Appendix

Microsoft Project 2007 Tutorial

LEARNING OBJECTIVES

After reading this appendix, you will be able to:

- Become familiar with Microsoft Project 2007.
- Enter tasks, estimate task durations, and sequence tasks in Microsoft Project.
- Enter resources and assign resources.
- Track project progress.
- Report project status.

Introduction

In keeping with the technological focus of this textbook, this appendix will provide you with a basic introduction to Microsoft Project 2007, a powerful project management software package that can help project staff manage schedules and resources and to track project progress. Although several vendors provide project management software (see Chapter 1) across a variety of price points and a variety of specific industries, Microsoft Project is one of the most widely used project management software applications available. Considering its widespread use and its familiar Microsoft Office user interface, we chose Microsoft Project 2007 to illustrate how project management software in general can support and facilitate information systems project management.

While the use of project management software can enhance and support the project management function, project management software should not be used in lieu of becoming familiar with the project management concepts presented in this textbook. This appendix is written with the expectation that the reader possesses some basic knowledge of the IS project management concepts presented in Chapters 1 through 12.

Microsoft Project Basics

If you do not already have Microsoft Project 2007, a trial version can be found online, e.g., at: http://download.cnet.com/Project-Professional-2007-Trial-Version/3000-2076_4-75451260.html.

Follow the directions on the Web site to install Microsoft Project on your computer. During the installation process, you will be asked whether you prefer the "typical" installation, or whether you want a "complete" or "custom" installation. The typical installation includes the most commonly used features of Microsoft Project; however, if you would prefer some additional features (e.g., PERT analysis), choose the complete installation.

Microsoft Project 2007 is a Microsoft Office application, so it has many elements similar to other Office titles such as Word, Excel, and PowerPoint. To begin using Microsoft Project, first start the application by clicking on the Start menu, All Programs, and select Microsoft Project, which is located in the Microsoft Office folder by default. Alternatively, if there is a program icon for Project on the desktop, double-click the icon to open Microsoft Project. The application will open with the screen shown in Figure A.1.

As you can see, elements of the user interface should be familiar to you if you've used Word or Excel. Specifically, the menu bar and the toolbar have been integral in Office 2003 and later, and the window opens with the task pane on the left side of the window (see Figure A.2). Depending on settings specific to your computer, your opening screen may not appear exactly as shown, but the differences will be minor.

Before getting started with specific project management activities, we will first explore the help menu and some interface characteristics that will help you configure Project 2007 to your preferences.

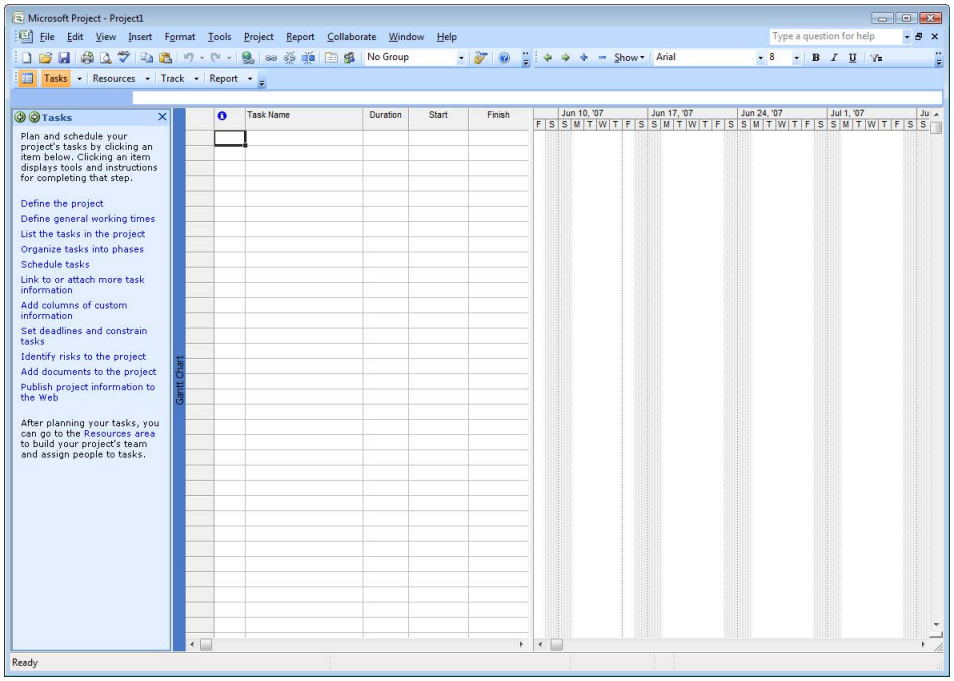


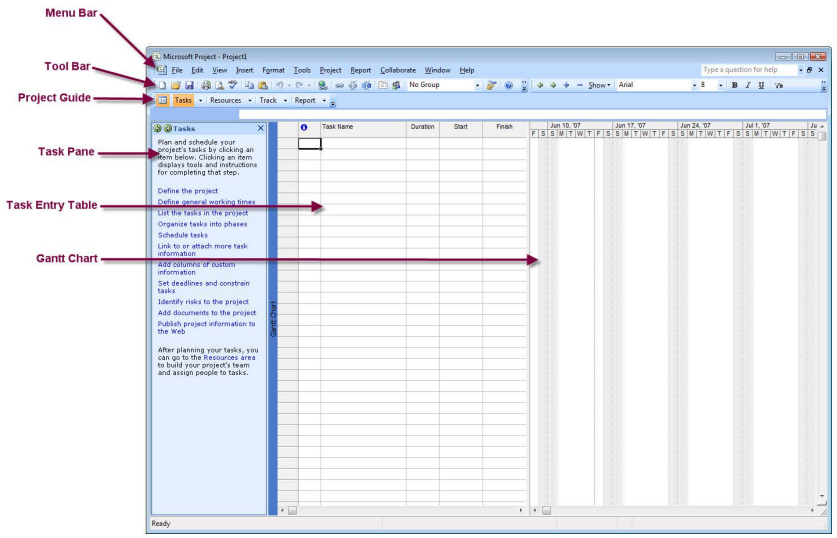
Figure A.1 Microsoft Project 2007 opening screen

Microsoft Project Help

One of the most important (and underused) features of Microsoft Project is the Help menu. To get help in Microsoft Project 2007, click on the Help menu in the menu bar, and click on "Microsoft Office Project Help" (see Figure A.3), or hit the F1 key.

After clicking on "Microsoft Office Project Help," the Help dialog box will open (see Figure A.4). The Help dialog box opens with a field to type questions or keywords and displays links for a variety of help topics. In addition to the built in help topics, the Microsoft Project Help dialog box provides links to Microsoft's Online help contents, including Downloads, Training, and Templates (see Figure A.5).

Figure A.2 Microsoft Project 2007 screen elements



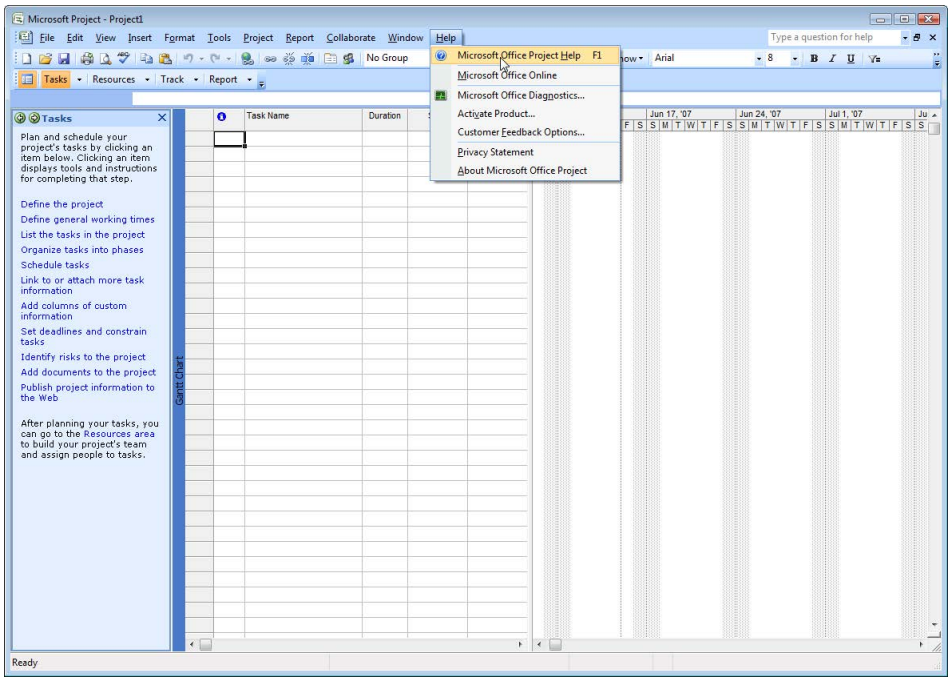
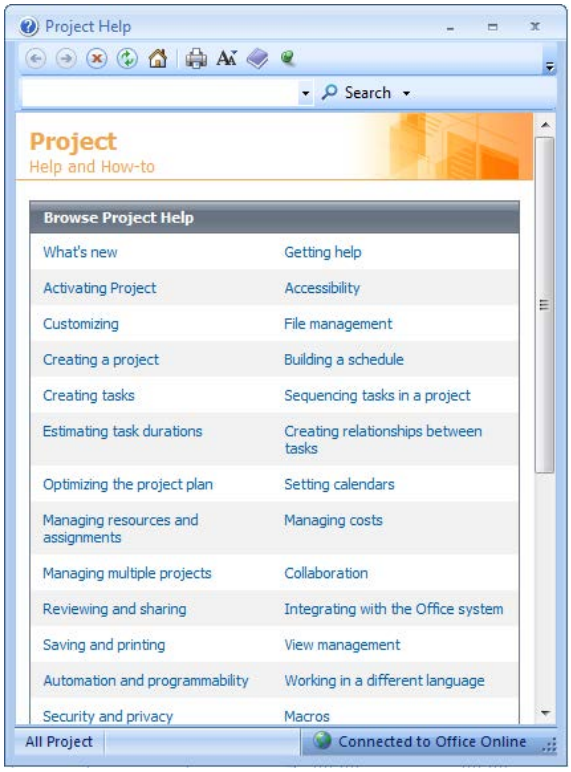


Figure A.3 Help menu in Microsoft Project 2007

Figure A.4 Microsoft Project 2007 Help pane



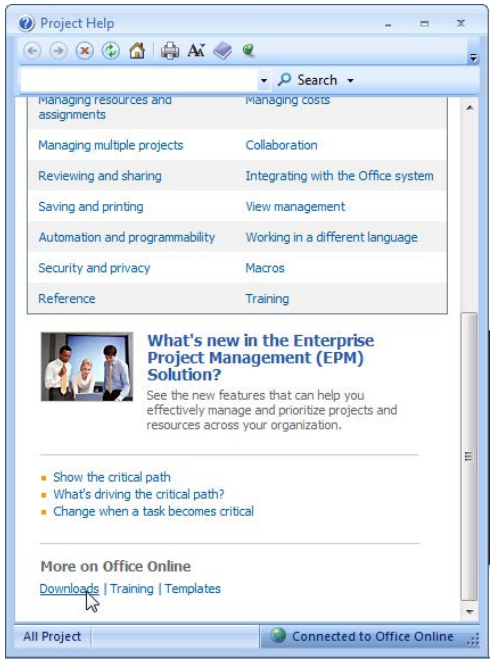
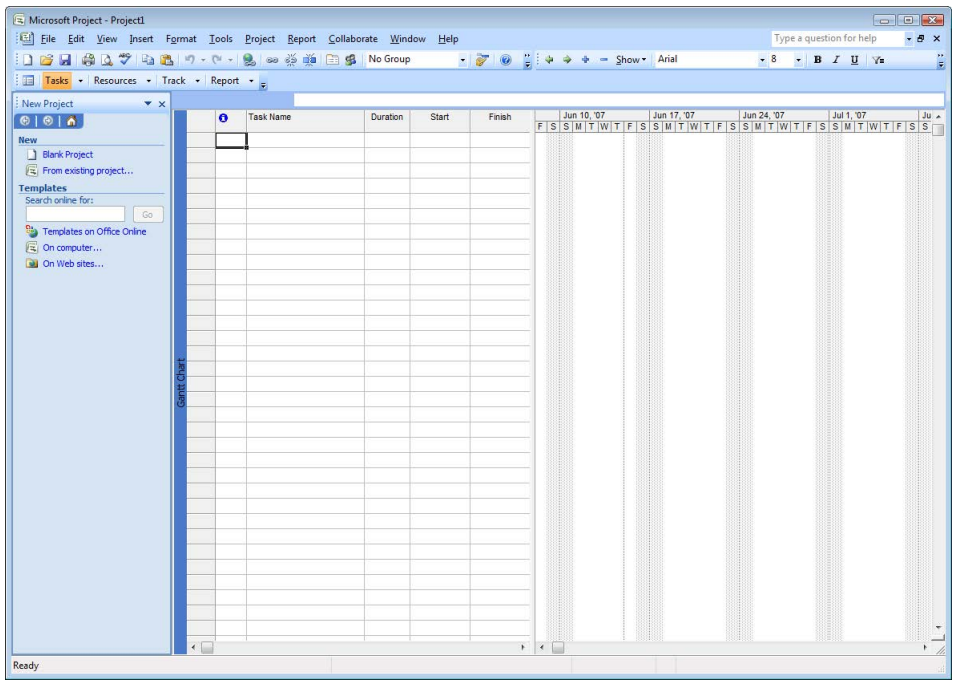


Figure A.5
Online Content settings in Microsoft Project 2007

As noted above, the Help menu can be a valuable resource for assistance with common, and not-so-common issues. The Help menu should become the first stop for answers to questions that may be beyond the scope of this introductory appendix.

For the following section, and many others throughout this appendix, the project being shown in the screenshots is adapted from the Software Development Template. It can be loaded by clicking on the File menu, then choosing "New." The Taks pane is replaced by the New Project pane (see Figure A.6).

Figure A.6 New Project pane in Microsoft Project 2007



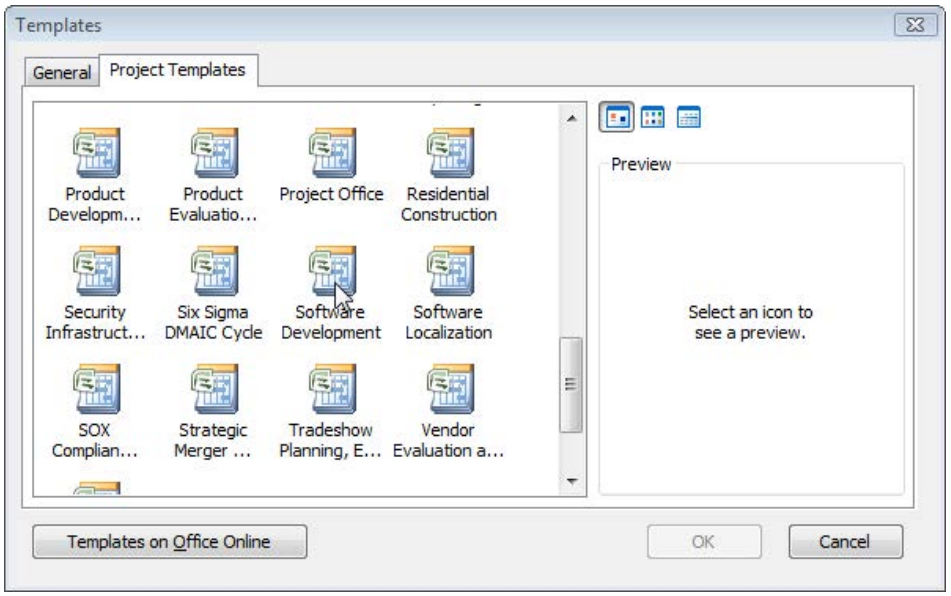


Figure A.7 Microsoft Project 2007 Project Template dialog box

Click on the "On Computer" link under the Templates heading. The Templates dialog box will appear (see Figure A.7), then click on the Project Templates tab to see the templates included in the Microsoft Project software. Scroll down to find the Software Development template. To illustrate how Microsoft Project helps support project activities, the Software Development template will be used to show some of the features of this software. It may be useful for you to open the Software Development template to follow along.

Views in Microsoft Project

When Microsoft Project is opened, it opens by default into the Gantt chart view. Other views of a project also exist, such as a Network Diagram view. These other views (as well as other options) are available using the View menu (see Figure A.8).

The View menu includes the most commonly used views, such as the Calendar view (see Figure A.9), or the Network Diagram view (see Figure A.10). If you can't find the view you're looking for on the main View menu, click on the "More Views" option for a dialog box with all possible view choices and options for editing views (see Figure A.11).

For the remaining sections of this appendix, make sure your Project Guide toolbar is visible in Microsoft Project. To verify that it is open, click on the View menu, move your mouse down to the Toolbars option to open the Toolbar menu, and then verify the Project Guide option is checked (see Figure A.12).

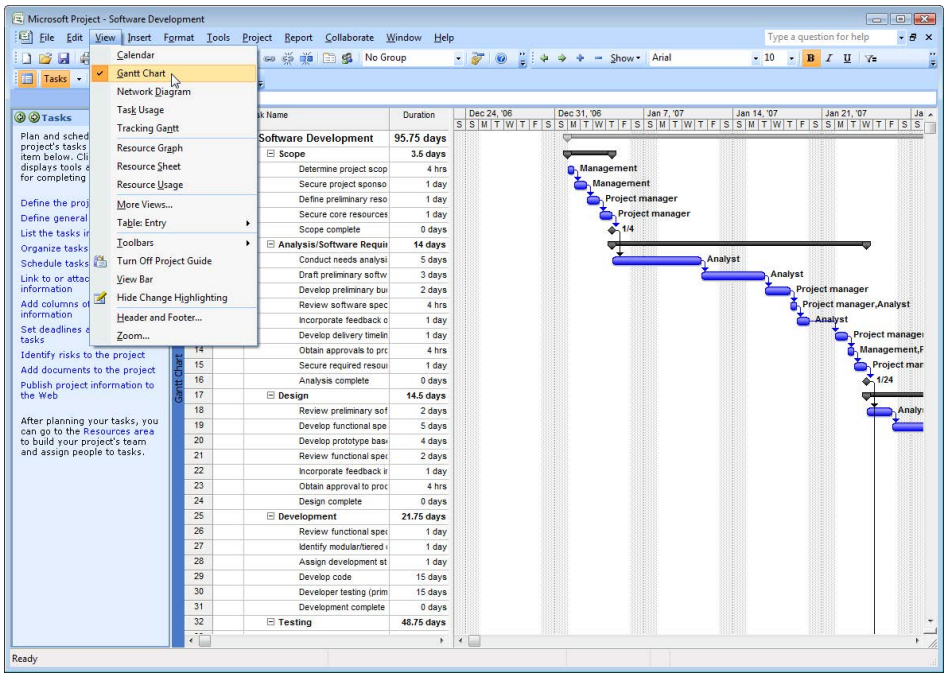
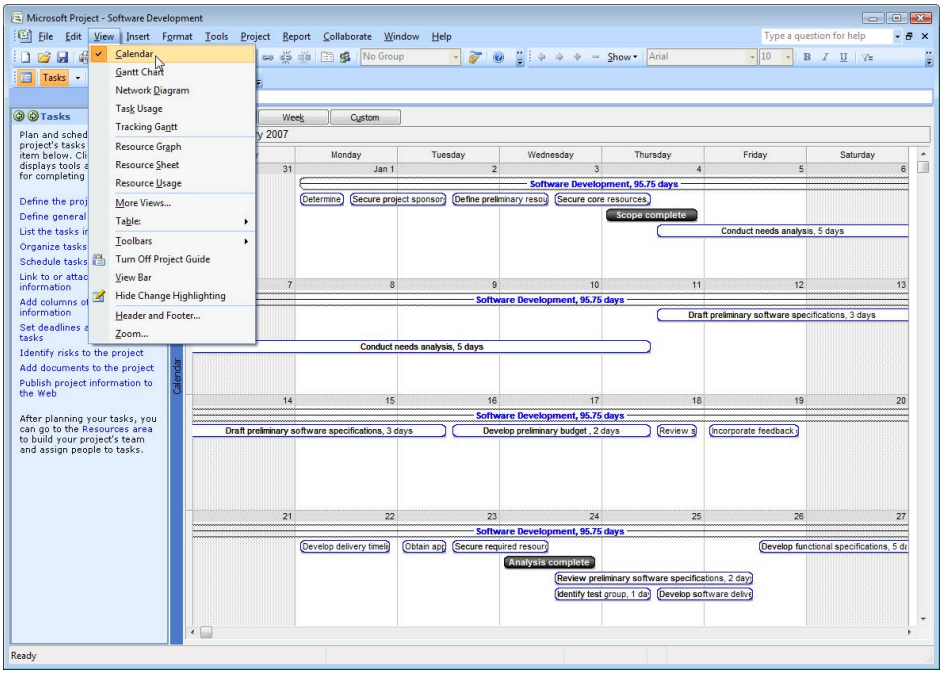


Figure A.8 Microsoft Project 2007 View menu

Figure A.9 Calendar view in Microsoft Project 2007



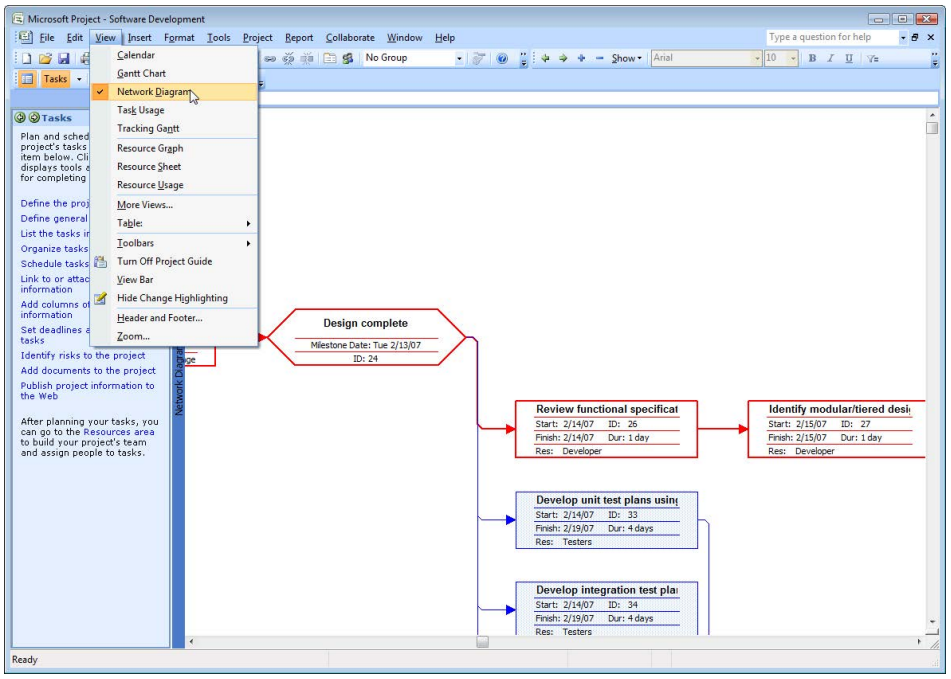
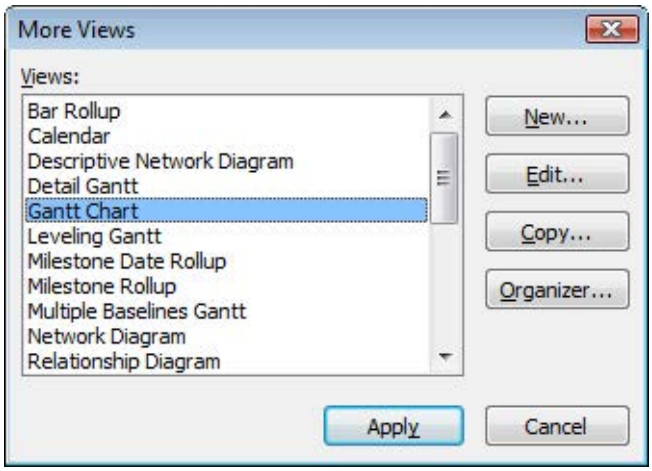


Figure A.10 Network Diagram view in Microsoft Project 2007

Figure A.11 More Views in Microsoft Project 2007



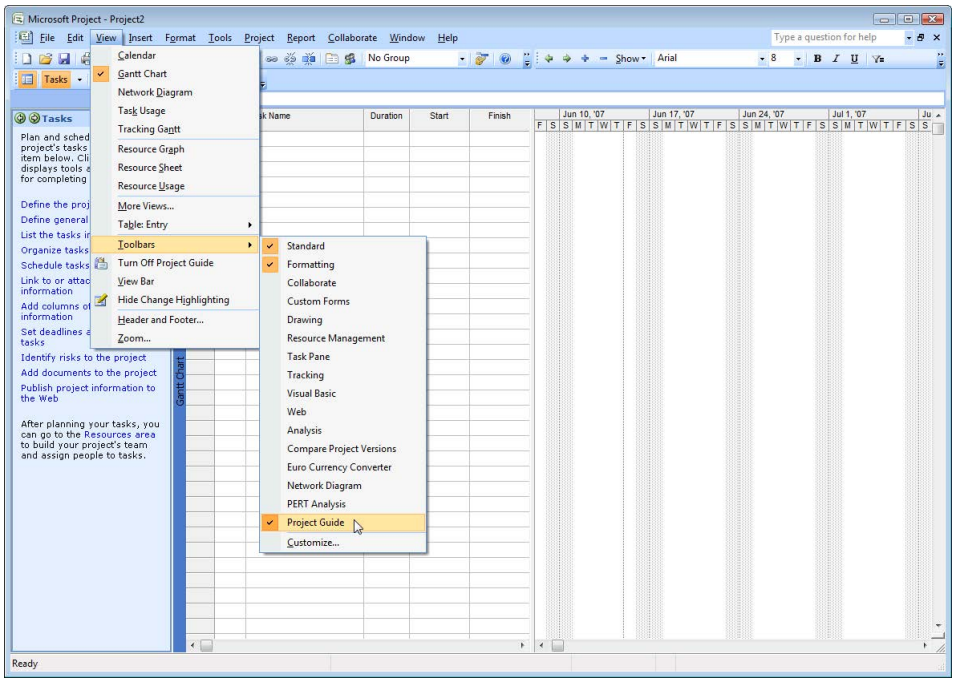
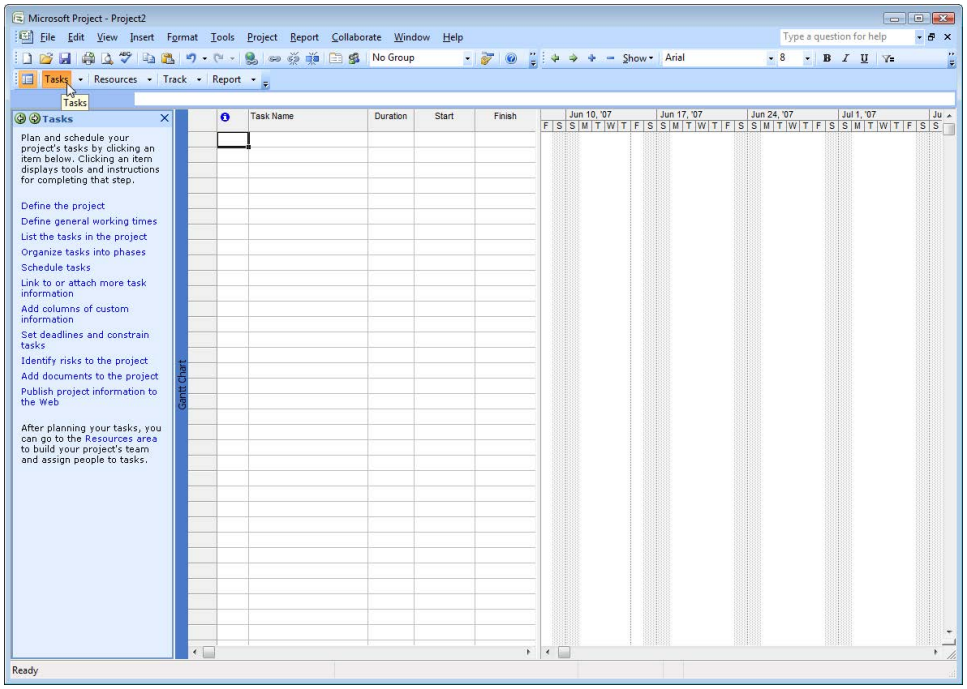


Figure A.12 Project Guide Toolbar view in Microsoft Project 2007

Figure A.13 Opening the Task Pane in Microsoft Project 2007



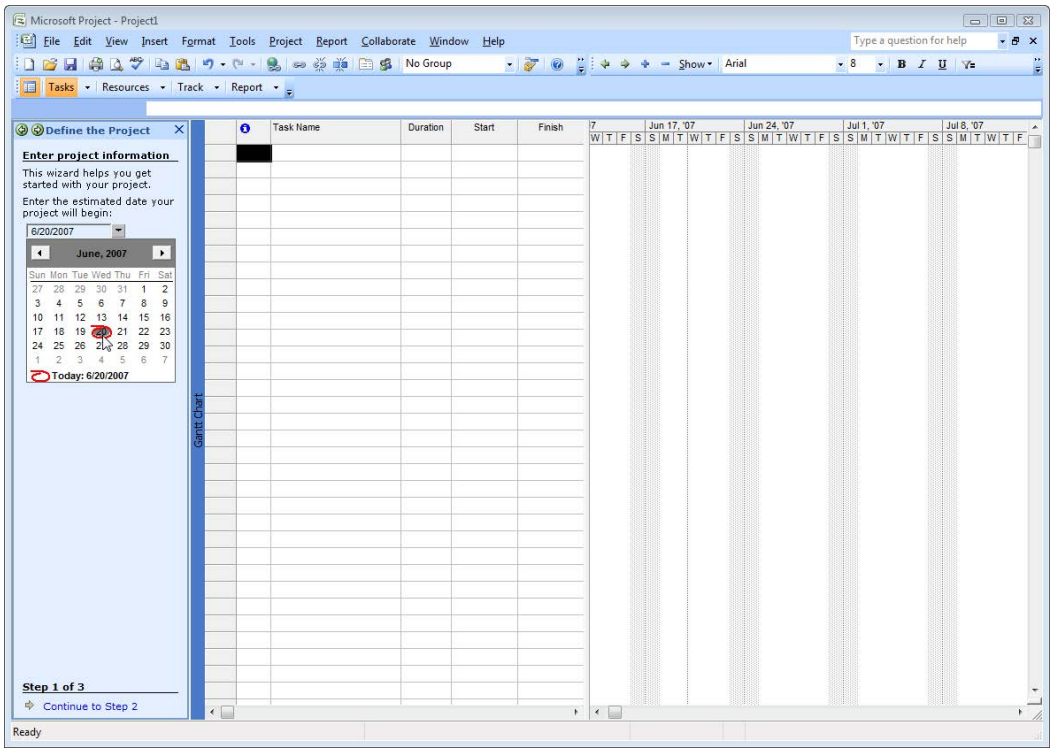


Figure A.14 Set estimated start date in Microsoft Project 2007

Microsoft Project Guide

To help you get started using Microsoft Project 2007 to manage your project, the software has an embedded step-by-step guide to define the project, enter and schedule tasks, identify, assign, and manage resources, track project status, manage changes, and generate reports. The Microsoft Project Guide (see Figure A.2) is a toolbar that includes the most often used tools in Microsoft Project. To begin using the project guide, click on the Tasks button on the Project Guide (see Figure A.13). Note that while we will use the Project Guide to help you become familiar with the functionality of Microsoft Project, in reality all the activities discussed later may be done outside of the Project Guide, and in a different order than specified here.

The Task Pane

After clicking on the Tasks button in the Project Guide, your screen should resemble that in Figure A.3, a new project with the Task Pane open on the left side of the screen. To get started, click on the "Define the project" link in the Task pane. Set the estimated start date for your project in the dropdown menu for the date. For example, in Figure A.14, the estimated start date is June 20, 2007.

Working Time

After choosing the estimated start date of your project, the next step is to define the working time for the project. Defining the project's working time is a five-step process that walks you through setting up the general project working times (specific resources may be scheduled differently later). First, click on the "Define general working times" link in the Task pane to start the five-step process. The first screen (see Figure A.15) offers three calendar templates to choose from

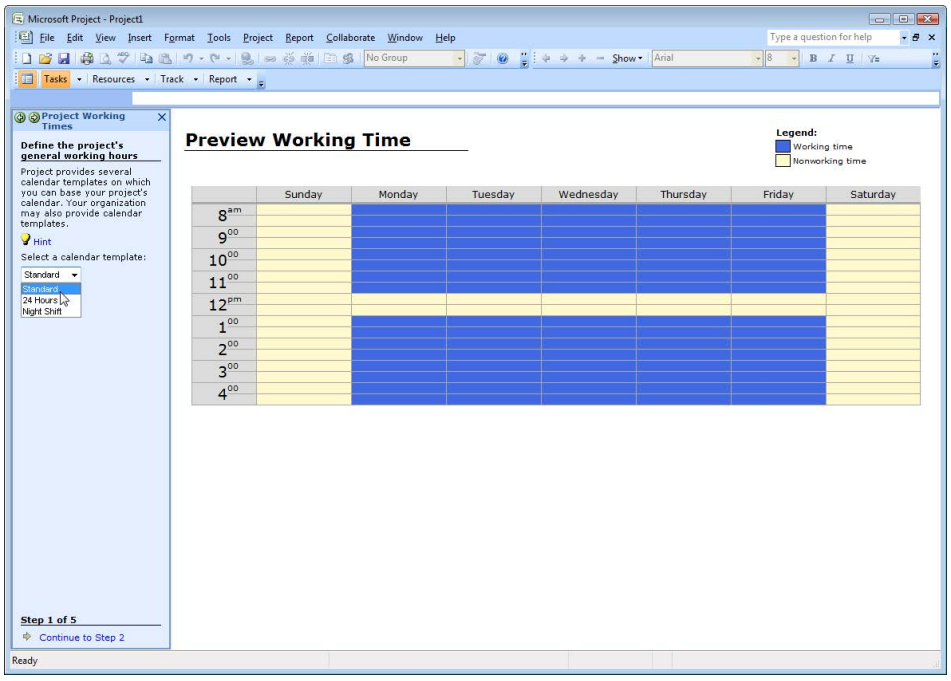
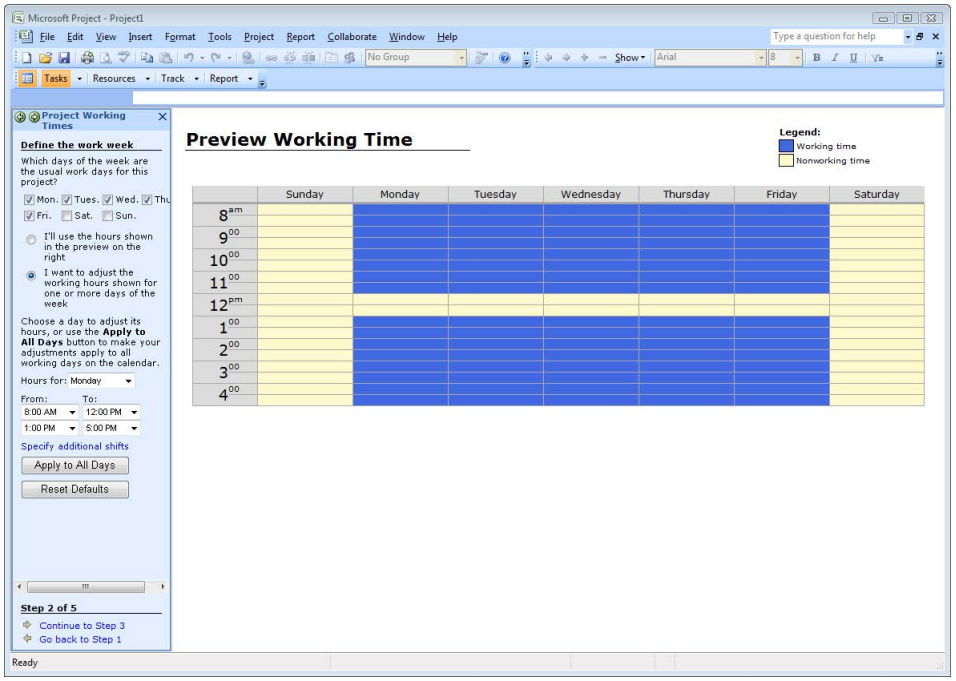


Figure A.15 Microsoft Project 2007 Project Working Times, Step 1

Figure A.16 Microsoft Project 2007 Project Working Times, Step 2



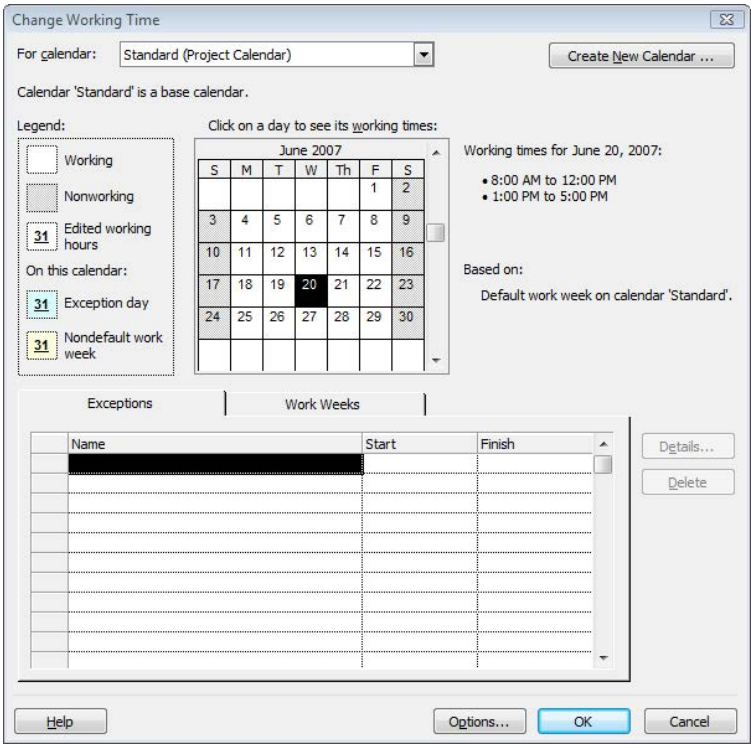


Figure A.17 Microsoft Project 2007 Project Working Times, Step 3

for the basic working time for the project. Default is the standard 40 hours a week, Monday through Friday schedule with weekends off. The other options are Night Shift, and 24 Hours. To illustrate the next steps in this example, we will choose the Standard schedule.

After you have made the general working time choice, click on the "Continue to Step 2" link at the bottom of the Task pane. Step 2 allows you to manipulate the days of the week, and if requested, the daily working times (see Figure A.16).

After making any needed changes, click on the "Continue to Step 3" link at the bottom of the Task pane. Step 3 allows you to specify nonworking time, such as holidays, or to specify hours during a given day that are not working hours. For instance, July 4 is the U.S. national holiday to celebrate U.S. independence. To specify that day as non-working time, click on the "Change Working Time" link in the Task pane to bring up the Change Working Time dialog box (see Figure A.17). Next, click on July 4 to select it. Notice the working time is filled in on the right side of the dialog box (see Figure A.18).

To specify July 4, 2007, as nonworking time, click on the Exception tab and enter "July 4th Holiday" to select the entire day as nonworking time (see Figure A.19). If your organization does work on that day but only works a half-day, as an example, click on the "Details" button, then click on the "Working Times" radio button, and then specify the working time for that day in the fields provided. Figure A.20 shows the dialog box with a morning half-day specified for July 4; notice the date is bold and underlined, indicating that the working time for that day has been edited.

After specifying all nonworking time during the estimated time of the project, click the "Continue to Step 4" link at the bottom of the Task pane. Step 4 allows you to specify the number of hours per day, the number of hours per week, and the number of days per month (see Figure A.21). Notice the instructions in the Task pane suggest making sure these values match those specified in earlier steps. This is important because Project calculates schedules based on hours. So, if you schedule the duration of a task as 2 days and the setting for work days is 8 hours, then Project will specify 16 hours for that task.

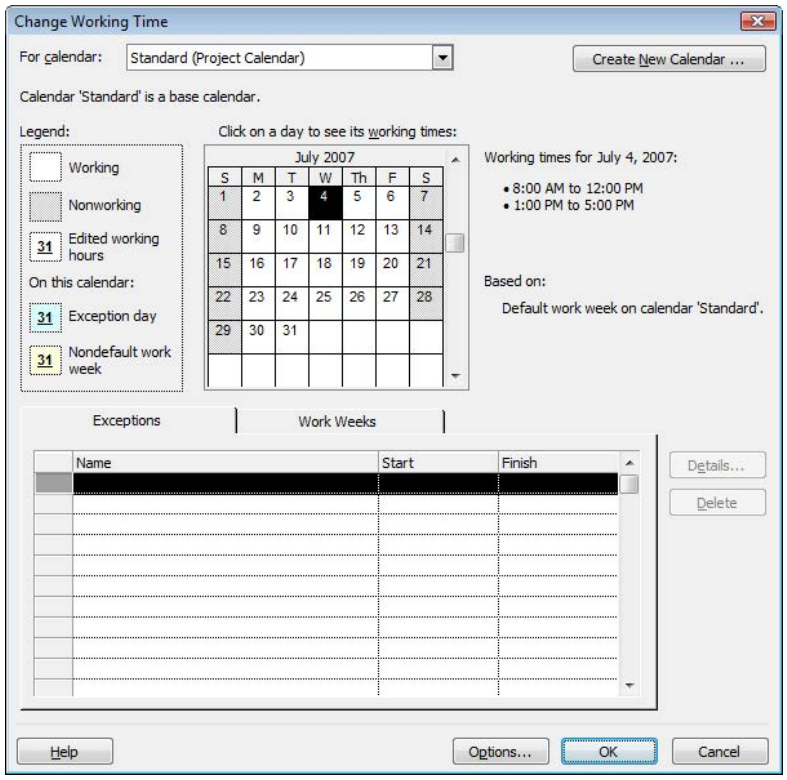
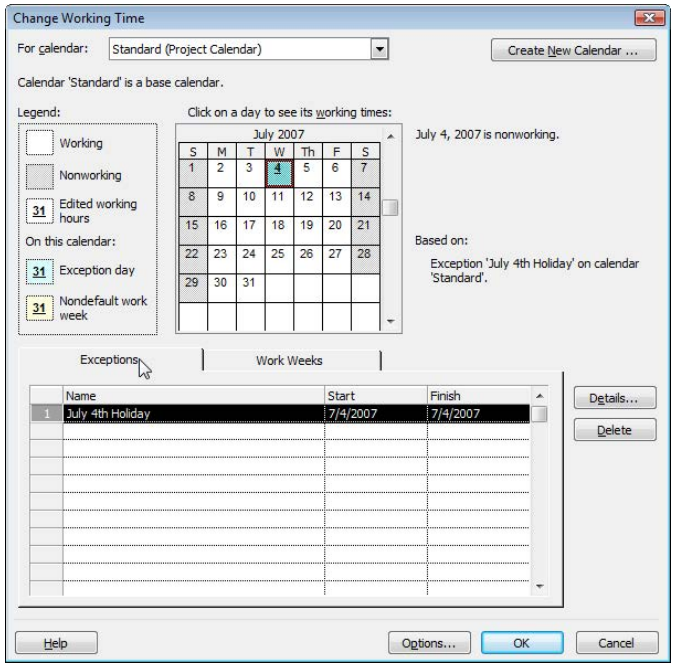


Figure A.18 Microsoft Project 2007 Project Working Times, Step 3, continued

Figure A.19 Microsoft Project 2007 Project Working Times, Step 3, continued (2)



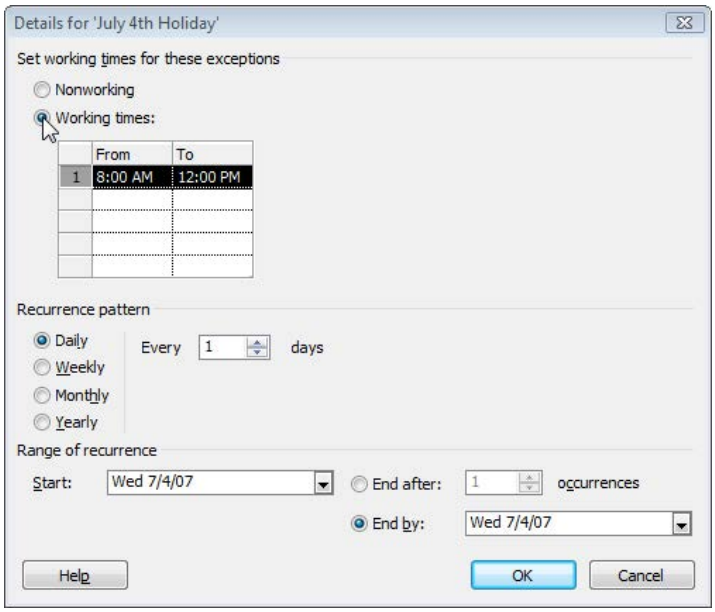
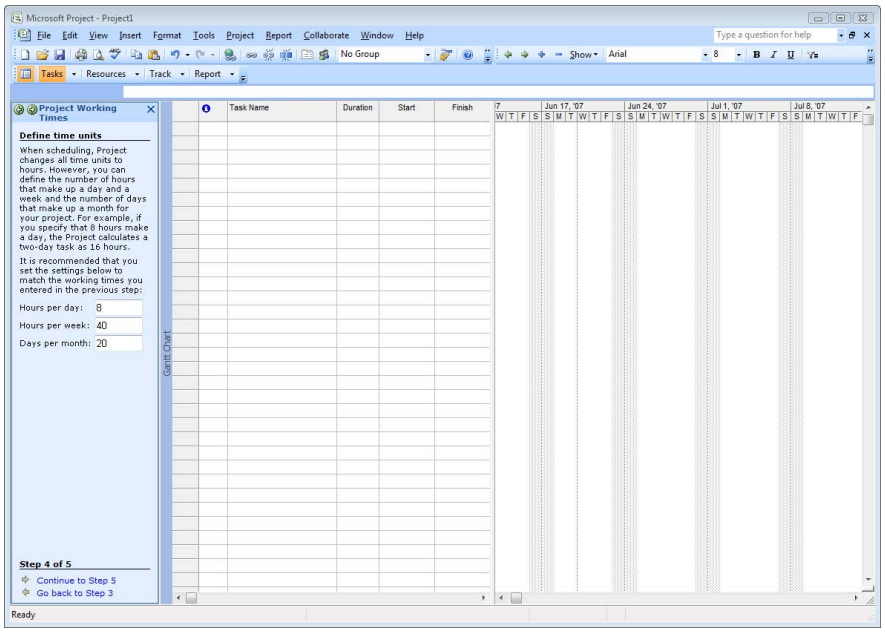


Figure A.20 Microsoft Project 2007 Project Working Times, Step 3, continued (3)

You may wish to make changes here if you have selected the Standard schedule but have made changes to the working times in Step 2. For example, if your organization works on compressed schedules, 4 days per week at 10 hours a day, making changes here will ensure that if you specify a task to take 2 days, it will be a 20-hour task rather than a 16-hour task. Once the values in this step are finalized, click on the "Continue Step 5" link at the bottom of the Task pane. The final step in the Project Working Times process is verification that the project's calendar has been set and that resources will be scheduled based on the calendar that has been specified during these steps (see Figure A.22).

Figure A.21 Microsoft Project 2007 Project Working Times, Step 4



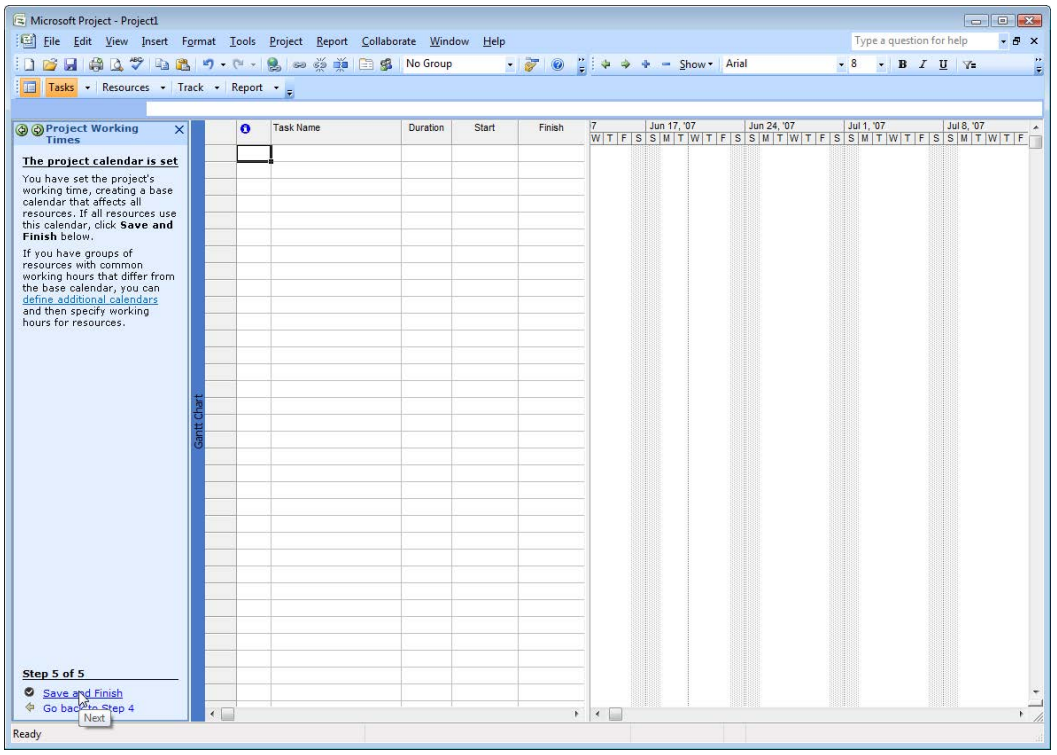


Figure A.22 Microsoft Project 2007 Project Working Times, Step 5

There is an option at this step to define a different calendar for a different set of resources. This might be useful if your organization utilizes a pool of part-time workers, for example. If you are satisfied with the calendar, click on the "Save and Finish" link at the bottom of the Task pane.

Task Entry

Now that the calendar has been set and saved, the next step is to enter the tasks to develop a Work Breakdown Structure (WBS). First, click on the "List the tasks in the project" link in the Task pane to bring up the List Tasks pane (see Figure A.23). There are two additional options to consider here as well. First, there is an Import wizard if there is another file with tasks already listed, such as an Excel spreadsheet. Second, there is the option to specify a task as a milestone.

Notice that Project suggests in this pane specifying durations for the tasks. You may wish to enter durations at this stage; however, if your goal is to develop a WBS (as shown in Chapter 6), you may wish to wait until a later step to specify durations. Figure A.24 shows the beginnings of a task list with no durations specified, that is, a WBS. Notice at this point, that no durations and no start or finish dates have been specified for any tasks.

Once all of the tasks have been entered into the Task entry table, click on the "Done" link in the List Tasks pane to return to the Task pane. The next step is to create summary tasks that represent phases of the project. Click on the "Organize tasks into phases" link in the Task pane to bring up the Organize Tasks pane. Notice in the task list, the first five tasks listed involve issues related to scope. Considering that these tasks are all related, and the fifth task is a milestone referred to as "Scope complete," we may wish to group these five tasks into a larger summary task. To do this, select the first task in the list, and then click on the button to insert a new row (see Figure A.25). For this example, we'll enter the summary task's name as "Scope" (see Figure A.26).

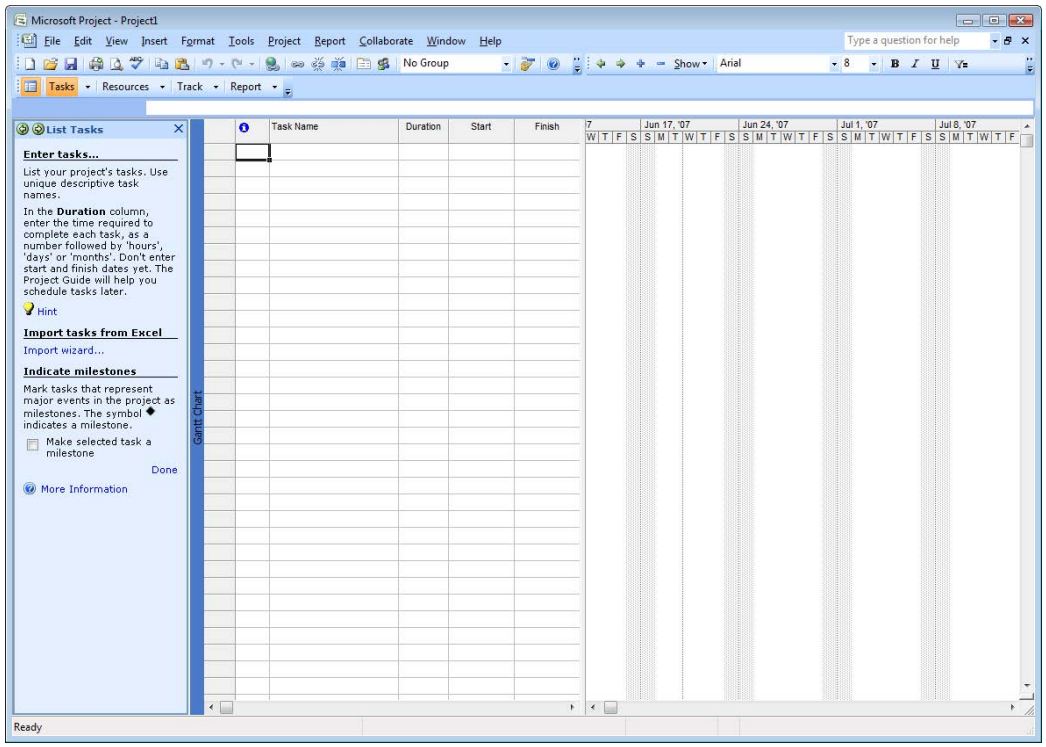
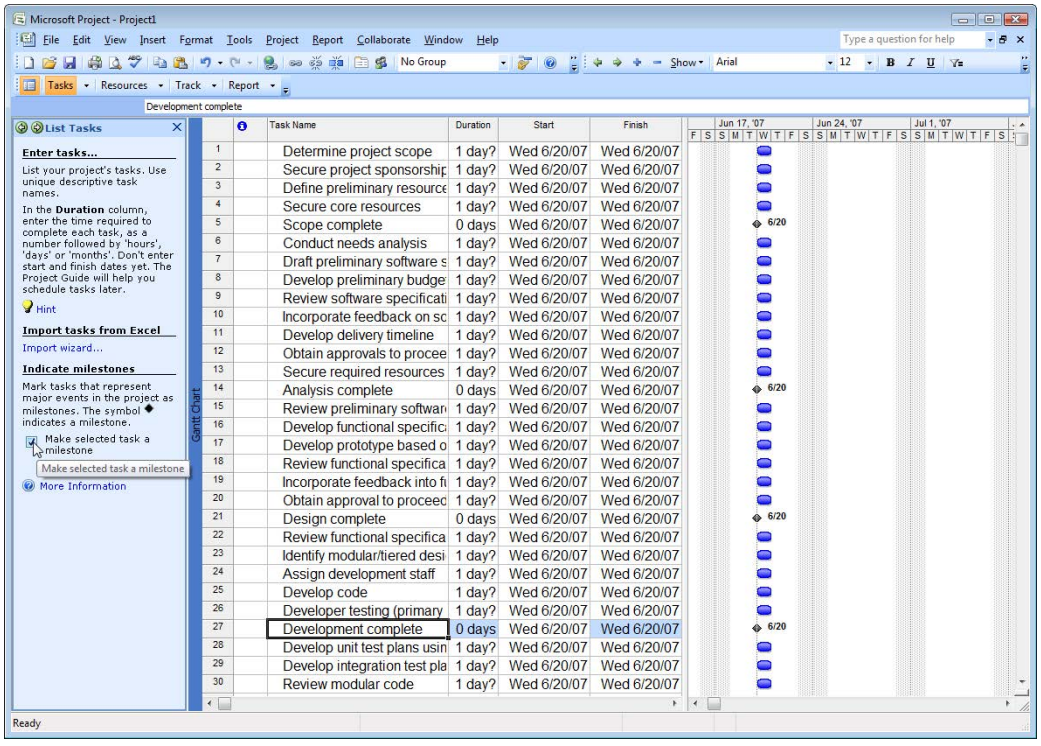


Figure A.23 Enter tasks in Microsoft Project 2007

Figure A.24 Starting a WBS in Microsoft Project 2007



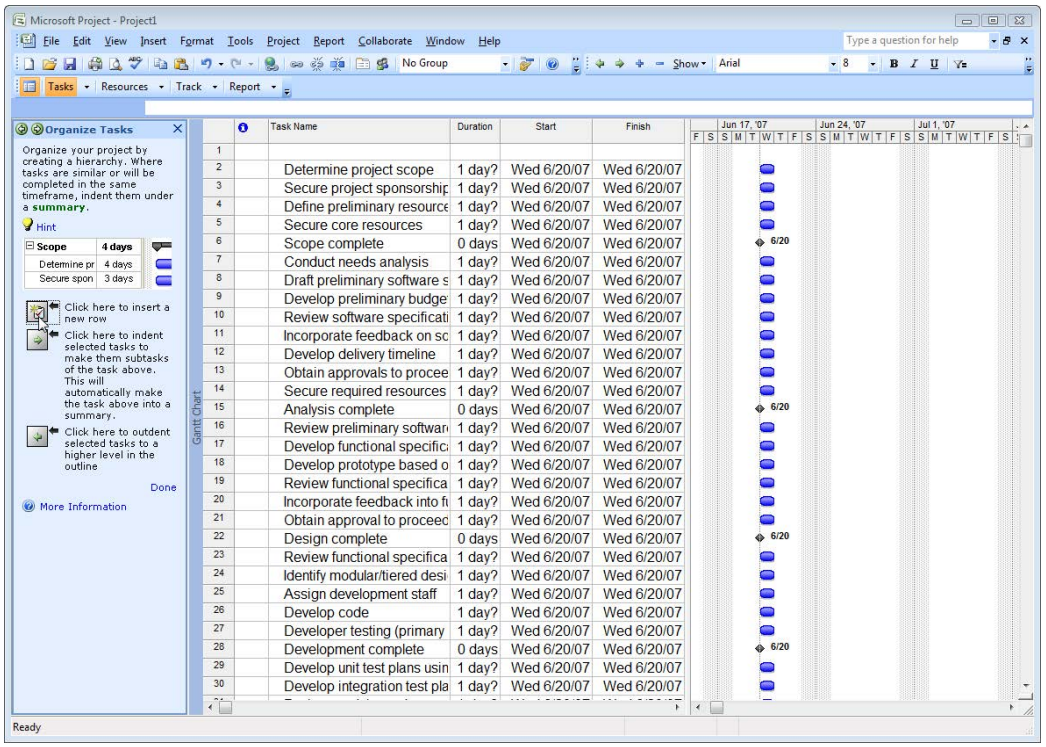
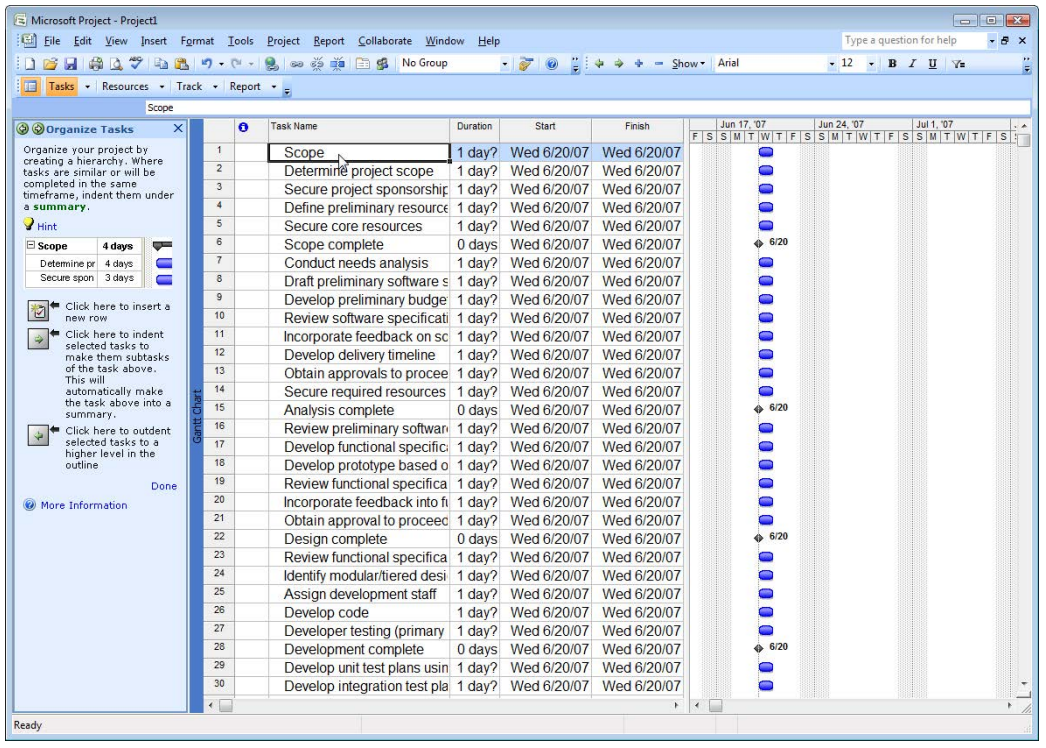


Figure A.25 Inserting a row for a summary task in Microsoft Project 2007

Figure A.26 Entering the summary task name in Microsoft Project 2007



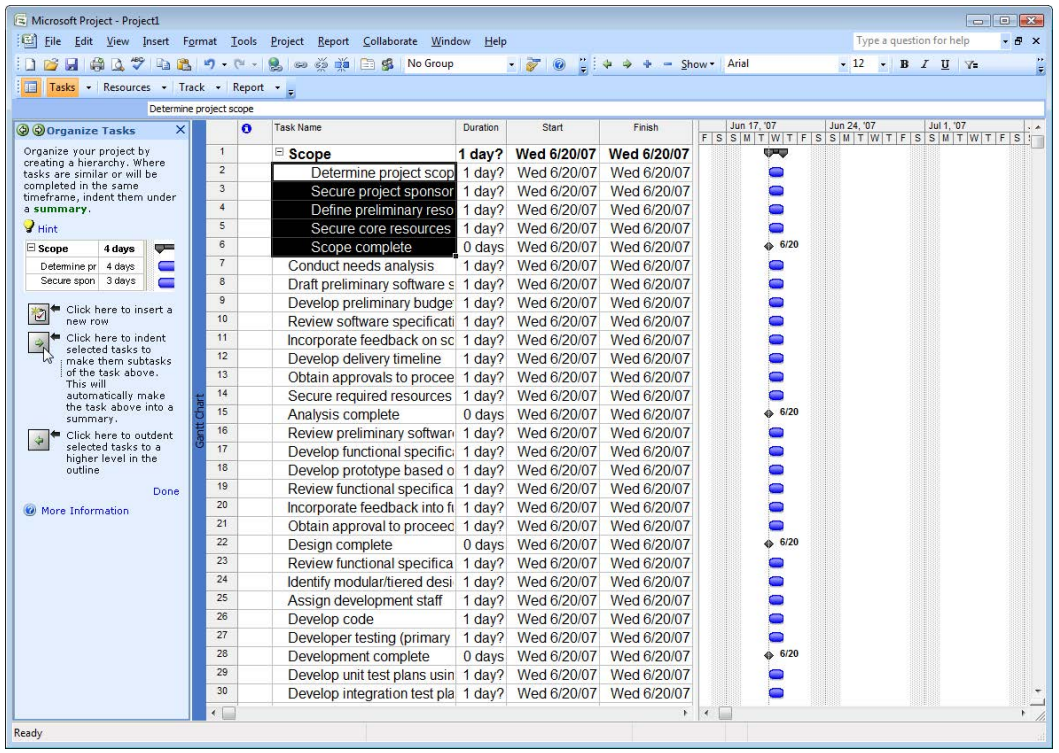


Figure A.27 Indenting subtasks in Microsoft Project 2007

Now, to set the "Scope" task as a summary task, select the five following tasks ("Determine project scope" through "Scope complete"), and then click the button with the arrow pointing to the right to indent the selected tasks (see Figure A.27). Notice that the "Scope" task is now bold and has a black, rather than blue, duration indicator.

In Figure A.28, a row has been inserted to enter a summary task called "Testing," but just entering the task into the row makes it appear as though it is a subtask of the "Development" summary task (see Figure A.29). To make "Testing" a summary task, click on the button (in the Organize Tasks pane) with the arrow pointing to the left. This outdents (moves the indention level to the left) "Testing" (see Figure A.30). Once subtasks to testing are identified and indented, "Testing" will then be displayed as a summary task (see Figure A.31).

Once all of your tasks have been organized, click the "Done" link in the Organize Tasks pane to return to the Task pane. To finalize the WBS, Project can generate WBS numbering codes to identify the levels of decomposition for each task level. To generate the WBS codes for your project, click on the Project menu in the menu bar, mouse over the WBS option, then click on Define Code (see Figure A.32).

Depending on the complexity of your project, and the level of decomposition of the tasks, you can display different levels of the WBS by clicking on the dropdown menu under the Sequence heading and choosing the format of the numbering for that particular level. In Figure A.33, the formatting for the WBS numbering has been set to an uppercase letter, followed by a period and a number for subtask levels.

Next, click the OK button. To display the WBS numbering, select the column you would like the WBS numbering to be next to; in Figure A.34, this is the Task Name column. Next, click on the Insert menu in the menu bar, and click on "Column" to insert a new column to the left of the selected column. The Column Definition dialog box will open; choose WBS from the Field Name dropdown menu. Click the OK button to show the WBS column (see Figure A.35).

Task Scheduling

At this stage, we have a completed WBS in Project that we can use as we estimate activity durations and determine

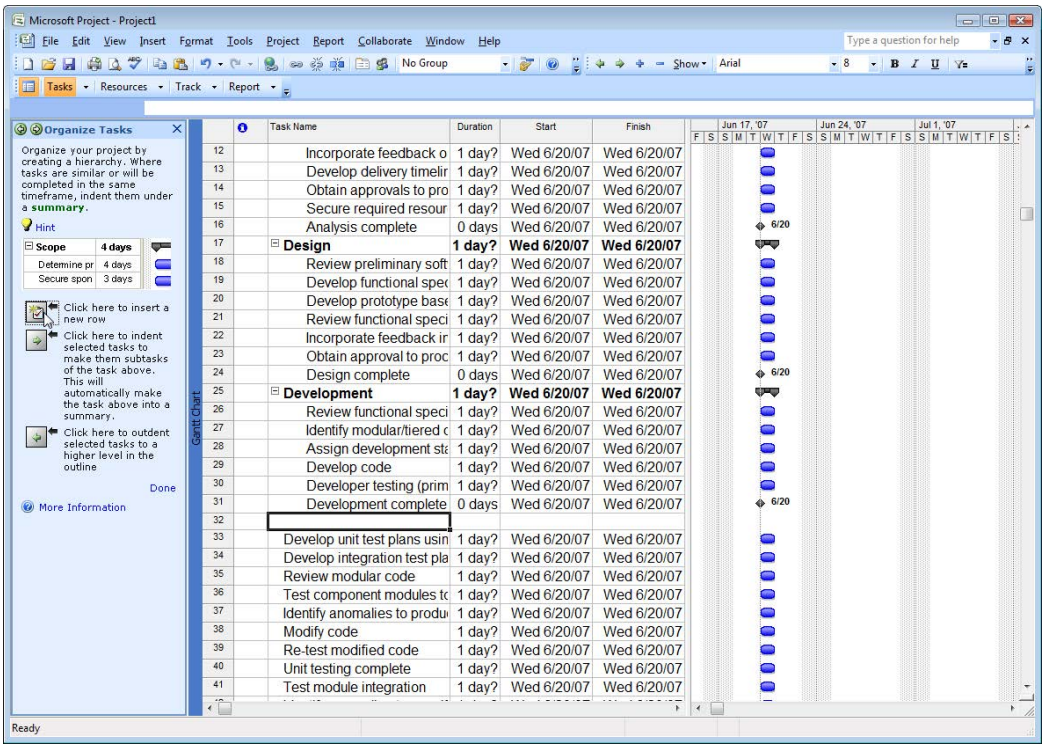
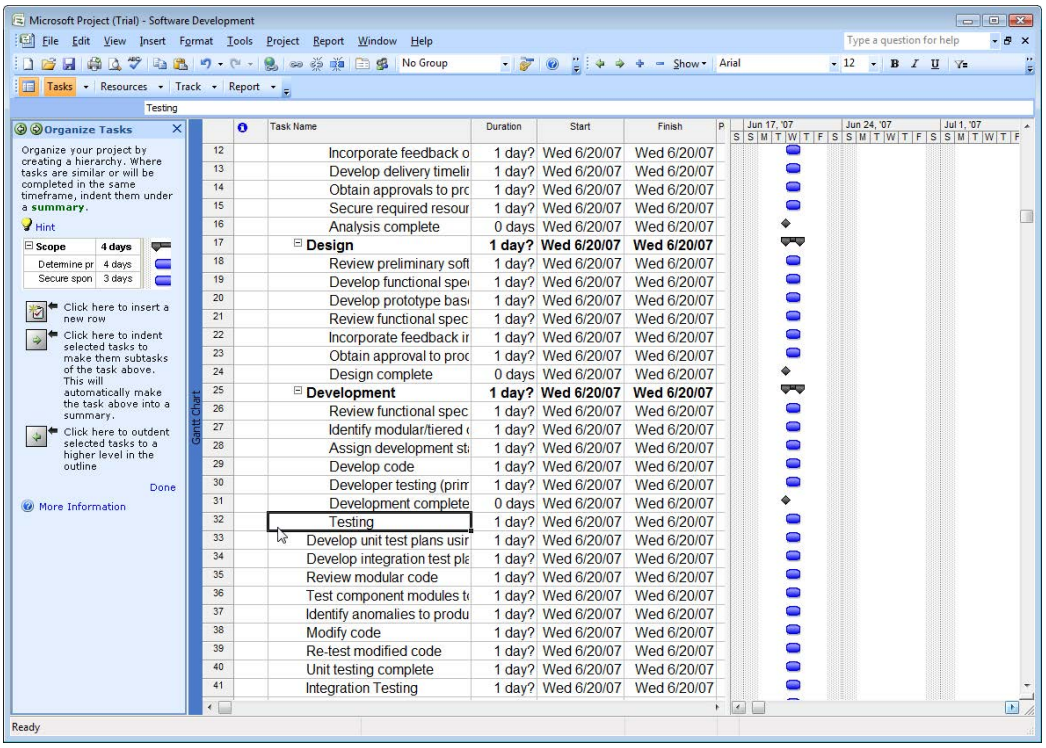


Figure A.28 Continuing summary tasks in Microsoft Project 2007

Figure A.29 Indented summary task in Microsoft Project 2007



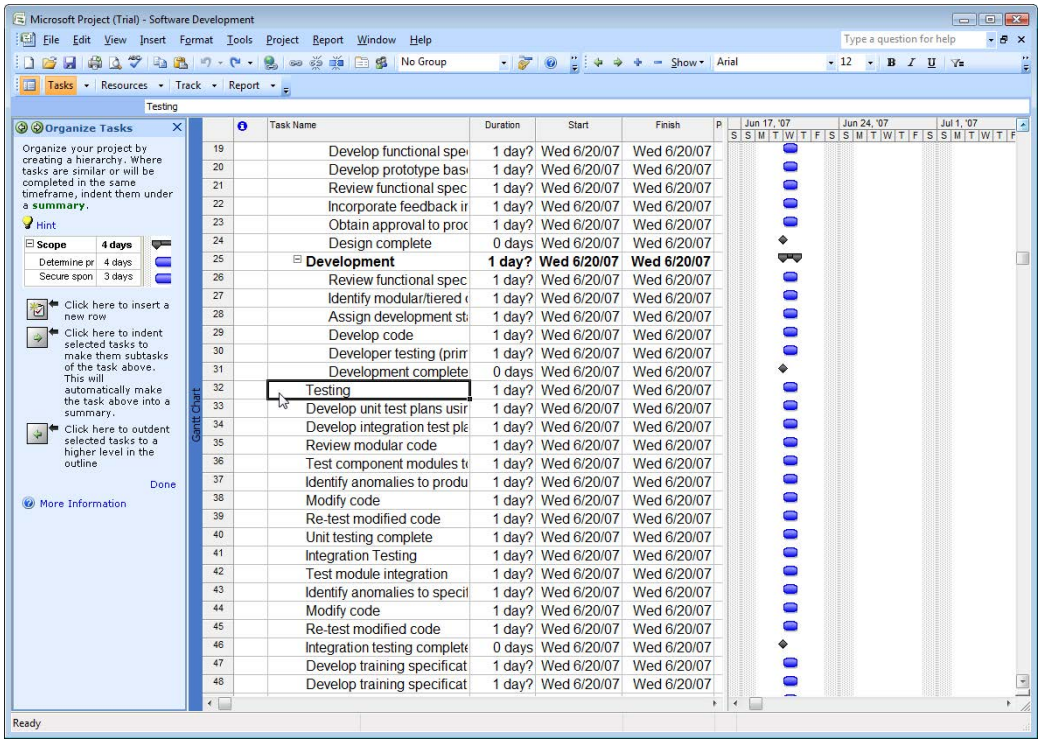
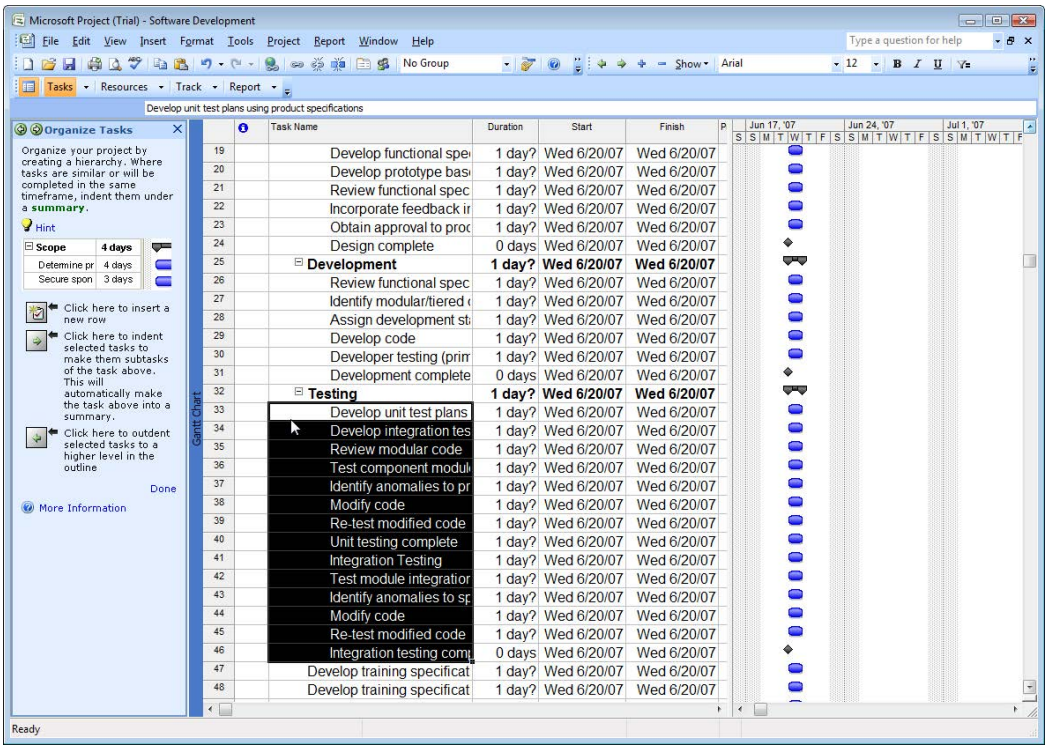


Figure A.30 Outdented summary task in Microsoft Project 2007

Figure A.31 Indenting "Testing" subtasks in Microsoft Project 2007



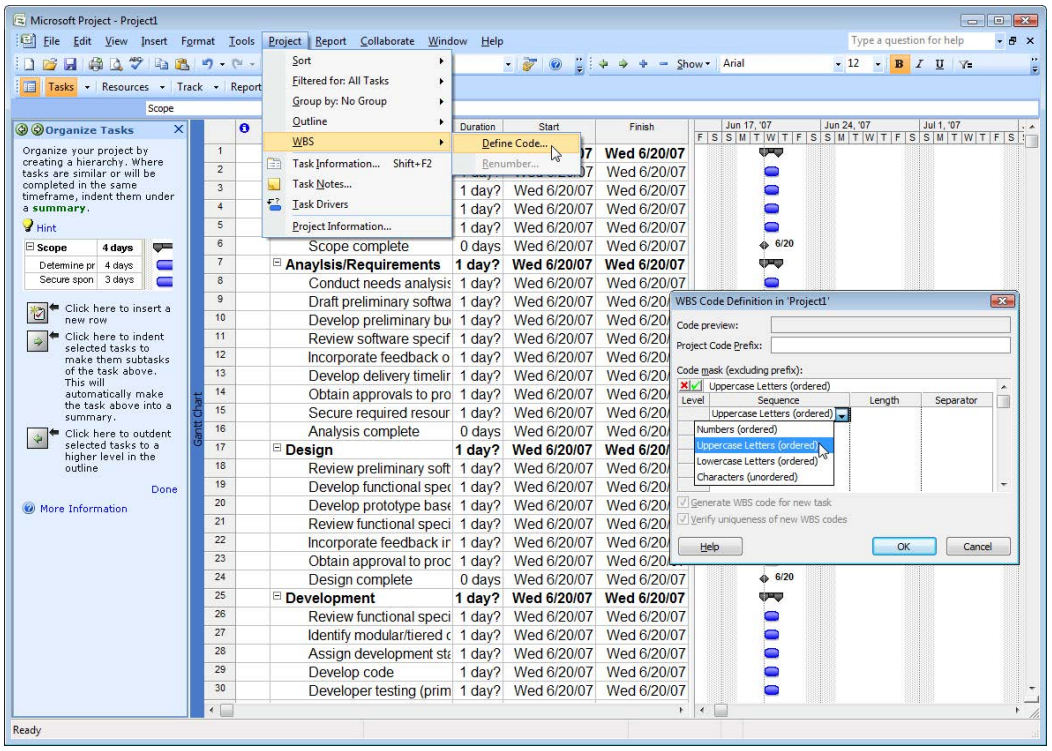
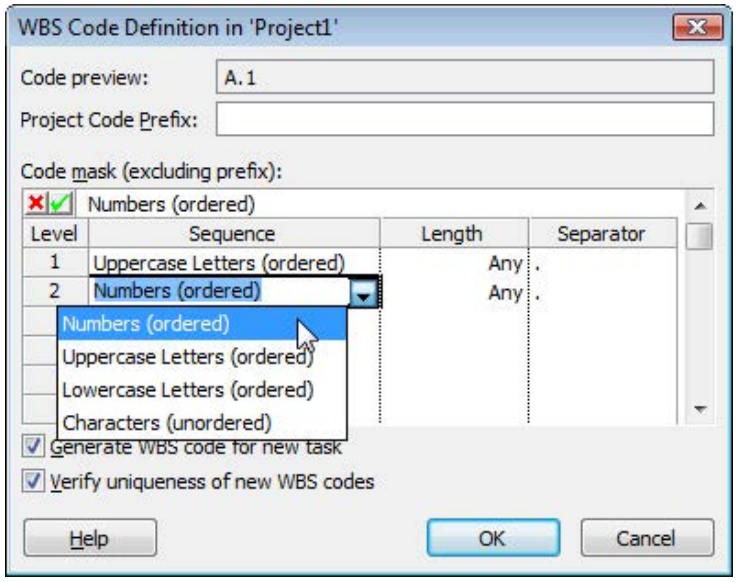


Figure A.32 WBS Code definition dialog in Microsoft Project 2007

Figure A.33 Setting the WBS numbering format in Microsoft Project 2007



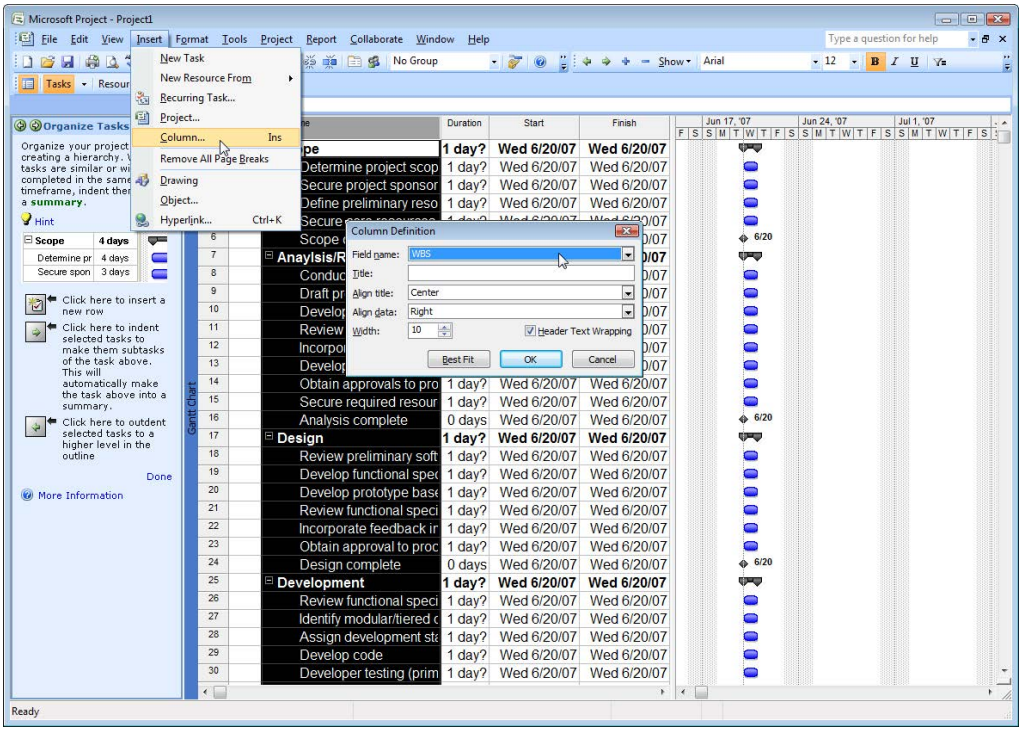
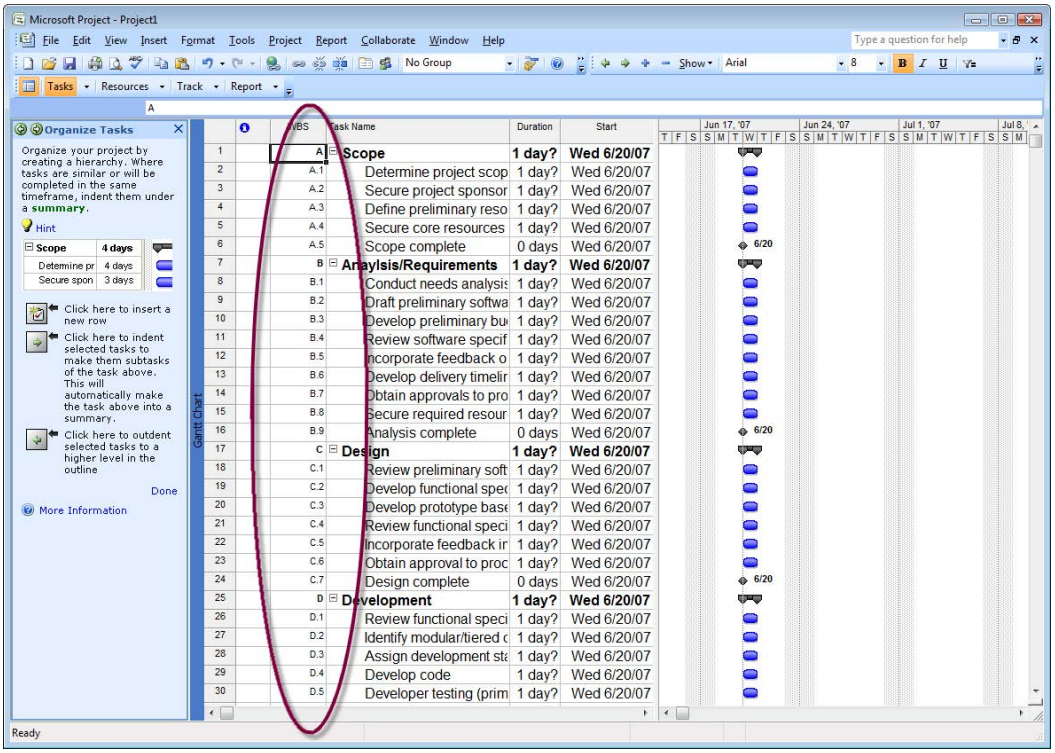


Figure A.34 Insert WBS column in Microsoft Project 2007

Figure A.35 WBS with codes showing in Microsoft Project 2007



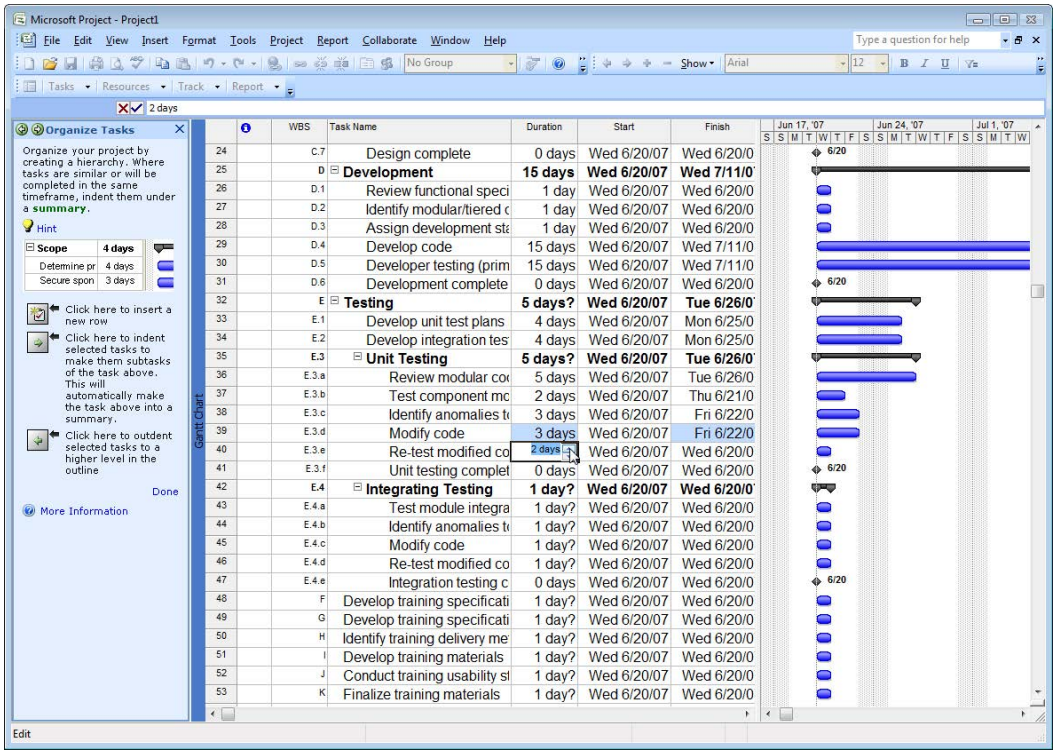


Figure A.36 Setting task durations in Microsoft Project 2007

task dependencies. To set the durations of each task, use the menus in the Duration column, or you can enter any number followed by "days," "hours," or "months." The default is "days," so if you know the task will not take a full day, you may wish to enter the time in hours (see Figure A.36). Do not set start or finish times; Project will calculate these automatically. If you need to constrain a task to begin or end at a specific time, that will be done in a later step. Figure A.37 shows the Tasks with durations set. Notice that Project will not allow you to set a duration for the summary tasks because Project will compute these automatically. Thus, you only need to set the durations for tasks that are not summary tasks.

Once you have set the durations for all of your tasks (milestones remain with 0 durations), it is time to schedule the tasks by setting their dependencies. From the main Task pane, click on the "Schedule tasks" link to bring up the Schedule Tasks pane (see Figure A.38). Three options are available in this pane for setting task dependencies—finish to start, start to start, and finish to finish. To set a dependency between two tasks, select the tasks in the Task entry table, then click on the dependency you would like to specify. Figure A.38 shows a finish to start dependency for tasks A.1 and A.2.

If you need to change a dependency after it is set, you may change the relationship to start to finish by double clicking on the dependency arrow on the Gantt chart to bring up the Task Dependency dialog box (see Figure A.39). Click on the dropdown menu to choose from the four dependency types. Use this dialog to set lag times for tasks as well.

For the purposes of this running example, we will specify all dependencies as finish to start. If several tasks are sequential, you can select all of the sequential tasks at once and then click the finish to start dependency button to set the dependencies for those tasks.

Now with all of the task dependencies set, notice that Project has determined the start and finish dates and times for each task based on the project's estimated start date, working and nonworking times, and task parameters (see Figure A.40). Additionally, after setting task dependencies, the Predecessor column in the Task entry table is now completed.

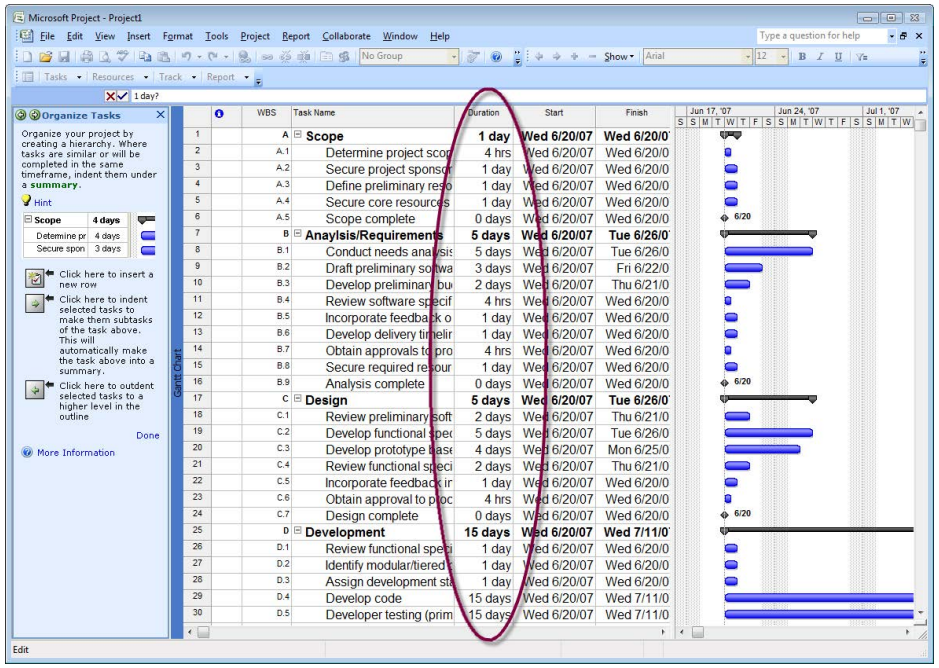
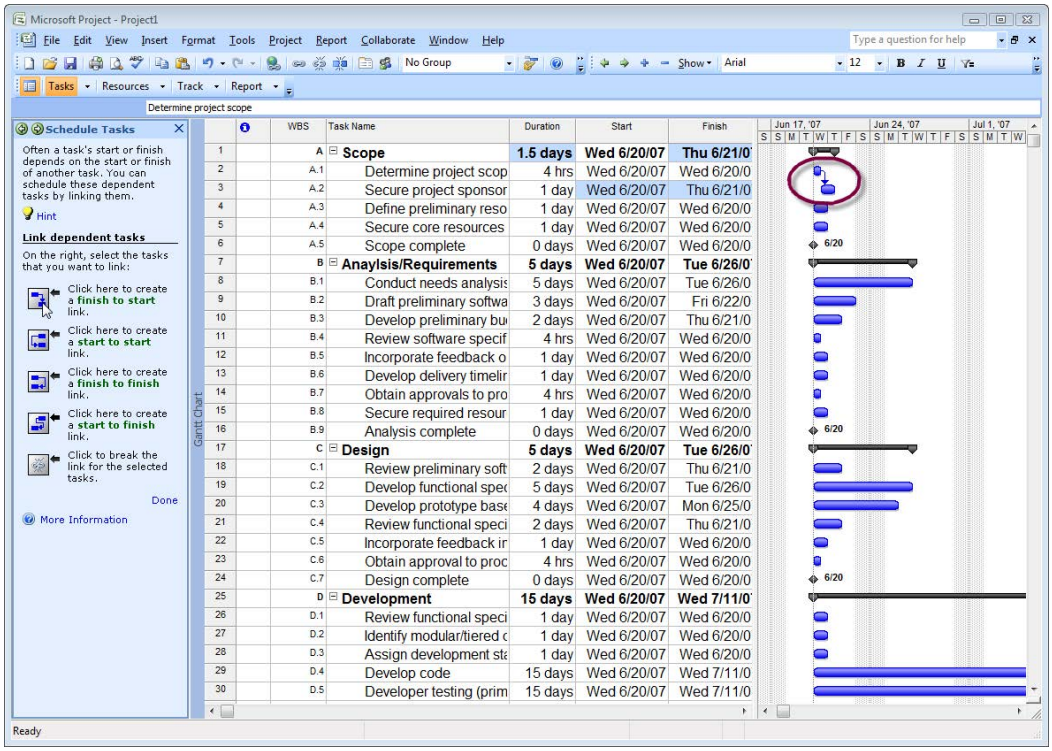


Figure A.37 WBS with task durations set in Microsoft Project 2007

Figure A.38 Setting task dependencies in Microsoft Project 2007



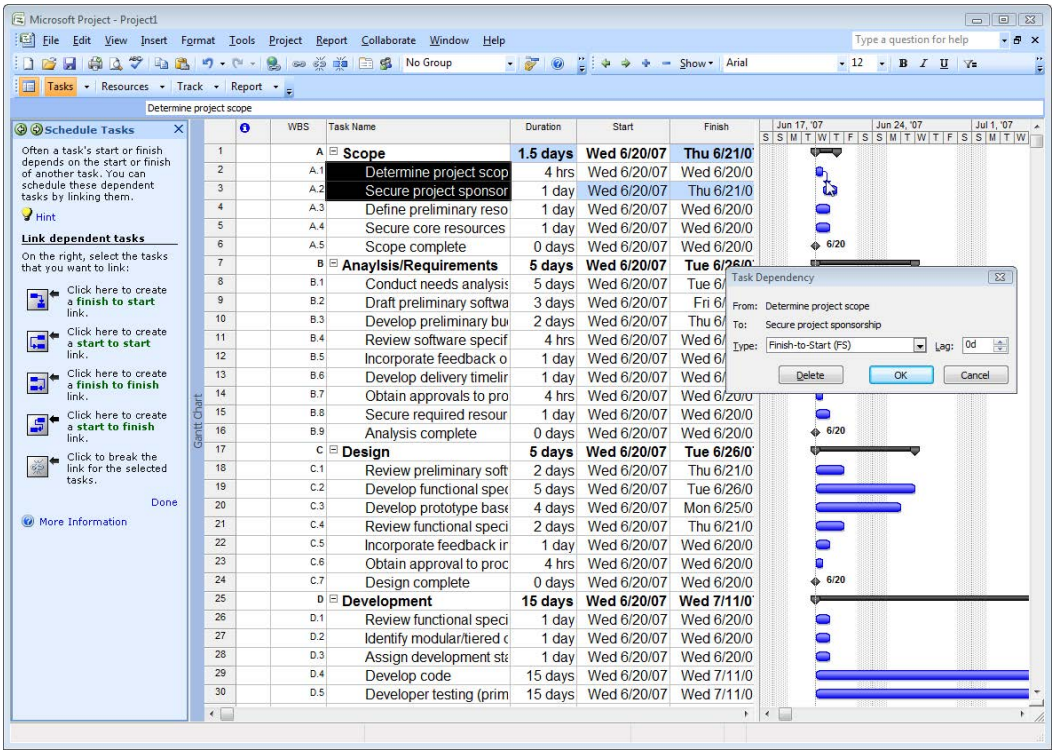
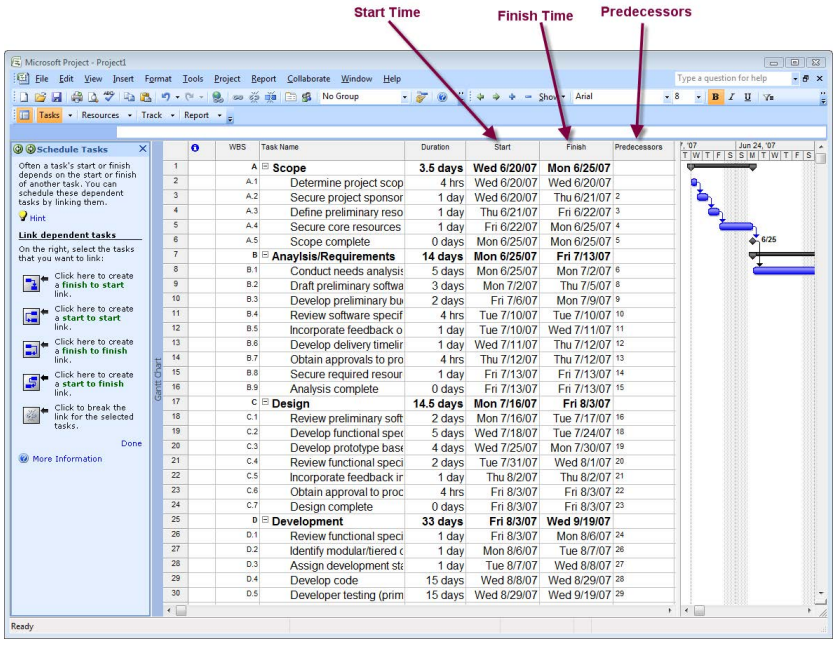


Figure A.39 More dependencies in Microsoft Project 2007

Figure A.40 Task dependencies set in Microsoft Project 2007



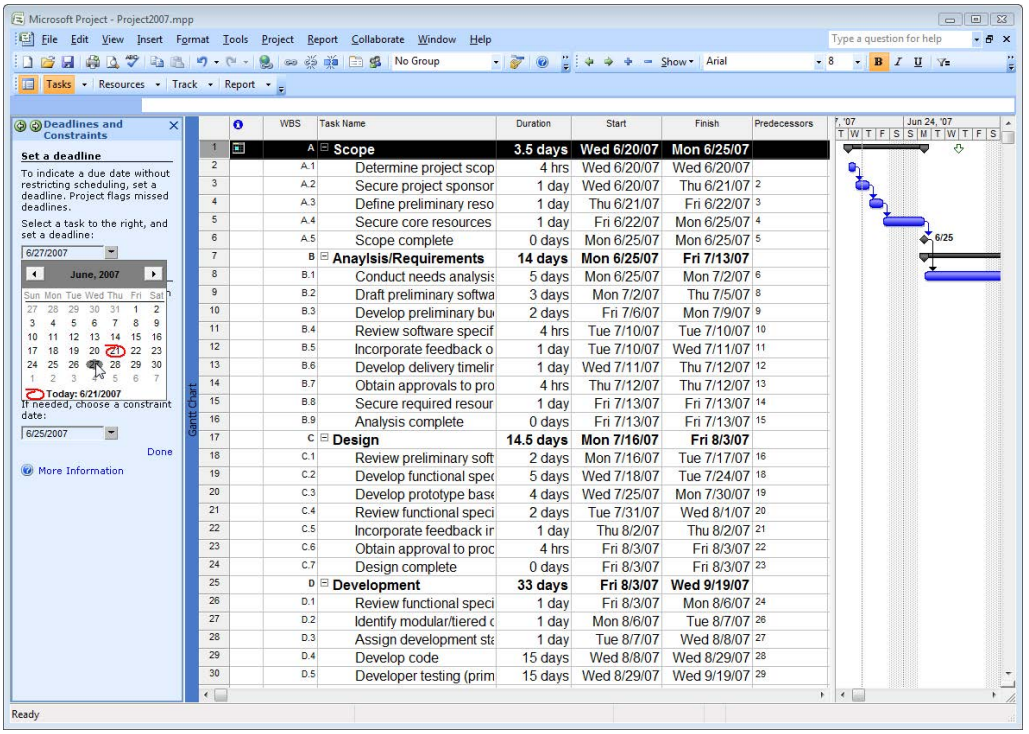


Figure A.41 Set deadline for summary task in Microsoft Project 2007

Finally, in project scheduling, tasks may sometimes have specific deadlines or may not be able to begin a certain date. In these cases, you may wish to set a deadline for (or constrain) those tasks. To set a deadline click on the "Set deadlines and constrain tasks" link in the Task pane. This will open the Deadlines and Constraints pane. The top half of the pane can be used to set a deadline for a task. The bottom half can be used to set various types of constraints on the task. If you need to set a deadline for a task, select the task you wish to set the deadline for and then click the dropdown menu in the "Set a deadline" portion of the Deadlines and Constraints pane to select a date from the calendar. Figure A.42 shows a deadline being set for the Scope summary task for Wednesday, June 27, 2007. It might be useful to set such a deadline if there is slack in the schedule for that task but the task requires some resource that is only available until the deadline date.

Another option is to set a constraint on a task. By default, every task is set to start as soon as possible. The other options for constraints are shown in Figure A.42. For instance, you may wish to push back a task as long as possible, particularly one with float or slack, in which case you would set the constraint to start "As late as possible."

Displaying the Critical Path

At this stage, you might want to have the critical path shown in the Gantt chart. To display the critical path on your Gantt chart, from the Format menu choose "Gantt Chart Wizard." The wizard will lead you through several steps that will allow you to make a number of changes to the appearance of the Gantt chart (see Figure A.43). Besides showing the critical path, you can choose to show the baseline, and on subsequent screens you can specify resources and dates to be shown on the Gantt chart as well.

When you choose to show the critical path, tasks that are on the critical path are shown in red. You may wish to change the font color of the critical path tasks in the task entry table as well. To change the critical path tasks' font color, from the Format menu, choose "Text Styles" to open the Text Styles dialog box (see Figure A.44). From the Item to Change dropdown menu, choose Critical Tasks; then from the color dropdown menu, choose Red. You also may wish to bold and/or underline the critical tasks, which can be done in this dialog box as well. After you have made the changes you wish to make, click the OK button to return to the Gantt chart view (see Figure A.45).

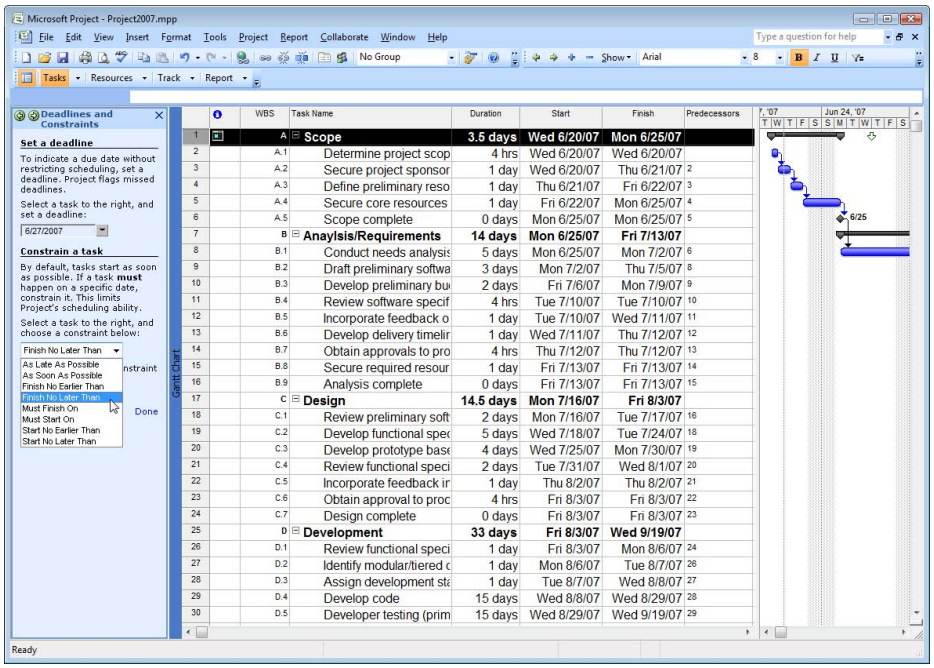
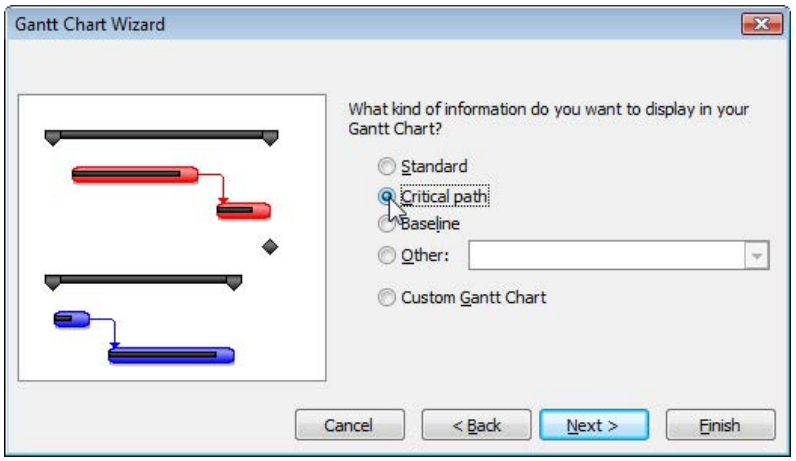


Figure A.42 Constraints in Microsoft Project 2007

Figure A.43 Gantt chart wizard, critical path in Microsoft Project 2007



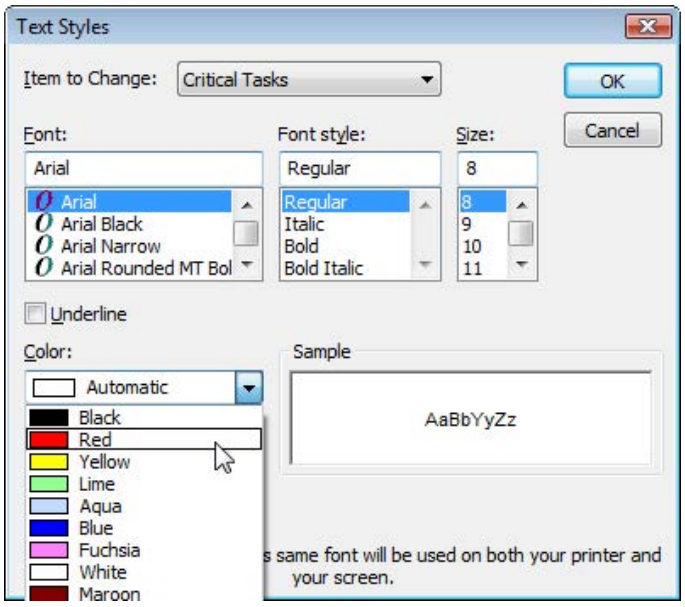
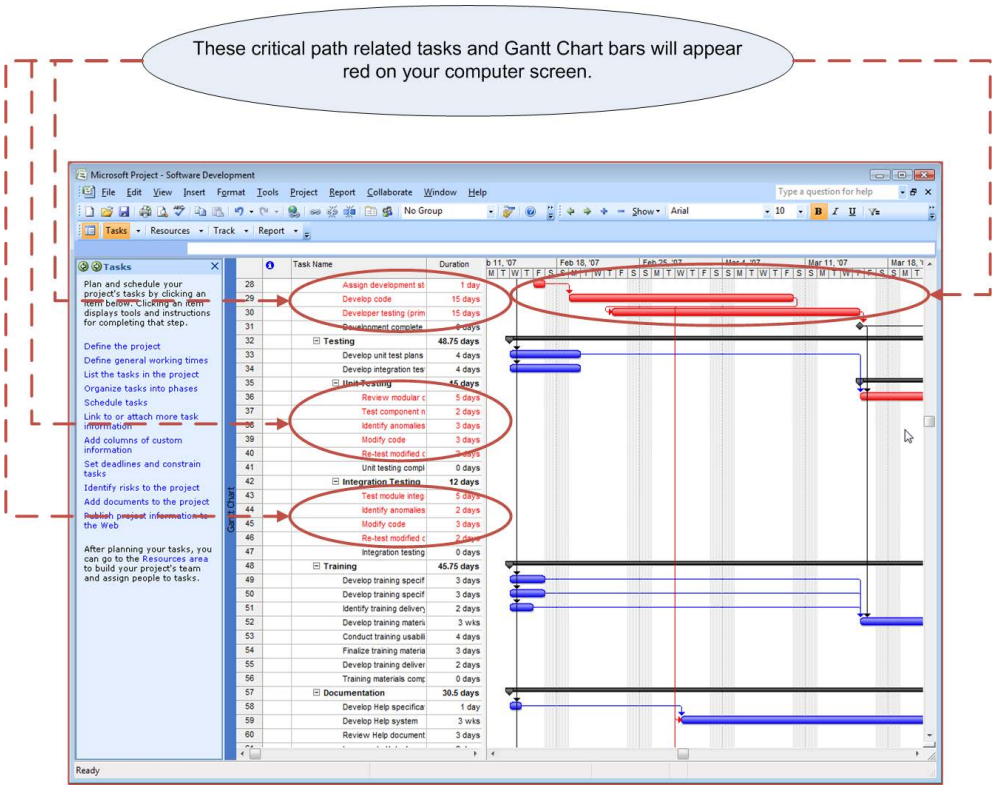


Figure A.44 Critical path tasks font color in Microsoft Project 2007

Figure A.45 Critical path in Microsoft Project 2007



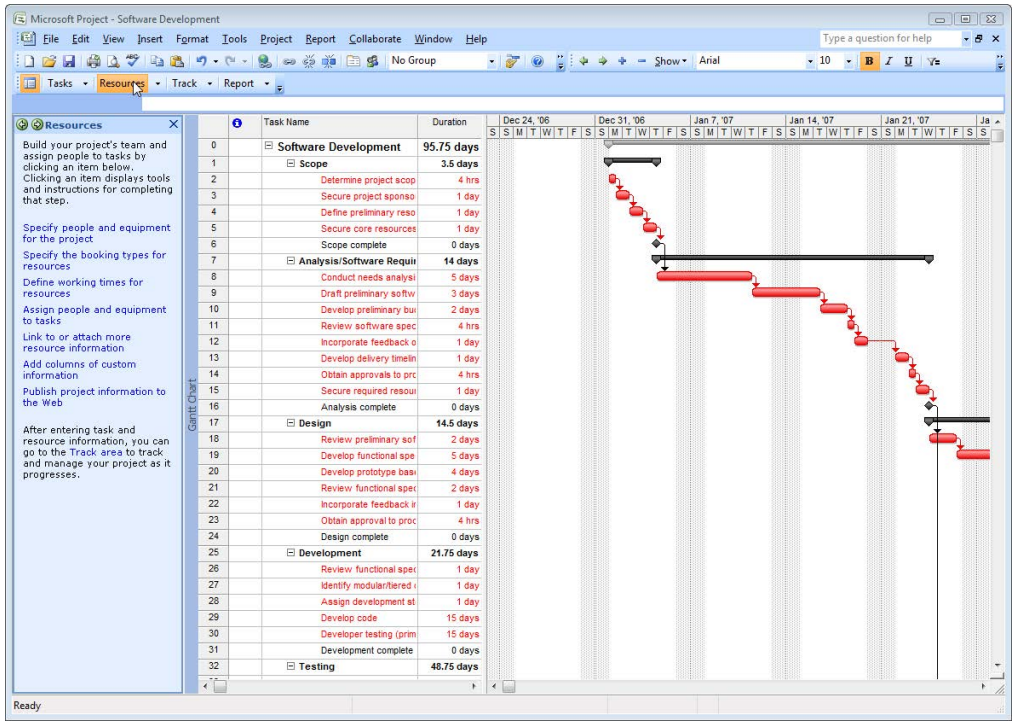


Figure A.46 Resources pane in Microsoft Project 2007

The Resources Pane

Now that the project has been decomposed and tasks have been identified, their durations estimated, and scheduled, it is time to identify and assign resources. To begin working with resources, click on the Resources button on the Project Guide toolbar. The Resources pane will open on the left side of the Task entry table (see Figure A.46).

Enter Resources

The first step is to identify the people and equipment that will comprise the resources for your project. Click on the "Specify people and equipment for the project" link in the Resources pane to open the Specify Resources pane (see Figure A.47). The screen now shows the Resource entry table and the Specify Resources pane gives three options for identifying resources for your project. If your organization maintains a company-wide address book (e.g., Outlook Exchange Server), or a company directory, click on the radio button next to the relevant choice to bring up the dialog box to choose the resources to assign to the project.

For the purposes of this appendix, the following examples will be based on manually entering resources. Click on the radio button next to "Enter resources manually" and begin entering your human resources into the Resource entry table (see Figure A.48). The columns allow you to enter the resource's name, e-mail address, hourly rate, and overtime rate of pay. Other columns, such as material resources, are available and will be covered below.

Notice the "Entering Material Resources" link in the Specify Resources pane. If you click that link, detailed instructions will be shown in the pane on how to enter material resources. Several steps should be taken to enter material resources. First, we need to add two columns to the Resource entry table. Select the E-mail address column by clicking on the column heading. Next, select "Column" from the Insert menu to open the Column Definition dialog box. From the "Field name" dropdown menu, choose "Type" and click OK to insert the Type column (see Figure A.49).

The next column to add is the Material Label column. You can follow the steps above or, after selecting the e-mail address column, right click on the column heading and select "Insert Column" to bring up the Column Definition dialog box. Select "Material Label" from the "Field name" dropdown menu and click OK to insert the Material Label column (see Figure A.50). Once these columns have been added, enter any material resources needed for the project. These may

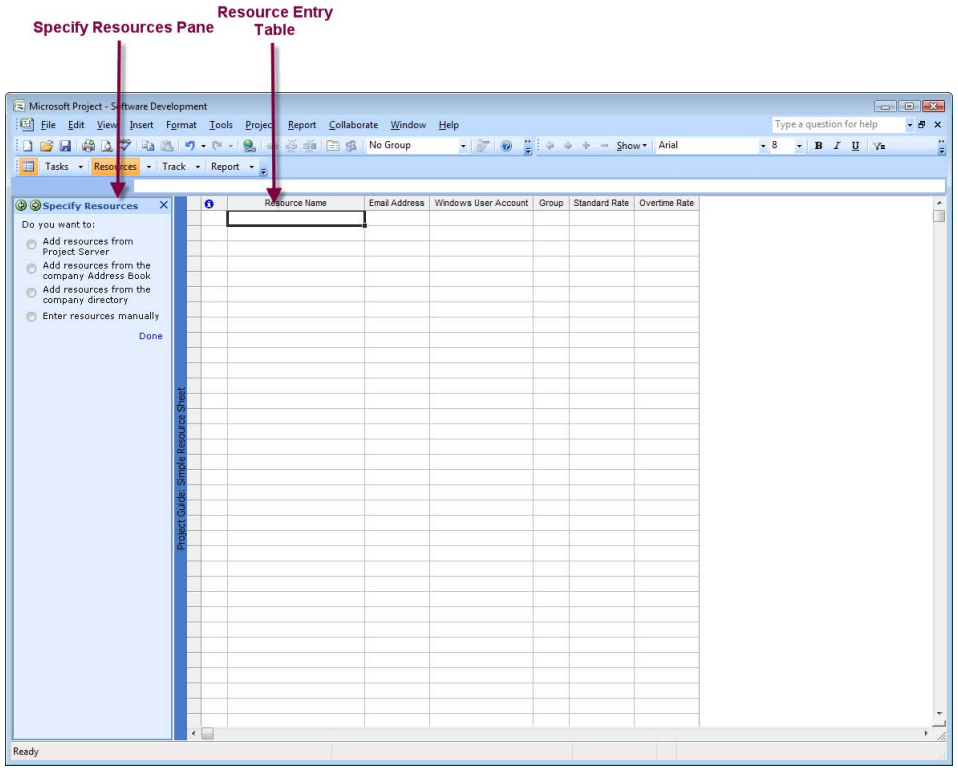
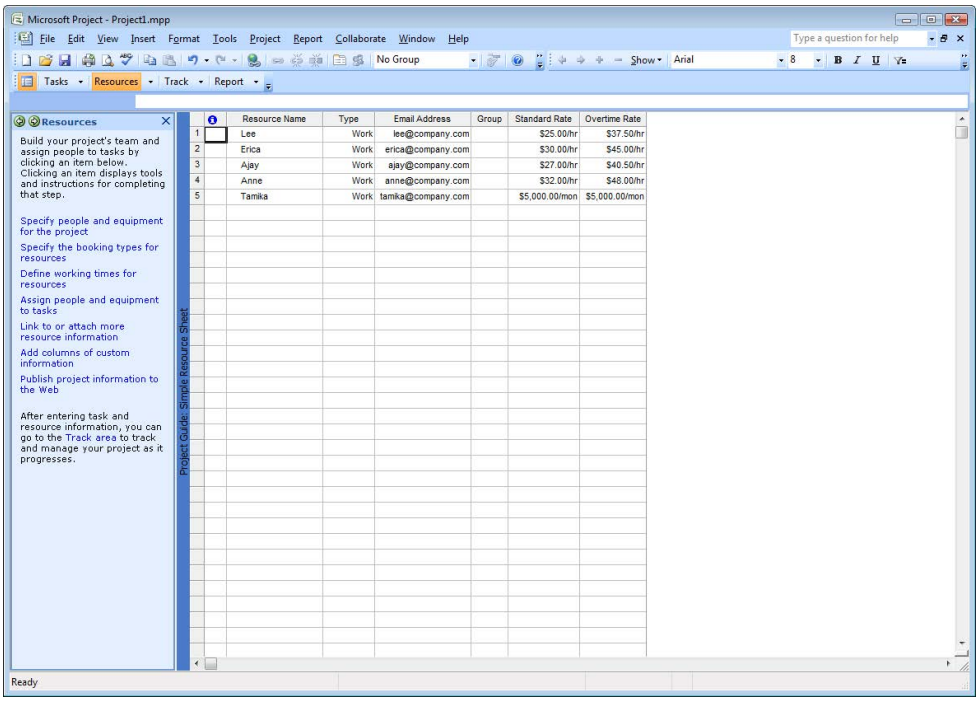


Figure A.47 Specify Resources screen in Microsoft Project 2007

Figure A.48 Adding resources in Microsoft Project 2007



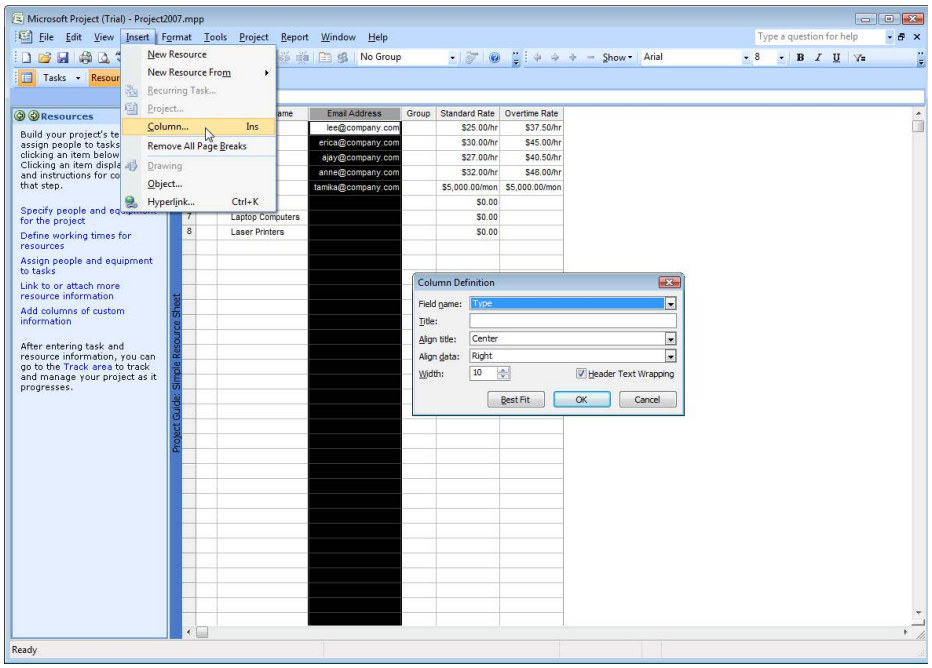
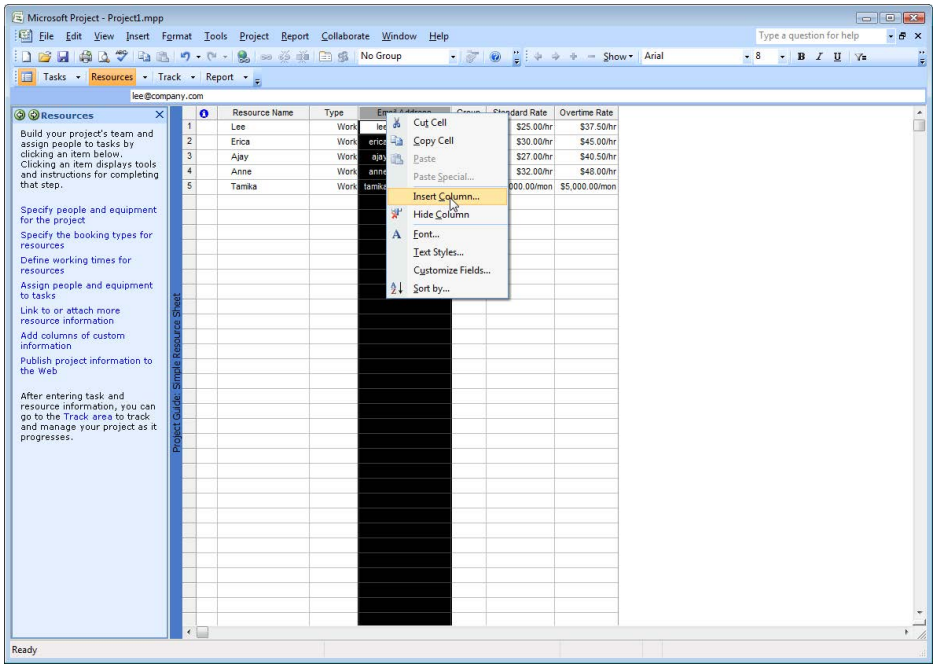


Figure A.49 Adding the Type column in Microsoft Project 2007

Figure A.50 Adding the Material Label column in Microsoft Project 2007



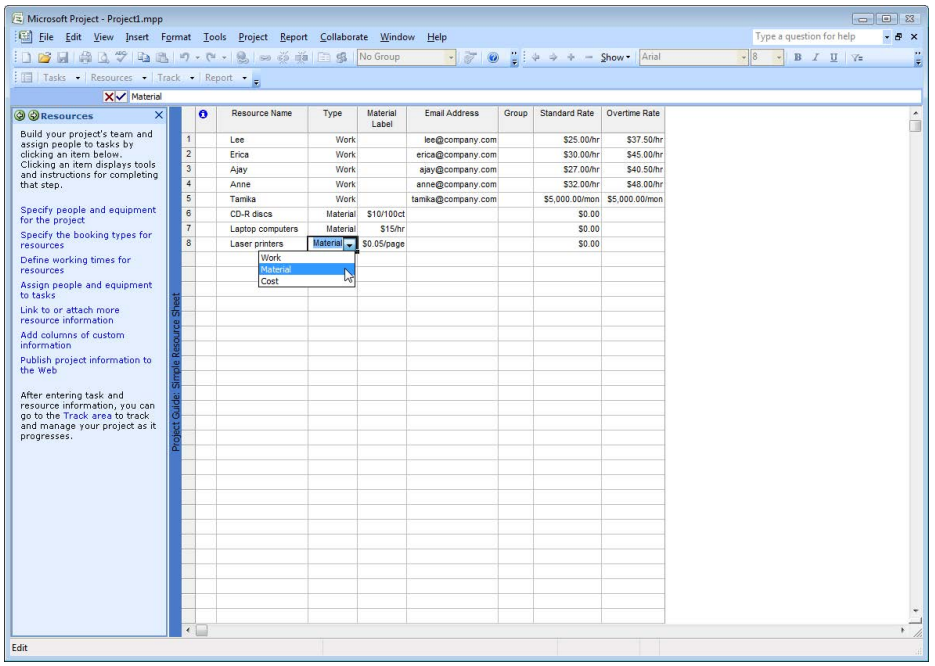


Figure A.51 Changing Resource type in Microsoft Project 2007

include software and equipment, even transportation to and from the job site. Notice that when you added the Type column to the Resource entry table, the column was already filled in with "Work" for the human resources you had previously entered. When entering material resources, click on the dropdown menu in the Type field to select Material for that resource (see Figure A.51).

The Material Label column allows you to specify the cost per unit of the material resource. In the example in Figure A.51, the project is logging costs of $10 for 100 CD-R discs, $15 per hour of laptop computer use, and $.05 per page printed by the laser printer. When you are done entering all the resources for your project, click on the "Done" link at the bottom of the Specify Resources pane.

Define Working Time for Resources

Once the resources have been identified and entered into the Resource entry table, you may wish to identify individual working times associated with resources—particularly those that differ from the project's normal working times. For instance, you may have some people who are working on multiple projects within your organization and can be allocated to work on your project only on certain days. Or, you may have some people who have scheduled vacation time that needs to be accounted for in their working time. Microsoft Project allows you to specify working time for individual resources that are different from the project's normal working time. To change the working time for a resource, click on the "Define working times for resources" link in the Resources pane to open the Resource Working Times pane. This is a five-step process very much like the process to set the project's working time. First select the resource whose working time you would like to change and click on the "Continue to Step 2" link at the bottom of the pane (see Figure A.52).

The next screen allows you to select a calendar template specific to that particular resource (see Figure A.53). For example, if you had a flex-time employee, you might want to choose the 24 hours template to be able to schedule that individual during different hours than the project's normal working times. The example in Figure A.53 will keep Anne on the normal working time schedule, but we will specify Anne's vacation time in Step 4. After choosing the template for this resource, click on the "Continue to Step 3" link at the bottom of the pane.

Step 3 allows you to make changes to specific days and hours within the template you have chosen (see Figure A.54). If you are satisfied with the default settings

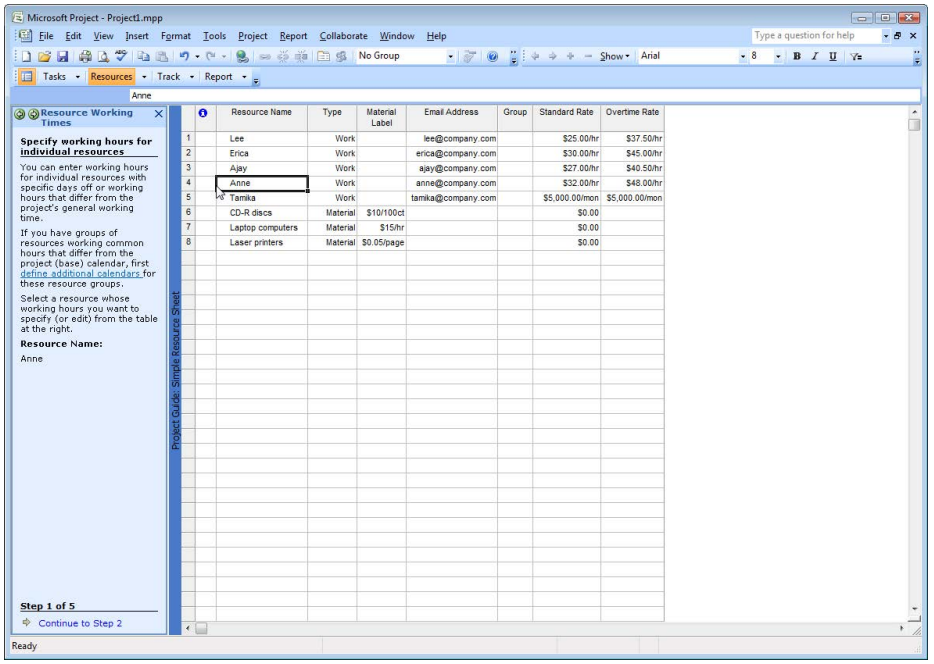
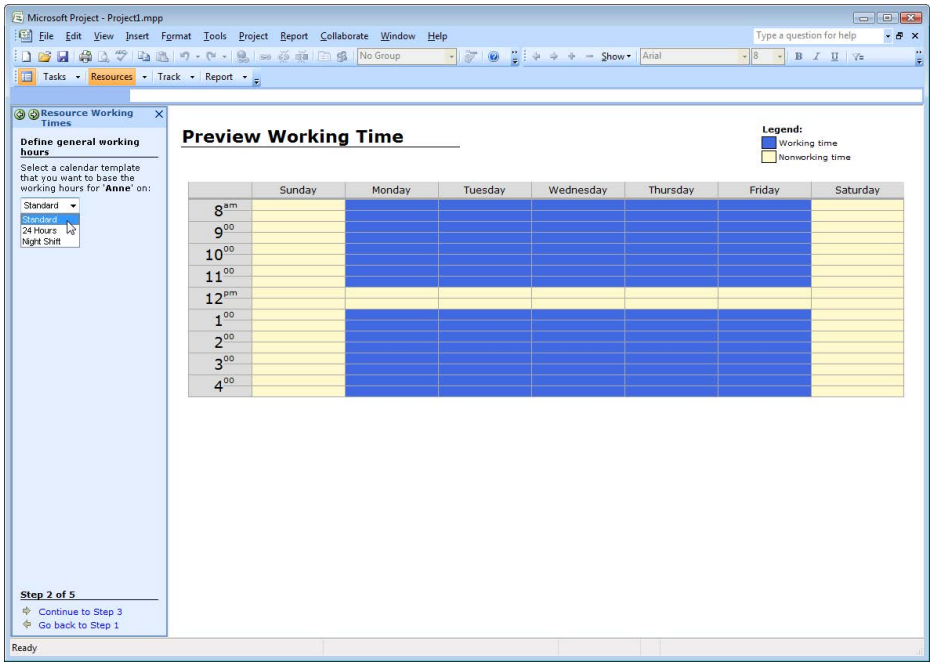


Figure A.52 Microsoft Project 2007 Resource Working Time, Step 1

Figure A.53 Microsoft Project 2007 Resource Working Time, Step 2



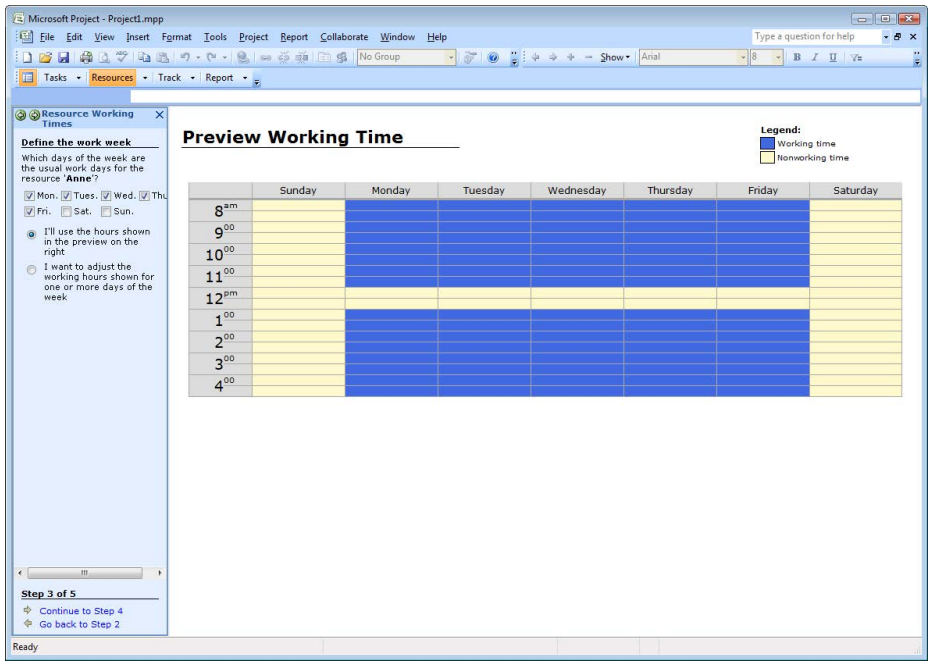
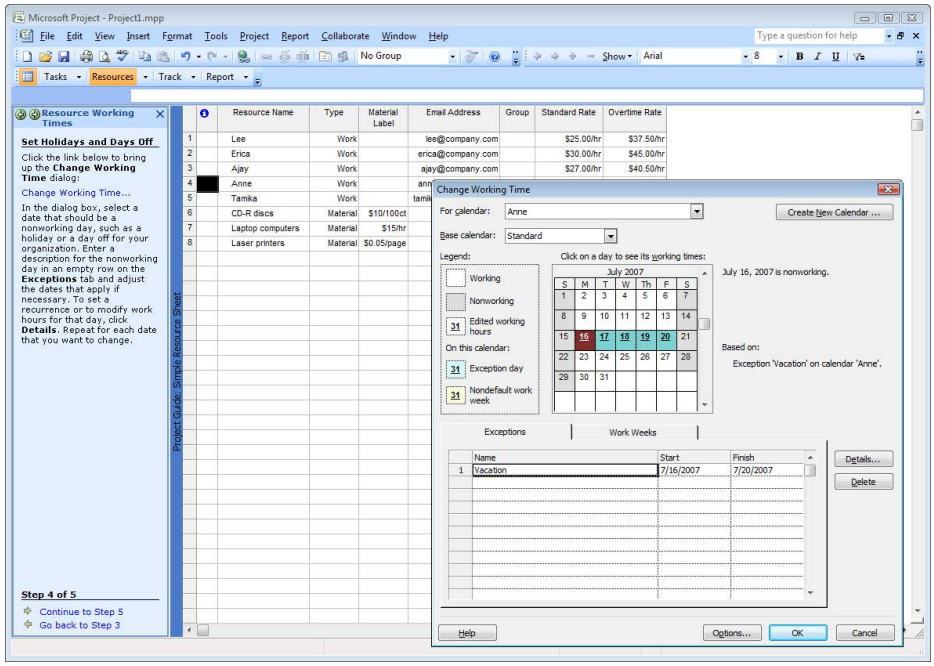


Figure A.54 Microsoft Project 2007 Resource Working Time, Step 3

Figure A.55 Microsoft Project 2007 Resource Working Time, Step 4



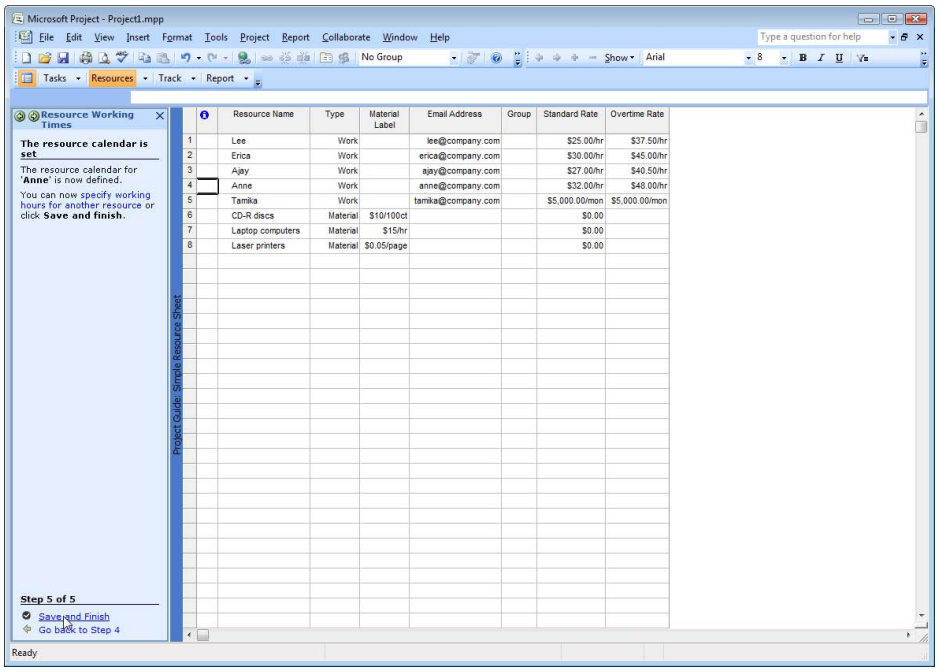


Figure A.56 Microsoft Project 2007 Resource Working Time, Step 5

or when you have made changes that you are satisfied with, click on the "Continue to Step 4" link at the bottom of the pane.

Step 4 allows you to specify nonworking time for the resource. In the example in Figure A.55, we have specified Anne's vacation time, July 16–20, by selecting those dates and entering "Vacation" under the Exceptions tab. This automatically enters that time as nonworking time, however, you can make specific changes, like partial days by clicking on the "Details" button as in Figure A.21. After you have specified any non-working time for this resource, click on the "Continue to Step 5" link at the bottom of the pane.

Step 5 is a verification screen that the resource's calendar is now defined and gives you the opportunity to specify the working times of additional resources (see Figure A.56). You can click on the "specify working hours for another resource" link to do so, or click on the "Save and Finish" link to return to the Resources pane.

Assign Resources

Now that all the resources have been specified and working times have been determined, the next step is to assign resources to tasks. From the Resources pane, click on the "Assign people and equipment to tasks" link to open the Assign Resources pane. The Assign Resources pane lists four steps to assign resources to each task. The first step is to click on the "Assign resources" link to open the Assign Resources dialog box. The second step is to select the task to assign resources to in the Task entry table. The third step is to assign specific resources to that task. To assign resources, select the resource to assign and click the Assign button in the Assign Resources dialog box (see Figure A.57).

The first time you assign resources to a task, Project calculates the work required to complete the task by multiplying the duration of the task by the percentage of work units. For example, the "Determine project scope" task has originally been estimated to take 4 hours, so when we assign both Ajay and Anne to this task at 100%, Project keeps the duration of the task at 4 hours, but calculates that it takes 8 hours of actual work to complete the task—4 hours × 200% assignment units (Ajay at 100% and Anne at 100%) = 8 hours work (notice the circled area of Figure A.57). Once resources for a task have been finalized, any subsequent resource additions or subtractions will cause Project to prompt you to make a decision. In Figure A.58, after assigning Ajay and Anne to the "Determine project scope" task, we've decided to add Erica to that task as well. Notice the warning diamond that appears next to the Task Name field when Erica is added to the task. Mouse over the warning diamond to get the option for the drop-down menu. Within the dropdown menu, there are three options for assigning the extra resource to the task. You can 1) reduce the duration to keep the work the same, now

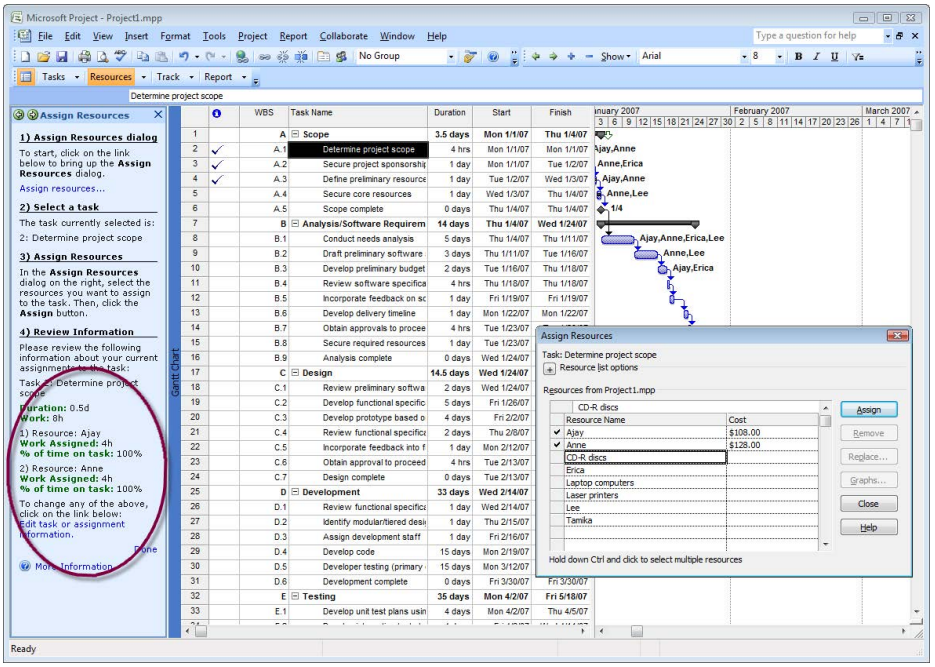
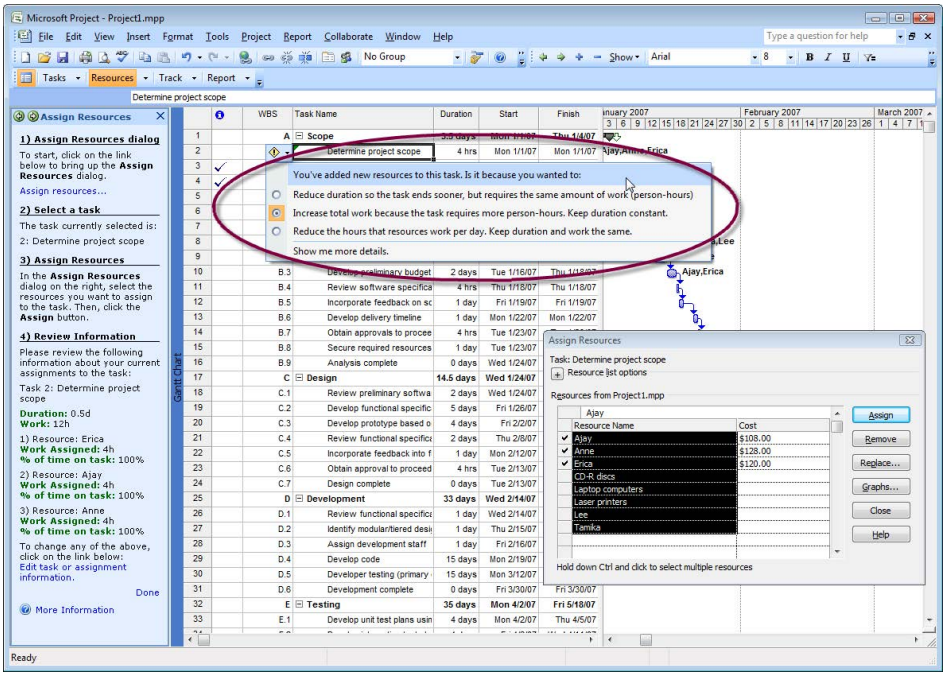


Figure A.57 Assigning resources in Microsoft Project 2007

Figure A.58 Adding resources to a task that has already been assigned in Microsoft Project 2007



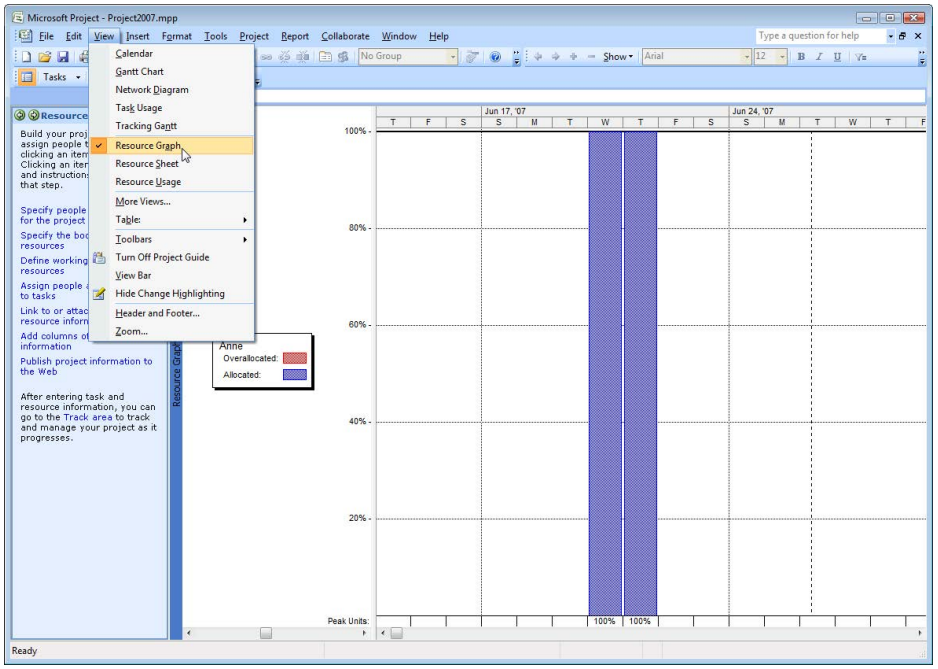


Figure A.59 Resource Graph view in Microsoft Project 2007

across three people instead of two; 2) increase the work required for the task to keep the duration constant, in this case, all three people now assigned 4 hours of work for 12 total hours instead of 8; or 3) keep both the hours of work *and* the duration constant, reducing the number of hours that the resources work per day.

These decisions should not be made lightly. While it might be tempting—and in some cases advisable—to assign additional resources to a task to shorten its duration (effort-driven scheduling), having too many people assigned to a task can sometimes cause more problems than it solves, both administratively and financially.

Resource Views

After assigning resources to tasks, you may wish to explore different views of the resources that Project provides. From the View menu in the Menu toolbar, click on Resource Graph to view a graph of the resources and their percentage of allocation (see Figure A.59).

The middle pane of this view indicates which resource the graph represents. Use the horizontal scroll bar at the bottom of the pane to view other resources. The graph view shows the percentage of allocation for that resource on the dates shown. Depending on how you have assigned resources, you can end up with resources being over-allocated. This view provides an intuitive, easy-to-understand representation of such overallocation by indicating overallocation with a red bar in the bar graph.

Another valuable resource view is the Resource Usage view. Open the Resource Usage view by choosing Resource Usage from the View menu. The middle pane of this view lists each resource and each task that is assigned to the resources (see Figure A.60). The usage view shows the number of hours each resource is working on each task on a given day.

More Information and Columns

The two remaining options in the Resources pane allow you to attach notes or hyperlinks to the resources and add additional columns to the resource entry table. To perform these tasks, click on the appropriate link in the Resources pane, "Link or attach more resource information" or "Add columns of custom information." Follow the instructions in the corresponding panes to perform these steps.

After you have completed identifying, assigning, and managing the project's resources, it is time to start tracking the progress of the project.

The Track Pane

Now that tasks have been scheduled and resources have been assigned, it is time to utilize Project to help you manage the progress of your project. First, click on the "Track

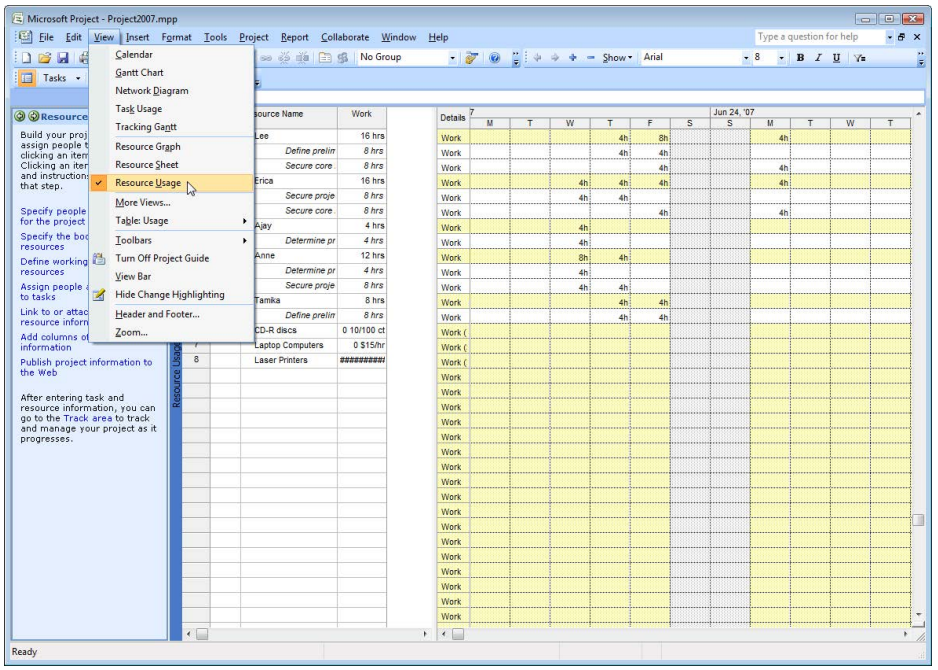
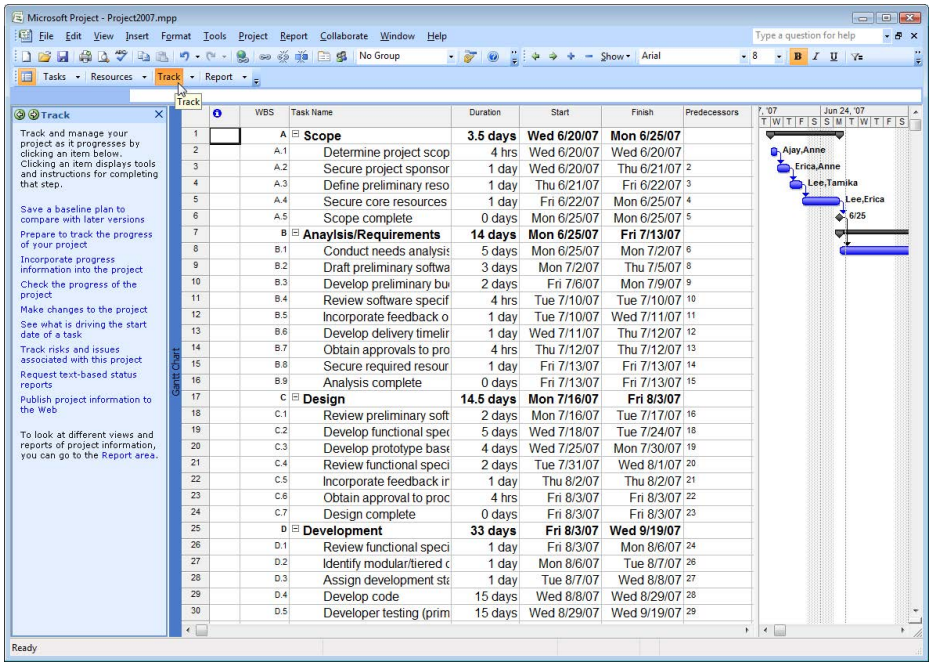


Figure A.60 Resource usage view in Microsoft Project 2007

Figure A.61 The Track pane in Microsoft Project 2007



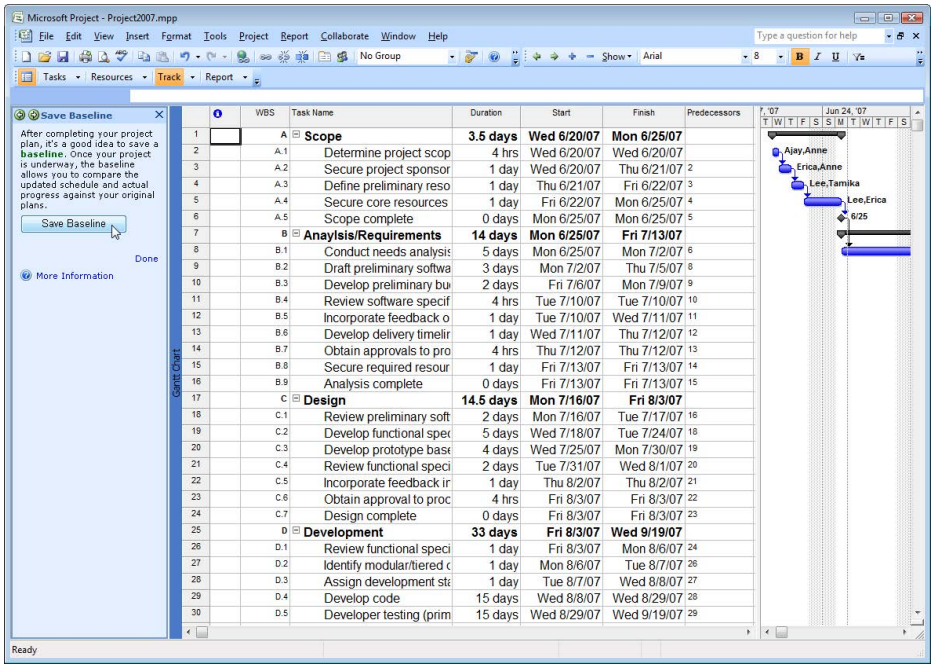


Figure A.62 Saving the baseline plan in Microsoft Project 2007

area" link in the paragraph at the bottom of the Resources pane or click on the Track button in the Project Guide toolbar to begin tracking your project (see Figure A.61).

Save the Baseline Plan

The first step in the Track pane is to save a baseline plan to compare with later versions. If you have saved your project at any time up to this point by clicking on the Save icon in the toolbar or by choosing Save from the File menu, Project by default saves it normally, not as a baseline plan. This is important because once the project is saved as a baseline plan, all subsequent changes will be shown in relation to that baseline plan. First, click on the "Save a baseline plan to compare with later versions" link in the Track pane to open the Save Baseline pane. If you have not already saved a baseline plan, the screen will resemble the one in Figure A.62. Click on the Save Baseline button to save the project as a baseline plan. If you have already saved a baseline plan, when you click on the "Save a baseline plan to compare with later versions" link in the Track pane, the Save Baseline pane will appear as in Figure A.63.

Notice in Figure A.63, that you can save a new baseline or update the existing baseline, and you can choose to update specific tasks or the entire project. Once the baseline plan has been saved, the next step is to specify how progress on the tasks has been completed. To make this specification, click on the "Prepare to track the progress of your project" link in the Track pane to open the Setup Tracking pane.

Setup Tracking

There are three options for setting up how progress is tracked throughout the project (see Figure A.64). These three choices relate to the level of accuracy for each method. According to the instructions for each option in the Setup Tracking pane, each option should be considered understanding its limitations.

Option	Level of Accuracy and Time Consumption
Always track by entering the Percent of Work Complete	The least accurate, but fastest, method of tracking. Your resources will specify the percentage of work complete, between 0 (no work has been performed on the task) and 100 (all the work has been completed on the task).
Always track by entering the Actual Work Done and Work Remaining	A moderately accurate and moderately time-consuming method of tracking. Your resources will specify how much work has been on each task, and how much work is left to do.
Always track by entering the hours of work done per time period	The most accurate though time-consuming method of tracking. Your resources will specify the hours worked on each task during each time period.

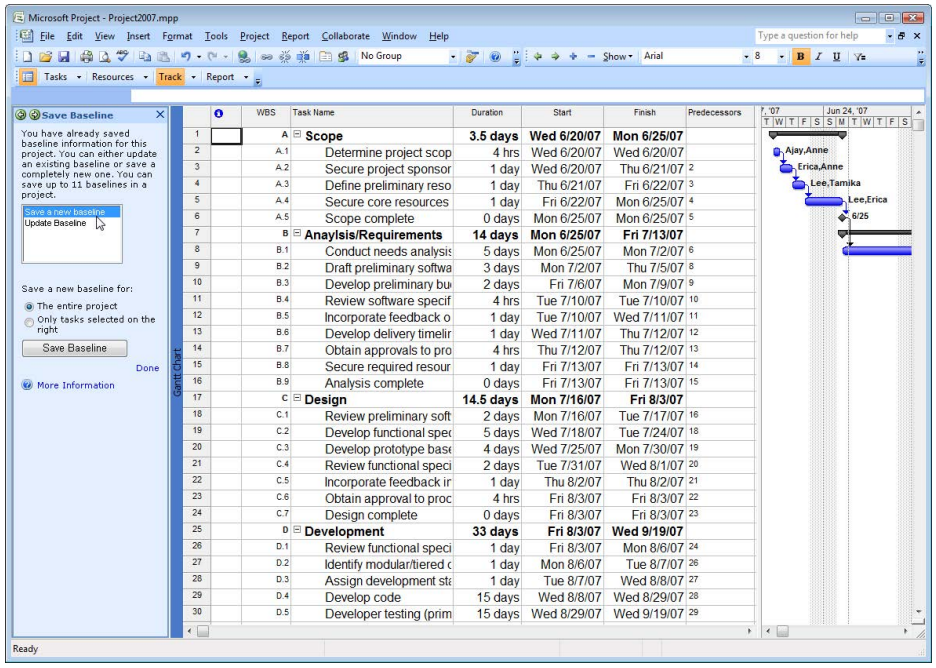
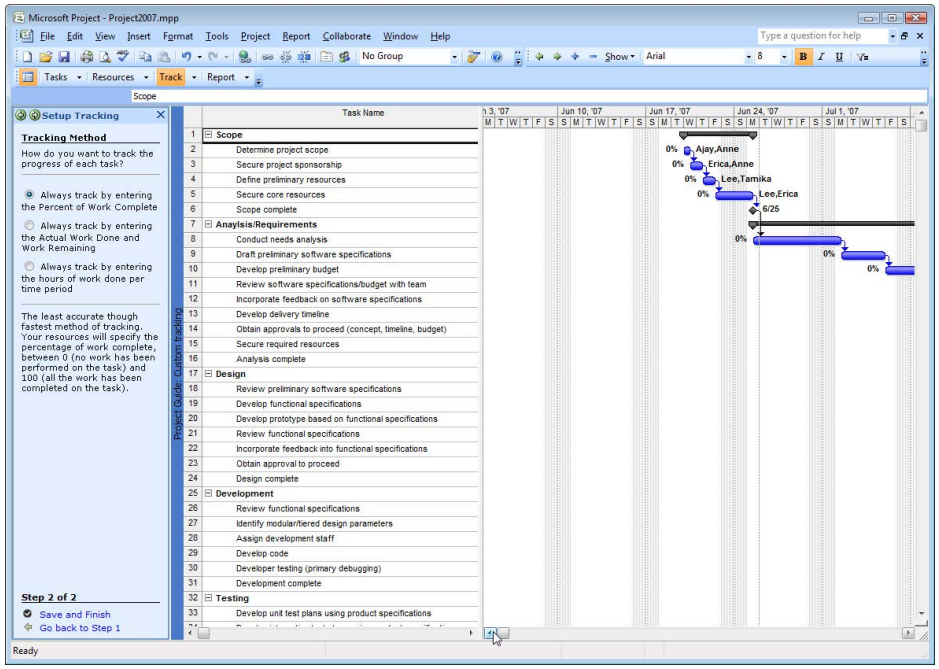


Figure A.63 Other options for saving the baseline plan in Microsoft Project 2007

Figure A.64 Setup Tracking pane in Microsoft Project 2007



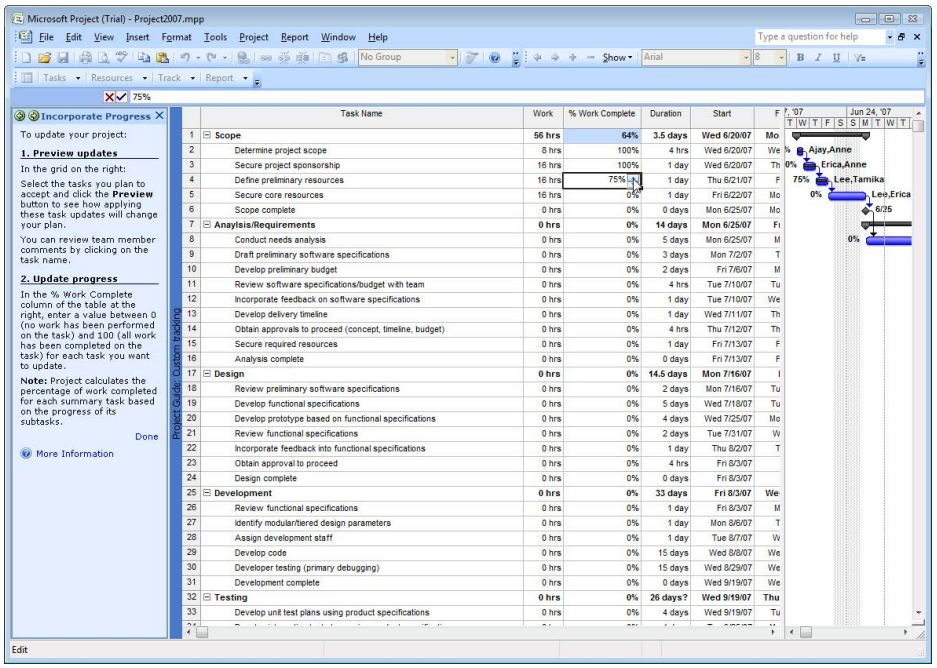


Figure A.65 Tracking progress by percentage of work complete in Microsoft Project 2007

Now that Project is set up to track your project's progress, it is time to incorporate the progress that has been made on the project into the project plan.

Incorporating Progress

Depending on how you chose to track progress, there are three possibilities for entering progress. From the Track pane, click on the "Incorporate progress information into the project" link to open the Incorporate Progress pane. Begin entering the percentage of work complete for each task by entering the percentage in the "% Work Complete" column of the task entry table.

If you have chosen to track the progress of your project by entering the actual work done and work remaining, you will still set the status date but will then enter the amount of work done and/or the amount of work left to complete each task. Project provides two new columns—"Actual Work" and "Remaining Work"—in the task entry table to enter this type of progress. If you enter the amount of actual work done, Project will compute the amount of remaining work to be done based on the task duration you have specified for that task. You can also enter the amount of work remaining, and Project will compute the amount of work done. However, you may wish to enter the amount of actual work done *and* the amount of work remaining. This can cause the task's duration to change but may be necessary depending on the circumstances. Notice that in Figure A.66, 12 hours have been completed for the "Define preliminary resources" task, but we have determined that it will take 6 more hours to complete the task. This brings the total work for the task to 18 hours, where before it was 10 hours (5 hours duration × 2 resources = 10 hours work). Because two people are assigned to this task (Lee and Tamika), Project makes changes to the work needed to complete the task (18 hours) and changes to the duration of the task (9 hours shown as 1.13 days) based on the progress information entered and the number of resources assigned to the task.

If you have chosen to track the progress of your project by entering the hours of work done per time period, you will still set the status date, but the task entry pane will be replaced with a calendar view listing each task

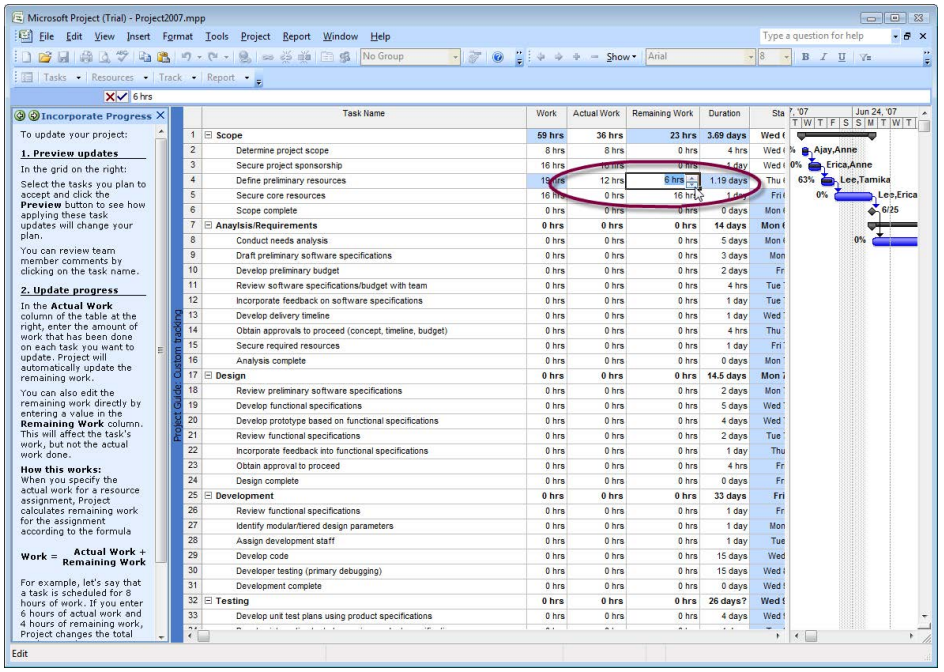
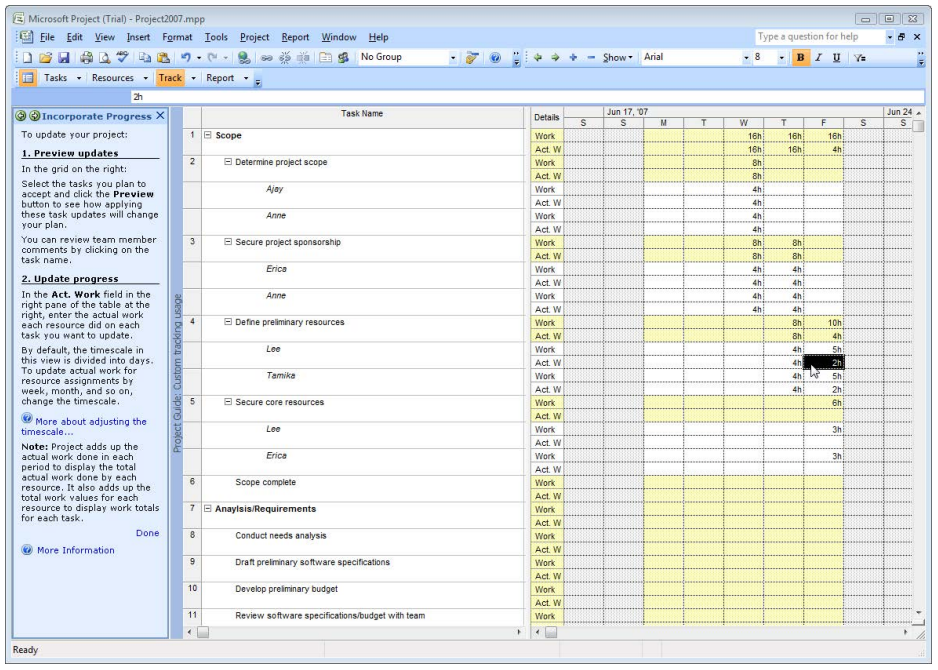


Figure A.66 Tracking progress by entering actual work done in Microsoft Project 2007

Figure A.67 Tracking progress by entering number of hours worked in Microsoft Project 2007



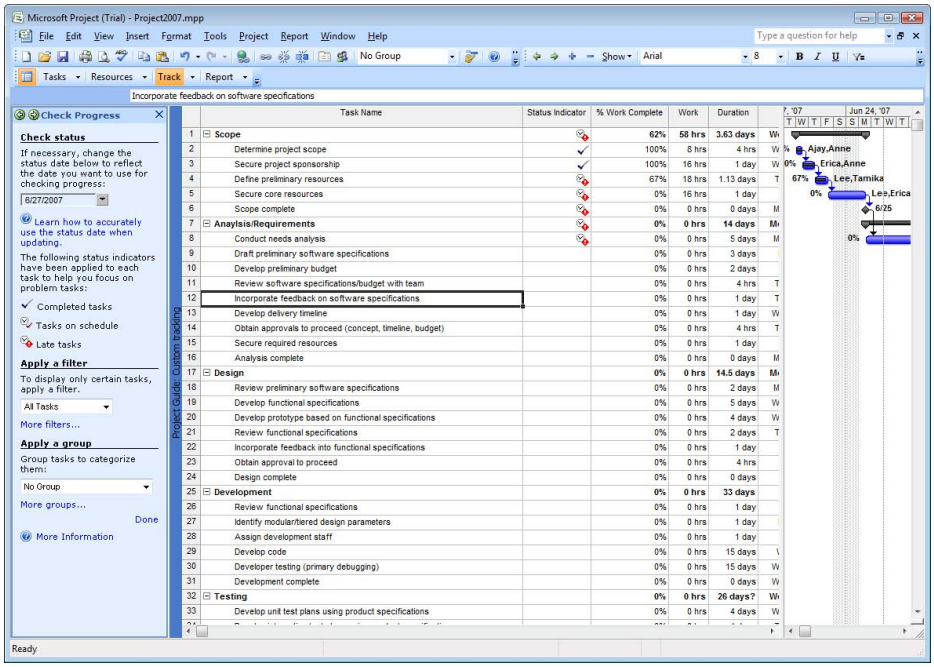


Figure A.68 Checking progress in Microsoft Project 2007

and each resource under each task (see Figure A.67). In the calendar pane at the right, each resource will have the estimated work to be done entered in each "Work" row for each task. To incorporate progress information, enter actual hours worked for each resource in the "Act. W" row of each resource for each task. In the example in Figure A.67, on Wednesday and Thursday, each task has been completed in the number of hours estimated. Notice, however, that on Friday Lee and Tamika have only completed 2 hours each on the "Define preliminary resources" task.

Checking Progress

Now that you have begun entering progress information, Project can indicate which tasks are on schedule, which are not, and which have already been completed. To check the progress of your project, click on the "Check the progress of the project" link from the Track pane to open the Check Progress pane (see Figure A.68). As with entering tracking information, you will select a status date for which to check the progress of the project. Depending on the tracking information you entered in the previous steps and the status date you have chosen, Project will indicate which tasks have been completed, which are on schedule, and which are behind schedule, or late, with icons in the Status Indicator column.

Making Changes

Once you have begun tracking the progress of your project, you may find situations where you need to make changes to the project plan. Microsoft Project allows you to make task duration, work, and resource assignment changes in one central place. To make any changes, click on the "Make changes to the project" link in the Track pane to open the Change Project pane (see Figure A.69). Because task duration, work, and resource assignments are all interrelated, changes made to one may impact the others, so be aware of the possible impacts that any change you make can have on other aspects of the project (see the Controlling Changes instructions in Figure A.69).

Now that you have begun to enter project progress information and have begun to track the status of your project, you might find that the Tracking Gantt Chart view allows you to see at a glance how your project is progressing. In Figure A.70 we can easily see that the Scope summary task is almost complete by noticing the hash marks beneath the summary task indicator. We can also easily see which tasks have been

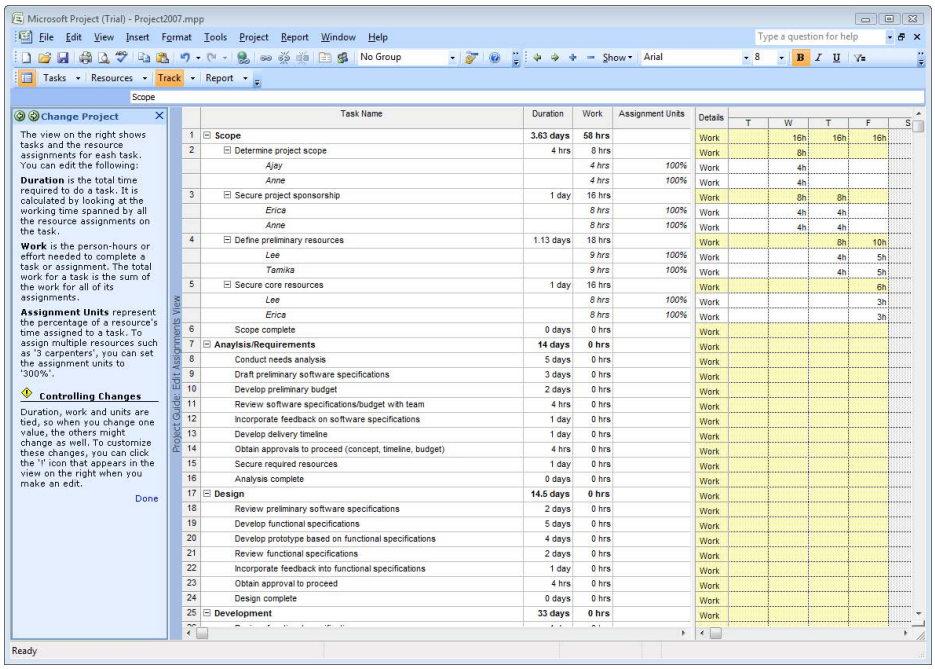
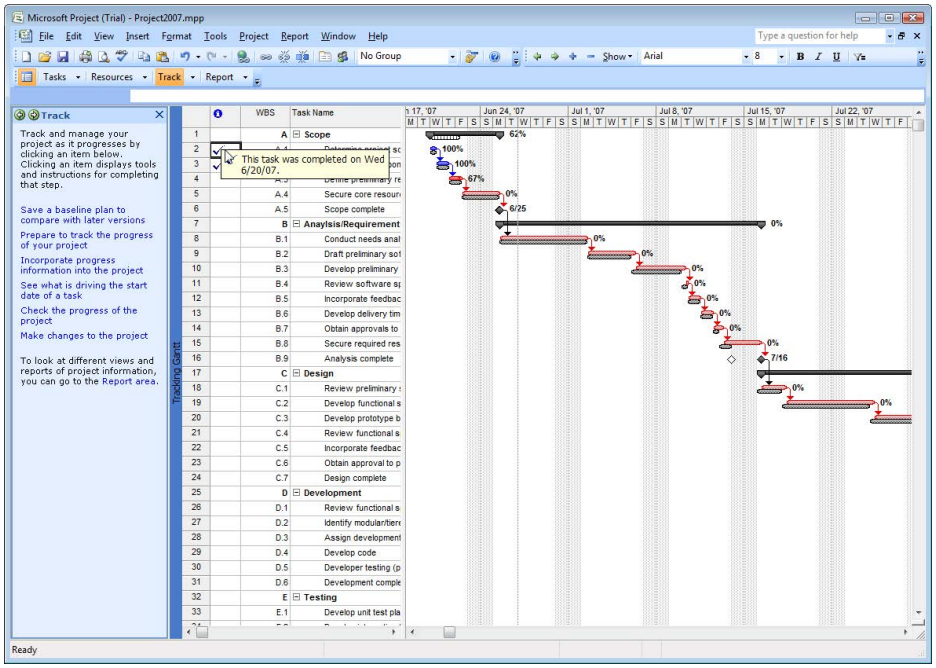


Figure A.69 Making changes in Microsoft Project 2007

Figure A.70 Tracking Gantt chart view in Microsoft Project 2007



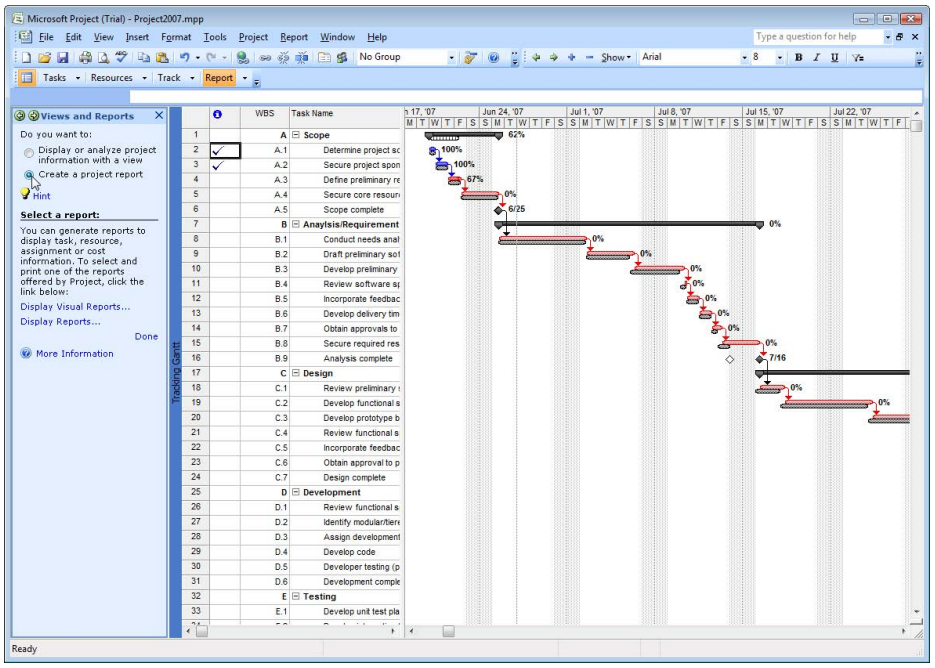


Figure A.71 Options in the Views and Reports pane in Microsoft Project 2007

completed by the check marks located in the first column of the task entry table. Notice that the bar for each task is split horizontally with the black bar on the bottom and a colored bar on top. The black bar indicates the baseline plan, and the colored bar indicates the actual progress made for the project. In the example in Figure A.70, no changes have been made yet to the project plan relative to the baseline plan. Also notice that once a task has been completed, it is no longer considered a critical path task and reverts to a blue bar on the Gantt chart.

The Report Pane

With the incorporation of tracking information into your Project file, you are now in a position to begin reporting your project's progress to stakeholders regarding a number of project criteria. To begin analyzing and reporting project information using the Project Guide, click on the Report button in the Project Guide toolbar to open the Report pane. Many of the choices in the Report pane we have addressed above, such as "Change the look or content of the Gantt chart" link. If you click on this link, you will be prompted to use the Gantt chart wizard, which we used to show the critical path. Clicking on the "Print current view as a report" link allows you to print the view that you have active on the screen. The options in the Print Current View pane allow you to shrink your entire project to fit onto one page or to change the settings to allow it to print across multiple pages. The "Compare progress against baseline work" link changes the current view to the Tracking Gantt chart view, and the "See the project's critical tasks" link changes the Gantt chart to show the critical path.

The key feature in the Report pane is the "Select a view or report" link. Click on that link to open the Views and Reports pane. Two options are available, either to change the view (which was covered with the View Menu discussion earlier), or to create a report (see Figure A.71).

To select a report to print out, click on the radio button next to the "Create a project report" option in the Views and Reports pane Further instructions will appear in the Views and Reports pane that include "Display Visual Reports," which provides several report templates, and "Display Reports," which provides an intuitive interface to choose various reports in the form of a Reports dialog box (see Figure A.72).

From the Reports dialog box, you can choose from 22 or more types of reports to print. Each choice in the Reports dialog box opens another dialog box with up to 6 reports to choose from (see Figure A.73).

The Custom reports option gives you the opportunity to make minor changes to any of the report options in the five previous choices. For example, if you wanted

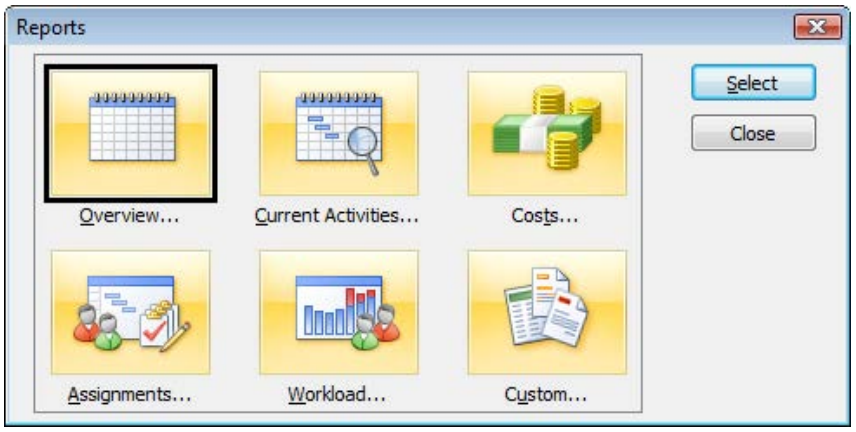


Figure A.72 Reports dialog box in Microsoft Project 2007

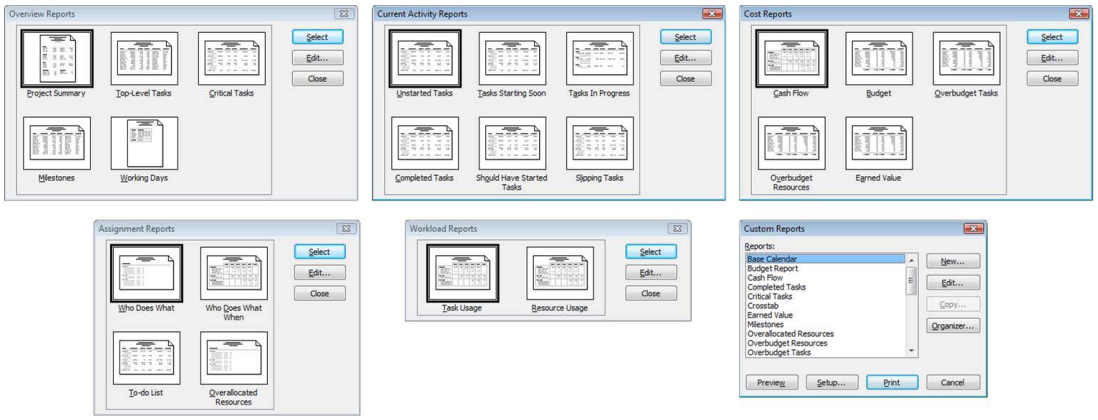
to show the resources associated with each task in the Earned Value report, you could make those changes in the Custom reports dialog box. To see the Earned Value report as Project prints it, from the Costs option in the Reports dialog box, click on the Earned Value choice and then click on the Select button to open the Print Preview dialog box (see Figure A.74). Notice that Microsoft Project 2007 uses labels for the key values in an Earned Value report that might be slightly different than those sometimes employed in other project management software. Both types of labels were also identified and explained in the textbook. The following table gives their equivalents.

Commonly Used Notations		Microsoft Project Label
PV	=	BCWS
EV	=	BCWP
AC	=	ACWP
CV	=	CV
SV	=	SV
EAC	=	EAC
BAC	=	BAC
BAC − EAC	=	VAC

Also notice that the report spans several pages. The bar at the bottom of the window notes, "Page 1 of 4; Size: 2 rows by 2 columns." Also notice the arrow buttons at the top left of the window. These buttons allow you to switch to adjacent pages in the report.

We have presented the Earned Value report here as an example of the many reports available in Microsoft Project. Later, you can explore and become familiar with the many other available reports.

Figure A.73 Reports to choose from in Microsoft Project 2007



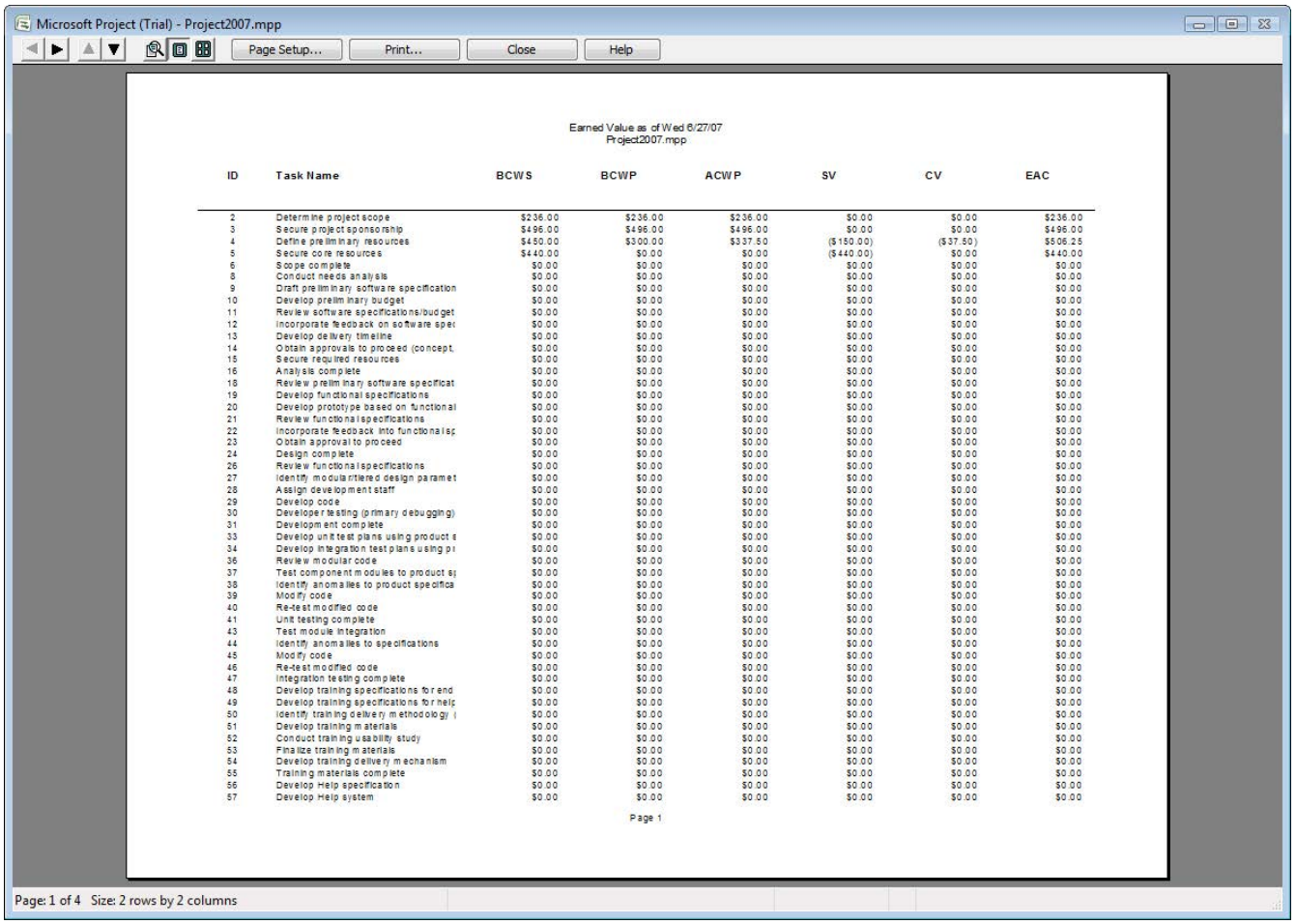


Figure A.74 Earned Value report in Microsoft Project 2007

Appendix Summary

Become familiar with Microsoft Project. Microsoft Project 2007 shares some common elements with other Microsoft Office titles, so it should be somewhat familiar. Major screen elements were noted and explained. The various Help options were discussed, along with additional Online Content settings. Project also provides several view options with which to see various aspects of the project.

Enter tasks, estimate task durations, and sequence tasks in Microsoft Project. The Project Guide feature of Microsoft Project 2007 makes entering tasks to develop a WBS simple. Once some of the project's parameters, such as the estimated start date and pro-ject working times, are set, you can enter tasks directly into the task entry pane. After entering the tasks, you can have Microsoft Project number each of the tasks based on your organization's WBS numbering convention. Once your WBS is set, you can begin entering the estimated durations of the tasks and you can schedule the tasks relative to each other by setting their dependencies. After the tasks have been scheduled, you can also set constraints on the tasks and change the Gantt chart view to show the critical path.

Enter resources and assign resources. Now that the tasks have been scheduled, it is time to specify the resources for the project. This involves identifying each resource, and for human resources, specifying their working rates and working times. Material resources are also identified and entered with two additional columns; the Type column that identifies them as "Work" or "Material" resources, and the material label column. Once all the resources have been specified for the project, it is time to assign resources to tasks. Microsoft Project computes the number of hours of work needed to complete the task in the task's scheduled duration by multiplying the duration of the task by the percentage of work assigned to the task. After the first assignment of resources to the tasks, if any subsequent resource assignments occur, Microsoft Project 2007 prompts you to decide whether to shorten the duration of the task, increase the amount of work to complete the task, or keep both the duration and work constant by decreasing the number of hours worked by the resources assigned. Microsoft Project provides several views with which to see and manage resources during a project.

Track project progress. Microsoft Project 2007 provides many options for tracking the progress of your pro-ject. Once your plan is entered (tasks scheduled and resources assigned), you can save the plan as a baseline plan against which all progress is compared. You must decide how to enter progress, and then progress can be incorporated into the plan. If changes need to be made, Microsoft Project 2007 provides a central place for making them to the schedule and/or resources.

Report project status. Microsoft Project 2007 contains a wide variety of reporting options to facilitate communication with stakeholders. The various reports are grouped into six main options—Overview, Current Activities, Costs, Assignments, Workload, and Custom. Each main grouping contains a variety of reports to choose from that can easily be printed directly from Microsoft Project 2007.