Introduction

Manually devising schedules for a large project is laborious and complicated. However, use of project management software such as MS Project greatly simplifies the process. Assuming that your team has already listed major project tasks and sub-tasks, MS Project will facilitate working through the details of project planning and scheduling—helping you to structure the relationships between tasks; to break down work into smaller components; to plot schedules; to determine resource requirements; and to devise a budget for the project.

Opening Screen

The default opening screen for MS Project is a Gantt Chart. Other views include the PERT Chart, calendar, resource graph, etc.

On the opening screen, there are six toolbars:

1. Title bar.
2. Menu bar.
4. The Formatting toolbar.
5. Entry bar—where cell contents, e.g., task names, are written or edited.
6. View bar—the left-hand vertical bar, to change the view of the project, i.e., Calendar, Gantt Chart, PERT Chart, Task Usage Chart, Resource Graph, and others.

Wizards

MS Project uses ‘wizards’ (pre-formatted guides), to take you step by step through the necessary phases in devising a schedule. When you first open up MS Project, it is worth following through the initial guided tour and various wizards and help functions, in order to familiarise yourselves with the main aspects of the program.

Devising a Schedule

Open a new file. Save.

On the Gantt view, the main screen is split into two. On the left, is the Gantt Table, and on the right is the Gantt Chart view, plotted on a calendar scale.

Start by listing project tasks in cells ➔ Enter.

Note the number to the immediate left of the task name, which is the task unique ID number.

Once you have identified main phases and sub-tasks, can promote or demote listed tasks. Note the hierarchy of a Work Breakdown Structure, with indentions. Summary tasks are in bold, and show task duration as the sum of all their subtasks. Tasks can have successive hierarchical levels. Note that when a
summary task is deleted, so are all its subtasks. Note the minus and plus signs to the left of the summary task name—clicking the minus box will **collapse** the task, while clicking the plus box will **expand** the task.

Also can add (highlight row, insert), delete (highlight row, delete), and move one or more tasks (through selecting, dragging and releasing) from one part of the Gantt Table to another.

**Task duration**—is listed in the Gantt Table column after the task name, using the abbreviations:

- **m** = minutes
- **h** = hours
- **d** = days
- **w** = weeks
- **0** = milestones

While you are not likely yet to have finalised your task durations, see what the program can do by inserting various hypothetical time estimates into this column alongside your tasks, eg 3h, 2w.

Note what happens in the Gantt Chart on the right hand side as you plot time durations—bars proportionate to length of time taken.

**Saving**—Planning Wizard asks whether you wish to save a **baseline** for your project (ie so you can subsequently compare the actual progress of various tasks with the originally intended dates and milestones).

**Milestones**—A milestone marks the beginning or the completion of a significant event/series of events in a project. Milestones are places to stop and to assess progress. They are indicated with a 0 (zero) time duration. On the chart they are shown with a shaded diamond, and the date.

**Linking tasks**—The default is **finish-to-start** link relationships, ie that one task cannot begin until the previous task is completed. You can link and unlink tasks, and change the nature of the linking relationship.

**Task relationships**—Some tasks must begin or end by certain dates (eg key personnel or equipment only available between designated times). Tasks have concurrent and/or predecessor task relationships.

In the **Gantt Table**, after the duration column, the next two columns list start and finish dates, and the third column indicates predecessor tasks (in the form of task numbers). [To make these columns visible, need to drag to the right the line separating the Gantt Table and the Gantt Chart].

**Concurrent** tasks share the same predecessor task, ie both start at the same time. **Lag time** allows room for flexibility.

The four types of task relationship in **MS Project** are:

1. **FS (Finish-to-Start)**—the default setting. Task A must end before Task B begins.
2. **SS (Start-to-Start)**—Task B cannot proceed until Task A does.
3. **FF (Finish-to-Finish)**—Task B cannot finish before Task A does.
4. **SF (Start-to-Finish)**—Task B cannot finish until Task A starts (eg a temporary electrical generator cannot stop until turned to the permanent electrical system).

As well as basic timing, note the ability to be able to indicate priorities (**constraints**) affecting the timing of tasks. The type of constraint is indicated in the “I” task information box in the column between the task number and the task name.
There are eight kinds of constraints in MS Project:

1. **ASAP (As Soon As Possible)** – the default setting. No actual constraint date.
2. **ALAP (As Late As Possible)** – without impeding the start date of subsequent tasks. No actual constraint date.
3. **FNET (Finish No Earlier Than)** – the task must end no sooner than a designated constraint date.
4. **FNLT (Finish No Later Than)** – the task must finish no later than a designated constraint date.
5. **MFO (Must Finish On)** – the task must finish on this designated date, which is anchored in the schedule.
6. **MSO (Must Start On)** – the task must start on this designated date, which is anchored in the schedule.
7. **SNET (Start No Earlier Than)** – the task must start on or after the designated constraint date.
8. **SNLT (Start No Later Than)** – the task must start on or before the designated constraint date.

**Estimating Time Requirements and Resources**

**Tasks**

In MS Project, when entering task names, the default task duration that appears is ‘one day’.

*Task information*– can access the standard Task Form in two ways:

- Select/ highlight a task and click ‘Task Information’ bar on the standard toolbar.
- Using a combination view via ‘Window → Split’. This shows a portion of the Gantt Table, the Gantt Chart, and the Task form.

Can add eg lag time between dependent tasks, eg Lag column 3d → OK.

Others: eg to indicate predecessor tasks, to define kind of task relationship (FS, SS, FF, SF), eg two tasks which could begin together.

*Task Details Form*– via View → More views. This replaces the standard Task Form, when more detailed task information is needed, eg to enter details of task constraints, such as ‘No earlier than [date]’. Changes here cause a series of changes to task information in the Gantt Table and Chart.

**Resources**

In MS Project, resources must be linked to tasks. This process greatly facilitates costing; helps determine whether too many or too few resources have been allocated; helps track if a resource is scheduled to be in more than one place at the same time; helps ongoing reporting.

*Resource pool*– the sum of people, equipment etc available for the project. Some are unlimited; others available only at certain times; some available at no costs; others fixed cost, etc.

*Resource-driven tasks*– the default assumed in MS Project. ie assumes that if increase the resources will decrease the time commensurately, eg a task taking three people eight hours would take six people four hours. vs *Fixed-duration tasks*– that take the same amount of time regardless of the number of people involved, eg signing a mortgage. Designation for fixed duration is on the Task Form–this means that the duration will remain unchanged no matter what is done with the resources.
Assigning resources options:

- ‘Assign resources’ dialogue box on the standard toolbar. Two columns in the dialogue box: Name [of resource] and Units (quantity of resources dedicated to the task; default of one, ie 100% of time for person or equipment, etc.). For example, task duration may take a week, but 0.25 indicates only one quarter of one person’s time is devoted to the particular task. Resources shown in the “i” column in the Gantt Table; and unit allocation appears next to the resource name on the Gantt Chart. In the Assign resources dialogue box, items of information which can be entered include name, initials (=shorthand way of referring to the name), maximum units available for allocation, group for a group resource (eg utilities for gas and electricity), code. Calendar–base, either standard or night shift or 24 hours. Costs – standard, eg 15 = $15 an hour; overtime rate; per use cost (eg standard fee for a particular service).

- Dragging a resource–From resource pool to another selected task(s).

- Removing and adding resources–Using the Assign resources dialogue box, remove button, replace button.

- Deleting a resource from resource pool–In Resource Sheet view [View →Resource Sheet]. Highlight and ‘Delete’.

- Using the Task Form–on the split screen view.

Calendars

Project calendar–Standard 8 hour days Monday to Friday as default. But can change calendar to whatever you want. Also to add holidays, etc. Modify via Tools → Change working time, eg select holiday date and specify it as a non-working day. [etc]

Resource calendar–eg for availability of different resources, eg in building a house can have different calendars for plasterers and for painters.

Views

Task views–Provide information about tasks, including Gantt Chart, PERT Chart, Calendar, Task Usage, Tracking Gantt, and other task forms. Task Cost Table.

Resource views–Provide information about resources–Resource Graph, Resource Sheet, Resource Usage and various resource forms.