

Why

PERT/CPM is used for planning, for budgeting, and for ongoing management of projects. We will take one project and look at several aspects of the planning and management through the lens of PERT in order to see what it will tell us.

LEARNING OBJECTIVES

1. Work as a team, using the team roles
2. Understand the use of PERT/CPM in planning and budgeting a project.
3. Understand acceleration (“Crashing”) of a project, and develop some idea of criteria for deciding if crashing is desirable (in the deterministic case - we’ve looked at the “uncertain duration” case)
4. See how a budget may be developed from a project plan
5. See the basic use of PERT-COST in managing a project

CITERIA

1. Success in working as a team and in fulfilling the team roles.
2. Understanding of the material by all team members
3. Success in completing the exercises.

RESOURCES

1. The handouts on projects cost/time tradeoffs (class 10/28) and on Managing costs with PERT (available on Blackboard - with Excel example)
2. Your text – sections 5.10 and 5.11
3. Microsoft Excel on the campus network
4. The templates and data in the workbook Act8SS.xls available on Blackboard
5. 50 minutes

PLAN

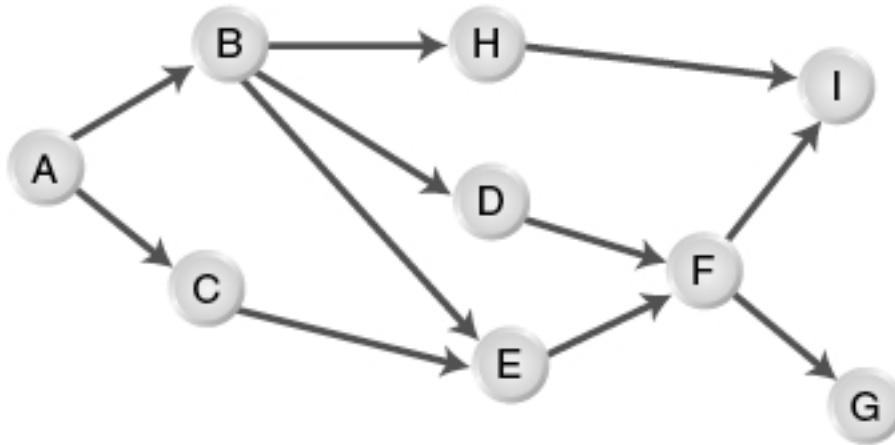
1. Select roles, if you have not already done so, and decide how you will carry out steps 2 and 3
2. Work through the exercises given below you will submit one (team) copy of the work, with the usual reports [see the syllabus]
3. Assess the team’s work and roles performances and prepare the Reflector’s and Recorder’s reports including team grade.
4. Be prepared to discuss your results

EXERCISES

Note: This is a selection of parts from Questions 45–48 from the additional problems on the Text CD.

QP Dolls, Inc. has developed a new doll it feels could turn into a “collectors item” through proper advertising on cable TV. The PERT/CPM network shown here models the activities (or work packages) of the project. Distribution of the total budgeted cost of \$5,280,000 and expected completion times (in weeks) for each of the

work packages are summarized in the first table below:



Work Package	Expected Time(wk)	Budgeted Cost
A. Conduct market analysis	6	\$ 240,000
B. Secure facilities/equipment	4	\$ 300,000
C. Hire manufacturing supervisor/foremen	3	\$ 150,000
D. Purchase manufacturing materials	3	\$ 540,000
E. Hire/train workers	10	\$ 900,000
F. Manufacture various prototypes	2	\$ 300,000
G. Complete full-scale production	6	\$1,350,000
H. Develop advertising campaign	6	\$ 450,000
I. Prepare cable TV informercials	8	\$1,050,000

The Excel worksheet “QP doll-Early-Late schedule” in the workbook Act7SS shows the early and late start and finish times for the project

Management is giving some thought to putting extra resources into the project so that it can be completed within one-half year (26 weeks). Accordingly, each work package has been studied, and a set of crash times in weeks and costs has been developed

Work Package	Crash Time	Crash Cost
A. Conduct market analysis	5	\$ 300,000
B. Secure facilities/equipment	3	\$ 400,000
C. Hire manufacturing supervisor/foreman	2	\$ 240,000
D. Purchase manufacturing materials	2	\$ 750,000
E. Hire/train workers	7	\$1,440,000
F. Manufacture various prototypes	1	\$ 390,000
G. Complete full-scale production	4	\$3,200,000
H. Develop advertising campaign	3	\$ 900,000
I. Prepare cable TV informercials	4	\$2,600,000

Your Job:

1. Develop a chart summarizing feasible budgets under both an earliest and a latest start time scenario (normal times), assuming that the budget for a work package will be distributed equally throughout its duration.
2. Determine a schedule for the work packages which minimizes the total cost of completing the project within 26 weeks. What is the minimum total cost? (May wish to use PERT-deadline template)
3. Management estimates that completing the project in 26 weeks would be worth \$1 Million (due to increased sales for the Christmas season). Would the acceleration to 26 weeks be worthwhile (based on this information)?

4. Assume QP decides to schedule the project according to the earliest time schedule for the activities derived in the previous step, and bases its budget of \$5,280,000 on the estimates given for the problem. At the end of week 15, only \$2 million has been spent. The status of each work package is as follows.

Work Package	Percent Completed	Accumulated Cost(\$)
A. Conduct market analysis	100	250,000
B. Secure facilities/equipment	100	320,000
C. Hire manufacturing supervisor/ foremen	100	140,000
D. Purchase manufacturing materials	50	300,000
E. Hire/train workers	60	590,000
F. Manufacture various prototypes	0	0
G. Complete full-scale production	0	0
H. Develop advertising campaign	50	400,000
I. Prepare cable TV informercials	0	0

Determine the amount the project is ahead or behind schedule and the amount it is over or under budget. (Note you can copy/past the precedence table from Pert- into the Pert-cost template). If the project is behind schedule or over budget, suggest some corrective actions that QP might attempt to rectify the situation.

READING ASSIGNMENT (in preparation for next class meeting)

Begin review of Chapters 4 and 5 for test 11/8

SKILL EXERCISES:(hand in - individually - at next class meeting)

No additional written exercises