# Unit 9: IT Project Management

Level: **3**
Unit type: **Internal**
Guided learning hours: **90**

## Unit in brief

Learners investigate a range of project management principles and methodologies and undertake the management of a 'live' or 'simulated' IT project from start to finish.

## Introduction

Project management is the art of coordinating resources, both human and machine, and solving problems to complete an agreed set of objectives and/or to deliver benefits in a fixed time period, budget and to a specified quality. Ensuring the quality of IT projects in any sector is an essential requirement.

In this unit, you will investigate the principles of project management and different project management methodologies, as used in the IT industry. You will deliver an IT project using at least one project management methodology and complete the five main stages of a project. You will initiate the project by researching a problem and using your creative skills to generate a range of solutions, undertaking a feasibility study to select an appropriate solution and outline the requirements of the project. You will undertake the planning, execution, and monitoring and control stages of the project, either through simulation or by undertaking a major project as part of your BTEC course, which could involve the integration of several units. You will close the project by reflecting on the success of the project outcome and your personal performance.

The analytical and problem-solving skills and knowledge you gain in this unit will prepare you for entry to higher education to study a range of degrees. The unit will help you when entering an IT apprenticeship or the workplace, for example working alongside a project manager.

## Learning aims

In this unit you will:

**A** Investigate the principles and methodologies of IT project management as used in industry

**B** Carry out a project initiation for an IT project

**C** Carry out the planning, execution, monitoring and controlling of an IT project, using an appropriate methodology

**D** Undertake the closure of a project by reflecting on the success of personal performance and the project outcome.

## Summary of unit

| Learning aim | Key content areas | Recommended assessment approach |
|---|---|---|
| **A** Investigate the principles and methodologies of IT project management as used in industry | **A1** Project definitions <br> **A2** Characteristics of project management methodologies <br> **A3** Project management structures | A written report on the investigation of principles and methodologies of IT project management as used in industry, using at least three different IT projects as case studies. |
| **B** Carry out a project initiation for an IT project | **B1** Project idea generation and solution creation <br> **B2** Feasibility study <br> **B3** Project requirements | A project document portfolio created from implementing either a 'live' or 'simulated' project using an appropriate methodology. Evidence will include planning, preparation, feasibility studies, requirements and records of processes carried out during the planning and execution of a project. Written or verbal reports should accompany the evidence where clarifications and justifications are required, and versioned document control should be applied. |
| **C** Carry out the planning, execution, monitoring and controlling of an IT project, using an appropriate methodology | **C1** Project phasing <br> **C2** Typical project management processes | |
| **D** Undertake the closure of a project by reflecting on the success of personal performance and the project outcome | **D1** Lessons learned from implementing an IT project | A written report or presentation evaluating the outcome of the 'live' or 'simulated' project and reflecting on personal performance. |

# Content

### Learning aim A: Investigate the principles and methodologies of IT project management as used in industry

### A1  Project definitions

Typical IT projects include: software application development, installing IT systems and networks, and information collection and analysis.

Understand that:

- a project has a defined beginning and end point in time, and a defined scope of work to be completed for a given objective and/or benefit
- project management is the art of planning, organising and controlling project activities so that the project is completed successfully within the budget, time and quality constraints, and that problems are resolved to an appropriate standard and appropriate risks are mitigated
- project life cycle has the following five main stages and the structure in which these are implemented will vary depending on which project management methodology is being applied.

  1. Initiating: the first stage of a project that outlines the justification and requirements.

  2. Planning: provide details about how the project work will be carried out, how it will be monitored and controlled.

  3. Executing: the human and machine resource required to undertake tasks within the constraints of time, cost and quality.

  4. Monitoring and controlling: to monitor and control the project in accordance with the initiation and planning documents.

  5. Closing: once the project is complete, it can be formally closed down and a review held to learn from both the successes and the mistakes made during the project.

### A2  Characteristics of project management methodologies

Understand that the characteristics of different project management methodologies make them suitable for delivering certain types of project.

### Projects IN Controlled Environments (PRINCE2®)

- The methodology is suitable for the vast majority of projects, regardless of industry or market, size or complexity.
- Understand what is involved at each stage of the PRINCE2 methodology, including:
  o starting up a project (SU), e.g. forming the project board, appointing project manager and team, preparing project brief, defining the approach, outlining business case, learning from previous experience and preparing the next stage
  o initiating a project (IP), e.g. planning, refining the business cases, risk planning, project controls, project files, project initiation documentation
  o directing a project (DP), e.g. authorisation of initiation, authorisation of project, authorisation of a stage, ad hoc direction, closing project
  o controlling a stage (CS), e.g. work packages, assessing progress, capturing and examining issues, managing and controlling risk, reviewing stages, escalating issues, reporting, delivering packages
  o managing product delivery (MP), e.g. accept, execute and deliver work packages
  o managing a stage boundary (SB), e.g. planning and updating a stage and the project board, updating business case, updating registers, exception plans
  o closing a project (CP), e.g. decommissioning a project, benefits and project end reviews.
- Benefits, including scalability, project size, training requirements, qualified personnel.
- Limitations, including cost of training and qualification, absence of people or contact management.

**Rapid application development (RAD)**
- The methodology is ideally suited for short-term, large-scale enterprise applications that require high budget resources.
- Understand what is involved in each phase of the methodology, including:
  - requirements planning, e.g. discussing and agreeing business needs, defining the project's scope, identifying constraints, identifying requirements, agreement between users, managers and IT staff on key issues and obtaining management authorisation.
  - user design, e.g. user analysis, systems analysis, developing models and prototypes, showing all processes, inputs and outputs, computer-aided software engineering (CASE) tools:
    - business and analysis modelling, e.g. entity relationships modelling
    - development, design and construction, e.g. GNU Debugger
    - verification and validation, e.g. code analysis
    - configuration management, e.g. content management system (CMS)
    - metrics and measurement, e.g. complexity analysis, Big O
    - project management, e.g. Gantt, schedules
  - construction phase, e.g. programming and application development, unit integration, system testing and cutover, e.g. data conversion, testing, migration from old system, user training.
- Benefits, to include quality, risk control, time and budget.
- Limitations, to include scarce resources, less control, new approach, poor design, lack of scalability for large systems.

**Waterfall**
- The methodology is ideally suited for websites, database software or network software.
- Understand what is involved in each phase of the methodology, including:
  - requirements, e.g. capturing product requirements and documenting them
  - analysis, e.g. generation of models, schema and business rules
  - design, e.g. User Interface (UI) designs, mock-ups, planning of the architecture
  - implementation, e.g. the development, unit testing and integration of the software
  - testing, e.g. discovery of issues and defects, fixes of uncovered issues
  - operation, e.g. installation, migration and delivery of software
- Benefits, to include suitability for short-term static projects, simple to understand and outputs being visible at each stage.
- Limitations, to include difficulty to explicitly define user requirements at the start of a project and small changes that can cause major delays and/or costs to the project.

**Agile**
- The methodology is ideally suited for medium- and long-term projects where user requirements can change and outputs are required at timed intervals.
- Understand what is involved in each phase of the methodology, including:
  - iteration 1 phase – where potential projects are analysed before being selected for development, funding provided, and roadmaps produced for technology and the business
  - iteration 0 phase – where the initial modelling, planning and organisation takes place, e.g. prototypes of the products are created and initial requirements and a release plan are defined
  - construction iterations phase – a series of time-constrained iterations consisting of prioritised work items in a 'sprint' where a product is produced, daily meetings to discuss team progress and end of iteration reviews to demo to stakeholders
  - transition and release phase – where the product is released into production as a working system
  - production phase – where the product is delivered to the customer, including the phases of support and maintenance
  - retirement phase – where the product is removed from development.

- Benefits, to include flexibility in constantly changing applications, clear visible outputs during each iteration of development and appropriate planning of resources ensures first to the market and continual releases.
- Limitations, to include teamwork from all stakeholders required to ensure the process is successful, full commitment and effort is required in projects and the need for experienced development teams to make decisions during the project.

**A3  Project management structures**

- User requirements, including:
  o a 'functional requirement' of the system, including the definition of inputs, the process and the outputs, e.g. a calculation, data manipulation process, what it is required to accomplish
  o a 'non-functional requirement' to satisfy in the system, including quality attributes of the system, e.g. performance or maintainability of a system.
- Project job roles and responsibilities:
  o project manager, including developing project plans, managing the stakeholders, managing communication across the team, managing individuals, risks, schedules, budgets, conflicts and delivery
  o systems architect, including design and implementation of hardware and infrastructure, providing definitions of hardware and how it meets the requirements of the system
  o electronics engineer, including designing electronic components, circuits and systems, providing interfaces for software implementation and development of firmware
  o product owner, including role as key stakeholder, identifying priority requirements, work items, release dates, has a vision for the product to be built
  o lead developer, including responsibility for underlying architecture, serving as mediatory between management and the development team body, acting as a mentor to more junior developers
  o developer, including writing software code, applying developer written unit tests
  o quality assurance (QA) test lead, including responsibility for test plans and test suites, delegating work to testers and acting as a mentor to more junior testers
  o QA tester, including testing functional and non-functional requirement testing against the product, carrying out more general testing
  o IT support technician, including logging and resolving user issues/faults and the operation of the IT services to meet the user's and organisation's needs, e.g. the operation of hardware and software and security systems
  o user, including using the product during deployment, producing requirements based on usability and testing, feeding back to stakeholders such as project managers and product owners.
- QA, including key and continuous process during the development life cycle, ensuring product meets quality standards defined by the product owner and customer.
- Operational test environment – a pre-release environment close in performance and architecture to live or a deployment environment.
- Live deployment – the operational deployment environment for the final product to be released to.

## Learning aim B: Carry out a project initiation for an IT project

**B1  Project idea generation and solution creation**

Identification of a suitable problem, perhaps based on a given theme, and creation of alternative solutions, including:

- researching a given project theme or initial idea and identifying problems to be solved, using tools, e.g. the internet, journals, databases, libraries, publicly available company information

- creativity tools to solve problems, e.g. rewording problems, challenging assumptions, thinking in reverse, mind mapping, drawing a diagram, group discussion, brainstorming and Edward De Bono's Six Thinking Hats®
- a specification that scopes out the alternative technical solutions, including:
  - o graphic solutions, e.g. sketches, diagrams, photographs and storyboards
  - o an outline of the required processes, e.g. information, systems, assemblies, high-level flow chart
  - o an outline of costings, e.g. spreadsheet, material cost, budgets
  - o initial technical information, e.g. outline performance parameters.

### B2  Feasibility study

A study into the feasibility of the project, identifying the resources and skills required to produce the IT product, service or system, and ensure it is economically viable. Criteria that could be used in an assessment include:

- technical assessment, including assessing and evaluating the technical resources available
- economic assessment, including assessing the cost, benefits and viability of the project
- legal assessment, including assessing the current and relevant legal requirements, e.g. the data protection legislation, Health and Safety at Work etc. Act 1974 or other relevant international equivalents
- operational assessment, including the assessment of how well the proposed solution meets the requirements and solves the problems of the project
- scheduling assessment, including the assessment of the likelihood of the project being a success, estimating the time required to complete the project
- sustainability assessment depending on the product or service proposed, e.g. environmental impact, waste material, power usage, choice of material, recycling and reuse
- security assessment, e.g. analysis of secure servers, software source control, 'penetration' testing
- usability assessment, e.g. the appropriate design of user interfaces ensuring smooth and consistent integration with any required systems.

### B3  Project requirements

Documentation to outline the project requirements, including:

- introduction to the project, e.g. purpose of the document, definitions, project overview and references
- overall description, e.g. project perspective, functions and characteristics of the software
- requirements specification, e.g. designs, interfaces, functionality, design constraints, time, budget and scope constraints
- success criteria of the project, how the project could be tested and what the overall goals of the project are.

### Learning aim C: Carry out the planning, execution, monitoring and controlling of an IT project, using an appropriate methodology

### C1  Project phasing

- The division of larger user requirements into more specific functional and non-functional requirements, generation of requirements specification documentation and acceptance of the documentation by the key stakeholders and the client.
- Understand that implementation covers the planning, execution, monitoring and controlling stages of the project life cycle.

### C2  Typical project management processes

Typical project management processes, including:

- the development of risks and issues and tasks for development
- prioritising work according to an ongoing plan and project charts
- analysis and management of barriers or constraints that arise during the development of the project
- regular meetings during implementation and with the customer to monitor progress
- ensuring the project is within budget and has appropriate resources.

### Planning and monitoring project-management processes

Tools to plan and monitor a project:

- resource plan, e.g. the internet, humans, peers, books and equipment
- time plan, to include a Gantt chart and critical path analysis to set priorities for different activities
- project contingency, e.g. an amount of time or additional budget that is included in the plan to manage unforeseen events
- project constraints, including time, budget, scope, sustainability, ethical and legal
- monitoring and control of the project at appropriate intervals, including logbook of problems and solutions, support, activities and communications, and progress against the plan and milestones.

### Risk and issue processes

- The purpose of risk and issue management:
  - avoiding 'crisis management'
  - improving the probability of success and increasing competitive advantage.
- A risk is a future event that could adversely impact on the project processes or outcome, and an issue is a current event that is adversely or positively impacting on the project process(es) or outcome.
- The risk or issue severity = probability of occurrence × expected impact on the project, e.g. on the customer's requirements, delivery to time and to budget.
- Risks and issues should be assessed throughout the delivery of the project and medium, high and extreme severity risks and issues should be managed.
- Management (monitoring and control) of risks and issues (mitigation), including:
  - identification and severity of risks and issues during the project
  - prevention to eliminate the threat of a risk occurring
  - reduction to reduce the likelihood of a risk occurring or to reduce the impact of a risk or issue
  - acceptance to do nothing about a risk or issue or transference to transfer the risk to a third party, e.g. a cloud service provider.

### Execution and management processes for a project

- The execution phase requires the management of processes through the project to ensure success of the project and to manage the project's resources and to avoid chaos during the project.
- Processes to manage throughout the execution phase, including:
  - time, e.g. a process for recording time against tasks, timesheets, updated project plans
  - cost, e.g. identify each cost in the project, expenses, keep a central record of costs
  - quality, e.g. set quality targets, define how to measure quality, report on the quality level
  - change, e.g. requests for change, evaluate the feasibility, manage the approval of change
  - risks and issues e.g. slippage of time or quality of work
  - acceptance, e.g. facilitate testing, document the results, request acceptance and approval.

**Learning aim D: Undertake the closure of a project by reflecting on the success of personal performance and the project outcome**

**D1  Lessons learned from implementing an IT project**

- Scope of the lessons learned should cover:
  - project management skills, e.g. proper use of project management processes, understanding of particular roles and use of management documentation for analysis and progress management
  - behaviours applied during the project, e.g. time planning, communication and problem-solving skills.
- Understand relevant behaviours for project management, including:
  - time planning and management to complete all the different activities in an appropriate time and sequence, how and when feedback from others will be gathered
  - communication and literacy skills to follow and implement instructions appropriately, interpret documentation and communicate effectively with others, including the use of feedback from others in writing and orally
  - problem-solving skills, e.g. logical thinking, investigating the source of the problem, breaking down problem into manageable chunks, and identifying one or more solution(s) to a problem
  - other behaviours and their impact on the project outcome, to include professionalism, etiquette, leadership, and taking responsibility for one's actions.

## Assessment criteria

| Pass | Merit | Distinction |
|------|-------|-------------|
| **Learning aim A: Investigate the principles and methodologies of IT project management as used in industry** | | **A.D1** Evaluate, using appropriate definitions, the characteristics of different methodologies and structures applied in IT projects. |
| **A.P1** Explain, using appropriate definitions, the characteristics of different methodologies applied in IT projects.<br><br>**A.P2** Explain the project management structures applied in different IT projects. | **A.M1** Compare, using appropriate definitions, the characteristics of different methodologies and structures applied in IT projects. | |
| **Learning aim B: Carry out a project initiation for an IT project** | | |
| **B.P3** Research with some inconsistencies an IT problem, based on a given theme and scope out at least two alternative solutions.<br><br>**B.P4** Prepare with some inconsistencies a feasibility study on an IT project and select a preferred solution. | **B.M2** Assess consistently at least two adequately researched solutions to an IT problem on a given theme and recommend a preferred solution. | **BC.D2** Evaluate consistently and comprehensively at least two researched and realistic solutions to an IT problem on a given theme and justify, using logical chains of reasoning, a preferred solution. |
| **Learning aim C: Carry out the planning, execution, monitoring and controlling of an IT project, using an appropriate methodology** | | **BC.D3** Perform consistently and effectively appropriate project management processes to implement an IT-based project. |
| **C.P5** Plan with some inconsistencies and/or omissions the implementation of an IT project.<br><br>**C.P6** Execute with some inconsistencies and/or omissions the implementation of an IT project.<br><br>**C.P7** Monitor and control with some inconsistencies and/or omissions the implementation of an IT project. | **C.M3** Perform soundly and consistently appropriate project management processes to implement an IT-based project. | |
| **Learning aim D: Undertake the closure of a project by reflecting on the success of personal performance and the project outcome** | | **D.D4** Demonstrate consistently good technical understanding and analysis of the project, including the effective application of relevant project management skills and behaviours. |
| **D.P8** Explain how project management skills were used in the management of an IT project.<br><br>**D.P9** Explain how relevant behaviours were applied during the management of an IT project. | **D.M4** Recommend improvements to the project management skills and behaviours applied during an IT project. | |

## Essential information for assignments

The recommended structure of assessment is shown in the unit summary along with suitable forms of evidence. *Section 6* gives information on setting assignments and there is further information on our website.

There is a maximum number of three summative assignments for this unit. The relationship of the learning aims and criteria is:

Learning aim: A (A.P1, A.P2, A.M1, A.D1)

Learning aims: B and C (B.P3, B.P4, C.P5, C.P6, C.P7, B.M2, C.M3, BC.D2, BC.D3)

Learning aim: D (D.P8, D.P9, D.M4, D.D4)

# Further information for teachers and assessors

## Resource requirements

For this unit, learners will need access to:

- a variety of physical resources, dependent on the type of IT project they pursue. Many of these resources are detailed in the other units in the qualification
- workshops, laboratories and specialist software applications.

Learners would benefit from exposure to commercial project management software, such as Microsoft Project®, Sage™ 200 or Zoho™. However, freeware and cloud-based solutions are also available such as Freedcamp or Trello™.

Learners may also need access to project simulation software, e.g. The Project Team Builder™ (PTB™).

## Essential information for assessment decisions

### Learning aim A

**For distinction standard**, learners will evaluate three different projects delivered using different project management methodologies as covered in the unit content. The evaluation will cover a comprehensive range of benefits and limitations of using a methodology based on the context. Learners will evaluate the structures used in the delivery of the project and how they play an important role in the management of the project, given the context. A supported judgement will be given that leads to a conclusion. For example, an Agile methodology may be chosen for a complex management tool for the banking industry because it is more flexible to use in a dynamic sector with unclear user requirements, and it offers shorter iterations of development and planning.

Overall, the evidence, such as a report, will be easy to read and understand by a third party. It will be logically structured, use appropriate technical language (including definitions) throughout and use a high standard of written language, i.e. consistent use of correct grammar and spelling, and consistent reference of information sources.

**For merit standard**, learners will compare at least three different project management methodologies used to deliver projects. The comparison will cover the benefits and limitations of each, and give reasons why they might be used during the management of a project. For example, PRINCE2 is a structured project management methodology that focuses on product outputs resulting from the project. In Agile, the focus is also on product outputs following a short sprint or iteration that, unlike PRINCE2, provides greater opportunities to assess the direction of a project throughout the development life cycle. Learners will compare the different structures used in the IT projects.

Overall, the evidence will be logically structured, technically accurate (including definitions) and easy to understand.

**For pass standard**, learners will explain the characteristics of and structures used in three IT projects delivered using different project management methodologies. For example, they will explain that Agile is a software development methodology where, in its initial stages, the users, business managers and IT staff discuss requirements of the project before development. They will describe the requirements of the project and document the outcome. The product should be designed and developed in a continuous phase.

Overall, the evidence will be well structured, with some use of appropriate technical language (including definitions), although there may be some inaccuracies with terms used. Some parts of the evidence may be considered in greater depth than others.

## Learning aims B and C

**For distinction standard**, learners will include at least two possible IT solutions to the given theme or an initial idea in their evidence. The comprehensive research evidence and feasibility study will provide at least two realistic alternative solutions to an IT problem. The evidence will be at a consistent breadth and depth. It will identify and evaluate the project risks and constraints and suggest viable methods of controlling the risks. For example, for a simulated IT project, learners might identify the lack of skilled resource in the development team as a risk and might identify the need to recruit an experienced developer to lead the development. They would also recognise that this initial cost would be offset if the project is successfully completed. A range of criteria will allow a good evaluation of the solutions and the justification of the preferred solution will be supported by logical chains of reasoning.

Learners' preferred solution or a simulated project will be implemented over the project life cycle using an appropriate methodology. Learners will perform consistent and effective project management processes using an appropriate methodology. For example, for a simulated IT project, learners might produce an initial software requirements specification that outlines the functional and non-functional requirements of the project. Using the Agile methodology, they would then produce user stories that facilitate planning of time and resource required to complete the work.

Overall, the evidence will be easy to read and understand by a third party. It will be logically structured and use technical terms with a high standard of written language, i.e. consistent use of correct grammar and spelling, and consistent reference of information sources.

**For merit standard**, learners will cover at least two possible solutions to an IT problem in their research evidence. Each solution will be investigated consistently (to a similar breadth and depth) and most of them will be realistic. High-level evidence will be given, scoping out each alternative solution to the IT problem.

Learners will undertake a feasibility study on the potential solutions and will assess each of them in turn. The study will be supported by research evidence of consistent breadth and depth across the two solutions. The risks and constraints associated with each solution will have been given. Enough criteria will have been used in the assessment to make an informed recommendation for the preferred solution. For example, as part of a simulated IT project, learners might suggest that part of the project is outsourced to lower initial costs and satisfy the constraints of an inexperienced development team.

Learners' preferred solution or a simulated project will be implemented over the project life cycle using an appropriate methodology. Learners will perform soundly appropriate project management processes. For example, if following the waterfall methodology as part of a simulated project, learners would produce development tasks based on the functional and non-functional requirements that facilitate time and resource planning.

Overall, the evidence will be logically structured, technically accurate and easy to understand. However, learners may not fully appreciate the number of iterations required to scope out two different solutions.

**For pass standard**, learners will research at least two potential solutions to an IT problem on a given theme. The research will be patchy in some areas, it may not support all the solutions given and at least one solution may not be realistic. The evidence will scope out the solutions and may include benefits, diagrams, storyboards, flow charts and other technical information.

The feasibility study will assess each of the alternative solutions in turn and cover the associated risks and constraints. The study will be supported by the research, although the depth and breadth of evidence will be inconsistent across the two solutions and the study will not contain enough criteria to make an informed decision on which solution to develop. A preferred solution will be selected. For example, as part of a simulated IT project, learners may have mistakenly suggested a project is feasible based on the amount of potential profit from the project, ignoring the lack of experience and resources available.

Learners will implement either their preferred solution or a simulated IT project through the life cycle stages of planning, executing, monitoring, controlling and using an appropriate methodology. They will deliver the project management processes such as planning, risk and issue management, and monitoring and controlling quality. They should suggest solutions to any problems that occur during the project. Although there will be evidence of a range of project management processes being used, there will be some inconsistencies and/or omissions in their use. For example, as part of a simulated IT project, learners' project plan may not be updated at appropriate times during the project and so was not used to monitor and control timely implementation of the project.

Overall, the evidence will be well structured, with some use of appropriate technical language, although there may be some inaccuracies with terms used. Some parts of the evidence may be considered in greater depth than others.

### Learning aim D

**For distinction standard**, learners will demonstrate effective project management skills and relevant behaviours throughout the project initiation and implementation (planning, execution and monitoring and control). For example, all work will be completed on time, the practical activities will be planned out in advance and problems encountered will be solved. Also, the lessons learned evidence will demonstrate a consistently good technical understanding and analysis of the project, and examples of where improvements could be made will be given.

Overall, the evidence will include a balanced view about the actions taken and project management processes applied. The report will be easy to read and understand by a third party and the correct and consistent use of technical IT language will be evident.

**For merit standard**, learners will give examples in their evidence of where improvements could be made to the application of:

- project management skills, e.g. that additional progress reviews were required to monitor and control progress against time
- relevant behaviours, e.g. that problems needed to be better anticipated to prevent them from impacting on the project outcome.

Overall, the suggested improvements should be reasonable and practical and technical terminology used accurately.

**For pass standard**, learners will produce evidence, such as a lessons learned report of around 300 words in length, which will explain:

- what project management skills were applied, such as using techniques and documentation to manage the project
- how behaviours were used, such as time management and planning to ensure the activity was completed within the appropriate time.

Overall, the evidence will be well structured, with some use of appropriate technical language, although there may be some inaccuracies with terms used. Some parts of the evidence may be considered in greater depth than others.

## Links to other units

This unit links to many other units, including:
- Unit 1: Information Technology Systems
- Unit 2: Creating Systems to Manage Information
- Unit 3: Using Social Media in Business
- Unit 4: Programming
- Unit 6: Website Development
- Unit 7: Mobile Apps Development
- Unit 8: Computer Games Development
- Unit 11: Cyber Security and Incident Management
- Unit 13: Software Testing
- Unit 14: IT Service Delivery
- Unit 15: Customising and Integrating Applications
- Unit 16: Cloud Storage and Collaboration Tools
- Unit 19: The Internet of Things.

## Employer involvement

This unit would benefit from employer involvement in the form of:
- guest speakers
- technical workshops involving staff from organisations/businesses
- contribution of design/ideas to unit scenario/case study/project materials, including own organisation/business materials as exemplars where appropriate
- feedback from staff from local organisations/businesses on plans/designs/items developed
- opportunities for observation of organisational/business application during work experience
- support from local organisation/business staff as mentors.