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## Overview

The System Development sub-discipline covers the competencies required to develop/enhance, acquire, reuse and/or commission a range of systems elements, such as software, hardware and networking elements and interface them to produce a holistic, 'end to end' working IT or Telecom enabled or system that meets a specific business need.

Software elements may be developed/enhanced, acquired, reused or commissioned, according to the approach that best meets the business needs.

Hardware and networking elements that need to be included in the system configuration may range from large-scale storage, processing and connectivity devices housed in data centres, to hand-held devices, using wireless connectivity to present information contained in the system to the end user or consumer. Some of these devices may need to be designed produced or assembled specifically to work as part of individual IT enabled or Telecom systems.

System elements may be developed/enhanced or commissioned to meet a specific need for an organisation (bespoke) or may be acquired package products that provide generic capabilities designed to address the needs of many organisations or may be existing operational assets that can be reused.

Systems development necessitates a 'end to end' perspective from those individuals involved in it, ensuring that all of the system elements, assets and services required to meet the business need are available and interfaced in a way which produces an outcome which best supports the business needs.

Systems development contexts can include, but are not limited to:

- Desktop, mainframe, process control, web and mobile applications
- Cloud computing software and data resources that are delivered as a service over the Internet. This includes: software as a service (SaaS), storage as a service (STaaS) and desktop as a service (DaaS)).
- Implementation and exploitation of digital and social Media in systems development
- Real world web/Internet
- Big data, difficult data and data warehousing (data searching and data mining)
- Green IT including both the impact on the environment of the increased use of IT & Telecoms systems and also the benefits that IT & Telecoms can have in reducing the environmental impact of other sectors

Working in the lead professional role involves:

- Controlling the infrastructure for systems development activities;
- Controlling systems development activities; and
- Managing external relationships during systems development activities

**Performance  
criteria**

**Control the infrastructure for systems development activities**

*You must be able to:*

- P1 design and implement effective and appropriate systems development standards, procedures, tools and techniques
- P2 determine the most appropriate approach to be taken to systems development activities
- P3 advise others, both internally and externally, on appropriate best practice in systems development
- P4 advise and guide others on all aspects of systems development activities

**Control systems development activities**

*You must be able to:*

- P5 make appropriate decisions on the appropriateness of 'off the shelf' packaged systems and services to meet the business needs
- P6 make effective decisions regarding external suppliers of systems development services
- P7 identify and make rational decisions on when it is necessary to combine bespoke developed systems elements with others that have been acquired/commissioned in order to create the 'end to end' IT enabled system
- P8 monitor and analyse systems development activities and act on findings in a timely manner
- P9 take timely and appropriate action to resolve issues escalated by less experienced individuals relating to the alignment of systems development activities with other solution development and implementation activities
- P10 verify that correct decisions are made regarding which system elements are to be developed/enhanced, which are to be commissioned, which can be reused, which need to be acquired and which may need to be decommissioned
- P11 take timely and appropriate action in the event of systems

development deliverables/packages failing to operate as required to support the business needs

**Manage external relationships during systems development**

**activities**

*You must be able to:*

P12 negotiate effectively and tactfully with sponsors and stakeholders during systems development activities

P13 agree how the IT enabled system will operate with sponsors and stakeholders during systems development

P14 liaise as appropriate with external bodies on all aspects of software development activities

P15 secure sign off of systems development deliverables from all sponsors and stakeholders

**Knowledge and understanding**

*You need to know and understand:*

**Control the infrastructure for systems development activities**

- K1 identify the range of approaches that may be taken to systems development activities and their appropriateness in a range of business and organisational contexts
- K2 design and implement:
  - K2.1 standards relating to systems development activities
  - K2.2 standards relating to the use of external providers of systems development services and/or 'off the shelf' packages and services
  - K2.3 the procedures, tools and techniques to use for systems development activities
  - K2.4 the procedures, tools and techniques to monitor the progress of systems development activities against plans, schedules, quality standards and budgets
  - K2.5 the procedures, tools and techniques to use to manage the delivery of 'off the shelf' packaged systems and services and/or systems developed by external providers
  - K2.6 the procedures, tools and techniques and plans to monitor the alignment of systems development activities with any relevant legislation, regulations and external standards
- K3 advise and guide others on:
  - K3.1 all aspects of systems development activities
  - K3.2 best practice in systems development
  - K3.3 the assessment and selection of 'off the shelf' package systems and services

**Control systems development activities**

*You need to know and understand:*

- K4 identify and select when and how:
  - K4.1 packaged systems and services should be considered to meet the business needs for an IT enabled system

- K4.2 to use external providers of systems development services
- K5 identify and select when it is necessary to combine bespoke developed systems elements with others that have been acquired/commissioned in order to create the 'end to end' IT enabled system
- K6 monitor and analyse the quality and effectiveness of:
  - K6.1 internal and external systems development activities
  - K6.2 external providers of systems development products and services
- K7 identify, select and implement the actions to be taken:
  - K7.1 to close any gaps and mismatches between 'off the shelf' package systems and services and design deliverables and requirements
  - K7.2 in the event of systems development activities/packages not supporting the business needs as reflected in systems design deliverables
  - K7.3 in the event of systems development deliverables/packages failing to operate as required to support the business needs
  - K7.4 in the event of 'off the shelf' packages and services not supporting the business needs
  - K7.5 in the event of 'off the shelf' packages and services failing to operate as required to support the business needs
  - K7.6 to ensure the optimal use of individual system elements during systems development activities
- K8 verify that correct decisions are made regarding which system elements are to be developed/enhanced, which are to be commissioned, which can be reused, which need to be acquired and which may need to be decommissioned

**Manage external relationships during systems development activities**

*You need to know and understand:*

- K9 negotiate and agree with sponsors and stakeholders during systems development on how:
  - K9.1 the IT enabled system will operate and support business needs
  - K9.2 with sponsors and stakeholders during systems development on how gaps and mismatches between requirements and packaged systems and services will be met
- K10 negotiate and contract with external providers of systems development services

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## Manage IT and Telecoms systems development programmes

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