# Project
# Intro-Intermediate

## Best STL

- Courses never cancelled: guaranteed
- Last minute rescheduling
- 12 months access to Microsoft trainers
- 12+ months schedule
- UK wide delivery

## www.microsofttraining.net

BEST STL

Microsoft® CERTIFIED Partner

Institute of IT Training
Accredited Training Provider

# Your Best STL Learning Tools

Welcome to your Best STL training course.

As part of your training, we provide you with the following tools and resources to support and enhance your learning experience.

Thank you for choosing Best STL.

## 1 In-course handbook

To guide you through your training while you are on the course.

Contains unit objectives, exercises and space to write notes.

## 2 Reference material
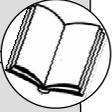
Available online through your delegate account.

Comprehensive reference material with 100+ pages, containing step-by-step instructions.

## 3 12 months access to Microsoft trainers
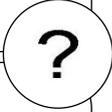
Available through online support forum.

Need help? Our team of Microsoft qualified trainers are on hand to offer advice and support.

## 4 Delegate account

Your delegate account gives you access to:

• Reference material
• Course exercise files
• Advice & support forum
• Rewards programme
• Promotions & Newsletters

## 5 Trainer hints and tips
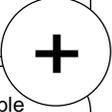
Hints and tips available online from our Microsoft qualified trainers for:

• All MS Office applications
• VBA
• MS Project
• MS Visio
  + more

## 6 Save with Promotions

Save on further training courses you book with Promotions.

• 30% off list price
  (time limited)
• £50 off list price
  (blue card discount)

# Contents

### What is Project Management?

**PMI:** The application of knowledge, skills, tools and techniques to a broad range of activities in order to meet the requirements of a particular project - see
http://www.pmi.org/WhoWeAre/Pages/About-PM.aspx

**PRINCE2** projects have the following characteristics – see
http://www.ogc.gov.uk/guidance_managing_successful_projects.asp:
A finite and defined life cycle
Defined and measurable business products
A corresponding set of activities to achieve the business products
A defined amount of resources
An organisation structure, with defined responsibilities, to manage the project

### The Microsoft Project Map

The Microsoft Project Map outlines the three phases of the project life cycle:

Build a plan
Track and manage a project
Close a project

More details online:

Project 2000/2002/2003 - http://office.microsoft.com/en-gb/project/HA010745311033.aspx?pid=CH011745691033

Project 2007 - http://office.microsoft.com/en-gb/project/HA102143771033.aspx

Project 2010 – quick reference guide

http://office.microsoft.com/en-us/templates/results.aspx?qu=project+2010#ai:TC101731504|

### Project Triangle

All projects involve time, money, and scope. Change one and the others are impacted. At the centre of the triangle is Quality - affected by any change in the other three.
See article by Microsoft - http://office.microsoft.com/en-us/project/HA010211801033.aspx

### PRINCE2

**PRINCE2** stand for (**PR**ojects **IN C**ontrolled **E**nvironments) and is a process-based method for effective project management.

PRINCE2 offers best practice guidance on project management and has the following features:

Its focus on business justification
A defined organisation structure for the project management team
Its product-based planning approach
Its emphasis on dividing the project into manageable and controllable stages
Its flexibility to be applied at a level appropriate to the project.
http://www.microsofttraining.net/prince2-foundation-course-london.php

# Introducing MS Project

First released as Microsoft Project V1 in early 1990 the software has grown into a rich application designed to help Project Managers:

### Organise

- List and group the tasks that together will lead to the desired Project outcome
- Identify and assign the resources required to their respective tasks

### Schedule

- Use dependencies between tasks plus constraints to position tasks on the Gantt chart

### Manage

- Forecast costs and spending (Cashflow)
- Allow the plan to be modified to account for actual progress
- Monitor and report on progress including spend and workload

### Tour of MS Project

- Templates
    - 2003 - 2007 File > New > New from templates (general or on my computer)
    - 2010 File > New then choose office.com templates (requires internet connection)
- Screen layout
    - 2003 - 2007 Use two toolbars:  Go to View > Toolbars > Customize > Options > Show standard and formatting toolbars as two rows
    - 2010 – see section on Ribbon and Quick Access Toolbar on page 25
    - All versions
        - Click and drag the vertical separator to reveal more columns
        - Double the click vertical separator to snap to the nearest column
- Zoom out / Zoom in
    - 2003 - 2007  using icons on toolbar
    - 2010 using the icons on the status bar
- Go to a particular bar on the chart:
    - All versions Ctrl + Shift + F5
    - 2003 - 2007 go to/scroll to selected task icon
    - 2010 Task Ribbon >Editing group, click on Scroll to task
- Undo
    - All versions Ctrl+Z
    - 2003 - 2007 Edit > Undo (multiple undo available from Project 2007)
    - 2010 Click the undo button on Quick Access Toolbar
- Create new blank project
    - All versions Ctrl + N or File > New and choose Blank Project
    - 2003 - 2007 use the sheet icon
- Use Window menu to switch between open projects
    - 2003 - 2007 Window menu
    - 2010 View Ribbon > Window group click Switch Windows
- Use Help for searching for topics
    - 2003 - 2007 type directly into help input box on toolbar
    - 2010 click help (?) icon on right side of ribbon
- Switch views from the View menu or by turning on the View bar
    - 2003 - 2007 View > Menu bar
    - 2010 right click vertical grey bar in Gantt view and choose View Bar
- Split the screen
    - 2003 - 2007 Window > Split (or Remove split)
    - 2010 View Ribbon > Split view, click the details checkbox

**Basics of the MS Project Environment**

Follow a checklist when setting up new projects. Your checklist will evolve to match the requirements of your organisation:

## Simple check-list

2003 - 2007

1.  File > Properties > Summary - enter the Project Title (can re-use this later in reports).
2.  Project > Project Information > Start Date - the estimated start date of your Project.
3.  Tools > Change working time - mark off non-standard working and non-working days.
4.  Format > working time > non working time > draw non-working time in front of bars to make the Gantt Chart easier to read

2010

1.  File > Info> Project Information > Advanced Properties - enter the Project Title (will be re-used later in reports).
2.  Project > Properties group > Project Information > Start Date - the estimated start date of your Project.
3.  Project  > Properties group >Change working time - mark off non-standard working and non-working days.
4.  View Ribbon > Zoom group, click dropdown showing current units and choose Timescale…> non working time > draw non-working time in front of bars to make the Gantt Chart easier to read

## Entering basic tasks and simple editing

Type the name of the activity into Task Name column

Task names can be edited by: over-typing or clicking in the entry bar and editing

Use drag and drop rather than cut and paste to change the order of activities

(Copy and paste IS OK to repeat processes)

Create a **new task** (inserted rows appear above the current task)
     2003 / 2007 Insert menu choose "New task"
     2010 Task ribbon > Insert group > click the Task button
All versions

*   right clicking on the row number and choosing New task
*   by pressing the Insert Key
*   clicking in chart area and dragging to draw bar

To **delete a task** click on its row number to highlight the row and press the delete key or right click on row number and choose delete from the menu

Add Notes to tasks to provide details - double click the task name and go to Notes tab

**Duration units** m=minutes, d=days, h=hours, w=weeks, mon=month (by default weeks are made up of 5 working days and months are 20 working days in duration)

**Estimated duration** - put a **?** between duration and units e.g. type in 5?d to give 5d?

**Elapsed time** ignores non-working time - use letter **e** between duration and units e.g. type in 5ed to force elapsed time (great to model time for paint drying)

### Work Breakdown Structure

- An indented hierarchy in the Project.
- Created by indenting task(s) which then make the row above into a summary task (bold)
- Project summary task, which summarises the whole project
  - 2003 - 2007 click on Tools > Options > View > Project Summary task
  - 2010 on the Format Ribbon, in the Show/Hide group select the Project Summary Task check box

### Tips for naming tasks and setting level of detail

**Summary tasks:** use a broad description ("selection phase", "User testing")
**Tasks:** verb + noun are often enough ("Brief consultant", "Install transformer", ")
**Milestones:** describe a point in time, a start/end  ("start of review", "testing completed")

To find the right level of detail for your tasks aim for tasks that:
- have durations can be reasonably estimated
- are hard to divide into smaller tasks
- will be easy to measure progress / completion
- are self-contained
- are likely to be carried out parties outside your project

If you still need to add further detail you can avoid having to create more tasks by adding the additional information into the task notes tab (double click on the task name)

## Automatic Scheduling, Task dependencies (Type, Lag/Lead – including percentages)

### Automatic Scheduling is the default mode for MS Project up to and including version 2007. From version 2010 Automatic scheduling must be selected by:

- To change the settings only for selected tasks first highlight the task / tasks then on the Tasks Ribbon in the Tasks group click Auto Schedule.
- Applying the setting from this point forwards by going to the status bar and clicking New Tasks the select Auto Scheduled.
- Changing the setting for future projects by going to File > Options > Schedule. In the Scheduling options for this project change the drop down to show All New Projects. Set the option for New Tasks Created to Auto Scheduled

### Linking tasks

Each task has a Start and a Finish. These can be used to connect one task to another using a dependency or link. Linking your tasks lets Project adjust the schedule as tasks change.

**Predecessors and successors**

When tasks are connected they take on the following roles:

**Predecessor** is the task whose start or finish drives the start or finish of the successor

**Successor** is the task whose start or finish is driven by the predecessor task

There are four types of dependency that can link Predecessors and Successors. You choose the type that best describes the relationship between them:

Finish to Start (FS) - **F**inish of Predecessor drives **S**tart of Successor
Start to Start (SS) - **S**tart of Predecessor drives **S**tart of Successor
Finish to Finish (FF) - **F**inish of Predecessor drives **F**inish of Successor
Start to Finish (SF) - **S**tart of Predecessor drives **F**inish of Successor

**Five ways to create task links**

- Hover the mouse over the middle of the predecessor bar on the Gantt Chart, left click and drag a link up/down to its successor
- Block select the tasks to be linked (use Click with the Ctrl key held down to select tasks that are not adjacent) and click the link button [2003 – 2010 on the standard toolbar, 2010 on the Tasks ribbon in the Schedule group]
- Double click on the name of a task, on the predecessors tab choose the name of the predecessor(s) and set the link type
- On the successor task row, in the predecessor column enter the row number of the predecessor followed by the initials of the relationship (e.g. 11FS)
- Split the screen and in the top half of the screen select a task that will be the successor and in the lower right half of the screen click below task name to choose the predecessor and type of link. Click OK to commit the change.

**Breaking links**

- Double click on dependency line between the tasks, from the dependency dialog box that appears click delete
- Highlight or Ctrl click the tasks to be disconnected and click the unlink tasks button [2003 – 2010 on the standard toolbar, 2010 on the Tasks ribbon in the Schedule group]
- Double click on the task name. On the predecessors tab click on the predecessor to remove and press the delete key
- On the successor task row, in the predecessor column delete the values in the cell
- With a split screen in the lower right half of the screen select the predecessor to remove and press delete

## Lag (delay) & Lead time

To model delay between tasks you can either:

- Double click on the arrow linking the tasks or
- Double click on the name of the successor and choose the predecessor tab then
- In the lag field add the number of days, estimated days or % delay

A negative value produces "lead" rather than lag and brings the successor earlier in the plan as opposed to delaying it.

## Constraints

Use constraints to model dates that affect the start or finish of your tasks. In addition to the constraint and date you set, Project will also take into account other factors such as calendars, resource availability and dependencies when calculating where to place the task on the chart.

All automatically scheduled tasks have a constraint. By default this is set to As Soon As Possible (ASAP). This means that unless another task or link gets in the way Project will position the task as early in the plan as it can.

**Constraints can be modified by:**

Double clicking on the name of the task to be constrained then from the advanced tab choose the constraint type and if appropriate add a date:

| | |
|---|---|
| **As Late As Possible** (ALAP) | the task will take place as late it can |
| **Finish No Earlier Than** (FNET) | models a task that are not able to finish before a certain date, but could be delayed beyond it |
| **Finish No Later Than** (FNLT) | is used to describe tasks that are not able to finish beyond a date, but are able to finish earlier |
| **Must Finish On** (MFO) | positions the task's finish on the specified date |
| **Must Start On** (MSO) | as MFO but positions the task's start on the specified date. |
| **Start No Earlier Than** (SNET) | the task starts on or after the specified date but no earlier |
| **Start No Later Than** (SNLT) | for activities that must start on or before a specified date. |

### Deadlines

Deadlines added to a task show the date when it should finish but won't prevent the task being delayed beyond that date. Instead an alert icon appears in the indicators column if the task finishes later than its deadline. To add a deadline to a task:

- Double click the task
- On the advanced tab enter a date in the Deadline box and click OK. On the Gantt Chart a green arrow indicates the deadline for the task.
- To remove a deadline double click the task and delete the date from the deadline field then click OK

## Enhancing the Project Environment

### Changing the hours of the Standard Calendar

By default Project assumes that there are 5 working days per week and that each day is made up of 8 working hours. If you estimate your durations in hours you may need to realign these hours to match those worked on your project. To do this:

**For Project versions up to Project 2003:**
To modify the hours available for work in the calendar (e.g. change from 8 hours per day, 40 hours per week to 7.5 hours per day and 37.5 hours per week):

Go to Tools > Change working time:

Select M to F column headers (selecting the header selects all occurrences in the calendar

Using the form on the right of the dialog box enter the pattern work will follow on those days(e.g. 9:00 to 12:00 and 13:00 to 17:30)

Click on the options button and a new dialog box appears

Set the default start and end times to 9:00 and 17:30 respectively

Set the Hours per day to 7.5 and Hours per week to 37.5

If your revised hours apply only to this project click OK, alternatively if all your projects will follow these new hours click set as default

Finally confirm your project start time is correct. To help you do this set Project to show task times as well as hours. From the Tools menu choose options then click the View tab. Choose a date format that also includes time and click OK

From the Project menu choose Project Information. Check the start date and time of your project and if necessary bring it into line with the new start time for your tasks. Click OK. Go back to tools > options > view and set the date format back to date only.

If your project already contains tasks you will need to correct their durations.

New tasks will align with the new hours you have applied.

**For Project 2007/2010:**

To modify the hours available for work in the calendar (e.g. change from 8 hours per day, 40 hours per week to 7.5 hours per day and 37.5 hours per week):

2003 – 2007 go to Tools > Change working time
2010 - Go to the Project ribbon, in the Properties group and click Change Working Time.

In both versions below the calendar choose the Work Weeks tab. Make sure Default is highlighted then click on Details

Select Monday to Friday from the Select Day(s) list

Using the form on the right of the dialog box enter the pattern work will follow on those days(e.g. 9:00 to 12:00 and 13:00 to 17:30) then click OK

Click on the options button and a new dialog box appears

Set the default start and end times to 9:00 and 17:30 respectively

Set the Hours per day to 7.5 and Hours per week to 37.5

If your revised hours apply only to this project click OK, alternatively if all your projects will follow these new hours click set as default. Click OK once more to return to the Chart

Finally confirm your project start time is correct. To help you do this set Project to show task times as well as hours.

2003 – 2007 from the Tools menu choose options then click the View tab. Choose a date format that also includes time and click OK then from the Project menu choose Project Information.

2010 from File > Options > General set the date format that includes time and click OK. Then from the Project ribbon, in the Properties group click Project Information

Check the start date and time of your project and if necessary bring it into line with the new start time for your tasks. Once complete set the date format back to date only. If your project already contains tasks you will need to correct their durations.

New tasks will align with the new hours you have applied.

### Critical Path and Float/Slack

Project will identify the Critical Path for your plan so that you can easily see which tasks are driving your Project end date. This makes it easy to focus on these influential tasks and ensure they are correctly estimated, appropriately linked and adequately resourced.

#### Critical Path

The Critical Path is made up of those tasks that determine the end date of your project. In other words if a task on the critical path moves, the finish of the project will move as well (positively or negatively)

A quick way to see the critical path is to switch to the Tracking Gantt view. Critical tasks are coloured red.

> 2003 – 2007 from the View menu choose Tracking Gantt.

> 2010 from the View ribbon, in the Task Views group click the bottom half of the Gantt Chart button and select Tracking Gantt.

#### Slack (Float)

Slack (also referred to as Float) refers to the time that a task can move before it impacts another task or moves the project's end date. Slack interrupts the critical path and can be created when constraints are applied to tasks.

### Formatting the Gantt Chart

**Bars and Bar text** – For one-off formats double click individual bars and choose their respective colour, shape and position of text around the bar (using the text tab). To work with more than one bar select the relevant tasks names (either click and drag on the row numbers or control+click for tasks not adjacent to each other) and

> 2003 - 2007 choose Format > Bar

> 2010 click the Format ribbon, in the Bar Styles group click Format > Format Bar

**Bar styles / Text styles** – To create formatting rules that apply to current and future tasks

> 2003 - 2007 choose Format > Bar styles (or Text Styles on the same menu)

> 2010 the Format ribbon, in the Bar Styles group click Format > Format Bar styles. On the same ribbon in the Format group choose Text Styles

Choose the appropriate bar or text type and apply your formatting. If some shapes on the Gantt chart don't pick up the new formatting settings double click them and choose Reset (next to OK)

**Reset formatting** – To reset the colours and layout of text around bars back to standard formatting go to

> 2003 – 2007 Format > Gantt chart Wizard.

> Click Next then choose Standard. Using this wizard Project can also format then Gantt chart to display Critical Path or Baseline information.

> 2010 click the Task ribbon, in the view group click the arrow below the current view icon and choose Reset to Default

**Other formats** - To add other formatting lines:

> 2003 – 2007 Format > Gridlines > Task rows and choose a line type. Project Start, Project Finish and Current date lines can also be set in Format > Gridlines

> 2010 Click on the Format ribbon, in the Format group click Gridlines and choose the Gridlines entry.

## Filters and Sorting

The Project menu provides access to tools that help Project Managers focus in on key tasks by applying filters and sorting of tasks and resources.

> 2003 – 2007 From Project > Filtered For choose Autofilter. The same menu gives access to sorting.

> 2010 – This feature is switched on by default. The drop down triangles also give access to sorting.

The triangular buttons at the top of each column in the sheet can now be used to apply filters by column.

## Print Screen, Excel Copy/Paste

To quickly get the plan into a format that can be easily shared:

- Take a snapshot of your current plan into the clipboard. This can be pasted straight into a document in Word or PowerPoint
  > 2003 – 2007 Go to Edit > Copy Picture and click OK
  > 2010 on the Task Ribbon, in the Clipboard group, click the drop down arrow beside copy and choose Copy Picture
- Select all tasks by clicking in the square above row 1 and to the left of the first column. Use the keyboard shortcut CTRL + C to copy the rows then switch into another application such as Excel (in 2010 the column titles are included in the paste along with the tasks).
- Choosing Paste Special in the destination application allows you to insert a Project Object which appears to be a picture of the Gantt Chart but when double clicked will open the Project in MS Project (if installed).

## Printing

To print a view; go to File-Print, select the relevant settings and click OK.

> Select relevant printer

> Specify which pages to print

> Specify the period of time to be covered by the print

> How many copies are to be printed

**Page Setup**

To set up the page for printing

2003 – 2007 Click on File-Page

2010 click on File > Print then click the page setup link

Setup and select the relevant options

| | |
|---|---|
| **Page Tab** | Orientation |
| | Scaling |
| | Paper size |
| **Margins** | Specify margins and page borders |
| **Header / Footer** | Specify data to go into the header and footer of each page |
| **Legend** | Modify the content and appearance of the legend |
| **View** | Choose to print the following |
| | All Columns |
| | First X columns |
| | Notes associated with tasks |
| | Blank Pages |
| | And also select here if the timescale is to run to the end of the page |

# Resources

Resources are best defined using the Resource Sheet, which can be accessed via the View menu or the View bar.

## Creating resources

Each resource is entered on its own line as follows:

## Basic resource properties

| | |
|---|---|
| **Name** | Enter an appropriate name for the resource. This can either be the name of an individual, a job role or a team name for generic resources. |
| **Type** | Up to Project 2003 resources can be either **work** or **material**. Use the Work resource type for people and equipment whose availability is capped (Max Units) so you can see if they become over-allocated. Use the material resource type if the resource is a consumable. |
| | Project 2007 and 2010 support **cost** resources. Use the cost resource type to track variable items such as expenses. The rate for the resource is not stored in the resource sheet. Each time cost is assigned to a task you can enter the cost that applies just to that task. |
| **Material Label** | Only applicable for material resources. This is the quantity that the resource is purchased in. For example paint might be purchased in litres. |
| **Initials** | An alternative to having the full name beside bars on the GANTT chart |
| **Group** | Can be used to categorise resources appropriately for reports, filters and grouping. Typical uses are team names, departments, subcontractors etc. |
| **Max Units** | The maximum number of units of the resource. 100% generally means one individual; 300% 3 individuals. (Work type only) |
| **Standard Rate** | Cost of standard work, can be recorded as Hourly/Daily/Weekly/Monthly e.g. £200/d for a daily rate |
| **Overtime Rate** | Cost of resource when work is specified as overtime. (work type only) |
| **Using Cost/Use** | A one off cost associated with the resource. Is charged every time resource is allocated to a task |
| **Accrue At** | Determines if the resource costs are charged at the start of the task; throughout the task, or at its end. |
| **Base Calendar** | The base calendar which determines the resource's working time. (Work Type only) |
| **Code** | A general code that can be used to identify the resource or resource group. A typical example would be a cost centre code. |

## Further resource properties

To access the additional resource properties, double click on the resource in the resource sheet and then modify the properties in the Resource Properties Dialog.

**General (Availability)**  Allows user to specify different availability levels for different time periods. For example a resource might only be available for 50% of its time for the month of March. This can be modelled by selecting the start and end date, together with the level of availability during this period. From Project 2007 this also includes the Change working time button.

**Calendar**  Use this to identify holidays and other non working days for the resource. Simply select the non-working day on the calendar and click on the "Non Working Time" option button. From 2007 this has been included on the general tab under the Change working time button.

**Costs**  Use this to:

1. Model inflation. If the resource's costs are likely to change during the course of the project, simply select the date of the change in a new row on the cost sheet, and then enter the new costs. The new costs can be entered directly, or as an increase on the previous figure. E.g. +10% would increase the cost by 10%.

2. Add additional costs rates. A typical use would be for a resource that is paid different results for different tasks. For example a resource might be paid one rate for training and another for consulting. To add the rate simply select one of the additional tabs (B-E) on the cost sheet and enter the rates as appropriate.

**Notes**  Used to add freeform notes or attach documents relating to the resource.

## Assigning Work Type Resources to Tasks

There are two stages of resource allocation. The Initial allocation, were resources are first allocated to a task; and then any changes made to that allocation, for example adding extra resources, or removing resources.

### Initial allocation

The initial allocation of resources involves specifying the resources necessary to complete each task in the duration specified.

### Procedure

1. In the Gantt chart view
2. Split the window to show the details pane
3. Select the task which is to be resourced

Then in the lower pane, under resources:

4. Select each resource required for the task
5. Then Click OK (Note all required resources must be selected before OK is clicked)

### Allocating multiple resources

When multiple resources are allocated to a task Project will assume that each resource must work on the task for the specified duration. So if two resources are to work on a 2 day task, then each resource must work on it for 2 days. If both resources can work at the same time, then the total duration of the task will remain unchanged. If however, they are working at different times then the duration of the task will likely change.

### Example

A two day task starts on Monday and finishes on Tuesday. Two resources are then allocated to it.

Resource 1, works both Monday and Tuesday, thus finishing its contribution within the 2 day duration. Resource 2 however is on holiday on Monday, and therefore starts its 2 day contribution on Tuesday, finishing Wednesday.

Therefore the task starts on Monday with resource 1 and finishes on Wednesday with resource 2; thus having a new duration of 3 days.

**Modifying allocations**

When modifying a resource allocation, it is necessary to understand that you are changing one of three variables, *units of resource*, the other two being *task duration* and *work*.

When you change the units of resource, either the duration of the task will change, or the amount of work will change, as the three variables can the represented in the formula

*Duration x Units of Resource = Work*

So, increasing the units of resource would require either the duration to decrease and work to remain fixed; or for Work to increase and duration to remain fixed.

The key is to be able to specify which option applies.

**Procedure**

1. Open the Gantt chart
2. Split the screen to show the details pane
3. Select the task to be modified.
4. In the lower pane ensure the "Effort Driven" tick box is empty. If there is a tick in the box remove it then click OK before proceeding (see below)
5. If you want the duration to alter change the task type to "fixed work"
6. If you want work to alter change the task type to "fixed duration"
7. Add or remove resources as required
8. Click OK

**A Word about Effort Driven Scheduling**

This is switched on by default in versions up to MS Project 2007.

If a task has the effort driven property selected, project will assume that any increase in the initial resource allocation will cause a proportionate decrease in the duration of the task.

For example, if painting the walls of a room takes 1 day with one person, adding an initial resource will reduce that time to half a day.

There are two issues here:

1. Some task durations do not respond to extra resources. It is unlikely that a meeting will go more quickly if more people get involved!

2. Even if a task's duration does respond to extra resources, it is unlikely to be a simple linear relationship. To take an extreme example, if it takes 1 person 1 day to paint a room, then according to effort driven scheduling, 100 people could do it in 38 minutes. This is clearly unrealistic as 100 people would be unable to fit into a room of that size!

In versions 2003 - 2007 it is often easier to disable effort driven scheduling, and control the process for yourself using the above method. In MS Project 2010 this has already been switched off by default.

To switch effort driven scheduling off for new tasks in MS Project 2003 - 2007:

1. Click on tools-options and select the scheduling tab
2. Remove the tick in "new tasks are effort
3. Click "Set as default"

## Resource Leveling

Resource leveling is the process that ensures resource demand does not exceed resource availability.

There are two stages to this process; first identify specific over allocations, and then fix them.

### Identifying over allocations

2003 – 2007

1. Go to the Gantt chart
2. Turn on the Resource Management toolbar: View > Toolbars > Resource Management
3. Click the Resource allocation icon (first icon from the left) on the Resource Management bar
4. Any resources which are over allocated will appear in red in the top half of the split view
5. To identify over allocations click on the "Go to next over allocation" button (third icon on the bar)

2010

1. In the Gantt chart Tasks with overallocated resources will now have a red indicator in the indicator column
2. In Resource views the name of the resource will be highlighted in red
3. The Resource ribbon includes a Next overallocation button to advance through the overallocated tasks in the project

### Fixing over allocations

There are 6 general approaches to solving over allocations
1. Increase the resource's working time for the period in question
2. Swop the resource for another resource
3. Delay the task until the resource has availability
4. Temporarily suspend work on a task (splitting)
5. Contouring resource allocation
6. Changing the logic of the program

### Increasing the working time

1. Go to the Resource sheet
2. Double click on the resource
3. On the general tab alter the resource's availability by:
4. First, specify a start and end date and then,
5. Change the percentage availability to a point where they can cover all the available work.

For example, if a resource normally works 8 hours in a day, increasing their availability to 150% would mean that on the days specified they are available for 12 hours.

### Swopping the resource

Select the relevant task in the Gantt chart

2003 – 2007 Click on the "Allocate Resources" button on the toolbar

2010 on the Resources ribbon, in the Assignments group click Assign resources

1. Select the resource to be replaced
2. Click replace
3. Select the new resource
4. Click OK

### Delaying the task

This involves using the levelling delay field. A levelling delay is a delay specifically associated with resourcing issues. We are saying that while the task can physically start at time X, we are delaying it to time Y as only then do we have the necessary resources available. The key point is it is easily identified and, in the event more resources become available, removed.

1. Go to the Gantt chart view
2. Add in the "Levelling Delay" column
3. Select the task to be delayed
4. Specify the duration of the delay in the levelling delay field

### Splitting tasks

This allows you to start work on a task, and then suspend work for a period of time while the resource works on another task. To split a task:

Click on the split task button

2003 – 2007 it is found on the main tool bar

2010 click the Task ribbon, it is located in the Schedule group

Then for all versions position the mouse pointer on the task where the split should start

Click and drag to the right, along to the point where the split is to finish

### Resource contouring

It is possible to specify the number of hours per day that a resource works on a task.

For example; a resource works an 8 hour day. It is allocated to two concurrent tasks and will initially be set to work 8 hours on the first task, and 8 hours on the second; thus working 16 hours in an 8 hour day. It may be however that the resource need only work 4 hours per day on task 1 and 4 hours per day on task 2, thus resolving the over-allocation. This is known as resource contouring.

To contour a resource allocation switch to the Resource Usage view by choosing it from the View Bar or

2003 – 2007 From the view menu choose Resource Usage

2010 Click the View Ribbon, in the Resource Views group choose Resource Usage

Then manually enter the daily hours worked alongside each resources assignment.

## Changing Project logic

Sometimes it is not possible to resolve over-allocation using the above methods. Under these circumstances it may be necessary to re-examine;

> Task Dependencies
>
> Task Constraints

In addition, if the project is to be completed on schedule, the only solution may be to bring in additional resources

## Resourcing multiple projects

It is very often the case that an organisation will be running multiple projects simultaneously and that as a consequence resources will be shared across those projects. It is therefore necessary to be able to allocate resources across different projects and to resolve resourcing issues as they arise.

To do this it is necessary to create a shared resource pool and then set each project to get its resources from the shared pool.

### Creating a resource pool

Create a new blank project and list all the organisation's resources in the resource sheet. As this will be the resource pool for all the organisation's future projects it is worth being thorough and including as much detail as possible. Then save the file in an easily accessible location with a suitable name, e.g. "Resource Pool". Existing resources can be copied from existing projects.

### Linking projects to the resource pool

> Open the resource pool plan
>
> Open the project that you wish to link to the resource pool
>
> 2003 – 2007 Click on Tools > Resource Sharing > Share Resources
>
> 2010 click the Resource ribbon, in the Assignments group click Resource Pool then choose Share Resources
>
> From the dialog box that opens select "Use Resources" and choose the resource pool file in the "From" combo, then click OK
>
> Save both files

Repeat this for each project file that will be connected to the resource pool.

### Working with the master project

> Open the resource pool
>
> In the dialog box select the third option which prompts you to create a master file.

Project will then create a master file, which shows all the projects in one Gantt chart. You can then allocate and level resources in the normal way, across individual projects.

# Tracking progress

Project tracking involves measuring actual progress and performance and comparing that with the planned schedule

## Setting the baseline

Once a project plan has been completed and its resources assigned, it is necessary to save a baseline. A Baseline is a snapshot of the project, and is used to compare what is planned to happen with what actually does happen. The baseline is very important, in that it is fundamental to analysing cost and schedule variances. If you are connecting several plans to a resource pool save the baseline on each individual plan. You will be able to see the combined baselines in the master project.

### To set the baseline:

2003 – 2007 click on Tools > Tracking > Set Baseline

2010 choose the Project ribbon, in the Schedule group click Set Baseline and choose Set Baseline from the menu

In both versions then:

Select "Save Baseline" and "Entire Project" option buttons

Click OK

Note that on the Tracking Gantt view, each task bar is split horizontally in two. The lower gray part represents the baseline, whilst the upper coloured bar represents actual progress.

## Progress - Duration

Tracking actual durations involves marking off tasks to indicate how much of the scheduled task has been completed.

One method is to use the pre-set progress buttons.

2003 – 2007 activate the tracking toolbar by clicking on View-Toolbars-Tracking

2010 switch to the Task ribbon

Elementary progress can be marked off using the 25%, 50%, 75% and 100% buttons.

More detail can be accessed by clicking on the update tasks button, which activates the dialog box of the same name.

2003 – 2007 Update tasks is found after the 100% progress button on the tracking toolbar

2010 On the Task ribbon, in the Schedule group click the drop down button beside Mark on Track and choose Update Tasks

Progress can be marked off in the following ways:

## Progress - Duration

**Percentage Complete**    Use this to mark off how much of the task's total duration has been completed.

**Actual Duration**    This can be used to mark off how long a task actually took to complete

**Actual Start**    When a task actually started

**Actual Finish**    When a task actually finished

**Remaining Duration**    How much time is actually required to complete a task

## Progress - Work

It is also possible to track the amount of work carried out on a task. To do this:

Go to the Resource Usage view
Double click on a task assigned the resource whose progress you want to record
From the dialog box that appears choose Tracking
Enter the Actual Work completed (in hours) and remaining work still to be done

## Reporting

When a project is in progress it is usually necessary to produce reports on how the project is performing in terms of schedule and cost.

To access built in reports

> 2003 click on View then choose Reports

> 2007 click on Reports then choose Reports

> 2010 Click the Project ribbon, in the Reports group click Reports

then select the category and report required.

Reports available include:

| Category | Report |
|---|---|
| **Overview** | Project Summary |
| | Top Level Tasks |
| | Critical Tasks |
| | Milestones |
| | |
| **Task Overview/ Current activities** | Unstarted Tasks |
| | |
| | Tasks Starting soon |
| | Tasks In Progress |
| | Completed Tasks |
| | Should Have Started Tasks |
| | Slipping tasks |
| | |
| **Costs** | Cashflow |
| | Budget |
| | Overbudget |
| | Overbudget Resources |
| | |
| **Assignments** | Who does what |
| | Who does what when |
| | To Do List |
| | Overallocated Resources |
| | |
| **Workload** | Task Usage |
| | Resource Usage |

In addition to updating the controls for Calendars the 2007 version of Project includes some additional features which you may find useful:

| Feature | Description |
|---|---|
| **Multiple undo** | Makes "what if" testing of the plan much easier. Can be adjusted by going to Tools > Options > General and changing Undo Levels. If you find Project runs slowly reducing the number of steps you can undo may improve performance |
| **Tasks drivers** | Click the task drivers icon then select a task. The pane to the left of the task list displays the elements in the plan affecting the selected tasks |
| **Change highlighting** | Project highlights cells that change as a result of the most recent edit you make to the plan |
| **Cell shading** | Cells in the table can now have background colours. Go to Format > Font or Format > Text Styles to apply |
| **Enhanced Views** | Bars now have 3D shading (Tools > Options > View tab) |
| | Calendar view can now display in week intervals as well as by month |

## Ribbon and Quick Access Toolbar

MS Project 2010 now has a simplified ribbon rather than the toolbars used by previous versions. It is made up of 5 sections: Task, Resource, Project, View, Format.
The Ribbon can be miminsed by Right clicking it and choosing Minimise the Ribbon. When minimised the Ribbon is still accessible by clicking any of the Ribbon headings. The Ribbon will temporarily appear allowing the user to make a selection. The Ribbon can be permanently returned to full height by right clicking it and deselecting Minimize the Ribbon.

Project has also acquired a Quick Access Toolbar for commonly used buttons. By default this is located in the upper left corner, above the ribbon.

Items on the QAT can be added by either clicking on the dropdown arrow at the end of the bar and choosing one of the commonly selected items or by right clicking on a button on the ribbon (or an item in the File menu) and choosing Add to Quick Access Toolbar. Buttons can be removed from the QAT by right clicking them and choosing the remove option.

## Manual Scheduling

MS Project 2010 introduces a new mode of scheduling called Manual. In fact this is the mode that is active when a plan is first created. Previous versions of MS Project have operated in what is now referred to as Auto mode. Project 2010 allows you to switch between both modes. The setting applies at task level so a plan could contain a mixture of manually scheduled tasks and auto scheduled tasks.

Tasks created in Manual mode behave differently to those set to Auto schedule. They are also drawn differently on the chart (they have square brackets around the bar **[ ]**) and a pushpin icon in the indicators column. The following table describes the main differences:

| Item | Manually scheduled | Auto scheduled |
| --- | --- | --- |
| **Duration** | Can be any number, date or text e.g. **4d** or **first week** | Must be a number plus unit such as **4d** |
| **Work** | Only numbers, representing time length, and a unit e.g. **3h** or **8d** | Only numbers, representing time length, and a unit e.g. **3h** or **8d** |
| **Resources** | OK to assign resources. Resources do not influence scheduling of manual tasks | OK to assign resources - resource availability influences scheduling |
| **Start date** | Can be any number, date or text e.g. **First week in Jan** or **April 7** | Only date values acceptable - calculated automatically or can be set with a constraint |
| **Finish date** | Can be any number, date or text e.g. **Last week in Jan** or **March 9** | Only date values acceptable - calculated automatically or can be set with a constraint |
| **Constraints** | Ignored | Available and influence scheduling when set |
| **Dependencies** | Links can be created but won't influence scheduling of the task | Dependencies influence scheduling |
| **Calendars** | Both project and resource calendars are ignored | Calendars influence scheduling |

In some ways working in Manual mode is like drawing a plan on paper, or building a chart in Excel. It's great for roughing out a simple project, for identifying major milestones and phases that can't move or for modelling a top down plan.

Auto scheduling uses the project scheduling engine so that logic dictates the flow of the project. For complex plans, sequences that depend on other parts of the plan or for modelling "what if" changes Auto scheduled tasks will adapt to edits made and progress recorded.

When switching a task from Manual to Auto scheduled be aware that text notes in date and duration fields will be replaced with default values such as 1d? and the earliest calculated start and finish dates.

## Team Planner (Project Professional)

This Resource view offers a new way for Project and Resourcing Managers to balance the load of work in their plans.

The view displays Resources and their tasks. It is a little like the Resource Usage view however instead of time phased data the view shows task bars grouped by resource. Over allocation is highlighted in red.

The lower half of the screen shows unassigned tasks.

Over allocated work can be dragged to the bottom half of the screen – so no-one is allocated, dragged to another resource (up or down) who may have spare capacity or dragged later/earlier (left/right) in the schedule to a time when over allocation will not be created.

If the task is Auto scheduled then any constraints and dependencies and resource non-working time will also have an effect. These changes are shown in the Team Planner. The Gantt chart is also updated.

## Timeline

The Timeline is a new way of presenting a high level view of a project plan.
To enable the Timeline go to the View ribbon, in the Split View group ensure there is a tick in the timeline box. Then in Gantt chart view right click the task or summary task you would like to appear in the Timeline. From the context menu choose Add to Timeline.

Adding too much detail to the Timeline can make it look cluttered. Right click a Timeline element and choose Remove from Timeline (or press delete) to tidy it up.

Clicking onto the timeline activates the Timeline Tools Ribbon with additional formatting features.

Click on a Timeline entry, then go to the Timeline Tools ribbon. In the Current Selection group entries can be formatted as bars (in a sequence) or as callouts (text labels above the timeline). The callout format is a very practical way of displaying summary tasks whilst still being able to show important subtasks on the Timeline.

## Activate / Inactivate (Project Professional)

Tasks can be temporarily "Inactivated" so they no longer influence the schedule yet still remain in the plan. Useful for "What If" analysis and also for keeping a history of tasks no longer required. To inactivate a task right click it and choose inactivate or after selecting it go to the Task ribbon and in the schedule group choose Inactivate.