

Chapter 10

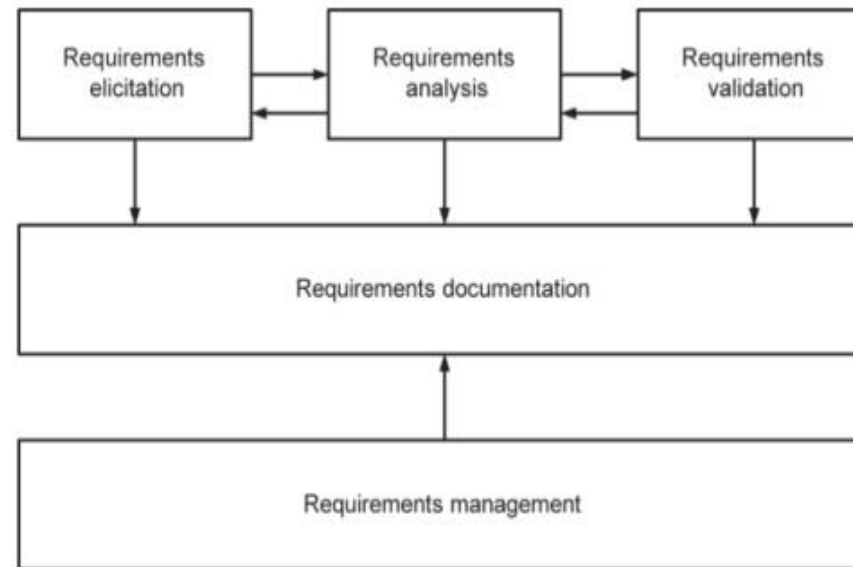
Establishing the requirements

The importance of requirements

- A requirement is a **feature or characteristic that has been requested by a stakeholder** and may form part of a solution.
- Requirements are at the very **heart of business and IT change**

The requirements engineering framework

- The RE framework was developed to help improve the quality of requirements by clarifying the activities to be carried out when defining requirements.



Business Analysis (4th Edition) Figure 10.1

Actors in requirements engineering

An **actor** is an individual or group who fulfils a specific role.

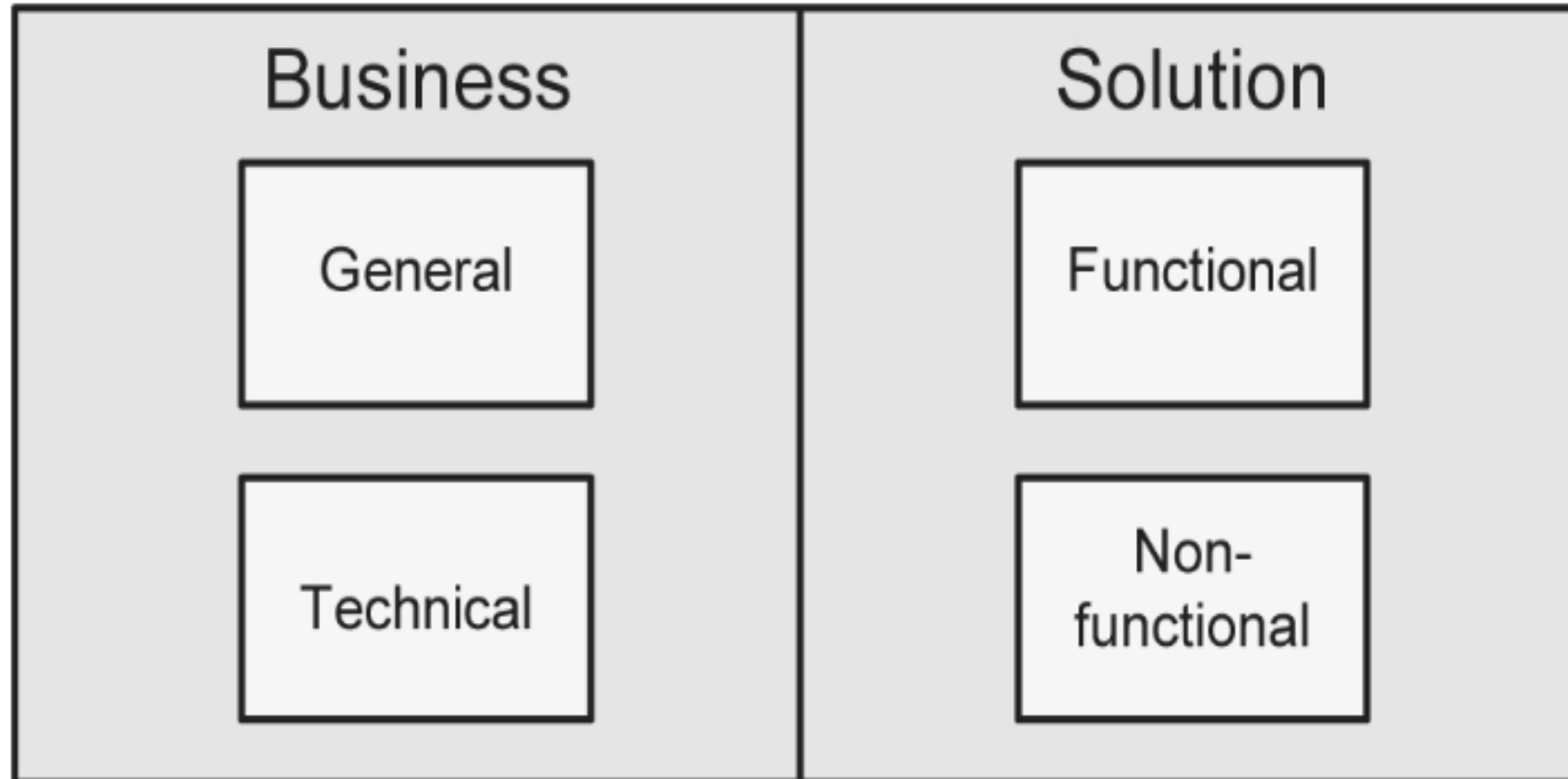
Stakeholder groups include

Business Representatives	Project Team
Project sponsor	Project manager
Product owner	Business analyst
Subject Matter Expert	Developer
Business staff	Software tester

Actors in RE

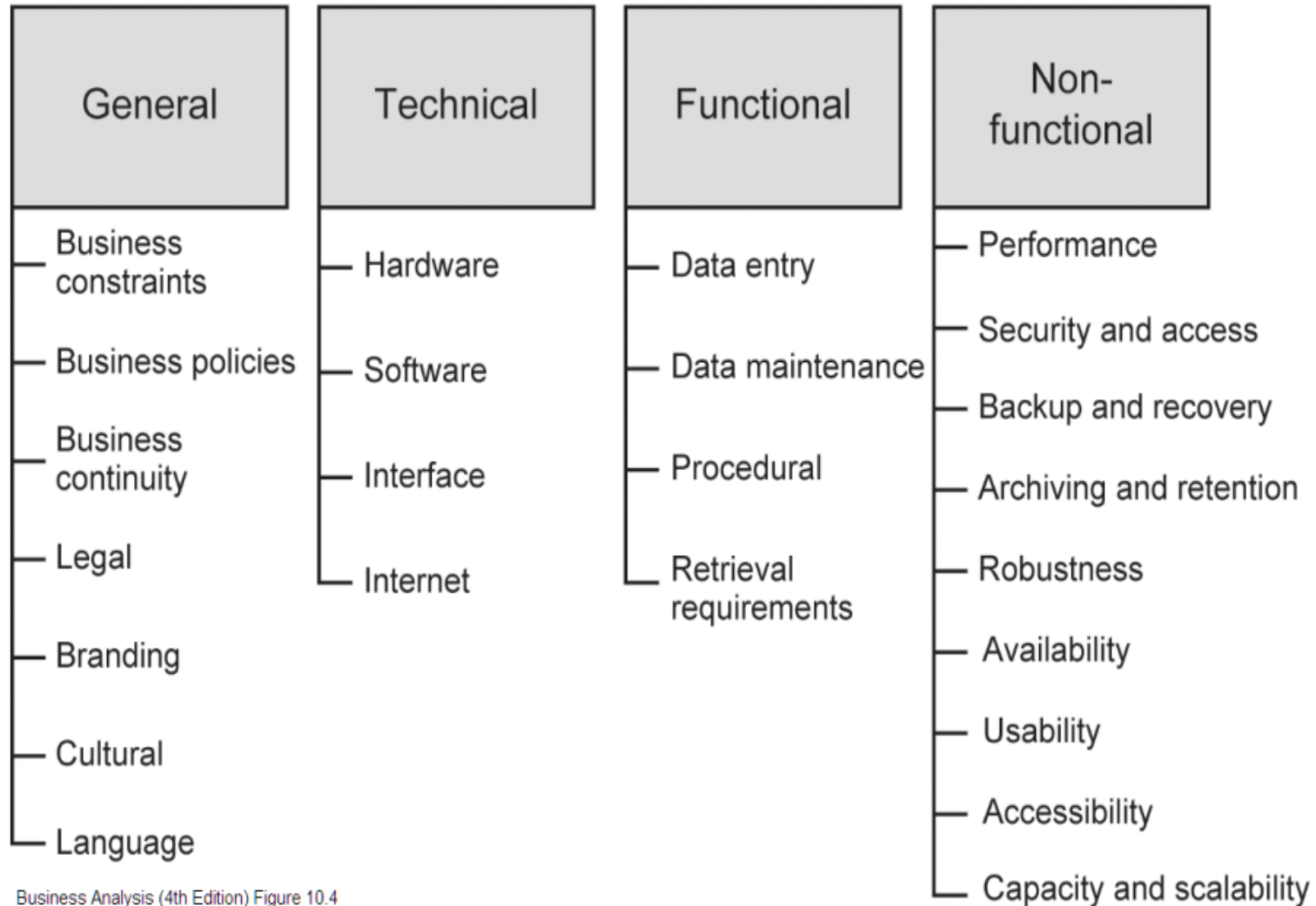
- The project sponsor (or accountable executive) represents the business in ensuring that business objectives are met.
- The product owner is the custodian of the product or solution backlog, the repository of the requirements, and is empowered to make decisions regarding the product development on behalf of the organisation.
- The SME (sometimes known as the domain expert) should have experience and knowledge of industry best practice and bring a breadth of understanding to the RE work.
- Business staff are the individuals or groups who carry out the work of the business so will implement the new business processes and use the new or enhanced software product.
- The project manager has overall responsibility for the project as defined in the Project Initiation Document or Terms of Reference. In particular, the project manager has to ensure that the project objectives are met and the deliverables are produced.
- Business analysts are responsible for carrying out the RE work. They must ensure that the requirements are well-formed and defined, in line with the project approach and standards, and provide a basis for a solution that will help to achieve the business objectives and realise the business benefits.
- The developer creates the software product in line with business requirements.

Types of requirements



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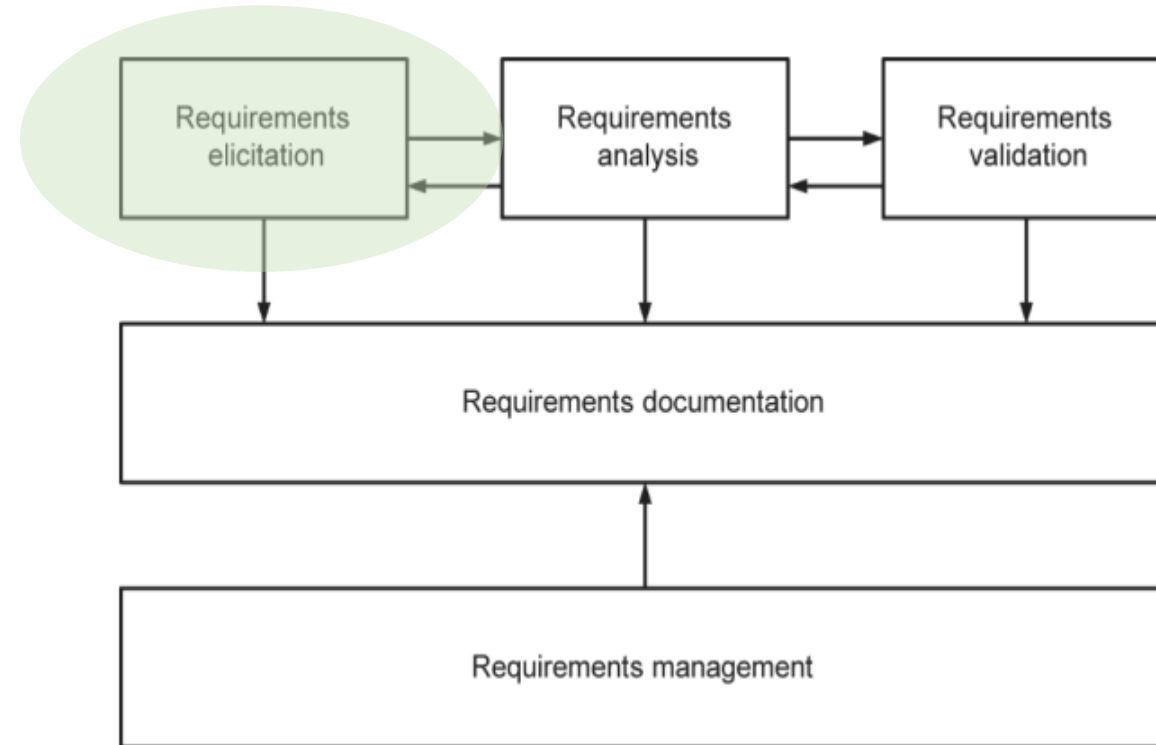
Types of requirements



Business Analysis (4th Edition) Figure 10.4

Requirements elicitation

Requirements elicitation This stage is concerned with drawing out requirements from the stakeholders, in particular those who perform the work of the organisation or are the intended users of the software product.



Business Analysis (4th Edition) Figure 10.1

Requirements elicitation

Techniques that have been shown to be particularly effective in eliciting requirements in a workshop include:

- **Visualisation:** Rich pictures, mind maps
- **Modelling:** Business process models, data models use case models
- **CSF analysis:** CSFs provide insight into the measures used in an organisation or business area.
- **Scenario analysis:** Talking through a step-by-step enactment of a transaction helps to uncover exceptions to the standard process flow and thereby identify alternate pathways and outcomes.
- **Prototyping:** Prototypes and wireframes may be used in two ways in a workshop: they may be constructed during the workshop as part of an activity to visualise a screen, report or scenario

Requirements elicitation

- **Interviews** provide a structured discussion forum for identifying features and characteristics business managers require. Often, the requirements elicited during interviews are at an overview level and reflect general business needs.
- **Document analysis** helps to explore the stakeholders' specific knowledge of the business area, processes and systems. If the project is to enhance or replace an existing process or system, analysing the current documentation, reports and screens helps to uncover information about actor responsibilities, process flow, reporting requirements and business rules.

These techniques work well when eliciting requirements that relate to the stakeholders' explicit knowledge.

Tacit knowledge

- When eliciting requirements, business staff communicate their explicit knowledge regarding the procedures and data that they can readily identify and easily articulate.
- Tacit knowledge refers to other aspects of the work that a stakeholder is unable to articulate or explain.

Tacit knowledge

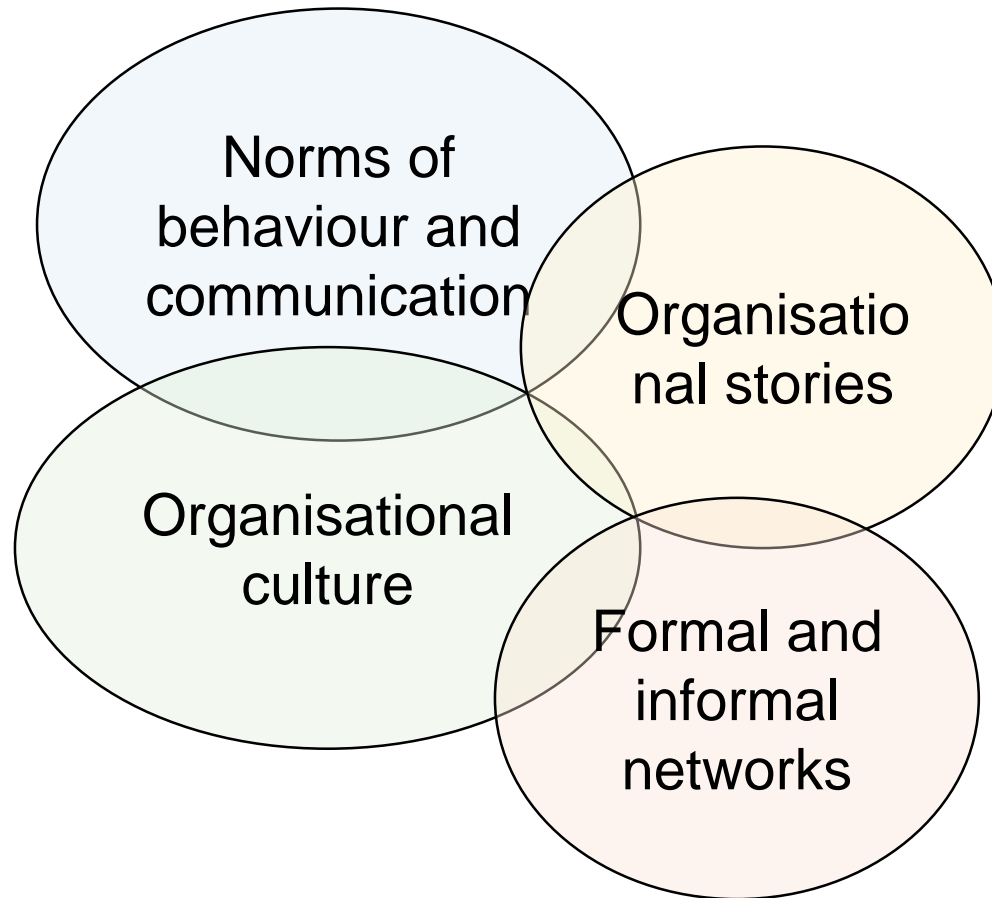
- The difficulties associated with taken-for-granted or tacit knowledge are by no means trivial, and in a world of new business practices, business processes and new technology, by no means uncommon.
- The business analyst is responsible for helping business staff to visualise what they need the new system to do and then to articulate it.

Tacit knowledge

Some aspects of tacit knowledge can cause problems and misunderstandings, and include:

Skills
Taken for granted information
Conceptual requirements
Tacit assumptions
Intuitive understanding

Tacit knowledge



Front story/back story is an explicit knowledge issue that **concerns a tendency to frame a description of current working practice more positively than is actually the case** – this is known as a favourable ‘front story’.

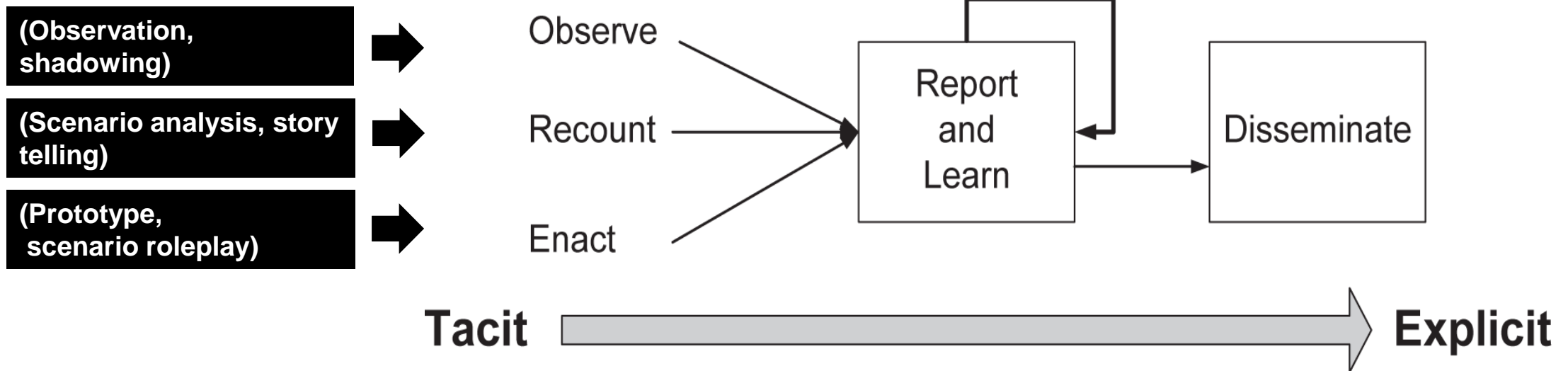
Situations where tacit knowledge is embedded in an organisation

Tacit knowledge

Level	Tacit	Explicit
Individual	Skills, values, taken-for-granted knowledge, intuitiveness	Task definitions, job descriptions, targets, volumes and frequencies
Corporate	Norms, culture, networks, organisation history, back story	Procedures, style guides, processes, knowledge sharing repositories, manuals, company reports

Business Analysis (4th Edition) Table 10.4

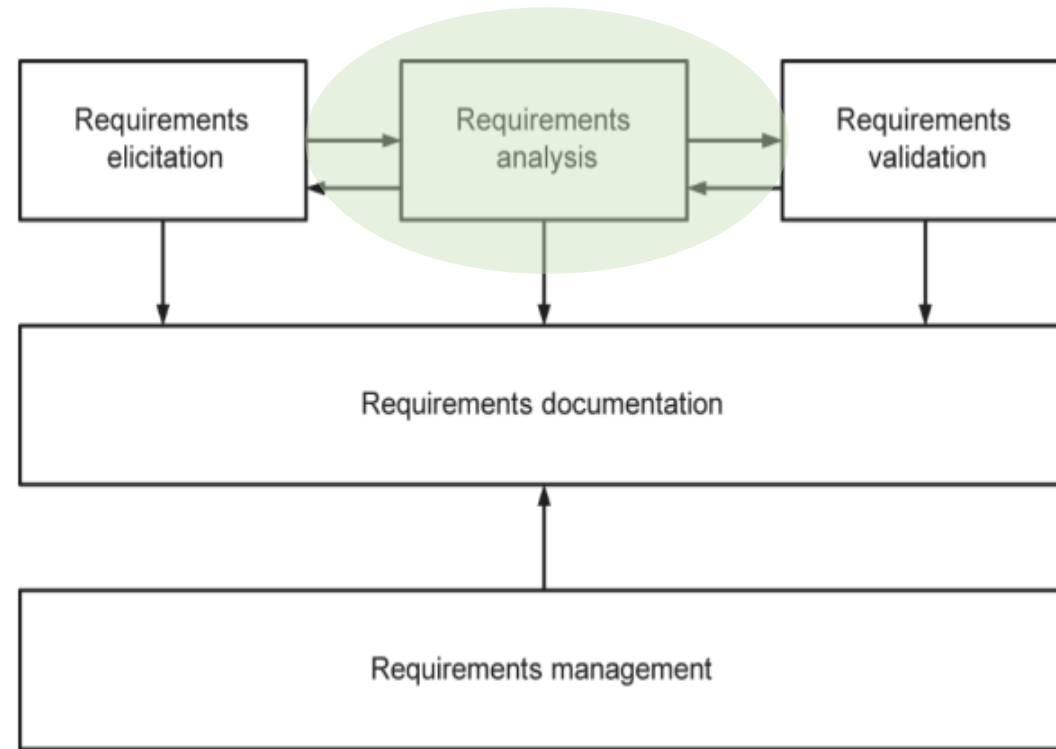
Tacit knowledge



Business Analysis (4th Edition) Figure 10.6

Requirements analysis

Requirements analysis This stage is concerned with reviewing and analysing the elicited requirements to remove duplication or error, negotiate conflicts and contradictions, evaluate feasibility and allocate priorities.



Business Analysis (4th Edition) Figure 10.1

Elements of requirements analysis

Whichever solution development approach is adopted for the project, requirements analysis includes the following tasks:

<p>Categorising requirements</p> <p>It is helpful to categorise requirements into the four specific types of requirement (general, technical, functional and non-functional).</p>	<p>Modelling requirements</p> <p>Various models may be used to represent requirements including use case diagrams and class models.</p>	<p>Prioritising requirements</p> <p>There are several techniques that may be used to determine the level of priority associated with a requirement.</p>
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Elements of requirements analysis

Business rules

Requirement filters

INVEST

**Prioritising requirements using
MOSCOW**

Business Rules

There are two categories of business rule to consider: constraints and operational guidance.

- **Constraints** are rules that govern what may or may not be done.
- **Operational guidance** sets out the rules that should be applied to decide how a transaction may be conducted, a decision may be made or a figure may be calculated.

Constraints	Techniques
Action governance	Narrative statements that include specific criteria such as those related to age or status
Data constraints	Data models and definitions, CRUD matrices
Operational guidance	Techniques
Decision conditions	Activity diagrams, business process models, decision tables, tables, matrices
Calculations	Arithmetical formulae, Structured English, pseudocode

Business Analysis (4th Edition) Table 10.8

Requirement filters

Unravelling multiple requirements	Checking for overlapping or duplicate requirements	Confirming relevance of the requirement	Evaluating feasibility
Removing conflicts	Checking for solutions		Technical feasibility
Confirming quality of expression	Clear	Concise	Business feasibility
Consistent	Relevant	Unambiguous	Financial feasibility
Correct	Testable	Traceable	

INVEST

The INVEST acronym (Wake, 2003) provides a quality check used to evaluate and improve user stories and other product backlog items. INVEST represents a set of quality attributes (similar to those listed in the previous filters).

INVEST attribute	Each user story/product backlog item:
Independent	Should not be dependent on other user stories but should be discrete and atomic.
Negotiable	Should provide a brief description of a required feature that is a basis for elaboration, clarification and prioritisation through collaborative negotiation.
Valuable to users or customers	Should be outcome or goal focused and offer potential value to customers.
Estimatable	Should be able to be estimated either in terms of its relative size or the amount of development effort it would require.
Small	Should be of a suitable size for iteration planning and development within a timeboxed iteration.
Testable	Should include specific measures that may be tested to evaluate whether or not it has been achieved.

MoSCoW

M	Must have: Mandatory in the current increment under development.
S	Should have: Mandatory but may be deferred to the second increment.
C	Could have: Desirable but the solution is acceptable without these requirements as timescale and budget may prevent their inclusion.
W	Want to have, but won't have this time: Requirements that are deferred until a later point.