to the controls that require user input:

a. Open the **Requisition CV** coach view.

b. Select the employment status control and open its **Visibility** properties.

c. Set the visibility to Required.



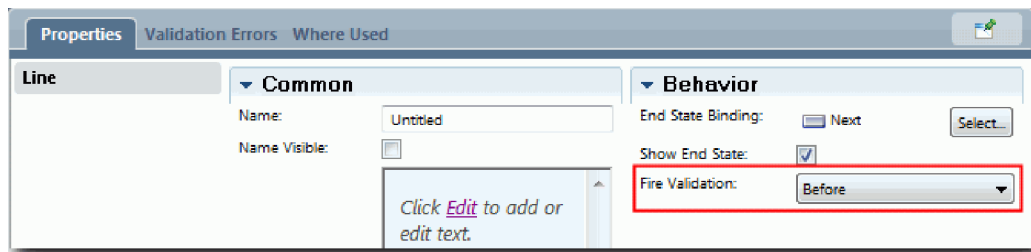
d. In the same way, set the visibility property of the following controls to Required:

- Department

- Planned starting date
- Location

**Important:** This step adds only the decorators. It does not add validation support to the field. The validation service validates the data.

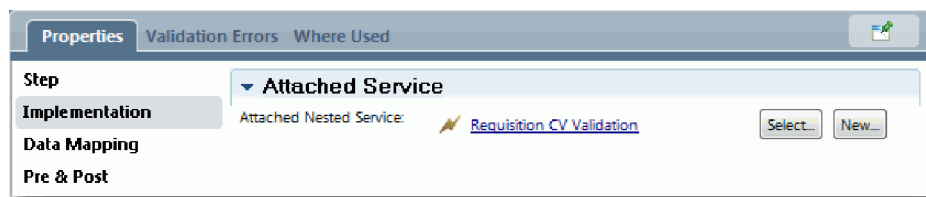
- e. In the **Position CV** coach view, set the visibility of the position type control to Required.
7. Insert the validation into the **Submit Requisition HS** heritage human service flow:
  - a. Open the diagram for the Submit Requisition HS heritage human service.
  - b. Select the line that flows out of the **Create Requisition Coach** to the position type decision. The line has a **Next** label.
  - c. In the Line properties, set **Fire Validation** to Before.




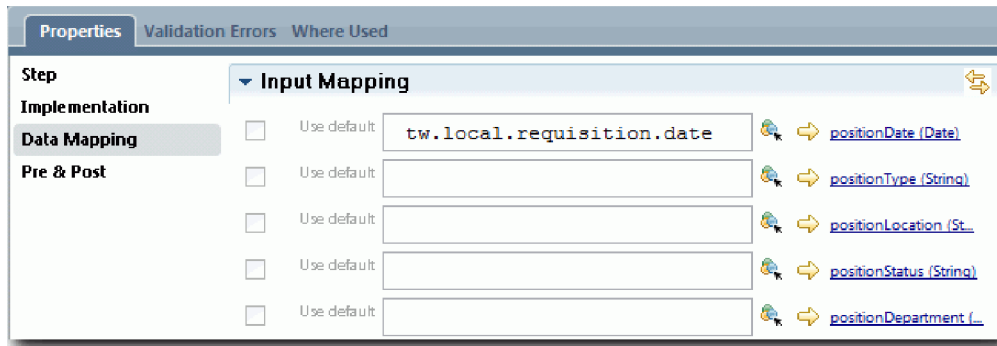
The anchor point of the line now has a validation check mark and the Create Requisition coach has an anchor point that you can use to connect the coach to the validation service.



- d. From the palette, add a nested service to the Submit Requisition HS diagram. Rename the service to Validate coach data.
- e. In the Implementation properties of the nested service, set the attached nested service to Requisition CV Validation General System service.

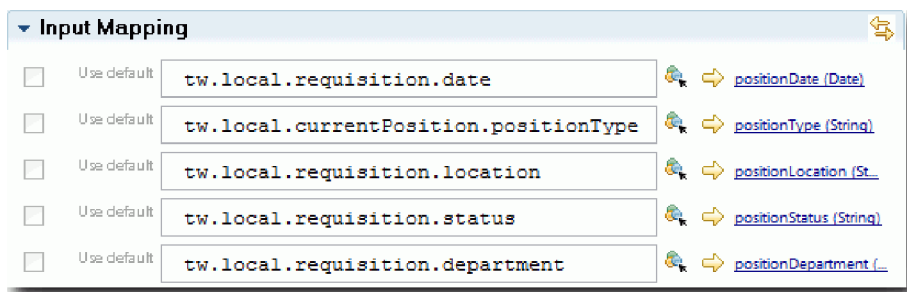



- f. Open the Data Mapping properties.
- g. For the **positionDate** input mapping, click its assign a variable icon  and then select requisition.date.

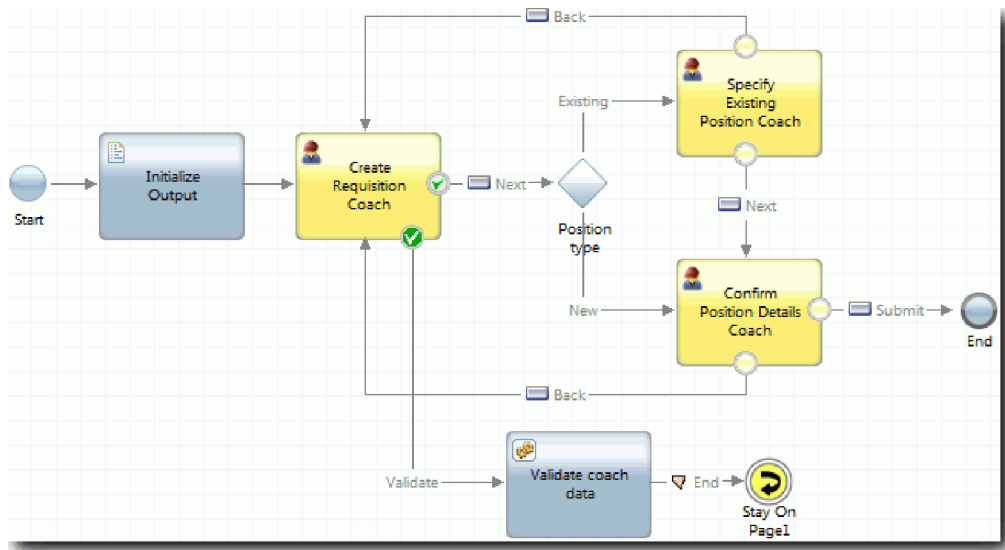


h. Map the other input variables by using the information in the following table:

Variable in the heritage human service	Variable in the validation service
tw.local.currentPosition.positionType	positionType
tw.local.requisition.location	positionLocation
tw.local.requisition.status	positionStatus
tw.local.requisition.department	positionDepartment



- i. For the **coachValidation** output mapping, type `tw.system.coachValidation`. The **tw.system.coachValidation** variable is a system variable that supports validating coaches.
- j. From the palette, add a **Stay on Page** event to the **Submit Requisition HS** diagram.
- k. Select the **Sequence Flow** tool icon . Make the following connections:
  - The validation anchor point of the **Create Requisition Coach** to the **Validate coach data** service
  - The **Validate coach data** service to the **Stay on page** node.



## Lesson checkpoint

You created the Requisition CV Validation service and connected the Create Requisition coach to it.

In this lesson, you learned

- How to create a validation service
- How to indicate to users that they must provide data in a control
- How to connect a coach to the validation service

In the next lesson, you conduct Playback Three.

## Conduct Playback Three

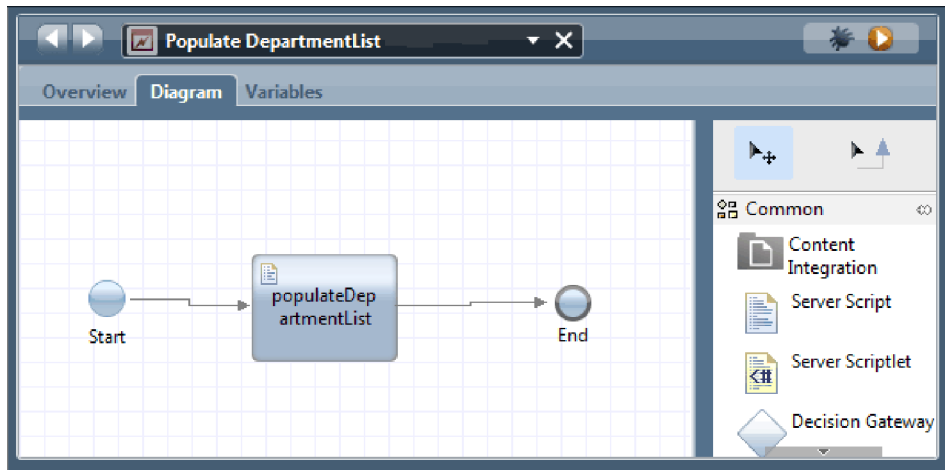
In this lesson, you conduct Playback Three by using the debugger to test the Ajax services and testing the validation script. Then you take a snapshot of the process.

Typically, you test services in one of two modes:

- Directly on IBM Process Server by running the services in the debug mode to ensure that they run as expected because not all services have a corresponding user interface component.
- Where the service is available to a web browser client, you call the URL directly by using input data. Because Ajax services are called in a coach from a web browser, you must use a web browser-compatible HTTP sniffer to troubleshoot client/server HTTP issues. For example, for Mozilla Firefox use the Firebug add-on. For Internet Explorer 8 and later, use the developer tools that you start by pressing the **F12** key.

Test Ajax services in the debugger:

1. In Process Designer, open the **Populate DepartmentList** Ajax service.



2. Click the **Debug** icon.



3. Switch to Process Designer.

4. At the Switch View window, click **Yes** to switch to the Inspector view.

5. Select the **Populate DepartmentList** step. The Debug window of the Inspector opens. Notice that the token, which indicates the active step is at the populateDepartmentList server script.

Service	Owner	BPD Instance ...	BPD L...
Populate DepartmentList	tw_admin		null

6. Select the Populate DepartmentList step.

7. Keep the web browser-based debugger and the Inspector side by side on your screen and click **Step** at the top of the web browser to run the populateDepartmentList script block in the PopulateDepartmentList Ajax service. In the web browser, you can see that the previously empty results area is now populated.

bpmpulse.torolab.ibm.com:9080/teamworks/debug.lsw

IBM Business Process Manager Service Debug

Service Populate DepartmentList  
 Item Type Exit Point  
 Item Name End

Namespace: local		
Name	Type	Value
results	String[]	<pre>&lt;object type="String[]"&gt;   &lt;arrayElement size="8"&gt;     &lt;item type="String"&gt;Finance&lt;/item&gt;     &lt;item type="String"&gt;Marketing&lt;/item&gt;     &lt;item type="String"&gt;Product Development&lt;/item&gt;     &lt;item type="String"&gt;Human Resources&lt;/item&gt;     &lt;item type="String"&gt;Sales&lt;/item&gt;     &lt;item type="String"&gt;Customer Service&lt;/item&gt;     &lt;item type="String"&gt;Business Partner Service&lt;/item&gt;     &lt;item type="String"&gt;Business Strategies&lt;/item&gt;   &lt;/arrayElement&gt;   &lt;metadata&gt;     &lt;property name="objectID" type="String"&gt;709b638d-5ac2-42c1-ac42-56fbb8885c52&lt;/property&gt;     &lt;property name="dirty" type="Boolean"&gt;true&lt;/property&gt;     &lt;property name="shared" type="Boolean"&gt;&gt;false&lt;/property&gt;     &lt;property name="key" /&gt;     &lt;property name="version" /&gt;     &lt;property name="rootVersionContextID" /&gt;     &lt;property name="className" /&gt;   &lt;/metadata&gt; &lt;/object&gt;</pre>
text		

In the Inspector, the token is now at the End event.

Process Instances Services in Debug

Service	Owner	BPD Instance ...	BPD I...
Populate DepartmentList	tw_admin		null

Populate DepartmentList

Overview Diagram Variables

```

graph LR
  Start((Start)) --> populateDepartmentList[populateDepartmentList]
  populateDepartmentList --> End((End))
  style End stroke:#f00,stroke-width:2px
  
```

Execution State Breakpoints


- Service Instance
  - Execution Stack
    - Exit Point (End)[Token]

Variables Execution Evaluator

1

- In the web browser, click **Step**. The service ends.
- Similarly, test the other Ajax services:

- Populate LocationList
  - Populate EmploymenttypeList
  - Populate PositionTypeList
10. Run the **Submit Requisition HS** heritage human service.
  11. Click **Next** without entering any information. The required fields are highlighted.
  12. Hover over the warning icon next to one of the highlighted fields. An error message displays, indicating that you must select an employment type.

13. Take a snapshot of the process application:
  - a. In Process Designer, click the  icon in the main toolbar.
  - b. Type Playback Three as the snapshot name and click **OK**.
  - c. For the description, type This is a snapshot of the process application up to Playback Three.
14. Rerun Playback One. This time, the coaches are displayed for the Submit requisition and Approval activities. See Hiring Sample tutorial: Conduct Playback One.

## Lesson checkpoint

You conducted Playback Three by checking that the Ajax services run correctly and testing the validation script.

In this lesson, you learned

- How to test Ajax services by using the web debugger
- How to test the validation script

In the next lesson, you conduct the Final Playback.

## Conduct the final playback

In this lesson, you conduct the final playback to follow the new job requisition path from beginning to end, and take a final snapshot.

Ensure that you created teams for the hiring manager and the general manager and added the group `tw_allusers` as members of both teams in Hiring tutorial: Model teams.

**Note:** All users in the user registry are added to the `tw_allusers` group by default.

The instructions in this lesson are written for two separate user IDs, one for the hiring manager, and one for the general manager (GM). You can either use the same user ID for both the hiring manager or the GM, or you can enter in separate user IDs.

In this playback, you run the following scenarios:

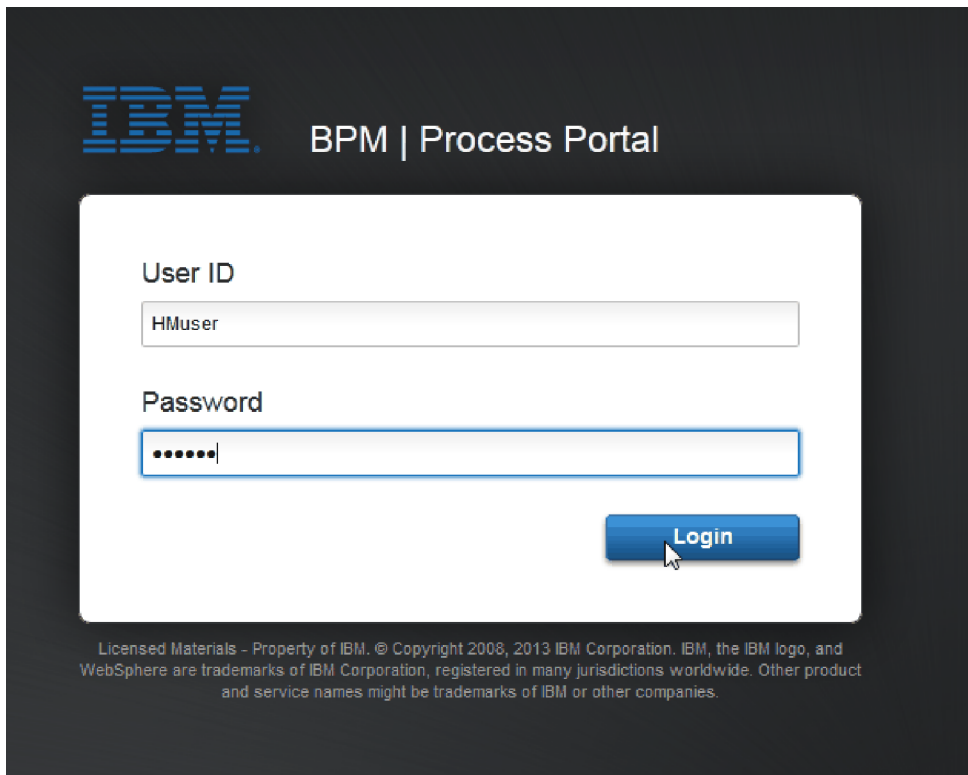
- The hiring manager submits a requisition for a new position.
- The GM does not approve the position within the required time.
- An escalation notice is sent.
- The GM approves the position.

Run the playback:

1. Use a web browser to access IBM Process Portal. The web address has the following format:  
`http://[host_name]:[port]/portal`

Provide the following details:

- The name of the host on which IBM Process Center or IBM Process Server is installed
  - The port that was designated for the server during IBM Business Process Manager installation. The default port is 9443.
2. Log in to Process Portal as the hiring manager.



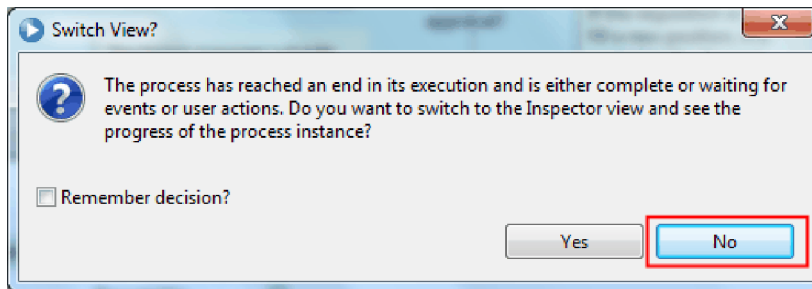
3. Switch to Process Designer.
4. Make sure that the Standard HR Open New Position process is open on the Diagram page.
5. To test the event, accelerate the triggering of the timer on the Approve or reject requisition activity. When you created the timer intermediate event, you set it to trigger one hour after the due date. The **Due In** property of activity sets the due date, which has a default value of 1 hour. For testing purposes, these times are too long to wait.
  - a. In the process diagram, click the **Approve or reject job requisition** activity and switch to the Properties Implementation page.

- b. Under Priority Settings, change the value of **Due In** to one minute.
- c. Click the timer intermediate event on the **Approve or reject job requisition** activity and switch to the Properties Implementation page.
- d. Under Timer Properties, change the value of **Before or After Difference** to one minute.
- e. Save your changes.

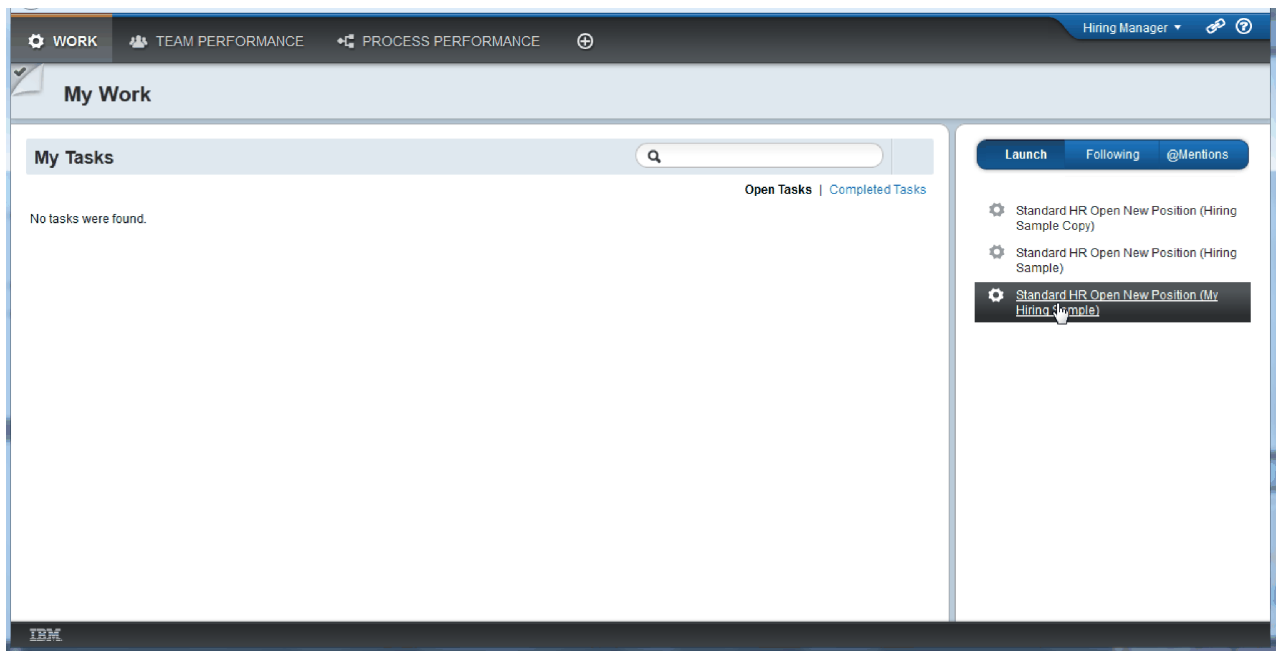
**Note:** Because the timer is set to be repeatable, an event is created every minute until the Approve or reject job requisition activity is completed.

**Remember:** When you have completed your testing, set the Due In property to 1 day so that the escalation notice task occurs daily instead of every minute.

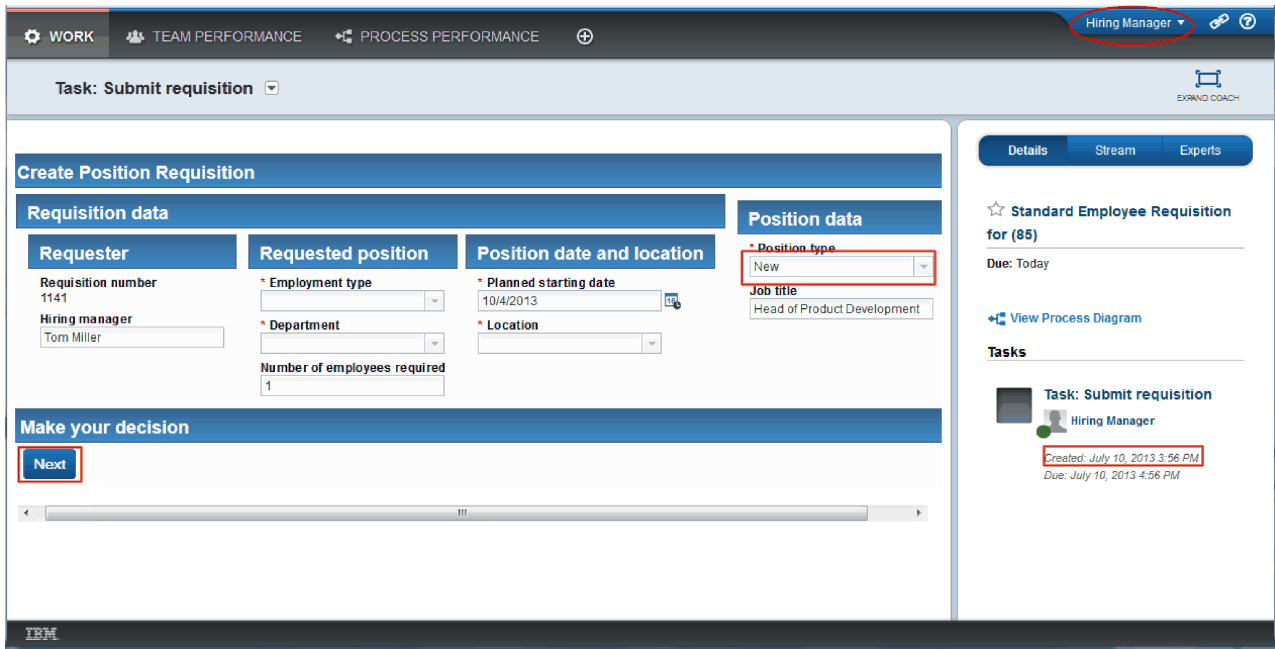
6. To run an instance of the process, click the **Run process** icon.
7. In the Switch View window, click **No** to bypass the Inspector.



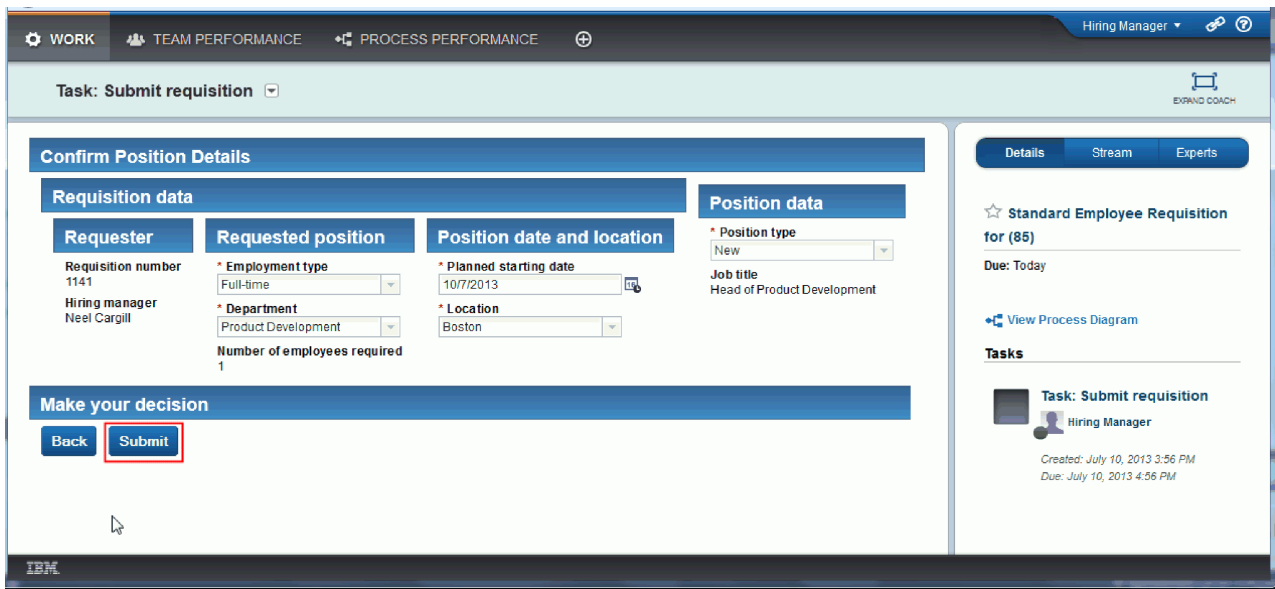
8. Switch to the My work page in Process Portal.
9. On the right, click the process instance that you just started.



Process Portal displays the Create Position Requisition coach. Notice that you are in the Hiring Manager mode.



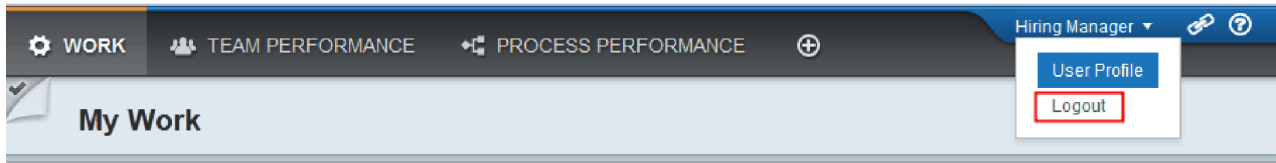
10. Complete the fields, making sure to select **New** as the position type. Click **Next**.
11. If the required fields are highlighted, you do not have valid data in them. Highlighted fields means that your validation script is working. Complete all the fields, and click **Next**.
12. The Confirm Position Details coach is displayed. Review the details and click **Submit**.



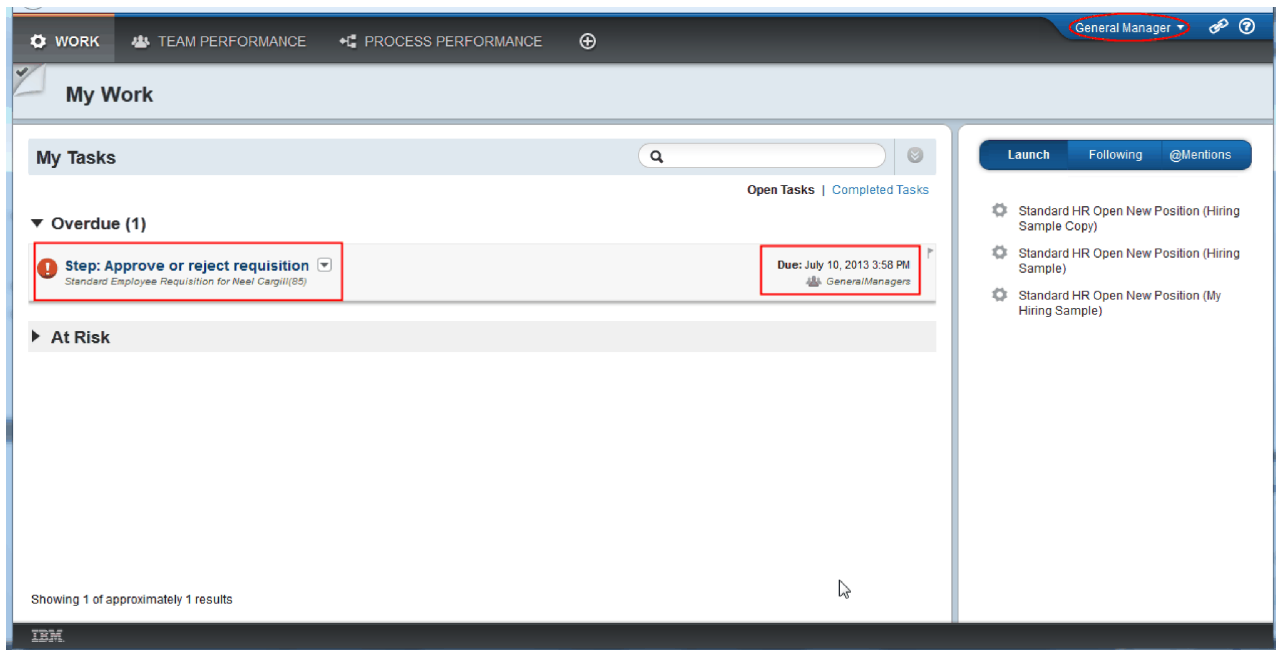
13. Switch to the General Manager mode:

**Tip:** To see the tasks for both the hiring manager and the GM in the My work page, you can use one user name to complete all the tasks in the final playback.

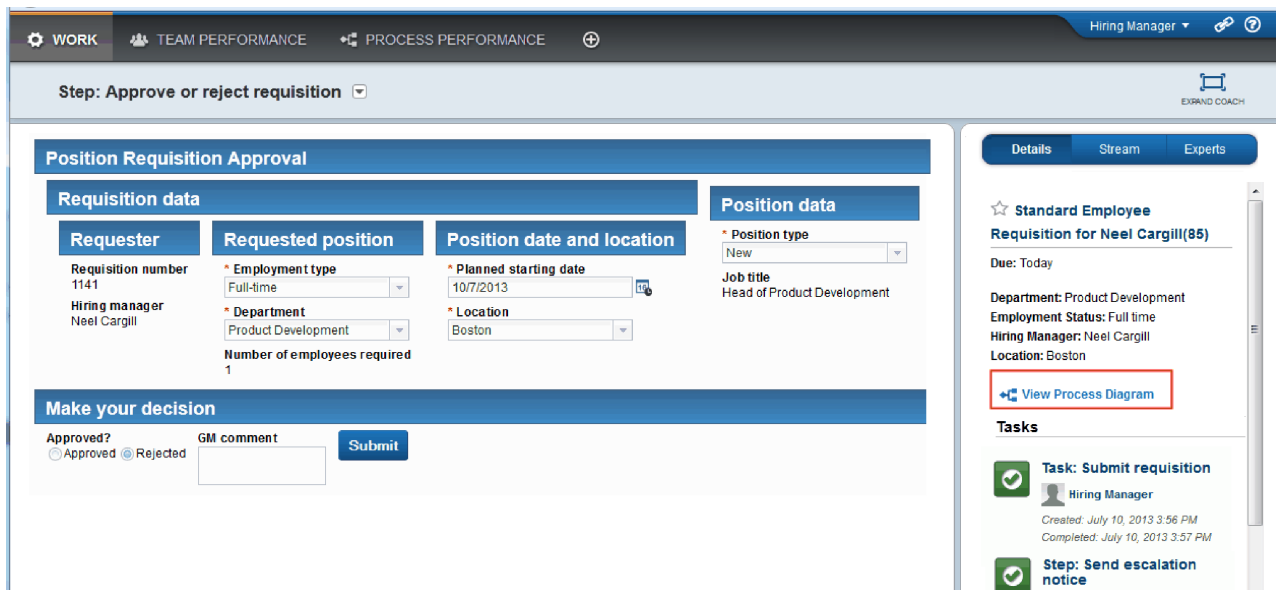
- a. Log out as the hiring manager.



- b. Log in as the GM.
  - c. Switch to the My work page.
14. Because the timer is set for 1 minute, the task is displayed almost immediately in the At Risk or Overdue list.

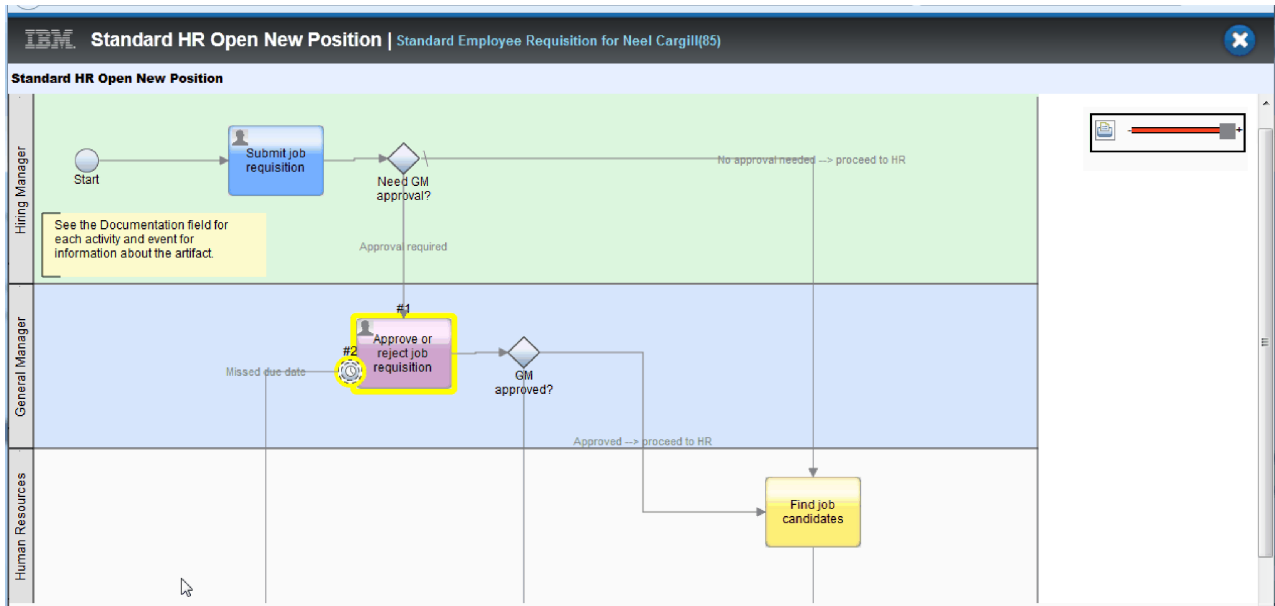


15. Acting as the GM, click the **Step: Approve or reject requisition** task to open it.



The GM approvals coach is displayed. To the right of the coach is a summary of the requisition.

16. Click **View Process Diagram**. The process diagram opens showing the highlighted activity:



17. Close the process diagram.
18. In the GM approval coach, scroll down the task list. You can see that an escalation notice step runs every minute past the due date for the Submit requisition activity. The repeated escalations occur because you set the timer as repeatable.

19. In the GM approval coach, keep the default selection, **Approve**, and click **Submit** to complete the task. The task is no longer displayed in the **My tasks** list.
20. In Process Designer, create a snapshot of your completed process application.

## **Lesson checkpoint**

ou conducted the final playback by using Process Portal to follow one instance of the process from beginning to end. You also took a final snapshot of the process application.

In this lesson, you learned

- How to use Process Portal
- How to test a timer escalation event

You are now at the end of the Hiring Sample tutorial.



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Version 8 Release 5**

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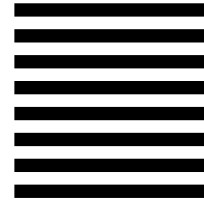
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