Software Project Management

Week 7

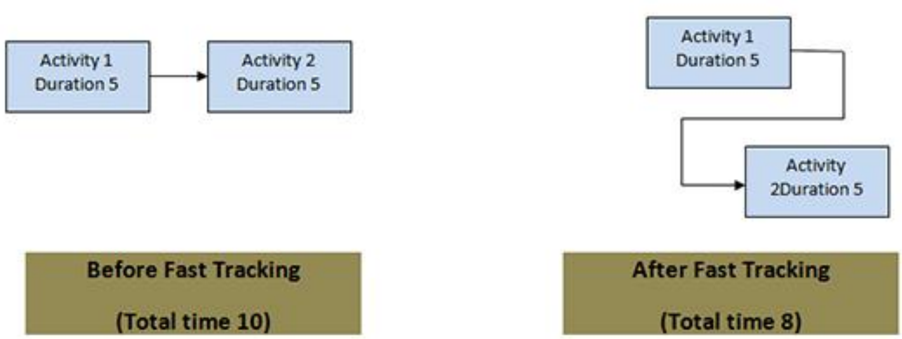
Fast Tracking

- A schedule compression technique in which activities or phases normally done in sequence are performed in parallel for at least a portion of their duration
- Fast tracking is not done blindly by changing schedule to have activities running in parallel.Rather activities are analysed to parallel work and extent of it.
- There is reference to “at least a portion of their duration.” In definition. This means full activity/activities are not required to be done in parallel. Portions can be done and most of the time its portions only

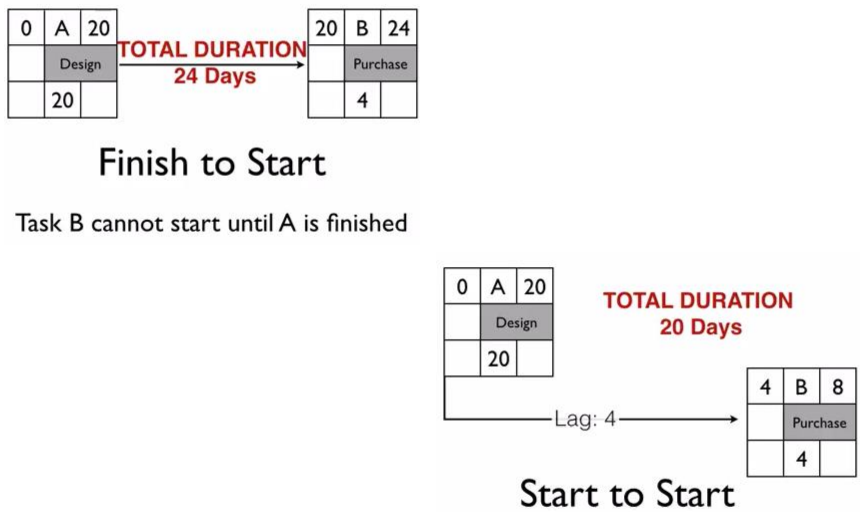
Fast tracking

- In a situation where schedule compression is required, this technique is explored first
- Any schedule compression technique is applied on the activities of critical path activities else we may end up owning risk without any tangible output of it
- Fast tracking can only be done to some limits after which if continued may only add risk and rework and not schedule compression. Ultimately you have to wait for concrete to settle before start of painting

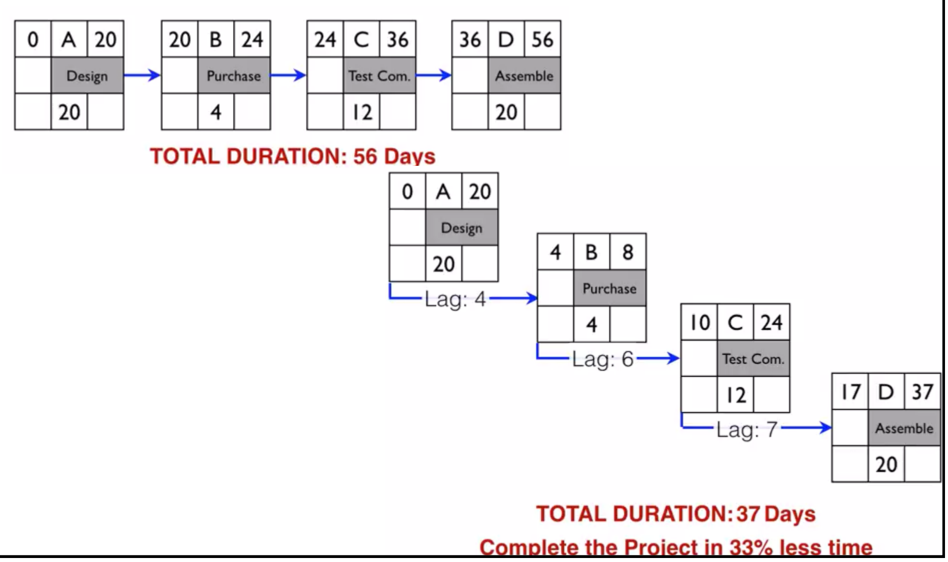
Fast Track



Example - I



Example - 2



Pros and Cons

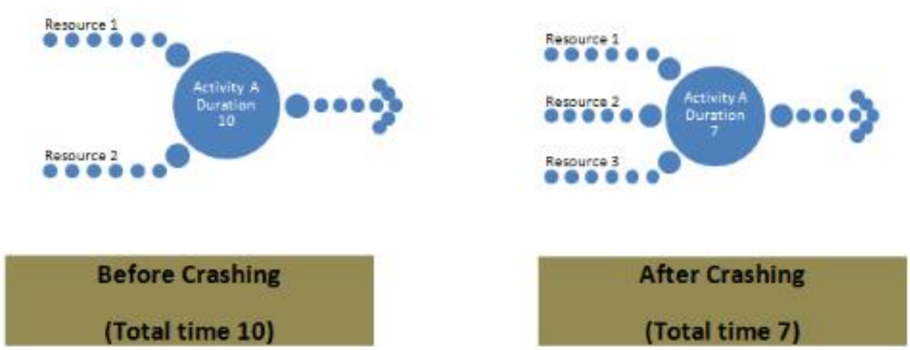
Pros	**Cons**
• No extra costs	• Increases risk
• Reduces project time	• Network is more sensitive
	• Requires more communication

Crashing

- A technique used to shorten the schedule duration for the least incremental cost by adding resources
- Crashing is not done blindly by adding resources. First the additional cost and benefits with crashing are evaluated and then only this is taken forward. Cost and schedule trade-offs are analysed to explore least additional cost and maximum compression
- Additional resources doesn't only mean additional number of heads but it can be any of below
  - Approving overtime
  - Paying extra
  - Adding more resources

Crashing

- This option is always explored after exploring fast tracking for a obvious reason of additional cost
- **Any schedule compression technique is applied on the activities of critical path activities else we may end up owning risk without any tangible output of it**
- Crashing can be done to some limits, after which if continued may only consume money without schedule compression. Ultimately you can't deliver a baby in one month if resources increased from 1 to 9



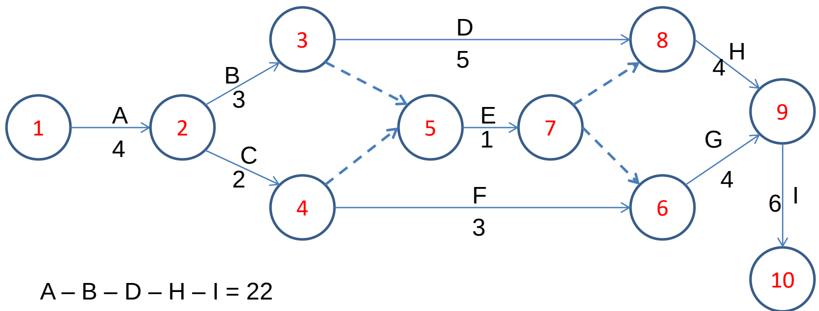
Sno	Fast Tracking	Crashing
1	Activities or phases are performed in parallel to compress the schedule	More resources are added to the activities or phases to compress the schedule
2	Increases rework and risk	Increases cost and can result in increased risk/cost too
3	Works only when activities/phases can be overlapped to shorten the project duration	Works only for activities where additional resources will shorten the activity's duration
4	Always tried first	Always tried when fast tracking hasn't given required compression in schedule
5	Applied on critical path activities. If not it will only add to float	Applied on critical path activities. If not it will only add to float

Example – I

Activity	Preceding Activity	Normal Time	Crash time	Normal Cost	Crash Cost	Cost /Wk	Wks to decrease
A	-	4	2	10,000	11,000	500	2
B	A	3	2	6,000	9,000	3,000	1
C	A	2	1	4,000	6,000	2,000	1
D	B	5	3	14,000	18,000	2,000	2
E	B,C	1	1	9,000	9,000	0	0
F	C	3	2	7,000	8,000	1,000	1
G	E,F	4	2	13,000	25,000	6,000	2
H	D,E	4	1	11,000	18,000	2,333	3
I	H,G	6	5	20,000	29,000	9,000	1

Slope = Crash cost – normal cost / crash time – normal time

Project Network Diagram



A – B – D – H – I = 22
A – B – E – H – I = 18
A – B – E – G – I = 18
A – C – E – H – I = 17
A – C – E – G – I = 17
A – C – F – G – I = 19

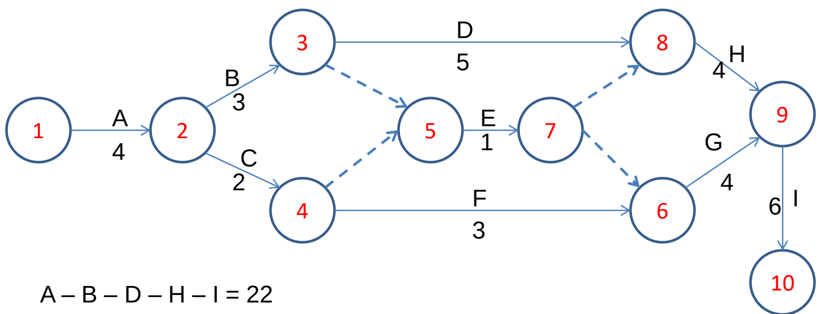
Q1 = REDUCTION OF DURATION TO 19
Q2 = NEW AND OLD PROJECT COST

Example – I

Activity	Preceding Activity	Normal Time	Crash time	Normal Cost	Crash Cost	Cost /Wk	Wks to decrease
A	-	4	2	10,000	11,000	**500**	2
B	A	3	2	6,000	9,000	**3,000**	1
C	A	2	1	4,000	6,000	2,000	1
D	B	5	3	14,000	18,000	**2,000**	2
E	B,C	1	1	9,000	9,000	0	0
F	C	3	2	7,000	8,000	1,000	1
G	E,F	4	2	13,000	25,000	6,000	2
H	D,E	4	1	11,000	18,000	**2,333**	3
I	H,G	6	5	20,000	29,000	**9,000**	1

Slope = Crash cost – normal cost / crash time – normal time

Project Network Diagram



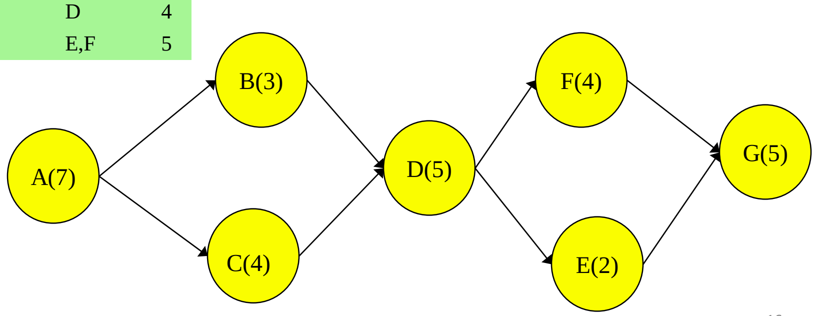
A – B – D – H – I = 22
A – B – E – H – I = 18
A – B – E – G – I = 18
A – C – E – H – I = 17
A – C – E – G – I = 17
A – C – F – G – I = 19

Q1 = REDUCTION OF DURATION TO 19
Q2 = NEW AND OLD PROJECT COST

We go by reduction in A and **?**

Act.	Imed. Pred.	Time
A	None	7
B	A	3
C	A	4
D	B,C	5
E	D	2
F	D	4
G	E,F	5

Crash the project by 4 days



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Time – Cost Analysis
Crashing the Project (Crash 4 days)

Activity	Normal Time	Crash Time	Normal Cost	Crash Cost	Cost/Day
A	7	6	$7,000	$8,000	$1,000
B	3	2	5,000	7,000	2,000
C	4	3	9,000	10,200	1,200
D	5	4	3,000	4,500	1,500
E	2	1	2,000	3,000	1,000
F	4	2	4,000	7,000	1,500
G	5	4	5,000	8,000	3,000

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		Action					
Path	Length	Crash A	Crash C	Crash F (or D)	Crash F (or D)		
ABDFG	24	23	23	22	21		
ABDEG	22	21	21	21	21		
ACDFG	25	24	23	22	21		
ACDEG	23	22	21	21	21		

Action	Marginal Cost	Total Cost
Crash A	$1,000	$1,000
Crash C	$1,200	$2,200
Crash F	$1,500	$3,700
Crash F	$1,500	$5,200