



Al- Mustaqbal University College
Chem. Eng. Petr. Ind. Dept.
4th stage

Industrial Management and Ethics

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Lecture 6

Project Management Techniques: PERT

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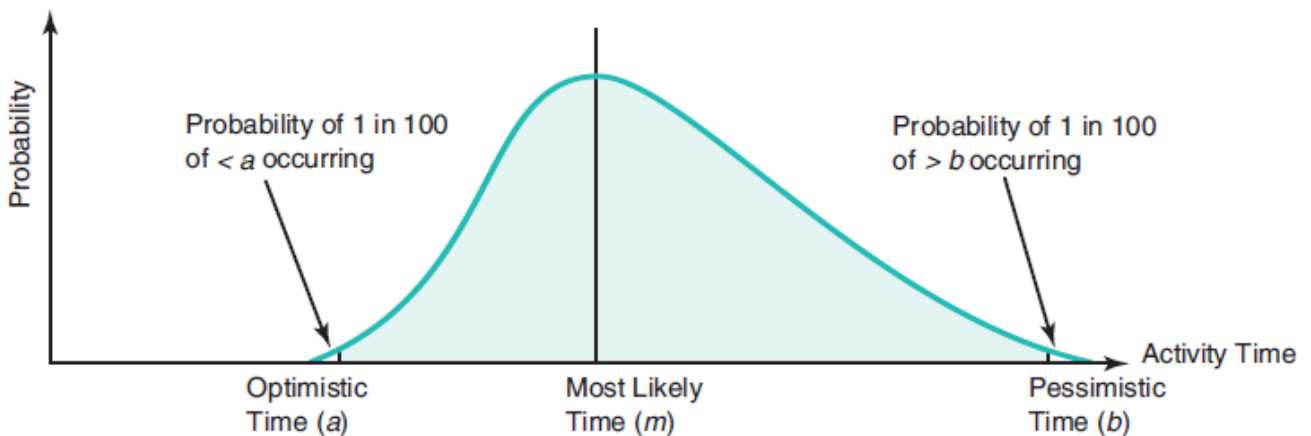
Program evaluation and review technique (PERT)

Three Time Estimates in PERT

Optimistic time (a) = time an activity will take if everything goes as planned. In estimating this value, there should be only a small probability (say, 1/100) that the activity time will be $< a$.

Pessimistic time (b) = time an activity will take assuming very unfavorable conditions. In estimating this value, there should also be only a small probability (also 1/100) that the activity time will be $> b$.

Most likely time (m) = most realistic estimate of the time required to complete an activity.



To find the *expected activity time*, t , the beta distribution weights the three time estimates as follows:

$$t = (a + 4m + b)/6$$

Example 1

Julie Ann Williams and the project management team at Milwaukee Paper want an expected time and variance for Activity F (Installing the Pollution Control System) where:
 $a = 1$ week, $m = 2$ weeks, $b = 9$ weeks

The expected time for Activity F is:

$$t = \frac{a + 4m + b}{6} = \frac{1 + 4(2) + 9}{6} = \frac{18}{6} = 3 \text{ weeks}$$

Example 2

Review the expected times for all of the other activities in the project. These are shown in Table below. Draw PERT network and calculate the expected time for completion the project.

ACTIVITY	OPTIMISTIC a	MOST LIKELY m	PESSIMISTIC b	EXPECTED TIME $t = (a + 4m + b)/6$
A	1	2	3	2
B	2	3	4	3
C	1	2	3	2
D	2	4	6	4
E	1	4	7	4
F	1	2	9	3
G	3	4	11	5
H	1	2	3	2

Example 3

ACTIVITY	IMMEDIATE PREDECESSOR	TIME (WEEKS)		
		<i>a</i>	<i>m</i>	<i>b</i>
A	—	9	10	11
B	—	4	10	16
C	A	9	10	11
D	B	5	8	11

Draw the project network

What is the expected completion time of the critical path?

Homework

A renovation of the gift shop at Orlando Amway Center has six activities (in hours). For the following estimates of a , m , and b , calculate the expected time for each activity:

ACTIVITY	a	m	b
A	11	15	19
B	27	31	41
C	18	18	18
D	8	13	19
E	17	18	20
F	16	19	22