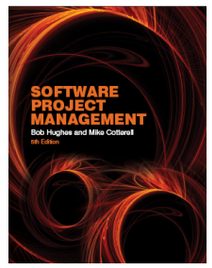
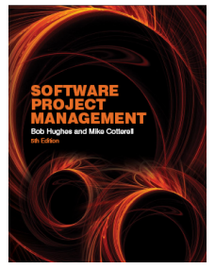
Project Management

Monitoring and control

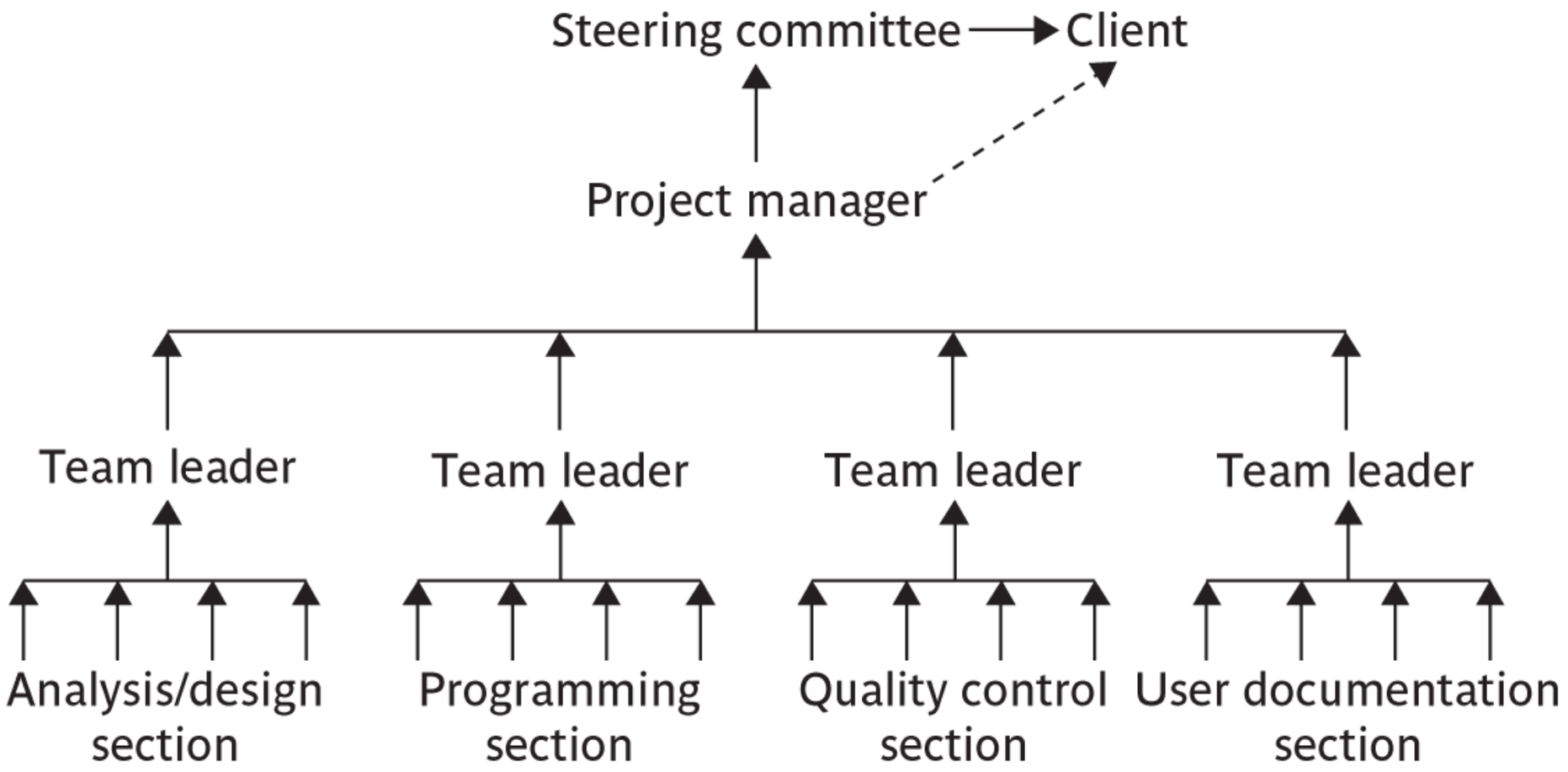
Four dimensions



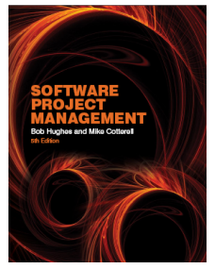
- Departures from the plan
  - delays in meeting targets
  - shortfalls in quality
  - inadequate functionality
  - costs going over target



Responsibilities

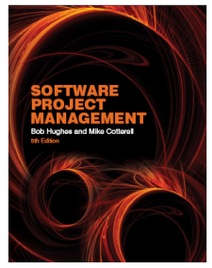


Assessing progress



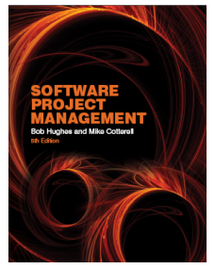
- Checkpoints – predetermined times when progress is checked
  - Event driven: check takes place when a particular event has been achieved
  - Time driven: date of the check is pre-determined
- Frequency of reporting
  - The higher the management level then generally the longer the gaps between checkpoints

Collecting the data



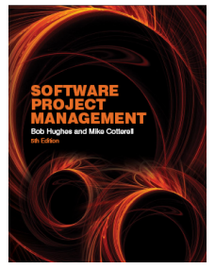
- Question:
  A software developer has written the first 250 lines of a Java program that is estimated to require 500 lines of code.
  Explain why it would be unreasonable to assume that the programming task is 50% complete. How might you make a reasonable estimate of how near completion it might be?

Collecting the data

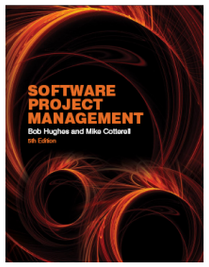


- Need to collect data about:
  - Achievements
  - Costs
  - A big problem: how to deal with partial completions
    - 99% completion syndrome
  - Possible solutions:
    - Control of products, not activities
    - Subdivide into lots of sub-activities

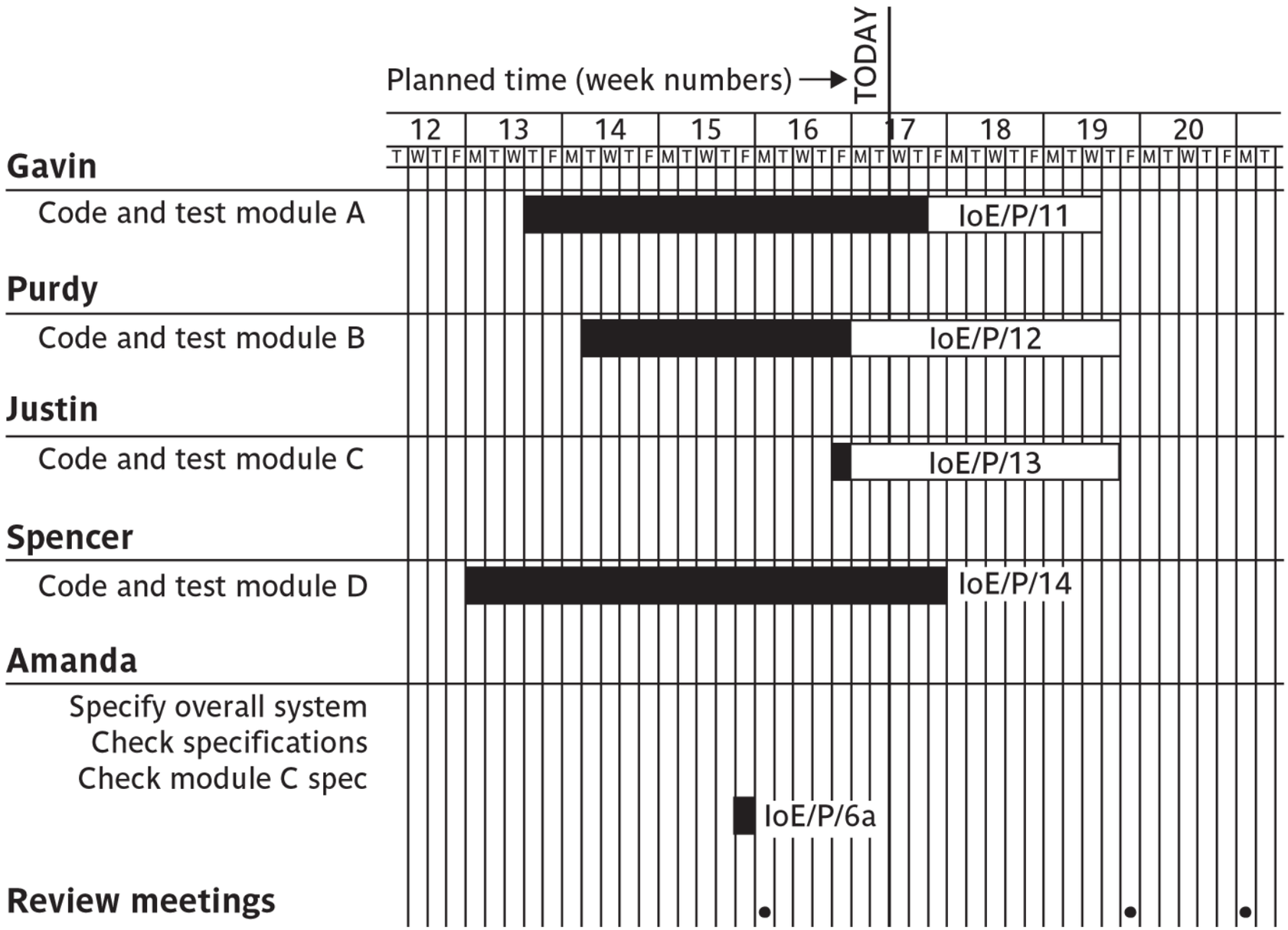
Reporting



- Time sheets
- Risk reporting
  - Identify key tasks
  - Break down into sub-tasks
    - Assess subtasks as:
      - Green – 'on target'
      - Amber – 'not on target but recoverable'
      - Red – 'not on target and recoverable only with difficulty'
    - Status of 'critical' tasks is particularly important

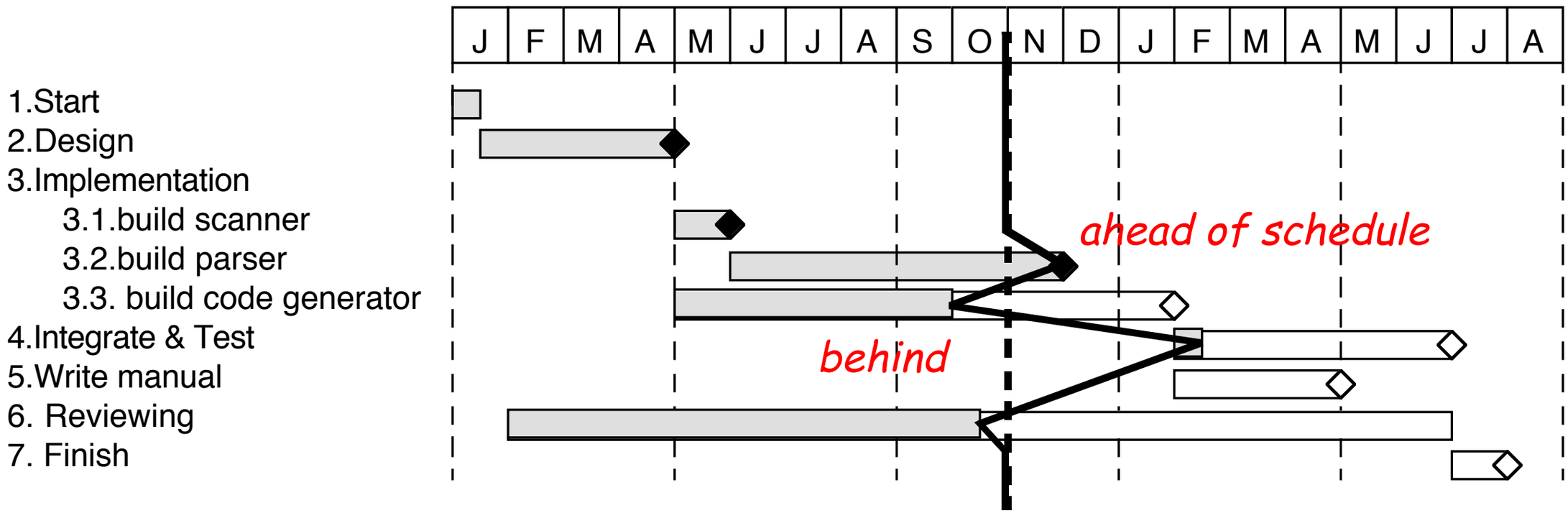


Visualizing progress: Gantt Chart



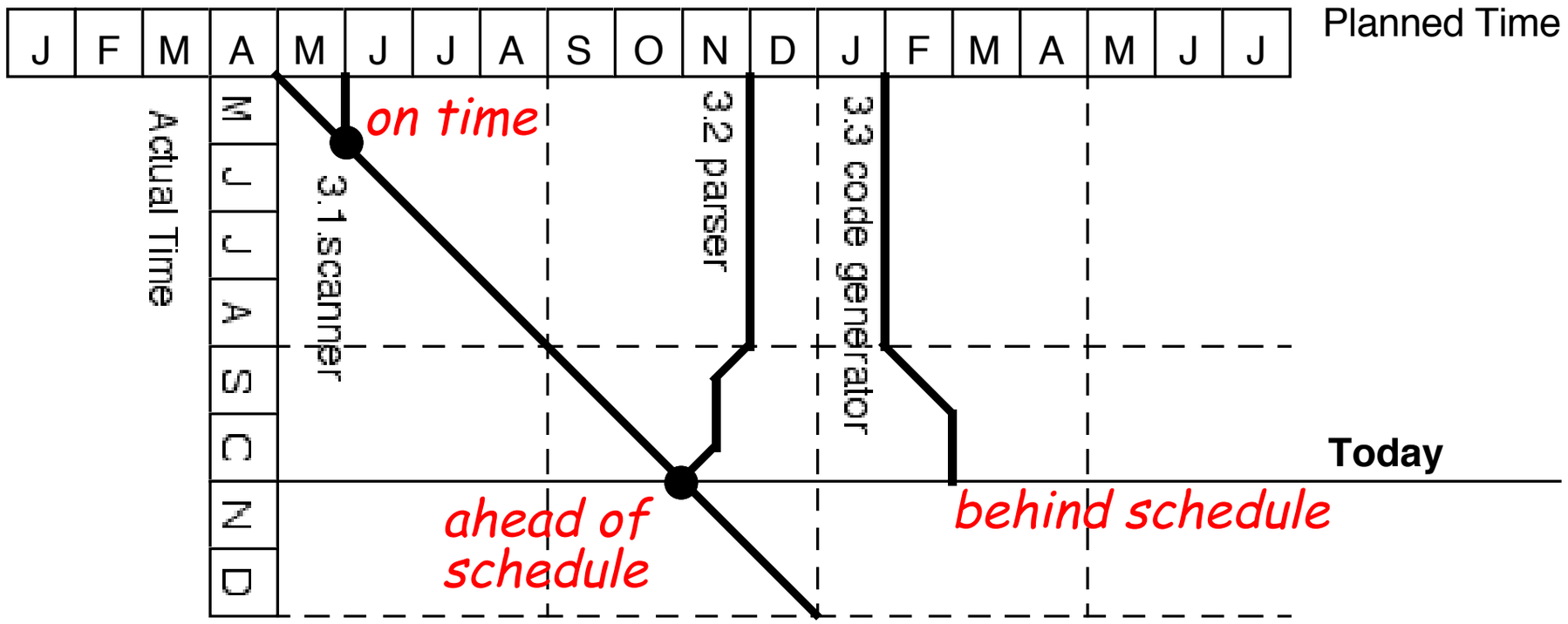
Gantt Chart: Slip Line visualizes slippage

- Shade time line = portion of task completed
- Draw a slip line at current date, connecting endpoints of the shaded areas
  - bending to the right = ahead of schedule
  - to the left = behind schedule

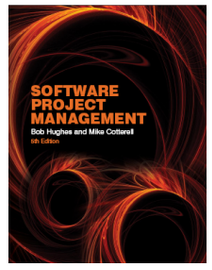


Timeline Chart: visualise slippage evolution

- downward lines represent planned completion time as they vary in current time
- bullets at the end of a line represent completed tasks

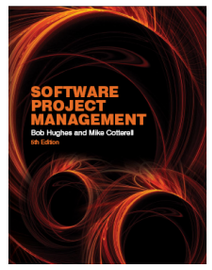


Cost Monitoring



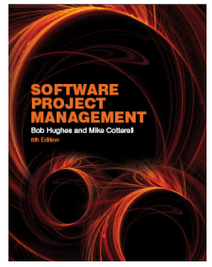
- A project could be late because the staff originally committed have not been deployed
- In this case the project will be behind time but under budget
- A project could be on time but only because additional resources have been added and so be over budget
- Need to monitor both achievements and costs

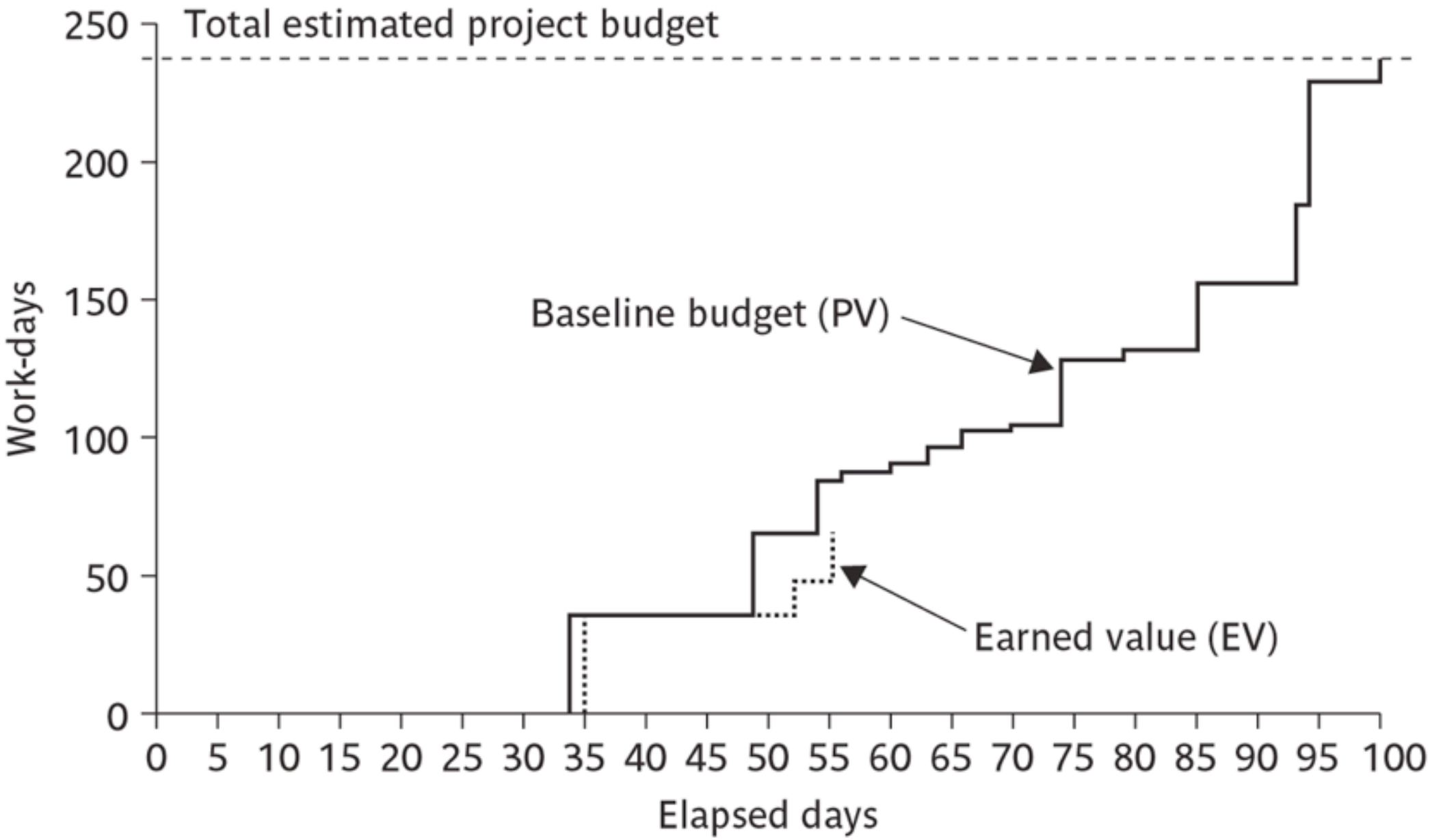
Earned-value analysis



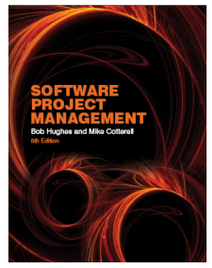
- Planned value (PV) – original estimate of the effort/ cost to complete a task (compare with idea of a 'price')
- Earned value (EV) – total of PVs for the work completed at this time
  - Work completed allocated on the basis
    - 50/50 half allocated at start, the other half on completion. These proportions can vary e.g. 0/100, 75/25 etc
    - Milestone current value depends on the milestones achieved
  - Can use money values, or staff effort as a surrogate

Earned-value analysis



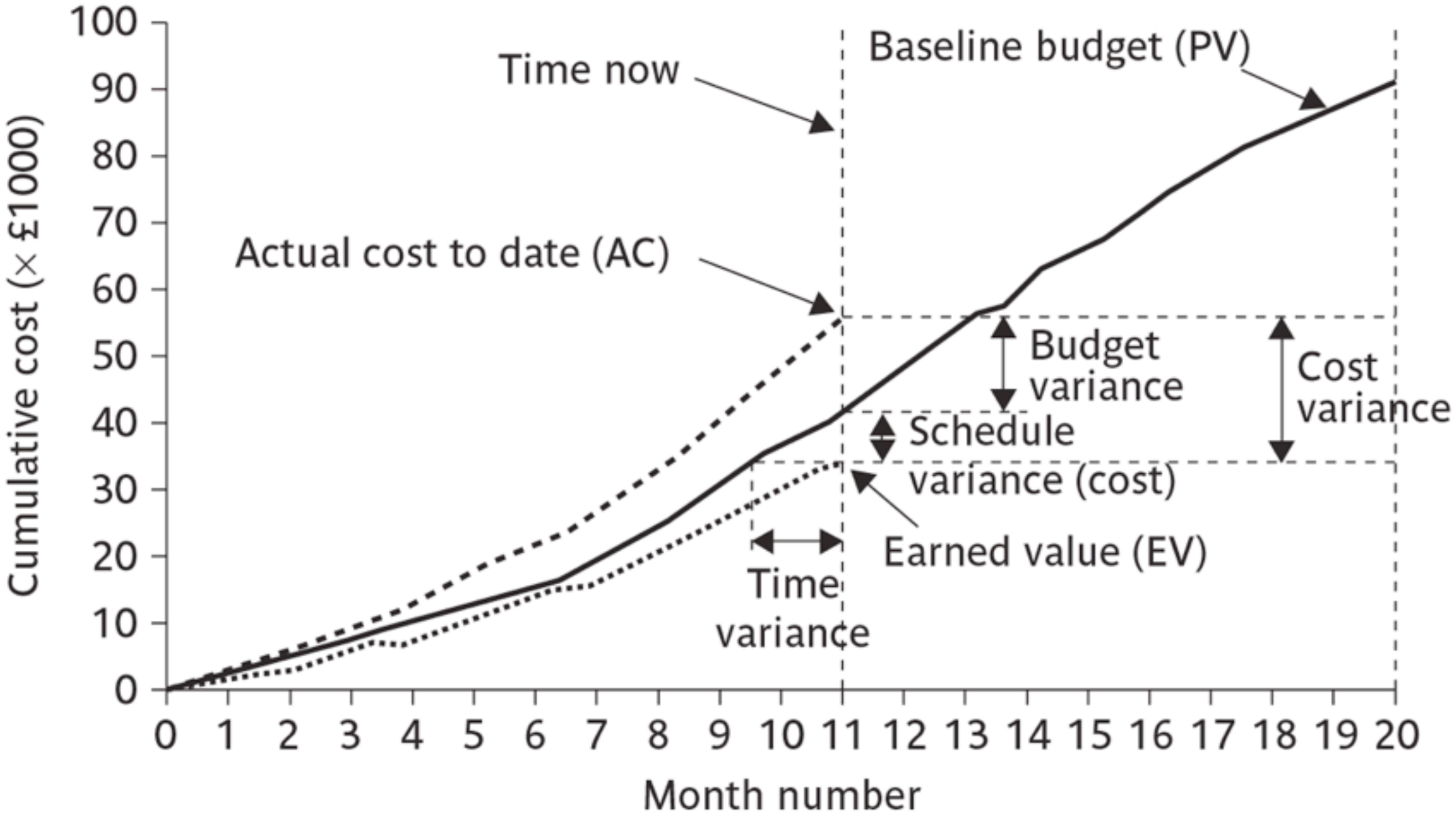


Earned-value tracking

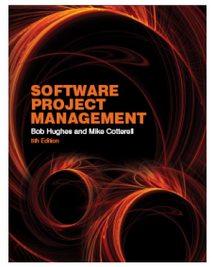


- Schedule variance (SV) - indicates the degree to which the value of completed work differs from the planned: EV - PV
- Cost variance (CV) - indicates the difference between the budgeted cost and the actual cost of completed work. EV - AC (actual cost)

Earned value chart example

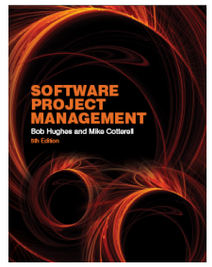


Prioritizing monitoring



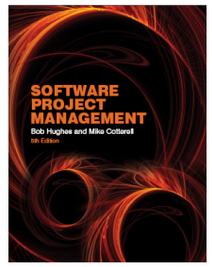
- We might focus more on monitoring certain types of activity, e.g.:
  - Critical path activities
  - Activities with no free float – if delayed later dependent activities are delayed
  - High risk activities
  - Activities using critical resources

How to recover?



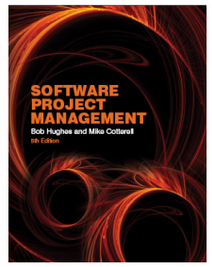
- Renegotiate the deadline – if not possible then
- Try to shorten critical path
  - re-allocate staff or swap staff
  - buy-in more staff
  - Reconsider activity dependencies
    - Over-lap the activities so that the start of one activity does not have to wait for completion of another
    - Split activities
- Prioritize requirements and deliver incrementally
  - deliver most important functionality on time
  - testing remains a priority (even if customer disagrees)

Exception Planning



- Some changes could affect
  - Users
  - The business case (e.g. costs increase reducing the potential profits of delivered software product)
- These changes could be to
  - Delivery date
  - Scope
  - Cost
- In these cases an **exception report** is needed

Exception reporting



- First stage
  - Write an exception report for sponsors (perhaps through project board)
  - Explaining problems
  - Setting out options for resolution
- Second stage
  - Sponsor selects an option (or identifies another option)
  - Project manager produces an exception plan implementing selected option
  - Exception plan is reviewed and accepted/rejected by sponsors/Project Board