CSIT214/CSIT883
IT Project Management

Introduction to Project Management

Why is project management important?

- Large amounts of money are spent on ICT
  - E.g. UK government in 2003-4 spent £2.3 billions on contracts for ICT and only £1.4 billions on road building
  - E.g. Australian government spends about $5 billions per year on ICT expenditure (2010-2011), which is about 5% of the Australian ICT market.

- Project often fail – Standish Group claim:
  - 1/3 of ICT projects are successful.
  - 82% were late and
  - 43% exceeded their budget.

- Poor project management a major factor in these failures

What is a project?

Some dictionary definitions:

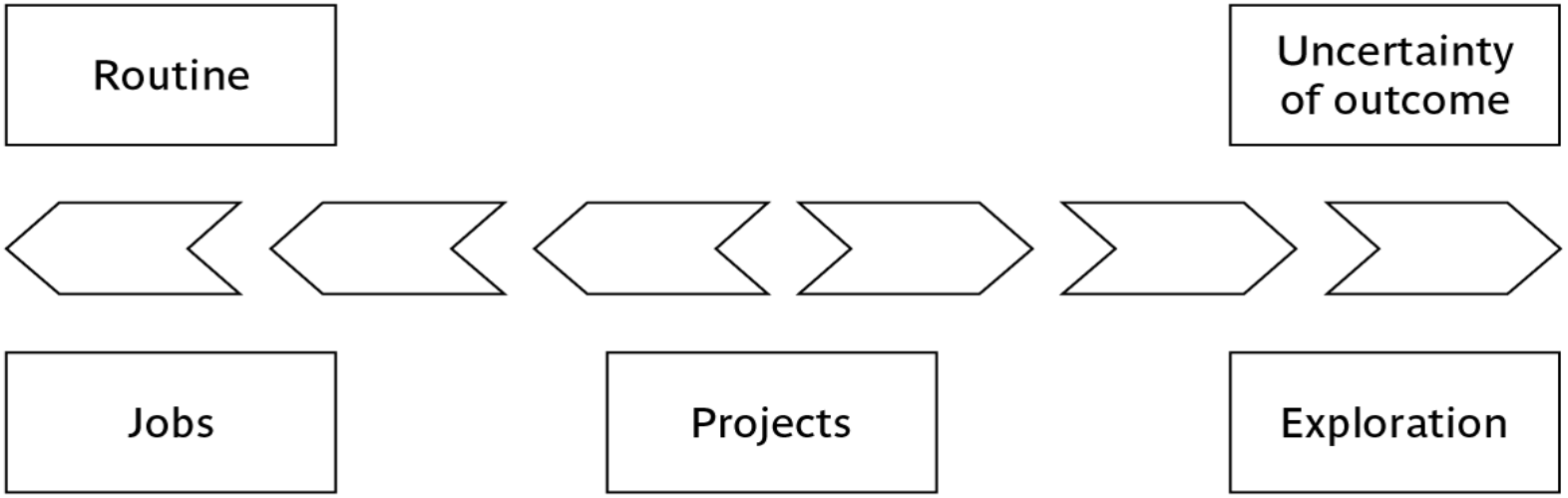
*"A specific **plan** or design"*

*"A **planned** undertaking"*

*"A **large** undertaking e.g. a public works scheme"*

Key points above are *planning* and *size* of task

Jobs versus projects



'Jobs' – repetition of very well-defined and well understood tasks with very little uncertainty

'Exploration' – e.g. finding a cure for cancer: the outcome is very uncertain

Projects – in the middle!

Characteristics of projects

A task is more 'project-like' if it is:

- Non-routine
- Planned
- Aiming at a specific target
- Carried out for a customer
- Carried out by a temporary work group
- Involving several specialisms
- Made up of several different phases
- Constrained by time and resources
- Large and/or complex

Pen and paper exercise

- Which of the following is a project? Put them in an order mostly closely matching your ideas of what constitutes a project.
  1. Producing an edition of a newspaper
  2. Putting robot vehicle on Mars to search for the signs of life (e.g. *NASA's Mars* rover Curiosity)
  3. Getting married
  4. Writing an operating system
  5. Evolving Android 3.0 “Honeycomb” to Android 4.0 “Jelly Bean”
  6. A research project into synchronizing design models and code.
  7. Installing a new version of eLearning for a university
  8. A CSIT214/883 assignment.

Examples of IT Projects (1 of 2)

- A team of students creates a smartphone application and sells it online
- A company develops a driverless car
- A government group develops a system to track child immunizations
- A global bank acquires other financial institutions and needs to consolidate systems and procedures

Examples of IT Projects (2 of 2)

- Top Strategic Technologies for 2018 (Gartner)
  - Artificial Intelligence
  - Intelligent Things
  - Cloud to the Edge
  - Immersive Experience

Are IT projects really different from other projects?

Not really …but

- Invisibility
  - E.g. Building a software vs. building a house.
- Complexity
- Conformity
- Flexibility

make software more problematic to build than other engineered artefacts.

Contract management versus technical project management

Projects can be:

- **In-house**: clients and developers are employed by the same organization
- **Out-sourced:** clients and developers employed by different organizations
  - 'Project manager' could be:
    - a 'contract manager' in the client organization
    - a **technical project** manager in the supplier/services organization

Project Constraints

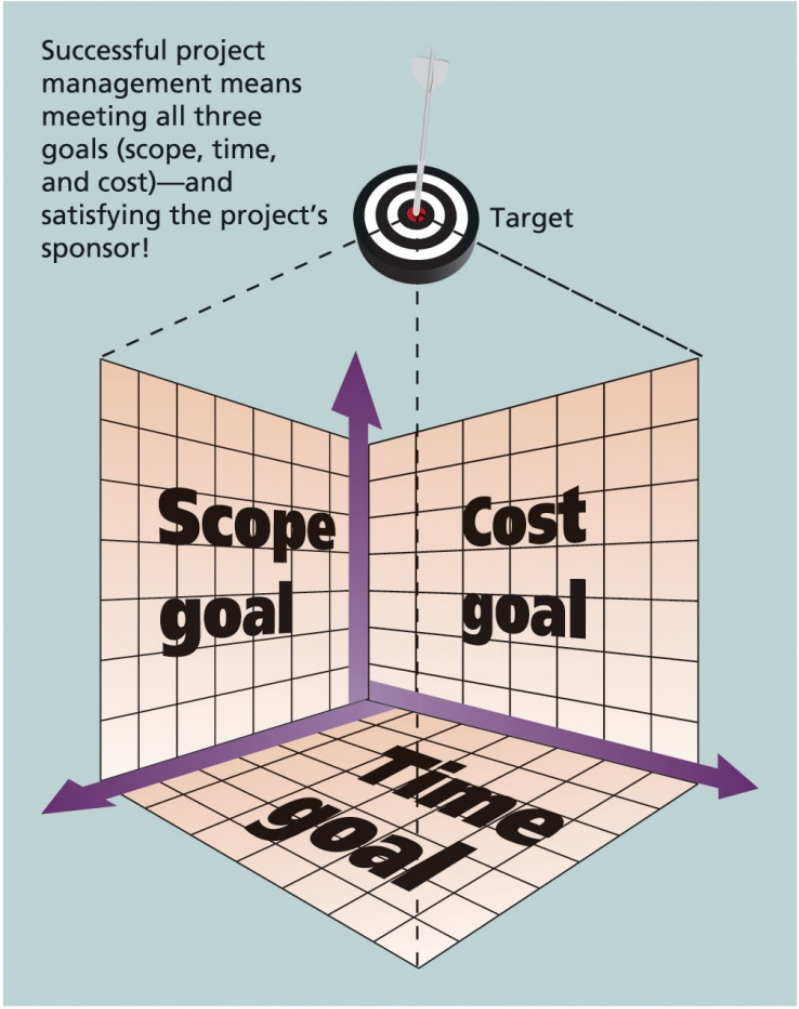


FIGURE 1-1 Project constraints

What is Project Management? (1 of 2)

- Project management is "***the application of knowledge, skills, tools and techniques to project activities to meet project requirements***" (PMBOK® Guide, Sixth Edition, 2017)
- Project managers strive to meet the triple constraint (project scope, time, and cost goals) and also facilitate the entire process to meet the needs and expectations of project stakeholders

What is Project Management? (2 of 2)

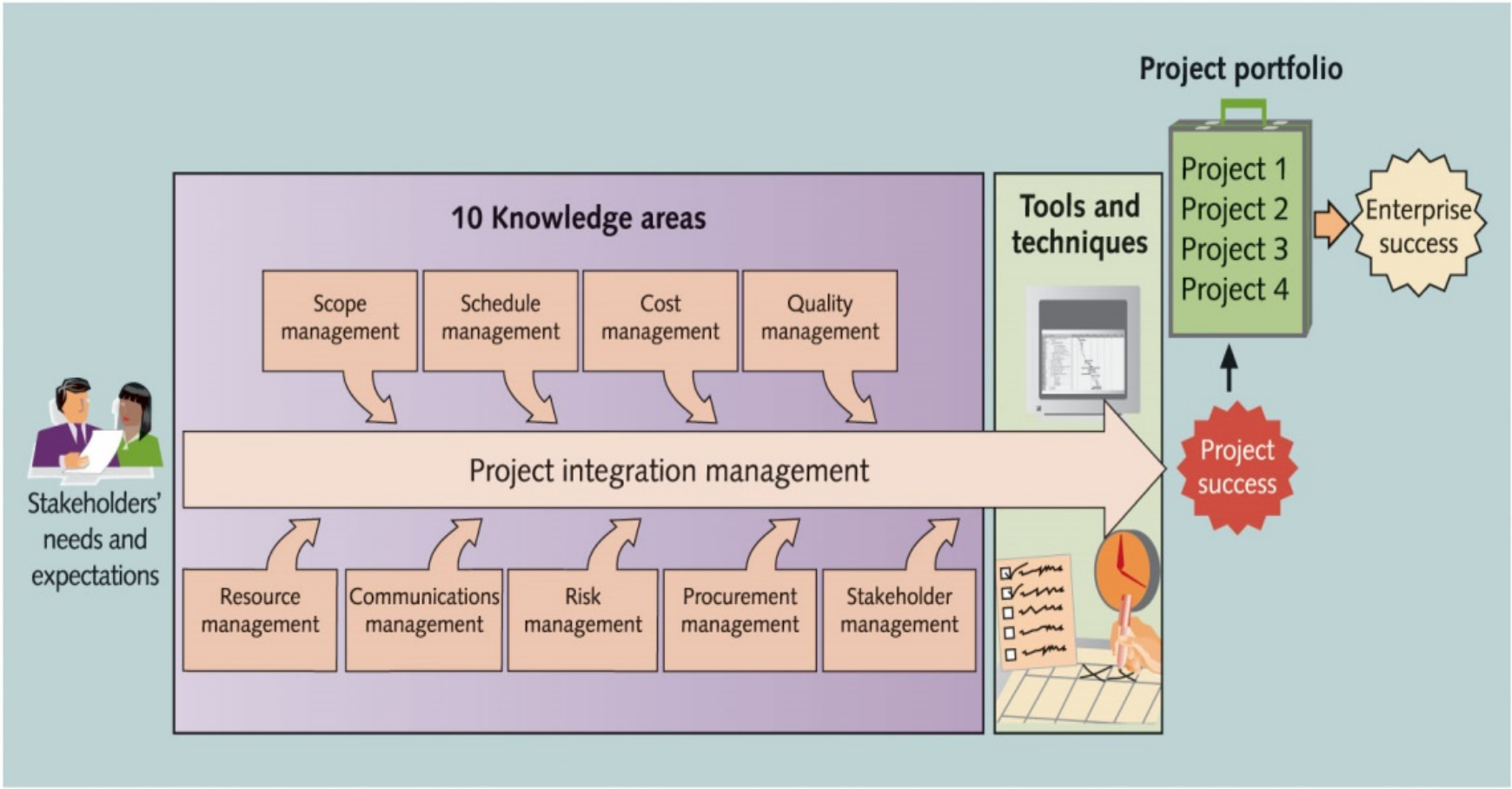
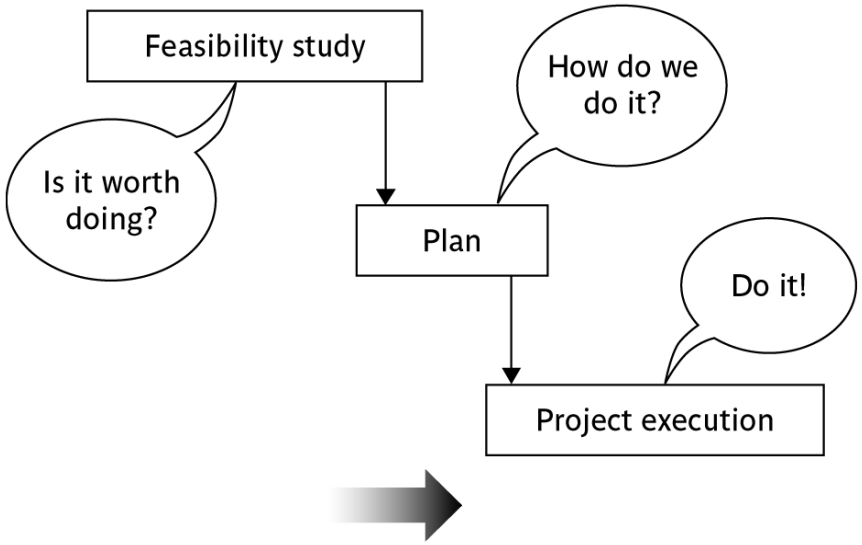


FIGURE 1-2 Project management framework

Activities covered by project management



Feasibility study

Is project **technically** and **organizationally** feasible and worthwhile from a business point of view?

Planning

Only done if project is feasible

Execution

Implement plan, but plan may be changed as we go along

Stakeholders

- Stakeholders (SH) are persons or organizations. They may be affected by it either directly or indirectly.

- Stakeholders may include:
  - anyone who operates the system
  - anyone who benefits from the system
  - anyone involved in purchasing or procuring the system.
  - organizations which regulate aspects of the system
  - people or organizations opposed to the system
  - organizations responsible for systems which interface with the system under design

- Different stakeholders may have different objectives – need to define common project objectives

Paper and Pen exercise
A patient information system for mental health care

- A MHC-PMS (Mental Health Care-Patient Management System) to support mental health care is a medical information system that maintains information about patients suffering from mental health problems and the treatments that they have received.
- **Individual care management**: Clinicians can create records for patients, edit the information in the system, view patient history, etc. The system supports data summaries so that doctors can quickly learn about the key problems and treatments that have been prescribed.
- **Patient monitoring:** The system monitors the records of patients that are involved in treatment and issues warnings if possible problems are detected.
- **Administrative reporting:** The system generates monthly management reports showing the number of patients treated at each clinic, the number of patients who have entered and left the care system, number of patients sectioned, the drugs prescribed and their costs, etc.

Paper and pen exercise (cont.)
Who could be a stakeholder in the MHC-PMS?

- **Patients** whose information is recorded in the system.
- **Doctors** who are responsible for assessing and treating patients.
- **Nurses** who coordinate the consultations with doctors and administer some treatments.
- **Medical receptionists** who manage patients' appointments.
- **IT staff** who are responsible for installing and maintaining the system.
- A **medical ethics manager** who must ensure that the system meets current ethical guidelines for patient care.
- **Health care managers** who obtain management information from the system.
- **Medical records staff** who are responsible for ensuring that system information can be maintained and preserved, and that record keeping procedures have been properly implemented.

Project Success

- There are several ways to define project success:
  - The project **met scope, time, and cost goals**
  - The project **satisfied** the customer/sponsor
  - The results of the project **met its main objective**, such as making or saving a certain amount of money, providing a good return on investment, or simply making the sponsors happy

Setting objectives

- Answering the question '*What do we have to do to have a success?'*
- Need for a ***project authority*** *(project ownership)*
  - Sets the project scope
  - Allocates/approves costs
  - Could be one person - or a group (e.g. Project Steering Committee).

Objectives

Informally, the objective of a project can be defined by completing the statement:

*The project will be regarded as a **success if**…….*

e.g. "*customers can order our products online*".

Focus on ***what*** will be put in place, rather than ***how*** activities will be carried out

Objectives should be SMART

- **S** – specific, that is, concrete and well-defined
  - E.g. "to improve customer satisfaction"???
- **M** – measurable, that is, satisfaction of the objective can be objectively judged
  - E.g. "to reduce customer complaints"???
- **A** – achievable, that is, it is within the power of the individual or group concerned to meet the target
  - E.g. "to send humans to Mars"???
- **R** – relevant, the objective must relevant to the true purpose of the project
- **T** – time constrained: there is defined point in time by which the objective should be achieved

E.g. "*upgrade the helpdesk telephone system by December 31 to achieve average client wait times of no more than two minutes"*

Sub-objectives

These are steps along the way to achieving the objective

Informally, these can be defined by completing the sentence

To reach objective X, the following must be in place

A……

B……

C…… etc

Measures of effectiveness

How do we know that the objective has been achieved?

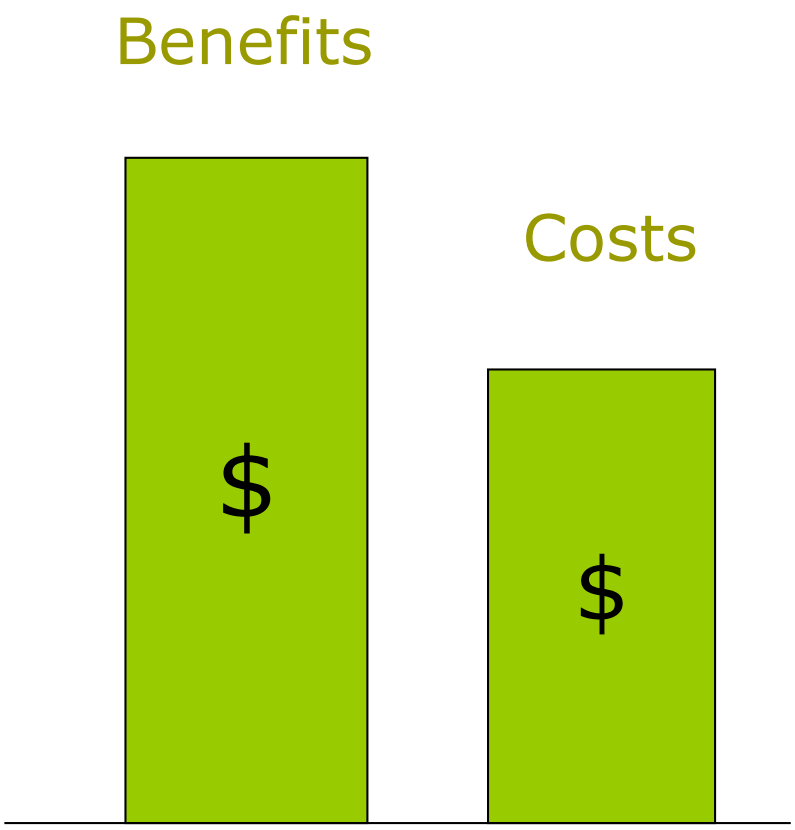
By a practical test, that can be objectively assessed.

e.g. for user satisfaction with software product:

- Repeat business – they buy further products from us
- Number of complaints

- Will explore more in Quality Management lecture

The business case



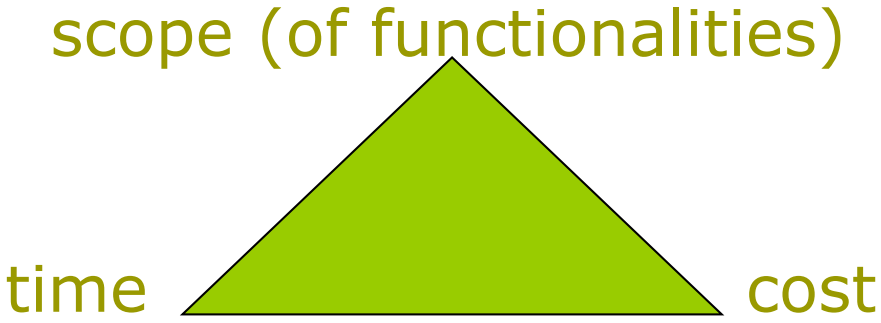
- Benefits of delivered project must outweigh costs
- Costs include:
  - Development
  - Operation
- Benefits
  - Quantifiable
  - Non-quantifiable

Project success and failure

- Project objectives vs. Business objectives
- Project objectives are the targets that the project team is expected to deliver:
  - The agreed functionality
  - The required level of quality
  - On time
  - Within budget.

Project success/failure

- Degree to which objectives are met



In general if, for example, project is running out of time, this can be recovered for by reducing scope or increasing costs.

Similarly costs and scope can be protected by adjusting other corners of the 'project triangle'.

Other success criteria

These can relate to longer term, less directly tangible assets

- **Improved** skill and knowledge
- Creation of assets that can be used on **future projects** e.g. software libraries
- Improved customer relationships that lead to **repeat business**

Pen and paper exercise

- A college currently has payroll processing carried out by a services company. This is very expensive and does not allow detailed analysis of personnel data to be carried out. Decision has been made to bring payroll 'in-house' by acquiring an 'off-the-shelf' application and do the service themselves.

Identify the objectives and sub-objectives of the college's payroll project. What measures of effectiveness could be used to check the success in achieving the objectives of the project.

What is management?

This involves the following activities:

- **Planning** – deciding what is to be done
- **Organizing** – making arrangements
- **Staffing** – selecting the right people for the job
- **Directing** – giving instructions

What is management? (continued)

- **Monitoring** – checking on progress
- **Controlling** – taking action to remedy hold-ups
- **Innovating** – coming up with solutions when problems emerge
- **Representing** – liaising with clients, users, developers and other stakeholders

Example: a day at work for the project manager

- "Paul Duggan is the manager of a software development department. On Tuesday at 10:00am he and his fellow department heads have a meeting with their group manager about the staffing requirements for the coming year. Paul has already drafted a document "bidding" for staff. This is based on work planned for his department for the next year. The document is discussed at the meeting. At 2:00pm, Paul has a meeting with his senior staff about an important project his department is undertaking. One of the programming staff has just had a road accident and will be in hospital for some time. It is decided that the project can be kept on schedule by transferring another team member from less urgent work to this project. A temporary replacement is to be brought in to do the less urgent work but this may take a week or so to arrange. Paul has to phone both the human resources manager about getting a replacement and the user for whom the less urgent work is being done, explaining why it is likely to be delayed."

Identify which of the management responsibilities that Paul was responding to at different points during his day.

Management control

Data – the raw details

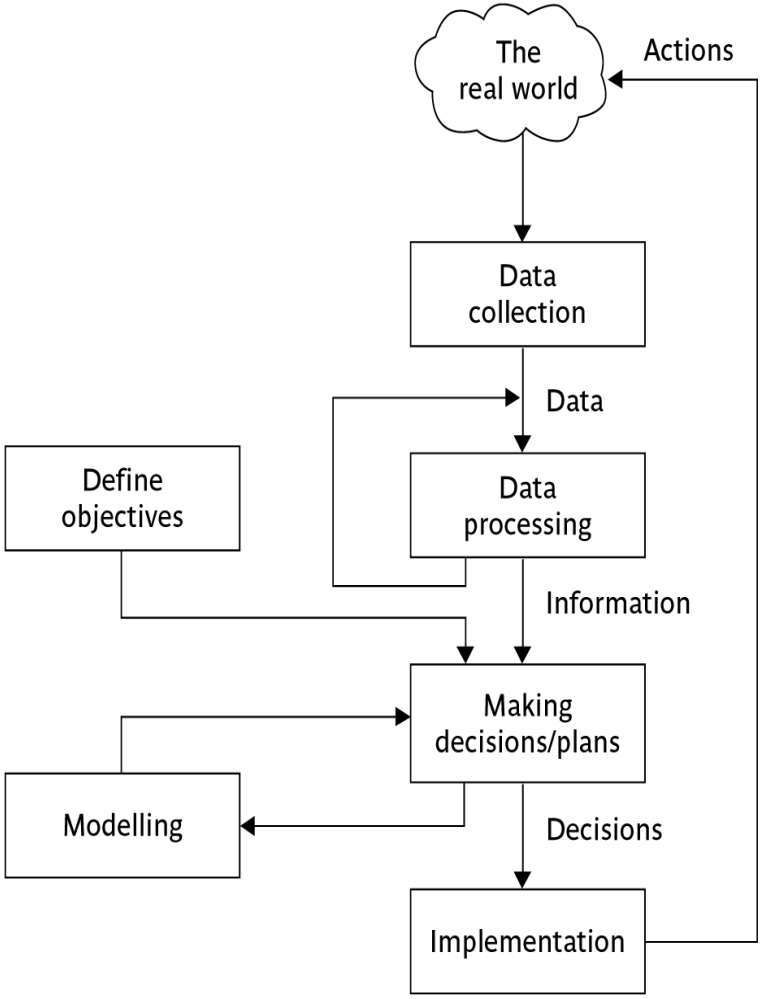
e.g. *'5,000 premises (e.g. houses) passed by NBN fibre at Kiama'*

Information – the data is processed to produce something that is meaningful and useful

e.g. 'productivity is 100 premises a day'

Comparison with objectives/goals

e.g. we will not meet target of rolling out NBN for Illawarra by 31st March 2014

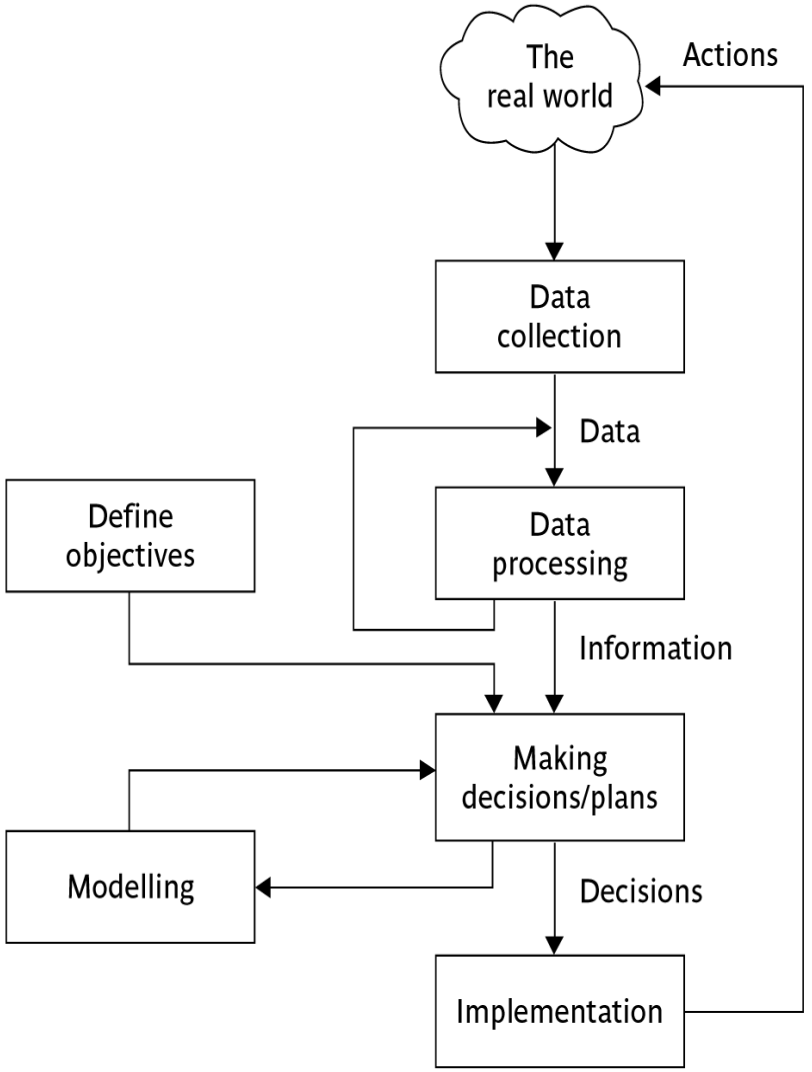


Management control - continued

Modelling – working out the probable outcomes of various decisions

e.g. if we employ 200 more staff at Wollongong how quickly can we get the NBN fibre installed?

Implementation – carrying out the remedial actions that have been decided upon



Pen and paper exercise

- An ICT project is to replace locally held paper-based records with a centrally organized database. Staff in a large number of offices that are geographically dispersed need training and will then have to use the new ICT system to setup the backlog of manual records on the new database. The system cannot properly operational until the last record has been transferred. The new system will only be successful if a new transactions can be processed within a certain times cycles.

Identify the data that you would collect to ensure that during execution of the project, things were going to plan.