Introduction to Management Information Systems

Project Management

Business Application

Learning objectives

- understand the main elements of the project management approach;
- relate the concept of project management to the creation of BIS;
- assess the significance of the different tasks of the project manager;
- outline different techniques for project management.

overview

Project Management Process

apply the groups to one phrase involving all the lifecycle stages

each organization has its own methodology

Example:

- PMI's Framework (Project Management Institute)
- PMBOK

Project Management Process

PMI's Framework

project management initiation framework

PMBOK

Project Management Body of Knowledge

framework of best practices, processes and terms that are practiced as standards within the project management industry

Project Management Process

- projects are different, custom-made
- lifecycle changes
- project groups not flexible:
  - initiation
  - planning
  - executing
  - monitoring & controlling
  - closing

Process Groups - Initiation

produce project charter

- to get go-ahead, project signed off
- mini project plan
  - what are you are doing?
  - why are you doing it?
  - objectives, scope, cost, time, key stakeholders , key milestones
- high level – not detailed
- planning expensive - after

Process Groups - Initiation

identify stakeholders

- complete stakeholder register
- project sponsor
- project manager
- project team
- project management team

Process Groups - Planning

3 questions:

1. what are we going to do?
2. how are we going to do it?
3. how to know when the project is done?

planning – complete a comprehensive project plan

Process Groups - Planning

comprehensive project plan

- requirements
- scope
- work breakdown structure
- schedule
- budget
- other
  - quality, risk, HR, communications

requirements

what do stakeholders really want?

give the project charter more detail

collecting requirements – not so easy

people say what they want – but without consideration for resources

may need trade offs

can gather requirements collectively – e.g. meeting

define the scope

important to define the scope

focus on the important & remove the unnecessary

must be clear

project justification + score + deliverables + success criteria

scope baseline =

- scope structure
- work breakdown structure (WBS)
- WBS dictionary

work breakdown structure (WBS)

- breaks the project down into smaller, manageable pieces
- top-down approach
- deliverables – broken down to packages (work packages)
  - packages must be ‘things’(PMI)
  - size / depth ?

can you estimate the time & costs of that package?

if no, then break it down further

WBS dictionary

- scope creep – project creeps outside of the scope
- explain each WBS
- define each WBS & boundaries
- list into a WBS dictionary

time management

- estimates on WBS timeframe
- how long will it take, or break it down further
- sequence
- critical path
- some carry out in parallel, overlap, reliant on previous etc.
- use Gantt chart (MS project)
- fast tracking – WBS same time
- crashing – add more resources to shorten WBS timeframe

cost management

- estimates on WBS
- how much will it cost, or break it down further
  - excel
- fixed costs, variable costs
- create a budget
- need to include risk costs, management costs
- contingency costs

  = project cost estimates (e.g. costs * 1.2)

Process Groups - Execution

- complete the work define in project management planning
- manage the team
- follow the processes
- conflict resolution
- deal with issues
- “all in the planning” - success relies on good planning
- manage expectations
  - careful of ‘change requests’

Process Groups - monitoring & controlling

- measuring the performance of the project
- hitting your ‘KPIs’
- starts with the execution process (same time)
- monitor
  - your scope
  - your schedule
  - costs, quality, risk, procurements, etc.
- look at a WBS – on time, in budget, root causes if not
- document everything

Process Groups - monitoring & controlling

Earned value

- = total project budget * % project completed
- but project costs are not linear
  - only works for selective projects
    - e.g. construction, software
  - normally a curve (exponential)
- growth & decay

Process Groups - closing

- product finished
- admin work
- reports
- hand-off to client
- final payments
- lessons learnt (what went wrong)
- release resources
  - staff go back to normal duties (security / permissions)

project management

Project Management

process of

- planning,
- scheduling, and then
- controlling the activities
- during system development

Project Management

- To plan and schedule a project efficiently,
- the project leader identifies:

Project Management

- project like operations
- project is unique & has a limited timeframe
- consist of many activities
- be carefully planned and coordinated

Project Management

increase the quality of the information system

- within time, budget and resources
- need a realistic assessment of the costs and benefits
- chance of success increased by
  - anticipating potential problems
  - applying corrective strategies

Project Management

"Projects are no longer "something extra",
they are the way work gets done at an increasing number of companies, from small start-ups to the likes of Hewlett Packard."

www.chiefprojectofficer.com

"One of the advantages of working in projects is that you never know what you will be doing in six months,
If you like uncertainty, it is an exciting environment."

www.provek.co.uk

Project Management Process

- structured project management process = improve the performance of IS projects
- divide the project plan to SDLC phases

initial project plan

- developed at the initiation phase
- the project receives the go-ahead

more detailed project plan

- will be produced before or as the project starts

Project Management Plan

detailed project plan

not be produced until after the project has commenced

1. high cost
2. needs to follow the analysis phase, since
   - estimates based on the amount of work needed
   - at the design and build phases of the project
   - estimate can only be produced once the requirements
   - have been established at the analysis phase.

Project Management Failure

- *Technical failure*
  - responsibility of the organisation's IS function
- *Data failure*
  a) poor data design, processing errors and poor data management
  b) poor user procedures & poor data quality control
- *User failure*
  - unwillingness to train staff
  - management failure to allow their staff involvement

Project Management Failure

- *Organizational failure*
  - fail to meet needs
  - senior management's failure to align IS to overall needs
- *Failure in the business environment*
  - inappropriate to the market environment
  - not changing business environment
  - not scaled
    - system not coping with the volume and speed of the underlying business transactions

Project Management Roles

Project sponsor

- accountable for project success or failure
- provides a justification of the project to senior management
- defines project objectives
- defines time, cost and quality performance measures
- obtains finance and appointing a project manager

Project Management Roles

Project manager

- day-to-day management
- ensure project objectives are met
- selection and management of the project team
- monitoring of the time, cost and quality performance
- progress reporting

Project Management Roles

Project user

- utilized during the information systems project
- involved in definition and implementation

Quality manager

- ensure quality targets are met
- conformance to customer requirements
- Total quality management (TQM)
  - establish a culture that supports quality

Project Management Roles

Risk manager

- projects contain risk investment made will not achieve objectives.
- reduce risk in complex and uncertain projects

Steering committee

- variety of interested people
  - users, functional staff (e.g. finance, purchasing) and project managers
  - all stakeholder views are taken into consideration.

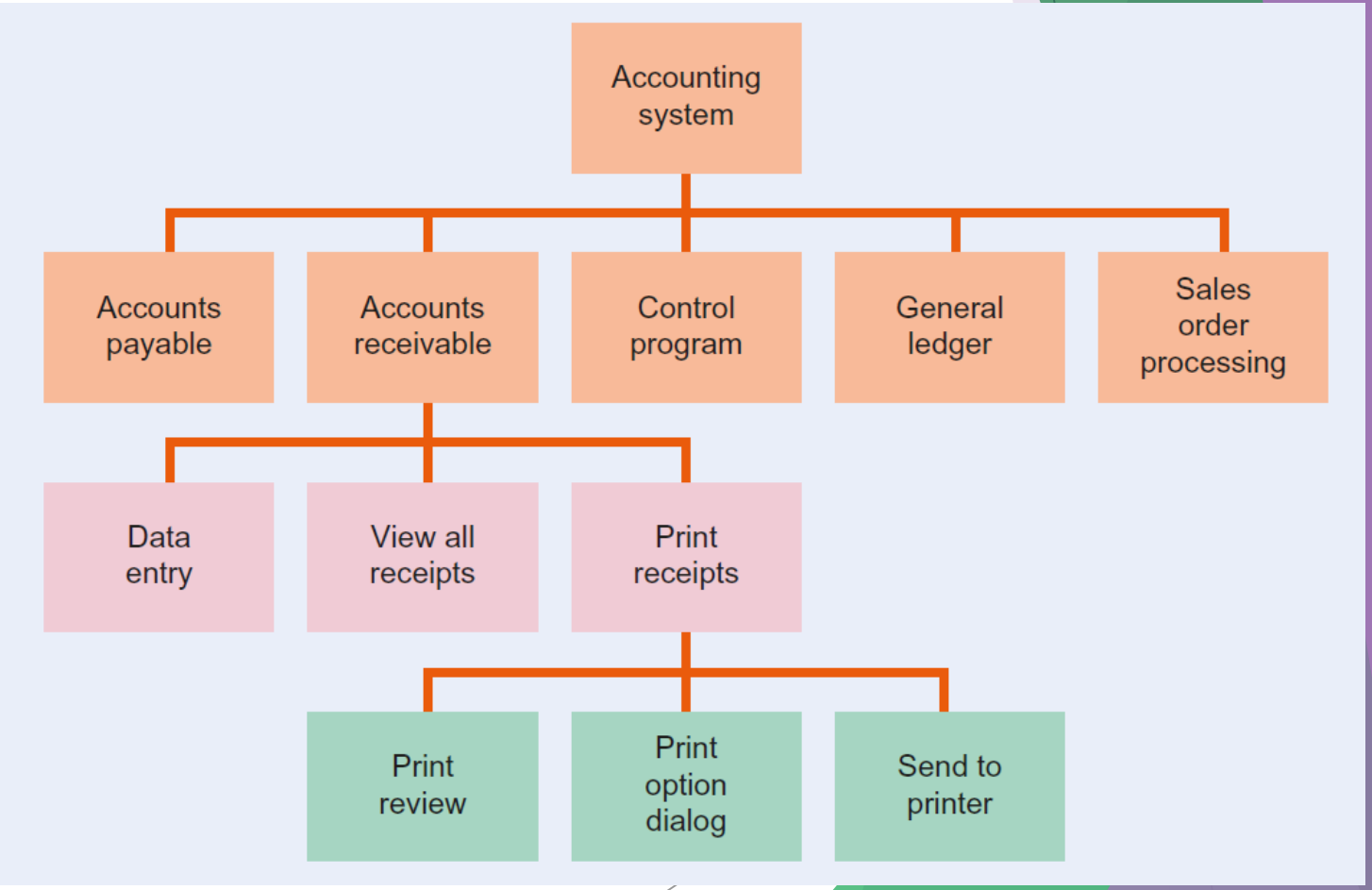
Project Management Steps

The project management process includes the following main elements:

- estimate
- schedule/plan
- monitoring and control
- documentation

Estimation

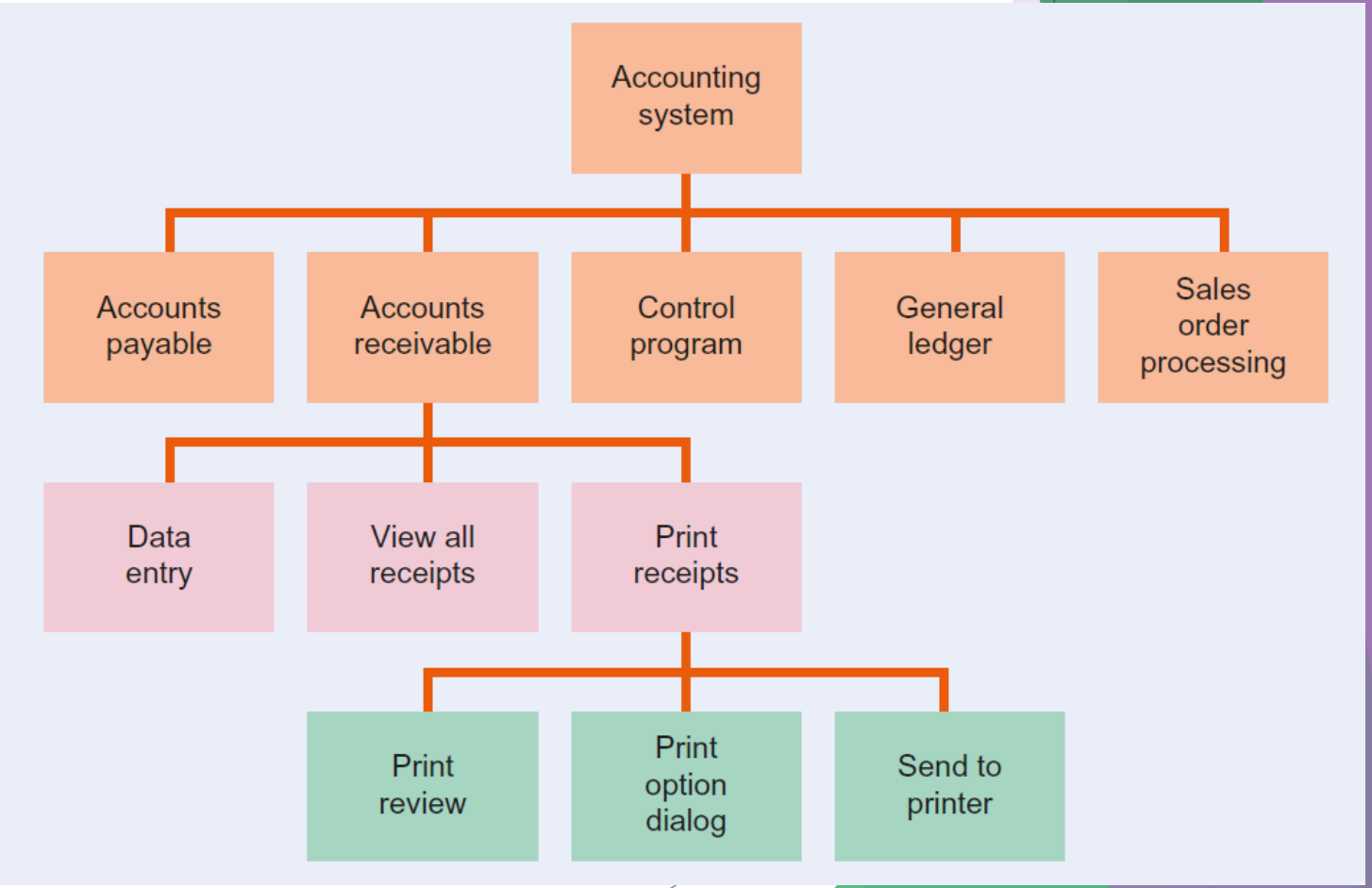
work on producing a new accounting system



- allows the project manager to plan for the resources
- number and size of tasks needed
- break down project into smaller tasks
- task given its own cost, time and quality objectives.

Estimation

work on producing a new accounting system



- assign responsibility to achieve objectives for each task
- work breakdown structure (WBS)
  - shows the hierarchical relationship between the project tasks

Project Management approach

a resource-constrained approach

- after project go-ahead
- more detailed estimate of the resources is needed

a time-constrained approach

- complete a project in a specific timeframe
- utilize alternative resources (e.g. subcontractors)
- to ensure project completion

Project Management Time

Effort time

- total amount of work that needs to occur to complete a task

Elapsed time

- indicates task duration
- how long in time (such as calendar days)

Project Management Time

calculated by:

- consider amount of effort time needed to complete each task
- effort time is then converted into elapsed time

- workers have different speeds
- more workers = elapsed time < effort time
- workers not available = elapsed time > effort time.

Project Management Estimating Time

1. estimate effort time for average person to undertake task;
2. estimate different work rates and availability of staff;
3. allocate resources (staff) to task;
4. calculate elapsed time based on number of staff, availability and work rate;
5. schedule task in relation to other tasks.

$$Elapsed\ time = Effort\ times \times \frac{100}{Availability\ \%} \times \frac{100}{Work\ rate\ \%}$$

Project Management Estimating Time

Estimating the feasibility study

- interviewing, writing up interview information and report writing
- assess the financial, technical and organizational acceptability of the project.

Project Management Estimating Time

Estimating analysis and design phases

- collection of information
  - operation of current systems
  - the specification of requirements
- new computer-based system in terms of its technical content
- produce a detailed description of each task

Project Management Estimating Time

Estimating build and implementation

- time and resources needed
  - coding,
  - testing
  - installation of the application

Project Management Costs

constructive cost model (COCOMO), Boehm (1981)

- The most widely used economic model
- used to estimate the amount of effort required to complete a project
- on the basis of the estimated number of lines of program code

Project Management Costs

COCOMO II

updated for developments in software and software development methodologies (Boehm et al., 2001)

$$WM = C \text{ x } (KDSI)^K \text{ x } EAF$$

where WM = number of person months, C = one of three constant values dependent on development mode, $KDSI$ = delivered source lines of code · 1000, K = one of three constant values dependent on development mode, EAF = effort adjustment factor.

Scheduling & Planning

- Scheduling is determining when project activities should be executed.
- *project plan* = finished schedule
- Resource allocation - part of scheduling, involves assigning resources to tasks
- *serial relationship* - activities only begin when others completed.
- *parallel relationship* - execution of other activities may be totally independent

Monitoring & control

- objectives of cost, time and quality in meeting targets must be closely monitored
- control occurs if the performance measures deviate from plan
- define milestones so performance against objectives can be measured

Monitoring & control

- cost objective is achieved by the use of human resource and computing resource budgets
- develop a quality plan which contains a list of items deliverable to the customer
- quality standard and procedure for dealing with a variance from the required quality level

Project structure and size

project structure dependent on the team size

- up to six team members report directly to a project leader regularly
- up to 20 team members, an additional tier of management of team leaders

Project structure and size

- The team leader could be responsible for
  - a phase of the development
    - e.g. analysis, design

  or
  - a type of work
    - e.g. applications development, systems development

Project structure and size

- project leader ensures consistency across development phases or areas
- more than 20 members,
  - additional management layers
  - ensure no one has too much supervision

Reporting project progress

- The two main methods of reporting project progress
  - written reports
  - verbal reports at meetings
- formal statement of progress is made in written form,
  - a standard report format,
  - ensure everyone is aware of current situation
- important when changes to specifications are made

Monitoring & control

Reporting project progress

- two-way communication between team members and team management,
- regular meetings
  - arranged by project manager
- allows discussion of points of interest
- dissemination of information
  - how each team's effort is contributing
  - progression of the project

Documentation

Workplan/task list

For each team member a specified activity with start and finish dates and relevant coding standard should be defined.

Requirements specification

This should clearly specify the objectives and functions of the software.

Purchase requisition forms

Required if new software and hardware resources are needed from outside the organisation.

Documentation

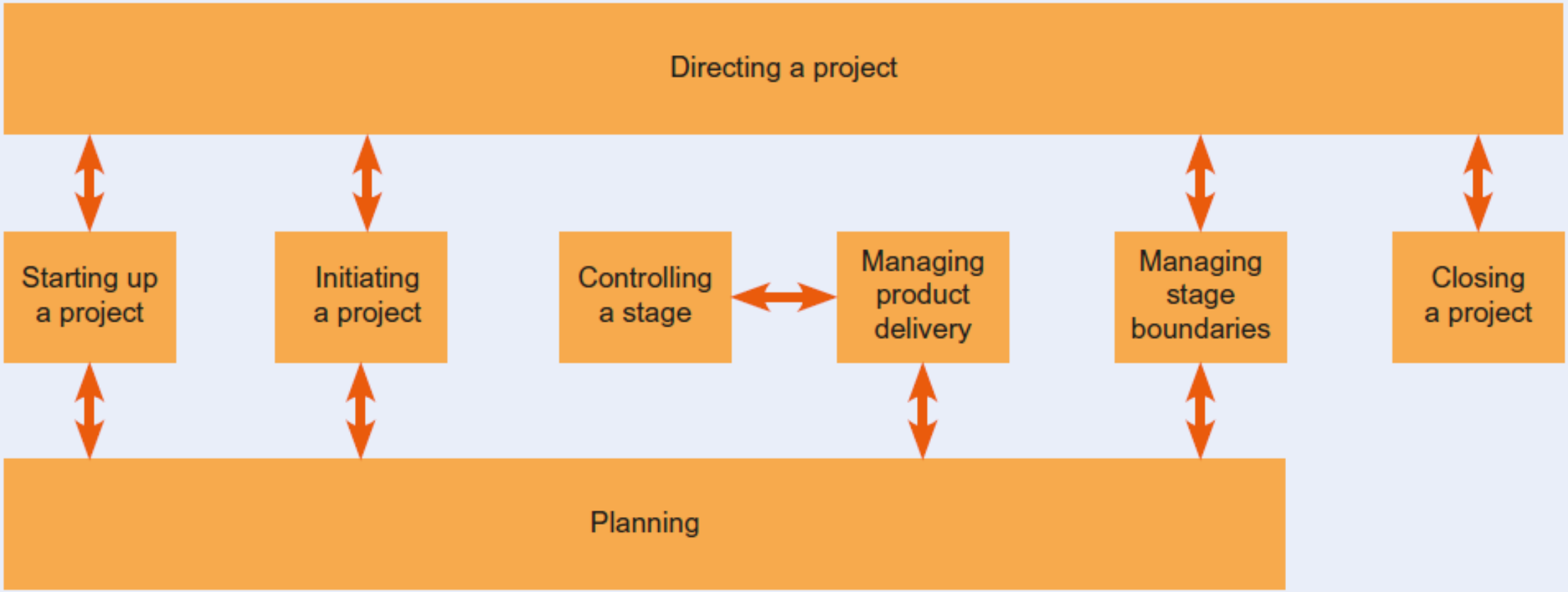
Staffing budget

- running total of personnel costs,
  - including expenses and subsistence payments
  - actual against predicted expenditure

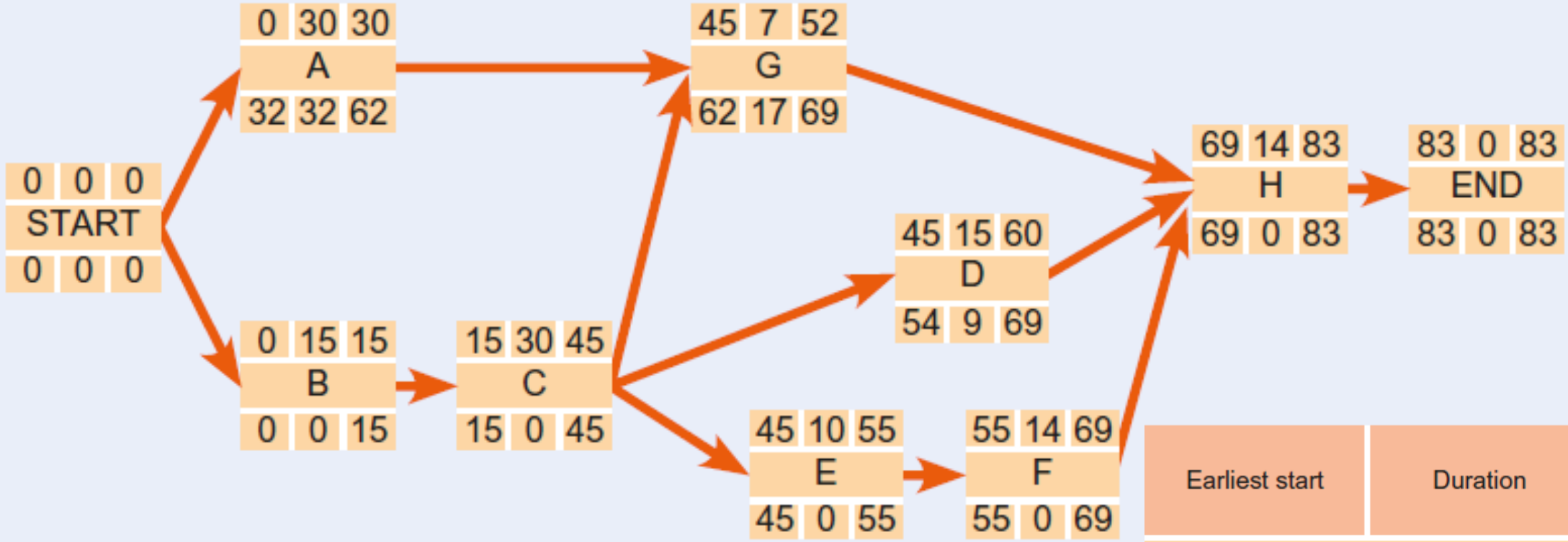
Change control documents

- document any changes to the project specification
- effect on budgets and timescales of a change in software specifications

PRINCE2 process model

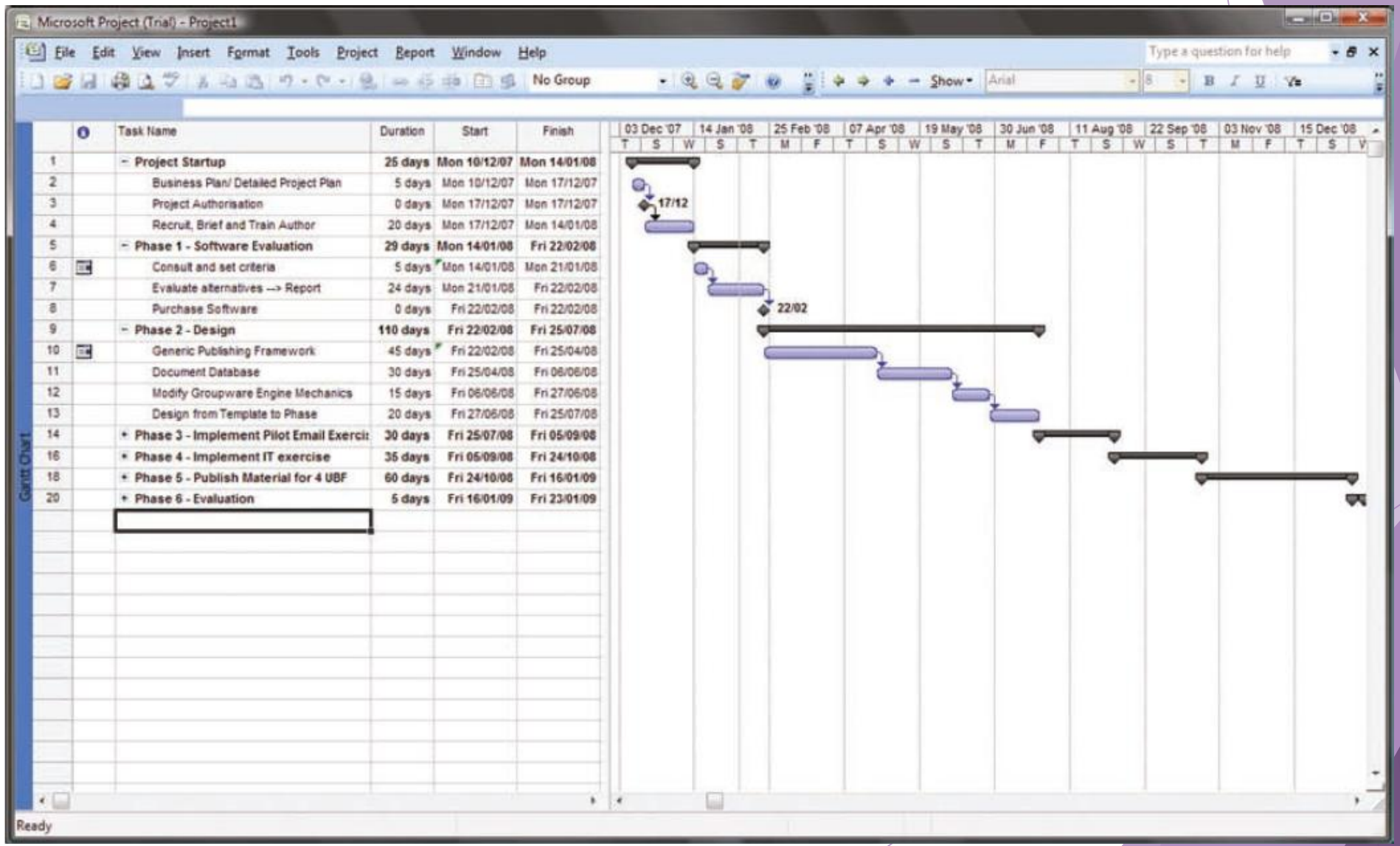


PM tools - Critical path method



Earliest start	Duration	Earliest finish
Activity number/letter Activity description		
Latest start	Slack/float	Latest finish

PM tools - Gantt Chart



Project evaluation and review technique (PERT)

The PERT approach attempts to take into account the fact that most task durations are not fixed, by using a beta probability distribution to describe the variability inherent in the processes. The probabilistic approach involves three time estimates for each activity:

- *optimistic time* – the task duration under the most optimistic conditions;
- *pessimistic time* – the task duration under the most pessimistic conditions;
- *most likely time* – the most likely task duration.

As stated, the beta distribution is used to describe the task duration variability. To derive the average or expected time for a task duration, the following equation is used:

$$Expected\ duration = \frac{Optimistic + (4 \times Most\ likely) + Pessimistic}{6}$$

Thank you!

any questions?