Novell ICEcore

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WORKFLOW GUIDE

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Contents

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Introducing Workflow

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Companies are focused on creating efficient and cost-effective methods that enable them to bring their products or services to the marketplace. Thanks to the Internet, and to video and networking innovations, companies now have many tools at their disposal, and can enhance and streamline their existing business processes. More and more companies are exploring and implementing workflow management systems to make their business activities more effective.

NOTE: *Workflow* is the way that interaction takes place between people and systems within an organization. It focuses on the whole process of the work required, not just on the end result.

This tutorial provides a general introduction to workflow and instruction on how workflow is implemented using ICEcore.

What's in this Chapter?

This chapter describes elements of business processes and how business processes translate into workflow processes:

If you have experience with workflows, you may want to skip this chapter.

1.1 What is a Business Process?

Your organization uses business processes based on your company's policies, such as ordering office supplies, requesting new hires, or handling expense reimbursements. These processes provide defined tasks and procedures that ensure the work is done effectively. The business process may even outline the steps and tools needed for performing your work

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NOTE: All businesses have business processes, which define a set of structured tasks that are organized and prioritized to achieve specific goals.

Because the definition of a business process is primarily a set of tasks, each task must be well defined. Tasks can be independent, which means that they are performed without requiring anything from anyone else. Or, they may be interdependent, which means that they can be started only after another task has been completed.

1.1.1 Organize Tasks

Tasks can be performed by a person taking action, can be performed automatically (for example, an amount of time expiring), or can be a combination of both. Monitoring and measuring can be incorporated into a business process to ensure that the task occurs within a pre-defined time limit or according to a defined standard.

Tasks break down the work required for each process into individual pieces that have a specific organization. When performing a task, the focus is on completing the work necessary to move to the next appropriate task in the business process.

1.1.2 Indicate Status

Work within a business process also implicitly includes a status. As work progresses, its status changes ("begun," "assigned," "on hold," "needing approval," and so on). These statuses, which are described by the business process, provide the trigger for subsequent work.

1.1.3 Implement Security

Business processes also define who has the right to view the work or to do a particular kind of work within the business process.

1.2 Elements of a Business Process

All business processes contain a few common elements:

- Participants-The individuals or systems that interact in order to perform the tasks. Participants need to communicate, reference information, and indicate completion of specific activities, which result in process participants continuing to the next appropriate activity.
- Tasks-Participants perform activities to achieve a specific function. Dependencies, or constraints, can be associated with a task.
- Outcomes-The business process attempts to achieve one or more results. Outcomes are specific and defined.

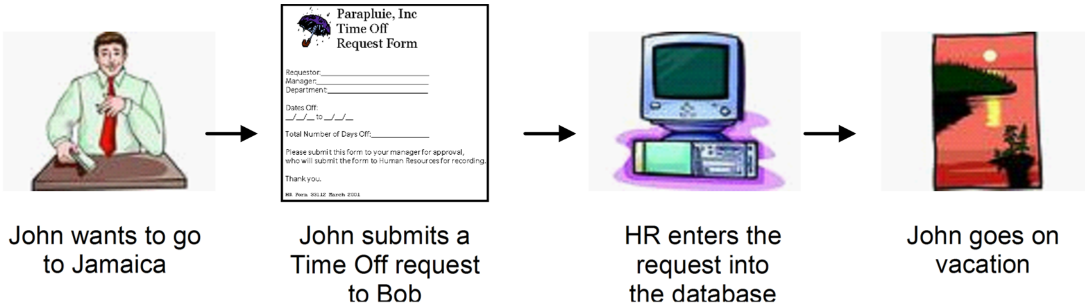
Business processes work by relying on collaboration and interaction with others. Effective business processes provide a way for everyone to communicate their status, approval, supporting documentation, collateral, discussion, and so forth.

1.3 A Business Process Example

Parapluie, Inc. is a fictional company that has a policy of Paid Time Off (PTO). The company provides their employees with three weeks of vacation each year. To take a vacation, the employee fills out a Time Off request, which is then sent to Human Resources. Human Resources enters the request into the Time Off database, which debits the employee's vacation accrual account.

1.3.1 Time Off Request Workflow

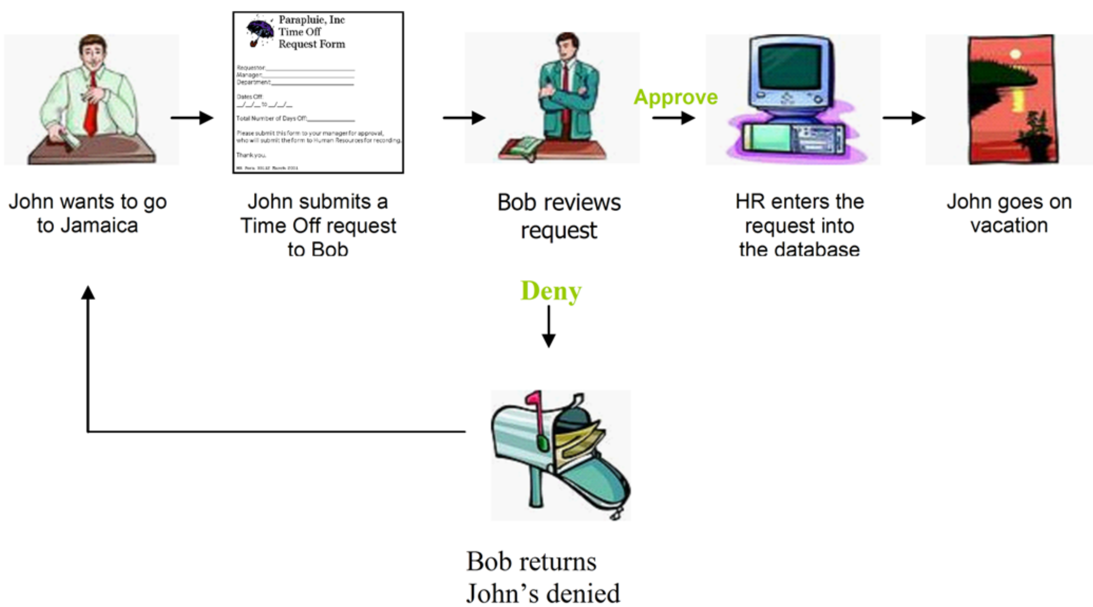
John Hall wants to go on vacation. In accordance with the business process, he must send a Time Off request to Human Resources (HR) so they may log the request into their Time Off database. The simplified flow of the process looks like this:



This business process has three activities: submitting the Time Off request, passing the request to HR, and entering the Time Off request into the Time Off database. The tasks are performed by three participants: John, Bob (his manager), and someone in the HR department. The task also has specified, preferred outcomes: John takes vacation, and his available PTO is debited accordingly.

Some business processes-such as the one described in the previous paragraph-are straightforward, with limited or no complexity. Most processes are more complex, requiring approvals or other actions before the flow of work can continue. For example, if John's manager, Bob, can "deny" a request instead of simply passing it on to HR, then the business process becomes more complex.

As an example of a more complex time-off process, once Bob has reviewed the request, he determines if John can go on vacation. If Bob approves the request, he sends it to HR so that they can enter it in the database. If Bob denies the request, he returns the request to John. The flow of work looks like this:



In this example, there are still three tasks. However, instead of merely passing the Time Off request to HR, Bob reviews the request for approval or denial. His decision has two possible outcomes: Yes (approved) or No (denied). Based upon input from Bob, the flow of work changes. For example, should Bob not approve John's request, Bob then sends John a "request denied" notification, HR is not notified, and the Time Off database is not modified.

1.4 What is a Workflow Process?

When a business process becomes defined and put into operation through the use of software and other tools, it becomes a workflow process.

NOTE: A workflow process is an online representation of a business process. A workflow process allows the participants of the workflow to organize, automate, and track all aspects of the business process.

The workflow process provides the online forms that participants use. A workflow process can also indicate the reassignment of work from one person to the next. In the previous example, the Time Off request can be represented online with a modifiable discussion-forum form (called a form) and a completed form (called a view). Once John completes the form and clicks OK, then the work is made available for viewing and is reassigned automatically to Bob.

Well-designed workflow processes identify and integrate the possible outcomes of each task, as different outcomes change the way in which one task transitions to another. In the previous example, when Bob makes a decision, the flow of work changes based upon his response. In a workflow process, Bob's decision can be made either manually (by selecting a label from a drop-down list) or automatically ("after ten days of inaction occur"). Once Bob's decision has been made, Forum sends the appropriate notification to the next participant in the workflow. Decisions, information, and a history of the completed work can be stored and later accessed in Forum.

Workflow allows you to move work quickly and efficiently throughout the organization. When developing an online workflow process, you should try to represent the associated business process in its fullest detail. To do this, workflow processes usually use a workflow-management system to support the design, implementation, testing, maintenance, and administration of processes.

NOTE: A workflow-management system is a software-based system that allows IT to create and manage the execution of workflows that serve their organization, and that assists participants in completing tasks within the business process.

In our example, the participants use a workflow-management system, which provides all of the tools needed to record responses, forward decisions, and send e-mail notifications.

Most workflow management systems provide a common set of tools. These tools allow IT to define the business processes, initiate and control specific tasks, or create rules for determining how specific data is processed and shared.

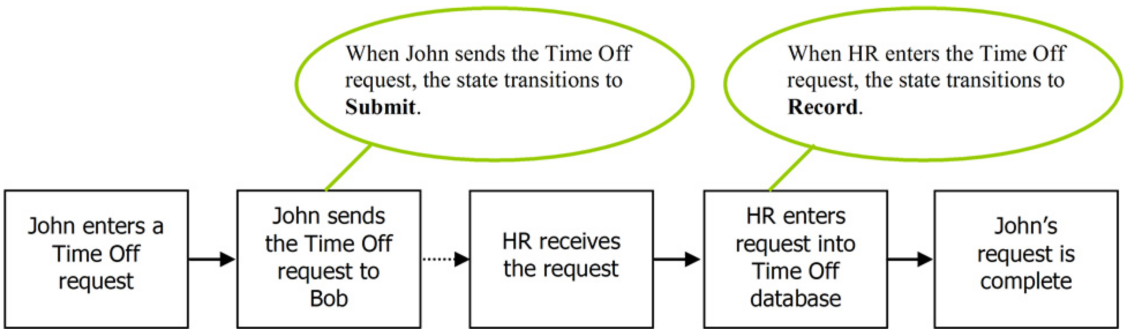
1.5 Workflow Tasks and Workflow States

To track work within a business process, a participant (most often a manager) checks the status of the work periodically. For example, the manager may request that his or her employees produce status reports using e-mail or may hold weekly status meetings. The purpose of these efforts is to communicate where within the business process the work currently resides. Once the manager understands the status of the work, he or she can make decisions about who must perform subsequent tasks.

Given our previous example, there is a point within the workflow process at which Bob is responsible for the work. We could provide a label for that point in the process (for example, "an employee has submitted a time-off request" or more simply "submit"). The only outcomes that can result from Bob's actions while reviewing the submission are "approve" or "deny." These labels ("submit," "approve," and "deny") quickly communicate the state of the work at a given point in the process and who is responsible for the next task.

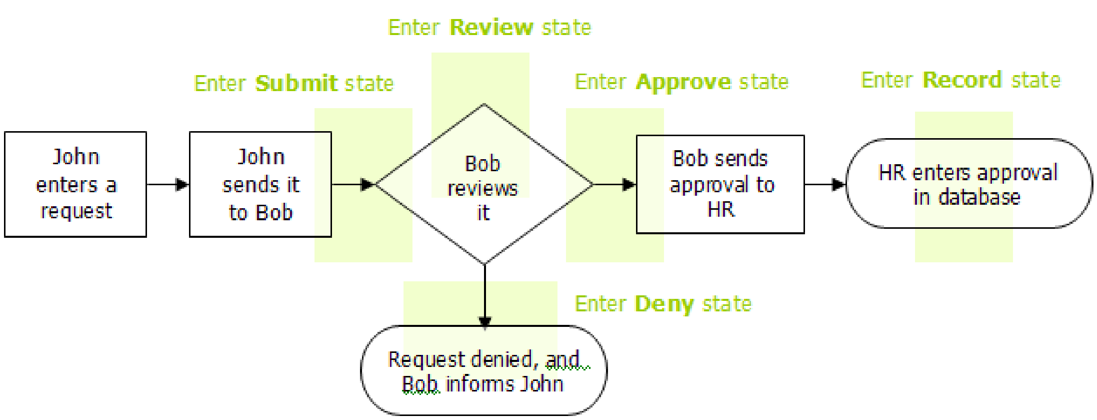
NOTE: A state is a label that identifies the result of a completed task and that indicates who is responsible for performing a subsequent task in the process (if any).

In our example, John submits a form to HR indicating that he wants to take a vacation day. Once John has finished entering the Time Off Request form, the state transitions to Submit. Later in the process, once the request is entered into the Time Off database, the state transitions to the Record state.



NOTE: A transition indicates that work moved from one workflow state to another.

Let's review the complete set of states associated with our previous example:



Notice that one or more discrete actions must be taken with the work in order for its state to change; however, a task may be composed of more than one discrete action. With an online workflow process, some actions can be automated. For example, once John completes a form and clicks OK, Forum can automatically transition the work to the Submit state and can notify Bob through e-mail that the Time Off request is ready for his review. As another example, the work can transition to Deny, if "more than ten days of inaction occur."

Other actions require that a participant use the workflow-management system to report the status of work manually. For example, before Bob begins his review of the request, he can select a label from a drop-down list that indicates that the work is to transition to the Review state. As another example, while in the Review state, the manager can manually select the Deny label.

NOTE: A state transition occurs when one or more discrete conditions are met. Depending on conditions that are met, a state may transition to one of potentially many subsequent states.

States allow participants to track and identify the progress of the work. By seeing the work in the Submit state, John and HR know that the request has yet to be reviewed by his manager. Based upon the decision that Bob makes in the Review state, the state can transition to one of two different states. If Bob manually denies John's request or if ten days of inaction occur, one of the required conditions has been met to make the state transition to the Deny state. When the state transitions to Deny, the actions required are different than if the state had transitioned to Approve.

1.6 Summary

Workflows, which are based upon business processes, are comprised of tasks that are completed by workflow participants. Tasks are associated with states that identify the status of the work. States transition based upon conditions that are defined in the workflow.

1.7 Next Steps

The next chapter helps you to plan and design a workflow. It assists you in identifying states and criteria for state transitions for this workflow.

The remaining chapters in this tutorial expand the Paid Time Off (PTO) example presented in this chapter.

Designing a Workflow Process

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To be effective, an online workflow process should represent the associated business process in full detail. It is useful to do a formal analysis of the business process before you begin creating the workflow. Start by talking with the participants and stakeholders of the process. This allows you to make sure that the software version of the process most closely matches the existing business process and best addresses the needs of its participants.

What's in this Chapter?

When designing a workflow process, it's important to obtain as much information about the business process as possible. Appendix A provides worksheets that help you to research your organization's business process, and that help you to translate this information into workflow participants, states, conditions, and transitions.

This chapter shows you how to fill out the worksheets in Appendix A by applying the worksheets to the Paid Time Off (PTO) example presented in Chapter 1:

2.1 Understand the Business Process

To begin, identify the purpose or goal of the business process. Writing a summary helps to identify the process as a whole before focusing on specific components of the workflow.

EXAMPLE: To begin the process, an employee submits a request for time off. The employee's manager then approves or denies the request. If it is approved, the manager passes the information to an employee in the Human Resources department, who then records the request in the Time Off database. Once the submission is recorded, the process is complete. If the request is denied, the request submission is returned to the employee with an explanation for the denial. This also completes the process.

Name the Process

Develop a concise phrase that describes the workflow process described in detail in the previous step.

EXAMPLE: Time Off Request

Identify the Tasks of the Process

Next, identify the tasks performed in the process. Each task is an action that a workflow participant performs.

Task	Description
Complete time off request form	The employee completes a Request for Time Off form.
Send request	The employee submits the request for time off to his or her manager.
Review request	The manager reviews the request.
Approve request	The manager approves the request.
Deny request	The manager denies the request.
Record request	Human Resources records the request into the Time Off database.

Identify the States of the Process

Each task has a set of one or more completion states. Define state names using a single word or a short phrase.

Task	Completion state
Complete time off request form	N/A
Send request	Submit
Review request	Review
Approve request	Approve
Deny request	Deny
Record request	Record

In the previous table, the "Complete time off request form" task does not have a corresponding state. Although it is important for the employee to fill out the Time Off Request form, the workflow does not begin until the work requires attention from another employee within the organization. Once the form has been sent to John's manager, the workflow beings, and a state can be defined for the task "Send Request."

2.2 Identify State Transitions

In a workflow process, work moves from one state to one of a number of possible states. As such, it is important to identify the way in which work transitions. States can transition into as many different states as needed to provide information to the workflow participants.

Condition	Can transition to…
Submit	Review
Review	Approve, Deny
Approve	Record
Deny	(Completes workflow)
Record	(Completes workflow)

Identify Conditions that Cause State Transitions

Specific conditions occur that transition work from one state to the next. Identify these conditions to determine what transitions an entry from one state to the next.

Condition	Causes the work to transition to…
The employee enters a Time Off request.	Submit
The manager indicates receipt.	Review
The manager approves the request.	Approve
The manager denies the request.	Deny
HR has entered the approved vacation.	Record

2.3 Identify the Process Participants

List the individuals and groups who participate in the workflow process. Identify people who should be notified-by e-mail or IM-when an entry transitions, or those whose action or attention is required to transition the work.

State	Participants	Action Required
N/A	The employee (time off requestor)	Enters the Time Off request.
Submit	The manager	Indicates that he has received the request.
Review	The manager	Reviews, and then approves or denies the request.
Approve	The manager and employee	The manager indicates that the request is approved. The employee must be notified when the request is approved.
Deny	The manager and employee	The manager indicates that the request is denied. The employee must be notified when the request is denied.
Record	Human Resources	HR enters the Time Off request into the Time Off database.

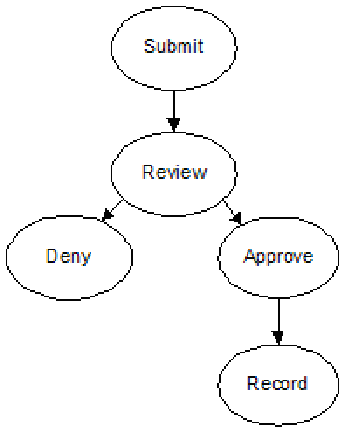
Identify Participant Access to Specific States

List the individuals and groups who in any way participate in the workflow process.

State	Participants	Action Required
Submit	The employee (time off requestor)	◆ Only the manager and employee can see an employee's request. ◆ The manager is the only one allowed to transition the work to Review.
Review	The manager	◆ The manager is the only one allowed to transition the work to Approve or Deny. ◆ Employees can review only their own pending requests in this state.
Approve	The manager and employee	◆ The manager, employee, and HR may view the request in this state. ◆ Only HR can transition to Record.
Deny	The manager and employee	The manager and employee can review requests in the Deny state.
Record	Human Resources	The manager, employee, and HR may view the work in this completed state.

2.4 Draw a Flowchart of the Process

A flowchart is a graphical representation of the process that can help you visualize the movement of the work between the different states. For example:



When defining a workflow process, Forum develops a graphical workflow diagram for your reference.

2.5 Summary

It is important to plan all aspects of the workflow, including each task, condition, and transition that affects the flow of work. Making a graphical representation of the process assists in using the Forum UI for workflow development.

2.6 Next Steps

With the information presented in this chapter, the workflow has been defined. The next step is to take the information outlined in this chapter and create a workflow process in Forum. This process is described in the next chapter.

Creating a Basic Workflow Process

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When developing a workflow process with Forum, you use the management UI within one discussion forum. In Forum, the completed workflow process is a separate function that can then be applied to a discussion-forum entry. Then, you use one of several methods Forum provides to start the workflow.

As one example, you can begin by creating a discussion topic in a forum, and then you can initiate a workflow process for that entry. The topic enters into the first state of the initiated process, and the workflow begins only for that one particular entry. As another example, you can specify that Forum initiate your workflow process automatically every time a user creates a discussion-forum entry of a specific type (entry types include topics, documents, URLs, polls, or your own customized entries).

The remaining chapters in this manual are designed to help you understand the Forum workflow feature as quickly as possible. They begin by showing you how to implement the basic workflow designed in the previous chapter. They then expand the design to more closely match the needs of a typical production-ready system (for example, using questions and notifications). Finally, Chapter 7 shows you how Forum can automatically initiate your workflow process every time a user creates a custom entry designed by you; you can use this technique to create a dedicated application, which is the typical way customers use workflow in a production-ready environment.

What's in this Chapter?

This chapter provides step-by-step instructions for creating the Time Off Request workflow process designed in the previous chapter. This includes creating a workflow, adding the states and transitions, and defining conditions that initiate transitions:

3.1 Prerequisites for the Exercises

You need to set up ICEcore with the following data as a prerequisite for the exercises in this tutorial.

- Create a "sandbox" (testing) discussion in Forum in which you can practice creating the tutorial workflow process. SiteScape strongly recommends that workflow processes be developed in a test or non-production discussion forum. This chapter refers to your sandbox discussion as the Time Off Requests forum.
- You must have access privileges that allow you to perform zone-management tasks (such as creating users and groups) and that allow you to manage the sandbox forum you created.
- Because the exercises in this chapter begin to require the use of Forum user and group names, take time now to create the names necessary for all exercises in this tutorial.

  When you create the following users, set the e-mail address for all accounts to be your e-mail address and set all the passwords to be the same, which makes testing and debugging easier:

  - John Hall-The Time Off requestor
  - Bob Jones-John's manager
  - Tiffany Vail-A Human Resources representative
  - Mary Windsor-Bob's manager
  - Tamika Williams-Another manager within the larger organization

  In addition, create groups needed for subsequent chapters in this manual:

  - Managers (assign Bob Jones as the only member)
  - Human Resources (assign Tiffany Vail as the only member)
  - Supervisors (assign Mary Windsor as the only member)

For more information about creating discussion forums, users, and groups, refer to the manager online Help or to the Getting Started Guide for Forum Managers.

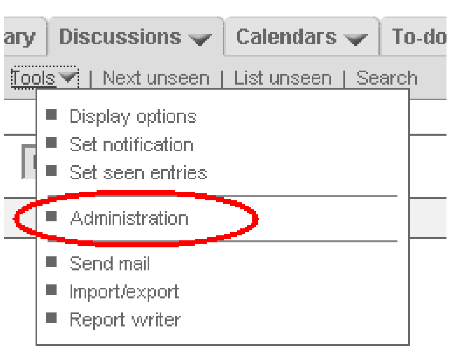
3.2 Define the Workflow Process

Once the discussion forum has been created, use the information from the Name the Process section in the previous chapter to begin defining the workflow process.

1 Access the *Time Off Requests* discussion forum.

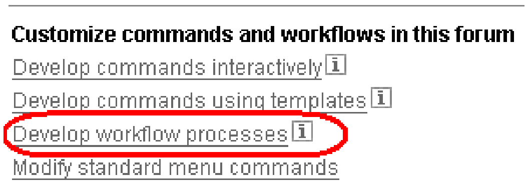
2 Click *Tools* on the toolbar.

3 Click *Administration* in the menu.



The "*Discussion-forum management*" page appears.

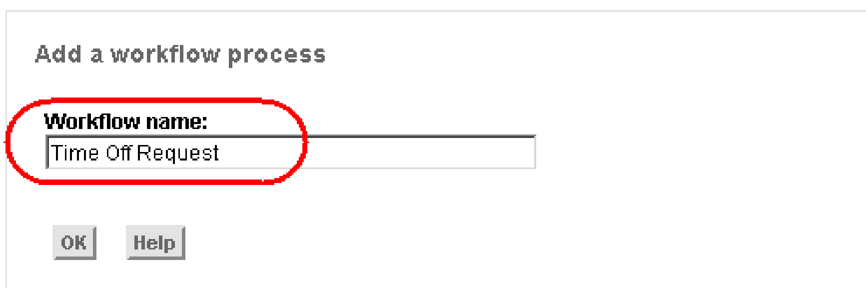
4 Scroll to the "*Customize commands and workflows in this forum*" section and click *Develop workflow processes*.



The "*Add a workflow process*" screen appears.

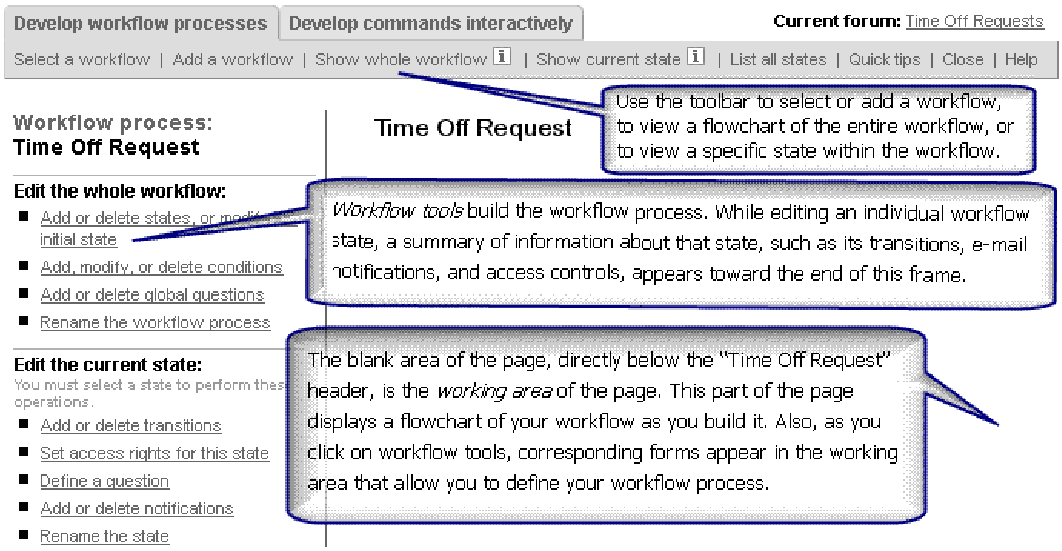
5 If you have existing workflow processes in this discussion forum, you must click the *Add a workflow* link on the toolbar to create a new workflow process (if you have no other existing workflow processes, skip this step).

6 In the "*Workflow name*" text box in the working area of the page, enter the workflow name.



7 Click *OK*.

The *workflow-management* page appears as follows:



- Use the toolbar to select or add a workflow, to view a flowchart of the entire workflow, or to view a specific state within the workflow.
- Workflow tools build the workflow process. While editing an individual workflow state, a summary of information about that state, such as its transitions, e-mail notifications, and access controls, appears toward the end of this frame.
- The blank area of the page, directly below the "*Time Off Request*" header, is the working area of the page. This part of the page displays a flowchart of your workflow as you build it. Also, as you click on workflow tools, corresponding forms appear in the working area that allow you to define your workflow process.

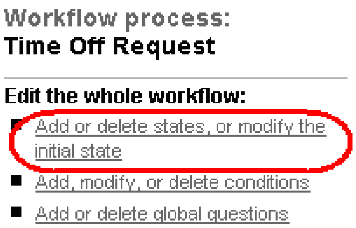
3.3 Add States to the Workflow

As shown in the previous chapter, the Time Off Request workflow design specified five states: Submit, Review, Approve, Deny, and Record.

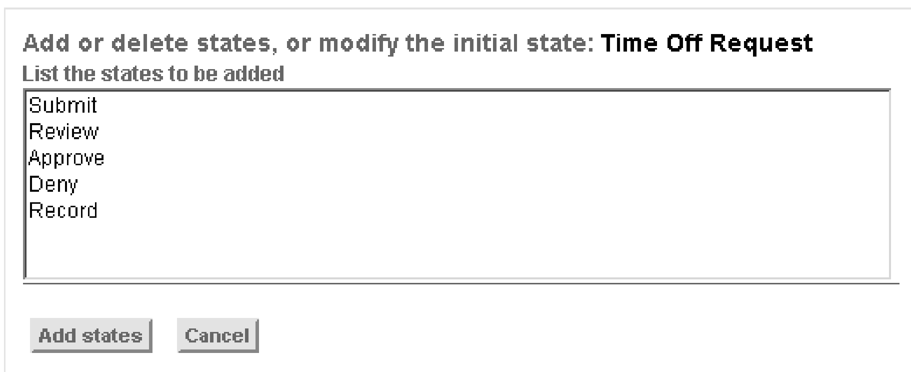
Task	Completion State
Complete time off request form	N/A
Send request	Submit
Review request	Review
Approve request	Approve
Deny request	Deny
Record request	Record

To add states to the Time Off Request workflow process:

1 Click *Add or delete states, or modify the initial state* from the list of workflow tools.



2 When the "*Add or delete states, or modify the initial state*" form appears in the working area of the page, enter one state name on each line.



3 Click the *Add states* button.

After you succeed at completing the steps listed previously, the process flow chart appears in the working area of the page, and each state is represented by an oval.

While working with various forms as part of the *workflow-management* page, you can click *Show whole workflow* in the toolbar at any time to return to the flowchart.

NOTE: Notice that the Submit state is labeled as the initial state, because it is the first state in the list of states and is designated as the first state in the process.

Once the states are defined, the next step is to develop transitions that move an entry from one state to the next.

3.4 Define Transitions for the Workflow

Transitions define the way that the work flows from one state to another. They may be manual, automatic, or triggered by a specific condition.

The following transitions are defined in a worksheet table presented in Chapter 2.

State	Can transition to…
Submit	Review
Review	Approve, Deny
Approve	Record
Deny	(Completes workflow)
Record	(Completes workflow)

Forum provides five built-in transition types. However, the Time Off Request example uses only the one called "Manual transition (group 1)." This transition type allows participants to use a drop-down list to move an entry from one state to another.

The rest of this section shows you how to define manual transitions that can be used by any registered user; this is just the first step in the process of defining these transitions. The next chapter shows you how to restrict this feature to only those users who should have permission to change the entry's state.

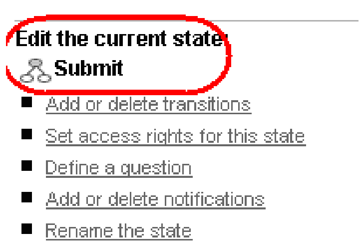
To begin, define a manual transition that allows participants to change the entry's state from *Submit* to *In Review*.

3.4.1 Create Transition from Submit State to Review State

To create a manual transition:

1 Using the flowchart, click the *Submit* oval.

This action causes the workflow tools to update its information. The "*Edit the current state*" header now indicates that the Submit state is the current state.

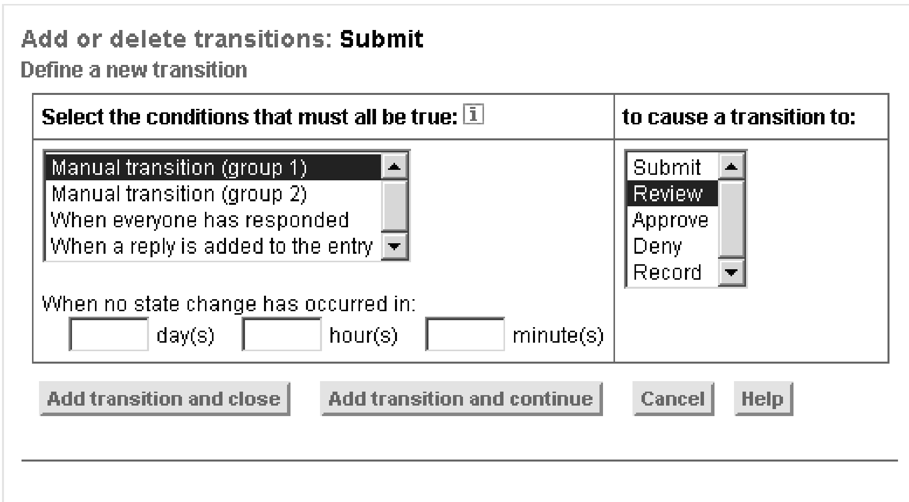


2 Click the *Add or delete transitions* tool in the "Edit the current state" section.

The "Add or delete transitions" form appears. Use this form to define how an entry can move from one state to another.

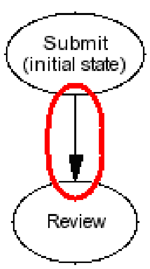
3 Click the condition *Manual transition (group 1)*.

4 In the "*to cause a transition to:*" list, click *Review*.



5 Click the *Add transition and close* button.

After you successfully complete the previous steps, the working portion of the page displays an arrow in the flow chart that represents the newly defined transition:



3.4.2 Create Transitions from Review

When the request is in the *Review* state, the manager reviews the request and makes a decision. Because the decision has two possible outcomes, it is necessary to define two different transitions: from *Review* to *Approve*, and from *Review* to *Deny*.

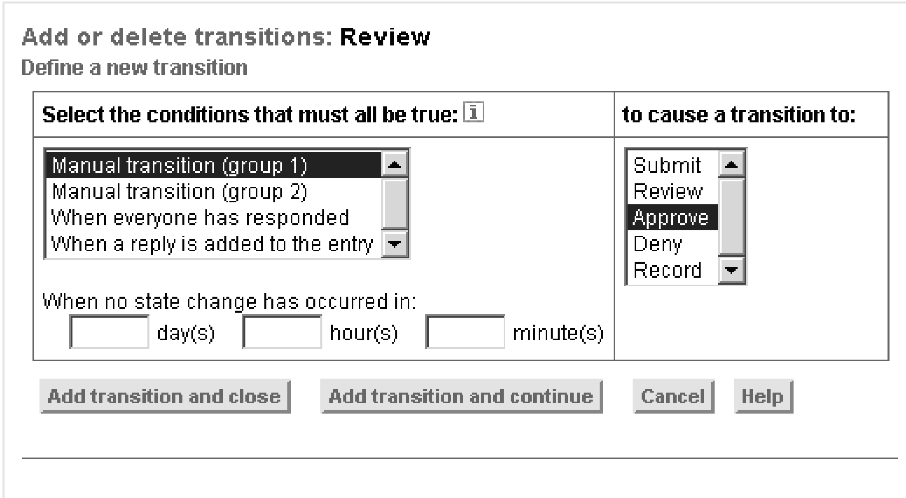
To create two manual transitions from Review:

1 In the flowchart, click the oval for the *Review* state.

2 In the "Edit the current state" tools, click *Add or delete transitions*.

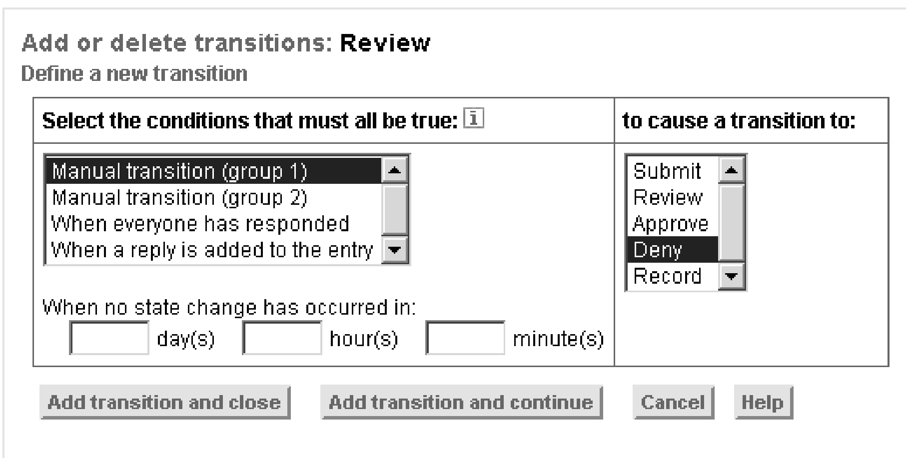
3 In the "*Select the conditions that must be true:*" list, click *Manual transition (group 1)*.

4 In the "*to cause a transition to:*" list click *Approve*.



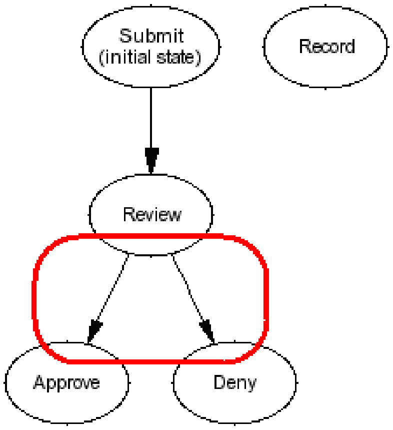
5 Click the *Add transition and continue* button.

6 Once the window refreshes, click *Manual transition (group 1)*, and then click *Deny*.



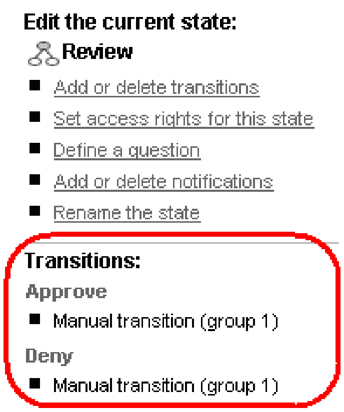
7 Click the *Add transition and close* button.

After you successfully complete the steps, the flowchart in the working area of the page represents the two new transitions with two arrows coming from the *Review* state.



Time Off Request

Notice that the Workflow tools, on the left side of the page, identify the new transitions:



3.4.3 Transition from Approve to Record

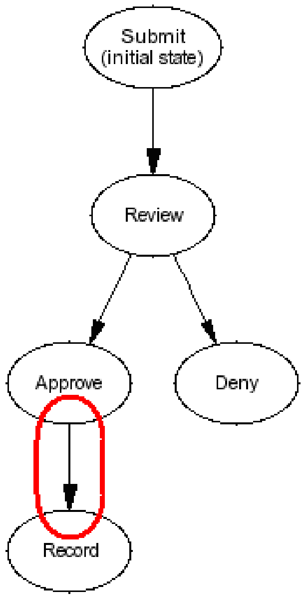
Once the manager has approved the Time Off Request, Human Resources must record it in the *Time Off Database*. This task is marked as complete when the state transitions to *Record*.

Using the steps described above, create a manual transition from *Approve* to *Record*.

Create a manual transition from Approve to Record:

1. Click on the *Approve* oval in the flowchart.
2. Click *Add or delete transitions*.
3. Once the "*Add or delete transition*" form appears, click *Manual transition (group 1)* and then click *Record*.
4. Click *Add transition and close*.

After you successfully complete the steps, the flowchart reflects the transition:



Time Off Request

After completing this step, you have created an initial, functional version of your workflow process.

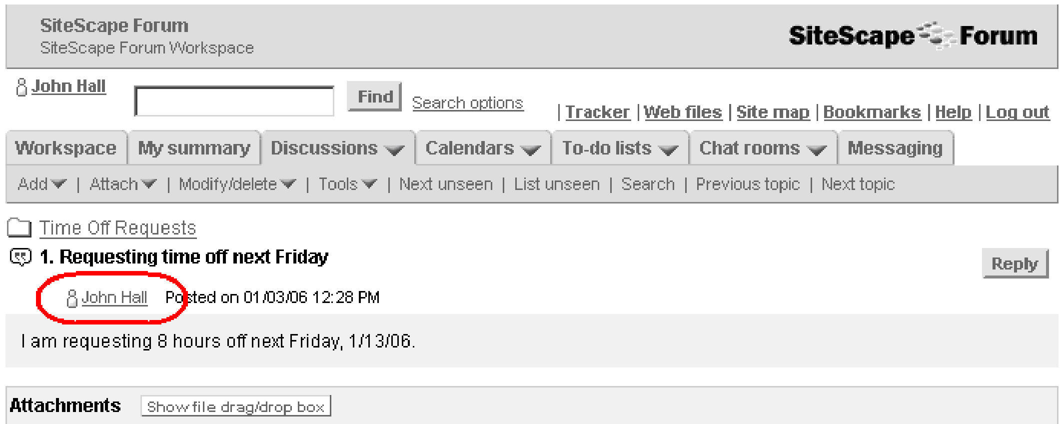
3.5 Testing the New Workflow Process

After creating a minimally functional workflow process, verify that the transitions function properly. (At this state of its development, the process does not define specific access to the workflow based upon the participant. This means that any participant in the discussion forum can transition the entry through the entire workflow.) To prepare for testing, log in as any user (the example suggests logging in as John Hall).

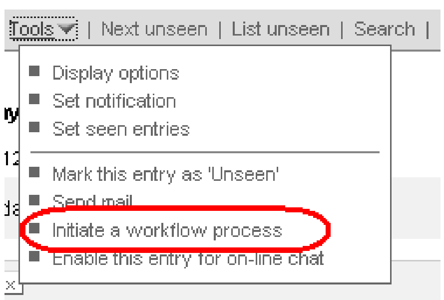
To test a manual transition:

1. Log in as John Hall.
2. Go to the *Time Off Requests* discussion forum.
3. Add a discussion topic using the *Add* menu option.
4. Type in the information and click *OK*.

After you succeed with this step, you should see a page similar to this:

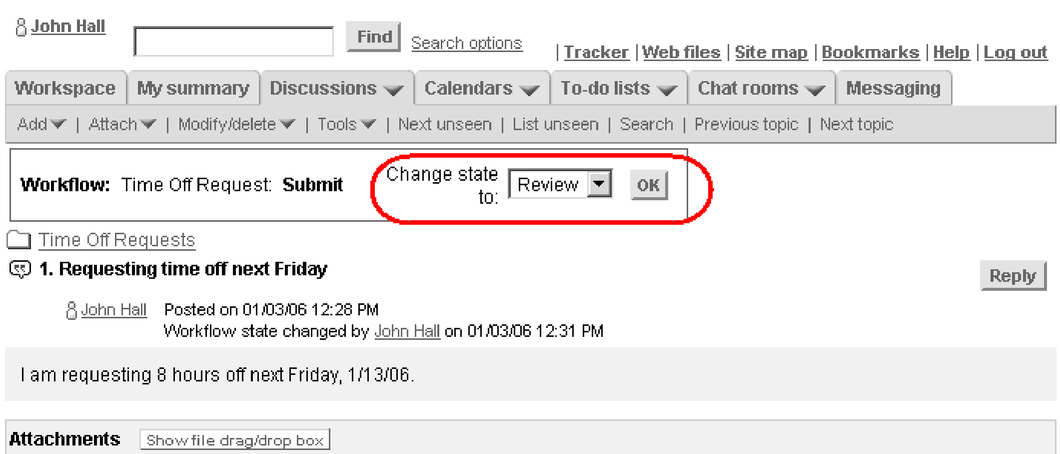


5 On the toolbar, click *Tools*, and click *Initiate a workflow process*.



6 On the form that appears, click the radio button next to the name of the *Time Off Request* workflow process, then click *OK*.

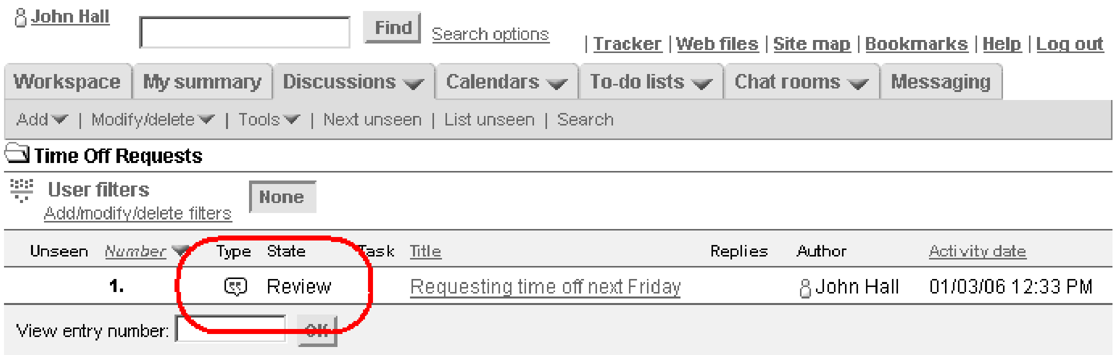
After you succeed with the previous step, Forum displays the following page, and the workflow information appears at the top of the entry. Notice how Forum implements the "*Manual transition (group 1)*" transition as a drop down list used to trigger the transition to another state:



7 To test the transitions, make sure that the "*Change state to:*" drop-down list is set to *Review*, and click *OK*.

8 View the top folder of the discussion forum by clicking on the linked folder title toward the top of the entry.

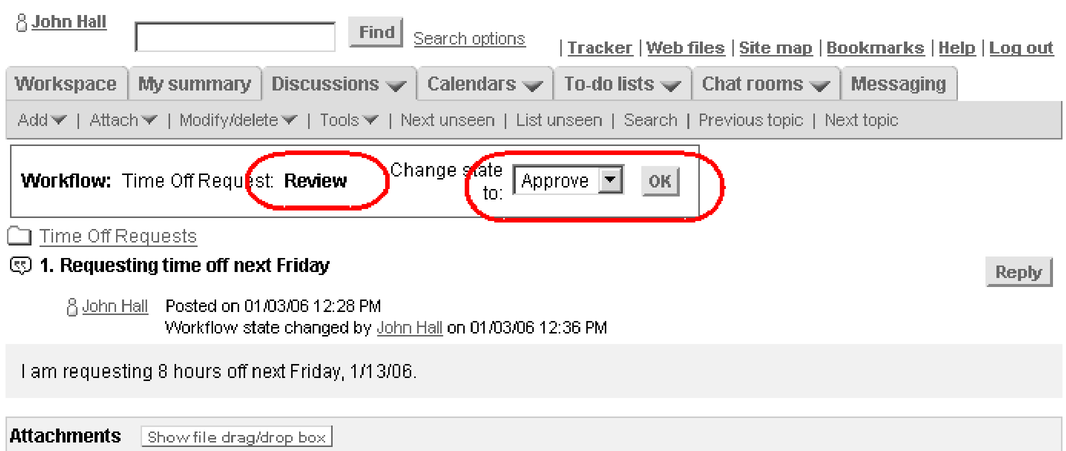
After you succeed with the previous step, the *folder-listing* page appears as follows:



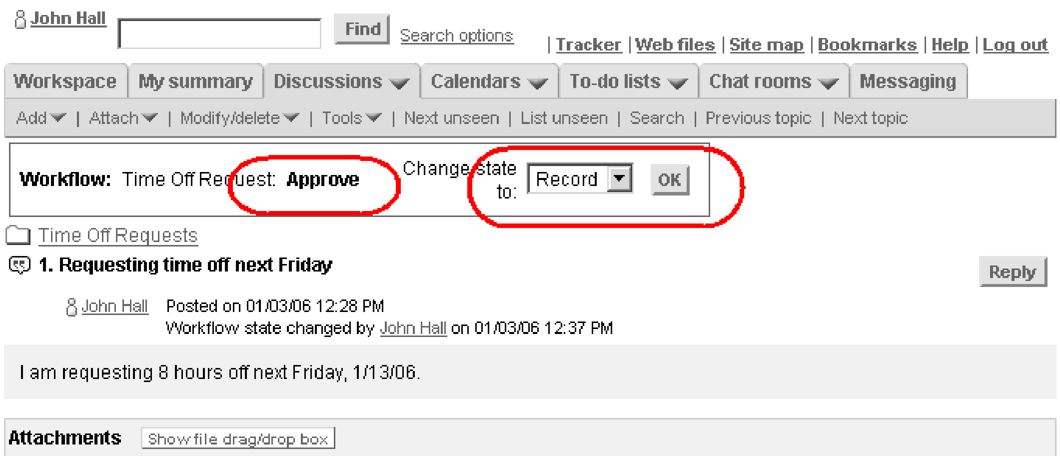
To Test the Remaining Transitions (Exercise):

Use the steps outlined in the previous section to test the rest of the transitions. If the workflow is not functioning properly, return to the *workflow-management* page, and review the transitions to ensure they are correctly defined.

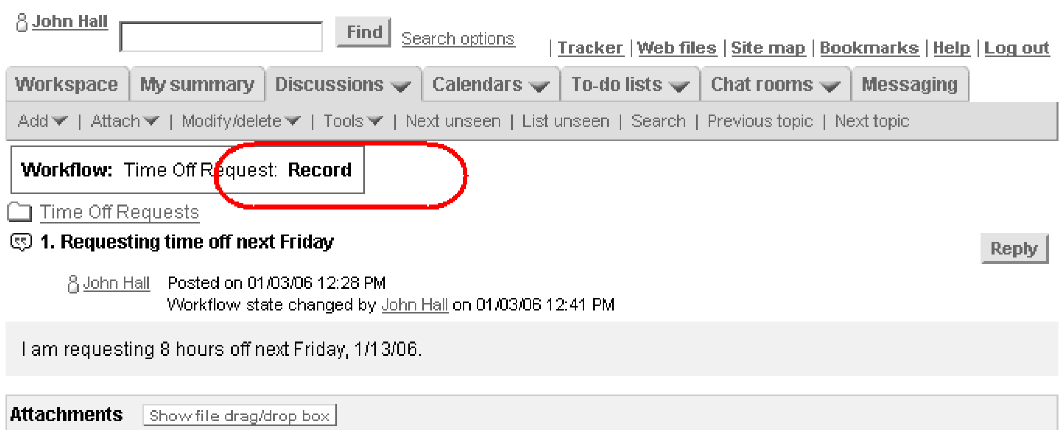
- When you successfully transition to the *Review* state, Forum displays this page:



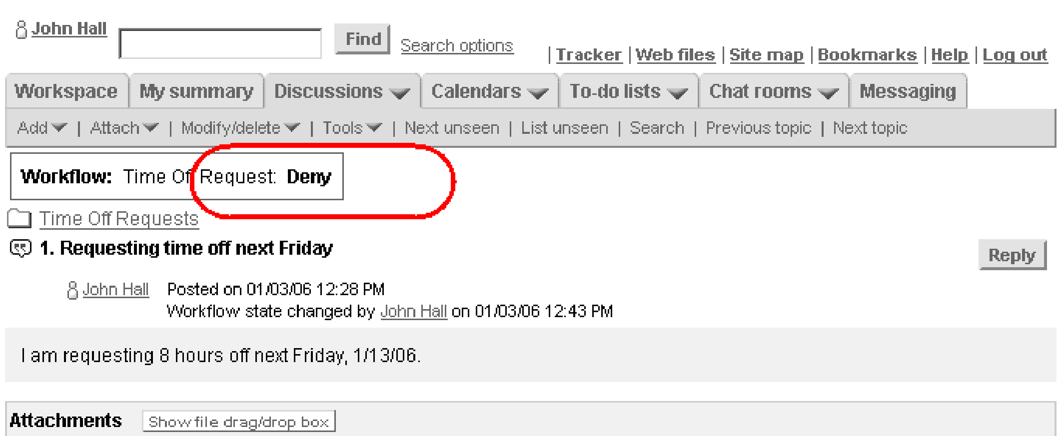
- When you successfully transition to the *Approve* state, Forum displays this page:



- When you successfully transition to the *Record* state, Forum displays this page:



Because the workflow is in a final state in the previous picture (there is no drop-down box to make an additional transition), you need to re-initialize the Time Off Request workflow process for this entry using the same steps you used to begin the workflow earlier in this chapter; this action places the entry back in the initial state (*Submit*). Then, after you successfully transition to the *Deny* state, Forum displays this page:



As you continue to perform the tasks in subsequent chapters, log in as various users to test the features that you add to the workflow process.

3.6 Summary

Based upon the worksheet tables in Chapter 2, you have:

- Developed a workflow process using the workflow-management page.
- Created states that are associated with the tasks you defined during the design process.
- Created state transitions that cause the work to flow through the process.
- Tested the workflow by moving an entry through all defined states in the process.

3.7 Next Steps

The remainder of this tutorial describes further customization of the paid-time-off workflow process. The next chapter outlines and describes access control for the workflow. Access control identifies who has the capability to read entries, as well as who has the right to use manual transition to apply a new state to an entry.

Setting Access Controls

4

Using the access control feature of Forum workflow, you can specify which participants may participate in causing an entry to transition from one state to another. Also, if the entry contains sensitive information at any time during the workflow process, you can restrict who may view the entry. This feature implements "per entry" access control, checking privileges for individual entries at each state in the workflow process.

What's in this Chapter?

The following sections describe how to set up access control in Forum as well as using various approaches with the workflow tools that set access control for one or more states:

4.1 What is Access Control?

When creating a workflow process using default settings, every user who can enter the discussion forum has access to view the entry and to participate in state changes. For almost all production-ready workflow systems, it is necessary to alter this default access control, so that:

- Only members of the team assigned to the business process may participate in the workflow process.
- Only designated responsible individuals participate in changing states.

NOTE: Access control is the term used to identify which users have the right to perform specific tasks at each state within the workflow process.

Access-Control Choices

When configuring access, it is possible to set access control for:

- The entire discussion forum

  Define access control to the entire discussion forum by using the Set forum access control option in the management menu. For information on setting a forum's access control, refer to the Manager online Help or to the Getting Started Guide for Forum Managers document.
- One or more states.

Planning Access Control

Before configuring access, identify the following:

- States-You defined these in the previous chapter.
- Access rights-For each state, define who can view, modify or delete, respond to, and participate in state transitions.
- Users or Groups-Map "participants" to usernames and group names within Forum.

In Chapter 2, the table used for access-control planning appeared as follows:

State	Participant	Access Required
Submit	The employee, or time off requestor	• Only the manager and employee can see an employee's request. • The manager is the only one allowed to transition the work to *Review*.
Review	The manager	• The manager is the only one allowed to transition the work to *Approve* or *Deny*. • Employees can review only their own pending requests in this state.
Approve	The manager and employee	• The manager, employee, and HR may view the request in this state. • Only HR can transition to *Record*.
Deny	The manager and employee	The manager and employee can review requests in the *Deny* state.
Record	Human Resources	The manager, employee, and HR may view the work in this completed state.

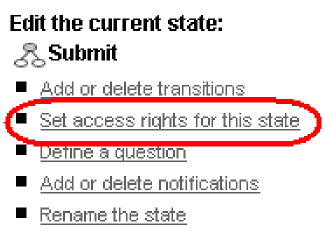
Subsequent sections in this chapter describe how to implement this plan for access control.

4.2 Setting Access Rights for the Submit State

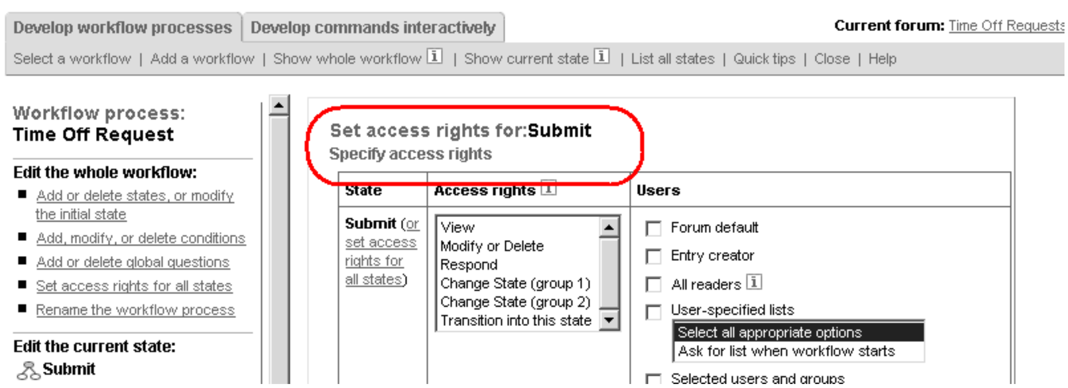
Given the planning-worksheet table for access control, an entry in the *Submit* state needs to be viewable by the person who created the *Time Off Request*, but not by any of her or his peers. In addition, only a manager can transition the entry from *Submit* to *Review*.

To set access rights for the Submit state:

1. View the workflow-development page for the *Time Off Request* workflow, if you are not already viewing this page.
2. Click *Show whole workflow* in the toolbar, which displays the flowchart in the working area.
3. Click the *Submit* oval in the flowchart.
4. Click the *Set access rights for this state* workflow tool:

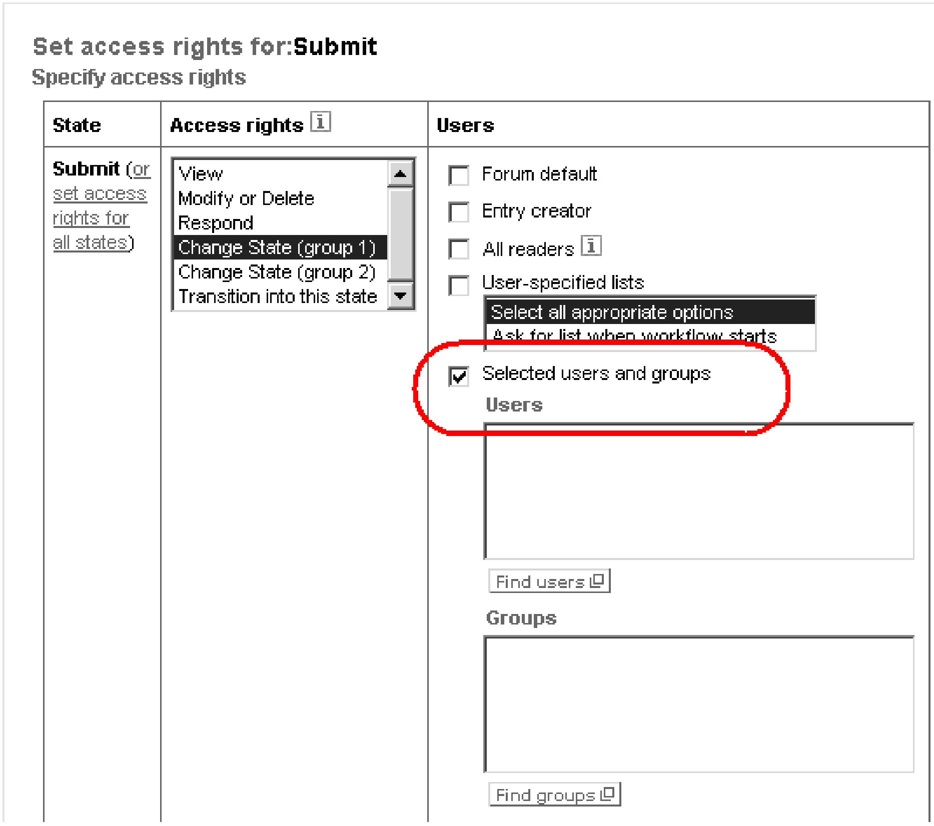


The "S*et access rights for…*" form appears in the working area of the page, as follows:

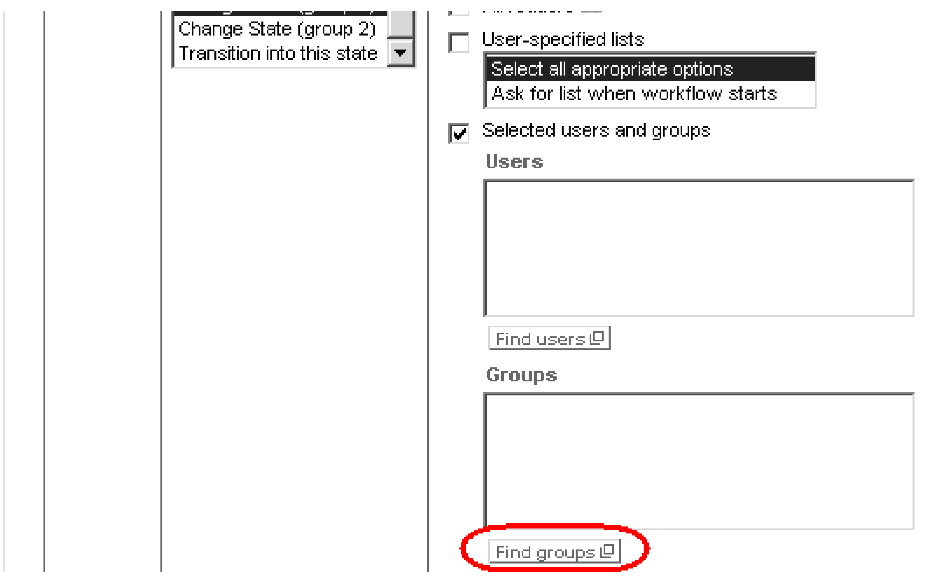


5. Click *Change State (group 1)*, located in the *Access Rights* column of the form, which selects it.

6 Select the *Selected users and groups* option, as follows:



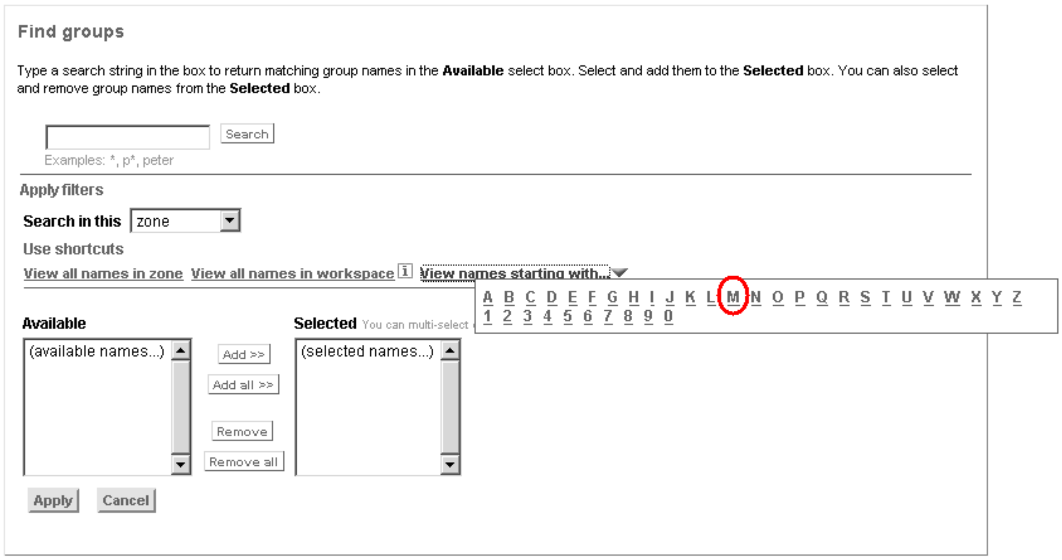
7 Click *Find groups*:



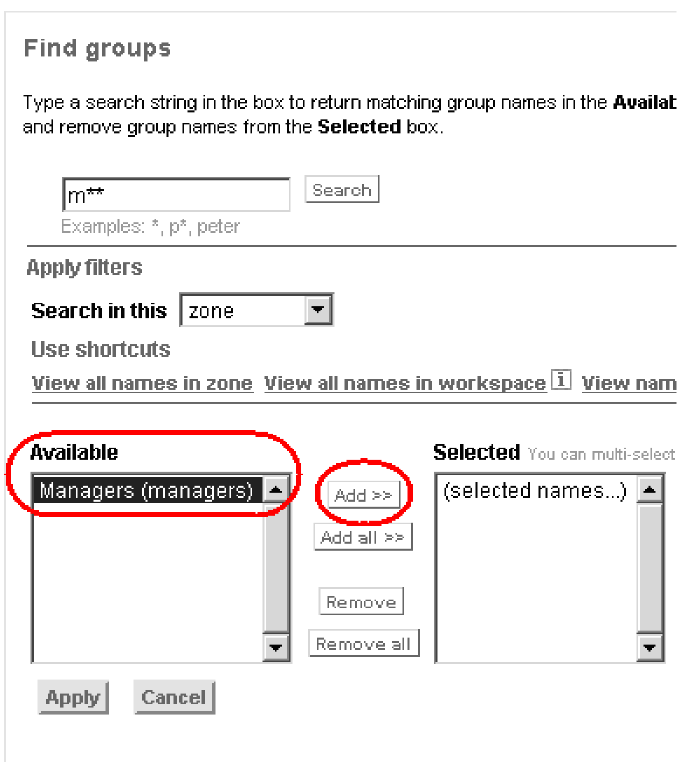
Forum displays the "*Find groups*" page in a new window.

Recall that, when completing the prerequisites for this tutorial, you created a group called Managers whose only member is Bob Jones.

8 Click *View names starting with…*, and click the letter *M*, as follows:



9 Click *Managers* in the *Available* box, and then click *Add*:



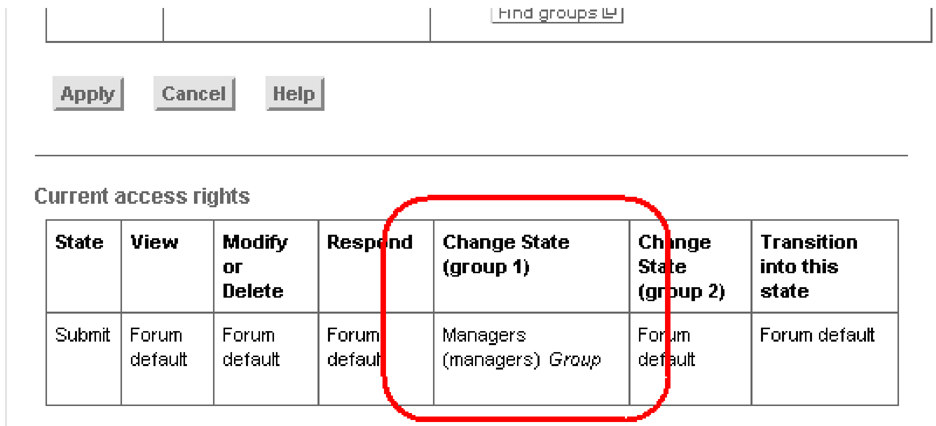
Forum lists "*Managers*" in the *Selected* box, located to the right of the *Add* button in the previous picture.

10 Click *Apply* in the bottom-left corner of the form.

Forum closes the "*Find groups*" window, and lists "*Managers*" on the "*Set access rights for…*" page.

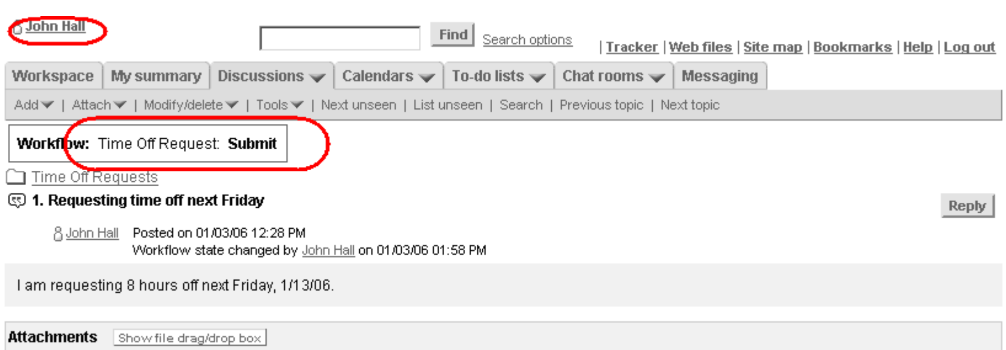
11 Back on the "*Set access rights for…*" page, click *Apply*:

11a After you successfully complete the steps, Forum displays a report of the current access-control settings at the bottom of the "S*et access rights for: Submit*" page:

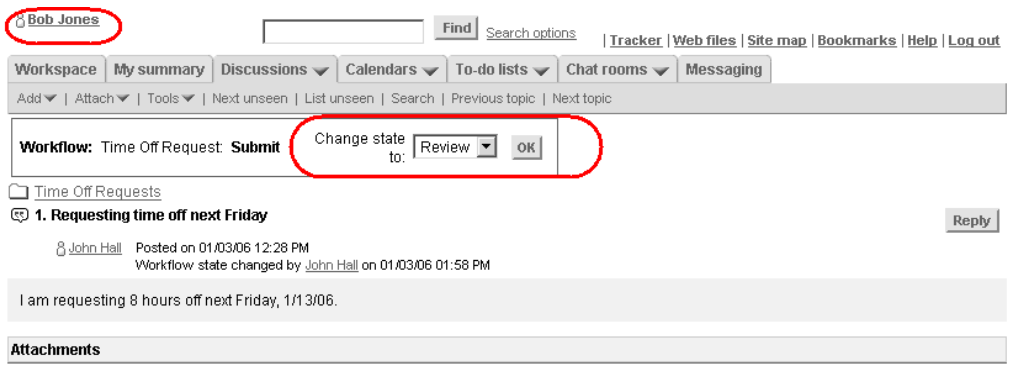


11b At this point in the development of the workflow process, only Bob Jones (as the sole member of the Managers group) has the right to transition the entry from *Submit* to *Review*.

To test this access-control setting, log in as *John Hall*, and notice that the drop-down list used for state transitions does not appear:



11c When you log in as *Bob Jones*, notice that the drop-down appears (because he has the right to use the manual method of making a state transition):



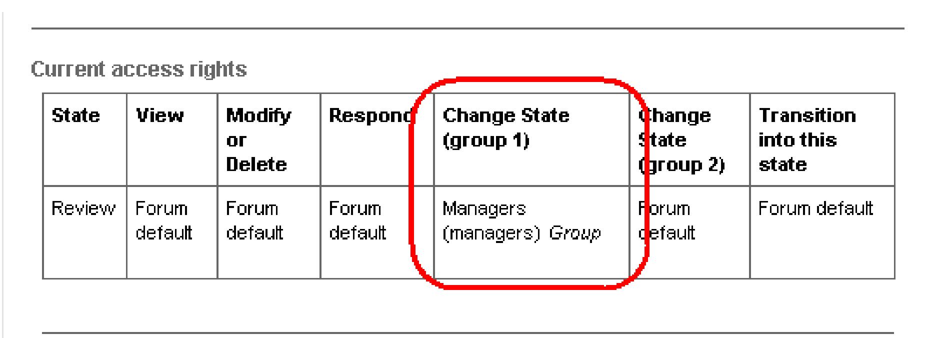
4.3 Setting Access Rights for the Review State

Using the steps outlined in the previous section, set the access rights for the *Review* state so that only a manager can transition the entry from *Review* to either *Approve* or *Deny*.

To set access rights for the Review state:

1. Click *Show whole workflow* in the toolbar, which displays the flowchart in the working area.
2. Click the *Review* oval in the flowchart.
3. Click *Set access rights for this state* link in the workflow tools.
4. Click the *Change State (group 1)* access right, selecting it.
5. Select the *Select users and group* option.
6. If "*Managers*" is not already present in the *Groups* box, click the *Find groups* button, and select the "*Managers*" group.
7. Back on the "*Set access rights for all states*" page, click *Apply*.

   After you successfully complete the steps, the "*Current access rights*" (at the bottom of the "*Set access rights for: Review*" page) appears as follows:



Current access rights

State	View	Modify or Delete	Respond	Change State (group 1)	Change State (group 2)	Transition into this state
Review	Forum default	Forum default	Forum default	Managers (managers) *Group*	Forum default	Forum default

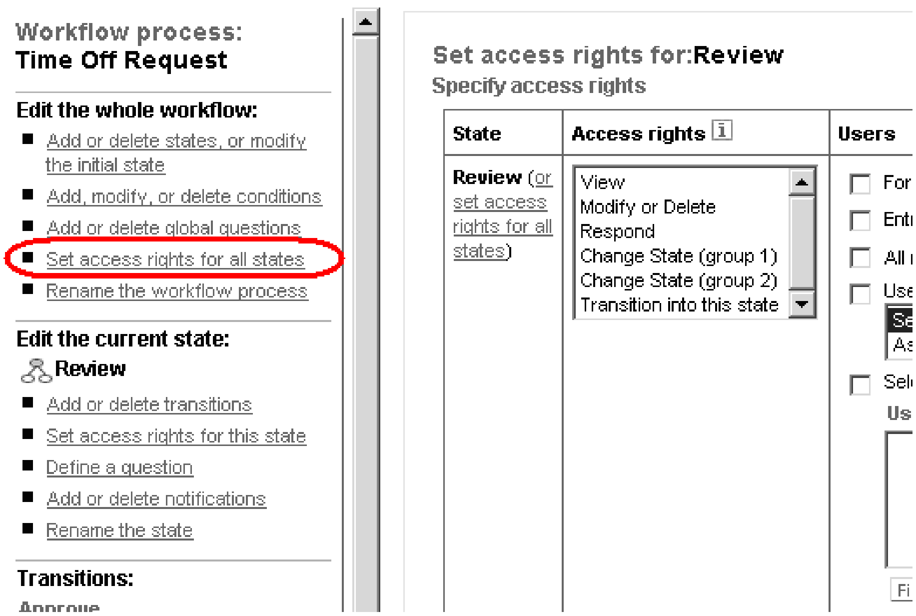
4.4 Set Access Control for More than One State

When configuring access control, it is likely that some states need the same access-control settings. When creating access control, you can use the convenient *Set access rights for all states* workflow tool to work with access control for more than one state at a time.

In our example, "view" rights for the *Approve* and *Record* states are the same. Use the following steps to set the same access rights for these states.

To set access rights for more than one state:

1 Click the *Set access rights for all states* workflow tool in the "*Edit the whole workflow*" menu.

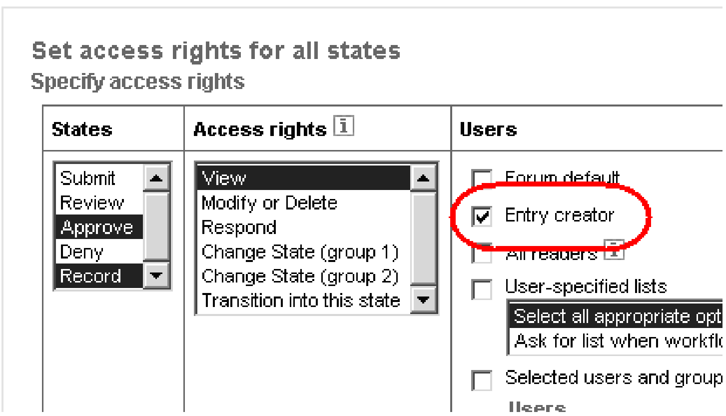


The "*Set access rights for all states*" screen displays the access-control information for all states within the workflow.

2 Ctrl+Click *Approve* and *Record*, highlighting both state names:

3 Click *View*:

4 Select the *Entry creator* option:



By clicking *Entry creator* instead of using the *Find users* button to specify John Hall, you are making a workflow process useful to a much larger group. If you specified only John Hall's username, then John Hall is the only employee who can use this Time Off system. When you specify "*Entry creator*," any employee who creates an entry in the *Time Off* discussion forum now has the right to view her or his own request.

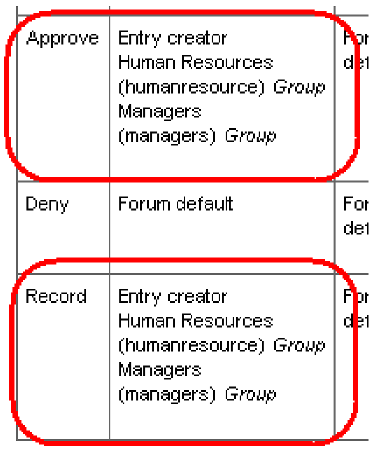
5 Select the *Selected users and groups* option.

6 Click *Find groups*.

7 Use the "*Find groups*" window to select "*Managers*" and "*Human Resources*."

8 Back on the "*Set access rights for all states*" page, click *Apply*.

After you successfully complete the steps, the "*Current access rights*" portion of the "*Set access rights for all states*" page reflects the new access settings in the *View* column, as follows:



4.5 Set Access Control for Remaining States (Exercise)

Use the steps that you learned in previous sections to set access control as designated by the planning worksheet developed in Chapter 2:

State	Participant	Access Required
Submit	The employee, or time off requestor	◆ Only the manager and employee can see an employee's request. ◆ The manager is the only one allowed to transition the work to *Review*.
Review	The manager	◆ The manager is the only one allowed to transition the work to *Approve* or *Deny*. ◆ Employees can review only their own pending requests in this state.
Approve	The manager and employee	◆ The manager, employee, and HR may view the request in this state. ◆ Only HR can transition to *Record*.
Deny	The manager and employee	The manager and employee can review requests in the *Deny* state.
Record	Human Resources	The manager, employee, and HR may view the work in this completed state.

After you successfully set access control according to the table, the "*Current access rights*" portion of the "*Set access rights…*" page appears as follows:

Current access rights

State	View	Modify or Delete	Respond	Change State (group 1)	Cha (gr
Submit	Entry creator Managers (managers) *Group*	Forum default	Forum default	Managers (managers) *Group*	For
Review	Entry creator Managers (managers) *Group*	Forum default	Forum default	Managers (managers) *Group*	For
Approve	Entry creator Human Resources (humanresource) *Group* Managers (managers) *Group*	Forum default	Forum default	Human Resources (humanresource) *Group*	For
Deny	Entry creator Managers (managers) *Group*	Forum default	Forum default	Forum default	For
Record	Entry creator Human Resources (humanresource) *Group* Managers (managers) *Group*	Forum default	Forum default	Forum default	For

Members of the Managers and Human Resources groups can work with all Time Off requests; only the employee who submitted the request (the "*entry creator*") can see it. If you want to be thorough, you can set the "*Modify or Delete*" column to be the same as the "*View*" column. However, only those with "*view*" rights are able to access the UI tools required to modify the entry, add a reply, or delete it.

NOTE: Until you become more experienced with implementing workflow processes, it can be very helpful to allow the `wf_admin` user to view the entry in all workflow states during prototyping. This allows you to use the most powerful of managerial usernames to troubleshoot, should the process provide difficulties for you.

You can log in using various usernames to test your access-control settings. Be sure to test the entry in the *Approve* state to make sure that only the Tiffany Vail user (HR) has the ability to transition the entry from *Approve* to *Record*.

4.6 Summary

Access control is an important aspect of workflow, because it allows a workflow designer to set levels of security and access to each task within the workflow.

While developing a workflow process, you can use workflow tools to set access for one state at a time or to work with more than one state simultaneously. Access control is comprised of who can see, modify or delete, respond to (a workflow question), or transition into or out of a specified state. When defining access control, you can specify all users, entry creators, or specific users and groups.

When you consider granting workflow access to an individual, make a distinction between times when more than one individual can use the workflow and when a specific individual always uses the workflow. The "Entry creator" individual applies to any Forum user who has permission to participate in the discussion forum and who can create entries in that forum. However, there may be occasions when "Jamaal" or "Ingrid" should be the only user who is to perform at a given level of access every time the workflow runs for any entry. Chapter 7 provides another example of specifying a type of user instead of one specific user, making the workflow process more generally applicable throughout a large organization.

At this point, you have a fully functional workflow process that corresponds to the design presented in Chapter 2. Congratulations!

4.7 Next Steps

Manual transitions are useful and powerful. However, many production-ready workflow processes require more sophisticated methods for determining whether to transition an entry to a new state. The next chapter introduces you to the concepts of workflow questions and conditions, which you can use to define transitions.

5 Using a Question in Workflows

Given the workflow designed in Chapter 2, Forum considers only one condition when determining if an entry's state should change: did someone transition the entry manually?

Despite the power of manual transitions, there are many times when a business process calls for a more complex set of conditions: examples include when one person in a group votes "yes," when everyone in a group votes "yes," when everyone in a group votes "yes" (except when one high-level manager overrides the process and "forces" the transition earlier), when someone adds a reply to the entry, or when a certain number of days have passed without a transaction occurring.

In many complex transition scenarios, it can be helpful to define a workflow question for your process.

What's in this Chapter?

This chapter provides instructions for creating questions within workflows and for configuring state transitions based upon provided answers:

NOTE: A workflow question allows the workflow process to use a set of answers to determine whether and how an entry should transition.

5.1 Add a Question to the Workflow

NOTE: A question can be specific to one state. As another option, you can define a global question, which you can then associate with any number of states; this is helpful when multiple states require the same question and answer set. Each state can have only one associated question.

For example, consider the conditions table from Chapter 2:

Condition	Causes the work to transition to…
The employee enters a Time Off Request.	Submit
The manager indicates receipt.	Review
The manager approves the request.	Approve
The manager denies the request.	Deny
HR has entered the approved vacation	Record

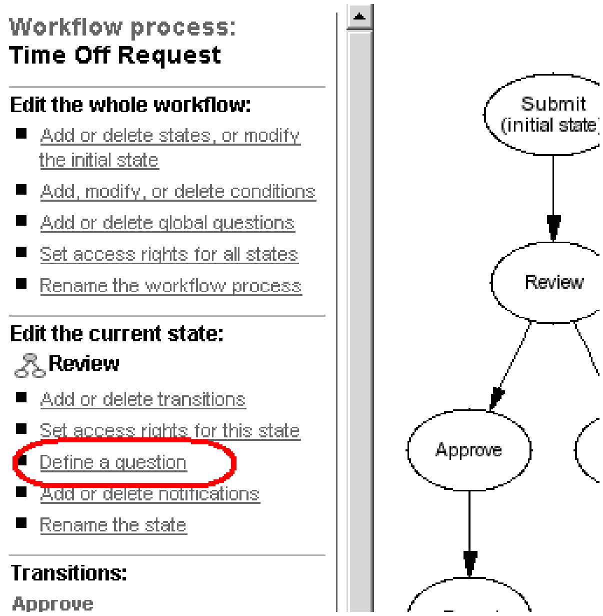
When reviewing the conditions table, look for conditions that can be automated. For example, the third and fourth items are excellent examples of conditions that can be determined automatically using workflow tools.

For example, you can alter the implementation of the Time Off Request workflow, so that the manager's answer to a workflow question determines if a request is *Approved* or *Denied*. Given the design of the Time Off Request workflow, the workflow question should appear to the manager in the *Review* state.

To add a workflow question to the Review state:

1. View the workflow-development page for the Time Off workflow, if you are not already viewing this page.
2. Click *Show whole workflow* in the toolbar, which displays the flowchart in the working
3. Click the *Review* oval in the flowchart.

4 From the "*Edit the current state*" menu, click *Define a question*:



The "*Define a question asked in:*" screen appears in the working area of the page.

5 Enter this question and set of corresponding responses:

NOTE: When users answer questions, they may also provide comments that can clarify their answer. Selecting the *Show response comment* option (toward the bottom of the previous picture) enables participants to provide and read these comments.

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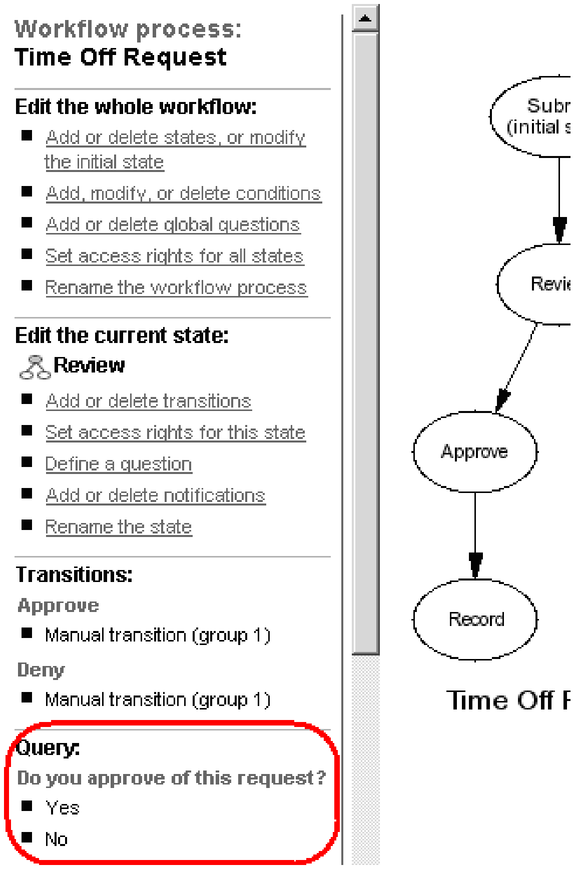
6 Click *OK* to save the question.

The flowchart reappears, and the question appears in the workflow-tools frame, as follows:



5.2 Associating Conditions with Question Replies

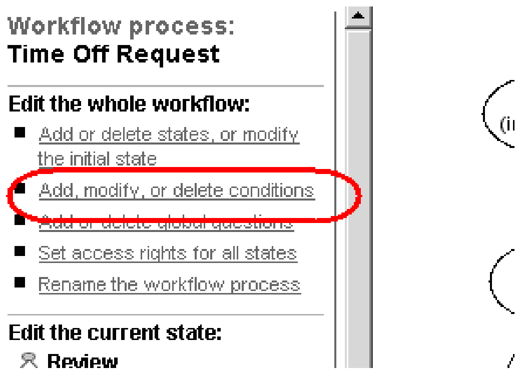
IMPORTANT: For the entry to transition to another state based on participants' responses to the workflow question, the responses must be associated with at least one true or false condition; if all associated conditions are true, then the entry transitions to the next state.

The following sections describe how to define and associate conditions with responses to workflow questions.

5.2.1 Define the Approved Condition

The question, "Do you approve of this request?" has two possible responses. To implement our design, both of the responses must have an associated condition.

1. Make sure that the current state is *Review*.
2. Click the *Add, modify, or delete conditions* workflow tool:

   The "*Add, modify, or delete conditions*" screen appears, listing the available conditions.
3. Click the *Add condition* button.

   The "*Add a condition*" form appears.
4. Enter the condition name "*Approved*."
5. In the "*If this state is*..." column, click the *Review* checkbox.
6. In the *Review* row and in the "*And if this response is given...*" column, click *Yes* (which selects it).
7. Click the "*Condition is true if the specified items are found*" radio button, toward the bottom of the form.
8. Click *OK*.
9. The "*Add, modify, or delete conditions*" form reappears, displaying the new condition.

   This condition is "*true*" if Forum receives one "*yes*" response to the workflow question while the entry is in the *Review* state.

   Given our example workflow implementation, members of the Managers groups are responsible for transitions in the *Review* state. This implementation is assuming a level of trust; although all managers would have the capability of causing a state transition for any employee (only one "yes" answer causes the transition), this implementation trusts that only the manager of the given employee will answer this question for their particular employees' requests.

5.2.2 Define the Denied Condition (Exercise)

Follow the steps in the previous section to define a condition named "*Denied*" based on a "*no*" answer.

After you successfully complete the steps, the bottom of the "*Add, modify, or delete conditions…*" page appears as follows:

5.2.3 Define the Transitions

Once you define conditions, you must define the transitions that base their actions on the conditions.

Create an Approved Condition

1. Make sure that the current state is *Review*.
2. Click the *Add or delete transitions* workflow tool:

   The "*Add or delete transitions*" form appears in the working area of the page, including the two new conditions that you just created.
3. From the "*Select the conditions that must all be true*" list, click *Approved* (which selects it).
4. From the "*to cause a transition to:*" list, click *Approve* (which selects it).
5. Click the *Add transition and continue* button.

   The new transition appears in the "*Current transitions*" table. A subsequent section shows how to remove older transitions.

Create a Denied Transition (Exercise)

Using the steps in the previous section, create the "*Denied*" transition to the *Deny* state.

After you successfully complete the steps, the "*Current transitions*" portion of the "*Add or delete transitions…*" form appears as follows:

5.2.4 Removing Older Transitions

In Chapter 3, you allowed managers to transition an entry manually from *Review* to *Approve* or *Deny*. The creation of the *Approved* and *Denied* transitions renders the existing manual transitions unnecessary.

To remove manual transitions:

1. In the "Current Transitions" table, click the radio button next to either instance of "Manual transition (group 1)."
2. Click Delete transition and continue.
3. Select the remaining transition and delete it in the same way.

   The "Current transitions" section of the form appears as follows:

5.3 Granting Permission to View and Answer the Question

The final step is to modify the access control so that only managers can see and respond to the question.

To control access to the question:

1. Click Show whole workflow in the toolbar, which displays the flowchart in the working area.
2. Click the *Review* oval in the flowchart.
3. Click *Set access rights for this state* workflow tool.

   The "*Set access rights*" screen appears.
4. Click *Respond* (selecting it) in the "*Access rights*" column.
5. Click the *Selected users and groups* checkbox.
6. Use the "*Find groups*" window to make sure that only the *Manager* group is selected.
7. Click the *Apply* button.

Now, when an entry is in the *Review* state, only a manager can respond to the question. Other workflow participants do not see the question. To be thorough, you can also change the "*Change State (group1)*" access right to be only "*Forum default*"; this means that the managers would see only the workflow question and not both a workflow question and a manual-transition, drop-down list.

For example, when you log in as John Hall, and when you view the entry in the *Review* state, this is what you see:

When you log in as Bob Jones (the manager), and when you view the entry in the *Review* state, this is what you see:

Bob Jones can click on either the *Yes* or *No* radio button, can click *OK*, and the entry transitions according to the answer he provides. Go ahead, try it!

5.4 Summary

Many business processes require the posing of a question that is very specific to the business process being replicated by the online workflow process. Sometimes, responses to these questions cause changes to the flow of the work.

Questions and their corresponding responses are created for specific states, and then they are associated with conditions. Conditions are combined to test whether an entry should transition; all conditions need to evaluate to "true" for the transition to take place. To allow users to participate by answering the question, use the access-control feature of workflow to assign the "respond" privilege to those users.

5.5 Next Steps

Most production-ready workflow processes may involve many different participants at various stages of the process. Because users do not need to be viewing these entries in some states, and because their participation may be vital in other states, most of these workflow processes notify

Forum users when work has reached a state that requires their attention. The next chapter describes how to set up notifications for the workflow participants.

Notifying Participants

6

Forum can send e-mail and Zon IM notification in different states of the workflow process. These notifications alert participants that the work has reached a state that requires their attention, provide information to managers who are tracking the process of the work, and provide a one-click method for a participant to view and work with the entry.

NOTE: In order to use workflow notifications, Forum must be configured to enable e-mail notifications. Refer to the "Installation and Configuration Guide" document for information on configuring e- mail servers and notification.

To use Zon IM for workflow notifications, you must run the `Tcl configuration script` that enables Zon integration.

What's in this Chapter?

This chapter includes instructions on creating the following types of notification:

- Notification of Request Submission - Define a notification that is sent whenever someone submits a Time Off request.
- Notification of Request Approval - Define a notification that is sent when the manager approves a Time Off request.
- Notification of Request Denial - Define a notification that is sent when the manager denies a Time Off request.
- Notification of an Overdue State - Define a notification that is sent whenever a state reaches a specified time limit.

The following sections walk you through these tasks:

- Section 4.1, “What is Access Control?,” on page 37
- Section 4.2, “Setting Access Rights for the Submit State,” on page 39
- Section 4.3, “Setting Access Rights for the Review State,” on page 43
- Section 4.6, “Summary,” on page 48
- Section 4.7, “Next Steps,” on page 48

6.1 Create a Notification

To determine places in the process where a notification can be helpful, you can review this table from Chapter 2:

State	Participants	Action Required
N/A	The employee (time off requestor)	Enters the Time Off request.
Submit	The manager	Indicates that he has received the request.
Review	The manager	Reviews, and then approves or denies the request.
Approve	The manager and employee	The manager indicates that the request is approved. The employee must be notified when the request is approved.
Deny	The manager and employee	The manager indicates that the request is denied. The employee must be notified when the request is denied.
Record	Human Resources	HR enters the Time Off request into the Time Off database.

Glancing at the third column, which actions appear to be time critical? Which ones could be facilitated with a notification either at the time the entry moves into or out of a state?

For example, the first line of the table indicates that something is "sent to the manager." Given that the entry resides in Forum and may not be viewed by the manager immediately, this is a good place to include a notification in the workflow process: notify the manager when an entry enters the *Submit* state.

To create an e-mail notification:

1. View the workflow-development page for the Time Off Request workflow, if you are not already viewing this page.
2. Click *Show whole workflow* in the toolbar, which displays the flowchart in the working area.
3. Click the *Submit* oval in the flowchart.
4. Click the *Add or delete notifications* workflow tool the "*Edit the current state*" menu.
5. The "*Add or delete notification*" screen appears.
6. Click the *Entering the state* radio button in the "*When*" column.
7. Click the *Selected users and groups* checkbox.
8. Click *Find groups*, and use the "*Find groups*" window to select the *Managers* group.

   Forum displays the "*Add or delete notifications: Submit*" page again. Notice the checkbox below the *Groups* box.

   The previous picture was taken using a Forum installation that did not configure Zon support. If you configured Zon support, then this portion of the page appears as follows:

   If you check the via IM checkbox, then Forum sends the notification in the form of an instant message to all specified users who are currently online using their Zon clients. If a user is not online, then she or he does not receive the notification. If it is important that the notification be delivered regardless of the a user's online status, make sure that the *via e-mail* box is checked as well.

NOTE: IM notifications can be an extremely effective tool for very important notifications during a workflow process. However, overuse of this feature has the potential to greatly annoy your users, interrupting their work unnecessarily with real-time Zon notifications. Use this feature judiciously.

---

9 Enter a "*Notification message subject line.*"

10 Enter the "*Notification text.*"

Using the two checkboxes under the "*Notification text*" textbox, you can affect the content of the e-mail message. If you click the *Append…* checkbox, Forum places the entire content of the entry into the e-mail, just after the text you specified in the textbox. If you click the Send… checkbox, Forum attaches to the e-mail all file attachments for the current entry.

11 Click *OK* to create the notification.

Forum reflects the newly created notification at the bottom of the "*Add or delete notifications: Submit*" page.

6.1.1 Creating a Notification of Request Approval (Exercise)

Use the steps outlined in the previous section to notify the entry creator whenever the manager approves a Time Off request. The Human Resources group must also be notified, in order to record the time in the Time Off database.

After you successfully complete the steps, the bottom of the "*Add or delete notifications: Approve*" page appears somewhat as follows:

6.1.2 Creating a Notification of Request Denied (Exercise)

Use the steps outlined previously to notify the entry creator whenever the manager denies a Time Off Request. After you successfully complete the steps, the bottom of the "*Add or delete notifications: Deny*" page appears somewhat as follows:

6.2 Sending Notification for Overdue State

Sometimes, a specific task within a workflow process can get "stuck" in one workflow state. For example, the participant who must transition the entry to the next workflow state may not be available or may not perform the work required for some other reason. In this case, the task is no longer continuing through the process as needed.

A common way to address this problem includes the creation of an "overdue" state, which includes a notification informing key participants that work is overdue. The sections that follow describe how to implement this change in the process.

Create the Overdue State

1 View the workflow-development page for the Time Off Request workflow, if you are not already viewing this page.

2 Click *Show whole workflow* in the toolbar, which displays the flowchart in the working area.

3 Click the *Add or delete states*, or modify the initial state workflow tool.

4 Type "*Overdue*" in the "*List the states to be added*" textbox.

5 Click the *Add states* button.

6 Verify that the state has been created by viewing the flowchart.

Define When an Entry Transitions to Overdue

1 Click the *Review* oval in the flowchart.

2 Click the *Add or delete transitions* workflow tool in the "*Edit the current state*" menu.

3 Specify a number of days in the "*When no state change has occurred in__ day(s)*" field.

This is the number of days after which time Forum sends the notification.

4 In the "*to cause a transition to:*" column, click *Overdue* (which selects it).

5 Click the *Add transition and close* button.

Create Transitions from an Overdue Entry

Create transitions that allow an entry in the *Overdue* state to transition to *Approve* or *Deny*. This allows the manager's supervisor to take over the responsibility of completing the task.

1 Click the *Overdue* oval in the flowchart.

2 Set two transitions by adding:

- "*Manual transition (group 1)*" from *Overdue* to *Approve*
- "*Manual transition (group 1)*" from *Overdue* to *Deny*

Refer to Chapter 3 for the steps required for creating manual transitions.

After you successfully complete these steps, the resulting flowchart reflects your changes.

Set Access for the Overdue State (Exercise)

When an approval decision is overdue, it is the responsibility of the manager's supervisor (Mary Windsor) to complete the task. Using steps outlined in Chapter 5, set the access control for an entry in the Overdue state so that only the members of the Supervisors group has the right to transition the entry:

After you complete the steps, the bottom of the "*Set access rights for: Overdue*" page appears as follows:

Create the Overdue Notification (Exercise)

Using the steps outlined earlier in this chapter, create a notification sent to the Supervisors group when the entry enters into the *Overdue* state. After you successfully complete the steps, the bottom portion of the "*Add or delete notifications: Overdue*" page appears similarly to the following:

6.3 Test the Notifications

To test the notifications, log on as different users and move an entry through the workflow process. As the entry transitions, you should receive e-mail notification. If not, make sure that you configured e-mail settings on your server, and review the workflow notifications you have created.

6.4 Summary

Notifications are a vital mechanism for maintaining the efficient and proper flow of work through the process. Notification can be sent to a number of different workflow participants, whenever a workflow process enters or exits a specific state. In addition to many other reasons, notifications can communicate approval, denial, completion, or overdue status.

6.5 Next Steps

A business process often requires the collection and display of data that is specific to the work being done. You can use Forum to define custom forms and views that more closely match your business process, you can have your workflow process begin automatically as soon as a user creates your custom entry, and you can configure a discussion forum so that the custom entry and workflow process are the only tasks performed in the forum. The next chapter describes how to achieve this effect by combining the power of custom commands and workflow processes.

Creating a Command for the Workflow

7

The previous chapters of this manual provided instructions that helped you to learn the Forum workflow system. This chapter begins to provide you with instructions for creating production-ready systems that more closely match the organizational needs of your business process.

Most business processes require the structured collection and display of information that are not part of Forum's default entry types (topics, documents, URLs, or polls).

NOTE: You can create a new entry type by defining a custom form (the page used to collect information from the user) and a custom view (the page used to display the information). This new entry type is called a custom command or a new command.

It can increase the smoothness of the user experience by naming your new command in a way that is most intuitive to your users, having the entry's form and view contain familiar information, having your workflow process begin automatically upon creation of your new command, and removing default entry types that are not related to your business process.

What's in this Chapter?

This chapter describes how to create a new command, how to associate the new command with your workflow process, and how to use one discussion forum to create an application dedicated to working with paid-time-off requests:

7.1 Planning a Command

As mentioned in previous chapters, it is important to gain a thorough understanding of your organization's business process before you plan the corresponding workflow process. In addition to informing the design of the workflow, the business process also informs the creation of the new command.

For example, the following picture shows a hardcopy Time Off Request form for the fictional Parapluie company introduced in Chapter 1:

Parapluie, Inc
Time Off
Request Form

Requestor:______________________________
Manager:________________________________
Department:_____________________________

Dates Off:
__/__/__ to __/__/__

Total Number of Days Off:________________

Please submit this form to your manager for approval,
who will submit the form to Human Resources for recording.

Thank you.

HR Form 33112 March 2001

It is possible to use either Forum's interactive UI to define a new command that replicates this form online, or you can use templates to create the new command. Chapter 8 briefly discusses why you may choose one method as opposed to another.

The topic of designing and implementing a complete, production-ready new command is beyond the scope of this workflow tutorial. However, as a way to get you started with this important and related topic, the remaining sections in this chapter show you how to use Forum's interactive UI to create a new command, which allows the entry creator to specify time-off dates and a specific manager's name. The sections that follow also discuss other aspects of creating a dedicated application based on the new command.

7.2 Developing Commands Interactively

Because the design needs of production-ready systems often require the association of workflow processes with new commands, Forum provides a UI that allows you to move easily between workflow and interactive custom-command creation. To move back and forth between these related tasks, you use the tabbed interface at the top of the workflow-management page.

Click on a tab to work with workflow processes or to work with new commands. If you are not currently viewing the workflow-management page, you can access the management page for new commands using the discussion forum's management menu.

To access the new-command-management page directly:

1. Access the *Time Off Request* discussion forum, which contains your time-off workflow process.
2. Click the *Tools* toolbar item.
3. Click the *Administration* menu item.
4. Click *Develop commands interactively*, which is located in the same section of the management page that allows you to create workflow processes.

To add the "Request time off " new command:

1. Access the *new-command-management* page from either the management menu in the discussion forum or by clicking the *Developing commands interactively* tab.

   The "*Add a command*" screen appears.
2. If there are existing commands, click *Add a command* on the toolbar (otherwise, skip this step).
3. In the working area of the page, enter the name of the command in the "*Command name*" text box, and use wording that sounds like a command (a phrase that begins with a verb):
4. Click the *Add* button.

   At this point in the process, your new command is created and functional. Typically, developers customize the command further before testing it.

The *new-command-management* page is very similar in layout to the *workflow-management* page. General tools are located along the top of the page, new-command tools are located in the left frame, and the working area of the page is located in the right frame.

The "*Lay out the command*" form appears in the working area, displaying the default elements of the new *Request time off command*.

Elements are pre-configured widgets that are used to develop form and view pages quickly, without programming.

The "*Lay out the command*" form provides a table of information about each element of a new command. Some elements appear in both the form and view pages; for example, there is a Title element on the form that also appears on the view. Some elements appear on only one of the pages; for example, the signature and date do not appear on the form (because they do not require the user to enter data), but they are automatically determined and appear on the view page.

The table located on the "*Lay out the command*" form gives you information about captions used on the form and view, other layout information, and whether there is a restriction on when the user sees an element. For example, it is possible to tell Forum to display a custom element only when the entry is in certain workflow states.

Also, the "*Lay out the command*" form allows you to alter the vertical order of the elements on the page. A subsequent section in this chapter shows you how to use this feature. (The next chapter briefly discusses issues involved with horizontal alignment.)

By default, the "*Lay out the command*" form creates a command that appears very much like the default discussion topic. Also, the default layout includes elements that are transparent to you but that are used when you alter the default configuration settings of a discussion forum; these configuration-based elements are local features 1 and local features 2. By default, the inclusion of these elements has no effect on your new command and enable possible, future configuration changes. Until you are more experienced with Forum customizations, retain these elements in your new command.

7.3 Modifying Elements

When creating a dedicated application, it is often important to make the wording of default elements match the wording familiar to users of your organization's business process. To customize the default terminology, you can modify new-command elements.

To modify an element:

1. Access the *new-command-management* page, if you are not there already, and view your new command.
2. Click the *Title* radio button.
3. Click the *Modify/view* button.

   The "*Modify element*" screen appears.
4. Enter a new caption for the Title element.

   The "*Modify element in…*" page informs you where this element appears, it allows you to require the user to enter information into this form element, and it provides you with a means for controlling the length of the textbox used on the form to collect this information.
5. Click *OK*.

7.4 Creating a User List Element

Previous chapters of this tutorial allowed all members of the Managers group to transition the entry from *Review* to either *Approve* or *Deny*. To more closely match the way a typical time-off business process works, it is more efficient to have the user specify her or his specific manager. That way, only the relevant manager receives e-mail notifications, and only that person can approve or deny the request.

Use the *User List* element to add an area in the form where the requestor can select the appropriate manager's username.

To create the user list element:

1. Access the *new-command-management* page, if you are not there already, and view your new command.
2. Click *User List*, in the "*Add HTML layout element*" section of the new-command tools.

   The "*Add element to...*" screen appears in the working area of the page.
3. Complete the "*Add element to…*" page.

   These checks require the user to enter a name and limit the selection to one name.
4. Click *OK*.

The layout table displays the new element.

By default, Forum places new elements at the bottom of the form and view pages.

5. Click the *User list* radio button that corresponds to the manger's username.
6. Type "*4*" in the textbox in between the *Move up* and *Move down* buttons.
7. Click the *Move up* button.

   The user list corresponding to the manager's username now appears under the title on the form and under the signature line on the view page.

7.5 Create Date Elements (Exercise)

Using the steps outlined in the previous section, create *Begin date* and *End date* elements for the time-off request. Require that the user enter these dates, and use the Forum date widget. Place the begin- and end-date elements under the manager's name.

After you successfully complete the steps, the "*Lay out the command…*" page should appear as follows:

7.6 Test the New Command

Now that the form contains all of the elements, review how the form appears to the workflow participants.

To preview the form:

1. Access the *new-command-management* page, if you are not there already, and view your new command.
2. Click the *Preview* tool.

   Forum opens a new browser window and displays the form as it would appear to your users, as follows:
3. Use the windowing or browser commands to close the preview window.

   For example, if you are using Windows, you can click the *X* button in the upper-right corner of the window to close it.

NOTE: The preview of the form is not a "*view only*" page; it is a "live" Forum page. This means that it is possible to use the preview page to create an entry in your discussion forum. If you want only to view the formatting of the page without creating new entries, view the preview page and close the browser window; do not click on any of the elements or buttons on the page.

At this point in the process, you can test your new command by creating an entry of that type. This allows you to see the view page.

To see the view page of your new command:

1. View a folder or entry page in the discussion forum containing your new command.

   If you are currently viewing the new-command-management page, click the linked name of the discussion forum in the upper-right corner of the page:

Otherwise, access the discussion forum from either the workspace page or the *Discussions* tab.

2 Click the *Add* toolbar item.

3 Click the *Request Time Off* menu item.

4 Fill out the form (specify Bob Jones as your manager), and specify any dates.

5 Click *OK*.

The completed entry appears similar to the following:

At this point in the process, you have a functional new command. The sections that follow show you how to have the Time Off Request workflow start automatically when someone uses the new command to create an entry and how to exclude all commands except your new command.

7.7 Associate the Command with a Workflow

IMPORTANT: To have the workflow begin automatically upon the creation of your custom entry, you associate the workflow process with the new command.

To associate the workflow with the command:

1 Access the *new-command-management* page, if you are not there already, and view your new command.

2 Click the *Associate a workflow process with this command* link in the "*Edit the command*" section of the new-command tools.

The "*Associate a workflow process*" form appears in the working area of the page.

3 Use the drop-down menu to select *Time Off Request*.

4 Click *OK*.

The *command-layout* table reappears.

Now, when a user creates an entry using the Request time off command, the entry automatically enters the first state of the Time Off Request workflow process: *Submit*.

Once you make an association between a new command and a workflow process, it is often the case that you want your workflow process to make decisions based on custom data in the new command. Given our tutorial example, it fits the business process better if the workflow acknowledges the requestor's specific manager instead of anyone within a group of managers.

To update the workflow process to work with the new command:

1 Access the *workflow-management* page, and view the Time Off Request workflow process.

2 Click the Set access rights for all states link in the "*Edit the whole workflow*" set of workflow tools.

3 Replace every instance of "*Managers (managers) Group*" with the following:

After you successfully complete this task, the "*Current access rights*" section at the bottom of the page appears as follows:

4 Click the *Show whole workflow* tool.

5 Click the *Submit* oval in the flowchart in the working area of the page.

6 Click *Add or delete notifications* in the "*Edit the current state*" set of workflow tools.

7 Alter the notification for the *Submit* state, so that the notification goes only to "*Request Time Off: Your manager's name.*"

After you successfully complete this task, the "*Current notification*" section of the "*Add or delete notifications…*" page appears as follows:

7.8 Disable Extra Commands

You can increase usability by eliminating distracting features of Forum that have nothing to do with the task that your users wish to perform as part of your business process. One way to streamline the process for your users is to create a dedicated application

---

NOTE: A dedicated application is an instance of a Forum application-for example, one discussion forum-that is a work area assigned only one business process.

To create a dedicated application using a discussion forum, disable all default Forum commands, leaving only your new command as an option for users of that forum. Given our tutorial example, it can be helpful to your business process if you had an application dedicated only to submitting time-off requests.

To disable default commands:

1 View the management menu of the discussion forum in which you created the new command.

1 If you are currently viewing the *new-command-management* page, click *Close* in the toolbar.

2 Click *Modify standard menu* commands, located in the same section that allows you to create interactive new commands and workflow processes.

A form appears, displaying the list of standard commands.

3 Deselect all the command options from both the *Add* and *Attach* menus, but leave the *Reply* command selected.

4 Click *Apply*.

5 Click *Close*.

The *discussion-management* menu reappears.

6 To return to the forum, click *Close*.

Because you turned off all *Attach* commands, Forum no longer displays an *Attach* toolbar item. The *Add* toolbar item displays only your new command and *Add* folder (by default, only managers may create folders).

7.9 Display Custom Data in the Folder Listing

One of Forum's strengths is providing users with several ways to do their work, which allows your users to work in ways that match their personal styles. Some users may like to use e-mail notifications as the way to engage in the workflow process, some use the "List unseen" feature, and some may glance at the folder listing.

For users who scan the folder listing for entries that need attention, it can be helpful to place custom information into the folder list. Given the tutorial example, it can be helpful to include the manager's name in an entry line of a folder listing. That way, managers can skim the "manager" column, check the state of the entry, and see at a glance which of their entries requires attention.

To add a custom column to the folder listing:

1. Access the management menu of the discussion forum that includes your workflow process and new command.
2. Click *Modify column layout*.

   Forum displays the "*Define the columns shown on the folder pages*" form.
3. Alter the form as follows:
4. Click *OK*.
5. On the next displayed page, choose to re-index the discussion forum by clicking *OK*.
6. Click the *Time Off Request* link to return to the discussion forum.

7.10 Testing the Dedicated Application (Exercise)

To test the dedicated application, log in as John Hall, and specify Bob Jones as your manager. If you want to be thorough with your testing, you can add a second name to the Managers group (say, Tamika Williams), and make sure that only Bob Jones is able to transition the entry.

This section shows you pictures of screens that should approximate what you see when you successfully complete this exercise.

When John Hall clicks the *Add* toolbar item, he sees this:

When filling out the form, John specifies this:

When John views the entry, it has been placed into the *Submit* state automatically:

When Bob Jones views the folder listing, he can click on the column-header link to sort the entries by manager, so he can check the state of his assigned entries that require attention:

7.11 Summary

Once you create a workflow process, it is helpful to provide the workflow participants with dedicated and easy-to-use access to the workflow. Creating commands defines the structure of information added to the workflow, provides data to present at various points in the workflow process, and limits or requires information entered into specific fields within the entry form.

7.12 Next Steps

You have completed the workflow tutorial. Congratulations!

Although this tutorial introduced you to dedicated applications, your next step is to deepen your understanding and skill with both workflow tools and new commands. The next chapter provides you with some tips that may assist you as you deepen your skill with these powerful Forum tools. Appendix A provides you with workflow-planning worksheets that you can copy and use to plan your own workflow processes in the future. And the Glossary provides a list of workflow and new-command terminology.

Continuing Your Learning

8

To increase your skill with workflow tools, new-command tools, and ways to create production-ready, dedicated applications, you may appreciate some tips to focus your future use of these powerful tools.

What's in this Chapter?

This chapter provides you with guidelines and pointers to areas of interest involving the creation of dedicated applications using workflow and new commands:

8.1 A More Efficient Development Process

This tutorial presented information to you in an order designed to maximize your learning experience with workflow. However, to maximize your efficiency when creating production-ready, dedicated applications, you should approach tasks in a different order.

When creating production-ready systems using workflow and new commands, do your work in this order:

1. Create your new command, which often includes custom elements.
2. Create a skeletal workflow process (say, a title and initial state).
3. Back in your new command, associate the command with the workflow process.
4. Back in the workflow process, complete the process definition, possibly designing conditions based on the custom elements in the new command.
5. Create state transitions based on the conditions you just created.
6. Back in the new command, specify which elements, if any, should be visible only when the entry is in certain states (as opposed to the default, which is "visible in all workflow states").

In summary, having the custom elements of the new command defined upfront facilitates the definition of the workflow process.

8.2 Using Interactive or Template-Based New Commands

One of the situations that you should avoid, if possible, is beginning to use the interactive new commands and then deciding that you want to switch to template-based new commands. To make this switch, you must replicate your work entirely in templates (there is no automated process for moving interactive commands to template-based commands).

In general, if you require very simple-and simply formatted-custom elements, such as the "manager's name" and "begin and end" dates presented during this tutorial, then interactive new commands should meet your needs. Stated another way, if your business process requires an entry that varies only slightly from a standard discussion-topic entry, then use the interactive method of creating your new command.

You "cross a line" and begin to require template-based new commands when one of the following occurs:

- You require tables of any complexity (a subsequent section discusses tables in more detail) or other types of horizontal formatting. If you feel the urge to use the "HTML" or "Table" tools included as part of the interactive method, strongly consider an immediate switch to templates.
- You require formatting that is not easily provided by the interactive method, such as background color, inclusion of graphics, changing the size of a textbox on the form, and so on.
- You require forms or views to behave differently depending on server data (for example, changes depending on a user's membership in a group).

Forum support for template-based new commands includes the "template-support procedures." If you can create an HTML form that replicates the collection of information required for your business process, the template-support procedures provide you with the means to convert that HTML form into a new command with a minimum amount of programming; the only programming skills required to use these routines involves being able to create a variable, call a procedure, and pass parameters to the procedure. This enables you to have exponentially more control over the formatting of your form and view pages, while requiring only the most basic of programming skills.

Of course, template programming can become more complex to respond to more demanding needs of the application. This is especially true when you make alterations to the form and view based on server data.

For more information, see the Templates Help system. (For information on accessing this Help system, see the "About this Manual" section of the book.)

8.3 Specifying Raw HTML and Using Tables

As mentioned in the previous section, if you feel the urge to use tables with the interactive method of creating new commands, then strongly consider switching to template-based new commands. However, if your planned table is very simple in structure, then you can use the interactive method.

First, you cannot use tables to align custom elements horizontally. Given our tutorial example, it would have been optimal to align the begin and end dates on the view page so that they appeared side by side. If you want to align custom elements horizontally, use template-based new commands.

Second, if you feel comfortable writing HTML, SiteScape recommends that you do not use the Table new-command tools, and simply insert the raw HTML using the HTML new-command tool. In addition to streamlining the number of custom elements in your new command, using the HTML tool gives you the flexibility of placing your table only on the form or view page (if you use the Table tool, it must appear on both pages).

To give you a feel for using the Table tool to create a table, here are instructions that show you how to create a table with a header row and only one row of data:

1. Click Table start to begin your table.

"*Attributes*" or "*Qualifiers*" are simply the HTML code that you can add to a tag to alter its default behavior. For example, the following attributes create a thicker border and provide a "light almond" background color:

```
border="3" bgcolor="#FFEBCD"
```

This results in Forum using the following HTML tag in the new command:

```
<table border="3" bgcolor="#FFEBCD">
```

2. Click *Table row* to indicate that a row begins.
3. Click *Table header* to indicate that you want to specify one column header.
4. Click *HTML* to specify the text you want to use as the column header.
5. Click *Table header* to indicate that you want to specify a second column header.
6. Click *HTML* to specify the text you want to use as the column header.
7. Click *Table row* to indicate that another row begins.
8. Click *Table cell* to indicate that you want to create a cell.
9. Click *HTML* to specify the text you want to place within the cell.
10. Click *Table cell* to indicate that you want to create another cell.
11. Click *HTML* to specify the text you want to place within the cell.
12. Click *Table end* to end the table.

And then you probably need to move all of these custom elements up or down on the page.

You may wish to create your HTML table using an HTML editor, prototype it until it appears as you wish, copy the HTML code required to create the table, click the HTML tool in your new command, and paste all of the HTML into one custom element.

8.4 When Everyone Answers Yes to The Question

Many business processes require that an entry make a transition "when everyone in a group responds Yes to a question." Given the tutorial example, this section describes how to cause a transition from *Review* to *Approve* when everyone in the Managers group answers Yes to the question.

To test this scenario, add just one more user to the Managers group, such as "Tamika Williams," and do the following tasks.

To transition an entry when everyone in a group answers Yes:

1 Using the Set access rights for all states tool, make sure of the following:

- The Managers group and entry creator have the right to view the entry in the *Review* state.
- The Managers group has the right to respond to the question in the *Review* state.

After you complete these tasks, the "Current access rights" portion of the page appears as follows:

2 Click the *Add, modify, or delete conditions* tool.

3 Click *Add condition*.

4 Fill in the form as follows (and click *OK*):

The settings on this form can be counterintuitive. It is saying, "This condition is true if no one responds No to the question." If no one responds No to the question, and if everyone has provided an answer, then everyone must have said Yes. (Don't worry if this still does not make sense. Just keep following the instructions and breathe deeply.)

Your "*Add, modify, or delete questions…*" page now appears like this:

5. On the application toolbar, click *Show whole workflow*.
6. Click the *Review* oval in the flowchart.
7. Click the *Add or delete transitions* workflow tool.
8. Toward the bottom of the page, in the "*Current transitions*" section, click the radio button for *Approved*, and click the *Delete transition and continue* button.

   You are going to define a new transition for "approved" that supersedes the old transition. The Denied transition still applies (if one member of the group answers No, then the request is denied).
9. At the top of the form, do the following:

   Remember that a condition must result in "true" in order to contribute to a transition. When you define a transition with more than one condition, they all must result to "true." So, everyone in the group must answer the question ("true") and everyone must answer Yes ("true") for the entry to transition to the *Approve* state.
10. Click the *Add transition and close* button.

Your new transition is ready to test. Log in as John Hall and enter a request. Log in as Bob Jones, transition the entry to the Review state, and answer Yes. Log in as Tamika Williams, view the entry, and answer *Yes*. The entry transitions to *Approved*.

Log in as John Hall again, and enter a request. Log in as Bob Jones, transition the entry to *Review*, and answer *No*. The entry transitions to *Denied*.

8.5 Varying Group Membership

In the previous section, the example called for the Managers group to have two users: Bob Jones and Tamika Williams. Let's say that you want your workflow process to function properly within a very large organization. And let's say that Bob and Tamika are two of 542 possible managers who could possibly be using this application. One time, the managers might be Bob and Tamika, but the next time the managers should be Cheryl and Anna (and so on). Clearly, the process as defined does not address needs of the business process.

To address the situation in which the workflow must function with a group whose membership varies, you need to use the "User-specified lists" workflow feature. Consider this picture from the "Set access rights for all states" page:

There are two ways that you can use these types of lists:

- The person who creates the entry selects Forum usernames from a list at the time that person initiates the workflow process ("Ask for a list when workflow starts").

  For example, one person can create an entry and specify that Hassan, Jane, and Chamique are to participate in the process. Another user can determine that Kumar, Harold, and Doogie are to participate.
- The workflow can use a custom element from a new command.

The user can use a "user list" element in a new command to specify Forum usernames, which a workflow process can then treat as a "group."

Recall that the tutorial example used a variation of this technique to define "Request Time Off: Your manager's name." To allow the creation of a group, indicate in the new command that the user can specify more than one Forum username.

8.6 Using Workflows Across Discussion Forums

Workflow processes and new commands are created within a single discussion forum. To use them in other discussion forums, use the export and import features.

You can import or export the following items:

- Entries
- Templates
- Template graphics
- New commands
- Attribute definitions
- Workflow definitions

Workflow Planning Worksheet

A

Chapter 2 used these worksheets to design the example workflow process for this tutorial. Use copies of the worksheets in this appendix to clarify details about your organization's business process and to map those details to your workflow implementation.

A.1 Identify Components of the Business Process

Begin by writing a brief description of the business process for which you want to define a workflow. Include the specific goal of the business process or a desired outcome.

Example: To begin the process, an employee submits a request for time off. The employee's manager then approves or denies the request. If it is approved, the manager passes the information to an employee in the Human Resources department, who then records the request in the Time Off database. Once the submission is recorded, the process is complete. If the request is denied, the request submission is returned to the employee with an explanation for the denial. This also completes the process.

Use this space (or the back of the page) to write a description of your business process:

A.2 Name the Business Process

UI Mapping: Click *Add a workflow*, enter in the "*Add a workflow process*" form.

Provide a brief, descriptive phrase or name for your business process.

Example: Time Off Request

Use this space to provide a name for the business process:

A.3 Identify the Tasks

A task is a step or action that a workflow participant performs. List the tasks involved in your business process, placing them in the order that they are performed:

Task	Description
Example: Send request	The employee submits the request for time off to his or her manager.

A.4 Identify States

UI Mapping: Click *Add or delete states*, or modify the initial states.

Workflow states label the outcome of each workflow task. Use this table to identify the tasks in the business process and their corresponding states:

Task	Completion State
Example: Send request	Submit

A.5 Identify State Transitions

UI Mapping: Revealed in the flowchart at the end of creating the process. To define a transition, click an oval in the flowchart, and click Add or delete transitions.

The act of sending work from one state to the next is known as a transition. Use this table to identify the relationships between the states and the states to which they transition:

Task	Can transition to...
Example: Send Submit	Review

A.6 Identify Conditions that Cause State Transitions

UI Mapping: Informs use of automated features, such as questions and associations with new commands. To work with conditions, click *Add, modify, or delete conditions*.

A state can transition once one or more conditions are met. Use this table to identify the relationships between the states and the conditions that cause them to transition:

Condition	Causes the state to transition to...
Examples:	
◆ The manager indicates receipt	Submit
◆ Employee enters Time Off Request	Review

A.7 Identify the Process Participants

UI Mapping: Informs the creation of notifications. To work with notifications, click an oval in the flowchart, and click *Add or delete notifications*.

For each workflow state, list the individuals and actions that are expected of them at this point in the process.

State	Participant	Action Required
Example: Submit	The manager	Indicates that he has received the request.

A.8 Identify Participant Access to Specific States

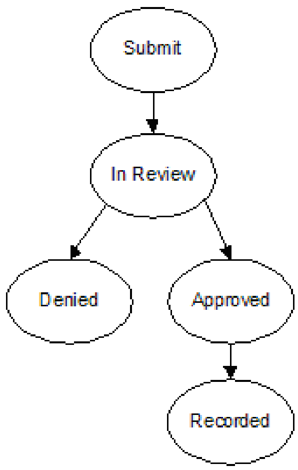
Some states in the workflow require limited access. It is not necessary for all workflow participants to be able to reply, or view each state in the workflow. Identify which states require modified or limited access for each workflow participant.

State	Participant	Action Required
Example: Submit	The employee (time off requestor)	◆ Only the manager and employee can see an employee's request. ◆ The manager is the only one allowed to transition the work to Review.

A.9 Draw a Flowchart of the process

A flowchart can help you visualize the movement of the work between the different steps.

Example:



Use this space (or the back of this page) to create a flowchart:

Glossary

access control
Definitions that specify which users have the right to perform specific tasks within the workflow process.

associated workflow process
A workflow process that begins automatically when a user creates an entry defined by a new command. The new command and the workflow process are said to be associated. See also workflow process and new command.

business process
Structured tasks that are organized and prioritized to achieve a specific business goal.

comment
A statement can be added to the answer provided to a workflow question, clarifying the answer. See also question and global question.

condition
A criteria that must be met in order for an entry to transition to another state. A state transition is comprised of one or more conditions, all of which must be "true" in order for the transition to occur.

custom command
See new command.

dedicated application
An instance of a Forum application-for example, one discussion forum-which is the only work area assigned to only one business process. See also business process.

element
New command widgets that allow for the quick definition for parts of a form or view page without programming. See also form page, view page, and new command.

form page
One of two pages associated with a new command, which allows the user to supply data for the custom entry. See also view page and new command.

flowchart
A graphical representation of the flow of the work in a workflow process.

global question
A question made available to all states within the workflow process. See also question.

initial state
The first state applied to the entry upon initialization of the workflow process.

manual transition

The act of a user selecting a state from a drop-down list, and, in response, the entry transitions to that state. See also state and transition.

notification

E-mail messages or Zon IM messages that are sent to specified workflow participants indicating that action or attention is required. See also workflow.

new command

A customized entry consisting of a custom form page, view page, and command in the Add menu. Also called a custom command. See also form page and view page.

question

A query specific to one workflow state whose answers can be used to define conditions. See also global question and condition.

state

A label indicating the completion of a task, which describes the status of the work within a workflow process. See also workflow process.

task

Work performed whose status determines the workflow state. See also state.

template

Files comprised of HTML, possibly JavaScript, and Tcl that are used to customize the Forum UI. You can use templates to implement new commands. See also new command.

transition

The movement of an entry within a workflow process from one state to another. See also workflow process and state.

view page

One of two pages associated with a new command, which displays the entry data. See also form page and new command.

workflow

A business process. See business process.

workflow-management system

A software-based system that allows IT to create and manage the execution of workflows that serve their organization, and that assists participants in completing tasks within the business process.

workflow participant

Individuals and systems that participate in a workflow.

workflow process

An online representation of a business process. See also business process.