

BCS PRACTITIONER CERTIFICATE IN ENTERPRISE AND SOLUTION ARCHITECTURE

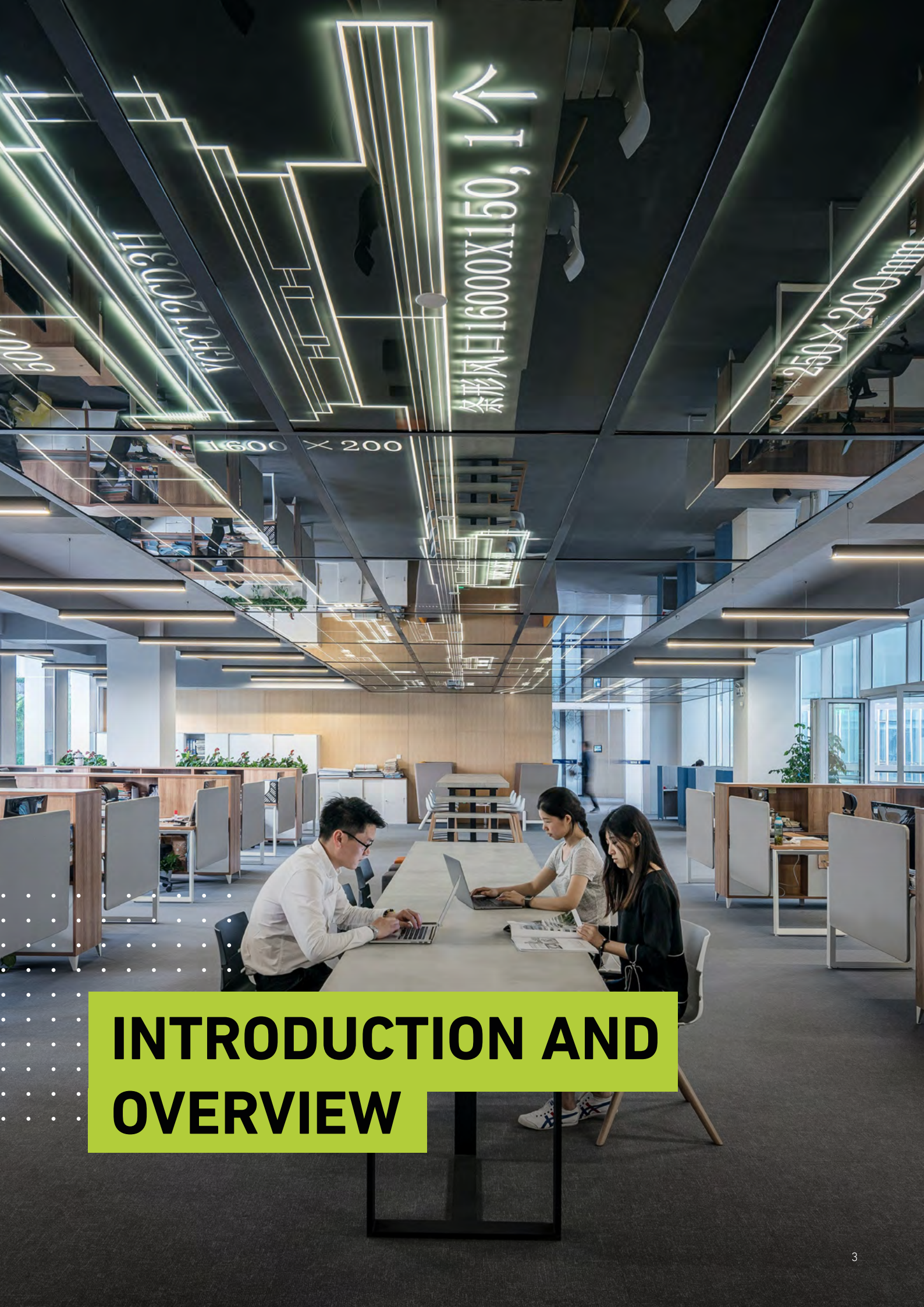
SYLLABUS

This professional certification is not regulated by the following United Kingdom Regulators - Ofqual, Qualifications Wales, CCEA or SQA.



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INTRODUCTION AND OVERVIEW

INTRODUCTION

What is architecture?

The Practitioner Certificate in Enterprise and Solution Architecture will give candidates an in-depth understanding of the role of architecture in an organisation, including key frameworks, lifecycles, artefacts and activities required of successful architecture.



LEARNING OUTCOMES

Upon completion of this certificate, candidates will be able to demonstrate a practical understanding of:

- The roles and relationships between architecture levels and domains.
- The required skills and professional behaviours of an architect.
- Tools, frameworks and artefacts used in architecture.
- Implementing and upholding governance and quality assurance.

QUALIFICATION SUITABILITY AND OVERVIEW

Centres must ensure that learners have the potential and opportunity to gain the qualification successfully. Candidates must have passed the BCS Foundation Certificate in Architecture Concepts and Domains, or have a current TOGAF 9 or current TOGAF 10 level 2 certificate. It is also advised that candidates hold a minimum of 3 years' experience in an architecture role. The candidate should also have good standard of written English and Maths.

This qualification is suitable for candidates who are looking to progress their career within a solution architecture role.

Candidates can study for this certificate by attending a training course provided by a BCS accredited training provider.

TOTAL QUALIFICATION TIME	GUIDED LEARNING HOURS	INDEPENDENT LEARNING	ASSESSMENT TIME
29 hours	18 hours	10 hours	50 minutes



TRAINER CRITERIA



It is recommended that to deliver this certification effectively, trainers should possess:

- The BCS Practitioner Certificate in Enterprise and Solution Architecture.
- A minimum of 2 years' training experience or 1 year with a recognised qualification.
- A minimum of 3 years' practical experience in the area of IT architecture.

SFIA LEVELS

This award provides candidates with the level of knowledge highlighted within the table, enabling them to develop the skills to operate successfully at the levels of responsibility indicated.

LEVEL	LEVELS OF KNOWLEDGE	LEVELS OF SKILLS AND RESPONSIBILITY (SFIA)
K7		Set strategy, inspire and mobilise
K6	Evaluate	Initiate and influence
K5	Synthesise	Ensure and advise
K4	Analyse	Enable
K3	Apply	Apply
K2	Understand	Assist
K1	Remember	Follow

For further information regarding the SFIA Levels
www.bcs.org/levels

SFIAPLUS

This syllabus has been linked to the SFIA knowledge skills and behaviours required at level 4 for an individual working in architecture.

ARCH4KSC38

The business environment relating to own sphere of work (own organisation and/or closely associated organisations, such as customers, suppliers, partners and competitors), in particular those aspects of the business that the specialism is to support (i.e. localised organisational awareness from a technical perspective).

ARCH4KSC21

Knowledge of the IT/IS infrastructure and the IT applications and service processes used within own organisation, including those associated with sustainability and efficiency.

ARCH4KSC39

The IT environment relating to own sphere of work (own organisation and/or closely associated organisations, such as customers, suppliers, partners), in particular own organisation's technical platforms and those that interface to them through the specialism, including those in closely-related organisations.

STPL5KSB05

Keeping organisational objectives and strategies in mind, and ensuring courses of action are aligned with the strategic context.

STPL5KSC04

Applying techniques that help investigating, analysing, modelling and recording a business area or system of interest.



SYLLABUS

1. ARCHITECTURE DOMAINS AND FRAMEWORKS (15%) K4

1.1 Discuss the role of architecture in an organisation.

Indicative content

- a. Definition "fundamental concepts or properties of a system in its environment embodied in its elements, relationships, and in the principles of its design and evolution" ISO 42010.
- b. The need for architecture.
- c. Drivers for architecture:
 - Strategic change.
 - Problem solving.
 - Legal requirements.
- d. Purpose and scope of own role.

Guidance

Candidates should discuss what architecture is, and the reason it is required in organisations. The drivers for architecture may be both internal and external, and candidates should be able to describe these drivers and the effect they have on specific domains. Candidates should be able to explain the purpose and scope of the role of an architect, in a given domain.

1.2 Discuss the different architecture domains and the relationships between them.

Indicative content

- a. Architecture domains:
 - Enterprise.
 - Business.
 - Applications.
 - Solution.
 - Software.
 - Infrastructure.
 - Data.
 - Security.
- b. Key activities and artefacts in each domain area.
- c. Dependencies between domains.

Guidance

Candidates should discuss the role of each architecture domain and the dependencies and relationships between them. The main activities and purpose of each domain should be considered, as well as the role each plays in the organisation.

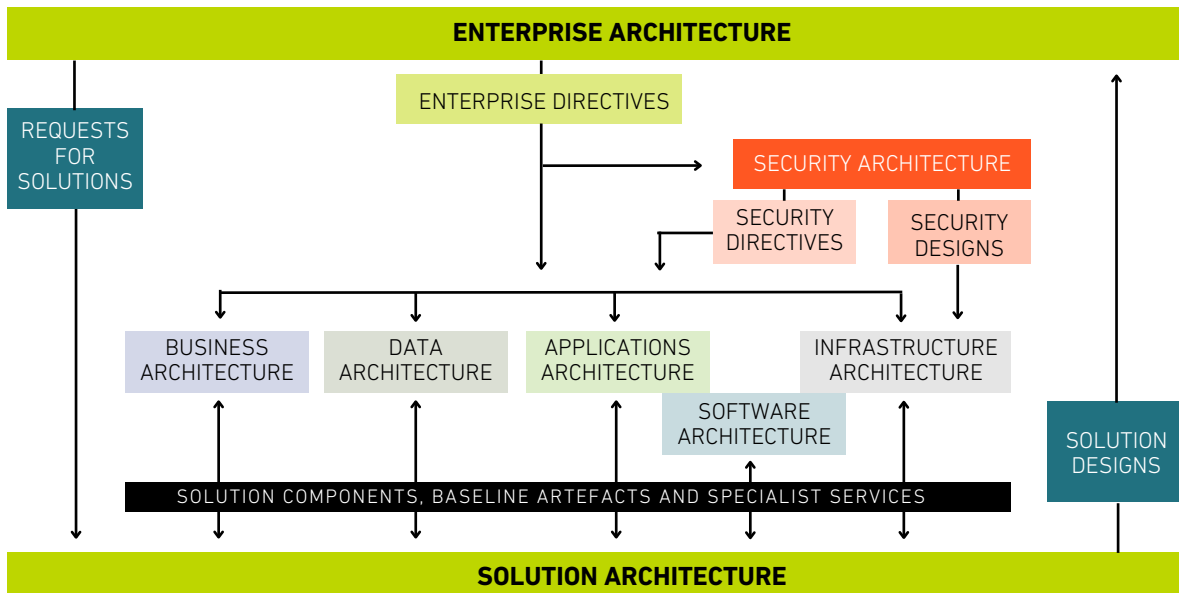


Figure 1 - Solution architecture in the context of other architectures

1.3 Discuss the key architecture frameworks.

Indicative content

- a. Architecture frameworks:
 - Zachman Framework.
 - The Open Group Architecture Framework (TOGAF).
 - NATO Architectural Framework (NAF).
 - C4 Model.
- b. Security frameworks:
 - The Cyber Security Body of Knowledge (CyBOK).
 - Sherwood Applied Business Security Architecture (SABSA).

Guidance

Candidates must be able to discuss the architecture and security frameworks on this list only. Candidates should be able to describe the application of these frameworks and how they impact architecture activity.

1.4 Discuss how industry standards are relevant to architecture.

Indicative content

- a. ISO standards:
 - ISO 42010 (Systems and software engineering – architecture description).
 - ISO 9241-11 (Ergonomics of human system interaction).
 - ISO 27000 series (Information security management systems).
 - ISO 15704 (Enterprise modelling and architecture).
 - ISO 14000 series (Environmental management).
 - ISO 25000 series (System and software quality requirements and evaluation).
 - ISO 38500 (Corporate governance of IT).
- b. Relevant bodies of knowledge:
 - Data Management Body of Knowledge (DMBOK).
 - Business Architecture Body of Knowledge (BIZBOK).
 - Business Architecture Technology Body of Knowledge (BTABoK).
- c. National Institute of Standards and Technology Cyber Security Framework (NIST).
- d. National Cyber Security Centre (NCSC) CYBOK.

Guidance

Candidates must be able to discuss the industry standards on this list only. Candidates shall give examples of how these standards are considered as guidance for ways of working, how they are applied in practice and the impact they have on architecture activities.



2. ARCHITECTURE AND THE ORGANISATION (15%) K4

2.1 Explain the role of architecture to other business areas.

Indicative content

- Organisation's mission, vision and purpose.
- Organisational strategy.
- Organisational structure.
- Other business functions:
 - IT.
 - People.
 - Ops.
 - Finance.

Guidance

Candidates should demonstrate their understanding of a business situation, linking it to the organisation's strategy, mission, vision and purpose. They shall discuss the structure of the organisation and describe the relationship between architecture and other business areas.

2.2 Discuss use of the business change lifecycle as an input for architecture.

Indicative content

- Practical example of the lifecycle in use.

Guidance

Candidates should discuss the stages of the business change lifecycle and relate them to a given business situation.

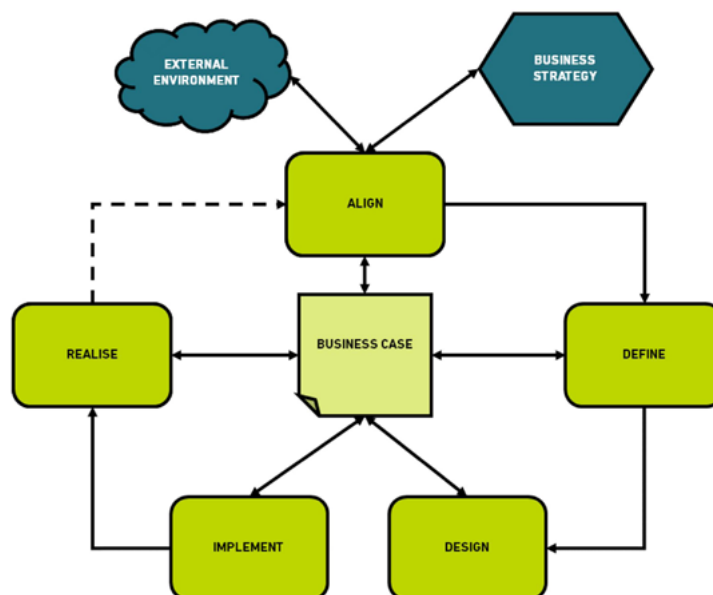


Figure 2 - The life cycle for business change

2.3 Discuss the business needs and the intended solution.

Indicative content

- a. Problem statement.
- b. Directive hierarchy.
 - Principles, policies, business rules.
- c. Target solution hierarchy.
 - Solution outline, blueprint, to be built.
- d. High level design.

Guidance

Candidates should discuss how the business needs have been established and considered when planning a solution, and how these are demonstrated in the high level design. The need to understand a problem statement, alongside the consideration of organisational principles, policies and business rules should be explained.



BUSINESS ARCHITECTURE

"BUSINESS ARCHITECTURE IS ABOUT ANALYSING
THE BUSINESS AND MAKING CHANGES TO
BRING ABOUT A TARGETED AND SUSTAINABLE
IMPROVEMENT. "

**SOLUTION ARCHITECTURE FOUNDATIONS
(MARK LOVATT, BCS, 2021)**

3. PROFESSIONALISM IN ARCHITECTURE (20%) K4

3.1 Discuss compliance with professional standards.

Indicative content

- a. BCS Code of Conduct.
- b. Digital, Data and Technology Profession Capability Framework (DDaT).
- c. Skills Framework for the Information Age (SFIA+).

Guidance

Candidates should discuss specific actions they can take to comply with the professional standards listed.

3.2 Discuss types of stakeholders.

Indicative content

- a. Stakeholder categories and management strategies.
- b. Technical and non-technical roles.
- c. Stakeholder communication plan.

Guidance

Candidates should describe the various stakeholders involved in a given project and identify potential ways to manage and work alongside them. Candidates shall identify the adjustments required to their own ways of working when communicating with technical versus non-technical stakeholders.

3.3 Explain specific stakeholder needs.

Indicative content

- a. Views and viewpoints.
- b. Conflicting requirements.

Guidance

To address specific stakeholder concerns, viewpoints can be used to demonstrate the behaviour of certain parts of a solution that are of particular interest. Candidates should describe how different stakeholders may have conflicting ideas of requirements and how to address these.

3.4 Discuss how to influence others.

Indicative content

- a. Recognise the limits of own authority.
- b. Contribute to business decision making.
- c. Influencing outside of normal reporting lines.
- d. Being a subject matter expert.

Guidance

Candidates should discuss the ways in which an architect must influence others, including using their own subject knowledge and expertise to advise senior staff outside of the normal hierarchy. Candidates shall discuss their understanding of when to seek help or escalate an issue which is beyond the limits of their authority.

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3.5 Apply a practical customer focus.

Indicative content

- a. Identifying the customer needs.
 - Use case diagrams.
 - User stories.
- b. UX/UI.
- c. Accessibility.
- d. Metrics of customer satisfaction.

Guidance

Candidates should explain steps and actions that can be taken to show a commitment to the customer throughout design and development of a solution. Candidates shall describe tools and metrics that can be used to measure the success of a solution and the level of customer satisfaction.

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3.6 Discuss the roles and dynamics of a successful team.

Indicative content

- a. Agile roles.
- b. Belbin's team roles.
- c. High performing teams.

Guidance

Candidates should discuss the key roles within Agile, and the characteristics of high performing teams. Candidates shall be able to categorise team members using Belbin's team role descriptions.

3.7 Discuss social, ethical and economic concerns to the role of an architect.

Indicative content

- a. Ethics.
- b. Green IT.
- c. Corporate social responsibility.
- d. Sustainable design.
- e. Inclusive and accessible design.

Guidance

Candidates should discuss the practical steps that can be taken to demonstrate consideration of social, ethical and economic issues in architecture. The importance of inclusive and accessible design should be explored with examples given of how this is implemented.



4. CORPORATE GOVERNANCE (10%) K4

4.1 Explain corporate governance and the impact it has on the role of an architect.

Indicative content

- a. "Governance means controlling activity and decision making to ensure that the change delivered matches the specification agreed with the business.... through the use of processes and organisational structures".
- b. Different levels of governance between enterprise and solution.
- c. Policy.
- d. Processes.
- e. Risks of non-compliance.

Guidance

Candidates should demonstrate their understanding of corporate governance, and the direct impact it has on the role of an architect. The need for consideration of and compliance with various policies and processes should be discussed, as well as the potential impact of non-compliance.

4.2 Discuss key architecture governance concepts, roles and artefacts.

Indicative content

- a. Concepts:
 - Conformance level.
 - Compliance level.
 - Dispensation.
- b. Roles:
 - Architecture board.
 - Governing architect.
 - Design authority.
- c. Artefacts:
 - Compliance review.
 - Compliance checklist.
 - Capability maturity model.

Guidance

Candidates should discuss the application and use of the key concepts in architecture governance, and their purpose. The role of the architecture board and the accountability of the governing architect should be related to an organisational context.

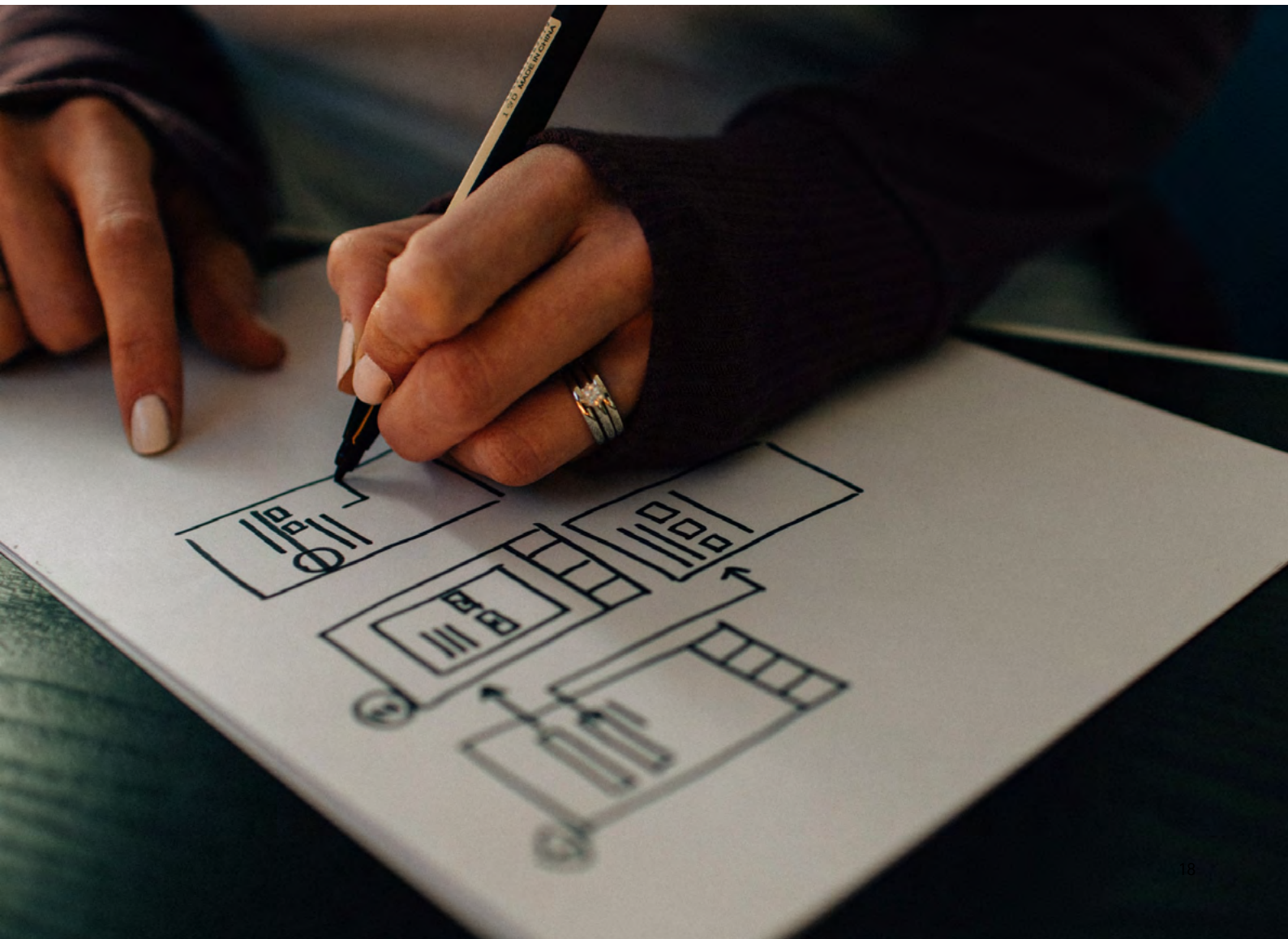
4.3 Explain the importance of risk management to the role of an architect.

Indicative content

- a. Risk appetite.
- b. Documenting risk.

Guidance

Candidates should discuss the importance of understanding the organisation's risk appetite and the need for documentation to record any risks that have been identified and mitigations which have been implemented.



5. ARCHITECTURAL PROCESS, TOOLS AND VISION (25%) K4

5.1 Discuss the practical application of the solution architecture framework.

Indicative content

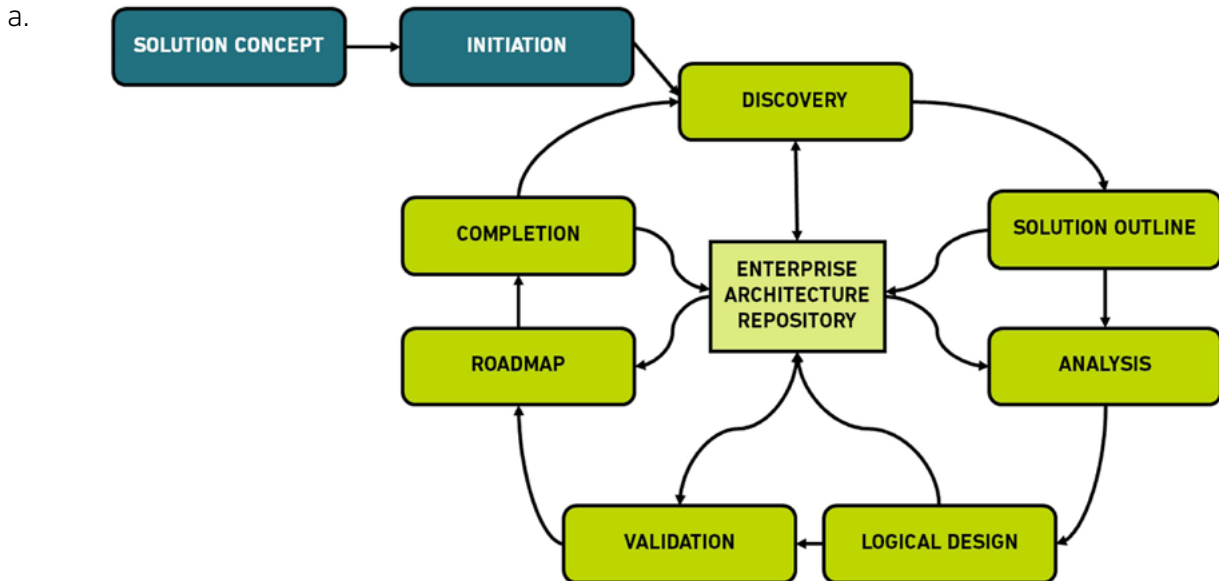


Figure 3 - Framework for solution architecture

Guidance

Candidates should describe the stages of the solution architecture framework, the key artefacts and activities of the architect at each stage.

5.2 Discuss three varieties of the Software Development Lifecycle (SDLC).

Indicative content

- Waterfall.
- Iterative.
- Agile.

Guidance

Candidates should discuss the practical application of each of the three varieties of the SDLC. Candidates should be able to critically compare the suitability of each lifecycle to a given scenario.

5.3 Discuss the design of a target solution architecture.

Indicative content

- a. Options evaluation.
- b. Trade off analysis.
- c. Modelling.
- d. Design patterns:
 - Data design patterns.
 - Enterprise integration patterns.
 - Business model patterns.
 - Application integration patterns.
 - Technology solution patterns.

Guidance

Candidates should discuss the activities undertaken by the architect during design, including how to analyse the possible options and suitability of design patterns.

5.4 Discuss the use of common architecture models.

Indicative content

- a. Business model.
- b. Business motivation model.
- c. Capability map.
- d. Value stream map.
- e. Functional decomposition.
- f. Business process models.

Guidance

Candidates should discuss the purpose and application and desired output of the common architecture models listed. Candidates shall consider their suitability for use in a given scenario.

5.5 Discuss the use of common information systems modelling techniques.

Indicative content

- a. Process models.
- b. Data models.
- c. Context diagrams.
- d. Use case diagrams.
- e. Data flow diagrams.
- f. Interaction/sequence diagrams.

Guidance

Candidates should discuss the purpose and use of modelling techniques as listed. Candidates shall consider the applicability of each technique to a given scenario.

5.6 Explain different types of business requirements.

Indicative content

- a. Types of requirements:
 - Business and IT strategy.
 - Corporate governance.
 - Enterprise architecture.
 - Technical requirements.
 - General business requirements
 - Stakeholders.
 - Functional requirements.
 - Non-functional requirements (NFRs).
 - Constraints.
- b. Quality and characteristics of requirements.
- c. INVEST:
 - Independent.
 - Negotiable.
 - Valuable.
 - Estimatable.
 - Small.
 - Testable.

Guidance

Candidates should discuss the different types of requirements, their origins and how to ensure quality.

5.7 Explain a method of preparing a gap analysis.

Indicative content

- a. Architecture descriptions.
- b. The purpose of a gap analysis.
- c. Grid method.
- d. Table method.
- e. Graph method.
- f. Gap report.
- g. Gap models.

Guidance

Gap analysis can be applied to identify differences, required improvements and planned growth between a current and desired state, or between two or more architecture descriptions. Candidates should discuss how to prepare a gap analysis, through the use of various tools and techniques.

5.8 Discuss a business case for presentation.

Indicative content

- a. The contents of a business case.
- b. Cost benefit analysis, ROI, risk assessment, gap analysis.
- c. Presenting information to non-technical stakeholders.

Guidance

Candidates should discuss the role of the architect in preparing the contents of a business case, including the artefacts and information required and the most suitable methods for presentation.



6. QUALITY ASSURANCE (15%) K4

6.1 Discuss the use of a range of quality assurance tools or techniques.

Indicative content

- a. Delivery roadmap.
- b. Comparison to Service Level Agreement (SLA).
- c. Comparison against requirements.
- d. Technical walkthroughs.

Guidance

Candidates should discuss the use of the tools listed as means of assuring the quality of a solution. Requirements, SLA and delivery roadmap can be used to compare the solution being delivered to the needs and expectations of stakeholders, and technical walkthroughs can identify any quality issues.

6.2 Discuss the principle of Separation of Concerns (SoC)

Indicative content

- a. Resource access layer.
- b. Business layer.
- c. Presentation layer.
- d. Vertical separation into client-server layers.
- e. Horizontal separation of loosely-coupled features.

Guidance

Candidates should discuss the use of separation of concerns - either by layer or by feature - and explain how it uses the software development principles of "single responsibility" and "cohesive responsibilities" to ensure the intended solution is both logical and easy to maintain.

6.3 Explain change management tools and processes.

Indicative content

- a. Baseline configuration.
- b. Configuration item.
- c. Change management.
- d. Change control.
- e. Request for change.
- f. Impact analysis.
- g. Configuration management.
- h. Version control.
- i. Risks of non-compliance.

Guidance

Candidates should discuss the purpose and practical application of configuration and version, change control and management. The need for change and how this is requested, implemented and documented should be explained, as well as the risks of non-compliance or the absence of control measures.

6.4 Discuss opportunities for continuous improvement.

Indicative content

- a. Plan, do, check, act.
- b. Improving efficiency.

Guidance

Candidates should explain the purpose and concept of continuous improvement and the practical steps that are taken to implement these ideas in architecture.

CHANGE CONTROL & MANAGEMENT

"IDEALLY FORMAL CHANGE CONTROL
PROCEDURES SHOULD BE IN PLACE FOR ALL
SOLUTIONS"

**SOLUTION ARCHITECTURE FOUNDATIONS
(MARK LOVATT, BCS, 2021)**

EXAMINATION FORMAT

This certificate is assessed through an online interview.

Adjustments and/or additional time can be requested in line with the [BCS reasonable adjustments policy](#) for candidates with a disability or other special considerations, including English as a second language.

TYPE

INTERVIEW WITH
SCENARIO-BASED
QUESTIONING

DURATION

50 MINUTES

SUPERVISED

YES
THIS CERTIFICATE
WILL BE SUPERVISED

OPEN BOOK

NO
(NO MATERIALS CAN
BE TAKEN INTO THE
EXAMINATION ROOM)

PASSMARK

65%

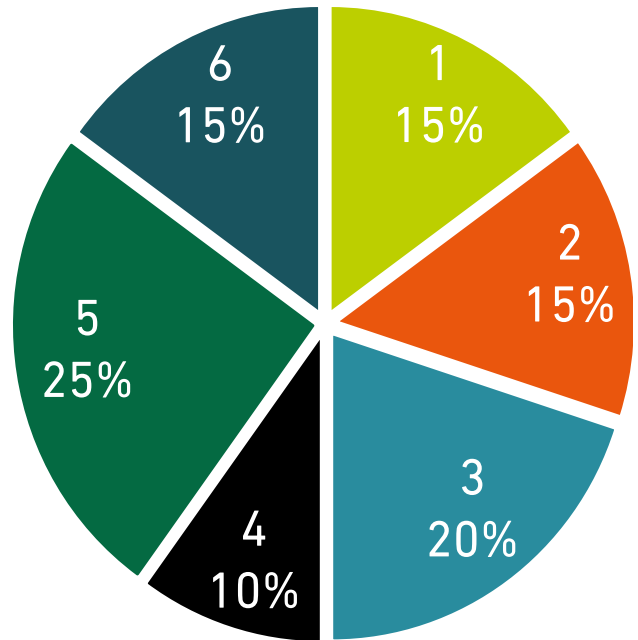
DELIVERY

ONLINE

QUESTION WEIGHTING

Each primary subject heading in this syllabus is assigned a percentage weighting. The purpose of this is:

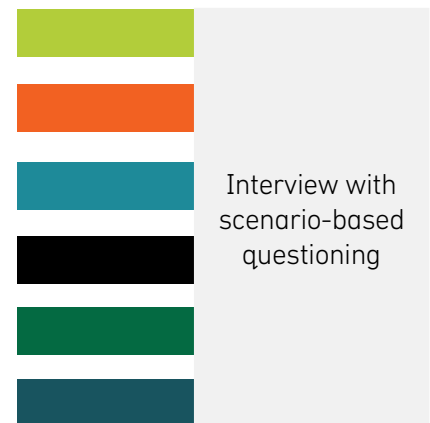
- Guidance on the proportion of content allocated to each topic area of an accredited course.
- Guidance on the proportion of questions in the exam.



Syllabus Area

- 1** Architecture Domains and Frameworks
- 2** Architecture and the Organisation
- 3** Professionalism in Architecture
- 4** Corporate Governance
- 5** Architectural Process, Tools and Vision
- 6** Quality Assurance

Question Type



RECOMMENDED READING

The following titles are suggested reading for anyone undertaking this award. Candidates should be encouraged to explore other available sources.

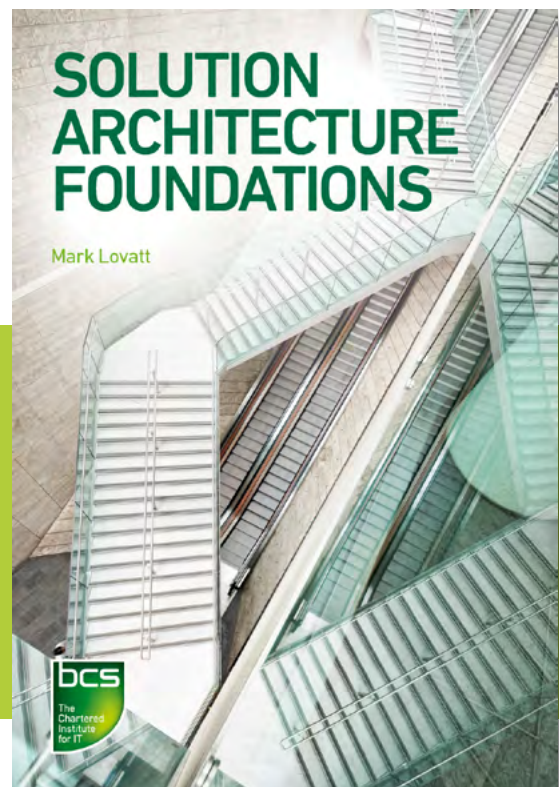
TITLE: Solution Architecture Foundations

AUTHOR: Mark Lovatt

PUBLISHER: BCS

PUBLICATION DATE: 2021

ISBN: 978-1-78017-5676



USING BCS BOOKS

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DOCUMENT CHANGE HISTORY

Any changes made to the syllabus shall be clearly documented with a change history log. This shall include the latest version number, date of the amendment and changes made. The purpose is to identify quickly what changes have been made.

VERSION NUMBER	CHANGES MADE
Version 5.0 (May 2023)	Major refresh. Format, examination format, topic areas, learning objectives.
Version 4.5 (Apr 2017)	Updated to standardised template format with revised ToC. K levels added.
Version 4.4 (Dec 2016)	Strapeline regarding regulated statement added.
Version 4.3 (Mar 2015)	Updated language requirements for additional time and use of dictionaries. Format of syllabus changed to new format. Standardised trainer requirements.
Version 4.2 (Oct 2013)	Trainer requirements added to show minimum pass rate.
Version 4.1 (July 2012)	Updated reasonable adjustments to include English as a Second Language.
Version 4.0 (Jan 2012)	Updated pre-requisites for Practitioner entry level. Removed reference to ISEB. Updated BCS logos.
Version 3.0 (Oct 2010)	Data Classification updated. Passrate changed from 24/40 to 26/40. Removed distinction category. Added change log.
Version 2.0 (July 2010)	Trainer criteria added for new trainers. This is not a retrospective requirements. Effective July 2010
Version 1.1 (Jan 2010)	Document Signed off and approved.

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