

Project Management using OpenProj

Introduction

Project Management is the discipline of planning, organizing, and managing resources to bring about the successful completion of specific project goals and objectives.

A project is a well-defined sequence of events with an identifiable beginning and ending. A project's focus is to achieve an identified goal, and it's the project manager's responsibility to guide the project based upon established parameters, such as time, cost, and resources, while maintaining a specified standard of quality.

This finite characteristic of projects stands in sharp contrast to processes, or operations, which are permanent or semi-permanent functional work to repetitively produce the same outcome. As processes have these characteristics, there is no identifiable ending.

The primary challenge of project management is to achieve all of the project goals and objectives while adhering to classic project constraints--usually scope, quality, time and budget. The secondary--and more ambitious--challenge is to optimize the allocation and integration of inputs necessary to meet pre-defined objectives. A project is a carefully defined set of activities or tasks that use resources (capital, human resources, materials, energy, space, provisions, communication, motivation, etc.) to achieve the project goals and objectives.

If you are ever responsible for coordinating a variety of specific tasks that must be completed within a specific timeframe for a set amount of money, you are a project manager, then this tutorial is for you. Developing a software product, publishing a newsletter, implementing a training program, starting a new business or even building a new home are some of the projects that millions of people embark upon everyday.

Tasks: They are a division of all the work that needs to be completed in order to accomplish the project goals. **Scope:** of any project is a combination of all individual tasks and their goals. **Resources:** can be people, equipment, materials or services that are needed to complete various tasks. The amount of resources affects the scope and time of any project.

The traditional triple constraints

Like any human undertaking, projects need to be performed and delivered under certain constraints. Traditionally, these constraints have been listed as **scope**, **time**, and **cost**. These are also referred to as the **Project Management Triangle**, where each side represents a constraint. One side of the triangle cannot be changed without impacting the others.



The Project Management Triangle

The time constraint refers to the amount of time available to complete a project. The cost constraint refers to the budgeted amount available for the project. The scope constraint refers to what must be done to produce the project's end result. These three constraints are often competing constraints: increased scope typically means increased time and increased cost, a tight time constraint could mean increased costs and reduced scope, and a tight budget could mean increased time and reduced scope.

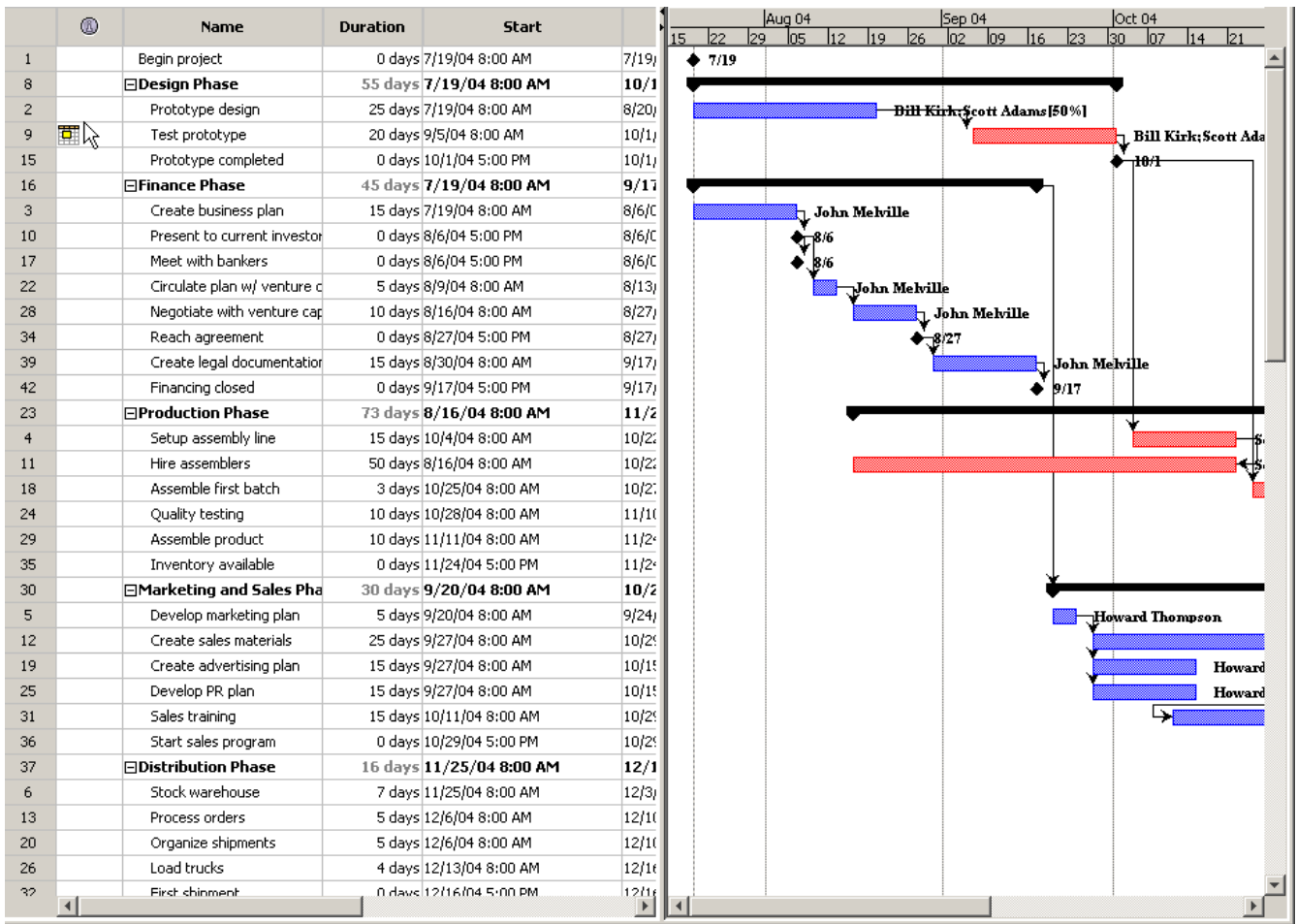
The discipline of project management is about providing the tools and techniques that enable the project team (not just the project manager) to organize their work to meet these constraints.

Another approach to project management is to consider the three constraints as finance, time and human resources. If you need to finish a job in a shorter time, you can throw more people at the problem, which in turn will raise the cost of the project, unless by doing this task quicker we will reduce costs elsewhere in the project by an equal amount.

Openproj Exercise 1 The Gantt Chart, Tasks and Links

The Gantt chart

[Gantt Charts](#) are the primary tool for project managers, and are the main workspace of your project. A Gantt chart consists of a hierarchical [spreadsheet](#) on the left which lists your tasks, and a time-scaled diagram off to the right. It enables you to see both the tasks in your project, their structure, and their ordering in time.



The [spreadsheet](#) side on the left of the Gantt Chart shows the [Work Breakdown Structure\(WBS\)](#) of your project with tasks broken down into various levels of detailed subtasks.

Starting a New Project in OpenProj:

Start by firing up OpenProj. A new project can be created either by choosing the option in the Welcome dialog, or choosing File - New Project from the menu.

The New Project dialog will appear on your screen:

The screenshot shows a 'New Project' dialog box. It has a title bar with a close button. The fields are: Project Name: My New Project; Manager: John Smith; Start Date: 8/31/07. There is a checked checkbox for 'Forward scheduled'. Below these is a 'Notes' section with a text area containing 'Here are some notes for my new project.'. At the bottom are 'OK' and 'Cancel' buttons.

The Project Name is a required field. The Project Start date will be today (or the next working day after today) by default, but it can be changed. Normally projects use forward scheduling, where you pick a start date and the dates are calculated in the future. If you fill in a start date, OpenProj schedules your tasks from that date forwards, based on the order in which tasks need to be completed and the availability of resources assigned to work on each task. But, if you have to finish the project by a deadline date, you can choose to enter the finish date instead. All intermediate schedules will then be set by OpenProj.

Fill in the following details:

1. Project name: Exercise 1
2. Manager: Your name
3. We will be using a forward schedule and the project starts today
4. Fill in some notes, for example My first exercise in OpenProj...

Any of the values can be modified at a later time by going to the [Project Information Dialog](#) which can be found in the project menu.

After entering details, you will be shown an empty [Gantt Chart](#) where you could start [creating tasks](#).

To change the properties of the project:

1. Choose project, Project information from the menu to display the project information dialog box.
2. Select the general tab. Here you can see much of the same information which you filled in when you created the project. In the project information dialog box you can also make the decision of what kind of calendar is to be used. The Standard Base Calendar consist of 5 working days/ week and 8 hours of work a day. There are some alternative calendars available, for example night shift . it is also possible to create a totally custom calendar. That, however, is beyond the scope of the exercise. When you are happy with the project information, just close the dialog box.

TASKS

Entering Tasks and assigning task duration:

Creating Tasks

To create new tasks, just type the task name into the name column in the Gantt chart view and hit Enter. This will create a 1 day task that starts on the project start date. The duration will show up as 1d?. The ? signifies that the duration is estimated. You may type in a new value to change the duration (and thus make it no longer estimated), or modify the duration by pulling the bar with the mouse on the right side of the window.

Double-clicking a task will open the **Task Information box**. You can fill in more detailed descriptions of tasks here, you can for example manipulate the task dependencies.

You can set up some interim goals, or **milestones**, in the Gantt chart. To enter a milestone, enter the name of the task and set its duration to zero. OpenProj then represents the milestone as a diamond shape instead of a bar in the Gantt Chart. To **copy tasks** and their contents, click on the task ID number at the left of the task and use the copy-paste method.

Exercise:

Enter the following tasks:

1. Summary task
2. first
3. second
4. third
5. Milestone (interim goal)

LINKS

Linking Tasks

The tasks within a project are very often dependent on tasks that come before them. Instead of entering start dates for your tasks, use the mouse to **draw dependencies** between your tasks and let the application calculate the dates for you. An alternative method of creating links is to **type in the predecessor task id's** in the Predecessors column.

Tasks are usually scheduled to start as soon as possible i.e. the first working day after the project start date. The remaining schedule can be defined in a base calendar to which the project is linked. OpenProj supplies three calendars and any one of them can be used. The Standard calendar, 24 Hours calendar and the Night Shift calendar schedule tasks on different working days and hours. The Standard calendar is usually used as the base calendar.

Sometimes, even after designing a schedule many unforeseen changes can affect the completion of tasks midway. This could lead to a disruption to completion of other related tasks. To solve this problem, project management software allows you to link tasks in various ways. By linking tasks the program adjusts the schedule whenever there

are changes that affect duration of other tasks. A task that needs to be completed before (painting the walls of a home before moving in the furniture) are called predecessor task and the linked tasks are its successors. Tasks can be linked in four ways:

To link tasks in FS dependency:

1. Select the tasks you want to link. Tasks with a lower ID number are taken as predecessors, but if you want to set the order of tasks yourself, select tasks by holding Control while you click the tasks in order.
2. Click the Link Tasks button on the Toolbar or draw the link with the mouse. Summary tasks can be linked to other summary tasks or to subtasks between summary groups. Subtasks can be linked to each other too.
3. To unlink tasks, click the Unlink Task button in the toolbar or click on the link itself and choose remove.

Linking with the mouse

This is the easiest way to link. Click on the predecessor task, and keeping the mouse button pressed, drag the cursor to the successor task. The mouse cursor will change to a link icon:

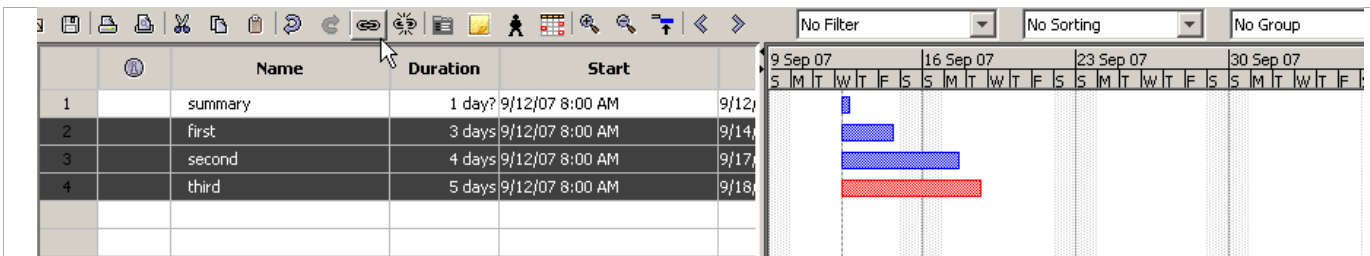
	Ⓜ	Name	Duration	Start	
1		summary	1 day?	9/12/07 8:00 AM	9/12/07
2		first	3 days	9/12/07 8:00 AM	9/14/07
3		second	4 days	9/12/07 8:00 AM	9/17/07
4		third	5 days	9/12/07 8:00 AM	9/18/07

when you release the button, the tasks will be linked:

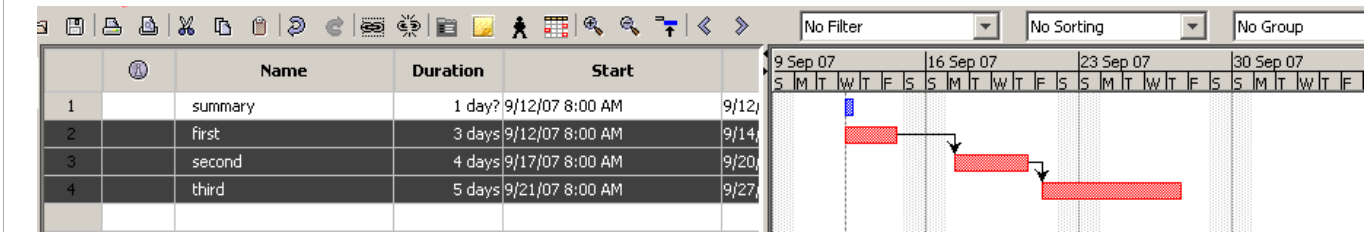
	Ⓜ	Name	Duration	Start	
1		summary	1 day?	9/12/07 8:00 AM	9/12/07
2		first	3 days	9/12/07 8:00 AM	9/14/07
3		second	4 days	9/17/07 8:00 AM	9/20/07
4		third	5 days	9/12/07 8:00 AM	9/18/07

Linking with the toolbar button

This is useful if you have more than two tasks that you'd like to link. The tasks will be linked sequentially from top to bottom. Select the task rows in the spreadsheet and click the link button in the toolbar:

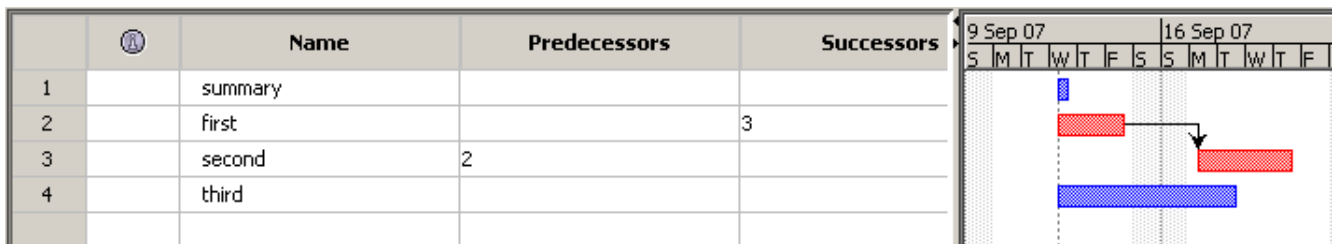


Now the tasks are linked:



Linking on the [Spreadsheet](#)

You can display the Predecessors and/or Successors columns on the Gantt spreadsheet and then type in the IDs of the tasks:



Note that the Predecessors of a task will have that task in its successors list, and vice-versa.

Modifying Links

The easiest way to modify a link is to click on it to bring up the [Task Dependency Dialog by clicking on the link between your tasks](#).

Removing Links

You can remove links by any of the following means:

- Selecting task rows of tasks to unlink and pressing the unlink button (similar to linking them as shown above in [Linking with the toolbar button](#))

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- Clicking on them to bring up the [Task Dependency Dialog](#) and choosing Remove.
 - Editing the Predecessors or Successors field and removing the task.
-

Delayed Links:

Sometimes tasks may be dependent on other factors causing a delay time or an overlap time, necessitating a lag or lead-time to be incorporated in a link. Lag and lead-time can be entered as units of time or as a percentage of the duration of the predecessor.

1. Double-click a task and open the Task Information dialog box.
2. Click the predecessor tab.
3. Select the lag/lead field.
4. Enter a number or a percentage in the cell. Click OK.

Alternatively you can click on the Link between your tasks and input the lag in the Task Dependency dialog that pops up.

4 types of links (dependencies)

1. Finish to start (FS)
 - *A FS B = B doesn't start before A is finished*
 -
 - *(Foundations dug) FS (Concrete poured)*
2. Finish to finish (FF)
 - *A FF B = B doesn't finish before A is finished (but B can be started)*
 -
 - *(Last chapter written) FF (Entire book written)*
3. Start to start (SS).
 - *A SS B = B can not start before A starts*
 -
 - *(Project work started) SS (Project management activities started)*
4. Start to finish (SF)
 - *A SF B = B doesn't finish before A starts*
 -
 - *(New shift started) SF (Previous shift finished)*

There are three kinds of dependencies with respect to the reason for the existence of dependency:

1. Causal (logical)

- *It is impossible to edit a text before it is written*
- *It is illogical to pour concrete before you dig the foundations*

2. [Resource constraints](#)

- *It is logically possible to paint four walls in a room simultaneously but there is only one painter*

3. Discretionary (preferential)

- *I want to paint the living room before painting the dining room, although I could do it the other way round, too*

Time related information can be used in conjunction with any of the relationships for any of the reasons outlined above. This is known as a lead or lag. For example: When building two walls from a novel material, one might start the second wall 2 days after the first so that the second team can learn from the first.

It is also useful to use lead/lag when tasks are in parallel in a Finish-Finish relationship. For example: The document for 'Activity A' should finish 5 days before the document for 'Activity B' so that the reviewers have time to read each individually. Although Document A and Document B may take different times to write, they will be planned to finish 5 days apart.

Outlining tasks:

Once the summary tasks have been entered in a task table, you will need to insert subtasks in the blank rows and indent them under the summary task.

You can introduce a hierarchy for both your tasks and your resources. This is done by using the Indent and Outdent buttons to make a tree structure. For tasks, this is known as the Work Breakdown Structure (WBS) and corresponds to what you see in the [WBS Chart](#). This lets you organize your tasks in outline fashion, with subtasks grouped under phases or summary tasks. When tasks are summarized, their values roll-up into their parents: durations span the earliest and latest tasks, and cost and work values are summed.

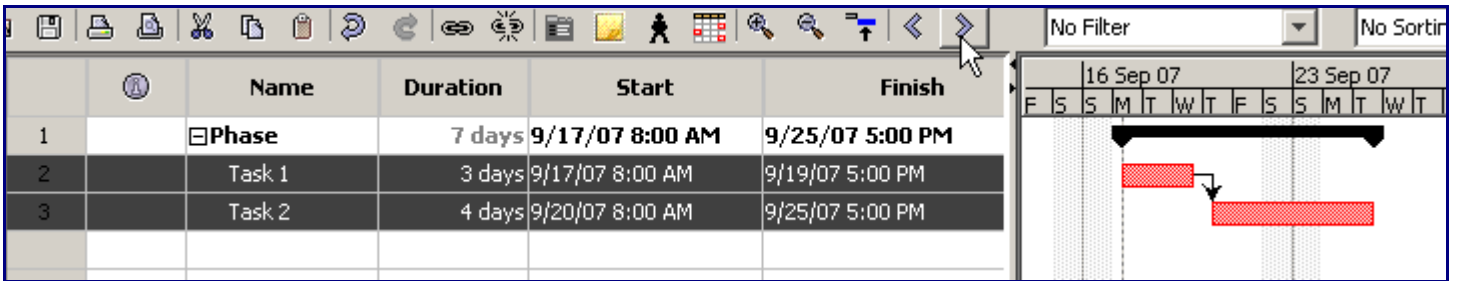
An Outlining Exercise:

Outlining creates multiple levels of subtasks that roll up into a summary task. Collapse and expand summary tasks when necessary.

In this example, we'd like to make the task "Phase" the parent. Select the two child tasks by clicking on their in the leftmost spreadsheet column.

	Ⓜ	Name	Duration	Start	Finish	16 Sep 07					23 Sep 07								
						F	S	S	M	T	W	T	F	S	S	M	T	W	T
1		Phase	1 day?	9/17/07 8:00 AM	9/17/07 5:00 PM														
2		Task 1	3 days	9/17/07 8:00 AM	9/19/07 5:00 PM														
3		Task 2	4 days	9/20/07 8:00 AM	9/25/07 5:00 PM														

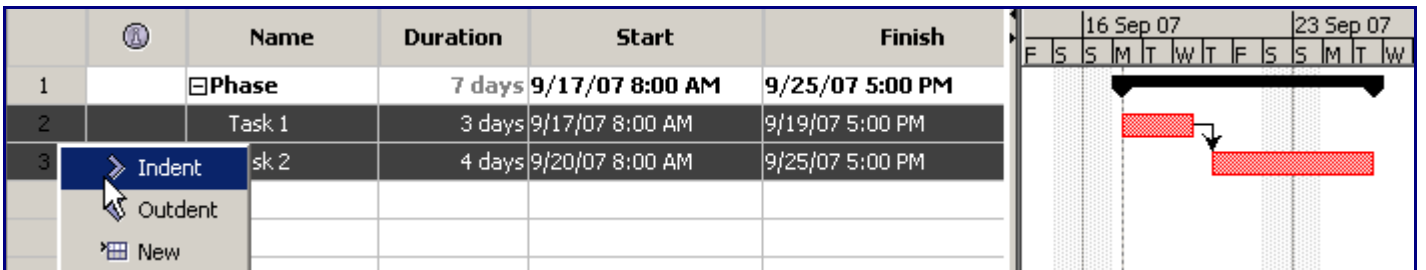
Then, click on the Indent button in the toolbar and the tasks are indented:



You may also perform the reverse action by using the Outdent button. This will move the tasks back out one level in the hierarchy.

Alternatively, you can click the right mouse button in the spreadsheet and indent from the popup-menu:

1



Views:

Views allow you to examine your project from different angles based on what information you want displayed at any given time.

Project Views are usually categorized into two types: **Task related views** and **resource related views**. There are several views available of both types but the default view is the Gantt chart which actually combines some elements of both types.

To find out more about each view, you can try them out by clicking on the buttons on the left side of the screen. This is something to do later when we have more data to play with though.

Exercise1 complete!