

Explanation of the gantt chart



Its use a simple logic calculations to identify the critical path, it does include:

- A sequence of activities has a timing duration.
- Adding the timing durations from the start till the end (forward pass), it helps to determine the early and late start.
- Deduct the timing durations from the end to the start (backward pass), it help to determine the late and early finish.
- Deduct the early finish from the late finish, by that we found the total float.
- The early start for activity A is 0, while the late finish for activity R is equal to its late start.

The critical path is the longest serious of activities in the diagram with no flexibility, linked to each other without interruption. In other word it's the path has activities with total float equal zero. While the duration of the project determine by the earliest and late finish of the last activity in the project.

Gantt chart is useful tool to project manager, in this chart there is a calendar time scale enable to determine the project duration including , not only the working days, but also holydays and weekend.

If the project starts on 11 January 2010 in 5 day working week, assuming there is no holidays the earliest day the project will completed is 2 April 2010. (See end of the document).

a. As activity P is a critical activity in a critical path a one day delay will create a delay in activities Q and R, which delay the project end for one day. Also it could generate an increase in project cost. The project manager should be able to predict this before it's occurred, therefore he should analyses the network diagram and looking for maneuver margin.

b. If activity N completed 1 day earlier, it could give other activities in the path such as O, P, Q, and R one day flexibility. However it doesn't mean that the project will finish earlier because other activity recourses were schedule and it could be not available at that time, but still there is possibility to the project to finish 1 day before than schedule.

c. Activity I is not critical activity, that's mean it has a float or slack which is in this activity is 6 days. There for a delay for 2 days in this activity will not create a delay in whole project, however there a possibility to generate increase in cost than the estimated before.

In the network diagram all the project activities are represented accordance with the relations that exist between them, the activities represented by nodes (boxes), these mentioned the beginning and the end of each activity

The benefits for the diagram are:

- Obtain a schematic representation of the project.
- predict the required time to complete the project.
- distinguish between critical and non critical activity in the project, and thus determine the possible maneuver margin for each task, which can be by moving some resources from non-critical tasks and focus on

critical activity, which contributes to reduce the time of the project with a fixed cost.

Implementing the network diagram is summarized in these steps:

- know all the activities for the project
there is a list of all tasks (activities) often included in the outset project based on Work Breakdown Structure
- Identify the relations between these tasks
there are tasks that can be implemented in parallel, or may depend on the end of the other tasks (sequence), in this step is a list of all the project tasks and its relations with other tasks.
- Setting the network diagram
after knowing the tasks, and the relations with other activities, the project activities are drawn as Node network diagram.
- Estimate the required time
an estimate of required time to complete each activity passed on past experiences, or by using intuition and logic, the estimate may not be free of error.
- identifying the critical activity and critical path of the project
critical activity is an activity which, if the delay occurred during the implementation, it could delay the whole project with the same amount, the critical path is the path that connects critical activities and it starts from the beginning of the project and finished at the end of the project, it is the longest path in terms of length in the network diagram. On this path there is no margin time to maneuver in the

implementation of any task because of the lack of flexibility time in any task on this path.

- Update the network diagram on a regular basis during the implementation of the project, real-time registration is taken for each activity, and in the meantime, critical path may appear to show new activities were not taken into account.