

Project Management Tools Project management series - 1

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In this article I will explain in detail on how to create and communicate a project plan using the **Critical Path Method**. The tool we would be using is Microsoft PowerPoint 2007 for building a project plan and communicating the same to stake holders.

I have also created a project plan template for 2010 and 2011 which you can use to do an effective presentation

You may have come across situations at your home or in your work environment to manage projects whose difficulty would have varied from simple to very complex. Each project may have many constraints like:

- Funds - need to complete within allocated budget.
- Time - have to be completed within specified allotted time.
- People – Use or train available resource.
- Infrastructure - Facilities, machinery, office/factory space.
- Skills - Limited Skills.
- Stakeholders – view, requirements of different members of senior management team.

Some of the commonly used tools in project planning and managing a project are:

- Brainstorming.
- Fishbone Diagrams (Also called as root cause analysis).
- Critical Path Method
- Flow Diagrams.
- Gantt Charts.

I had discussed about brainstorming and fishbone diagram, in my earlier article. In this article I will be discussing about the “**Critical Path Method**” in detail. Also I will discuss How to create a project planning presentation using Microsoft PowerPoint 2007 which can be used as an effective communication tool. Using a presentation is an effective

way of communicating the milestones and challenges to different members in the team. It is a very useful tool to track the progress as you get on with the project. Let us learn and understand “What is Critical Path method”.

Critical Path Analysis

Critical Path Analysis is also called Critical Path Method and the terms are commonly abbreviated, to CPA and CPM.

This tool can be used to identify the worst and best case of projection of every activity in the project and in turn the actual completion date of project itself.

A technique which is used within critical path analysis is **Program/Project Evaluation and Review Technique (PERT)**. This is a specialized method for identifying related and interdependent activities for all the events in a project. PERT is not normally relevant in simple projects. But if the project contains hundreds or thousands of connected elements and the project is of considerable size and complexity then we can effectively use critical path method to plan the project. In a project when timings and interdependency issues are crucial to complete the project we can benefit from the detailed analysis enabled by PERT methods. PERT analysis commonly feeds into Critical Path Analysis and to other broader project management systems.

The CPA or CPM method helps you to build a graphical representation of the project showing the **necessary sequence of tasks** and those activities that **can be done simultaneously (in parallel)**.

It also calculates and identifies the critical path which is the series of tasks that determine the shortest possible completion time. Once we identify the critical path, it is essential for the project management team to track and monitor the tasks in the critical path so that project delays can be avoided.

Tools required monitoring and tracking a project.

1. A large visible work surface, with large number of task templates.
2. We can also use simple tools like **Microsoft Excel and Microsoft Power Point** to document the task and communicate to all stake holders. Or
3. We can use complex project management tools like Microsoft Project or Oracle Primavera or Oracle Projects.
4. I have created excellent project management template using Microsoft Excel and Microsoft Power Point which you can download from here. I have explained on how build a project plan in 8 steps as below. With a simple example.

Step 1: Assemble the team

Assemble the team of people who are going to be involved and responsible for the delivery of the project. All members of delivery team must have good knowledge and deep understanding of all the subtasks contained in the project.

Step 2: Brainstorm

Brainstorm and document all the tasks that are needed to complete the project.

Step 3: Identify the task and document

Identify the first task and that need to be done and record it on the far left of the work surface .I Have created a sample template using Microsoft excel as shown in the below example. To make a cup of coffee the first activity is to “Fill the kettle with water”. We have taken time required to fill the kettle is 1min.

1. Fill kettle with water	
T = 1 Min	
0	1
0	1

Step 4: Identify the Sequential and Parallel tasks

Question/brainstorm and identify “Are there any tasks which can be done simultaneously with task 1”. If there are any place the tasks above or below task 1.

Step 5: Identify next tasks

You can use any of the brain storming technique like fishbone diagram to identify the next set of tasks.

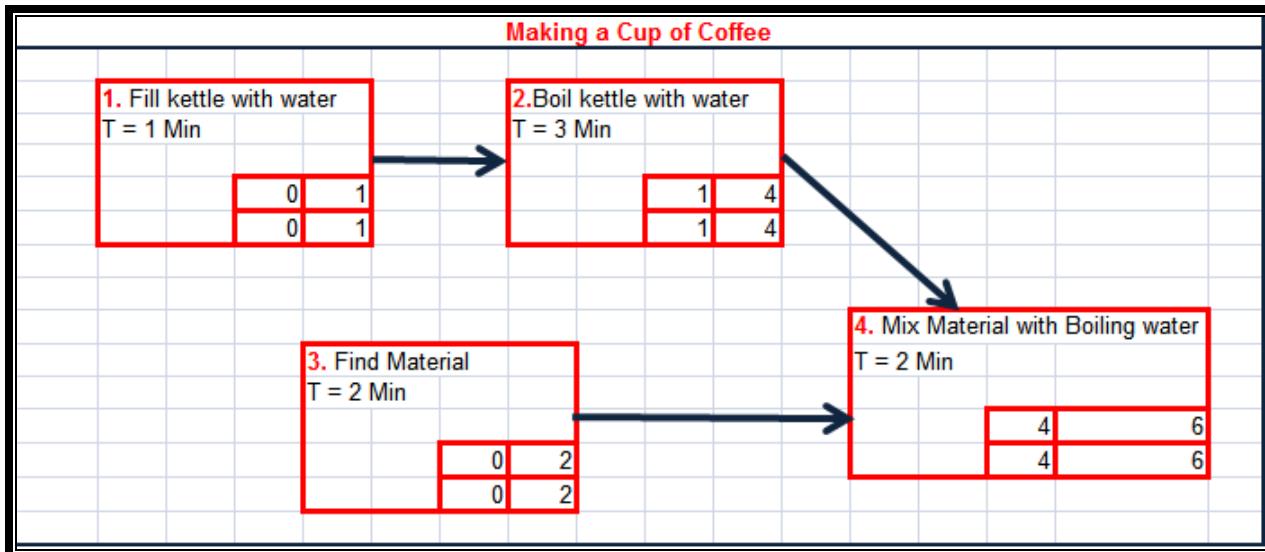
Step 6: Repeat Step 4 and step 5

Repeat above 2 steps and ensure you have recorded the entire task and have identified for each task if they are in sequential or in parallel.

Step 7: Number each task

Number each task and draw connecting arrows to show the links between tasks.

Finally discuss with different members of the team and agree the realistic time required for completion of each task and record it on a task template. An example of making a cup of Coffee is explained below



Step 8: Determine the critical Path

Critical path is the shortest possible completion time for the project. This can be identified by two methods.

1. **Longest cumulative path:** Calculate the shortest possible completion time for all of the paths through the project, the path whose best completion time takes the longest time is the critical path.

2. **Calculated Slack:** This requires you to look at each of the tasks in turn and identify the time element shown below. For Consistency use the four box grid to capture the times of each task.

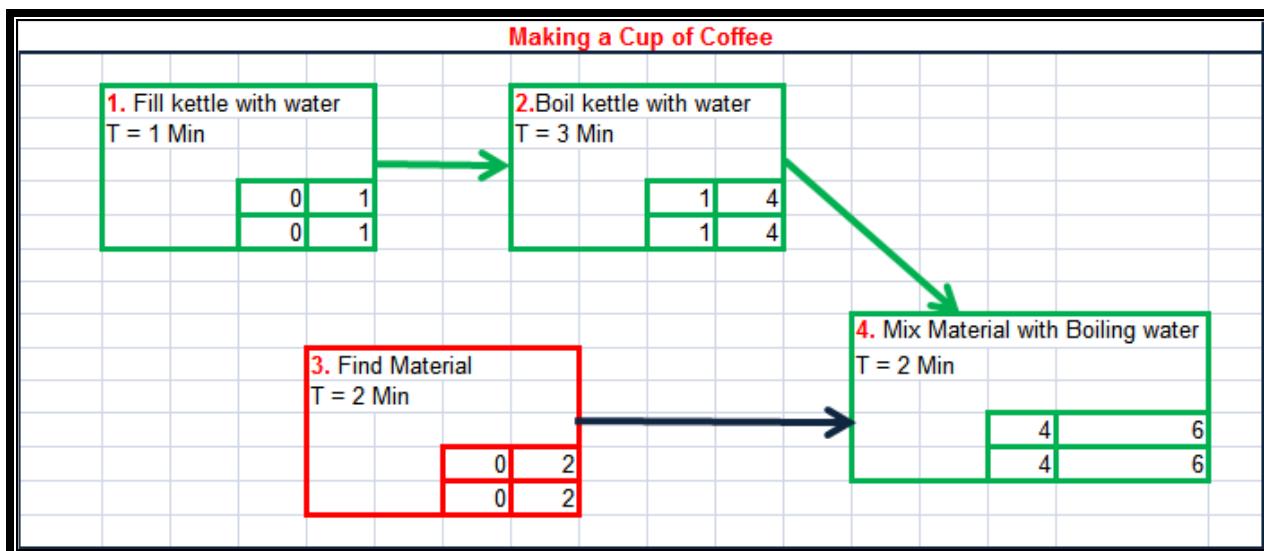
Earliest Start (ES)	Earliest finish (EF)
Latest Start (LS)	Latest Finish (LF)

ES – The largest EF of any previous connected task.

EF – ES plus the time taken to complete that task.

LS - LF minus the time taken to complete that task.

LF – The smallest LS of any following connected task.



When $ES=LS$ and $EF=LF$ that task is on the critical path and need to be highlighted.
In this example 1, 2 and 4 are on the critical path and therefore need to be monitored carefully.

Sometime Critical Path Activity Diagram is also called the Activity Network Diagram. As discussed earlier there are number of software solutions that can aid in development of the CPA.

Step 9: Task tracking sheet.

Below is the sample of task tracking sheet, which can be used to identify all the details of a task.

Task No	
Task name	
Task start Date	
Task end Date	
Task Notes	

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and communicating using project presentation***

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