Computing Project
(COMP08053)

Lecture 6

Project Monitoring & Control

The Plan-Monitor-Control Cycle

Involves **continually**:

- **Planning** what to do

- **Checking** on progress

- **Comparing** progress to plan

- **Taking** corrective action

- **Re-planning** when needed

The Plan-Monitor-Control Cycle

Fundamental items to be planned, monitored and controlled are:

- **Time**

- Cost

- **Scope**

So project stays on schedule, does not exceed budget and meets its specification

The Plan-Monitor-Control Cycle

Real-time data must be identified to measure achievement against the plan

Monitoring system can include:

- Change tracking/control systems

- Documentation processes for both **formal** and **informal** communications

The Plan-Monitor-Control Cycle

Not just **'hard'**, objective measures that are monitored…

…also **'soft, subjective** data such as informal conversations over coffee etc can be used as part of monitoring and control

Data collection and reporting

Once you have decided what data you want to monitor – next question is how to collect data.

Could use:

Frequency counts – a tally of the occurrence of an event (e.g. defects, errors, complaints)

Raw numbers – (e.g. hours spent, £s spent)

Data collection and reporting

Subjective numeric ratings – subjective estimates of some quality (e.g. aesthetics of a design)

Verbal characterisations – variables that are difficult to measure (e.g. team spirit)

Data collection and reporting

Important to set series of **checkpoints** that may be:

- **Regular** – weekly or fortnightly

- **Tied to specific events** such as production of report or deliverable (e.g. prototype)

Data collection and reporting

Significant differences from plan should be highlighted so project manager exercising control cannot overlook the potential problem

Project plans should be updated to reflect current reality

Preserve documents from earlier stages so that comparables can reported in project final report

Data collection and reporting

Red/Amber/Green (RAG) Reporting

Get team members to estimate likelihood of meeting planned target dates using traffic-light method

Green (on target), *Amber* (not on target but recoverable), *Red* (not on target and recoverable only with difficulty)

Data collection and reporting

Any critical activity classified as **amber** or **red** will require further consideration and often leads do revision of project schedule
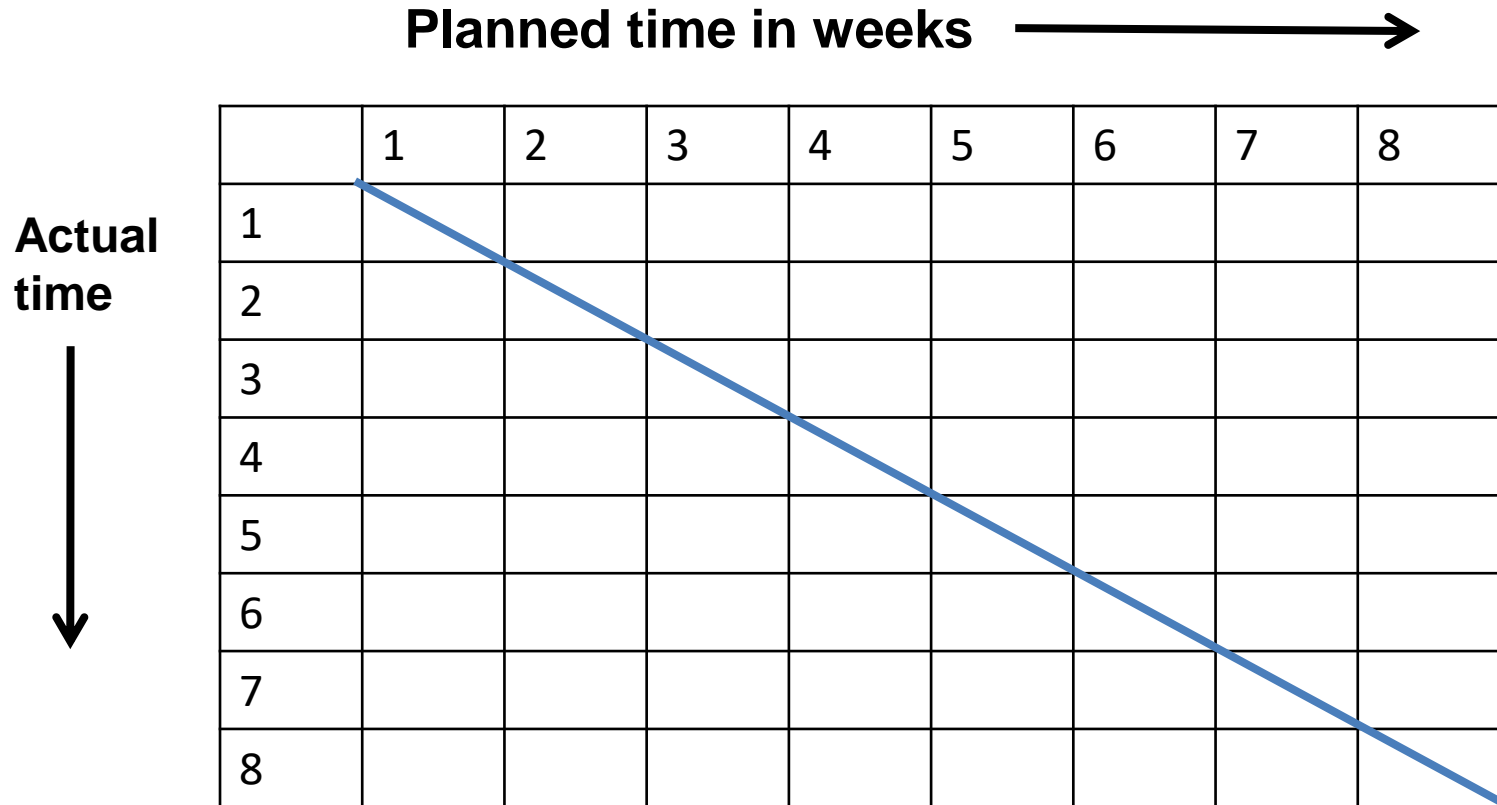
Timeline chart

Helps with **visualising progress**

Project manager needs some way of presenting data to greatest effect

Timeline chart is a method of **recording** and **displaying** the way in which targets have changed throughout duration of project
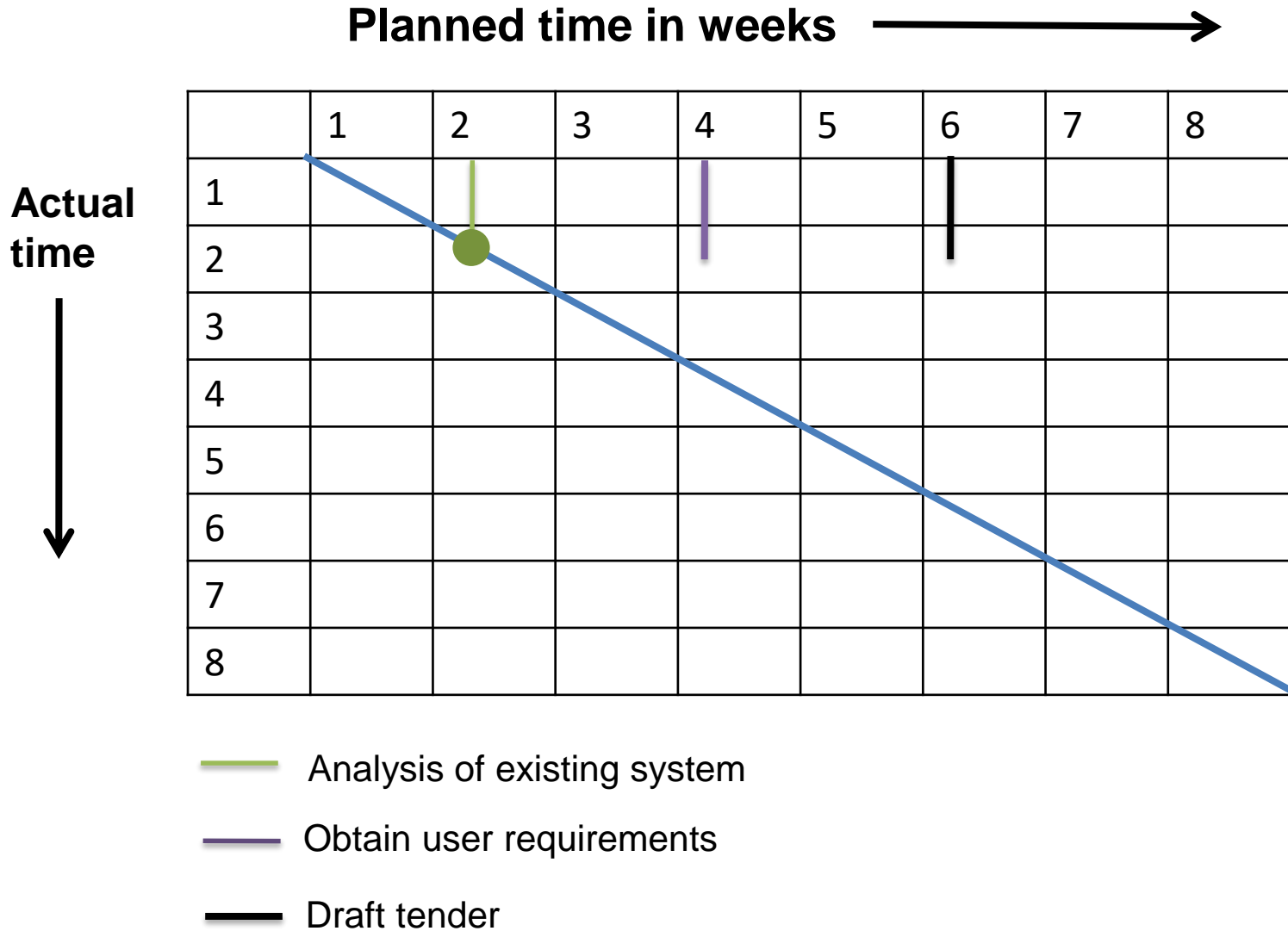
Timeline chart

Planned time in weeks →

Actual time ↓

	1	2	3	4	5	6	7	8
1								
2								
3								
4								
5								
6								
7								
8								

Timeline chart

Horizontal axis shows planned time

Vertical axis shows actual time

Timeline chart

Planned time in weeks →

	1	2	3	4	5	6	7	8
1								
2								
3								
4								
5								
6								
7								
8								

Actual time ↓

—— Analysis of existing system
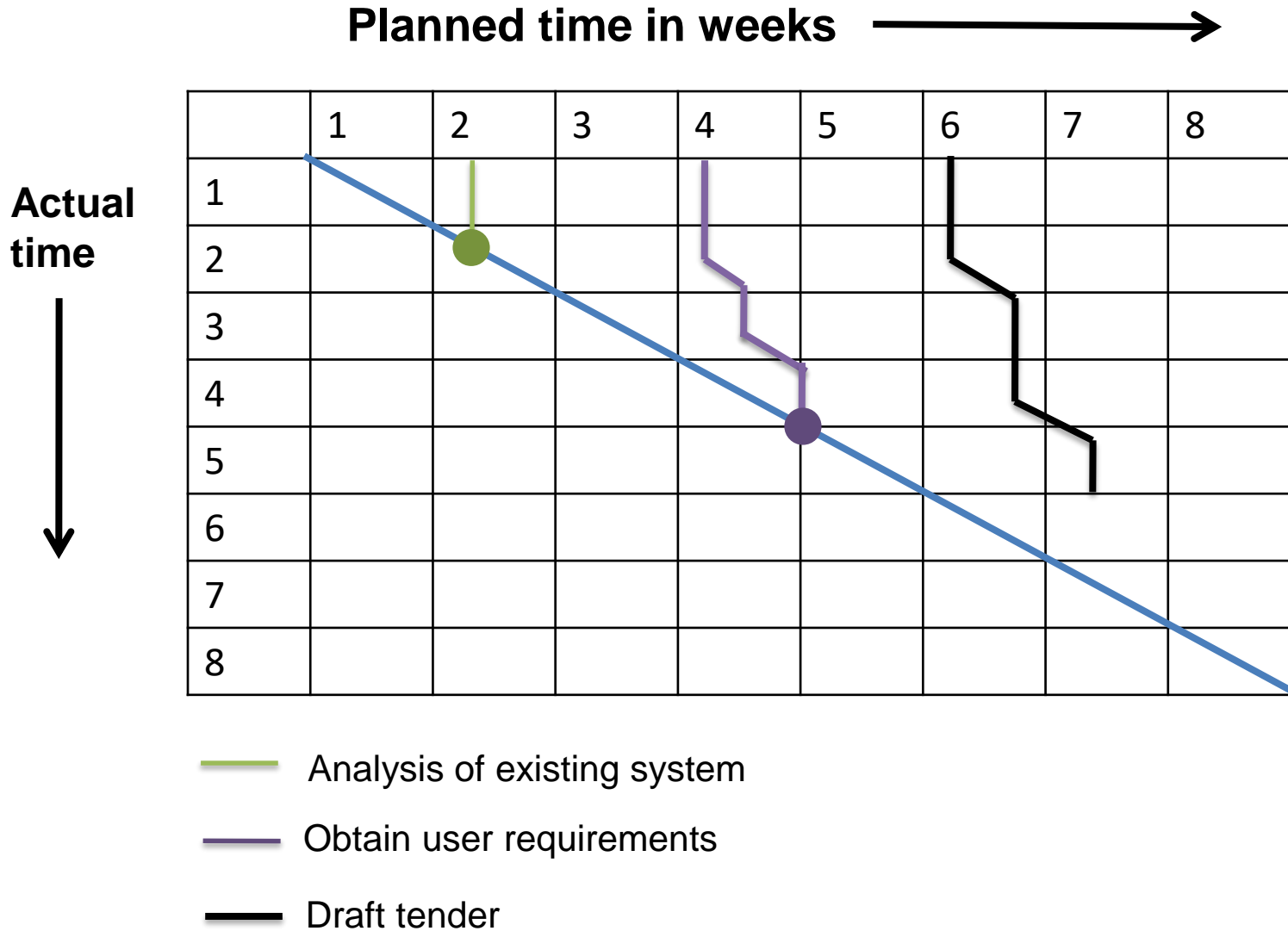
—— Obtain user requirements

—— Draft tender

Timeline chart

The green line (analysis of existing system) shows a straight vertical line – meaning delivered as planned

The other activities start on a straight vertical line….but
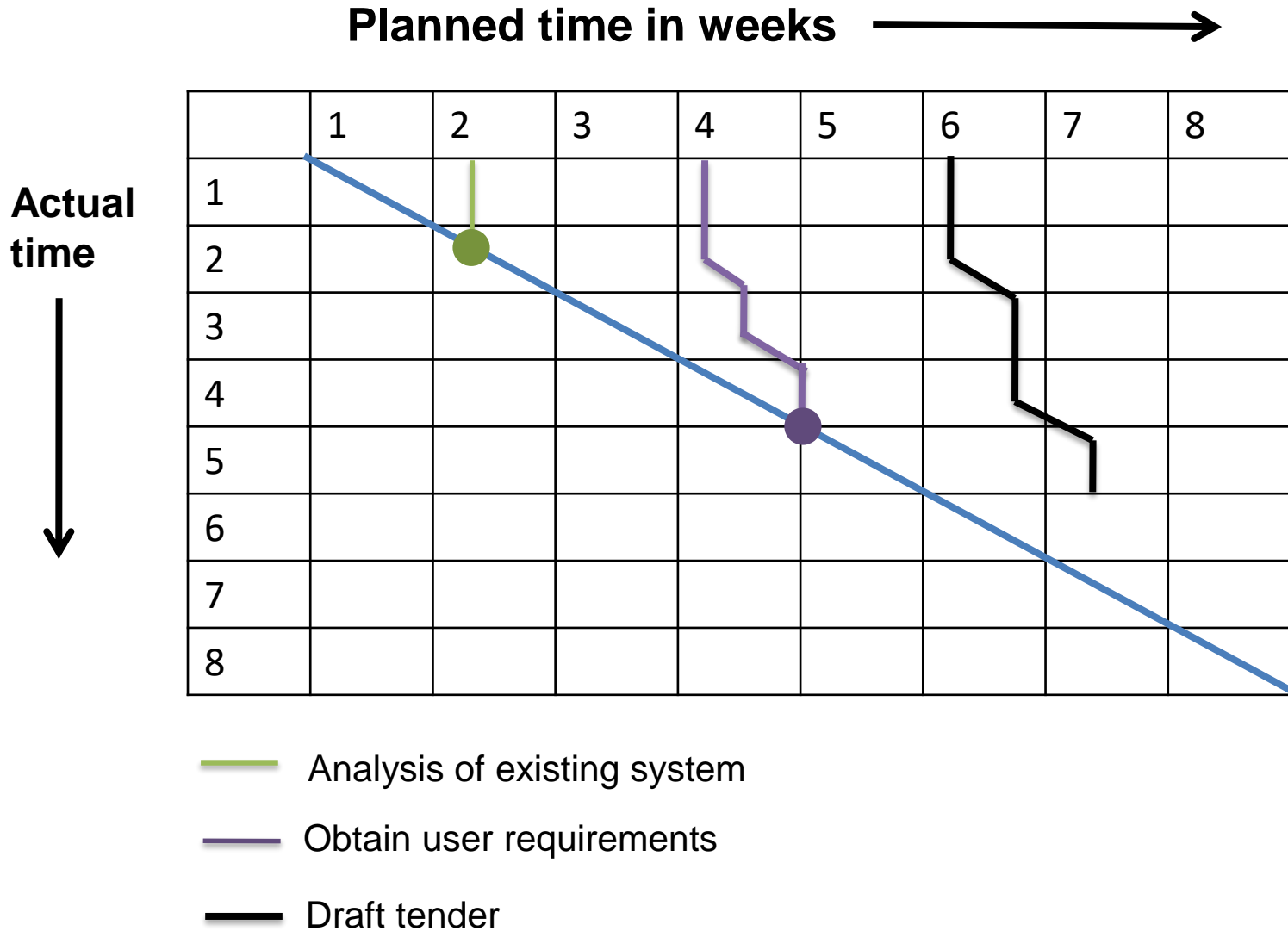
Timeline chart

Timeline chart

During review points in Weeks 2, 3 and 4 are shown to veer from the planned schedule

Thus for the purple line (obtain user requirements) the planned completion was early in Week 4 (as shown on horizontal axis)…

…however the actual completion ended up being at the end of Week 4 (as shown in the vertical axis)

Timeline chart

Planned time in weeks →

Actual time ↓

	1	2	3	4	5	6	7	8
1								
2								
3								
4								
5								
6								
7								
8								

— Analysis of existing system

— Obtain user requirements

— Draft tender

Timeline chart

The black line (draft tender) is clearly well off target and has yet to be completed

This is a **useful chart to include for your own project** to show the main activities and whether they are being completed within planned timelines

Prioritising monitoring

Activities that require prioritised monitoring include:

Critical path activities – any delay in an activity on the critical path will cause a delay in the completion date of the project

Activities with no free float – *float* is amount of time an activity can be delayed without affecting subsequent activity

Prioritising monitoring

High risk activities – need to be identified early

Activities using critical resources – activities that are expensive in terms of skills and staff

Project control

Control is act of reducing differences between plan and actuality

Monitoring and comparing activities with plan are to no avail if **actions** not taken when reality deviates significantly from plan

Control is one of project manager's most difficult tasks.

Project control

Control involves both mechanistic and human elements

Anger, **frustration**, **irritation**, **helplessness**, **apathy**, **despair** are all emotions that can arise during the course of a normal project – can affect the activities of team members

It is through this confusion, inertia, emotion, fallibility that **project manager tries to intervene and exert control**

Project control

Control means **interceding** in an activity that someone has been doing and **correcting it** – thereby implying that someone was at **fault** and doing something wrong

Primary aim of project manager is to intercept problems before they arise or at least before they get serious

Getting project back on target

Important to ensure that the scheduled project end date remains unaffected

Can be done by shortening critical path:

- **by adding resources** – especially staff
- **by increasing use of current resources** – getting staff to work overtime, making available computing resources for longer
- **by reallocating staff to critical activities** – particularly more efficient staff

Getting project back on target

- **by reducing scope** – reduce amount of work to be done by reducing functionality to be delivered
- **by reducing quality** – cutting back on testing, achieves planned delivery date, but more corrective work needs to be done to the 'live' system once implemented. Quite common.

Getting project back on target

Reconsider precedence requirements

To avoid project delivering late – it might be worth questioning whether as yet **unstarted** activities really do **have to wait** until completion of others

For example a user handbook could be drafted earlier or start training before user testing complete

Project control

Best approach is for project manager to set up **well controlled** and **formal process** whereby changes can be introduced and accomplished with as little distress as possible

Process known as *change control system*

Change control system

Purpose is to:

- **Review** all requested changes

- **Identify** all impacts the change may have on other project tasks

- **Translate** impacts into alterations of project schedule, performance, output, costs

- **Evaluate** benefits and disadvantages of requested changes

- **Identify** and evaluate alternative changes that might accomplish same ends

Change control system

- **Implement** process for individuals to accept/reject proposed changes

- **Communicate** accepted changes to all concerned parties

- **Ensure** that changes are implemented properly

- **Identify** all impacts the change may have on other project tasks

References

Hughes, B., Cotterell, M. (2009) *Software Project Management*. McGraw-Hill

Mantel, S.J., Meredith, J.R., Shafer, S.M., Sutton, M.M. (2011) *Project Management in Practice*. Wiley