

Managing multiple projects

Document author:

Andy Jessop

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The tips and tricks below are taken from Project Mentor, the smart way to learn Microsoft Project. For further information, please go to:

www.projectlearning.net/project_mentor.htm

More useful tips and tricks can be found on the Project Learning blog:

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Managing multiple projects

Introduction

How many of us have tried to create a programme of interrelated projects? Then, how many of us have attempted to share resources across these projects to see where inter-project resource conflicts exist. Tricky, isn't it?

Before you try to create a programme containing master projects and subprojects, it is important to understand the nature of programmes and how tasks (and hence resource work) is scheduled across a programme.

These tips and tricks illustrate the background to programmes of work and illustrate how a programme can be effectively created within a Microsoft Project environment.

Background

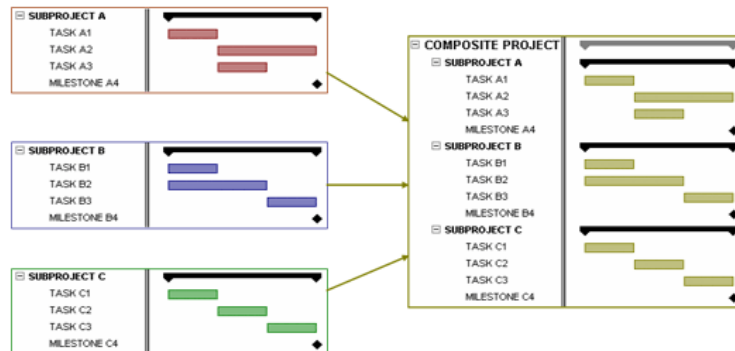
Often, it is useful to compare the schedule of several subprojects within an overall programme of work. This can be achieved by creating a consolidated project containing a combination of subprojects and master projects. Another useful facet of creating a programme is that cross-project links can be used to make a task within one subproject dependant upon a related task within a different subproject. This linking can however affect the critical path across the consolidation. Within a programme environment, resources can be shared across subprojects by using a common resource pool. This will usually create cross-project resource conflicts that can often be resolved by applying resource leveling.

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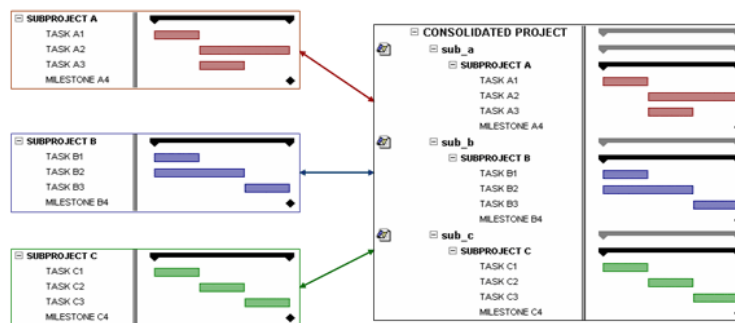
Master and subproject structures

Within a programme environment, multiple project hierarchies can be created using two basic structures:

Within a composite project, the tasks within the subprojects are effectively pasted into a new project. If any changes are made to these tasks within the composite project, the respective subprojects will remain unaltered. If resources are copied from subproject to composite project, the relationship is one way too.



Unlike a composite project, a consolidated project retains the links to its subprojects, which retain their identity as discrete projects simply linked into the whole. The consolidated master project file is basically a set of pointers to the subproject files. The subproject files themselves are where the tasks to be accomplished reside. Any change within the master project is reflected in the relevant subprojects.



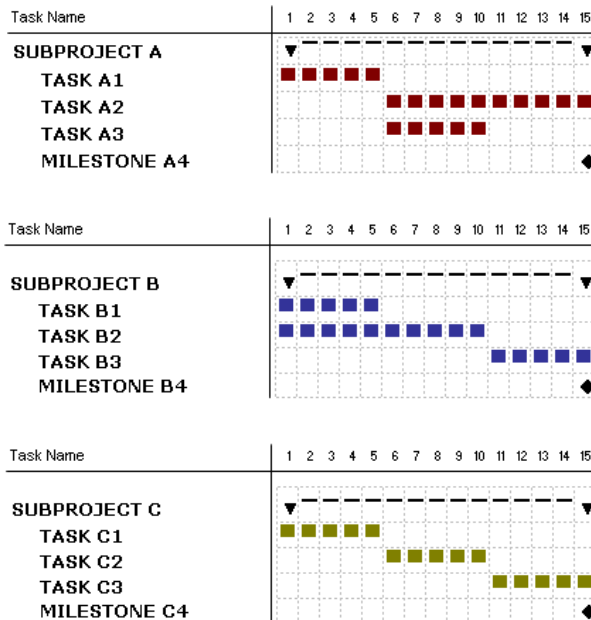
Hints

- Composite projects are a good way to build up a complex project from a number of small subproject templates. These templates may contain tasks that make up a particular work package or be the extension of a to-do list.

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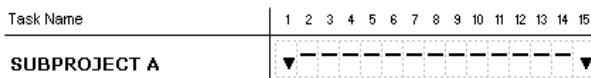
Creating project consolidations

Creating a consolidation is simply a matter of inserting subprojects into a master project. Take the three subprojects below, each with an identical project start date:

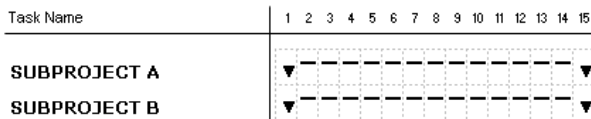


When the subprojects are inserted, their outline is collapsed:

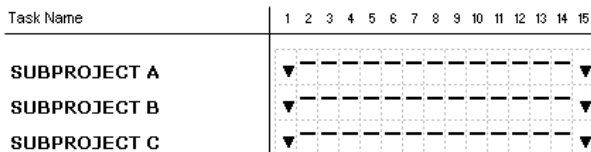
Subproject A only:



Subprojects A and B:

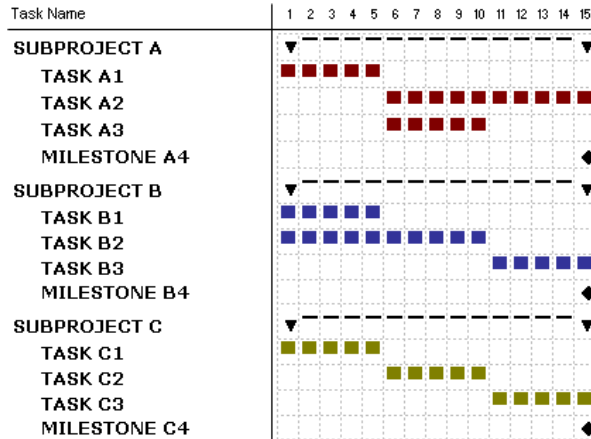


Subprojects A, B and C:



When they have been inserted, their outline can be expanded:

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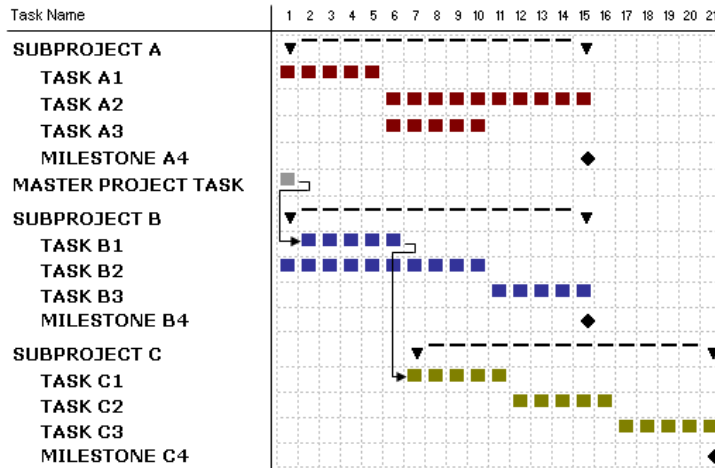
Hints	<ul style="list-style-type: none"> • The project summary task of each subproject depicts its overall schedule. • Within a consolidated project, each subproject retains its original WBS structure; for example, 1.1, 1.2, 1.3, 1.4. • More complex structures can be created by inserting subprojects within other subprojects, thus creating a hierarchy of multiple projects.
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Creating cross-project links

Within a multi-project consolidation, cross-project links can be created:

- Between tasks within the individual subprojects.
- Between subproject tasks and tasks within the master project.

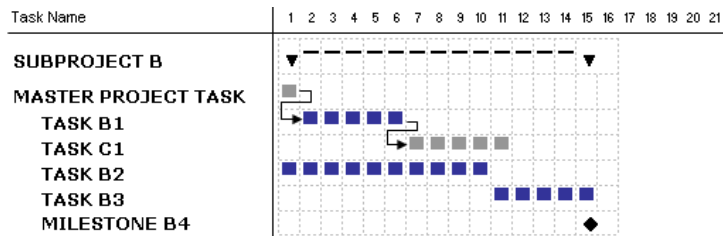


In the example above:

- There is a cross-project link from the finish of the MASTER PROJECT TASK (within the master project) to the start of TASK B1.
- The start of TASK C1 depends upon the completion of TASK B1.

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If an individual subproject is viewed in isolation, the schedule would be depicted as:



- Links between tasks within the subproject and external tasks (depicted as grey bars) can clearly be seen.
- The project summary task of the subproject depicts its overall schedule, taking external tasks into account.

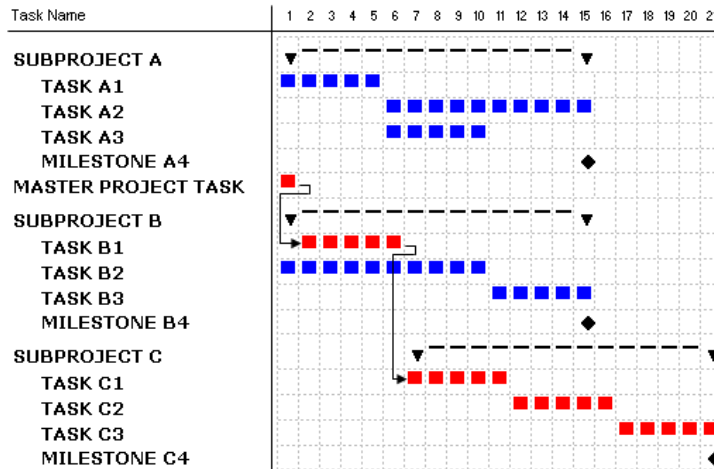
Hints

- Unless otherwise constrained, tasks inserted within the master project will start on the master project's project start date.
- As external tasks can have a large influence on a project's schedule, keep a record of all of these tasks and regularly ensure that they are still meeting an agreed schedule.

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Critical paths within consolidations

When subprojects are consolidated within a master project, a critical path can be seen across the programme:



- The critical path runs: MASTER PROJECT TASK -> TASK B1 -> TASK C1 -> TASK C2 -> TASK C3 -> MILESTONE C4.
- All of SUBPROJECT A is non critical, as are TASK B2, TASK B3 and MILESTONE B4.

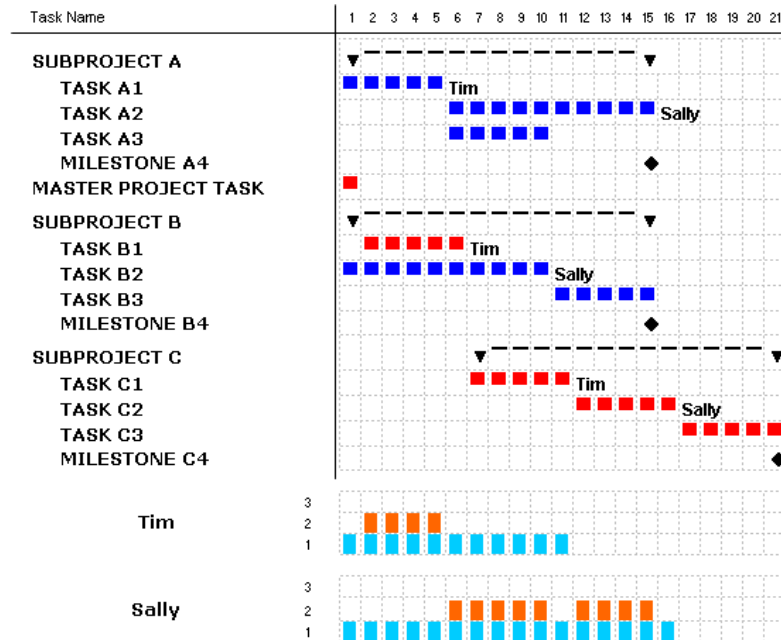
Hints

- Within Microsoft Project, multiple critical paths can be displayed, depicting the critical path of each discrete subproject.
- Review critical paths between master and subprojects regularly as the overall critical path can have a significant impact upon the schedule of each of the subprojects.

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Resource assignments within consolidations

Within a project consolidation, assignments for resources can be seen across the programme if resources are shared from a common resource pool:



In the example above:

- There is a resource conflict for Tim's parallel assignments between TASK A1 and TASK B1.
- Sally's resource conflicts are due to parallel assignments between TASK A2 and TASK B2 and TASK A2 and TASK C2.

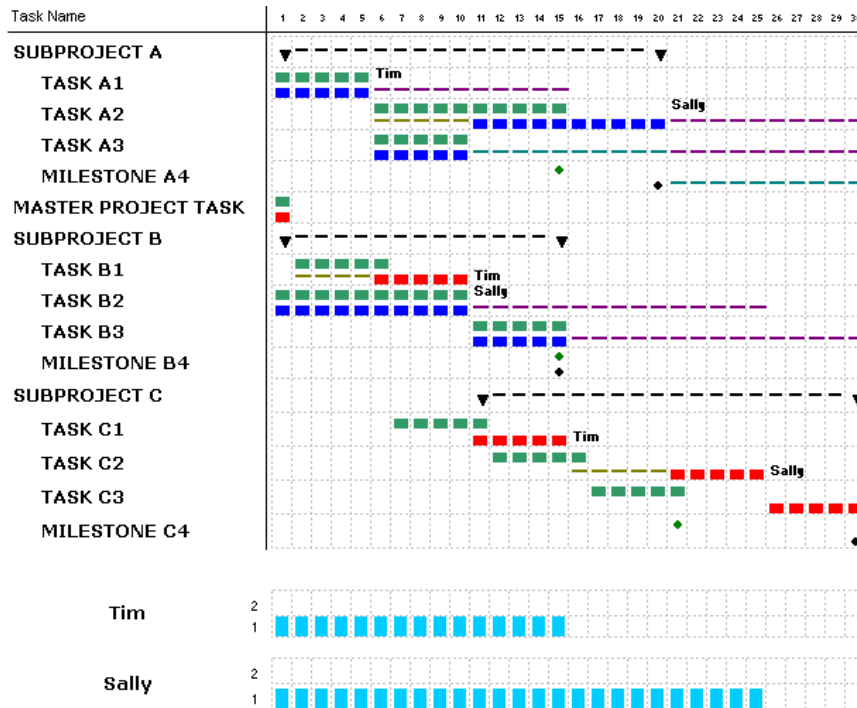
Hints

- A common resource pool is required for resources to be utilized across several subprojects.

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Leveling resources within consolidations

When resource conflicts exist within a consolidation, it is possible to use resource leveling to attempt to remove conflicts. In the example below, subprojects A, B and C have had leveling applied according to a 'Standard' leveling order:

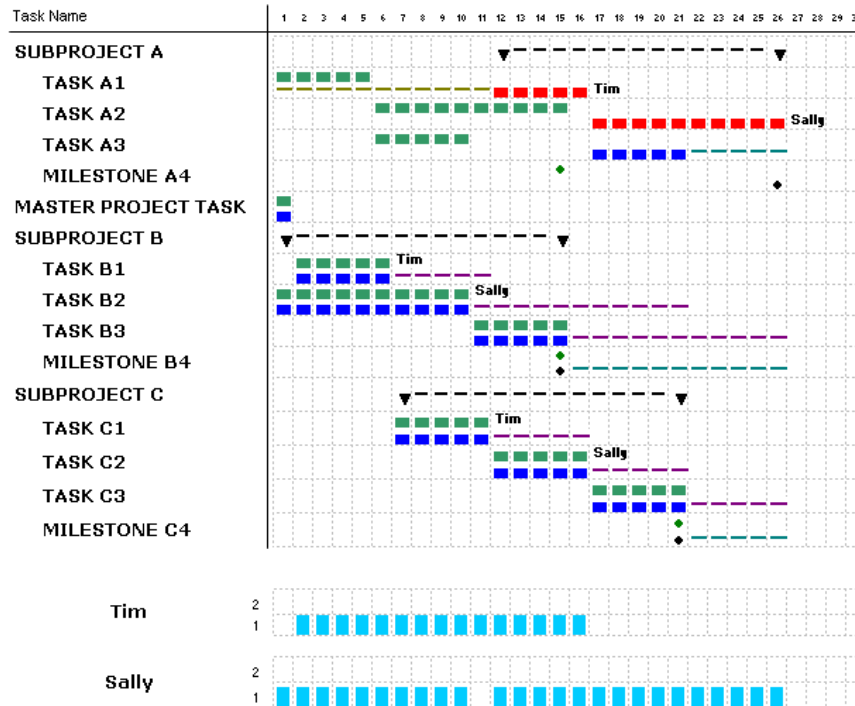


- All resource conflicts have been removed and the project finish date for SUBPROJECT A and SUBPROJECT C has been delayed.
- Tim's schedule of work is to first of all complete TASK A1. A leveling delay (depicted by an olive-colored line) determines the start of his work on TASK B1. Work on TASK C1 is controlled by the cross-project link between B1 and C1.
- Sally's schedule of work commences on TASK B2. Work on TASK A2 commences as soon as TASK B2 is over (as shown by the leveling delay bar). TASK C2 (also with an applied leveling delay) commences as soon as TASK A2 has been completed.
- The critical path runs: MASTER PROJECT TASK -> TASK B1 -> TASK C1 -> TASK C2 -> TASK C3 -> MILESTONE C4.
- MILESTONE C4 is now scheduled to occur on day 30, whereas its preleveled schedule (depicted in green) was to occur on day 21.

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- All of SUBPROJECT A is non critical, as are TASK B2, TASK B3 and MILESTONE B4. The leveling process has also increased the total slack (depicted by purple-colored bars) and free slack (depicted by teal-colored bars) for all non critical tasks.

It is also possible to modify the leveling order, for example to level resource assignments projects based upon priority values. In the example below, SUBPROJECT B has been given a higher priority than SUBPROJECT A or SUBPROJECT C. The resultant leveling effect is:



- All resource conflicts have been removed and the project finish date for SUBPROJECT A only has been delayed.
- Tim's revised schedule of work is to first of all complete TASK B1 as this project has the highest priority. Tim then commences work on TASK C1 due to the cross-project link between B1 and C1. His work can then commence on TASK A1 which has a leveling delay (depicted by an olive-colored line) of 11 days applied to the task.
- Sally's schedule of work commences on TASK B2. She then has a day of no work on day 11 and then commences TASK C2 on day 12 (due to the completion of the predecessor TASK C1). Sally can commence task A2 as soon as its predecessor (TASK A1) has been completed.
- The critical path runs down the leveling delay to TASK A1 and then through TASK A2.

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- MILESTONE A4 is now scheduled to occur on day 26, whereas its prelevelled schedule (depicted in green) was to occur on day 15.
- The programme of work can now be completed by day 26, with all tasks in subprojects B and C possessing combinations of total slack and free slack.

Hints	<ul style="list-style-type: none">• Great care should be taken when instigating resource leveling in a programme environment as significant changes can be made to the schedule of individual subprojects by the use of various leveling parameters.• It is also possible to level resource assignments within available slack, thus not delaying a project finish date.
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