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Instructor:

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Workshop Agenda:

First session	Second session
Introduction	Entering Estimates
Review PMBOK nine area of knowledge	Entering Dependencies
Introduction to MS Project 2010	Entering Deadlines
Setting up a Project	BREAK
BREAK	Entering Resources
Entering WBS	Entering Assignments
Entering Estimates	Updating the Schedule
	Reports

Key Learning Outcomes:

After completing this workshop, students should be able to

1. **Have a global understanding of the nine PMBOK knowledge area**
2. **Set a project on MS Project 2010**
3. **Enter WBS**
4. **Enter estimates**
5. **Work dependencies**
6. **Add Deadline, Constraints dates, and calendars**
7. **Enter Resources**
8. **Enter Assignments**
9. **Update schedule**
10. **Generate reports**

PLAN

Introduction: review of the nine * PMBOK areas of knowledge.....	3
LESSON 1: INTRODUCTION TO MICROSOFT PROJECT 2010	5
Topic 1: What's New in MS Project 2010	5
Topic 2: A Dynamic Approach to Scheduling	5
Topic 3: Course Structure	5
LESSON 2: SETTING UP A PROJECT	11
Topic 1: Opening, Saving, and Closing a Project	11
Topic 2: The MS Project 2010 Interface	11
Topic 3: Setting up a New Schedule	11
LESSON 3: ENTERING THE WORK BREAKDOWN STRUCTURE (WBS).....	28
Topic 1: The WBS Defined.....	28
Topic 2: Task Categories.....	28
Topic 3: Entering Tasks	28
Topic 4: Indenting and Outdenting Tasks	28
Topic 5: Changing the WBS	28
LESSON 4: ENTERING ESTIMATES.....	42
Topic 1: What are Estimates?.....	42
Topic 2: Setting MS Project Options	42
Topic 3: A Process for Estimating	42
Topic 4: Moving and Copying Data.....	42
LESSON 5: ENTERING DEPENDENCIES.....	52
Topic 1: Dependencies and Dynamic Scheduling.....	52
Topic 2: What are Dependencies?.....	52
Topic 3: Types of Dependencies	52
Topic 4: Using Lead or Lag	52
Topic 5: Entering Dependencies in the Gantt View	52
Topic 6: The Network Diagram	52
LESSON 6: ENTERING DEADLINES, CONSTRAINT DATES, AND CALENDARS	59
Topic 1: Deadlines versus Constraint Dates	59
Topic 2: Entering and Managing Deadlines.....	59
Topic 3: Types of Constraints	59
Topic 4: Entering and Managing Constraint Dates	59
LESSON 7: ENTERING RESOURCES.....	64
Topic 1: What is a Resource?.....	64
Topic 2: Entering and Managing Resources	64
Topic 3: Editing the Resource Calendar	64
LESSON 8: ENTERING ASSIGNMENTS.....	70
Topic 1: What is an Assignment?	70
Topic 2: Assignments and Types of Detail Tasks.....	70
Topic 3: Assigning Resources.....	70
Topic 4: Changing Tasks and Assignments	70
LESSON 9: UPDATING THE SCHEDULE.....	78
Topic 1: Introduction to Schedule Updating	78
Topic 2: Baseline the Schedule	78
Topic 3: Progressing the Schedule and Updating Tasks	78
Topic 4: Reporting on Updated Schedule	78
LESSON 10: REPORTS	85
Topic 1: Types of Reports	85
Topic 2: Using Visual Reports	85

Introduction: review of the nine * PMBOK areas of knowledge

Knowledge Areas	Project Management Process Groups				
	Initiating Process Group	Planning Process Group	Executing Process Group	Monitoring and Controlling Process Group	Closing Process Group
4. Project Integration Management	4.1 Develop Project Charter	4.2 Develop Project Management Plan	4.3 Direct and Manage Project Work	4.4 Monitor and Control Project Work 4.5 Perform Integrated Change Control	4.6 Close Project or Phase
5. Project Scope Management		5.1 Plan Scope Management 5.2 Collect Requirements 5.3 Define Scope 5.4 Create WBS		5.5 Validate Scope 5.6 Control Scope	
6. Project Time Management		6.1 Plan Schedule Management 6.2 Define Activities 6.3 Sequence Activities 6.4 Estimate Activity Resources 6.5 Estimate Activity Durations 6.6 Develop Schedule		6.7 Control Schedule	
7. Project Cost Management		7.1 Plan Cost Management 7.2 Estimate Costs 7.3 Determine Budget		7.4 Control Costs	
8. Project Quality Management		8.1 Plan Quality Management	8.2 Perform Quality Assurance	8.3 Control Quality	
9. Project Human Resource Management		9.1 Plan Human Resource Management	9.2 Acquire Project Team 9.3 Develop Project Team 9.4 Manage Project Team		
10. Project Communications Management		10.1 Plan Communications Management	10.2 Manage Communications	10.3 Control Communications	
11. Project Risk Management		11.1 Plan Risk Management 11.2 Identify Risks 11.3 Perform Qualitative Risk Analysis 11.4 Perform Quantitative Risk Analysis 11.5 Plan Risk Responses		11.6 Control Risks	
12. Project Procurement Management		12.1 Plan Procurement Management	12.2 Conduct Procurements	12.3 Control Procurements	12.4 Close Procurements
13. Project Stakeholder Management	13.1 Identify Stakeholders	13.2 Plan Stakeholder Management	13.3 Manage Stakeholder Engagement	13.4 Control Stakeholder Engagement	

Table 1: Project Management Process Group and Knowledge Area Mapping

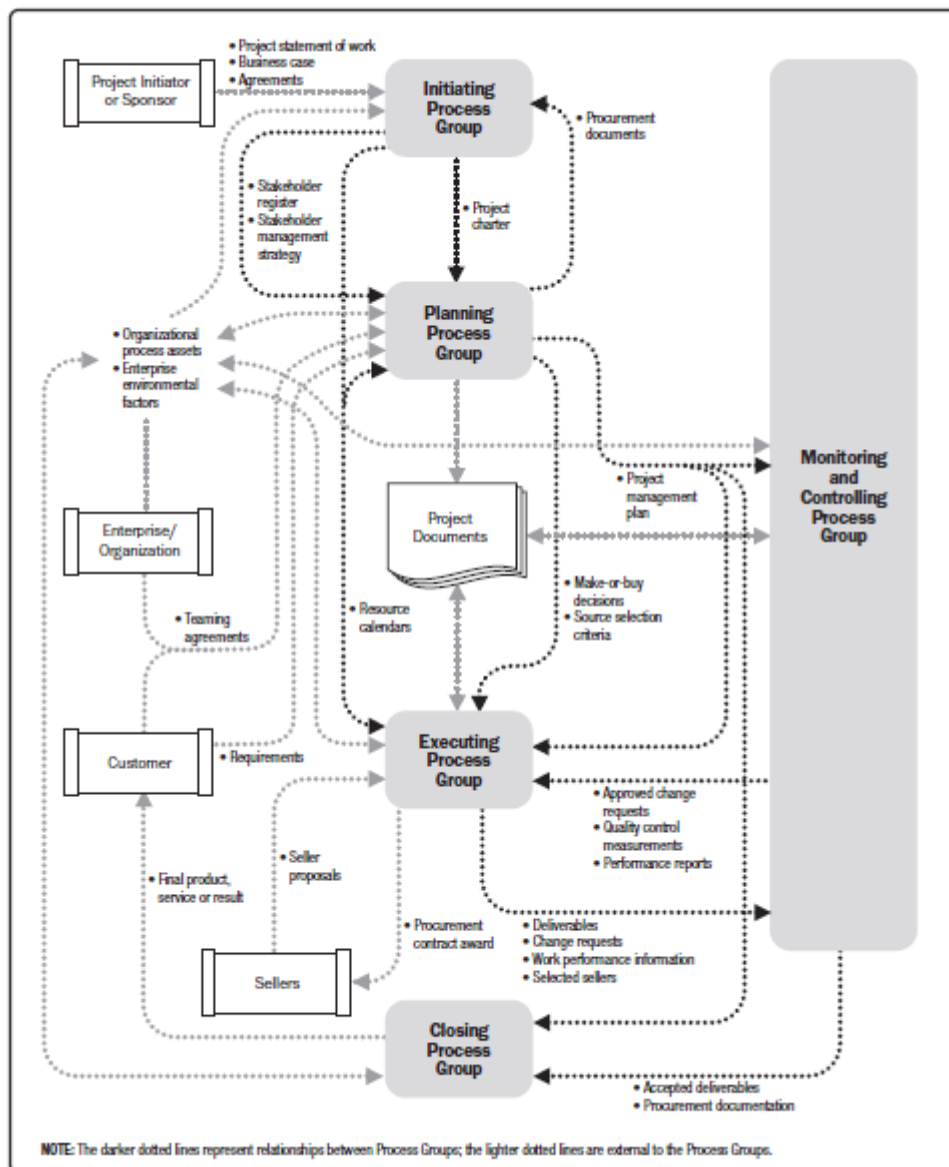


Figure 1 : Project Management Process Interactions

LESSON 1: INTRODUCTION TO MICROSOFT PROJECT 2010

Topic 1: What's New in MS Project 2010

Topic 2: A Dynamic Approach to Scheduling

Topic 3: Course Structure

MS Project 2010 Course Outline



Topic 1: What's New in MS Project 2010

What's New in MS Project 2010?

- Here's what's new in Project:
 - Ribbon
 - Quick Access Toolbar (QAT)
 - Backstage (**File** ribbon)
 - Manually Scheduled tasks
 - Team Planner
 - Time Line view
 - Improved **Paste** function
 - **Move** Project function
 - Create PDF files without Adobe Acrobat

Project 2010 is a software application that helps you build a model of your project. It is a powerful tool that has grown in its usefulness for professional project managers. Like all tools, correct use requires knowledge and skill. This course is designed to assist you gain both. The software is not a magic beam that will grow a successful project by itself. A successful project results from a combination of executive support, competent project management, a committed team, and the right tools.

Here's what's new in Project 2010.

- **Ribbon** (*Fluent User Interface*)

There are six ribbons in Project 2010: **File, Task, Resource, Project, View,** and **Format**. Ribbon is the common term used by most practitioners, but Microsoft uses the term *Fluent User Interface*.

- **Quick Access Toolbar** (QAT)

The Quick Access Toolbar is always visible, unlike each ribbon. Buttons you put on the QAT are always accessible.

- **Microsoft Office Backstage (File Ribbon)**

The backstage can be accessed by clicking File. It contains the file management features and all features of secondary use. The Options can now be found on the backstage.

- **Status bar at the bottom of the screen:**

The status bar now provides more feedback and has some new interactive buttons as well as the popular zoom slider for zooming the timescale in or out.

- **Manually scheduled tasks**

Manually scheduled tasks have a pushpin icon in the indicators column. This is the new default replacing Auto Scheduled tasks. Manually scheduled tasks give you the flexibility of Excel but the power of Project and allow you to start entering data into your MS Project schedule as soon as you receive them without having to complete the schedule. Your schedule can be your notepad much earlier during the planning phase. Manually scheduled tasks do not automatically move out when they have dependencies and will keep their dates as you entered them. Manually scheduled tasks even allow you to enter notes in **Start** and **Finish** date fields, for example: *discuss with Harry*.

- **Team Planner**

The Team Planner view is a workload chart in which you can easily drag workloads around. The bars depict workloads for the resource. Their position in the timescale represents when the workloads are scheduled.

- **Time Line view**

The Time Line view provides an overview of all important milestones and tasks of your choice. You can paste it in a Power Point slide as a Microsoft Drawing object that you can continue to manipulate in Power Point.

- **Resource Graph view**

The Resource Graph view can now also chart proposed work, availability and cumulative numbers.

- **Paste is improved**

Tasks copied between MS Office applications now keep their formatting. An indented task list copied from MS Word will also keep its indentation structure in Project 2010.

- **Move Project**

Move Project is a new feature found on the **Project** ribbon. When you move a project, MS Project adjusts all the hard dates in the schedule relative to the new start date you enter.

- **Create PDF files without Adobe Acrobat**

MS Project now allows printing directly to PDF files.

Topic 2: A Dynamic Approach to Scheduling

A Dynamic Approach to Scheduling

- Valid - produces accurate forecasts reliably
- Dynamic - when one thing changes in the project, you need to make only one change in the schedule
- Robust - can survive as many changes as possible
- Model - a deliberate and smart simplification of the reality
- Forecast - a model built to forecast the project

A Schedule is a Valid, Dynamic and Robust Model to Forecast

- **Valid**

A valid schedule is a schedule that produces accurate forecasts reliably. Most project managers create schedules to better forecast their projects.

- **Dynamic**

A dynamic schedule updates itself as much as possible. A dynamic schedule is set up to come as close as possible to realizing when one thing changes in the project, you need to make only one change in the schedule, then all forecasts in the entire schedule are immediately recalculated by the software and are accurate again.

- **Robust**

A robust model is a model that can survive as many changes as possible, even extreme circumstances, with as few necessary adjustments as possible.

- **Model**

A model is a deliberate and smart simplification of the reality. A schedule should be an intentional and intelligent simplification of the project. The art of scheduling is capturing only what is important in the project.

- **Forecast**

The schedule is a model built to forecast the project. The biggest benefit of the schedule is to continuously forecast your project. Stakeholders are interested in accurate forecasts.

Topic 3: Course Structure



It is recommended that you follow the process below as your own business process to create and manage your schedules.

Lesson Title	Corresponding Process Sentences
Setup	Setup a new schedule and configure its options
WBS	Create the Work Breakdown Structure
Estimates	Estimate task durations or efforts (work) and enter them
Dependencies	Create a complete and correct network of dependencies to create a dynamic model of the project
Deadlines	Enter deadlines and perhaps some constraints or task calendars
Resources	Define and enter resources
Assignments	Assign resources to the detailed tasks
Updating the Schedule	Set the baseline once, maintain it if needed, and update the schedule so it forecasts the project at all times
Reports	Customize reports to the needs of project stakeholders once, and then generate them at each status period

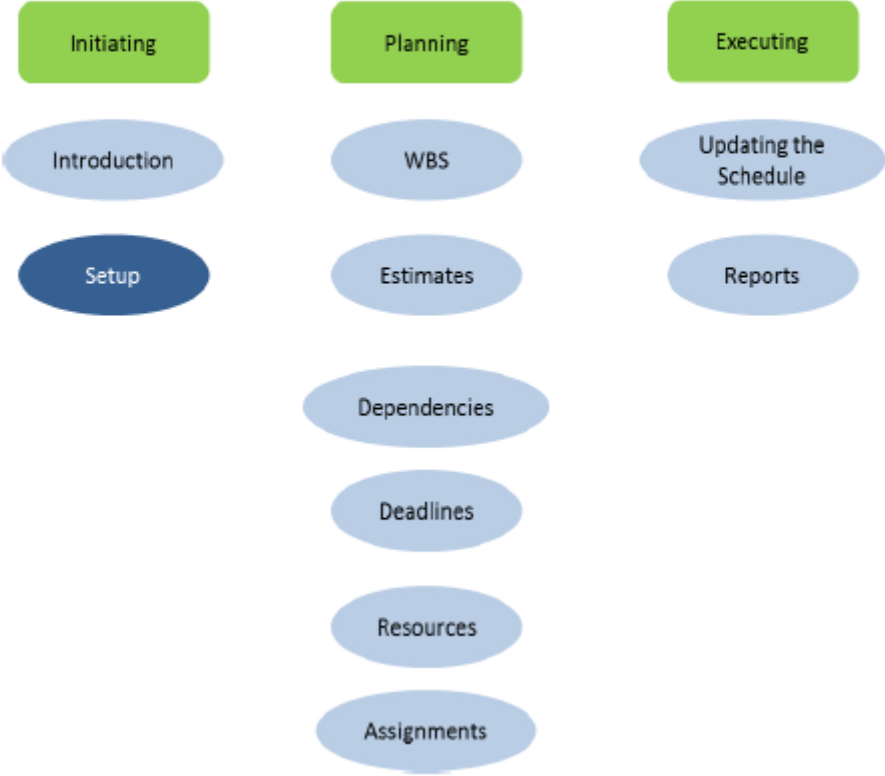
LESSON 2: SETTING UP A PROJECT

Topic 1: Opening, Saving, and Closing a Project

Topic 2: The MS Project 2010 Interface

Topic 3: Setting up a New Schedule

MS Project 2010 Course Outline



Topic 1: Opening, Saving, and Closing a Project

MS Project File Types

- MS Project 2010 can store its data in project files and project template files.
- Project templates are like regular project files, but with an added protection against accidental changes.

The file extensions for these two types are:

- A project file has an **.MPP** extension (**M**icrosoft **P**roject **P**roject)
- A template file has an **.MPT** extension (**M**icrosoft **P**roject **T**emplate)

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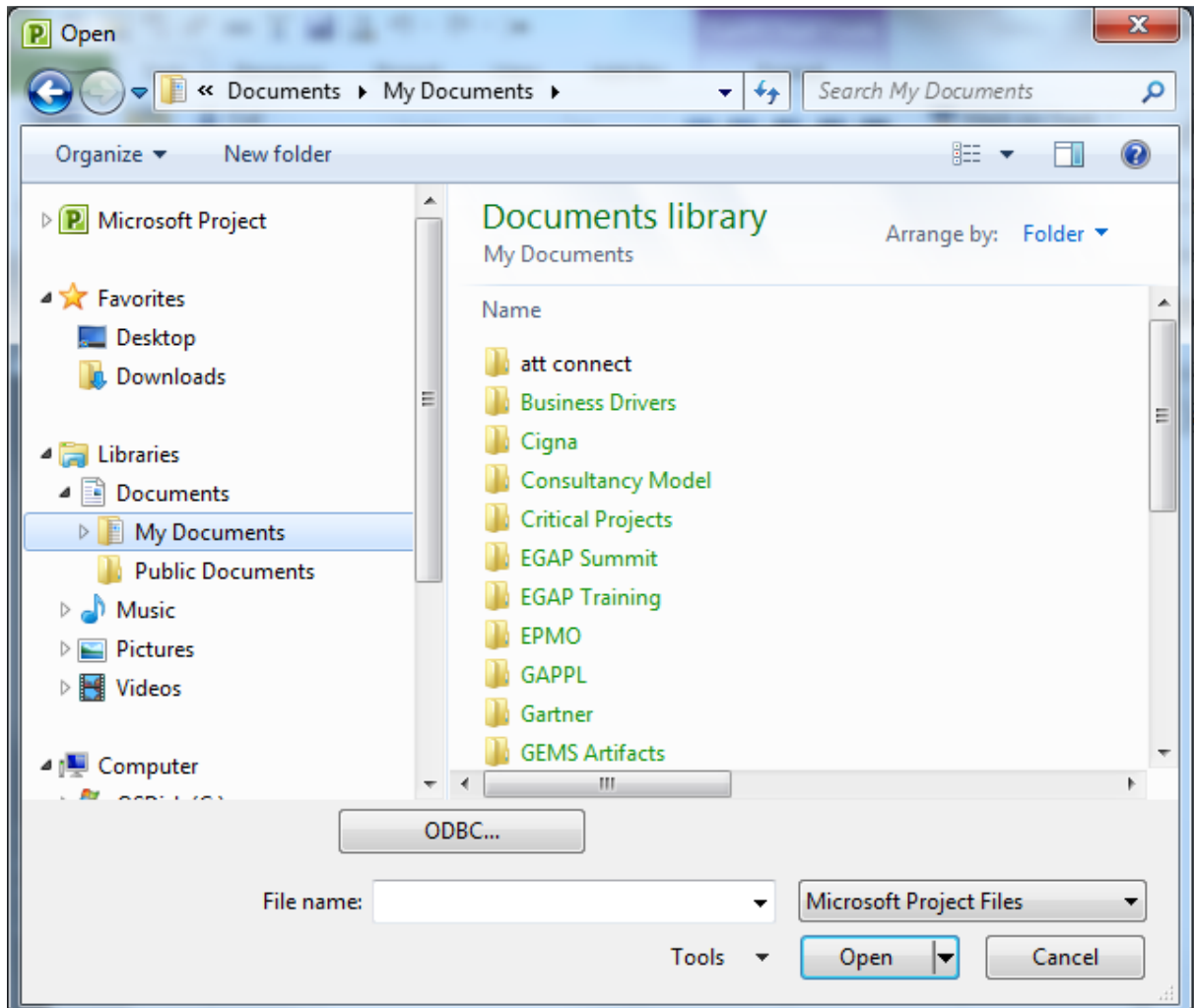
File Types in MS Project 2010

MS Project 2010 can store its data in project files and project template files among other file types. Project templates are like regular project files, but with an added protection against accidental changes. Templates are commonly used in organizations that run similar projects over and over. Think of a template as a standardized schedule.

The file extensions for these two types are:

- A project file has an **.MPP** extension (**M**icrosoft **P**roject **P**roject)
- A template file has an **.MPT** extension (**M**icrosoft **P**roject **T**emplate)

Demonstration: Opening, Saving, and Closing a Project




3. Navigate to the file to open.

4. Double-click on the name of the file to open.

OR

Single-click on the file name and click *Open*. The drop-down list on the button also allows you to **Open read only** or **Open as Copy**.

Note: If the file was opened recently, you can more easily open it: Click the **File** ribbon and click **Recent** and then double-click the file to open. You can even pin a file to the top of the list by clicking its pushpin button  behind the file name.

Saving Changes in an Existing MPP file

1. Click ribbon **File** and click .

2. If your file exists already, the file on your hard disk will be updated with the changes. If the file does not exist, the **Save As** dialog will appear automatically.

Note: There is an **Auto Save** option that saves your schedule every so many minutes, which you indicate in ribbon **File, Options**, tab **Save**.

Topic 2: The MS Project 2010 Interface



This topic will cover the following screen parts on the Main Screen:

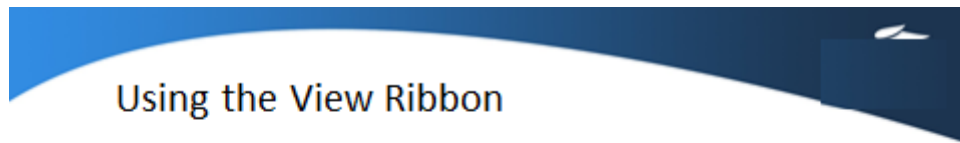
- Main Screen Components
 - Sizing buttons
 - Screen divider
 - Indicators column
 - Zoom slider
 - View buttons
 - Status bar
- The Ribbon (tabs, buttons, and drop-down lists)
- The Quick Access Toolbar (QAT)

Topic 2: The MS Project 2010 Interface – The Main Screen

The screenshot shows the Microsoft Project 2010 interface with several components highlighted by blue callout boxes:

- Quick Access Toolbar:** Located at the top left, containing icons for Save, Undo, and Redo.
- Ribbon tabs:** Located below the Quick Access Toolbar, including File, Task, Resource, Project, View, and Add-Ins.
- Ribbon buttons and drop-down lists:** Located in the ribbon area, such as 'Auto Schedule' and 'Inspect'.
- Window sizing buttons for MS Project (top) and the schedule (bottom):** Located in the top right corner of the window.
- Divider separating the spreadsheet on the left from the timescale on the right; you can move it left or right:** A vertical line separating the task list from the Gantt chart.
- Indicators column with message icons:** A column on the left side of the task list containing small icons representing task status.
- Status bar with messages and New Tasks toggle button:** Located at the bottom left of the window.
- Views buttons to change views:** Located at the bottom center, including buttons for Gantt Chart, Task Sheet, and Resource Sheet.
- Zoom slider to adjust timescale:** Located at the bottom right, used to zoom in and out of the Gantt chart.



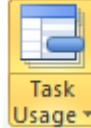
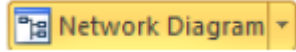
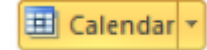
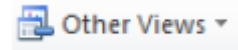
Topic 2: The MS Project 2010 Interface – Views

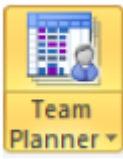

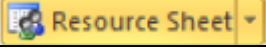
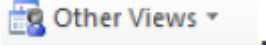


- The *View* of a project is a predefined layout that:
 - Presents the project from a certain angle
 - Allows you to enter or edit data
- Views are accessed via the **View** ribbon
- There can be single or combination views

Using the View Ribbon

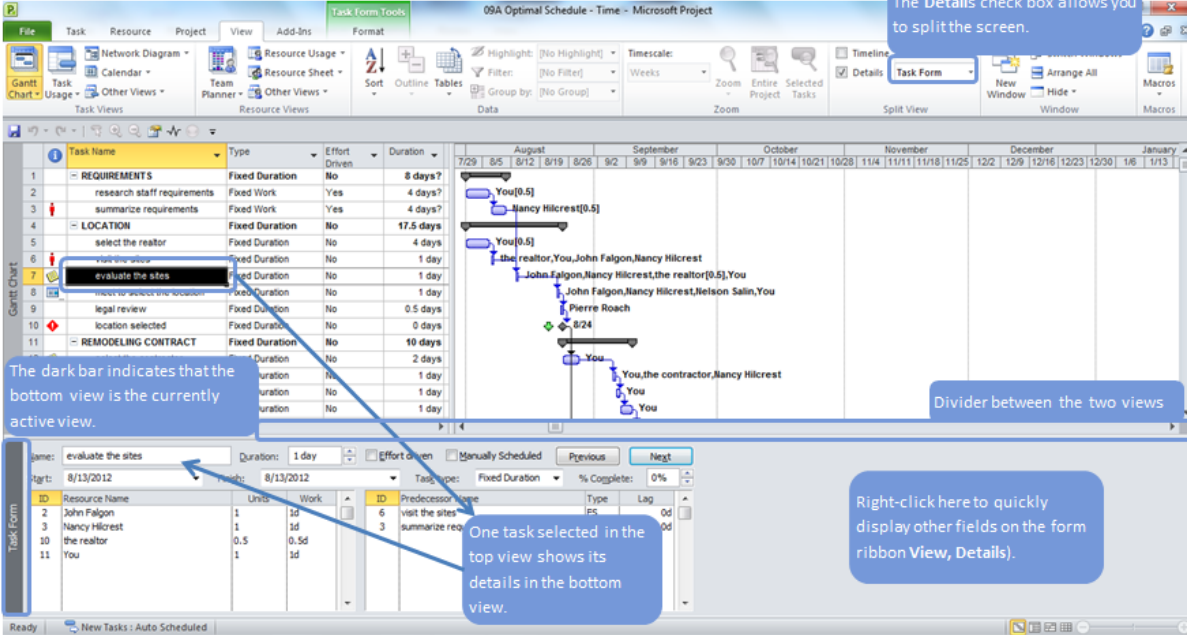
The *View* of a project is a predefined layout that presents the project from a certain angle. The views you allow you to enter or edit data, review or report your project. You can access the views by clicking the **View** ribbon.

View	View Ribbon Button	Shows
Gantt Chart	Section Task Views, Gantt chart 	The tasks and their task bars' over time, plus spreadsheet columns.
Tracking Gantt	Section Task Views, Tracking Gantt 	Two bars for each task in this view: The most recent update of the schedule and the original schedule (baseline) if the baseline is set.
Task Usage	Section Task Views, Task Usage 	Tasks with their assigned resources and the effort or cost over time
Network Diagram	Section Task Views, 	The network of dependencies between tasks (dependencies are shown as arrows)
Calendar	Section Task Views, 	The tasks shown as bars on a calendar
Timeline	Section Task Views, 	The Timeline view can display phases and milestones on one timeline bar to summarize the project. It appears as the top

	Timeline	view.
Team Planner	Section Resource Views, 	The Team Planner view facilitates allocating tasks to resources while keeping as eye on their workloads.
Resource Usage	Section Resource Views, 	Resources with their assigned tasks with the workloads or cost over time.
Resource Sheet	Section Resource Views, 	The spreadsheet with resource information.
Resource Graph	Section Resource Views,  Resource Graph	The workloads for resources in a bar chart format

Single View versus Combination View

Here is an example of a combination view, the **Task Entry** view. This view displays the **Gantt Chart** in the top and the **Task Form** in the bottom



The Details check box allows you to split the screen.

The dark bar indicates that the bottom view is the currently active view.

Divider between the two views

One task selected in the top view shows its details in the bottom view.

Right-click here to quickly display other fields on the form ribbon View, Details).

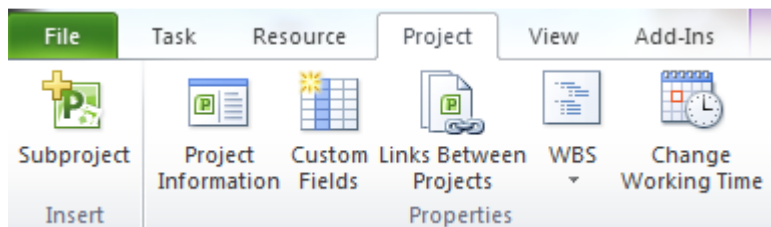
Exercise 2.1: Working with the MS Project 2010 Interface

1. Start MS Project
2. Click ribbon **File**, click - the **Open** dialog appears

3. Navigate to the Project2010SBS\Chapter01\Guided Tour_Start.mpp file and double-click the name.

Exploring the Main Screen

1. Locate the **Ribbon** and click the **Project** tab.



2. Locate the **Properties** ribbon group, click on **Project Information**.

What is the **Project Start Date**? _____

3. Click . 

4. Locate the **QAT**, click the button. Click **Show Above the Ribbon**.

Exploring Views

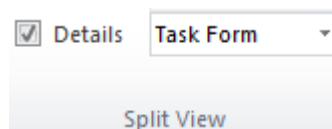
1. Click the **View** ribbon tab, locate **Task Views** section.

2. Click **Gantt Chart** dialog launcher . Select **Tracking Gantt**.

3. Toggle back to the **Gantt Chart** view by repeating step 2 and selecting **Gantt Chart**.

Exploring Combination Views

1. From the **View** ribbon tab, locate the **Split View** section.




2. Select **Details** option .

3. In the top view select task # 12.

4. What is the **Predecessor Name** in the Task Form view? _____ location selected

5. Unselect the **Details** option to return to a single view.

Close the Project File


1. Select the **File** ribbon tab.
2. Click  **Close**
3. Select on the Microsoft Project dialog box.

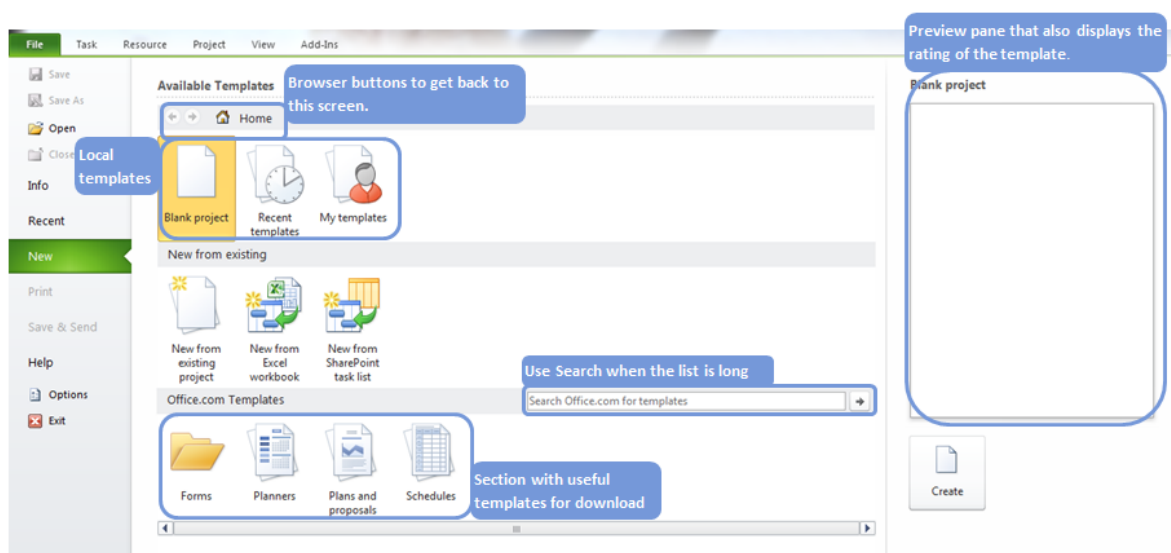
Topic 3: Setting Up a New Schedule

We recommend the following process when setting up a new project schedule. This topic will define each step in detail.

- Creating a new schedule from the ground up or from a template.
- Describing the project
- Setting the schedule options
- Setting the project calendar

Topic 3: Setting Up a New Schedule – Ground up or Template

Click ribbon tab **File** and click  - the following screen appears:



You can create a new **Blank Project** or jump start your project with:

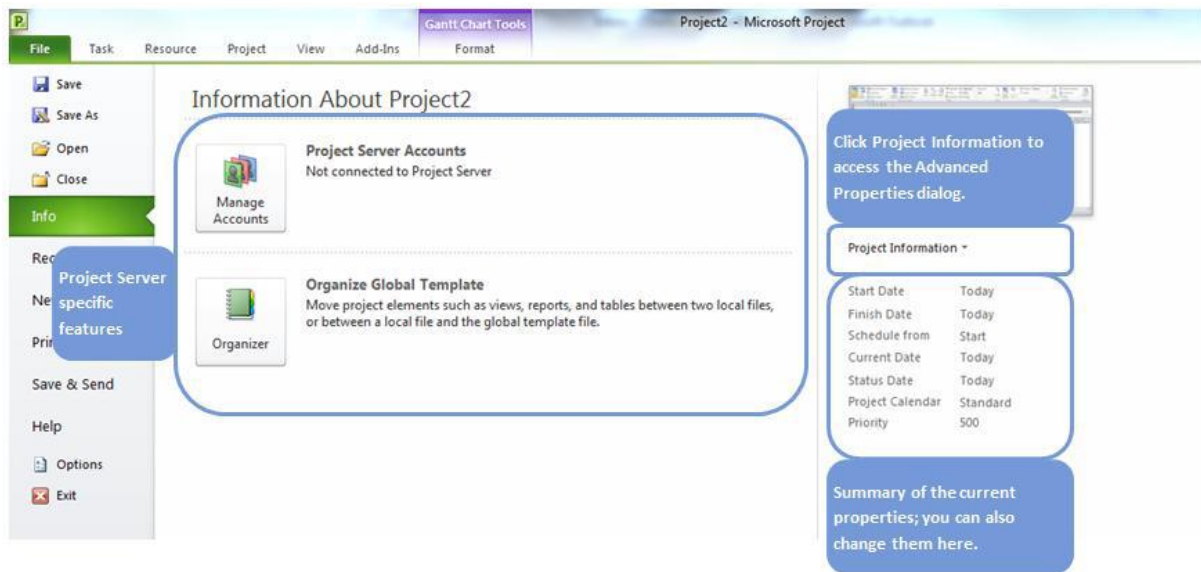
- **Recent templates**; Templates you have recently accessed
- **My Templates**: templates you have downloaded from Office.com.
- **New from existing project**: reuse an existing project.
- **New from Excel workbook**: this requires you to create a map to tell MS Project in which fields the data from Excel need to be loaded. You can also copy straight from Excel, then lay out the columns similarly in MS Project and paste.

- **Office.com Templates:** Project 2010 does not come with out-of-the-box templates, but the list of templates on Office.com will keep growing.

Topic 3: Setting Up a New Schedule – Describing the Project

Project Properties

1. Navigate to the Project2010SBS\Chapter01\Guided Tour_Start.mpp file and double-click the name.
2. Click ribbon **File** and click **Info** - the following screen appears:



3. Click list button **Project Information** (on the right side of the screen) to display its drop-down menu and select **Advanced Properties** – the following dialog appears:

Project2 Properties

General Summary Statistics Contents Custom

Title: Relocation Devom, Inc.

Subject:

Author: Charlie Milstead

Manager: Charlie Milstead

Company: Devom, Inc.

Category:

Keywords:

Comments: The project objective is to be moved to and operational in a new location by Nov 1st with minimal interruptions to business operations.

Hyperlink base:

Template:

Save preview picture

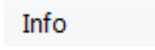
OK Cancel

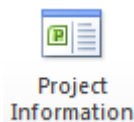
This dialog allows you to describe your project and has fields that can be pointed to in headers and footers of reports.

4. Click the tab **Summary** and in this dialog:
 - a. In the field **Title**, enter the name of the project
 - b. Enter your name and the **Author** and/or **Manager** and
 - c. In the **Comments** field, enter the project objective or a description of the final project product.

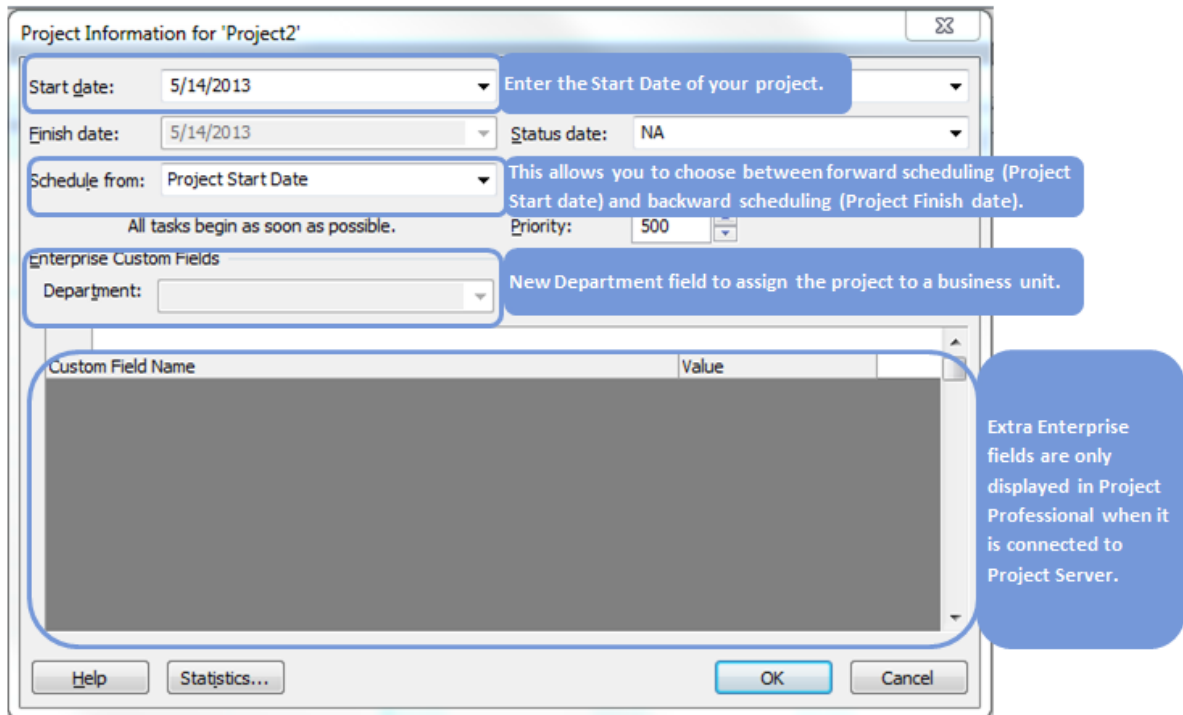
5. Click 

Entering the Project Start Date

1. Click ribbon **File** and click  and enter the **Start Date** on the right side of the



screen OR Click ribbon **Project** and click  this dialog box appears:



2. Enter the basic information in this dialog. There are two choices in the list **Schedule from**:
 - a. Project Start Date: (forward scheduling)
 - b. Project Finish Date: (backward scheduling)

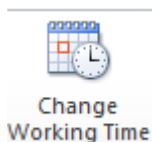
Setting the Project Calendar

The **Change Working Time** dialog (**Project** ribbon) allows you to set the project calendar. The default project calendar is called *Standard (Project Calendar)*. On the project calendar you indicate:

- *Workweek*
 - The *Working days* (business days) and nonworking days.
 - The *Working times* on the business days.
- National and corporate *holidays* are called *Exceptions* in MS Project.

To create a calendar:

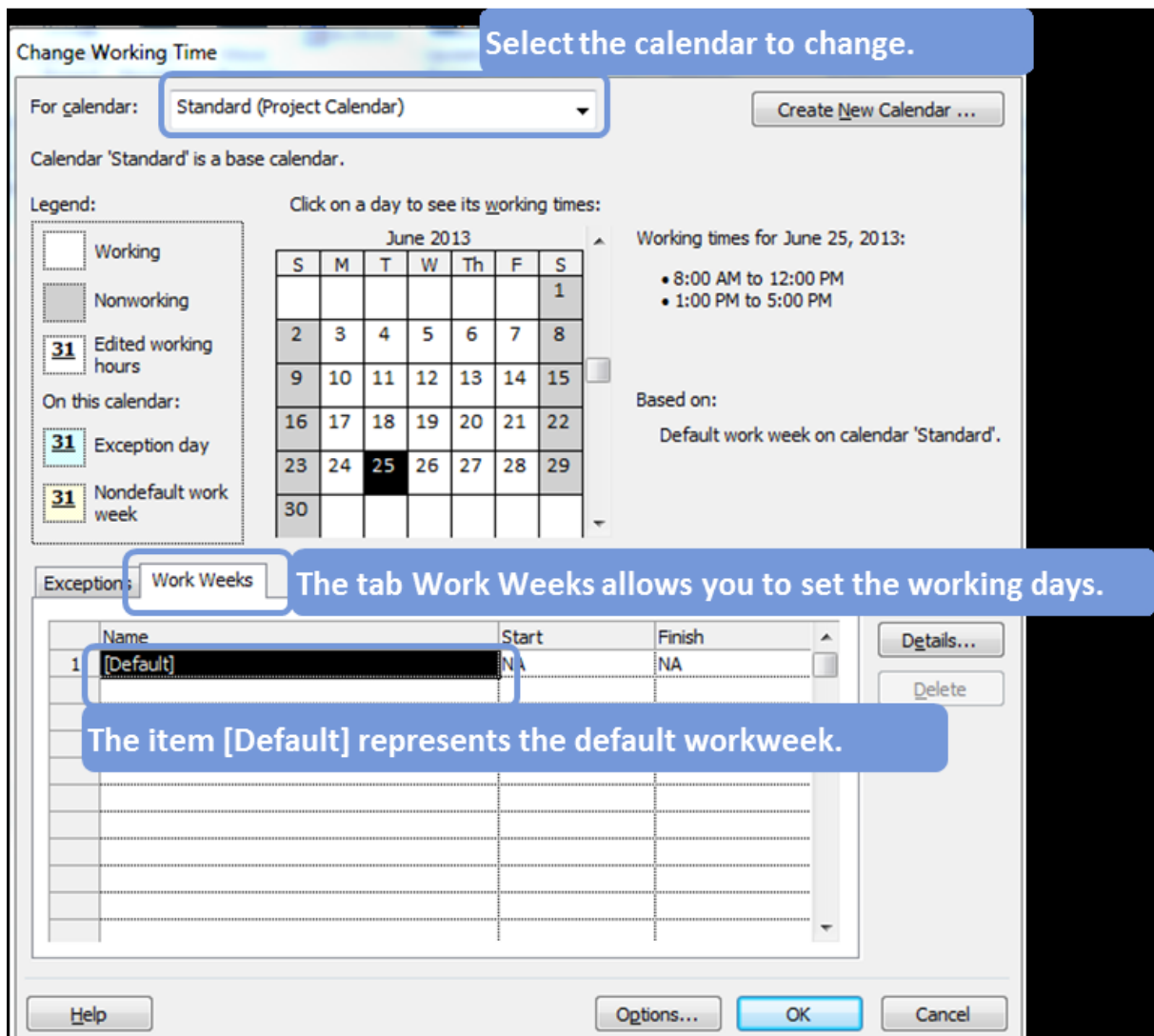
1. Click the ribbon **Project** and find the section **Properties**.

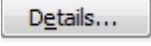


2. Click **Change Working Time** - **Change Working Time** dialog appears.

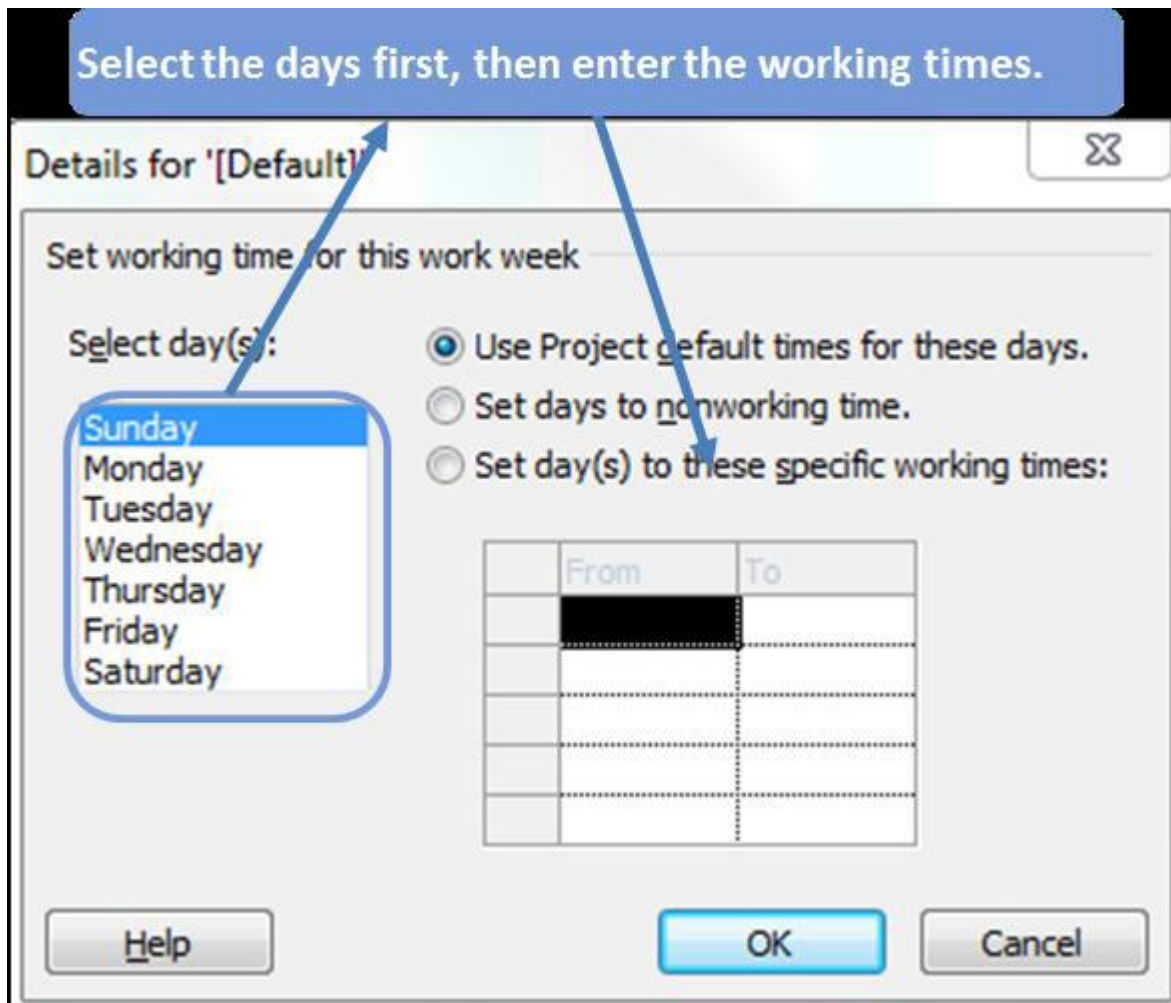
3. You can set the working days of the *workweek*. Select at the top of the dialog in the list **For** the item **Standard (Project Calendar)**; this is the calendar that acts as the default project calendar.

4. Click the tab **Work Weeks** – the dialog looks like:



5. The item **[Default]** is the default workweek and you could add items in this list to create multiple workweeks: For example, you may want to schedule different working hours for summer and winter. To change the default workweek, double-click the line item **[Default]** or select the item **[Default]** and click 

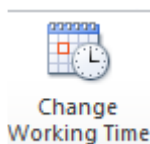
6. The **Details for [Default]** dialog appears.



7. Select the working days of the week by dragging over the weekdays in the list **Select day(s)**.
8. Select the option **Set day(s) to these specific working times** if you need to change the default working times. You then enter the times in the grid.
9. Select the weekend days in the list **Select day(s)** and select the option **Set days to nonworking time**.
10. Click **OK** when done.

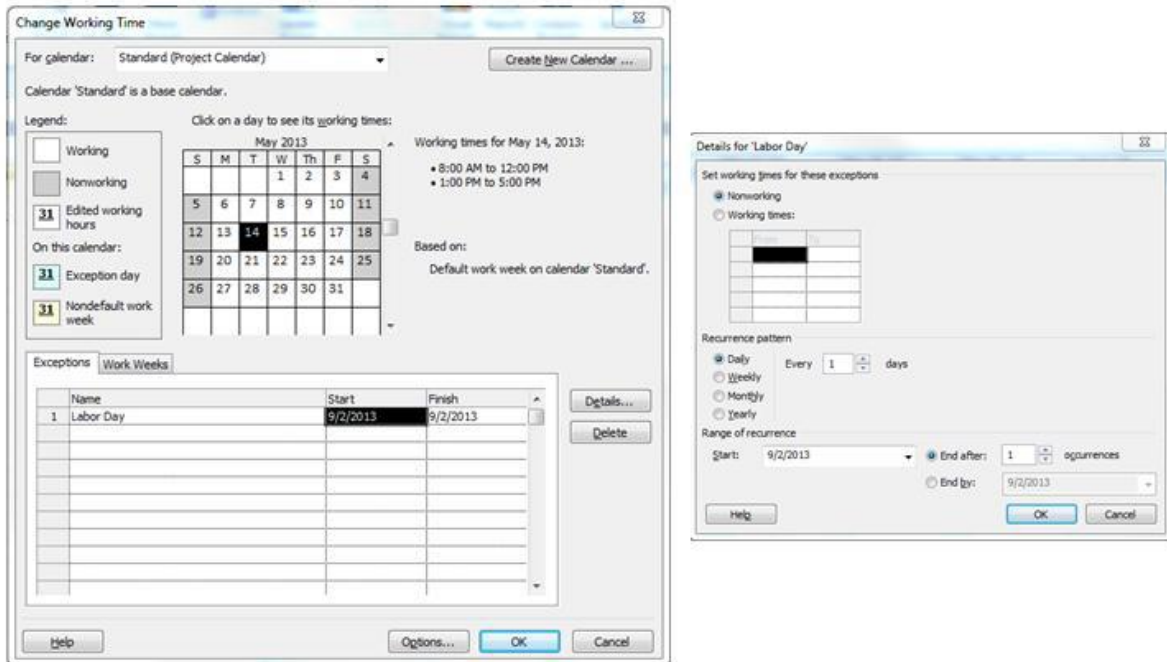
To create *Exceptions* (holidays) in a calendar:

1. Click the ribbon Project and find the section Properties.



2. Click **Change Working Time** - **Change Working Time** dialog appears.
3. You can set the working days of the *workweek*. Select at the top of the dialog in the list **For** the item **Standard (Project Calendar)**; this is the calendar that acts as the default project calendar.

4. Click the tab **Exceptions** – the dialog looks like:



5. Holidays need to be entered as exceptions to the default calendar.

6. In the first available field under **Name** enter the name of the holiday (exception), for example *Labor Day*.

7. Click the **Details** button, the **Details dialog** should appear as the example above.

8. Holidays (exceptions) set in the project calendar are carried over to the individual resource calendars. Even if the project calendar is changed after the resource calendars are created, the changes will show up automatically in the resource calendars.

Exercise 2.2: Setting Up a New Schedule

The goal of this exercise is to be able to create a new project and enter project-level information. You are put in charge of relocating your office. You have to find a new location and organize the move. The following is the scope statement for the project. Your CEO has already signed the scope statement.

Scope Statement
<p>Project: Relocation of DEVOM, Inc. to a new 150-person location Project accounting code: MOVE001</p>
<p>The Business Need</p> <p>DEVOM, Inc. is growing and needs larger facilities to accommodate the expanding workforce.</p>
<p>The Project Objectives</p> <ul style="list-style-type: none">• To be moved and operational in the new location by November 1, 2013• To stay within the available budget of \$100,000 for labor cost• To have 80% satisfaction rate from the personnel for the new work environment
<p>The Project Deliverables and Requirements</p> <ul style="list-style-type: none">• A project plan (including WBS, Network Diagram, Gantt Chart, budget, resource list, and assignments)• A new rented or leased location that has a maximum capacity of 150 work spaces<ul style="list-style-type: none">○ The location should be accessible to disabled people○ The location should have parking facilities for at least 150 cars○ The location should have modern work cubicles and an open workspace• Contracts with the landlord, the general contractor and the moving company• The physical move of people and equipment
<p>The Project Constraints</p> <ul style="list-style-type: none">• The work on the project is to be started no earlier than August 1, 2012• The personnel have to be asked for input as to the location and facilities needed• The disruption to the normal operations of DEVOM should be minimized and may not exceed the loss of 500 person days caused by the project, including the packing and unpacking by staff• Clients will have to be able to contact DEVOM at any time by phone, fax and email• The purchase of new materials and equipment shall be budgeted and approved separately

- The new location will be within the boundaries of the city and its suburbs
- The need for expansion is so urgent that the project has priority over normal operations
- Any changes to the project objectives will require the approval of the CEO

Project Assumptions

- The market will continue to grow at the same rate
- The current furniture can be reused
- The current workstations can be reused
- The current LAN and servers will be replaced

Date: _____

Your Signature:

Signature CEO:

Project Manager, Relocation Project


I. M. DeBoss
CEO, DEVOM, Inc.

You decide to take charge of this project and to create the schedule in Project 2010:

1. At the bottom of the scope statement, fill in the date and sign the charter
2. Create a new MS Project file.
3. Click ribbon **Project**, button **Project Information**. In the **Project Information** dialog:
 - a. Set the start date for the project to *August 1, 2012*
 - b. Make sure the **Calendar** is set to **Standard**
4. Display the ribbon **File**, tab **Info**, list button **Project Information**, item **Advanced Properties** dialog, **Summary** tab.
 - a. Enter the **Title** of the project; it is *Relocation Devom, Inc.*
 - b. You are the responsible project manager; enter your name under **Manager**.
 - c. Enter *Devom, Inc.* under **Company**.
 - d. Formulate one sentence that captures the essence of the relocation project and enter it in the field **Comments**.
5. Close the dialog and save the file as *Relocation.mpp*.

Relocation Project – File, Options

Continue to work in the file *Relocation.mpp* and enter only the following options in the ribbon **File**,

 **Options** Dialog. Save the schedule when done.

Tab	Set to
Schedule	Hours per day : 7.5 (enter by typing)
	Hours per week: 37.5
	Days per month: 20
	<input checked="" type="checkbox"/> Show scheduling messages
	Show assignment units as a : Decimal
	Duration is entered in: Days
	Work is entered in: Days
	Default Task type: Fixed Duration
	<input type="checkbox"/> New tasks are effort driven
	Calculate project after each edit: <input checked="" type="radio"/> On <input type="radio"/> Off
General	Date format: Jan 28 '09

Relocation Project – The Project Calendar

1. Display the following dialog: click ribbon **Project** and button **Change Working Time**. Set the working hours on the **Standard (Project Calendar)** to:

*8:00 to 12:00 and
13:00 to 16:30*

2. Enter the following national holidays for the months August, September and October in the **Standard (Project Calendar)**. Since this project takes place in the USA, enter the following national holidays of the United States for 2013 into the project calendar. Make sure you select the dates below and then:

- a. *Labor Day, September 3, 2012*
- b. *Columbus Day, October 8, 2012*
- c. *Veterans Day, November 12, 2012*

3. Save your file.

LESSON 3: ENTERING THE WORK BREAKDOWN STRUCTURE (WBS)

Topic 1: The WBS Defined

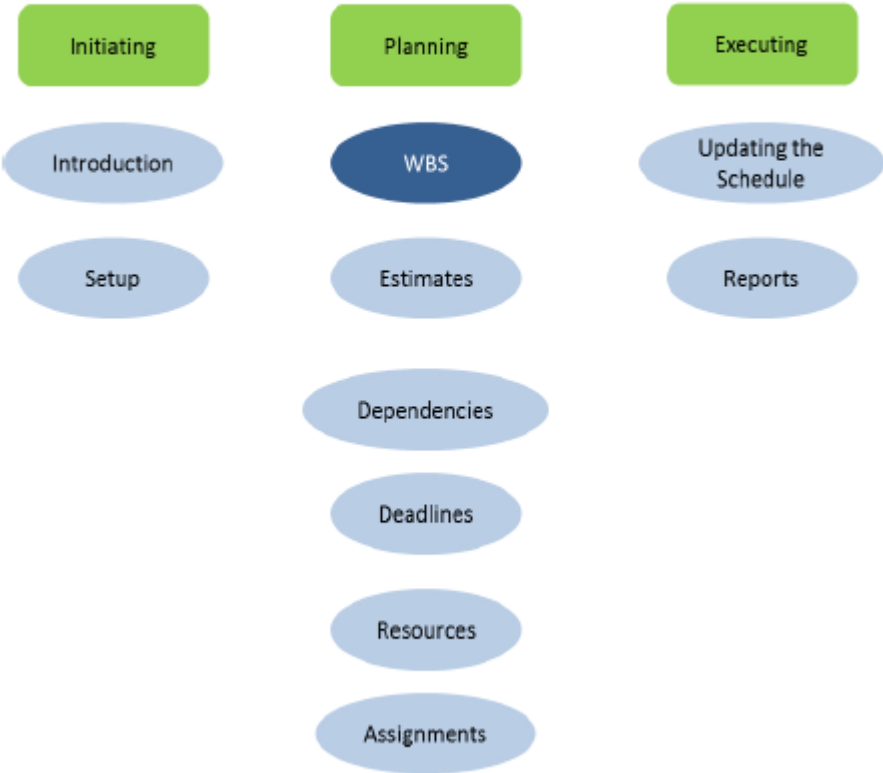
Topic 2: Task Categories

Topic 3: Entering Tasks

Topic 4: Indenting and Outdenting Tasks

Topic 5: Changing the WBS

MS Project 2010 Course Outline



Topic 1: The WBS Defined

Work Breakdown Structure Defined

- The list of tasks should be in a logical grouping
- Group the tasks by Deliverable
 - Provides a good overview
 - Enables good reporting

PMI® defines a Work Breakdown Structure as:

“a deliverable-oriented, hierarchical decomposition of the work to be executed by the project team to accomplish the project objectives and create the required deliverables.”

25

The WBS is the most important component of the schedule and becomes the foundation of the schedule. As in the construction of a building, if the foundation is weak, the building (schedule) will be weak; if the foundation is strong, the building (schedule) will be strong.

Topic 1: The WBS Defined – An Implicit Contract

The WBS is an Implicit Contract

- The WBS is a contract between:
 - The project manager and the external customer
 - The project manager and the internal executives (project sponsor)
- The WBS is normally depicted as a chart, which makes it easy to read and understand the full scope
- The WBS specifies explicitly what deliverables should be created, and implicitly what is NOT created

If it is not in the WBS, it is not in the project!

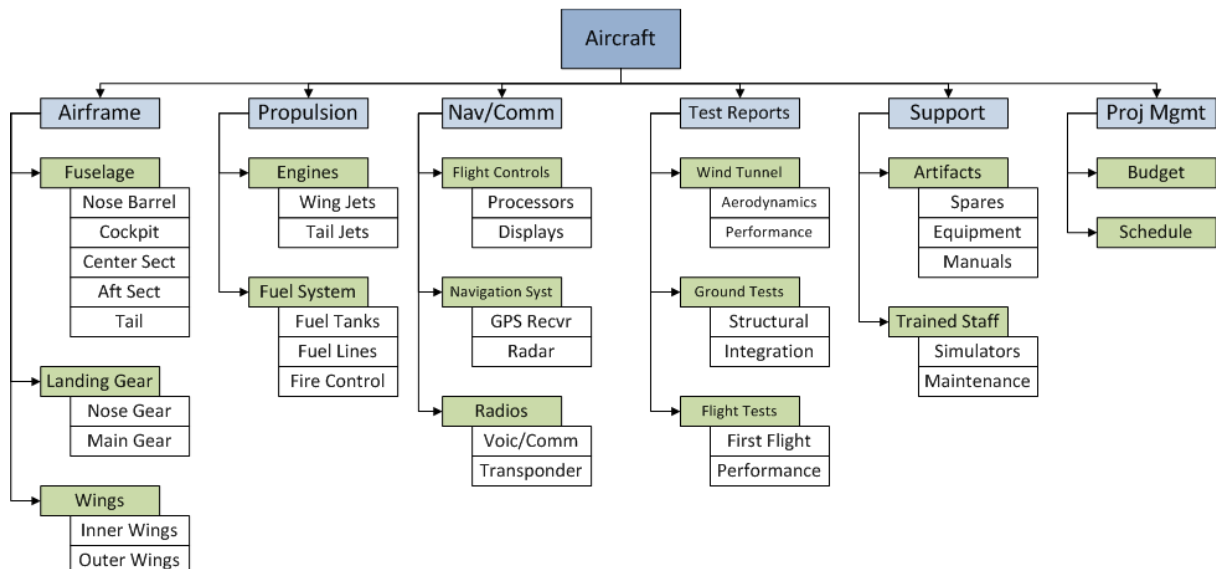
26

The WBS specifies explicitly what deliverables should be created. If a client requests output during project execution, the WBS should explicitly contain the output to be delivered. The 100% rule states: **the WBS should cover 100% of the work of the scope of the project and include all interim and**

final deliverables to be completed, including project management deliverables.

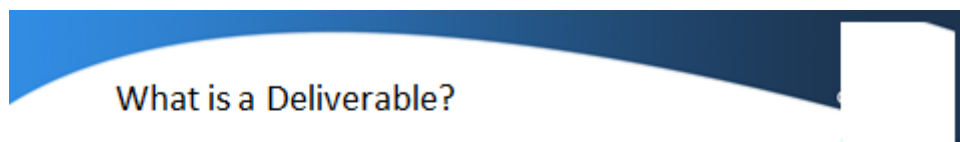
The WBS also indicates implicitly what should NOT be done, since it will not be shown in the WBS. If an item is not in the WBS, it is *out-of-scope* and therefore not agreed upon with the client.

Topic 1: The WBS Defined – The Chart



MS Project does not have a WBS Chart view, but an add-in tool such as *WBS Chart Pro* will allow you to lay out the WBS in such a graphic format.

Topic 1: The WBS Defined – Deliverables



What is a Deliverable?

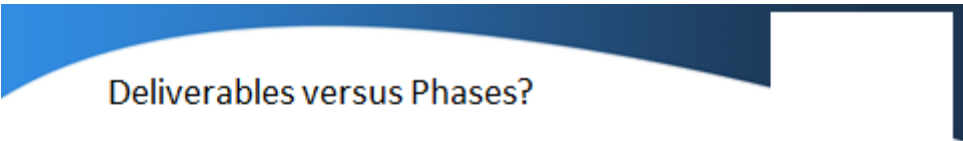
- Two types:
 - Interim deliverables handed over during project execution
 - Final deliverables handed over at the end of the project
 - *PMBOK® Guide* definition: “Any unique and verifiable product, result, or capability to perform a service that must be produced to complete a process, phase, or project.”
- Three characteristics:
 - Verifiable – measurable. Clarifies what is to be produced.
 - Must have a client – internal (interim deliverables) and external (final product deliverables).
 - Must be of value to client – if the client does not perceive value, don’t create it.

You may not be used to thinking in terms of deliverables, and sometimes it is difficult to identify the deliverables in a project. However, if you put some effort into finding the deliverables, you will be surprised how easy it is once you begin. For example, consider the office relocation project and ask yourself:

1. What are the deliverables in this project? or better yet,
2. What will my customer or sponsor expect to receive?

Ambiguously formulated deliverable	Verifiable, measurable deliverable
Closing	Customer approval of the project product
Subcontracting	Signed contract
Moving to new location	Operational new location
Renovation	Renovated facility
Planning	Approved project plan
Material procurement	Procured construction materials
Prototype development	Developed prototype
Training	300 trained application users
Staff	50 newly hired staff members
implementation	New workstations operational for entire team

Topic 1: The WBS Defined – Deliverables versus Phases



- Phases:
 - Time-oriented groupings of tasks
 - Much vaguer concept than a deliverable
 - Not as verifiable as a deliverable
- A WBS is a *logical* not a *chronological* breakdown.
- Chronology is done later.

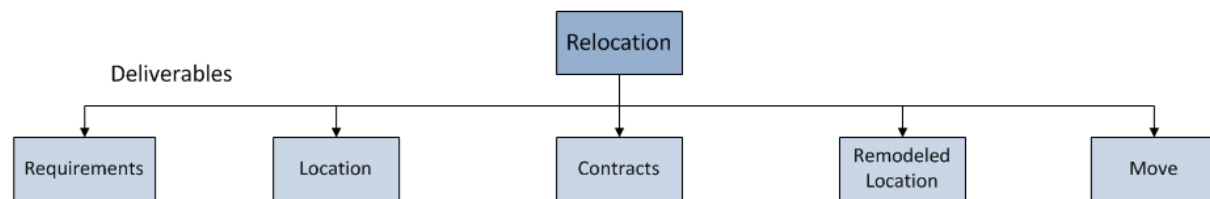
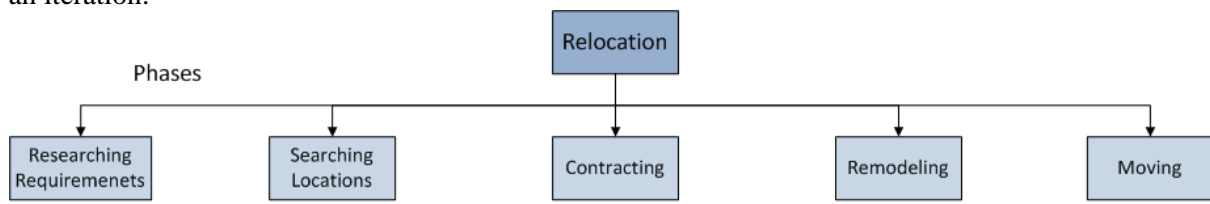


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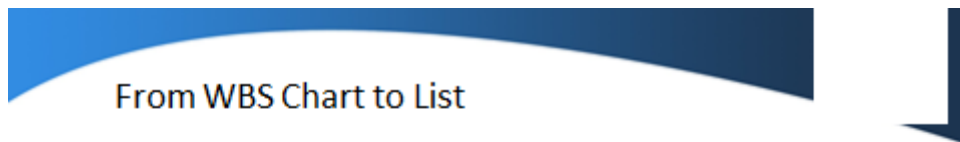
When people have difficulty identifying deliverables, they often group the tasks into *phases*. Phases are distinct periods in the life of a project, merely time-oriented groupings of tasks. Phases become chronological groupings of tasks creating a *chronological breakdown* of the work. This does not provide verifiability of the deliverables.

Another reason to stay away from chronological breakdowns is the number of iterative processes in project management. A chronological orientation will tie your brain in knots when dealing with

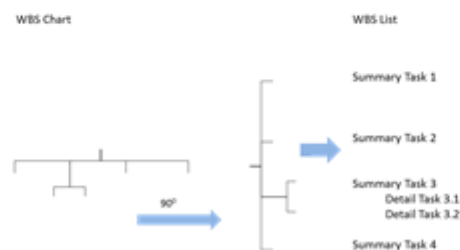
iterative processes. In a deliverable-oriented breakdown you simply add one (interim) deliverable for an iteration.



Topic 1: The WBS Defined – From WBS Chart to WBS List

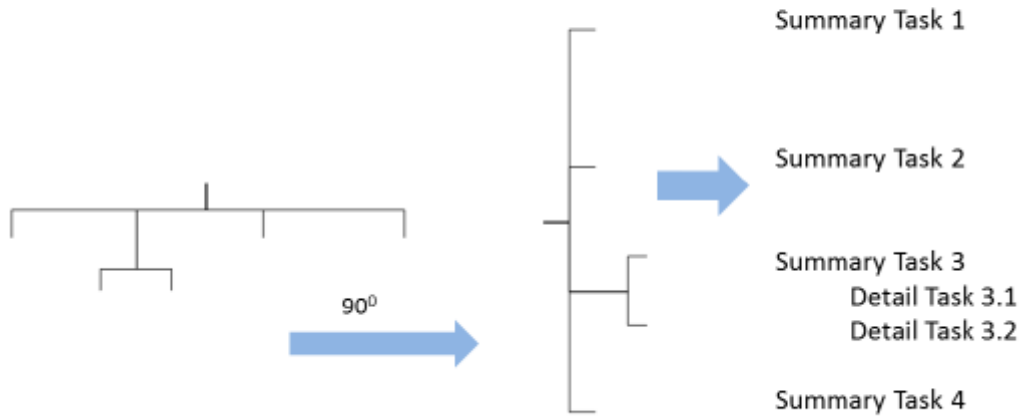


- The WBS Chart must be converted to an indented list of tasks.
- Rotate the chart 90° and the lower levels become the indented levels.
- Use the **Gantt Chart** view to create the WBS.



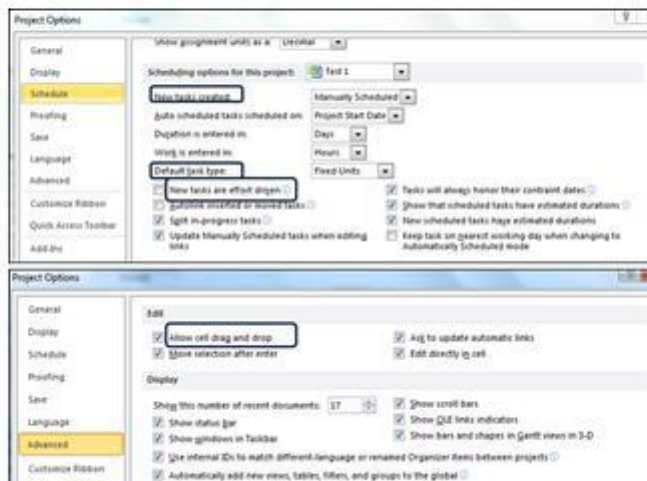
WBS Chart

WBS List

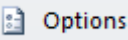


Topic 1: The WBS Defined – Setting the Options related to the WBS

Setting the Options related to the WBS

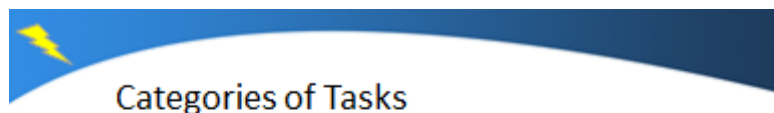


31

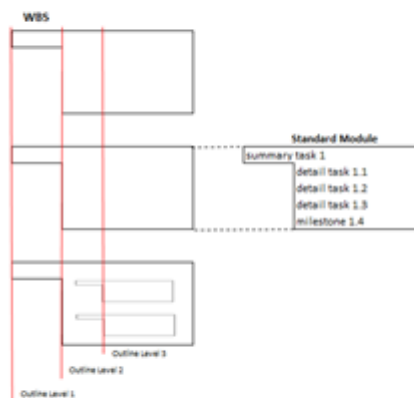
To set the options related to the WBS and tasks, click ribbon File,  and click on the tab of the dialog box indicated in the table below.

Tab	Option
Schedule	<p>Section Scheduling options for this project:</p> <p>New tasks created: Manually Scheduled or Auto Scheduled; (we will discuss Manually Scheduled and Auto Scheduled tasks in the next section). Use Manually Scheduled if you create a draft or high-level schedule. If you create a detailed schedule use Auto Scheduled.</p> <p>Default task type</p> <p>Many people enter the duration immediately. If you do this we recommend setting this option to Fixed Duration. If you normally enter Work estimates, we recommend Fixed Work as the default task type. In this way you protect the estimates you enter. It is the default task type for new tasks you create. On a task-by-task basis you can still decide what type serves you best and switch the task Type to it.</p> <p>New tasks are effort driven (un-checked)</p> <p>This option changes the number of resources assigned (assignment units); we recommend you turn it off for Fixed Duration and Fixed Units tasks. It functions like Fixed Work tasks and we recommend you use the task type instead. Fixed Work tasks are by definition effort-driven and have this option always on.</p>
Advanced	<p>Section Edit:</p> <p>Allow cell drag and drop (checked)</p> <p>This allows you to move or copy the selected cells by dragging the selected area by its border. With this option on, you can quickly rearrange your WBS by dragging tasks. This option is global across all your schedules</p>

Topic 2: Task Categories



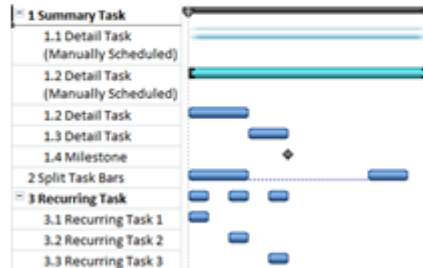
- Project Summary Tasks
- Summary Tasks
- Detail Tasks
- Milestones
- Recurring Tasks



Topic 2: Task Categories – Styles of Task Bars

Categories of Tasks – Styles of Task Bars

- Summary task bar
- Detail task bar (Manual)
- Detail task bar (Auto)
- Milestone diamond
- Split task bars
- Recurring task bars



Additional remarks:

- *Summary task bar*

It indicates a tasks start and end point. For **Auto Scheduled** tasks the bar starts when its first detail task starts, and ends when its last detail task (or milestone) ends.

- *Detail task bar*

Manually scheduled task bars have either washed out ends or square brackets to indicate the end date. An **Auto Scheduled** detail task bar is shown as a simple bar with rounded ends. The length of the bar represents its estimated duration.

- *Milestone diamond*

Auto Scheduled milestones appear as black diamonds. **Manually Scheduled** milestones are gray (without dates or *unscheduled*) or blue when they have dates (*scheduled*). Milestones have zero duration.

- *Split task bar*

A split task bar has multiple parts connected by dots. This indicates that the scheduled work is to be interrupted and resumed at a later date. These types of tasks should be used during project execution only.

- *Recurring task bar*

Recurring task bars have multiple parts that occur at a regular interval. Recurring tasks are useful to model things you do regularly such as meetings, reviews, etc. They act as summary tasks with detail tasks indented underneath them.

Formulating WBS Elements:

It is important to pay attention to the wording you use to create the elements of the WBS. The following formats are recommended.

- *Summary task*

Summary tasks can be deliverables or phases:

- Deliverables: Use **nouns** for deliverables, for example *location* or *design*. Nouns are words you can put the word “the” in front of. You can also add an adjective to describe the noun and improve its measurability. An example is, *signed contract* rather than *contract* or the *final design* rather than *design*.
- Phases: Use **verbs** in the *present continuous* tense (-ing) for phases. This tense best indicates that something is ongoing for a period of time. Example: *Researching* or *Remodeling*.

- *Detail tasks*

Use **verbs** in the *present* tense for detailed tasks. This indicates action. Examples include *discuss with publisher*, *code universal logon feature*, or *purchase equipment*.

- *Milestones*

Typically the milestone is expressed as follows:

<deliverable> <past perfect tense verb>

Where <deliverable> is a noun that describes the deliverable, and the <past perfect tense verb> describes what is supposed to happen to the deliverable at that point in time. For example: *delivered*, *accepted*, *completed*, *done*, *sent*, *shipped*, and *finished*. Example of a milestone: *module completed*, *server installed*, *printer delivered*, or *report accepted*.

- *Recurring tasks*

Recurring tasks will become summary tasks in MS Project. Use plural **nouns** when they reflect recurring deliverables, for example *schedule updates*, *change request reviews*, and *status reports*. You could also use present tense **verbs** for recurring activities, for example *review change requests*, *meet with team*, or *meet with steering committee*.

Topic 3: Entering Tasks

We will discuss how to enter the different elements of a *WBS* into the Gantt Chart view on the pages that follow.

- Detail tasks
- Summary tasks
- Split tasks
- Recurring tasks
- Milestones

Exercise 3.1: Entering Tasks

Instructions:

Create a new planning: demonstration.mpp. Follow the instructions below.

Entering Detail Tasks

1. Set **New Tasks: Auto Scheduled** by clicking on the left side of the status bar at the bottom of the page and selecting the option.
2. Enter 10 tasks (name them **Task 1 to Task 10**) each in a separate line.
3. Enter the duration for each task in the column Duration as per the screenshot below (Task 1 – 3 days, Task 2 – 5 days, Task 3 – 8 days, Task 4 – 4 days, Task 5 – 7 days, Task 6 – 9 days, Task 7 – 6 days, Task 8 – 3 days, Task 9 – 7 days, Task 10 – 9 days).


						21, '13	Jul 28, '13					Aug 4, '13				Aug 11, '13								
						M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F
1		Task 1	3 days	Aug 1 '13	Aug 5 '13																			
2		Task 2	5 days	Aug 1 '13	Aug 7 '13																			
3		Task 3	8 days	Aug 1 '13	Aug 12 '13																			
4		Task 4	4 days	Aug 1 '13	Aug 6 '13																			
5		Task 5	7 days	Aug 1 '13	Aug 9 '13																			
6		Task 6	9 days	Aug 1 '13	Aug 13 '13																			
7		Task 7	6 days	Aug 1 '13	Aug 8 '13																			
8		Task 8	3 days	Aug 1 '13	Aug 5 '13																			
9		Task 9	7 days	Aug 1 '13	Aug 9 '13																			
10		Task 10	9 days	Aug 1 '13	Aug 13 '13																			

Entering Summary Tasks

1. Highlight the 10 tasks and click on **Insert Summary Task** in the **Task** ribbon **Insert** group. Enter a name for the summary task.
2. On the **File** tab, select save.

						21, '13	Jul 28, '13					Aug 4, '13				Aug 11, '13								
						M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F
1		Summary Task	9 days	Aug 1 '13	Aug 13 '13																			
2		Task 1	3 days	Aug 1 '13	Aug 5 '13																			
3		Task 2	5 days	Aug 1 '13	Aug 7 '13																			
4		Task 3	8 days	Aug 1 '13	Aug 12 '13																			
5		Task 4	4 days	Aug 1 '13	Aug 6 '13																			
6		Task 5	7 days	Aug 1 '13	Aug 9 '13																			
7		Task 6	9 days	Aug 1 '13	Aug 13 '13																			
8		Task 7	6 days	Aug 1 '13	Aug 8 '13																			
9		Task 8	3 days	Aug 1 '13	Aug 5 '13																			
10		Task 9	7 days	Aug 1 '13	Aug 9 '13																			
11		Task 10	9 days	Aug 1 '13	Aug 13 '13																			

Entering Split Tasks

1. Highlight **Task 2**.
2. Click on the **Split** icon  on the **Task** ribbon.
3. Watch the **Split Task** box and move your mouse cursor half-way over the bar of Task 2 in the Gantt chart.
4. Left click with your mouse. The task will split and each part can be moved independently.

	Task Mode	Task Name	Duration	Start	Finish	21, '13							Jul 28, '13							Aug 4, '13							Aug 11, '13						
						M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	
1		Summary Task	9 days	Aug 1 '13	Aug 13 '13																												
2		Task 1	3 days	Aug 1 '13	Aug 5 '13																												
3		Task 2	7 days	Aug 1 '13	Aug 9 '13																												
4		Task 3	8 days	Aug 1 '13	Aug 12 '13																												
5		Task 4	4 days	Aug 1 '13	Aug 6 '13																												
6		Task 5	7 days	Aug 1 '13	Aug 9 '13																												
7		Task 6	9 days	Aug 1 '13	Aug 13 '13																												
8		Task 7	6 days	Aug 1 '13	Aug 8 '13																												
9		Task 8	3 days	Aug 1 '13	Aug 5 '13																												
10		Task 9	7 days	Aug 1 '13	Aug 9 '13																												
11		Task 10	9 days	Aug 1 '13	Aug 13 '13																												

Entering Recurring Tasks

1. Highlight **Task 2**.
2. In the **Insert** group on the **Task** ribbon, click on the drop-down arrow of the **Task** button, and click on **Recurring Tasks**.
3. In the **Recurring Task Information** dialog box, enter **Weekly Meeting** as the name.
4. For the **Recurrence pattern**, select **Weekly**, in the **Recur every** field, enter **1**, check **Monday**, and click **OK**.

Recurring Task Information

Task Name: Duration:

Recurrence pattern

Daily
 Weekly
 Monthly
 Yearly

Recur every week(s) on:

Sunday **Monday** Tuesday Wednesday
 Thursday Friday Saturday

Range of recurrence

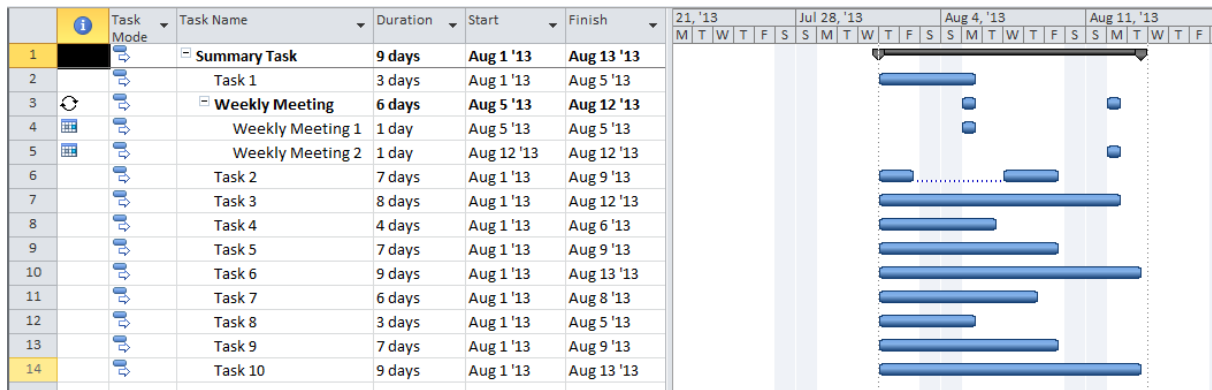
Start: End after: occurrences
 End by:

Calendar for scheduling this task

Calendar: Scheduling ignores resource calendars

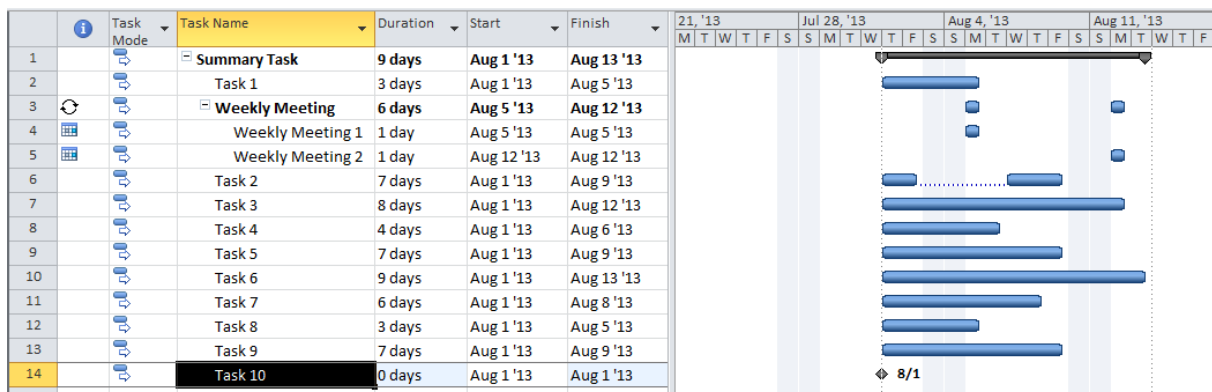
Help OK Cancel

5. Click on the **+** by the name of the parent task to expand, click again to collapse. Note that by default the end date of the recurrence is set to the project finish date.



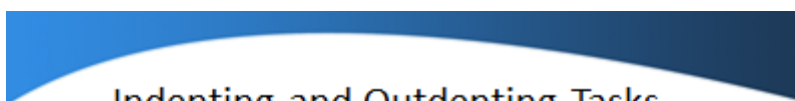
Creating a Milestone

1. Highlight **Task 10** and enter **0** as the duration. A task with 0 duration is a milestone.



Close the exercise file by clicking the File tab, Close button , . Click **Yes** on the **Microsoft Project** dialog box

Topic 4: Indenting and Outdenting Tasks



- An outlined WBS makes the plan easier to read and understand
- Additional information is aggregated on the Summary tasks (Deliverable)
- Views of different levels of detail are provided
- MS Project automatically keeps track of the indentation level in the field called "Outline Level"

Topic 5: Changing the WBS

Changing the WBS

- Editing a task name
- Inserting/Deleting Multiple tasks
 - Using the *Inactive* task feature
- Copying or Moving tasks
- Copying or Moving a Summary Task Family

Exercise 3.4: Entering the WBS for the Relocation Project

Instructions:

Open the *Relocation.mpp* file to continue your work. Check in ribbon **File**, dialog box, tab **Schedule**, section **Scheduling options for this project** if the following options are selected:

- If the **New tasks created** is set to **Auto Scheduled**
- If the **Default task type** is set to **Fixed Duration**
- If the option **New tasks are effort-driven** is cleared

1. Enter the WBS into MS Project as shown in the table below.
2. Indent the detailed tasks under their summary tasks. The summary tasks are the tasks with names in capital letters.
3. Compare your file with the solution file *Exercise3c.mpp*.
4. Save your file when done.

Task Name	
1	REQUIREMENTS
2	Research staff requirements
3	Summarize requirements
4	LOCATION
5	Select the realtor
6	Visit the sites
7	Evaluate the sites
8	Meet to select the location
9	Legal review
10	Location selected
11	REMODELING CONTRACT
12	Select the contractor
13	Meet to discuss contract
14	Revise the schedule

15	Negotiate the contract
16	Contractor contracted
17	REMODELED LOCATION
18	Relocate walls
19	Install electric wiring
20	Paint
21	Drying of paint
22	Install cabinetry
23	Install LAN
24	Lay carpet
25	Facility remodeled
26	MOVE
27	Select mover
28	Pack
29	Move
30	Unpack
31	New location opened

LESSON 4: ENTERING ESTIMATES

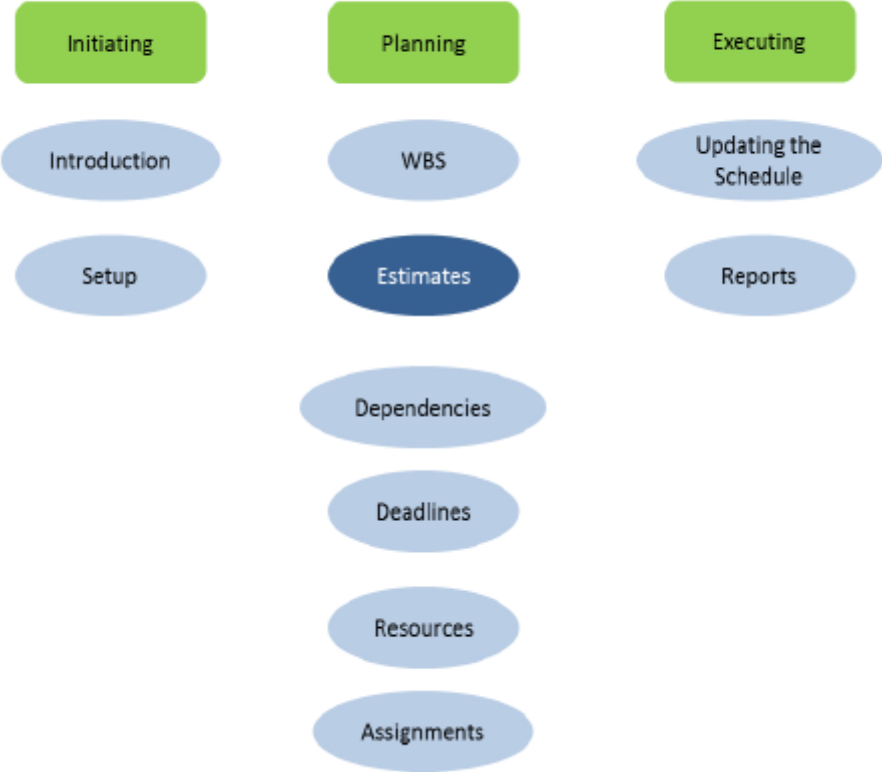
Topic 1: What are Estimates?

Topic 2: Setting MS Project Options

Topic 3: A Process for Estimating

Topic 4: Moving and Copying Data

MS Project 2010 Course Outline



Topic 1: What are Estimates?

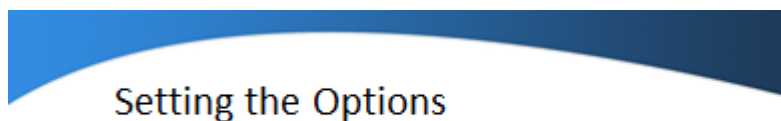


- Predictions of how much time a task will take
- Can be made in terms of duration
 - Expressed in business (working) days
 - MS Project field **Duration**
- Can be made in terms of effort
 - Expressed in person hours or person days
 - MS Project field **Work**

Duration versus work effort Example:

If you have 3 carpenters working for 2 business days (duration), the effort is $3 * 2 = 6$ person days of effort.

Topic 2: Setting MS Project Options



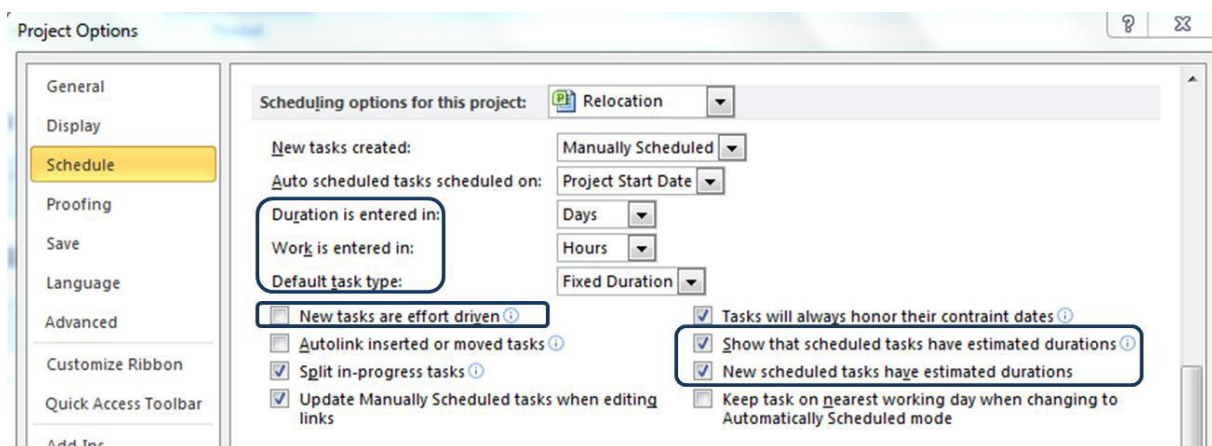
Options dictate how MS Project will function for various activities you will perform while building and maintaining your schedule.

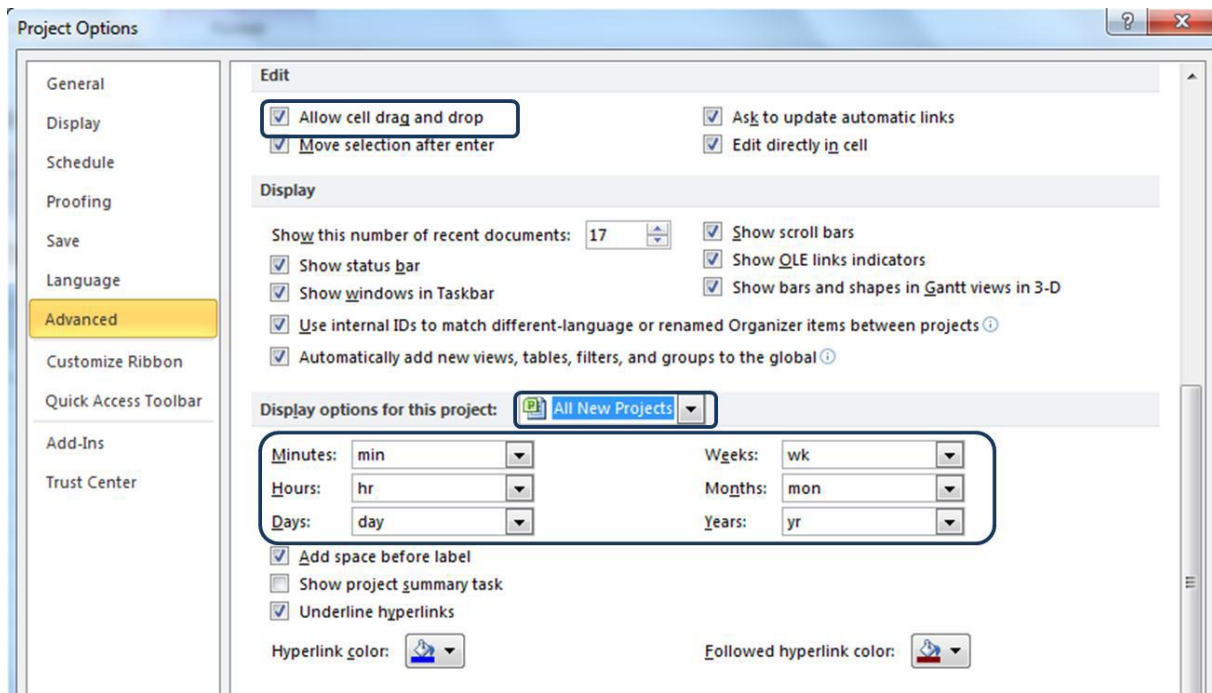
Before entering the estimates, it is important to understand how MS Project will function. Click ribbon **File, Options** and click on the tab indicated in the table below where you want to change settings.

Tab	Option
Schedule	<p>Section Scheduling options for this project:</p> <p>Duration is entered in: MS Project will use the setting as the default time unit for the field <i>Duration</i>. With the default duration time unit set to days, you can type in 5 instead of 5d to get 5 days. You do not need to type a 'd' in the duration fields. Choose the unit that fits the majority of your inputs to save some keystrokes. The Duration field will display whatever time unit you entered.</p>
	<p>Work is entered in: Explanation is the same as for previous Duration field. Unlike the Duration field, the Work field will convert all entries to its default time unit. If you switch the time unit, MS Project will convert all values.</p>
	<p>Default task type: Most people enter the duration immediately, and MS Project should not change it, unless required. If you normally enter duration estimates rather than work (effort) estimates, we recommend setting it to Fixed Duration. If you normally enter work estimates we recommend setting it to Fixed Work.</p>
	<p>New Tasks are Effort Driven: (unchecked) When turned on, this option can change <i>assignment units</i> (the number of resources</p>

Tab	Option
	<p>assigned); we recommend you turn it off. This option works similarly to the task type Fixed Work. We recommend you use the task Type instead of Effort Driven. The option takes effect only when you create new tasks.</p>
	<p>Show that scheduled tasks have estimated durations (checked) will add a question mark to the durations that you did not enter yourself.</p>
	<p>New scheduled tasks have estimated durations (checked) will add a question mark to durations of new tasks you may create.</p>
Advanced	<p>Section Edit:</p> <p>Allow cell drag and drop (checked) This allows you to move or copy the selected cells by dragging the selected area by its border. This option is global.</p>
	<p>Section Display options for this project</p> <p>Minutes, Hours, Days, Weeks, Months, and Years This allows you to change the way time units are shown in your project. The shorter you make the time unit, the more space you save. Select All New Projects first from the list if you want the short labels to be used from then on.</p>


Topic 2: Setting MS Project Options





Exercise 4.1: Setting the Options for Estimating

Instructions:

Open the *demonstration.mpp* file. To set the options related to estimating, click ribbon **File**,  **Options** and click on the tab of the dialog box indicated in the table below.

Tab	Option
Schedule	Section Scheduling options for this project: Duration is entered in: Days
	Work is entered in: Hours
	Default task type: Fixed Duration
	New Tasks are Effort Driven: (unchecked)
	Show that scheduled tasks have estimated durations (checked)
	New scheduled tasks have estimated durations (checked)
Advanced	Section Edit: Allow cell drag and drop (checked)
	Section Display options for this project Minutes: min Hours: hr Days: day Weeks: wk Months: mon Years: yr

Click OK.

Close and save the file.

Topic 3: A Process for Estimating



A Process for Estimating

This topic will discuss the following items

- Duration and Effort
 - What Time Unit to Use
 - Pure or Gross Work Time
- The Scheduling Formula
- Task Types and how the work

The Difference between Duration and Effort

The *duration* of a task is the number of time units of working time the task will take. Duration is expressed in *business hours* or in *business days*.

The *work* is the number of *person hours* or *person days* planned or spent on a task. The term *work* in MS Project is synonymous with *effort* in daily life.

For example, one person who works for two business days (duration) delivers two person days of effort (work). Two painters who work for three business days (duration) to paint your house spend $2 * 3 = 6$ person days of effort (work).

The business days are entered in the *Duration* field and the effort is entered in the *Work* field.

Topic 3: A Process for Estimating – What Time Unit to Use

Estimating – What Time Unit to Use

MS Project allows you to estimate in:

- Person days – enter effort into the field **Work**
- Business days – enter the days in the field **Duration**
- Calendar days (elapsed duration)

- *Person days*

One person day is one person working one full day. The number of person days is the amount of work or effort needed on the task. You enter the effort into the field **Work**. MS Projects needs the effort estimate to calculate cost of the project. Each person hour applied needs to be multiplied by the appropriate rate to arrive at the cost.

- *Business days*

A business day is one working day. The number of working hours in a full working day is defined in ribbon **File, Options**, tab **Schedule, Hours per day**. You enter the number of full working days a task will take in the **Duration** field. MS Project needs to know the number of business days in order to calculate calendar days needed and the start and finish dates, which are used to create the Gantt Chart.

- *Calendar days*

One calendar day is 24 hours; this is simply how everybody thinks of one day. You need to know the number of calendar days if you are asked to commit to a date on which you will deliver the project product. Calendar days are also known in MS Project as *elapsed days*.

Topic 3: A Process for Estimating – Pure Work Time or Gross Work Time

Estimating – Pure Work or Gross Work

How do your resources estimate their work?

- Pure Work: the work time spent 100% productively
- Gross Work: the work time spent on things other than project tasks

How do your resources estimate their time? Do they imagine being able to work full-time without interruptions? Do they include personal time, like visits to the restroom and calls, coffee breaks? Do they include time spent in meetings to discuss or present deliverables?

The term *Pure Work Time* expresses an important concept. Pure work time is work time spent 100% productively.

The term *Gross Work Time* includes time spent on things other than project tasks.

Topic 3: A Process for Estimating – The Scheduling Formula

Estimating – The Scheduling Formula

Duration * Peak Units = Work

- Duration = how many business days to finish the job
- Peak Units = how many resource units are assigned to do the work
- Work = how many person days it will take

In the formula you only have to have two out of the three variables, MS Project will calculate the third one.

Topic 3: A Process for Estimating – Setting up the Gantt Spreadsheet

It is recommended you prepare the Gantt spreadsheet so you have the right fields for entering estimates. The illustration below is what you want your Gantt spreadsheet to look like.

	i	Task Mode	WBS	Type	Effort Driven	Duration	Work
1			1 Summary Task	Fixed Duration	No	10 days	0 hrs
2			1.1 Detail Task (Manually Scheduled)	Fixed Units	No	10 days	0 hrs
3			1.2 Detail Task (Manually Scheduled)	Fixed Units	No	10 days	0 hrs
4			1.2 Detail Task	Fixed Units	No	3 days	0 hrs
5			1.3 Detail Task	Fixed Units	No	2 days	0 hrs
6			1.4 Milestone	Fixed Units	No	0 days	0 hrs
7			2 Split Task Bars	Fixed Units	No	5 days	0 hrs
8			3 Recurring Task	Fixed Duration	No	5 days	0 hrs
9			3.1 Recurring Task 1	Fixed Units	No	1 day	0 hrs
10			3.2 Recurring Task 2	Fixed Units	No	1 day	0 hrs
11			3.3 Recurring Task 3	Fixed Units	No	1 day	0 hrs

Topic 3: A Process for Estimating – Fixed Duration Task Type

Estimating – Fixed Duration Task Type

A *fixed duration* task is a task that has a duration that does not fluctuate with the number of resources assigned to it, or with the working hours of those resources. Notice the tendency to use words ending in *-ing* for these task names. Examples include;

- Status meeting
- Training
- Backing up system
- Drying of paint



Topic 3: A Process for Estimating – Fixed Work Task Type

Estimating – Fixed Work Task Type

A *fixed work* task is a task with an amount of effort dependent only upon the technical specifications of the job. Unlike duration, the amount of effort is not dependent upon the number of resources that will be assigned to the task or their working times.



32

Exercise 4.2: Entering Estimates for the Relocation Project

Instructions:

The goal of this exercise is to be able to enter duration and work estimates and protect them by setting the task type accordingly.

Insert the fields *Type*, *Effort Driven*, *Duration*, and *Work* in the Gantt spreadsheet in the order they appear in the column headings in the table below.

Open the *Relocation.mpp* file to continue your work. Check in ribbon **File**, dialog box, tab **Schedule**, if the following options are selected:

- Time unit for **Work is entered in** is set to **Days**.
 - **New tasks created** is set to **Auto Scheduled**
1. Enter the data from the table below. Please note:
 - a. The tasks with zero duration will become milestones
 - b. Where no data are provided (blank cell), do not enter anything; MS Project will fill in the default duration of *1 day*? and the default work of *0 days*. Leave these as they are; you cannot blank them out.
 2. Save your file when done.

ID	Task Name	Type	Effort Driven	Duration	Work
1	REQUIREMENTS	Fixed Duration	No		
2	Research staff requirements	Fixed Work	Yes		2 d
3	Summarize requirements	Fixed Work	Yes		2 d
4	LOCATION	Fixed Duration	No		
5	Select the realtor	Fixed Duration	No	4 d	
6	Visit the sites	Fixed Duration	No	1 d	
7	Evaluate the sites	Fixed Duration	No	1 d	
8	Meet to select the location	Fixed Duration	No	1 d	
9	Legal review	Fixed Duration	No	0.5 d	
10	Location selected	Fixed Duration	No	0 d	
11	REMODELING CONTRACT	Fixed Duration	No		
12	Select the contractor	Fixed Duration	No	2 d	
13	Meet to discuss contract	Fixed Duration	No	1 d	
14	Revise the schedule	Fixed Duration	No	1 d	
15	Negotiate the contract	Fixed Duration	No	1 d	
16	Contractor contracted	Fixed Duration	No	0 d	
17	REMODELED LOCATION	Fixed Duration	No		
18	Relocate walls	Fixed Work	Yes		100 d
19	Install electric wiring	Fixed Work	Yes		25 d
20	Paint	Fixed Work	Yes		8 d

ID	Task Name	Type	Effort Driven	Duration	Work
21	Drying of paint	Fixed Duration	No	4 ed	
22	Install cabinetry	Fixed Work	Yes		40 d
23	Install LAN	Fixed Work	Yes		60 d
24	Lay carpet	Fixed Work	Yes		60 d
25	Facility remodeled	Fixed Duration	No	0 d	
26	MOVE	Fixed Duration	No		
27	Select mover	Fixed Duration	No	2 d	
28	Pack	Fixed Duration	No	2 d	
29	Move	Fixed Work	Yes		20 d
30	Unpack	Fixed Duration	No	2 d	
31	New location opened	Fixed Duration	No	0 d	

LESSON 5: ENTERING DEPENDENCIES

Topic 1: Dependencies and Dynamic Scheduling

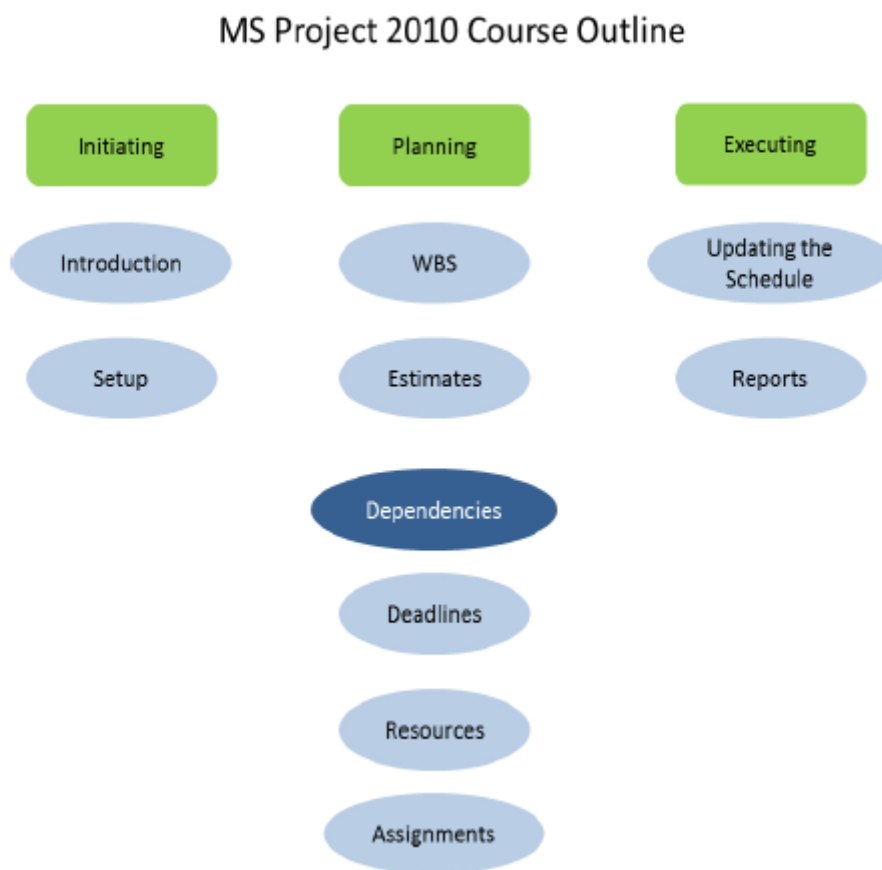
Topic 2: What are Dependencies?

Topic 3: Types of Dependencies

Topic 4: Using Lead or Lag

Topic 5: Entering Dependencies in the Gantt View

Topic 6: The Network Diagram



Topic 1: Dependencies and Dynamic Scheduling

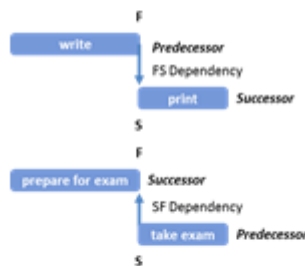
Dependencies and Dynamic Scheduling

- Schedules become forecast models of your project
- Allows for easier updating
 - Requires tasks have “relationships” between them
 - Minimize fixed or hard dates, known as constraint dates
- When things change, a dynamic schedule usually only needs a few changes.

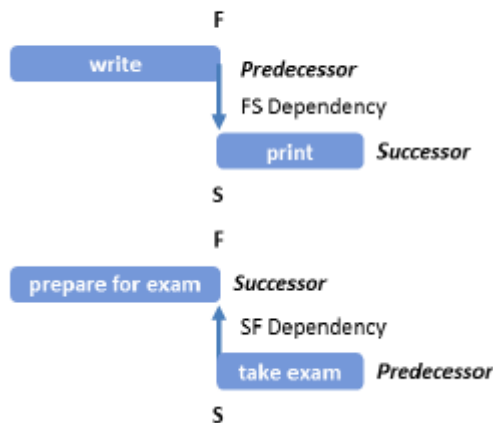
Topic 2: What are Dependencies?

What are Dependencies?

- A *dependency* is a relationship between the (start or) finish of one task and the start (or finish) of another task.
- The dependency reflects the cause-and-effect, predecessor and successor.
- Think of the predecessor as the *independent* or driving task (*driver*) and the successor as the *dependent* or *driven* task.



37



The words *predecessor* and *successor* are misleading, because they imply chronology; the predecessor precedes and the successor succeeds. Dependencies are not a matter of chronology, but about cause-and-effect. These can come from:

- *Practical necessities:* the book needs to be written before it can be printed.
- *Mandatory processes:* if your organization requires a quality review before releasing a report, this would create a dependency.

Topic 2: Dependencies Treated as Cause-and-Effect

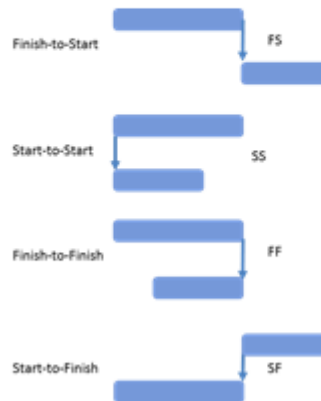
Dependencies as Cause-and-Effect

- Logical relationships stay the same
- You will spend less time maintaining the network logic
- Logical dependencies provide more reliable automatic updates
- Logical dependencies make always-up-to-date schedule possible
- Logical relationships produce the tightest possible schedule

Topic 3: Types of Dependencies

Types of Dependencies

- Finish-to-Start (FS)
- Start-to-Start (SS)
- Finish-to-Finish (FF)
- Start-to-Finish (SF)

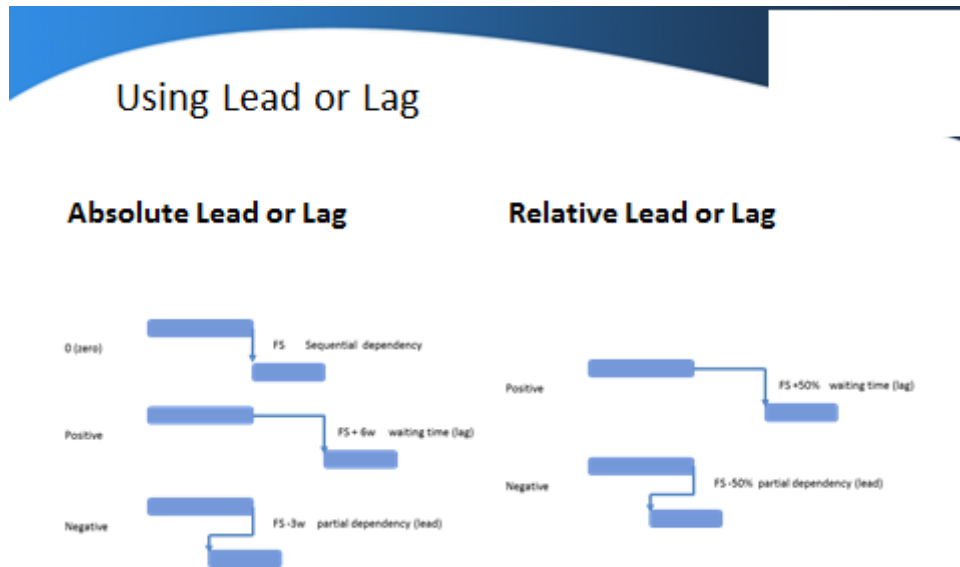


Topic 3: Types of Dependencies – Choosing the Right Type

Choosing the Right Dependency

1. Which task drives the other? (predecessor)
2. Does the start or finish of the predecessor drive the other task?
3. Does the predecessor drive the start or finish of the successor?
4. Do you need a gap (lag), or an overlap (lead)?
5. Is the lag absolute or relative to the predecessor?
6. How much should the lag or lead be?

Topic 4: Using Lead or Lag



Examples:

- There are two tasks *write report* and *edit report*. After writing the first half of the report, we want to send it to the editor. We need an *FS-50%* dependency between *write report* and *edit report* (the 2nd example in the illustration).
- The *electrical design* starts when the *civil engineering design* is 60% complete: *SS+60%* or *FS-40%*. The lag is relative to the duration of its driver task.

Topic 5: Entering Dependencies in the Gantt View

Entering Dependencies


Project 2010 offers several ways to enter dependencies into the schedule. We will demonstrate the following:

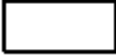
1. Setting the Options for dependencies
2. Using the *Link* tool
3. Using the mouse
4. Using the *Task Information* dialog
5. Using the *Task Form*


Topic 6: The Network Diagram

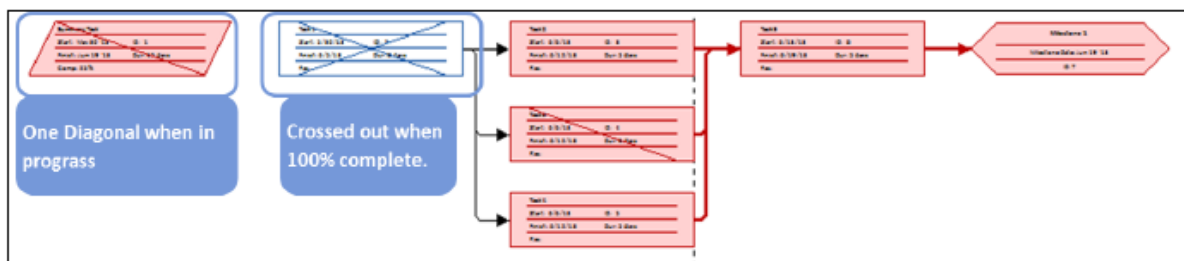
To apply the view, click ribbon **View**, button **Network Diagram**. The Network Diagram can display an overview of all the dependencies you have set; the dependencies are depicted as arrows in this view.

By default, the Network Diagram displays the types of tasks in differently shaped nodes:

Summary tasks in a parallelogram 

Detail tasks in a rectangle 

Milestones in a hexagon 



The default formatting in the Network Diagram is as follows:

- *Critical tasks* have a red fill and red border
- Noncritical *Auto Scheduled* tasks have a white fill and blue border
- Noncritical *Manually Scheduled* tasks have a light blue fill and dark blue border

The color and shape of the nodes can be changed by clicking ribbon **Format**, button **Box Styles**.

Exercise 5.1: Entering Dependencies for the Relocation Project

Instructions:

The goal of this exercise is to be able to enter a complete network of cause-and-effect dependencies into the schedule.

Continue to work with your file *Relocation.mpp*

Enter the following dependencies:

1. Finishing the task *research staff requirements* allows the task *summarize requirements* to start.
2. Finishing the task *summarize requirements* allows the task *evaluate the site* to start.
3. The detail tasks of the deliverable *LOCATION* are all Finish-to-Start dependent upon each other.

4. Accomplishing the milestone *location selected*, allows you to start the task *select the contractor* and the task *select mover*.
5. The detail tasks of the deliverable *REMODELING CONTRACT* are all Finish-to-Start dependent upon each other. The dependency between *select contractor* and *meet to discuss contract* has a lag of 5 days; it will take a time frame of 5 days to get the participants together to meet.
6. Accomplishing the milestone *contractor contracted* allows the task *relocate walls* to start.
7. The tasks *relocate walls* through *install cabinetry* of the deliverable *REMODELED LOCATION* are all Finish-to-Start dependent upon each other.
8. In the deliverable *REMODELED LOCATION* the tasks *install cabinetry* and *install LAN* can take place concurrently after the paint dries. *Drying of paint* is the predecessor for both tasks.
9. Accomplishing both tasks *install cabinetry* and *install LAN* can start the task *lay carpet*.
10. Completing the task *lay carpet* achieves the milestone *facility remodeled*.
11. Accomplishing the milestone *facility remodeled* allows the task *pack* to start.
12. The detail tasks of the deliverable *MOVE* are all Finish-to-Start dependent upon each other.
13. Compare your file with the solution file *Exercise5.mpp*.
14. Save your file.

LESSON 6: ENTERING DEADLINES, CONSTRAINT DATES, AND CALENDARS

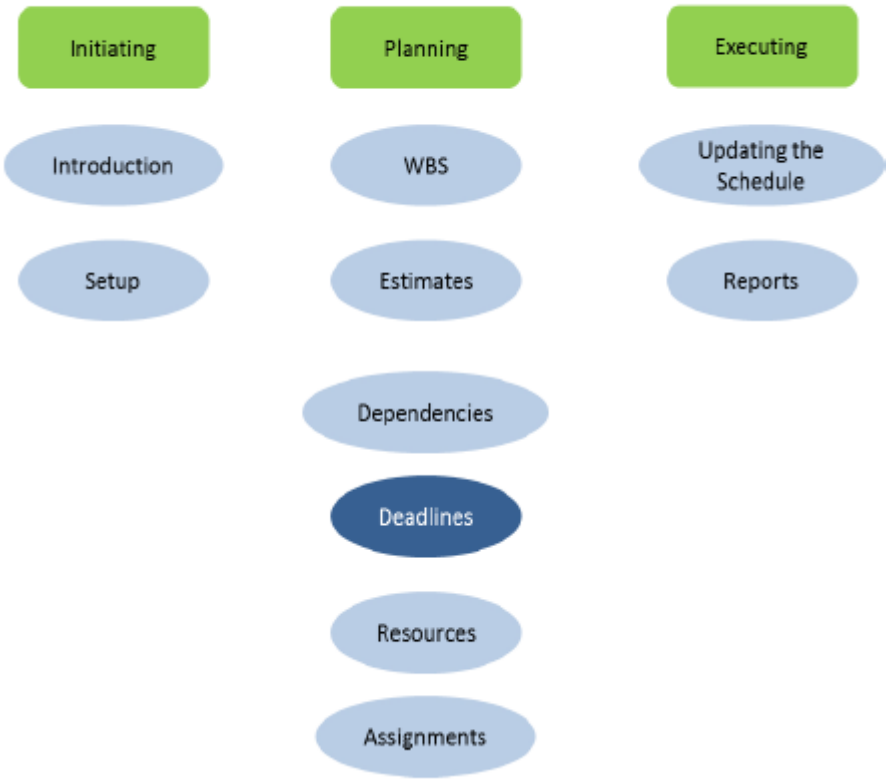
Topic 1: Deadlines versus Constraint Dates

Topic 2: Entering and Managing Deadlines

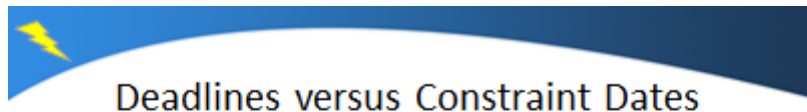
Topic 3: Types of Constraints

Topic 4: Entering and Managing Constraint Dates

MS Project 2010 Course Outline






Topic 1: Deadlines versus Constraint Dates



- **Deadlines are commit to dates**
 - Does not restrict the schedule
 - Deadlines stay visible in the timescale
- **Constraints restrict when a task can be scheduled**
 - Affects the dependency network
 - Requires more effort to maintain schedule

Date constraints affect the network of dependencies. The more constraints you create, the less freely your network will flow back and forth when you enter changes. Therefore, the more constraints you have in your schedule, the more effort you will spend revising (constraint) dates to keep your schedule valid.

Deadlines, on the other hand, do not restrict the scheduling of tasks. Deadline dates stay visible in the timescale as down-facing green arrows . When you miss a deadline date, MS Project displays a red indicator  in the indicators  column.

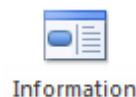
Topic 2: Entering and Managing Deadlines

Entering Deadlines

1. Open the demonstration file **Project2010SBS\Chapter06\Simple Tracking_Start.mpp**.

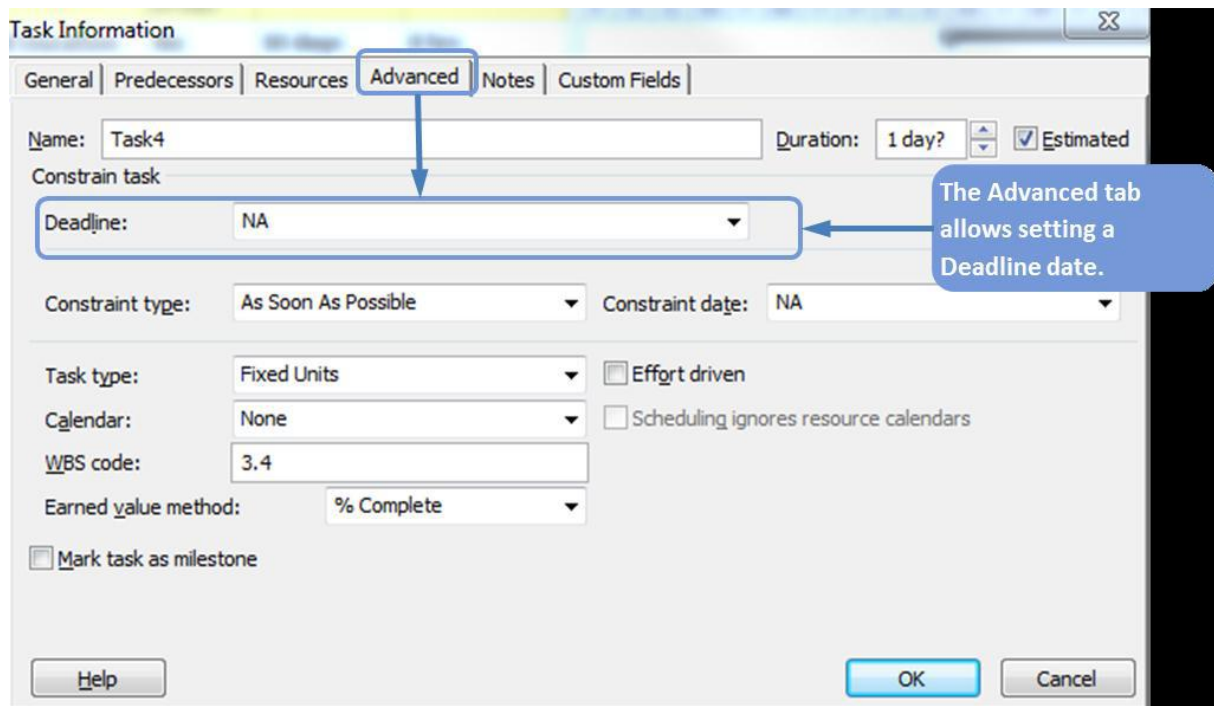


2. Click ribbon **View** and find its section **Task Views**, click the top part of





3. Double-click on the task, click the ribbon **Task** and click

4. Click the **Advanced** tab; the dialog should now look like:



5. Enter the deadline date in the **Deadline** field or use the pull-down calendar to click on a date.

6. Click OK and you will now see an arrow  in the timescale that represents the deadline date you entered. You can move deadline dates by simply dragging the green arrow in the timescale to a new date. You can start dragging as soon as you see the four-arrow mouse pointer. 

NOTE: If you have to be done before November 1, you have to enter October 31 as the deadline date. The deadline time will be at the end of the day by default unless you enter a time as well. If you enter *November 1* as the deadline date, the tasks will be done by 5:00 PM on November 1. You could add the time to the deadline date by entering *November 1, 8 AM*, for example.

Managing Deadlines

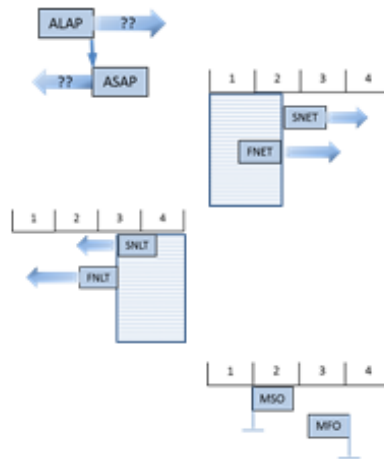
You will not get an automatic warning dialog from MS Project if deadlines are not met. What you do get is a red exclamation icon  in the indicators column .

Also, if you use the list of filters on the View ribbon and apply the filter *Tasks with Deadlines*, you can quickly display all tasks with deadline dates and see which deadlines are slipping.

Topic 3: Types of Constraints

Types of Constraints

- Tendencies
 - As Soon As Possible
 - As Late As Possible
- One-sided Constraints
 - Start No Earlier Than
 - Finish No Earlier Than
 - Start No Later Than
 - Finish No Later Than
- Rigid Constraints
 - Must Start On
 - Must Finish On



Topic 4: Entering and Managing Constraint Dates

Entering and Managing Constraints

Project 2010 offers several ways to enter constraints into the schedule. We will demonstrate the following:

1. Dragging task bars
2. Entering dates
3. Using the new **Move** feature
4. Using the task fields *Constraint Type* and *Constraint Date*
5. Using the *Task Information* dialog

In Which Situations do you Need Constraints?

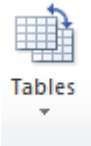
For Auto Scheduled tasks it is recommended constraints be used for the following situations:

- *External Dependencies:* enter is as an extra milestone that is held in place by a *Start No Earlier Than (SNET)* constraint.
- *Group activities:* Meetings, presentations, training or, in general, tasks that involve a group of people. A *Must Start On* or *Must Finish On* constraint should be used for these activities.

- *Public events*: Seminars, conferences, performances and other events to which the public is invited. These may be one or more days in duration. These dates are fixed and do not change. A *Must Start On* or *Must Finish On* constraint should be used.

To Check All the Scheduling Constraints

1. In the Gantt Chart click ribbon **View** and find its section **Data**.



2. Click **Tables** and select from the drop-down menu **More Tables**.

3. The **More Tables** dialog appears.

4. Select the **Constraint Dates** table in the list.

5. Click **Apply**. You can now see the fields **Constraint Type** and **Constraint Dates** to check all constraints on the tasks.

6. You can apply a filter that displays all the tasks that have a constraint date. Click the **View** ribbon and click the **Filter** list, then **More Filters** and select the filter called **Tasks with Fixed Dates**. Click **Apply** and you will only see tasks with a constraint.

Exercise 6.1: Entering Deadlines and Constraints for the Relocation Project

Instructions:

The goal of this exercise is to be able to enter deadlines and constraints into the schedule.

Continue to work with your file *Relocation.mpp*

1. Set deadlines on the following milestones by double-clicking on the task to display the **Task Information** dialog and clicking the tab **Advanced**. Note that these deadlines will be missed and the warning icon appears in the indicator column.

ID	Milestone	Deadline Date
10	location selected	August 20, 2012
16	contractor contracted	August 31, 2012
25	facility remodeled	October 26, 2012
31	new location opened	November 1, 2012

The CEO, *Mr. DeBoss*, is out of the country until *August 23, 2012*; we will need a *Start No Earlier Than* constraint on task *8 meet to select the location*.

The task *pack* should be scheduled *As Late As Possible*, otherwise the equipment may be packed days before the actual move takes place over the weekend. You want the employees to be packed as late as possible on the Friday before the weekend. Enter the following constraints by double-clicking on the task to display the **Task Information** dialog and clicking the tab **Advanced**:

ID	Task	Constraint
8	meet to select the location	Start No Earlier Than August 23, 2012

3. Notice that the AS Late As Possible constraint does not display an icon in the indicators column.
4. Compare your file with the solution *Exercise 6.mpp*.
5. Save your file.

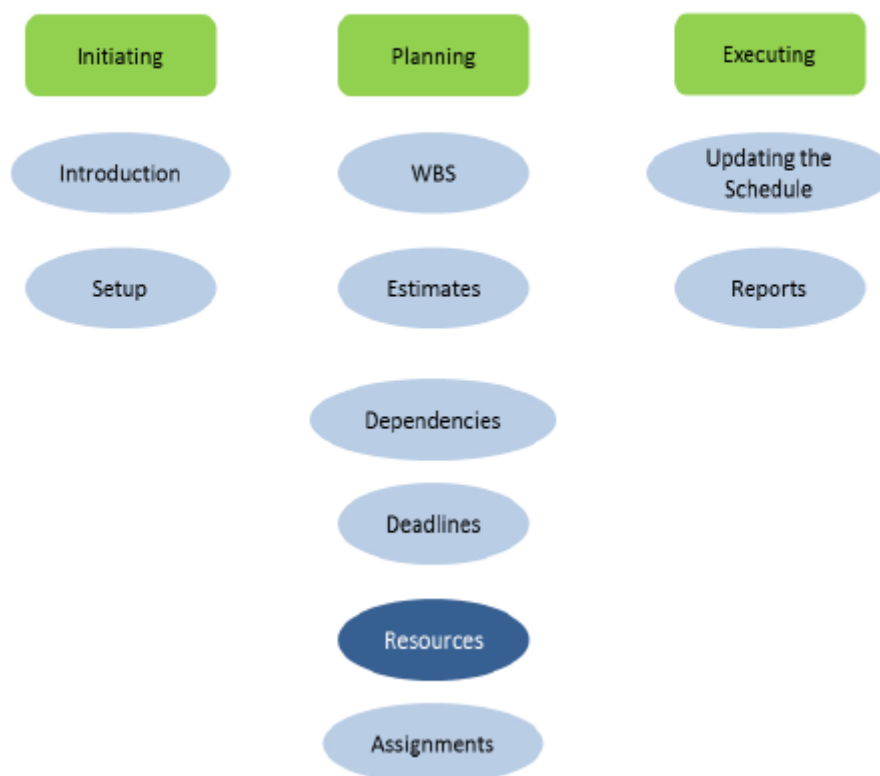
LESSON 7: ENTERING RESOURCES

Topic 1: What is a Resource?

Topic 2: Entering and Managing Resources

Topic 3: Editing the Resource Calendar

MS Project 2010 Course Outline



Topic 1: What is a Resource?

What is a Resource?

Resources are people, facilities, machines, materials, or money necessary to create the project deliverables.

Resources are normally assigned to activities on the lowest level in the Work Breakdown Structure

Topic 1: Setting the Resource Options

Setting Options for Resources

- Default standard rate
- Default overtime rate
- Show assignment units as a: Percentage or Decimal

Click the ribbon **File, Options** and click on the tab indicated in the table below where you want to change settings.

Tab	Option
Advanced	Section General Options for this Project: Default standard rate: By entering a rate you can reduce the amount of typing you have to do. If the standard rate is set to \$50/hr, you do not need to enter a rate for any resource that is \$50/hr.
	Default overtime rate: By entering a rate you can reduce the amount of typing you have to do.
Schedule	Section Schedule: Show assignment units as a: Percentage or Decimal Units of resources can be expressed as a percentage or in decimals in the resource-related Max Units field (availability) and in the assignment-related field Units field (workload). This is a global option and applies to all your projects, existing or new. For example, you have a resource that is available half-time to your project. This option

Topic 1: Types of Resources



- **Work**
 - Human resources: time-related costs
- **Material**
 - Facilities: time-related capital resources
 - Machines: similar to Facilities
 - Materials: consumable resources
- **Cost**
 - Monetary resources: financial resources with which others are bought

Topic 1: Understanding the Resource Fields in the Entry Table

You will find the following fields in the Resource Sheet. If the field is *required*, an entry is expected. If a field is *enumerated*, a pick list will be presented once you cursor into the field. The fields discussed are in the order in which you will find them in the default resource **Entry** table:

	Resource Name	Type	Material	Initials	Group	Max.	Std. Rate	Ovt. Rate	Cost/Use	Accrue At	Base Calendar	Code	Add New Column
1	Tom Jones	Work		TJ	IT		1 \$50.00/hr	\$10.00/hr	\$0.00	Prorated	Standard	101500	
2	Training Room	Material	2	Rm 2010	Trng		\$5.00		\$0.00	Start		101510	
3	Licenses	Cost		L	Software					Start		101520	

- **Indicators**

If a resource is over allocated, this field will show and icon.

- **Resource Name** – required field

This is where you enter the name of the resource.

- **Type** – required, enumerated

The type of resource can be **Work** (default), **Material**, or **Cost**. Work resources are human resources or people. Material resources are facilities, equipment or materials. Cost resources are for capturing any other costs in your project, like hotel or car rental costs.

- **Material Label** – optional field, only for **Material** resources

The label you enter will show up in several other views and reports. It is normally used to indicate the unit of measure of the material.

- *Initials* – optional field Used for abbreviating the resource name.
- *Group* – optional field
- This field can be used for a variety of purposes, to capture the name of the department a resource works in.
- *Max Units (Maximum Units)* – required field, only for **Work** resources
- This is the maximum availability of the resource to your project. A resource that is available full-time to your project needs 100% in the **Max Units** field, 50% for half-time availability.
- *Std. Rate (Standard Rate)* – optional field
- Enter the standard rate for regular work in this field. For example, if you enter 10.50/h, it means the person earns \$10.50 per hour.
- *Ovt. Rate (Overtime Rate)* – optional field, only for **Work** resources
- Enter the rate for overtime work in this field.
- *Cost/Use (Cost per Use field) (per-use-cost)* – optional field
- Enter in this field the rate that has to be paid every time the resource is used, which means on each task it is assigned. It can be an up-front fee.
- *Accrue At* – optional, enumerated field
- Select Start, Prorated, or End to indicate when the costs are incurred. Tab to the *Accrue at* field and a pull-down button appears. Select one of the following options from the list:

Accrue at	Incurs the Cost	Example
Start	As soon as the task starts	actors
Prorated	The cost is incurred as the task progresses; the cost goes up with the % Complete.	employees
End	As soon as the task finishes	consultants

- *Base Calendar* – optional, enumerated field Select a calendar from the list. The *base calendar* specifies the general working hours and working days for the resource. Material resources cannot have a base calendar.
- *Code* – optional field Type an alphanumeric code, such as an accounting code. This is used to charge the expenses for the resource to a particular cost account.

Exercise 7.1: Entering Resources for the Relocation Project

Instructions:

The goal of this exercise is to be able to enter deadlines and constraints into the schedule. Continue to work with your file *Relocation.mpp*

1. See table below: the fields *Position* and *Function* are not standard fields in MS Project; you will have to create them. Click ribbon **Project**, button **Custom Fields**: select **Resource** and select from the **Type**, the item **Text** to display text fields. Click **Rename** and rename the field **Text1** to *Position* and **Text2** to *Function*. Click the **OK** button.
2. Customize the table for the Resource Sheet view as shown in the table below. You will need to insert the fields *Position* and *Function* and remove some other fields.
3. Notice that in the table below we present the **Max Units** in decimals, whereas MS Project shows percentages by default. Click ribbon **File**, **Options**, tab **Schedule** and, in the section **Schedule**, change **Show Assignment units as a** to **Decimal**.
4. Enter the resources from the table below into the Resource Sheet. Use the **Fill Down** feature for the columns *Function* and *Accrue at*. Notice that there are generic resources in the table, like *movers*. There is no **Cost/Use** for these resources.
5. Sort the list of resources on resource Name as the first sorting key (ribbon **View**, button **Sort**, item **Sort by**). Select the option to permanently renumber the resources.
6. *Nancy Hillcrest* will go on a 1-week vacation in the third full week of August 2012. Create and **Exception** called *Vacation Nancy*.
7. You realize that due to the project requirement of minimal disruption to normal operations, the move will have to take place over the weekend. Set the weekend days to working days and all the weekdays to nonworking days for the resource movers. The result should be that the move task takes place over a weekend once the movers are assigned to the task. The movers will work 8 hours per weekend day.
8. Compare your file with the solution *Exercise 7.mpp*.
9. Save your file.

Resource Name	Type	Material Label	Position	Function	Max Units	Std. Rate	Accrue at
Your name	Work		project manager	manager	1	\$75/h	Prorated
I.M. DeBoss	Work		CEO	manager	1	\$150/h	Prorated
John Falgon	Work		Employee representative	Employee	1	\$30/h	Prorated
Nancy Hillcrest	Work		planner	Employee	1	\$35/h	Prorated
Pierre Roach	Work		lawyer	External	1	\$75/h	Prorated
employees	Work		Employees	Employee	75	\$25/h	Prorated

Resource Name	Type	Material Label	Position	Function	Max Units	Std. Rate	Accrue at
contractor	Work		Contractor	External	50	\$30/h	End
realtor	Work		Realtor	External	1	\$35/h	End
movers	Work		Movers	External	40	\$25/h	End
LAN consultants	Work		LAN Consultants	External	20	\$75/h	End
boxes	Material	boxes		material		\$2	Start

LESSON 8: ENTERING ASSIGNMENTS

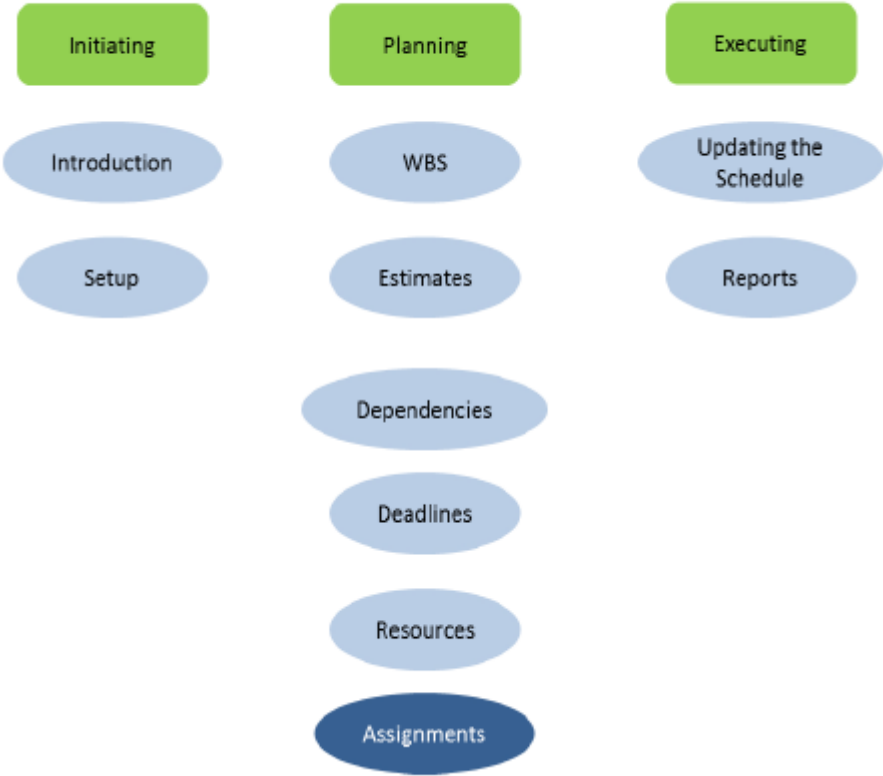
Topic 1: What is an Assignment?

Topic 2: Assignments and Types of Detail Tasks

Topic 3: Assigning Resources

Topic 4: Changing Tasks and Assignments

MS Project 2010 Course Outline



Topic 1: What is an Assignment?

What is an Assignment?

An *assignment* is a combination of one task and one resource.

Assignments reflect who works on what task.

Assigning resources to tasks is also called *loading resources*, and results in a resource-loaded schedule.

Resource Usage view:
Resource record of Nancy Hilcrest

	Resource Name	Work	Add New Column	Details	Aug 5, '12					
					S	M	T	W	T	F
3	Nancy Hilcrest	5 days		Work			1.5d	0.5d	0.5d	0.5d
	<i>summarize re</i>	<i>2 days</i>		Work			0.5d	0.5d	0.5d	0.5d
	<i>visit the sites</i>	<i>1 day</i>		Work			1d			
	<i>evaluate the.</i>	<i>1 day</i>		Work						
	<i>meet to selec</i>	<i>0 days</i>		Work						
	<i>meet to discu</i>	<i>1 day</i>		Work						

Nancy's five assignment records: no ID number, italic text and lighter background in the timescale.

Double-click on an assignment and the **Assignment Information** dialog will appear with only assignment-specific fields. If you double-click on the resource record, you get the **Resource Information** dialog.

Topic 1: Assignment-Specific Fields

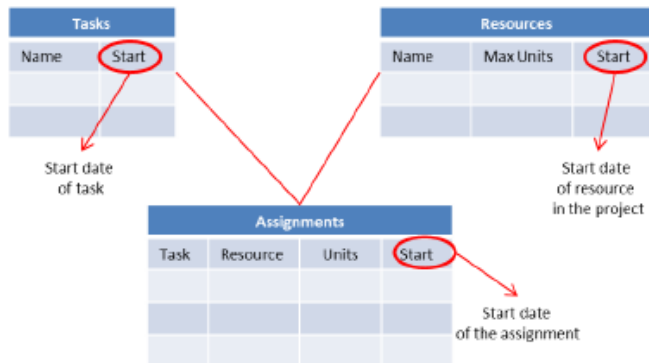
Assignment-Specific Fields

All three data entities, *tasks*, *resources*, and *assignments*, have their own specific fields.

- *Start* and *Finish* dates (task, resource, and assignment-related)
- *Max Units* (resource-related), *Units* (assignment-related) and *Peak* units (resource and assignment related)
- *Work* (task, resource, and assignment-related)

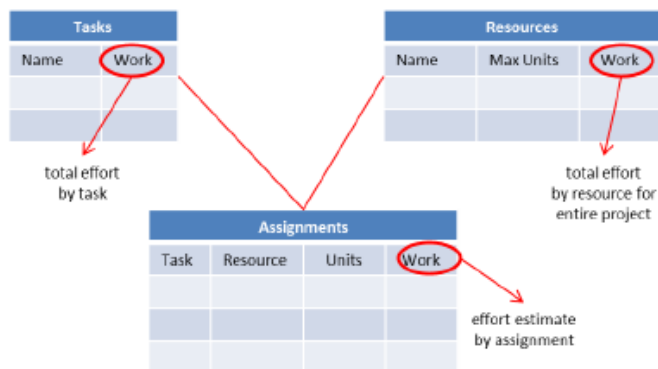
Start and Finish Dates

Start and Finish Dates



The start date of a task is not necessarily the same as the start date of its assignments. The start date of a task is when any one of the resources starts working on the task. The start date of the resource is the earliest assignment in the entire project. For example, if Mary only works the last 2 days of the 5-day task, the start date of her assignment is different from the start date of the task.

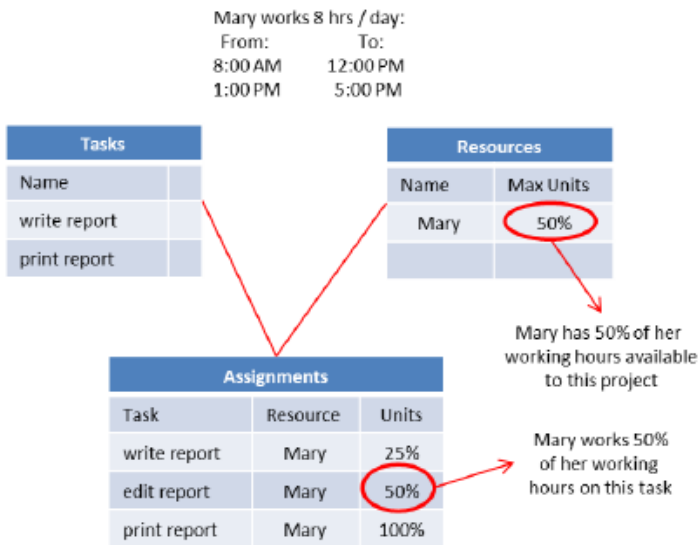
Work



Although they all have the same name, the field **Work** for tasks in the Gantt spreadsheet is not the same as the field **Work** on the Resource Sheet, nor is it the same as the assignment-related field **Work** on the Task Form. In the Gantt Chart, **Work** is the total effort of all resources working on the task. In the Resource Sheet, **Work** is the total effort for the resource in the entire project. On the Task Form you see the assignment-related **Work** field, which displays the effort of one resource on one particular task.

related **Work** field, which displays the effort of one resource on one particular task.

Max Units, Units, and Peak



The last set of similar fields that look alike but are very different are:

- Resource-related **Max Units**
- Assignment-related field **Units** (appears as **Assignment Units** in usage views)
- Resource- and assignment-related field **Peak**.

The **Max Units** field of a resource reflects the maximum availability of the resource to the project. The assignment-related field **Units** is the percentage of working hours a resource is working on the task. The **Peak field (Peak Units)** is

predominantly assignment-related, but is also displays resource-related values. As a resource-related field it shows the highest percentage across all the assignments of the resource, an indication of overallocation. As an assignment-related field it shows the highest percentage across all days of the assignment. The **Peak** field is calculated by MS Project.

Topic 3: Assigning Resources

There are multiple ways to assign a resource to a task. We will cover three ways that are most commonly used.

Assignments Using the Task Sheet View

A new feature in Project 2010 is the ability to assign multiple resources to a task in the Resource Names field by using the list of resources and the check boxes that is displayed.

Task Name	Duration	Work	Resource Names
LOCATION	17.5 days	13 days	
select the realtor	4 days	2 days	You[0.5]
visit the sites	1 day	4 days	the realtor,You,John Falg
evaluate the sites	1 day	3.5 days	<input type="checkbox"/> boxes <input checked="" type="checkbox"/> John Falgon <input checked="" type="checkbox"/> Nancy Hilcrest <input type="checkbox"/> Nelson Salin <input type="checkbox"/> Pierre Roach <input type="checkbox"/> the contractor <input type="checkbox"/> the employees <input type="checkbox"/> the LAN consultants <input type="checkbox"/> the movers <input checked="" type="checkbox"/> the realtor <input checked="" type="checkbox"/> You
REMODELING CONTRACT	10 days	7 days	
select the contractor	2 days	2 days	
meet to discuss contract	1 day	3 days	
revise the schedule	1 day	1 day	
negotiate the contract	1 day	1 day	
contractor contracted	0 days	0 days	
REMODELED LOCATION	41.5 days?	293 days	
relocate walls	10 days?	100 days	the contractor[10]

Assign multiple resources by clicking their check boxes.

If you assign in this way, Project 2010 will assign the maximum availability of an individual resource (*Max Units*) and only one unit of *team resources*.

Assignments Using the Assign Resources Dialog Box

The **Assign Resources** dialog has the following features:

- It is only enabled in a task view, not in resource views.
- It is a floating dialog that allows you to click on tasks while it remains displayed.
- It puts all the resources that are assigned to the selected task at the top of the list.
- It always sorts the rest of the resources alphabetically.
- It provides filtering options to determine which resources are available.

Assigning Resources by Dragging



Click ribbon **Resource**, **Assign Resources** floating dialog appears

The Assign Resources dialog allows you to create assignments quickly.

Resource Name	R/D	Units	Cost
✓ John Falgon		1.00	\$225.00
✓ Nancy Hilcrest		1.00	\$262.50
✓ the realtor		0.50	\$131.25
✓ You		1.00	\$562.50
boxes			
Nelson Salin			
Pierre Roach			
the contractor			
the employees			
the LAN consultants			

Hold down Ctrl and click to select multiple resources

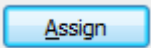
1. Click the resource to be assigned.
2. Point to the resource selector in front of the resource name; the mouse pointer now has a person's head attached:



3. Holding down the primary mouse button, drag and drop the resource onto the task you want to assign. The resource is now assigned; it has a check mark in front of its name.

Entering the Units on an Assignment



1. Click ribbon **Resource**, **Assign Resources** floating dialog appears.
2. In the field Units, enter the percentage or decimal of the resource's available working hours.
3. Click  MS Project recalculated the work of a **Fixed Duration** task, or recalculated the duration of a **Fixed Work** task.

Exercise 8.1: Entering Assignments for the Relocation Project

Instructions:

The goal of this exercise is to be able to assign resources to all detailed tasks.

1. Continue to work with your file *Relocation.mpp*
2. Add the fields **Type**, **Duration**, and **Work** to the Gantt Chart view in such a way that the view matches the column headings of the *task fields* in the table below. Note that you cannot add the column *Units* shown in the table below as a column to the Gantt Chart.
3. The units are presented in decimals in the table below, whereas MS Project will show percentages by default. Click ribbon **File**, **Options**, tab **Schedule** and change **Show Assignment units as a** to **Decimal** in order to enter the numbers as shown.
4. The next table provides all assignment information for the Relocation project. Enter all assignments including their units by using the **Assign Resources** dialog (ribbon **Resource**, button **Assign Resources**) or the **Task Form** (click ribbon **View**, **Details**). The **Task Form** is best when you want to assign multiple resources and enter specific numbers for units and/or work.
5. Compare your file with the solution *Exercise 8.mpp*.
6. Save your file.

TASK FIELDS				ASSIGNMENT FIELDS	
Task Name	Type	Dur	Work	Resource Names	Units
REQUIREMENTS	Fixed Duration				
Research staff requirements	Fixed Work		2 d	You	0.5
Summarize requirements	Fixed Work		2 d	Hilcrest	0.5
LOCATION	Fixed Duration				
Select the realtor	Fixed Duration	4 d		You	0.5
Visit the sites	Fixed Duration	1 d		Falgon	1
				Hilcrest	1
				The realtor	1
				You	1
Evaluate the sites	Fixed Duration	1 d		Falgon	1
				Hilcrest	1
				The realtor	0.5
				You	1
Meet to select the location	Fixed Duration	1 d		Falgon	1
				Hilcrest	1
				DeBoss	1
				You	1
Legal review	Fixed Duration	0.5 d		Roach	1
REMODELING CONTRACT	Fixed Duration				
Select the contractor	Fixed Duration	2 d		You	1
Meet to discuss contract	Fixed Duration	1 d		You	1
				The contractor	1
				Hilcrest	1
Revise the schedule	Fixed Duration	1 d		You	1
Negotiate the contract	Fixed Duration	1 d		You	1
REMODELED LOCATION	Fixed Duration				
Relocate walls	Fixed Work		100 d	The contractor	10
Install electric wiring	Fixed Work		25 d	The contractor	5
Paint	Fixed Work		8 d	The contractor	4
Drying of paint	Fixed Duration	4 ed			
Install cabinetry	Fixed Work		40 d	The contractor	8
Install LAN	Fixed Work		60 d	The LAN consultants	5
Lay carpet	Fixed Work		60 d	The contractor	6
MOVE	Fixed Duration				
Select mover	Fixed Duration	2 d		You	1
Pack	Fixed Duration	2 d		The employees	35
				Boxes	400
Move	Fixed Work		20 d	The movers	10
Unpack	Fixed Duration	2 d		The employees	35

Topic 4: Changing Tasks and Assignments

Changing Tasks and Assignments

If the task *training* is a **Fixed Duration** type of 2 business days of duration, and you invite 8 people to the training, MS Project will calculate $2 * 8 = 16$ days of **Work**.

The task *write report* with 5 person days of **Fixed Work** could be worked on by two people, and MS Project will calculate a **Duration** of 2.5 business days.

	Duration * Peak Units = Work		
Fixed Duration training	2d	8	...
Fixed Units budget	2d	0.5	...
Fixed Work write report	...	2	5d

LESSON 9: UPDATING THE SCHEDULE

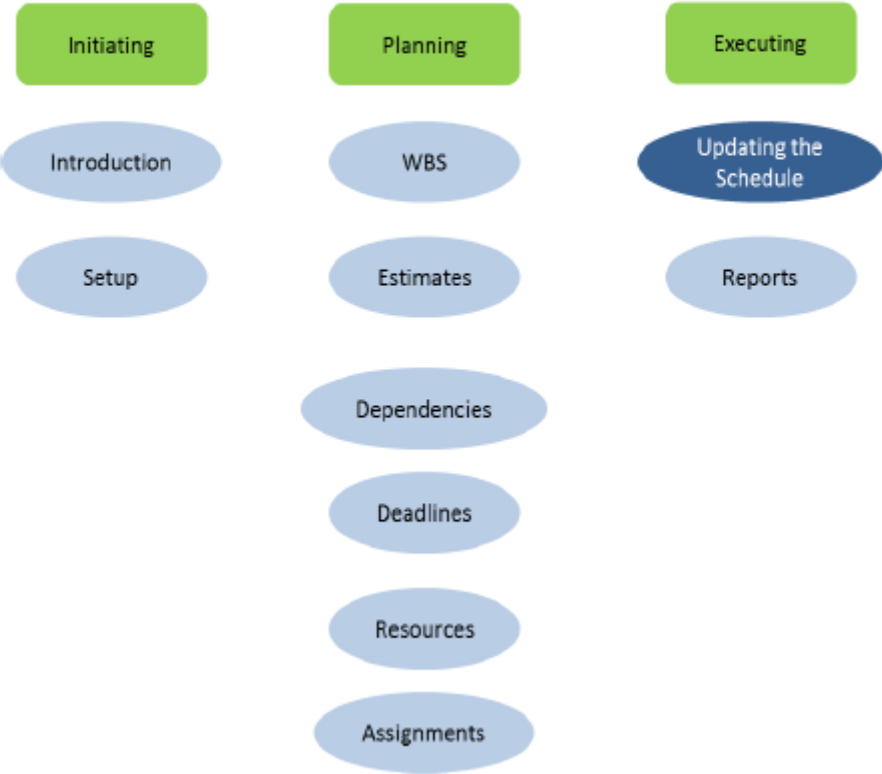
Topic 1: Introduction to Schedule Updating

Topic 2: Baseline the Schedule

Topic 3: Progressing the Schedule and Updating Tasks

Topic 4: Reporting on Updated Schedule

MS Project 2010 Course Outline



Topic 1: Introduction to Schedule Updating

Introduction to Schedule Updating

The process steps we will discuss for updating a schedule are:

- Switching to Auto Scheduled Tasks
- Baseline the schedule
- Update tasks
- Prepare status and forecast reports

Topic 1: Setting the Options for Updating Tasks

Setting the Options for Updating Tasks

Recommended options for updating tasks

- Split in-progress tasks:
- Updating task status updates resource status:
- Actual costs are always calculated by Microsoft Project:
- Move end of completed parts after status date back to status date:
- Move start of remaining parts before status date forward to status date:
- Edits to total task % complete will be spread to the status date:
- Automatically add new resources and tasks:
- Allow cell drag and drop:

Topic 2: Baseline the Schedule

The baseline schedule is a frozen copy of the approved schedule. It is the target you work towards and compare progress against.

Open the demonstration file

Setting the First Baseline Schedule



Set
Baseline ▾

1. Click ribbon **Project**, **Baseline** ▾, item **Set Baseline** – the next dialog appears:

The first time, you set the baseline For Entire project. To change the baseline when a change request is approved, you use For Selected tasks.

2. Select **Set baseline**
3. To set the baseline for all tasks, select **Entire project**
4. Click **OK** – the current schedule is copied to the **Baseline** fields.
5. If you suspect that you will receive change requests that will result in multiple baselines, it is a good idea to preserve the current baseline by copying it also into **Baseline1**.

Preserving a Baseline Schedule

Change requests will necessitate changing the baseline. It is a good idea to preserve every steady-state baseline that was in effect at some time. You can preserve up to 10 baselines.

Updating the Baseline of Impacted Tasks

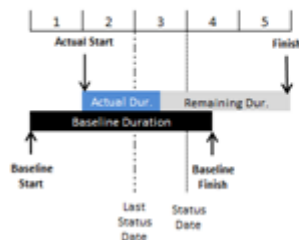
The baseline data of completed tasks should never be changed. Only tasks that have not been started yet and that are affected by change requests through dependencies can be re-baselined

Topic 3: Progressing the Schedule and Updating Tasks

Progressing the Schedule

The black *Baseline* allows us to analyze slippages. In the illustration, you can see that:

- The task started 1 week later (Actual Start) than scheduled (Baseline Start).
- The task duration was already revised from 3.5 (Baseline Duration) to 4 weeks (current Duration); this is a 0.5-week increase in duration.
- The progress is still behind; the task is also progressing 0.5 weeks more slowly, because the Actual Duration (progress) is 0.5 weeks behind the status date. This 0.5 week of work to be done should be rescheduled to the future. It is likely the slippage will further increase; since the rate of progress was about half of the expected rate in the last update period, the remaining duration may need to be increased again.



The black *Baseline* allows us to analyze slippages. In the illustration, you can see that:

1. The task started 1 week later (Actual Start) than scheduled (Baseline Start).
2. The task duration was already revised from 3.5 (Baseline Duration) to 4 weeks (current Duration); this is a 0.5-week increase in duration.
3. The progress is still behind; the task is also progressing 0.5 weeks more slowly, because the Actual Duration (progress) is 0.5 weeks behind the status date. This 0.5 week of work to be done should be rescheduled to the future. It is likely the slippage will further increase; since the rate of progress was about half of the expected rate in the last update period, the remaining duration may need to be increased again

Topic 3: Progressing the Schedule and Updating Tasks

Progressing the Schedule – What Data is Needed?

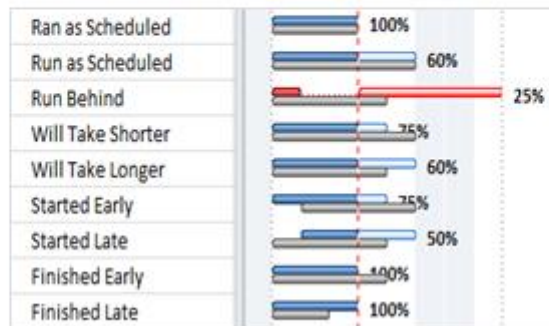
Keep the following formulas in the back of your mind as you collect the data. They explain how MS Project calculates and displays when you enter your updates.

Actual Duration + Remaining Duration = Duration

Actual Duration / Duration = % Complete

Topic 3: Progressing the Schedule and Updating Tasks

Progressing the Schedule – Types of Task Updates



Topic 4: Reporting on Updated Schedule

Open the demonstration file

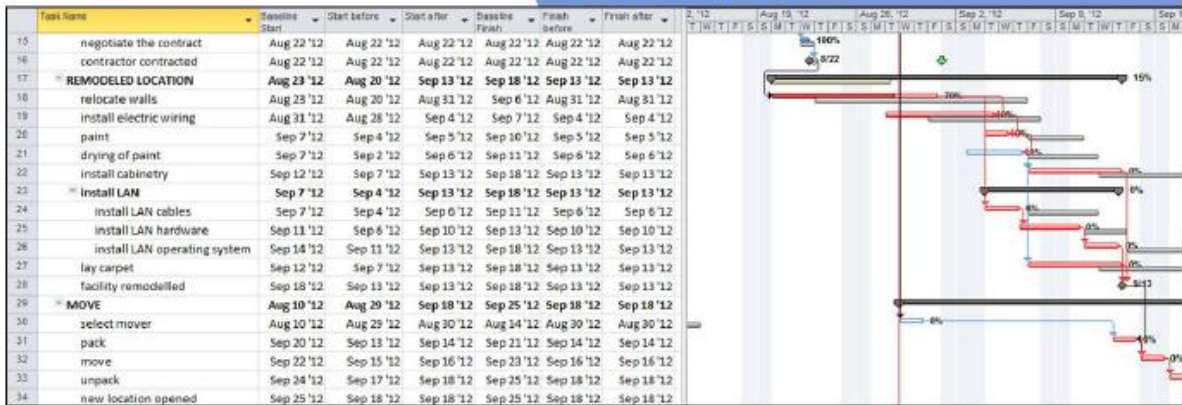
Executives sometimes ask for reports that only show the differences since the last update. To create such a report, you need to take a snapshot immediately after each schedule update:

1. Save all start and finish dates by setting an interim plan before entering any update information: click ribbon **Project**, button **Set Baseline**, item **Set Baseline** – the dialog appears.
2. Select **Set interim plan** and **Entire project**. Click **OK**.

Taking this step immediately after each update is better than just before the next update, because it catches any changes in the schedule other than the changes resulting from updating the schedule. To create this report:

1. Enter the task update information and apply the custom view *Tracking Gantt delta since last update*. The report should look similar to the screenshot below. How this view was created will be demonstrated in the next lesson. **Note: creating custom tables, views, and filters will be covered in more detail in the second MS Project course.**

The project manager updated the schedule, and the view bolded all tasks that were affected by the update.



Exercise 9.1: Updating the Schedule for the Relocation Project – First Update

Instructions:

The goal of this exercise is to be able to update a schedule and to get accurate forecasts. Continue to work with your file *Relocation.mpp*

1. Click ribbon **View**, button **Table**, item **Tracking** to apply the Tracking table. Remove the column **% Comp.** and the **Phys. % Comp.** Move the column **Act. Finish** to after **Rem. Dur.** The order of the columns is the order in which to enter update information and is a memory bridge for updating.
2. Using ribbon **Project**, button **Set baseline**, item **Set baseline...** - set the baseline for the entire project.
3. Click ribbon **Project** and set the **Status Date** to *August 28, 2012 5:00 p.m.* and create a gridline for the status date in the Tracking Gantt timescale using ribbon **Format**, button **Gridlines**, item **Gridlines...**
4. Set the following options in ribbon **File**, **Options**, tab **Schedule**:
 - a. **Updating task status updates resource status** is checked
 - b. **Actual costs are always calculated by Project** is checked
5. Set the following options in ribbon **File**, **Options**, tab **Advanced**:
 - a. **Move end of completed parts after status date back to status date** is checked
 - b. **Move start of remaining parts before status date forward to status date** is checked
6. Switch the task type to **Fixed Units** and not **Effort-Driven** for all tasks.
7. Update the tasks in the project schedule. As of the status date the situation is:
 - a. All the tasks until Contractor Contracted ran as scheduled.
 - b. The contractor started early because he finished his previous contract early. He supplied the following update on the first and only task he started: relocate walls:

Task	Started	Actual Duration	Remaining Duration
Relocate walls	August 20, 2012	7 days	3 days

8. Check whether the schedule is updated correctly:
 - a. Check whether there are any remaining durations scheduled before the status date. Reschedule these after the status date.
 - b. Check if there are actual durations after the status date and reschedule these before the status date.
9. Describe the status of project in your own words.
10. Do you need to take corrective actions?
11. Save all start and finish dates by setting an interim plan before entering any update information: click ribbon **Project**, button **Set Baseline**, item **Set Baseline** – the dialog appears. Select **Set interim plan** and **Entire project**. Click **OK**.
12. Save your file

Re-optimizing After First Update

Instructions:

The goal of this exercise is to be able to improve a schedule so that it is closer to its baseline schedule again.

Continue to work with your file *Relocation.mpp*.

Task name	Action
Relocate walls	Change the task type back to Fixed Work , then change the number of units to 15 for the balance of the activity: add 5 resources to help complete the activity. The result is a gain of 1 day.
Install electrical wiring	Enter an Ovt. Rate for the Contractor of \$45 per hour (150%). Change the task type back to Fixed Work, then change the number of units to 8 for the activity. Have the resources work overtime to a total of 32 overtime hours. The duration shortens to almost 2.6 days.
Install cabinetry	Delete the dependency from <i>drying of paint</i> to <i>install cabinetry</i> and replace it with a dependency from <i>paint</i> to <i>install cabinetry</i> . <i>Install cabinetry</i> should be on schedule.
Install LAN cables	Change the dependency from <i>relocate walls</i> to <i>install LAN cables</i> to Finish-to-Finish with a 1.5 day lag. The <i>Install the LAN</i> activities should be on schedule.

Save your file

LESSON 10: REPORTS

Topic 1: Types of Reports

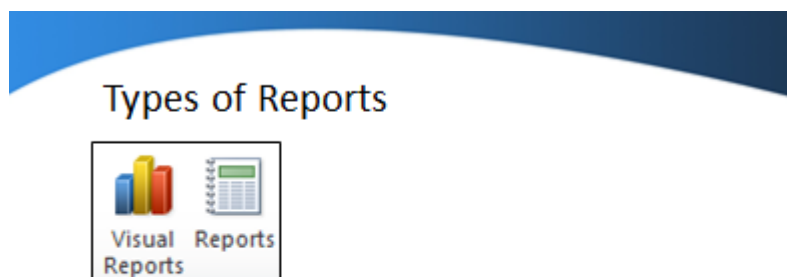
Topic 2: Using Visual Reports

Topic 3: Creating simple reports (Views)

MS Project 2010 Course Outline



Topic 1: Types of Reports



- Visual Reports (Excel and Visio)
- Views

Topic 1: Setting the Options for Reporting

Setting the Options for Reports

Recommended options for Reports

- Show that scheduled tasks have estimated durations:
- New scheduled tasks have estimated durations:
- Change the time units for **Minutes, Hours, Days, Weeks, Months, and Years** to one character to save space on the screen.

Topic 2: Using Visual Reports

A filter button indicates that only some items are shown.

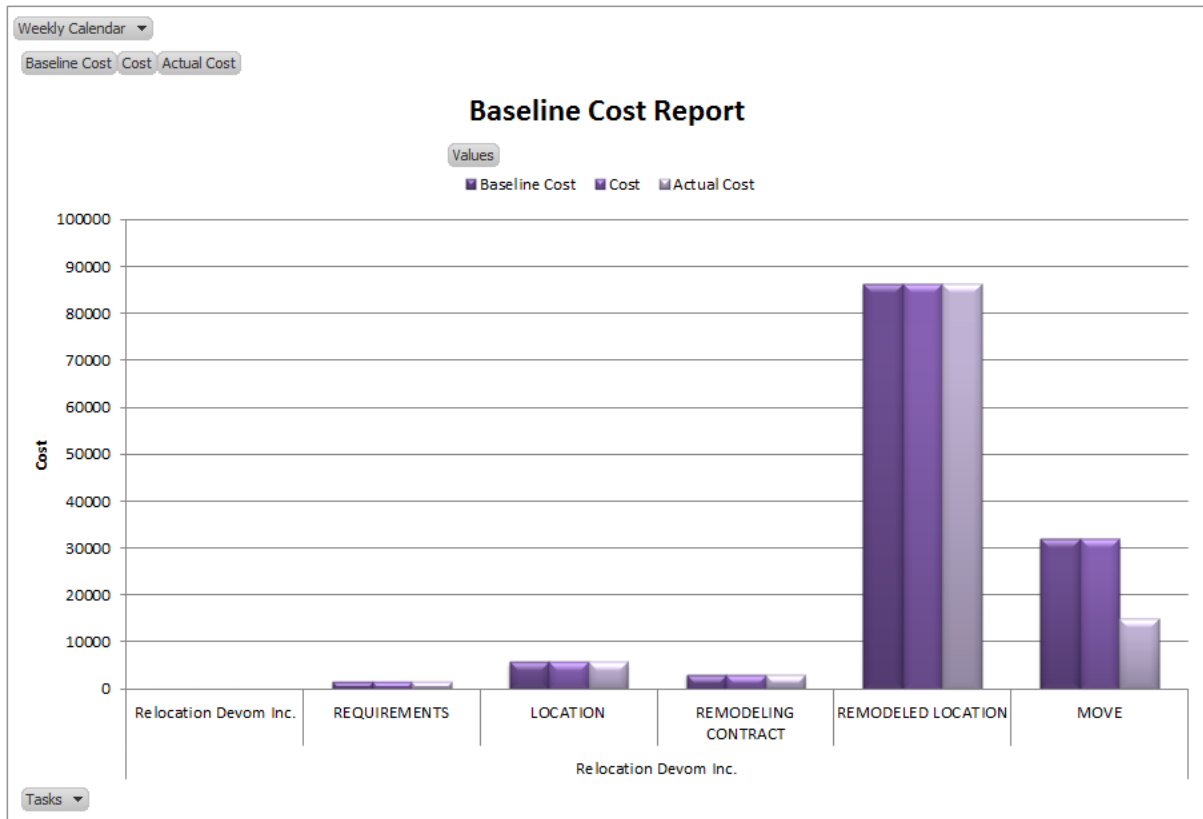
Weekly Calendar		All			
Task	Task 1	Data			
		Baseline Cost	Cost	Actual Cost	
⊖ Relocation Devom Inc	Relocation Devom Inc.	0	0	0	
	⊕ REQUIREMENTS	1650	1650	1650	
	⊕ LOCATION	5812.5	5812.5	5812.5	
	⊕ REMODELING CONTRACT	3037.5	3037.5	3037.5	
	⊕ REMODELED LOCATION	86175	86380	86380	
	⊕ MOVE	31925	31925	15050	
	Relocation Devom Inc - Total	128600	128805	111930	
	Grand Total	128600	128805	111930	

Plus button for drilling down into detail

The steps to create the pivot table are:

1. Click the ribbon **Project** and the button **Visual Reports**.
2. Clear **Microsoft Visio** to hide the *Visio* pivot diagrams.
3. From the list select the report you want and click **View** – the pivot chart appears in Excel.
4. To see the pivot table, click the worksheet tab **Assignment Usage** at the bottom of the screen. You may have to further manipulate the pivot table in Excel to make it look the way you want it to.

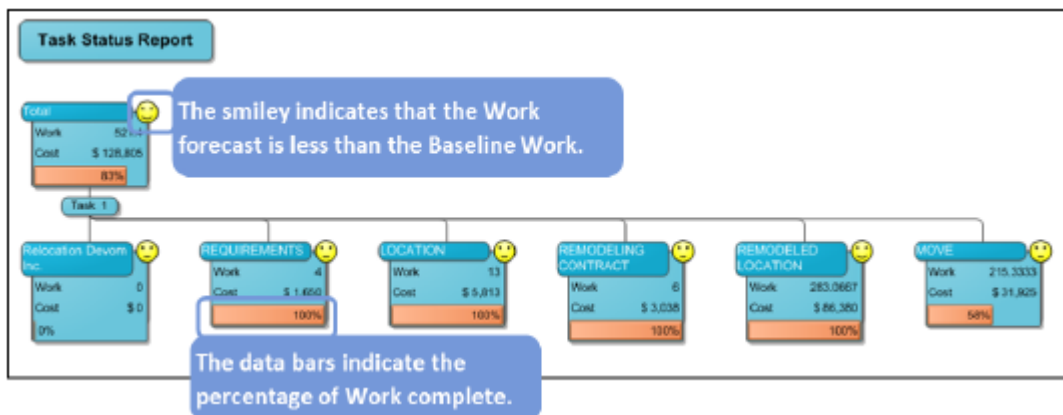
Pivot Charts in MS Excel



Topic 2: Using Visual Reports

Pivot Diagram in MS Visio

Pivot diagrams in Visio 2010 are like breakdown charts, similar to a visual WBS chart. Below is an example.



The steps to create this pivot diagram are:

5. Click ribbon **Project** and button **Visual Reports**.
6. Clear **Microsoft Excel** to hide the *Excel* pivot tables and charts.

7. From the list select the report you want and click **View** – the pivot diagram appears in Visio.
8. You may have to manipulate the chart further in Visio to make it look the way you want.

Topic 3: Creating Simple Reports (Views)



DEMONSTRATION

Creating Simple Reports (Views)

Exercise 10.1: Reporting for the Relocation Project – Executive Overview

Instructions:

The goal of this exercise is to be able to create custom, one-page reports targeted at executives. Continue to work with your file *Relocation.mpp*

1. Click ribbon **View**, button **Tables**, item **More Tables...** and create a new task table named *Executive Overview*. Use the columns **ID**, **Name**, **Duration**, and **Cost**.
2. Click ribbon **View**, list **Filter**, item **More Filters...** and create a new filter, *Executive Overview*, to display milestones plus summary tasks.
3. Click ribbon **View**, list **Other Views**, item **More Views...** and create a new view, *Executive Overview*, which is based on a Tracking Gantt view. Select **Show in menu** to display it as an item in the list of **Gantt Charts** on the **View** ribbon. Make sure when you apply the view *Executive Overview*, the corresponding table and filter that you created are both applied.
4. Hide the question marks in the **Duration** column by clicking ribbon **File**, **Options**, tab **Schedule** and clearing the options **Show that scheduled tasks have estimated durations** and **New scheduled tasks have estimated durations**.
5. Click ribbon **View**, find its section **Zoom** and click the down arrow of the list **Timescale**, and select **Timescale**: Apply the following settings in the **Timescale** dialog:

		Middle Tier	Bottom Tier
Field	Units	Months	Days
	Label	Jan, Feb, ...	1, 2, ...
	Count	1	7
	Align	Center	Center
	Size	100%	100%

6. In the **Page Setup** dialog (ribbon **File**, tab **Print**, hyperlink **Page Setup**), format the **Header**, **Footer**, and **Legend** as follows:

		Section	Set to	Font
Tab	Header	Center	&[View] &[Project Title]	Arial, Bold, 20
	Footer	Left	&[Manager] &[Company]	Arial, Regular, 8
		Right	&[Date]	Arial, Regular, 8
	Legend	Legend on	select None	

7. Save your file