Project management 101 *by Zavanak*

21. DEALING WITH PROBLEMS

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Project management 101 *by Zavanak*

21.7 Accelerating the project

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Why we need to go faster

The **schedule was too optimistic** in the first place and the project manager is facing a fixed deadline to finish by.

Market needs change and the project output is in demand sooner than expected.

The project has **slipped further behind schedule** than can be absorbed by the time contingency (e.g. time to resolve performance problem with output).

The contract with the customer includes **severe penalties if the project is late**. Adding cost to finish on time may be cheaper than contract penalties for late delivery.

The project may face **dangerous external risks** such as impending severe weather of the outbreak of war.

Speeding up the project is a change, so must be managed through the formal change control processes, and tested against the business case.

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Ways to accelerate the project

Use overtime and weekend working, or lengthen work shifts. Having over-tired team members may lead to quality problems.

Run more activities in parallel. Even if it is possible, people may get in each other's way.

Improve the productivity of project resources. This could be incentives to complete work early, such as early finish bonuses.

Add extra resources. It may be hard to get new people up to speed, and find space for extra equipment. Staff hired externally may taken longer to settle in.

Negotiate to have un-used resources. These might be surplus people from another part of the organisation, or equipment that would otherwise stand idle.

Relax quality standards. Reducing testing or inspections may lead to higher warranty or maintenance costs later.

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Ways to accelerate the project

Remove constraints to starting activities early. Modify dependency relationships.

Change working methods. This may involve changing the balance between the use of technology and people to do the work.

De-scope the project. This might mean paring back the output, like reducing the number of people to be trained or cutting 'nice to have' features. New technology may be dropped.

Revisit the original estimates. With the benefit of the **learning rate**, some estimates may have proved too pessimistic.

Adopt critical chain methods. Focusing on removing bottle-necks to progress. This is very difficult once a project has begun.

Get output to a point where it works well enough to meet the deadline. Coming back to finish it off will probably be expensive and disruptive.

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Crashing the project

Crashing the project does not mean destroying it!

Crashing is taking actions to finish the project sooner than would be the case if it was allowed to carry on under the current plan.

In other words, crashing is about **accelerating the project**.

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The challenges of crashing

It is very **hard to increase productivity** in the middle of a project:

- Quality standards and processes are fixed
- Equipment cannot be used faster
- New systems and equipment cannot work without training

Extra work hours do not automatically help:

- Productivity falls when people work long hours
- Overtime is not used effectively
- Extra people gets in each others' way

Crashing is never easy, and is usually painful and expensive.

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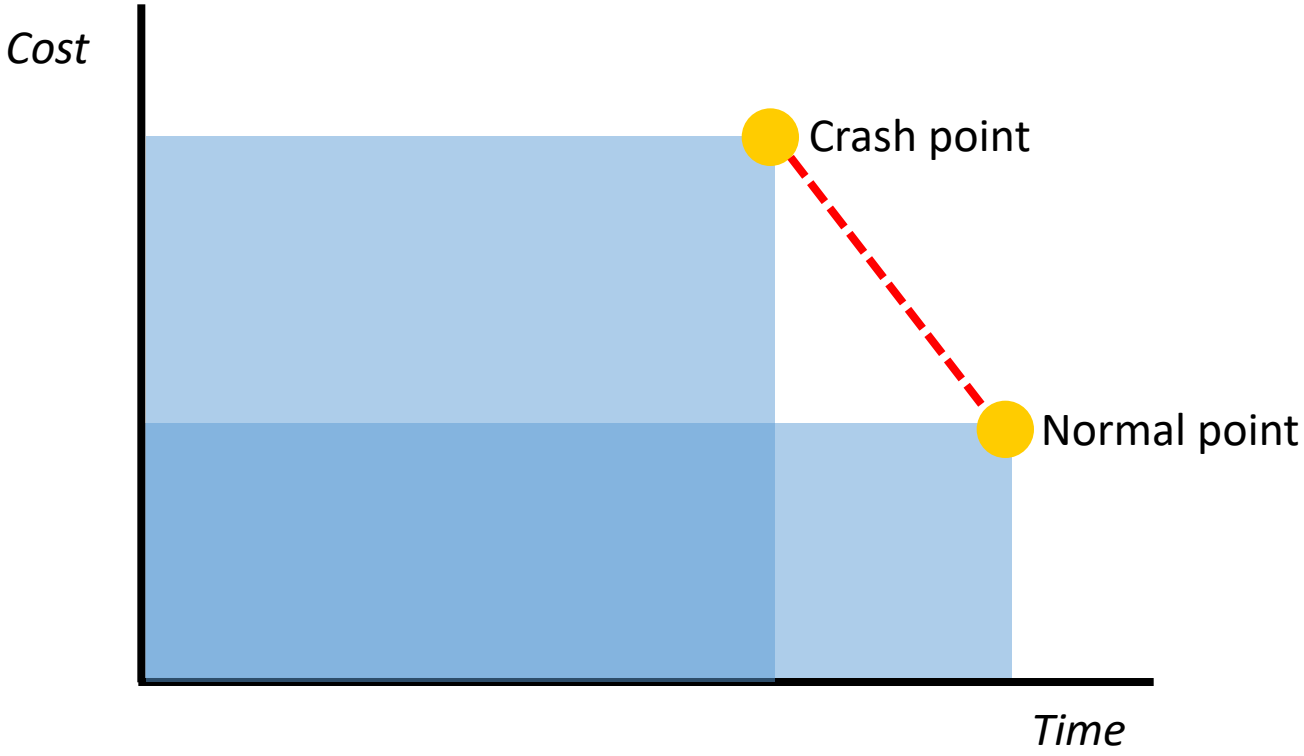
The crashing trade-offs



$$\text{Slope} = \frac{\text{Crash cost} - \text{Normal cost}}{\text{Normal time} - \text{Crash time}}$$

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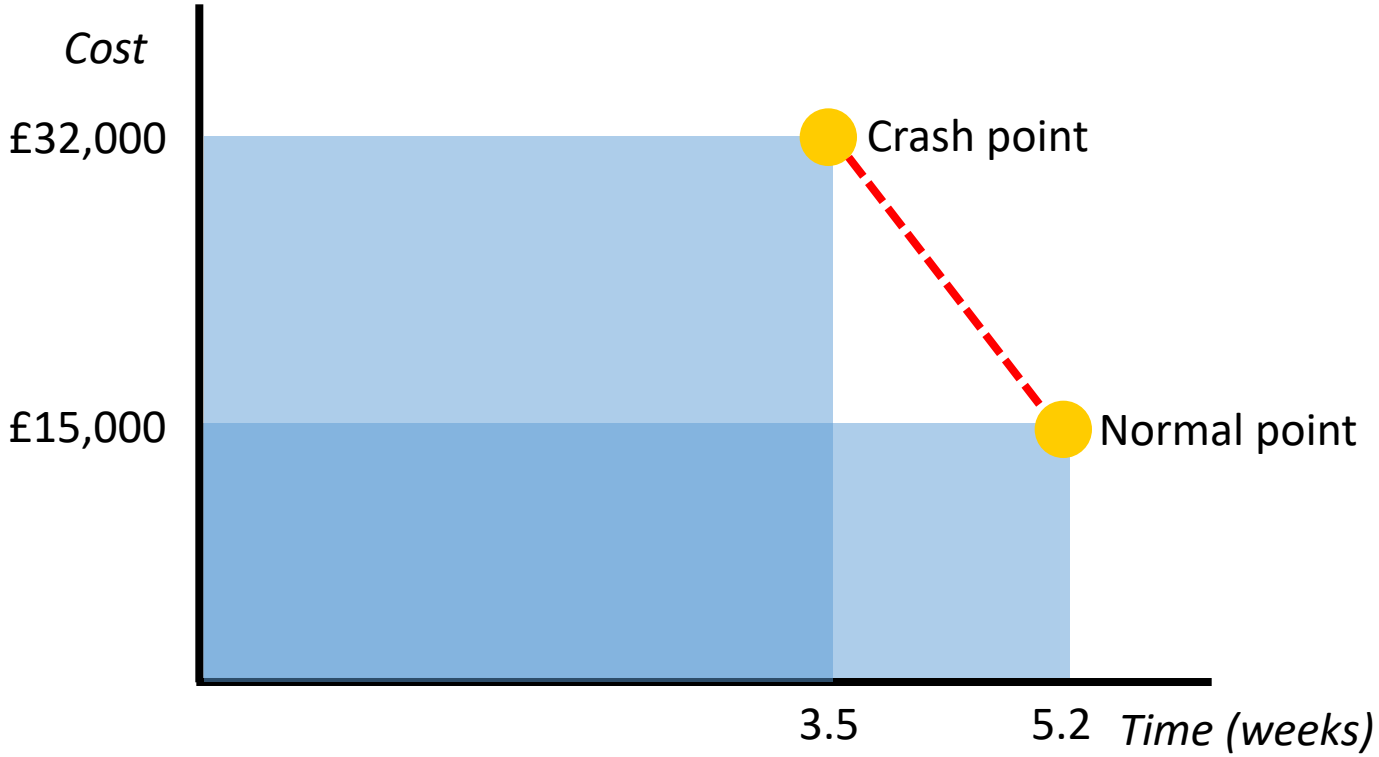
The cost of crashing



$$\text{Slope} = \frac{32{,}000 - 15{,}000}{5.2 - 3.5} = £10{,}000 \text{ per week}$$

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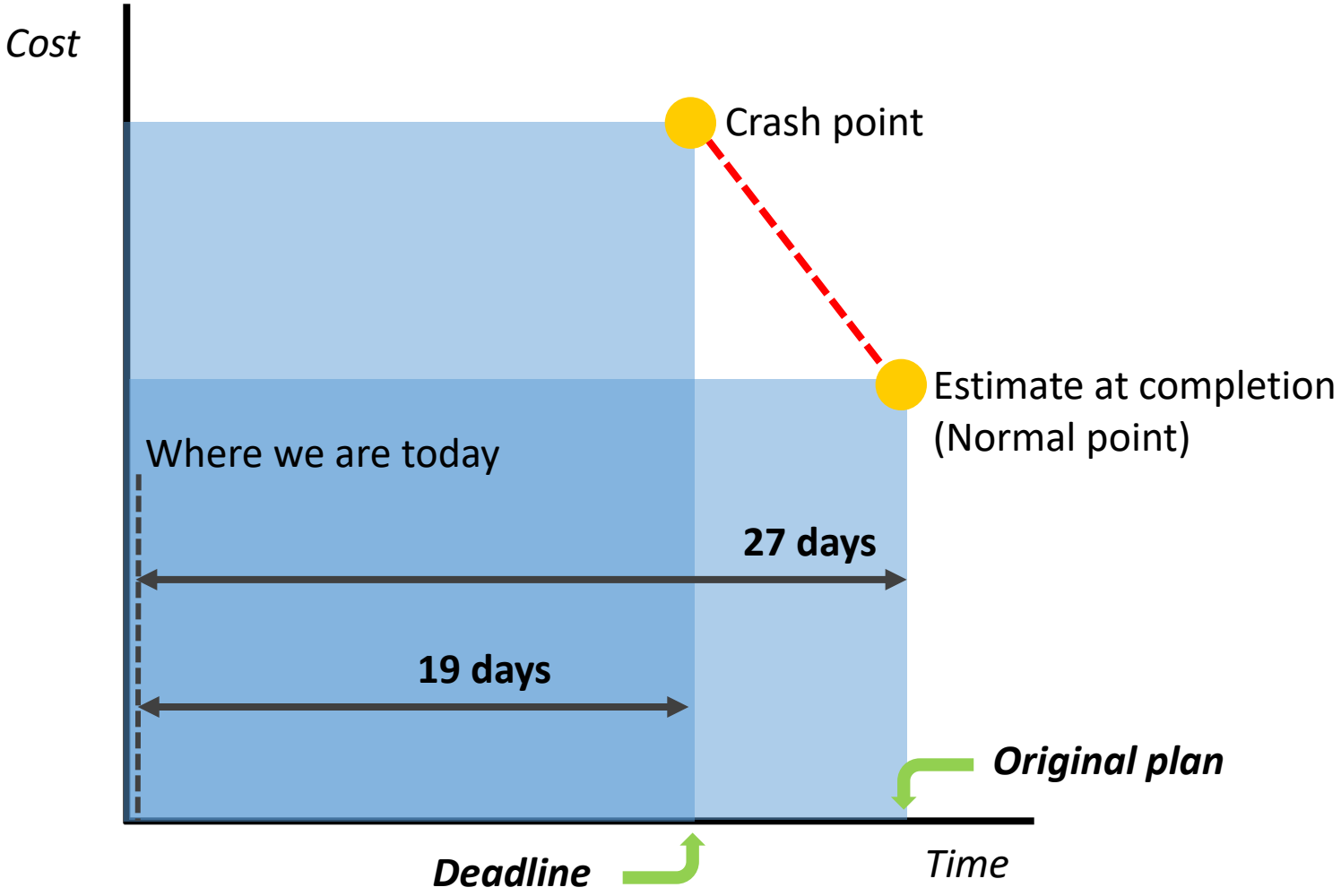
The crashing trade-offs



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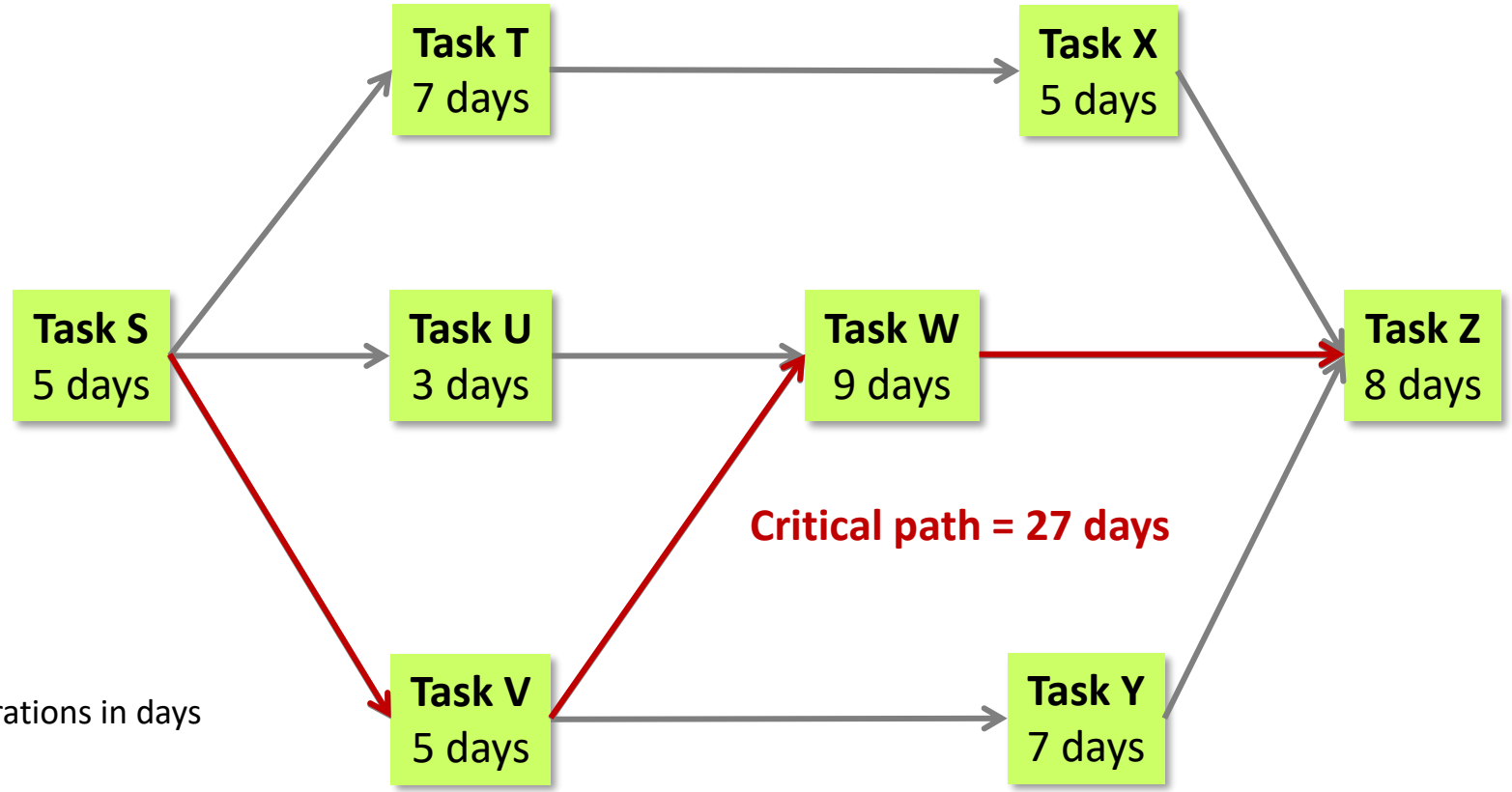
The normal project task network



Durations in days

Challenge: Shorten the deadline to 19 days from starting Task S

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Project activities and costs

	Normal		Crashed		
Activity	**Duration (days)**	**Cost £**	**Duration (days)**	**Cost £**	**Cost per day**
S	5	1,000	3	1,500	250
T	7	700	6	1,000	300
U	3	2,500	2	4,000	1,500
V	5	1,500	5	1,500	-
W	9	3,750	6	9,000	1,750
X	5	1,600	3	2,500	900
Y	7	2,100	4	3,000	300
Z	8	9,000	5	15,000	2,000
Total		**£22,150**		**£37,500**	

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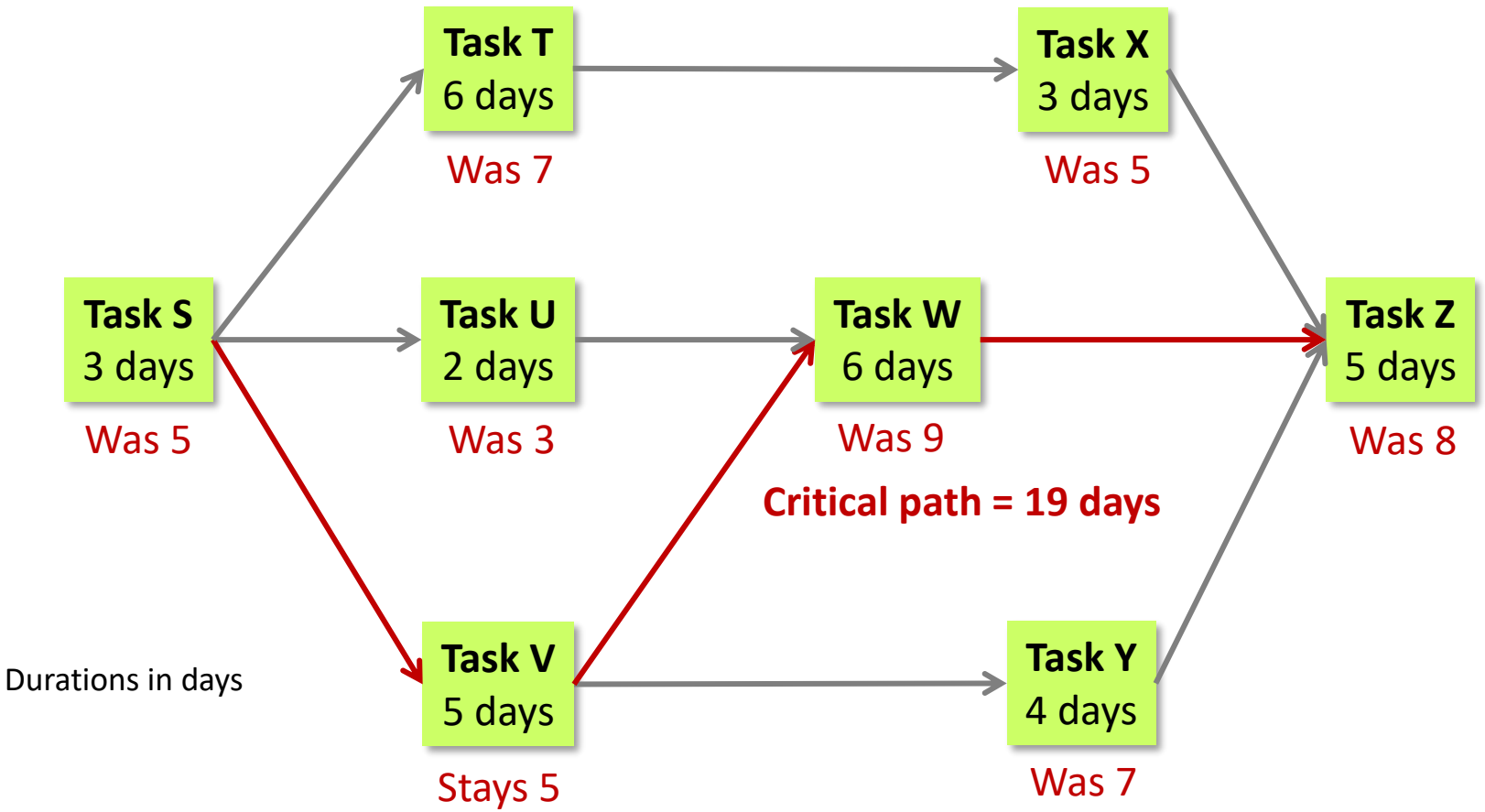
The fully crashed project task network



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Project activities and costs

	Normal		Crashed (pass1)		
Activity	**Duration (days)**	**Cost £**	**Duration (days)**	**Cost £**	**Cost per day**
S	5	1,000	3	1,500	250
T	7	700	6	1,000	300
U	3	2,500	2	4,000	1,500
V	5	1,500	5	1,500	-
W	9	3,750	6	9,000	1,750
X	5	1,600	3	2,500	450
Y	7	2,100	4	3,000	300
Z	8	9,000	5	15,000	2,000
Total		**£22,150**		**£37,500**	

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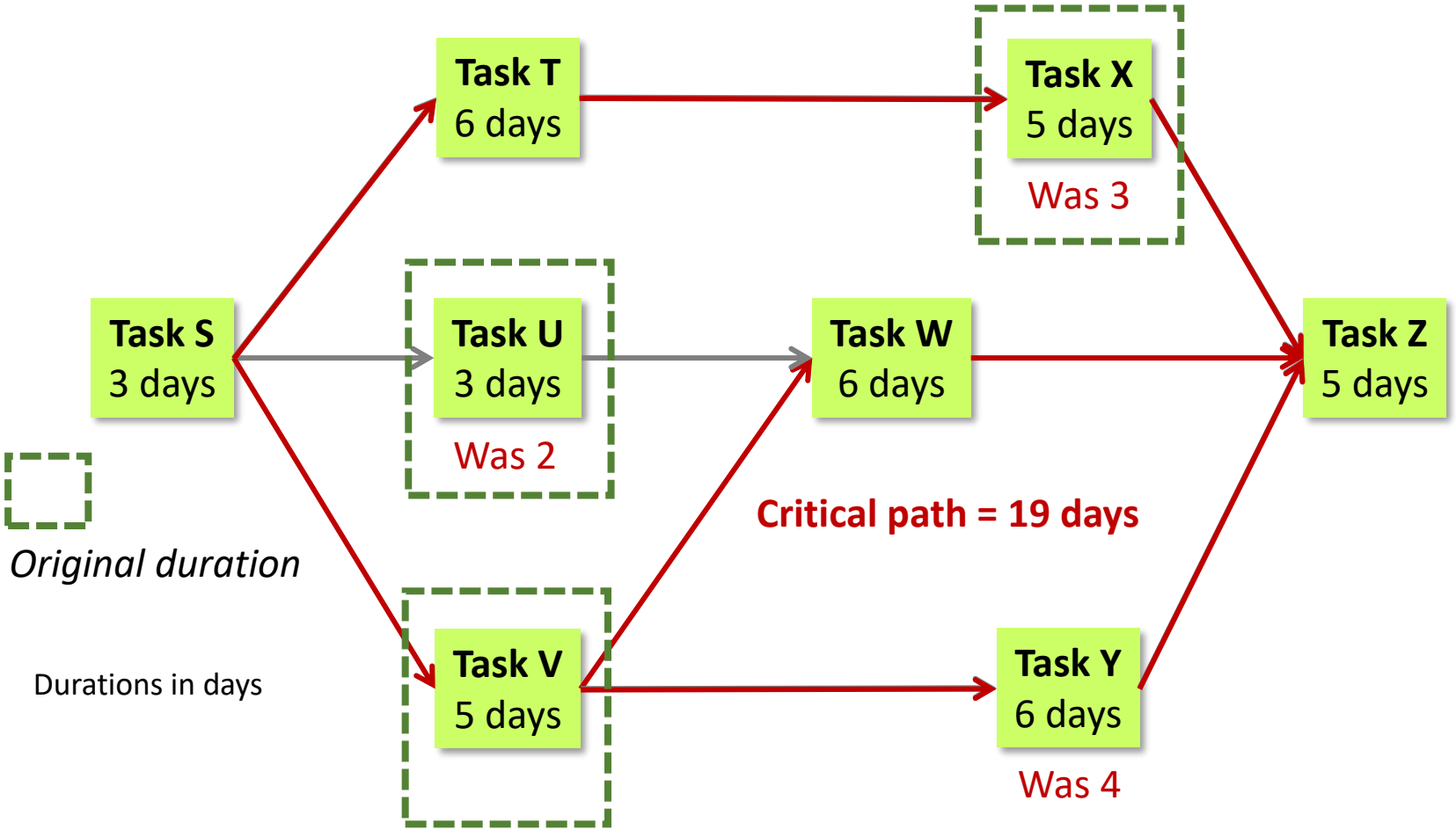
The optimally crashed project task network



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Project activities and costs

	Normal		Crashed (pass 2)		
Activity	**Duration (days)**	**Cost £**	**Duration (days)**	**Cost £**	**Cost per day**
S	5	1,000	3	1,500	250
T	7	700	6	1,000	300
U	3	2,500	3	2,500	-
V	5	1,500	5	1,500	-
W	9	3,750	6	9,000	1,750
X	5	1,600	5	1,600	-
Y	7	2,100	6	2,400	300
Z	8	9,000	5	15,000	2,000
Total		**£22,150**		**£34,500**	

Was £37,500

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Rules for crashing

Understand exactly why the project has to be crashed. How critical is the new deadline; can even a small period of time be added?

Work out the costs of accelerating each remaining task. Sometimes costs do not follow a simple cost per day pattern.

Aim to crash tasks with lowest crash costs first. See if deadline can be reached by avoiding tasks with high crashing costs.

Remember that the critical path may change. Multiple critical paths are possible as everything is compressed.

Day to day schedule and cost management will be intensive. More than ever, time and cost must be closely controlled to minimise overspend.

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