



Managing Projects with MS Project 2010



Session: 6

Resource Management



Objectives

- ◆ Explain types of resources
- ◆ Explain how to make flexible choices for resource planning
- ◆ Describe how to estimate resources
- ◆ Describe how to work with resource pool
- ◆ Describe how to manage workload
- ◆ Explain how to simplify resource workload analysis

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Introduction

- ◆ A project involves planning and organizing people, equipment, material, and other assets for a project while ensuring effective utilization.
- ◆ These people, equipments, and materials employed in a project are the project's resources.
- ◆ The project manager should drive resources to optimize project costs.
- ◆ MS Project provides several tools that enable project managers to make optimum resource assignments.

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People, Product, and Processes

- ◆ Project managers need to manage the project without over allocating any resource at any point during the project schedule.
- ◆ As resources affect time and costs in a project, using software products like MS Project, helps project managers.
- ◆ Resources in a project are not just the people but also include materials, assets, and equipment.
- ◆ Resources can be anything that is used to complete the project.
- ◆ When considering resources, project managers should also consider facilities such as meeting space, rent for infrastructure, and any other costs.



Analyzing Resources

- ◆ Analyzing resources is the next step after creating and organizing the project tasks.
- ◆ Resources in an organization should be optimally used by sharing them across the projects.
- ◆ Following two factors must be considered when analyzing the resources required for a project:

Cost of resources

Time availability of resources



Cost of Resources

- ◆ Resources in a project equal costs.
- ◆ When analyzing the resources and their costs to a project, adding fixed cost to the project is a good practice.
- ◆ A fixed cost is a set of costs applied directly to an individual task, such as monthly charges to rent computers.
- ◆ They are not directly assigned through resources, as they are not calculated collectively by the hours of work or units used.

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Time Availability of Resources

- When analyzing project resources, it is important to identify resources that have limited time availability to manage the workflow in a project.
- Project managers can also view ideal resources, the resources working on multiple projects across the organization, and use them efficiently.
- Following figure illustrates the **Resource Usage** view that helps project managers visualize resource working times in a project:

The screenshot shows the Microsoft Project application window with the 'Resource Usage' view selected. The ribbon tabs at the top include File, Task, Resource, Project, View, and Format. The Resource tab is active. The main area displays a grid of resources and their work hours across specific dates.

Resource Name	Work	Details		Schedule			
		30 Oct '11	13 Nov '11	30-10	06-11	13-11	20-11
Gary Zeus	96 hrs	Work	24h			4h	
Fay Morgan	164 hrs	Work	24h	40h	24h		
SSU-Sr Mgmt	44 hrs	Work	4h		16h	12h	
Mitchelle Yeomans	264 hrs	Work				28h	
Sharon Gail	280 hrs	Work				32h	
Ryan Patrick	256 hrs	Work				28h	
Jeff Smith	336 hrs	Work				24h	
Develop Help specification		8 hrs				8h	
Develop Help system		120 hrs	Work				
Review Help documentation		24 hrs	Work				
Incorporate Help documentation feedback		16 hrs	Work				
Develop user manuals specifications		16 hrs	Work				16h



Types of Resources

- The resources required for a project can be classified in the following three types:

Work resources

Material resources

Cost resources



Work Resources

- ◆ In general, work resources are considered as people resources.
- ◆ People costs are normally associated with the amount of work hours put in. These costs are usually an hourly rate.
- ◆ Work resources are assigned with tasks based on the project and resource calendars, where their working and nonworking hours are entered.
- ◆ Project managers can modify the base calendar for a resource to schedule specific working hours.
- ◆ An example of a typical work resource is a person working 8 hours a day at a standard rate of \$25 per hour and an overtime rate of \$35 per hour.

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Material Resources

- ◆ Material resources have a unit cost and do not need working hours.
- ◆ Hence, these resources do not have any calendar configuration or any settings for working and nonworking times.
- ◆ A typical material resource is any equipment or material such as paper, rubber, steel, or stationary items and so forth assigned to a task with a unit cost associated to it.
- ◆ For example, a resource called Paper with a unit price of \$15, assigned to a task called User Manual Preparation at 10 units, accrues a cost of \$150 to the task.



Cost Resources

- ◆ Cost resources do not have any cost associated to them initially.
- ◆ These resources offer flexibility to specify the applicable cost each time as per the resource usage.
- ◆ Calendars, units of work, or unit costs of these resources will have no effect on the project.
- ◆ Project managers decide which resource type is to be used while adding an external resource or material resource to the project.
- ◆ Examples of cost resources include air travel, hotel costs, or car rental fare.
- ◆ Cost resource can be anything that is independent of working hours or any person performing a service for a fee irrespective of the number of working hours.



Resource Effort Estimation

- While estimating the effort required in completing the tasks in a project, project managers use experience with similar tasks and resources by considering the following guidelines:





Committed and Proposed Resource 1-2

- Following are the steps to assign resources to a project:

On the **Task** tab, click the bottom part of the **Gantt Chart** button and select the **Resource Sheet** option. This displays the **Resource Sheet** view.



From the **Resource Sheet**, select the resource to assign to the project.



On the **Resources** tab, click the **Information** button in the **Properties** group to display the **Resource Information** dialog box.

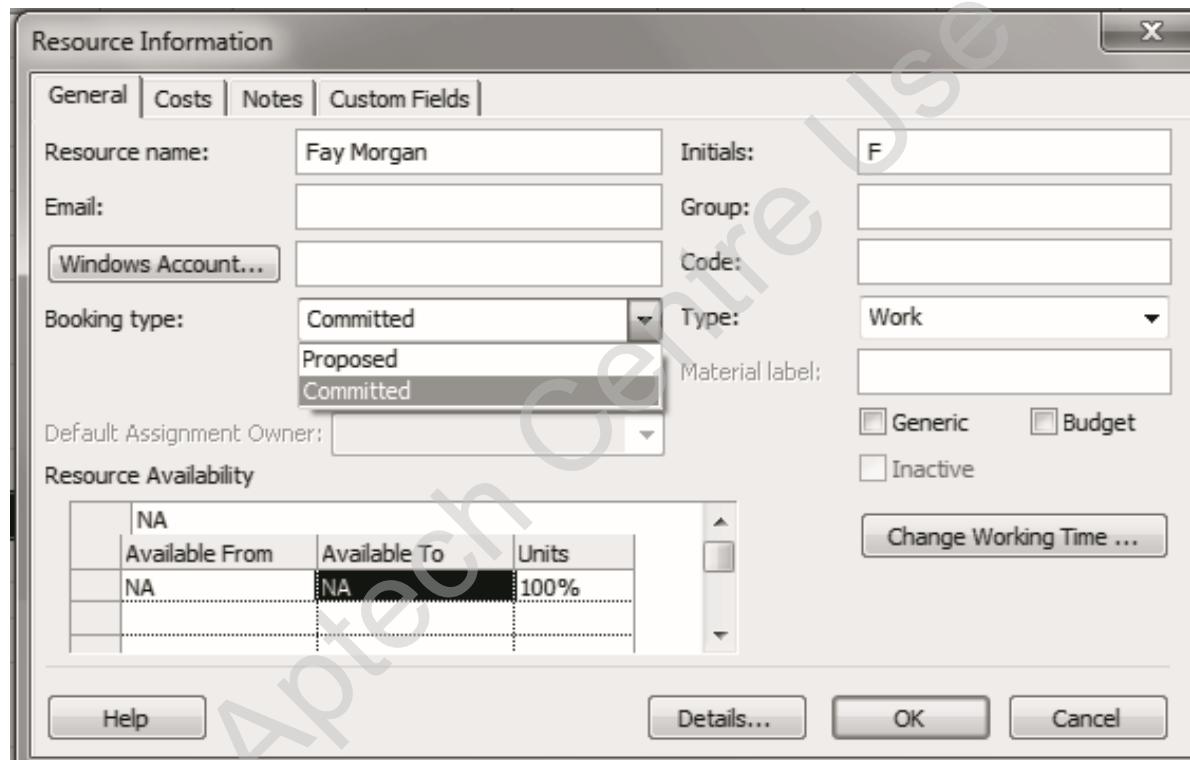


On the **General** tab, from the **Booking type** drop-down list, select **Committed** or **Proposed**, depending on whether the resource is officially assigned to the project or is proposed to be used in the project.



Committed and Proposed Resource 2-2

- Following figure illustrates assigning resources to a project, in the Resource Information dialog box:





Creating Resources

- ◆ Listing resources in MS Project, involves gathering information such as the resource name, per hour rate or cost per usage, and availability.
- ◆ Optional information, such as the group in the organization, e-mail addresses, and so forth can also be listed.

There are three ways of creating resource list in MS Project as follows:

Resource Information
dialog box

Resource Sheet view

Importing resources
from MS Outlook



Creating Resources Using the Resource Information Dialog Box

1-2

- The steps to create resources in the **Resource Information** dialog box are as follows:

- 1 • On the **Task** tab of the **Ribbon**, click the bottom part of **Gantt Chart** button and select **Resource Sheet**. This displays the **Resource Sheet** view.
- 2 • On the **Resource** tab of the **Ribbon**, click the **Information** button in the **Properties** group to display **Resource Information** dialog box.
- 3 • In the **Resource Name** text box, enter a name for the resource.
- 4 • Enter an abbreviation or initials by which the resource will be referred, in the **Initials** text box.
- 5 • From the **Type** drop-down list, select **Work**, **Material**, or **Cost**, depending on the type of resource being created.
- 6 • In the **Code** text box, enter a code that identifies the resource with a specific project group code, or a skill code, or a job code. This is an optional field.



Creating Resources Using the Resource Information Dialog Box

2-2

7

- Further information, such as e-mail address and the name of the project group to which the resource belongs, can be specified. These fields are also optional.

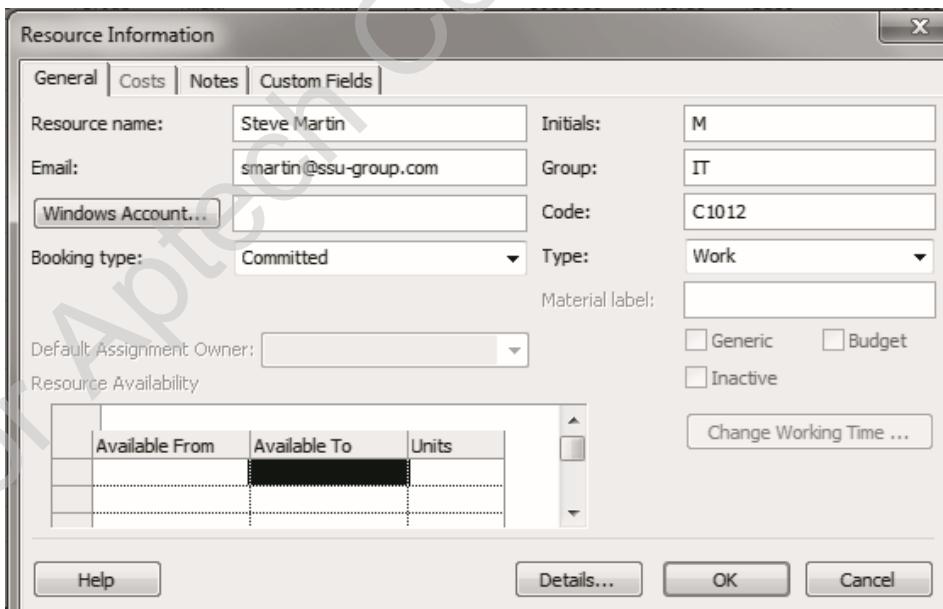
8

- From the **Booking Type** drop-down list, select **Committed** or **Proposed**, depending on whether the resource is officially assigned to the project or is proposed to be used in the project.

9

- Click **OK** to save the changes.

- Following figure displays about creating resources in the **Resource Information** dialog box:





Creating Resources from the Resource Sheet View

- ◆ One can also use the **Resource Sheet** view to create resources.
- ◆ The **Resource Sheet** view contains fields for entering all the information as in the **Resource Information** dialog box, and more.
- ◆ Additional resource information that can be specified in the **Resource Sheet** view includes:

Max: The maximum percentage of time for which the resource is available for the project.

Std. Rate: The standard cost rate that the resource costs per unit of time.

Ovt. Rate: The cost rate for employing the resource for overtime work on the project.

Cost/Use: The cost of a resource added on each time a task is assigned.

Accrue: This field is specified when the cost accrued is charged against the resource.

Base: The calendar that is used to schedule tasks for the resource is specified here.



Importing Resources from MS Outlook

- ◆ MS Project allows project managers to pull resources from MS Outlook.
- ◆ Project managers should have Outlook as the default e-mail program for this to work.
- ◆ The steps to insert resources from the MS Outlook Address Book are as follows:

- 1 • Open the **Resource Sheet** view.
- 2 • In the Insert group on the **Resources** tab, click the **Add Resources** button and select the **Address Book** option. This displays the **Select Resources** dialog box.
- 3 • Select the resource required in the project, from the **Name** list box.
- 4 • Click the Add button to move the selected resource name to the **Resources** list box.
- 5 • Repeat the steps to import all the resources into the project.
- 6 • Click **OK** to import the resources to the project file.



Sharing Resources

- ◆ Most organizations have multiple projects executing simultaneously.
- ◆ In such cases, it is common to have a set of core resources or a pool of resources that are required to work on all or most of the projects.
- ◆ To handle such resources, the best practice is to create centralized resources and share them across projects.
- ◆ This saves time as the resources need not be created in every project and helps to track the shared resources across projects.



Creating a Resource Pool

- ◆ A resource pool file can be an existing project file whose resources are shared across projects.
- ◆ Typically, a resource pool file is a separate file without any tasks.
- ◆ It lists only the set of shared resources and is used to track their availability, and to manage their costs and assignments across projects.
- ◆ Following are the steps to create a resource pool:

Open a new blank project file.

On the **Task** tab, click the bottom part of **Gantt Chart** button and select **Resource Sheet** to display the **Resource Sheet** view.

Enter the information for all resources to be included in the resource pool including work, material, and cost resources.

Save the file at a location such as a central server or a shared folder on the network. This will enable project managers of various projects to access it.



Linking a Project to a Resource Pool 1-2

- ◆ To use the resource pool in a project, project managers need to link the project file to the resource pool file.
- ◆ Following are the steps to link a project to a resource pool:

1

- On the **Task** tab in the project file, click the bottom part of the **Gantt Chart** button and select **Resource Sheet** to display the **Resource Sheet** view.

2

- On the **File** tab, click **Open** and select the resource pool file.

3

- From the Taskbar, select and display the project file.

4

- In the **Assignments** group on the **Resource** tab, click the **Resource Pool** button and select the **Share Resources** option.

5

- In the **Share Resources** dialog box, select the **Use resources** radio button.

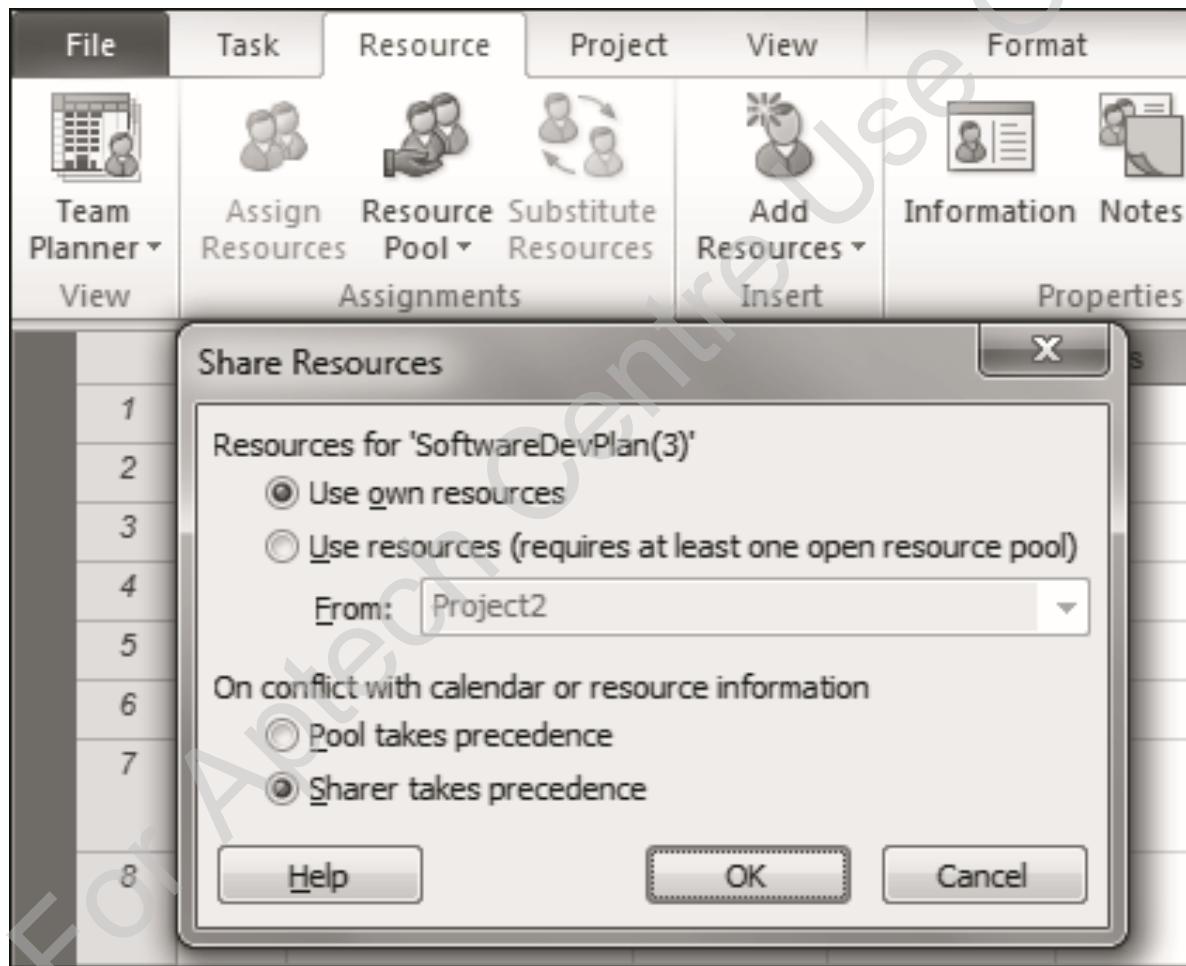
6

- Click **OK** to link the selected resource pool file to the project file.



Linking a Project to a Resource Pool 2-2

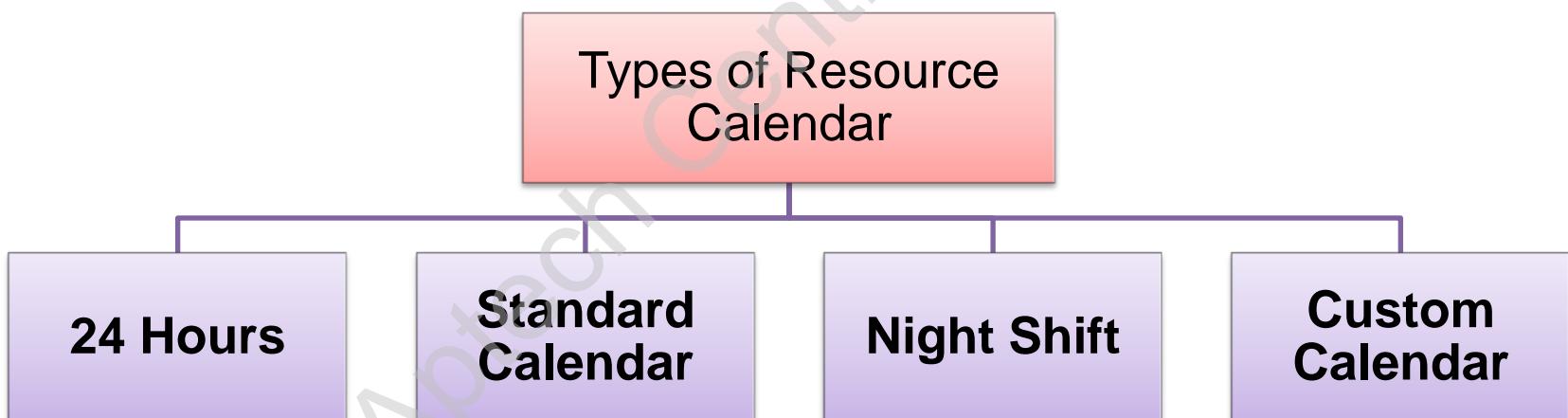
- Following figure shows the **Share Resources** dialog box:





Working with Resource Calendar 1-4

- ◆ By default, the project calendar applies for scheduling and assigning all resources to a project.
- ◆ If the resource has specific scheduling constraints that are different from that of the project calendar, project managers can create a different calendar specific to the resources. Such calendars are called resource calendars.





Working with Resource Calendar 2-4

- The steps to make changes to a resource's calendar are as follows:

In the **Resource Sheet**, select the resource name and click the **Information** button on the **Resource** tab, to display the **Resource Information** dialog box.

On the **General** tab, click the **Change Working Time** button to display **Change Working Time** dialog box.

To change the base calendar, select a different base calendar from the **Base calendar** drop-down list.

To specify an exception to the default base calendar hours, open on the **Work Weeks** tab and select the default entry in the table.

Then, click **Details** button to display **Details** dialog box.

From the **Select day(s)** list box, select the days for which specific work hours need to be defined.

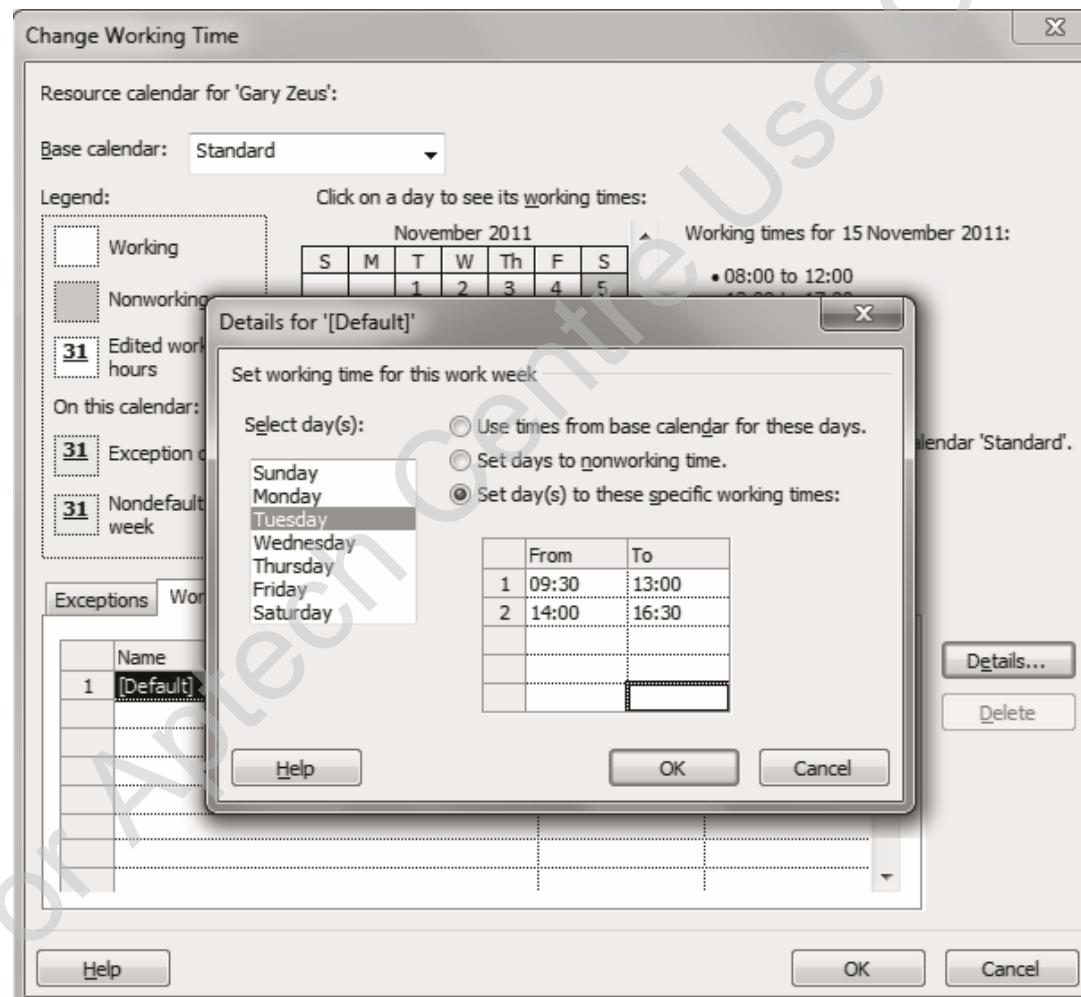
Select the **Set Day(s) to These Specific Working Times** radio button and edit the **From** and **To** working times in the table, as needed.

Specify as many different work times for various days as required, with each work time in a separate row.



Working with Resource Calendar 3-4

- Following figure displays the **Details** dialog box for a resource calendar:





Working with Resource Calendar 4-4

Click **OK** to save the work time and workdays specifications.

To create an exception such as a holiday or vacation day, on the **Exceptions** tab, select the date or period on the calendar for which a holiday or vacation needs to be specified.

In the table, enter the exception name and press the Tab key. Specify the start and finish dates for the holiday or vacation period.

Click the **Details** button to display the **Details for Exception** dialog box.

Specify the required details for the selected period, such as any specific working times, recurrence pattern of the exception period, and the duration of the exception.

Click **OK** thrice to save the resource calendar settings and close all the open dialog boxes.



Finding the Right Resource

- ◆ For efficient execution of the project tasks, it is very important to find the right resource for the right task.
- ◆ Following are the four parameters for finding the right resource for a task:

Right skills of the resource required for the task to complete

Time available for the resource to complete the task according to the project schedule

Commitment of the resource to the project

Cost of the resource that fits in the project budget

- ◆ MS Project provides the following ways for identifying resources based on their skill and other criteria:

Enter information about resources' skills and abilities using the **Resource Notes** tab in the **Resource Information** dialog box.

Rank resources by skill set, cost, or ability to work well with team using the **Code** field in the **Resource Information** form.

Create custom fields for resources to note specific skills and search resources for those skills.



Managing Workload 1-3

- ◆ Managing the assignment of resources without overallocating anyone is the key of project management.
- ◆ Though occasional overallocation is predictable for most resources, frequent overtime of resources result in poor work quality.

Project managers can perform the following three main actions to manage resource workload in a project:

Track the project plan

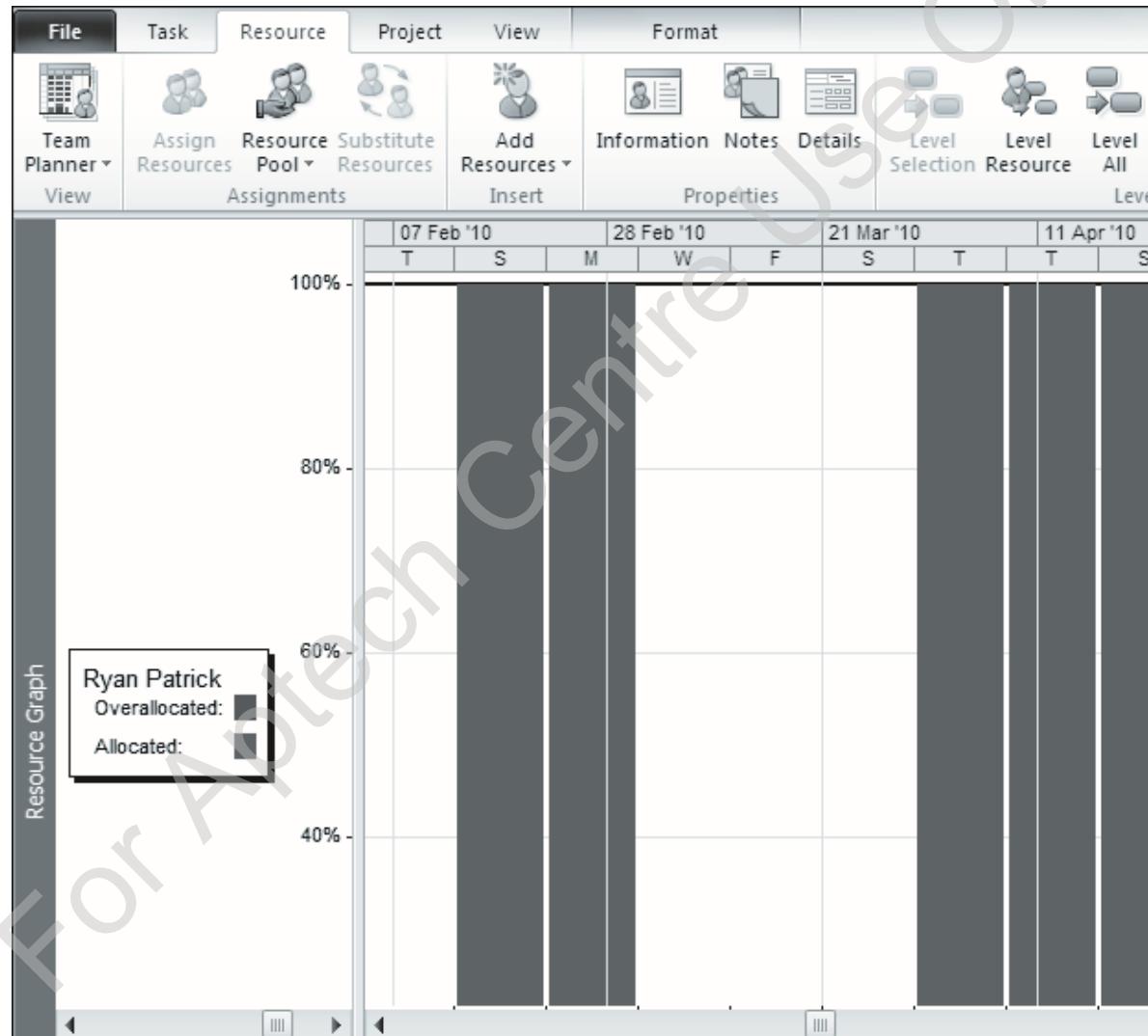
Track the workload of individual resources

Communicate with resources



Managing Workload 2-3

- Following figure illustrates the **Resource Graph** view and **Resource Form**:





Managing Workload 3-3

- Following figure illustrates the Resource Form:

The screenshot shows the Microsoft Project Resource Form dialog box. At the top, there's a toolbar with standard Office-like buttons for Cut, Copy, Paste, Font selection (Calibri, 11pt), and various scheduling and tracking options like 'Mark on Track', 'Respect Links', and 'Inactivate'. Below the toolbar, the main area is divided into sections: 'Name' (Fay Morgan), 'Initials' (F), 'Max units' (100%), and a 'Previous' button. The 'Costs' section includes fields for 'Std rate' (\$0.00/h), 'Per use' (\$0.00), 'Ovt rate' (\$0.00/h), 'Accrue at' (Prorated), 'Base cal' (Standard), 'Group', and 'Code'. The bottom half of the dialog is a table showing task assignments for a project named 'SoftwareDevPl'. The columns are labeled 'Project', 'ID', 'Task Name', 'Units', 'Work', 'Ovt. Work', 'Baseline Work', and 'Actual Work'. The tasks listed are: Conduct needs analysis, Draft preliminary software specification, Review software specifications/budget, Incorporate feedback on software spe, Review preliminary software specificat, Develop functional specifications, and Develop prototype based on functiona.

Project	ID	Task Name	Units	Work	Ovt. Work	Baseline Work	Actual Work
SoftwareDevPl	8	Conduct needs analysis	100%	40h	0h	0h	0h
SoftwareDevPl	9	Draft preliminary software specification	100%	24h	0h	0h	0h
SoftwareDevPl	11	Review software specifications/budget	100%	4h	0h	0h	0h
SoftwareDevPl	12	Incorporate feedback on software spe	100%	8h	0h	0h	0h
SoftwareDevPl	18	Review preliminary software specificat	100%	16h	0h	0h	0h
SoftwareDevPl	19	Develop functional specifications	100%	40h	0h	0h	0h
SoftwareDevPl	20	Develop prototype based on functiona	100%	32h	0h	0h	0h



Managing Resource Conflicts 1-6

- ◆ In order to achieve project success, the project manager must create an environment of cooperation, respect, team consensus, and honest communication.
- ◆ A project manager must establish effective communication methods such as regular status meetings with several graphical reports to get people connected with the project goal.
- ◆ Overallocation of a resource occurs when more work is assigned than what the resource can complete in the allotted time for the work.
- ◆ Overallocation can cause project schedule delays as there is a risk of the assigned resources not completing the tasks on time.
- ◆ As resources are assigned with tasks, MS Project checks the resource's calendar to make sure that the resource is available.
- ◆ MS Project provides views and filters to identify overallocated resources.



Managing Resource Conflicts 2-6

- Following figure displays overallocated resources in Gantt Chart view:

i	Task Mode	Task Name	Duration	Start	Finish	Resource Names
		Scope	3.5 days	Mon 04-01-10	Thu 07-01-10	
		Determine project scope	4 hrs	Mon 04-01-10	Mon 04-01-10	SSU-Sr Mgmt
		Secure project sponsorship	1 day	Mon 04-01-10	Tue 05-01-10	SSU-Sr Mgmt
		Define preliminary resources	1 day	Tue 05-01-10	Wed 06-01-10	Gary Zeus
		Secure core resources	1 day	Wed 06-01-10	Thu 07-01-10	Gary Zeus
		Scope complete	0 days	Thu 07-01-10	Thu 07-01-10	
		Analysis/Software Requirements	3 days	Thu 07-01-10	Tue 12-01-10	
		Conduct needs analysis	2 days	Thu 07-01-10	Mon 11-01-10	Fay Morgan,Jeff
		Draft preliminary software specifications	3 days	Mon 11-01-10	Thu 14-01-10	Fay Morgan
		Develop preliminary budget	2 days	Thu 14-01-10	Mon 18-01-10	Gary Zeus
		Review software specifications/budget with team	4 hrs	Mon 18-01-10	Mon 18-01-10	Gary Zeus,Fay Morgan
		Incorporate feedback on software specifications	1 day	Tue 19-01-10	Tue 19-01-10	Fay Morgan
		Develop delivery timeline	1 day	Wed 20-01-10	Wed 20-01-10	Gary Zeus
		Obtain approvals to proceed (concept, timeline, budget)	4 hrs	Thu 21-01-10	Thu 21-01-10	SSU-Sr Mgmt,Gary Zeus
		Secure required resources	1 day	Thu 21-01-10	Fri 22-01-10	Gary Zeus



Managing Resource Conflicts 3-6

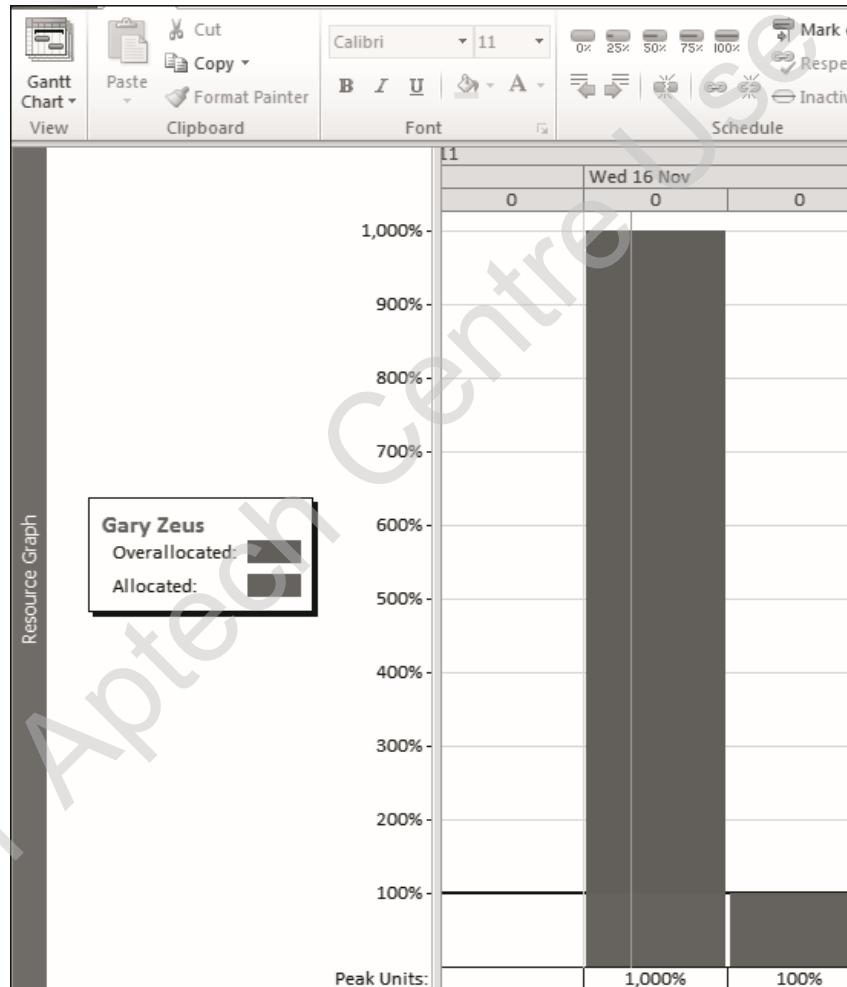
- ◆ A red person icon in the Indicator column of **Gantt Chart** indicates overallocated resources.
- ◆ Also, in **Resource Usage** view and the Resource Sheet, an alert sign displays beside overallocated resources in the Indicator column.
- ◆ The resource's name and hours appears in bold red as shown in the following figure:

	Resource Name	Work	Add New Column	Details	14 Nov '11	
					M	T
	+ Unassigned	0 hrs		Work		
1	gary zeus	168 hrs		Work		
	<i>Determine project scope</i>	16 hrs		Work		
	<i>Secure project schedule</i>	48 hrs		Work		
	<i>Define preliminary requirements</i>	16 hrs		Work		
	<i>Develop preliminary design</i>	16 hrs		Work		
	<i>Review software architecture</i>	8 hrs		Work		
	<i>Develop delivery plan</i>	8 hrs		Work		
	<i>Obtain approvals from stakeholders</i>	8 hrs		Work		
	<i>Secure required resources</i>	8 hrs		Work		
	<i>Obtain approvals from management</i>	8 hrs		Work		
	<i>Identify test groups and tools</i>	8 hrs		Work		
	<i>Document lessons learned</i>	8 hrs		Work		
	<i>Distribute to team members</i>	8 hrs		Work		
	<i>Create software documentation</i>	8 hrs		Work		



Managing Resource Conflicts 4-6

- Alternatively, the **Resource Graph** view shows graphical representation of a resource's allocation as shown in the following figure:





Managing Resource Conflicts 5-6

- Following are the various ways of displaying the Resource Graph view:

Click the down arrow on **Gantt Chart** button on the **Task** tab and select **Resource Graph**.

Click the down arrow on **Team Planner** button on **Resources** tab and select **Resource Graph**.

Click the **Other Views** button on the **Task Views** tab and select **Resource Graph**.

- Overallocated resource names appear in red, and a red bar highlights overallocated tasks and timeframes.
- Steps to open **Team Planner** in MS Project 2010 are as follows:

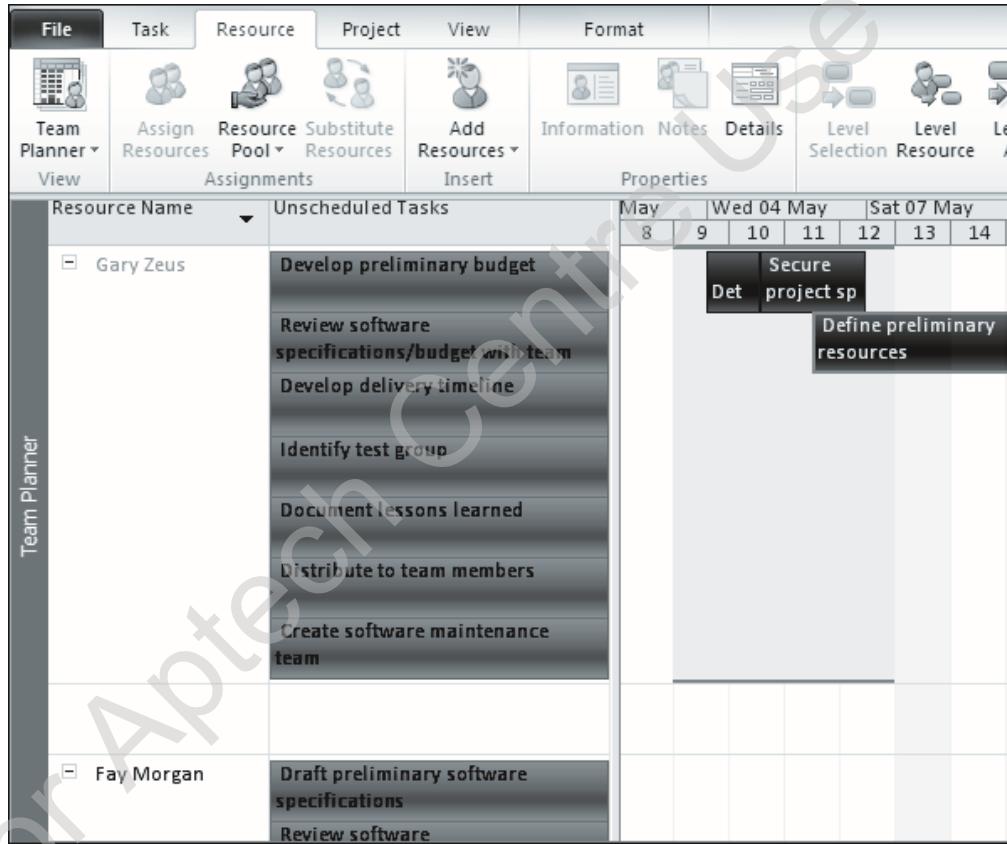
1 • On the **View** tab, under **Resource Views** group of the **Ribbon**, click **Team Planner**.

2 • Alternately, on the **Resource** tab, under **View** group, click **Team Planner**.



Managing Resource Conflicts 6-6

- Following figure illustrates the Team Planner view displaying overallocated resources:





Summary

- ◆ Project management involves assigning the right resources to the right tasks at the right time without any overallocation.
- ◆ While analyzing the resource requirement, the project resources such as work, material, and cost need to be considered.
- ◆ Project managers need to estimate the effort and the number of resources required considering the three guidelines, skill set, projects history, and individual assessment.
- ◆ Project managers start by listing the available resources for a project by using the Resource Information dialog box, the Resource Sheet view, or by importing resources from MS Outlook.
- ◆ Multiple projects running simultaneously can create a resource pool of the core resources and share them according to the project requirement and the resource availability.
- ◆ Project managers can create a separate resource calendar for resources with specific scheduling constraints different from that of the project.
- ◆ To avoid work overload or over allocation and for successful project execution, project managers need to manage the workload by constantly tracking the project plan, and tracking the workload of resources and communicate with them.