

# Project schedule

[Business](#), [Management](#)



Part Precedence Relationship A network diagram is a clear and concise graphical representation of the project schedule and illustrates the project activities and the sequence in which they happen. Network diagrams are an important tool to monitor and track the project from start to its completion. There are two types of network diagrams, Precedence Diagramming Method (PDM) and Arrow Diagramming Method (ADM). In Precedence Diagramming Method, nodes are used to represent the activities while arrows are used to show interdependencies among activities. While in Arrow Diagramming Method, arrows are used to represent activities while nodes show relationship and dependences among different activities. Following are few types of dependencies that are used on Precedence Diagramming Method (Sanghera 2008):-

Finish to Start - An activity must finish before the next can start

Finish to Finish - An activity must finish before the next activity can finish

Start to Start - An activity must start before the next activity can start

Start to Finish - An activity must start before the next activity can finish

The precedence relationship between the activities in Part 1 is explained below.

Initiating Phase Task 1 and Task 2 start at the same time and have start to start dependency.

Requirement Gathering Phase Task 1 and Task 2 must be finished before the Task 3 is started. Thus these tasks have a finish to start relationship.

Similarly, Task 3 must be finished before Task 4 and Task 5, again indicating a finish to start relationship.

Design Phase Task 4 and Task 5 must be finished before Task 6, indicating a

finish to start relationship. Task 7 can start immediately after Task 5 has been finished. Thus it has a finish to start relationship with Task 5 and start to start relationship with Task 6.

Development and Testing Phase Task 8 and Task 9 must be started after Task 7 is finished. Thus these have a finish to start relationship. Similarly, Task 10 can start when Task 7 has been finished. Also Task 10 precedes Task 12. All showing a finish to start relationship.

Documentation Phase Task 13 has a finish to finish relationship with Task 8 and Task 12.

Deployment and Testing Phase Task 14 must be started after completion of Task 18. Also Task 12 and Task 14 must be completed prior to starting the Task 15. Also Task 13 and Task 15 must be finished before Task 16 is started. Task 17 must start when Task 12 is finished and Task 8 must be finished before Task 18 is started. All the tasks indicate a finish to start relationship.

Project Schedule is shown on the next page in form of Project Network Diagram. The red lines indicated the project critical path while blue lines show dependencies on non-critical paths. The total duration of the project is 192 days.

## Part 2 : Reducing the Project Schedule by One Month

Project Management Institute (2008) defines crashing in its PMBOK as a specific technique for project schedule compression performed, after analyzing and identifying the best compromise between project time and cost, to achieve schedule compression for greatest extent and least increment in cost. For example, if the project has a negative float i. e.,

estimated completion date is after the desired date; then would you as a project manager asking for more time or you would look for alternate options of schedule compression. In more simplistic manner, Crashing actually finds the answer to questions that if time is to be reduced what can cause least increase in cost? By definition, this always results in higher cost, thus trading time for money. In crashing, it is always appreciated to find the best option or set of options with least negative impact on the project.

Mulcahy and Diethelm (2011) insist that project crashing is always associated with the activities on the critical path because it is the sequence of activities with the longest duration that actually determines the project completion time. Thus introducing such activities on critical path that may result in maximum compression of the project time with minimal increase in the project cost would lead the project to crashing by accomplishing the project activities on a faster pace than before. However, it is not true for all activities since it would yield best results with activities that are compressible and if not then may result in increased risk or unwarranted high costs. Therefore, it is better to identify the critical activities or those activities that exhibit the best ratios of incremental cost to reduced time. Based on the customer's request for compressing the project schedule by 30days prior to current completion date, following activities were considered for reducing the time duration.

Task ID

Task Name

Original Duration

Duration after Resource Addition

No of Additional Resources

Cost per Resource per Day

Total Cost per Day

9

Manufacturing of the shell of the machine

40

30

(Reduce by 10 days)

4

500

2000

10

Assembling of the electronic components of the machine

10

10

(No Reduction)

1

700

0

11

Testing of the circuit for accuracy of responses

40

30

(Reduce by 10 Days)

3

300

900

12

Testing of the manufactured machine and calibration to standards

15

5

(Reduce by 10 Days)

1

200

200

Total Additional Cost

3100

With this, change in project schedule and duration is shown on next page.

With reducing the duration of Task 9, Task 10 and Task 12 each by 10 days, the overall duration of the project has been reduced to 162 days from 192 days ( a total reduction of 30 days).

#### References

Mulcahy, R., & Diethelm, L. (2011). Pmp exam prep. (7 ed.). Pennsylvania: RMC Publications Inc.

Project Management Institute (2008). A guide to the project management body of knowledge. (4th ed.). Newtown Square: Project Management Institute, Inc.

Sanghera, P. (2008) Fundamentals of Effective Program Management: A Process Approach Based on the Global Standard. Florida: Jossey Rose Publications.