CHAPTER 5

# Project Time Management

# Hand Out # 5

# Learning Objectives

After reading this chapter you should be able to:

1. Understand the importance of good project time management
2. Explain the basic process for developing project schedules
3. Describe how various tools and techniques help project managers perform activity definition, activity sequencing, activity duration estimating, schedule development, and schedule control
4. Use a Gantt chart for schedule planning and tracking schedule information
5. Construct a project network diagram and understand its importance for determining overall project completion dates
6. Understand and use critical path analysis
7. Describe several techniques for shortening project schedules
8. Explain the basic concepts behind critical chain scheduling
9. Discuss reality checks and people issues involved in project schedule management and control
10. Describe how software can assist in project time management

# Chapter Outline

Importance of Project Schedules

Where Do Schedules Come From? Defining Activities

Activity Sequencing

Project Network Diagrams

Activity Duration Estimating

Schedule Development

Gantt Charts

Critical Path Method

Using Critical Path Analysis to Make Schedule Trade-Offs

Techniques for Shortening a Project Schedule

Importance of Updating Critical Path Data

Critical Chain Scheduling

Program Evaluation and Review Technique (PERT)

Controlling Changes to the Project Schedule

Reality Checks on Scheduling

Working with People Issues

Using Software to Assist in Time Management

Words of Caution On Using Project Management Software

Lecture Notes

## Importance of Project Schedules

Many people view project time management as one of the most important and most unique aspects of project management. This chapter includes many terms, tools, and techniques that are unique to project management.

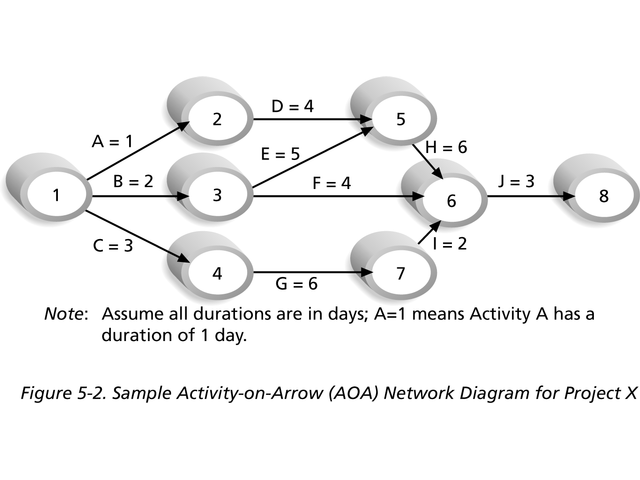
Many projects that are completed are finished late. Schedule issues are the main reason for conflicts on projects. One can often relate to problems with time since many of them are juggling work, school, families, and so on. The importance of developing realistic schedules and adhering to these realistic schedules, in order to improve project time management. Figure 5.1show the results of research on causes of conflicts on projects.

## Where Do Schedules Come From? Defining Activities

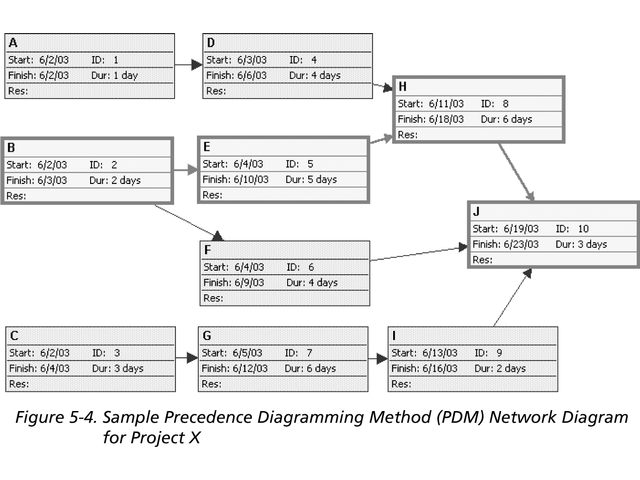
Many other knowledge areas and process groups come into play when creating a project schedule. There must be a strong scope definition before creating a schedule, as well as good information concerning cost, quality, human resources, and so on. The importance of documenting WBS activities and making sure the project team understands each activity before doing *activity sequencing* or duration estimating.

## Activity Sequencing

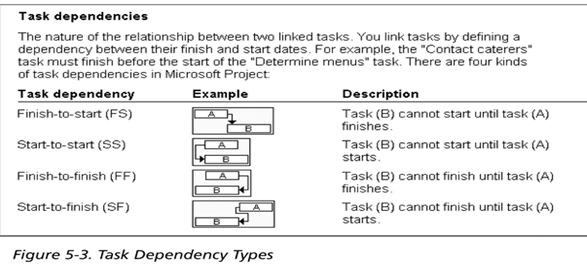
The concept of creating dependencies or relationships makes sense to most. However, creating dependencies, or have even use of a PERT (Program Evaluation & Review Technique) chart. In example, shown using Project X in Figure 5-2 by Network Diagram. It is often easier to read and create the activity-on-arrow (AOA) network diagrams, even though project management software uses the precedence diagramming method. The same project using both diagramming methods is shown in (Figure 5-2 and 5-4). A network diagram using just a few activities.



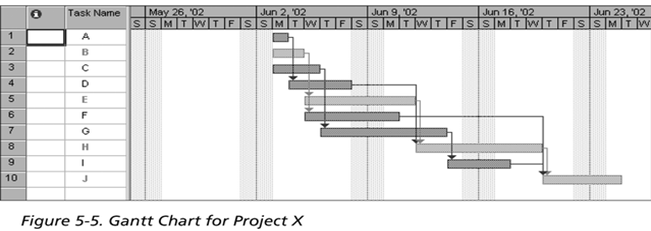
Figures 5.4 illustrate Project X using the Precedence diagramming method for Figure 5.3; the activities are placed inside boxes, which represent the nodes of this diagram.



Another method is Precedence diagramming method (PDM) is a network diagramming technique in which boxes represent activities, as shown in Figure 5.3.



Project management tools for schedule development: Gantt charts, network diagrams (formerly called PERT charts), and critical path analysis, Gantt chart as shown in Figure 5.5.



***Activity Duration Estimating***

People often become confused when creating duration estimates. Unlike many cost estimates where you estimate **the amount of time someone would work on an activity, the duration estimate includes that time, plus any elapsed time.** Many people are overly optimistic about how long it will take to complete activities.

## Schedule Development

Emphasize that the ultimate goal of schedule development is to create a realistic project schedule that provides a basis for monitoring project progress. Schedules are an important part of project plans, and most people can easily understand schedules and see if work is being completed on time or not.

***Critical Path Method***

This is also called critical path analysis. It is also part of network diagramming technique used to predict total project schedule.

***Calculating the Critical Path***

Figure 5.8 shows the AOA network diagram for Project X. This figure shows all the paths, a total of four paths, through the network diagram.

## 

Since path B-E-H-J at 16 days has the longest duration, it is the critical path for the Project X. What does the critical path means? **The critical path shows the shortest time in which a project can be completed. Even though the critical path is the longest path, it represents the shortest time it takes to complete a project.**

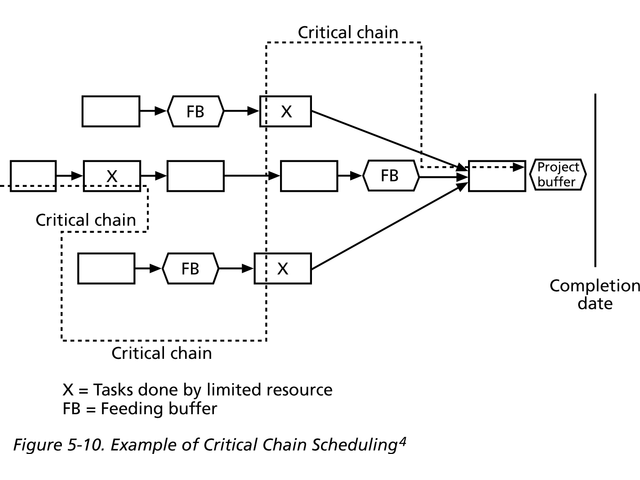
***Critical Chain Scheduling***

Multitasking occurs when a resource works on more than one task at a time; see Figure 5.9(a). The same person is assign three tasks and if he wanted to please someone he works on one Task-1 then on Task-2 and then on Task-3, sees his results in Figure 5.9(b).

## 

## Task-1 is completed in 20 days instead of 10 days, similarly Task-2 completed in 25 days instead of 20 days and Task-3 in completed in same days.

Another approach in this connection is to add buffer, as shown in Figure 5.10, below. The job of FB, this gives additional time added before task proceeded.



## Controlling Changes to the Project Schedule

The importance of reviewing project schedules to ensure that they are both reasonable and realistic. Many project managers and team members are pressured to create unrealistic time estimates. It is better to negotiate realistic schedules up front on most projects than to deal with schedule overruns later in the project. It is also important to remember the people issues involved in developing and maintaining project schedules. It takes good leadership to keep people on schedule

## Using Software to Assist in Time Management

Project management software is most often used for time management. Unlike other software (spreadsheets, databases, and so on), project management software easily creates Gantt chart, network diagrams, and critical path information.