Constraints and Deadline in Microsoft Project

There are three types of constraints:

1. Flexible constraints. This is a **default type** of constraint in Microsoft Project. It means that a task can start As Soon As Possible
2. Semi-flexible constraints. A task must begin or end no later than the defined date
3. Inflexible constraint. A task must begin or end on a certain date.

Flexible

As Soon As Possible
Project will schedule a task to occur as soon as it can occur. This is the default constraint type applied to all new tasks when scheduling from the project start date. There is no constraint date for an ASAP constraint.

As Late As Possible
Project will schedule a task to occur as late as it can occur. This is the default constraint type applied to all new tasks when scheduling from the project finish date. There is no constraint date for an ALAP constraint.

Semi-flexible

Start No Earlier Than
Project will schedule a task to start on or after the constraint date that you specify. Use this constraint type to ensure that a task will not start before a specific date.

Start No Later Than
Project will schedule a task to start on or before the constraint date that you specify. Use this constraint type to ensure that a task will not start after a specific date.

Finish No Earlier Than
Project will schedule a task to finish on or after the constraint date that you specify. Use this constraint type to ensure that a task will not finish before a specific date.

Finish No Later Than

Project will schedule a task to finish on or before the constraint date that you specify. Use this constraint type to ensure that a task will not finish after a specific date.

Inflexible

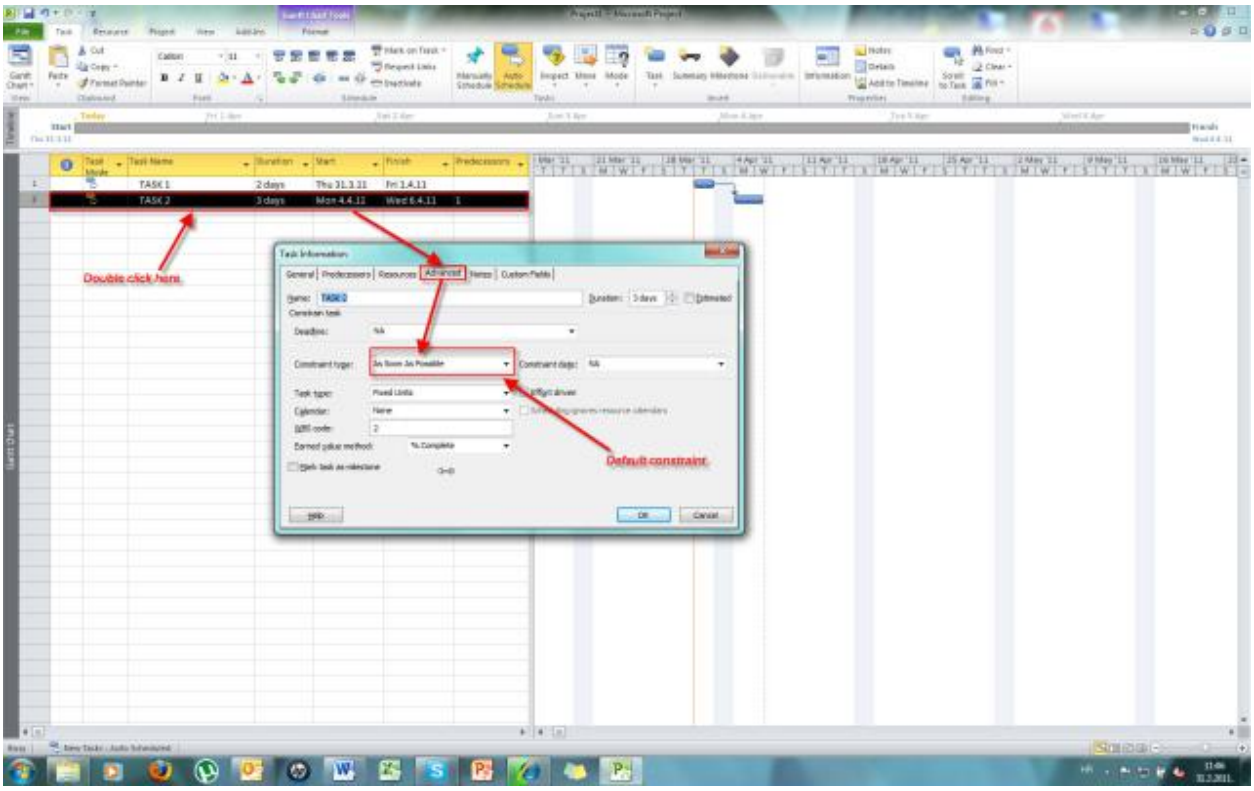
Must Start On

Project will schedule a task to start on the constraint date that you specify. Use this constraint type to ensure that a task will start on an exact date.

Must Finish On

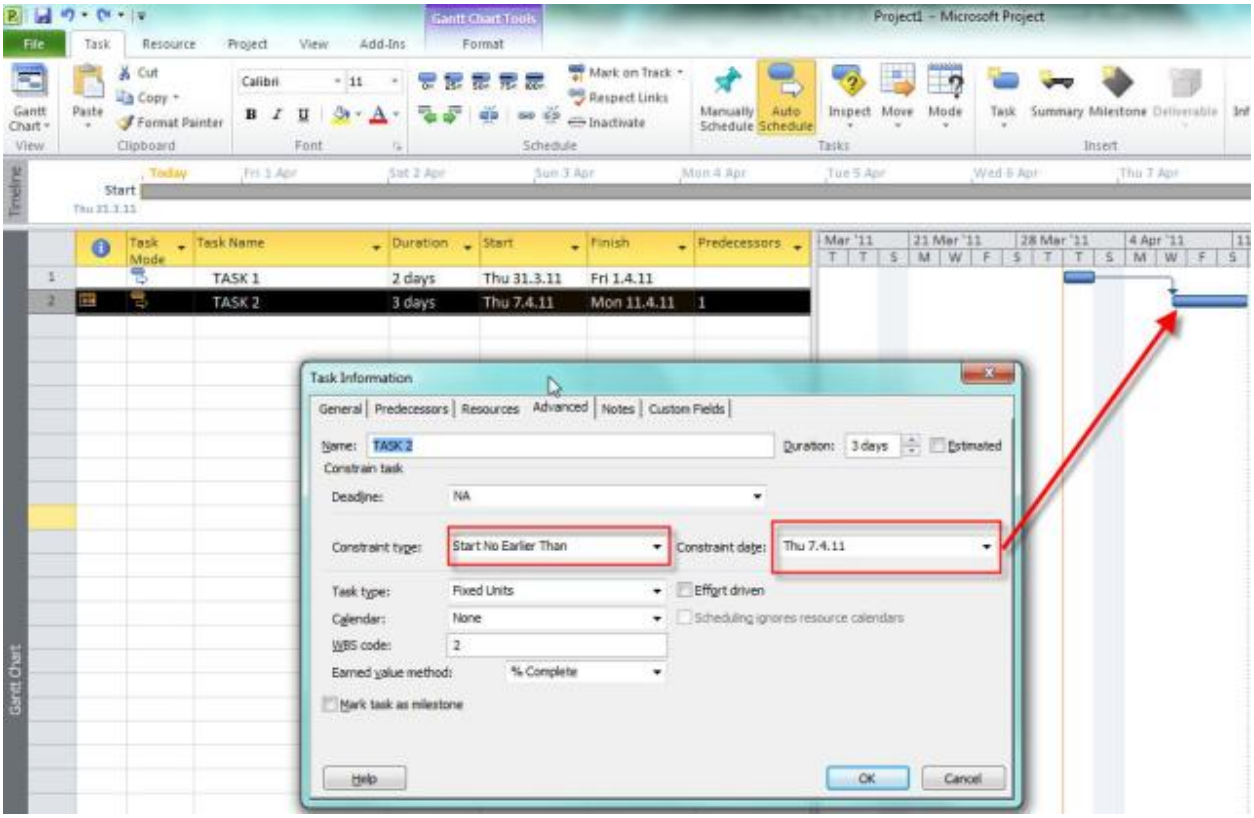
Project will schedule a task to finish on the constraint date that you specify. Use this constraint type to ensure that a task will finish on an exact date.

Which type to choose? Well, the best approach is to use Flexible constraint.

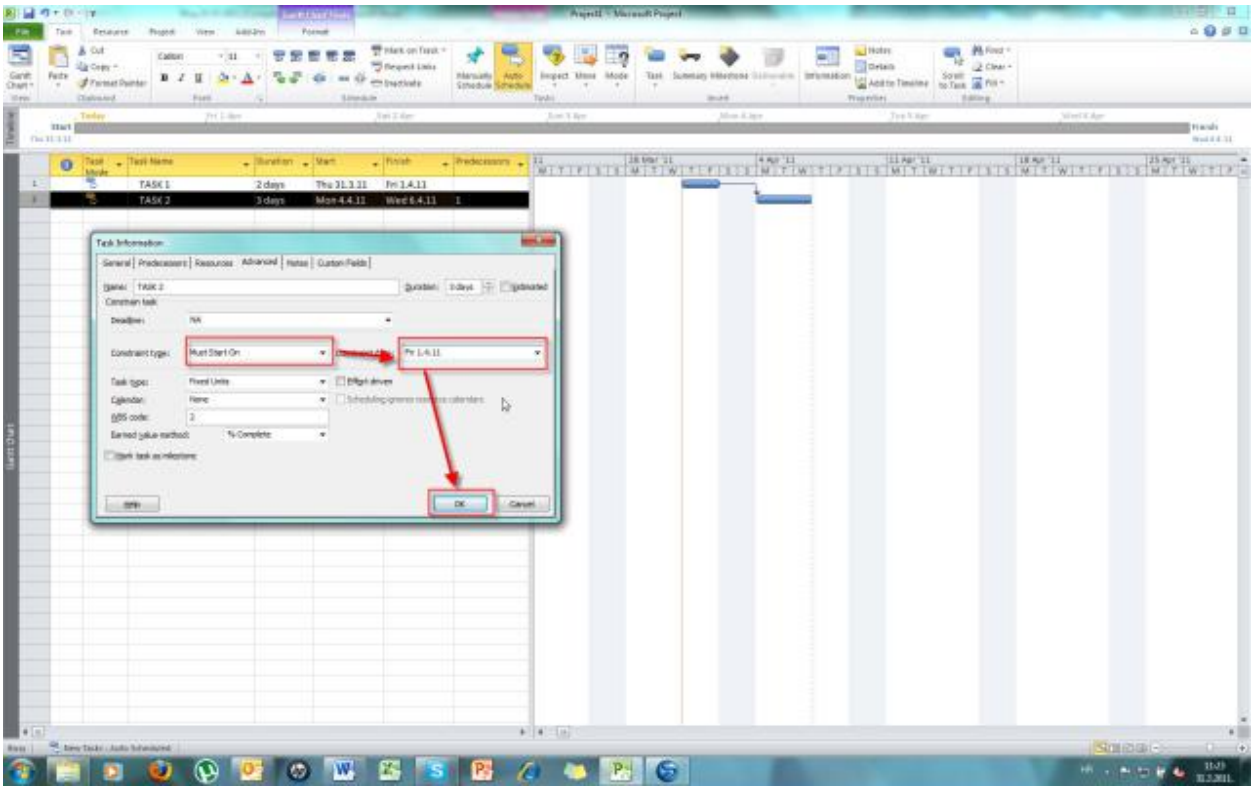


This type of constraint lets Microsoft Project to schedule task with only one limitation and that is, predecessor and successor relationship. In previous picture you can see that TASK 2 will start immediately after TASK 1 ends.

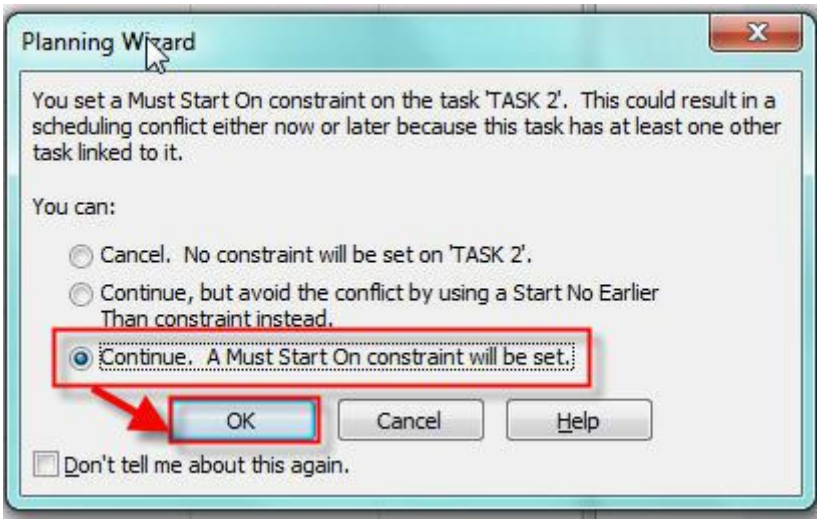
If you use semi-flexible constraint like, for example, Start no Earlier Than, task will start no earlier than date you have entered in the Constraint date field, but it can start later than this date if its predecessor ends later than given date.



If you use inflexible constraint like, for example, Must start on, task will start on specific date (no prior and no later than given date). In my next example I have TASK 1 which will start on 31.03.2011 and finish on 01.04.2011 (2 day duration), and its successor TASK 2 which will start on 04.04.2011 and finish on 06.04.2011 (3 day duration). Now I will put the inflexible constraint Must Start On and the constraint date will be 01.04.2011 (see the picture below):

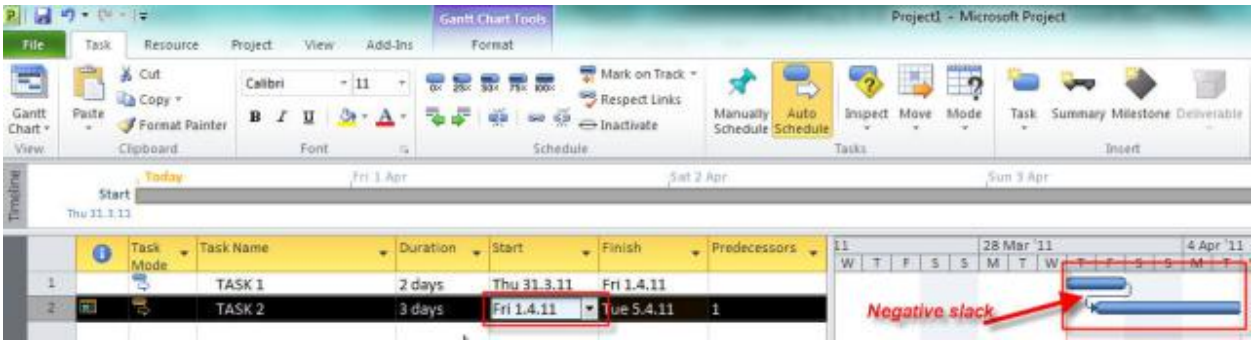


When I click on OK button I get this:



This is a warning screen. It asks you: “What do you want to do?” If you choose: “Cancel. No constraint will be set on ‘TASK 2’” you are actually cancelling the whole thing. If you choose: “Continue, but avoid the conflict using a Start No Earlier Than constraint instead” the constraint will be changed from Inflexible → Must Start On to Semi-flexible → Start No Earlier than. If you choose: “Continue. A Must Star On constraint will be set.” you will get (from my example) this:

If you choose: "Cancel. Avoid the scheduling conflict" you are actually cancelling the whole thing. If you choose: "Continue. Allow the scheduling conflict" you will get *negative slack* (see the picture below):



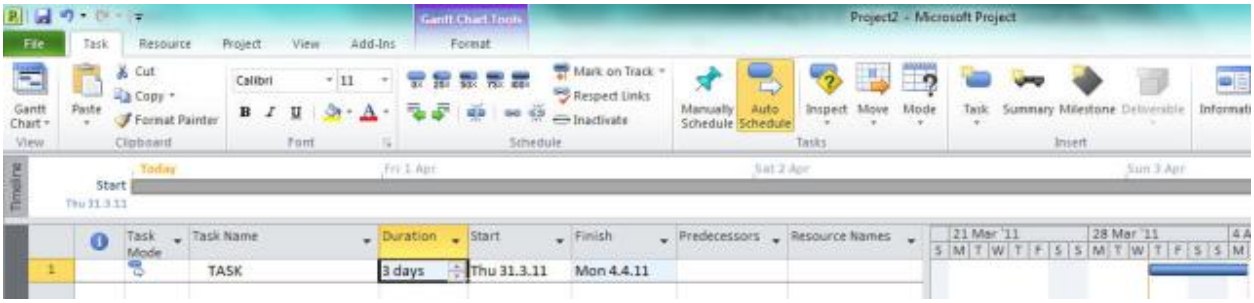
For a Task you can enter duration, start or finish date:

If you enter a Duration (and only duration) you are setting flexible constraint → As soon as possible (when scheduling from the project start date). If you enter a Start date you are applying a Start No Earlier constraint. If you enter a Finish date you are applying a Finish No Earlier constraint.

If you know that your task has a deadline one common mistake is to put inflexible constraint → must finish on. Suppose that you have a task with 1 day duration and the deadline is 01.04.2011. If you put Must finish on constraint with 01.04.2011 you are increasing the risk for this task. Why? Because you are telling Microsoft Project that this task MUST finish on that date and NOT BEFORE. What if your

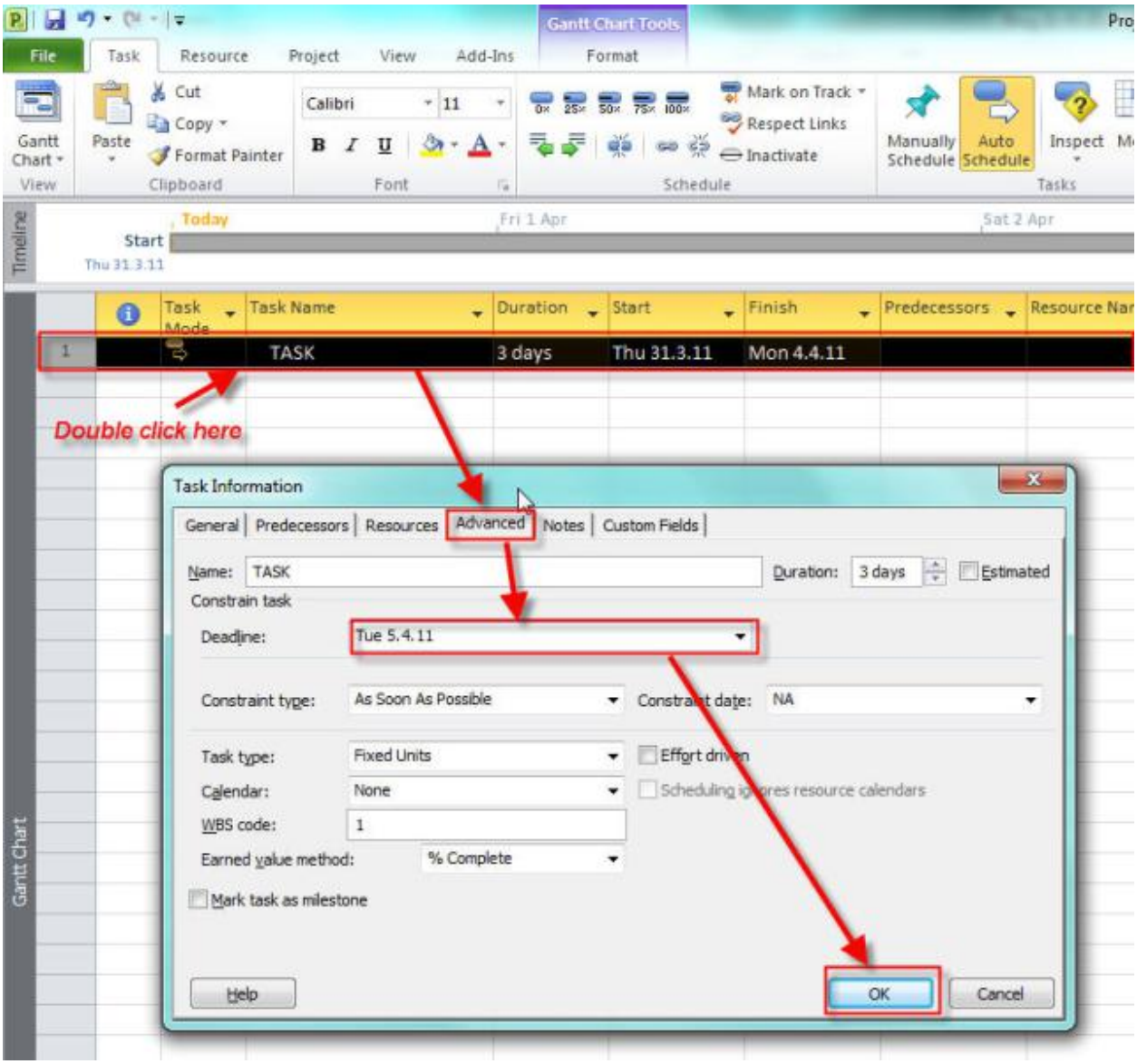
required resource is sick? Better approach is to let Microsoft Project to handle start date with As Soon As possible constraint and put the deadline information about the task.

Here is the example: We have the TASK with 3 day duration:



We have the deadline for this task and it is 05.04.2011.

We will put it here:



And we will get the Deadline indicator in our Gantt diagram: