



BCS Practitioner Certificate in Requirements Engineering Courseware



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Objectives

Develop an understanding of:

- How to collaborate with stakeholders to ensure requirements align with business objectives.
- Eliciting different types of requirements and the associated documentation.
- How to analyse and validate requirements.
- How to ensure and manage requirement quality and change.

SFIA

KSB04	Identifying gaps in the available information required to understand a problem or situation and devising a means of resolving them.
KSB12	Understanding commercial considerations and ensuring alignment with them when making decisions or recommending actions.
KSB22	Establishing relationships, contributing to an open culture and maintaining contacts with people from a variety of backgrounds and disciplines. Effective, approachable and sensitive communicator in different communities and cultures. Ability to adapt style and approach to meet the needs of different audiences.
KSC04	Applying techniques which help investigating, analysing, modelling and recording a business area or system of interest. Example, but not limited to: business environment analysis and process modelling.
KSC09	Using tools (manual or automated) to record the structure, relationships and use of information within an organisation. Examples, but not limited to class diagram and relational data model.
KSC84	Understanding and application of different development approaches e.g. iterative/ incremental methodologies (Agile, XP, TDD, SCRUM) or traditional sequential methodologies (Waterfall or V-Model) and their energy and resource footprints. Irrespective of development methodology a DevOps approach may also be taken where development and operational staff work collaboratively.
KSD04	The selection and application of information elicitation methods, tools and techniques which are appropriate to the information required and the sources available. Examples, but not limited to: focus groups and surveys/questionnaires.

Syllabus Key Topics

Syllabus Area	Syllabus Weighting	Question type
1. Define Requirements Approach and Project Scope	5%	Multiple choice and multiple response.
2. Elicit Requirements	15%	Multiple choice and multiple response.
3. Record Requirements	10%	Multiple choice and multiple response.
4. Build Models and Prototypes to Represent the Requirements	20%	Multiple choice and multiple response.
5. Collaborate and Communicate with Stakeholders to Clarify Requirements	7.5%	Multiple choice and multiple response.
6. Analyse, Prioritise and Assure the Quality of Requirements	20%	Multiple choice and multiple response.
7. Conduct User Analysis and Profiling	7.5%	Multiple choice and multiple response.
8. Requirements Management and Traceability	15%	Multiple choice and multiple response.



Syllabus

- 1.1 Define the term “Requirements”.**
- 1.2 Describe the Requirements Engineering Framework.**
- 1.3 Explain factors to be considered in adapting the approach to requirements engineering.**
- 1.4 Describe the contents of a project initiation document (PID)/terms of reference (ToR)**

- 2.1 Explain different knowledge types.**
- 2.2 Identify a technique to articulate tacit knowledge.**
- 2.3 Explain the use, advantages and disadvantages of elicitation techniques.**
- 2.4 Identify an appropriate technique to elicit requirements.**
- 2.5 Discuss the suitability of elicitation techniques for agile and linear development approaches.**

- 3.1 Identify and describe the categories of requirement.**
- 3.2 Explain the importance of documentation.**
- 3.3 Identify the key documentation styles.**
- 3.4 Explain the characteristics documented for requirements in a requirements catalogue.**
- 3.5 Explain the key underlying principles and standard format of a user story .**

- 4.1 Explain the rationale for modelling the functional requirements (processing and data) of an information system.**
- 4.2 Describe the purpose of modelling in requirements engineering.**
- 4.3 Prepare a UML use case diagram.**
- 4.4 Prepare a UML Class diagram.**
- 4.5 Explain the use of a CRUD matrix.**
- 4.6 Explain the use of prototyping to elaborate requirements.**



Syllabus

5.1 Describe the responsibilities of the actors (stakeholder roles) in Requirements Engineering

5.2 Describe the purpose of requirements validation.

5.3 Describe the rationale for various approaches to requirements validation.

5.4 Demonstrate how Agile requirements are validated.

5.5 Demonstrate formal requirements validation.

6.1 Explain the purpose of analysing requirements.

6.2 Apply the MoSCoW technique to prioritise requirements.

6.3 Interpret individual requirements; applying filters and quality criteria.

6.4 Identify the purposes of Slicing Requirements (Agile/ Linear).

6.5 Identify techniques used to analyse Business Rules.

6.6 Explain the importance of testability.

7.1 Describe techniques used to analyse roles.

7.2 Explain the purpose of a Customer Journey Map.

8.1 Explain the rationale and the approach to achieving requirements traceability.

8.2 Explain the rationale for requirements management.

8.3 Define the elements of Requirements Management and the links between them.

8.4 Explain the use of a change control process.

8.5 Describe the elements of a version control process.

8.6 Explain the use and advantages of different forms of traceability.



Define Requirements Approach and Project Scope

Key Topic 1



5%



How would you define a 'Requirement'?



BUSINESS ANALYSIS

Fourth edition

Debra Paul and James Cadle

What is a requirement?

BCS 'Business Analysis' 4th Edition definition

- *“A feature that the business users need the new system (business or IT) to provide”*

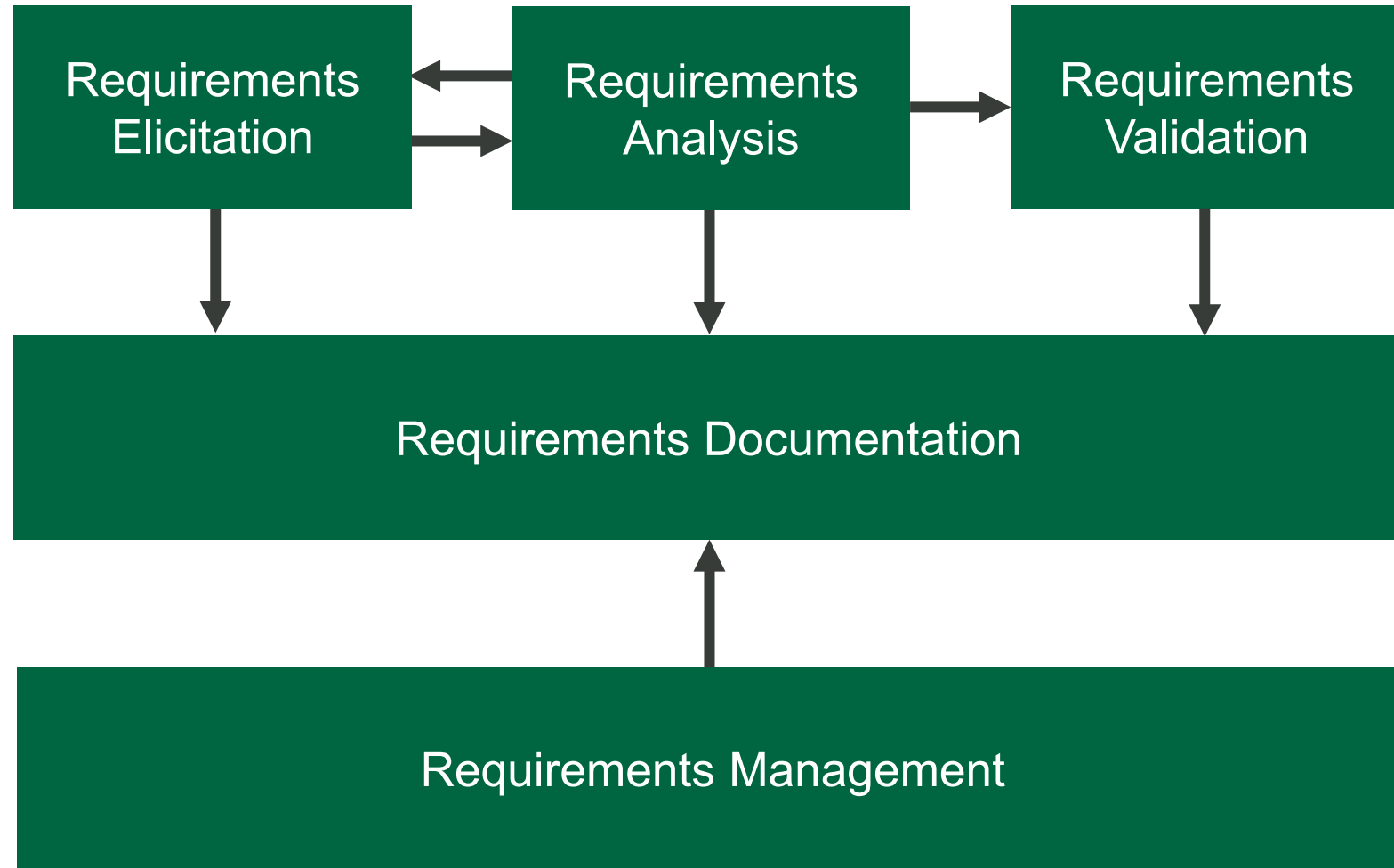
• IEEE (Standard Glossary, 610.12-1990)

- ‘A condition or capability -
 - needed by a user to solve a problem or achieve an objective
 - that must be met by a system or system component to satisfy a contract, standard, specification or other formally imposed document
- A documented representation of a condition or capability’

• Sommerville and Sawyer (1997) suggest

- ‘... a specification of what should be implemented. Descriptions of how the system should behave, or of a system property or attribute. May be a constraint on the development process’.

Requirements Engineering Framework

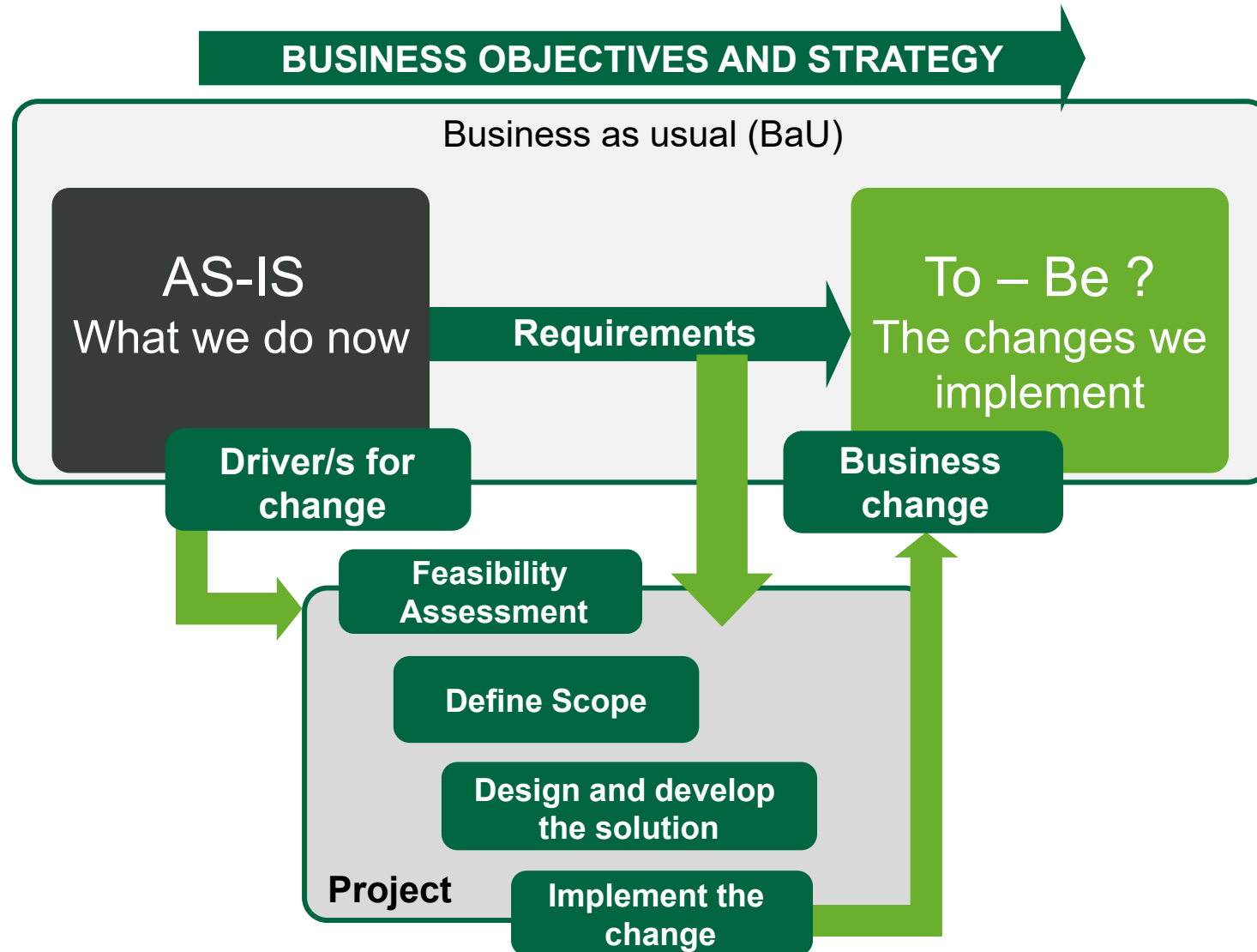




Rationale for Requirements Engineering

- **Requirements Engineering is focused on defining the ideal characteristics of the product(s) or service that will solve a business problem**
- **Whatever solution the business adopts, the change must be measured and tracked through the project and back into Business as Usual**

Requirements and Business as Usual





Origin of Requirements

- **Businesses are constantly changing**
- **Requirements arise due to:**
 - Business changes
 - Operational Changes
 - Business process changes
 - Strategic changes
 - Covered in BAP
 - New business, products, business rules or regulations
 - Opportunities for improvements, enhancements...
- **Requirements support the needs of the business and are fundamental to successful change**

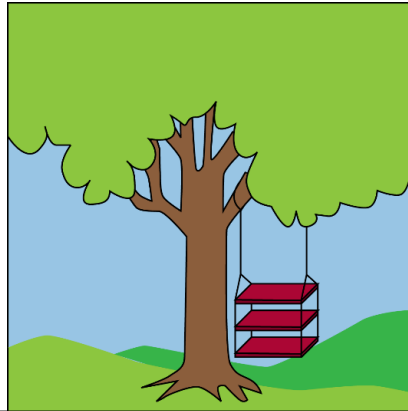


Planning Your Approach

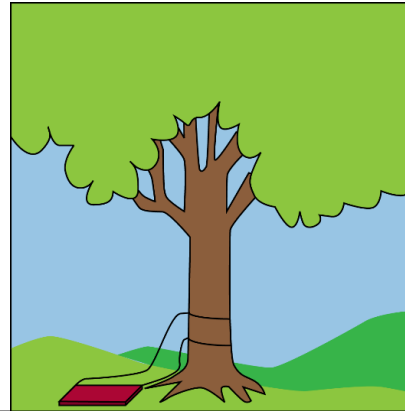
- **Organisational Standards**
- **Project Approach**
- **Types of Requirement**
- **Nature of the Solution**

- **Requirements shall:**
 - *Form the basis of project estimates*
 - *Clarify scope*
 - *Reveal more about the problem, the people, the processes, the business rules*
 - *Rationalise at a task level why the problem needs addressing*
 - *Take time to uncover*

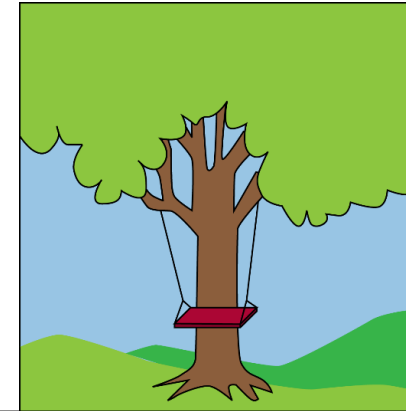
The Importance of Planning



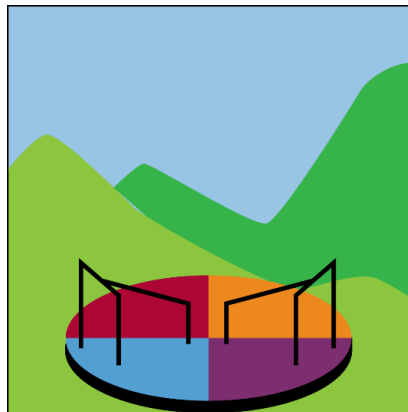
What the users thought they needed



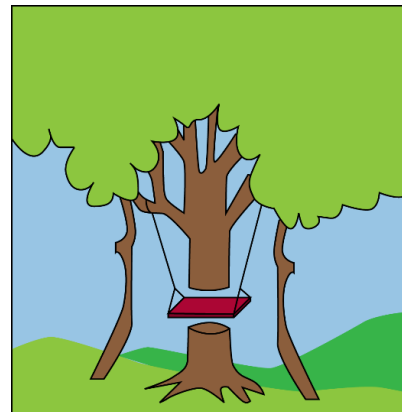
What the analyst understood



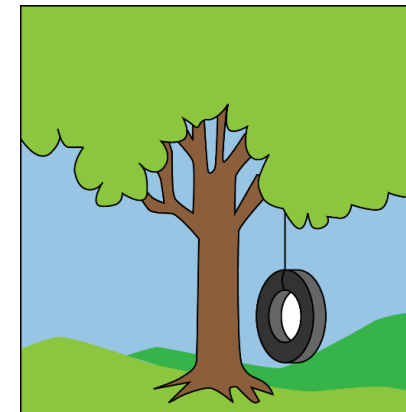
How the designers saw it



One Stakeholder thought it was a...



What solution was implemented



What the solution should have been

Definition of a Project

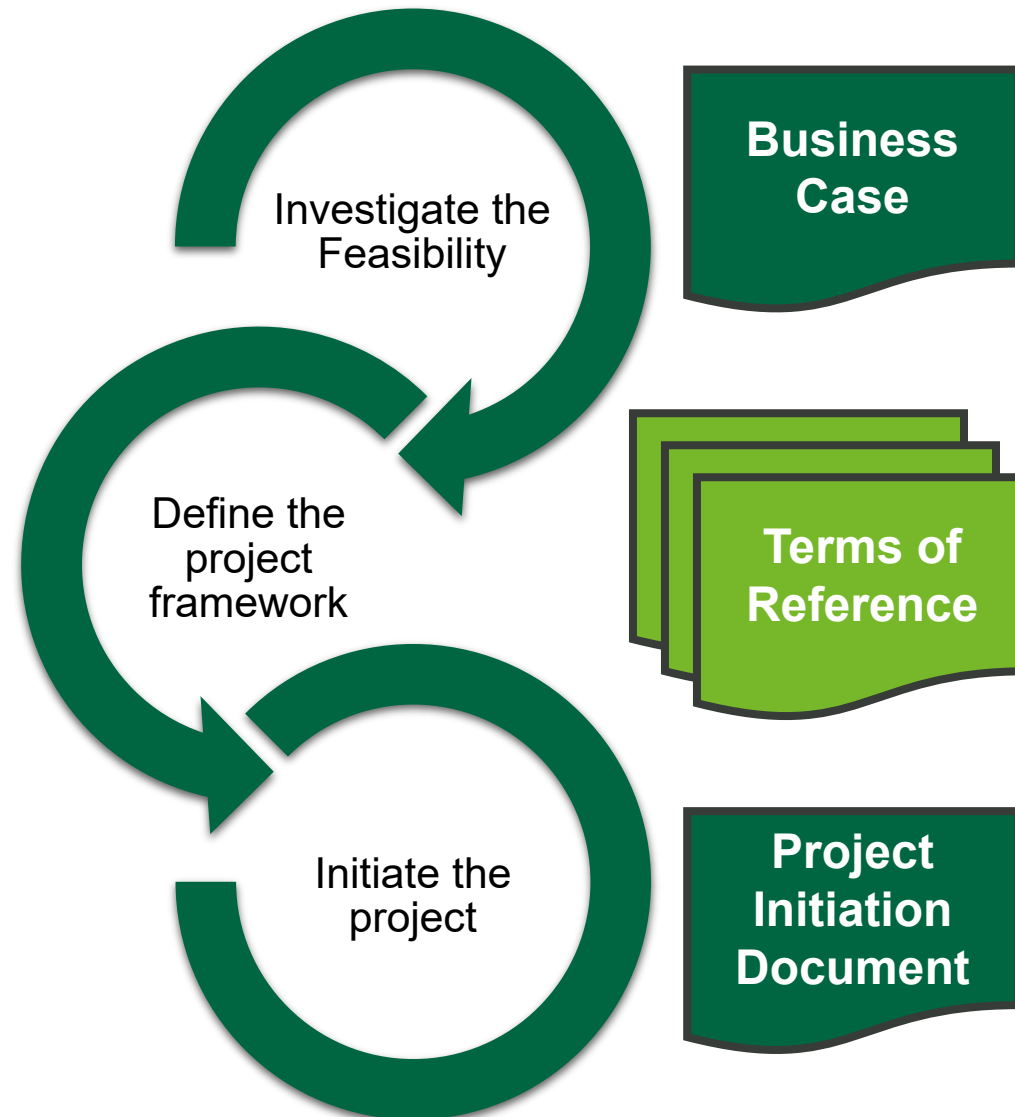
- The ToR/PID documentation help to formalise what shall be done.
- A project...

... is a discrete piece of work with an agreed start and end date.

... consists of a set of coordinated and controlled activities undertaken to deliver a product conforming to specific requirements within the constraints of time, cost and resources.

... exists to deliver products that the business can use to deliver benefits.

Business Inputs to Requirements





The Business Case

- **Usually created by a business representative**
- **Justifies investment**
- **Provides options for resolving the issues**
- **Measures of success**
- **It is important to keep focused on the business case during Requirements Engineering**
 - As stakeholders emerge and understand the issue better
 - As requirements change and evolve
 - As the product evolves
 - As the business (continually) changes
 - As costs, benefits and risks become clearer ...



Terms of Reference (ToR)

- Created by the project team or project team representatives
- A structured way of defining the key components (and time) for a project
- **O**bjectives
- **S**cope
- **C**onstraints
- **A**uthority and Assumptions
- **R**esources



Project Initiation Document (PID)

- **Created and owned by the Project Manager**
- **Project Initiation Document, or PID, is a formal project launch document**
- **Defines**
 - What, Why, Where, Who, How, When ... of the project
 - Basis for management of project
 - Basis for assessment of overall success