Software Project Management
Fifth Edition

Chapter 8

Resource allocation

Schedules

Activity schedule - indicating start and completion dates for each activity

Resource schedule - indicating dates when resources needed + level of resources

Cost schedule showing accumulative expenditure

Resources

These include

- labour
- equipment (e.g. workstations)
- materials
- space
- services

Time: elapsed time can often be reduced by adding more staff

Money: used to buy the other resources

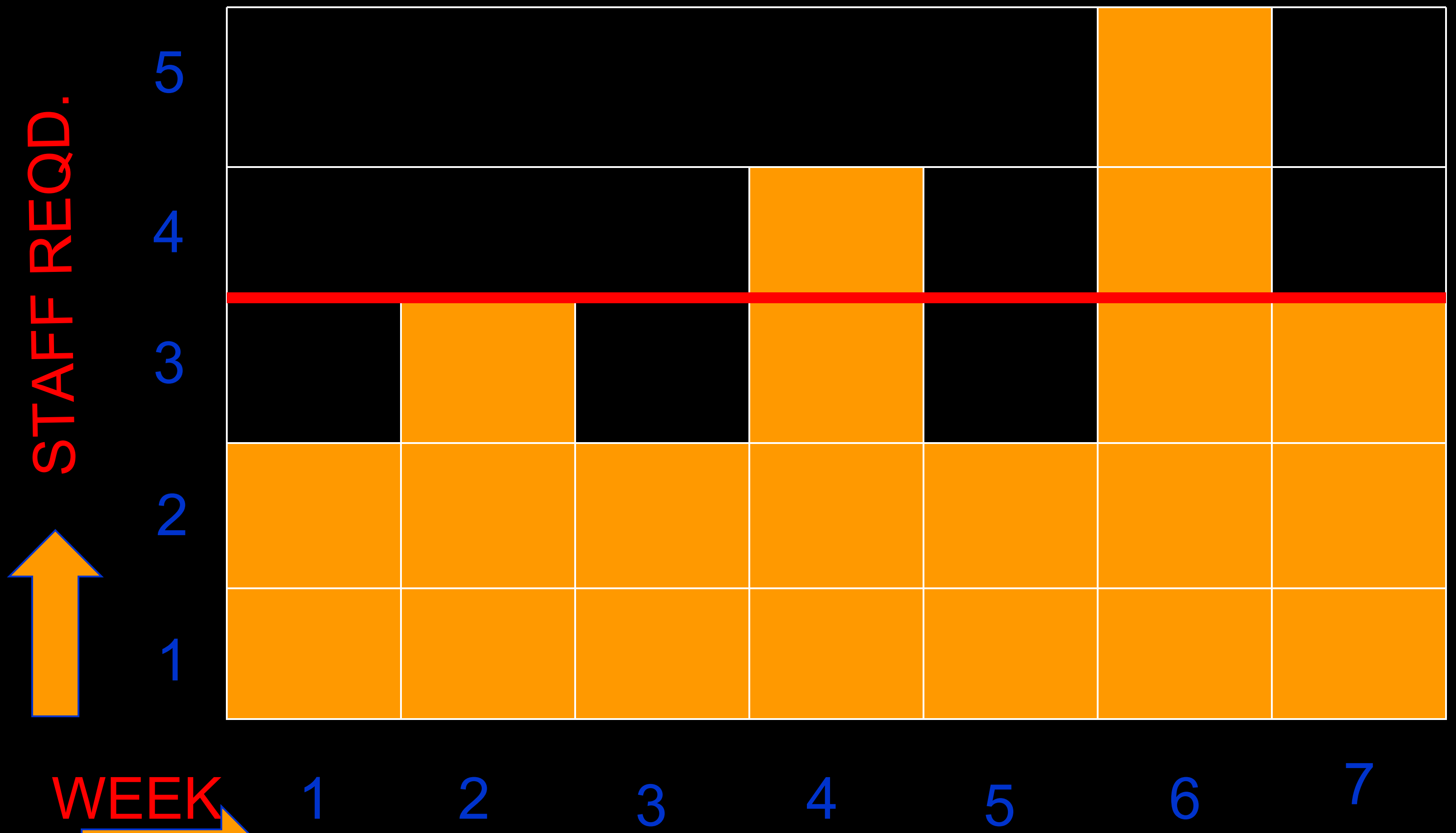
Resource allocation

Identify the resources needed for each activity and create a *resource requirement list*

Identify *resource types* - individuals are interchangeable within the group (e.g. ‘VB programmers’ as opposed to ‘software developers’)

Allocate resource types to activities and examine the *resource histogram*

Resource histogram: systems analysts



Resource smoothing

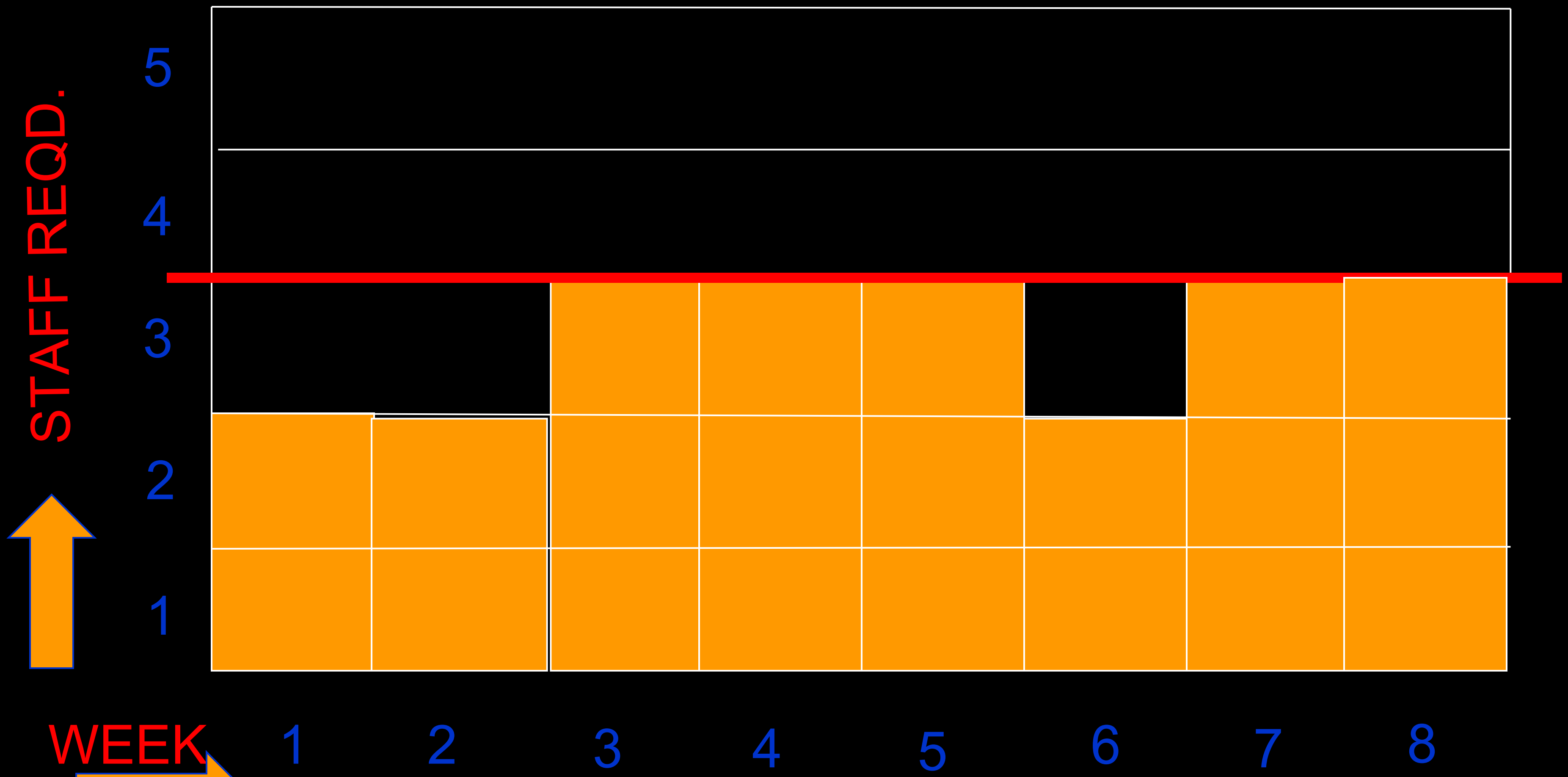
It is usually difficult to get specialist staff who will work odd days to fill in gaps – need for staff to learn about application etc

Staff often have to be employed for a continuous block of time

Therefore desirable to employ a constant number of staff on a project – who as far as possible are fully employed

Hence need for resource smoothing

Resource smoothing



Resource clashes

Where same resource needed in more than one place at the same time

can be resolved by:

delaying one of the activities

- taking advantage of float to change start date
- delaying start of one activity until finish of the other activity that resource is being used on - *puts back project completion*

moving resource from a non-critical activity

bringing in additional resource - *increases costs*

Prioritizing activities

There are two main ways of doing this:

- *Total float priority* – those with the smallest float have the highest priority
- *Ordered list priority* – this takes account of the duration of the activity as well as the float – see next overhead

Burman’s priority list

Give priority to:

- Shortest critical activities
- Other critical activities
- Shortest non-critical activities
- Non-critical activities with least float
- Non-critical activities

Resource usage

need to maximise %usage of resources i.e. reduce idle periods between tasks

need to balance costs against early completion date

need to allow for contingency

Critical path

Scheduling resources can create new dependencies between activities – recall *critical chains*

It is best not to add dependencies to the activity network to reflect resource constraints

- Makes network very messy
- A resource constraint may disappear during the project, but link remains on network

Amend dates on **schedule** to reflect resource constraints

Allocating individuals to activities

The initial ‘resource types’ for a task have to be replaced by actual individuals.

Factors to be considered:

- Availability
- Criticality
- Risk
- Training
- Team building – and motivation

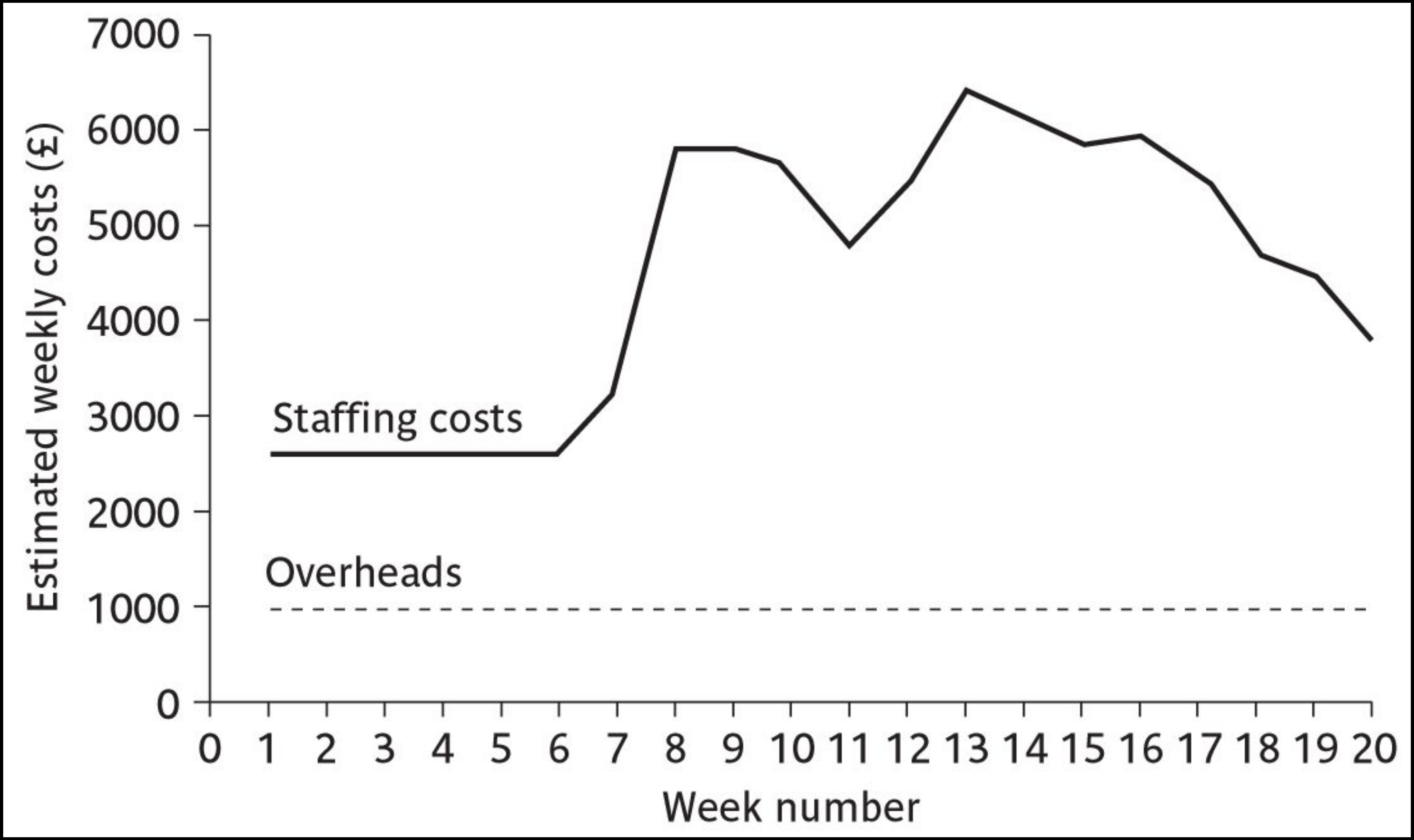
Cost schedules

Cost schedules can now be produced:

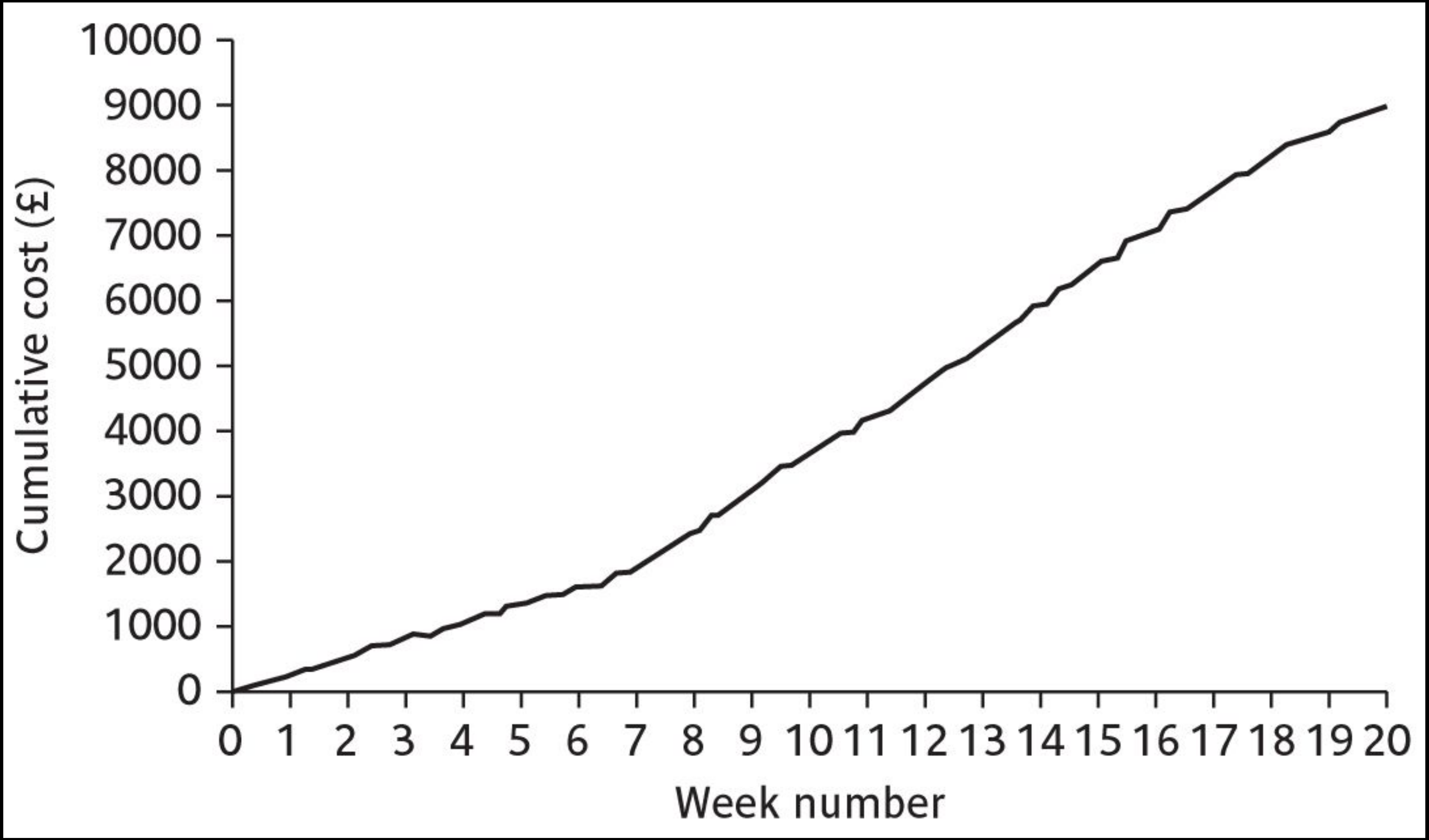
Costs include:

- Staff costs
- Overheads
- Usage charges

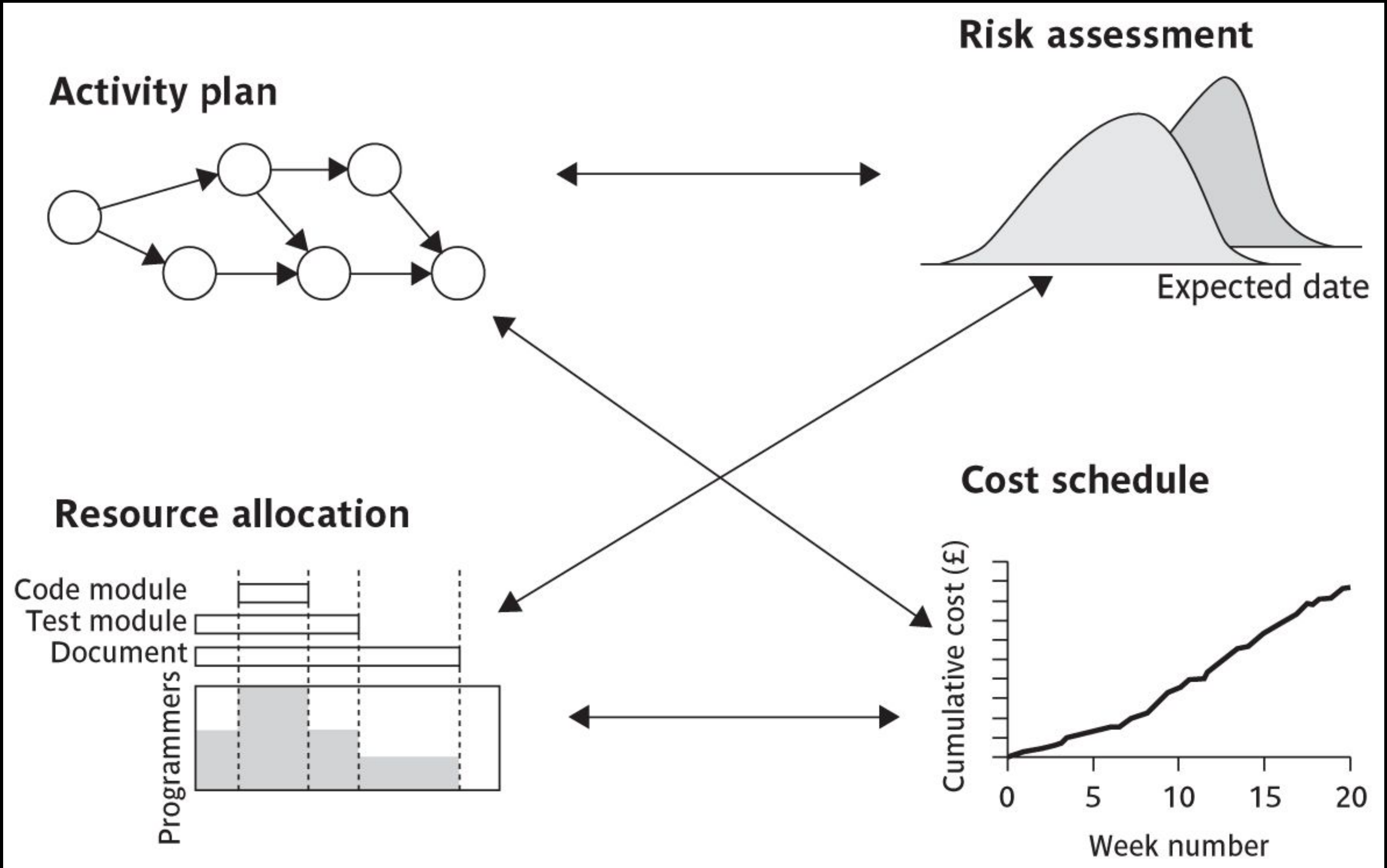
Cost profile



Accumulative costs



Balancing concerns



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