Software Project Management
Fifth Edition

Chapter 8

Resource allocation

Introduction

- Resources are the people, equipment and materials needed to complete the task in a project.
- In resource allocation we will see how to match the activity plan to available resources and assess the efficacy of changing the plan to fit the resources.

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:
  - Money

Nature of Resources

- Resources can be any item from paper clip to key personnel.
- Resources fall into one of seven categories:
  - **Labour**: Members of the development team and any employees participate in specific activities. e.g. Project Manager, Analysts
  - **Equipment**: Include workstations or office equipment.

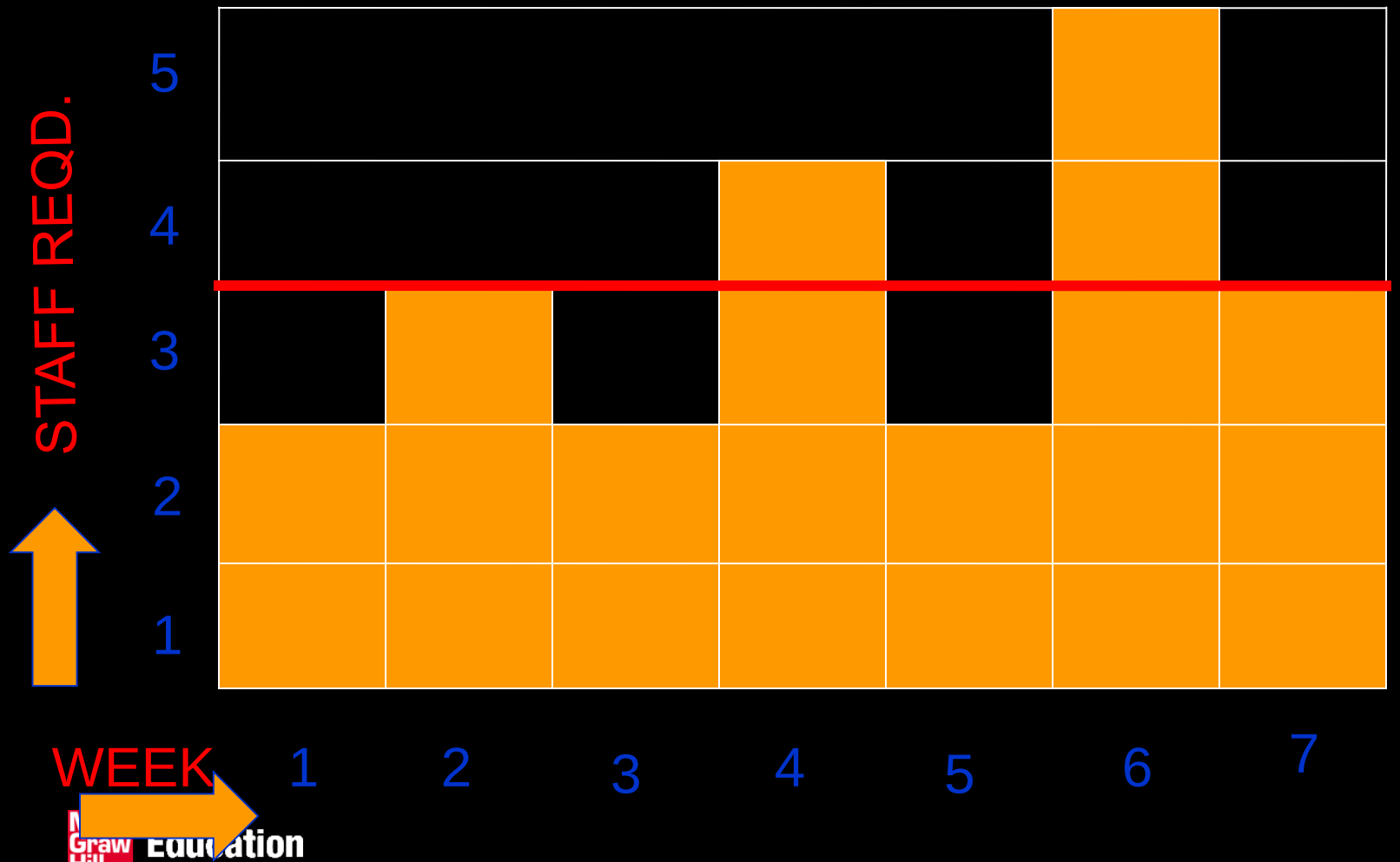
Nature of Resources (Cont..)

- **Materials**: Resources that we consume as the project proceeds. e.g floppy disk.
- **Space**: Office space is needed for existing staff and for contracted or recruited one.
- **Services**: Require procurement of services e.g. telecommunication
- **Time**: Primary resources, project timescales can be reduced by increasing resources. Elapsed time can often be reduced by adding more staff
- **Money**: Secondary resources ,used to buy 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*

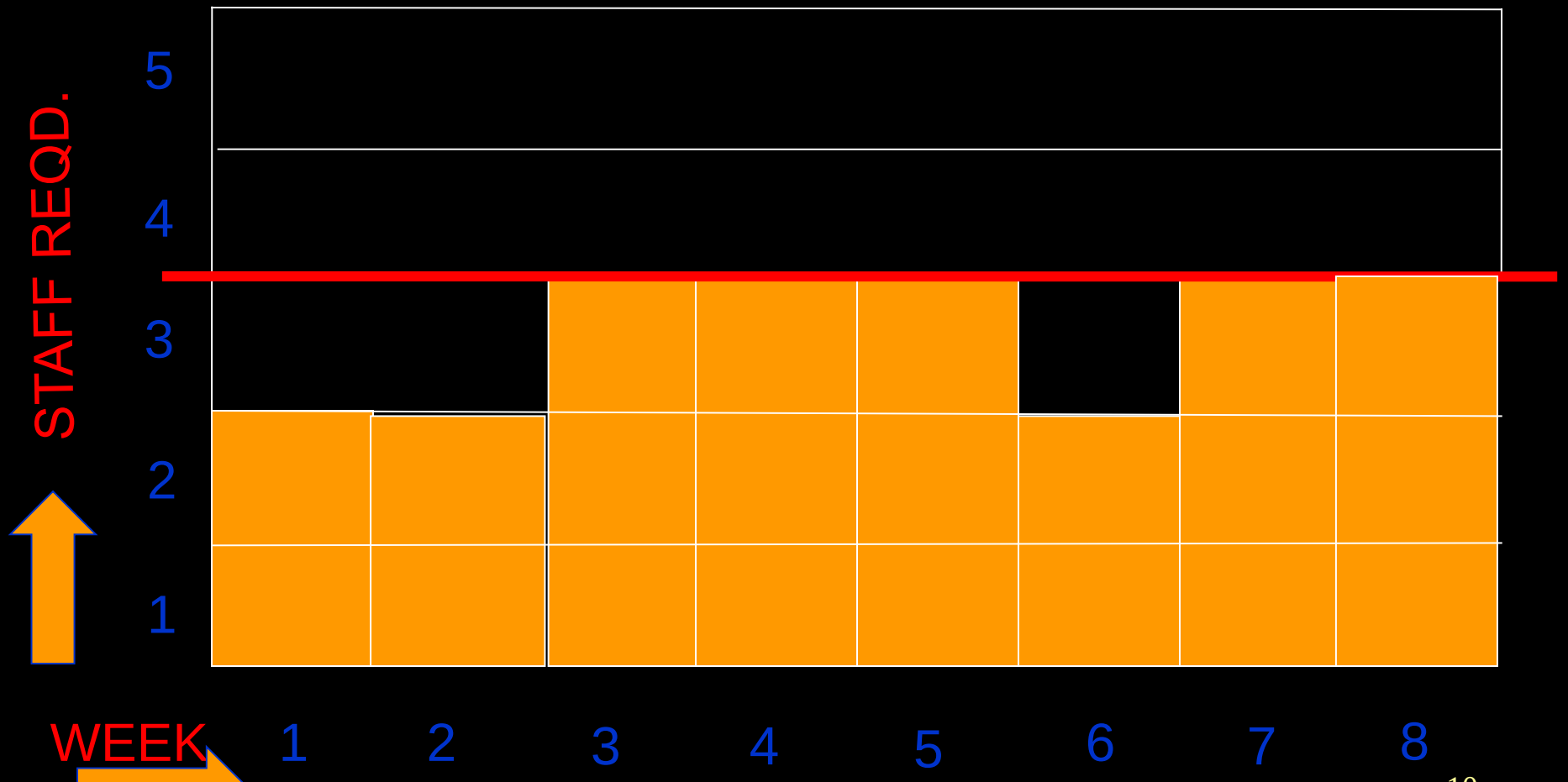
Resource histogram: systems analysts



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

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:

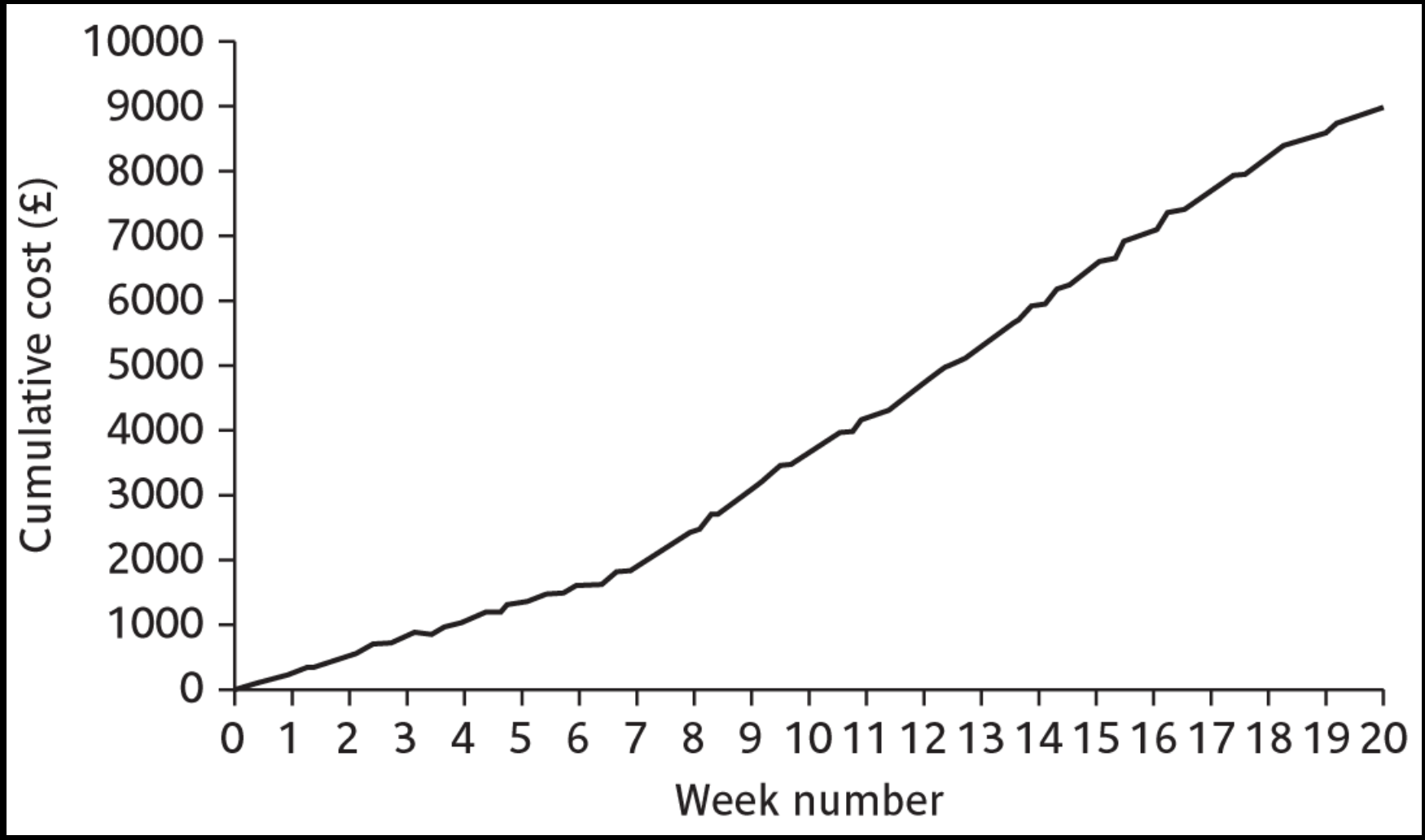
Costs include:

- Staff costs
- Overheads
- Usage charges

- **Staff costs** – includes not just salary, but also social security contributions by the employer, holiday pay etc. Timesheets are often used to record actual hours spent on each project by an individual. One issue can be how time when a staff member is allocated and available to the project, but is not actually working on the project, is dealt with.
- **Overheads** e.g. space rental, service charges etc. Some overheads might be directly attributable to the project; in other cases a percentage of departmental overheads may be allocated to project costs.
- **Usage charges** – some charges can be on a ‘pay as you go’ basis e.g. telephone charges, postage, car mileage – at the planning stage an estimate of these may have to be made

Cost profile

Accumulative costs



Balancing concerns