



PeopleTools 8.12 PeopleSoft
Workflow PeopleBook

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ABOUT THIS PEOPLEBOOK

This book describes the features of PeopleTools related to business process design and workflow. These features include Application Designer tools for adding workflow to your business processes, as well as tools for administering workflow within your organization.

This book provides information on the role of PeopleTools in the design of business processes and workflow. For information specific to your application, please refer to your PeopleSoft application documentation.

This book is written for technical users, project leaders, and programmers who develop, configure, or maintain business processes in PeopleSoft applications. To take full advantage of the information in this book, we recommend that you understand how to use Application Designer to create and modify PeopleTools pages and related objects. Some aspects of workflow implementation require knowledge of PeopleCode.

Understanding Workflow introduces the concept of workflow, discusses the benefits of an automated workflow system, and provides an overview of PeopleSoft's workflow capabilities.

Developing Workflow introduces you to PeopleSoft's workflow technology, presents the eight steps for developing basic workflow applications, and introduces additional workflow development topics.

Building Workflow Maps explains how to map the business processes and activities that are the basis of your workflow applications.

Defining Roles and Users describes how you set up workflow users and summarizes the different methods of identifying the person to whom work will be routed.

Defining Worklist Records documents the process of defining and creating a database table to store information about work items.

Adding Events and Routings explains how to create the objects that define events (transactions that trigger workflow) and routings (notifications of work to be completed).

Defining Event Triggers describes how to modify application pages so that they detect when a business rule has been triggered and take appropriate action.

Additional Routing Options describes special routing options which enable you to define custom routing schemes without writing PeopleCode.

Workflow Integration summarizes the technologies by which users can trigger Workflow events from outside of the PeopleSoft system.

Batch Workflow Processing explains how to create and run a program that checks your PeopleSoft database for specified conditions and, when the condition is met, uses Component Interfaces to trigger workflow events.

Defining Approval Processes describes two specialized tools that can further automate approval processing.

Designing Activity Guides provides information about integrating workflow maps into the runtime environment to guide users through multiple related pages.

Designing PeopleSoft Navigator Maps explains how PeopleSoft Navigator uses workflow maps to help end users navigation the system.

Administering Workflow provides information on setting up and monitoring workflow within your organization.

Before You Begin

To benefit fully from the information covered in this book, you need to have a basic understanding of how to use PeopleSoft applications. We recommend that you complete at least one PeopleSoft introductory training course.

You should be familiar with navigating around the system and adding, updating, and deleting information using PeopleSoft windows, menus, and pages. You should also be comfortable using the World Wide Web and the Microsoft® Windows or Windows NT graphical user interface.

Related Documentation

To add to your knowledge of PeopleSoft applications and tools, you may want to refer to the documentation of the specific PeopleSoft applications your company uses. You can access additional documentation for this release from PeopleSoft Customer Connection (www.peoplesoft.com). We post updates and other items on Customer Connection, as well. In addition, documentation for this release is available on CD-ROM and in hard copy.



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Please take a moment to review the following typographical cues:

`monospace font`

Indicates PeopleCode.

Bold

Indicates field names and other page elements, such as buttons and group box labels, when these elements are documented below the page on which they appear. When we refer to these elements elsewhere in the documentation, we set them in Normal style (not in bold).

We also use boldface when we refer to navigational paths, menu names, or process actions (such as **Save** and **Run**).

<i>Italics</i>	Indicates a PeopleSoft or other book-length publication. We also use italics for <i>emphasis</i> and to indicate specific field values. When we cite a field value under the page on which it appears, we use this style: <i>field value</i> . We also use italics when we refer to words as words or letters as letters, as in the following: Enter the number <i>0</i> , not the letter <i>O</i> .
KEY+KEY	Indicates a key combination action. For example, a plus sign (+) between keys means that you must hold down the first key while you press the second key. For ALT+W, hold down the ALT key while you press W.
Jump Links	Indicates a jump (also called a link, hyperlink, or hypertext link). Click a jump to move to the jump destination or referenced section.
Cross-references	The phrase For more information indicates where you can find additional documentation on the topic at hand. We include the navigational path to the referenced topic, separated by colons (:). Capitalized titles in <i>italics</i> indicate the title of a PeopleBook; capitalized titles in normal font refer to sections and specific topics within the PeopleBook. Cross-references typically begin with a jump link. Here's an example: <hr/> <p>For more information, see Documentation on CD-ROM in <i>About These PeopleBooks</i>: Related Documentation.</p> <hr/>
• Topic list	Contains jump links to all the topics in the section. Note that these correspond to the heading levels you'll find in the Contents window.
Name of Page or Dialog Box	Opens a pop-up window that contains the named page or dialog box. Click the icon to display the image. Some screen shots may also appear inline (directly in the text).



Text in this bar indicates information that you should pay particular attention to as you work with your PeopleSoft system. If the note is preceded by **Important!**, the note is crucial and includes information that concerns what you need to do for the system to function properly.



Text in this bar indicates For more information cross-references to related or additional information.



Text within this bar indicates a crucial configuration consideration. Pay very close attention to these warning messages.

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Or send comments by email to the authors of the PeopleSoft documentation at:

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CHAPTER 1

Understanding Workflow

The power of PeopleSoft applications is that they automate vital business tasks. PeopleSoft's workflow capabilities significantly broaden the range of tasks you can automate. Workflow enables you to integrate the activities of multiple users into a single, flexible business process. With workflow, you can re-engineer and streamline essential business processes to increase efficiency, cut costs, and keep up with rapidly changing customer and competitive challenges.

Many PeopleSoft applications already incorporate workflow to automate common business processes, such as new hires, procurements, and transaction approvals. Like the rest of PeopleTools, the workflow tools provide a flexible development environment that you use to tailor PeopleSoft applications to your unique business requirements.

What Is Workflow?

Many of the tasks you perform throughout the day are part of larger tasks that involve several steps and several people working together. For example, when you enter an invoice, you are really initiating an approval and payment process: Someone else reviews and approves it, and a third person submits payment to the vendor. The term workflow refers to this larger process.

To a certain extent, all the business processes you define using Application Designer involve workflow. However, we usually reserve the term to refer to processes that involve multiple users and the routing of data between the users. PeopleSoft workflow tools help you build the routings into your computer system. You use them to tie together the individual steps, so that the system can help coordinate the activities. Because the system has the big picture and knows what you are trying to accomplish, it can automatically start the next step in the workflow.

Workflow Example

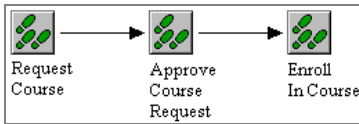
Let's look at a simple example from an imaginary PeopleSoft customer. The training department for New Generation Software has a well-defined process for enrolling employees in training classes. The existing process has a number of manual steps.

1. The employee requests a class by completing a Course Request page.
2. If the employee requests an external class, the manager reviews the request and either approves it or rejects it. If the manager approves the request, it goes on to a training clerk for enrollment. If the manager rejects the request, he or she informs the employee by sending an email message.

If the employee requests an internal New Generation class, the manager does not need to review the request. It is automatically approved.

- 3. A training clerk enrolls the employee in class and sends a confirmation email message.

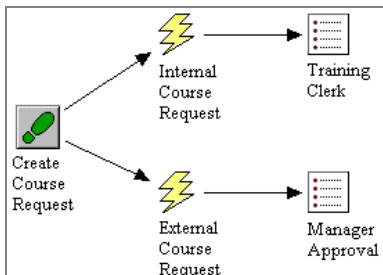
In this example, the workflow is the overall process of enrolling in a class—all three tasks and the business rules that link them together. We refer to each task along the way as an activity, and to the conditions that trigger each activity as events. (One very common event is the completion of the previous activity.)



A simple business process

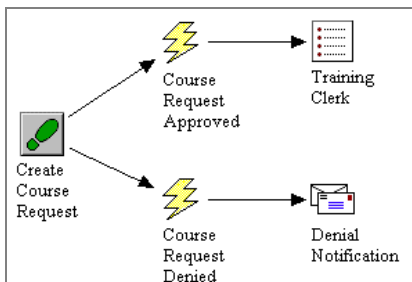
PeopleSoft’s workflow tools enable the training department to automate much of this business process.

- 4. When an employee completes the course request page, the system automatically forwards the request to the employee’s manager (for external classes) or to a training clerk (for internal classes).



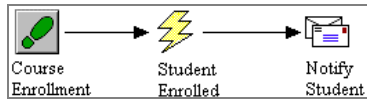
Request course - activity

- 5. When the manager approves a course request, the system forwards the request to the training clerk. If the manager rejects a request, PeopleSoft generates an email message and sends it to the employee.



Approve course request - activity

- 6. When the training clerk enrolls the employee in a class, PeopleSoft generates an email message with the course information and sends it to the employee.



Enroll in course - activity

Through its open approach, PeopleSoft even enables you to bring non-PeopleSoft users into the automated process. New Generation Software could further enhance its course enrollment process by allowing users to fill out an enrollment form in Lotus Notes rather than completing a PeopleSoft page. The system can automatically take the form, map its data into a PeopleSoft application, and initiate the course enrollment process.

This is just one example of how implementing workflow can improve your business processes, not just automate them.

Why Use Workflow?

PeopleSoft applications give you a common database that you share with other PeopleSoft users. But having access to the same data is not the same as working together. Without an automated workflow, you do a lot of work outside the system to coordinate your activities with other users' activities to keep the work flowing. An employee enters a course request, but the manager and training clerk don't know it until they run a query or receive a message from the employee.

With workflow, your application does more of the work. If you need manager approval for a course request, the system automatically forwards the request. You don't need to set up a supporting procedure, like sending an email or routing a printed copy of the invoice. Workflow typically eliminates the job tasks associated with controlling paper flow and frees the people who once performed clerical functions to do more meaningful work.

When properly managed, workflow enables you to monitor the work your organization is doing and how it is being done. It facilitates continuous process improvement. You can also gauge how your underlying business is changing. As changes occur, you are well positioned to respond promptly and proactively implement new business processes.

Workflow tools broaden the range of tasks you can automate, including:

- Tasks that several users work on together.

The essence and strength of workflow software is its ability to link together the activities that make up a business process.

- Tasks that involve non-PeopleSoft users.

Using Component Interfaces, you can include third-party applications in your automated business processes. Users can exchange information with the PeopleSoft database using the software with which they're familiar.

- Tasks that don't require user involvement.

Rather than having to remember to query the database for overdue receivables, unprocessed purchase orders, or expired passwords, you can have the system automatically check for work that needs to be done and then generate work items.

By putting these workflow capabilities together in your PeopleSoft application, you can automate, streamline, and control the flow of information across your enterprise.

The PeopleSoft Approach to Workflow

Building Workflow Applications

You create and use your workflow applications using several powerful tools.

Worklists are the most common way for users to see their work items. Worklists are ordered lists of the work a person (or group of people) has to do. When work is routed to a PeopleSoft user, it is put in their worklist. To work on a particular item, the user selects it from the worklist and is automatically taken to the proper page in the system. Users accessing their worklist through a browser will see worklist entries prioritized in an order you define; for example, worklists for accounts receivable clerks could be sorted by days overdue, amount overdue, or credit class.

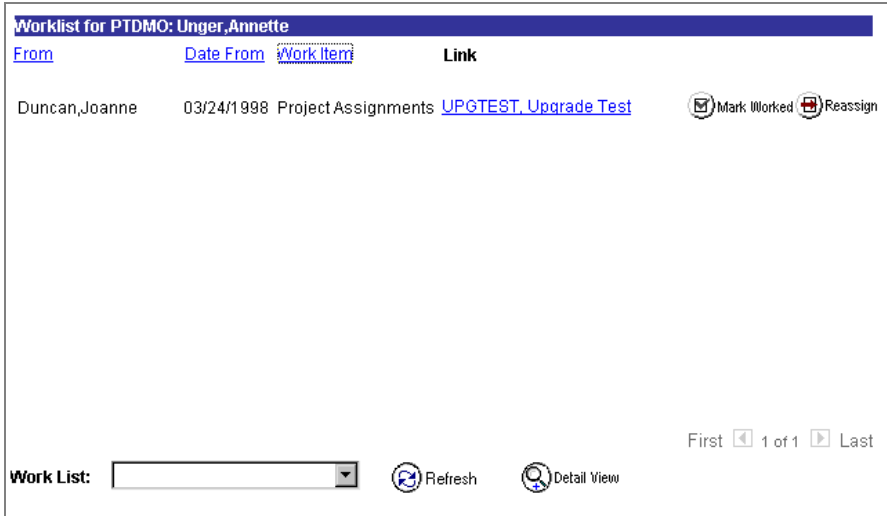
Application Designer includes the tools you use to design and build your business processes, including the workflow rules and routings.

PeopleCode functions detect when a business rule has been triggered as users enter data into a PeopleSoft application. They evaluate who should act on the new work instance (the role) and routes it to the appropriate employee (the routing).

Workflow Administrator gives you the ability to access, monitor, analyze, and control workflow in your organization. You can use the Workflow Administrator to detect if a particular worklist has too many entries in it, so you can assign additional staff to help clear the backlog. The Workflow Administrator facilitates reporting on your workflow, so you know where to focus attention. You can see how long a business process takes, which activities take the longest, which worklists are overloaded, and you can reassign work when an employee is out sick.

Using Worklists

In a workflow-enabled application, the most obvious change in a user's day-to-day operations is the use of worklists. The worklist is a prioritized list of the work items awaiting the users' attention. Users select items to work on from a worklist, and selecting an item automatically brings up the page where the work is performed.



Worklist page

Worklists provide the following functionality:

- Notification of pending work.
- Prioritization of work items.
- Pooled lists or specific assignments. All users (assigned to a particular role) can work from a shared list of work items, or you can allocate specific items to specific users. For example, you could put all invoices into a worklist for accounts payable clerks, so that the first available clerk processes the highest priority invoice. Or you could consistently assign invoices from a certain range of vendor IDs to a particular clerk, so that the clerk “owns” the vendor relationship.
- Timeout exception processing. The system can automatically reassign work items to other worklists if they’ve been sitting around for too long.



Users can also receive workflow routings outside of the PeopleSoft system through email or electronic forms.



For more information about worklists, see Using Worklists. For more information about different kinds of routings, see Adding Events and Routings.

Routing Work Items

Worklists help you and your users know what needs to be done and make it easier to get to the appropriate pages. But how do work items get into worklists?

At the heart of your workflow definition is a set of business events and the routings associated with those events. A business event is a condition that tells the system an activity is complete: A new record has been created, a record field has a particular value, a due date has passed. A routing is an instruction that tells the system to forward information to the next step in the business process. It specifies what information to forward and where to forward it.

When a user saves a page, the system checks whether an event has occurred and, if it has, triggers the associated routings. For example, suppose an employee enters a change of address from an online page. An agent determines that the database has been correctly updated and may then add an item to the benefits administrator's worklist to notify the insurance provider of the correct address.

In addition to adding work items to worklists, routings can send email messages or electronic forms.



For more information about triggering events, see [Defining Event Triggers](#).

Triggering Workflow

Workflow routings are initiated by Workflow PeopleCode. The PeopleCode is assigned to pages, and when you save the page, it triggers a business event and its related routings.

Any process that can trigger PeopleCode can trigger a workflow event, including:

- Users working in PeopleSoft pages.
- Third-parties sending information to a PeopleSoft component by way of Component Interfaces.
- Batch programs or queries sending information to a PeopleSoft component by way of Component Interfaces.

Page-Based Triggers

At the center of almost every PeopleSoft activity is a page or group of pages (a component). Pages are your windows into the database. When you want to perform some function—enter an invoice, update employee information, register in a training class—you navigate to the appropriate page and enter or update data on it. As you enter data and save your work, the Application Processor manages the system behind the scenes, verifying your data, displaying prompt lists and translate values, running PeopleCode, and updating the database tables as necessary.

Adding workflow does not change this basic picture. You still interact with the database through pages. Workflow PeopleCode evaluates data entered into a page and evaluates the data to see if the conditions that define the workflow rule are met. When the conditions are met, the PeopleCode generates a workflow routing.

Third-Party Triggers

PeopleSoft applications have always given you the flexibility to integrate with best of breed solutions. You can choose the hardware configuration and database platform that best meet the needs of your organization.

The workflow tools are no different. Rather than requiring all input to come from a user at a PeopleSoft workstation, you can accept data from a variety of sources, such as electronic forms or automated queries. By using Component Interfaces to enter the data, you ensure that PeopleSoft performs all the same edits and security checks it always does—including running any workflow PeopleCode.

Batch Workflow Triggers

There are cases where you want to trigger events using batch processing rather than in response to a user action on a page. A very common reason to do this is if you are monitoring a database for certain conditions such as elapsed time. For example, you might query for a list of users who haven't changed their passwords in over a month, so you can send them an email message asking them to change. Or you might check for outstanding course requests to review.

Although the batch programs perform a simple task, they play an important role in workflow. By running predefined SQL programs on a regular basis, they periodically check your PeopleSoft database for data that is relevant to your business processes. By causing appropriate PeopleCode to fire, they enable the system to respond automatically.

With workflow, you can get the system to automatically query the database for particular conditions. You can run these queries on a regular schedule. And most importantly, you can automatically trigger workflow notifications based on the results of these queries.

Batch workflow processing uses the following tools in addition to the standard Workflow tools:

- Application Engine programs run queries behind the scenes and pass the results to a Component Interface. You can use Process Scheduler to run these programs on a regular schedule.
- The Component Interface accesses the component and its PeopleCode to trigger a business event, thus initiating a workflow.

Using Workflow in PeopleSoft Applications

We've designed PeopleSoft products so that you can easily adapt them to your unique needs. You have complete access to the PeopleTools we use to build the database tables, applications, pages, and reports that make up our applications. You can use the sophisticated functionality of our applications as is, or you can use it as a point of departure.

We deliver PeopleSoft applications with many common business processes already workflow-enabled. You have complete access to these standard business processes through Application Designer. You can use them, and the specialized pages we've built to support them, as templates to adapt for your specific needs. Then, if necessary, you can take the next step and create your own business processes using your own rules, roles, and routings.

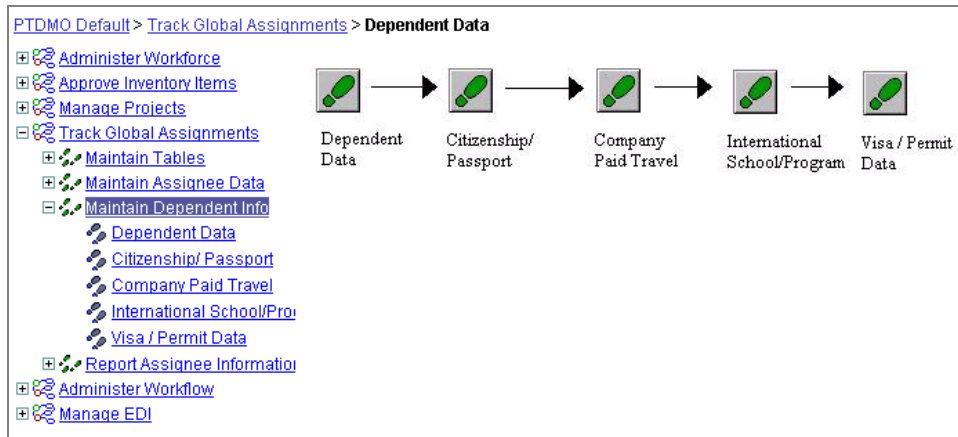
Using Workflow Maps as Navigation Aids

In order to create workflow application, you need to create workflow maps: diagrams of your business processes and activities. Because workflow maps offer a helpful graphic overview of how multiple steps fit together into larger processes, many end users find that maps offer an intuitive navigational structure.

PeopleSoft offers two ways to use maps as navigational aids: through PeopleSoft Navigator and through activity guides.

PeopleSoft Navigator

Navigator is an alternative to the standard application menus. With Navigator, users can see workflow maps and use them to access pages (but not external programs) that are represented within these maps.



Navigator



For more information about developing maps for use with PeopleSoft Navigator, see Designing PeopleSoft Navigator Maps. For more information about how end users work with PeopleSoft Navigator, see Using PeopleSoft Navigator.

Activity Guides

Activity guide are navigational aid for end users. Unlike Navigator, which displays an entire hierarchy of maps, an activity guide integrates a single map into the related transactional pages. Although activity guides can benefit all users, they are particularly appropriate for guiding untrained users through self-service transactions.

An activity guide appears as a navigation bar across the top of a page. Within the bar, you can see each of the steps involved in the activity. Clicking a step takes you to the page where you can complete the step; the navigation bar remains visible as you move from page to page.

Marriage Life Event

Change Status [Review Benefits](#) Personal Information Tax Information Direct Deposit

1-5 of 7

Request Marital Status Change

Antonio Santos

Fill in the following information and click the submit button. This form must be completed within 31 days of your marriage date or you will not be eligible to change your benefit elections for this family status change event.

Current Marital Status: Married

***Change Marital Status To:**

***Date Change Will Take Effect:** (example: 12/31/2000)

* Required Field

Marriage Activity Guide page



For more information about creating and using activity guides, see [Designing Activity Guides](#).

CHAPTER 2

Developing Workflow

This chapter provides an overview of workflow development.



This chapter does not discuss how you use and administer workflow in your production system. For more information about worklists, the workflow interface for end-users, see *Using Workflow*. For more information about administering your workflow applications, see *Administering Workflow*.

Components of Workflow

A workflow application is made up of the three R's: Rules, Roles, and Routings.

Rules

Rules are your company's business practices captured in software. Rules determine what activities are required to process your business data. For example, you might implement a rule that says department managers must approve all requests for external classes.

You implement roles through workflow events: PeopleCode that evaluates a condition and triggers a notification (a "routing") when appropriate.

In most organizations, the rules are contained in policies and procedures documents that sit gathering dust on employees' bookshelves. By incorporating rules into the software, you ensure that people are following them, without requiring extra work on their part.

Roles

Roles describe how people fit into the workflow. A role is a class of users who perform the same type of work, such as clerks or managers. Your business rules typically specify what role needs to do an activity. For example, a rule can say that department managers (a role) must approve external course requests.

Roles direct the work to types of people rather than to individuals. Identifying roles instead of individual users makes your workflow more flexible and easier to maintain. Associating roles

with users make it easy to ensure workflow users the security access they need to access the pages where they complete their work.

Roles remain stable, even as people change jobs. If an employee in the R&D Department requests an external class, the system forwards the request to the R&D Manager, not to Vic Rumpel, the current R&D Manager.

Why is this approach better? For several reasons:

- You maintain role data through standard PeopleSoft pages; there's no need for a developer to redefine your workflow process in Application Designer every time someone changes roles.
- The statement of the rule makes it clear why Vic is the right person to approve your requests: because he fills the role of manager, not because he has a special relationship to the training department or because he was volunteered for the job when he missed a meeting.
- You've stated the rule more generally. It can apply to any number of departments, not just those that Vic manages.
- You don't need to change the rule when Sandy Bocci takes over Vic's department or when the employee moves to a new department with a different manager.

PeopleSoft application data serves as the basis for defining roles throughout your organization.

Routings

Routings connect the activities in the workflow. They are the system's means of moving information from one place to another, from one step to the next. Routings specify where the information goes and what form it takes—email message, electronic form, or worklist entry.

Routings bring the flow into workflow. Routings connect people across the enterprise, providing the next person in a process a direct link to the work they need to do. The network of routings creates a business process from what used to be isolated activities. They get the right information to the right people at the right time, enabling users to work together to accomplish the company's goals.

Routings make it possible to deploy applications throughout the enterprise. They work through the levels and departments of an enterprise to bring together all the roles that are necessary to complete complex tasks. In a purchasing system, it's possible to automate the processing of a purchase order by sending the electronic requisition form to each role, while keeping the originator informed of its progress through email. After approval by the proper role, the requisition becomes part of the purchasing workflow. It travels through the system, creating purchase orders and acquiring vendors, and is finally transmitted out an electronic gateway into the vendor's own EDI (Electronic Data Interchange) system. On the return trip, the vendor's invoice triggers a voucher that is approved by receiving and inspection, generating a payment to the vendor.

The Eight Steps of Developing Workflow

Workflow development progresses through eight steps. The following topics only summarize these steps; the rest of this book provides detailed information about each step.

Step 1: Design Your Workflow Application

As with any development, it's crucial to invest time up front designing your application.

Before you start developing Workflow applications, you must first analyze what business processes you want to automate. You need to identify the goal of each business process, what its component tasks are, and how the task should be divided into smaller activities and steps. You need to articulate the conditions which trigger a workflow event and what happens when those conditions occur. You need to understand who your workflow users will be and how you'll determine who receives a particular work item.

As you design your workflow application, you will identify the workflow rules and how they relate to the data objects and transactions in your PeopleSoft system.

Step 2: Build the Underlying Application

Workflow adds an extra dimension to your applications. But before you add Workflow, you need to put the underlying application in place. That is, if you're going to add Workflow to notify managers when employees submit expense reports, you first need an application where employees can submit their expenses and managers can review and approve the expense reports.

The underlying application is part of your PeopleSoft system. To the extent that you need to build or adapt the application, you use the standard Application Designer procedures.

Step 3: Create Workflow Maps

Workflow, by its very nature, involves multiple transactions that together make up a process. Thus it makes sense that you start workflow development by mapping out the process you're planning to automate. Use Application Designer to create graphical maps that represent your business process.

At this stage, you only create maps for the processes involved in the underlying application; you start adding Workflow-specific elements to the maps when you define events and routings in step six.



For more information, see Building Workflow Maps.

Step 4: Define Roles and Users

PeopleSoft users all belong to specific roles. A role is a category of role users that perform the same kind of work, such as analysts or managers. You define users' roles when you give them their User IDs.

Roles are particularly important when it comes to Workflow. In order to make sure that work flows to the right person, you need to determine who that person is. You can find the right person using either query roles or user list roles.

You define a role as a query when you want to send work items to different people at different times. When an employee's manager must approve a training request, the manager role is a query, because you want to send enrollment requests to different managers, depending on who makes the request.

When a role is defined as a query, the system figures out who should receive the work item based on the value of one or more fields in the page that triggers the routing. In other words, it uses context information from the current record to determine who needs to work it. For example, the manager role query uses the value of the Employee ID field from the course request to look up the name of the employee's manager.

You define a role as a list of users when it doesn't matter specifically who performs the work assigned to that role. For example, if a training clerk enrolls employees in classes, the TRAINING CLERK role can be defined as a list of users, because it doesn't matter which clerk enrolls the employee in the class. The system forwards enrollment requests to the worklist for training clerks, and the first clerk who selects the request handles it. (In PeopleSoft Workflow terminology, the users are working from a pooled worklist.)

You also define a role as a list of users when you want everyone who fills that role to get the same set of work items. For example, if you want the automated Worklist Monitor to send its email messages to several people when worklist volumes get too high, you could have its messages routed to a role called SYSTEM ADMINISTRATOR. Every administrator gets the messages.

Finally, you can define a role as a list of users when there's just one person who fills the role. For example, the CHIEF FINANCIAL OFFICER role can be a user list, even though the list is very short.



For more information, see [Defining Roles and Users](#).

Step 5: Create Worklist Record

The purpose of workflow is to route work to appropriate users. In PeopleSoft Workflow, routings can take three shapes: an email notification, a form (essentially a structured email), or an entry in a worklist. A worklist is a list of the items awaiting a user's attention. Users select items from the list, and the system automatically displays the pages they need.

Like all PeopleSoft data, entries in worklists are stored in database tables. You define the structure of these tables, and what data the system stores about each item, by creating worklist records. When a business event routes a work item to a worklist, it adds a row to the table; when a user finishes with a work item, the system marks the row as worked.

The worklist record determines what fields of information the system stores for each work item, including the data needed to access the target page (the search keys for the page) and any additional information you would like to display in the worklist itself. Because different worklist entries can have different target pages and display data, you need separate worklist records for the different types of entries that will appear in the worklist.

The basic procedure for creating a worklist record definition is the same as for any record definition, but worklist record definitions follow a standard pattern:

- A standard set of system fields.
- Fields for the key data in the target page.
- Application fields for information that you want to display in the worklist or that you want to use for the next transaction.
- Fields to hold descriptive information that appears in a user’s worklist.

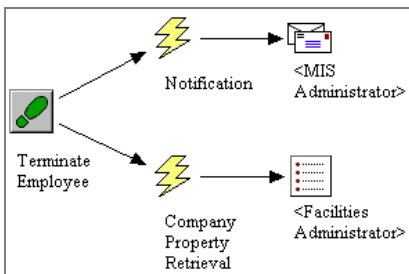


For more information, see Defining Worklist Records.

Step 6: Define Workflow Objects

At the heart of your workflow definition is a set of business events and the routings associated with them. A business event is a condition that tells the system a task is complete: A new record has been created, a record field has a particular value, a due date has passed. A routing is an instruction that tells the system to forward information to the next step in the business process. Routings specify where the information goes and what form it takes: worklist entry, email message, or electronic form. Routings bring the flow into workflow.

Events and routings are both objects on your Workflow maps. To define these workflow objects, you add the icons to your map, linked to the step representing the page where the triggering event occurs.



Activity with Step, Event, and Routing Icons



For more information, see Adding Events and Routings.

Step 7: Define Event Triggers

After you create your Workflow processes, you need to link them into your PeopleSoft applications. As you define the processes, you identify the application pages that are supposed to trigger business events. Now you need to set up the pages so they actually do trigger the events.

You do this by adding PeopleCode programs to the pages. The PeopleCode detects when a business rule has been triggered and determines the appropriate action.



For more information, see Defining Event Triggers.

Step 8: Test

No development is complete until everything is thoroughly tested. Be sure to test under a variety of conditions, both usual and unusual.

Extended Workflow Capabilities

In addition to basic workflow events and routings, PeopleSoft provides extended capabilities that add to the power of your Workflow applications.

Using Route Controls

In certain situations, querying the database to determine who should receive a workflow routing is extremely complex. In PeopleSoft Financials applications, for instance, you might want to route items differently, depending on the business unit, department, project, customer, vendor, or account to which they relate. To solve this problem, the Workflow Administrator enables you to define route controls.

Route controls identify the aspects of a situation on which you want to base routing decisions and enable you to associate particular values with particular role users. For example, suppose you want to route purchase requisitions to different buyers, depending on what vendor supplies the ordered items, what business unit is requesting the items, what department they're for, or some combination of these factors. You define a route control for each factor—Vendor ID, Business Unit, and Department—and specify the range of values for each buyer.

Route controls simplify the creation of role queries by enabling you to associate application data with the role user definition. Instead of joining together a bunch of records, you can just look at

the role user table. Without route controls, it would be very difficult to figure out which buyer worked with a particular vendor; with route controls, all you need to do is look at the role user definition.

Another advantage of route controls is that the factors controlling routing are stored on a database table instead of being buried in query definitions or PeopleCode. If you need to change the routing rules, you simply change users' route control profiles. You don't have to modify the business process, the role queries, or any PeopleCode.



For more information about route controls, see [Additional Routing Options](#).

Triggering Workflow From External Applications

Component interfaces allow third-party applications to enter data into PeopleSoft applications. Component Interfaces accept data from a variety of sources, such as electronic forms software, interactive voice response (IVR) systems, or World Wide Web applications, and, very importantly, from PeopleCode and Application Engine programs.

When a component interface sends data into the PeopleSoft system, PeopleSoft performs all the same edits and security checks it always does, including running any PeopleCode associated with the page. So, if the page has associated Workflow PeopleCode, a Component Interface can trigger a business event.

Component Interfaces extend the reach of your business processes beyond the users who use PeopleSoft applications. Rather than typing data directly into a PeopleSoft page, people throughout the organization can enter the data using familiar software.

You can create component interfaces using Application Designer. The process is straightforward, involving little more than identifying the business component involved and specifying which fields and methods to expose to the outside world.



For more information, see [Workflow Integration](#).

Batch Workflow Processing

There are cases where the event that triggers a Workflow routing is actually a non-event. That is, a situation exists, but not because someone has entered data into the system. The most common examples of this type of event are aging processes: An invoice becomes overdue, an employee reaches his five-year anniversary, or a worklist entry remains unworked for over a week.

PeopleSoft's Application Engine enables you to monitor your database for this type of event. You can create an Application Engine program that runs a SQL query against your PeopleSoft database and passes the results to a Component Interface. Together, the Application Engine and Component Interfaces significantly extend the range of tasks you can automate.

Using Application Engine programs in conjunction with Process Scheduler, you can monitor your database tables for conditions that should trigger Workflow events. For example, you could create a program that looks for overdue receivables, and you could schedule it to run once a week. When the program finds overdue receivables, it passes the data to the Component Interface. The Component Interface can, in turn, trigger the Workflow event in one of two ways: by entering the data into a page specifically for overdue receivables, or by using a Save method in the regular receivables page in order to fire Workflow PeopleCode you've placed there. All of this happens without user intervention.



For more information about triggering workflow from external application, see Batch Workflow Processing.

Defining Approval Processes

Approval processes are a very common form of business process. We've simplified the process of defining approval processes by enabling you to define your approval rules on an Approval Rule Set map. The Approval Steps that you place on this map represent the approval levels required for the activity in question.

You then have a choice of two tools that can read and implement the approval rules from the map.

- Virtual Approver automatically tracks the approval process.

As users complete transactions that require approvals, Virtual Approver determines the appropriate approver and sends a workflow routing. As each approver completes the approval, Virtual Approver determines whether additional approvals are needed and, if necessary, sends additional workflow routings.

- GetApprovers PeopleCode determines the entire list of required approvals at once, so that you can develop custom approval tracking applications.



For more information about triggering workflow from external application, see Defining Approval Processes.

Using Activity Guides

Activity guides support a very specific type of workflow—a single user's work across several pages. Because activity guides are intended for a single user, they do not involve routings such as are found in a regular workflow application. Rather, the activity guide steps a user through a multi-step task.

An activity guide appears as a navigation bar across the top of a page. Within the bar, you can see each of the steps involved in the activity. Clicking a step takes you to the page where you can complete the step; the navigation bar remains visible as you move from page to page.

Activity guides are particularly useful in self-service applications, where the guide provides casual users with both an organized view of the necessary tasks and an easy means of navigating the system to complete those tasks.



For more information about triggering workflow from external application, see [Designing Activity Guides](#).

CHAPTER 3

Building Workflow Maps

Workflow maps, also known as Navigator maps, are visual representations of your organization's business processes. Maps are necessary elements of all Workflow processes; they can also be used as navigational aids for end users.

There are two types of Workflow maps, each representing a different hierarchical level. The top-level map, known as a *business process*, represents broad areas of functionality. Business processes contain one or more *activities*, or subprocesses. Activities contain individual *steps* that represent the specific transactions that complete that activity.

Uses for Maps

Workflow maps serve as workflow tools and as navigation tools.

Because maps offer a helpful graphic overview of how multiple steps fit together into larger processes, they offer end users an intuitive navigational structure that can be easier to use than other types of menus. PeopleSoft offers two ways to use maps as navigational aids: through PeopleSoft Navigator and through activity guides.



However a map is used, you create it using the tools described in this chapter.

Workflow Maps

Workflow, by its very nature, involves multiple transactions that make a process. It makes sense that you start workflow development by mapping the process you want to automate. Workflow maps are the first building block for all automated workflow processes.

When you create workflow maps, you first create basic maps (business processes and activities) as described in this chapter. This is the third step of eight steps for building workflow. As you continue with subsequent steps, you add workflow-specific elements—events and routings—to the activities. You need events and routings only in activities that are used as Workflow tools, not in those that are used as navigation tools.

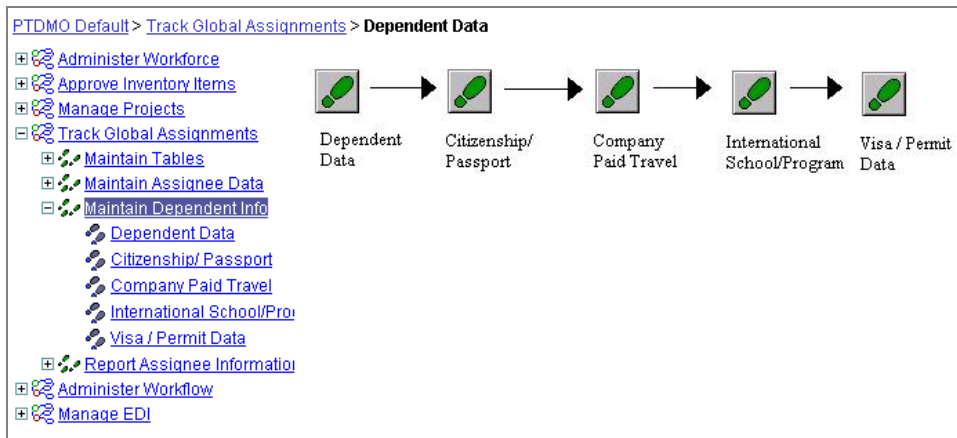


For more information about adding events and routings to maps, see [Adding Events and Routings](#).

PeopleSoft Navigator Maps

PeopleSoft Navigator is an alternative to the standard application menus. With Navigator, users can see workflow maps and use them to access pages (but not external programs) that are represented within these maps.

Navigator presents maps according to their hierarchical relationships. Users can browse the available maps and navigate to individual pages by clicking the step that represents the page. As users move from map to page and back to map, the Navigator tree remains visible on the left side of the screen.



PeopleSoft Navigator

You control which maps are visible in Navigator by defining a Navigator homepage: a top-level business process that greets the user when Navigator is first accessed. Users can access only the maps that are hierarchically related to this homepage.








For more information about designing maps for use in Navigator, see *Designing PeopleSoft Navigator Maps*. For more information about using Navigator, see *Using PeopleSoft Navigator*.

Activity Guides

An activity guide is another navigational aid. Unlike PeopleSoft Navigator, which displays an entire hierarchy of maps, activity guides take a single map and integrate it into the pages that are used for the specific transaction. Although activity guides can benefit all users, they are particularly appropriate for guiding untrained users through self-service transactions.

An activity guide appears as a navigation bar across the top of a page. Within the bar, you can see each of the steps involved in the activity. Click the link to a step to go to the page where you can complete that step. The navigation bar remains visible as you move from page to page.

Marriage Life Event

 Change Status
  [Review Benefits](#)
 Personal Information
  Tax Information
  Direct Deposit

<< 1-5 of 7 >>

Request Marital Status Change

Antonio Santos

Fill in the following information and click the submit button. This form must be completed within 31 days of your marriage date or you will not be eligible to change your benefit elections for this family status change event.

Current Marital Status: Married

***Change Marital Status To:**

***Date Change Will Take Effect:** (example: 12/31/2000)

* Required Field

Marriage activity guide page

Of the two kinds of workflow maps (business processes and activities), only activities are used for activity guides. The activity guide maps are built with the same tools as all other maps. There are, however, a few extra steps you need to follow in order to integrate the maps into your runtime environment.






For more information about creating and using activity guides, see [Designing Activity Guides](#).

Understanding Map Hierarchies

Workflow uses three hierarchical levels. The first two levels, business processes and activities, are both maps: graphical representations of the relationships between the component objects (other maps or steps).

The third level, steps, are not maps. Steps are elements within activities and represent the level at which the user interacts directly with application pages.

<i>Symbol</i>	<i>Level</i>	<i>Description</i>
	Business Process	A complete business task, consisting of one or more activities. Business processes can include other business processes. Normally, you use this functionality only when designing maps for use in PeopleSoft Navigator.
	Activity	A subprocess of the business task, consisting of one or

Symbol	Level	Description
	Step	more steps. A discrete step in the business process, corresponding to a single transaction executed on an application page or through an external program.

Business processes and activities are both freestanding objects that you can open in PeopleSoft Application Designer and include in projects. Because business processes include icons for other maps (activities or other business processes), you must create these lower-level maps before you can add them to a business process.

Steps are not freestanding Application Designer objects; they exist only within a particular activity. You create steps as you define an activity.

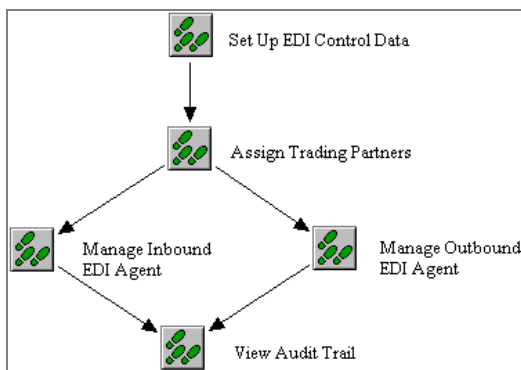


PeopleSoft Workflow and PeopleSoft Navigator applications require all three levels: All activities must belong to business processes. Activity guides, on the other hand, do not involve business processes. Activity guides are built from standalone activities and their component steps. A setting in the Activity Properties dialog box identifies the activity as being used in an activity guide.

The following topics describe the two types of graphical maps.

Business Processes

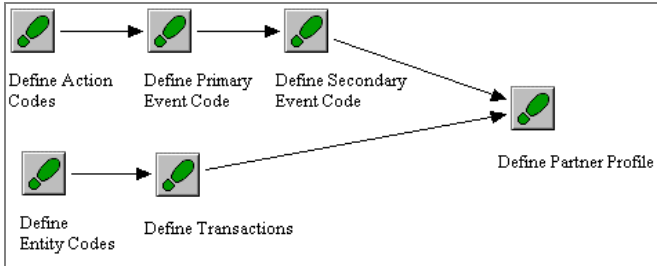
A business process is a graphical representation of the relationships among related activities. Arrows show the relationships between the activities, indicating the proper chronological sequence.



Example of a business process - Manage EDI

Activities

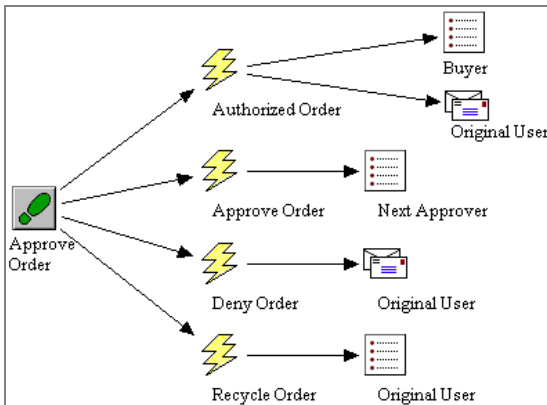
Activities that are intended only for end users (in PeopleSoft Navigator or in activity guides), typically include only steps that correspond either to application pages or to external programs.



Example of an activity - Set Up EDI Control Data

When you incorporate workflow, activities also include events and routings. Events represent specific transactions that can occur in the page that's connected to the event. Routings represent notifications that are triggered by that event.

For example, there are several possible events in a page where managers approve orders. The manager could approve the order, deny the order, or send the order back to the employee for changes. Each event requires routings to inform the next person in the chain (a buyer, an additional approver, or the employee who submitted the original order) what needs to happen next.



Activity with workflow routings



For more information about creating workflow routings, see Adding Events and Routings.

Defining Maps

You create maps using PeopleSoft Application Designer. Once you've created the map, you further define it by adding items to the map and establishing the attributes of and relationships among those components.

Because maps are freestanding objects in Application Designer, you can use the standard techniques for opening, saving, deleting, renaming, adding to projects, printing, and so forth.

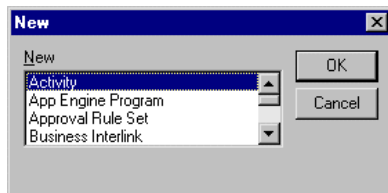


For more information about working with objects in Application Designer, see *Working with Object Definitions*.

To create a new map:

1. In Application Designer, select **File, New**.

The **New** dialog box appears.



New dialog box

2. In the **New** scrolling list, select the map type and click **OK**.

Possible map types are *Activity* and *Business Process*.

A new map of the type you've selected is opened in the Object Workspace.

3. Add the icons you want to include in your map.

If you're creating a business process, the icons represent other maps: activities and possibly other business processes. When you add these types of icons to the map, you must specify an existing activity or business process that the icon is to represent. For this reason, you can add these icons to your map only after you've created the activities or business processes they represent.

If you're creating an activity, your components are mostly steps and workflow objects (events and routings). It is often simplest to start by creating activities without the workflow objects and then add the workflow objects later.



For more information about the different components that you can put on a map, see *Using Toolbar Buttons*. For instructions on adding components to maps, see *Adding Objects to Maps*.


4. Arrange the icons in a logical and visually informative way.

If it clarifies the purpose or the flow of the business process, add additional modeling symbols, drawings, arrows, text, or other graphic elements to the map. These elements are useful primarily in maps that will be visible in PeopleSoft Navigator. They do not affect workflow processing, nor are they visible in activity guides. They simply clarify the flow of work.



For more information about arranging components in the maps, see [Arranging Objects on Maps](#).

5. Connect the activities, decision points, and subprocesses in the appropriate order.

To connect two objects, click the  **Link** button, then click the two objects sequentially. An arrow appears, pointing from the first object to the second.

The links between steps are used only to clarify the flow of work. They do not directly determine the order of the steps, which you specify when you set the properties for individual icons in the maps. However, if you've enabled automatic sequencing in the activity properties, the default step order is based on the links.

6. Define the properties of the map.



For more information, see [To define the properties of an activity](#) and [To define the properties of a business process](#).

7. Define the properties of the icons on the map.

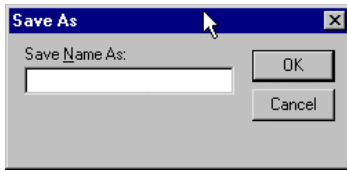


For more information, see [Setting Icon Properties](#).

8. Save the map.

Click the **Save** icon on the toolbar or select **File, Save**.

If this is the first time you've saved the map, the **Save As** dialog box appears, prompting you for a name.



Save As dialog box

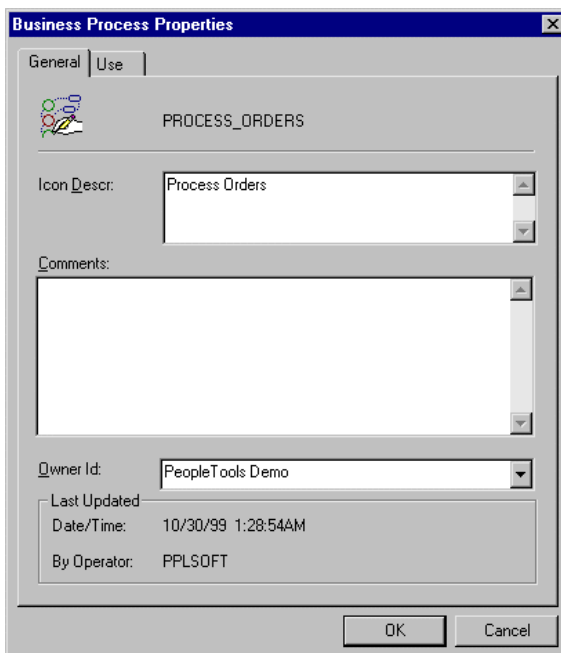
Enter a name and click **OK**.

To define the properties of a business process:

1. Open the business process in Application Designer.
2. Open the Business Process Properties dialog box.

To open the dialog box, right-click in the map (but not on an object in the map) and select **Object Properties**.

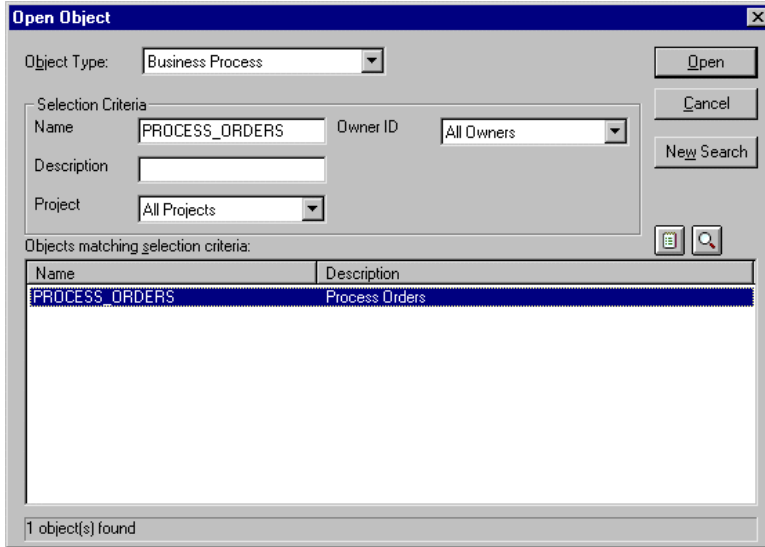
The General tab of the Business Process Properties dialog box appears.



Business Process Properties dialog box - General tab

3. Set the properties in the General tab.

In the **Icon Descr** (icon description) field, provide a description that will appear in the dialog boxes that list this type of map. If you leave this field blank, the map name appears by default.



Icon Descr values appear in dialog boxes such as the Open Object dialog box



Note: The **Icon Descr** field is language-sensitive; the map name is not. If you intend to translate this object, supply a value for the **Icon Descr** field.

In the **Comments** field, supply detailed information about this map.

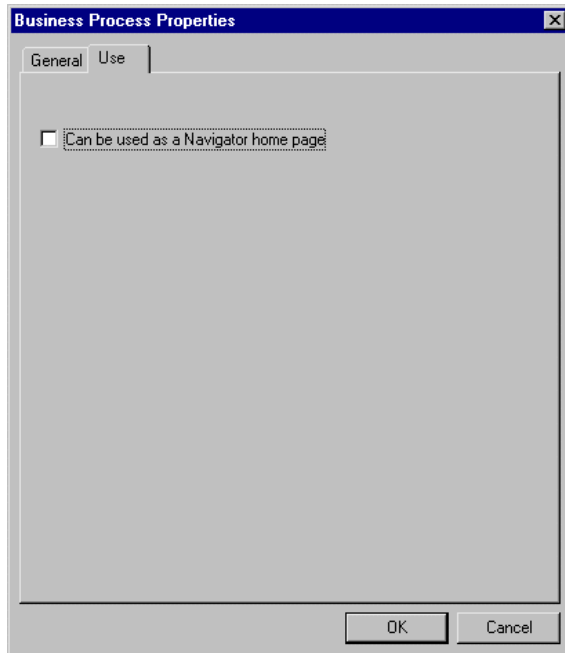
If your organization tracks object owners, use the **Owner ID** field to record this information.



For more information about owner IDs, see Viewing and Editing Object Properties.

The **Last Updated** fields are read-only. They record the time of the last update to the business process map and the User ID of the user who performed it.

4. Set the properties on the Use tab.



Business Process Properties dialog box - Use tab

A Navigator homepage is the high-level business process that a user sees immediately after accessing PeopleSoft Navigator. A user's homepage settings are established in the User Profile and Permission List pages.

To make this business process available as a homepage, select the **Can be used as a Navigator home page** check box.



For more information about Navigator homepages, see [Establishing Navigator Homepages](#).

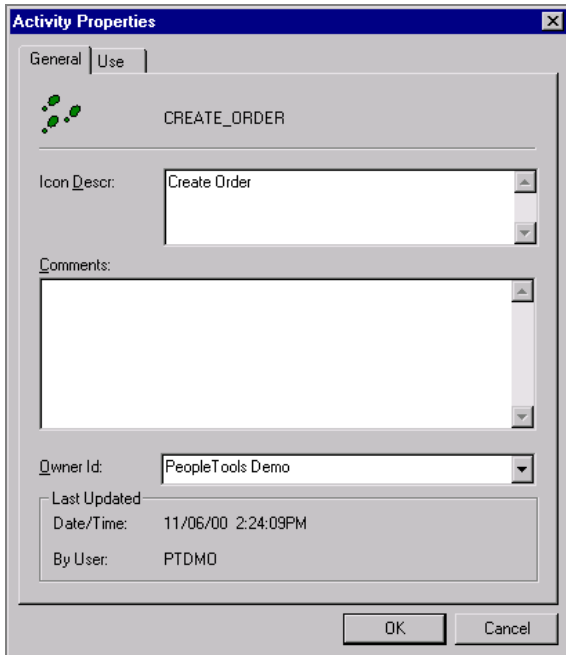
5. Click **OK** to accept the settings.
6. Save the business process.

To define the properties of an activity:

1. Open the activity in Application Designer.
2. Open the Activity Properties dialog box.

To open the dialog box, right-click within the map (but not on an object in the map) and select **Object Properties**.

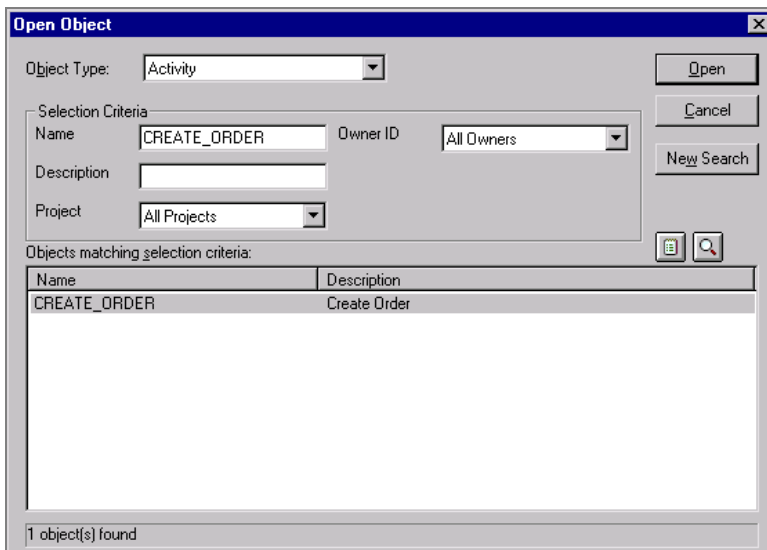
The General tab of the Activity Properties dialog box appears.



Activity Properties dialog box - General tab

3. Set the properties in the General tab.

In the **Icon Descr** field, provide a description that will appear in the dialog boxes that list this type of map. If you leave this field blank, the map name appears by default.



Icon Descr values appear in dialog boxes such as the Open Object dialog box



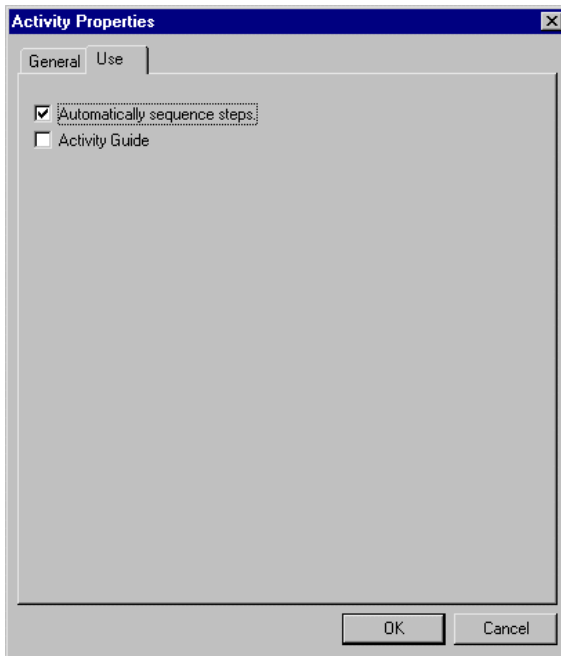
Note: The **Icon Descr** field is language-sensitive; the map name is not. If you intend to translate this object, supply a value for the **Icon Descr** field.

In the **Comments** field, supply detailed information about this map.

If your organization tracks object owners, use the **Owner ID** field to record this information.

The **Last Updated** fields are read-only. They record the time of the last update to the business process map and the User ID of the user who performed it.

4. Set the properties on the Use tab.



Activity Properties dialog box - Use tab

The **Use** tab includes options for automatically sequencing steps and for enabling end-user-facing activity guides.

After you add steps to an activity, you arrange them into a logical sequence. You arrange them visually using connecting arrows, and you also assign each step a number. If you select the **Automatically sequence steps** check box, then the step numbers are automatically assigned when you save the activity. The step numbers are based on the order in which you connect the arrows. This is an efficient way to order the steps.



For more information and an explanation of ordering steps, see To set properties for Step icons in an activity.

Select the **Activity Guide** check box if you're creating a map that you want to use as the basis for an end-user facing activity guide.



Normally an activity that you use in a workflow application isn't reused as an activity guide. Instead, you create activities specifically for activity guides.



For more information about activity guides, see [Designing Activity Guides](#).

5. Click **OK** to accept the settings.

Using Toolbar Buttons

Maps are comprised of various objects—primarily icons and connecting lines. You use toolbar buttons to add these objects to your maps. Different toolbars (and therefore different map objects) are available for business processes and activities.

The topics in this section provide a quick reference to the individual toolbar buttons you use to build your maps.



For more information about map objects, including detailed procedures for adding objects to maps and for working with the objects within the maps, see [Working With Map Objects](#).

The toolbar buttons add two distinct types of map elements:

<i>Type of Element</i>	<i>Description</i>	<i>Toolbars</i>
PeopleSoft-specific icons	These elements represent specific pieces of your PeopleSoft application.	Business Process Toolbar Activity Toolbar Modeling Toolbar*
General-purpose shapes	These graphic elements are strictly informational. They do not correspond to workflow functionality. They are most useful in maps that will be exposed to end users through PeopleSoft Navigator.	Modeling Toolbar* Drawing Toolbar

*The Modeling toolbar has both PeopleSoft-specific buttons and general-purpose shapes. All of the PeopleSoft-specific buttons on this toolbar duplicate functionality found on either the Business Process toolbar or the Activity toolbar.







There are two additional toolbars with buttons that help you control your map’s appearance. These toolbars do not include buttons that add objects to the map. For more information about these layout toolbars, see [Arranging Objects on Maps](#).

Business Process Toolbar

The Business Process toolbar provides the basic components of a business process, including activities and the lines that link them.









This toolbar is visible only when a business process is the active window in the object workspace.












Button	Name	Description
	Link	Connects related activities or steps. This button is also in the Activity toolbar. Note that you must use the link tool to connect objects on the map; do not use arrows or other drawn shapes.
	Business Process	Represents another business process.
	Activity	Represents an activity.
	Decision	Indicates a decision point in a process. A Decision icon in a map is descriptive only; it has no workflow functionality. This button is also in the Activity toolbar.

Activity Toolbar

The Activity toolbar provides the basic components of an activity, including steps, workflow events, and workflow routings.

This toolbar is visible only when an activity is the active window in the object workspace.

Button	Name	Description
	Link	Connects related activities or steps. This button is also in the Business Process toolbar.
	Step	Represents a PeopleSoft page.
	Event	Business event
	Worklist	Worklist
	Email	Email for workflow routing.
	OutForm	Outbound form
	InForm	Inbound form
	IRV	Message Agent (IRV). Do not use for new development.

Button	Name	Description
	WWW	Message Agent (Web link). Do not use for new development.
	Kiosk	Message Agent (Kiosk). Do not use for new development.
	EDI	Message Agent (EDI). Do not use for new development.
	External App	Message Agent (other application). Do not use for new development.
	Database Agent	Message Agent (database agent). Do not use for new development.
	nVision	Message Agent (nVision). Do not use for new development.
	Batch	Creates a descriptive icon for a background process.
	Manual Process	Creates a descriptive icon for a manual process.
	Decision	Creates a descriptive icon for a decision point in a process. This button is also in the Business Process toolbar.
	Subscription	Creates a descriptive icon for a publish-and-subscribe subscription.
	Message	Creates a descriptive icon for a Message Agent (general). This button does not incorporate Message Agent functionality.









The Activity toolbar includes several buttons for creating objects to represent external applications that can be sources of data for the PeopleSoft system. These objects are applicable only to workflow activities, not to activity guide activities. They work in conjunction with the Message Agent, a feature of previous PeopleTools releases that has been replaced by Component Interfaces. Because the Message Agent has been superseded, do not use it (or the corresponding buttons in the Activity toolbar) for new development. If you have existing Message Agent definitions, consider migrating your Message Agent functionality to Component Interfaces.



For more information about Component Interfaces and the Message Agent, see Workflow Integration.

Modeling Toolbar

The Modeling toolbar provides additional buttons for creating icons to graphically enhance your maps. Some of the icons are informational only; those that are functional have exact equivalents in either the business process or the Activity toolbars. This toolbar is visible when either a business process or an activity is the active window in the object workspace.

Button	Name	Description
	Document	Adds a descriptive symbol for document. Informational only.
	End Process	Adds a descriptive symbol for end of process. Informational only.
	Process	Adds an icon representing a business process; same function as the Business Process symbol on the Business Process toolbar. When you add this icon to a map, you're prompted to identify an existing business process that the icon represents. This is available only when a business process is the active window in the workspace.
	Activity	Adds an icon representing an activity; same function as the standard Activity symbol on the Business Process toolbar. When you add this icon to a map, you're prompted to identify an existing activity that the icon represents. This is available only when a business process is the active window in the workspace.
	Event	Adds an icon for an event; same function as the standard Event symbol on the Activity toolbar. This is available only when an activity is the active window in the workspace.
	Page	Adds an icon for a page; same function as standard Step symbol on







Button	Name	Description
		<p>the Activity toolbar.</p> <p>This is available only when an activity is the active window in the workspace.</p>


Drawing Toolbar

This toolbar is visible when either a business process or an activity is the active window in the object workspace.

Normally, you add an object to a map by clicking the object on the toolbar and then clicking the desired location on the map. Some of the drawing tools, however, involve extra clicks on the map.

For example, to draw a line, first click the line tool as you would with any other button. To draw the line on the map, click once at the beginning of the line and again at the end of the line. You can move the endpoints later.

Button	Name	Description
	Line	Draws a static line. Drag the cursor from one end of the line to the other. You can move the endpoints later.
	Rectangle	Draws a rectangle. Drag the cursor from one corner of the rectangle to the opposite corner. You can move the corners later.
	Polycurve	Draws a curve. Drag from anchor point to anchor point, and double-click at the end of the curve. You can move the anchor points later.
	Ellipse	Draws an ellipse. Drag from one corner of the surrounding rectangle to the opposite corner. You can move the corners later.
	Text	Draws a static text field. Place text by clicking the desired location. You can move or resize the text box later.
	Image	<p>Puts a bitmap on your map. Place the bitmap by clicking the desired location.</p> <p>For more information about putting bitmaps in maps, see To add an image to a map.</p>

Button	Name	Description
	Toggle Grid	Maps have an optional grid to help you place map objects. This button displays or hides that grid.

Working With Map Objects

Maps are comprised of various objects—primarily icons and connecting lines. You use toolbar buttons to add these objects to your maps. Different toolbars and different elements are available for business processes and activities.

The following topics describe how to add objects to maps and how to manipulate them once they're there.

Adding Objects to Maps

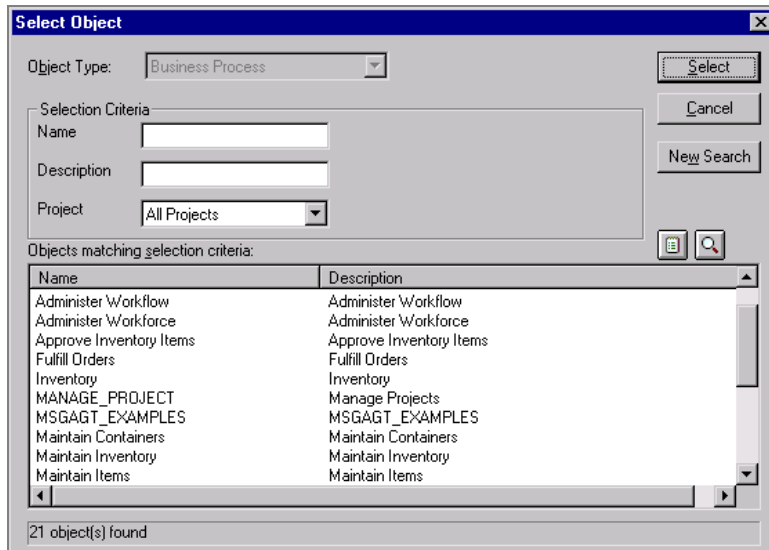
To add an icon to a map:

1. Click the toolbar button representing the icon you want to add.
2. Click the map where you want to place the icon.



For some objects on the Drawing toolbar (for example, lines, rectangles, and curves), you must click and drag rather than just click. Specific instructions for these objects are in the table of Drawing Toolbar Buttons.

In most cases, the icon is added to the map when you click. If you're adding an icon for an activity or business process, however, the Select Object dialog box appears.



Select Object dialog box

3. If you're adding an activity icon or business process icon, identify the specific activity or business process that the icon will represent.

The type of object you're adding to the map appears as the **Object Type** in the Select Object dialog box.

Select the specific activity or business process that the icon will represent, and click the **Select** button to finish placing the icon on the map.



To connect icons within a map:

1. Click the  **Link** button on the toolbar.

You must use the link tool to connect icons; do not use arrows or other drawing objects.

2. Click the icon where the link will start.

The icon must be a linkable object; clicks that aren't over a linkable object are ignored. As you pass the cursor over different parts of the map, its appearance changes to indicate whether you're over a linkable object:

-  A plus sign indicates that you are not over a linkable object.
-  A plus sign within a circle indicates that you are over a linkable object.

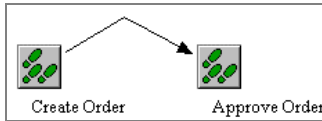
3. Click the icon where the link will end.

This click completes the link, and an arrow from one object to the other appears. Even if you move objects around, the connector stays connected to both objects.

To cancel without completing the link, simply right-click.

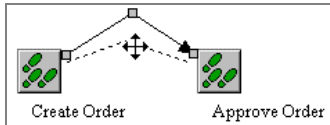
4. (Optional) Modify the shape of the link.

To create angles at the same time as you create the link, make one or more intermediate clicks wherever you want the line to bend. You can add multiple angles if you want. However, you must always end the line with a linkable object.



Angled connector line


Change the angle by clicking the connector line, grabbing the angle anchor, and moving it.



Moving the angle connector

To create an angle in an existing link, select the link, press and hold the CTRL key, and click where you want to create an angle anchor. You can then move the anchor as described above.

To add an image to a map:

1. Click the  **Image** button on the toolbar.
2. Click the map where you want to place the image.

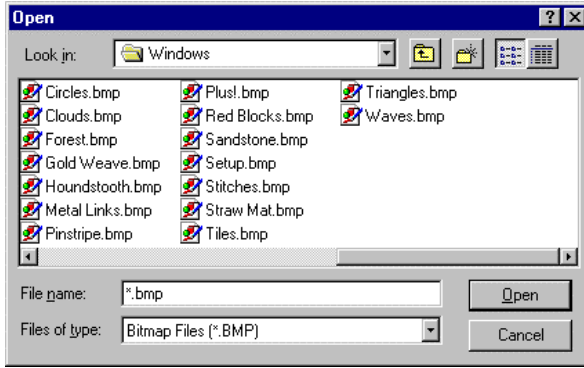
By default, the following image appears.



Default image

3. Right-click the bitmap and select **Change Bitmap**.

The **Open** dialog box appears.



Open dialog box

4. Select the image file you want and click **OK**.

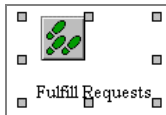
The selected image replaces the default bitmap.

Arranging Objects on Maps

To select an object on a map:

1. Click the object.

Handles appear around the selected object:



Selected object

To move an object on a map:

1. Drag the object to a new position.

When you drag an object, any caption text moves with it. You can, however, select or move just the text to reposition it relative to its object.

If an object is linked to other objects, the line representing links move with the object.

Use the Snap to Grid feature to align the object to the grid or switch off the Snap to Grid feature for freeform placement.



For more information about the grid, see Controlling the Grid.

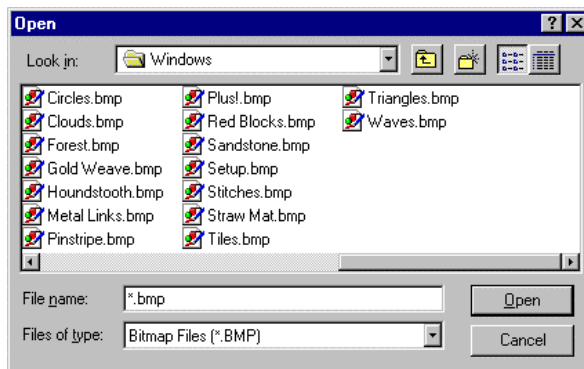
To delete an object from a map:

1. Select the object you want to delete.
2. Press DELETE.

To change the display bitmap of an existing icon:

1. Right-click the icon and select **Change Bitmap**.

The **Open** dialog box appears.



Open dialog box

2. Select the image file you want and click **OK**.

The selected image replaces the default bitmap.

To visually align multiple objects:

1. Decide on a base position object; you'll move other objects in line with this base position object.

Don't select the object yet; just make a mental note of it. It will be the last object you actually select.

2. Click one of the objects you want to move.







Handles appear around the object.

3. Press SHIFT while clicking all the other objects you want to move.

Handles appear around each object as you select it. To deselect an object, continue to press SHIFT and click the object.





4. Still pressing SHIFT, click the base position object.
5. Release SHIFT.
6. Click the appropriate alignment button.

The Alignment toolbar has options for aligning on several different axes.

Button	Name	Type
	Align Top	Arranges all selected objects so that they are aligned at the top with the base position object.
	Align Middle	Arranges all selected objects so that they are aligned at the middle with the base position object.
	Align Bottom	Arranges all selected objects so that they are aligned at the bottom with the base position object.
	Align Left	Arranges all selected objects so that they are aligned at the left side with the base position object.
	Align Center	Arranges all selected objects so that they are aligned at the center with the base position object.
	Align Right	Arranges all selected objects so that they are aligned at the right side with the base position object.

To put objects in front of or behind each other:

1. Select the objects that you want to move in front of or behind another overlapping object.
2. Click the appropriate button on the Layering toolbar.

Button	Name	Type
	Front	Moves the selected object in front of any overlapping objects.
	Back	Moves the selected object behind any overlapping objects.
	Forward	Moves the selected object in front of the overlapping objects immediately in front of it.
	Backward	Moves the selected object behind any overlapping objects immediately in front of it.

Setting Icon Properties

Descriptive Icons

Both business processes and activities can include descriptive icons. These icons typically do not have associated workflow processing; they are useful primarily if the map will be visible through PeopleSoft Navigator.



Even though the activity icon does not have any associated processing, it nevertheless *must* be included in the business process in order to establish the relationship between the activity and the business process. That relationship is necessary for proper workflow processing.



Descriptive icons in an activity



Descriptive icons in a business process

To set properties for descriptive icons:

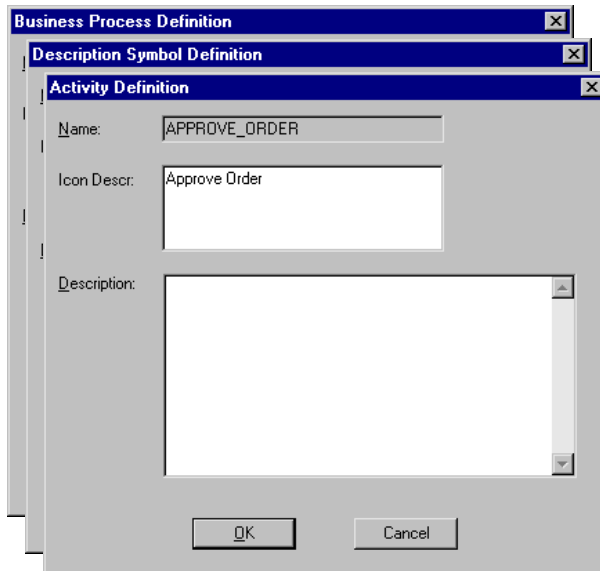
1. Right-click the icon and select **Component Properties**.

The **Properties** dialog box appears. Depending on the type of icon, the title bar reads Business Processes Definition, Activity Definition, or Description Symbol Definition.



Other than the title differences, the properties for all descriptive icons have identical properties dialog boxes.

2. Enter information into the dialog box.



Icon properties

The text you enter in the **Name** field identifies the icon and, by default, appears as the display text under that icon.

To display different text under the icon, enter it in the **Icon Descr** text box.

Include line breaks in the text by pressing the ENTER key.

Enter a more detailed explanation of the activity in the **Description** text box.

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

Step Icons

Set the properties for the steps in an activity in order to associate the step with the proper page or external program and to establish the correct sequence of steps within the activity.

To set properties for Step icons in an activity:

1. Right-click the Step icon.

The **Step Definition** dialog box appears.

Step Definition dialog box

2. Enter descriptive information about the step.

Type a unique name for the step in the **Name** text box. By default, the step name also appears as the display text under the icon on the business process.

To display different text under the icon, enter it in the **Icon Descr** text box.

Include line breaks in the text by pressing the ENTER key.



Note: The **Icon Descr** field is language-sensitive. Provide a value for this field if the map is to be translated into multiple languages. For more information about translating icon description fields, see *Translating Icon Labels on Workflow Maps*.

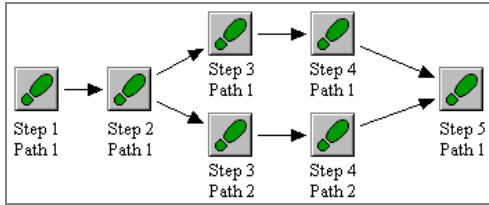
Enter a more detailed explanation of the step in the **Description** text box.

3. Enter **Step Number** and **Path Number** information to place this step into the activity's flow.

The **Step Number** and **Path Number** boxes order the steps in this activity.

When the user always completes the same steps in the same order, specify the order of the step in the **Step Number** box and leave the number 1 in the **Path Number** box. The first step is step 1; the second is step 2.

When the user performs different tasks along the way, define multiple step paths. Start numbering the steps from step 1, staying on path 1 until you reach the first point where a user has options. For each step that might come next, use the next consecutive step number but a different path number for each one. All the steps should have the same **Step Number** sequence but a different **Path Number** value.



Parallel sequencing

If there's a user-facing activity guide based on this map, you might want to make the more common path the default path. Select the **Default Step** check box for the step you want the activity guide to take when a user progresses through the activity.

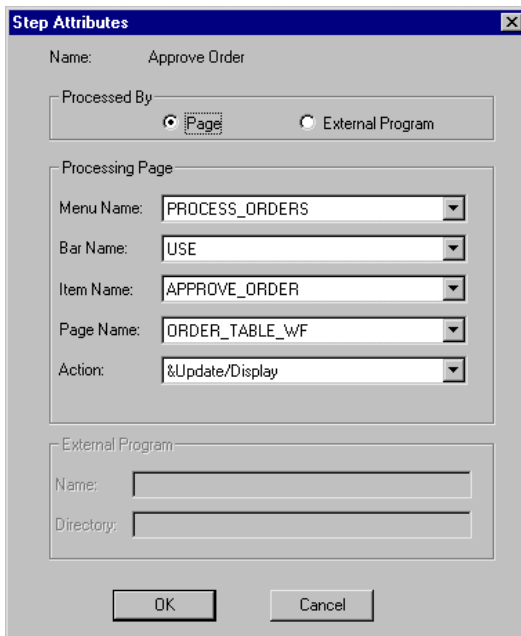
You can avoid the manual sequencing of steps if you use the automatic step sequencing options available in the property sheet for the activity. However, you should always review the sequence created by automatic numbering to verify that the sequence is correct.



For more information about automatic step sequencing, see To define the properties of a map.

4. Click the **Attributes** button.

The **Step Attributes** dialog box appears.



Step Attributes dialog box

Use the **Step Attributes** dialog box to select what page or program the system launches when a user selects this step and what action mode is used to open the page.

5. Specify whether the user completes this step on a PeopleSoft page or from an external

program.

When you click the **Page** or **External Program** option, the appropriate section of the dialog box you need to complete becomes available.

If this is an activity guide and you've marked the activity guide option in the activity properties, you must select **Page**.

6. Give directions for launching the page or external program.

If a user performs the step by completing a PeopleSoft page, select the page from the list boxes in the **Processing Page** group box.

In the **Action** list box, select what type of activity the user needs to perform on the database: **Add**, **Update/Display**, **Update Display/All**, or **Correction**. When a user selects this step, the system displays the specified page in the specified action mode.



You must assign a page to a menu before you create a step that navigates to it. For more information about assigning pages to menus, see *Creating Menu Definitions*.

If users perform the step using an external program, select the program name and its working directory from the **External Program** group box. The program name must be the name of the executable file, followed by command line parameters, if appropriate. When a user selects this step, the system starts the specified program.



If this step is the first step in its activity (Step 1 Path 1) and the activity has an associated worklist, the system can pass additional parameters to the external program from the worklist record.

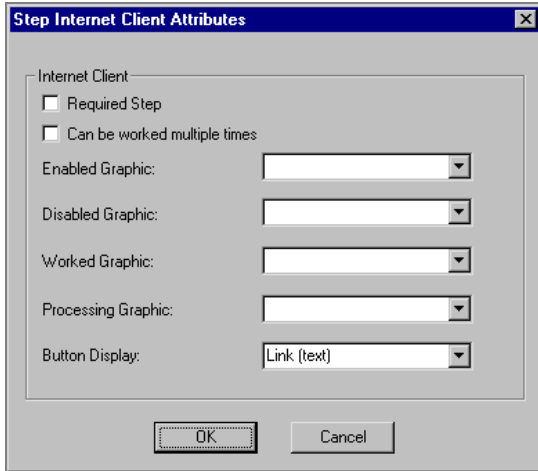


For more information, see *Adding Events and Routings*.

7. Click **OK** in the **Step Attributes** dialog box.
8. Click **Activity Guide** (optional).

This button is enabled only if you have marked this as an activity guide in the activity properties.

The **Step Internet Client Attributes** dialog box appears.



Activity guide options

If this map is an activity that will be used in an activity guide, enter the necessary information in this dialog box.



For more information about activity guides and for instructions on how to enter activity guide information, see [To create an activity for use in an activity guide](#).

9. Click **OK** twice to close the **Activity Guide** and **Step Definition** dialog boxes.

The step definition is complete.

Other Icons

The following icons are specific to workflow processing:

- Events and routings

These are your actual workflow objects, representing transactions that trigger workflow (events) and the medium through which the trigger sends work to the recipient (routings). You normally add these objects to your activities after completing your basic maps.



Events and routings



For more information about workflow objects, including instructions for adding them to activities and setting the properties, see [Adding Events and Routings](#).

- Message Agent icons

These work in conjunction with the Message Agent, a feature of previous PeopleTools releases that has been superseded by Component Interfaces. Because Component Interfaces are the preferred tool, do not use the Message Agent toolbar buttons for new development.




Message Agent icons



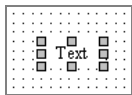
For more information, see [Using Database Agents and Message Definitions](#).

Controlling Text

To add standalone text to a map:

1. Click the  **Text** button on the Drawing toolbar.
2. Click the map to place the text there.

A text box with the word *text* appears on the map.



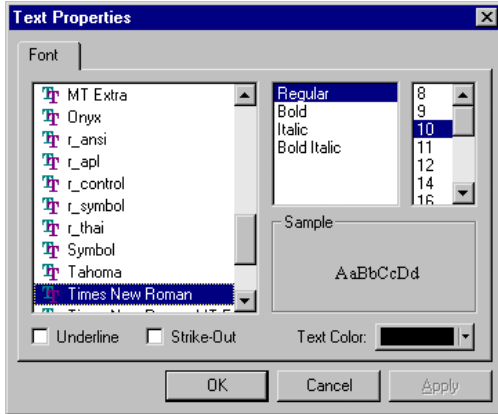
New text box

3. Double-click the default text to select it.
4. Enter your own text.

To format standalone text:

1. Right-click the text and select **Component Properties**.

The Text Properties dialog box appears.



Text Properties dialog box

2. Set the text properties.

Choose the font, a style (regular, bold, italic, or bold italic), and the font size.

Select **Underline** or **Strike-Out** if you want.

Choose the text **Color**.

3. Click **OK**.

To change the position of icon text:

1. Click the text to select it.

A black selection box appears around the text.

2. Drag the text to its new position.

You might want to center caption text under the object it describes.

Adding Drawing Shapes to Maps

To add a drawing shape to a map:





1. Click the desired drawing shape.



Drawing shapes

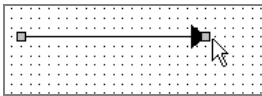
2. Draw the shape on the map.

The drawing method depends on which shape you're drawing.

Button	Name	Description
	Line	Draws a static line. Drag the cursor from one end of the line to the other. Move the endpoints later.
	Rectangle	Draws a rectangle. Drag the cursor from one corner of the rectangle to the opposite corner. Move the corners later.
	Polycurve	Draws a curve. Drag from anchor point to anchor point, and double-click at the end of the curve. Move the anchor points later.
	Ellipse	Draws an ellipse. Drag from one corner of the surrounding rectangle to the opposite corner. Move the corners later.

3. Modify the shape by dragging its handles to a new location.

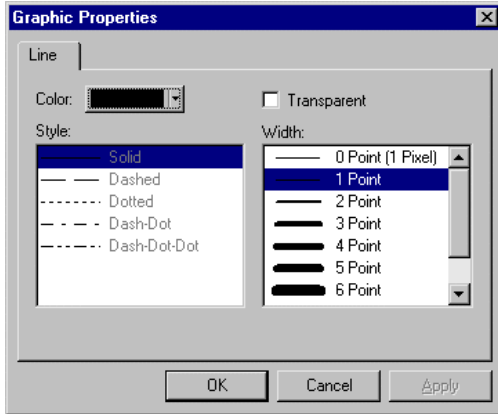
The handles are gray boxes that appear when you select a shape. The handles define the start and end points of the shape.



Handles on a line

To change the appearance of the drawing line:

1. Double-click the shape to bring up the Properties dialog box.
2. Set the properties on the **Line** tab.



Graphic Properties dialog box - Line tab

Select a **Color**, a line **Style**, and a line **Width**.

Click **Transparent** to make the line disappear. When you choose this option for a line, only the arrowhead on the line remains visible.

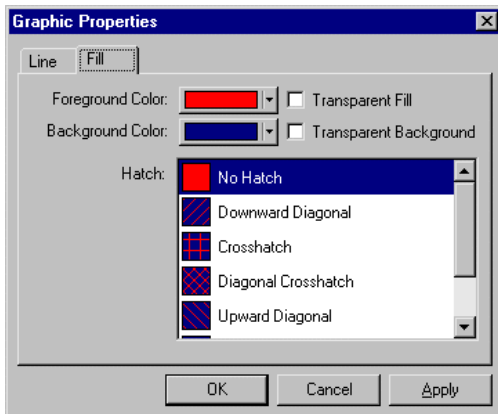
3. Click **OK** to close the dialog box.

To change the color and pattern within a drawing shape:



Because lines and curves do not enclose a drawing area, this procedure applies only to rectangles and ellipses.

1. Double-click the shape to bring up the properties dialog box.
2. Set the properties on the **Fill** tab.



Graphic Properties dialog box - Fill tab

For a solid fill (no hatching), choose a **Foreground Color** to fill the shape.

To prevent the drawing from covering other shapes behind it, select **Transparent Fill**.

For a patterned fill, select both a **Foreground Color** and a **Background Color**, and choose a **Hatch** pattern. Choose **Transparent Background** to apply hatches while leaving the fill transparent. The pictures of the hatching options show the color scheme you've selected.

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

Other Display Features

When you create a map, there are additional display options that give you control over your design environment. With these features you can:

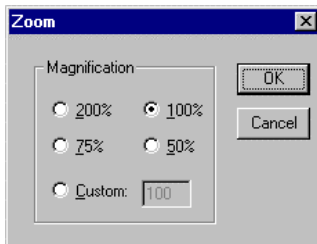
- Control the size of the map display (the zoom).
- Control the grid, which allows you to align objects precisely on the map.
- Navigate between a business process and its constituent maps.

Controlling Map Display Size

To change the display (zoom) size of the map:

1. Select View, Zoom.

The **Zoom** dialog box appears.



Zoom dialog box

2. Select the level of magnification you want.
3. Click **OK**.

Controlling the Grid

Maps have an optional grid to help you place map objects. Define how fine the grid is, whether it appears, and whether objects snap to the grid intersections when you place or move them.

To turn the grid on or off:

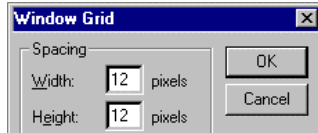
1. Select View, Grid Visible.

This menu item is a toggle command. When the grid displays, a check mark appears next to the menu item. By default, the grid is visible.

To set the size of the grid:

1. Select Edit, Grid.

The **Window Grid** dialog box appears.



Window Grid dialog box

2. Select how much space you want (in pixels) between the lines of the grid.

Select **Width** (the number of pixels between the vertical lines) and the **Height** (the number of pixels between the horizontal lines).

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

If the grid is visible, it redisplay its grid lines based on the new settings. If the grid is not visible, the new settings still take effect, although you can't see them.

To turn Snap to Grid on or off:

1. Specify whether you want **Snap to Grid** active.

When **Snap to Grid** is active, Application Designer positions all objects so that they each have a corner at an intersection in the grid. The grid doesn't have to be displayed for this option to work.

This menu item is a toggle command. When the option is on, a check mark appears next to the menu item. By default, this option is off.

Navigating Between a Business Process and Its Component Maps

A business process is comprised of lower-level maps. These lower-level maps, whether activities or other business processes, are freestanding Application Designer objects. It's convenient to open the lower-level maps directly from the business process map rather than using the standard **File, Open** command.

To access a map that is part of a business process:

1. Double-click the icon for the lower-level map within the business process, or right-click the icon and select **View Definition**.

CHAPTER 4

Defining Roles and Users

PeopleSoft users all belong to specific roles. A role is a category of role users who perform the same kind of work, such as analysts or managers. You define users' roles when you give them their User IDs.



For more information about setting up User IDs and roles, see Security.

Roles are particularly important when it comes to Workflow. In order to make sure that work flows to the right person, you need to determine who that person is. There are several ways to do this, all based on roles.

Understanding Workflow Roles

Business rules typically refer to users by their roles rather than by their names. It is much better to say that the manager of your department needs to approve course requests than it would be to say that Vic Rumpel, your current manager, needs to approve them. Why? For several reasons:

- The statement of the rule makes it clear why Vic is the right person to approve your requests: because he fills the role of manager, not because he has a special relationship to the Training department or because he was volunteered for the job when he missed a meeting.
- You have stated the rule more generally. It can apply to any number of departments, not just those that Vic manages.
- You don't need to change the rule when Sandy Bocci takes over Vic's department or when you move to a new department with a different manager.

When you create your Workflow applications, you specify which role performs each activity. Based on this information, PeopleSoft Workflow determines which users can work on a work item.

Roles can be as specific or as general as they need to be. For example, many different people fill the manager role, but only one fills the role manager of the HR department or my manager. When you're stating your business rules, you usually want to use roles that are as general as possible, so that the rule is widely applicable.

When you build a workflow, you need to specify who performs each activity. You identify the users according to the role they play in your organization and in the workflow. Employees

request training classes, their managers approve the requests, and training clerks enroll the students in classes. Employee, manager, training clerk—these are all roles.

When the system routes a work item to the next activity in a business process, it forwards the item to the users who fill the role assigned to that activity. In some cases, you've defined a list of users who fill the role; more commonly, the system runs a query to find out who the appropriate users are for a given work item.

User List Roles and Query Roles

You can define a role in one of two ways: as a fixed list of individual role users, or as a query that selects one or more role users at runtime.

User List Roles

You define a role as a list of users when it doesn't matter which particular person performs the work assigned to that role. For example, if a training clerk enrolls employees in classes, the TRAINING CLERK role can be defined as a list of users, because it doesn't matter which clerk enrolls the employee in the class. The system forwards enrollment requests to the worklist for training clerks, and the first clerk who selects the request handles it. (In PeopleSoft Workflow terminology, the users are working from a pooled worklist.)

You also define a role as a list of users when you want everyone who fills that role to receive the same set of work items. For example, if you want the automated Worklist Monitor to send its email messages to several people when worklist volumes get too high, you could have its messages routed to a role called SYSTEM ADMINISTRATOR. Every administrator gets the messages.

Lastly, you can define a role as a list of users when there's just one person who fills the role. For example, the CHIEF FINANCIAL OFFICER role can be a user list, even though the list is very short.



We deliver the system with a set of default user list roles corresponding to the levels within an organization, such as EMPLOYEE, MANAGER, and VICE PRESIDENT. These role are intended primarily for use with route controls.



For more information about route controls, see [Additional Routing Options](#).

Query Roles

You define a role as a query when you want to send work items to different people at different times. When an employee's manager must approve a training request, the manager role is a

query, because you want to send enrollment requests to different managers, depending on who makes the request.

When a role is defined as a query, the system figures out who should receive a work item based on the value of one or more fields in the page that triggers the routing. In other words, it uses context information from the current record to determine who needs to work it. For example, the manager role query uses the value of the Employee ID field from the course request to look up the name of the employee's manager.



For more information about this role query, see Case Study: The Manager Qry Role.

Because of the flexibility they bring to business processes, query roles are much more common than user list roles.

When you create a query role, you're telling the system how to figure out who fills the role at runtime. You don't need to assign role users to the role as you do with user list roles. However, you need to set up the query by:

- Writing a query in PeopleSoft Query. The query identifies the users to whom the work item will be routed. The query needs to take some value from the page that triggers the event—such as the user's User ID or Employee ID—and return a list of role users.
- Defining the role through PeopleSoft Security. For query roles, you pick the query you want to run.
- Assigning the role to the appropriate workflow routings. Because the query will have runtime bind variables, you also need to specify which page field values to copy into the query.



For more information, see Adding Events and Routings.

To define a role query:

1. Start Query.

Select **Go, PeopleTools, Query**.

2. Select the Workflow record definition that you want to query.

A role query needs to return a set of role users, so the record definition you want is either ROLEUSER (which lists role users and the role they are assigned to) or ROLEXLATOPR (which lists role users and their IDs).

3. Choose ROLEUSER as the one and only SELECT field.

Of course, you use other fields and join to other record definitions to specify the criteria for which role users to select. See the next step.

4. Specify the criteria for finding role users.

For example, to define the Manager role, you join the ROLEXLATOPR record definition with a record definition that identifies each user's manager.

You create query roles when you want to route items differently based on some element of the context: What employee created the item, what class is being requested, what business unit a transaction relates to. So, your query will almost surely include at least one runtime prompt. The runtime prompts (or bind variables) correspond to the data on which you want to base the routing decision. At runtime, the system sets the values of the variables based on data from the page that triggers the event.



For more information about how the system gets values for role query bind variables, see [Adding Events and Routings](#).

5. Identify the query as a role query.

Select **Edit, Properties**. In the **Query Properties**, select **Role Query** as the **Query Type**.

6. Save your role query using a name that begins with [ROLE], so that you can identify it as a role query.

Route Controls

Defining query roles that return the role users you want can be difficult. Based on the data in the page that's triggering the routing, you need to get an appropriate list of Role User IDs. To get from one to the other, you need to be pretty familiar with the structure of your application data tables, and you have to write fairly complex queries. For even a simple query like manager of the employee requesting the course, we have to find a table that includes both the Employee ID and the manager's ID, and we have to join three tables.

In real life situations, you may want to base routing decisions on very detailed information. In PeopleSoft Financials applications, for instance, you might want to route items differently depending on the business unit, department, project, customer, vendor, or related account. It isn't easy to find the data you need in your database to link role users to work items at this level of detail. And if you can, the query is likely to be quite complex.

To solve this problem, the Workflow Administrator enables you to define route controls. Route controls identify the aspects of a situation on which you want to base routing decisions and enable you to associate particular values with particular role users. For example, suppose you want to route purchase requisitions to different buyers, depending on what vendor supplies the ordered items, what business unit is requesting the items, what department they're for, or some combination of these factors. You would define a route control for each factor—Vendor ID, Business Unit, and Department—and specify a range of values for each buyer



For more information on Route Controls, see [Additional Routing Options](#).

Case Study: The Manager Qry Role

In this section we look at how the our example role, Manager Qry, works.

What the Query Does

When an employee requests an external course, we want to route the request to the employee's manager. Since we need to route requests to different people depending on who submits the request, we need to define the manager role as a query.

A role query needs to return one or more Role User IDs based on the data that's been saved on the page triggering the routing. In our case, we need a query that takes an employee's EMPLID (which is available on the course request form) and returns the Role User ID of the employee's manager.

Here's the SQL statement for the [ROLE] Manager query (with the effective date logic removed to simplify matters).

```
SELECT C.ROLEUSER
FROM PS_JOB A, PS_DEPT_TBL B, PS_ROLEXLATOPR C
WHERE B.DEPTID = A.DEPTID
AND A.EMPLID = :1
AND C.EMPLID = B.MANAGER_ID
```

Key Points

The Query Selects Role User IDs

The system uses role queries to determine which role users will receive the work items. So, the one and only field that a role query should select is ROLEUSER, from either the ROLEXLATOPR or ROLEUSER record definition. No matter how complex the query is—how many joins or selection criteria it has—it must return ROLEUSER and nothing more.

Bind Variables Correspond to the Contextual Factors

You define a role as a query because you want to route items differently based on the context of the transaction the user is performing. So, every role query contains at least one bind variable whose value gets set at runtime. The bind variable or variables correspond to the data on which you want to base the routing decision. In our example query, we want to route requests differently based on the EMPLID of the requester, so we should include a bind variable to set the EMPLID.

At runtime, the system sets the values of the bind variables based on data from the page that triggers the routing. When you create the query, you need to make sure each bind variable matches a field from the page.

Maintaining Roles and Role Users

Role users are the people who participate in one or more of your automated business processes. Because role users must all have PeopleSoft User IDs, maintaining role users is typically a security administrator's task. This topic previews the workflow-related information that the security administrator maintains.



For more information about maintaining roles, see [Roles](#). For more information about maintaining role users, see [Workflow](#).



Your workflow applications may involve role users who do not have access to your PeopleSoft system. For example, if your order processing workflow delivers electronic order forms to vendors, your vendors are role users. Those users still need PeopleSoft User IDs with information such as email address. Just be sure that the security profile associated with the User ID doesn't allow access to the PeopleSoft system.

Maintaining Users' Workflow Information

The component used to maintain User IDs includes a page specifically for Workflow information. To view this page, select **Maintain Security, Use, User Profile**.

ID		General		Workflow		Roles		Audit		Administrator		Links	
User ID:		PTDMO											
Description:		Unger,Annette											
Workflow Attributes													
Form ID:		<input type="text"/>											
Alternate User ID:		<input type="text"/>										<input type="button" value="Q"/>	
From Date:		<input type="text"/>		<input type="button" value="BT"/>								Routing Preferences	
To Date:		<input type="text"/>		<input type="button" value="BT"/>								<input checked="" type="checkbox"/> Worklist User	
Supervising User ID:		<input type="text"/>										<input type="button" value="Q"/>	
Reassign Work													
<input type="checkbox"/> Reassign Work To:		<input type="text"/>										<input type="button" value="Q"/>	
Total Pending Worklist Entries:		1											
<input type="button" value="Save"/>		<input type="button" value="Return to Search"/>								<input type="button" value="Add"/>		<input type="button" value="Update/Display"/>	
ID General Workflow Roles Audit Administrator Links													

User Profiles - Workflow page

This page includes information such as an alternate role user to receive routings when this role user is unavailable.



Workflow role users may not have commas in their User IDs.



For more information about maintaining role users, see Workflow.

Maintaining Roles

The Roles component includes all the information necessary for Workflow. To view this page, select **PeopleTools, Maintain Security, Use, Roles**.

General Members Dynamic Members Permission Lists Workflow Role Grant Links

Role Name: MANAGER
Description: Manager

Role Status
 Role Disabled

Long Description
List of Managers.

Save Return to Search Next in List Previous in List Add Update/Display

Roles – General page

The Role business component also has the following custom method related to Workflow:

```
GetMembersUsingQuery (&Parameters As RowSet) Returns Rowset
```

This method retrieves the users returned by this role's Workflow query. Parameters to the query are specified as name - value pairs in the &Parameter rowset.



For more information on maintaining roles, see Security.

Defining Worklist Records

The purpose of workflow is to route work to appropriate users. In PeopleSoft Workflow, routings can take three shapes: an email notification, a form (essentially a structured email), or an entry in a worklist. A worklist is a list of the items awaiting a user's attention. Users select items from the list, and the system automatically displays the pages they need.



For more information about routings, see [Adding Events and Routings](#).

The worklist can include several different types of items at once. For example, a manager may have entries related to approving employee course enrollments and other entries related to approving employee orders for supplies.

Although both types of entries appear in this manager's worklist, the underlying data is naturally be different. The course enrollment entries might display information relating to the course name and start date, while the orders might have information relating to the description and price of the items ordered.

Like all PeopleSoft data, entries in worklists are stored in database tables. You define the structure of these tables, and what data the system stores about each item, by creating worklist records. The worklist record determines what fields of information the system stores for each work item and in what order the work items appear.

As you can see from entries on the manager's worklist, different worklist entries often have different worklist records. (It is possible, however, for worklist entries with the same underlying structure to use the same worklist definition.) When a business event routes a work item to a worklist, it adds a row to the table; when a user finishes with a work item, the system marks the row as worked.

The basic procedure for creating a worklist record definition is the same as for any record definition, but worklist record definitions have some special requirements. This following topics identify these requirements.

Understanding Worklist Record Definitions

When you create a worklist record definition, you are defining what a work item in a worklist looks like. The system uses the worklist record definition to perform the following functions:

- Link each work item with the underlying workflow tracking information, which is stored in a workflow system record (PSWORKLIST).

- Display relevant information about each work item in the Worklist page, so that users can select the one on which they want to work.
- Determine the order of work items in the worklist.
- Retrieve the record associated with the work item, so the user can work on it.

The basic procedure is the same as for creating any record definition, but worklist record definitions have some special requirements. Specifically, they have to include several special system fields and the key fields for the record used to work the item.

System Fields

The first fields in a worklist record definition must always be these system fields, described in the following table.

System Field	Description
BUSPROCNAME	The business process that includes the work item.
ACTIVITYNAME	The activity that triggers the worklist routing.
EVENTNAME	The business event that triggers the worklist routing.
WORKLISTNAME	The worklist in which the work item is waiting.
INSTANCEID	The system-assigned ID for the work item.
TRANSACTIONID	The system-assigned Transaction ID for the work item. When an event triggers multiple routings, each work item has the same Transaction ID, but a different Instance ID.

The system uses these fields to link the items in the worklist with their tracking information, which is stored in the PeopleSoft-defined table PSWORKLIST. They must be defined as ascending key fields in the worklist record definition.

Virtual Approver, a specialized type of Workflow used for approval processes, requires one additional system field. If you're using Virtual Approver, you also need to add the APPR_INSTANCE field as a non-key field in the worklist record definition. This field stores the ID assigned to the work item for Virtual Approver processing.



For more information about the Virtual Approver, see [Defining Approval Processes](#).

Application Fields

The next set of fields in a worklist record definition are those specific to the application that creates the worklist. The system uses these fields to retrieve the associated record from the database when the user clicks a worklist entry and moves to the page where the work gets done.

Here are some important facts about the application fields in a worklist record definition:

- Because the system uses the values from these fields to search for the associated database record, you must include *all* the key fields for the search record.
- The order of the fields is important. The system sorts the work items in a worklist based on the field immediately following the TRANSACTIONID field, then on the next field, and so on. It sorts based on all key fields in the record definition.
- All the application fields appear in the user’s worklist unless you suppress them by including the special field WORKLIST_DESCR.


Worklist Display Fields

The last two fields in a worklist record definition are for descriptive information that appears in the Worklist.

Worklist Display Field	Description
WORKLIST_URL	The text that links to the page where the user can work the item. Appropriate values might include the key data for the record where the item will be worked. For example, for a work item directing a manager to approve an expense report, the text could be the name of the employee who submitted the report.
WORKLIST_DESCR	A text comment that appears in the users worklist. The presence of this field automatically suppresses the display of any application fields, though the key fields are still used to bypass the search page of the target page.

When you look at the Worklist Details page, these values appear as the **Link** and **Comment** fields. The Link also appears on the main Worklist page.

Worklist for SUPV01: George Hincapie



<u>From</u>	<u>Date From</u>	<u>Work Item</u>	<u>Link</u>			
Timed Out Dttm	Operator ID	Selected Dttm	Comment	Timed Out	Instance	WL Tran ID
PSFG	05/08/2000 11:15:24AM	1st Authorizers Worklist	Armstrong, Lance			
05/08/2000 11:15:24AM				<input type="checkbox"/> Mark Worked	<input type="checkbox"/> Reassign	
					1	1

Worklist Details page



For more information about the Worklist and Worklist Details pages, see Using Workflow.

Creating Worklist Record Definitions

You create a worklist record definition just like any other PeopleSoft record definition, using Application Designer. You can create a worklist record definition from scratch, but because the first six fields are always identical, it's often easier to copy an existing record definition and change it as necessary.



For more information about creating record definitions in Application Designer, see [Creating Record Definitions](#).

To create a worklist record definition:

1. Add the required system fields to the record definition.

The fields you need to add, in order, are shown below. Identify them all as key fields with ascending sort order.

System Field	Description
BUSPROCNAME	The business process that includes the work item.
ACTIVITYNAME	The activity that triggers the worklist routing.
EVENTNAME	The business event that triggers the worklist routing.
WORKLISTNAME	The worklist in which the work item is waiting.
INSTANCEID	The system-assigned ID for the work item.
TRANSACTIONID	The system-assigned Transaction ID for the work item. When an event triggers multiple routings, each work item has the same Transaction ID, but a different Instance ID.

2. Add the key fields from the search record for the page group users use to process the worklist entries.

Make them key fields so that they're used to sort the work items. The worklist record needs to include the search record key fields so the system can locate the record the user needs to work on.

3. If users work on work items using an external program rather than a PeopleSoft page, add a character field named `COMMAND_PARM` (optional).

When you define a step in an activity, you can specify that an external program starts when a user selects it. If the activity assigned to this worklist starts with such an activity, you can pass command-line arguments to the external program from the worklist record.

For example, if you map a filename into the COMMAND_PARM field, the system appends the filename to the external program’s command line (as specified in the step definition).

4. Add fields to provide descriptive information in the user’s worklist.

Normally you add the two worklist display fields WORKLIST_URL and WORKLIST_DESCR.

If you have a compelling reason, you can add other application fields instead. However, don’t add other application fields if you’ve added the WORKLIST_DESCR field, because using WORKLIST_DESCR automatically stops the worklist from displaying the application fields.

5. Save the record definition using a name that ends with _WL.

Here’s an example of what a completed worklist record definition looks like:

Num	Field Name	Type	Len	Format	Short Name	Long Name
1	BUSPROCNAME	Char	30	Mixed	Bus Proc	Business Process Name
2	ACTIVITYNAME	Char	30	Mixed	Activity	Activity Name
3	EVENTNAME	Char	30	Mixed	Event Name	Event Name
4	WORKLISTNAME	Char	30	Mixed	Work List	Work List Name
5	INSTANCEID	Nbr	10	Raw B	Instance	Instance ID
6	TRANSACTIONID	Nbr	10	Raw B	WL Tran ID	Transaction ID
7	DTTM_CREATED	DtTm	26	McroS	Datetime	Datetime Created
8	FROM_ROLEUSER	Char	30	Mixed	Roleuser	From Roleuser
9	ACTIVITY_GUIDE	Char	30	Upper	Guide	Activity Guide Name
10	WORKLIST_URL	Char	254	Mixed	URL	URL
11	WORKLIST_DESCR	Char	50	Mixed	Descriptio	Description

Sample worklist record definition

6. Create a database table using the record definition you saved at step 5.



For more information about creating tables from record definitions, see Building SQL Tables and Views.

Adding Events and Routings

At the heart of your workflow definition is a set of business events and the routings associated with them. A business event is a condition that tells the system a task is complete: A new record has been created, a record field has a particular value, a due date has passed. A routing is an instruction that tells the system to forward information to the next step in the business process.

Routings are the system's means of moving information from one place to another, from one activity to the next. Routings specify where the information goes and what form it takes: worklist entry, email message, or electronic form. Routings bring the flow into workflow.

This chapter explains how to add events and routings to your business processes, creating a workflow. You add events and routings to the maps you create in Application Designer.



For more information about creating business processes, see [Building Workflow Maps](#).

Understanding Events and Routings

When you create a business process in Application Designer, you're specifying what activities make up a business process and in what order they need to be completed. The map provides an overview of the process, but it doesn't provide any real link between the activities. To truly link the activities into a workflow, you want to add routings, which automate the delivery of information to other activities and other users.

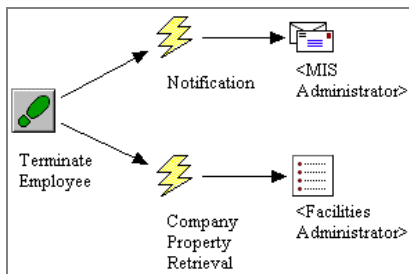
For example, in a purchase order approval process, some user with appropriate authority, such as a supervisor, needs to review each PO entered. Rather than requiring that the user who enters the PO proactively inform his or her supervisor, you can have the system route an email message, electronic form, or worklist entry to the supervisor behind the scenes.

Events

To create routings, you first define a business event. The business event is a condition that has associated routings: When the condition is met, you want the system to perform a specified set of routings. You define the condition in PeopleCode attached to the record definition underlying a step in a step map. When a user saves the page, completing the step, the system runs the PeopleCode program to test the condition. If the condition is met, it performs the routings.

Routings

After defining the event, you specify what routings to perform in response to the event. Routings can deliver data in three forms: worklist entries, email messages, and electronic forms. To create a routing, you specify what type of routing you want, who should receive the data, and what data you want to send. The data is usually a subset of the data from the step that's triggering the routing. For example, in the purchase order approval process, it would be the PO data. You create a mapping that specifies how the data from the page gets packaged for delivery.



Activity with Step, Event, and Routing icons

Workflow on Navigator Maps

Events and routings appear as icons in the activities where they're triggered.




For more information, see [Building Workflow Maps](#).

Defining Events

Events are the conditions that move information along to the next step in the process. Events trigger routings, which move work items to the next activity.


To add an event:

1. Display the activity to which you want to add the event.
2. Click the  **Event** button in the toolbar, then click where you want the event to appear on the map.

A copy of the lightning bolt appears on the map.

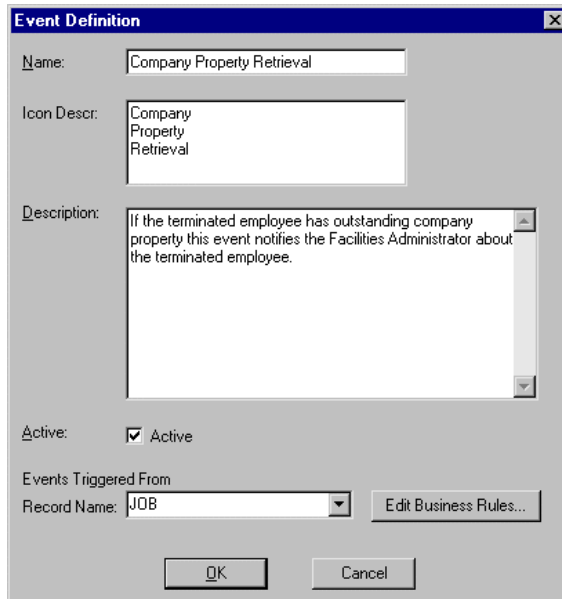
3. Connect the event icon to the icon for the step that triggers it.

To connect the event to the step, click the connector icon in the palette, then click the step icon and the event icon in turn. An arrow connects the two icons.

You must use the  link icon to connect an event to the step that triggers it, not the line icon. If you use the line icon, the system won't recognize the event.

4. Double-click the event icon or right-click the icon and select **Component Properties**.

The **Event Definition** dialog box appears.



Event Definition dialog box

5. Enter a name and description of the event.

The text you enter in the **Name** text box is the name you use to trigger the event with the TriggerBusinessEvent PeopleCode function.

By default, the event name also appears as the display text under the icon on the map. If you want different text to display under the icon, enter it in the **Icon Descr** text box. You can include line breaks in the text by pressing **ENTER**; these line breaks appear in the icon display text.

You can enter a more detailed explanation of the event in the **Description** text box.

6. Specify whether the event is active.

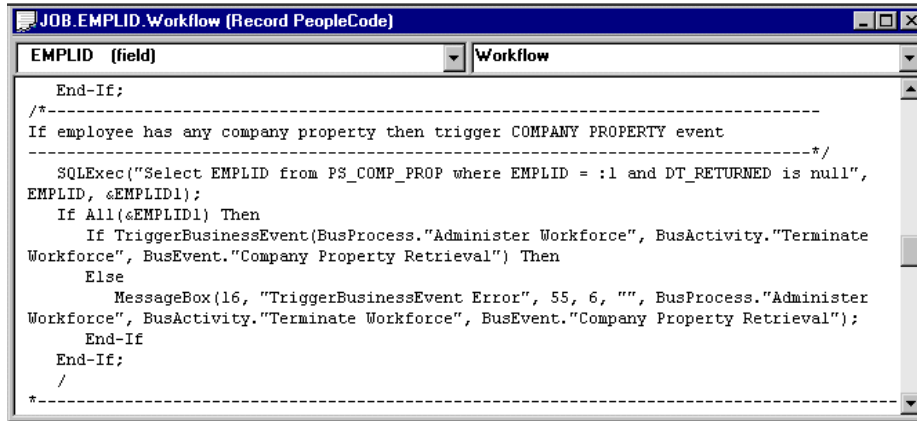
When an activity triggers an event, the TriggerBusinessEvent function first checks whether the event is active. To temporarily deactivate an event, preventing any of its routings, clear the **Active** check box. To restart an inactive event, select it.

7. Identify the record that triggers this event.

To trigger a business event, you add Workflow PeopleCode to one of the record definitions available from the **Event Definition** dialog box. Select one record definition from the **Event Triggered From Record Name** drop-down list box.

8. Click the **Edit Business Rules** button.

The PeopleCode Editor appears. The name of the first key field in the specified record definition appears in the title bar.



PeopleCode Editor



The **Edit Business Rules** button adds the Workflow PeopleCode to the first key field in the specified record definition. If you're using Virtual Approver, you need to go to the Application Designer and add SaveEdit PeopleCode to this same record.



For more information, about Workflow PeopleCode, see Writing Workflow PeopleCode. For more information about Virtual Approver, see Defining Approval Processes.

9. Enter the PeopleCode that triggers the business event.



For more information about the PeopleCode you need to write, see Defining Event Triggers.

10. Save the PeopleCode, then click **OK** to close the **Event Definition** dialog box.

Creating Worklist Routings

A worklist is a list of the items awaiting an activity. Users select items from the list, and the system automatically displays the pages they need.

Worklists are automatically created as you route items to them. To define a worklist, you just need to create a worklist record definition and define worklist routings.

Before you create a worklist routing for an activity, you need to create a worklist record definition. The worklist record determines what fields of information the system stores for each work item and in what order the work items appear.




For more information, see Defining Worklist Records.

To create a worklist routing:

1. Create the business event that triggers the worklist routing.




For more information about creating business events, see Defining Events.

2. Click the  **Worklist** button in the toolbar, then click where you want the routing icon to appear on the map.

A copy of the worklist icon appears on the map.

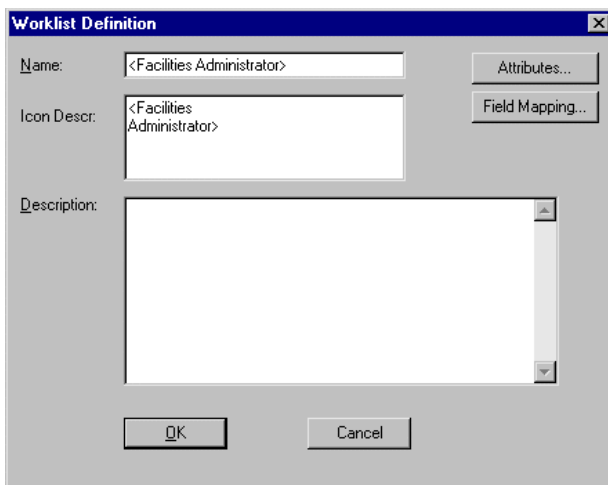
3. Connect the routing to the event that triggers it.

To connect the routing to the event, click the connector icon in the palette, then click the event icon and the routing icon in turn. An arrow connects the two icons.

You must use the  link icon to connect a routing to the event, not the line icon. If you use the line icon, the system won't recognize the routing.

4. Double-click the worklist icon or right-click and select **Component Properties**.

The **Worklist Definition** dialog box appears.



Worklist Definition dialog box

5. Enter a name and description for the routing.

The text you enter in the **Name** text box is the name that the system displays in dialog boxes that list routings. It must be unique.

By default, the routing name also appears as the display text under the icon on the map. If you want different text to display under the icon, enter it in the **Icon Descr** text box. You can include line breaks in the text by pressing **ENTER**; these line breaks appears in the icon display text.

You can enter a more detailed explanation of the routing in the **Description** text box.

6. Click the **Attributes** button.

The **Worklist Attributes** dialog box appears.

Worklist Attributes dialog box

7. In the **Worklist Attributes** box, select the record definition to use for storing and displaying work items.



For more information about worklist record definitions, see *Defining Worklist Records*.

8. Specify what activity works the items from this worklist.

In the **Worked by** group box, enter the **Business Process** and **Activity** that a user needs to complete in order to work the item.

When a user selects a work item from the worklist, the system displays the page (or external program) associated with the first step in the activity you specify here. The first step is the one marked as Step 1 Path 1 in the step map.

You usually select the next activity in the current business process, but it's by no means a requirement. You can route to any activity in any business process.

9. In the **Worklist Page Attributes** group box, specify how users retrieve work items from the worklist.

The first three options—**Show Instances**, **Allow Multiple Unworked**, and **Worklist Acts Like Prompt List**—have no effect in PeopleSoft 8. They are reserved for future use.

Pooled List	Specifies whether the system creates a single shared work item or one work item for each worklist user. With a pooled worklist, all worklist users get copies of shared work items; the first user who selects an item works it, and the item is dropped from everyone else's worklist. With a non-pooled worklist, each user gets a personal copy of each item.
Timeout Processing Active	Specifies whether the system checks this worklist for overdue items.
Reassignable	Allows users to reassign worklist items to other users.

10. Specify the timeout parameters (if timeout processing is active).

The timeout parameters specify how long the system allows unprocessed work items to sit in this worklist and what it does when an item times out.

Specifying a timeout condition is optional. If you want all work items to remain in this worklist until a user processes them, leave the controls in the **Timeout Parameters** group box blank, or clear the **Timeout Process Active** check box.

In the three **Late After** boxes, specify how long to wait (**Days**, **Hours**, and **Minutes**) for a user to process a work item. The system adds the three values together. If a work item sits in the worklist for over the specified amount of time, the system performs the action identified by the check box you select.

Finally, select the action you want to happen when a work item times out:

Email Assigned Current User	Send an email message to the user to whom the work item is assigned, warning that the item is overdue.
Email Supervisor	Send an email message to the user's supervisor. The supervisor is the role user assigned as the user's Supervising Role User in the person's User Profile, maintained through PeopleSoft Security. In PeopleSoft HRMS applications, the system uses the supervisor from the user's PERSONAL_DATA record.

Send Timeout Worklist

Send a new worklist item to the currently assigned user's Timeout worklist.



For more information about role users and supervising role users, see [Administering Workflow](#).

In the **Mark Worked When** group box, define what action counts as working a worklist entry.

Work items remain in a user's worklist until they have been worked. You can specify what the user has to do before the system considers the work item to be worked.

User Specified

A work item is marked as worked when the user explicitly identifies it as worked by highlighting it in the **Select Worklist** page and clicking the **Mark Worked** button. This option is useful in situations where the user may need to return to the same work item several times or wait for supporting information.

Saved

A work item is marked as worked when the user saves work on the page assigned to the worklist. This option is appropriate for work items the user can complete right away.

Selected

A work item is marked as worked as soon as the user selects it from the worklist. This option is appropriate for work items that notify the user of an event; just seeing the item is sufficient.

Programmatic

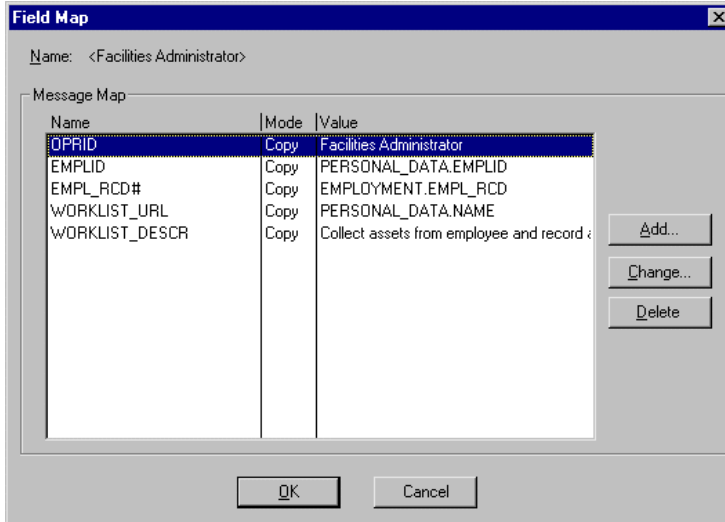
A work item is never marked worked directly by the user. It can only be marked worked programmatically (that is, with PeopleCode). This setting enables you to provide additional logic to determine when a work item can be considered worked.

11. Click **OK** to close the **Worklist Attributes** dialog box and return to the **Worklist Properties** dialog box.

12. Click the **Field Mapping** button.

If the **Field Mapping** button is unavailable, it means you haven't properly linked the routing to the event that triggers it..

The **Field Map** dialog box appears.



Field Map dialog box

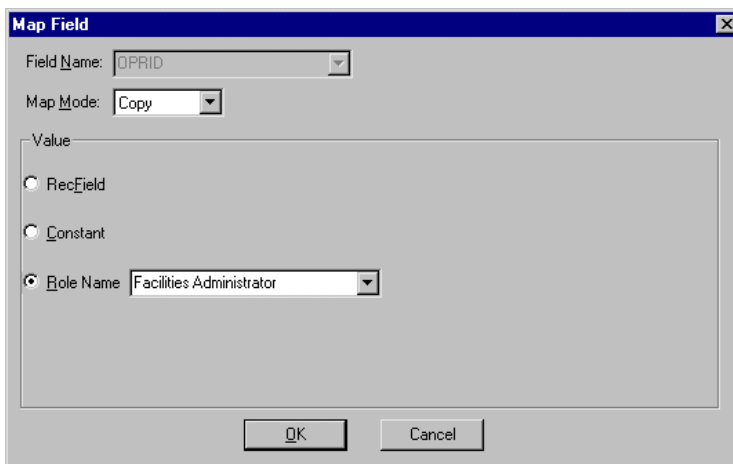
Use the **Field Map** dialog box to tell the system where to find the data needed to create a worklist entry. The **Message Map** group box lists the fields involved: The **Name** column shows the fields, and the **Value** column shows where the system will get the data to enter into those fields.

These are the fields that appear in this dialog box:

- The User ID (OPERID) of the person who will receive the worklist routing.
- The fields in the worklist record, including 1) key data for the page where the user will perform the necessary work, and 2) the descriptive data that will appear in the user’s worklist—normally the WORKLIST_URL and WORKLIST_DESCR fields.

13. Highlight the field into which you want to map a value, then click the **Change** button. Or, to add a new field to the map, click the **Add** button.

The **Map Field** dialog box appears.



Map Field dialog box

You use this dialog box to provide a value for each field in the worklist record.

14. Select the field into which you want to place routing data.

If you select the field from the Message Map, its name appears in the **Field** list box. If the correct name doesn't appear, you can select a field from the list box or type in a new name.

15. Identify the value for the selected field.

There are three ways to get data into a field: from a database field, a specific constant value, or a role name.

Record Field Value

To enter the value from a database field into the worklist field, select the **RecField** option. The **Record** box lists the record definitions that should be available when the event triggers this routing (according to the page and record definition associated with the event). Highlight the record name. The fields in that record appear in the **Fields** list box. Select the field whose value you want. When the event is triggered, the system completes the worklist field with the value of the field in the current record.

Constant

To assign a specific constant value to the field, select the **Constant** option and enter the value in the text box to the right. Every worklist entry will have this value in the selected field.

Role Name

To assign a role name to the field, select the **Role Name** option button and select a role from the drop-down list that appears next to it. When the event is triggered, the system completes the field with the User IDs of the users who fill this role. If you select a user list role, each user assigned to that role receives a copy of the work item. If you select a query role, each user that the query returns receives a copy.

You'll recall that the OPRID field, which appears in every worklist, has a special importance. Its value determines which users see the work items in their worklist. The system routes work items to the users whose User IDs appear in this field.

You can map the OPRID field to a constant value (so that work items are always routed to the same user) or to a record field, but it's much more common to map it to a role name.

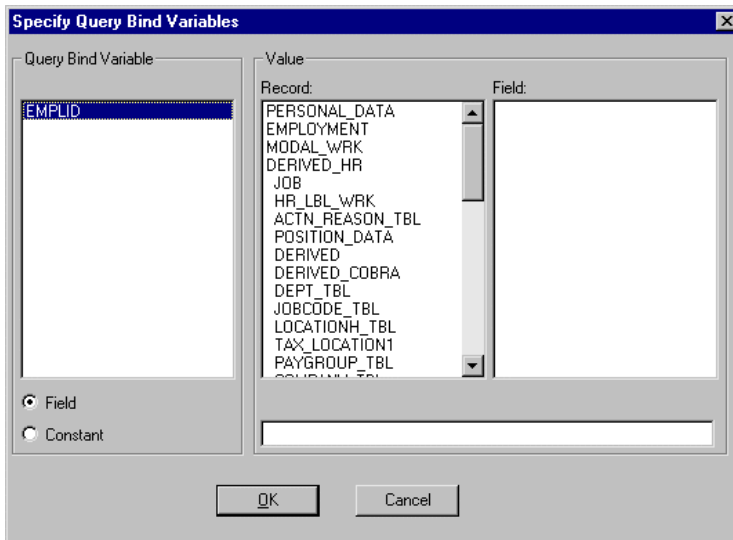


For more information about roles, user list roles, and query roles, see Security.

16. If you map the field to a role name, provide values for any bind variables.

If you map the OPRID field to a query role that includes bind variables (and you almost always will), a button appears next to the **Role Name** option button: **Specify Query Bind**

Variables. When you click this button, a dialog box appears, enabling you to specify, for each bind variable in the query, what value it should take for each work item.



Specify Query Bind Variables dialog box

The **Query Bind Variable** column shows the bind variables for the role query. (If nothing appears in this column, it means you defined the query without specifying any bind variables.) The **Record** column lists the record definitions associated with the component that triggers this routing. The **Field** column shows the fields in the selected record definition.

You can bind each variable with the value from a record field or with a constant.

To bind a variable with the value from a record field, select the **Field** option, highlight the bind variable you want to provide a value for, then highlight the record field to contain the value.

To bind a variable with a constant, select the **Constant** option, then enter the value into the text box.

If you're using route controls with Virtual Approver, the role you assign to the OPRID field is one of the predefined route control query roles.



For information about route controls, see Additional Routing Options.

When you've mapped bind values for all the variables, click **OK** to close the dialog box.

17. If you map the field to a record field, specify whether the system copies the assigned value directly into the worklist field or replaces the assigned value with a value from the Translate Table.

Select the appropriate option from the **Map Mode** list box. The **Map Mode** list box is available only if the selected field has associated Translate Table values. In most cases, you leave it at its default value of **Copy**.

For example, suppose the worklist record definition includes an Employment Status field, and you associate the field with the record field PERSONAL_DATA.STATUS. If the PERSONAL_DATA.STATUS field holds an abbreviation that translates to a value on the Translate Table, you can tell the system to fill in the worklist field with the abbreviation (**Copy**) or with the corresponding Translate Table value (**Xlat-S** for the short form or **Xlat-L** for the long form).

18. Click **OK** to add the field and its value to the routing dialog box.

19. Repeat steps 14 to 19 for each field you want to add to the routing.

You must provide values for at least all the key fields in the worklist record definition.

20. Close all the dialog boxes by clicking **OK** in each one.

Defining Email Routings

With email routings, you can send email messages in response to business events. The messages can inform users that there's work to be done. In some cases, you might want to define two routings for the same event: one that adds an item to someone's worklist and one that sends email to tell that person about the new worklist item.

One advantage of email routings is that the recipient need not be a PeopleSoft application user. You can send an email routing to anyone to whom you can send email through your mail system. All you have to do is define the person in your PeopleSoft Security pages (which doesn't require giving access to the system) and provide an email address.



For more information, see Defining Roles and Users.


PeopleSoft applications support email routings to any email software that supports the VIM or MAPI standards. The executable for the email software must be in the search path so that the system can find it. For Lotus Notes, the NOTESDB directory must also be in the path.

To create an email routing:

1. Create the business event that triggers the email routing.




For more information, see Defining Events.

Click the  email button in the toolbar, then click where you want the routing icon to appear on the map.

A copy of the email icon appears on the map.

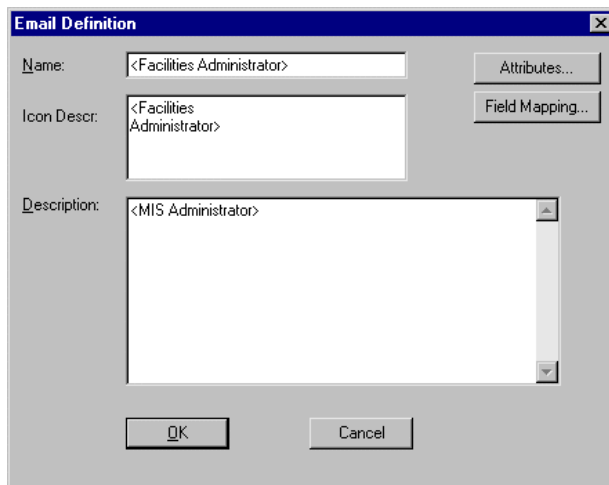
2. Connect the routing to the event that triggers it.

To connect the routing to the event, click the connector icon in the palette, then click the event icon and the routing icon in turn. An arrow connects the two icons.

You must use the  link icon to connect a routing to the event, not the line icon. If you use the line icon, the system won't recognize the routing.

3. Double-click the email icon or right-click it and select **Component Properties..**

The **Email Definition** dialog box appears.



Email Definition dialog box

4. Enter a name and description for the routing.

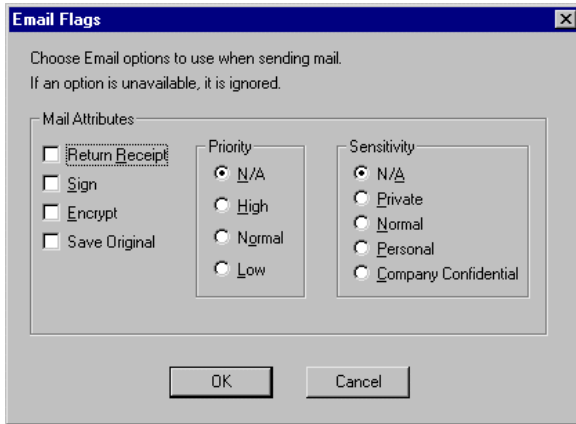
The text you enter in the **Name** text box is the name that the system displays in dialog boxes that list routings. It must be unique.

By default, the routing name also appears as the display text under the icon on the map. If you want different text to display under the icon, enter it in the **Icon Descr** text box. You can include line breaks in the text by pressing **ENTER**; these line breaks appear in the icon display text.

You can enter a more detailed explanation of the routing in the **Description** text box.

5. Click the **Attributes** button.

The **Email Flags** dialog box appears.



Email Flags dialog box

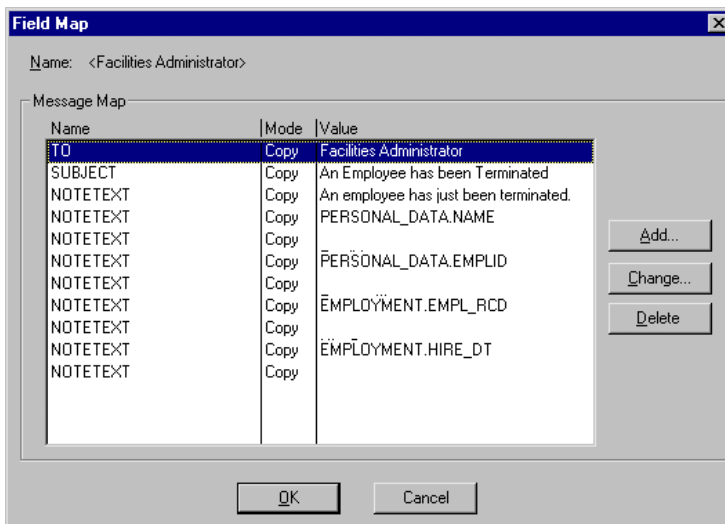
6. Select any settings you want to apply to the email message.

The options in this dialog box correspond to the mailing options offered in most email software. Refer to the documentation for your email software for details. If your email software does not support one or more of these options, the system ignores its setting.

7. Click **OK** to return to the **Email Definition** dialog box.
8. Click the **Field Mapping** button.

If the **Field Mapping** button is unavailable, it means you haven't properly linked the routing to the event that triggers it. See step 3.

The **Field Map** dialog box appears.



Field Map dialog box

Use the **Field Map** box to tell the system where to find the data needed to create an email. The **Message Map** group box lists the fields involved: The **Name** column shows the fields, and the **Value** column shows where the system will get the data to enter in those fields.

The fields that appear in this dialog box represent the two different types of data needed to create an email: the who and the what.

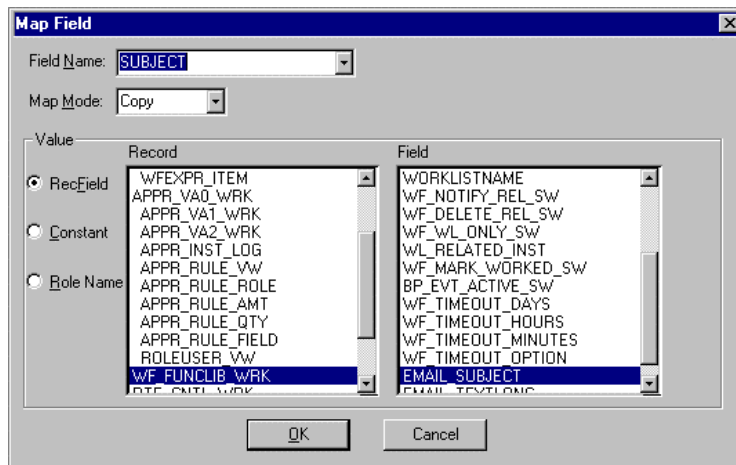
The who is the person who will receive the email. The TO field holds the email address for this person.

The what is the content of the email. This includes a SUBJECT line and any additional text you add. You can also concatenated data into the message.

When you first open the dialog box, the **Name** column shows the fields available for mapping. You need to provide a value for at least the TO field.

- Highlight the field you want to map a value into, then click the **Change** button. Or, to add a new field to the map, click the **Add** button.

The **Map Field** dialog box appears.



Map Field dialog box

You use this dialog box to create the email message from the values provided by the step that triggers the routing.

- Select the field into which you want to place routing data.

If you select the field from the Message Map, its name appears in the **Field** list box. If the correct name doesn't appear, you can select a field from the list box or type in a new name.

The following fields in an email routing's Message Map has a particular meaning to the email software to which the system forwards the email message.

Field	Values
TO	The name of the person to whom to send the email.

Field	Values
	The value can be an email name or a role. To send to more than one person, separate the names with semi-colons.
CC, BCC	The names of other people to whom you want to send the message. This field is optional.
SUBJECT	The Subject line that appears in the receiver's email inbox.
NOTETEXT	The body of the message. The message can have multiple NOTETEXT fields. The system displays NOTETEXT fields in the order in which they appear in the Field Map dialog box. To add a new NOTETEXT line, click the Add button in the Field Map dialog box and select NOTETEXT in the Field Name box.
FILEPATH	The completed qualified path and filename for a file to attach to the email message. This field and the next two are optional.
FILENAME	The name to display in the body of the email message, underneath the icon that represents the file attachment.
FILETYPE	The type of file being attached.

The values in the TO, CC, and BCC fields determine who receives the email message. The values that you map into these fields can be email addresses, Role User IDs, or role names. The system automatically converts Role User IDs and role names into the user's email addresses.

You must map a value into the TO field. The CC and BCC fields are optional.

11. Identify the value for the selected field.

The value can be data from a record field, a specific constant value, or a role name.

Record Field Value

To enter the value from a record field into the email message, select the **RecField** option button. The Record box lists the record definitions that should be available when the event triggers this routing (according to the page and record definition associated with the event). Highlight the record name. The fields in that record appear in the **Fields** list box. Select the field whose value you want. When the event is triggered, the system completes the email field with the value of the record field in the current record.

Constant

To assign a specific constant value to the field, select the **Constant** option button and enter the value in the text box to the right. Every email message will have this value in the selected field.

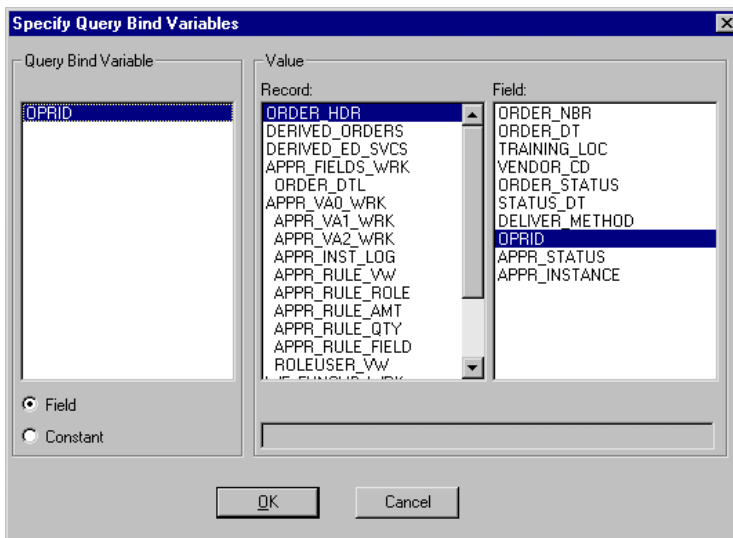
Role Name

To assign a role name to the field, select the **Role Name** option button and select a role from the drop-down list that appears next to it. When the event is triggered, the system completes the field with a list of the users who fill this role. If you select a user list role, each user assigned to that role receives a copy of the email message. If you select a query role, each user that the query returns receives a copy.

Although the role returns a list of role users, the system enters the user's email address into the field. There must be an email address in each role user record.

12. If you map the field to a role name, provide values for any bind variables.

If you map the TO, CC, or BCC field to a query role that includes bind variables (and you almost always will), a button appears next to the **Role Name** option button: **Specify Query Bind Variables**. When you click this button, a dialog box appears, enabling you to specify, for each bind variable in the query, what value it should take.



Specify Query Bind Variables dialog box

The **Query Bind Variable** column shows the bind variables for the role query. (If nothing appears in this column, it means you defined the query without specifying any bind

variables.) The **Record** column lists the record definitions associated with the component that triggers this routing. The **Field** column shows the fields in the selected record definition.

You can bind each variable with the value from a record field or with a constant.

- To bind a variable with the value from a record field, select the **Field** option, highlight the bind variable for which you want to provide a value, then highlight the record field that will contain the value.
- To bind a variable with a constant, select the **Constant** option, then enter the value into the text box.



If you're using route controls with Virtual Approver, the role you assign to the TO field is one of the predefined route control query roles, and the bind variable values come from a work record you need to add to the component that's triggering the routing.



For information about route controls, see Additional Routing Options. For more information about Virtual Approver, see Defining Approval Processes.

When you've mapped bind values for all the variables, click **OK** to close the dialog box.

13. If you map the field to a record field, specify whether the system copies the assigned value directly into the field or replaces the assigned value with a value from the Translate Table.

Select the appropriate option from the **Map Mode** list box. The **Map Mode** list box is available only if the selected field has associated Translate Table values. In most cases, you leave it at its default value of **Copy**.

For example, suppose you want to include a person's employment status in the email message, and so you associate the NOTETEXT field with the record field PERSONAL_DATA.STATUS. If the PERSONAL_DATA.STATUS field holds an abbreviation that translates to a value on the Translate Table, you can tell the system to fill in the field with the abbreviation (**Copy**) or with the corresponding Translate Table value (**Xlat-S** for the short form or **Xlat-L** for the long form).

14. Click **OK** to add the field and its value to the routing dialog box.
15. Repeat steps 10 to 14 for each field you want to add to the routing.
16. Close all the dialog boxes by clicking **OK** in each one.

Defining Form Routings

With a form routing, the system takes data from a PeopleSoft page on which the user is working, enters it onto a third-party form, and mails the completed form to designated users using the forms product's mail capabilities. It is similar to an email routing, except the object that's sent is a structured form instead of an unstructured message.

The advantage of form routings over email routings is that they can provide two-way communication. The person who receives the form can make changes to it and send it back to the PeopleSoft application.




For more information about integrating electronic form software with PeopleSoft applications, see [Outgoing Forms API](#).

To create a form routing:

1. Create the business event that triggers the form routing.




For information about creating business events, see [Defining Events](#).

Click the  outgoing form button in the toolbar, then click where you want the routing icon to appear on the map.

A copy of the outgoing form icon appears on the map.

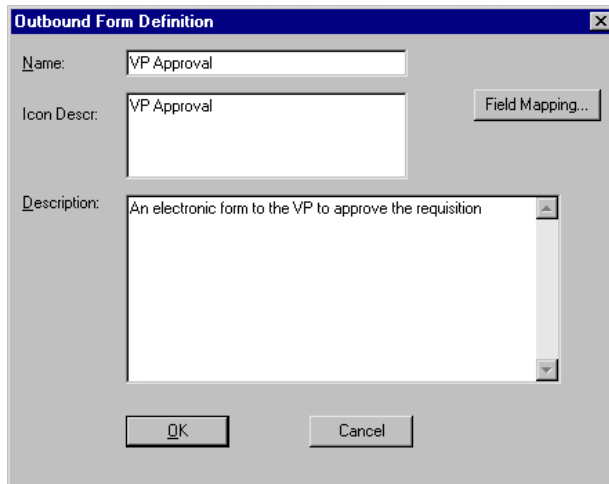
2. Connect the routing to the event that triggers it.

To connect the routing to the event, click the connector icon in the palette, then click the event icon and the routing icon in turn. An arrow connects the two icons.

You must use the  link tool to connect a routing to the event, not the line icon. If you use the line icon, the system won't recognize the routing.

3. Double-click the outgoing form icon, or right-click it and select **Component Properties**.

The **Outbound Form Definition** dialog box appears.



Outbound Form Definition Dialog

4. Enter a name and description for the routing.

The text you enter in the **Name** text box is the name that the system displays in dialog boxes that list routings. It must be unique.

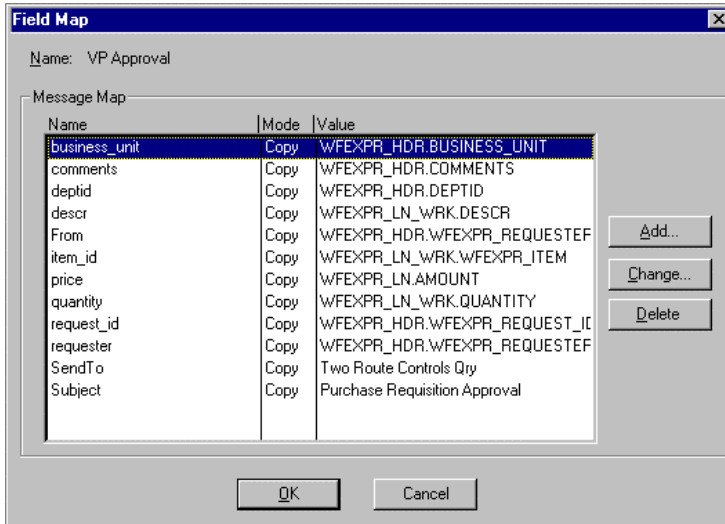
By default, the routing name also appears as the display text under the icon on the map. If you want different text to display under the icon, enter it in the **Icon Descr** text box. You can include line breaks in the text by pressing **ENTER**; these line breaks will appear in the icon display text.

You can enter a more detailed explanation of the routing in the **Description** text box.

5. Click the **Field Mapping** button.

If the **Field Mapping** button is unavailable, it means you haven't properly linked the routing to the event that triggers it. See step 3.

The **Field Map** dialog box appears.



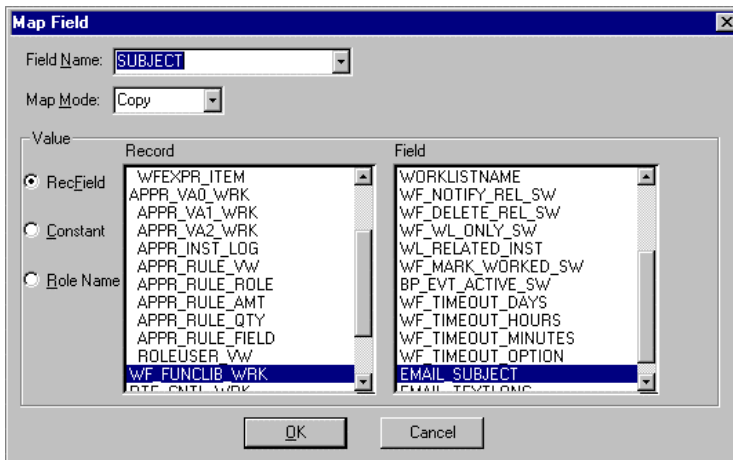
Field Map dialog box

Use the **Field Map** dialog box to tell the system where to find the data needed to complete the form. The **Message Map** group box lists the fields involved: The **Name** column shows the fields, and the **Value** column shows the where the system gets the data to put into those fields. It shows only the fields for which you've provided values, so when you first open the dialog box, the box is empty.

The names in the **Name** column must exactly match the field names from the form.

6. Click the **Add** button to add a field to the Message Map. Or, if you're modifying a field you've already added, highlight the field and click **Change**.

The **Map Field** dialog box appears.



Map Field dialog box

You use the **Map Field** dialog box to complete the form using values provided by the step that triggers the routing.

7. Enter the name of the field into which you want the routing to enter data in the **Field** drop-down list.

The SendTo field on an electronic form corresponds to the TO field in an email message: it determines who receives the form. You must map a value into this field. The value that you map into these fields can be a forms address, a Role User ID, or a role name. The system automatically converts Role User IDs and role names into the user's forms addresses.

8. Identify the value for the selected field.

The value can be data from a record field, a specific constant value, or a role name.

Record Field Value

To enter the value from a record field into the form field, select the **RecField** option button. The Record box lists the record definitions that should be available when the event triggers this routing (according to the page and record definition associated with the event). Highlight the record name. The fields in that record appear in the **Fields** list box. Select the field whose value you want. When the event is triggered, the system completes the form field with the value of the record field in the current record.

Constant

To assign a specific constant value to the field, select the **Constant** option button and enter the value in the text box to the right. Every form will have this value in the selected field.

Role Name

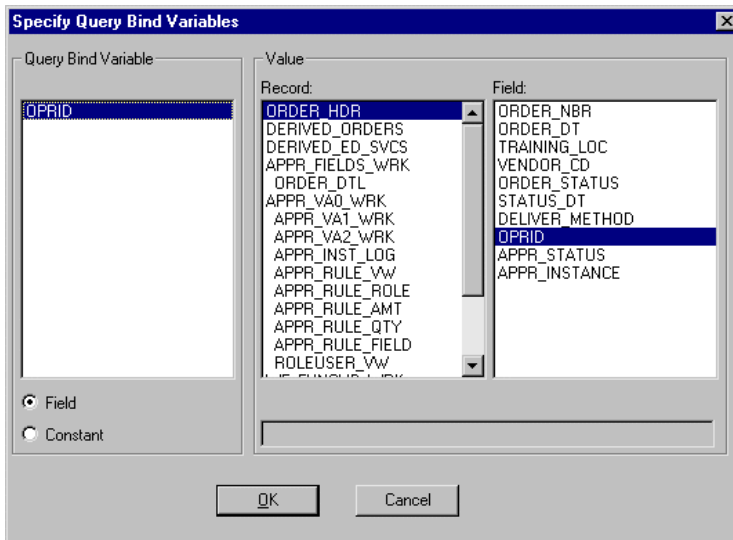
To assign a role name to the field, select the **Role Name** option button and select a role from the drop-down list that appears next to it. When the event is triggered, the system completes the field with a list of the users who fill this role. If you select a user list role, each user assigned to that role receives a copy of the form. If you select a query role, each user that the query returns receives a copy.

Although the role query returns a list of role users, the system enters the user's Form ID into the field. There must be a Form ID in each role user record.

9. If you map the field to a role name, provide values for any bind variables.

If you map the SendTo field to a query role that includes bind variables (and you almost always will), a button appears next to the **Role Name** option button: **Specify Query Bind**

Variables. When you click this button, a dialog box appears, enabling you to specify, for each bind variable in the query, what value it should take for each form.



Specify Query Bind Variables dialog box

The **Query Bind Variable** column shows the bind variables for the role query. (If nothing appears in this column, it means you defined the query without specifying any bind variables.) The **Record** column lists the record definitions associated with the component that triggers this routing. The **Field** column shows the fields in the selected record definition.

You can bind each variable with the value from a record field or with a constant.

- To bind a variable with the value from a record field, highlight the bind variable for which you want to provide a value, then highlight the record field that will contain the value.
- To bind a variable with a constant, click the **Constant** option button, then enter the value into the text box.



If you're using route controls with Virtual Approver, the role you assign to the SendTo field is one of the predefined route control query roles, and the bind variable values come from a work record you need to add to the component that's triggering the routing.



For information about route controls, see Additional Routing Options. For more information about Virtual Approver, see Defining Approval Processes.

When you've mapped bind values for all the variables, click **OK** to close the dialog box.

10. If you map the field to a record field, specify whether the system copies the assigned value directly into the form field or replaces the assigned value with a value from the Translate Table.

Select the appropriate option from the **Map Mode** list box. The **Map Mode** list box is available only if the selected field has associated Translate Table values. In most cases, you leave it at its default value of **Copy**.

For example, suppose the form includes an Employment Status field, and you associate the field with the record field PERSONAL_DATA.STATUS. If the PERSONAL_DATA.STATUS field holds an abbreviation that translates to a value on the Translate Table, you can tell the system to fill in the form field with the abbreviation (**Copy**) or with the corresponding Translate Table value (**Xlat-S** for the short form or **Xlat-L** for the long form).

11. Click **OK** to add the field and its value to the routing dialog box.
12. Repeat steps 6 to 12 for each field you want to add to the routing.
13. Close all the dialog boxes by clicking **OK** in each one.

CHAPTER 7

Defining Event Triggers

After you create your Workflow processes, you need to link them into your PeopleSoft applications. As you define the processes, you identify the application pages that are supposed to trigger business events. Now you need to set up the pages so they actually do trigger the events.

You do this by adding PeopleCode programs to the pages. The PeopleCode detects when a business rule has been triggered and determines the appropriate action.

This chapter explains how to workflow-enable pages that trigger business events. You'll learn how to complete the two major steps.

Writing Workflow PeopleCode

Workflow PeopleCode is one of the PeopleCode events associated with a record definition. To trigger a business event from a page, you add a PeopleCode program to the Workflow event on the record definition for one of the tables to which the page writes. For example, to trigger events from the Course Request page, we add Workflow PeopleCode to the TRAINING record definition; TRAINING is the record definition with which the Course Request page fields are associated.

If you're triggering business events from a page that includes scrolls, make sure you add the Workflow PeopleCode to the record definition at the appropriate scroll level. If, for example, you add it to the record definition associated with a level 1 scroll, the PeopleCode runs once for each row at that level. A Workflow PeopleCode program can reference record fields from record definitions at the same scroll level or lower scroll level. These rules also apply to the SaveEdit PeopleCode for Virtual Approver.

Workflow PeopleCode runs after the user saves the page group and before it updates the database with the saved data. More specifically, it runs after SavePreChg PeopleCode and before SavePostChg PeopleCode. Because SavePostChg PeopleCode executes after Workflow PeopleCode, it does not execute if the Workflow PeopleCode fails to complete.

Workflow PeopleCode programs typically review the data in the saved record, then decide which business event to trigger, if any. They all include at least one use of TriggerBusinessEvent, the PeopleCode function that triggers events, or Virtual_Router, a PeopleCode library function associated with the Virtual Approver, which uses TriggerBusinessEvent internally. The Virtual_Router PeopleCode library function is located in the FieldFormula event of the APPR_VA0_WRK.FUNCLIB_02 record field.

You can add the Workflow PeopleCode to any field in the record definition. For clarity, though, it's a good idea to add it to a field that the program itself references. For example, you would add the Workflow PeopleCode that triggers an approval process to the Approval Status field.

TriggerBusinessEvent

You use this function in every Workflow PeopleCode program.

In components that use Virtual Approver, you don't use these functions explicitly in the Workflow PeopleCode. You use the Virtual_Router PeopleCode library function, which uses these two functions internally.



For information, see PeopleCode for the Approval Processes.

TriggerBusinessEvent triggers a specified business event and the workflow routings associated with that event. This is the syntax:

```
TriggerBusinessEvent (BUSPROCESS.BusProcName, BUSACTIVITY.ActivityName,
                     BUSEVENT.BusEventName)
```

The ***BusProcName***, ***ActivityName***, and ***BusEventName*** parameters are the names of the business process, activity, and event from Application Designer. They are all strings, enclosed in quotes. For example, this line triggers the Deny Purchase Request event in the Manager Approval activity of the Purchase Requisition business process:

```
TriggerBusinessEvent (BUSPROCESS."Purchase Requisition", BUSACTIVITY."Manager
Approval", BUSEVENT."Deny Purchase Request")
```



For more information about the TriggerBusinessEvent function, see TriggerBusinessEvent. For more information about business processes, activities, and events, see Building Workflow Maps and Adding Events and Routings.

Workflow PeopleCode Programs



This section doesn't apply to components that use Virtual Approver. See the next discussion, PeopleCode for the Approval Processes.

The general structure of all Workflow PeopleCode programs is the same:

- Check for the condition under which a business event should be triggered. This condition is a business rule.

- If the condition is true, trigger the event. The system automatically checks whether the event is active and triggers it if it is. If you've deactivated the event, the system won't run it.

Let's take a look at a typical Workflow PeopleCode program. This program is a simplified version of the Workflow PeopleCode for the training example in PTDMO.

```

/* Start the Employee Training process for a new course request */

if RecordNew(ATTENDANCE) then

    if COURSE_TBL.INTERNAL_EXTERNAL = "I" then

        /* For internal courses */

        &TEMP = TriggerBusinessEvent(BUSPROCESS."Employee Training",

            BUSACTIVITY."Request Course",

            BUSEVENT."Internal Course Request");

    else

        /* For external courses */

        &TEMP = TriggerBusinessEvent(BUSPROCESS."Employee Training",

            BUSACTIVITY."Request Course",

            BUSEVENT."External Course Request");

    end-if;

```

PeopleCode for the Approval Processes

Approval processes are a very common form of business process. We've simplified the process of defining approval processes by enabling you to define your approval rules on an Approval Rule Set map. You then have a choice of two tools that can read and implement the approval rules from the map.

Virtual Approver

As users complete transactions that require approvals, Virtual Approver determines the appropriate approver and sends a workflow routing. As each approver completes the approval, Virtual Approver determines whether additional approvals are needed and, if necessary, sends additional workflow routings.

To trigger the Virtual Approver from a page, you need to use two PeopleCode functions in the record definition that's associated with the page.

- Use the `Virtual_Approver` function in your `SaveEdit` PeopleCode. This checks the approval rules you defined in your Approval Rules Sets and determines whether an item needs to be routed for approval.

- Use the `Virtual_Router` function in your Workflow PeopleCode. This routes items to the next step in the approval process.



For more information about the PeopleCode for Virtual Approver, see [Adding Virtual Approver PeopleCode](#).

GetApprovers

The `GetApprovers` PeopleCode function looks at an Approval Rules Set and determines the entire list of required approvals at once, so that you can develop custom approval tracking applications.



For more information about `GetApprovers` PeopleCode, see [GetApprovers PeopleCode](#).

Additional Workflow PeopleCode Functions and Variables

There are a few other Workflow PeopleCode functions and variables that you might find useful as you get into more advanced workflow development.

GetWLFieldValue

When you open a page from a worklist (by selecting one of the work items), this function enables you to get the value from one of the fields in the current item's worklist record. This is the syntax:

```
GetWLFieldValue(field_name)
```

The *field_name* parameter specifies the field from which you want the data. It has to be a field from the worklist record definition.



For more information, see [GetWLFieldValue](#).

MarkWLItemWorked

When you open a page from a worklist (by selecting one of the work items), this function marks the current worklist entry as worked. `MarkWLItemWorked` takes no parameters, and can only be used in Workflow PeopleCode.



For more information, see [MarkWLItemWorked](#).

System Variables

Here are some system variables that you might want to use during workflow development.

%BPName

The name of the business process for the worklist from which you're currently processing a work item. If you didn't open this page from a worklist, the variable is blank.

%MessageAgent

If the current page was opened by the Message Agent, this variable gives you the name of the message definition the Agent is using. If the page was opened by a user, this variable is blank.

The %MessageAgent variable is useful when you want to vary the logic of your PeopleCode program depending on whether the page is being used by the Message Agent or a user.

Note. Message Agent, a feature of previous PeopleTools releases, is replaced by Component Interfaces in PeopleSoft 8. Because the Message Agent is a superseded feature, do not use it (or the corresponding buttons in the Activity Toolbar) for new development. If you have existing Message Agent definitions, consider migrating your Message Agent functionality to Component Interfaces.

%WLInstanceID

The Instance ID for the work item you're currently processing. If you didn't open this page from a worklist, the variable is blank.

%WLName

The name of the worklist you're currently processing a work item from. If you didn't open this page from a worklist, the variable is blank.

CHAPTER 8

Additional Routing Options

The use of query roles, pooled worklists, and non-pooled worklists provides a lot of flexibility in routing work items. But they may not meet all of your needs.

This chapter describes additional routing options available through Workflow Administrator. These options enable you to define complex custom routing schemes without writing PeopleCode. You'll learn about route controls, which enable you to associate application data with role users to assist in routing.

You'll also use information from this chapter when you're configuring several of the business processes we've included in PeopleSoft Financials products. You'll want to define the route control types that are important for your business.

Understanding Route Controls

Defining query roles that return the role users you want can be difficult. Based on the data in the page that's triggering the routing, you need to get an appropriate list of Role User IDs. To get from one to the other, you need to be pretty familiar with the structure of your application data tables, and you have to write fairly complex queries. For even a simple query like manager of the employee requesting the course, we have to find a table that includes both the Employee ID and the manager's ID, and we have to join three tables.

In real life situations, you want to base routing decisions on very detailed information. In PeopleSoft Financials applications, for instance, you might want to route items differently depending on the business unit, department, project, customer, vendor, or account. It won't be easy to find the data you need in your database to link role users to work items at this level of detail. And if you can, the query is likely to be quite complex.

To solve this problem, the Workflow Administrator enables you to define route controls. Route controls identify the aspects of a situation on which you want to base routing decisions and enable you to associate particular values with particular role users. For example, suppose you want to route purchase requisitions to different buyers depending on what vendor supplies the ordered items, what business unit is requesting the items, what department they're for, or some combination of these factors. You would define a route control for each factor—Vendor ID, Business Unit, and Department—and specify a range of values for each buyer.

Route controls simplify the creation of role queries by enabling you to associate application data with the role user definition. Instead of joining together a bunch of records, you can just look at the role user table. Without route controls, it's difficult to figure out which buyer works with a particular vendor; with route controls, you simply look at the role user definition.

Another advantage of route controls is that the factors controlling routing are stored on a database table instead of being buried in query definitions or PeopleCode. If you need to change the routing rules, you just change users' route control profiles. You don't have to modify the business process, the role queries, or any PeopleCode.

Developing Route Controls

Here's an example to show how route controls work, using a business process for approving purchase requests.

1. You define route control types, which identify the factors on which you want to base routings: Business Unit, Department, Vendor ID, and so on. You can define route control types based on any prompt table.



For more information, see [To add a route control type](#).

2. You define route control profiles, which identify ranges of values for one or more route control types. For example, one route control profile might list the Vendor IDs for all software vendors, while another might list the IDs for all office supply vendors.



For more information, see [To define a route control profile](#).

3. You assign route control profiles to role users. You assign the Vendors (Software) profile to the clerks who handle software and the Vendors (Office Supplies) profile to the clerks who handle office supplies.



For more information, see [Security](#).

4. When you define the routing in Application Designer, you assign one of the roles we've provided for use with route controls.

The screenshot shows a 'Map Field' dialog box with the following fields and options:

- Field Name: DPRID
- Map Mode: Copy
- Value section:
 - RecField
 - Constant
 - Role Name: Two Route Controls Qry
- Specify Query Bind Variables button
- OK and Cancel buttons at the bottom.

Using Route Control Query Roles

The route control query roles have runtime bind variables that correspond to the following criteria:

- The route control types to use.
- The values for those types.

For example, the One Route Control Qry rule has four bind variables: one that specifies the single route control type to use, two that you map to a value from the page that's triggering the routing, and one that you map to the user list role.



For more information, see [Using the Route Control Roles](#).

- When a business event is triggered, the system follows these steps to decide to whom to route the work item:
 - It binds the query's bind variables using data from the page that's triggering the event.
 - It runs the query, checking each user's route control profile to determine whether the user meets the selection criteria.
 - It routes the work item to the appropriate role users.

Defining Route Controls

You create route controls using Workflow Administrator. There are two major parts to defining route controls:

- Defining route control types, which identify the situational factors on which you want to base routing decisions.

For example, if you want to route purchase requisitions to different buyers based on what vendor can supply the requested item, you create a Vendor route control type. Later, you specify with whom each buyer works.



You can only create route control types based on fields that have prompt tables.

7. Building route control profiles, which specify the range of values within a route control type.
You assign route control profiles to role users to identify the areas on which they work.

To add a route control type:

1. Select PeopleTools, Workflow Administrator, Use, Route Control Type.
2. Search for an existing **Route Control Type** or create a new one.

Use the standard search or add methods to enter your Route Control Type and access the Route Control Type page.

When creating a new Route Control Type, use a descriptive name for the factor on which you want to base the route control. For example, to add a route control type for vendors, enter *Vendor*.

Route Control Type page

3. From the **Edit Table** drop-down list, select the prompt table against which you want to validate values.
4. Save this page and repeat the process for each route control type.

To define a route control profile:

1. Select PeopleTools, Workflow Administrator, Use, Route Control Profiles.
2. Search for an existing **Route Control Profile** or create a new one.

Use the standard search or add methods to enter your Route Control Profile and access the Route Control Profile page.

When creating a new Route Control Profile, use a name that describes the work items to which users with this profile will have access, such as *Vendor (Hardware)*.

Route Control Profile page

You use this page to specify the range of values associated with a class of users.

3. Select a route control type from the **Route Control Type** drop-down list.

The route control type specifies the prompt tables to which this profile applies.

4. Specify the range of values from the type’s edit table that users with this profile can process.

To give access to a continuous range of values, pick the lowest value in the **From Value** list box and the highest value in the **To Value** list box. To give access to a single value, select the same value in both list boxes. To give access to two values, add a new row to the **Authorized Values** box.

5. Assign values for another route control type (optional).

You can assign values for more than one route control type to the same route control profile. With your cursor in the **Route Control Type** list box, click the **+ Add** button. Then, select a new route control type and assign its authorized values.

For example, you might want to route work items to managers based on **Item** and **Department**, so that managers receive work items only for their department and only if the item number is for department supplies. This is still considered a two-route control role query.

6. **Save** the page.

Using the Route Control Roles

One advantage of using route controls is that the application-specific data you use to control routings is stored in database tables, not buried in PeopleCode or query definitions. When you need to change the way you route items, you update the route control tables using Workflow Administrator pages. You don’t have to modify code or business processes.

To preserve this advantage, we use a set of predefined query roles specifically designed for use with route controls. The five route control query roles differ only in how many route control types they allow you to use:

- One Route Control Qry
- Two Route Controls Qry
- Three Route Controls Qry
- Four Route Controls Qry
- Five Route Controls Qry

The critical feature of the role queries is that they don't include any application data. That is, they aren't hard-coded with the names of particular route control types or particular values. Instead, they have a series of runtime bind variables that you link to the route control types you want.

Let's look at one of the queries to see how these roles work. Here's the SQL for the Two Route Controls Qry role:

```
SELECT A.ROLEUSER
FROM PS_RTE_CNTL_LN_VW2 A
WHERE A.ROLENAME = :1
AND A.RTE_CNTL_TYPE_1 = :2
AND A.RTE_FROM_VALUE_1 <= :3
AND A.RTE_TO_VALUE_1 >= :4
AND A.RTE_CNTL_TYPE_2 = :5
AND A.RTE_FROM_VALUE_2 <= :6
AND A.RTE_TO_VALUE_2 >= :7
```

Like all role queries, this query selects role users (although it retrieves the field from a special route control view rather than the ROLEXLATOPR table).

The most distinctive thing about this query is how generic the WHERE clause is and how many runtime bind variables it includes. This structure is what enables you to use the same role, regardless of what route control types you are using. The RTE_CNTL_TYPE bind variables enable you to plug in route control types at runtime.

A route control query has two classes of bind variables:

- The RTE_FROM_VALUE and RTE_TO_VALUE bind variables get set to values that come from the component that triggers the routing. They are similar to the bind variables that all role queries have. They enable the role to route items to different users based on some aspect of the item.

- The `ROLENAME` and `RTE_CNTL_TYPE` variables typically get set to constant values, representing the role and route control types that are relevant for the current routing.



The value for the `ROLENAME` bind variable should be a user list role that corresponds to a level in your organization. If you're using route controls, you need to have a set of organizational roles, and each role user should be assigned to at least one of them. We provide you with a default set of roles—`EMPLOYEE`, `MANAGER`, and so on—but you may need to update them to reflect your organization.

When you define routings in Application Designer, map the `OPRID` field (or the `TO` field for email routings) to the route control query that uses the number of route controls that are relevant for the routing decision.

Then, in the Specify Query Bind Variables dialog box, map the `RTE_FROM_VALUE` and `RTE_TO_VALUE` bind variables to fields from the page's record definitions. Map the `ROLENAME` and `RTE_CNTL_TYPE` variables to constant values that give the name of a user list role and route control type.

If you'd like to experiment with how the route control queries work, the Role User Search page enables you to mimic their operation.



For more information about Role User Search, see [Searching for Role Users](#).

Searching for Role Users

If you're using route controls, at runtime the system figures out where to route work items. This feature gives you a lot of flexibility, but it also creates the possibility that no users will meet the criteria for the role. In a purchase requisition role query, for instance, you might want a role query that returns the buyer assigned to work with the vendor of the ordered item; if someone orders an item from a new vendor, the query might return no one.

The Role User page in the Workflow Administrator enables you to search for role users based on specified criteria. You can use it to find out which users receive particular work items.

Role User Search is particularly useful when you're using route controls. By entering different values for the route control parameters, you can verify that the right users are receiving the right work items, and that you've assigned a user for every possible case.

To search for users meeting specified criteria:

1. Click PeopleTools, Workflow Administrator, Inquire, Role User Search.

The **Criteria** page appears.

The screenshot shows a web interface with two tabs: 'Criteria' and 'User List'. The 'Criteria' tab is active. Below the tabs is a section titled 'User Search Criteria'. This section contains the following fields:

- Role Name:** A text box containing 'SYSTEM ADMINISTRATOR' and a search icon.
- Route Control Type 1:** A dropdown menu and a search icon.
- Value 1:** A text box and a search icon.
- Route Control Type 2:** A dropdown menu and a search icon.
- Value 2:** A text box and a search icon.
- Route Control Type 3:** A dropdown menu and a search icon.
- Value 3:** A text box and a search icon.
- Route Control Type 4:** A dropdown menu and a search icon.
- Value 4:** A text box and a search icon.
- Route Control Type 5:** A dropdown menu and a search icon.
- Value 5:** A text box and a search icon.


To the right of these fields is a green search button with a magnifying glass icon. Below the search button, the text 'Total Found:' is displayed, with the number '0' below it.

Role User Search - Criteria page

All of the list boxes are optional. For a complete list of role users, leave them all blank. To list all the users in a role, select a role but leave the **Route Control Type** boxes blank.

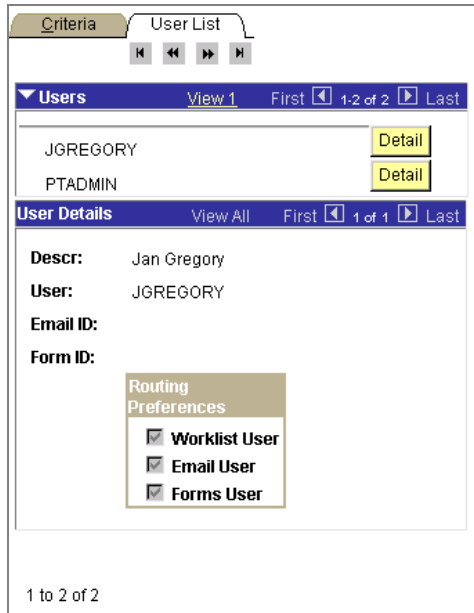
2. Select a user list role in the **Role Name** list box.
3. Specify which route control values to use.

From each of the **Route Control Type** list boxes, select a route control type you defined. Then, from the corresponding **Value** list box, select a specific value from the prompt table associated with the route control type.


4. Click the  Search for Role Users button.

The system searches for role users who meet the specified criteria. It displays the number of users below the button.

5. Move to the **User List** page to review information about the users who meet the criteria.



User List page

In the **Users** list, click the  button to expand or collapse the list of users. If there are multiple users, either review them one at a time using the controls in the **Users** bar or list all of them together by clicking **View All**.

For any user in the list, click the **Detail** button to populate the **User Details**. The **Details** button is only visible when the list of users is expanded.

The **User Details** include the following information:

Descr	The user's name
User	The user's ID
Email ID	The user's email address
Form ID	The user's ID for your form software.
Routing Preferences	The places where the system can deliver work items to this user. Only checked options are available; users cannot receive work items using options that are not checked.

CHAPTER 9

Workflow Integration

There are several reasons why you might use PeopleSoft's integration technology in conjunction with Workflow.

- You can monitor a database for passive events (like aging invoices) and then force an event to trigger when the event occurs. In this situation, you would use an Application Engine program to capture the event and run a Component Interface, and you would use the Component Interface to force `TriggerBusinessEvent` to run.
- You can consolidate Worklists among multiple PeopleSoft databases. For example, if managers approve expenses in PeopleSoft Financials and approve course requests in PeopleSoft HRMS, you can use an Application Message to consolidate Worklist entries so that managers only have to monitor a single Worklist.
- You can use third-party applications to access existing Worklist items, either to mark them worked or to reassign items to other users.
- You can use third-party applications to create new Worklist items with URLs that the user can follow to work the item outside of PeopleSoft.

PeopleSoft Integration Technologies

PeopleSoft provides several integration technologies that you can use with Workflow. In this topic, we'll look at two integration technologies most commonly used with Workflow.



For more information about these and other integration technologies, see your PeopleSoft Integration Tools documentation.

Component Interfaces

Component Interfaces allow third-party applications to enter data into PeopleSoft applications. Component Interfaces accept data from a variety of sources, such as electronic forms software, interactive voice response (IVR) systems, World Wide Web applications, and, very importantly, from PeopleCode and Application Engine programs.

When a Component Interface sends data into the PeopleSoft system, PeopleSoft performs all the same edits and security checks it always does, including running any PeopleCode associated with

the page. So, if the page has associated Workflow PeopleCode, a Component Interface can trigger a business event.

For example, there are cases where the event that triggers a Workflow routing is actually a non-event. That is, a situation exists, but not because someone has entered data into the system. The most common examples of this type of event are aging processes: An invoice becomes overdue, an employee reaches a five-year anniversary, or a worklist entry remains unworked for over a week. You can use PeopleSoft's Application Engine to monitor the database for this type of event. You create an Application Engine program that runs a SQL query against your PeopleSoft database. The Application Engine program can then pass the query results to a Component Interface, which can then trigger the business event.



For more information about using Application Engine to monitor for passive events, see Batch Workflow Processing.

Component Interfaces extend the reach of your business processes beyond the users who use PeopleSoft applications. Rather than typing data directly into a PeopleSoft page, people throughout the organization can enter the data using software they're familiar with.

You create Component Interfaces using Application Designer. The process is straightforward, involving little more than identifying the business component involved and specifying which fields and methods to expose to the outside world.

As you design your Workflow applications, it's likely that you'll find several uses for Component Interfaces.



For more information about creating components interfaces and using them to send data to PeopleSoft business components, see PeopleSoft Component Interface.

Message Agent

Although Component Interfaces are the preferred method for integrating with PeopleSoft applications, PeopleSoft also supports older message agent integration technology. Because this is older technology that may not be supported in future releases, you should use Component Interfaces for any new development.

PeopleSoft still delivers message agents with certain applications, and you may have some custom message agents that you developed under an early release. However, it's likely that all of PeopleSoft's message agents will be converted to the newer technology in the future, and you should consider doing the same with any of your custom message agents.



For more information about message agents, see Message Agent and Using Database Agents and Message Definitions.

Replicating Worklists

To consolidate worklists from multiple databases, you can use the Worklist Replicate process in the Workflow Administrator.



Every worklist item has a worklist name—for example, Expense Report Approval, Order Item, or another descriptive name. In order for worklists to successfully replicate, you cannot generate identical worklist names in multiple databases: one database must be the “master” for each worklist name.

To replicate worklists:

1. Select PeopleTools, Workflow Administrator, Process, Worklist Replicate.
2. Search for an existing **Run Control ID** or add a new one.

Use the standard search and add methods to enter a Run Control ID and access the Worklist Replicate page.

Worklist Replicate page

3. Enter the **Server URL** for the current database.

Add the http://server (protocol://servername) used by the PeopleSoft Internet Architecture for the current database.

4. Click the **Run** button.

The Process Scheduler Request page appears. The list at the bottom of the page displays the database agents you can run from this page.

Process Scheduler Request

User ID: PTDMO Run Control ID: RC1

Server Name: (Invalid Value) Run Date: 08/14/2000 [BY]

Recurrence: Run Time: 9:33:15AM

Time Zone: Reset to Current Date/Time

Process List					
Select	Description	Process Name	Process Type	*Type	*Format
<input checked="" type="checkbox"/>	WL_REPLICATE	WL_REPLICATE	Application Engine	(None)	NONE

OK
Cancel

Process Scheduler Request page

5. Complete the Process Scheduler request.



For more information, see To submit a Process Scheduler request.

Enterprise Integration Points

PeopleSoft delivers a number of preconfigured Enterprise Integration Points (EIPs) to meet some of the more common integration needs. There are three Workflow-related EIPs that you may have occasion to use.



For more information, see the PeopleSoft Enterprise Integration Points documentation.

Worklist Entry

The Worklist Entry EIP (Component Interface WORKLISTENTRY) enables third-party applications to access existing Worklist entries and mark the item selected, mark the item worked, or reassign the item to another user.

Worklist Synchronization

The Worklist Synchronization EIP (Application Message WORKLIST_MSG) consolidates Worklist data from multiple PeopleSoft databases. This means that users who would otherwise have to work from multiple Worklists (for example, people who use Workflow in both PeopleSoft HRMS and PeopleSoft Financials) can use one Worklist and still see all work items from both sources.

Third-party applications can also use this EIP to create new Worklist entries—entries that can include a URLs for the action that needs to be taken.

Worklist

The Worklist EIP (Component Interface WORKLIST) enables third-party applications to add new entries to PeopleSoft Worklists. In general, this is not the preferred way to add Worklist entries. The preferred method is to use a Component Interface for a component that already calls `TriggerBusinessEvent` and to let `TriggerBusinessEvent` create the Worklist entry. Another alternative is to use the Worklist Synchronization EIP.

Batch Workflow Processing

There are cases where you want to trigger events using batch processing rather than in response to a user action on a page. A very common reason to do this is if you are monitoring a database for certain conditions such as elapsed time: An invoice becomes overdue, an employee reaches his five-year anniversary, or a worklist entry remains unworked for over a week.

Although the batch programs perform a simple task, they play an important role in workflow. By running predefined SQL programs on a regular basis, they periodically check your PeopleSoft database for data that is relevant to your business processes. By causing appropriate PeopleCode to fire, they enable the system to respond automatically.

The batch process breaks down into two parts. First, a batch program must capture the relevant condition—the overdue invoice, the five-year anniversary, or whatever condition you’re looking for. Next, the batch program must cause the relevant TriggerBusinessEvent PeopleCode to execute.

PeopleSoft provides two sets of tools to perform this batch processing:

- Application Engine works in conjunction with Component Interfaces to perform the batch processing. Application Engine programs capture the relevant conditions and then passes the results to a Component Interface, which then triggers the Workflow PeopleCode.
- Database Agents work in conjunction with Message Agent definitions to perform the batch processing. Database agents capture the relevant conditions and then pass the results to a Message Agent definition, which then triggers the Workflow PeopleCode.



Database Agents and Message Agents are older technology, superseded by Application Engine and Component Interfaces. Although PeopleSoft still supports Database Agents and Message Agents, the newer technologies are preferred. All new development should use Application Engine and Component Interfaces, and you should consider converting any existing Database Agents to Application Engine programs.

Using Batch Processes

When you’re working with PeopleSoft applications, there are some activities that you perform interactively (online processes) and some that you ask the system to perform behind the scenes (batch processes). Batch processes provide three major benefits:

- You can schedule them to run later, on a recurring schedule if necessary.

- They can process a large number of items all together, unlike online processes, which typically work on one item at a time.
- You can offload them to a server, so that time-consuming tasks don't tie up your machine.

However, batch processes have one possible drawback: They connect to the database directly, rather than working through the PeopleSoft pages. If you're counting on the Component Processor to validate incoming data or run some custom PeopleCode, you probably don't want a batch process updating the database behind its back. And because you trigger business events by saving data on a page, batch processes can't initiate a workflow.

You can use Application Engine programs and Component Interfaces to get around these limitations. Like online processes, Application Engine programs enter data through PeopleSoft pages (using the Component Interface as an intermediary). Like batch processes, they can handle a batch of items. In essence, you can have an agent run a batch of online processes.

For example, suppose you have a batch process that transfers assets between departments, and you want to notify (using email) the managers of all affected departments. The batch process itself can't trigger an email routing, and to create the emails manually would be tedious and time-consuming. Instead, after the batch process is complete, you could run an Application Engine program that selects the transferred assets and sends an email to each manager. Or better still, you could replace the batch process with an Application Engine program that makes the asset transfer.

Using Application Engine and Component Interfaces

Using Application Engine programs in conjunction with Process Scheduler, you can monitor your database tables for conditions that should trigger Workflow events. The Application Engine program runs a SQL query against your PeopleSoft database and passes the results to a Component Interface, which then triggers Workflow PeopleCode.

For example, you could create a program that looks for overdue receivables, and you could schedule it to run once a week. When the program finds overdue receivables, it will pass the data to the Component Interface. The Component Interface can, in turn, trigger the Workflow event in one of two ways: by entering the data into a page specifically for overdue receivables, or by using a Save method in the regular receivables page and thus firing Workflow PeopleCode you've placed there. All of this happens without user intervention.

An Application Engine program can run any SQL that you can define with Application Designer. The WHERE clause of the query is the business rule that's looking for exception conditions.

Monitoring the Database with Application Engine

Most of the time, a user entering data onto a page triggers a business process. For example, in a purchase order approval process, the system generates an approval request when a user enters a new purchase order. This immediate response is part of the productivity gain that PeopleSoft Workflow provides.

However, there are situations where you'd like to trigger routings based on some event that doesn't involve a user at all: The number of outstanding work items entries gets too high, a contract lapses, Process Scheduler completes a batch process, and so on. Application Engine programs make such routings possible.

To trigger routings based on a non-user-initiated event, you write a SQL program that checks the database for data that needs to be processed. You put that SQL program into an Application Engine program, then you use Process Scheduler to schedule the Application Engine programs to run on a regular schedule. When the condition for which you're checking is true, the Application Engine programs sends the data to the Component Interface, which in turn initiates a Workflow event. Once you've started the Application Engine program, no user intervention is required.

Triggering Events with Component Interfaces

Application Engine programs do not trigger business events directly. They can't. With PeopleSoft workflow, you trigger business events by entering (and saving) data on a PeopleSoft page that has Workflow PeopleCode associated with it. Application Engine programs can't enter or save data on pages, but Component Interfaces can.

Application Engine programs trigger business events indirectly, by passing the results of their queries to the Component Interface. If the component has associated Workflow PeopleCode, a business process is triggered when the Component Interface saves the page.

If an Application Engine program returns multiple rows of data—for example, if it finds several overdue items—the agent passes the rows to the Component Interface, one row at a time.



For more information about the Component Interfaces, see PeopleSoft Component Interface.

Creating the Batch Workflow Application

In order for an Application Engine program to trigger a business event, it has to pass its data to a Component Interface and the Component Interface, in turn, has to trigger Workflow PeopleCode in a business component. So, to set up your batch processing you have to set up all three stages of the process:

- Create the Application Engine program that queries the database for the situation in question.
- Define a Component Interface that maps the results to a page.

It's up to you whether to enter new data into a page. For example, you can create a separate table for tracking overdue invoices. Alternatively, you can use the Save method in the Component Interface to force PeopleCode to execute without actually entering any data into the page. In this case, you would set up PeopleCode in your main invoice record and use the Component Interface Save method to execute that PeopleCode when the invoice is overdue—without affecting the data.

- Create the Workflow PeopleCode that triggers the appropriate business event.



In order to batch workflow applications, you must be familiar with Application Designer and, in particular, you must understand how to create Application Engine programs, Component Interfaces, and Workflow applications. The following procedure merely provides a high-level overview of the process.

To create batch workflow applications:

1. Create the Workflow application.

Build your workflow maps, events, routings, and TriggerBusinessEvent PeopleCode. Everything needs be working in order for a batch program to trigger the workflow event.

2. Create a new record to be used as the state record for the new Application Engine program.

This record type can either be derived or a table.



If you are converting a database agent, this record contains the database agent input and output fields: that is, the fields on the page where you ran the database agent and the fields that were returned by the database agent query.

3. Create a new Application Engine program.

Define the state record created in Step 1 as the default state record for the Application Engine program. Insert a SQL statement to select values from the run control record into the state record. Note that Application Engine automatically initializes the OPRID and RUN_CNTL_ID fields.

4. Create a step in the Application Program to select data that meets your conditions.

The step consists of a PeopleCode program with an SQL query that selects the data in question. For example, if you're looking for invoices over a month old, you'll write a SQL query to select the appropriate invoices.

You may want to break the SQL query into separate statements if the data will be passed to a Component Interface with multiple levels.



If you're converting an existing database agent, you can probably paste the SQL from the database agent query into the Application Engine statement with only minor modifications.

5. Create the Component Interface for the component with the Workflow PeopleCode.

When you create the Component Interface, you need to expose the properties that your Application Engine program will update.

Be sure to test the Component interface in the interactive environment provided by Application Designer.

6. Create an Application Engine step that invokes the Component Interface once for each row returned by the query.

How you invoke the Component Interface depends on exactly what you're trying to accomplish. Here are some general guidelines.

- Remember the mode you are using for your component. If you're using Add mode, then use the Create and Save methods on the Component Interface. If you're using Update/Display mode, use the Get and Save methods on the Component Interface.
- On the Save method, it is a good idea to record errors to a file or to a record. Any workflow PeopleCode will trigger routings when the component successfully saves.

Here are some additional guidelines to consider if you're converting an existing database agent:

- You want to duplicate the database agent behavior using PeopleCode. Whereas the database agent behavior is determined through its properties, using PeopleCode to produce this behavior provides greater flexibility because you have all the capabilities of PeopleCode functions, including the PeopleCode debugger.
 - The Field Mapping dialog box for the database agent contains all the information you need to know in order to set the Component Interface properties.
 - If the Component Interface has multiple levels, use the level mapping information on the database agent property dialog box to determine how to handle matching and unmatching rows in the Component Interface level data. You can use the ItemByKey method to help determine whether you have matching rows.
7. Create a process definition for the new Application engine program and link to the run control page.

The steps for scheduling an Application Engine program are the same as those for any Process Scheduler process:

- Define a process type definition. PeopleSoft ships with the process types for Application Engine already defined, so you can skip this step.
- Create a process definition.
- Set up the page and component where users will run the process. If the program includes runtime bind variables, you the page needs to include fields where users can enter values for the variables.

Users can then schedule the process just as they schedule any process: by navigating to the page, clicking the Run button to reach the Process Scheduler request page, and clicking Run to initiate the process.



For more information about any Process Scheduler options, see Process Scheduler.

8. Test the application.

Using Database Agents and Message Agents

Although Application Engine programs are the preferred method for monitoring databases, PeopleSoft also supports older database agent technology that can also be used to monitor databases. Database Agents work in conjunction with the Message Agent to check for specified conditions in your database and to trigger appropriate events when those conditions are met.

Because both Database Agent and Message Agent are older technologies that may not be supported in future releases, you should not use them for any new development.

PeopleSoft still delivers database agents and message agents with certain applications, and you may have some custom agents that you developed under an early release. However, it's likely that all of PeopleSoft's agents will be converted to the newer technology in the future, and you should consider doing the same with any of your custom agents.



For more information, see [Using Database Agents and Message Definitions](#).

Defining Approval Processes

Approval processes are a very common form of business process. We've simplified the process of defining approval processes by enabling you to define your approval rules on an Approval Rule Set map. The Approval Steps that you place on the map represent the approval levels required for the activity in question.

You then have a choice of two tools that can read and implement the approval rules from the map.

- Virtual Approver automatically tracks the approval process. As users complete transactions that require approvals, Virtual Approver determines the appropriate approver and sends a workflow routing. As each approver completes the approval, Virtual Approver determines whether additional approvals are needed and, if necessary, sends additional workflow routings.
- GetApprovers PeopleCode determines the entire list of required approvals at once so that you can develop custom approval tracking applications.

In this chapter, you learn how to define approval rule sets and use them with Virtual Approver and with GetApprovers PeopleCode.



Several PeopleSoft applications incorporate Virtual Approver-based business processes, particularly in PeopleSoft Financials. You can adapt the approval rules sets for those processes to meet your unique business needs.

Understanding Approval Processes

A typical approval process incorporates many business rules. Some examples might be:

- Employees can approve purchases up to a given amount, based on their level in the organization: Supervisors can approve up to \$500, managers up to \$5000, and so on.
- All product improvement requests are approved by both a manufacturing representative and a safety inspector.
- People can only approve items for their own departments.
- If an item requires a vice president's approval, skip the usual step of manager approval.

Business rules such as these are usually incorporated into Workflow PeopleCode programs. Logical statements in the PeopleCode check the data on the page—such as the page where

employees enter purchase requests—to see whether the conditions are right for entering a work item into the workflow.

Defining a sophisticated set of approval rules in PeopleCode could require some fancy coding. To implement rules like those listed above, your code would have to test several conditions: who the current user is, how much that user is allowed to approve, whether the work item needs to go to a manager or a vice president, and so on.

You would have to write separate PeopleCode programs for each approval process. When you needed to modify the rules, you'd need to modify the PeopleCode. Because the rules are in PeopleCode, you would need to involve a PeopleCode developer when the business rules change.

Because all approval processes share some basic similarities and automation potential, Approval Rule Sets represent an alternative solution to the complex writing of PeopleCode. With Approval Rule Sets, you define your approval rules on a graphical map. In place of the complex PeopleCode you'd normally write, you use PeopleSoft-supplied functions to access the rules you've created.

The principle behind Approval Rule Sets is similar to the one behind route controls. Both features allow you to store application data in easy-to-maintain database objects rather than hard-coding the data into the business process definition. As a result, you can alter routings without redeveloping your business processes.

Features Common to Virtual Approver and GetApprovers

Virtual Approver and GetApprovers PeopleCode share the following advantages:

- You can determine the appropriate approver for each approval step.
- You define and configure approval rules using the same Application Designer interface that you use to develop all business process maps.
- You can define different approval rules for different business processes, or even multiple sets of rules for the same process.
- You can build multi-step approval processes, with steps occurring sequentially or in parallel.
- You access the Approval Rule set through built-in PeopleCode functions. Virtual Approver uses the functions `Virtual_Approver` and `Virtual_Router`. `GetApprovers` is itself a PeopleCode function. In both cases, the functions look to the approval rule set to determine whether approvals are needed and who the appropriate approvers are. When you need to change a rule, you make the change in your Approval Rule Set rather than in your PeopleCode.
- Users enter transactions just as they always have, by entering data onto a PeopleSoft application page. When they save the page, Virtual Approver or GetApprovers checks the approval rules you've defined to see what approvals are necessary.

Differences Between Virtual Approver and GetApprovers

Virtual Approver and GetApprovers PeopleCode differ in significant ways. Use the information in the following table to help you decide which is appropriate in a given situation.

<i>Virtual Approver</i>	<i>GetApprovers</i>
The system determines the next approver (if any) at each step along the way.	The entire approval chain is determined up front.
Because Virtual Approver only processes one approval step at a time, the system always has the latest data about any substitute approvers—for example, when someone goes on vacation or leaves your organization.	Because the entire approval chain is determined up front, you capture the approval chain at a single point in time. If an approver goes on vacation and schedules a substitute approver, GetApprovers won't be aware of this.
Because the system determines the next approver (if any) at each step along the way, you can't show your users all the approvals that are required for a transaction.	Because the entire approval chain is determined up front, you can expose that data on a page that users can see.
Virtual Approver, in conjunction with Virtual Router, generates Workflow routings to approvers.	GetApprovers does nothing to notify approvers. Once it provides the list of approvers, it's up to you to build a custom approval application. Typically, you store the list of approvers as part of the transaction (usually in a child table), so that the entire approval chain can be viewed. Additional development is necessary to define how approvals occur.
Virtual Approver automatically displays a message to a user who enters a transaction that requires approval. The user has the option to submit the transaction for approval or to cancel the transaction.	By itself, GetApprovers does not provide any information to the user. It's up to you to provide messages.



As GetApprovers merely returns a list of approvers, it can be used with in conjunction with Virtual Approver without disrupting normal Virtual Approver functionality. You might use GetApprovers and Virtual Approver together to add forecasting capability to Virtual Approver.

Using Virtual Approver

Approval Rule Sets are Application Designer objects similar in appearance to workflow maps. Approval Rule Sets reference business processes, but they are not embedded within business

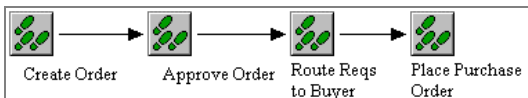
processes (unlike activities, which are part of business processes). That is, Approval Rule Sets are not represented by physical icons on your workflow maps.

Instead, Approval Rule Sets are separate objects referenced by your workflow PeopleCode. Specifically, Virtual Approver finds the next approver by calling `GetApprovers()` and then sends that person a workflow notification by calling `VirtualRouter()`. Note that you use different PeopleCode to trigger Virtual Approver than you would use for other Workflow events, but the function of the PeopleCode is the same: To identify the next users and to send them notifications.



For more information about Workflow PeopleCode, see [Writing Workflow PeopleCode](#) and [Adding Virtual Approver PeopleCode](#).

To examine how Virtual Approver fits into Workflow, picture a business process for ordering supplies. The first two activities within this business process are for creating orders and approving orders.

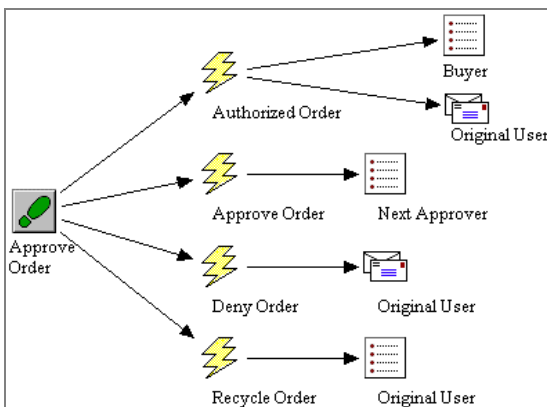


Process Orders Business Process

The Create Order activity consists of a single step, entering the order information into the PeopleSoft system.

When an employee enters an order, PeopleCode triggers Virtual Approver, which reads the specified Approval Rule Set to determine whether the order requires approval and, if it does, who needs to approve the order. When an order does require approval, Virtual Approver sends a routing to the approver. The approver works the item using the activity specified in the first step of the Approval Rule set—in this case, the Approve Order activity.

The Approve Order activity also consists of a single step, approving the requisition. The approver can approve the order, deny the order, or recycle the order back to the original requestor for changes.



Approve Order Activity

When the approver is finished, PeopleCode again triggers Virtual Approver. Virtual Approver PeopleCode includes a parameter that specifies the approval action. Valid actions are A (Approve), D (Deny), or R (Recycle).



For more information about Virtual Approver PeopleCode syntax and how Virtual Approver knows what approval action occurred, see [Adding Virtual Approver PeopleCode](#).

If the approver approves the action, Virtual Approver looks at the Approval Rule Set to see whether additional approvals are required.

- If additional approvals are not needed, Virtual Approver triggers the Authorized Order event, which sends a confirmation email to the original user and sends a worklist routing to the buyer who will place the purchase order
- If additional approvals are needed, Virtual Approver triggers the Approve Order event again. This is the exact same event that was triggered when the original user first submitted the order, but when Virtual Approver figures out who needs to approve the order, the routing goes to the next person in the approval chain.

If the approver denies the order, Virtual Approver triggers the Deny Order event, which sends an email notifying the original user that the order was denied.

If the approver recycles the order, Virtual Approver triggers the Recycle Order event, which sends an email telling the person defined in the routing the (either the original submitter or the previous approver) to change the order and then resubmit it.

As you can see, the workflow maps do show the events and routings that Virtual Approver triggers, just as the maps show all workflow events and routing. To determine whether Virtual Approver is involved in a particular workflow application, you must look at the workflow PeopleCode. If the PeopleCode uses Virtual Approver, you'll also be able to identify the Approval Rule Set being used.

Defining Approval Rule Sets

An Approval Rule Set is a Workflow map representing all the criteria for determining what approvals are required for a transaction. The components of the map are individual approval steps, one for each level of approval.

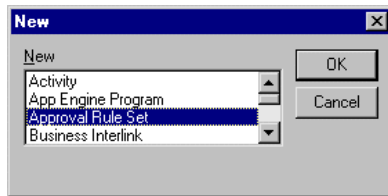
Creating Approval Rule Sets

The following procedure describes how to define an approval rule set. Except where specified, the process is the same regardless of whether Virtual Approver or GetApprovers uses the Approval Rule Set.

To define an Approval Rule Set:

1. In the Application Designer, select **File, New**.

The **New** dialog appears.

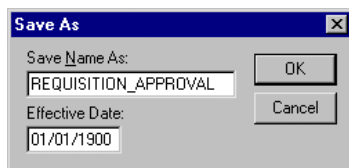


New dialog box

2. In the **New** scrolling list, select **Approval Rule Set**, then click **OK**.

This opens a new Approval Rule Set in the Object Workspace.

3. Save the rule set and assign an effective date.




Save As dialog box

Unless you specifically want to make the Approval Rule Set effective at a particular time, we recommend a standard effective date such as **01/01/1900**.

4. Open the Approval Rule Properties dialog box.

You can access the properties dialog box in several ways:

- Click the  **Properties** button.
- Select File, Properties
- With no objects in the map selected, right-click and select **Object Properties**

The Approval Rule Properties opens, displaying the **General** tab.

The screenshot shows the 'Approval Rule Properties' dialog box with the 'General' tab selected. The dialog contains the following information:

- Name:** ORDER_APPROVAL
- Date:** 1990-01-01
- Icon Descr:** ORDER_APPROVAL
- Comments:** (Empty text area)
- Owner Id:** (Empty dropdown menu)
- Approval Active:** (checked)
- Allow Self Approval:** (unchecked)
- Last Updated:**
 - Date/Time: 11/01/99 4:29:32PM
 - By Operator: PPLSOFT

Buttons for 'OK' and 'Cancel' are located at the bottom of the dialog.

Approval Rule Properties – General tab

On the General tab, you enter descriptive information about the rule set and specify whether to allow users to approve their own transactions.

5. Enter descriptive information about the Approval Rule Set.

Use the **Icon Descr** field to specify a description that appears next to the rule set's name in dialogs listing Approval Rule Sets.

Use the **Comment** field to supply detailed information about this rule set.

If your organization tracks object owners, use the **Owner ID** field to record this information.

The **Last Updated** fields provide read-only information about the time of the last update to the business process map and the user who performed the update.

6. Temporarily suspend the use of this approval rule set (optional).

If you clear the **Approval Active** check box, Virtual Approver won't check the approval rules. Instead, it will automatically approve all transactions.

7. Specify whether users can approve their own transactions.

Select **Allow Self Approval** if users are permitted to approve transactions they've entered. Selecting this option does not mean that transactions are automatically approved; self-approval is still subject to the person's approval limits. For example, if managers can approve purchase requisitions up to \$5000, then a manager who submits a requisition for \$7500 cannot self-approve that requisition even if you allow self-approval.

8. Move to the **Use** tab.

On the Use tab, specify what happens after the transaction is authorized

Approval Rule Properties—Use tab

9. Enter the name of the **Business Process** associated with this rule set.

Although Approval Rule Sets are not represented by physical icons on your workflow maps (business processes and activities), the approval process you're defining is part of a Workflow business process. Enter the name of that business process here. This information is required when you use Virtual Approver.

When you add PeopleCode to call Virtual Approver from the transaction page, this business process is one of the input parameters.

10. Specify the event to trigger when all required approvals have occurred.



This information is for Virtual Approver purposes only; the GetApprovers function disregards this information.

In the **On Authorized** group box, enter an **Activity Name** (associated with the business process you've specified) and **Event Name** to specify what event should be triggered when the transaction is fully approved. Virtual Approver triggers this event when final approval occurs. For example, after a purchase requisition is approved, it would be logical to trigger an event that notifies a buyer that the approved requisition is ready to be fulfilled.

Note that Application Designer enables you to deactivate individual business events. If you deactivate an event that Virtual Approver is supposed to trigger, the event won't be triggered.

11. Specify currency units for the approval rules.

You only need to enter currency information if the approval rules are based on monetary amounts in the transaction.

Currency Options

Enter the **Currency Code** and **Rate Type** used in your approval rules. For example, if a rule requires approvals for amounts over \$1000 US dollars, you need to enter **USD**.

12. Specify the currency unit for the transaction.

Specify the **Currency Record** and **Currency Fieldname** that store the currency code for the data to be evaluated. For example, to evaluate whether a requisition requires approval, you need to know the amount of the requisition and the currency in which that amount is being expressed.



If the currency specified for the transaction being processed is different from the currency specified for the approval rule, Virtual Approver performs the appropriate currency conversion before making the comparison.

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

14. Add approval steps to the rule set.



For more information and instructions on adding approval steps, see *Defining Approval Steps*.

15. Save the Approval Rule Set.



Click the **Save** button on the toolbar or select **File, Save**.

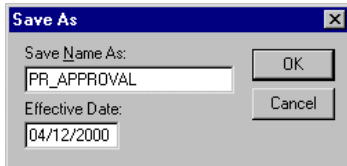
If this is the first time you've saved the map, the **Save As** dialog box appears, prompting you for a name.

Save As dialog box

Enter a name and click **OK**.

To make an effective-dated change to an Approval Rule Set:

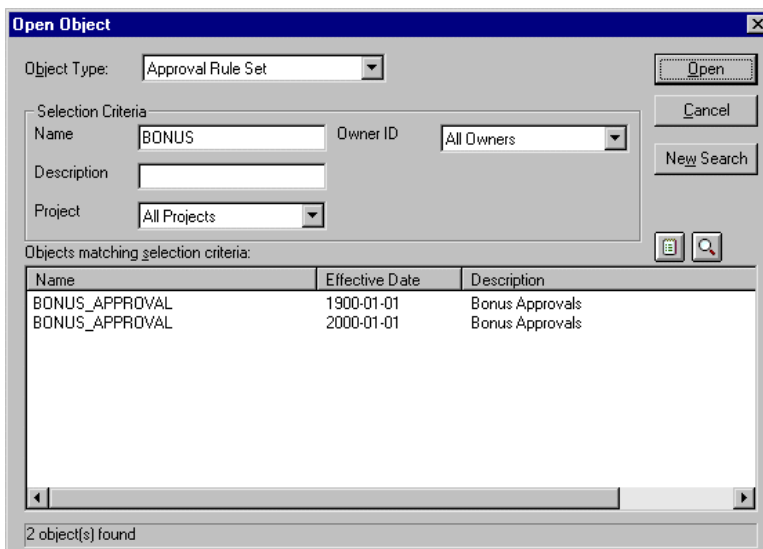
1. Open the Approval Rule Set.
2. Select File, Save As...



Save As dialog box with Effective Date

3. Enter the new **Effective Date**, then click **OK**.

There's now a new object with the same name, but a different effective date. The different effective-dated versions of the object appear separately in the Open Object dialog box.



Open Object dialog box with effective-dated Approval Rule Sets

4. Modify the rules as desired.

Defining Approval Steps

Rule steps are the individual approval steps. Approval rules sets incorporate one rule step for each level of approval that may be required.

When the person who submits something for approval has no self-approval authority, you do not need to include a step for that person. If you choose to include a step for that user so that your graphical map more clearly documents the entire process, you can do so. As long as that user has no authorization authority, Virtual Approver will bypass that user anyway.


If users who submit items for approval have some level of authorization, for example, users can self-approve amounts up to \$100, then the first rule step must represent that approval level.

The following procedures describe how to define rule steps on your Approval Rule Sets.

To add a rule step to a rule set:



This process is the same regardless of whether Virtual Approver or GetApprovers uses the Approval Rule Set.

1. Click the  **Approval Step** button on the toolbar.
2. Click the place on the Approval Rule Set where you want the step to appear
An Approval Step icon appears where you clicked.

To set properties for a rule step:

1. Double-click the rule step icon or right-click it and select **Component Properties**.
The Rule Step Definition appears.

The screenshot shows the 'Rule Step Definition' dialog box with the 'Definition' tab selected. The fields are as follows:

- Icon Descr:** Manager Approval
- Route to Role:** MANAGER
- Equally Authorized Roles:** MANAGER (with 'Add' and 'Remove' buttons)
- On Further Processing:** Both, Workflow Only, Message Only
- Skip to Next Step:** No, Yes, Only skip if cannot authorize
- Message Catalog:** Set: 107 Workflow Administrator, Number: 4 This transaction needs %1
- Step Number:** 2, **Path Number:** A

Buttons at the bottom: OK, Cancel.

Rule Step Definition —Definition tab

Steps 2-7 explain how to use the fields on this tab.

2. Enter an Icon Description.

Use the **Icon Descr** field to specify a description to appear in the dialog boxes that list this type of map. If you leave this field blank, the map name appears by default.

3. In the **Route to Role** list box, select the role that performs this step.

The role you select is the role of the user who will approve items at this step and path. The system verifies this role against the row level rule you set up in step 9 before routing items. Pick a user list role that corresponds to a level within your organization. In approval processes, a person's level typically determines the approval authority.



The Virtual Router portion of Virtual Approver determines who should receive the work item based on the role you specify here in conjunction with the query role assigned to the event in Application Designer. (You specify which event at step 11 in this procedure.) The event's query role needs to accept a role name as a bind variable, as the standard route control roles do.

4. In the **Equally Authorized Roles** field, select all the roles that are qualified to process the transaction at this step.

You have to include at least the role you selected as the **Route to Role**. If you add additional roles, you're specifying that the system should treat those roles as equivalent to the **Route to Role** for purposes of the approval rules.

For example, consider a purchase request process where managers can approve transactions up to \$25,000. If a manager enters a request for \$25,000 or less, Virtual Approver automatically approves it. Now, suppose you also wanted to let system administrators self-approve up to \$25,000. All you need to do is add SYSTEM ADMINISTRATOR to the **Equally Authorized Roles** box. System administrators won't receive transactions routed to them, but they are treated as managers for the requests they submit.

You can also use this field for users who do not normally participate in the approval process, but who have the necessary authority to approve at this level if necessary. This can be useful for exception processing—for example, when the regular approver is unavailable or you need to approve a transaction outside of the worklist. Be aware that even if an equally authorized user handles the approval, the worklist routing in the regular approver's queue will not disappear.

GetApprovers does not return information about equally authorized roles, only about users who actually perform approvals.

Use the **Add** and **Remove** buttons to add users to or remove users from the **All Authorized Roles** box.

5. Specify what the user sees when a transaction requires **Further Processing** for approval.

When a transaction needs further approval, the Virtual Approver can:

- Trigger the specified event to forward the transaction to the next step.
- Display a message to the user, indicating that further approval is required.

You specify which of these actions it should take by selecting one of the options in the **On Further Processing** box on the right side of the page. The default is **Both**.

- Workflow Only** If a transaction needs further approval, Virtual Approver forwards it on to the next step without informing the user.
- Message Only** The user sees a message indicating that the transaction needs further approval, but the transaction doesn't enter the workflow.
- Both** Virtual Approver displays a message asking the user whether to add the transaction to the workflow.

If you pick **Message Only** or **Both**, the message comes from the PeopleSoft Message Catalog. Use the **Message Catalog** setting to specify the **Set** and **Number** of the message that the user sees.

6. Specify whether the system can bypass this approval step if there's additional approval required.

In the **Skip to Next Step** group box, select when, if ever, the current approver should be ignored. Choose one of the following options:

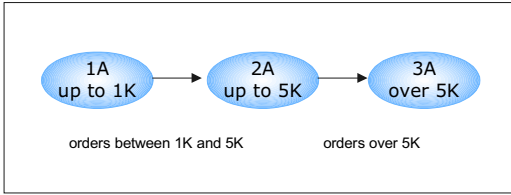
- Yes** If additional approvals are needed, the system always skips this approver. You only use this option when role users can self-approve certain transactions but don't ever approve other people's transactions.
- No** This approval step will not be skipped and the routing will happen. This is true regardless of whether additional approvals are required.

The only time this step is omitted is when a prior approver was able to give final authorization.
- Only skip if cannot authorize** If additional approvals are needed (that is, this approver doesn't have final approval authority), the system skips this approver.

For example, consider a process where an employee can approve requests up to \$1,000, a manager can approve requests up to \$5,000, and a vice president can approve requests up to \$100,000. The **Skip to next step** setting specifies what happens when an employee enters requests over \$1,000 (the self approve amount).

If you choose **No**, the manager (step 2A) gets all orders over \$1,000 for approval. If the order is over \$5,000, the order is subsequently routed to the vice president (step 3A).

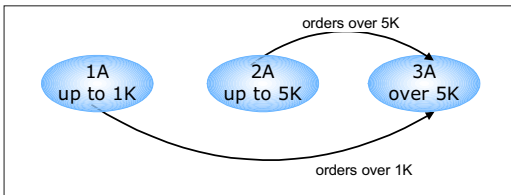
Use this option if you want a strict chain of approval.



Do not skip to next step

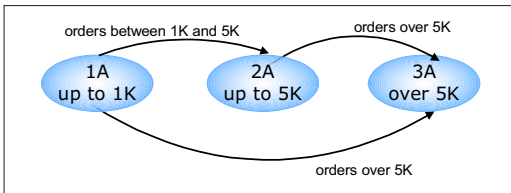
If you choose **Yes**, step 2A is skipped for all orders over \$1,000. Step 2A only comes into effect when a manager enters a request for less than \$5000, the role’s self approval amount. Managers can approve their own orders for up to \$5,000, but they never have orders routed to them. Note that if managers couldn’t self-approve, there would be no need for the manager step. This means that the **Yes** option only makes sense when self-approval is allowed.

Use this option to give one user more authority than another without having users with less authority involved in transactions they can’t approve.



Skip to next step

If you choose **Only skip if cannot authorize**, step 2A is skipped for orders over \$5,000. Step 2A only comes into effect when the order is between \$1000 and \$5000



Only skip if cannot authorize

7. In the **Appr Step** and **Appr Path** boxes, specify which step you’re defining.

Approval processes can have multiple steps (in sequence) and multiple paths (in parallel). Our purchase request example has several steps, but only one path. An example of a process with multiple paths would be one in which requests needed to be approved by the department manager and an office manager before going to a vice president. Here is sequence of steps and paths in this case:

Step	Path	Route to Role
1	A	MANAGER (DEPT.)
1	B	MANAGER

		(OFFICE)
2	A	VICE PRESIDENT

In this example, the system would send two worklist entries when a new request comes in: one to the department manager and one to the office manager. Then, when both of the managers approve the request, the system forwards it to a Vice President.



The easiest way to figure out your approval steps and paths is to consult the activity map for the business process for which you're defining approval rules.

8. Move to the **Rules** tab to specify the approval parameters.

Rule Step Definitions - Rules Tab

You use the fields on the Rules tab to define what items the users at this step have the authority to approve. These are the true approval rules.

9. Specify what transactions the specified role users have the authority to approve.

You can specify what transactions a user can authorize in the following three ways.

If approval requirements are based on a monetary amount, enter the criteria in the **Amount Rule** group box. The user can authorize transactions whose monetary amount is between the values in the **Min** and **Max** fields. The associated **Record** and **Field** specify the record and field containing the amount in the original transaction.

If approval criteria are based on a (non-monetary) quantity, enter the criteria in the **Quantity Rule** group box. The user can authorize transactions where the (non-monetary) quantity is between the values in the **Min** and **Max** fields. The associated **Record** and **Field** specify the record and field containing the quantity in the original transaction.

If the approval criteria are based on the approver's user data, enter the criteria in the **Row Level Rule** group box. There are two methods of obtaining row level criteria: using a **Route Control** or a **SQL Object**.

- If you choose **Route Control**, the range of transactions the user can authorize is determined by the user's route control profile.

The system compares the value from the specified **Record** and **Field** to the user's route control profile. If the value falls in the range to which the route control profile gives the user access, the user can approve the transaction.

For example, if you link role users to vendors as we described in Additional Routing Options, you might want them to be able to approve transactions with a particular class of vendors.

- If you choose **SQL Object**, the range of transactions the user can authorize is some other data stored in the database.

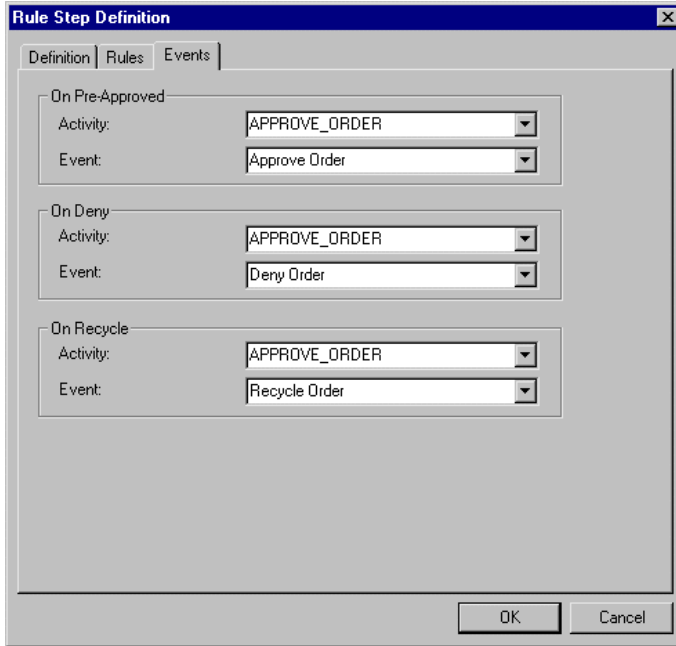
You evaluate the data using a SQL program that you create as an Application Designer SQL Object. After you create the SQL object, enter its name next to the **SQL Object** option. Enter bind variables used in the SQL program in **Record** and **Field**. At most five record and field binds can be used.

For example, if you use the PeopleSoft HRMS products, which store extensive data on reporting relationships within the organization, you could use a SQL Object to specify that a manager is authorized to approve only requisitions submitted by people in that manager's department. Using `order_hdr.deptid` as your bind variable, you could use the following SQL program:

```
Select a.oprid from psoperalias a, ps_dept_tbl b where a.emplid = b.emplid
and b.deptid = :1
```

You can specify more than one authorization rule for any rule other than **SQL Object**. To add additional authorization rules, just enter data in multiple grid rows. For example, you could base the routing on more than one route control **Field**. The number in the **Seq** field is incremented for each rule you add. You can also use multiple authorization types for a single step. In this case, the user can only authorize transactions that meet *all* the specified rules for this step.

10. Move to the **Events** tab to specify which business events are triggered, depending on the action of the approver at this step.



Rule Step Definition - Events tab

At each step in an approval process, the person reviewing a transaction has three options: approve it, reject it, or send it back to the previous step (recycle). The **Pre-Approved Activity/Event** box specifies what happens when the person approves the request. You can also specify a **Deny Activity/Event** and a **Recycle Activity/Event**. For example, if a request is denied, you might want to trigger an event that sends an email message to the requester.

If you don't pick an event for these actions, the system changes the status of the transaction, but doesn't route it anywhere.

11. In the **Pre-Approved Activity/Event** group box, select the business event to trigger when this approver approves the transaction.

For the first step in the process (Step 1), this is the event to trigger when a user enters a new transaction. For subsequent steps, it's the event to trigger when the user performing the current step approves the transaction, but it requires further approval. In either case, the event needs to forward the transaction to the next step. These settings are required; you must identify a pre-approved activity and event.

You define each event as part of an activity in Application Designer. Select the activity name from the **Activity** list box and the event name from the **Event Name** box.



Virtual Approver triggers this event when the transaction requires further approval—when the user who approves it doesn't have sufficient authority to make a final approval, according to the rules you defined on the previous page. If the user does have the authority to approve the transaction, Virtual Approver triggers the Approval Activity/Event for this approval rule set, which you specify in the properties for the overall Approval Rule Set.

12. Specify what events to trigger if the user denies or recycles the transaction.

13. Repeat this entire procedure for each step in the approval process.
14. Click **OK** to close the properties.

Maintaining Approval Rules

Over time, your business rules may change. Perhaps you once required managerial approval for purchases over \$100 and now you only require approval for purchases over \$500.

You can maintain approval rules in the same place you create them—in the Rules tab of the rule step property sheet. But if you prefer to expose the rules to your users so that they can update the rules without going into Application Designer, you can use the Approval Step Maintenance page.

To maintain approval rules:

1. Select PeopleTools, Workflow Administrator, Use, Approval Step Maintenance.
2. Search for an existing Approval Rule Set, Approval Path, and Approval Step.

Use the standard search method to identify your approval rule and access the Approval Step Maintenance page.



This page shows only one rule at a time; the page does not provide an overview of how all the rules fit together in the approval rule set. Therefore, in order to use this page effectively, users need to be able to identify the approval rule sets and their embedded paths and steps.

Approval Step Maintenance

Approval Rule Set ORDER_APPROVAL **Effective Date** 01/01/1990

Approval Step 1 **Approval Path** A

Amount Rules			
View All	First	1 of 1	Last
Minimum	Maximum	Record	Panelfield
1 0.00	1000.00	DERIVED_ED_SVCS	GRAND_TOTAL

Quantity Rules			
View All	First	1 of 1	Last
From Quantity	To Quantity	Record	Panelfield
1 0.00	0.00		

Save
 Return to Search

Approval Step Maintenance page

3. Update the **Amount Rules** as necessary.

If approval requirements are based on a monetary amount, enter the **Amount Rules**.

The user can authorize transactions whose monetary amount is between the values in the **Minimum** and **Maximum** fields.

The monetary amount that will be evaluated comes from the associated **Record** and **Panelfield** (field). Normally you will not change these values in the page, as doing so may require additional modifications that can only be made in Application Designer.

4. Update the **Quantity Rules** as necessary.

If approval criteria are based on a (non-monetary) quantity, enter the **Quantity Rule**.

The user can authorize transactions whose monetary amount is between the values in the **From Quantity** and **To Quantity** fields.

The quantity that will be evaluated comes from the associated **Record** and **Panelfield** (field). Normally you will not change these values in the page, as doing so may require additional modifications that can only be made in Application Designer.

5. Review all the rules.

If you specify a more than one authorization rule for any step, users can only authorize transactions that meet *all* the specified rules.

6. Save the page.

Triggering Virtual Approver Routings

Once you create your Approval Rule Sets, the steps for developing a Virtual Approver approval process are basically the same as for any other business process. You define your roles, events, and routings just like you always do. When you set your event triggers, however, instead of using the TriggerBusinessEvent PeopleCode function, you use a pair of functions that trigger routings based on the Approval Rule Set you specify. In order to access these functions, you must first add special Work Pages to the component where the event is triggered.

Adding Workflow Work Pages

Every component that uses Virtual Approver PeopleCode (the Virtual Approver and Virtual Router functions) needs to include the pages WF_FUNCTIONS_01 and APPR_WRK_01. These special work pages load several important workflow PeopleCode functions into memory. For example, if you're using route controls, WF_FUNCTIONS_01 enables the system to determine which route control types are relevant for the event you're triggering.

To add the work pages to a component:

1. In Application Designer, open the component.

2. Add WF_FUNCTIONS_01 and APPR_WRK_01 to the list of pages in the component.
3. Save the component.



For more information about adding pages to components, see [Creating Component Definitions](#).



Under normal circumstances, after adding a page to a component, you'd go to Security Administrator and grant users access to the page. However, since WF_FUNCTIONS_01 and APPR_WRK_01 are work pages, you don't want users to see them or have access to them.

Adding Virtual Approver PeopleCode

We designed Virtual Approver to vastly simplify the PeopleCode you have to write for approval processes. Rather than writing complex PeopleCode programs, you define the approval rules using pages in the Workflow Administrator, then use two simple PeopleCode functions to check those rules.

After you've added the Virtual Approver Work pages to the component with the page where the triggering event occurs, you must add both SaveEdit PeopleCode and Workflow PeopleCode to the record definition that's associated with that page.

- The SaveEdit PeopleCode uses the Virtual_Approver PeopleCode library function to check the approval rules you defined in the Workflow Administrator and determine whether an item needs to be routed for approval.
- The Workflow PeopleCode uses the Virtual_Router PeopleCode function to route items to the next step in the approval process.



The Virtual_Router PeopleCode library function is located in the FieldFormula event of the APPR_VA0_WRK.FUNCLIB_02 record field. The Virtual_Approver function is located on the FieldFormula event of the APPR_VA0_WRK.FUNCLIB_01 record field.

You must add the SaveEdit and Workflow PeopleCode to the same record field.



For more information about Workflow PeopleCode in general, see [Defining Event Triggers](#).

SaveEdit PeopleCode

This is the general structure of the SaveEdit PeopleCode program:

1. Declare the external workflow functions `Get_RoleUser` and `Virtual_Approver`.
2. Set values in the `APPR_FIELDS_WRK` work record to give the `Virtual_Approver` function the data it needs to check the approval rules. You need to set these values:
 - The name of the role user attempting to approve the transaction.
 - The business process and approval rule set you want `Virtual_Approver` to use.
 - The approval action that the current user gave to the current work item. The valid status values are A (Approve), D (Deny), or R (Recycle).
3. Use the `Virtual_Approver` function.
4. Set the approval status record field to the value that `Virtual_Approver` returns: A (Approved), D (Denied), and P (Pending).

You can enter the code below exactly as it's shown, replacing the values in angled brackets with the values that are appropriate for your application.

```

/* Declare the Virtual Approver workflow functions */
declare function Get_RoleUser PeopleCode APPR_VA0_WRK.ROLEUSER FieldChange;

declare function Virtual_Approver PeopleCode APPR_VA0_WRK.FUNCLIB_01
FieldFormula;

/* Get the role user name for the current user */

&USERID = %UserId;

Get_RoleUser(&USERID, &EMAILID, &FORMID, &EMPLID, &ROLEUSER);

/* Set values in the work record for Virtual Approver */

APPR_FIELDS_WRK.ROLEUSER = &ROLEUSER;

APPR_FIELDS_WRK.BUSPROCNAME = BUSPROCESS.<BusProcessName>;

APPR_FIELDS_WRK.APPR_RULE_SET = <approval_rule_set>;

APPR_FIELDS_WRK.APPR_ACTION = <approval_action>;

APPR_FIELDS_WRK.APP_ROW_NUMBER = <current_row_number>;

/* Call the Virtual Approver */

Virtual_Approver();

/* Set the application record's approval status field to the value
Virtual_Approver returns */

<status_record_field> = APPR_FIELDS_WRK.APPR_STATUS;

```

Here's what the variables in this code represent.

<i>BusProcessName</i>	The name of the business process whose approval rules to use.
<i>Approval_rule_set</i>	The name of the approval rule set you want Virtual_Approver to use to determine whether an item needs further approval.
<i>Approval_action</i>	The approval action you want to give Virtual_Approver as input. Usually, <i>approval_action</i> is the name of the record field in which the user sets the approval status. It could also be one of the string constants P, D, or R.
	Note. If the user specifies the approval action at level 0 on the page—that is, if the user specifies a single approval action for the entire page—a good practice is to include the field APPR_FIELDS_WRK.APPR_ACTION on the page and let the user set it directly. However, this direct approach doesn't work if the user needs to specify approval actions for each row in a scroll. You need to have the user set the action in another field, then transfer the value to the APPR_ACTION field prior to the Virtual_Approver call.
<i>Current_row_number</i>	The current row number in the scroll. Setting this field is not necessary at level 0.
<i>Status_record_field</i>	The record field that holds the approval status of the transaction, such as Purchase Request Approval Status.

Virtual Approver PeopleCode

The Workflow PeopleCode for Virtual Approver is short and sweet. Here's what it looks like:

```
declare function Virtual_Router PeopleCode APPR_VA0_WRK.FUNCLIB_02
    FieldFormula;
    APPR_FIELDS_WRK.APPR_VR_ROW = <scroll_info>;
    Virtual_Router();
    if None(APPR_INSTANCE) then
        APPR_INSTANCE = APPR_FIELDS_WRK.APPR_INSTANCE;
    endif;
```

The ***scroll_info*** is a number. If you're calling the router from Level 0, ***scroll_info*** is 0; if you're calling it from a scroll, ***scroll_info*** is the row number of the current row in the scroll. If you're calling from a level 1 to level 3 scroll, use the CurrentRowNumber PeopleCode function.

The if statement assigns an Instance ID to a transaction if it doesn't already have one.

Reviewing Approval History

The Approval Instance Log in the Workflow Administrator enables you to see the history of a work item as it passed through the steps of the approval process. You can find out which role users reviewed the item, what action they took, and the item's status.

To review a work item's approval history:

1. Click PeopleSoft, Workflow Administrator, Inquire, Approval Instance Log.
2. Enter the Approval Instance ID of the work item in which you're interested.

A work item's Approval Instance ID is part of its worklist entry. You can find it by looking at the worklist entry in the Worklist page (if you have access to the worklist) or by using the Worklist Monitor.

When you enter the Approval Instance ID, the Approval Instance Log page displays the data for the specified item.

The screenshot shows the 'Approval Instance Log' page. At the top, it displays 'Approval Instance: 12'. Below this is a table with the following data:

Approval Step:	0
Approval Path:	A
Approval Instance Status:	I Initiated
Approving Name:	
Approving User:	DeHaven,Joanne
Date/Time Action Taken:	09/14/1995 4:08:01PM
Business Process Name:	Purchase Request
Approval Rule Set:	PR Approval

At the bottom of the page, there are two buttons: 'Save' and 'Return to Search'.

Approval Instance Log page

3. Scroll through the steps in the process.

When you first open this page, it displays the information about how the work items entered the workflow (step 0, with the status Initiated). Scroll to review the information for each subsequent step. The **Approval Instance Status** for the last available step is the current status of the work item.



For more information, see Monitoring Workflow.

Delivered Virtual Approver Objects

PeopleSoft applications include some Virtual Approver objects that you will find helpful as you develop your Virtual Approver applications.

Virtual Approver Templates

We deliver PeopleSoft applications with some of the most common approval processes already set up for you. For example, PeopleSoft Payables uses a Virtual Approver-based business process to streamline voucher processing. So in many cases you'll probably be adapting an existing process rather than developing an entirely new one.

To adapt the approval rules for an existing business process, just open the approval rule set for that process and update with the rules that apply to your business. Because approval rule sets are managed objects within Application Designer, PeopleSoft's upgrade tools help you manage upgrades. That's the beauty of our table-driven approach to approval processing.

User List Roles for Organizational Levels

Some of the Virtual Approver processes delivered with your PeopleSoft applications make use of user list roles that PeopleSoft has already defined: EMPLOYEE, MANAGER, VICE PRESIDENT, and so on. Virtual Approver uses these roles to specify the levels of authorization authority a user has.

Although we deliver these default roles, you must make sure the set of roles accurately reflects the levels in your company and that they're assigned to the right users.



For more information about roles and role users, see [Defining Roles and Users](#).

GetApprovers PeopleCode

GetApprovers PeopleCode determines the entire list of required approvals based on the rules defined in an Approval Rule Set. GetApprovers evaluates all approval steps at once so that you can get a complete list of approvers from the entire approval chain.

Typically, you'll put GetApprovers in the Workflow PeopleCode for the transaction that requires approval.

Syntax

```
GetApprovers(approval_rule_set, evaluation_fields_rowset, approvers_rowset,
  approvers_record)
```

Sample Code

```
GetApprovers("ORDER_APPROVAL", GetLevel0(),
  GetLevel0() (1).GetRowset(Scroll.APPR_USERLIST), "APPR_USERLIST")
```

Parameters

- The Approval Rule Set name
- The rowset containing the fields that the rules evaluate. The records and fields referenced by the Approval Rule Set need to be at the current level—that is, the same level as the call to `GetApprovers`.
- A rowset created from the record `APPR_USERLIST`. `GetApprovers` adds rows for each required approval.
- The record name where the returned approver data is stored.

Description

The `GetApprovers` function performs the following tasks:

- `GetApprovers` evaluates each step in the Approval Rule Set.
- When the rules for a step indicate that no approver is necessary, `GetApprovers` ignores the step.
- When the rules for a step indicate that an approver is required, `GetApprovers` obtains the Role User(s) for the step. `GetApprovers` identifies the Role Users using the method defined in the step: either with a SQL object or with a Route Control.
- Once every step has been evaluated, the results are returned to the calling program in the form of a rowset object.

Returns

`GetApprovers` returns a rowset with the following data for each required approver:

- `ROLEUSER`
- `ROLENAME`
- `STEP`
- `PATH`

GetApprovers also inserts this data into a record you specify.



If you create a page to display the data that GetApprovers returns, you may want to include additional information such as the users name or email address. Use related display fields to display such information.

CHAPTER 12

Designing Activity Guides

Activity guides are navigational aids for end users. An activity guide integrates a single map into the related transactional pages. Although activity guides can benefit all users, they are particularly appropriate for guiding untrained users through self-service transactions.

What Are Activity Guides?

Certain situations require users to complete a number of tasks, often on a number of different pages. Activity guides provide an easy-to-use format for identifying the tasks and navigating through them.

An activity guide appears as a navigation bar across the top of a page. Within the bar, you can see each of the steps involved in the activity. Clicking a step takes you to the page where you can complete the step; the navigation bar remains visible as you move from page to page.

For example, PeopleSoft provides a self-service application to help newly married employees update their benefits, tax withholding, and other relevant information. The activity guide at the top of the page shows the steps a newly married employee needs to take.

The screenshot shows a web interface for a "Marriage Life Event". At the top, there is a navigation bar with five steps: "Change Status", "Review Benefits", "Personal Information", "Tax Information", and "Direct Deposit". The "Review Benefits" step is currently active and highlighted in blue. Below the navigation bar, the main content area is titled "Request Marital Status Change" and is for user "Antonio Santos". It contains a form with the following fields: "Current Marital Status" (Married), "*Change Marital Status To:" (a dropdown menu), and "*Date Change Will Take Effect:" (a date picker with a calendar icon and an example "12/31/2000"). There are three buttons: a yellow "Submit" button, a grey "Back" button, and a yellow "Next" button. A legend at the bottom left indicates "* Required Field".

Marriage Activity Guide page

Activity guides are particularly useful in self-service applications, where the guide provides casual users with both an organized view of the necessary tasks and an easy means of navigating the system to complete those tasks. Several of the self-service applications PeopleSoft delivers already incorporate activity guides.

But because the activity guide tool is part of PeopleTools, every PeopleSoft application has the ability to use this powerful feature. Using the activity guide tool, you can create a visual outline for a business process and then use that visual outline to walk users through the steps necessary to complete the process. And because the activity guide is simply getting you to the same PeopleSoft pages you always use, all PeopleCode, including data validation and workflow events, occurs as it should.

The activity guide tool offers a lot of flexibility in defining activities. You can specify the order of the steps, which steps are optional, and which are required.

Developing Activity Guides

You create an activity for an activity guide much as you create an activity for a workflow application: You create the new activity and add steps corresponding to the pages that make up the activity. There are, however, a few extra options you need to set.

Once you create an activity guide, you need to modify the target pages for each step so that those pages display the activity guide.

The pages don't show the activity guide when you use the standard PeopleSoft navigational structures (the portal or PeopleSoft's menu navigation). Therefore, your final task is to create a mechanism for users to access the activity.

Creating Activities

To create an activity for use in an activity guide:

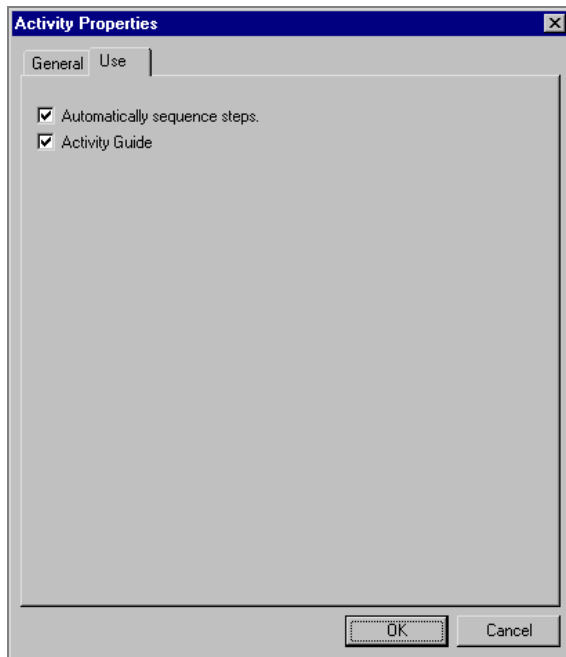
1. Create a new activity.



For more information about creating activities, see [To build a map](#).

2. Access the **Use** tab on the activity properties.

Open the properties sheet by double-clicking in the map (but not on an object in the map). When the properties appear, move to the **Use** tab.



Activity Properties dialog box - Use tab

3. Select Activity Guide.

This is necessary so that the system recognizes that this activity can be used in an activity guide.

4. Select Automatically sequence steps (optional).


After you add steps to an activity, you arrange the steps into a logical sequence. You arrange them visually using connecting arrows, and you also assign each step a number.

If you select **Automatically sequence steps**, then the step numbers (and, if necessary, the path numbers) are automatically assigned when you save. The step and path numbers are based on the order in which you draw the connecting arrows. This is an efficient way to order the steps.

5. Add steps corresponding to the pages that make up the activity.



For more information about adding steps to an activity, see [To add an icon to a map](#).

6.  Arrange the steps, using connectors to put the steps in order.

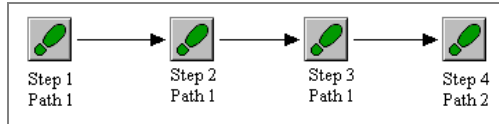
To connect two steps, click the connector icon, then click the first step, then click the second step. Repeat until all steps are connected.



For more information about how to draw connectors between steps, see [To connect icons within a map](#).

You have two options when you arrange the steps: sequential or parallel paths.

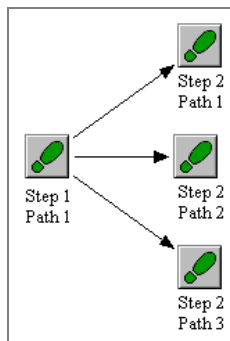
In a sequential path, the steps form one unbroken sequence.



Steps forming a sequential path

In the activity guide based on this activity, users must complete the steps in the specified order. Users cannot go from step 1 directly to step 3; step 3 remains disabled until the user completes step 2.

When you create parallel paths, the steps still appear in the activity guide as a single row, but the user has more flexibility in choosing which step to do. This is because the user can go directly to any step whose immediate predecessor has been finished. For example, the parallel paths diagram pictured here allow a user who completes step one to go directly to the step 2 on any of the three paths.



Steps in parallel paths

7. Double-click a step.

The **Step Definition** dialog box appears.

Step Definition dialog box



For more information about the options in the Step Definition dialog box, see [To set properties for Step icons in an activity](#).

8. Enter a Name and Icon Descr.

Type a unique name for the step in the **Name** text box. By default, the step name also appears as the display text under the icon on the business process.

To display different text under the icon, enter it in the **Icon Descr** text box. This is the text that appears in the activity guide.

Although manual line breaks in the **Icon Descr** field are recognized in the design environment, be aware that the line breaks do not appear in activity guides.

Enter a more detailed explanation of the step in the **Description** text box.

9. Enter the step number and path number for each step.

If you're manually ordering steps, you need to enter a Step and Path for each step in the activity. Double-click or right-click the step icon to bring up the **Step Definition** and enter the appropriate **Step Number** and **Path Number**.

If you've chosen to automatically sequence steps, the step and path number are automatically updated when you save the activity. However, even if you choose this convenience, you should check the step and path number after saving to verify that the steps are ordered the way you intended.

10. Click the **Attributes** button.

The **Step Attributes** dialog box appears.

Step Attributes dialog box

11. Indicate that the step is processed by a page.

Select **Page** in the **Processed by** group box of the dialog box. The **External Program** option is not supported for activity guides.

12. Give directions for launching the page.

Select the page from the list boxes in the **Processing Page** group box.

In the **Action** list box, select what type of activity the user needs to perform on the database: **Add**, **Update/Display**, **Update Display/All**, or **Correction**. When a user selects this step, the system displays the specified page in the specified action mode.

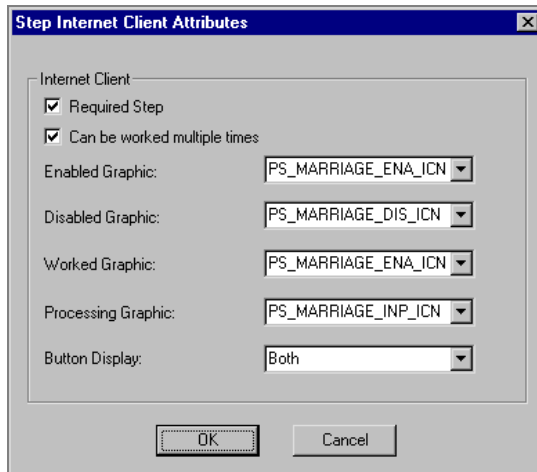


You must assign a page to a menu before you create a step that navigates to it. For more information about assigning pages to menus, see *Creating Menu Definitions*.

13. Click the **OK** button to close the Step Attributes dialog box.

14. Click the **Activity Guide** button.

The Step Internet Client Attributes dialog box appears.



Step Internet Client Attributes dialog box.

15. Configure your activity guide options.

Required Step is not currently used by activity guides. However, if you want to create your own programs to enforce required steps, you can use this option to identify them.

Select **Can be worked multiple times** if you want user to be able to return to an already worked step. When this option is active, the activity guide hyperlink that brings up the step stays active even after the step is worked. When this option is inactive, the hyperlink is disabled after the user finishes the step.

The **Button Display** determines what users see as they use the activity guide.

Link (text)

Each step is represented by the text you used as the icon description. This text is a hyperlink to take the user to the page represented by the step.

Graphic

Each step is represented by an icon. The icons are not hyperlinks, so if you choose this option, the user isn't able to use the activity guide to navigate from page to page. Instead, the user must rely on the Back and Next buttons that appear in related pages. Use this option if you want the Back and Next buttons to be the only navigation objects in the activity guide.

Both

Users will see both an icon and a hyperlink. This is the default option.

16. Add graphics to represent different the possible statuses of the step (optional).

If you choose to display either graphics or both graphics and text in your activity guides, you need to specify which graphics to use. You should specify four graphics, one for each possible step status. You can use the same graphic for multiple statuses.

Enabled Graphic	<p>This graphic is used for the next step after the step currently in process. If you've defined parallel paths, multiple steps can be simultaneously enabled.</p> <p>If you've enabled both graphics and links, the accompanying link is active.</p>
Disabled Graphic	<p>This graphic is used for steps that the user cannot yet start.</p> <p>If you've enabled both graphics and links, the accompanying link is inactive.</p>
Worked Graphic	<p>This graphic is used for steps that the user has completed.</p> <p>If you've enabled both graphics and links, the accompanying link is inactive, unless you have marked the step as one that can be worked multiple times.</p>
Processing Graphic	<p>This graphic is used for steps that the user is currently working on.</p> <p>If you've enabled both graphics and links, the accompanying link is inactive.</p>

You can select any graphic in the PeopleSoft image catalog. To use a custom graphic, you must first add it to the catalog.



For more information about adding images to the catalog, see [Creating Image Definitions](#).

17. Repeat steps 7-16 for each step in the activity.

18. Save the activity guide.

Creating Activity Guide Pages

The pages that are accessible through activity guides are standard PeopleSoft pages. However, in order for the page to appear in an activity guide, it needs two elements that wouldn't otherwise be present. Look at the marriage activity guide to see those two elements:

Activity Guide page

- There’s a bar across the top where you see an overview of all the steps in the activity. In addition to providing information about the activity, this bar provides navigational links to take the user to the pages associated with each step.
- You see Back and Next buttons in the main transaction area. These buttons provide an alternate means of navigating from step to step.



Even after you’ve added the two activity guide elements to a page, you can continue to keep that page accessible through the regular PeopleSoft menu structure. The activity guide elements aren’t visible when the page is accessed that way.



For more information, see Setting Up Access to Pages.

These modifications are only visible when you access the page in activity mode. If you use the PeopleSoft Portal or PeopleSoft menu navigation, the activity guide modifications are invisible. This is important because it enables you to use the same pages in activity guides as you do throughout your PeopleSoft system.

To add an activity guide to a page:

1. Open the page in Application Designer.
2. Add the ACTIVITY_GUIDE_SBP subpage to the page.

PeopleSoft's convention is to place the `ACTIVITY_GUIDE_SBP` subpage across the top of the page.

3. Add the `ACTIVITY_NEXT_SBP` where you want the Back and Next buttons to appear.

PeopleSoft's convention is to place the `ACTIVITY_NEXT_SBP` subpage in the lower right corner of the page.

4. Save the page.

The two subpages you've added only appear when a user navigates to the page in activity guide mode. If you navigate to the page in regular page mode, these sections are hidden, and the page looks just like it did before the activity guide subpages were added to the page.

Setting Up Access to Pages

The pages that are accessible through activity guides are standard PeopleSoft pages that you can add to menus or access through the PeopleSoft portal. If you access the pages in a special activity guide mode, you see the activity guide functionality; if you access the pages using standard PeopleSoft menu navigation, the activity guide functionality is invisible. This means that you can use the same pages both in the standard navigation and in activity guides.

This topic explains how to access pages in activity guide mode.

Understanding Activity Guide Mode

Links that take you to a PeopleSoft page include an `ICType` parameter to control whether you access a page in activity guide mode. There are two `ICTypes` that can be used to access a page in activity guide mode; when you use these `ICTypes`, the URL also takes an additional parameter to identify the activity.

- Worklist links (whether delivered by a worklist or by email) use the value `ICType=Worklist`, which takes the `&Activity` parameter. The `&Activity` value is the activity that triggers the worklist item. The link, however, takes you to the activity that actually works the item. Worklist links put pages in activity guide mode only when the activity that works the item is marked as an activity guide.
- You can create custom links that use the value `ICType=LifeEvent`, which takes the `&ActName` parameter. The `&ActName` value is the actual activity guide. The `ICType` and `&ActName` values persist through subsequent PeopleCode page transfers. You drop out of `ICType=LifeEvent` when you use the standard menu navigation.



The `ICType` automatically changes so that you return to regular page mode when you use standard menu navigation. To manually reset the `ICType` without leaving the activity guide, use the `FinishActivityGuide()` function. This function is in `PSACTIVITYGUIDE.ACTIVITYNAME.RowInit()`.

The key concept here is that the page itself is viewable in activity mode or in regular page mode. In order for a user to get into an activity guide, the link that takes the user there must be specially constructed. So the crucial last task you must perform when developing activity guides is setting up that access, either by creating a worklist item or by constructing a custom link.

Accessing Activity Guides Through Worklists

Worklist links are generated when a transaction triggers a workflow event that sends a routing to the worklist. The workflow event is part of a business process and activity that were defined when the workflow application was built.

In worklist links, the &ActName value is name of the workflow activity where the event gets triggered, not the name of the activity guide that works the item. But when resolving a worklist link (identifiable because the ICType=Worklist), PeopleSoft determines the name of the activity that works the event and, if that event is an activity guide, puts the page in activity guide mode.

Once you understand this, you can see that you can direct users to activity guides from their worklists. To do this, you build a workflow application with a page where the user initiates the workflow event. The user then receives a routing—either in a worklist or by email—with a link that takes the user to the activity guide.

For example, you could create a page where users update their marital status. This page isn't part of an activity guide; it's a regular PeopleSoft page accessible through regular menu navigation. Behind the page, you create a workflow application that is worked by the Marriage activity. As long as the Marriage activity is marked as an activity guide, the workflow link that takes users to this activity ends up seeing the page in activity guide mode.

The advantage of using workflow to access activity guides is that the necessary link is automatically created by standard workflow processing. You don't need to create the link manually, nor do you need to understand the syntax of the link.

The downside to using workflow to access activity guides is that from your users' perspectives, there are two separate transactions involved: the one that triggers the workflow routing and then, after the user has received the routing, the one that works the item.

Accessing Activity Guides Through Custom Links

If you don't want to use a workflow application to provide access to an activity guide, you need to provide users with custom navigation that enables them to reach the page in activity guide mode.

The advantage of using custom navigation is that users can complete all the steps in one session. They don't have to go from the PeopleSoft system to a workflow notification and back to the PeopleSoft system.

The downside of using a custom link is that you can't rely on PeopleSoft to create the link for you; you need to understand the proper link syntax and manually code the link in PeopleCode.

The following procedure outlines one approach to creating custom links:

To transfer a user to an activity guide:

1. Set up a component with a single blank page.

This page acts as a transfer point only; users accessing the page are automatically transferred elsewhere without ever seeing the blank page.

2. Add the component to a menu.

This enables the user to reach the page by regular menu navigation.

3. Transfer the user from the blank page to the activity guide.

Use component PreBuild PeopleCode to transfer the user to another page in activity mode. Because the transfer occurs in the component PreBuild PeopleCode, the user never sees the blank page in the component.

For example, the following code checks to see if the user is in activity guide mode, and if the user is not (which is always be true, because users access this page through menu navigation), then the code uses the ViewURL function to transfer to another page. The URL consists of the following parts:

- The URI: the part of the URL that is universal throughout your PeopleSoft implementation.
- ICType and &ActName: the parameters that move you into activity guide mode.
- &Menu and &PanelGroupName: the parameters that indicate the first step in the activity guide. It's important to note that you still need the menu and component information; the system does not derive this from the &ActName.

```
If %Request.GetParameter("ICType") <> "LifeEvent" Then
    ViewURL(%Request.RequestURI |
"?ICType=LifeEvent&ActName=MARRIAGE&Menu=LIFE_EVENTS&Component=MARRIAGE_GUIDE");
End-If;
```

The URL that is created looks like this:


```
http://servername/servlets/iclientservlet/peoplesoft8/?ICType=LifeEvent&ActName=
MARRIAGE&Menu=LIFE_EVENTS&Component=MARRIAGE_GUIDE
```

You don't have to transfer directly to the activity guide. You can, instead, transfer to a welcome page that introduces the activity. You have to include the activity guide subpages on the welcome page in order to put users in activity guide mode, but you can hide the subpages so that they never appear, regardless of mode.

Marriage Life Event





This is a good time to consider how joining with another person into one household may affect your health care coverage, life insurance, tax withholdings, and other important choices.

This guide will take you through all the steps necessary to ensure that your personal profile, benefits, and payroll information are updated to reflect this important event in your life.



Click Start to begin or continue the life event process.

Start

Steps	Description
 Change Status	To change your benefit choices, you must first complete the Marital Status Change form.
 Review Benefits	Review your current benefits summary.
 Personal Information	Review your current name, address, phone numbers, email address, and emergency contacts.
 Tax Information	Review and update your federal tax information.
 Direct Deposit	Review and update your direct deposit information.
 Voluntary Deductions	Review and update your voluntary deductions.
 Benefits Enrollment	Find out how to add new dependents or make changes to your current benefits choices.

Marriage Activity - Welcome page

Notice that the welcome page includes a standard transfer button that users can press to move to the first page in the activity guide. As long as users are viewing the welcome page in activity guide, they stay in activity guide mode during that transfer.

Using Activity Guides

Using an activity guide is very straightforward; you see an activity use guide to move through the various pages you need to complete.

The guide appears at the top of each page used to complete the steps in the activity. The guide includes some combination of links that you can use to move from step to step and icons to help you recognize the status of each step. As you move to a step, the appropriate page loads into the transactional area of your browser, but the activity guide stays in place. The transactional area also has Back and Next buttons that provide another means of moving from step to step.

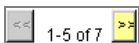
When you start an activity, you see the page that corresponds to the first step. For example, when you start the Marriage activity (where newly married employees can update certain information relevant to their new marital status), you start at the Change Status step.

Starting an activity

Reviewing the Steps in an Activity

The activity guide shows a row of steps—up to five steps at a time. Normally you see an icon and some descriptive text for each step. (It’s possible to have activities with only icons or only text, but it’s more common to have both.)

An indicator in the lower right corner of the activity guide tells you how many total steps are in the activity and which group of steps is currently visible.



Total steps in an activity

Use the << and >> buttons to scroll to any additional steps that you can’t see. These buttons do not affect which page appears in the transactional area; they simply enable you to look ahead or look back at the list of steps in the activity.

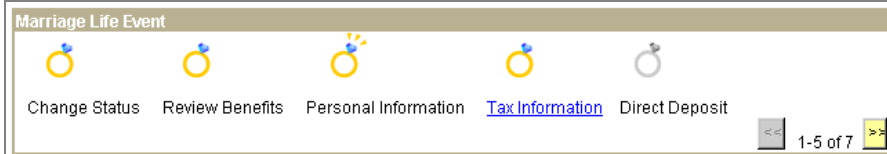
Understanding Step Status

As you proceed through the steps, the icons and text in the activity guide change to indicate the status of the step. Depending on how the activity is defined, up to four different statuses are possible, each with its own icon.

Status	Hyperlink	Comments
Disabled	Inactive	You cannot yet start this step. Before you can start this step, you have to complete the previous step. This status is used when you must complete the steps in sequence; it is used for future steps.

Status	Hyperlink	Comments
Enabled	Active	You have not started the step, but you can start now, if you like. You normally see this status when an activity includes parallel steps—that is, steps that you can work on in any order. You also see this status when you finish working one step and before you start working on another.
In Process	Inactive	You are currently working on this step.
Worked	Active or Inactive	You have completed the step. If you are permitted to work the step multiple times, the hyperlink is active; if you are not permitted to work the step multiple times, the hyperlink is inactive. You can always return to a worked step using the Back button on the page.

For example, if you are on the third step of an activity that requires you to complete all steps in sequence and does not permit you to work the step multiple times, then the first two steps are worked, the third step is in process, the fourth step is enabled, and all steps after that are disabled. Although the status is not explicitly stated, you can see that there are different icons for each status.



Icons and hyperlinks indicate the status for each step

Stepping Through an Activity

There are two ways to navigate from step to step:

Use the Back and Next buttons to go to the previous or next page in the sequence. This is based on the page currently in the transaction area. If the step to which you’re navigating is not currently visible in the activity guide, the activity guide also updates to display the group of steps that includes the current transaction.

Alternatively, if the activity guide includes an active hyperlink for a step, you can simply click the hyperlink.

Leaving a step signifies that that current step is complete. As you complete each step, it gets a date and time stamp noting that you’ve finished. This means that if you stop before finishing all steps in an activity, you can return within 30 days and pick up right where you left off.

Once you finish all steps, the Back and Next buttons are no longer available. You can still use the activity guide scroll to review all the steps in the activity, but the hyperlinks for the different steps are available only if the step definitions specify that the steps can be worked multiple times.

Alternatively, you can create PeopleCode to transfer the user to another page once the last step in the activity is complete. However, this functionality is not part of the standard activity guide processing.

If you reenter an activity after completing it, you can start over at the beginning.

CHAPTER 13

Designing PeopleSoft Navigator Maps

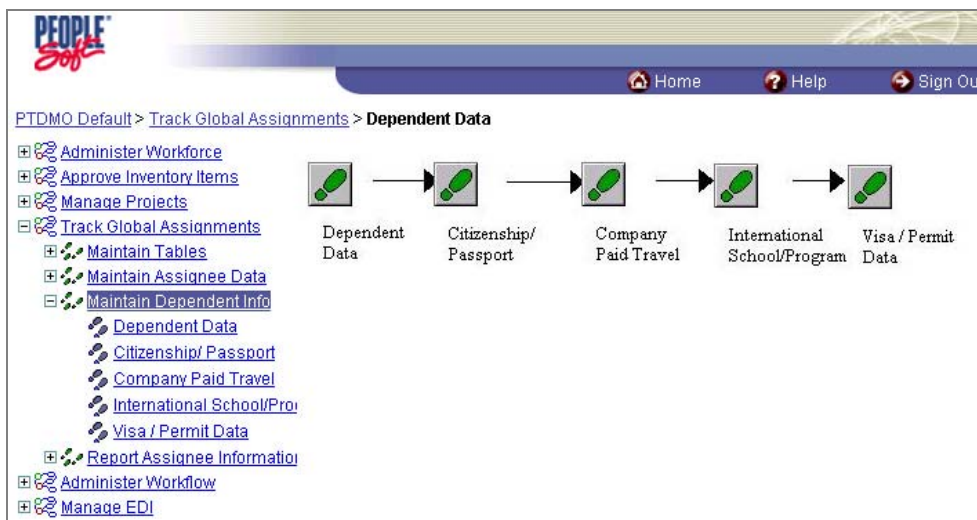
PeopleSoft Navigator is a tool that enables end users to see workflow maps according to their hierarchical relationships. Users can browse the maps and navigate to individual pages by clicking the map elements representing the pages.

This chapter explains how to use Workflow maps in Navigator.

Understanding PeopleSoft Navigator

Users access PeopleSoft Navigator by selecting **PeopleTools, Navigator**. This causes the Navigator structure to appear in place of the standard PeopleSoft menu structure. In the Navigator structure, users see a tree representing the hierarchical relationships of the workflow maps that fall under the high-level map that is used as the Navigator homepage.

As the user clicks on the business processes and activities in the tree, the corresponding maps appear on the right side of the screen. When the user clicks a step—the map element corresponding to a single page—the corresponding page appears on the right side of the screen. For example, in the following picture, the user has clicked on the Maintain Dependent Info node and sees the Maintain Dependent Info activity on the right.



PeopleSoft Navigator

If the user were to click the Dependent Data step (the first step in this activity), the Dependent Data page would appear in place of the map.

The user can return to the standard application menus by clicking Home in the page header.

Maps that are used for workflow are visible through PeopleSoft Navigator; you can also create additional maps (which are not part of workflow) specifically for use in Navigator. In this context, the maps are commonly called *Navigator maps* rather than workflow maps.



For more information, see Using PeopleSoft Navigator.

Designing Navigator Maps

The mechanics of creating Navigator maps are the same as those for creating all other workflow maps. Of course, you omit any workflow-specific elements, such as events and routings, if the map is not also used by PeopleSoft Workflow.

However, because Navigator maps serve a different purpose than maps designed for workflow purposes, there are additional design considerations:

- Navigator is organized hierarchically.

Users drill down from business processes to activities (or other business processes) then down to steps. A well-designed hierarchy of business processes and activities is important for usability.

- You need a business process that can serve as the Navigator homepage—the first map users see.

Users can drill down only to maps that are hierarchically related to this homepage. Therefore, the homepage hierarchy is also important for security.

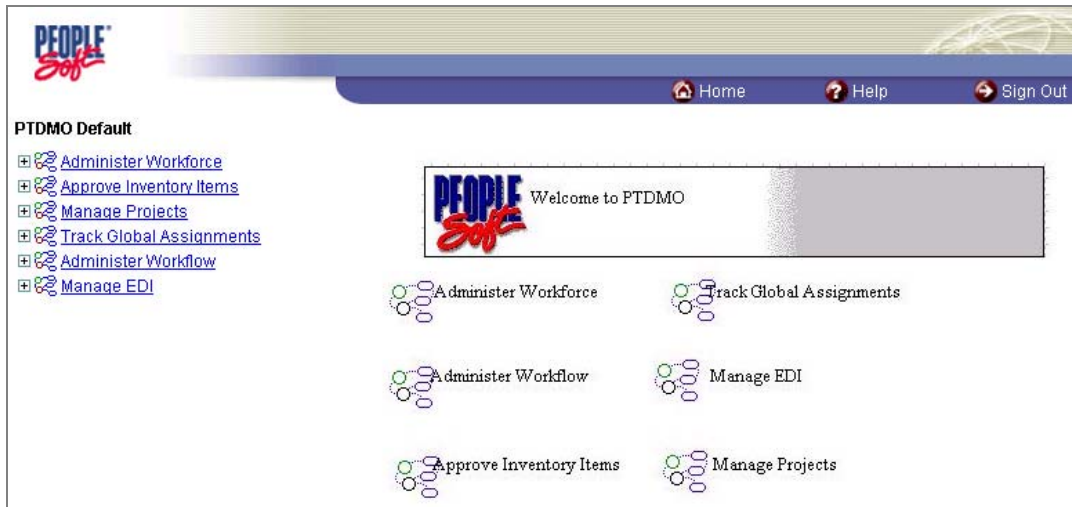
- Because the maps are visible to end users, good graphic design is important.

For example, icon position within maps and aesthetic elements on maps, while irrelevant to workflow, can help users understand the maps and the processes they represent.

Establishing Navigator Homepages

A Navigator homepage is the first business process a user sees after accessing Navigator. Normally the homepage is a business process composed of all other business processes that are to be visible in PeopleSoft Navigator. However, if only one business process is to be visible, you can use it as the homepage.

Because this business process is to be the map that greets the Navigator user, you might want to include a logo or other welcome graphic in this map.



Navigator homepage

Navigator homepages are associated with individuals through permission lists, which are associated with a user's profile, as defined in PeopleSoft Security. In order to establish a user's homepage, you must:

1. Mark a business process as available for use as a homepage.
2. Identify that business process as the homepage that is associated with a permission list.
3. Associate that permission list with the user's profile.

To prepare a business process to be a Navigator homepage:

1. Open the business process that is to be used as the homepage.

If you haven't yet created the business process, you'll need to do that first.



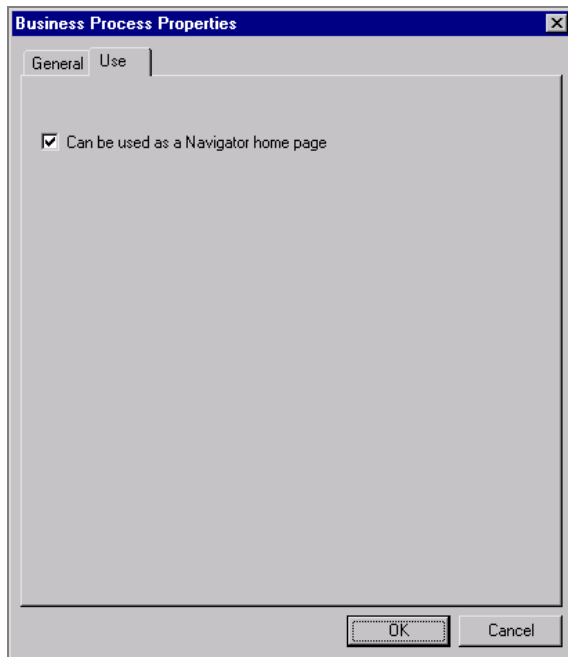
For more information about creating business processes, see [Building Workflow Maps](#).

2. Open the Business Process Property dialog box.

To open the dialog box, right-click in the map (but not on an object in the map) and select **Object Properties**.

The General tab of the Business Process Properties dialog box appears.

3. Move to the Use tab.



Business Process Properties dialog box - Use tab

4. Select the Can be used as a Navigator home page check box.
5. Click the **OK** button to close the dialog box.
6. Save the business process.

To associate a permission list with a specific Navigator homepage:

1. Select PeopleTools, Maintain Security, Use, Permission Lists.
2. Open the permission list that is to be associated with this homepage.



For more information, see Working with Permission Lists.

Permission Lists - General page

3. Select a Navigator Homepage.

You can select any business process where **Can be used as a Navigator home page** is selected.

4. Save the permission list.

To associate a user profile with a permission list:

1. Select PeopleTools, Maintain Security, Use, User Profiles.
2. Move to the General page.

User Profiles - General page

3. Enter the appropriate permission list in the **Navigator Homepage** field.

4. Save the page.

Upgrading Maps to Work With Navigator

Before Navigator can display workflow maps created with versions earlier than PeopleTools 8.12, you need to run an Application Designer process that upgrades the maps to a PIA-compatible format. You only need to run this process once; any new maps you create with PeopleTools 8.12 do not require conversion.

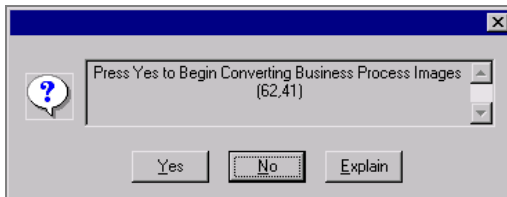
To upgrade Workflow maps for use in Navigator:

1. Start PeopleTools.

The Application Designer window opens.

2. Select Tools, Upgrade, Convert Business Process Images.

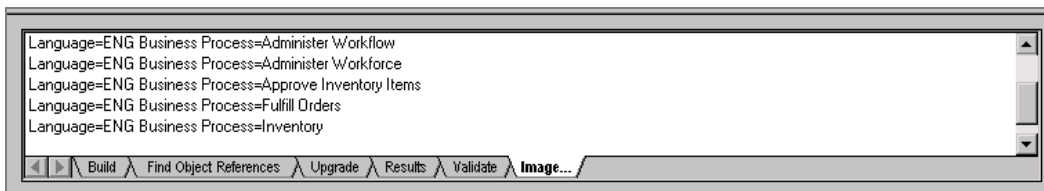
You are prompted to start the conversion process.



Begin Conversion Process dialog box

3. Click **Yes**.

The conversion process begins. The Application Designer output window logs the progress of the conversion process, including any error messages.



Application Designer output window



In versions of PeopleSoft earlier than PeopleSoft 8, activities were not stand-alone objects in Application Designer. Instead, activities were simply icons in business processes. Normally, the PeopleSoft 8 upgrade process converts these older activities to the proper format. Any maps that were not properly upgraded will cause the conversion process to stop. You need to fix the map before the conversion can continue.

CHAPTER 14

Administering Workflow

Workflow Administrator provides the tools you need to keep your workflow running smoothly. In this chapter, you'll learn the following procedures:

- Setting system workflow defaults.
- Communicating with workflow users.
- Scheduling workflow agents to run.
- Monitoring the flow of work through the system.



In previous versions of PeopleTools, the Workflow Administrator included tools for managing Workflow roles and role users. With PeopleSoft 8, Workflow users are managed with all other PeopleSoft users using the Maintain Security pages.



For more information about maintaining roles and role users, see Security.

Setting Workflow Defaults

Before you start routing work items, there are a couple of administration tasks that you should

perform. Unlike most administration tasks, which are ongoing responsibilities, you only need to perform this set of tasks once (or at least infrequently).

To set routing defaults:

1. Select PeopleTools, Workflow Administrator, Use, Workflow System Defaults.

The Defaults page appears.

Worklist System Defaults

System Default User

*User ID:

Message Agent Defaults

Lotus Notes Logon:

Lotus Notes Password:

System Wide Route Processing

Worklists Active

Email Active

Electronic Forms Active

HR Installed

Workflow System Defaults - Defaults page

You use this page to provide default routing information.

2. Select a **System Default User**.

When you define a role as a query, the system figures who should receive work items on the fly at run time. This feature gives you a lot of flexibility, but it also creates the possibility that no users will meet the criteria for the role. For instance, a query that returns the buyer assigned to work with the vendor of the ordered item could fail to return a user, if someone orders an item from a new vendor.

The System Default User is the person who receives work items that aren't assigned to some other role user. Select a **User ID** from the list box.

The default user should be someone in your IS department who is an expert in PeopleSoft Workflow. This administrator is typically responsible for reassigning the work items to another user, and possibly updating the route control information so that future items are routed appropriately.



The System Default User must have a valid PeopleSoft User ID, email address, and electronic forms address.

3. Provide a logon name and password for the Message Agent to use with Lotus Notes (Lotus Notes users only).



The Message Agent, a feature of previous PeopleTools releases, has now been replaced by Component Interfaces. Because the Message Agent is a superseded feature, you should not use it for any new development. If your Workflow applications have existing Message Agent definitions, please refer to the PeopleBooks for the release under which you developed them.

When you want to send an email message or form to another user, you have to log on to the mail or form software. The same rule applies when Workflow needs to route an email message or form using Lotus Notes.

When a user performs an action that triggers an email or form routing, Workflow can prompt for that user's logon name and password. But when the Message Agent triggers an email or form routing, there is no user to ask.

In the two text boxes, enter the **Lotus Notes Logon** name and **Password** that the Message Agent should use to connect to Lotus Notes. We recommend that you set up a special Notes logon for the Message Agent, one that has appropriate security access and a descriptive name. The Lotus Notes Logon is the name users see in the From field when they receive a message or form from the Message Agent.

If you're using email or forms software other than Lotus Notes, the Message Agent doesn't use the logon name and password you specify here. If the software requires the Message Agent to log in, it will prompt for logon information the first time it connects (unless you specially configure the software to look at these fields).

4. Specify which types of routings are active.

Workflow can route work to users three ways: through the user's Worklist, by Email, or by electronic form. You can suspend all routings of a particular type by clearing the appropriate option in the **System Wide Route Processing** group box: **Worklists Active**, **Email Active**, and **Electronic Forms Active**. Before Workflow performs a routing, it checks these settings.

5. Specify whether you're using PeopleSoft HRMS applications.

If you're using any PeopleSoft HRMS applications, select the **HR Installed** check box. The system uses this setting to determine a role user's supervisor:

- If the check box is not selected, a **Supervisory Role User** field appears on the User's profile. The system uses the User ID in this field when it needs to forward a work item to a user's supervisor.
- If the check box is selected, the system determines a user's supervisor just as it does throughout PeopleSoft HRMS applications: from the user's PERSONAL_DATA record.

6. Save the page.

Defining Workflow Messages

Workflow administrators frequently need to communicate information to system users. For example, you might need to send everyone the backup schedule or send managers a weekly update on the work their groups performed. Workflow Administrator provides a page for creating and sending this kind of general message. You can send the message by email or to the users' worklists.

For standard messages that you send out regularly to all the same people, Workflow Administrator enables you to define default messages and default routings for those messages, so that you need only type them once.

A default message is a saved version of a common message that you can use over and over again. When you open the Worklist/Email Message page to send a message, you can select from the list of default messages. Then, you can add to or change the message in any way before sending it.

Default messages are also a good way of defining standard mailing lists. You can define default messages without default text, but which are addressed to a default list of users, such as all managers. When you're ready to send a message to the managers, you select the default message and add the text; thus, you don't have to individually select all the managers each time.

To define a default message:

1. Select PeopleTools, Workflow Administrator, Use, Worklist/Email Default Msg.
2. Search for an existing **Message ID** or add a new one.

Use the standard search or add method to enter your Message ID and access the Default Message page.

Default Message

User: PTDMO Message ID: Monthly Backup

Default Message

Subject: Network Maintenance Weekend

Message: Remember that we'll be having our monthly network maintenance weekend starting early Saturday morning. Everyone needs to be logged off by Friday at midnight.

Routing Method

Email
 Worklist

Priority

High
 Medium
 Low

Default Routing: View All First ◀ 1-3 of 3 ▶ Last

8121	Gregory, Jan	+ -
8120	Jones, Theresa	+ -
8101	Penrose, Steven	+ -

Save Add Update/Display

Worklist / Email Default Msg - Default Message page

Notice that messages are keyed by User ID as well as by Message ID.

3. Enter a subject line and message text in the **Subject** and **Message** boxes.
 You can enter as much or as little of this information as you like. You can enter the rest when you actually send the message.
4. Specify whether to send the message by email or to a worklist.
 Click either the **Email** or **Worklist** option.
5. Assign a routing priority to the message.
 Choose **High**, **Medium**, or **Low**.
6. If you always send this message to the same set of users, select their role user names in the **Default Routing** box.
 Click **+** to add additional role users. You can enter as many or as few users as you like. You can change the list when you send the message.
7. Save the page.

To send a message (either default or ad hoc):

1. Select PeopleTools, Workflow Administrator, Use, Worklist/Email Message.

The Worklist/Email Message page appears.

Worklist/Email Message page

Use this page to send a message to the role users that you specify.

2. If you have a default message that contains the text or list of **Deliver To** users you want, select its **Message ID**.

The information from the default message appears in the page. You can add or change any of it without affecting the default message itself.

3. Enter a Subject and Message Text.

The Subject you enter appears as the subject line of an email message or the description of a worklist entry.

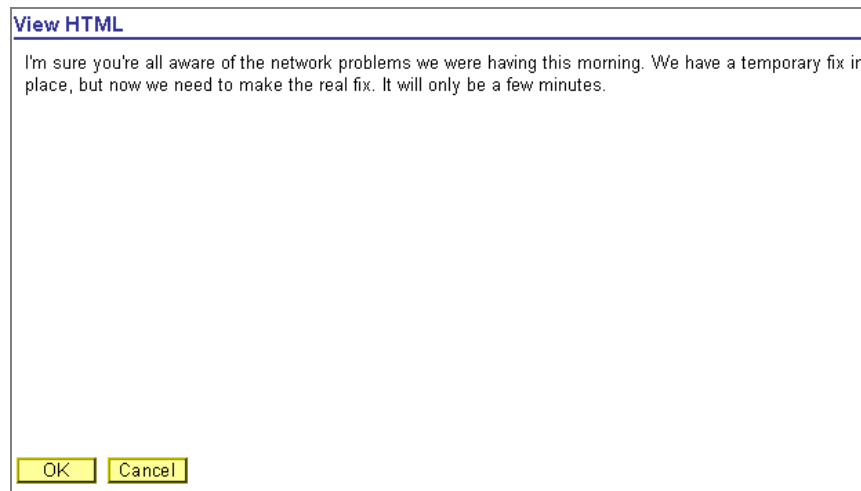
4. Enter the complete path to any attachments you want to include with the message (optional).

5. Choose a Routing Option and a Priority.

6. Select the role users to whom you want to send the message.

Click to add or to remove role users from the list. You can enter as many or as few users as you like.

7. To preview a message, click **View HTML**.



View HTML page

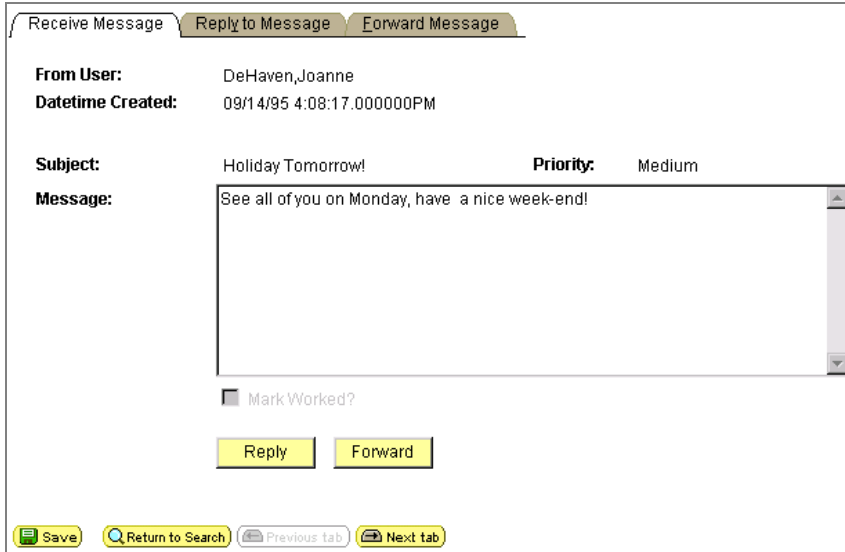
8. To send the message, save the page.

To receive and respond to a worklist messages:

1. In your Worklist, select the message you want to answer.

Alternatively, you can access the message by clicking **PeopleTools, Workflow Administrator, Use, Worklist Email Reply**.

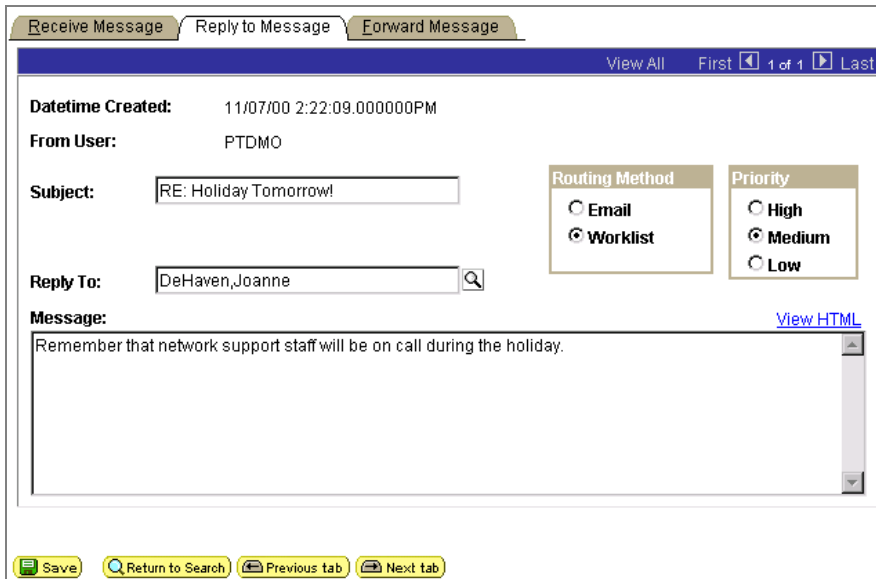
The Receive Message page appears.



Worklist / Email Reply - Receive Message page

- To reply to the original sender, click the **Reply** button and complete the message on the Reply to Message page.

By using the **Reply** button rather than any of the alternate means of navigation, you automatically populate the **Subject** and **Reply To** fields based on the original message.



Worklist / Email Reply - Reply to Message page

Add your **Message**.

Choose a **Routing Method: Email** or **Worklist**.

Specify a **Priority: High, Medium, or Low**.

Normally, you accept the default **Subject** and **Reply To** values. If they don't default properly, or if you prefer different values, make the necessary changes.

- To forward the message to another user, click the **Forward** button and complete the message on the Forward Message page.

By using the **Forward** button rather than any of the alternate means of navigation, you automatically populate the **Subject** field based on the original message.

Worklist / Email Reply – Forward Message page

In the **Forward To** group box, specify who receives the forwarded message. Press **+** to add or **-** to remove role users from the list. You can enter as many or as few users as you like.

Add your **Message**.

Choose a **Routing Method: Email** or **Worklist**.

Specify a **Priority: High, Medium, or Low**.

Normally you accept the default **Subject**; if it doesn't default properly, or if you prefer a different subject, make the necessary changes.

- Click **Save** to send your message.

Scheduling Workflow Processes

There are several types of processes you can run to monitor your Workflow applications. These processes can perform a variety of monitoring tasks, such as checking worklists for timed-out work items. PeopleSoft delivers some Workflow processes; you likely added your own, too.

Although the processes that PeopleSoft delivers are already defined in Process Scheduler, that doesn't start them running. You still have to submit Process Scheduler requests to tell the system when, where, and how often to run each agent.

You need to schedule the following functions:

- Application Engine programs and Database Agents that you've built to facilitate batch workflow processing. This includes both programs you've created and several predefined database agents used to monitor workflow. To schedule most database agents, click **PeopleTools, Workflow Administrator, Process, Database Agent**.
- The Message Agent API that monitors Lotus Notes for incoming forms. To schedule this, select **PeopleTools, Workflow Administrator, Process, Message Agent API**. You only need to schedule this application if you're allowing users to submit Lotus Notes forms.



Database Agents and Message Agents are features of previous PeopleTools releases. Although these are superseded features, PeopleSoft continues to support both technologies and delivers some pre-configured Database Agents and Message Agents as part of Workflow Administrator.

When you first initiate your workflow, you usually set up these processes to run on a recurring schedule. If you do, you don't need to start the processes every time you want them to run. You only need to restart them if the schedule you specify expires or if you want to change their schedule.



For more information about processes delivered by PeopleSoft, see Monitoring Workflow.

This procedure describes how to submit a request to Process Scheduler. The procedure is the same for all the agents you need to schedule.

To submit a Process Scheduler request:

1. Select the page associated with the process you want to schedule.

The delivered workflow processes are run from pages found under **PeopleTools, Workflow Administrator, Process**. To schedule worklist volume monitors, for example, click **PeopleTools, Workflow Administrator, Process, Worklist Volume Monitor**.

2. Search for an existing **Run Control ID** or add a new one.

Use the standard search or add methods to enter a Run Control ID and access the page.

To schedule a process, you need to tell the system when and where you want the process to run. For example, you might tell it to check worklist volumes at five o'clock, or every day at five o'clock, or on your workstation right away. For some processes, you also need to set input parameters, such as which worklists to check.

A run control is a database record that provides values for these settings. Instead of entering the same values each time you schedule the process, you create (and save) a run control with those settings. The next time you schedule the process, you select the run control and the system fills in the settings.

Each run control you create gets a unique Run Control ID. When you select a Process menu item, a search page appears, asking for a Run Control ID. If you're in Add mode, enter a new ID for the run control you're about to define. If you're in Update/Display mode, enter an existing Run Control ID, or click Enter and select from the list of available Run Control IDs.



If you're starting a number of agents in a row, you only have to enter the Run Control ID for the first agent. When you select a second item from the menu, the application remembers which run control you're using.

3. Enter the run control parameters.

Once you enter a Run Control ID, a page appears. If the agent you're scheduling needs run control parameters, editable fields become available. If the agent doesn't have any run control parameters, the page doesn't have any editable fields.

4. Click the **Run** button.

The Process Scheduler Request page appears.

Select	Description	Process Name	Process Type	*Type	*Format
<input type="checkbox"/>	Monitor WL by Group	MONWLGRP	Database Agent	(None)	NONE
<input type="checkbox"/>	Monitor WL by Individual	MONWLUSR	Database Agent	(None)	NONE

Process Scheduler Request page

The bottom of the page lists the agents that you can start from this page.

5. Turn on the **Select** check box for the agents you want to schedule.

You can identify a process by its **Description**, **Process Name**, and **Process Type**.

The **Type** and **Format** fields apply only to reports.

6. Specify where you want the agent to run.

Enter the name of the server that will run the agents. To run database agents, the server needs to be running Microsoft Windows, Windows 95, or Windows NT.

7. Specify when and how often you want the agent to run.

Process Scheduler can run agents once or periodically on a specified schedule.

If you're running the agents once, enter the date and time in the **Run Date** and **Run Time** boxes. They default to the current date and time.

To run them more than once, select a different **Recurrence** schedule. The recurrence definition sets the run date and time. By default, the system leaves the **Recurrence** field blank; when you enter a value, it overrides any manually entered **Run Date/Time**.



For more information, see Process Scheduler.

8. Click the **OK** button to run the highlighted processes.

Repeat the process to run other processes on a different schedule.

Monitoring Workflow

Perhaps the most important responsibility of a workflow administrator is ensuring that work items continue to flow smoothly through the business processes. If work items stall halfway through processing, you've lost the benefits of an automated workflow. Because this responsibility is so important, we've provided a number of tools to assist you.

In this section, you learn how to perform workflow monitoring tasks.

Monitoring Worklist Volumes

To help you identify bottlenecks, the Workflow Administrator provides an Application Engine program that monitors for overloaded worklists. The program checks for worklists that contain more than a specified number of work items and sends you a warning message when overloaded worklists are found.

To use this program, you first define the monitoring parameters. Each set of monitoring parameters is considered a separate worklist volume monitor. You must set up separate worklist volume monitors for different worklists. You can create one or more for each worklist you want to monitor.

To configure a worklist volume monitor:

1. Select PeopleTools, Workflow Administrator, Use, Worklist Monitor Setup.
2. Search for an existing **Notification Setup ID** or add a new one.

Use the standard search or add method to enter your Notification Setup ID and access the Setup page.

Worklist Monitor Setup - Setup page

You use this page to specify which worklist to monitor, how many work items to allow in the worklist, and what message to send when the worklist exceeds the threshold.

3. In the **Notification Message** box, specify when you want the worklist volume monitor to inform you about the number of worklist entries.

Use the two drop-down list boxes on the first line to identify the worklist you want to monitor. In the left box, select the business process; in the right box, select the worklist name.

4. Specify a date and time range within which the monitor will count work items.

By default, the worklist volume monitor counts work items added to the worklist starting from today, the day you define it, through two years from now. If you want to count work items that are already in the worklist, change the **From Dttm** to an earlier date.

5. Specify which work items to count.

The **Status** box specifies which work items to count, based on their status. Valid values are *Available*, *Selected*, *Worked*, and *Cancelled*.

The default status is *Available*. Available work items haven't yet received user attention.

6. In the **Notify Trigger** box, enter the number of work items that constitute the worklist's threshold.


When the worklist contains this number of entries, the worklist volume monitor sends out its warning message.

7. Specify whether to measure the threshold by an individual user's number of work items or the number of total work items.

If you enter the threshold for each individual user, click the **Total by Individual** check box; if you enter the threshold for the entire worklist, leave the check box clear.

For example, if you have a worklist where work items wait for a manager's approval, you can monitor how many work items are in each manager's worklist or how many are in all managers' worklists.

8. In the **Worklist User Pool** box, pick the users whose work items you want to include in the count.

When the worklist volume monitor counts work items, it only includes those assigned to a USERID that appears in this box. Click  to add as many users as you like.

9. Set the notification message.

The **Notification Message** box defines the message that the worklist volume monitor sends when a worklist contains too many work items. The default message will probably be fine for most circumstances, but you can select any message from the PeopleTools Message Catalog. When you pick the **Set** and **Msg**, the subject and text of the message appear to the right.

Note that the subject of the message is always *High Volume Worklist Warning*.

10. Specify how to deliver the message.

The worklist volume monitor can deliver the message to a user's worklist, send it through email, or both. Select one or both of the notification method check boxes: **Notify by Worklist** and **Notify by Email**.

11. Specify to whom to send the message.

In the **User Notification List** box, enter the users to whom you want the monitor to send the warning message.

12. Save the page.

To schedule workflow volume monitors to run:

1. Click PeopleTools, Workflow Administrator, Process, Worklist Volume Monitor.
2. Search for an existing **Run Control ID** or add a new one.

Use the standard search or add method to enter your Run Control ID and access the Worklist Volume Monitor page.

Worklist Volume Monitor page

You use this page to select which worklist volume monitor to start.

3. In the **Workflow Monitor Setup ID** field, select one of the worklist volume monitors you defined.

When you define a worklist volume monitor, you have the option of specifying the volume threshold in terms of the number of work items an individual user has or the number of total work items. The **Total by Individual** check box shows which option you specified for the selected worklist volume monitor. This information will be important in the Process Scheduler Request page.

4. Click the **Run** button.

The Process Scheduler Request page appears.

Select	Description	Process Name	Process Type	*Type	*Format
<input type="checkbox"/>	Monitor WL by Group	MONWLGRP	Database Agent	(None)	(None)
<input type="checkbox"/>	Monitor WL by Individual	MONWLUSR	Database Agent	(None)	(None)
<input type="checkbox"/>	WL_VOL_MON	WL_VOL_MON	Application Engine	(None)	(None)

Process Scheduler Request page - Worklist Volume Monitor

5. Select a program to run.

The WL_VOL_MON Application Engine program supersedes both the Monitor WL by Group (MONWLGRP) and the Monitor WL by Individual (MONVWUSR) database agents. The Application Engine program determines whether to monitor by group or by individual based on whether the Total by Individual checkbox is selected in the worklist volume monitor you're processing.

Although the database agents are still available, PeopleSoft recommends that you use Application Engine. Application Engine programs are typically easier to debug than Database Agents and, because Database Agents are being superseded by the newer Application Engine technology, PeopleSoft expects to support Application Engine longer.

If you use the database agents, you must manually select the appropriate agent depending on the Total by Individual setting associated with the worklist volume monitor you selected.

6. Complete the Process Scheduler Request page.

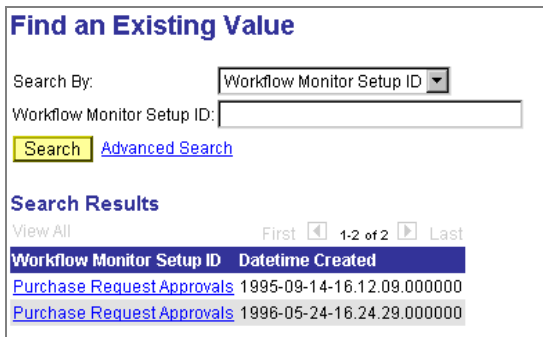


For more information, see To submit a Process Scheduler request.

To review notifications sent by the volume monitor:

1. Select PeopleTools, Workflow Administrator, Use, Worklist Monitor Notification.
2. Search for an existing WL Monitor Setup ID and DateTime Created.

Because one volume monitor can send multiple notifications, you need both a WL Monitor Setup ID and a DateTime Created to uniquely identify a notification.



Multiple notifications for a single Workflow Monitor Setup ID

3. Review the notification.

Use the standard search method to enter access the Notify page.

Notify	
WL Monitor Setup ID:	Purchase Request Approvals
Datetime Created:	09/14/95 4:12:09.000000PM
Total Counted:	6 Subject: High Volume Worklist Warning
Message:	Warning! The total number of available worklist entries for worklist Approve Purchase Request for business process Purchase Request has exceeded the acceptable limit. The total number as of 1995-09-14-16.12.09.000000 is 6.
Notification Criteria	
BP/WL:	Purchase Request Manager Approval
From Dttm:	05/24/94 12:00:00.000000AM To Dttm: 05/24/97 12:00:00.000000AM
Status:	2 Worked Threshold: 1 <input checked="" type="checkbox"/> Total by Individual
User Notification List:	View All First ◀ 1 of 1 ▶ Last
Sullivan, Theresa	
Worklist User Pool:	View All First ◀ 1-2 of 3 ▶ Last
PTA1	
PTM1	
<input type="button" value="Save"/> <input type="button" value="Return to Search"/>	

Worklist Monitor Notification - Notify page

The **Datetime Created** is the date and time the notification was sent.

The **Total Counted** tells you how many worklist items the worklist volume monitor found. Notifications are only sent when the number of worklist items exceeds the specified **Threshold**.

The **Subject** and **Message** show the text of the notification. If the message specified in the Worklist Monitor Setup page included any bind variables, the variables are resolved in this message.

The **Notification Criteria**, **User Notification List**, and **Worklist User Pool** show the original Worklist Monitor Setup parameters that triggered this notification.

Checking for Worklist Timeouts

When you define a worklist, you have the option of specifying a timeout condition, which specifies how long a work item should sit unworked in a worklist before the system forwards it on to another worklist. This behavior is set in Application Designer in the Worklist Attributes dialog box.

Worklist Attributes dialog box



For more information on setting worklist attributes, see [Creating Worklist Routings](#).

The system uses an Application Engine program to check for work items that have timed out and to forward them according to the timeout parameters. You need to schedule the Application Engine program to activate this process.

Monitoring for Worklist Timeouts

To monitor for worklist timeouts:

1. Click PeopleTools, Workflow Administrator, Process, Timeout Exceptions.
2. Search for an existing **Run Control ID** or add a new one.

Use the standard search or add method to enter your Run Control ID and access the Timeout Exceptions page. This page displays the Run Control ID, but doesn't contain any editable controls.

Timeout Exceptions

Run Control ID: RC1 [Report Manager](#) [Process Monitor](#) **Run**

Save **Add** **Update/Display**

Timeout Exceptions page

3. Click the **Run** button.

The Process Scheduler Request page appears.

Process Scheduler Request

User ID: PTDMO Run Control ID: lard

Server Name: [] Run Date: 11/08/2000 []

Recurrence: [] Run Time: 5:21:57PM

Time Zone: [] **Reset to Current Date/Time**

Select	Description	Process Name	Process Type	*Type	*Format
<input type="checkbox"/>	Time Out Worklists	TIMEOUT	Database Agent	(None)	(None)
<input type="checkbox"/>	Worklist Timeout Exceptions	WLEXCP	SQR Report	Web	PDF
<input type="checkbox"/>	WL_TIMEOUT	WL_TIMEOUT	Application Engine	(None)	(None)

OK **Cancel**

Process Scheduler Request page - Timeout Exceptions processes

The list at the bottom of the page displays the items you can schedule from here.

The TIMEOUT Database Agent and the WL_TIMEOUT Application Engine program both process the timeout information and produce identical results. PeopleSoft recommends that you use Application Engine. Application Engine programs are typically easier to debug than Database Agents and, because Database Agents are being superseded by the newer Application Engine technology, PeopleSoft expects to support Application Engine longer.

4. Complete the page as described in To Submit a Process Scheduler Request.



For more information, see To submit a Process Scheduler request.

Checking Timeout Worklist Data

Timeout parameters include an option to send timeout notifications to the user’s Timeout Worklist.

When users open items in their Timeout worklists, they are transferred to the Timeout Worklist Data page for that work item.

In this page, the user can view information about the timed-out work item, enter a comment on the item, or reassign the item to another User ID.

You can also access this page directly by selecting **PeopleTools, Workflow Administrator, Use, Worklist Timeout Data** in Workflow Administrator.

Worklist Timeout Data

Business Process: Approve Inventory Items
Activity: Inventory Item Approval
Event: Inventory Item Approval
Worklist: Inventory Item Approval
Instance: 1

Timeout Worklist Information

User ID:

Comment:

Instance Available Date/Time: 03/09/97 2:04:37PM
Instance Selected Date/Time: 03/11/97 4:30:09PM
Late After: 03/09/97 2:04:37PM

Timeout Worklist Data page

Reviewing Work Items Online

The Worklist Monitor enables you to review the work items in your workflow, regardless of where they are. It provides detailed status information about each item. It also enables you to update individual work items: Assign them to different users, change their status, and edit their worklist entries.

You can access the Worklist Monitor in two ways, depending on how you want to search for work items:

- Based on their workflow properties, such as their status or the user to whom they’re assigned. You can find items wherever they are in the workflow.
- Based on the fields in their worklist entries. You can search for items within a single worklist.

To search for work items based on their workflow properties:

1. Select PeopleTools, Workflow Administrator, Inquire, Worklist Monitor.

The Search Criteria page appears.

Worklist Monitor - Search Criteria page

The Worklist Monitor searches for work items based on the properties whose check boxes are selected.

2. Select the check boxes for the properties to include in the search, and enter search criteria in the corresponding controls.

To search for all worklist entries, clear all the check boxes.

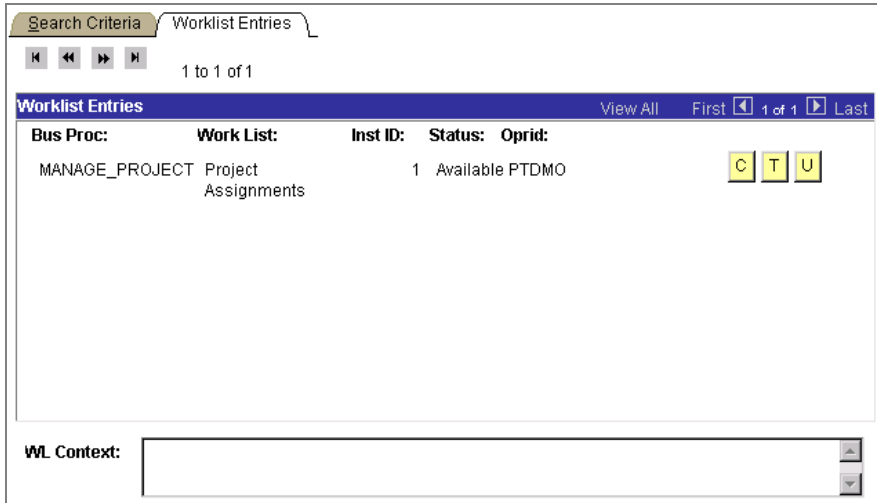
Check Box	Searches For
Bus Proc / WL	Work items in the worklist specified in the Business Process Name and Work List Name list boxes.
WL Datetime Range	Work items that were created during the time period between the From Datetime and To Datetime .
User Assigned	Work items assigned to the specified User ID .
Originator	Work items that entered the workflow due to an action taken by the specified User ID .
WL Status	Work items with the specified Instance Status .
WL Instance ID	The work item with the specified ID.

3. Click the  **Search WL Switch** button to perform the search.

When the search is complete, the Worklist Monitor displays the **Total Worklist Entries Found**, that is, the number of worklist entries that meet your criteria.

4. Move to the Worklist Entries page.

The Worklist Entries page appears, displaying the entries that meet your search criteria.



Worklist Monitor - Worklist Entries page

Each line displays information for one worklist entry, including the **Bus Proc** (Business Process), **Work List**, **Inst ID** (Instance ID), **Status**, and **Oprid** (User ID).

5. Review additional information about an entry (optional).

The **C**, **T**, and **U** buttons at the end of each line provide additional processing.

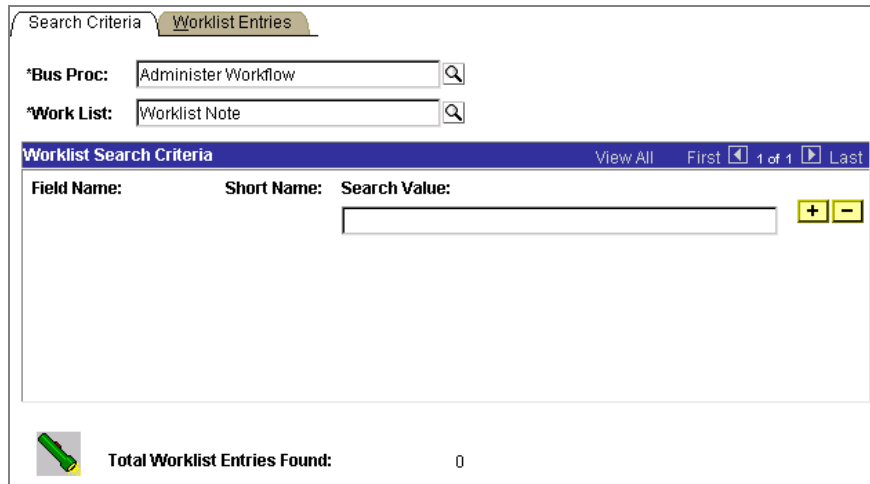
- C** Displays additional **Context** information about the work item in the **WL Context** box at the bottom of the page.
- T** Transfers you to the page group used to work on the work item. You can work the work item just as if you'd selected it from its worklist.
- U** Displays the Update page so that you can update this work item.

Note. You can also get to the Update page by selecting **PeopleTools, Workflow Administrator, Use, Worklist Entry Updates**.

To search for work items within a worklist:

1. Click PeopleTools, Workflow Administrator, Inquire, Worklist Monitor via Context.


The Search Criteria page appears.



Worklist Monitor via Context - Search Criteria page

2. Select the business process and worklist you want to search.

After you select the worklist, the user-defined fields from the worklist record definition appear in the **Worklist Search Criteria** box. Each field has a **Search Value** box next to it.

3. Enter search criteria in as many or as few of the boxes as you like, then click the  **Search WL Switch** button.

The Worklist Monitor displays **Total Worklist Entries Found**, that is, the number of worklist entries that meet your criteria.

4. Move to the Worklist Entries page.

The Worklist Entries page displays the entries that meet your search criteria. See the previous procedure for details about this page.

To update work items:

1. Click the **U** button on the Worklist Entries page or select **PeopleTools, Workflow Administrator, Use, Worklist Entry Updates**.

The Update page appears. This page enables you to change the worklist entry for a work item. Most importantly, it enables you to change the user to whom the item is assigned or its status in the worklist.



If you're selecting **PeopleTools, Workflow Administrator, Use, Worklist Entry Updates**, you need to know the Instance ID of the work item you want to update.

Update

Bus Proc: Approve Inventory Items
Work List Name: Inventory Item Approval
Instance ID: 2 **Originator UserID:** INS2

User Assigned:

Comment:

Available Dttm:

Selected Dttm:

Worked Dttm:

Worklist Status
 Available
 Selected
 Worked
 Cancelled

Worklist Entry Updates - Update page

This page displays status information about the work item in editable form.

2. Update the work item information.

You can change the user to whom it’s assigned, its status in the worklist, or its description. You can also change the date and time information that the system usually updates, although it’s not as common. One possible reason to change the date and time information would be to delay the processing of a work item. To do this, change the **Available Dttm** to a future time.



The Worklist Entry Updates page enables you to reassign individual work items by changing the assigned user. If you want to reassign all the items assigned to a particular user, however, this method can be tedious. Security Administrator offers another way to reassign work items: using the User Archiving page. One of the options on that page is to reassign all work items from one user to another. It offers this option so that you can reassign all the work for a user you’re archiving, but you don’t need to archive a user to take advantage of the feature.



For more information, see Security..

3. Save the page.

Running Workflow Reports

We deliver the Workflow Administrator with a set of standard reports that are designed to provide status information about the work that your users are accomplishing. The reports fall into two categories:

- Worklist Averages reports, which give average processing times for completed work items.
- Worklist Totals reports, which count work items by status.

For both classes of reports, you can get information about all your users for all your business processes, or you can focus the report on specific users or business processes.

To run one or more workflow reports:

1. Select PeopleTools, Workflow Administrator, Process, Worklist Averages or PeopleTools, Workflow Administrator, Process, Worklist Totals.
2. Search for an existing **Run Control ID** or add a new one.

Use the standard search and add methods to enter a Run Control ID and access the Worklist Averages or Worklist Totals page.

Worklist Averages

Run Control ID: RC1 [Report Manager](#) [Process Monitor](#)

Reporting Parameters

*Worked Datetime From: 11/07/00 12:00:00.000000AM

*Worked Datetime To: 11/07/00 11:59:59.000000PM

Business Process Name:

WL User Reporting Tool View All First 1 of 1 Last

User:	User ID:	Description:
<input type="text"/>	<input type="text"/>	

Worklist Averages page

You use this page to enter parameters for the reports.



Because the two classes of reports have similar reporting parameters, the pages look similar. The pages behave differently, however: Worklist Averages reports the work items completed during the specified time range; Worklist Totals reports on the work items in the worklists by status.

3. Enter the time span you want the report to cover.

The two date and time boxes specify the time period on which you want to report.

In the Worklist Averages Run page, enter the **Worked Datetime From** and **Worked Datetime To**. The reports only include work items marked as worked during the specified time period.

In the Worklist Totals Run page, enter the **Available Datetime From** and **Available Datetime To**. The reports only include work items added to the worklists during the time period.

4. Specify which business process on which to report (optional).

Most of the reports include data about all your business processes, broken down by worklist, by user, or both. However, you do have the option of reporting on a single business process. If you only want the data for one business process, select its name from the **Business Process Name** list box.

5. Specify which users' work items to include in the report.

By default, the reports include work items assigned to all the users. You can limit the report to a specific set of users by selecting their User IDs in the **WL User Reporting Pool** box. If this box doesn't have any users listed in it, the reports includes all work items; if it has one or more users listed in it, the reports only include work items assigned to those users.

6. Click the **Run** button.

The Process Scheduler Request page appears. The list box at the bottom of the page displays the available reports.

7. Select the reports you want to run.

The reports differ in how they organize the data. Both Worklist Averages and Worklist Totals offer reports organized several different ways:

- By Business Process and worklist
- By Business Process, Worklist, and User
- By User
- By Business Process and Worklist with all Users
- Information for a single Business Process only.

8. Complete the Process Scheduler request.



For more information, see To submit a Process Scheduler request.

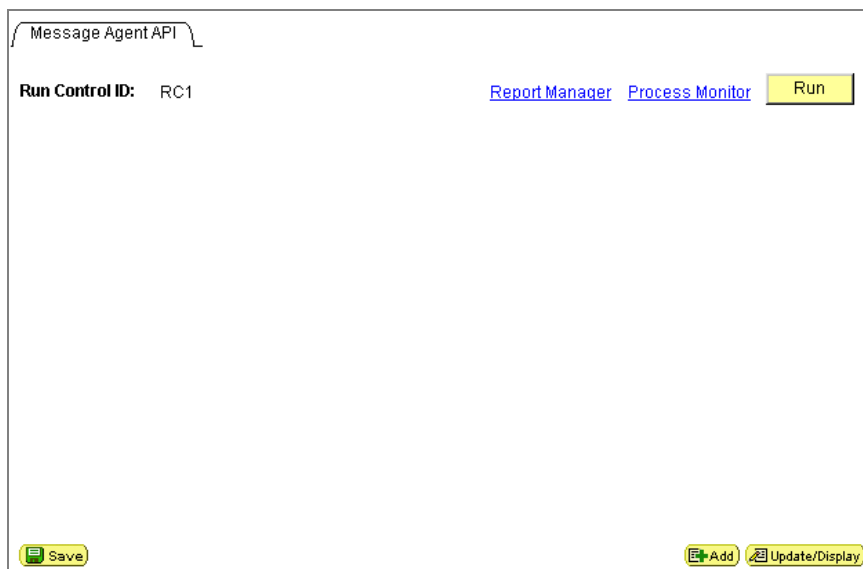
Scheduling the Lotus Notes Monitoring Application

If you've set up a business process that includes users mailing Lotus Notes forms, you need to schedule the Lotus Notes monitoring application to periodically check for new forms in the mail-in database.

To schedule the Lotus Notes monitoring application:

1. Select PeopleTools, Workflow Administrator, Process, Message Agent API.
2. Search for an existing **Run Control ID** or add a new one.

Use the standard search and add methods to enter a Run Control ID and access the Message Agent API page. This page displays the Run Control ID, but doesn't contain any editable controls.



Message Agent API page

3. Click the **Run** button.

The Process Scheduler Request page appears. The list at the bottom of the page displays the one item you can schedule from this page: Lotus Notes API. Because there's only one item in the list, the system highlights it for you.

4. Complete the Process Scheduler request.



For more information, see To submit a Process Scheduler request.

Running Miscellaneous Database Agents

We've provided the Database Agents option on the Process menu as a default place to run database agents. Generally, we recommend that you add your database agents here if they don't require any input parameters. It's also where you start many system-defined database agents.



Database Agents and Message Agents are features of previous PeopleTools releases. Although these are superseded features, PeopleSoft continues to support both technologies and delivers some pre-configured Database Agents and Message Agents such as the ones supporting report requests.

To run a database agent:

1. Select PeopleTools, Workflow Administrator, Process, Database Agents.
2. Search for an existing **Run Control ID** or add a new one.

Use the standard search and add methods to enter a Run Control ID and access the Schedule page. This page displays the Run Control ID, but doesn't contain any editable controls.



If you added custom database agents to other pages, start them from those pages.



Database Agent – Schedule page

3. Click the **Run** button.

The Process Scheduler Request page appears. The list at the bottom of the page displays the database agents you can run from this page.

4. Complete the Process Scheduler request.



For more information, see To submit a Process Scheduler request.

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