PDA Project Management

Project Management:

Project Justification and Planning

DV5H 35

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Publishing information

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Preface

This pack has been developed to provide support for the Higher National Unit *Project Management: Project Justification and Planning (DV5H 35)* — the first of two Units that make up the Professional Development Award (PDA) in Project Management. The second Unit is *Project Management: Managing the Implementation of a Project (DV5J 35).*

Project management is playing an increasingly important part in a wide range of organisations and disciplines. Its defining features are fixed time schedules, budgetary boundaries, team coordination, specific accountabilities, focus on particular outcomes and collaborative working between project partners. Breakdowns in these aspects are the most frequent source of problems in projects. The PDA in Project Management is designed to equip you with the knowledge, understanding and skills required for successful project design and implementation.

Project Management: Project Justification and Planning (DV5H 35) is also an optional Unit within the HNC in Management (G85M 15).

Introduction

Welcome to this learning and teaching pack. It is an introductory resource to support Unit DV5H 35 *Project Management: Project Justification and Planning* — the first of two Units that comprise the Professional Development Award (PDA) in Project Management.

You should use this pack in a flexible way and with the support and direction of your tutor. This pack will probably be one of a number of resources or references your tutor will give you to help you fulfil the requirements of the Unit.

Information about the PDA in Project Management

The PDA in Project Management is designed to enhance and accredit the project management skills of new, inexperienced or aspiring project managers. It offers an opportunity to develop project management skills and enables progression to other widely recognised project management qualifications.

The PDA in Project Management comprises two mandatory Units at SCQF level 8 (HND level) with a total of 3 HN credits or 24 SCQF credit points. The award is sequenced from the first Unit on *Project Management: Project Justification and Planning* through to the second Unit on *Project Management: Managing the Implementation of a Project*. Although both Units are mandatory for the award, each can be delivered stand-alone in order to develop particular skills.

Information about this Unit

You will probably already be a project manager working in the public, private or voluntary sector, although you might not have formal project management qualifications. The purpose of this Unit is to provide you with the knowledge and skills required to prepare a project proposal — including an outline project plan. These skills will enable you to develop a business case for a project that demonstrates:

- its fit with the organisation's business objectives

- its viability, based on the appraisal of a number of possible options.

There are three sets of study notes in this pack, each relating to one of the three Outcomes in the Unit. The three Outcomes are:

Outcome 1: Produce the rationale for a project

Outcome 2: Assess the viability of a project proposal

Outcome 3: Prepare for project implementation.

Assessment of this Unit is predominantly practical and workplace-based. The Outcomes will be assessed in one of two ways:

- through the development of project proposal documentation (covering all of the requirements of the three Outcomes) for a real project for which you have responsibility

- through a simulated or case-study based project provided by your Centre — that derives from the workplace.

How the pack is organised

The main part of the pack contains study notes, covering the main topics in the Unit. At intervals in the text, there are activities that will help you to review your learning and prepare you for assessment. You should discuss your responses to these activities with your tutor.

The activities are not designed to test your knowledge formally. Assessment assignments and instructions will be created and provided by your tutor(s).

The activities within Sections 2 and 3 of this pack are designed to support the progressive build of the content of a project business case, and will be based on a new project for which you are creating a business case. The activities won't cover the full range of business case content, but they will provide valuable input towards it.

Similarly, Section 4 will help you to create the documentation you need to develop a project initiation document.

The descriptor for this Unit is not based on any specific project methodology, so that both you and your Centre can adopt the concepts and terminology most suited to your organisation. However, for the purpose of consistency and clarity this guide takes an approach that is based on PRINCE2.

Terminology and symbols

Terminology
Throughout the pack, the word 'tutor' is used to refer to the person delivering the Unit, and the word 'candidate' to the person studying the Unit. Any additional relevant terminology is explained as it is introduced.

Symbols
Specific symbols are used to denote particular activities as follows:
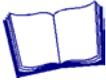
indicates that you should read a recommended text

indicates that you should access a particular internet site

indicates that you should undertake an activity.

Section 1: Overview of project management

Purpose of this section

This section sets the context for the rest of the pack by describing what is meant by 'project' and 'project management'. It also gives you generic guidance on what makes a successful project, and describes some typical pitfalls that can cause a project not to achieve its outcomes.

As the Unit descriptor is not based on a specific project management methodology, a brief description is given here of a number of the most commonly used project management methodologies.

An outline project development framework based on a simplified PRINCE2 approach is used as the basis for the layout of the support materials for the Unit.

What is a project?

There are a number of definitions of a project. Each captures, in its own way, the essential features of a project. These features are summed up effectively and economically by the definition provided by the Office of Government Commerce, which states that a project is:

'a unique set of coordinated activities, with definite starting and finishing points, undertaken by an individual or team to meet specific objectives within defined time, cost and performance parameters.'

The main characteristics of a project can be summarised as being:

- an instrument of change

- non-routine

- unique

- composed of interdependent activities

- carried out by people who don't normally work together

- temporary — with defined start and end dates

- intended to achieve specific outcomes

- frequently uncertain and involves a degree of risk.

What is project management?

There is no fixed or guaranteed formula for ensuring that a project is successful, but there are established techniques to help plan and manage projects. Project management is the planning, monitoring and control of all aspects of the project, and the motivation of all those involved in it to achieve the objectives on time and to the specified cost, quality and performance.

A large part of project management is based on common sense, and much of what is described in this pack is a structured approach to what informed and skilled people probably do instinctively. Some people who believe they have no project experience may already be 'accidental project managers' (see Mullaly, M E, (2003) *The Accidental Project Manager: Coming in from the Cold* — source: jiscinfonet.ac.uk). These people carry out many of the activities outlined here, but view them as simply 'getting things done'. What this pack provides is a structured approach and a set of tools that help this process. It is not always necessary to buy in project management skills from a third party supplier or consultancy firm. Often, existing skills can be configured and directed to develop and run projects.

Although in the right circumstances, external consultancies can contribute valuable experience relinquishing a significant degree of control over a project should not be entered into lightly. Any organisation should consider developing sufficient in-house project management skills to be able to evaluate the performance of potential contracting partners.

Project success

The Office of Government Commerce (OGC) guidelines advise that successful projects should have the following:

- a well-defined scope and agreed understanding of intended outcomes

- active management of risks, issues and timely decision-making, supported by clear and short lines of reporting

- ongoing commitment and support from senior management

- a senior individual with personal accountability and overall responsibility for the successful outcome of the project

- an appropriately trained and experienced project team and, in particular, a project manager whose capabilities match the complexity of the project

- well-defined and visibly managed processes, which are appropriate for the scale and complexity of the project.

The following list of project characteristics might provide a useful checklist. To increase the chances of success, projects should have the following:

- clear and well-managed processes
- a clearly defined purpose and limits
- shared understanding of intended outcomes
- realistic objectives
- good management of risks and problems
- thorough planning
- timely decision-making supported by short, clear lines of reporting
- strong leadership
- commitment and support from senior management
- a senior person with overall responsibility for the success of the project
- a trained and experienced project manager who is suited to the particular project
- a trained and experienced project team
- clearly defined jobs and responsibilities
- good communications.

The following websites contain advice on successful project management:

'14 Key Principles for Project Management Success'

http://www.michaelgreer.com/14key.htm

'Project Management Tips' contains links to several helpful articles. Two of these provide an overview of project management best practice:

'Project Management Best Practices I – Plan the Work'

'Project Management Best Practices II – Work the Plan'

http://www.projectkickstart.com/html/tips.htm

The Atlantic Systems Guild website contains a list of good project management points. These were gathered from successful project managers.

http://www.systemsguild.com/GuildSite/Robs/MasterPoints.html

Why do projects fail?

A significant number of projects fail to achieve their intended outcomes on time and within budget. This is particularly so for projects involving information systems. The project scenario shown below illustrates the most common pitfalls.

Why do projects fail?

What the user wanted...........................

What the budget allowed for...............

What the timescale allowed for..............

What the technician designed.................

What the user finally got..........................

The most common reasons for project failure are:

- following a method without thinking
- being too confident of success
- not having enough of a contribution from those with an interest
- having unrealistic expectations
- contributors or partners having too little involvement
- poor communication
- poor project specification
- not enough resources
- having the wrong people involved in the project
- having too much reliance on one person

- not enough planning
    - unrealistic time and resource estimates
    - unclear or unmeasurable project objectives
    - changing project objectives during the project

- failure to manage risks and problems.

The failure of large, ambitious projects in the public sector often receives considerable, negative publicity. Three such examples are described briefly below. Follow the weblinks provided to read more about what went wrong with each project and the lessons learned.

Example 1 — the Passport Office

In the summer of 1999, the failure of the Passport Office's new IT system caused large delays in the issue of passports. Several hundred people were unable to travel and phone lines were continually congested.

Reference

For a description of the case study:

http://www.jiscinfonet.ac.uk/InfoKits/project-management/pm-intro-1.2

Extract from National Audit Office summary at:

http://www.nao.gov.uk/pn/9899812.htm

Full report at:

http://www.nao.gov.uk/publications/nao_reports/9899812.pdf

Example 2 — NASA's Mars Climate Orbiter Project

In 1999 a Mars space probe from NASA was lost. According to the report of the subsequent investigation, a number of the failures were related to the quality of the project management.

Reference

For a description of the case study:

http://www.jiscinfonet.ac.uk/InfoKits/project-management/pm-intro-1.2

Report on 'Project Management in NASA' by the Mars Climate Orbiter Mishap Investigation Board at:

www.dcs.gla.ac.uk/~johnson/Mars/MCO_MIB_Report.pdf

Example 3 — a university accounting system

A large university developed a new accounting system that did not work for the first six weeks of its operation. Several months later it was seen as 'failing to do what it was supposed to do', and as being 'unreliable'. This led to a major investigation, which concluded that basic project management procedures had not been followed, and that it would take at least two years to correct matters.

Reference

For a description of the case study:

http://www.jiscinfonet.ac.uk/InfoKits/project-management/pm-intro-1.2

Lessons learned from previous projects

In the analysis of all projects, whether successful or otherwise, it is a consistent finding that projects revolve around the people involved — at all levels. Relatively few projects fail for technical reasons. Most fail because they are not effectively managed. The most important and complex aspect of the management task is managing relationships amongst the people involved.

Regardless of the size or nature of project, the types of problems and reasons for failure can be very similar. It is important therefore that we record what goes wrong, the reasons why it goes wrong, and what should be done differently or better the next time. We want to learn from these lessons in future projects and not repeat the same mistakes that we made before.

The lessons learned from the above projects are typical of the lessons reported from many other projects, large and small:

- maintain a sense of ownership throughout the project, and ensure that the allocation of major resources is followed through (by senior manager responsible)

- set clear success criteria for its outcomes

- match scope of project to funding

- ensure budgets are adequate for the intended outcomes

- make an initial costing as part of the business case

- present a full business case before the project is started, to obtain a commitment to resources from stakeholders and senior management
- construct business case to ensure that time is allowed to assess the costs and benefits of any proposed new system before the project gets underway
- define roles and responsibilities
- pay attention to 'people' issues, including the infrastructure of the project
- train staff fully and allow adequate time to learn new processes
- keep customers or end users of the system informed
- ensure good team working and adequate and appropriate staffing
- ensure good communications amongst and within different teams
- monitor the work of contractors effectively
- put adequate risk management and issue control procedures in place, with continuous risk analysis and discussion of issues from start to end of the project
- create climate in which issues can be easily and safely raised
- adhere to organisation's procurement procedures
- have realistic contingency plans in case the project fails to deliver on time
- include in planning the basic tools that allow project staff to carry out their day-to-day work
- plan and monitor effectively, so that you realise when changes are required and re-planning is necessary.
- test new systems thoroughly.

Project management methodologies

There are many formal project management methodologies that combine a framework or approach with a set of project tools and guidelines. Some are proprietary approaches developed by consulting firms and software houses, while others are in the public domain. They vary in scale and complexity, but all are based around a small core of common sense principles.

The choice of project management methodology is less important than the way it is applied. The success of a project depends substantially on the skills and commitment of the people running it.

Some examples of frequently used methodologies are described below.

1   PRINCE2 (PRojects IN Controlled Environments)

The PRINCE methodology entered the public domain in 1990. Further revisions following extensive user consultation resulted in the launch of PRINCE2 in 1996. This methodology is the UK Government standard for managing major projects and is becoming increasingly popular internationally. It has been widely adopted by both the public and the private sectors for all types (IT and non-IT) and sizes of project.

Key features

Business case

PRINCE2 is business case driven and focuses on delivering outcomes to meet a defined business case based on business benefits. The business case is the justification for the forecast time and effort set against the expenditure. The project board uses the business case to monitor the viability of a project throughout its lifespan.

Customer/supplier relationship

PRINCE2 acknowledges the distinct roles of the customer and the supplier in a project. The customer commissions the work and the supplier provides the specialist resources, skills, goods or services. Some projects have more than one customer and more than one supplier and can be considerably more complex as a result. PRINCE2 stresses the need to manage such projects with additional care and planning.

Scope of the methodology

PRINCE2 is used to manage a project and its resources. It does not cover specialist techniques for creation of products — for example — people management, planning, risk management, quality management, finance and procurement. It is process based, and needs to be tailored to suit circumstances. It can be applied to small and large projects.

Reference

www.prince2.org.uk

2 Small Project Management (SPM)

This methodology is designed for those seeking a straightforward approach to managing small projects. The SPM philosophy is a standard method for managing all small projects, and aims for a consistent approach while keeping paperwork to a minimum. This proprietary methodology is available through several training consultancies and membership bodies.

Reference
USA

www.projectexperts.com/products/spg.htm

UK

www.tpgacademy.com/

3 Structured Systems Analysis and Design Method (SSADM)

Early definitions for structured design and structured analysis were introduced in the late 1970s. This culminated in the emergence of the Structured Systems Analysis and Design Method (SSADM) in 1980. Subsequently, there were updated versions during the 1980s and 1990s, leading to the launch of SSADM4+ in 1995. SSADM is best suited to IT development projects, but does not cover the whole project life-cycle — for example, it does not include project controls. It is best used in conjunction with another project management method.

Reference
www.bdris.com/SSADM1.htm

4 Rapid Application Development (RAD)

The early 1990s saw the emergence of Rapid Application Development (RAD) as an approach to the development of information systems (IS). This provided a potentially quicker and less costly solution to the development of IS projects. The approach covers the whole life-cycle of a project from feasibility to maintenance, and is characterised by small development teams. There are many established methods of using RAD, and more recently in the UK it has been incorporated within the Dynamic Systems Design Method (DSDM).

Reference
www.blueink.biz/RapidApplicationDevelopment.aspx

5   Dynamic Systems Development Method (DSDM)

DSDM is a stricter method of RAD, based on previous experience of RAD projects. It is designed for rapid and effective product delivery, and is well suited to small projects. PRINCE2 and DSDM are complementary and aspects of both can be used in the same project.

Reference

www.dsdm.org

6   Project Cycle Management (PCM)

This is a well-established method, and is used by the European Commission for the identification, formulation (appraisal), implementation and evaluation of projects and programmes. It incorporates the Logical Framework — a management tool for planning and managing development projects, which emphasises objectives.

Reference

The PCM Group

www-en.pcm-group.com/

The Logical Framework

www.metametrics.com/logframe.html

7   Scalable Methodology Guide

The Scalable Methodology Guide recognises that projects of varied size and complexity require unique scaling of project management techniques, to manage project risks effectively and economically. The Guide builds upon the US Project Management Institute's key principles of project management, and gives guidance on how to fit the various tools and techniques available to particular projects.

The Scalable Methodology Guide sees project management as a set of principles and techniques for controlling project risks and capturing opportunities as projects are developed. Due to the constraints of economics and the unique circumstances of each project, management techniques need to be tailored to the specific risks and opportunities they present.

Reference

www.hyperthot.com/pm_meth.htm

A project management framework

This pack uses an approach based on PRINCE2 — a comprehensive methodology that can be applied to projects of any size and complexity. For the purposes of the pack, PRINCE2 is confined to the essential features of a framework suitable for managing any project. Since the method is scalable, there are areas where it can be explored in greater or lesser detail, depending on the particular context. Properly applied, it should be a user-friendly framework that matches the size, risk level and complexity of the project.

As with any project management framework, a degree of documentation is required. This is essential to define and manage the project and to measure its success. It will also help you to develop skills for the future. The proposed documentation is kept to the minimum required for these purposes.

Some project methodologies focus primarily on the mechanics of management activity and, in doing so, overlook the indispensable human dimension. Here, the management activities are balanced with the skills you will need to manage the organisational change — the personnel interactions and the professional development that any project will inevitably bring about.

The following diagram shows the main components of the project management framework used by this pack. Some elements — namely, project start-up and project closure — occur only once. The remaining elements — planning, managing and controlling — form a continuous cycle that runs throughout the project up to its completion.
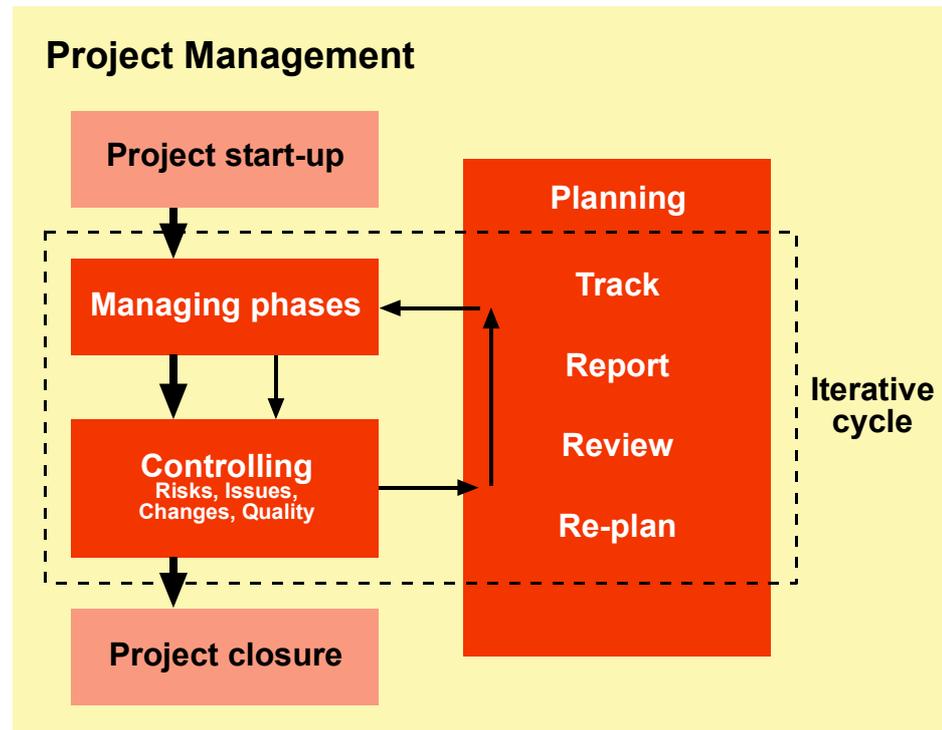
The methodology behind this framework is a tried, tested and structured approach that will provide a sound basis for running a successful project. It is not, however, a substitute for creativity. Every project has its unique characteristics, and necessarily involves uncertainty and risk. It requires flexibility and ingenuity if it is to succeed.

Section 2: Study notes for Outcome 1

Purpose of this section

This section provides study notes and activities to support Outcome 1: Produce the rationale for a project. These notes and activities will help you to cover the following knowledge and/or skills required for this Outcome:

- Rationale

- Project context

- Lessons learned

- Project objectives

- Project scope

- Measures of success.

To achieve this Outcome you must provide evidence of all the above knowledge and/or skills by producing project documentation that provides the rationale for a project. In addition to a description of the scope and objectives, this will include a justification for the organisational fit and need for the project. This should be sufficient to enable a decision to be made about whether or not the project should advance to the next stage of business case development (covered by Outcome 2: Assess the viability of a project proposal).

In providing this evidence, you should:

- explain the reasons for the project and the benefits expected from it

- describe the relevant context in terms of political, business, economic and/or programme factors

- define the objectives and scope of the project in a comprehensive manner

- describe the interdependencies with other projects

- select one aspect of the rationale that has been influenced by previous learning, and explain how this should be beneficial to the project

- give an assessment of measures of success, based on recognised criteria.

The notes in this section — alongside tutor input and other reading on the topics — should enable you to create the required evidence in support of the rationale for a project. These notes cover the following topics:

- The business case

- Project rationale and context

- Lessons learned

- Project scope and objectives

- Measures of success.

Study notes on Outcomes 1 and 2 (Sections 2 and 3) collectively cover the requirements to enable the production of a project business case.

The business case

Preparing a business case doesn't have to be a lengthy or difficult process. The amount of time invested in this should be related to the scale and cost of the project. Even when faced with a situation where the project is already a *fait accompli*, it is worth drafting a short outline and confirming with the sponsor that this is what they have in mind. At the bare minimum, this should summarise what is being done and why, and should list possible alternatives.

It could be that a management group has decided on a course of action, without adequately exploring whether it is the most effective way forward, or whether it will adequately meet the identified needs.

An alternative scenario is that the group has set time and cost limits in advance of a proper analysis of what the project involves. Such optimism can often be provoked — especially in relation to systems implementations — by sales teams and consultants who think (unrealistically) that it will be easy to apply their own implementation methodology in the customer's organisation. In these situations, the business case should state the reasons why alternatives aren't going to be fully explored. It should also state the fact that time and cost estimates might need to be revised once systematic planning is under way. Statistical data or other evidence from colleagues in the sector can help to make this case. The aim is to encourage the sponsor to consider the best way forward in more depth. It also gives the project manager some protection when he or she has to go back to the sponsor and tell them that things aren't going to work in the way that had been imagined.

Writing an effective business case

An effective business case should be clear and concise and should address the following questions:

1   What are we doing?

- Some of the people sitting in judgement might not know the project or the background, and will therefore have to rely on the paper to get a useful understanding of it.

- Complex projects can be very difficult to explain in what are necessarily short papers.

- The focus must be on what, exactly, the project is undertaking, and should not be confused with what might be a bigger picture.

- Project executives and sponsors sometimes need to stand back and look at things from a different angle.

2   Why are we doing it?

- There must be a clear justification as to why the organisation is involved in and/or carrying out the project.

- Why isn't someone else doing it?

- What difference will it make?

- What if we don't do it?

3   What are the expected benefits?

- What is the evidence for the claimed outputs and benefits?

4   Do we have the money to do it?

- Who is paying the bill?

- Realistic costs?

- Is anyone else contributing?

- European funding?

5   How risky is it?

- Identify risks.

- Explain how these will be managed.

6   How will we know we have made a difference?

- Critical success factors.

- Arrangements for monitoring and evaluation.

Sample business case templates

The following sample business case templates will hopefully be useful in providing a suitable format for a project business case:

www.jiscinfonet.ac.uk/InfoKits/infokit-related-files/business-case-template

www.prince2.org.uk/Web/Site/PRINCE2Resources/PRINCE2-Templates.asp

The remainder of this section and Section 3 (Outcome 2) cover the steps required to complete a business case — including the appraisal of alternative options. The business case will contain detail relating to all the knowledge and skills elements of Outcomes 1 and 2.

Activity 1

Does your organisation have a standard project business case template?

If yes:

1   How does it compare with the samples referenced in the websites above?

2   What — if any — recommendations for improvement would you like to make to your organisation's template as a result of this comparison? Or what shortcomings do you believe the above samples have when compared with your organisation's template?

If no:

3   Based on the samples referenced in the websites above, design a project business case template that might be suitable for use in your organisation.

Project rationale and context

Project ideas

There are many reasons why organisations initiate projects. Some of the most common ones are:

- new strategic direction for the organisation

- new requirement for information from a statutory body

- new internal management information requirements

- introduction of a new working environment

- new administrative processes

- need to replace an ageing system

- major software upgrade

- new build

- new product.

Project ideas can originate from anyone and anywhere, from inside and outside an organisation. Care must be taken to inform the originator of progress and to manage their expectations of what the organisation or the project may or may not be able to deliver. This should be done regardless of where the idea originated, but particularly if it has arisen externally,

Activity 2

The activities that follow in Sections 2 and 3 of this guide are designed to support you in the progressive build of a business case. You should use a new project for which you are creating a business case as the basis for these activities. They will not cover the full range of business case content but provide valuable input towards it.

1   Where did the original idea for your project come from?

2   What steps were taken to transform the idea into a project proposal?

Sources of project ideas

The table below highlights some of the hazards to be avoided in relation to managing and developing a new project idea:

Source of idea	Hazards	Dos and Don'ts
External to your organisation.	Taking longer than required and/or agreeing to take the decision to reject or accept idea. Not fully explaining the reasons for rejecting a proposal. Dismissing an idea out of hand. The rejection may be justified on financial or economic development grounds, but giving the appearance of dismissing it casually risks alienating all concerned.	Do behave as you mean to continue — timely and tactfully. Do manage expectations — if the idea is likely to be turned down. Do explain clearly why an idea is being turned down. Ensure you have justifiable reasons for rejecting an idea. Do not delay.

Source of idea	Hazards	Dos and Don'ts
Strategy work highlights a problem to be addressed.	To a greater or lesser extent, project ideas are always pre-appraised — a strategy has highlighted the need for action. The main hazard now is developing a project without getting to know what others have done in the past.	Do find out what has happened in the past or elsewhere in the area of work. Do consider ways of enhancing, extending and adapting the work of others. This can be cost-effective and make an impact more quickly than developing an all-new project.
Your own knowledge of an area.	Never getting round to development of the project. Looking at the project over-optimistically or not being rigorous enough about initial appraisal.	Do schedule time in your diary to develop the project. Do appraise it as you would any other project.

Whatever the reason for considering a project, the senior management team of the organisation will consider the project in terms of its place in an overall strategy.

Rationale

Projects are driven by and have to sit within the strategic goals or business objectives of an organisation. When you provide the rationale for a project, you must explain the strategic fit of the project, along with a justification for why it is necessary.

Strategic fit explains how the scope of the proposed project fits within the existing business aims and strategies of the organisation. It also explains the compelling case for change in terms of the existing and future operational needs of the organisation.

In assessing the strategic fit of a project, consider the answers to the following questions.

- Are there clear links to one or more strategic goals or business objectives?

- Is the project consistent with organisational priorities?

- What positive contributions will the project make towards organisational strategy and targets?

- Are the objectives of the project consistent with the strategies and policies of the organisation?

- Is the project needed at all?

- Have the stakeholders made a commitment to the project?

- If it is a poor fit, can the scope be changed?

All systems, processes and products need to fulfil a strategic purpose. Yet many project implementations are undertaken at a tactical or even operational level without considering the overall strategic vision of the organisation. Strategic evaluation of a project usually starts with a single fundamental question: 'How does this project benefit the organisation and its clients?' If this question is not asked prior to implementation, it follows that the answer to it during evaluation might be difficult or even impossible to establish.

Activity 3

1   Which strategic goals or business objectives are addressed by your project?

2   How does the project benefit the organisation and its clients?

Sponsorship

Successful projects are invariably those that are given direction and support from a high level within the organisation. It is important for any major undertaking to have a project advocate in the senior management team. This person is known as the 'project sponsor' or 'project senior responsible owner'. The sponsor is unlikely to play an active part in the day-to-day management of the project, but will set the objectives for the project in line with the strategic plan, ensure that appropriate resources are committed and resolve any issues where necessary. The sponsor must have sufficient authority in all parts of the organisation that are impacted by the project.

Defining the project

Theoretically, the project sponsor should be prepared to present the project manager with a project brief that outlines what they have in mind for the project, and how it fits with the organisation's wider strategies and plans. On the basis of this brief, the project manager should then go on to develop a business case that investigates the feasibility of the project — including the likely timescales and costs and whether it will deliver the intended benefits.

However, the theory does not always translate into practice. It is not unknown for people to be given the minimum guidance on a poorly specified and ill-considered outcome, timescale and costing. This is a major reason for project management — time spent properly defining the project can save considerable cost, effort and disappointment later on.

Project context

In addition to ensuring strategic fit, it should also be possible to provide further justification of the need for a project. To do this effectively, awareness of all the factors that gave rise to the project proposal is necessary. There can be a variety of drivers and reasons for a specific project, and the manager should be able describe the relevant context in terms of political, business, and economic factors.

In a business context, some factors to take into account might include:

- organisational structure
- culture (core beliefs, traditions and values of the organisation)
- corporate governance
- strategies and policies, for example:
  - procurement
  - project management
  - risk assessment and management

- management processes, for example:
  - cost centre budget management

- operations
- roles and responsibilities.

Projects are not delivered in isolation. They often have an impact on and are impacted upon by other projects and the operational environment. It is essential that any interdependencies with other projects — particularly in relation to risks — are identified, understood and managed. Project interdependencies might be represented pictorially using project dependency network diagrams.

Lessons learned

Section 1 of this pack provided a list of some typical lessons learned from other projects. Identifying, recording and disseminating lessons learned from a project are activities that should be planned and implemented from the start of the project. One way in which we can build learning into projects from the start is by forming Communities of Practice within our organisations or partnerships.

Communities of Practice (CoP) are groups of people who share an interest and who interact regularly so as to develop and learn from each other. CoPs are important to the sharing of knowledge, ideas and experience in organisations. They consist of those internal networks, project teams and thematic groups to which individuals belong and contribute, and include those colleagues and peers with whom an individual shares practice.

Project managers should disseminate lessons learned through their own CoP to other CoPs, where appropriate. During the project appraisal process, CoPs can help to identify people who have worked on similar projects, so that there is a pool of experience to draw from. If difficulties arise — even during implementation — the project manager should also be able to find someone in their CoP with whom they can discuss a potential solution. Communities of Practice are essential if an organisation is to avoid the following:

- costly and time-consuming reinventions of the wheel across a dispersed organisation

- repetition of past mistakes

- missed opportunities for individual professional development.

Activity 4

List the Communities of Practice (CoP) to which you belong

For each one, describe the knowledge, ideas and experiences that you share with colleagues.

How are lessons learned from previous and current projects in your organisation shared and disseminated? Is this well done? What additional methods might be used to improve the sharing of good practice and avoiding of past mistakes?

Notes on Activity 4

Here are some tips on sharing lessons and good practice:

- disseminate

- evaluate

- 'how' almost more important than 'what'

- beware the blandness of an organisational overview

- file 'lessons learned' report with project documentation

- copy this report to central programme/project office or repository if there is one

- celebrate success — present to other project teams

- write case studies

- capture experiences of individuals

- use intranet, websites, newsletters.

Project scope and objectives

Defining the scope

When defining the scope of a project, boundaries should be set for what is included and what is not included.

To help scope a project, some useful questions can be asked.

- What is the project responsible for delivering? What is the project not going to deliver?

- Why is it being done?

- What are the main objectives?

- What needs to change to achieve these objectives?

- What will the effect of those changes be?

- What will stay the same?

- Which stakeholders will be affected and how?

- What other work or projects are there that might impact on this? (Boundaries must be agreed to avoid duplication or omission of tasks or deliverables.)

- Whose responsibility is it to put in place longer-term mechanisms and reviews to evaluate the project?

The answers to these questions will help to define the scope of the project. They will also define the interfaces that need to be established with other projects and stakeholders. Clearly establishing what is to be included and what is to be excluded is — in particular — fundamental to planning a project.

A major reason for projects going wrong is a failure to properly define the scope or, subsequently, to manage changes to the scope.

Defining and agreeing the scope will help to:

- ensure clear project goals and objectives

- promote understanding

- reduce ambiguities and risks

- identify the desired outcomes

- manage expectations

- get management's and colleagues' commitment

- develop quality and evaluation criteria.

Even if it is known that the scope is likely to change, it is still important to set out the current understanding of the objectives — what is and isn't included. This will help to plan and estimate the resources required to do the job.

Activity 5

Establish a list of customer/user expectations by asking them what they want to be able to do with the system product or service provided by your project.

Establishing objectives

The expression of goals provides an overall picture of what the project is trying to accomplish. The project manager needs to understand the wider business goals that the project is contributing to.

Objectives are more detailed statements than goals and set out the specific, tangible products and deliverables that the project is to achieve as it progresses towards meeting each goal.

Objectives should be written so that they can be evaluated at the conclusion of a project, to assess whether they were achieved or not. Objectives must be clear and measurable.

If clear objectives cannot be determined, it is likely that they are being considered at too high a level, and are, in fact, more like goals. If objectives describe the characteristics of the deliverables, they are being considered at too low a level. If they describe the features and functions, they are requirements, not objectives.

SMART objectives

Wherever possible, objectives should be:

Specific

Measurable

Achievable/**A**greed

Relevant/**R**ealistic

Time-bound.

Measures of success

It is essential to identify the criteria that will be used to determine the success of the project upon its completion. This needs to be done at the very outset of the project. Remember that success will mean different things to different people. Some stakeholders will focus on the time it takes to complete the project, while others will be more concerned with the budget or the technical aspects of achievement. A range of measurable success criteria should be compiled to cover not only SMART objectives but also timescale and budgetary targets.

Relationship to evaluation

Clear objectives are essential — especially if the way they are going to be delivered changes throughout the project. They are also the foundation for the critical success factors and the measures of success that the project will be evaluated against.

Activity 6

| 1 | What are the objectives of your project? |
| 2 | What deliverables would help to achieve these? |

Section 3: Study notes for Outcome 2

Purpose of this section

This section provides study notes and activities to support Outcome 2: Assess the viability of a project proposal. These notes and activities will help you to cover the following knowledge and/or skills required for this Outcome:

- Sources of project funding

- Project costs and budget forecasting

- Value of benefits

- Project risk assessment

- Options appraisal.

To achieve this Outcome you must provide evidence of all the above knowledge and/or skills by producing project documentation that demonstrates the viability of a project through the application of a process of options appraisal. This documentation will include data and analysis for a number of options, followed by your recommendation for a preferred option with a justification for project affordability and value for money.

In providing this evidence, you should:

- describe two project delivery options

- provide data and analysis for each project option (based on construction of a set of appraisal criteria), including:

  – estimated project costs
  – funding sources
  – project budget, constructed in accordance with recognised budgetary principles
  – estimated value of project benefits
  – key risks

- make a recommendation, with reasons, for the preferred option based on comparative costs, benefits and risk ratings.

The notes in the section — alongside tutor input and other reading
on the topics — should enable you to create the required evidence
in support of the viability of a project. These notes cover the
following topics:

- Project viability
- Options appraisal
- Measuring the benefits
- Risk assessment
- Risk management
- Project costs and funding sources
- Economic appraisal
- Financial appraisal
- Select the preferred option.

Study notes on Outcomes 1 and 2 collectively cover the
requirements to enable the production of a project business case.

Project viability

One way of determining whether a project is viable is to conduct a
cost benefit analysis and to check that the benefits outweigh the
costs. This might not be straightforward in practice, because it
could be difficult to put a value on benefits that are not of a
financial nature. Also, a comparison of the value of the benefits
resulting from a project and the costs of the project should not be
made without consideration of the associated risks. All three
elements of costs, benefits and risks are taken into account within
the options appraisal approach described in this section.

Project options appraisal is where an organisation looks at the
different ways in which a project might provide a solution to a
problem through achievement of objectives and production of
outputs. These different ways or options are costed, analysed and
assessed. The alternative options — including costs, benefits and
risks — are presented within the business case to give senior
management the information they need to make a decision on
whether or not to proceed with the project and, if so, which option
to use.

In considering the options within the business case, the decision makers should conduct both an economic appraisal and a financial appraisal of the options. The economic appraisal is based on the cost benefit analysis and looks at which option gives the best value for money. A financial appraisal looks at whether the project will work as a business proposition and addresses the question 'Is this a good use of anybody's money?' Both types of appraisal are covered in more detail later in this section.

Options appraisal

Options generation and appraisal need to be addressed at two key points:

Strategic options appraisal

This is an appraisal of the options for delivering the objectives and outcomes that have been identified. It is often invoked when there are a number of competing projects to be considered. It addresses the issue of whether this option is the best way to achieve the stated ends.

Operational options appraisal

This is a consideration of the options for taking the chosen project forward. It addresses the issue of how to deliver the project rather than whether to do it in the first place.

The base case

When considering the options for delivering the objectives, you should always include the 'do nothing' approach. Sometimes, however, doing nothing is just not feasible, and it makes more sense either to consider doing the minimum or retaining the status quo. This is the base case — the benchmark from which you can measure what the project is likely to achieve over and above the bare minimum.

To construct a base case, you need to know what is happening with the project at the moment — what is the base line the project is starting from? Once you have established a base line, you can construct a picture of what is likely to happen if no action were taken.

From this point, you can then go on to develop a picture of what the project is likely to achieve. This becomes the base case (that is, the best estimate of the costs and benefits of an option). If the difference between the base case and doing nothing is minimal, then it would be a good idea to rethink the whole thing. If, however, the base case demonstrates that the improvements the project could bring are a great deal better than doing nothing, then it should now be possible to tell just how much better — and that is the added value (also known as additionality) that the project will achieve.

Cost, benefit and risk

Options appraisal aims to arrive at the optimum balance of cost, benefit and risk. Ideally, it consists of a high level cost/benefit analysis of at least three options for meeting the business need. It also includes analysis of 'soft' benefits that cannot be quantified in financial terms, and identifies preferred options and any trade-offs. Options appraisal must be carried out in detail before selecting a preferred option.

In trying to reach the optimum balance of cost, benefit and risk, consideration can be given to what trade-offs need to be made — such as foregoing some of the benefits in order to keep costs within budget or taking carefully considered risks to achieve more substantial benefits.

Generating and appraising options should:

- identify creative approaches

- assess whether the project is actually worthwhile

- identify the key success factors

- be able to fully justify actions through a transparent process

- highlight strengths and weaknesses in a project

- identify further risk factors.

Stakeholders

The process of options appraisal allows for participation in decision making by a wide range of stakeholders. It also extends the sense of project ownership.

Project stakeholders include the sponsors and all those who will be involved in or impacted upon by the project. If the project has been set in a strategic context, most members of the organisation will be to some extent stakeholders, exercising varying degrees of influence at various levels. These include:

- strategic — determine the strategy that the project underpins — might sponsor the project

- managerial — execute managerial control over elements of the project and/or its outputs

- project — are involved in developing and delivering the project

- operational — involved in implementing or operating outputs of the project

- direct influence — are directly affected by outputs of the project

- indirect influence — are indirectly affected by the project or its outputs.

Activity 7

Who are the key stakeholders in your project?

How much and in what way will you involve them in the development of the business case?

A method for appraising options (multi-attribute utility theory)

Identify the objectives of the project

↓

Agree the criteria for appraising options

↓

Generate a long list of options for delivering objectives

↓

Reduce to a short list of options

↓

Assess and systematically compare costs and benefits of options

↓

Consider risks and uncertainties

↓

Select preferred option
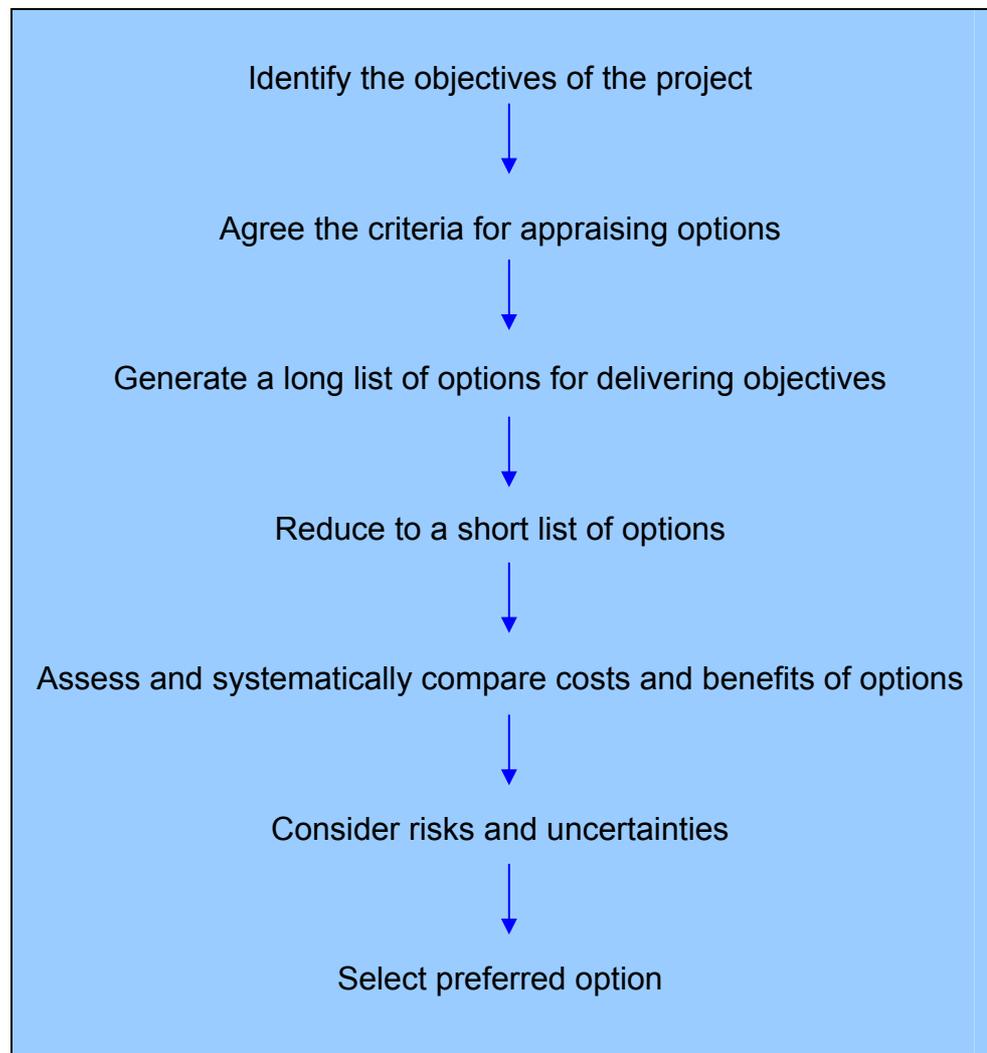
Activity 8

Who do you think should be involved at each stage in the
appraisal process and why?

Agree the criteria for appraisal

Once you have identified the objectives of the project — what you want it to deliver — you then need to draw up the factors that will indicate success. These form the criteria for options appraisal and also for future evaluation.

Criteria set out in more detail the expectations of what will be achieved in meeting the objectives. Criteria will test how well the options have delivered the objectives. The criteria used for the appraisal will also form the basis of the eventual evaluation.

Criteria should be:

- clear, explicit and well–defined

- independent

- quantifiable.

It is important to use only criteria relevant to the project. Select between five and 10 criteria. If fewer are used, they can be overwhelmed by opposing influences. If more are used, they risk becoming unmanageable.

Weighting criteria

Not all the criteria will be equally important, and they should be weighted to reflect their relative importance. This is for the most part a subjective exercise. It is more easily achieved if the criteria are clearly defined. It is then a matter of distributing, say, one hundred points amongst the criteria according to the relative importance of each. Stakeholders can, if appropriate, take part in this exercise. Where the criteria are weighted by individuals, the final weighting for each is established by averaging the individual ratings.

Activity 9

Agree and weight the criteria against which you will appraise your options.

Generate the long list of options

The art of generating the long list is to take ideas from as many people as possible, and combine these into a coherent list of possibilities. Long lists should be creative and include innovative ideas. Options to include in the long list are:

- 'do nothing' option

- 'do the minimum' option (which may be the same as do nothing)

- top quality option — ignoring all financial constraints

- politically important options

- full range of alternatives, including counter-intuitive options.

Brainstorming sessions often generate good long lists. Everyone should be encouraged to give their suggestions and no ideas should be rejected at this stage. Often ideas that initially seem inappropriate turn out to be inspired. Another technique is to use scenario exercises to explore how current circumstances could change within the timescale of the project. This ensures that fast-changing conditions do not mean that the project is out of date before it is launched.

Reduce to a short list of options

The next step is to test the options for feasibility and discard any that are clearly not achievable, unrealistic or unlikely to outperform the 'do nothing' option. The aim is to reduce the long list to a short list of three to five options that nevertheless cover the spectrum of possibilities. The 'do nothing' or 'do the minimum' options should also be included, to provide the base case against which the added value of each option can be assessed.

Assess and systematically compare costs and benefits of options

Once the short list is arrived at, you will need to identify and compare the benefits and costs associated with each option. Each option is scored against the weighted criteria — for example, using a score from 0 to 10:

Verbal scale	Numeric scale
Excellent	10
Extremely good	9
Very good	8
Good	7
Fairly good	6
Neither good nor poor	5
Fairly poor	4
Poor	3
Very poor	2
Extremely poor	1
Really bad	0

Weighting and scoring provides a systematic method of assessing the relative merits of alternative options. It is particularly useful where it is not possible to place a monetary value on the benefits of a project.

The criteria used to assess the options are those selected by the project team, together with partners and stakeholders. The ranking and weighting of the objectives is agreed by the same people.

An options appraisal could be set out as follows:

Criteria	Do nothing			Option 1		Option 2		Option 3	
	Weight	Score	Total	Score	Total	Score	Total	Score	Total
1									
2									
3									
4									
5									
Total									

Activity 10

Generate a range of options and reduce to a short list. Appraise each option against your criteria including the 'do minimum' or 'do nothing' option.

Measuring the benefits

The benefits of a project are those positive outcomes that it is intended to deliver, and that justify the investment. Wherever possible, benefits should be expressed in tangible ways. For example, the intangible benefit of 'happier staff' might be expressed in more tangible ways by translating it into 'per cent decrease in staff turnover' or 'per cent decrease in time off for stress-related problems'. Both of these can be translated into a projected monetary saving.

Each benefit should be described clearly in measurable terms, so that improvements can be assessed after the project has been completed.

A useful part of the overall project justification may be a description of what will happen if the project is not done — for example, per cent decrease in market share; £ x maintenance costs.

Risk assessment

The decision to proceed with a particular course of action is not made purely on the outcome of the options appraisal scoring process. A high scoring option may also be the one with the highest risks and the greatest uncertainties.

During the initial project appraisal process, the options appraisal outcomes can help identify the key reputational, financial and operational risks to the project.

Begin by looking at the weighted criteria: the highest weights represent the most critical areas of the project. If these criteria are not fully delivered, then the effectiveness of the whole project is likely to be affected.

For these criteria, ask:

- What could go wrong?

- How serious would it be if it did? (Impact)

- How likely is it that it will go wrong? (Probability)

This information can then be used to form a probability/impact risk profile:

		Very low	Low	Medium	High	Very high
Probability	Very high	🟧	🟧	🟥	🟥	🟥
	High	🟩	🟧	🟧	🟥	🟥
	Medium	🟩	🟩	🟧	🟧	🟥
	Low	🟩	🟩	🟩	🟧	🟧
	Very low	🟩	🟩	🟩	🟩	🟧
		Impact				

Any issues that are in the high impact/high probability zones should be identified, and mechanisms to manage these should be part of the project plan.

The strongest option(s) may also be built on some assumptions and uncertainties.

Assumptions

Any underlying assumptions that have been made to get this far should be clearly understood and aired at this stage. Examples might be:

- it is assumed that enough existing staff time will be made available

- it is assumed that there will be no significant changes to legislative requirements within the timescale of the project.

Risk management

At the project appraisal stage, there should be an indication of the risks inherent in the project and an indication of how those risks might be managed. Risk management action plans allow us to:

- allocate resources for risk management

- allocate responsibilities for the management of risks

- determine responses to risks.

Determining responses to risks

There are four categories of response to risk:

Transfer	Transfer of the risk to a third party
Tolerate	There may be a limited ability to do anything about some risks, or the cost of minimising them may be disproportionate to the benefit of doing so. In these cases it may be decided to accept the risk.
Treat	Most risks should be covered (treated). Treatment does not necessarily obviate the risk, but should at least contain it or keep it at a more acceptable level. Internal controls should be exercised when treating risks (see below).
Terminate	The risk might be terminated by eliminating the possibility of the risk occurring such as by using alternative resources, technologies or ways of working. Where risks are deemed to be unmanageable and severe, and cannot be tolerated, the decision to terminate the project remains open.

Internal controls

It is essential that any controls are proportional to the risk they are related to. Controls should give reasonable assurance of confining likely loss within a range the organisation is able to tolerate. Every control action has an associated cost and so has to offer value for money in relation to the risk it is controlling.

There are four main categories of internal controls for risk:

Preventative	Preventative controls limit the possibility of a risk being fully realised. Examples are: • obtaining sufficient specialist advice in advance • recruiting sufficient financial experience • separating duties to prevent fraud. The greater the risk, the more important prevention becomes.
Directive	These controls are vital when a project has to conform to regulations. Examples are: • compliance with legislation • no payments in advance of need • only trained staff can participate • wearing of protective clothing.
Detective	If loss or damage has occurred, there must be controls or systems in place ready to investigate what happened and to detect the lessons to be learned. Examples are: • reviews of management accounts • undertaking aftercare/monitoring visits • stock checks.
Corrective	These controls are the mechanisms by which, once loss or damage has occurred, something can be recovered. Examples are: • penalty clauses in contracts • controls to recover overpayments • insurance.

Activity 11

What are the risks and assumptions contained in the strongest option?

How could these be managed?

What are the comparative costs and benefits?

Project costs and funding sources

Broad estimates of the projected whole-life costs must be
calculated for each of the selected project options. At this stage
these costs may be broad estimates, but should be as accurate as
possible, based on the data available. The types of costs incurred
in a project will be split between capital or one-off costs and
operational costs.

Some typical major cost headings include:

- hardware

- software

- equipment

- project staff

- other staff

- consultancy

- staff development

- office overheads

- travel

- hospitality

- consumables

- contingency.

As part of the assessment of the financial case, both the
affordability of an option and the availability of funding must be
assessed. The proposed expenditure must be linked to available
budgets and existing commitments.

Questions to be addressed at this stage:

- Can we obtain the budget required to deliver the whole project?

- If not, can the scope be reduced or delivered over a longer period?

- Will funding be sought from single or multiple sources? For example:

  - government grant
  - private investors
  - partners
  - European funding
  - contributions from several internal budgets.

- Has funding been confirmed?

- Do costs vary year on year?

Section 4 contains further guidance on costing and budgeting for a project. It provides more detailed information on costs for input to the project initiation document, and also for future refinements of the business case during the lifetime of the project.

Economic appraisal

The process up to now should provide a clear idea of the benefits, relative risks and costs for the strongest options. Before the final decision is made, however, a cost benefit analysis must be carried out. In effect, this is an economic appraisal of the option. It answers the question: which option will actually give the best value for money?

Where it is projected that options are to be implemented over a number of years, costs should be expressed as net present value (NPV). NPV allows comparison of the costs and predicted income of different options by transforming the actual cash cost/income into the value of that money today. This means discounting the amounts over time. This is arrived at using the discount rate indicated in *The Green Book, 2003*. The current rate of discounted cash flow is 3.5 per cent.

(http://greenbook.treasury.gov.uk).

Financial appraisal

Whereas an economic appraisal demonstrates whether the benefits outweigh the costs, a financial appraisal looks at whether the project will work as a business proposition. It answers the question: 'Is this a good use of anybody's money?' This is not simply a public versus private sector discussion. A public sector body should exercise at least as much financial discipline as a private firm. It should not use public money to support financially untenable investments unless there are sound reasons for doing so.

It is possible for a project to pass an economic appraisal, yet still be untenable as a business proposition. If government wants this type of project to go ahead and is prepared to pay, then it may use public money or some kind of loan guarantee.

It is also possible for a project to represent a good business proposition, but to have a net cost to society (for example, because of pollution). Such a project is unlikely to be supported by public funding.

Financial appraisal does not stand on its own, but is an integral part of the wider appraisal process. Where a range of options that differ both in spend and timescales are being compared, the different costs must be reduced to NPV.

		Economic appraisal	
		Pass	Fail
Financial appraisal	Pass	Ideal projects that are both beneficial to the organisation and attractive to stakeholders.	Projects that are attractive to stakeholders but impose costs or disadvantages on the organisation.
	Fail	Projects that are beneficial to the organisation but not attractive to stakeholders. Some additional support is therefore needed to ensure they go ahead.	Projects that are neither beneficial to the organisation nor attractive to stakeholders. Unviable.

Discounted cash flow — NPV

The simplest way to apply discounted cash flow analysis is to
calculate the NPV. If the NPV is positive (greater than zero) this
means that, even when their time value is considered, the benefits
are greater than the costs and the project is therefore viable or
worthwhile.

Year	Cash flow (negatives are costs)	Present value (discounted at 3.5%)	Calculation
0	- 200	- 200	
1	- 300	- 290	300/1.035
2	- 100	- 93	- 100/(1.035)^2
3	200	180	200/(1.035)^3
4	500	436	500/(1.035)^4
5	500	421	500/(1.035)^5
6	500	407	500/(1.035)^6
7	500	393	500/(1.035)^7
Total	1600	1254	

Reference
Net Present Value

http://en.wikipedia.org/wiki/Net_present_value

Discounted cash flow — IRR

Decision makers can find the meaning of net present value difficult to grasp and to relate to everyday concepts. Because of this, another way of quantifying a discounted cash flow is often used — the internal rate of return (IRR). IRR has the advantage that it relates to the size of the original investment. As the name suggests, the IRR of an investment measures its rate of return, whereas NPV measures the size of the return. For example, if you invest £1,000 in a project with an IRR of 15 per cent, it is exactly the same as investing the same £1,000 in an interest-earning bank account at an interest rate of 15 per cent. The IRR of a cash flow is defined as the discount rate which would result in that cash flow having an NPV of zero.

If a project has an IRR that is greater than the alternative options for investing the capital (ie greater than the opportunity cost of capital), then it would normally be considered an attractive project. It should be noted, however, that a project may involve a greater degree of risk than other possible investments.

Reference
Internal rate of return

www

http://en.wikipedia.org/wiki/Internal_rate_of_return

Select the preferred option

At this stage in the process, you should now have the following information to help you select the preferred option:

- the project objectives

- a range of options for delivery

- the comparative costs, benefits and risk ratings for the options.

You can now make a final choice of option that is fully supported by a rationale for that choice.

Remember, the appraisal process should be in proportion to the scale and sensitivity of the project.

Activity 12

Which is now your preferred option and why?

Activity 13

Complete the business case — including options appraisal — for your project.

Section 4: Study notes for Outcome 3

Purpose of this section

This section provides study notes and activities to support Outcome 3: Prepare for project implementation. These notes and activities will help you to cover the following knowledge and/or skills required for this Outcome:

- Project management processes
- Project organisational structures
- Project reporting arrangements
- Record keeping and audit requirements
- Project planning techniques.

To achieve this Outcome you must provide evidence of all the above knowledge and/or skills above by producing project documentation that describes the future operating environment of a project and presents an outline project plan. This will include a description of the project management processes, proposals for the project organisation structure and reporting arrangements and the record keeping and audit requirements for the project.

In providing this evidence, you should:

- create a project plan that presents a timeline identifying key project tasks, resources, milestones and deliverables
- describe the sequence of project management processes and associated activities that will be followed throughout the life of the project
- propose a suitable project organisation structure, including key roles and responsibilities
- describe the project reporting arrangements, including the regularity and nature of communications between the key roles and individuals
- identify and justify the performance measures, record keeping and audit requirements of the project.

The notes in this section — alongside tutor input and other reading on the topics — should enable you to create the required evidence to demonstrate adequate preparation prior to delivery of a project. These notes cover the following topics:

- Project initiation document

- Project management processes

- Project organisational structures

- Project control mechanisms and reporting framework

- Record keeping and audit requirements

- Project planning

- Planning tools

- Estimating

- Methods of analysing the plan

- Contingency planning

- Costing the project

- Staff development

- Setting up the project infrastructure.

Project initiation document

The single most important piece of documentation to be produced at this stage, and probably during the course of the entire project, is a project initiation document (PID). This may also be called a project scoping document, project outline or project management plan. This sets out in detail what needs to be known to plan and resource the project. Projects seldom fail at the end — but they frequently fail at the beginning.

A PID should include details of:

- project goals and objectives, and the critical success factors by which achievement of the objectives will be judged

- the project scope in relation to the organisation, functional areas and timescale, as well as a statement about any related areas that are considered to be out of scope

- identified risks and any constraints affecting the project (see Section 3 for information on risk management)

- any assumptions made about the project. These might be assumptions that the project manager is making about the support expected from other parts of the organisation or, if the project has a partner or a third party supplier, assumptions about what the partner/supplier will deliver. Here is a sample set of typical assumptions of the kind that can undermine a project if they are not fully understood and agreed:

  - when implementing a piece of software, it is assumed that it is someone else's job to specify, procure and install the necessary hardware before the project is started
  - a project plan has been drawn up on the basis that it will have a full team in place from day one, although the team isn't yet recruited
  - it is assumed that the project team has the authority to change administrative processes in user departments to ensure the effective working of a new system
  - it is assumed that somebody will actually implement those changes to working practice
  - it is assumed that a third party will provide goods/resources of the stated quality at the stated times. (The assumptions made about third party involvement are best resolved by drawing up a contract with that third party. In other words, there should be a formal definition of responsibilities.)

- the project's organisation structure and roles and responsibilities within the team

- the project control mechanisms

- the reporting framework

- stakeholders and their involvement

- the approach to planning and a milestone plan

- the project budget.

Sample templates and example PID

Sample templates for a project initiation document can be found at:

www.jiscinfonet.ac.uk/InfoKits/infokit-related-files/project-initiation-document-template

www.prince2.org.uk/Web/Site/PRINCE2Resources/PRINCE2-Templates.asp

Some useful additional references can be found at these web addresses:

From the University of Bristol, a project brief for a project to create a Data hub to share personnel and administrative data across the university can be seen at:

www.bris.ac.uk/projects/datahub/project_brief

This site also contains other project documentation.

Project initiation document produced by Northumbria University for the development of a Data Warehouse:

www.jiscinfonet.ac.uk/InfoKits/infokit-related-files/pid-example-northumbria-datawarehouse

Activity 14

You developed a business case for a project in Sections 2 and 3.

Now create a template for a PID that you will use for this project.

Project management processes

In Section 1 there is a diagram that illustrates the main components or processes of a project management framework. This clearly shows that some elements — namely project start-up and project closure — occur only once. The remaining elements — planning, managing and controlling — form a continuous cycle that runs throughout the project up to its completion.

The number and names of processes can vary from one project management methodology to another. However, regardless of such differences, the principles are the same and each will represent an approach that is cyclical and iterative by nature.

Many of the techniques that are deployed during the creation of the PID and starting up the project are used throughout the life of the project — for example:

- costing and budgeting

- risk analysis

- stakeholder management

- planning.

Project organisation structures

However small or large a project, there must be agreement on who:

- says what is needed
- provides the budget
- provides the resources
- authorises the changes
- manages the day-to-day work
- defines the standards to be met.

On a small project, many of the above tasks will be the responsibility of the same person. On a large project, a number of people may be involved in each task. In each project it should be decided which of the following roles needs to be allocated to one person or shared amongst a number of people or combined together:

- Project sponsor (also known as project executive or project senior responsible owner)
- Project board
- Project manager
- Team manager
- Project team members
- Project support — for example, a project administrator.

Additional roles might include:

- Systems developer
- Systems administrator
- Programme manager (if project is part of a programme).

Project roles and responsibilities

Definitions of these roles are provided in the tables below.

Title	Role
Project sponsor	The person who commissions others to deliver the project and champions the cause throughout the project. They will normally be a senior member of staff with a relevant area of responsibility that will be affected by the outcome of the project. They are involved from the start of the project, including defining the project in conjunction with the project manager. Once the project has been launched they should ensure that it is actively reviewed. The project sponsor is usually the one who has to negotiate a path through potentially difficult senior management questions.
Responsibilities	

- acts as champion of the project

- is accountable for the delivery of planned benefits associated with the project

- ensures resolution of issues escalated by the project manager or the project board

- sponsors the communications strategy; communicates the project's goals to the organisation as a whole

- makes key organisation/commercial decisions for the project

- assures availability of essential project resources

- approves the budget and decides tolerances

- leads the project steering board

- has ultimate authority and responsibility for the project.

Title	Role
Project board (or steering group)	This group (normally containing management grade personnel) is responsible for overseeing the progress of the project and dealing with any strategic problems. The group is optional, as the sponsor-manager relationship may be seen as the best means of control, but is usually required in large projects, which cross functional boundaries.
Responsibilities	

- champions the project and raising awareness at senior level
- approves strategies, implementation plan, project scope and milestones
- resolves strategic and policy issues
- drives and manages change through the organisation
- prioritises project goals with other ongoing projects
- communicates with other key organisational representatives.

Title	Role
Project manager	The person responsible for developing (in conjunction with the project sponsor) a definition of the project. The project manager ensures that the project is delivered on time, to budget and to the required quality standard within agreed specifications. He or she ensures the project is effectively resourced and manages relationships with a wide range of groups, including all project contributors.
	The project manager is also responsible for managing the work of consultants, allocating and utilising resources in an efficient manner and maintaining a cooperative, motivated and successful team.
	The project manager isn't normally the line manager of everyone on the team. The line managers may not even be working on the project.

Project manager (continued)
Responsibilities
• manages and leads the project team
• recruits project staff and consultants
• manages coordination of the partners and working groups engaged in project work
• implements detailed project planning and control
• develops and maintains a detailed project plan
• manages project deliverables in line with the project plan
• records and manages project issues and escalating where necessary
• resolves cross-functional issues at project level
• manages project scope and change control and escalating issues where necessary
• monitors project progress and performance
• provides status reports to the project sponsor
• manages project training within the defined budget
• liaises with, and updates progress to, project steering board/ senior management
• manages project evaluation and dissemination activities
• manages consultancy input within the defined budget
• gives the design specification final approval
• works closely with users to ensure the project meets business needs
• defines and manages the user acceptance tests
• identifies user training needs, devises and manages user training plans.

Title	Role
Team manager (senior consultant or supplier-side manager)	The person responsible for managing supplier-side input to the project.
Responsibilities	

- ensures that mandatory supplier requirements are met

- manages the production and approval of the supplier side of the budget

- makes effective use of supplier resources within the approved budget

- tracks performance of consultants and takes appropriate action

- proactively develops a collaborative relationship with the organisation to project steering board level

- ensures that there are clear communication paths within the project team and the organisation and supplier

- acts as main point of contact between the supplier and the organisation

- produces and monitors financial reports including entry and maintenance of all actual time and expense against the master plan

- day-to-day management of supplier staff assigned to the project

- quality assures the work of supplier staff assigned to the project

- encourages the transfer of product knowledge and skills to the appropriate staff within the organisation.

Title	Role
Project team members	The staff who actively work on the project, at some stage, during the lifetime of the project. Some may have a specific role — for example, the team might include a project administrator (see below).
Responsibilities	

- Team members' roles will vary depending on the type of project. Typically their role might be to:

    – provide functional expertise in an administrative process
    – work with users to ensure the project meets business needs
    – document and analyse current and future processes/systems
    – identify and map information needs
    – define requirements for reporting and interfacing
    – train users.

Title	Role
Project administrator or coordinator	This person is responsible for maintenance of the project plan, maintenance and updating of project documentation and website (if appropriate). They provide administrative support to the project manager.
Responsibilities	

- sets up and manages support functions covering planning, tracking, reporting, quality management and internal communication

- produces consolidated reports to the project steering board, including milestone summary, key issues, risks, benefits, summary of costs incurred

- establishes standards, tools and procedures for use on the project, including issue, risk, change and information management

- manages the project library

- reviews project activities for compliance with procedures and standards

- manages the support and provision of project tools and equipment

- manages data security, software and licence control

- assists with the production of user documentation

- assists with testing.

Title	Role
Systems developer	The person who works with the project manager on defining and executing development requirements.
Responsibilities	

- works with the project manager on definition of development requirements and priorities
- migrates data
- interfaces with other systems
- reports configuration and deployment
- sets up and maintenance of security rights and access permissions
- contributes to technical strategy, policy and procedure
- develops and operates technical tests
- produces technical documentation to agreed quality standards
- reports on progress/issues to management and users.

Title	Role
System administrator	The person who manages and supports the IT system environments.
Responsibilities	

- manages and supports the various environments
- manages and supports network operating systems
- manages and supports databases
- devises and implements back-up and disaster recovery measures
- contributes to technical strategy, policy and procedure
- develops and operates technical tests
- produces technical documentation to agreed quality standards.

Title	Role
Programme manager	This role is relevant if there are several related projects.
Responsibilities	

- has overall management and coordination of the programme of projects
- contributes to strategy, policy and procedure
- manages supplier/contractual relationships
- has budgetary control of the programme of projects
- monitors and responds to issues at the programme level.

Activity 15

1 Draw a diagram to illustrate the organisation structure for your project.

2 Draw up brief, project-specific job descriptions for each of the individuals identified in your project organisation structure diagram.

Project control mechanisms and reporting framework

Controls help to ensure that the project:

- is producing the right products to the agreed quality
- is being carried out according to the schedule
- continues to remain viable against the business case.

The control mechanisms to be used — including reports from and to all relevant parties — need to be detailed within the PID. Such controls might include:

When	Questions	Evidence
Initiation or start-up	Should the project be undertaken?	PID Business case
End of stage/ phase or at predetermined interval	Is the project still on course? Is business case still viable? Are risks under control? Should the project proceed?	Progress reports Business case Risk register
Predetermined intervals during project	What is progress?	Progress reports — eg highlight reports
Ad hoc during project	Why has project exceeded tolerances? — eg budget, time	Early warning of any forecast deviation beyond tolerance levels — eg exception reports
Project closure	Has project delivered everything expected? What lessons have been learned?	Final project report Evaluation report Lessons learned report (may all be contained within one report)

Record keeping and audit requirements

Some of the key documents to help manage and control a project include:

- project brief
- business case
- project initiation document (PID)
- project organisation structure
- roles and responsibilities

- stakeholder analysis

- communications plan

- project plan

- budgets

- quality criteria

- risk log

- issue log

- request for change

- lessons learned log

- progress reports

- lessons learned report

- end of project report.

This is not an exhaustive list, and there may be others that could be added in specific contexts. In particular, additional documentary evidence such as beneficiary records and claims forms might be needed to meet legislative and funding body requirements.

It is not enough only to create the documents. It is imperative that they are kept up-to-date, version controlled and regularly reviewed. Documents should be used only if they work for and add value to the project. Documents and records — whether kept on paper or electronically — can be subject to internal or external audit at any time during or after the life of a project. At the end of the project, the records must be stored appropriately for the requisite statutory or funding body retention period, and must be available for retrieval on request.

Activity 16

1 Explain why or why not each of the documents in the list above is essential for the management of the project.

2 What additional documentation would you include and why?

Activity 17

Design a simple version control system for managing your project documentation.

Project planning

The project plan lies at the heart of project management. As such, it is the key to controlling the progress of the project. A comment (attributed to the managing director of a pharmaceutical company) noted that 'We never seem to have time to plan our projects, but we always have time to do them twice.'

(Turner, JR (1999) *The Handbook of Project-Based Management*, McGraw-Hill, p 5).

Only one thing about any project plan is certain — it will be out of date as soon as it is written. Planning is a developmental process that goes on throughout the life of a project. It isn't finished until the project is complete. Initial draft plans are usually over-optimistic but are nevertheless invaluable in steering progress.

The development and recording of project plans is a matter of personal preference, but there are a number of pointers to successful planning:

Write the plan for your context

There is no such thing as a standard or template plan. A commercial software supplier or consultancy firm, for example, may present their standard plan at an early stage in a project's initiation. This may be a useful initial template as it is based on tried and tested methodologies and past experience but in each new circumstance it is essential that the new context is taken into account.

Think of the plan as a flexible framework

A plan must be regarded as a flexible framework amenable to adaptation and change as the project progresses. It is no good sticking rigidly to a plan that isn't working and ploughing ahead regardless. This developmental process has been likened to captaining a yacht on its way from A to B. The captain knows where the objective (B) is, but the optimum route may vary from hour to hour as the wind and weather conditions change.

Don't make it too detailed

Following that example through, the Rolling-Wave method of planning is based on the premise that detailed forward planning should be arranged, not for the ultimate objective, but only for as far ahead as is sensible at the time. There are managers who try to plan a project in minute detail from beginning to end in the hope of eliminating uncertainty. This isn't realistic. A detailed plan takes considerable time and effort to develop and maintain. A plan that is too detailed and too far ahead is more likely to consume resources unnecessarily and become inflexible.

Break it into phases or stages

This is one of the reasons a plan needs to be broken down into phases or stages. The completion of each phase may require the achievement of a set of milestones expressed in the plan. Phasing and milestones represent a logical sequence of activities required to achieve a project's goals. A milestone plan is a high-level summary of the whole project. It should be easy to understand, logical and focused on what needs to be delivered, not how it is to be delivered. Phase boundaries highlight points in the project where progress is reviewed and the plan reassessed.

Write a well-crafted plan

The number of phases and milestones in a plan is necessarily dependent on the scale and complexity of the project. However, plans are more than administrative tools. They are political and communication tools as well. A plan provides a picture of the project's progress to stakeholders as well as to the project team. A well-crafted plan can help to ensure the success of the project by identifying quick wins and easily achievable stages early in the life of the project. This helps to build stakeholder confidence and to boost the morale of the project team.

Pilot the changes to be implemented

Depending on the nature of a particular project it may be wise to think about phasing the plan to include piloting the changes to be implemented.   Pilots tend to attract substantial commitment from the people involved. They can also reveal a lot about project management.

Give each task a defined deliverable

Whatever level of detail is planned, each task in the plan must have a clearly defined deliverable. This means a tangible product that shows the task has been successfully competed. For instance, tasks with labels such as 'think about'; 'look at' or 'investigate' are of limited value. The definition of the output the task is to produce must be observable or otherwise tangible — for example, a document, a piece of code or a cleansed data file.

The guidelines above are based on well-established good practice in project planning, and have been shown to be effective in many projects. That said, it may be that some of the concepts applied to particular projects meet with resistance from steering groups or other relevant contributors. For instance, the concept of flexible planning can be uncomfortable for some people, since it frankly acknowledges the inherent risk and uncertainty involved. In these circumstances it is only possible to repeat the advice given above — the uncertainty won't go away, however much time is spent on planning.

Activity 18

1. What is the danger of having too few milestones in your project plan?

2. What is the danger of having too many milestones in your project plan?

Notes on Activity 18

Too few milestones might result in:

- lack of control
- quality issues
- risks materialising
- cost overruns
- time overruns
- project no longer viable.

Too many milestones might result in:

- too many review meetings

    - increased costs
    - people not available for reviews

- unnecessary extra paperwork

- people overstretched

- efforts expended on bureaucracy and not on project activities

- cost overruns

- time overruns.

Planning tools

There are many project planning tools on the market. At best they can be invaluable in helping to manage complex plans. At worst they can sap resources and energy and be a constant source of frustration. You need to find the one that works best for your particular project. This might be a simple spreadsheet. Or a whiteboard on the office wall is a constant visible reminder to the team of where they are and where they need to be. A team of people working on a multi-million pound system implementation project indicated that they found this more helpful than the plans produced by a sophisticated software tool.

The following is an overview of some commonly used software tools. It is intended purely as an indication of the range and type of products available. SQA does not endorse any particular supplier or product.

Microsoft Project

The latest versions offer a range of techniques to track large projects, and programmes of projects. Microsoft Project deals in particular with task scheduling and resource allocation. To use Microsoft Project successfully, the user must be sure of their estimates of tasks, sub-tasks, timescales, resource availability and costs.

To start using Microsoft Project the project activities first have to be broken down into discrete tasks and sub-tasks. Each task is then given projected start and finish dates. Resources are allocated to the tasks (usually in the form of the people who will complete the tasks) and the overall costs involved. Tasks may also be linked to each other to indicate where one task depends on another.

When is Microsoft Project a useful tool?

As task scheduling is at the heart of a project, it is a useful tool for projects with discrete and predictable tasks that have to be performed in a particular order using well-defined resources. It is possible to use this approach to highlight major target dates and other milestones in the project, and to pick out a critical path of tasks and their dependencies.

Different views in Microsoft Project allow details of resource allocation to be seen, highlighting any resource clashes and showing periods of the project where resources might be thinly stretched. This is particularly useful for planning the allocation of staff time and for tracking project costs.

Once you are accustomed to using the basic techniques in Microsoft Project — which are based on spreadsheet tools — it can be an excellent tool to create 'what if' scenarios, predicting the effects of increased or fewer resources, or changes to time schedules.

Different versions of Microsoft Project include:

- a standard product suitable for small, individual projects

- a team version for sharing information among staff in different locations

- an enterprise version for managing planning at the organisational level.

Some people, however, find that Microsoft Project is too complex and restrictive for their purposes, and that it makes too many assumptions — especially if the project has ill-defined or complex tasks. In this case, alternative software tools might be more appropriate.

Open source software

'Open source' software is available free on the internet. Such software comes without guarantees as to risk, but there is a rapidly developing range of useful tools available in this way. Educational institutions, commercial companies and government organisations are increasingly using open source software for major applications such as the creation of Managed Learning Environments.

An example of open source project planning software is Planner, part of the GNOME office suite:

http://developer.imendio.com/wiki/Planner

This software provides a simpler tool than Microsoft Project for scheduling tasks and allocating resources.

Project Smart offers a template based on an Excel spreadsheet that offers an overview to see the progress of small projects at:

http://www.projectsmart.co.uk/templates.html

Some products on this list are open source, some are available at low prices.

A useful list of software tools for project management can be found on the website of the University of Glamorgan, at:

http://www.comp.glam.ac.uk/pages/staff/dwfarthi/projman.htm#sw

Alternatively try Google's own list of open source project management software.

Estimating

Any plan is based on estimates of the time and resources needed to complete an activity. The accuracy of those estimates depends on how much experience its author has had in similar activities. Where the plan involves activities outside the experience of the project team, the accuracy of the estimates decreases and the level of risk increases commensurately.

Adopting the Rolling-Wave planning approach means that estimates should become increasingly accurate as the project progresses. It is important that all members of the team understand the need for estimation in the project plan. If they fail to do so then they could become demoralised through viewing inaccurate estimation as failure. Where estimates are wrong the team needs to discuss the reasons for this in a positive manner, so that all members can contribute to increasing the accuracy of future estimates.

You should be cautious about taking extreme approaches to estimating:

Padding	Where individuals always try to give themselves a comfort margin in order to complete their deliverables 'on time'
Squeezing	Where individuals think the manager won't like the estimate so they reduce it to an unrealistic level

Where a number of people are involved in working on a project plan, it is important to ensure that they all plan and estimate in the same way, and use the same techniques. For example, everyone needs to agree how holidays, sickness, training and other duties are allowed for in estimating how much time members of staff have available to work on the project.

Methods of analysing the plan

Estimating the time needed for tasks is an inexact science, and as much help as possible is needed in refining these estimates, keeping track of variations against the estimates and predicting the knock-on effects on resources and product delivery.

There are a number of techniques available to help schedule activities. These include network analysis, PERT (Programme Evaluation and Review Technique) and Critical Path Analysis. These can be sophisticated techniques involving mathematical modelling and are often used in complex engineering projects.

Key actions

If you are new to project planning techniques it is advisable to start by using a simple method of analysis. It should be possible to start quickly with these techniques if project scheduling software is being used. But whether a software application is used or the plan is analysed manually, the same set of key actions needs to be undertaken:

- divide the project into tasks

- sequence the tasks

- identify dependencies between tasks — that is, where one task cannot start until another has finished

- estimate a timescale for each task

- convert the timescales to calendar dates.

Gantt Charts

The bar chart, invented by Henry Gantt, is a straightforward and useful graphical tool that can help you to visualise a project schedule. It is drawn with dates as the 'x' axis and the project tasks as the 'y' axis. Tasks are shown as solid bars between the estimated start and end dates. Arrows linking tasks can be used to show dependencies. Other drawing conventions are the use of a filled diamond shape to indicate a milestone or a filled circle to indicate a meeting date.

The diagram below shows a simple example of a Gantt chart mapping the tasks involved in appointing a new member of staff. The main dependencies in the process are shown by arrows linking the tasks.

Task	Duration (day/s)	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Agree job and person specification	1						
Personnel manager to define job grade	5						
Prepare advertisement	2						
Publish advertisement on website	1						
Receive enquiries and send further information	10						
Closing date for applications	1						
Agree composition of interview panel	2						
Book interview room	1						
Evaluate applications and prepare shortlist	3						
Invite shortlisted applicants for interview	1						
Conduct interviews	1						
Confirm selection decision	1						
Send offer letter to successful candidate	1						

Project scheduling software enables more sophisticated planning by identifying working and non-working time and allocating resources to tasks. The Gantt chart can also be used to compare estimates with actual time taken, and so help with monitoring and rescheduling.

Activity 19

Draw a Gantt chart to map the key tasks and dependencies for your project.

Critical path analysis

If there are limited resources in a project, then knowing the critical path can be helpful. The critical path through a project is the longest route between dependencies or the minimum time required to complete the project. If any task on the critical path is delayed, then the project will finish late. Analysing the critical path allows critical tasks to be prioritised when planning, and can help with the identification of slippages or slack in the plan when tracking tasks. The reliability of the critical path depends on accurate estimates of time and of resources required.

Critical path analysis can be complex, especially if it has to be done manually. It depends on knowing which task has to finish before another starts, and which tasks can run in parallel. In the example above, the project can have a draft advertisement ready by the end of day three, but the advert can't be published until the personnel department confirms the job grade in the middle of week two.

The critical path uses two key dates:

- the earliest start date (this depends on the duration of preceding activities)

- the latest finish date (the date on which the task must be completed if it is not to delay later tasks).

If these two dates are known, the amount of float available can be identified. Float is free time. For example, a task is estimated to take two days. It can't start until day seven and it must be finished by day 11. This allows four days between the earliest start date and the latest finish date. Subtract the task duration (two days) from this and a float equal to two days is left. Where the float is zero, there must be a critical event on the critical path.

You should normally avoid manual analysis for complex plans, but it is useful to understand the theory and practice behind it. Knowing where there is slack or float and where there are critical dependencies can allow resources to be directed more effectively. The ability to identify a critical path through a project is a skill that can be developed with practice.

A comprehensive description of applying critical path analysis using network charts can be found at:

http://www.mis.coventry.ac.uk/~nhunt/cpa/listof.htm

PERT (Programme Evaluation and Review Technique) can help in optimisation of scheduling, using estimates of best possible timescales, worst possible timescales and most likely timescales.

Activity 20

Identify the critical path for the activities in the project Gantt chart created above.

Contingency planning

Projects invariably involve uncertainty and risk, so you will probably have to develop contingency plans for key areas of risk. This involves:

- identifying risk scenarios that could, in reality, have a significant impact on the ability of the organisation to carry out its business

- considering the available options.

An example of this could be a new administrative system that fails to go live on time. The contingency plan might be to carry on with the old system, in which case the following issues must be considered.

- Is this feasible?

- What essential maintenance would be required?

- Do we have the necessary skills?

- When would be the next opportunity to switch systems?

- How will we transfer the data?

- What additional costs will we incur?

- How will this impact our clients?

Other alternatives could involve carrying out the process manually, or contracting it out to someone else.

The number of scenarios likely to require a full contingency plan depends on the project. A contingency plan is more likely to be invoked should there be a failure to achieve major milestones. However, it is unlikely there will be more than a few such milestones in any project. Contingency planning should not be confused with the normal re-planning necessary to react to minor variances in the developing project plan.

Costing the project

You will need to develop a budget or financial plan for the project as part of the project initiation document. This is a more detailed and up-to-date costing than the broad estimates provided for the options appraisal within the business case.

There is no reason for IT or any other projects to run over budget if the project is costed properly at the outset. It is not uncommon to see project budgets that cover only part of the costs. There are a number of frequently occurring reasons for this:

- a tendency to focus on initial purchase costs, and to ignore elements such as staffing

- poor planning that doesn't allow sufficient resources for training and staff development

- blind faith in optimistic supplier estimates

- project managers who don't think their senior managers could cope with knowing the true cost.

The last point should not be underestimated. In many organisations, the tendency for IT projects to run over budget is accepted as the norm. Managers find it far easier to keep asking for small incremental sums than to give their sponsor the possible shock of revealing what the whole project will actually cost. Project costs are relatively easy to conceal in large IT departments, especially where existing staff are carrying out the work.

The types of costs incurred in a project will be split between capital or one-off costs and operational or running costs. The following table shows some of the major cost headings and suggests issues to think about when trying to cost those items.

Cost heading	Issues to consider
Hardware	• Is it more cost effective to buy or lease? • Include maintenance agreements. • If purchasing, do you pay in advance or enter into a financing agreement?
Software	• How many licences are required in each phase of the project? • Are future annual increases capped?
Equipment	• Is it more cost effective to buy or lease? • Do you need maintenance agreements for printers, etc?
Project staff	• Include recruitment costs — for example, advertising or agency fees. • Include employers on-costs — for example, pension and National Insurance. • Where staff are on incremental pay scales, allow for annual increments. • Allow for annual pay increases. • Do you need to allow for overtime working? • What will happen at the end of the project — do you need to build in redundancy payments?
Other staff time	• Do you need to reimburse other departments for staff time spent in assisting the project — for example, porters moving equipment, IT staff overtime, staff attending meetings/training?
Consultancy	• Are consultants paid a daily rate or a fee for the job? • What are their daily travel and expenses limits? • Where will they be travelling from and how often?

Cost heading	Issues to consider
Staff development	• What training is required at each stage of the project and for how many people? • Can you save money by advance block booking of external training? • Is it more cost effective to train onsite rather than pay travel costs? • Are there any online training materials available? • For IT staff weigh up the cost (including time) of training versus taking on skilled staff at higher salaries.
Office overheads	• Include any chargeable items such as heating, telephones, security, postage and so on.
Travel	• Include travel to meetings, conferences and training courses.
Hospitality	• Will you be required to provide catering for meetings or training events?
Consumables	• Include stationery, printer cartridges and so on.
Contingency	• What is a reasonable contingency estimate given the amount of risk and uncertainty in the project?

Budget plan

A budget plan like the one illustrated in the following table is a tool for planning expenditure over time. The format of a project budget will depend on the procedures of its partners and the requirements of funding providers.

The budget plan is usually divided into revenue costs and capital costs. Revenue costs are all costs that relate to the running of the project while capital costs relate to the purchase of any items that will have a resale value longer than one year. How the expenditure headings are listed will depend on the type and complexity of the project.

Budget Headings (related to project activities)	Unit	Cost Per Unit	Quantity x cost per quarter Year 1 Q1 Q2 Q3 Q4	Project annual total	Funding sources (eg partners, grants, cost centres)	Recurrent Costs per annum (costs to be met after project end)
Revenue						
Office costs						
Salaries						
Overheads						
Professional fees						
Other (specify)						
Total revenue						
Capital						
Building costs						
Furniture/ fittings						
Land						
Other (specify)						
Total capital						
Total revenue plus capital						

Budget and actual variance record

The budget and actual variance record illustrated in the table below is used to monitor actual expenditure against what was planned in the budget plan. Anyone looking at this quarterly monitoring record should be able to see where change has taken place and where no change has occurred. It should provide a clear picture of what has happened during the quarter, and is essential data for evaluation.

Budget Headings	Quarter 1			Quarter 2			Quarter 3		
	* P	A	V	P	A	V	P	A	V
Revenue									
Office costs									
Salaries									
Overheads									
Professional fees									
Other (specify)									
Total revenue									
Capital									
Building Costs									
Furniture/ fittings									
Land									
Other (specify)									
Total capital									
Total revenue and capital									

*   P = Planned

A = Actual

V = Variance

Staff development

Staff development is frequently ignored at the project planning and costing stages. This is frequently a cause of serious project failure.

There are a number of different types of staff development that need to be considered in planning a project:

- training/development for the project team to allow them to carry out the work

- training/development for end users in a newly implemented system or a changed process

- general awareness-raising and development to prepare the organisation for change.

The first two relate directly to the project but the third, although vital, is not usually the immediate duty of the project team.

Systems implementations — where change management should be a separate responsibility — are a case in point. Change management is about the organisation's culture and values. A new system can support a changed approach but the system itself is not the change. Unless the organisation is properly prepared for the change, the system will be seen as the cause of change and may be resented.

An example of this is the implementation of virtual or managed learning environments (VLE). Such environments are necessarily part of an institutional strategy about learning and teaching. An institution cannot be turned into a different type of learning organisation simply by implementing a VLE. Systems projects must run in tandem with change projects. If you expect systems implementers to do both jobs, this will inevitably lead to (an avoidable) failure.

Any training and development needs of the project team must be identified at an early stage so that necessary activities can be built into the plan. The team might require an introduction to project work and other team formation activities as well as more project-specific training. In the case of projects with a significant IT component, training could consume a significant proportion of the project costs.

Where it is likely that a considerable investment will be needed, the risk of staff undergoing expensive training and then obtaining a job change must be considered. It is possible to issue staff with a contract for the duration of the project that specifies a requirement to pay back training costs should they resign within a certain time period. This could be particularly valuable if market conditions suddenly create a demand for the skills the project has invested in.

An alternative is to consider the relative cost of paying a slightly higher salary to attract staff who already have the skills to do the job. This will have the additional benefit of saving time. However, you should be cautious about buying in skills on a short-term contract basis unless there is no other option. Contractors are unlikely to develop the same sense of project ownership, and the skills are lost to the organisation as soon as the project is over. Furthermore, contractors are unlikely to understand the context of the organisation as well as in-house staff.

End-user training is essential to ensure acceptance and effective operation of new processes or systems. The timing of training is critical, and must be carefully planned. Some users might need training at an early stage to contribute to the development and user acceptance testing phases of the project. Other users should not be involved in training too long before they are required to use the new process or system.

When scheduling training activities, you should take account of typical processing cycles within the organisation. For example, it is unlikely managers could sanction the release of staff for training in the middle of known peak activity periods. The commitment of such managers is vital to ensuring the success of training.

The project sponsor has a role to play in ensuring that managers understand the importance of training and work, and that their staff are able to attend scheduled sessions. Managers also need to send the right people. Even well-planned training programmes go awry if staff cancel bookings at the last minute and managers send inexperienced staff.

Activity 21

Look at the project team members you identified during Activity 15.

Now analyse whether each project team member has the skills required to enable them to carry out their role.

If not, what support or training should they receive?

Setting up the project infrastructure

You should consider setting up the infrastructure for the project at an early stage. In a system implementation project, setting up the technical infrastructure — such as specifying and procuring hardware and getting it operational — could be a whole phase of the project.

In all projects you need to consider where the staff are going to be located and what equipment they need. Securing accommodation for project staff can, in particular, be difficult in some sectors. Major projects have been known to suffer delays because, although the staff were hired and ready to start work, there was no space for them to work as a project team. In projects where staff need to form a team and deliver results quickly, it is often necessary to secure space where they can be co-located away from the pressures of their normal office duties.

The team will also need other resources. The following project infrastructure checklist might be useful in setting up the project infrastructure.

Project infrastructure checklist			
Accommodation	**Required**	**Quantity**	**Available**
Desk, chair, drawer space and desktop accessories (do you need facilities for external consultants as well as project staff?)			
Filing cabinets			
Storage space			
Access to meeting space (consider necessary room size and frequency)			
Access to training facilities			
Access to video-conferencing facilities			
Access to basic kitchen facilities			
Out-of-hours access to building			
Hotel/other accommodation — for example, for visiting partners			

Project infrastructure checklist (continued)			
Equipment			
PCs (consider special features required — for example, CD writer)			
Telephones (consider how many extension numbers are needed and whether dial-up modem access is required)			
Mobile phones			
Phone with speaker for conference calling			
Access to printing facilities (consider special requirements — for example, need to be able to print complex plans at A3 size)			
Access to photocopier			
Laptop (for example, for giving presentations to stakeholders)			
Digital projector or OHP for presentations			
Whiteboard/(s) (Fixed or mobile? Do you need to be able to print from the board?)			
Flip chart and pads/pens			
Stationery			
Hardware			
Consult your IT department about hardware needed to run a new IT system			
Network points for PCs and printers			

Project infrastructure checklist (continued)			
User accounts/configuration			
Access to file space on a shared network drive			
Access to shared calendars			
Project e-mail address — for example, project_help@company.co.uk			
Secure access rights to parts of shared drive			
Potential use of virtual learning environment (VLE) — for sharing of information between project staff and external partners			
Software			
Standard office applications (check that software versions are standardised for all project partners, both staff and external partners — this may involve versions not in general use by the organisation)			
Specialist applications — for example, project planning software or graphics tools			
Other			
Cost codes set up on finance system			

Where working with external parties such as suppliers or consultants, you should take particular care to ensure that issues (such as people working with different versions of software) don't obstruct effective working. The same could apply if staff bring PCs with them from different parts of the organisation. It might be necessary to allocate IDs to externals so that they can log on to shared drives and e-mail system. It is a good idea to consult the IT department at an early stage to clarify what needs to be done, and to iron out any issues — potential and actual.

Activity 22

Use the checklist above to create a project infrastructure checklist
for your project.

Activity 23

Now go on and create the PID for your project, using the data and
information gathered in the activities above.

Section 5: Project management resources

Project management guidance websites

- **Project management guidance from the UK Government's Department for Education and Skills (DfES):**

http://www.dfes.gov.uk/ppm/index.cfm?fuseaction=content.view &SiteID=2

Straightforward and user-friendly project management guidance covering the life-cycle of a project from start-up to closure.

- **Project management guidance from JISC infoNet:**

http://www.jiscinfonet.ac.uk/InfoKits/project-management

Straightforward and user-friendly project management guidance. The guidance has been written specifically for projects in colleges and universities. The examples are related to the education sector. Despite this, there is much useful information that can be applied to any project.

- **For clear, jargon-free guidelines on general project management principles, see the website of the Office of Government Commerce:**

http://www.ogc.gov.uk.

- **Project management guidance from the Successful Delivery Toolkit provided by the UK Government's Office of Government Commerce (OGC):**

www.ogc.gov.uk/sdtoolkit/deliveryteam/projects/index.html

Comprehensive coverage of all aspects of project management with many links to other documentation and related topics. The approach is more formal and contains more detail than DfES and JISC infoNet.

- **The APM Group provides many resources for project, programme and risk management on their website:**

http://www.apmgroup.co.uk/web/site/home/home.asp

- **The Association for Project Management (APM) has materials available on their website:**

http://www.apm.org.uk

- **Many tools for project management and controls specifically for information systems projects can be found at:**

http://www.iturls.com/English/SoftwareEngineering/SE_2.asp

- **The University of Glamorgan provides a list of project management links at:**

http://www.comp.glam.ac.uk/pages/staff/dwfarthi/projman.htm#general

- **A number of resources are available at the website of the Programme and Project Management Resource Centre. In particular, they highlight some common problems with project management and ways to address them. The site is at:**

http://www.projectsmart.co.uk/index.html

Project resources and other useful tools

- **Project management templates**

www.prince2.org.uk/Web/Site/PRINCE2Resources/PRINCE2-
Templates.asp

Contains a set of PRINCE2 project management document
templates. The templates can be altered to suit individual needs.

- **Tools for project management and control**

http://www.ittoolkit.com/qtools.htm

Easy-to-use worksheets, checklists and templates, specifically
designed to help complete individual planning tasks and project
management objectives.

Case studies

- **PRINCE2**

http://www.prince2.org.uk/Web/Site/PRINCE2Resources/Case-
Studies.asp

Contains a number of PRINCE2 case studies. These were written
in response to requests from organisations considering using the
method. They focus on the business case for using PRINCE2,
how PRINCE2 was implemented, lessons learned and benefits.
Those interested in the implementation of PRINCE2 within a local
authority should download the report on Reading Borough Council.

- **Local Government International Bureau**

www.lgib.gov.uk/case_studies/index.html

Case studies from local government. It describes projects run by
UK local authorities with EU funding, and how councils in other
countries are tackling common problems. For example, there is a
case study on community regeneration in Bristol. This describes
Bristol City Council's involvement in an EU programme, which gets
young people involved in regenerating their own communities.

Books

- **The Project Shop**

http://www.theprojectshop.co.uk/acatalog/index.html
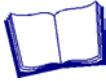
The Project Shop is an online bookshop for books on management. The listings include a summary of each book.

Click on the following link to go to the catalogue on General Project Management:

http://www.theprojectshop.co.uk/acatalog/Online_Catalogue_General_Project_Management_1.html

PRINCE2 books can be found at:
http://www.theprojectshop.co.uk/acatalog/PRINCE2_.html

- **Amazon**

http://www.amazon.com

Thousands of books on project management.

- **Amazon's UK website:**

http://www.amazon.co.uk

Section 6: Glossary of project management terms

Term	Description
Acceptance criteria	A prioritised list of criteria that the final deliverables must meet before the customer will accept them.
Assumption	A statement that is taken as being true for planning a project, but which could change later.
Audit	The examination of the activities, deliverables and finances of the project to determine the extent to which they conform to accepted criteria.
Benefits	The positive outcomes that a project is being undertaken to deliver, and which justify the investment.
Budget and actual variance record	Monitors the receipts and expenditure against amounts planned. It shows the variation between actual and budgeted expenditure.
Budget plan	A tool for planning expenditure over time. It provides information on project expenditure and includes information on the funding sources and conditions of funding.
Business case	Information that describes the justification for setting up and continuing a project.
Change control	A procedure to ensure that the processing of all project issues and change requests are controlled, including the submission, analysis and decision making.
Change control form	A form to request a change to the project. It is used to help the project manager and project board to determine the potential impact and cost of changes to the agreed project plan.
Communications plan	Describes how the project's stakeholders and interested parties will be kept informed during the project.

Term	Description
Constraint	Something that is unavoidable or that could prevent the project manager from delivering the project in the most appropriate way.
Contingency plan	A plan that provides an outline of decisions and measures to be taken if circumstances (such as a risk) occur outside the control of a project.
Critical path	The minimum time required to complete the project, taking into account dependencies between activities. If any task on the critical path is delayed, then the project will finish late.
Critical path analysis	Analysing the critical path allows critical tasks to be prioritised when planning, and can help identify key slippages. The reliability of the critical path depends on accurate estimates of time and of resources required.
Customer acceptance form	Confirms that the deliverables have been measured against their acceptance criteria, and have been accepted on behalf of the customer.
Deliverable	An item that a project has to create as part of its requirements. Another name for a deliverable is 'product'.
Document template	A suggested format for a document, with headings under which the user can enter their own text.
End-of-project report	Produced at the end of the project. It provides the project board with a review of the overall project, and an assessment of how successfully the project has met its objectives.
Exception	A situation where it is identified that the project will exceed tolerance levels agreed between two parties, such as project manager and project board.

Term	Description
Exception report	A report — describing an exception — that is presented to the project board by the project manager. This provides an analysis and options for the way forward, and identifies a recommended option.
External evaluation	An externally commissioned evaluation of the project. May be a formative and/or summative evaluation of the processes and the deliverables.
Gantt chart	A bar chart which can help visualise the project schedule. It is drawn with dates as the 'x' axis and the project tasks as the 'y' axis.
Highlight report	A progress report produced at a specified frequency.
Inter-dependent activities	Activities or tasks where one or more activity cannot commence until another has completed.
Issue	Something that has happened and which is affecting the project and needs to be resolved. For example, it can be a problem, query or request for change.
Issue log	A log of all project issues (including requests for change raised during the project) showing details of each issue, its evaluation, what decisions have been made about it and its current status.
Lessons learned log	Used during the lifetime of the project to record lessons learned as they occur. Used to produce a lessons learned report.
Lessons learned report	A report that describes the lessons learned in undertaking the project. The lessons should be distributed and the report held centrally for the benefit of future projects.
Management by exception	A management technique whereby a higher level of management does not intervene at a lower level unless there is a deviation from the agreed levels of tolerance.
Milestone	A point at which progress can be measured on the way to achieving an objective.
Outcome	Describes what a project is set up to deliver.

Term	Description
Partnership agreement	A written agreement that outlines the jobs, responsibilities and contributions of all project partners.
Post project review	One or more reviews held after project closure to see if the expected benefits have been obtained.
Post project review form	A form summarising progress on post-project benefits. Used to record status at the time of the post project review.
Post project review plan	The plan, including schedule, for the reviews to be conducted after project closure.
Product	An item that is created by the project. Sometimes known as a 'deliverable'.
Project	A set of coordinated activities, with clear starting and finishing points, undertaken to meet objectives within defined time, cost and performance targets.
Project board	Managers representing the business, users and suppliers of the project. It provides overall direction and management of the project and is accountable for the project's success.
Project brief	A description of what the project is to do. This is used to develop the project initiation document.
Project initiation document (PID)	Brings together the main information needed to start the project and to convey that information to all concerned with the project.
Project infrastructure checklist	A checklist to help identify the resource needs of a project (such as accommodation, equipment, hardware, software and user access accounts).
Project life-cycle	The duration of the project from start-up to closure.
Project management	The planning, monitoring and control of all aspects of a project, and the motivation of those involved in it, with the aim of achieving objectives on time and to the specified cost, quality and performance.

Term	Description
Project management methodology	A structured set of guidance and processes that provide a method to manage a project. This includes a set of pre-defined tools and techniques which can be followed as part of a standard management process.
Project management tools	Checklists, templates, software packages and other aids to help you manage a project.
Project manager	The person given the authority and responsibility to manage the project on a day-to-day basis, to deliver the outcomes within the constraints agreed with the project board.
Project objective	To be achieved in order to meet an aim. Objectives should be Specific, Measurable, Achievable, Relevant and Time-bound (SMART)
Project plan	A high-level plan showing the main deliverables, when they will be delivered and their cost. An initial project plan is presented as part of the project initiation document. This is revised as information on actual progress appears. It is a major control document for the project board to assess progress against expectations.
Project resources	The resources of a project include all the finances, budgets, staff, buildings, equipment, systems, services and technology required by the project.
Project sponsor	The person who is accountable for the successful delivery of a project. The project sponsor usually has control over the resources allocated to it. The project manager reports progress to the project sponsor.
Project team	Those involved in the management and delivery of the project and its deliverables.
Quality	The features of a deliverable or service that define its ability to satisfy the needs of the customer who commissioned it.

Term	Description
Quality assurance	Describes the process by which quality outcomes and project management can be demonstrated.
Quality control	The procedures and techniques to control the quality of project management and of deliverables being produced. Quality control is about the processes to be put in place to achieve that quality.
Quality management system	The complete set of quality standards, procedures and responsibilities for a site or organisation.
Quality plan	A plan defining the main quality criteria, quality control and audit processes to be applied to project management and specialist work in the project.
Risk	Something which might happen in the future. It requires positive management to reduce the likelihood of it happening and to lessen its potential impact.
Risk log	A document recording identified project risks. It includes impact evaluation and counter-measures for all risks. It should be created during the start-up of the project and developed during the life of the project.
Risk management	The task of minimising the project's vulnerability to risk.
Scope	The limits within which a project is planned and managed. When defining the scope of a project it is as important to consider what is outside the project's scope as it is to define what is within it.
Scope creep	Changes to the process by which the set of deliverables is produced — usually in an uncontrolled fashion and without a corresponding change in resources or a review of the deliverability of the project. Scope creep is one of the most common causes of project failure.

Term	Description
Stakeholder analysis	An analysis of stakeholders to reach an understanding of their requirements. Used to determine appropriate communications.
Stakeholder	Any person or group with an interest in, or who is impacted upon by the project.
Status report	Shows outstanding project tasks, tasks completed since the last status report and tasks due for completion before the next report.
Strategic plan	The strategic level business plan of an organisation.
Tolerance	Acceptable deviation in planned time and cost. Separate tolerance figures should be given for time and cost. There could also be tolerance levels for quality, scope, benefit and risk.
User acceptance testing (UAT)	The means by which it is ensured that a new system, process or deliverable meets essential user requirements. Each component to be implemented should be subject to one or more user acceptance tests (UAT) before being 'signed off'.