

---

## Overview

This sub-discipline is concerned with the competencies required to create, maintain and manage both logical and physical designs for an information technology solution based on the information defined in a range of deliverables produced by business, data, HCI and systems analysis activities. A systems design is effectively a blueprint or plan for how a proposed information technology system will operate in order to meet business needs. Design activities produce solutions to address the requirements specified through analysis activities, including, at a detailed level, functions and processing, interfaces, data handling and storage needs and how the system will be used by and interact with people, as appropriate.

Logical systems design typically describes the functions, processes and data handling needs of the information technology solution independent of any specific technologies, platforms or products that may be used in its actual development. One or more logical solutions may be proposed.

Physical design translates these logical design principles into a proposed physical design, where components such as application software products, file and database systems and infrastructure components are specified and the information contained in the logical design is converted into a design format that takes account of practical considerations such as location of physical assets and performance of the system.

In some organisations, typically those where rapid development approaches are used, systems design may be undertaken in parallel with data design and HCI design. Furthermore, in these organisations, an iterative process of systems analysis and systems design may also take place. Systems design commonly incorporates aspects of data design and HCI design in order to produce an holistic, 'end to end' view of the proposed information technology system's design.

**Performance criteria**

**Identify and implement the processes required for system/solution/service design activities**

*You must be able to:*

- P1 Correctly select, implement and maintain the processes, tools and techniques relating to system/solution/service design activities
- P2 Correctly identify the IT/technology architectures that need to be referenced during system/solution/service design activities, and apply all relevant information from them to inform system/solution/service design activities
- P3 Clearly identify what changes may be required to translate a logical system/solution/service design into an appropriate physical design
- P4 Be fully accountable for the quality and effectiveness of any logical and physical system/solution/service design elements produced within own area of accountability

**Manage the design of an ‘end to end’ system/solution/ service design**

*You must be able to:*

- P5 Make clear and well reasoned decisions on the individuals and teams to whom individual design elements may be delegated and effectively manage those individuals and/or teams in the production of logical and/or physical design elements of any 'end to end' system/solution/service design
- P6 Verify the accuracy, currency, completeness and relevance of all data and information used by system/solution/service design activities and the accuracy and appropriateness of any processing and functions contained within the ‘end to end’ design
- P7 Correctly identify elements of an ‘end to end’ system/solution/service design so that they may be delegated to others
- P8 Design, implement and maintain effective and feasible plans and standards for the design of an ‘end to end’ system/solution/service, under direction

**Produce ‘end to end’ system/solution/service designs**

*You must be able to:*

- P9 Amalgamate the full range of design specifications in order to produce an holistic, ‘end to end’ system/solution/service design for an IT/technology system, service and/or asset, under the guidance of superiors
- P10 Correctly identify appropriate technologies, products, services and items of equipment and assets that are available to /exist within, the organisation and ensure that physical designs take account of/ use them appropriately
- P11 Develop, implement and maintain appropriate and technically robust logical and physical ‘end to end’ system/solution/service designs for an IT/technology system, service and/or asset that align fully with all relevant analysis, design and architecture deliverables and service requirements

**Present system/solution/service designs to others**

*You must be able to:*

- P12 Critically review the design of any particular design element that has been produced by other individuals as part of the 'end to end' system/solution/service design
- P13 Clearly present all relevant information produced by system/solution/service design activities, particularly information relating to how the proposed IT/technology will function, in an understandable form to a wide range of sponsors, stakeholders and other individuals, in order to confirm understanding and ensure business needs are being met, under the direction of superiors
- P14 Provide accurate and comprehensive logical and physical system/solution/service designs to other internal and external individuals and/or organisations for review and sign off

**Knowledge and understanding**

**Identify and implement the processes required for system /solution/ service design activities**

*You need to know and understand:*

- K1 Identify and select
- K1.1 standards relating to system/solution/service design activities and their deliverables
- K1.2 the processes, tools and techniques relating to system/solution/service design activities and their deliverables
- K1.3 the IT/technology architecture that need to be referenced during system/solution/service design activities
- K1.4 business requirements when producing logical and physical system/solution/service designs
- K1.5 business rules that need to be incorporated into system/solution/service designs
- K1.6 elements of an 'end to end' system/solution/service design that may be delegated to others
- K1.7 which internal and external individuals, groups and teams may have elements of an 'end to end' design delegated to them
- K1.8 design options developed to meet the business needs during system/solution/service design activities
- K1.9 the full range of design specifications in order to produce an holistic, 'end to end' system/solution/service design for an IT/technology system, service and/or asset
- K1.10 naming conventions and standards to be used in system/solution/service design activities in line with organisational standards
- K1.11 which technologies, such as programming languages, software packages, data organisation and storage systems and infrastructure components are available and can be used by an IT/technology system, service and/or asset supporting the organisation
- K1.12 real life factors and constraints, such as security controls and operational service levels, that need to be incorporated within the physical system/solution/service design
- K1.13 internal and external factors in system/solution/service design activities
- K1.14 the impact and implications of changes to business requirements during system/solution/service design activities
- K1.15 lessons learned from previous system/solution/service design assignments
- K1.16 how the IT/technology system, service and/or asset needs to function in order to meet the business needs
- K1.17 who are the sponsors of and stakeholders for any system/solution/service design activities
- K1.18 the rules and controls required to ensure the privacy, integrity and

- security of data held within the system/solution/service design
- K1.19 what changes may be required to translate a logical system/solution/service design into an appropriate physical design
- K1.20 what models, prototypes and 'mock ups' of all/parts of the 'end to end' system, service and/or asset may be required during system/solution/service design activities to assist with the clarification of design details
- K2 Implement and maintain
- K2.1 the processes, tools and techniques relating to system/solution/service design activities and their deliverables
- K2.2 the processes, tools and techniques to monitor the alignment of system/solution/service design activities and their deliverables with all relevant legislation, regulations and external standards and plans and standards relating to system/solution/service design activities and their deliverables
- K2.3 the processes, tools and techniques to monitor the quality and effectiveness of all aspects of system/solution/service design activities and their deliverables
- K2.4 a logical and physical system/solution/service design for an IT/technology system, service and/or asset
- K2.5 plans and standards for an 'end to end' system/solution/service design
- K3 Be accountable for the quality and effectiveness of any logical and physical system/solution/service design elements produced within own area of accountability
- K4 What is the range of issues associated with system/solution/service design activities
- K5 the processes, tools and techniques that can be used to monitor the alignment of system/solution/service design work with IT/technology architecture, analysis and other design deliverables
- K5.1 alignment of system/solution/service design work with IT/technology architecture, analysis and other design deliverables
- K5.2 quality and effectiveness of external providers of system/solution/service data services
- K5.3 privacy, integrity and security aspects of the 'end to end' system/solution/service design
- K5.4 alignment of system/solution/service design activities and their deliverables with any relevant legislation, regulations and external standards
- K5.5 alignment of system/solution/service design work with analysis activities and their deliverables
- K5.6 Alignment of system/solution/service design work with service level requirements
- K5.7 quality and effectiveness of system/solution/service design activities and their deliverables

*You need to know and understand:*

**Manage the design of an 'end to end' system/solution/ service design**

- K6 Make decisions on the individuals to whom individual design elements may be delegated
- K7 Negotiate how the target IT/technology system, service and/or asset, service and/or asset will function, with individuals and organisations both internally and externally involved with service, operational and environmental management
- K8 Verify
  - K8.1 the accuracy, currency, completeness and relevance of all data and information used by system/solution/service design activities
  - K8.2 the accuracy and appropriateness of any processing and functions contained within any 'end to end' system/solution/service design
- K9 Apply
  - K9.1 information from IT/technology architectures to inform system/solution/service design activities and their deliverables
  - K9.2 real life factors and constraints, such as security controls and operational service levels, within the physical system/solution/service design
  - K9.3 processes, tools and techniques to monitor the alignment of system/solution/service design activities and their deliverables with all relevant legislation, regulations and external standards
  - K9.4 best practice in system/solution/service design activities
  - K9.5 lessons learned from previous system/solution/service design assignments
  - K9.6 service and operational requirements in order that they may be incorporated within system/solution/service design deliverables
- K10 Design
  - K10.1 plans and standards for the design of an 'end to end' system/solution/service
  - K10.2 system/solution/ service design deliverables aligned, as appropriate, to analysis deliverables
  - K10.3 system/solution/service design deliverables aligned to IT/technology architecture deliverables
  - K10.4 system/solution/service design deliverables aligned to related design deliverables
  - K10.5 system/solution/service design deliverables aligned, as appropriate, to service objectives and the service strategy
  - K10.6 logical and physical 'end to end' system/solution/service designs for an IT/technology system, service and/or asset
- K11 Monitor
  - K11.1 the quality and effectiveness of any particular element of a system/solution/service design

- K11.2 the alignment of system/solution/service design activities with the business requirements
- K11.3 the alignment of system/solution/service design activities and its deliverables with all relevant legislation, regulations and external standards
- K11.4 the alignment of system/solution/service design activities with other related design activities
- K11.5 the alignment of system/solution/service design activities with analysis deliverables
- K12 Report
- K12.1 the results of monitoring the alignment of system/solution/service design activities with the business requirements
- K12.2 the results of monitoring the alignment of system/solution/service design activities and its deliverables with all relevant legislation, regulations and external standards
- K12.3 the results of monitoring the quality and effectiveness of system/solution/service design activities and their deliverables
- K13 Who
- K13.1 are the sponsors of and stakeholders for any system/solution/service design activities
- K14 The need for monitoring
- K14.1 the quality and effectiveness of external providers of system/solution/service data services
- K14.2 the privacy, integrity and security aspects of the 'end to end' system/solution/service design
- K14.3 the alignment of system/solution/service design deliverables with IT/technology architectures for an organisation
- K15 What are the
- K15.1 problems and opportunities that system/solution/service designs are required to address
- K15.2 range and types of system/solution/service design deliverables that can be used to represent the holistic, 'end to end' design of any IT/technology system, service or asset to meet specific business needs
- K15.3 technologies, such as programming languages, software packages, data storage systems, that are available and can be used by an IT/technology system, service or asset supporting the organisation and their advantages and disadvantages
- K15.4 legislation, regulations and external standards that may apply to system/solution/service design activities
- K15.5 benefits and disadvantages of using external suppliers of system/solution/service design services
- K15.6 implications of internal and external factors on system/solution/service design activities and their deliverables
- K15.7 benefits and disadvantages of using external providers of

system/solution/service design services

K15.8 range of approaches that may be used for system/solution/service design activities and their appropriateness in a range of business and organisational contexts

**Produce 'end to end' system/solution/service designs**

*You need to know and understand:*

K16 Take action

K16.1 to translate any particular logical system/solution/service design element into a physical system/solution/service design for an IT/technology system, service and/or asset

K16.2 to delegate the production of elements of any 'end to end' system/solution/service design appropriately

K16.3 to co-ordinate the design efforts of groups and individuals involved in designing individual physical and/or logical elements of any 'end to end' IT system/solution/service design

K16.4 to specify and define processing and functional needs within logical and physical system/solution/service design deliverables

K16.5 to produce design options, where appropriate, for review by sponsors, stakeholders, superiors and other individuals

K16.6 to incorporate the full range of design specifications in order to produce an holistic, 'end to end' system/solution/service design for an IT/technology system, service and/or asset

K16.7 to translate an 'end to end' logical system/solution/service design into a physical system/solution/service design for an IT/technology system, service and/or asset

K16.8 to incorporate a range of real life factors and constraints, such as security controls and operational service levels, within the physical system/solution/service design

K16.9 to bring all elements of an 'end to end' logical and physical design together into an integrated whole

K16.10 to optimize the 'end to end' physical system/solution/service design

K16.11 to secure sign off to the physical system/solution/service design prior to system/solution/service development activities commencing

K16.12 to take account of internal and external factors in system/solution/service design activities

K16.13 to review and update, as appropriate, information contained in IT/technology architecture and analysis deliverables as a result of system/solution/service design activities

K16.14 to ensure

K16.15 that system/solution/service design activities are guided and informed by the business needs

K16.16 that the information produced by system/solution/service design activities is used to inform system/solution/service development activities



- K16.17 that the physical design take account of and uses appropriate, technologies, products, services and items of equipment and assets that are available to /exist within the organisation
- K16.18 system/solution/service design activities and their deliverables are integrated, where appropriate, into projects and programmes
- K17 Manage
- K17.1 any issues arising from system/solution/service design activities
- K17.2 the 'end to end' logical and physical system/solution/service design for an IT/technology system, service and/or asset
- K17.3 individuals and/or teams producing logical and/or physical design elements of any 'end to end' system/solution/service design
- K17.4 the design efforts of groups and individuals involved in the logical and/or physical design of elements of any 'end to end' IT/technology system/solution/service
- K17.5 changes to business requirements through change control mechanisms during system/solution/service design activities
- K17.6 the alignment of system/solution/service design activities with the business requirements
- K17.7 the alignment of system/solution/service design activities and its deliverables with all relevant legislation, regulations and external standards
- K17.8 the alignment of system/solution/service design activities with other related design activities
- K17.9 the alignment of system/solution/service design activities with analysis deliverables
- K17.10 the alignment of system/solution/service design activities with service objectives and the service strategy
- K17.11 the alignment of system/solution/service design activities with IT/technology architectures
- K17.12 relationships with sponsors, stakeholders and external bodies on matters relating to system/solution/service design activities
- K17.13 the relationships with external providers offering system/solution/service design services
- K18 The fact that the impact of any relevant legislation, regulations and external standards need to be reflected in system/solution/service design activities and their deliverables
- K19 Why
- K19.1 the alignment of system/solution/service design activities and their deliverables with all relevant legislation, regulations and external standards needs to be monitored
- K19.2 the alignment of system/solution/service development activities with system/solution/service design deliverables needs to be monitored
- K19.3 the alignment of system/solution/service design work with other design deliverables needs to be monitored

K19.4 the alignment of system/solution/service design work with analysis deliverables needs to be monitored

**Present system/solution/service designs to others**

*You need to know and understand:*

- K20 Present and review
  - K20.1 review the design of any particular design element as part of the 'end to end' system/solution/service design
  - K20.2 information produced by system/solution/service design activities, particularly information relating to how the proposed IT/technology will function, in an understandable form to a wide range of sponsors, stakeholders and other individuals, in order to confirm understanding and ensure business needs are being met
  - K20.3 information contained in IT/technology architectures and from analysis activities as a result of system/solution/service design activities
  - K20.4 the findings from monitoring the alignment of any 'end to end' system/solution/service design with a range of factors and requirements
  - K20.5 design recommendations for any 'end to end' system/solution/service design
  - K20.6 the quality and effectiveness of system/solution/service design activities and their deliverables
  - K20.7 the quality and effectiveness of external providers of system/solution/service design services
- K21 Document
  - K21.1 actions taken in the event of the deliverables of system/solution/service design not supporting the business requirements
  - K21.2 actions taken in the event of the deliverables of system/solution/service design being incorrect, incomplete or inadequate
  - K21.3 actions taken in the event of the deliverables of system/solution/service design not meeting the service and operational performance needs
  - K21.4 actions may be taken in the event of system/solution/service design activities not aligning with IT/technology architecture deliverables
  - K21.5 best practice in system/solution/service design
  - K21.6 the quality and effectiveness of external providers of system/solution/service design services
- K22 Interpret
  - K22.1 the results gained from monitoring the alignment of system/solution/service design activities and their deliverables with all legislation, regulations and external standards
  - K22.2 the results gained from monitoring the alignment of system/solution/service design activities with related design deliverables and their deliverables
  - K22.3 the results gained from monitoring the alignment of

- system/solution/service design activities with analysis activities and their deliverables
- K23 Provide
  - K23.1 any relevant analysis, design, IT/technology architecture deliverables together with any business and service requirements to any external providers of system/solution/service design services
  - K23.2 logical and physical system/solution/service designs to other internal and external individuals and/or organisations for review and sign off
- K24 Communicate
  - K24.1 with sponsors, stakeholders and external bodies on matters relating to system/solution/service design activities
  - K24.2 with individuals, groups and organisations involved in other related design and development activities
- K25 The importance of
  - K25.1 system/solution/service design deliverables being used to update, where appropriate, architecture models and roadmaps
  - K25.2 having a design authority for any 'end to end' system/solution/service design
  - K25.3 role of system/solution/service design activities and their deliverables in representing the holistic 'end to end' design of IT/technology systems, services and assets to meet the business needs
  - K25.4 and value of system/solution/service design deliverables in informing and directing IT/technology development activities
  - K25.5 ensuring that the translation of a logical into physical design incorporates 'real world' factors and constraints, such as security considerations
  - K25.6 ensuring the integrity of any 'end to end' system/solution/service design
  - K25.7 physical system/solution/service design deliverables specifying precisely how the IT/ technology system, service and/or asset should be structured and operate
  - K25.8 the value of system/solution/service design activities in informing and directing the development, use or reuse of any IT/technology systems. services and/or assets that will be used to provide a solution
  - K25.9 presenting information produced by system/solution/service design activities, particularly information relating to how the proposed IT/technology system, service and/or asset will function, in an understandable form to a wide range of sponsors, stakeholders and other individuals, in order to confirm understanding and ensure meets are being met
  - K25.10 explaining, discussing, negotiating and agreeing how the IT/technology system, service and/or asset will function with sponsors and stakeholders during system/solution/service design activities
  - K25.11 securing sign off to the physical system/solution/service design prior to

development activities commencing

K25.12 integrating system/solution/service design activities into projects and programmes, as appropriate

K25.13 managing relationships with sponsors, stakeholders and external bodies on matters relating to system/solution/service design

K25.14 communicating effectively with stakeholders and sponsors during system/solution/service design activities

K25.15 using appropriately skilled individuals, groups and bodies in any system/solution/service design activities

ESKITP4075

## Systems Design Level 5 Role

---

**Developed by** e-skills UK

---

**Version number** 1

---

**Date approved** September 2009

---

**Indicative review date** March 2014

---

**Validity** Current

---

**Status** Original

---

**Originating organisation** e-skills UK

---

**Original URN** 4075

---

**Relevant occupations** Business Analyst; Information and Communication Technology

---

**Suite** IT and Telecoms

---

**Key words** Logical design; Physical design; Requirements specification