A framework for dealing with risk

The planning for risk includes these steps:

- Risk identification – what risks might there be?
- Risk analysis and prioritization – which are the most serious risks?
- Risk planning – what are we going to do about them?
- Risk monitoring – what is the current state of the risk?

Boehm's top 10 development risks

Risk	Risk reduction techniques
1. Personnel shortfalls	Staffing with top talent; job matching; teambuilding; training and career development; early scheduling of key personnel
2. Unrealistic time and cost estimates	Multiple estimation techniques; design to cost; incremental development; recording and analysis of past projects; standardization of methods
3. Developing the wrong software functions	Improved software evaluation; formal specification methods; user surveys; prototyping; early user manuals
4. Developing the wrong user interface	Prototyping; task analysis; user involvement

❑ Risk Assessment

Risk exposure (RE)

= (potential damage) x (probability of occurrence)

Ideally

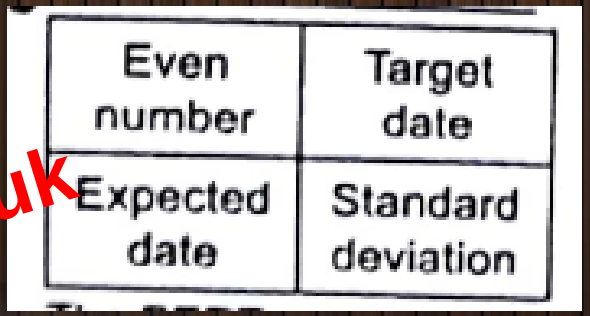
Potential damage: a money value e.g. a flood would cause £0.5 millions of damage

Probability 0.00 (absolutely no chance) to 1.00 (absolutely certain) e.g. 0.01 (one in hundred chance)

RE = £0.5m x 0.01 = £5,000

Crudely analogous to the amount needed for an insurance premium

PERT event Labelling



	Activity	Duration (weeks)	Precedents
A	Hardware selection	6	
B	System configuration	4	
C	Install hardware	3	A
D	Data migration	4	B
E	Draft office procedures	3	B
F	Recruit staff	10	
G	User training	3	E, F
H	Install and test system	2	C, D

1. Calculate Expected Duration

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

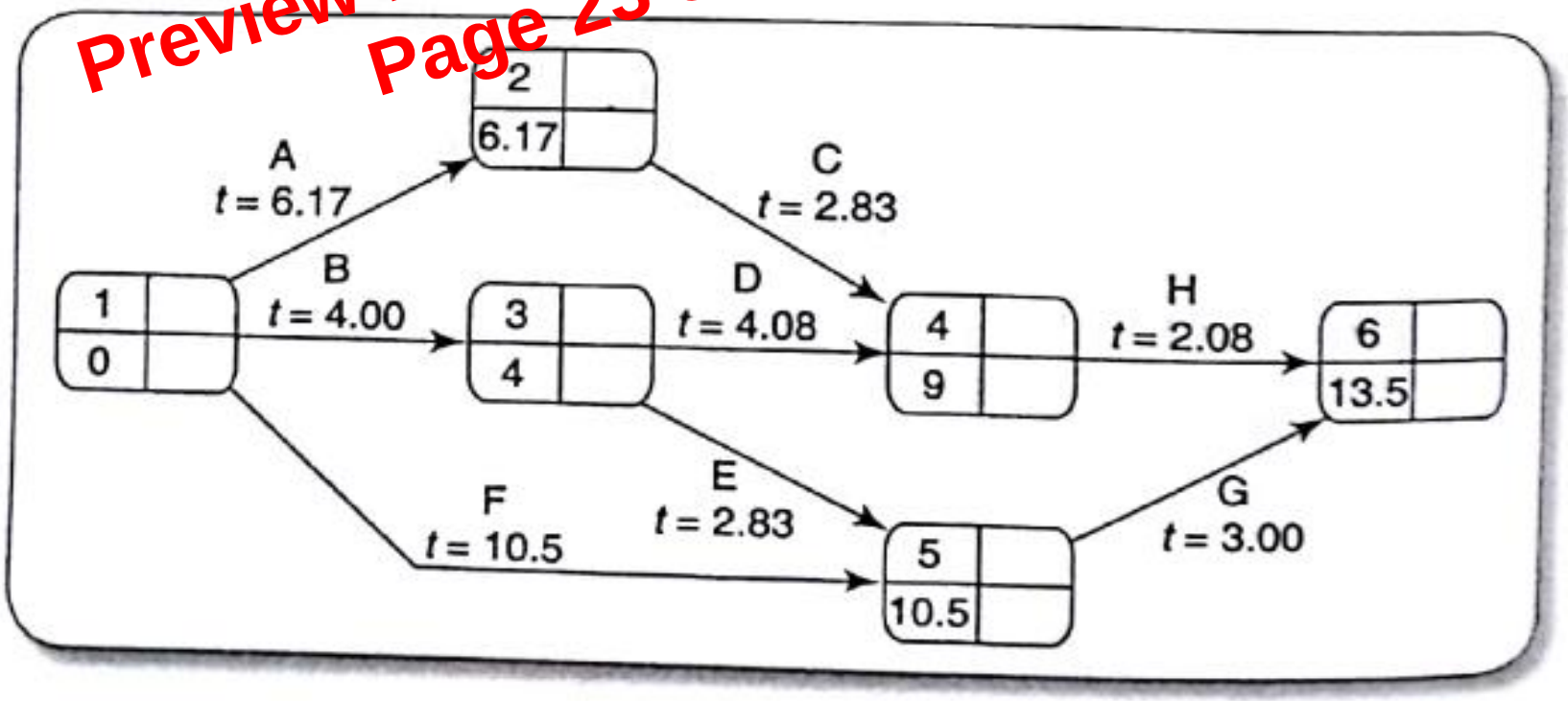


FIGURE 7.6 The PERT network after the forward pass

Example

- To perform the Monte Carlo simulation to determine the schedule, you must have duration estimates for each activity.

Let's say that you have three activities with the following estimates (in months):

Activity	Optimistic	Most Likely	Pessimistic	PERT Estimate
A	5	4	6	4.5
B	5	6	7	6
C	6	7	8	7
Total	16	17	21	17.5

However, in the best case, it will be finished in 16 months, and in the worst case it will be finished in 21 months.

Now, if we run the Monte Carlo simulation for these tasks five hundred times, it will show us results such as:

Duration (in months)	Chances of Completion
16	2%
17	8%
18	55%
19	70%
20	95%
21	100%