Windchill Workflow Tutorial

Release 7.0

November 2003

Introduction

This tutorial is designed to demonstrate the creation of a workflow process definition, the initiation of a process instances and the participation in a workflow process.

Specific workflow topics are also addressed in a collection of abbreviated tutorials.

Follow along and perform the example procedures demonstrated in this tutorial for a hands-on introduction to the workflow process features of Windchill.

References

You can find additional information about Windchill workflow functionality in the following Windchill documentation:

- *Windchill Business Administrator's Guide*
- *Windchill Application Developer's Guide*
- Workflow online help

If you have questions that are not addressed by this tutorial or the documentation listed above, contact PTC Technical Support. See the *PTC Customer Service Guide* for ways to contact the support in your area.

Table of Contents

Table of Contents (Continued)

Workflow Development

Workflow development involves the following activities:

☆ Defining and saving a workflow template

A workflow template (sometimes referred to as a *process template* or a *workflow process template*) is a reusable definition from which you can create running process instances.

❷ Enabling a workflow template

Before a workflow template can be execute and used, you must enable it.

❸ Initiating the process

You start a workflow process by opening the Workflow Administrator, selecting a template and clicking **Initiate**.

❹ Participating in the process

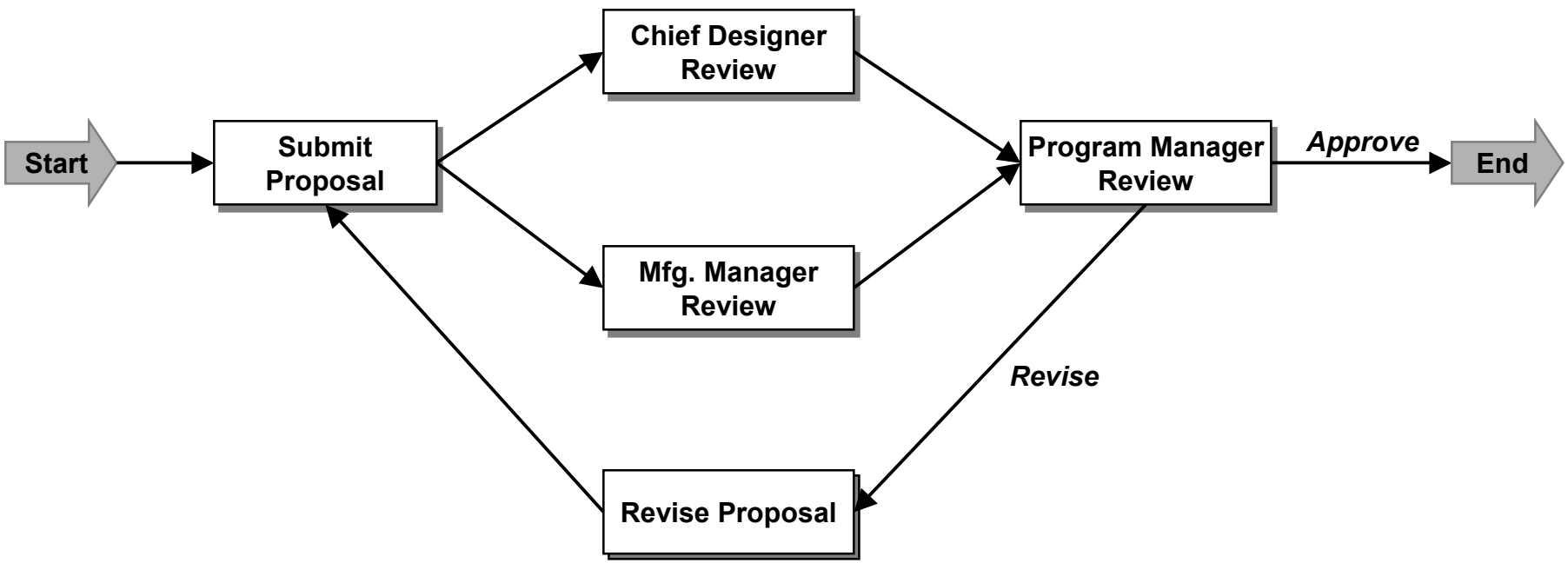
You participate in a process by opening the work items in your worklist and by interacting with the task forms associated with the work items.

❺ Monitoring and managing the running process

You can monitor a running process to see the states of all of the activities, and you can manage the process to skip or terminate an activity or process.

Tutorial Sample Review Process

This is the sample process that you will define during this tutorial. You may want to refer to it frequently during the rest of the tutorial.



Broad Workflow Process Procedures

The sample process you will define is composed of the following procedure:

1. Accessing the Workflow Process Editor
2. Defining the Workflow Template Process Properties
3. Defining the Process Activities
4. Defining the Process Connectors
5. Defining Process Links
6. Defining Activity Properties
7. Mapping Activity Response Events to Activity Links
8. Saving Your Process Template
9. Checking in Your Process Template
10. Executing Your Workflow
11. Initiating Your Template
12. Checking Workflow Progress
13. Completing Task Response Form
14. Working with Tasks
15. Monitoring Workflow Progress
16. Completing your Workflow Instance
17. Viewing Your Completed Process

Section 1 — Building a Workflow Template

Accessing the Workflow Process Editor

You design workflow process templates on the Workflow Process Editor. The next few pages show you how to access it, starting from the Workflow Administrator.

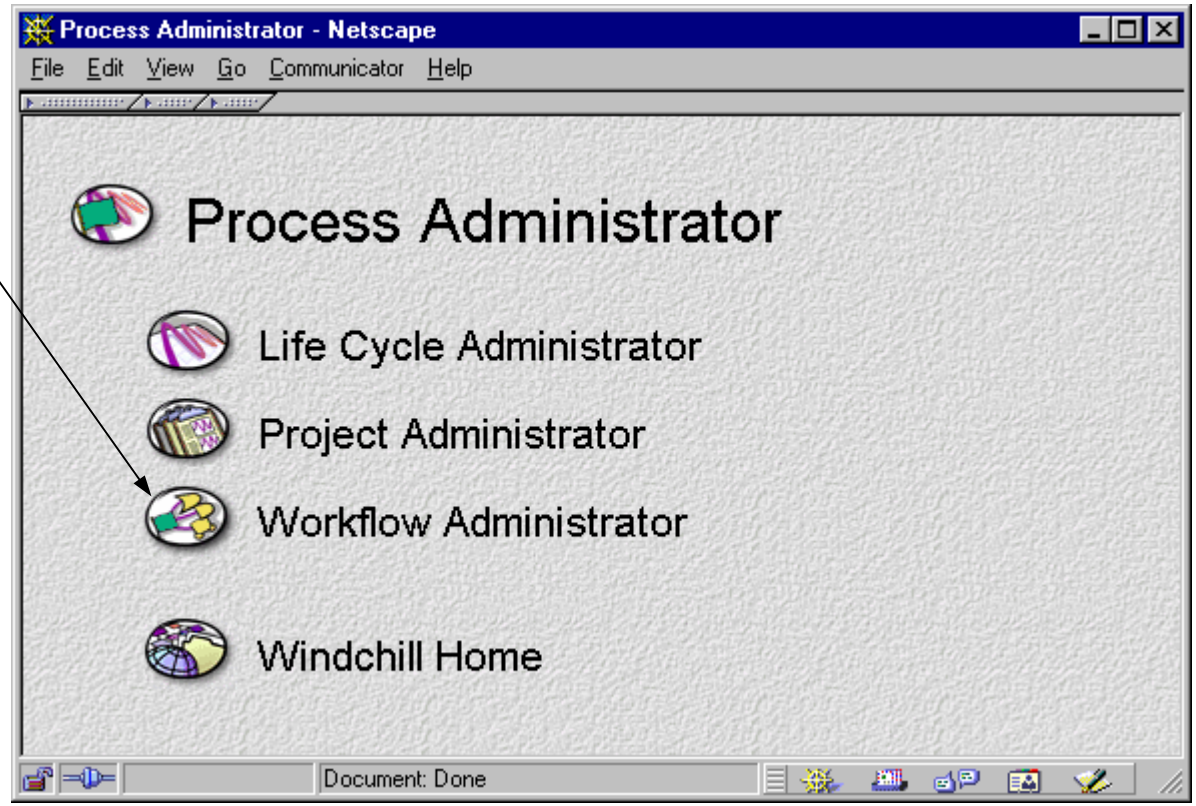
Step 1

On the Windchill Administrator page, click **Process Administrator**.

Accessing the Workflow Process Editor (continued)

Step 2

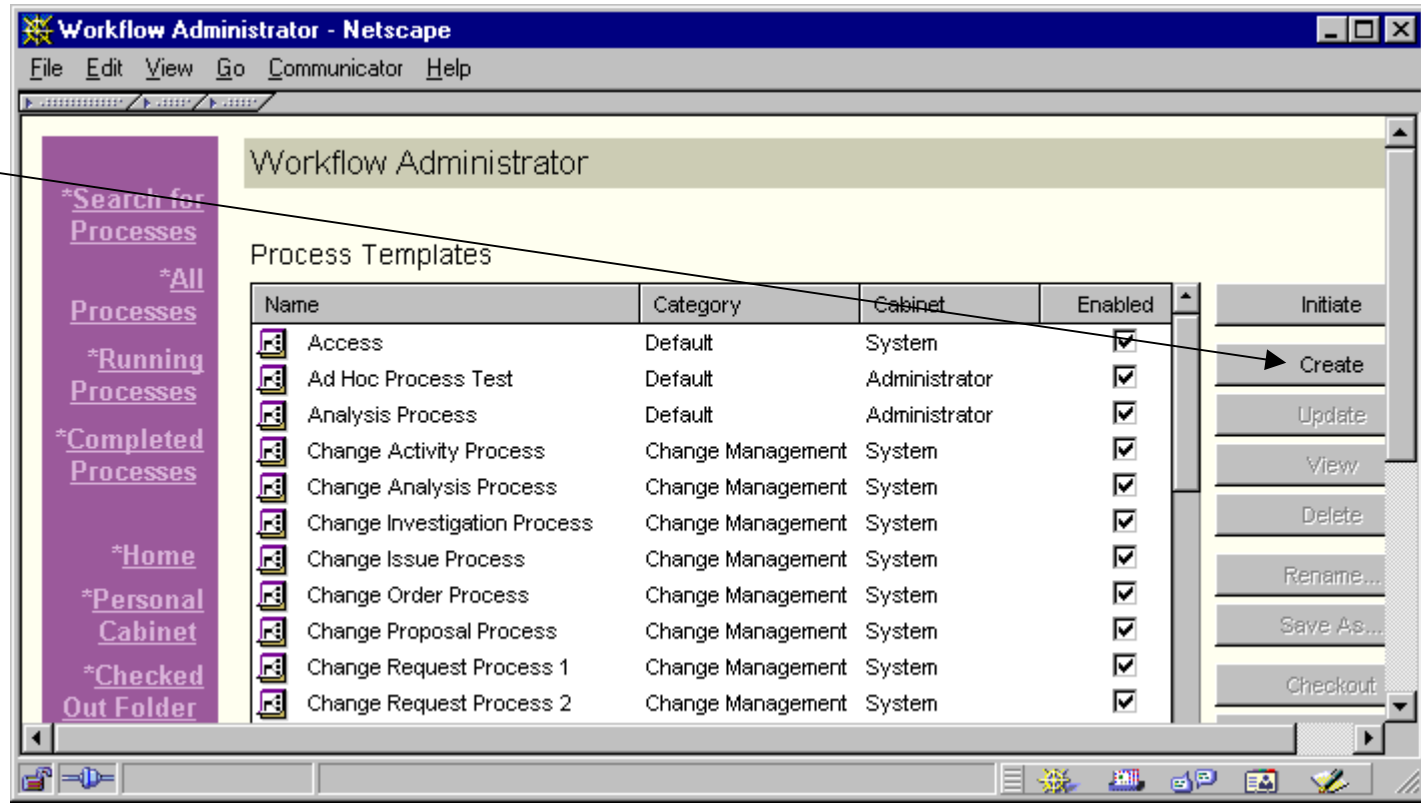
On the Process Administrator page, click **Workflow Administrator**.



Accessing the Workflow Process Editor (continued)

Step 3

Click **Create** to open the Workflow Process Editor to begin creating a process template.



Section 1 — Building a Workflow Template

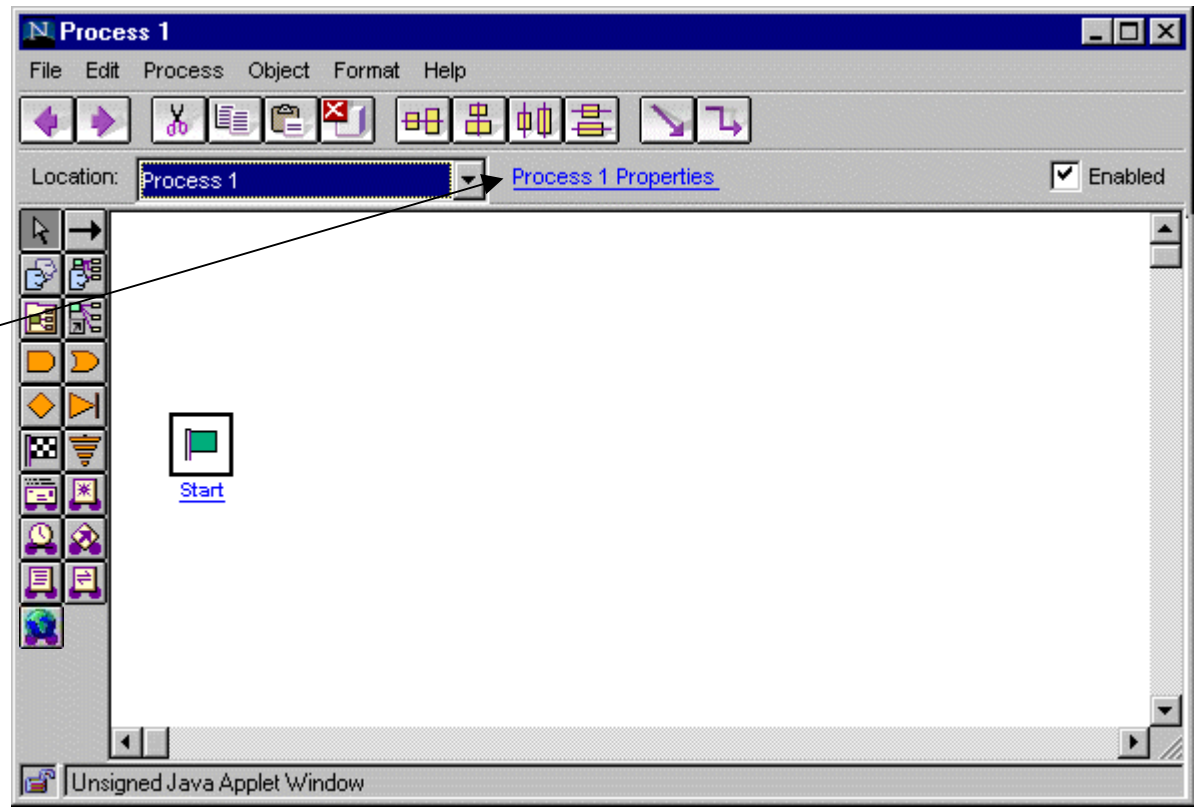
Defining Workflow Template Process Properties

Now that you have accessed the Workflow Process Editor, you can begin defining the properties of your template.

Note that the template opens with the Start flag displayed. All processes must have a Start flag.

Step 1

Open the process properties dialog box by clicking **Process 1 Properties**.

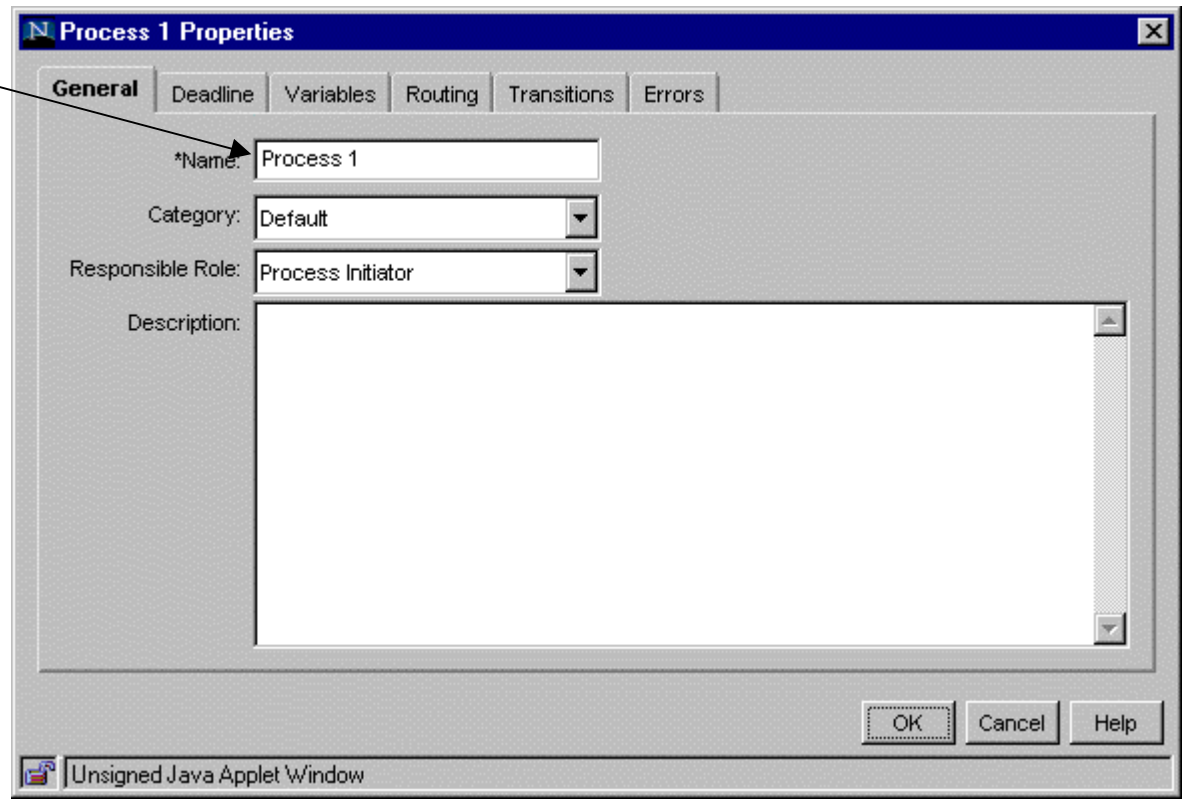


Defining Workflow Template Process Properties (continued)

Note that the **Name** text box displays **Process 1** by default.

Step 2

For this tutorial, change the name to `My Test`. You can give a process any name.



Defining Workflow Template Process Properties (continued)

Note that the **Category** text box displays **Default,** and the **Responsible Role** box displays **Process Initiator.** Each is the default value.

The purpose of the category is to group process templates.

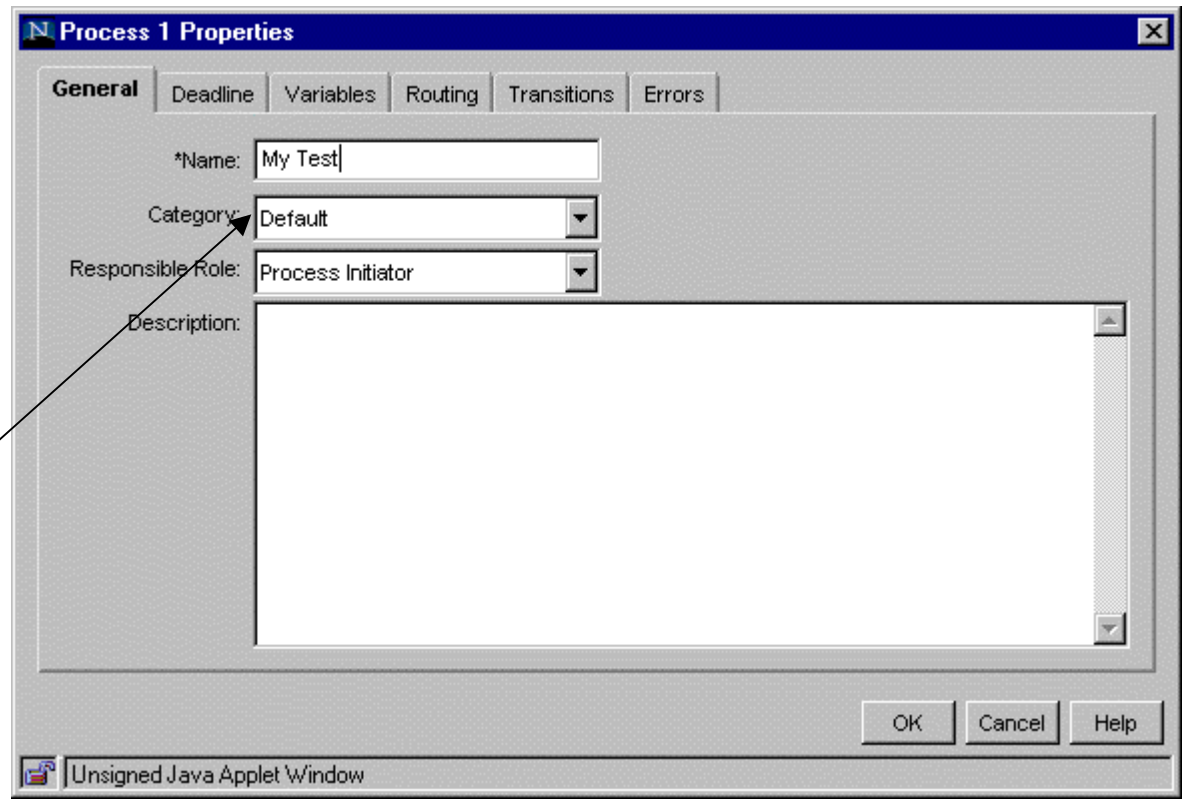
The responsible role determines who will be notified, based on his or her role, if activities are overdue and/or process errors occur.

Step 3

Select any category from the drop-down list.

Step 4

Do not change **Process Initiator** as the responsible role.



Defining Workflow Template Process Properties (continued)

You can enter information that will be displayed for reviewing of the process templates in the **Description** text box. You may want to include a URL to reference more detailed documentation.

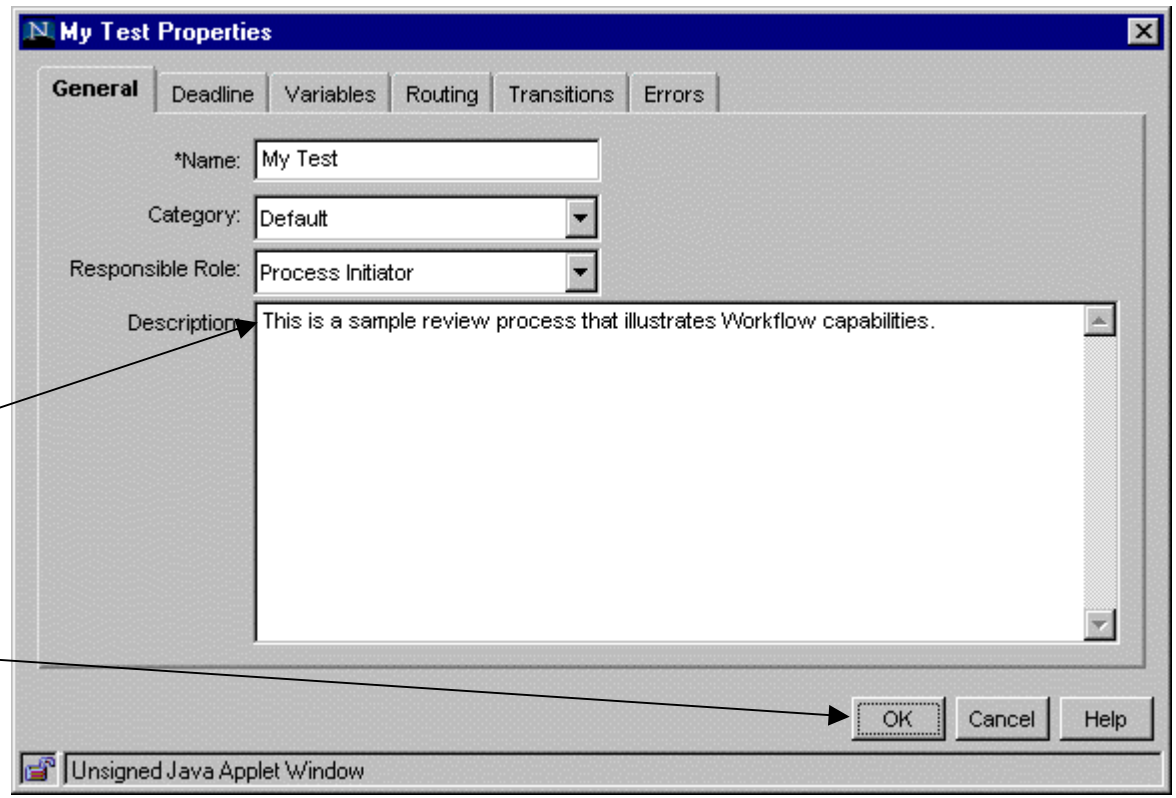
Step 5

For this tutorial, type the following text:

```
This is a sample review
process that illustrates
Workflow capabilities.
```

Step 6

Click **OK** to close the Properties dialog box.

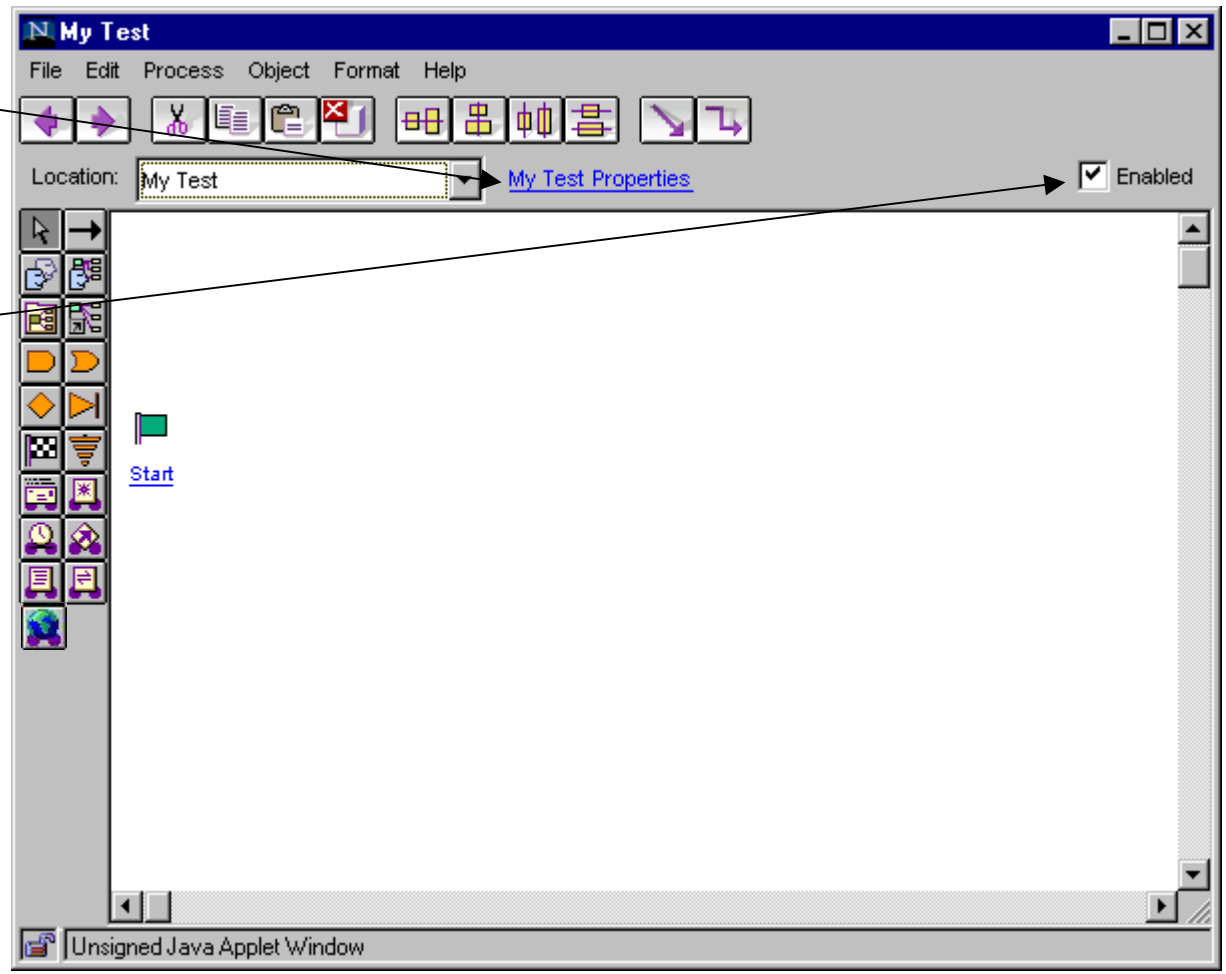


Defining Workflow Template Process Properties (continued)

Notice that the Properties Link now says **My Test Properties**.

Also notice that the **Enabled** check box is selected by default.

(The **Enabled** check box must be selected for the template process to be executed.)



Defining Process Activities

Now you are ready to define the activities for the steps in the review process structure.

To begin, you must add activity nodes (or *connectors*) to the Workflow Process Editor.

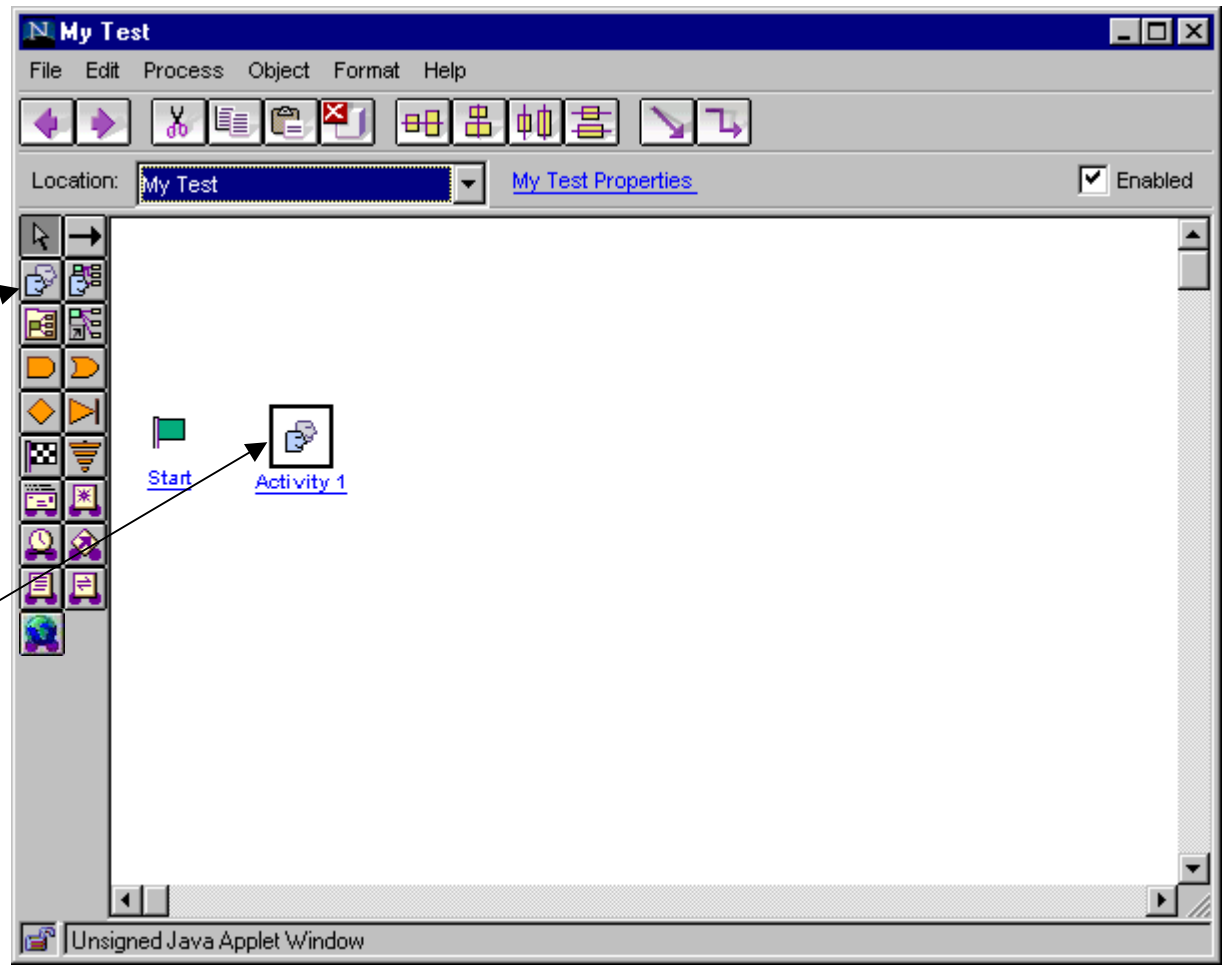
Step 1

To create an activity, select the **Activity** icon.

Step 2

Click anywhere in the white Workflow Process Editor work area to place the activity.

An activity node appears in the process editor work area. Note the box surrounding it, which indicates that it is selected.



Defining Process Activities (continued)

Step 3

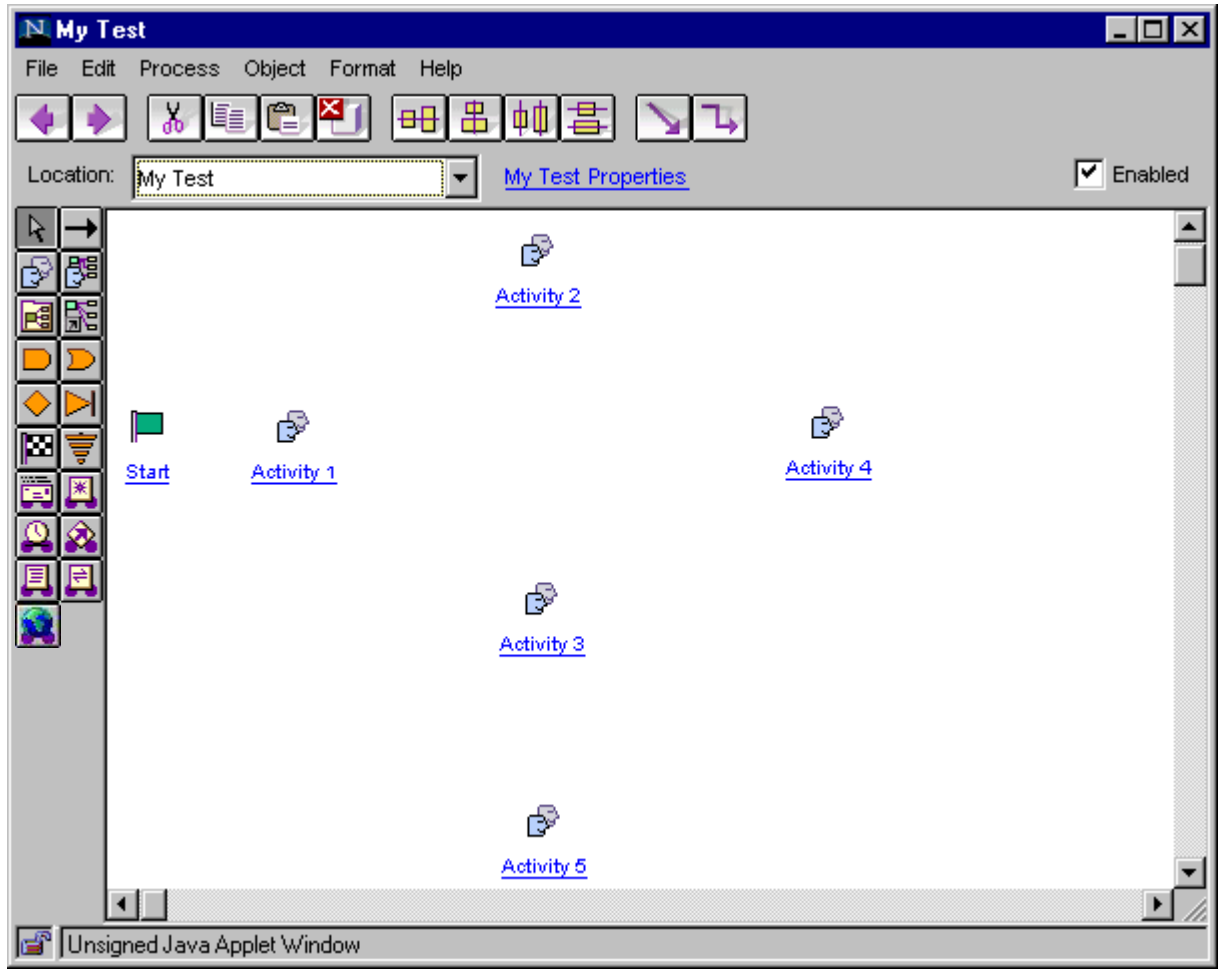
Repeat Steps 1 and 2 until you have five activities for this sample review process.

The activities are automatically numbered as you create them.

Step 4

Click and drag activities to arrange them, so they are similar to the example on the right.

Note: You must click the graphical node to move it, not the link below it.



Defining Process Connectors

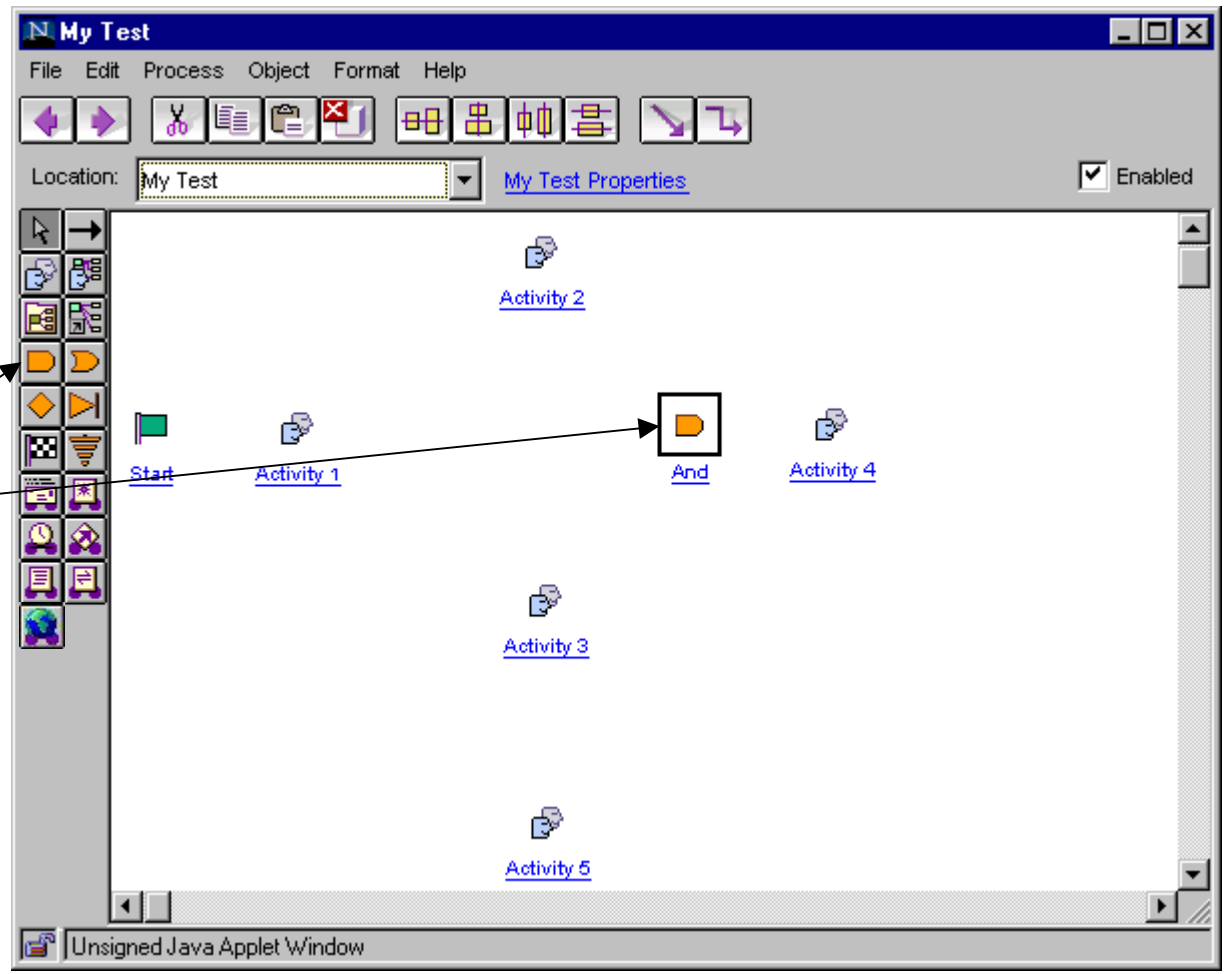
Use an *And* connector to require two or more parallel activities to finish before the next activity can start.

(See the *Windchill Administrator's Guide* for a more detailed discussion of connectors.)

Activities 2 and 3 are parallel review activities, which require an And connector.

Step 1

Place the *And* connector on the Workflow Process Editor work area (using the same procedure that you used in Steps 1 and 2), so it looks similar to the example.



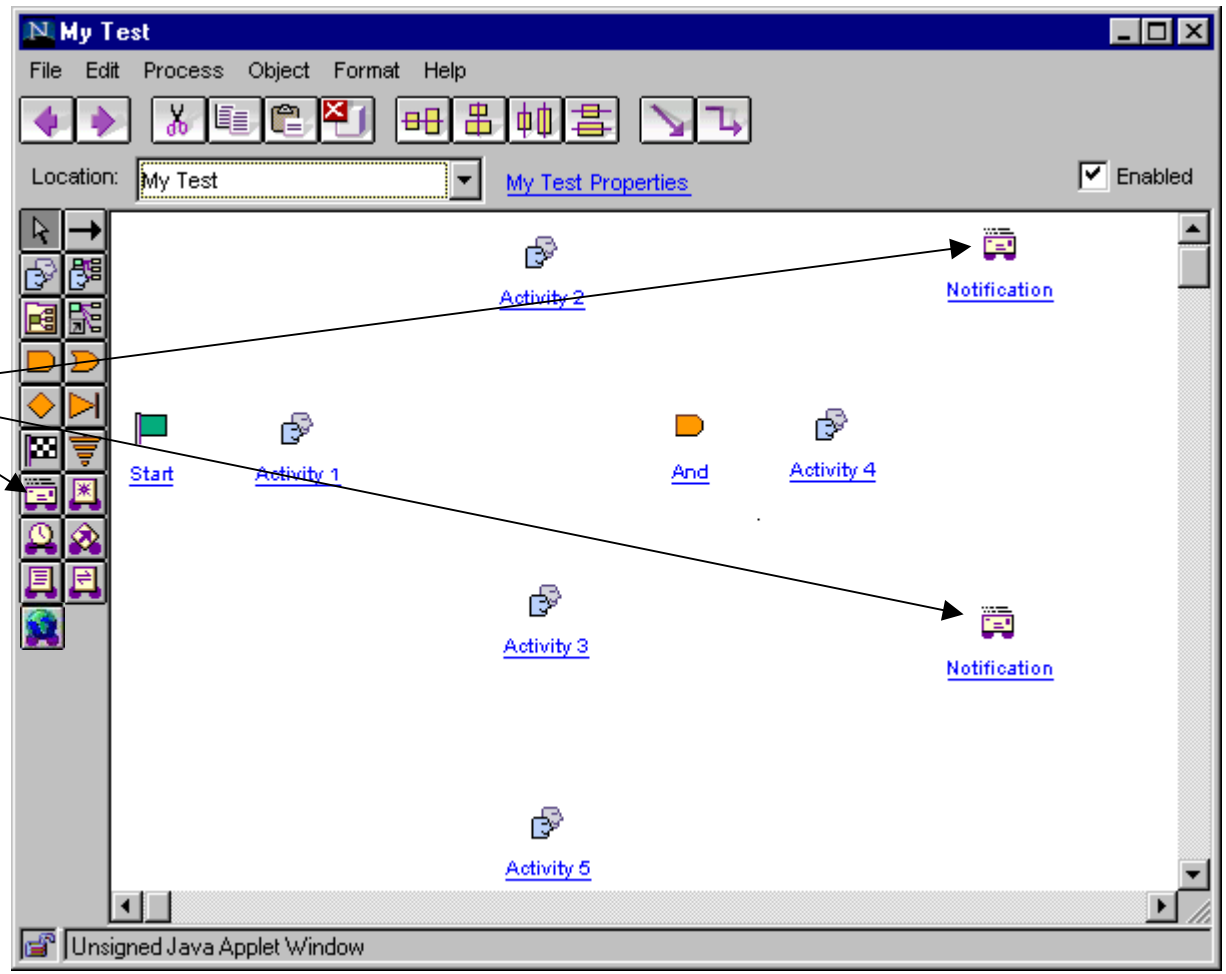
Defining Process Connectors (continued)

Activities that automatically performs actions are called *robots.* A Notification robot automatically send e-mails.

In this example, a Notification robot is used to automatically send an e-mail indicating the status of the proposal review.

Step 2

Place two Notification robots, on the Workflow Process Editor work area, as in the example.



Defining Process Connectors (continued)

Use an *Or* connector where completion of *any one* of two or more merging activities satisfies requirements.

The two Notification robots are merging activities, which require an *Or* connector. When one of the Notification robots fire, the Test Properties process is completed.

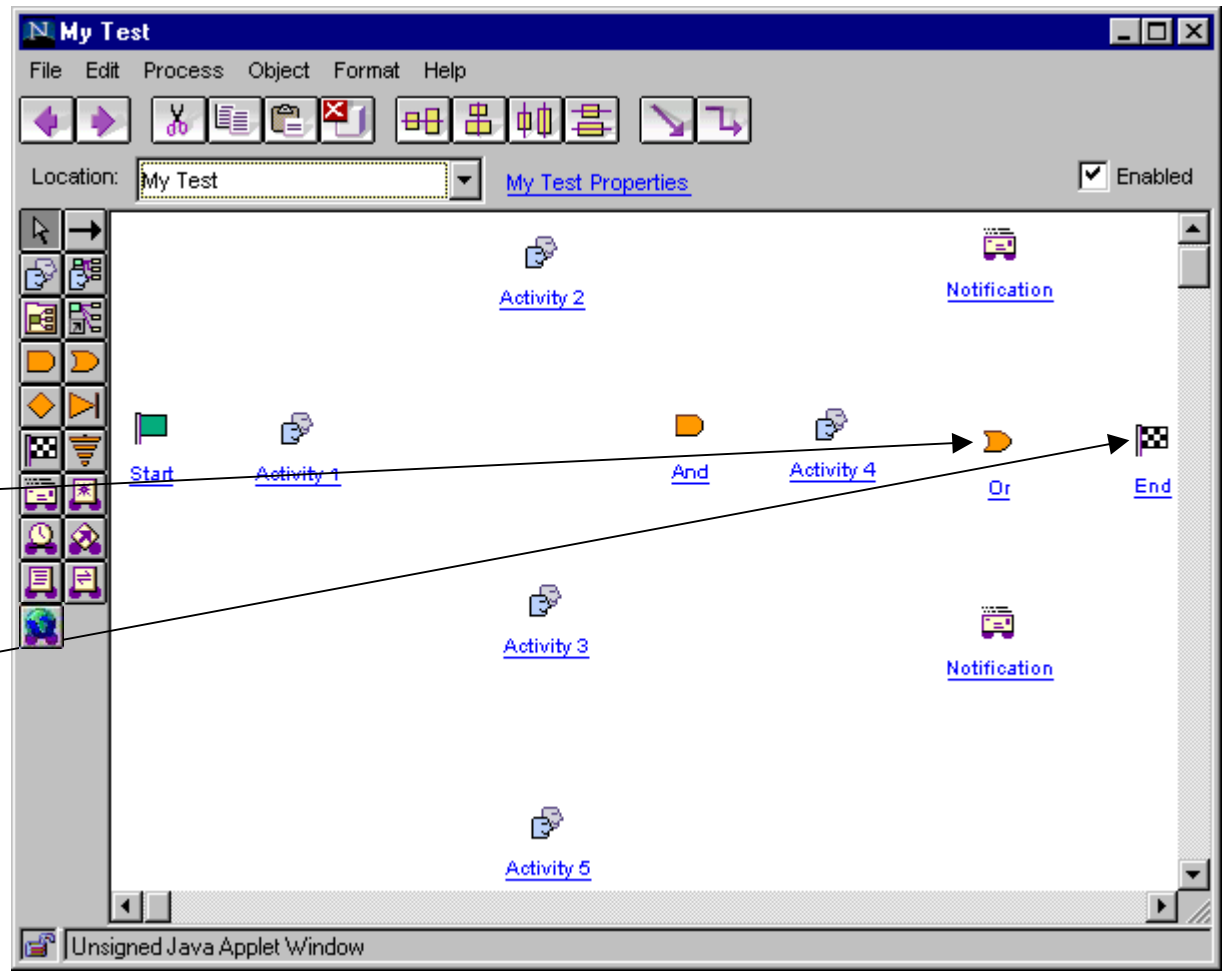
Step 3

Place an *Or* connector between the Notification robots.

Step 4

Place an *End* connector to the right of the *Or* connector (as in the example).

The *End* connector marks the successful completion of the workflow process. Every workflow process must have an *End* connector.



Defining Process Links

Now you are ready to create the links that define the control flow between the activities and connectors (or *nodes)*.

Step 1

Click the **Link** icon.

Step 2

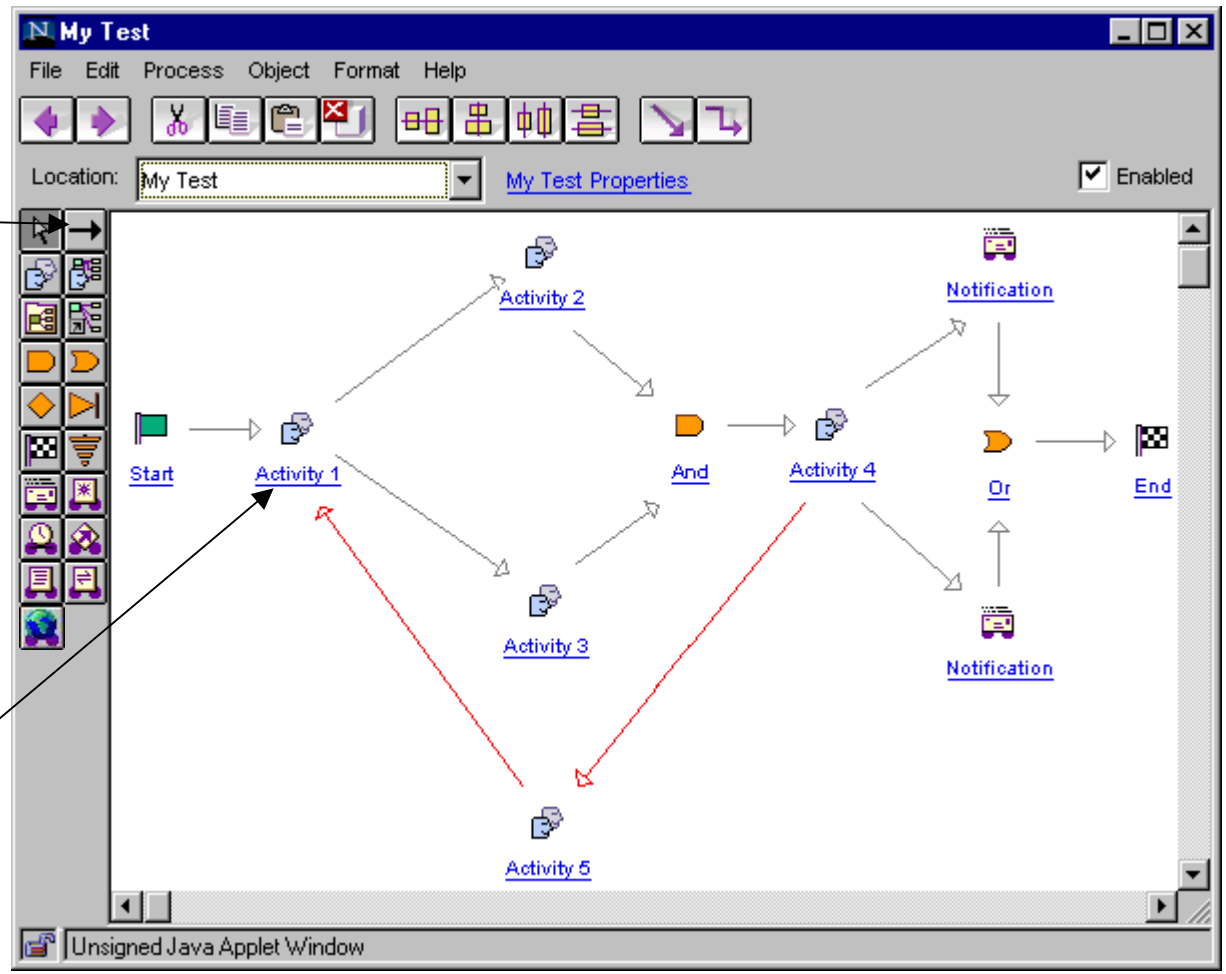
Click the *Start* flag and drag to Activity 1. (Note that the *Start* flag does not move.)

A link arrow appears, connecting the two nodes.

Continue to connect the activities until your process template is similar to the example.

Step 3

When you have connected all the nodes, as shown, click the **Activity 1** hyperlink (beneath the Activity 1 node) to open the Properties dialog box.



Defining Activity Properties

The default entry for the **Name** text box on the General tab is **Activity 1**.

The default entry for the **Category** field is set at **Default**. This field is used to identify activity types, for organizational purposes.

The default entry for the **Responsible Role** field is **Process Initiator.**

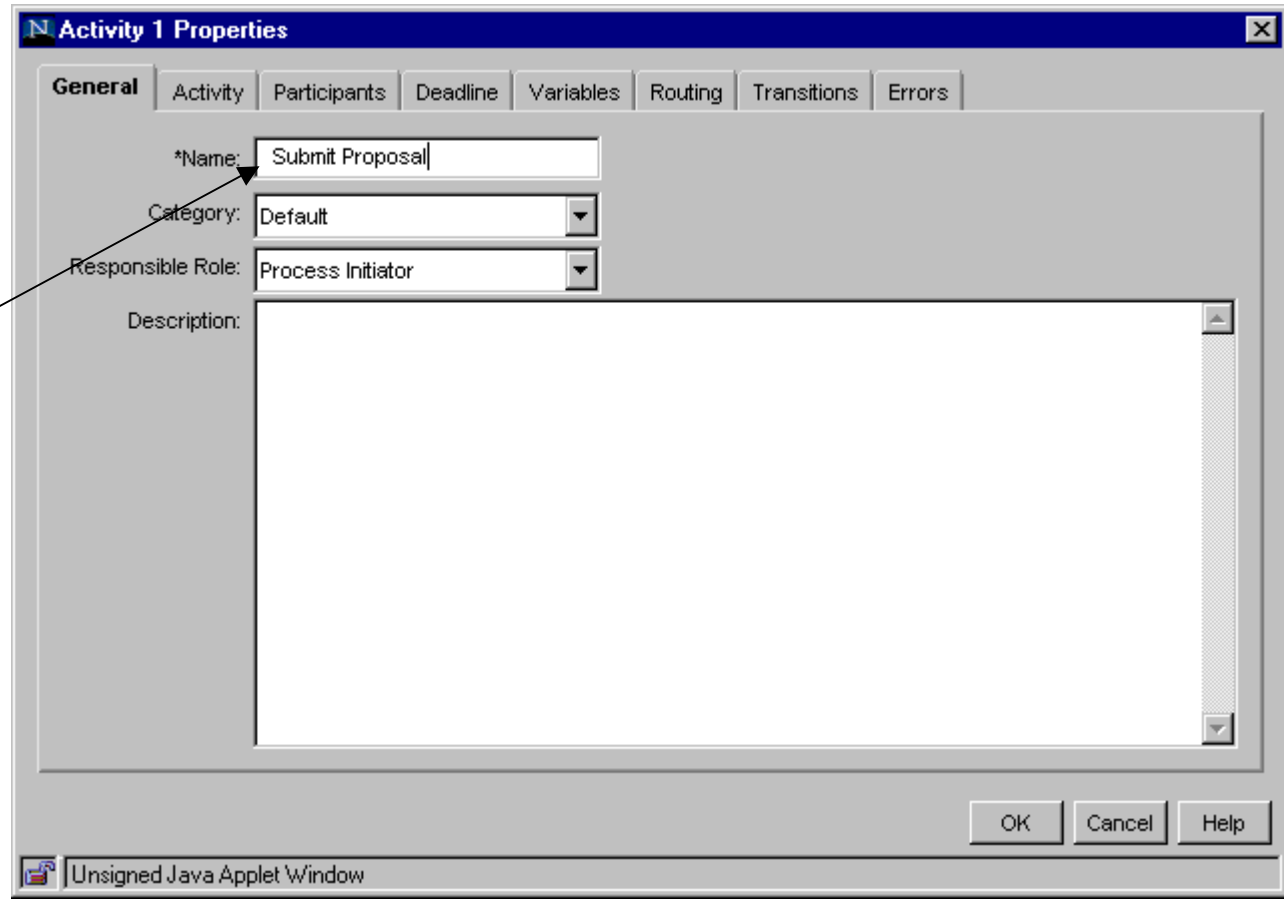
Step 1

For this tutorial, enter **Submit Proposal** as the name, and do not change the default entries for **Category** and **Responsible Role**.

Do not add a description.

Step 2

Select the **Activity** tab.



Defining Activity Properties (continued)

The default entry for the **Activity** text box is set at **Default**.

Your selection in the **Activity** drop-down menu determines the type of activity window that will be displayed to the activity assignees.

Your entry in the **Instructions** text box will be displayed to the assignees on an HTML page. You can insert HTML-formatted text for any instructions.

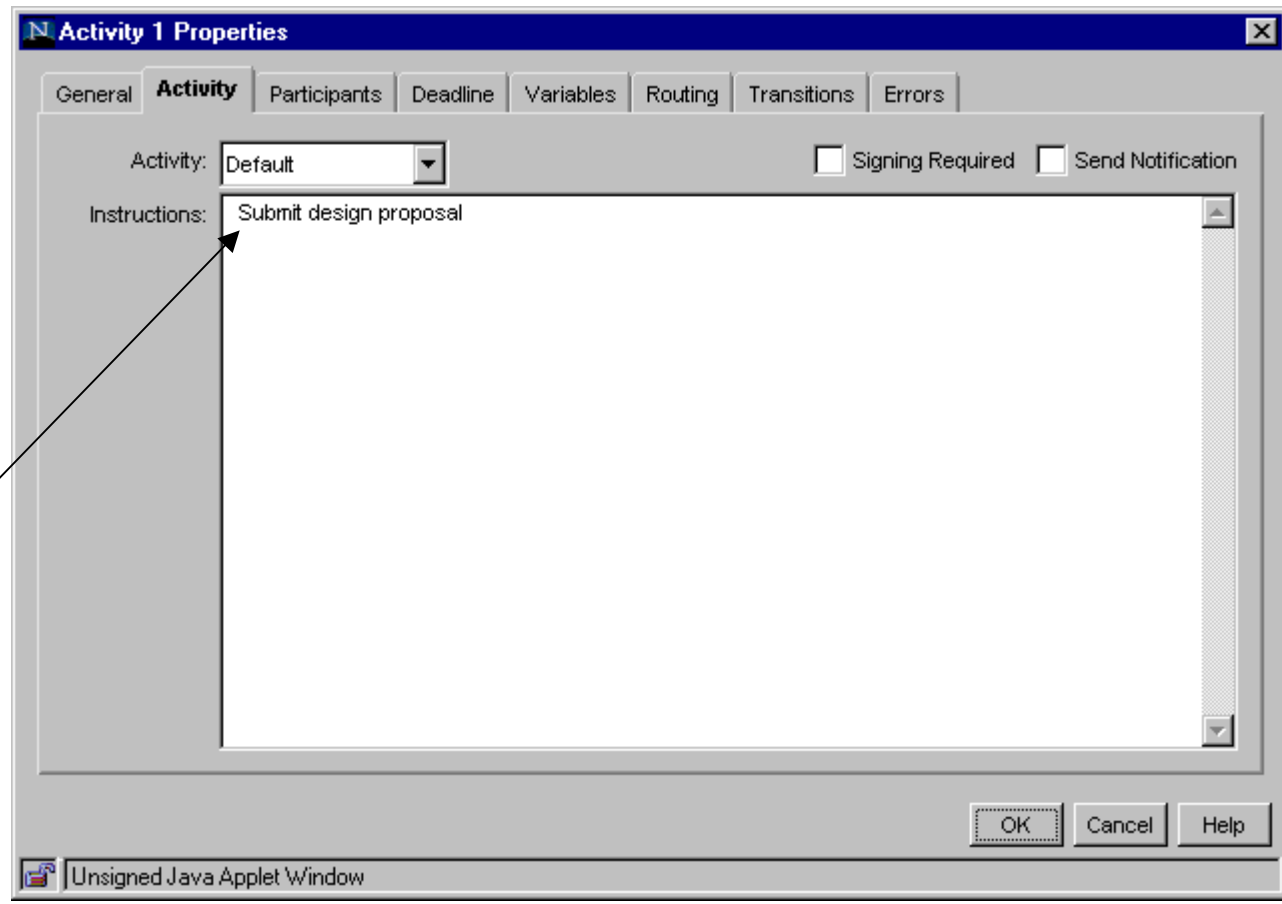
Step 3

Leave the default **Activity** entry, and enter the following instructions:

```
Submit design proposal.
```

Step 4

Select the **Participants** tab.



Defining Activity Properties (continued)

On the **Participants** tab page, you can determine who will participate in the activity.

You can select participants in a number of ways. For example, you can select individual users, groups, or business roles.

See the online help or the *Windchill Administrator's Guide* for more information.

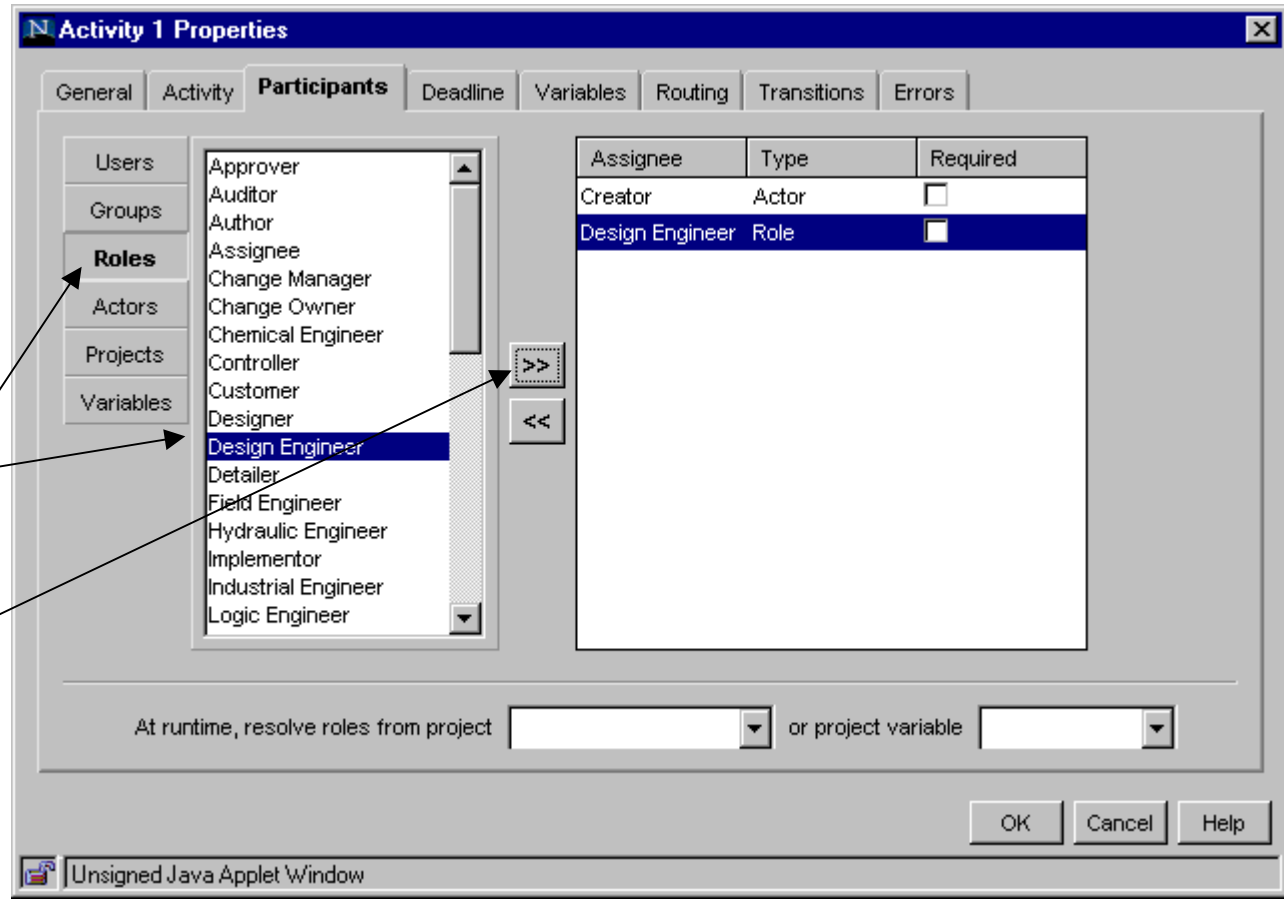
Step 5

Click **Roles**, on the left of the window, and then select **Design Engineer**.

Step 6

Click >> to add the Design Engineer role to the participants list.

Roles are resolved to one or more users from a project that is defined either in the activity or at the start of a process instance.



Defining Activity Properties (continued)

When a participant can be represented by more than one user (for example, a role or a group) you must designate whether *any, all*, or a specific *number* of those users are required.

When you select the **Required** check box, a drop-down list appears, on which you can make the designation.

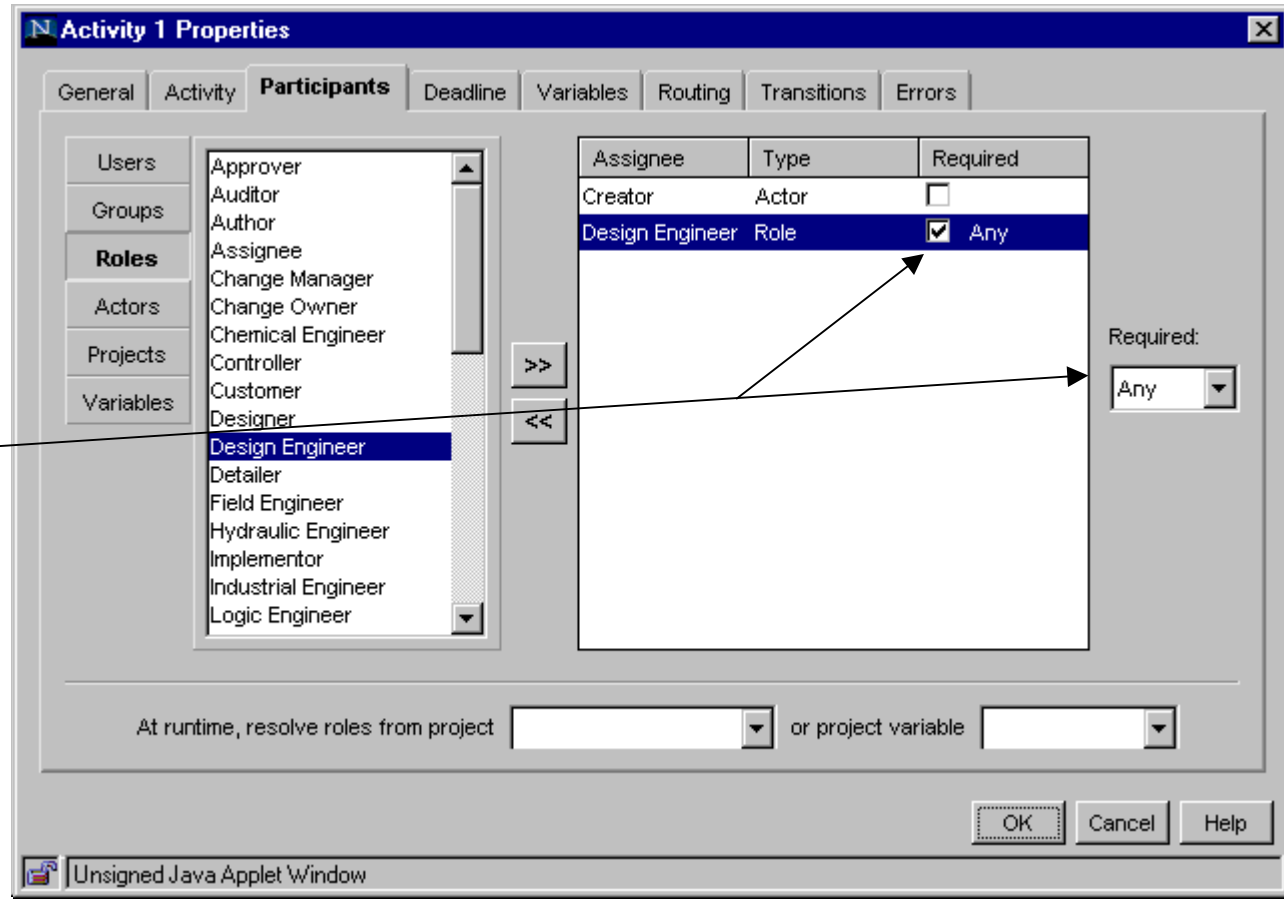
Step 7

Select the **Required** check box for the Design Engineer, and leave the **Required** designation at **Any** (the default), to designate that any one assigned to the Design Engineer role can complete the activity.

Step 8

Click **OK** to close the properties dialog box.

Do not make changes to any of the other tab pages.



Defining Activity Properties (continued)

Step 9

Repeat Steps 1–7 for the remaining activities.

Refer to the table at the right for the properties for each activity.

Note: Additional instructions for Activity 4 follow on the next page.

Activity	General – Name	Activitiy – Instructions	Participants – Role	Routing Events
Activity 2	Design Review	Review design for conformance with design standards.	Design Engineer	
Activity 3	Manufacturing Review	Review design for manufaturability.	Manugacturing Engineer	
Activity 4	Approval	Review design and comments. Approve, decline, or ask to rework proposal.	Product Manager	Approve Decline Rework (See slide 28.)
Activity 5	Revise Proposal	Revise proposal per comments.	Creator	

Defining Activity Properties (continued)

For Activity 4 only, you will require that the participant choose from among a set of choices for the disposition of the approval.

These choices are called *routing events* and are associated with links from the activity.

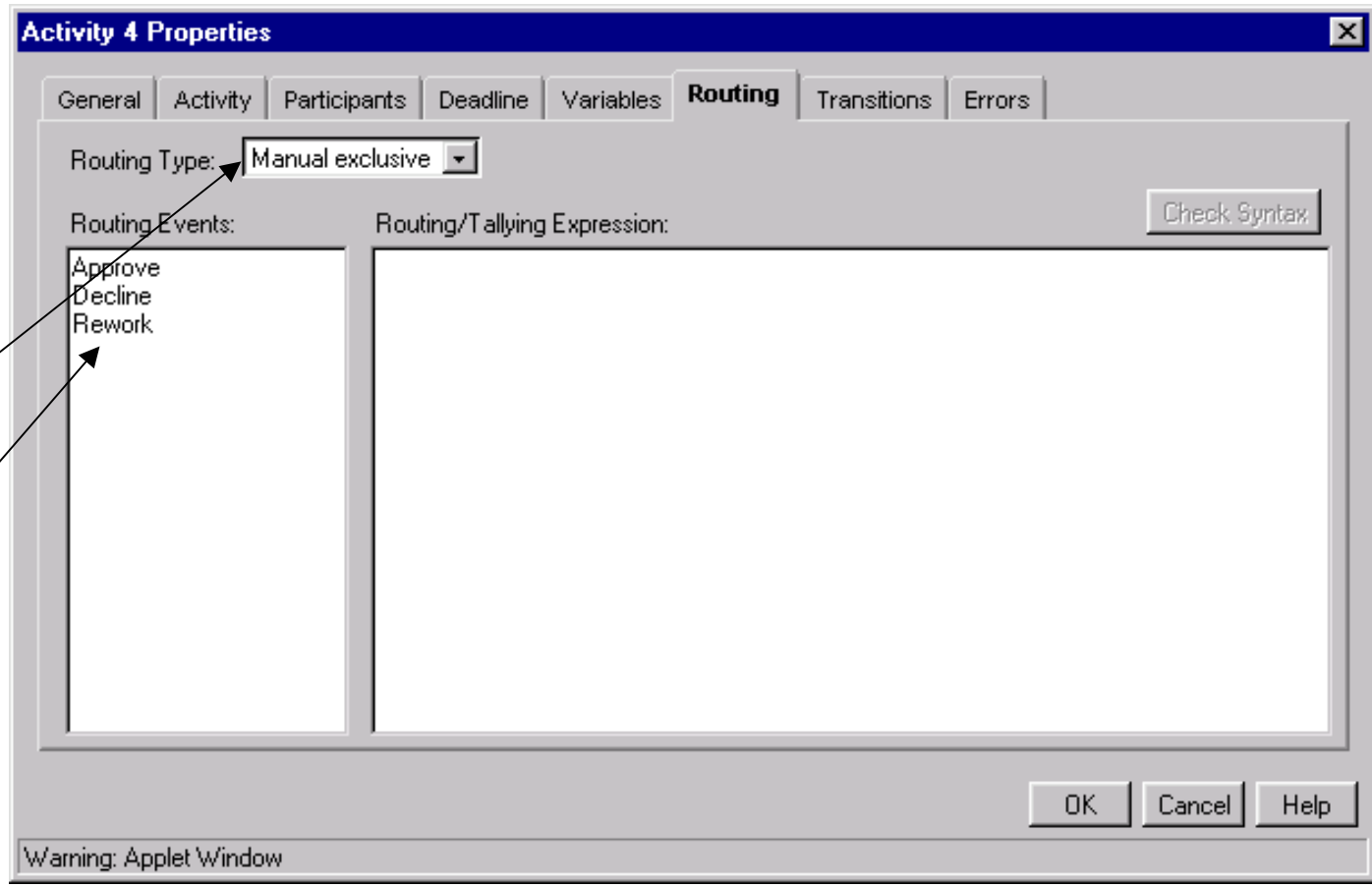
Step 1

Select the **Routing** tab and select **Manual exclusive** from the **Routing Type** drop-down menu.

Step 2

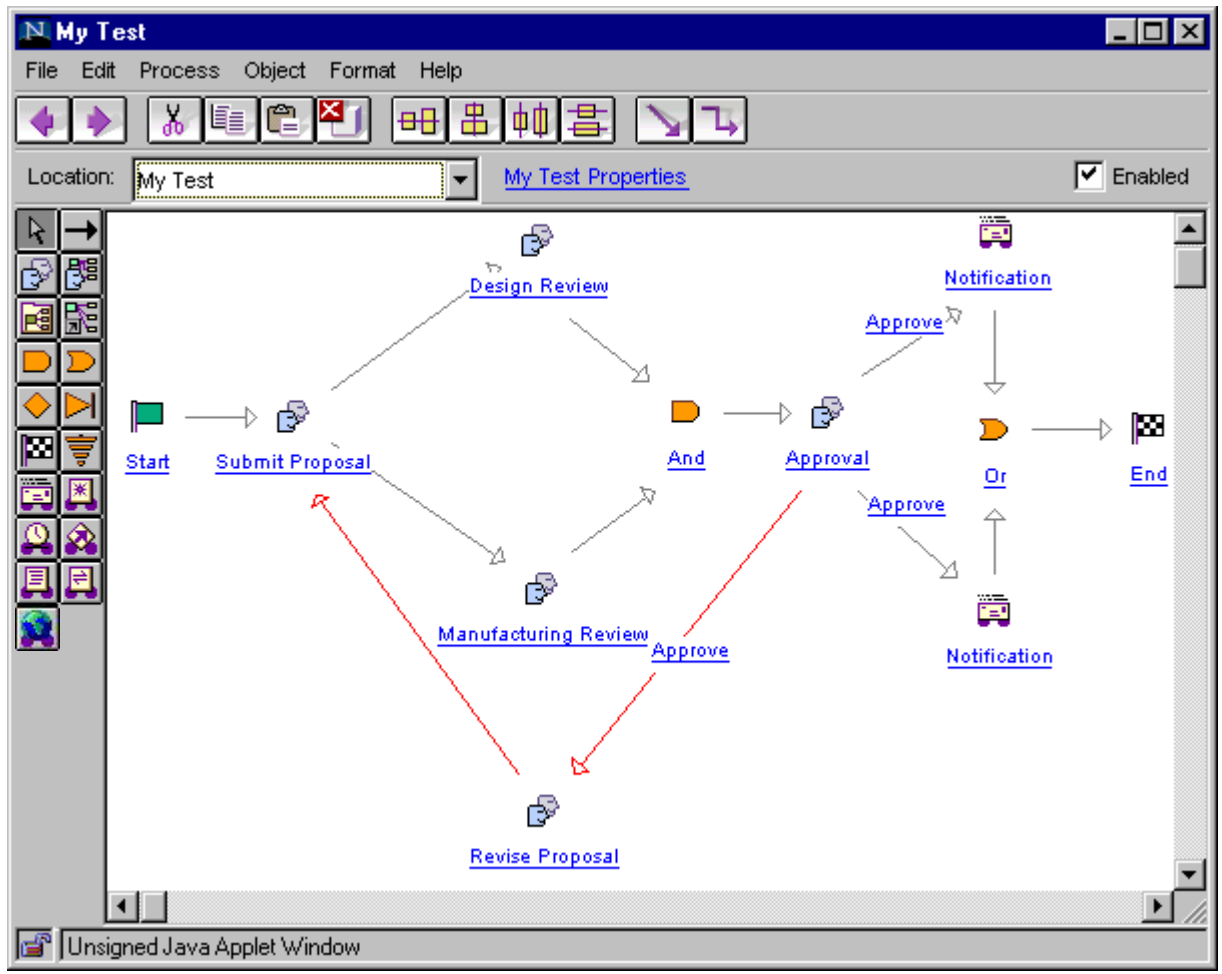
In the **Routing Events** text box, enter:

```
Approve
Decline
Rework
```



Defining Activity Properties (continued)

You have now defined all of your activities. Your process should look similar to the example.



Mapping Activity Response Events to Activity Links

You can now set up link properties to designate what will happen when a routing event takes place in the Approval activity you just defined.

The upper link defines what will happen if the activity is declined.

Step 1

Click the upper **Approve** hyperlink associated with the Approval activity. (This link may also appear as a question mark.) The Link Properties window opens.

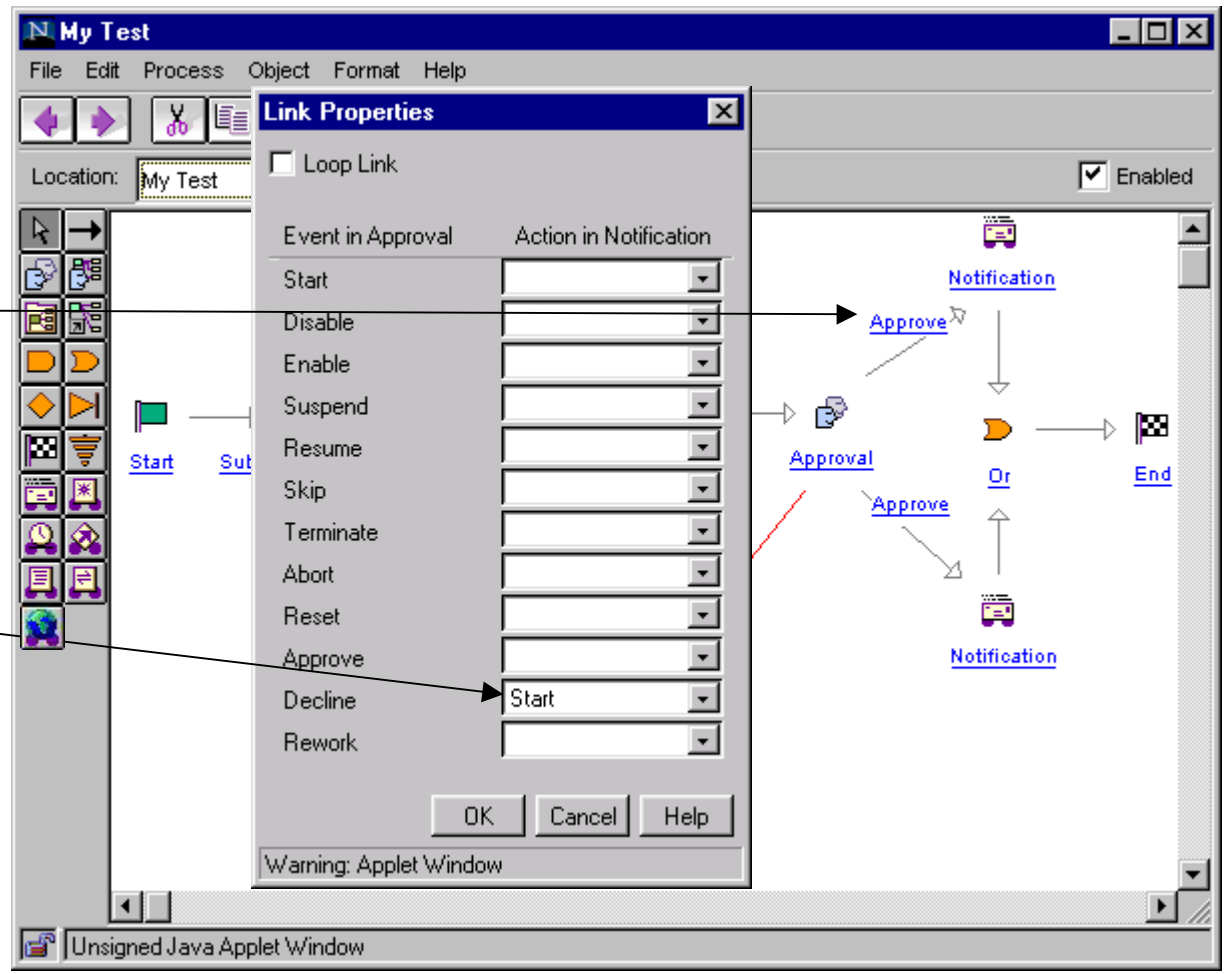
Step 2:

Leave the **Approve** and **Rework** boxes blank. (The pull-down menu has a blank option.) Select **Start** from the **Decline** drop-down menu.

Step 3

Click **OK**.

This will cause a predefined e-mail notification to be sent if the Product Manager selects **Decline**.



Mapping Activity Response Events to Activity Links (continued)

The middle link defines what will happen if the activity is approved.

Step 4

Select the middle **Approve** hyperlink associated with the Approval activity. (This link may also appear as a question mark.)

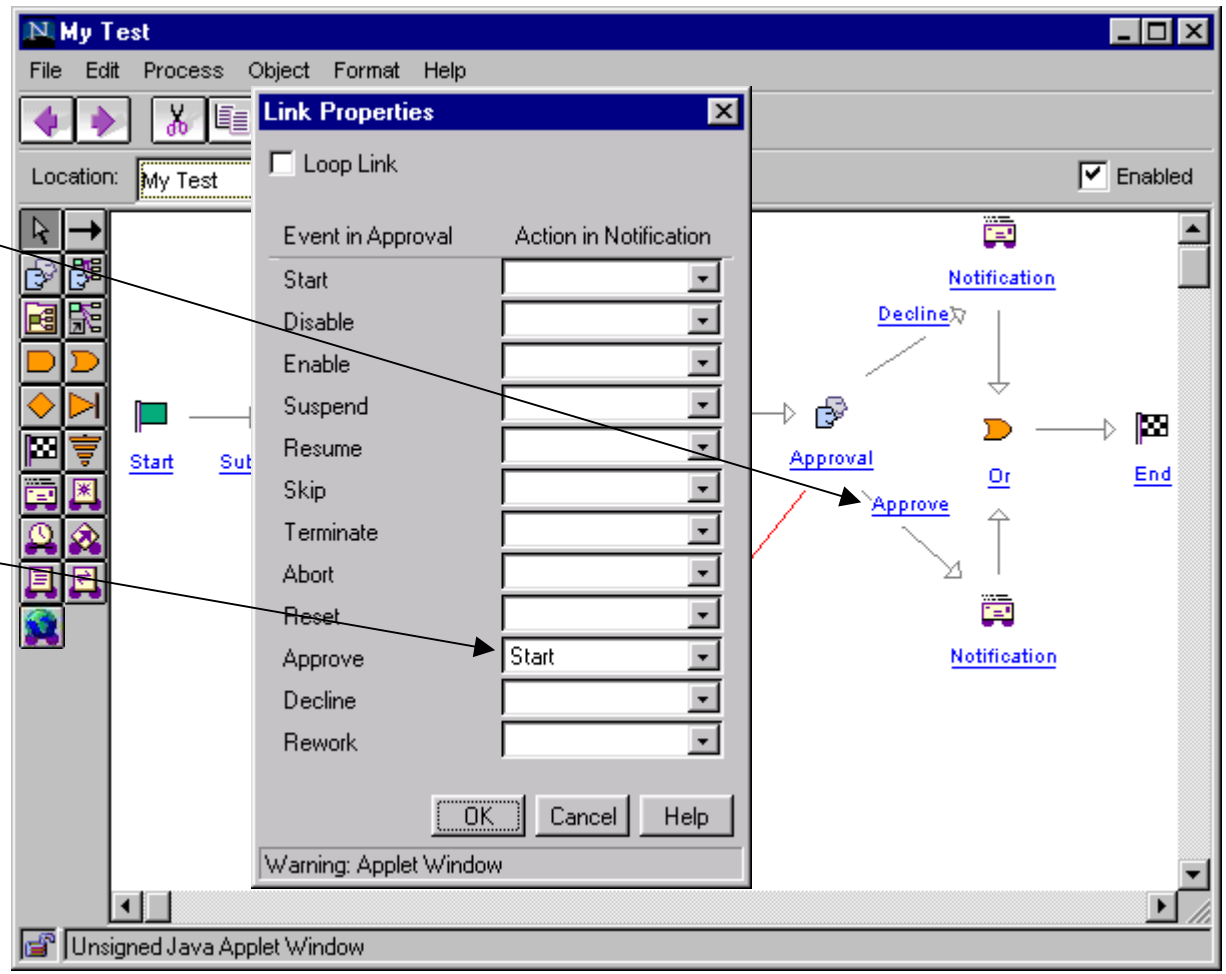
Step 5

Leave the **Decline** and **Rework** boxes blank. Select **Start** from the **Approve** drop-down menu.

Step 6

Click **OK**.

This causes a predefined e-mail notification to be sent, if the Product Manager selects **Approve**.



Mapping Activity Response Events to Activity Links (continued)

The lower link defines what will happen if the activity is sent back to be reworked.

Step 7

Select the lower **Approve** hyperlink associated with the Approval activity. (This link may appear as a question mark.)

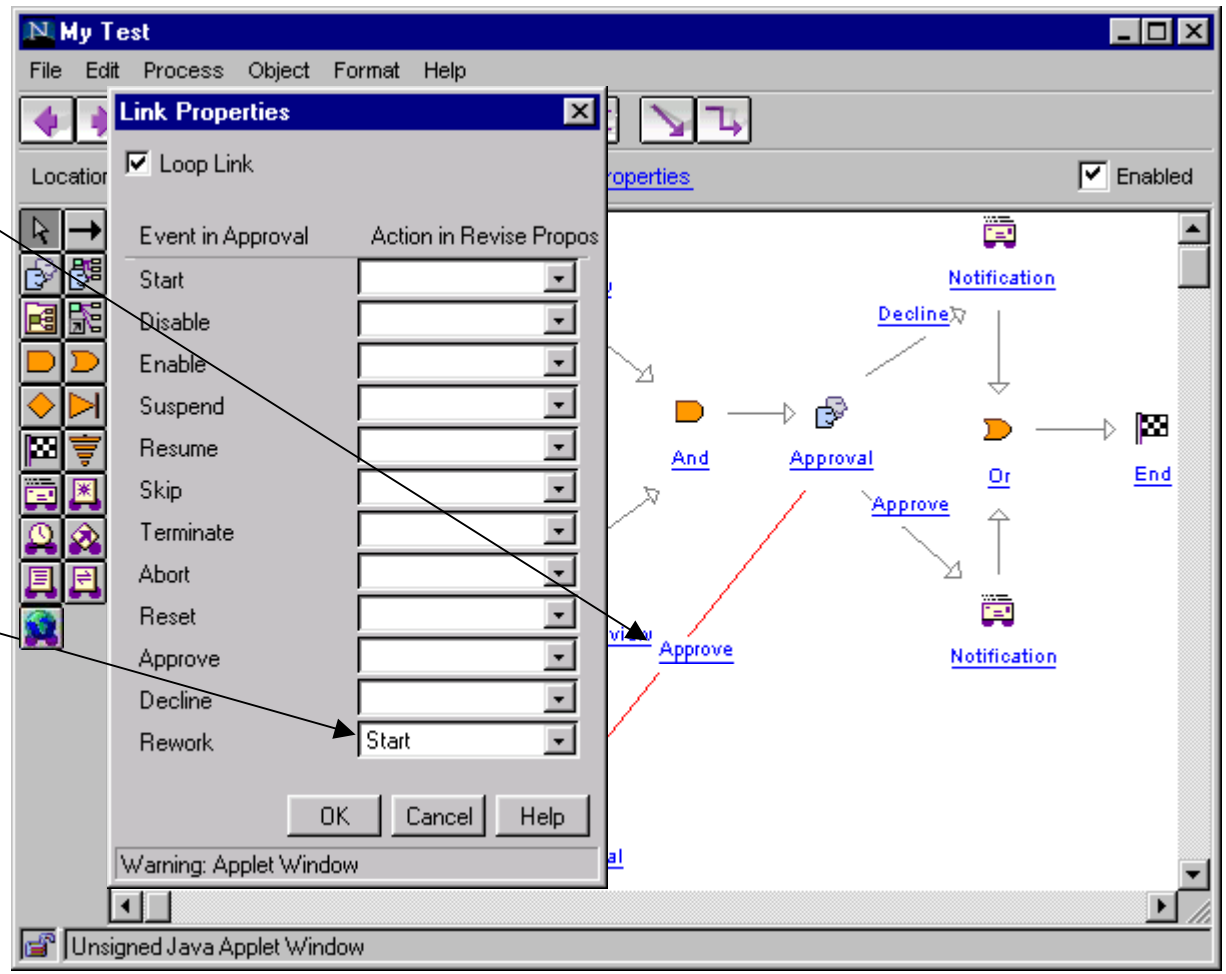
Step 8

Leave the **Approve** and **Decline** boxes blank. Select the empty option from the **Approve** pull-down menu. Select **Start** from the **Rework** pull-down menu.

Step 9

Click **OK**.

This will fire the **Revise Proposal** activity, if the Product Manager selects **Rework**.



Mapping Activity Response Events to Activity Links (continued)

Step 10

Right-click the arrow between the Revise Proposal activity and the Submit Proposal activity.

Step 11

Select **Properties** from the menu that opens.

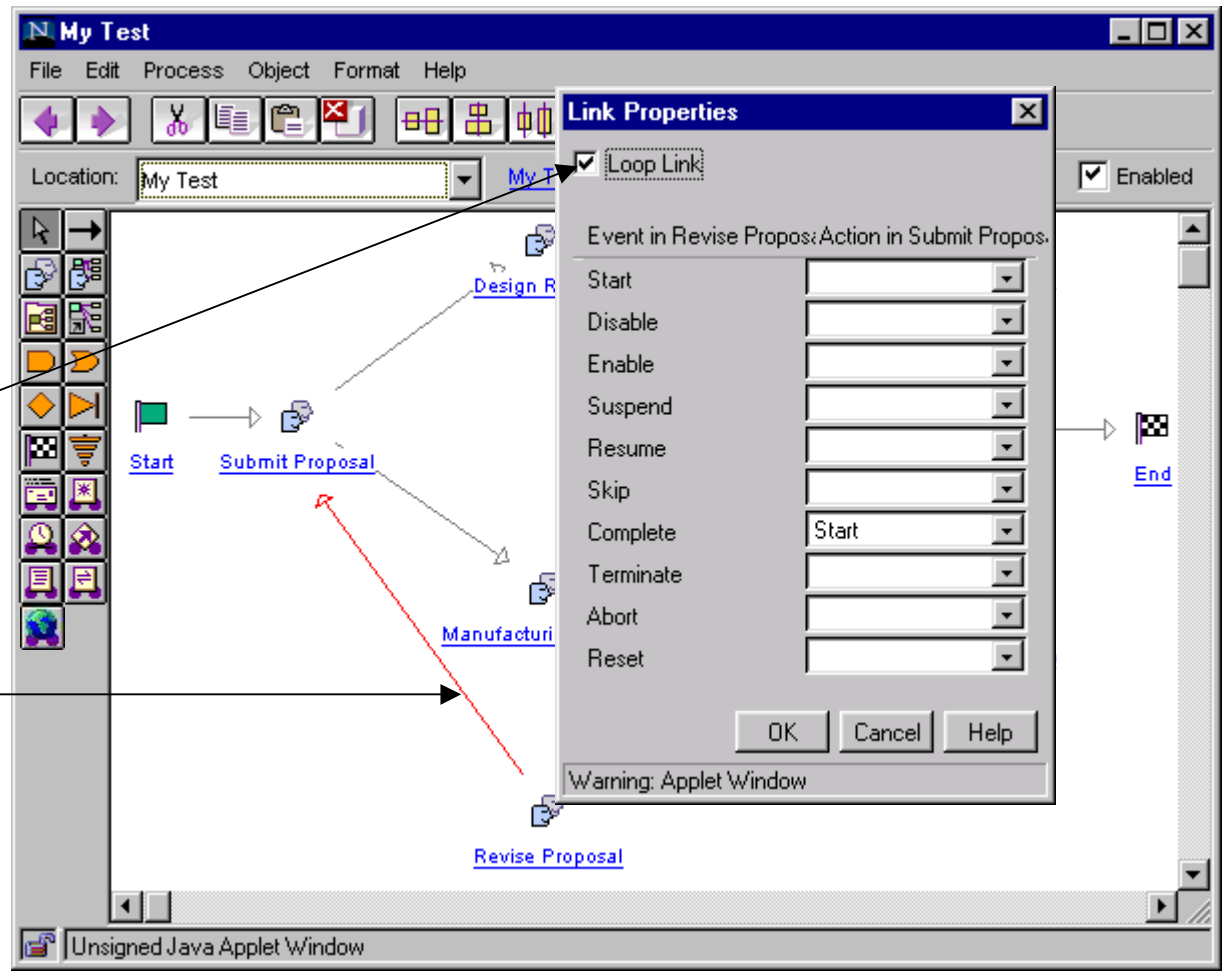
Step 12

At the top of the Link Properties dialog box, select the **Loop Link** check box.

Step 13

Click **OK**.

This will fire the **Submit Proposal** activity again if the Product Manager selects **Rework**, thus restarting the entire process.

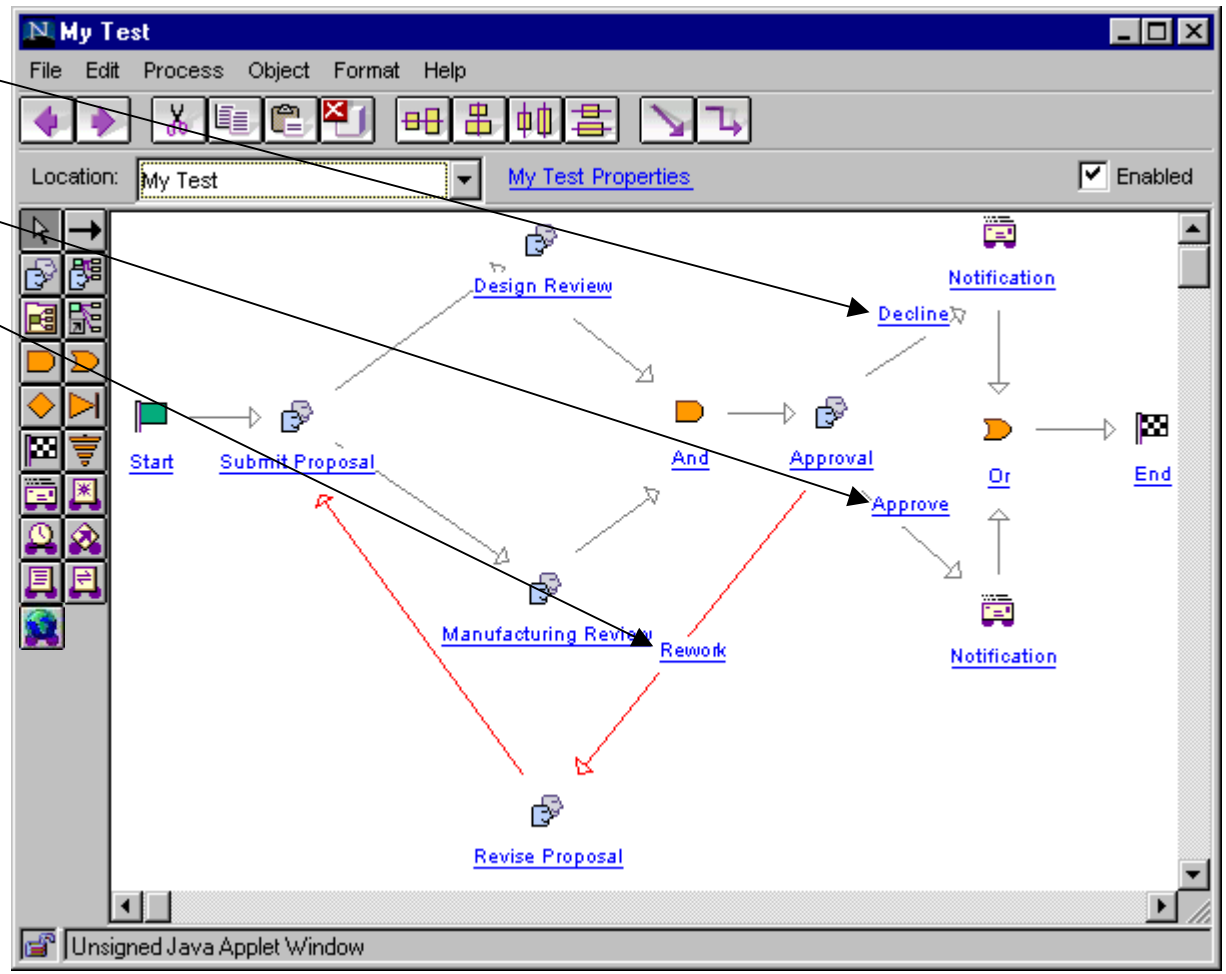


Mapping Activity Response Events to Activity Links (continued)

The upper link should now be labeled **Decline**.

The middle link should be labeled **Approve**.

The lower link should now be labeled **Rework**.

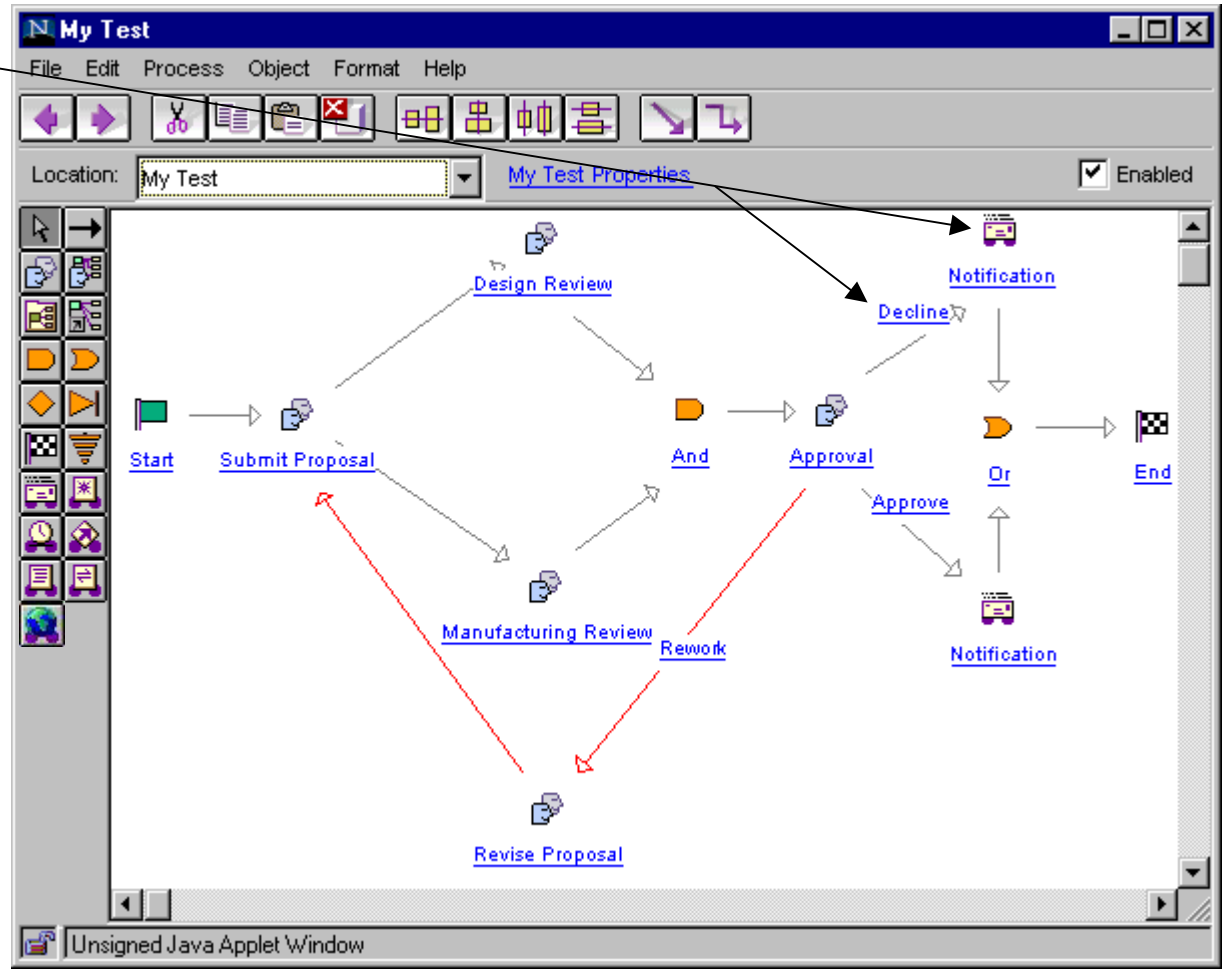


Mapping Activity Response Events to Activity Links (continued)

Step 14

Click the **Notification** icon associated with the **Decline** link (near the top).

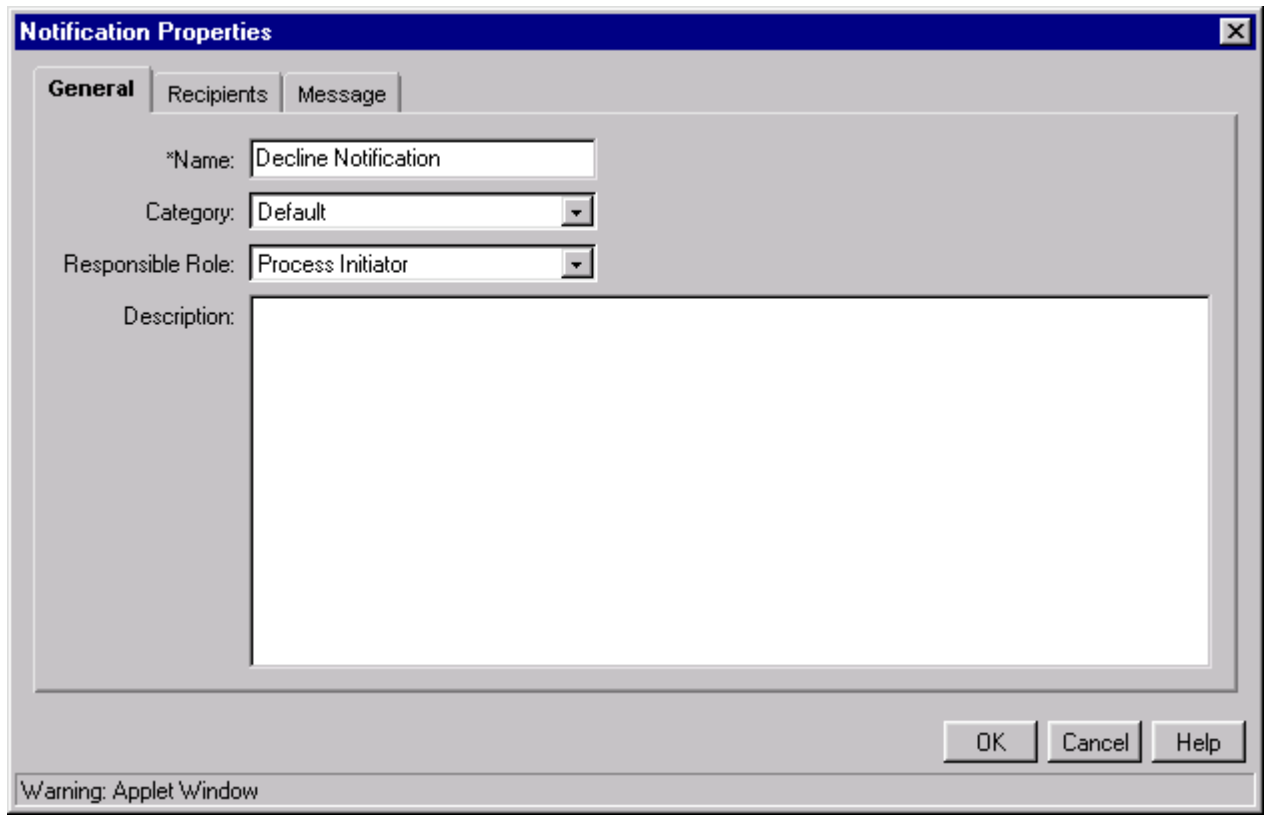
The Notification window opens.



Mapping Activity Response Events to Activity Links (continued)

Step 15

In the **Name** text box, on the **General** tab page, type **Decline Notification**.



Mapping Activity Response Events to Activity Links (continued)

Step 16

Click the **Recipients** tab, and then click **Users.**

Step 17

Enter your full user name or your user ID, and click **Find**.

Or, to get a list of all users, leave the **User Name** and **User ID** text boxes empty and click **Find.**

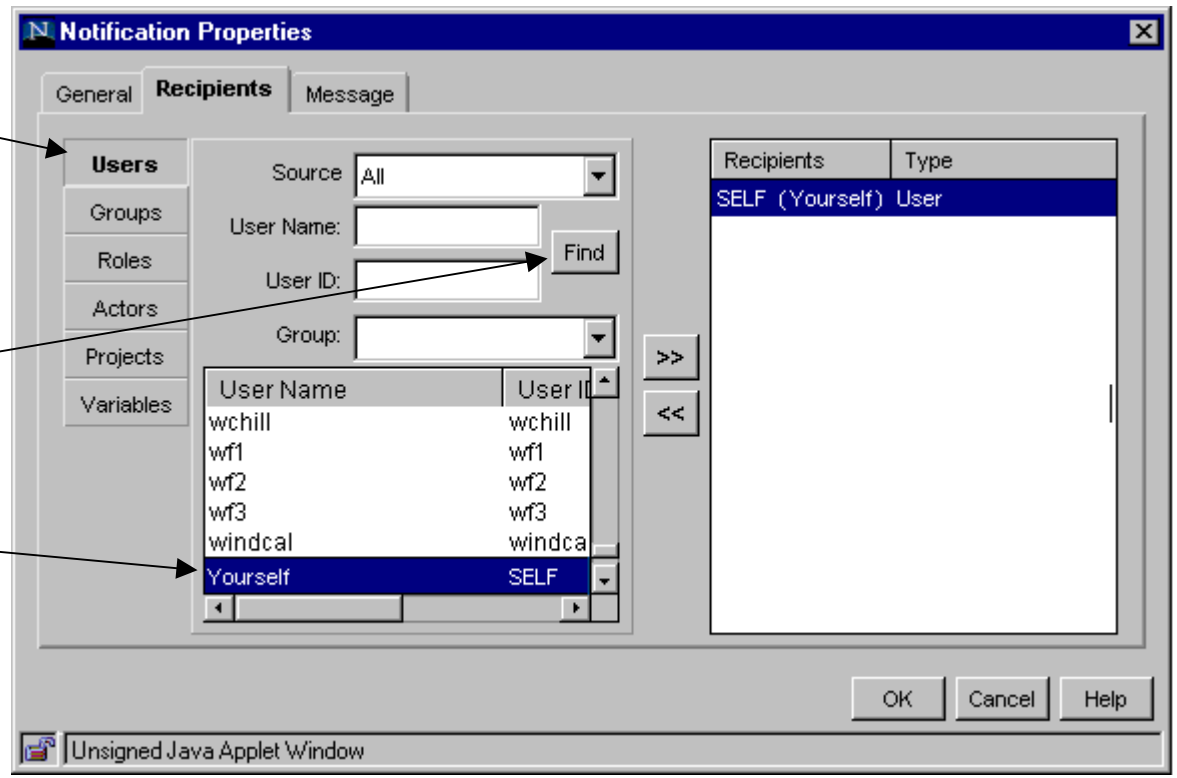
Step 18

Select your own user name, and click >> to move your name to the Recipients list.

Step 19

Click **OK.**

This will set the robot to send you an e-mail message if the proposal is declined.



Mapping Activity Response Events to Activity Links (continued)

Step 20

Click the **Message** tab, and in the **Subject** text box, type:

```
My Test Proposal Declined.
```

This will appear in the subject line of the message.

Step 21

In the message text box, type the following message:

```
The My Test design
has been declined.
```

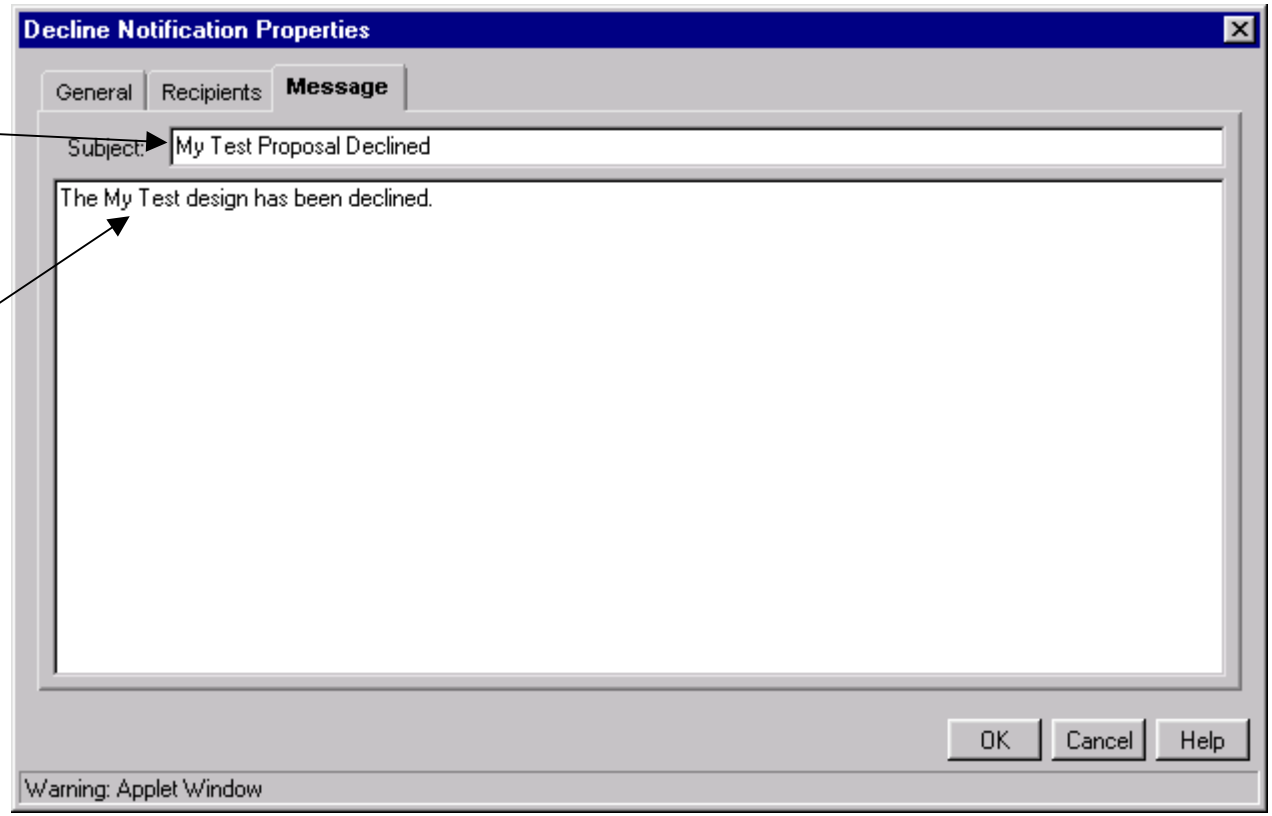
This will be the body of the message.

Step 22

Click **OK**.

The Notification robot will now send you the preset message if the proposal is declined.

Now continue, by following the same process to set the **Approve** Notification robot.



Mapping Activity Response Events to Activity Links (continued)

Step 23

Click the **Notification** icon associated with the **Approve** hyperlink to reopen the Notification window.

Step 24

On the **General** tab page, in the **Name** text box, type:

```
Approve Notification.
```

Step 25

On the **Recipients** tab page, select your self to receive the Approve message.

Step 26

On the **Message** tab page, in the **Subject** text box, type:

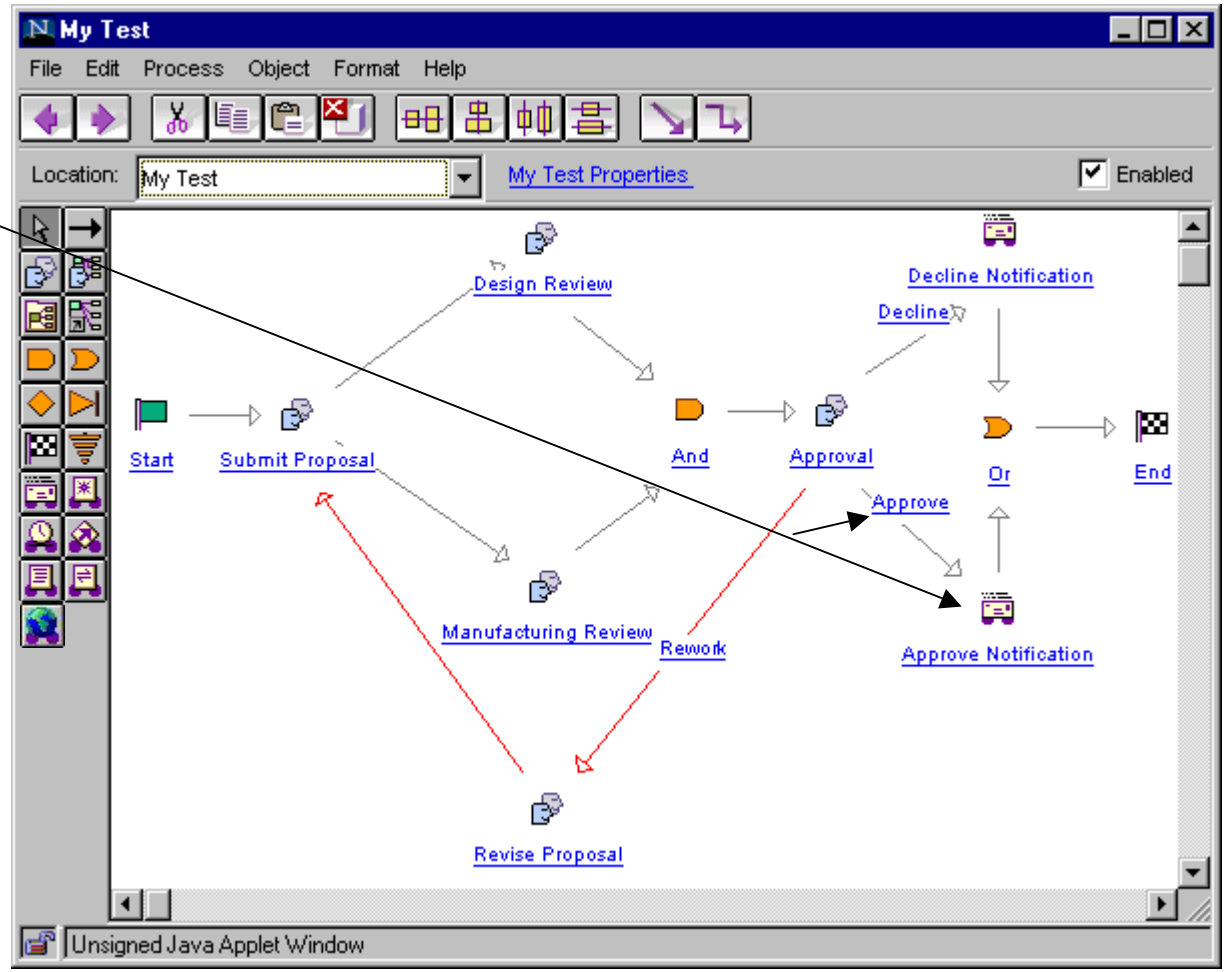
```
My Test Proposal Approved
```

In the **Message** text box, type the following message:

```
The My Test design has been
approved.
```

Step 27

Click **OK**.



Section 1 — Building a Workflow Template

Saving Your Process Template

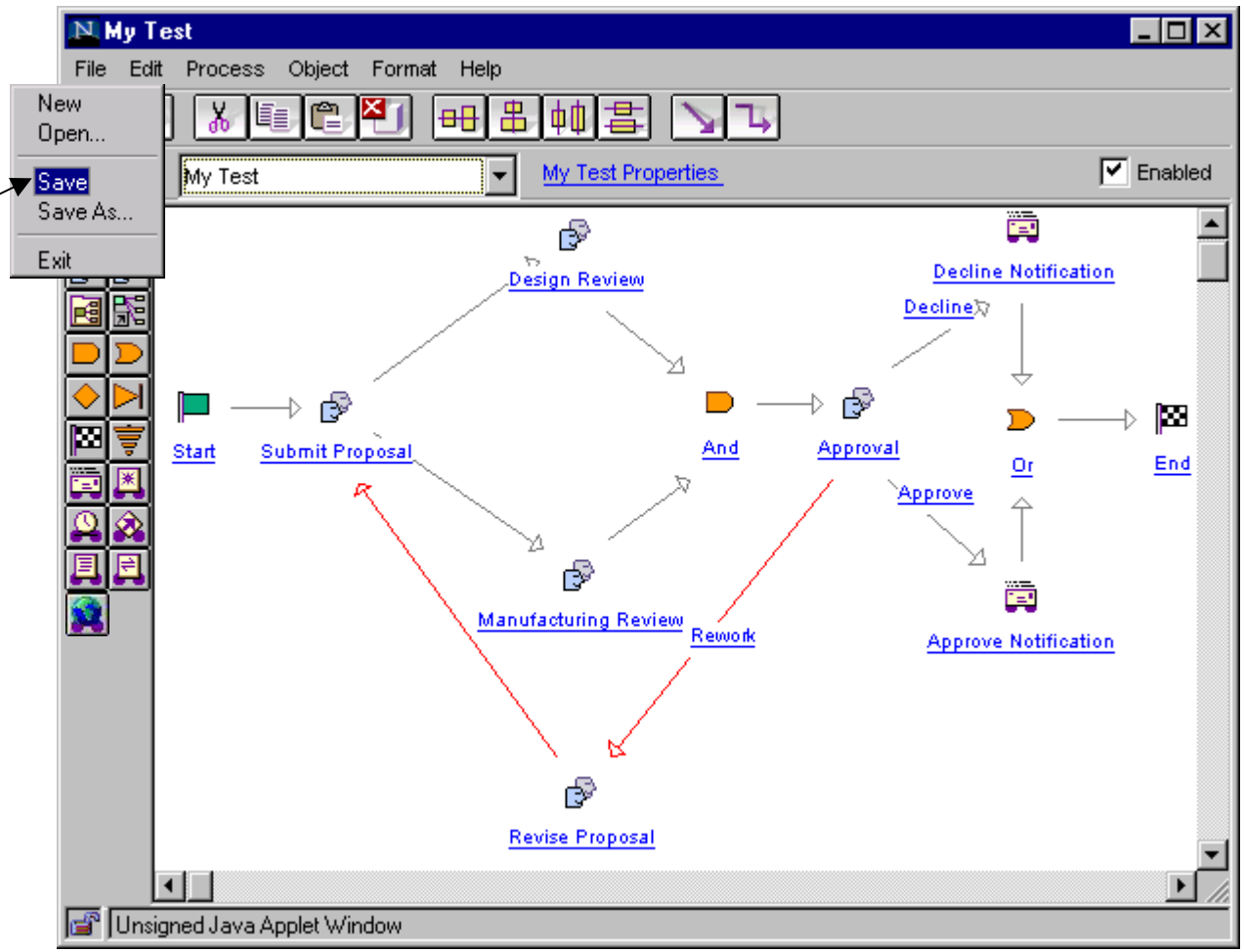
You have completed your workflow process template, and you can now save the template and close the Workflow Process Editor.

Step 1

Select **File > Save** to save the template.

Step 2

Select **File > Exit** to close the Workflow Process Editor.



Checking In Your Process Template

Step 1

Return to the Workflow Administrator, and select **My Test** from the list of templates.

(See pages 10 and 11.)

Step 2

Click **Checkin** to check My Test into the System folder, where it will be publicly available to others.

The Check In window opens.

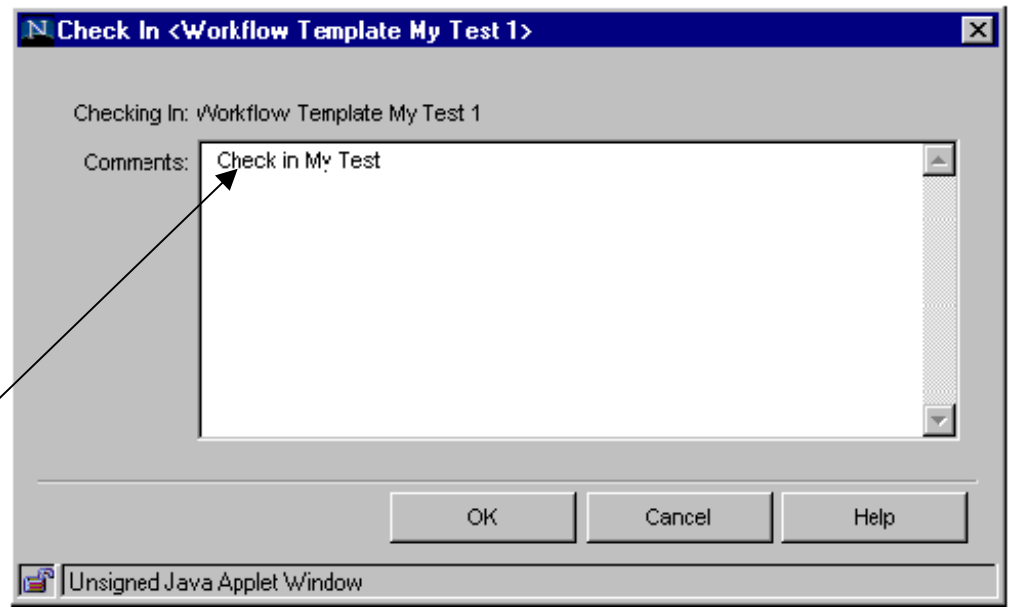
Step 3

In the **Comments** text box, type the following comment:

```
Check in My Test.
```

Step 4

Click **OK**.



Executing Your Workflow

If the Workflow Administrator is not displayed when you exit the Workflow Process Editor, you should return to it. You may want to refer to pages 9 and 10.

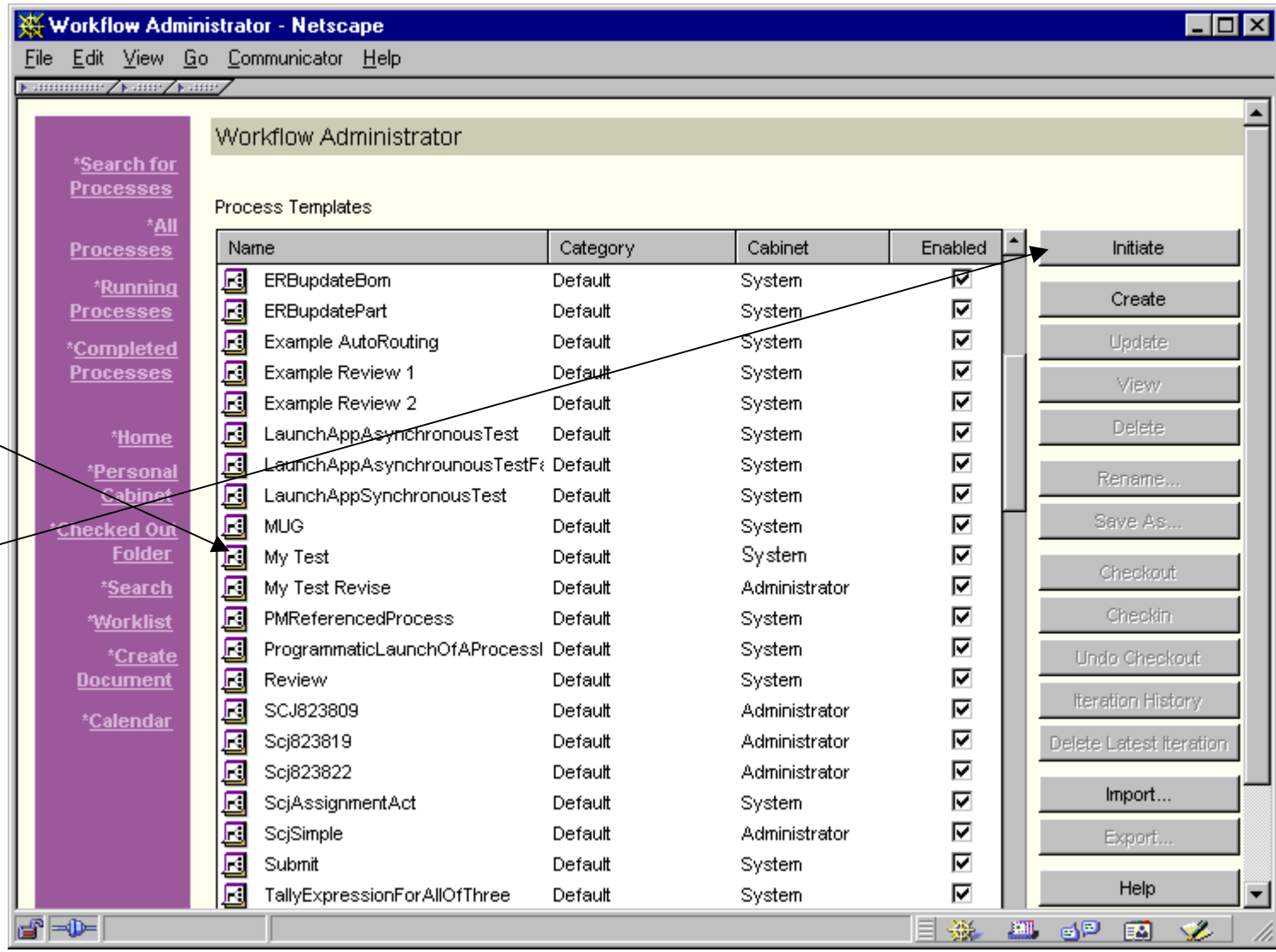
Step 1

When the Workflow Administrator is displayed, click **My Test** from the list of process templates.

Step 2

Click **Initiate**.

A dialog box opens entitled Initiate My Test.



Initiating Your Template

The Initiate dialog box for your template is open.

Step 1

In the **Process Name** text box. Type:

```
My Proposal Review.
```

Select the Default project.

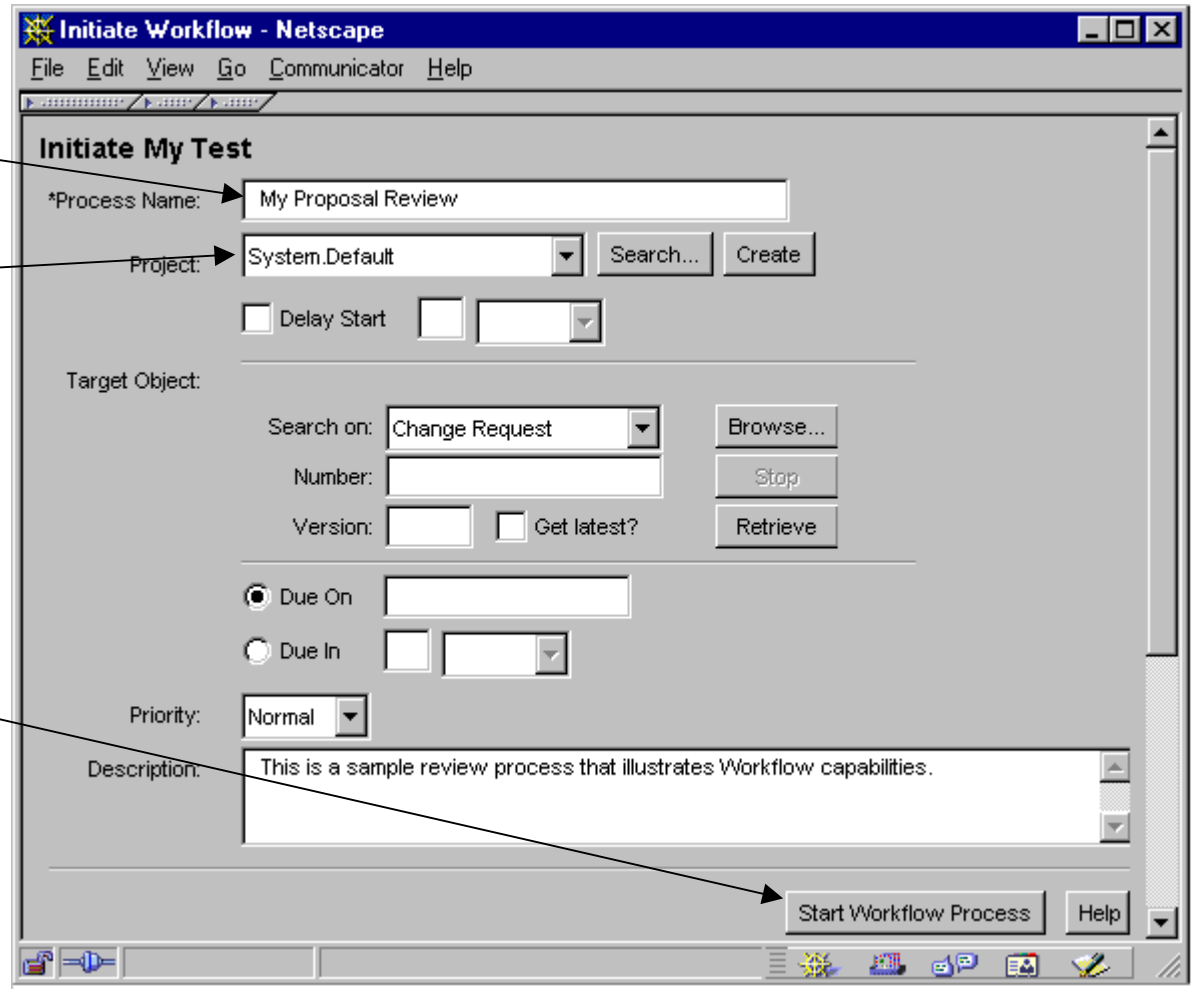
The description that you typed earlier appears in the **Description** text box

(For information on these and the other fields, click **Help**.)

Step 2

Click **Start Workflow Process**.

A new page opens displaying the message: *Workflow started.*



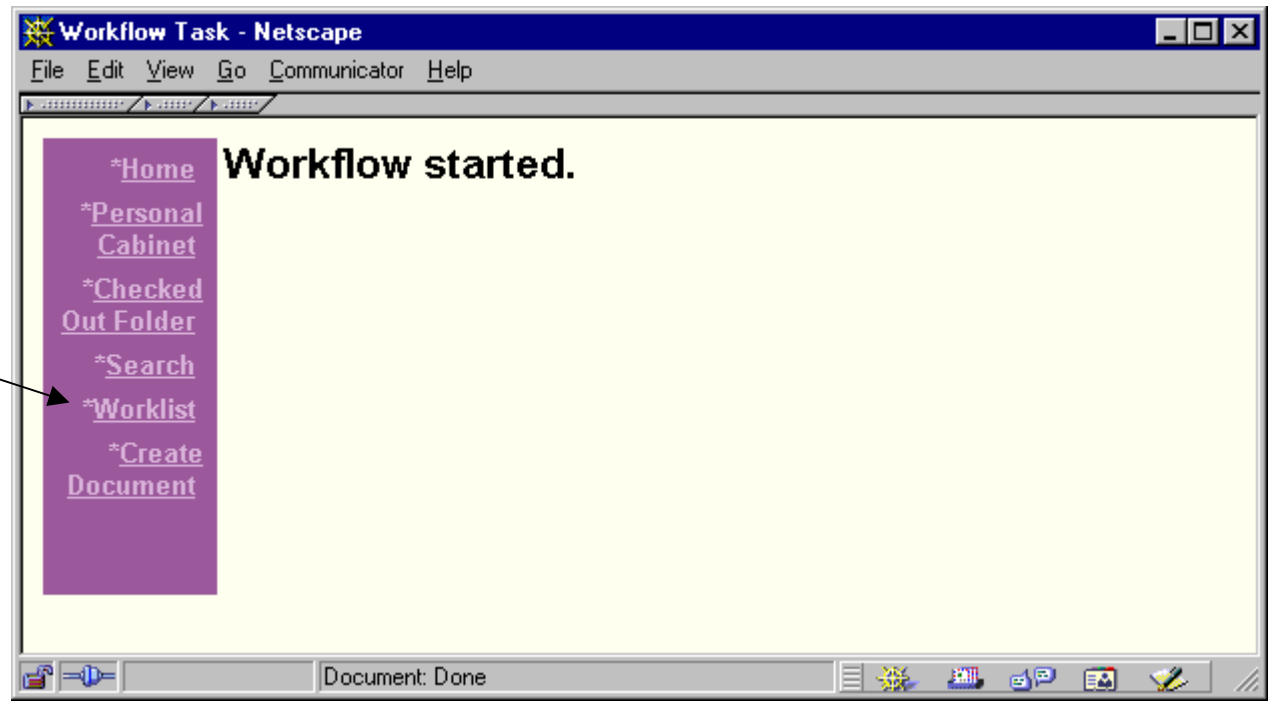
Checking Workflow Progress

Now that you have started your workflow process instance, you can track its process.

Step 1

Click **Worklist** on the navigation bar.

Your worklist opens.



Checking Workflow Progress (continued)

Your worklist is probably *not* laid out like the example. It probably displays different rows and columns.

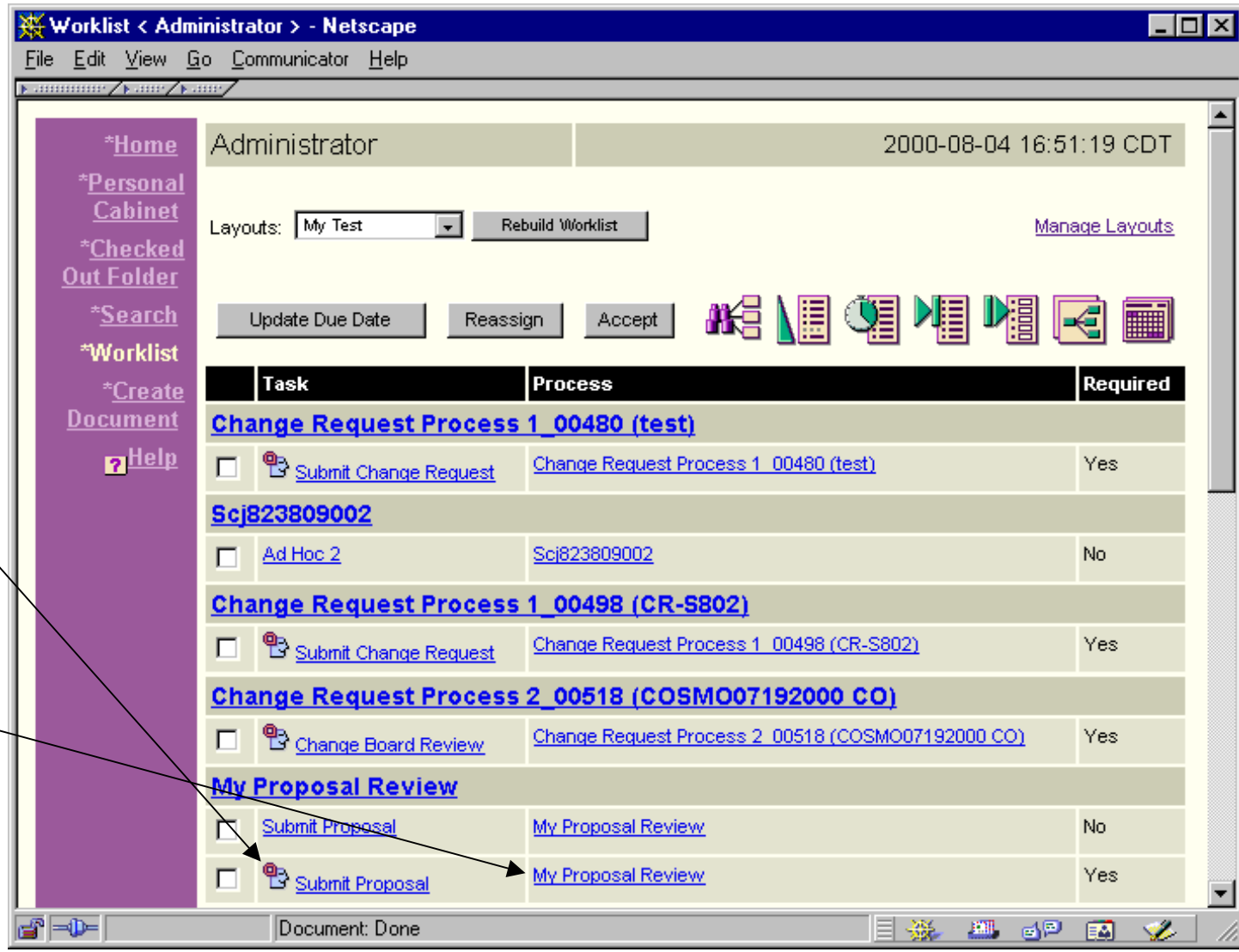
The columns are user defined, as are the sorting and grouping of the rows. In the example, the rows are sorted by task and grouped by process.

Step 2

Click **Submit Proposal** to view its instructions.

(The icon indicates that the task is required.)

As displayed in the Process column, the process name is **My Proposal Review.** The role should be Design Engineer. When applicable, complete both listings of each task.



Completing the Task Response Form

Step 1

Review instructions.

Step 2

Click **Task Complete**.

A page opens displaying the side bar menu and the following message:

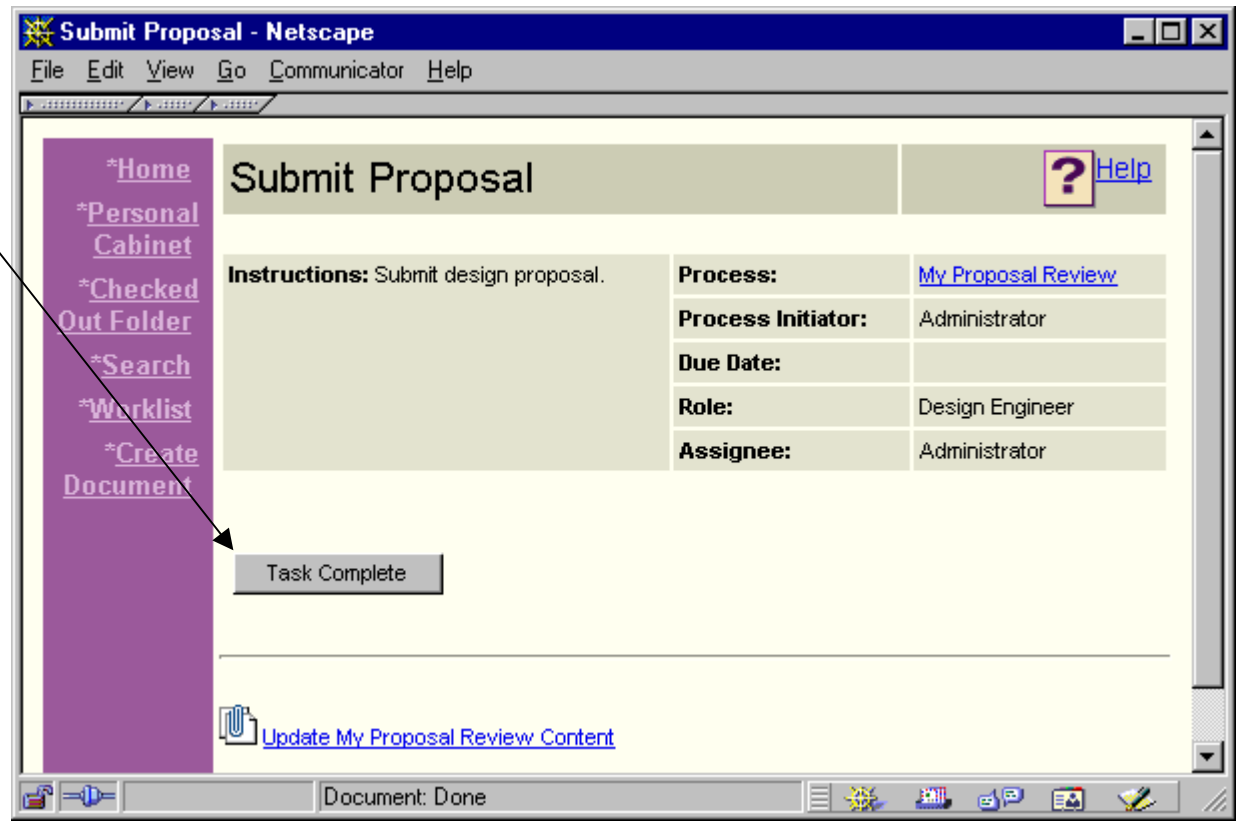
Work item has been successfully completed.

Step 3

Click **Worklist**.

Step 4

Continue opening work items, and complete all tasks associated with My Proposal Review until the **Approval** task appears in the worklist.



Working with Tasks

Step 1

On your worklist, click **Approval** to open the Approval Window.

Step 2

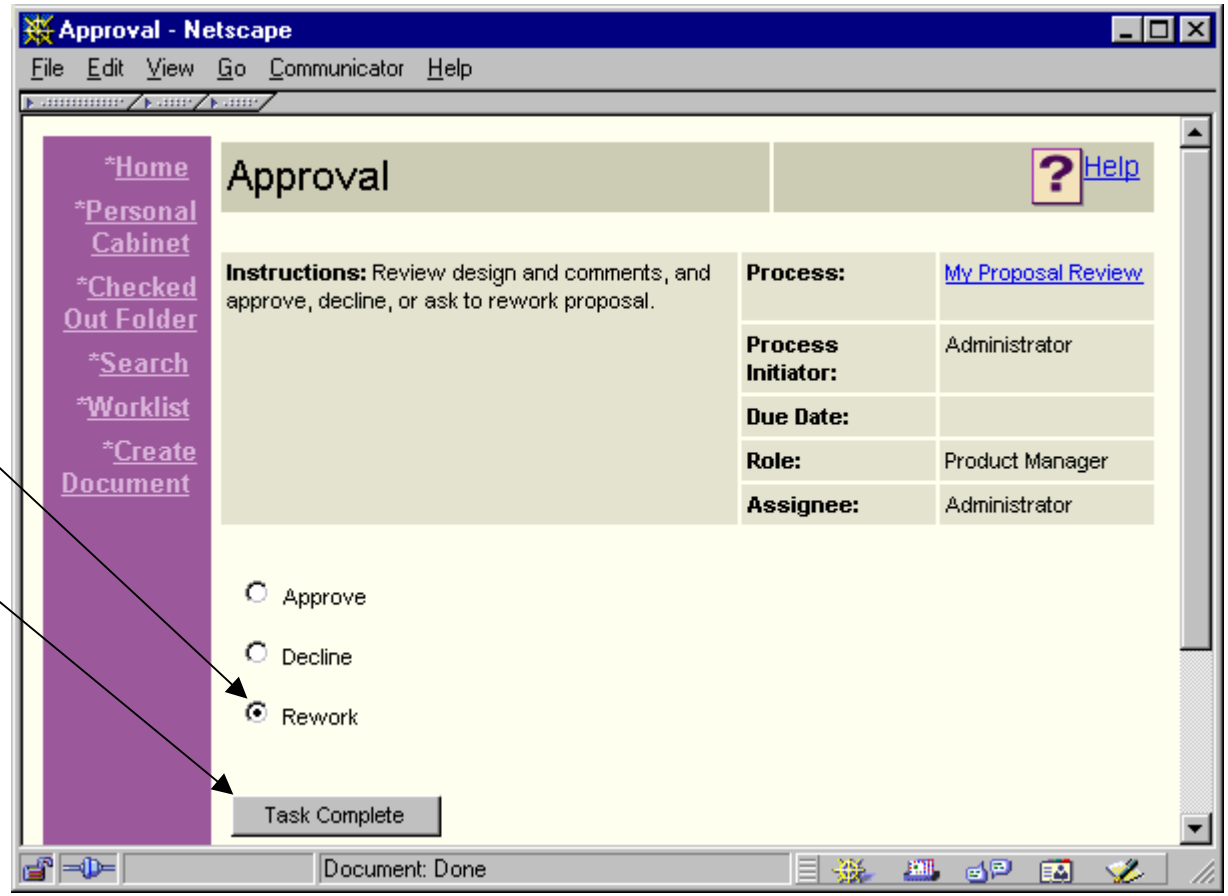
Review the instructions, and select the **Rework** radio button.

Step 3

Click **Task Complete**.

Step 4

Check your e-mail for notification.



Monitoring Workflow Progress

Step 1

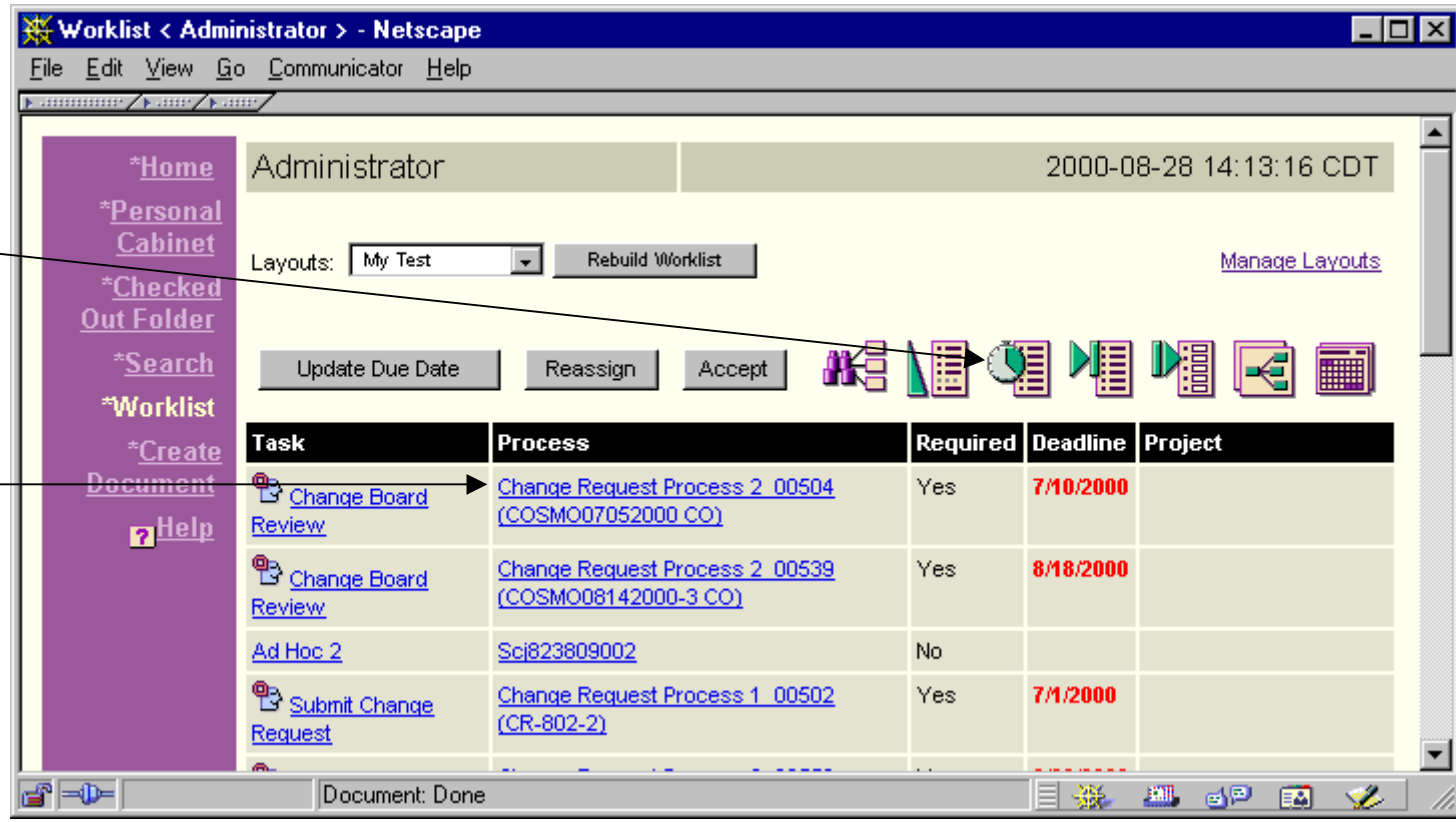
Return to your worklist, by selecting **Worklist** from the navigation bar.

Step 2

Click the **Running Processes** icon in the upper right portion of the page.

Note: Process names are also directly linked to the Process Manager.

You can click these links to monitor the progress of processes in the Process Manager



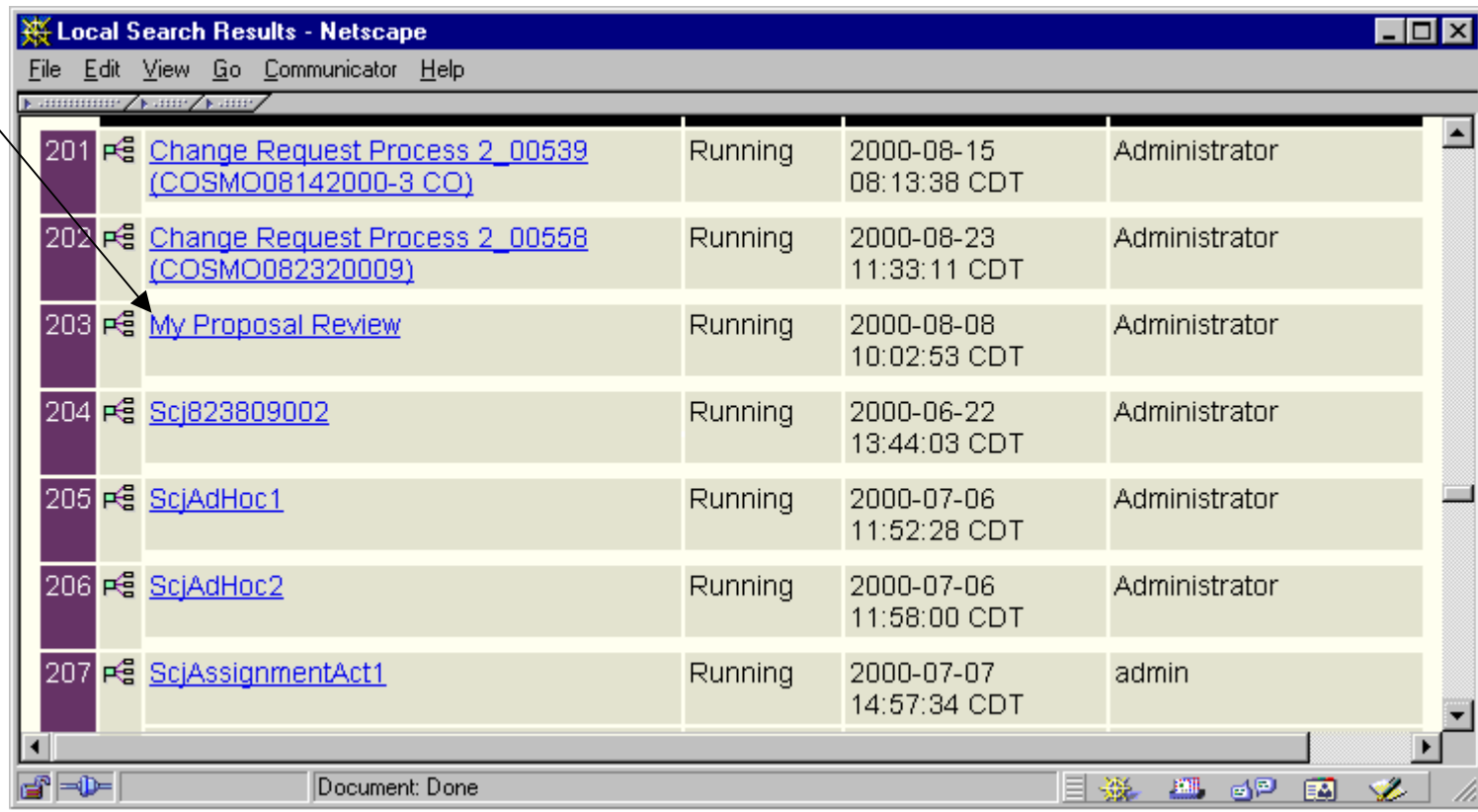
Monitoring Workflow Progress (continued)

Step 3

Select **My Proposal Review**, from the list of running processes.

You may have to scroll to find it.

The Process Manager opens, displaying the My Proposal Review process.

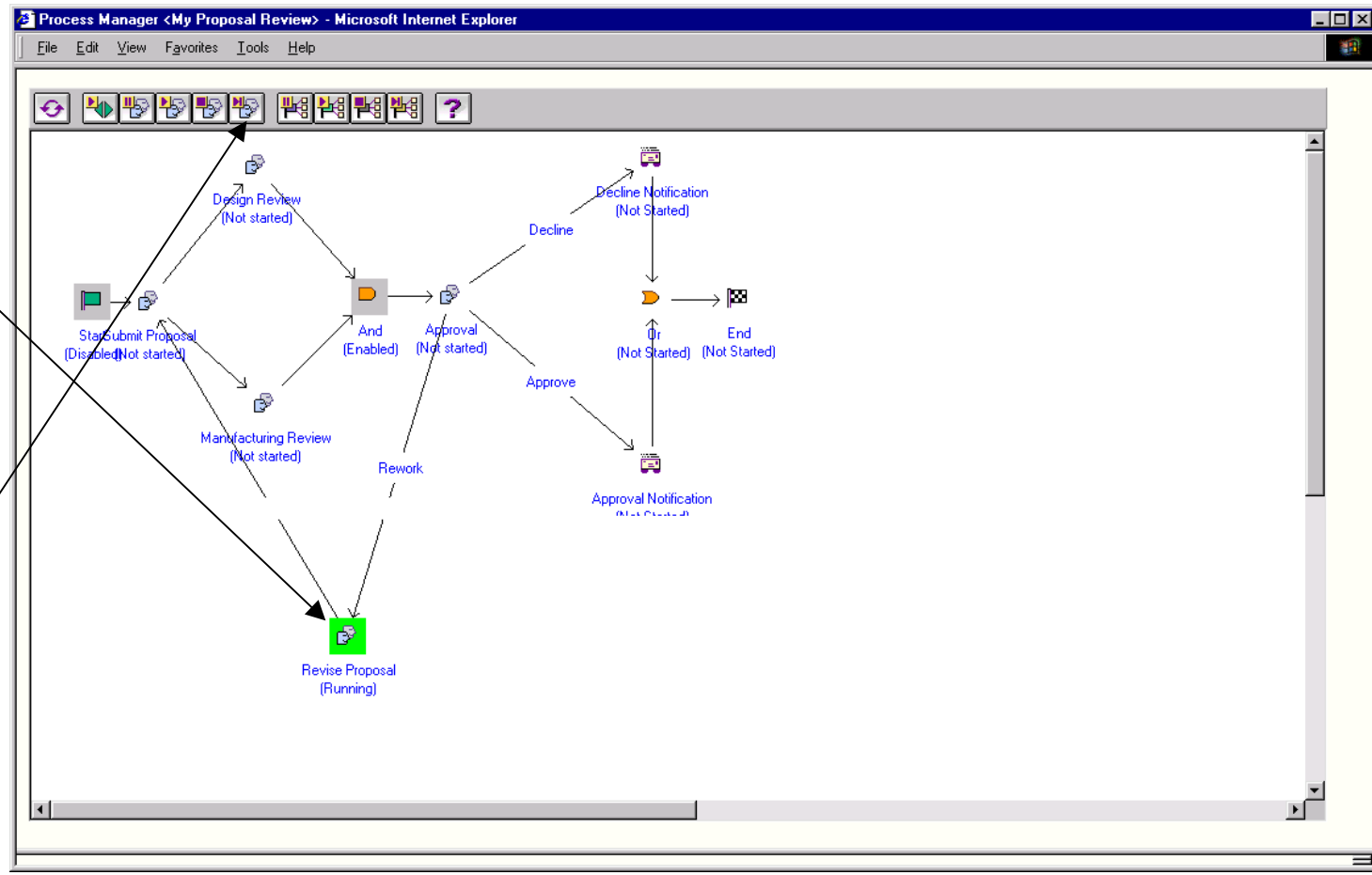


Monitoring Workflow Progress (continued)

The process appears on the top portion of the page. It displays the state of each activity. In the example, you can see that the **Revise Proposal** activity is highlighted in green and is described as *running*.

When you click an activity, the lower page is indexed to the information about that activity.

You can force an activity to complete by clicking the activity and then clicking the **Complete Activity** icon at the top of the window.



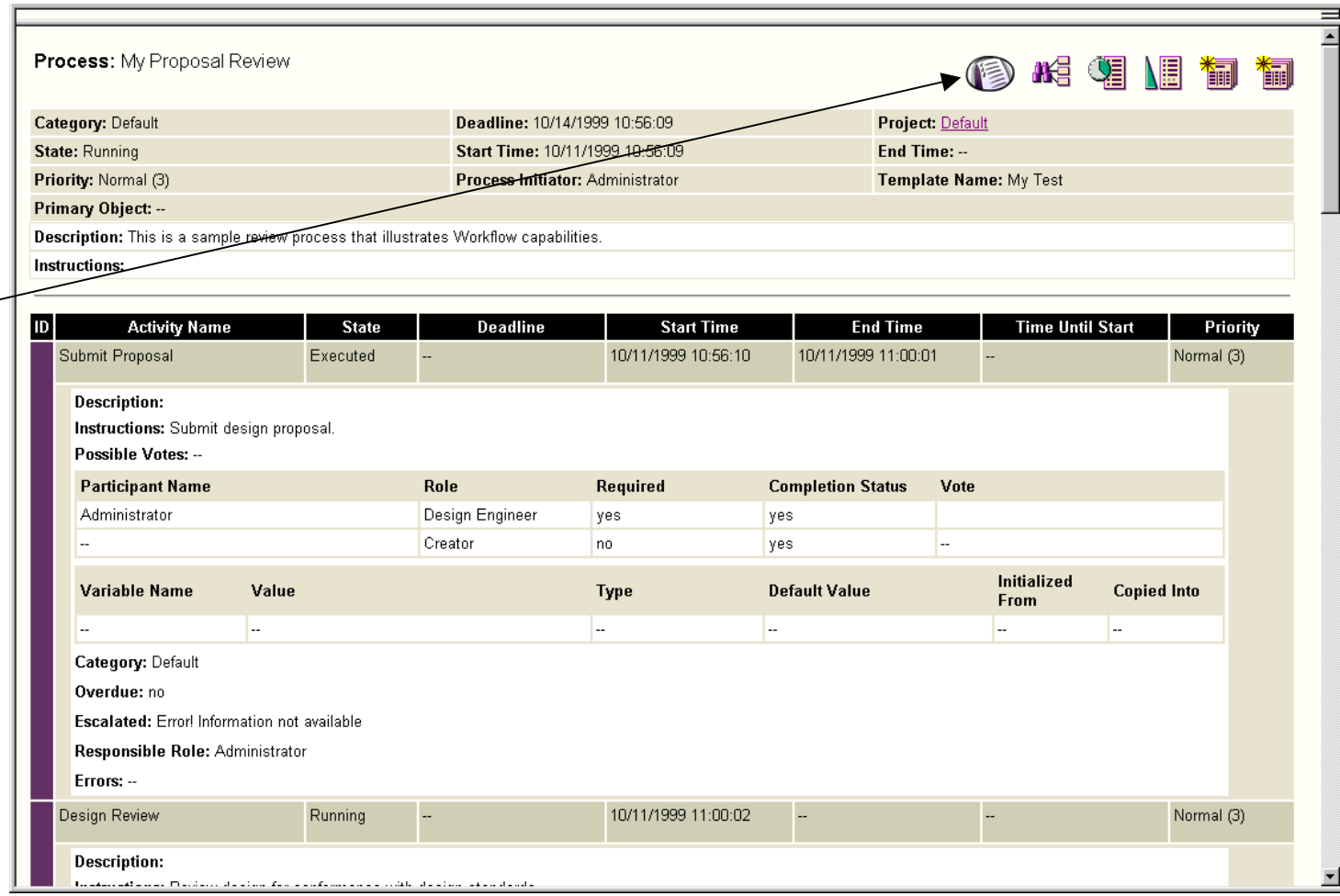
Monitoring Workflow Progress (continued)

Instructions for and descriptions of each activity appear on the bottom portion of the page.

You can browse through each portion separately.

Step 4

Return to your worklist by clicking the **Worklist** icon at the top of the second half of the page.



Completing Your Workflow Instance

You should now be back to your worklist.

Step 1

Click **Revise Proposal**.

Step 2

Click **Task Complete**.

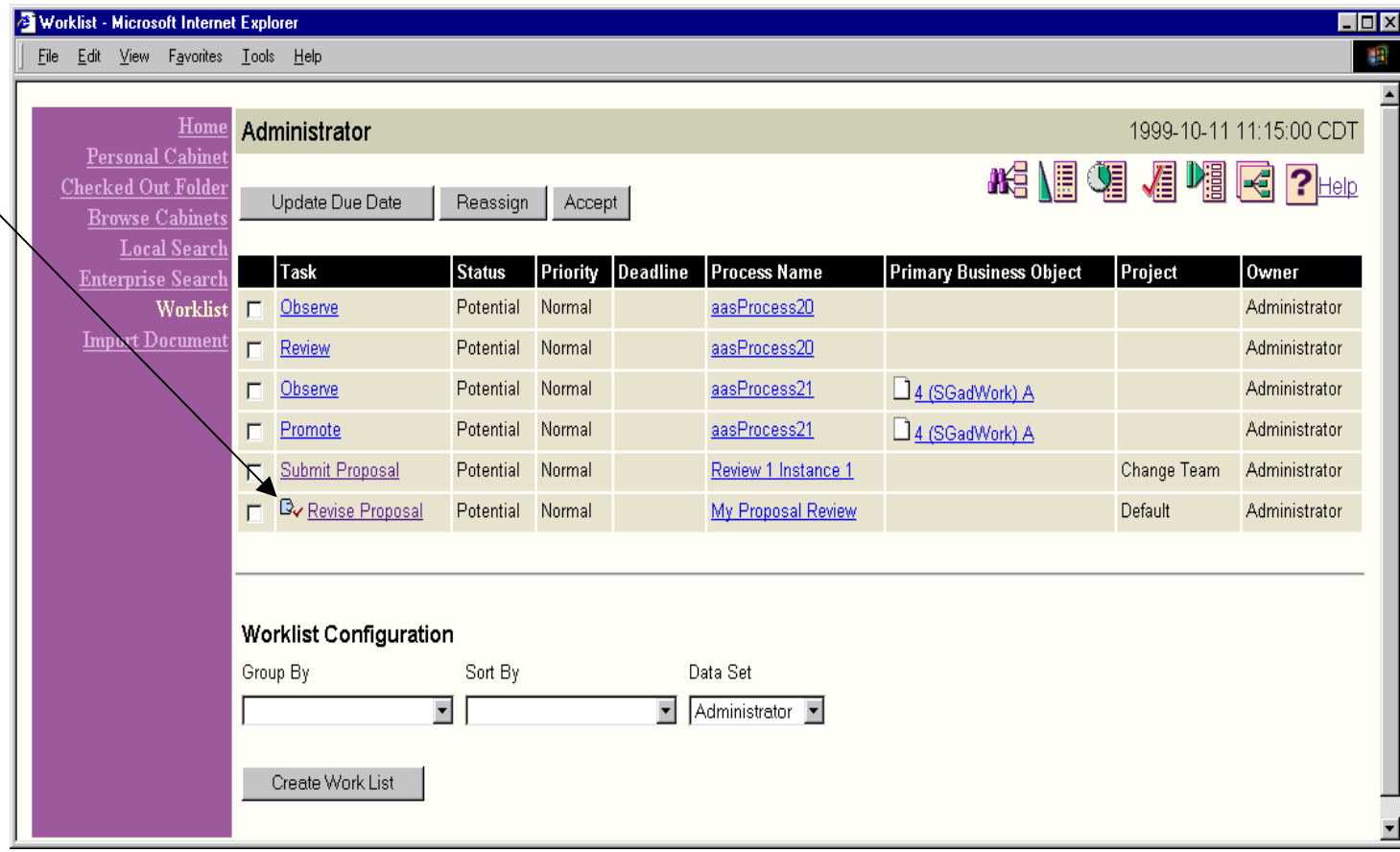
Step 3

Complete all of the tasks again. When you get to the Approval task, click **Approve** to complete your process.

Step 4

Check your e-mail messages.

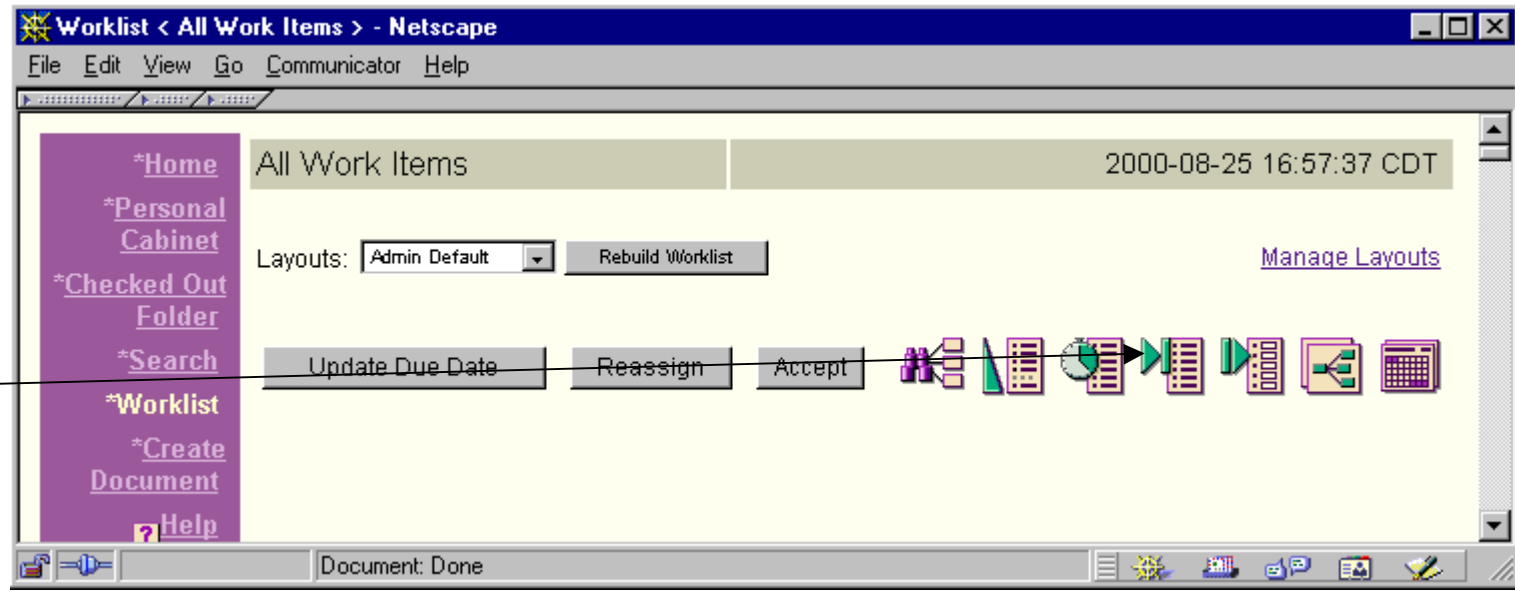
If you followed the instructions correctly for the **Notification** robot, the message you set up should be sent to you when you click **Approve**.



Viewing Your Completed Process

Before you continue, you may have to wait a few minutes before your process is recognized as completed.

To view your completed process, click the **Completed Processes** icon at the top of the Worklist page.



Congratulations!

You have now completed the Windchill Release 5.1 Workflow Tutorial for workflow process templates.

The next section of this tutorial covers the life cycle view of workflow processes.

Windchill®

Life Cycle Tutorial

Release 5.1

Section 2 — Building a Life Cycle Process Template

Defining a Life Cycle

A life cycle represents the states an object moves through as it matures.

Human Life Cycle	**Birth**	**Childhood**	**Adolescence**	**Adulthood**	**Senility**	**Heaven**
Product Life Cycle	**Concept**	**Design**	**Prototype**	**Production**	**Support**	**Obsolescence**

Determining the Value of a Life Cycle

A life cycle is valuable because it:

- Provides high-level view of an object's state or maturity
  - Is an object released?
  - Is an object obsolete?
- Controls access to the object, based on its state
  - An author only has read/write privileges during development.
  - All users have read-only privileges during review.
- Establishes criteria for moving to the next phase
  - Are all of the component parts released?
  - Has UL approval been granted?

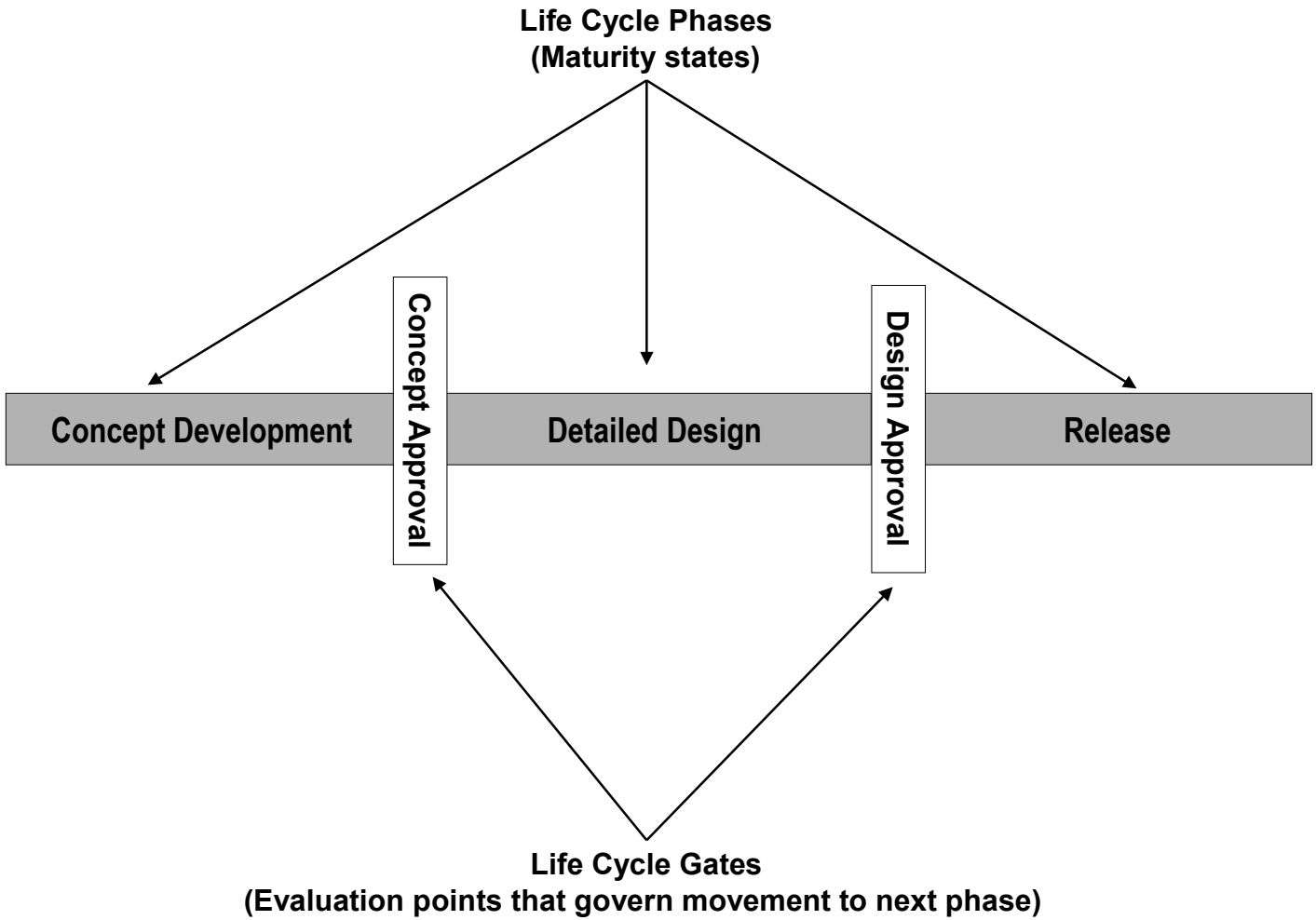
Section 2 — Building a Life Cycle Process Template

Using Life Cycles

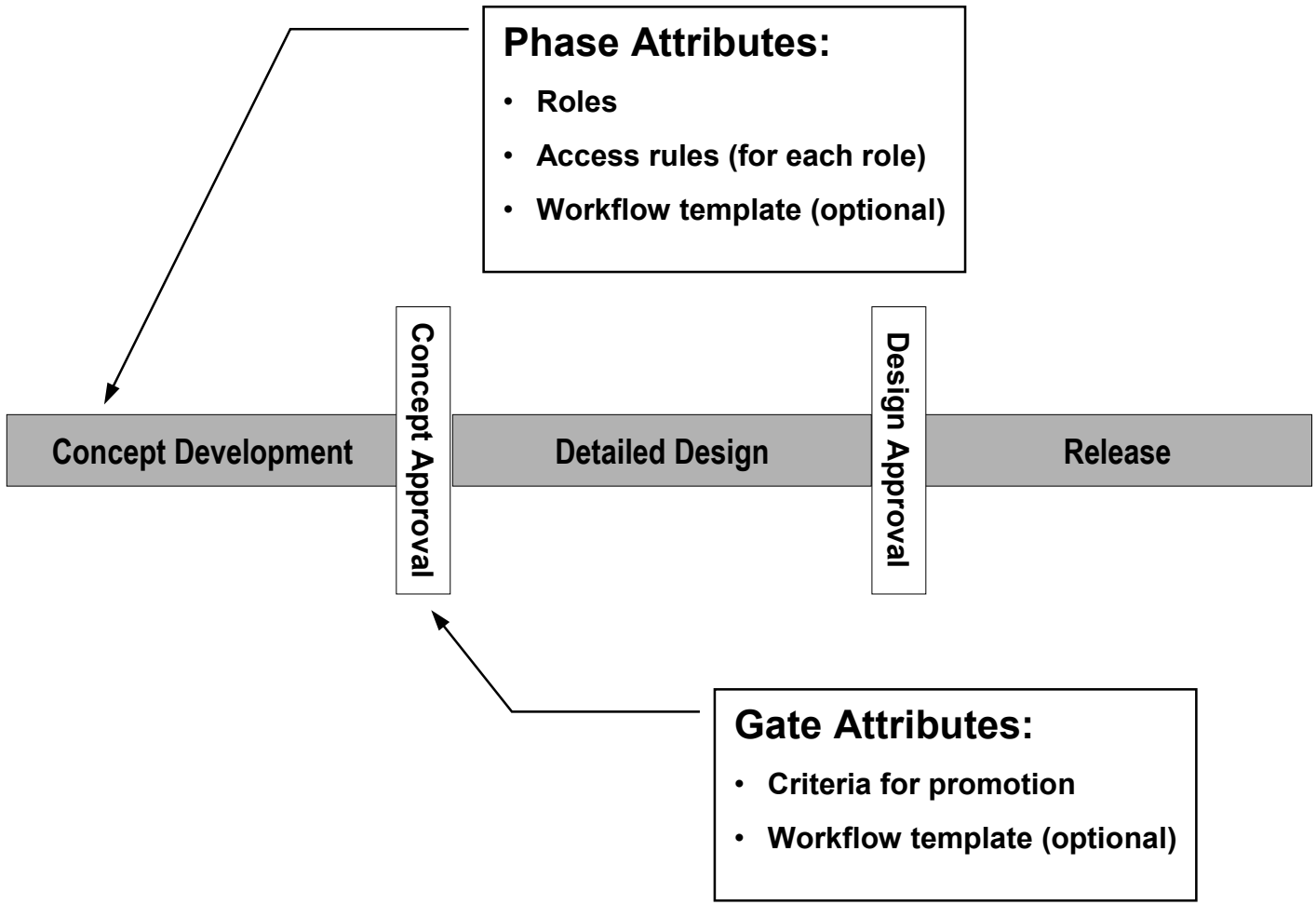
A life cycle is used to:

- Manage part creation, modification, review, and release.
- Document development review and approval of design documents and specification documents.
- Engineer change management with change requests, change orders,and change activities.

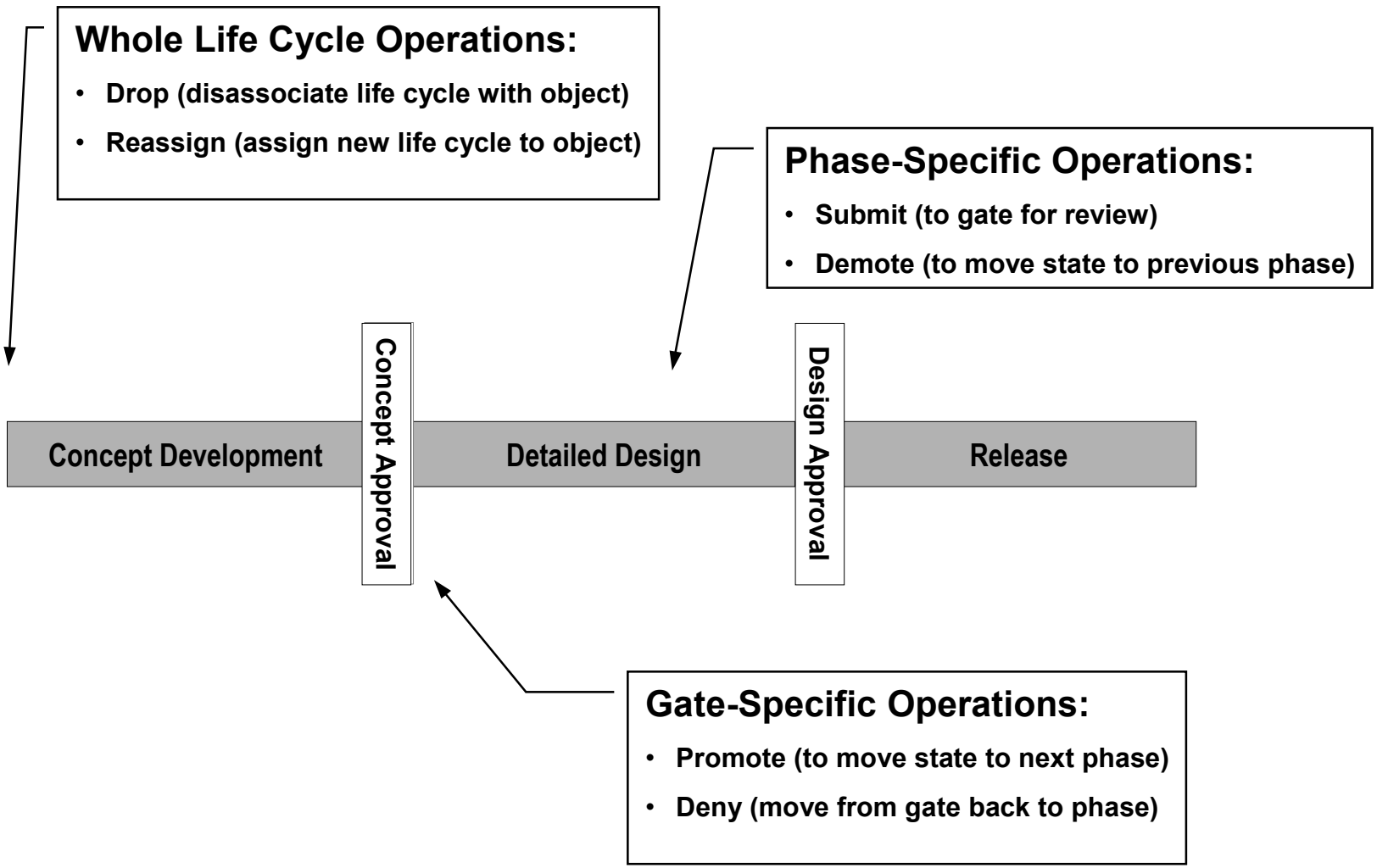
Understanding Life Cycle Components



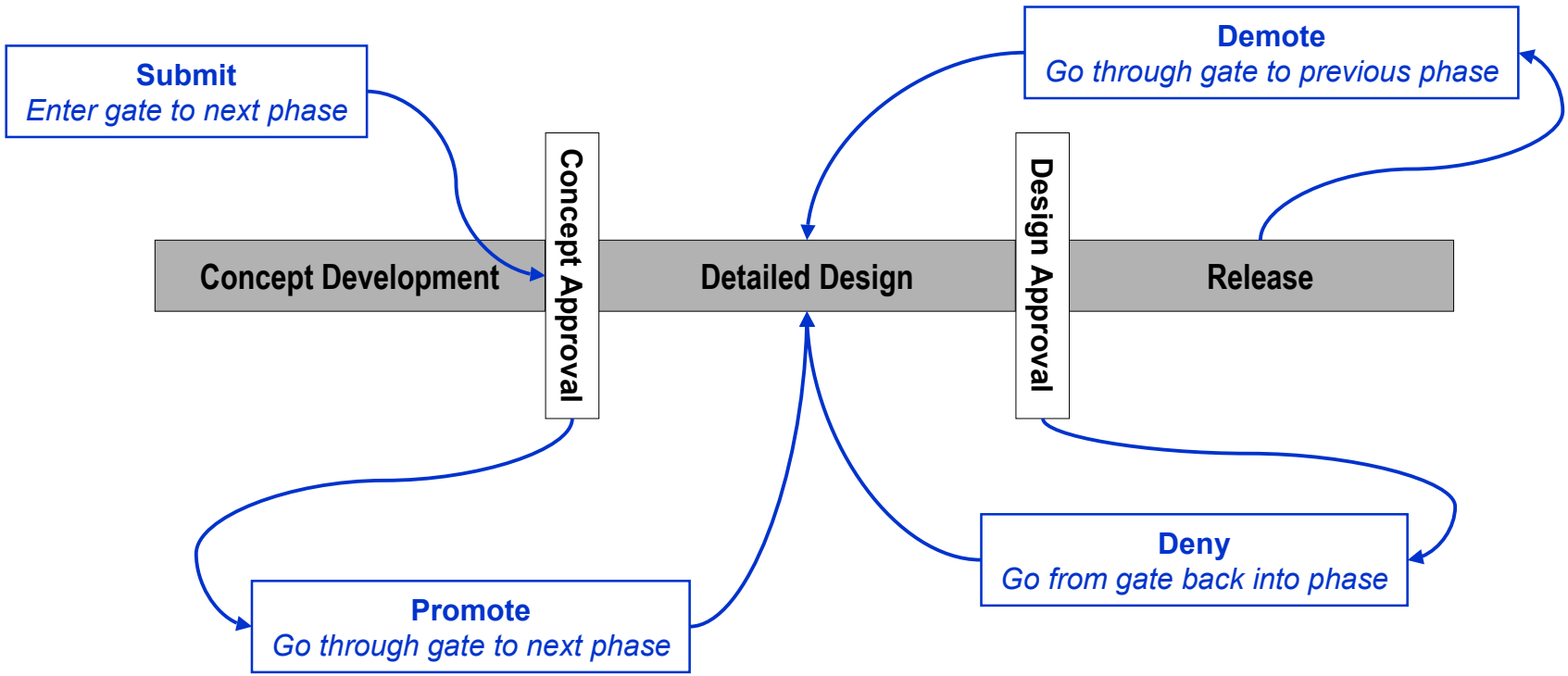
Understanding Life Cycle Attributes



Understanding Life Cycle Operations



Understanding Life Cycle Affects and Effects



Understanding Life Cycle Development

Life cycle development involves the following steps:

1. **Defining life cycle name and location**

   A life cycle name must be defined as well as a reference location.

2. **Creating a phase/gate pair and associate phase name**

   You must select the phase from a list of defined phases (defined in the StatesRB.java resource bundle).

3. **Defining roles, access privileges, promotion criteria, and the optional workflow template**

   You participate in a process by opening the work items in your worklist and by interacting with the task forms associated with the work items.

4. **Creating an object and assigning a life cycle and project**

   You must create a new object instance and assign a previously defined life cycle.

5. **Participating in object life cycle events**

   You can submit and promote an object and view an object's history.

Understanding Life Cycle Creation and the Life Cycle Window

Subject phase selected

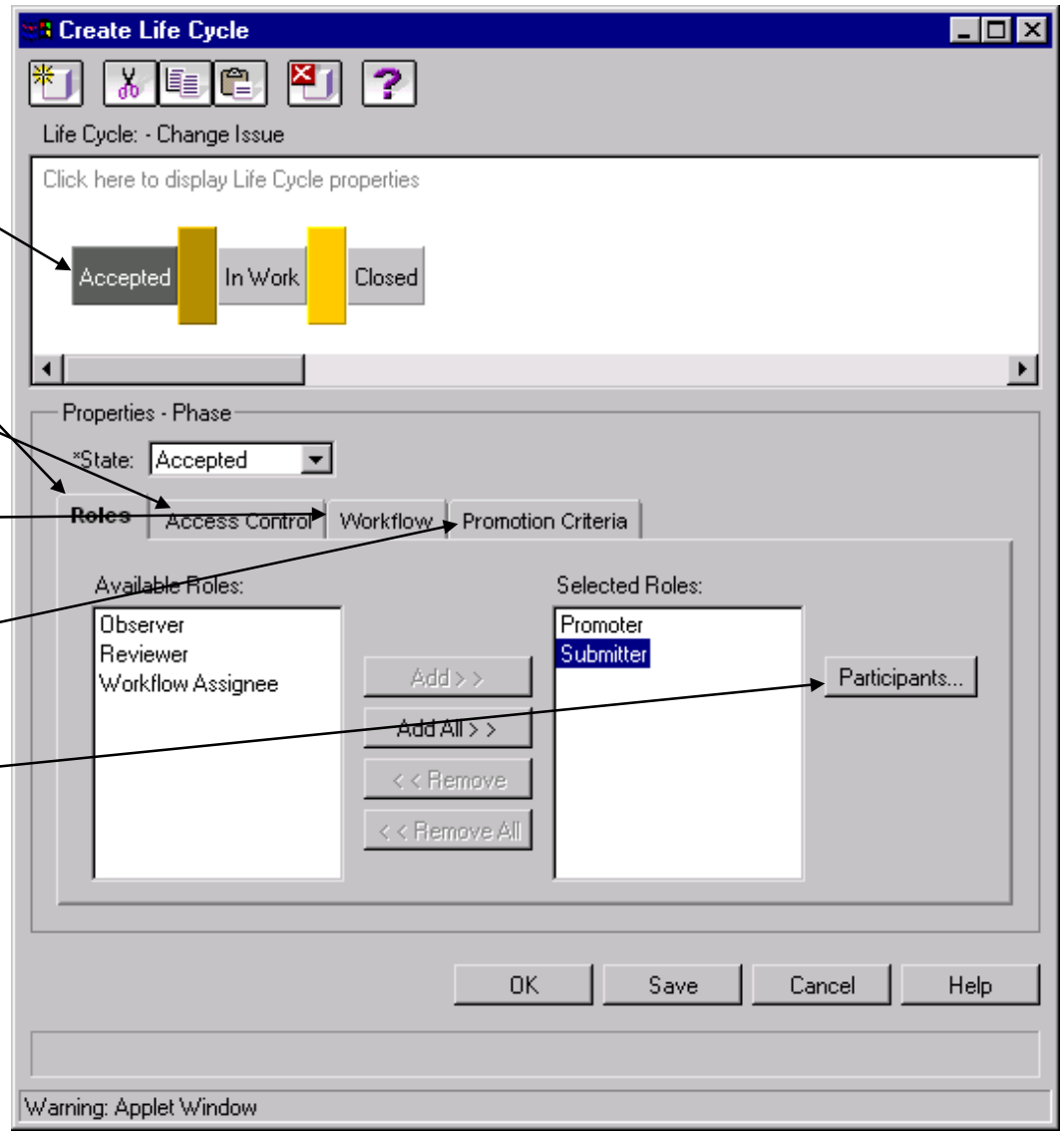
Roles tab page for selected phase

Access Control tab to set access control for each role

Workflow tab to specify workflow template for phase

Promotion Criteria tab to specify promotion criteria for phase

Participants button to assign participants through roles or resolve roles through project (recommended)

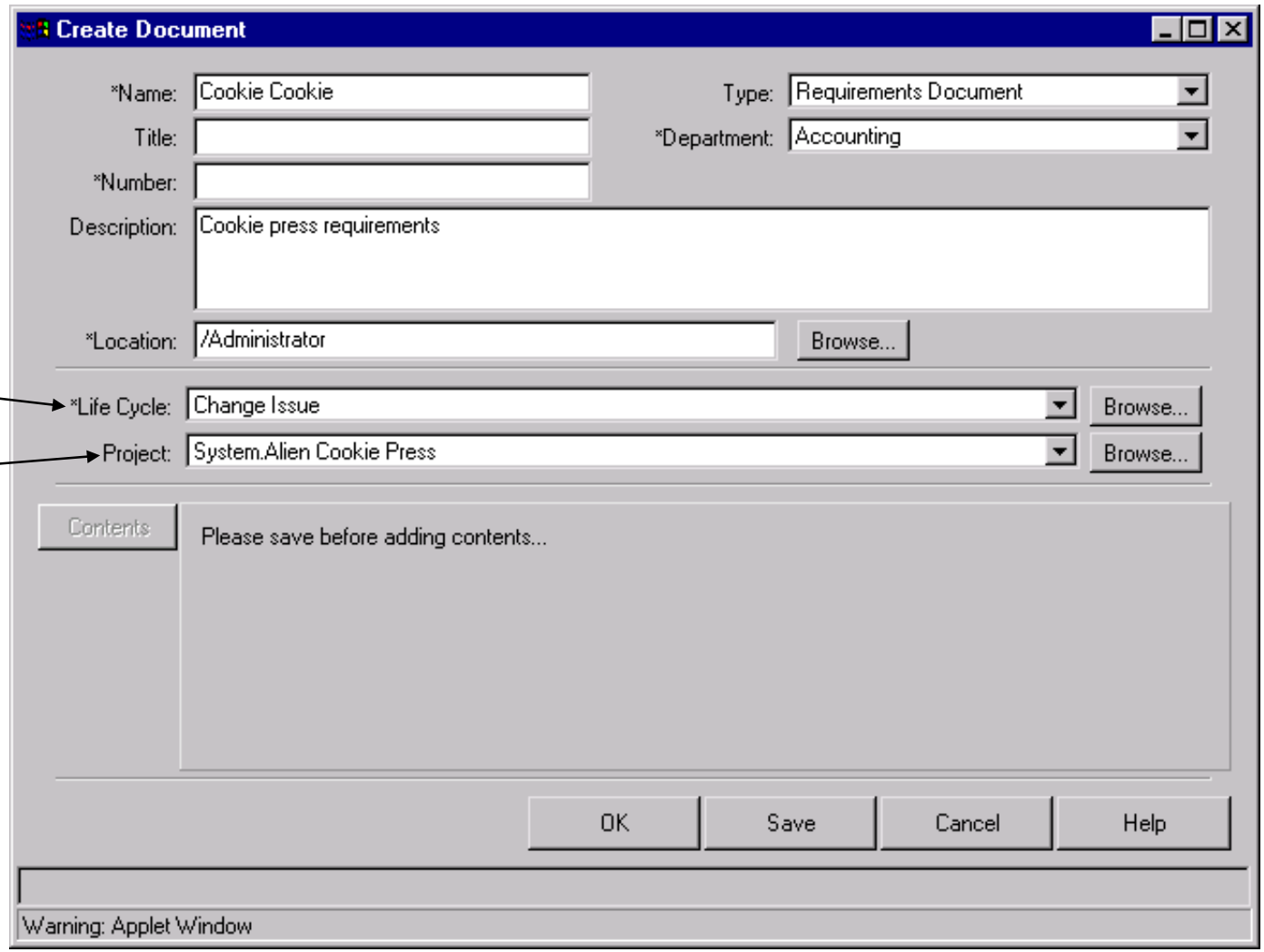


Creating Objects and Assigning Life Cycles

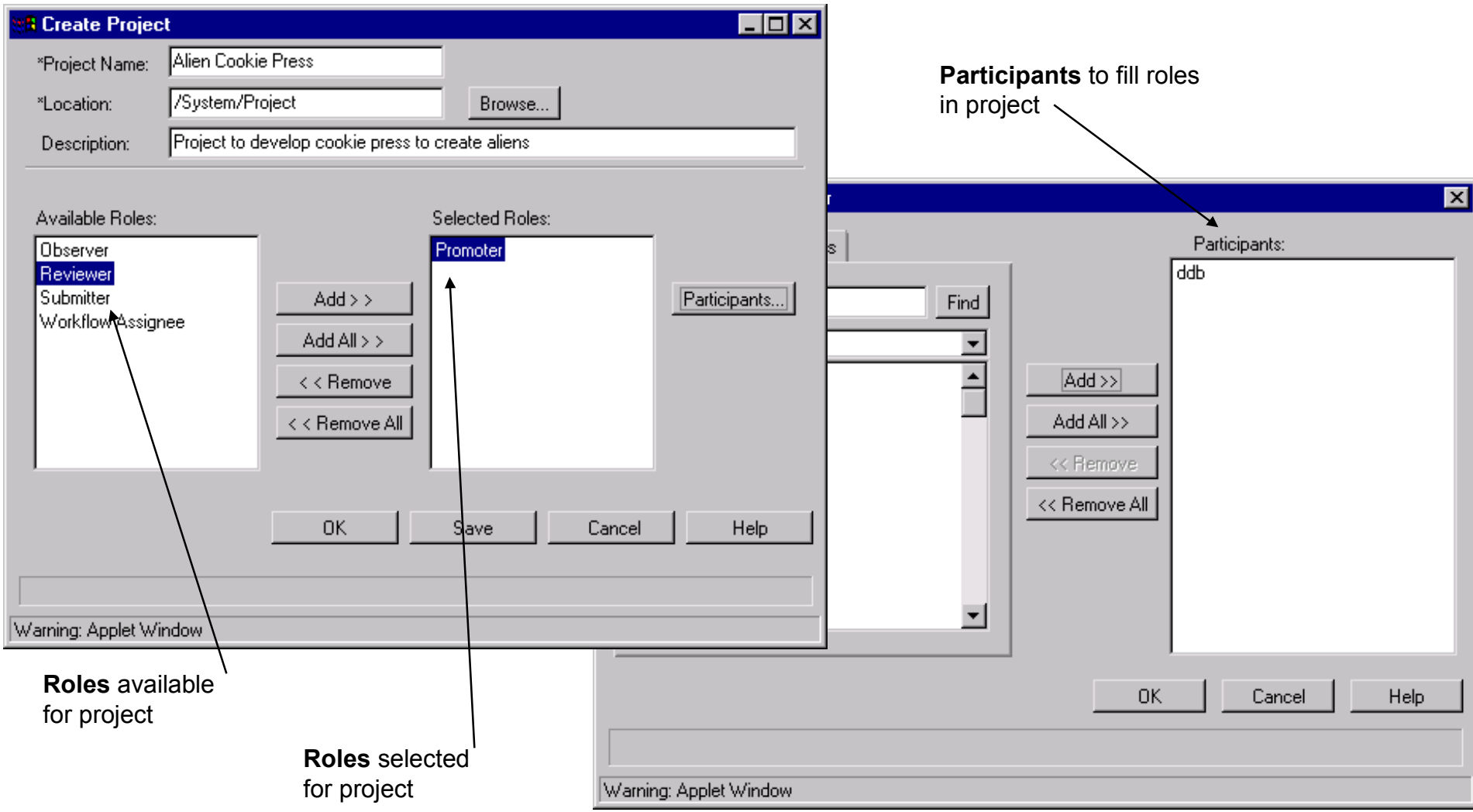
You can assign a life cycle and, optionally, a project to an object.

Assign life cycle.

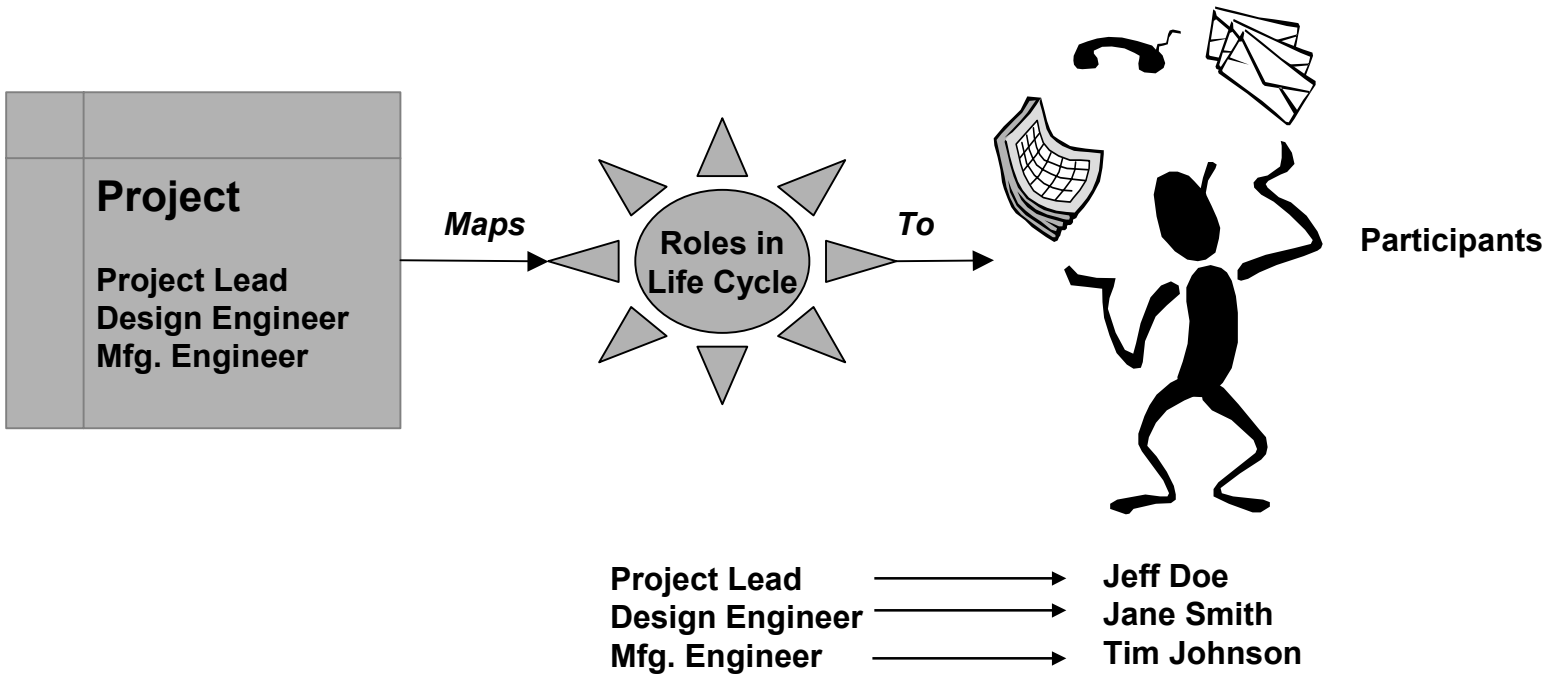
Assign project to map participants to roles.



Creating Projects



Understanding Project-Based Role Resolution

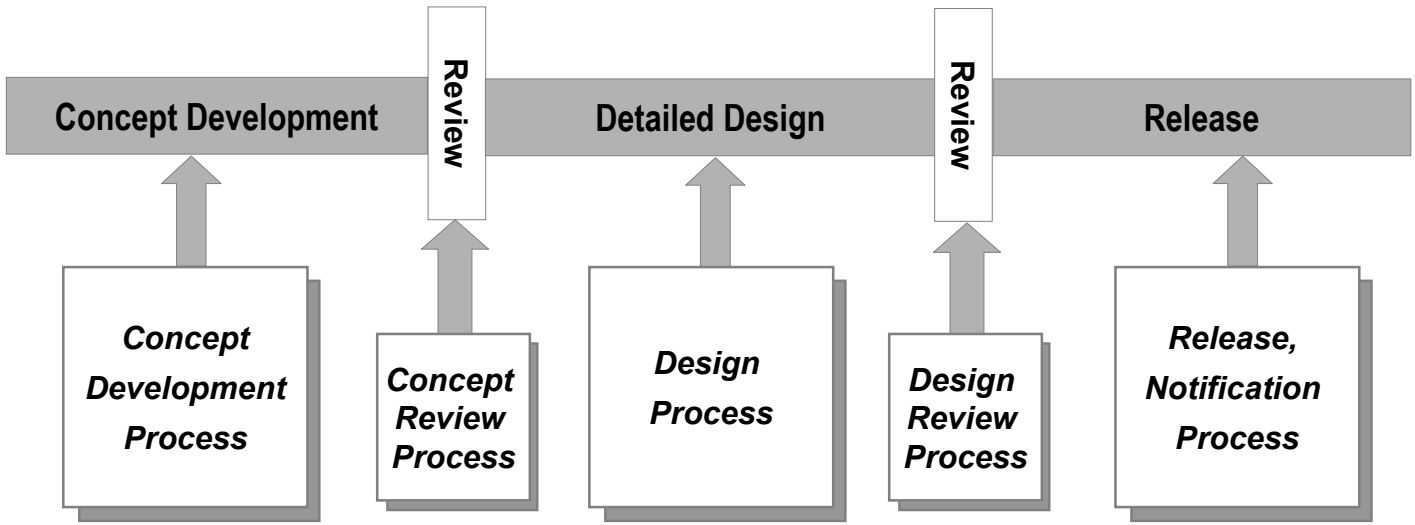


A project maps roles in life cycles and workflows to real participants for an object instance.

Understanding Life Cycle/Workflow Integration

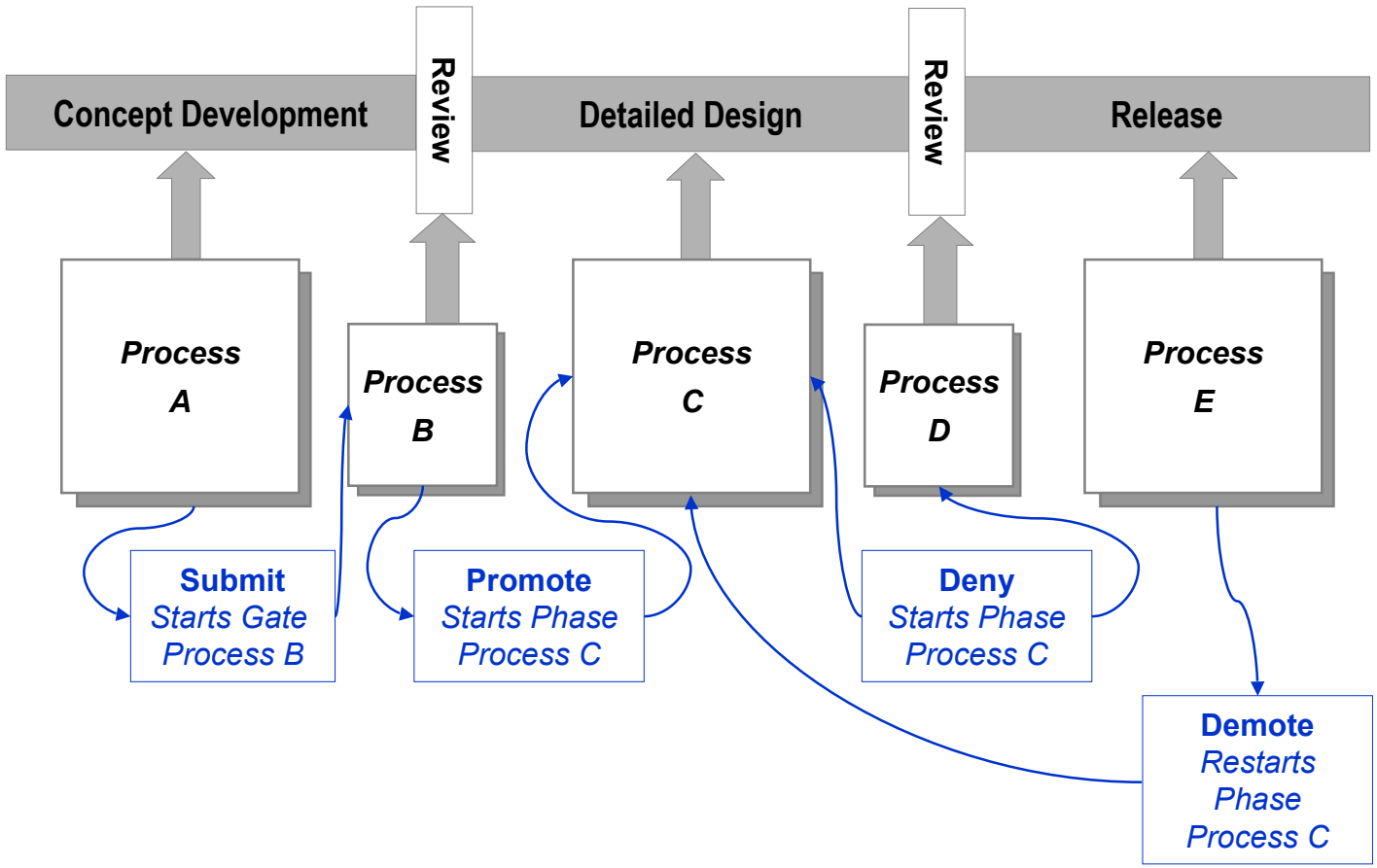
Workflow templates can be optionally associated with any phase or gate.

The workflow process associated with the first phase is initiated when the object instance is created and assigned a life cycle
.



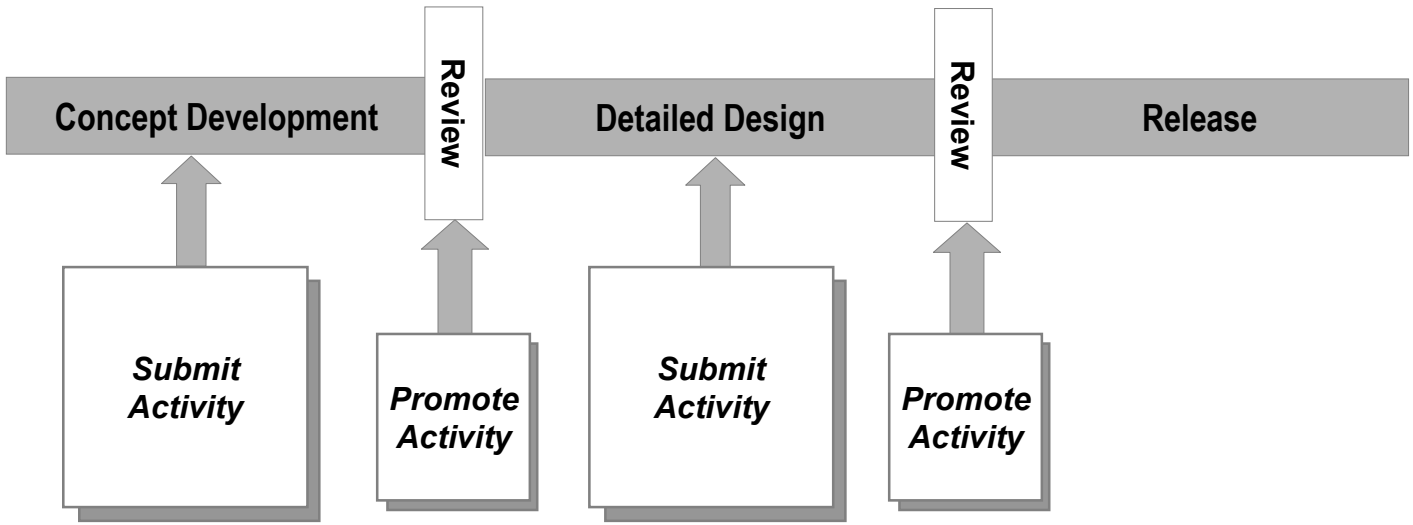
Understanding Life Cycle/Workflow Integration (Continued)

Life cycle operations cause workflow processes associated with phases and gates to start.



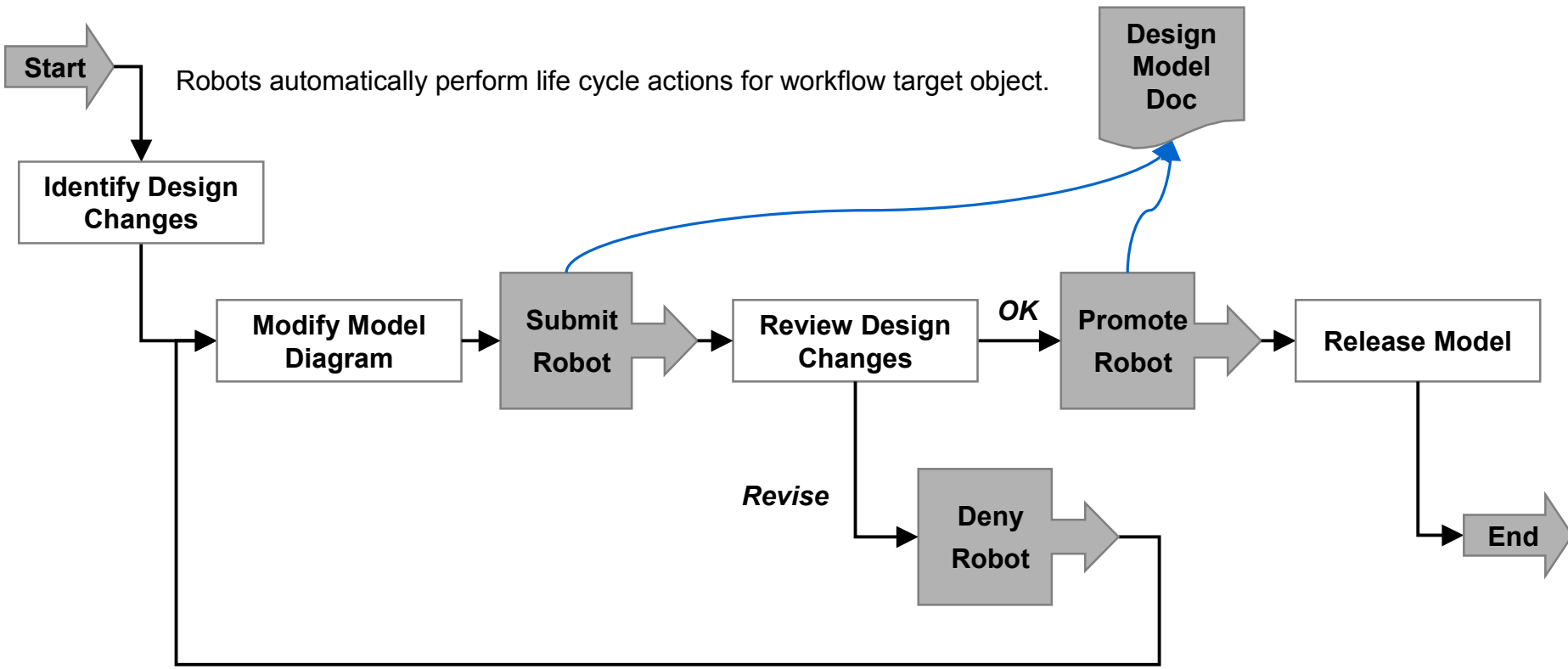
Understanding Life Cycle/Workflow Integration (Continued)

The figure to the right illustrates default processes and activities associated with phases and gates



Understanding Life Cycle/Workflow Integration (Continued)

Workflow can include robots to automate life cycle submit and promote actions.
The actions are applied to the life cycle associated with the target object of a workflow.



Windchill®

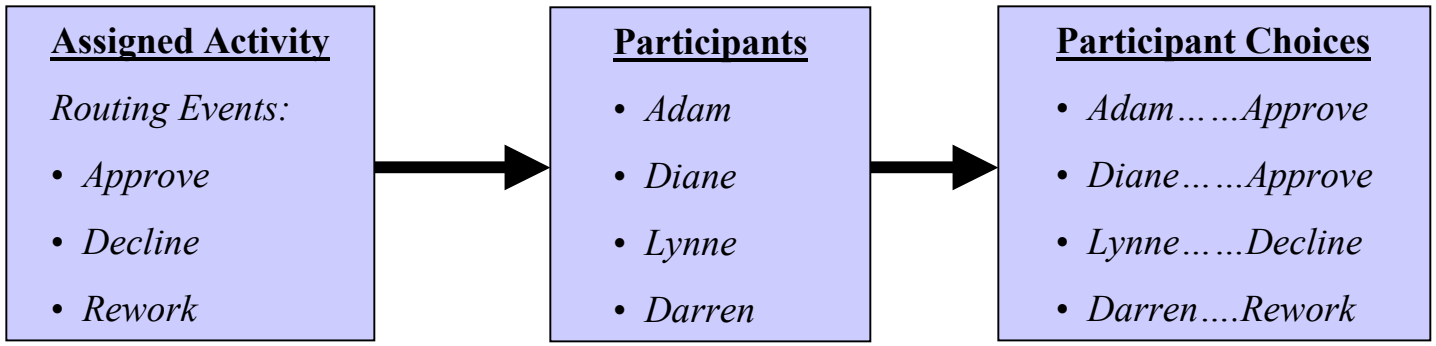
Advanced Examples

Release 5.1

Overview

Workflow gives you the ability to tally votes for each assigned activity.

This means you can cause a particular routing event in an activity to fire, based on a poll of the choices of the participants of that activity.



You can cause the Activity to fire the routing event that was chosen most often.

Conduct poll for highest number of votes.

Approve = 2 votes; Decline = 1 vote; Rework = 1 vote. Approve wins.

Fire routing event Approve .

Opening My Test Workflow in Update Mode

Step 1

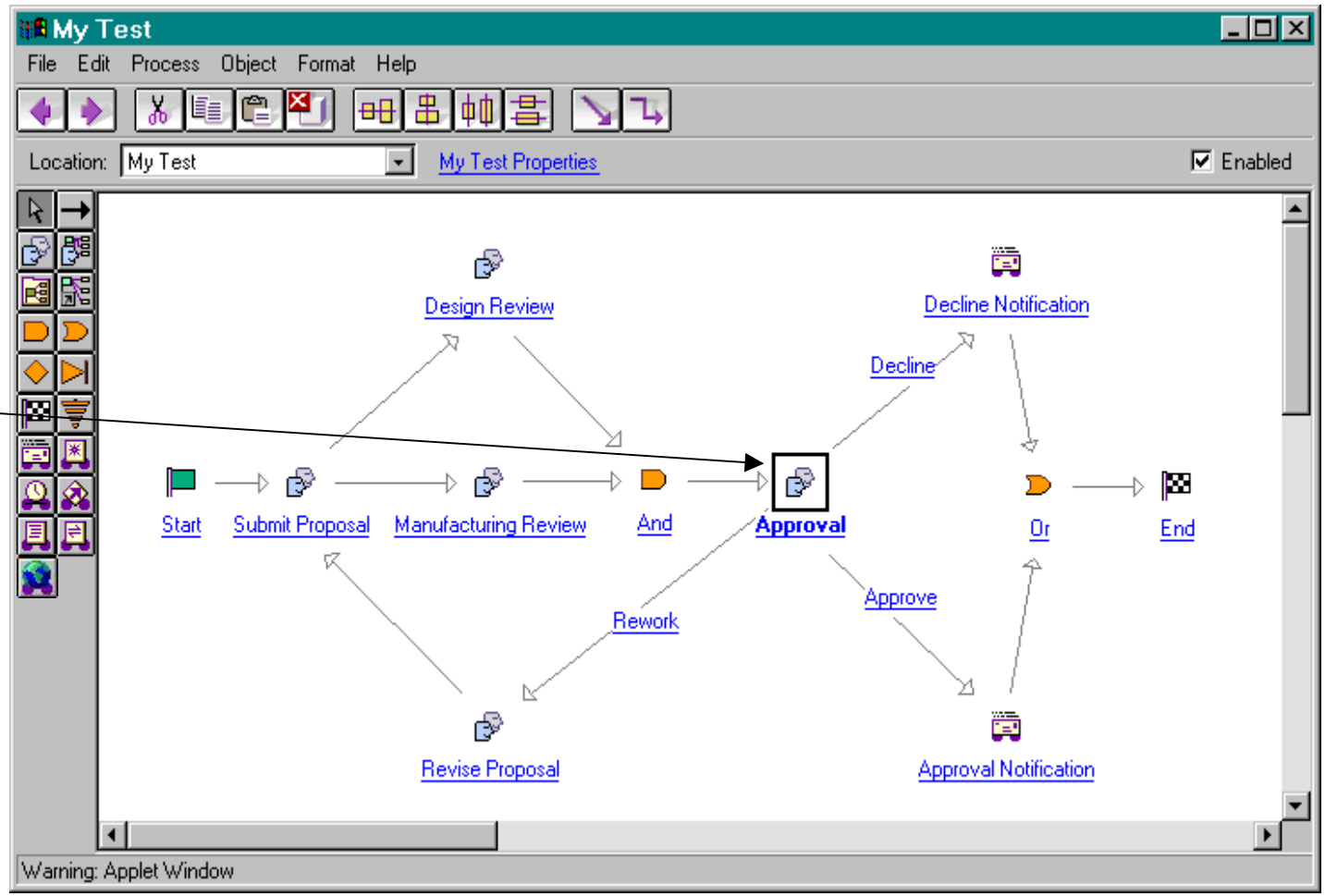
Return to the Workflow Administrator.

Click **Update** to open the **My Test** workflow template you created in Section 1.

Step 2

Click the **Approval** activity link.

The activity Properties window opens.



Adding Assignees to the Activity.

Step 1

Click the **Participants** tab.

Step 2

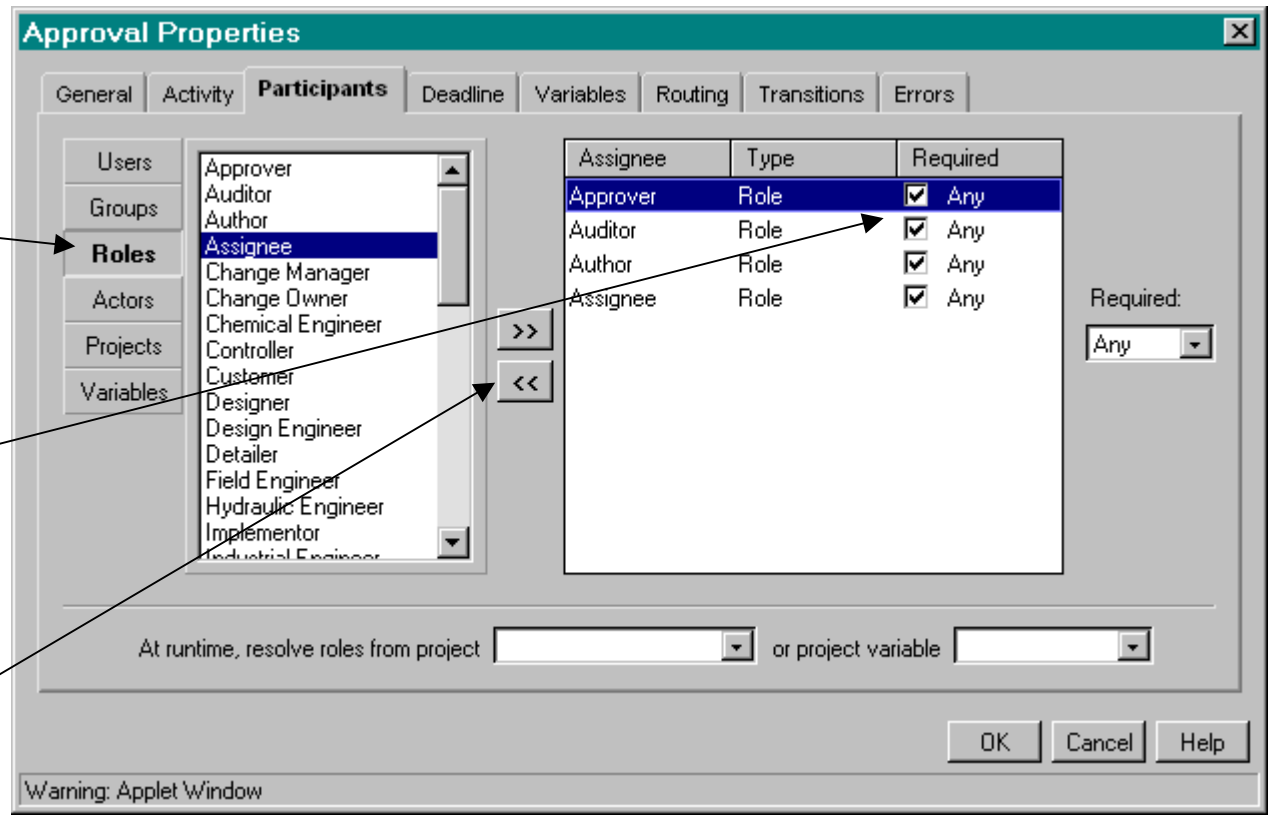
Click **Roles**, and then add any four roles from the roles list to the assignees of the Activity. (Select the role and click » .)

Step 3

Select the **Required** check box to make the assignees required.

Step 4

Remove Creator and Product Manager from the assignee list. (Select the roles and click « .)



Adding a Tallying Expression to the Activity

Step 1

Click the **Routing** tab.

Step 2

In the **Routing/Tallying Expression** text box, enter your tally expression for firing the event that got the most votes. Use the Wf.Tally.plurality() method.

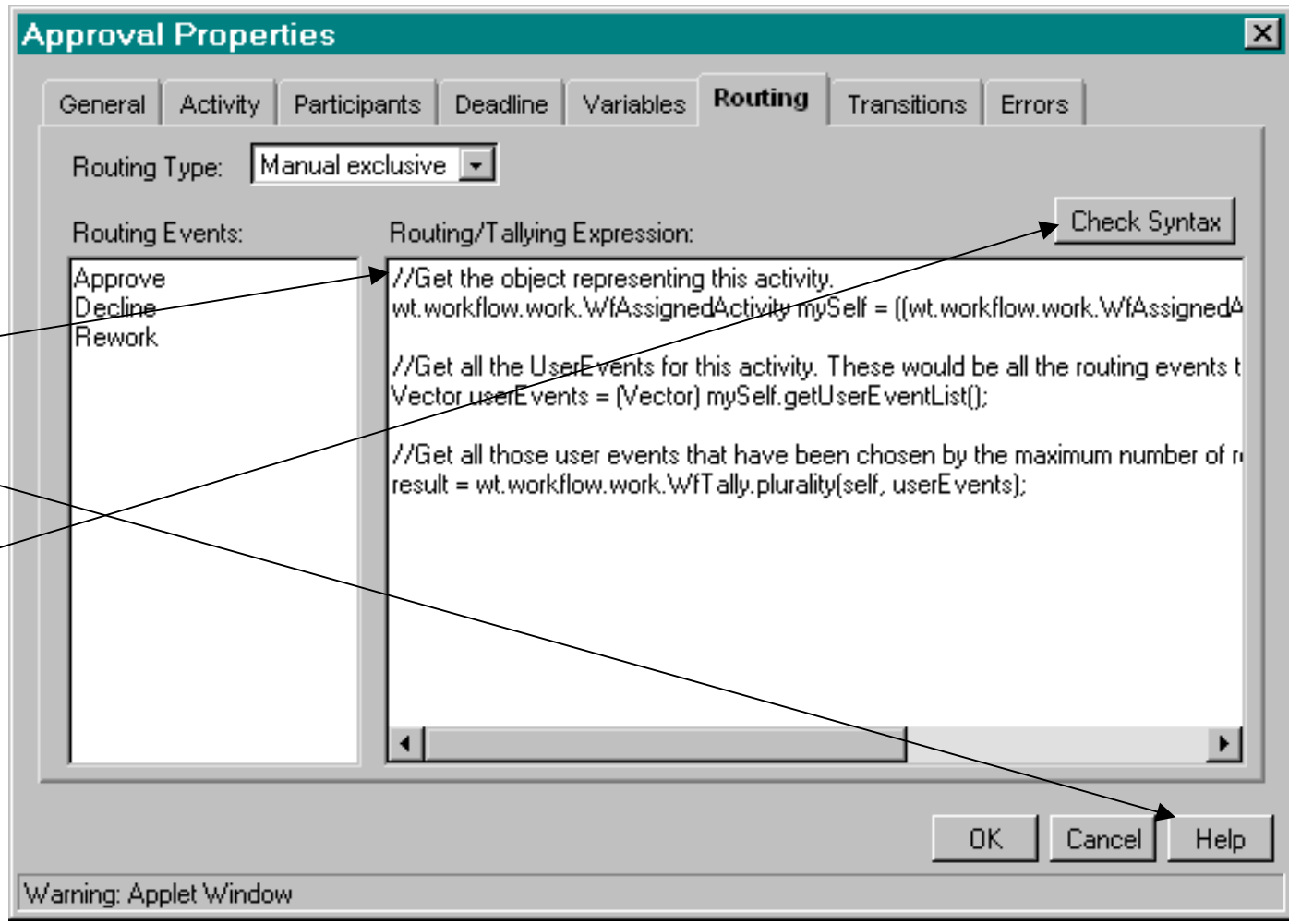
(Follow code sample links from the workflow activity help file.)

Step 3

Click **Check Syntax**, and correct any errors.

Step 4

Click **OK** when your expression is free of errors.



Running the Workflow

Step 1

Select **File > Save As**. Name the workflow `Tally Test`.

After saving, select **File > Exit** to exit the window.

Step 2

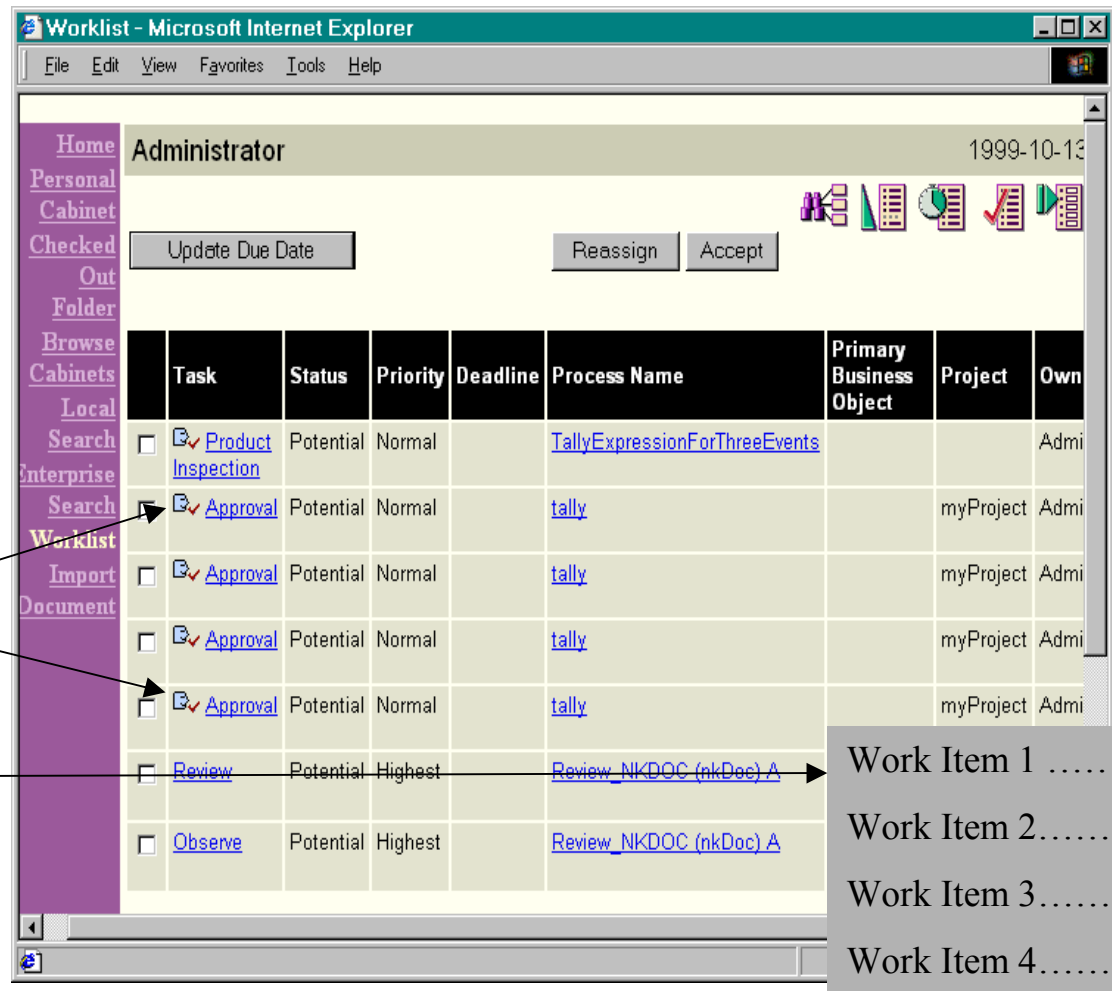
Check the Tally Test workflow into the System folder, where it will be publicly available to others.

Step 3

Initiate the Tally Test workflow, and complete all tasks in the worklist until you see four work items for the Approval activity.

Step 4

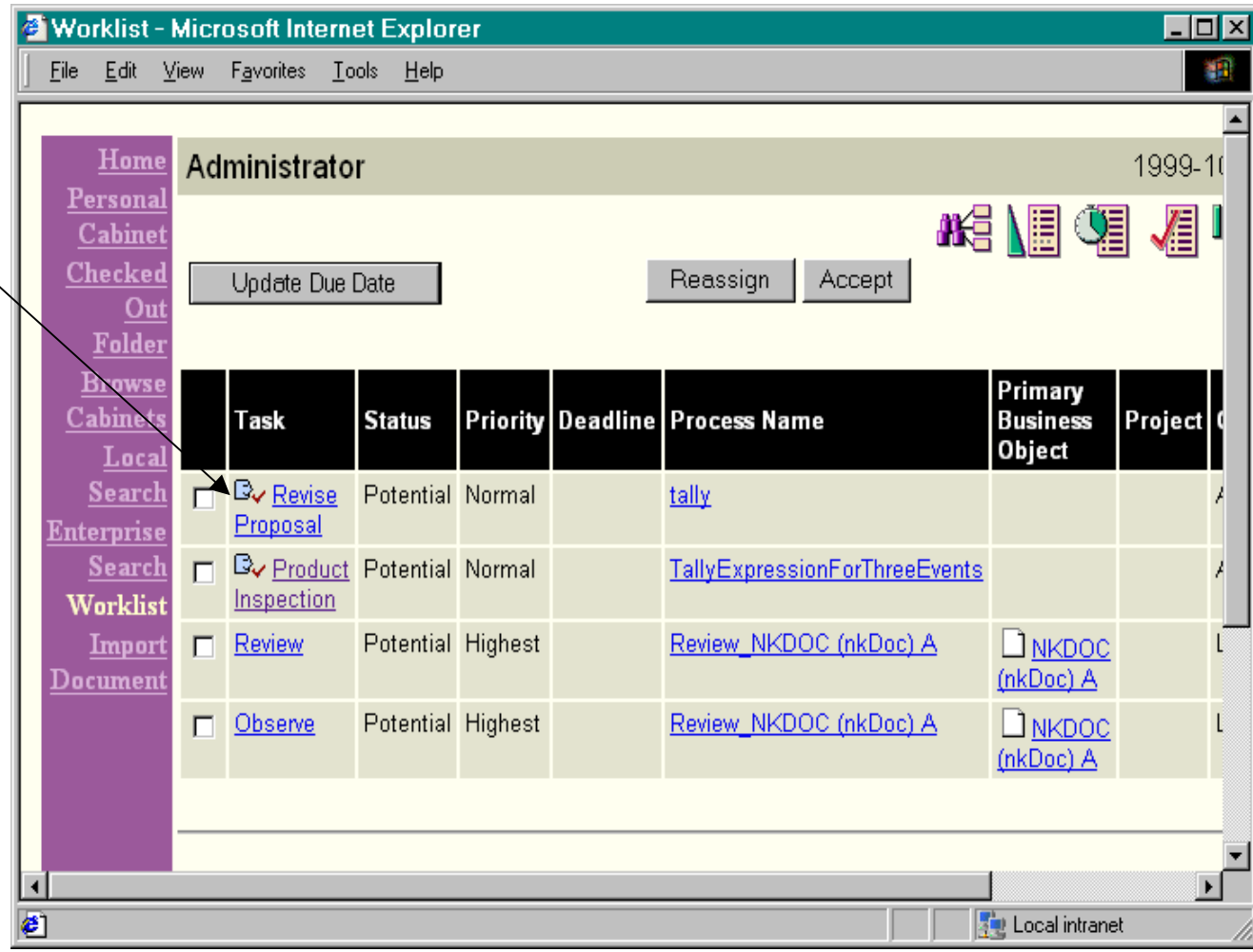
Select the routing events in the table for each of these work items.



Checking Results of the Tally Expression

When you have completed the last work item, the **Revise Proposal** work item appears on your worklist because it received the most votes.

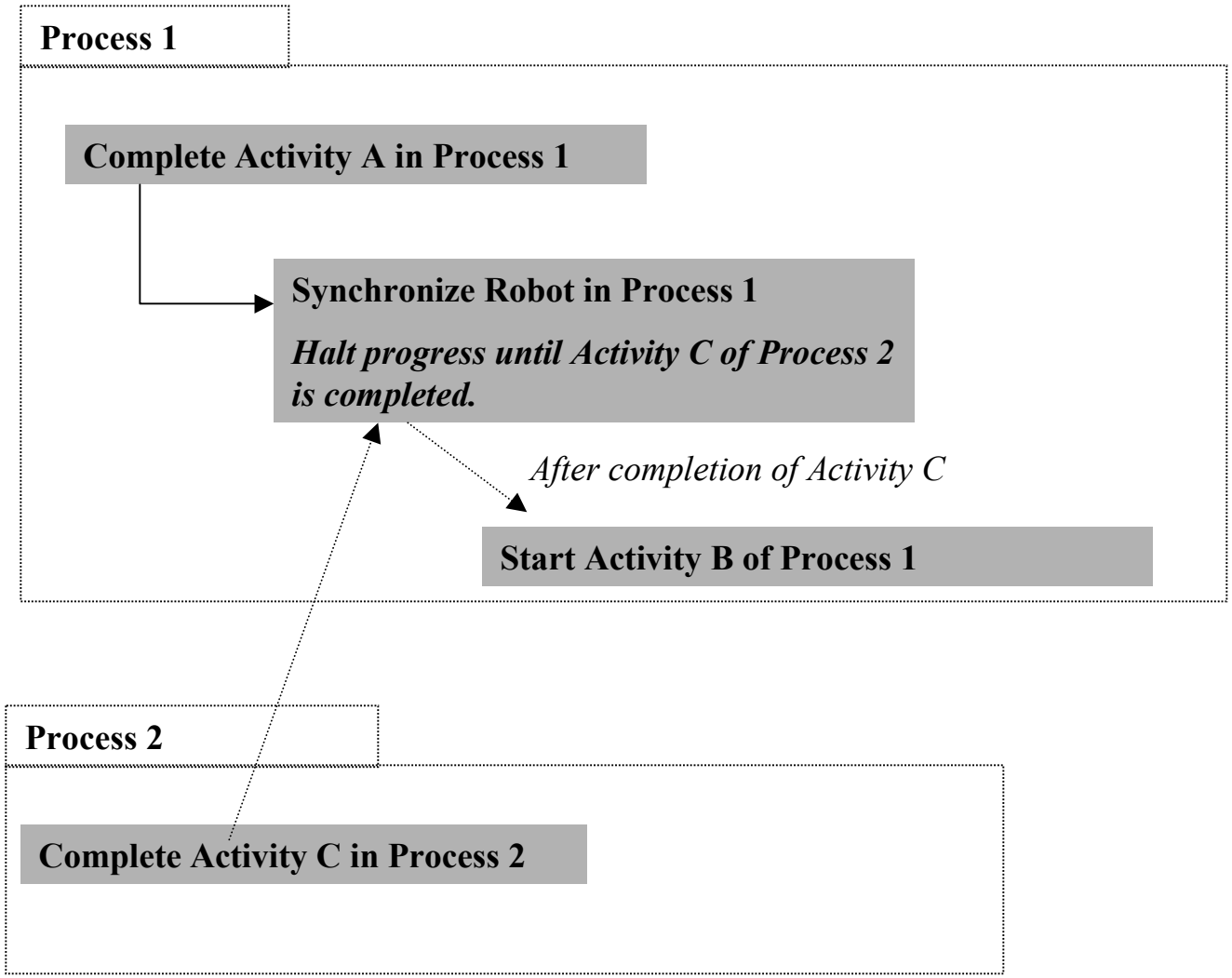
Complete the remaining work items until the process is completed.



Overview

Synchronization robots halt the progress of a running process until a specified condition is satisfied.

These robots can be used when the progress of an activity or process is dependent on an event in another process or activity.



Creating a Workflow with a Synchronization Robot

Step 1

Create a new workflow template, and name it `Robot Test`. For instructions, see Section 1 of this tutorial.

Step 2

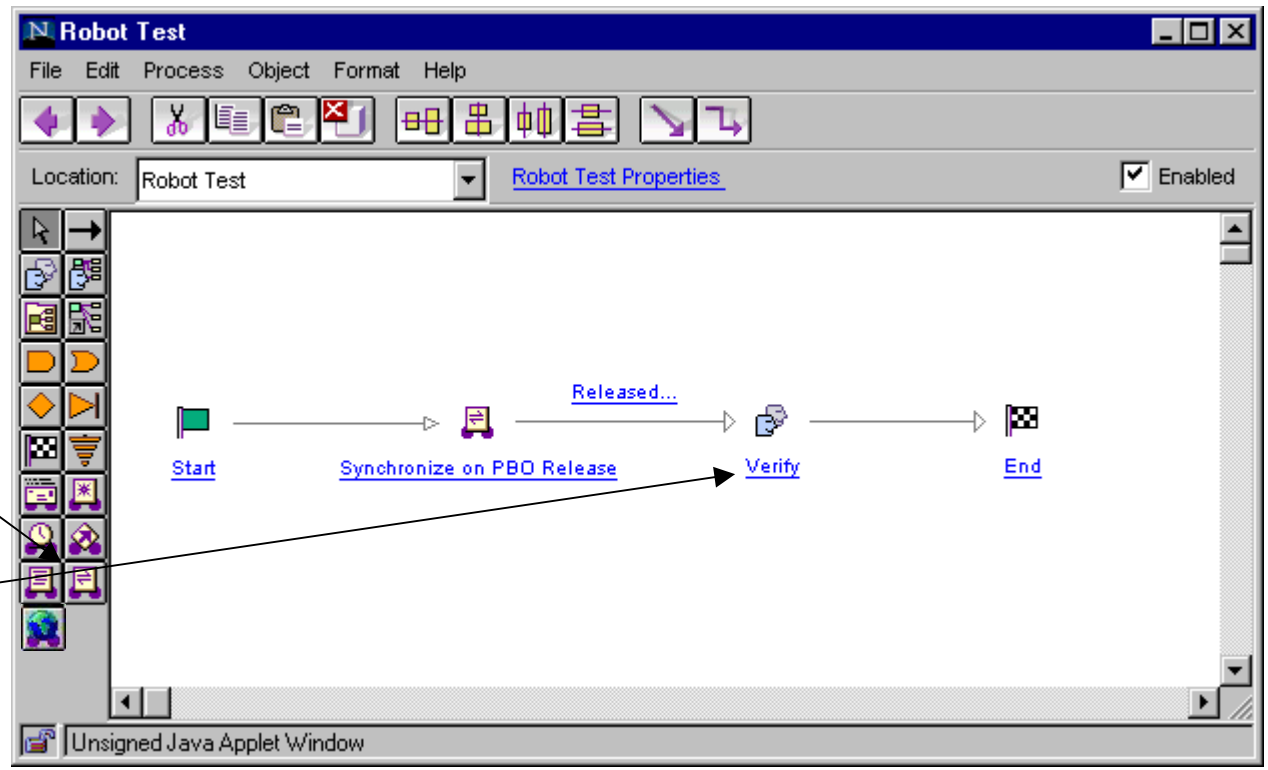
Click the **Synchronization Robot** icon and place it on the workflow screen.

Step 3

Add an assigned activity to the workflow, and name it `Verify`.

Step 4

Add links to the workflow, as in the example.



Change Properties of the Synchronization Robot

Step 1

Open the Properties dialog box for the Synchronization robot.

Step 2

Change its name to `Check state robot`.

Step 3

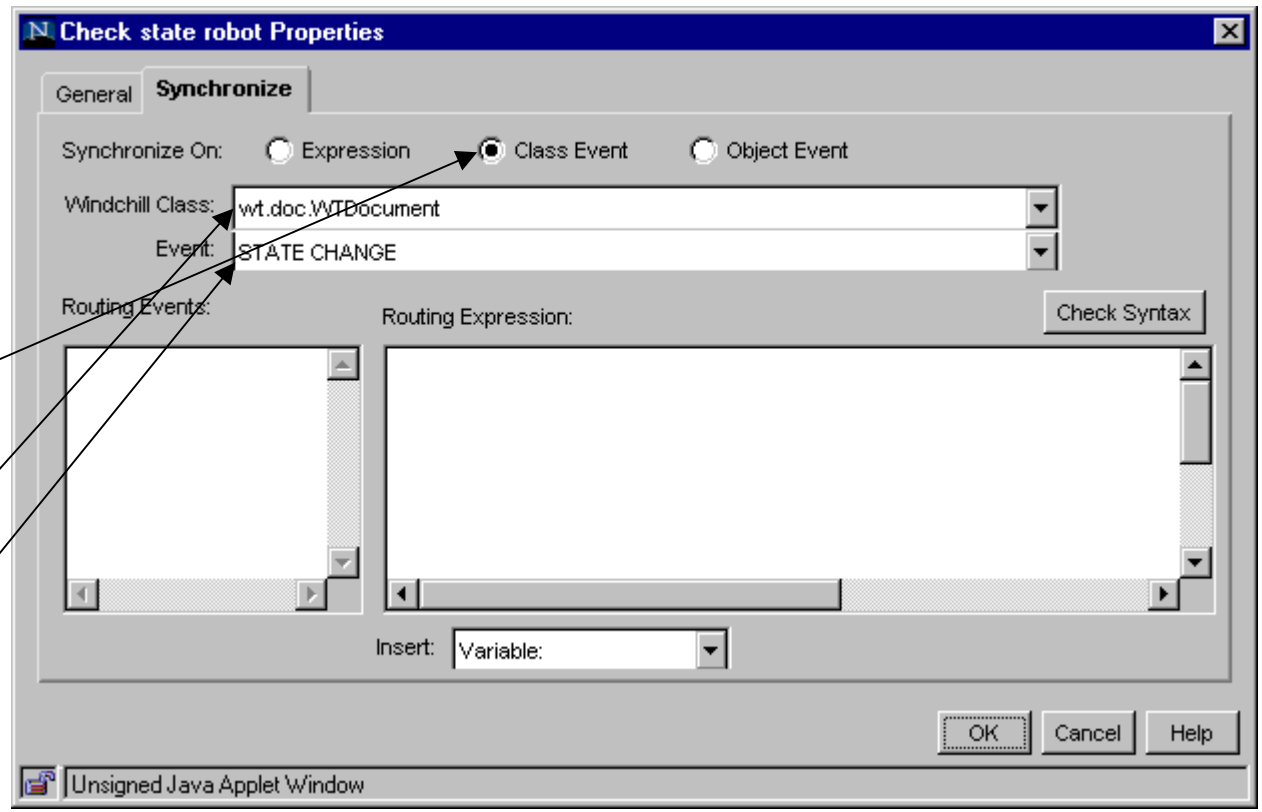
On the **Synchronize** tab page, select Synchronize on **Class Event**.

Step 4

From the **Windchill Class** drop-down menu, select **Wt.doc.WTDocument**.

Step 5

From the **Event** drop-down menu, select the **STATE CHANGE** event.



Change Properties of the Synchronization Robot (Continued)

Step 6

Add a **Routing Event**, and name it `released`.

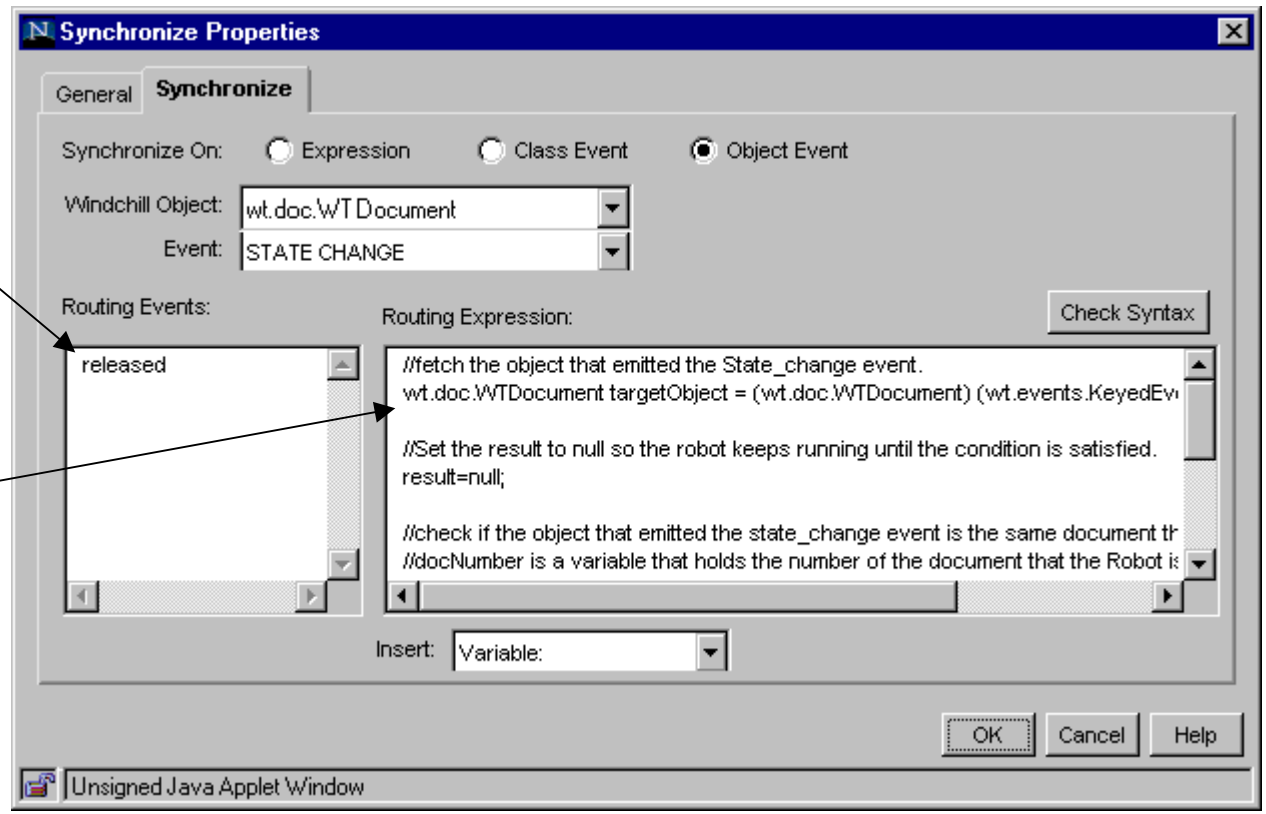
Step 7

Add an expression to check if the document that emitted the STATE CHANGED event is the primaryBusinessObject (PBO) of this workflow. If so, check its state. If the PBO has been released, then fire the routing event. Follow code samples for synchronization on the state of an object.

Step 8

Click **OK,** and save the workflow.

Note: The default value for the result of a robot is null. The robot keeps running until the result is not equal to null, that is, until it has been assigned some other value.



Running the Workflow

Step 1

Create a document called `myDoc`, and assign it to the default life cycle.

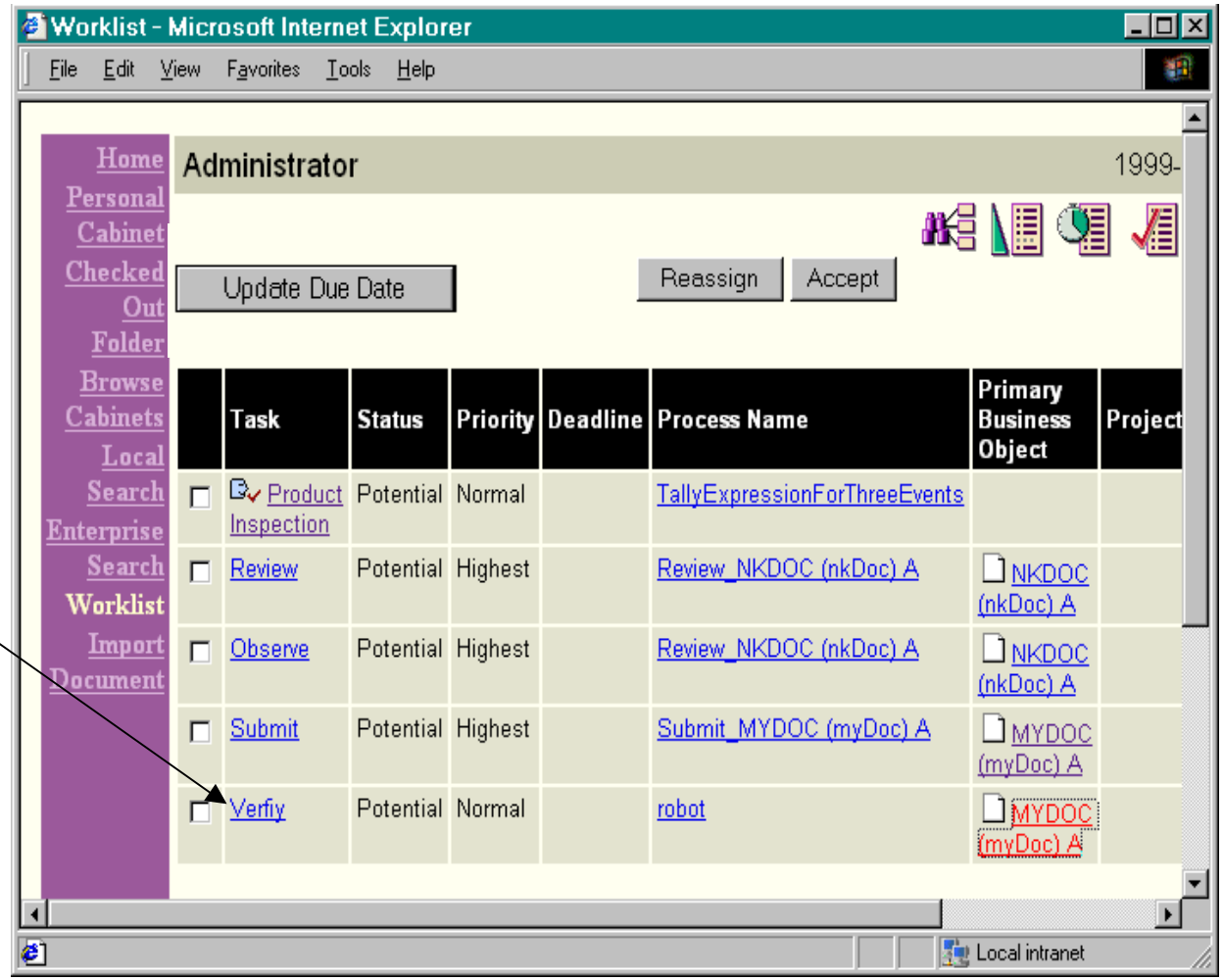
Step 2

Select the **Verify** workflow, and click **Initiate**.

Step 3

Complete all work items for myDoc until the the document reaches the Released state.

The **Verify** work item appears in the worklist because the document has been released and the Synchronization robot releases its hold on the process.

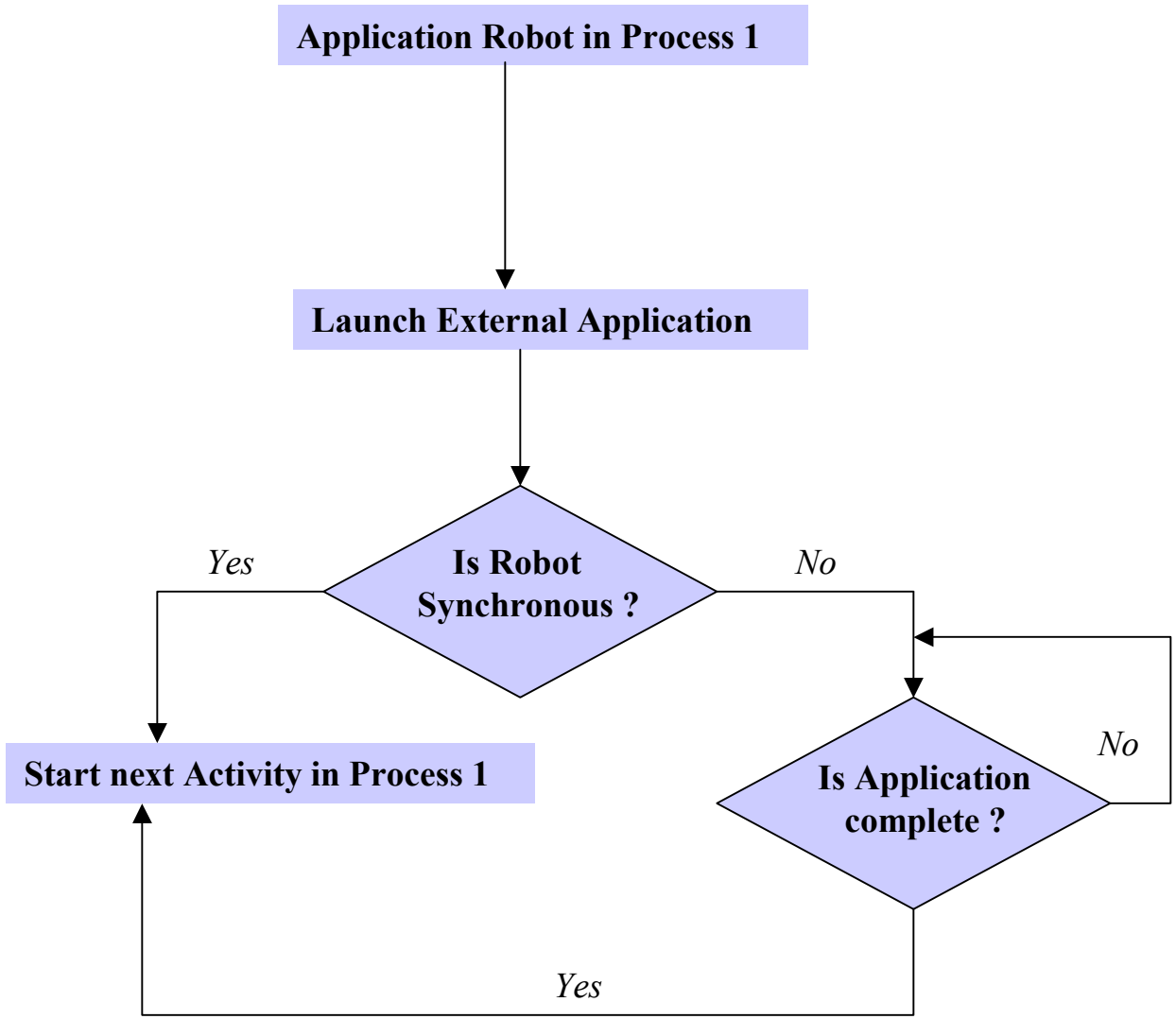


Overview

Using Application robots, you can interact with external (that is, non-Windchill) applications from any process.

Application robots enable you to execute system commands from the server. These commands are executed using the Java runtime.exe.

You can also set environment variables using these robots. The launch of an application can be synchronous (that is, the robot waits for completion of the application) or asynchronous (that is, the robot is done with its job as soon as the application is launched).



Creating a Workflow with an Application Robot

Step 1

Create a new workflow, and name it `Application Launch Workflow`. For instructions, see Section 1 of this tutorial.

Step 2

Place the **Application** robot on the Workflow Process Editor work area.

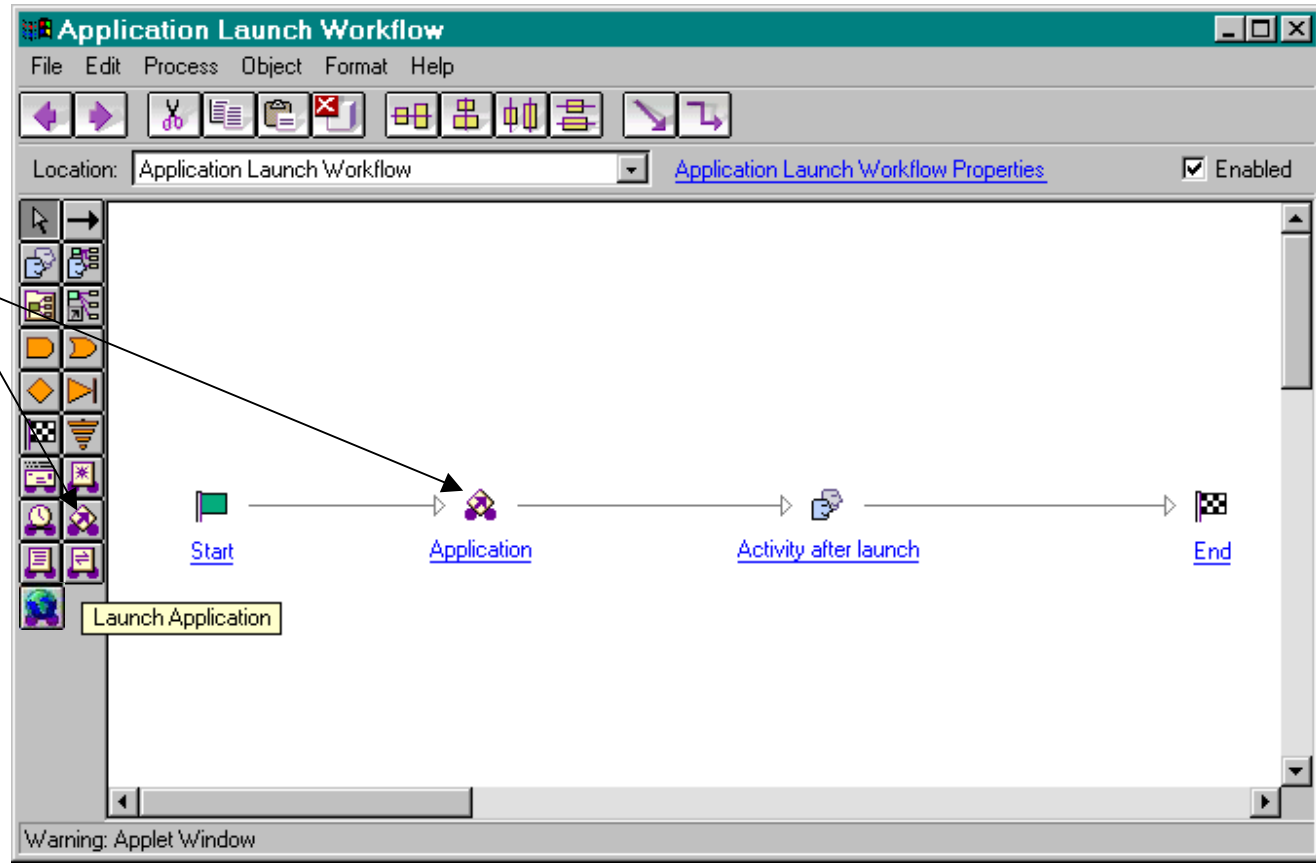
Step 3

Add an assigned activity to the workflow, and name it `Activity after launch`. Create links following the example of the diagram.

Step 4

Create three String process variables called `name`, `date`, and `message`. Give them some meaningful default values.

Note: To assign two or more words to a variable, you must enclose them in quotation marks.



Changing the Properties of the Application Robot

Step 1

Open the Application robot properties window, and name the robot `App Launcher`.

Step 2

Click **Help**, and follow links to code sample: *Setting Environment Variables Using the Application Robot*.

Step 3

Copy the text from the sample into a text editor, and save it into c://jdk1.1.2/bin, with the name **MessageDisplay.java**.

Step 4

Open a command prompt, and go to c:/jdk1.1.2/bin and type

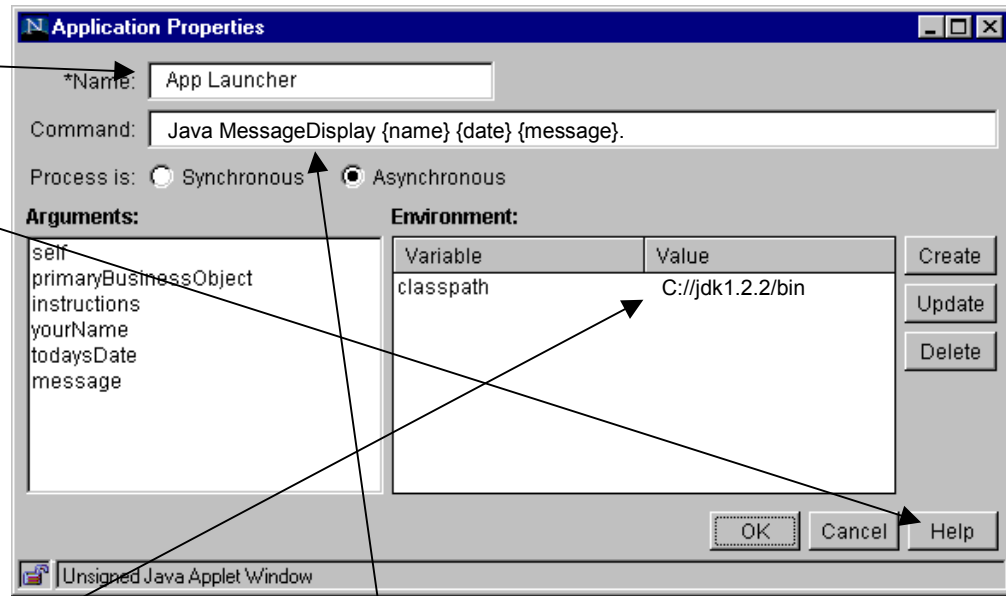
```
javac MessageDisplay.java.
```

Step 5

Click **Create** to create a new environment variable called `classpath`. In the value column, enter the path to your java classes, for example,

```
c://jdk1.2.2/bin
```

Note: The double slashes (//) are required.



Step 6

In the command line, type

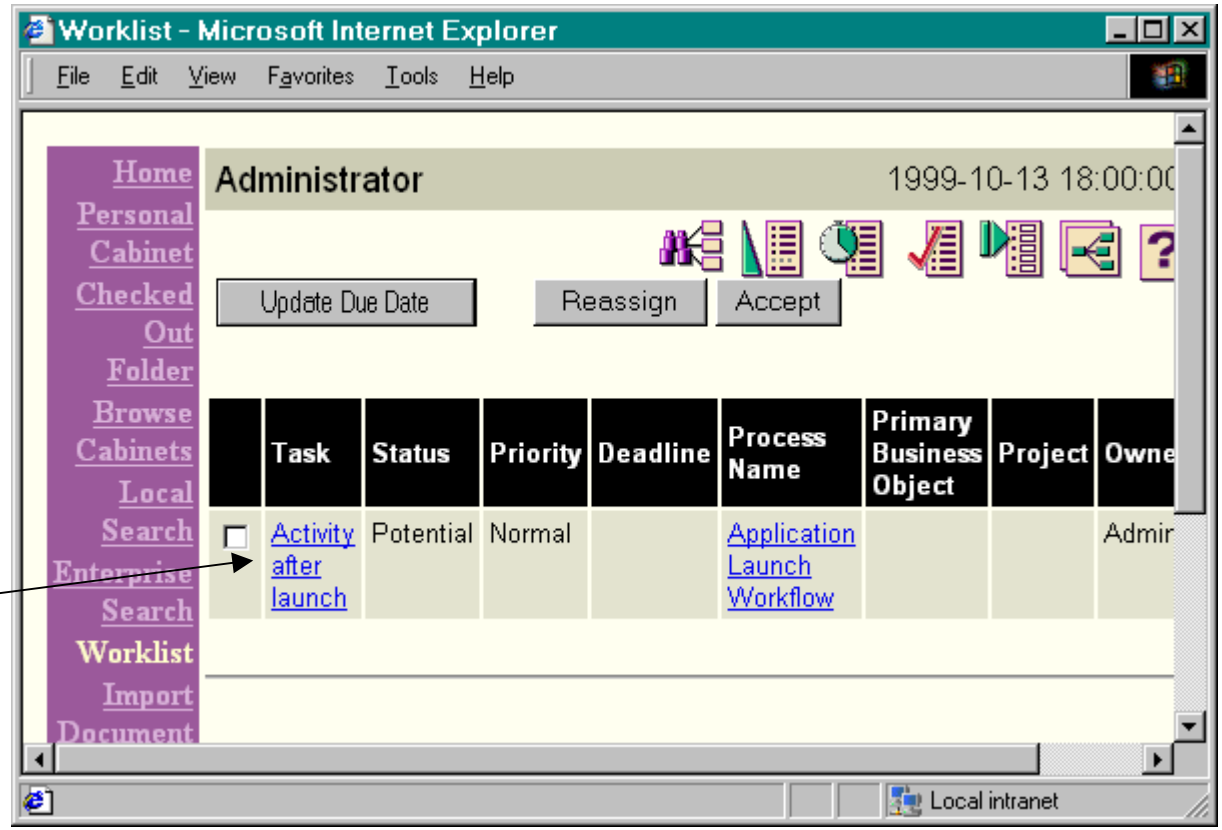
```
Java MessageDisplay {name} {date} {message}.
```

Running the Workflow

Save the workflow, check it in, and initiate it.

Your applet or frame (which ever was used in your application) opens, and the arguments you passed is displayed. (For source code for this application, follow code sample links in the robot's help file.)

If you selected the **Synchronous** radio button, then the worklist will not show any work items until you close this application. For an asynchronous robot, the **After Launch** activity appears in your worklist as soon as the activity is launched.



This is the end of the tutorial.