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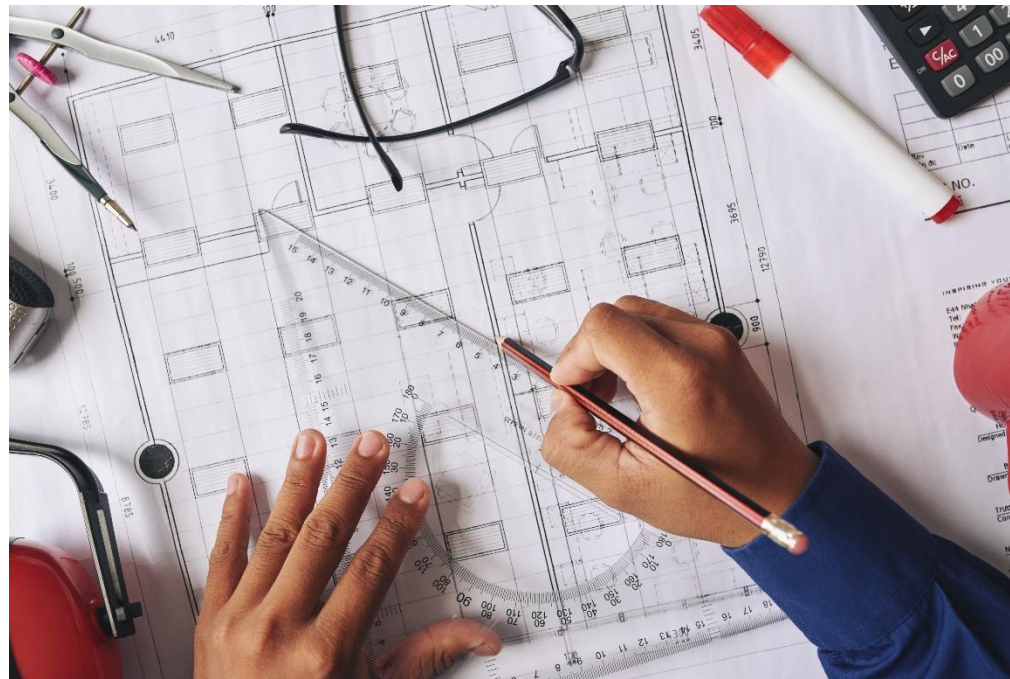
WHAT IS REQUIREMENTS ENGINEERING?

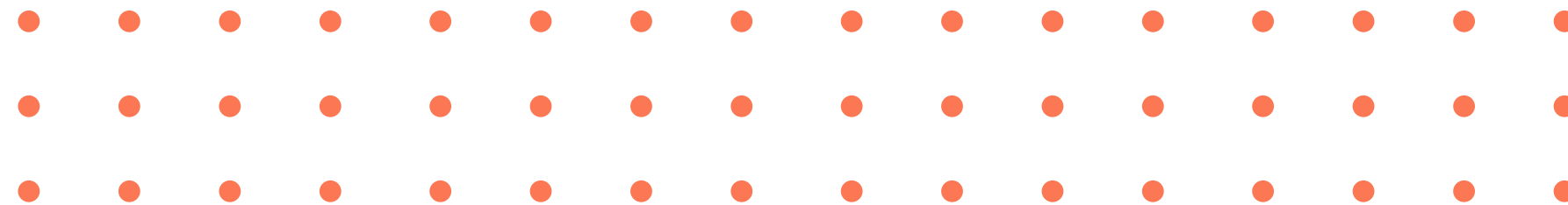Presented by

Simon Brereton

INTRODUCTION

- We cannot build a car without manufacturing specifications or a house without architectural blueprints

- To build anything complex, we need clear documentation that outlines specifications and features of what is to be produced

- Software Developers and System Engineers need specifications for the system before they know how to build a software

- These specifications are called requirements.

REQUIREMENTS

- A requirement is a statement about a single feature of a system

- Requirements are for a specific user of the system (the customer)

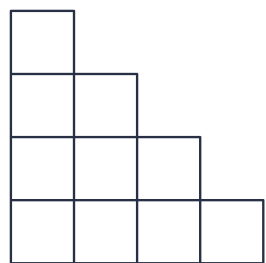> *The system shall display all the products on a configurable page.*

> *The system shall allow a user to select a product to configure.*

> *The system shall notify the user of misconfigured products.*

> *The system shall allow the user to search for product items.*

> *The system shall allow a user to add a product to the shopping cart.*

> *The system shall display popular products on a product page.*

REQUIREMENTS ENGINEERING STAGES

ELICIT

ANALYSE

DOCUMENT

VALIDATE

MANAGE

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ELICIT

ANALYSE DOCUMENT VALIDATE MANAGE

- Aim to identify and gather requirements for the system from people that know the system or those that know what the system should do

- Can be done by using various techniques such as interviews, workshops, surveys, and focus groups

- First round usually gathers general requirements at a high level & the initial functional requirements of the system
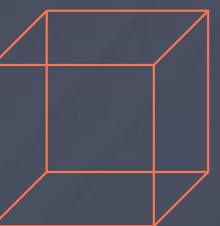
ELICIT → **ANALYSE** → **DOCUMENT** → **VALIDATE** → **MANAGE**

- Requirements gathered from various individuals can be incorrect or incomplete

- Analyst will identify gaps and ambiguities in the requirements and identify where misunderstandings have occurred

ELICIT · ANALYSE · DOCUMENT · VALIDATE · MANAGE

- Slightly different requirements = an area of ambiguity

- Each requirement must be unique, clear, and unambiguous

- Need to know all techniques for analysing requirements appropriately, such as
  application of requirements filters
  categorising requirements
  modelling requirements

- The stage where requirements are analysed, refined, and organised

Feedback

The system shall notify the customer when a ticket has been closed

versus

Feedback

The system shall send a message to the customers when a query has been resolved.

ELICIT ANALYSE **DOCUMENT** VALIDATE MANAGE

- Requirements are written down or captured in a clear, concise manner that can be easily understood by the development team

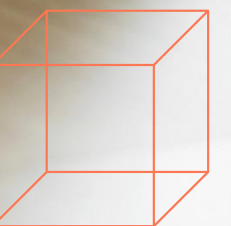- Can be done through a Requirements Document or a Requirements Management Tool

ELICIT → ANALYSE → DOCUMENT → **VALIDATE** → MANAGE

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- Goal is to verify that the requirements are correct and complete

- Analysts may carry out reviews, walkthroughs, and testing activities

- Models, prototypes, designs, mockups, and wireframes can be used to help stakeholders visualise solutions
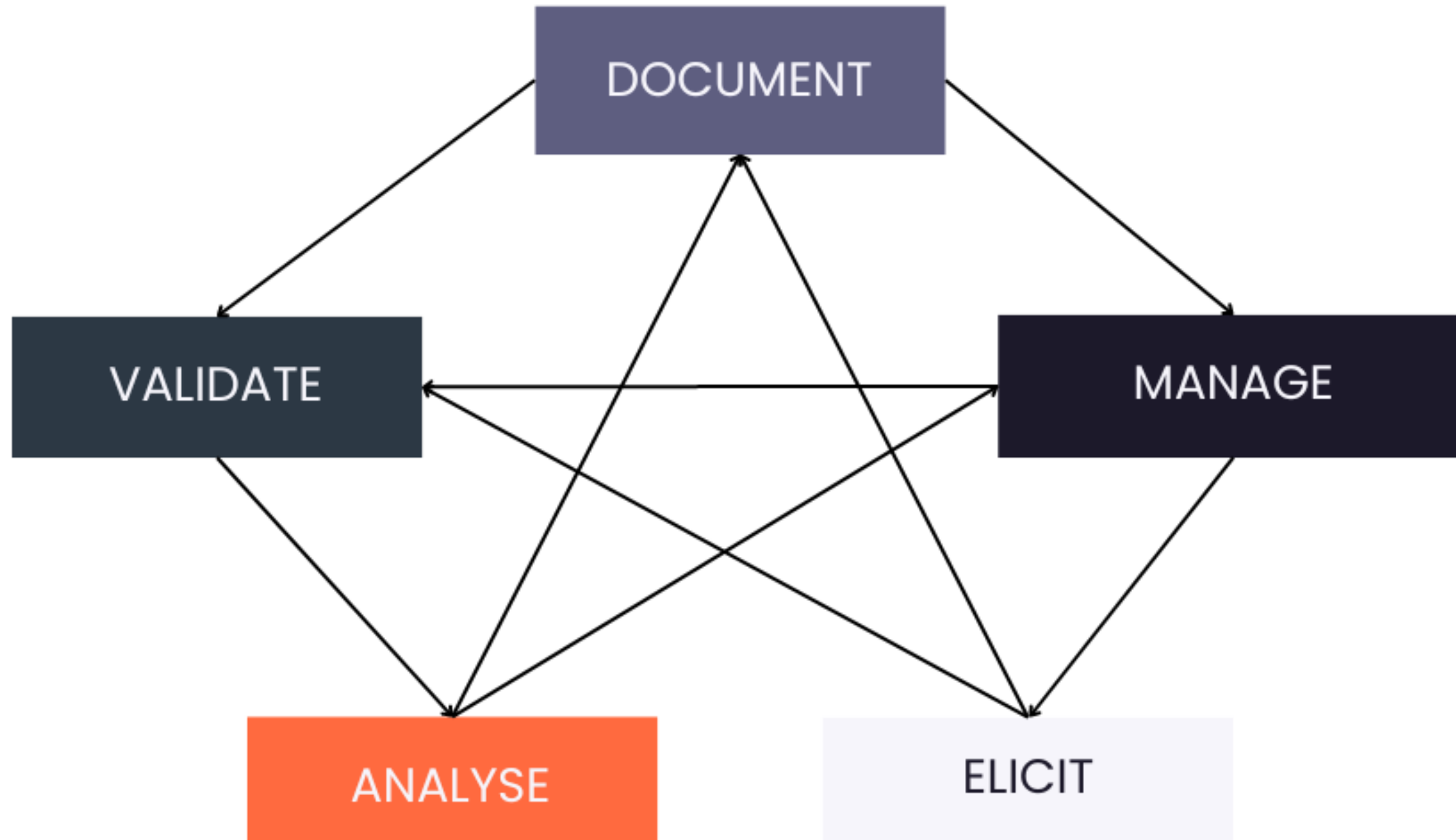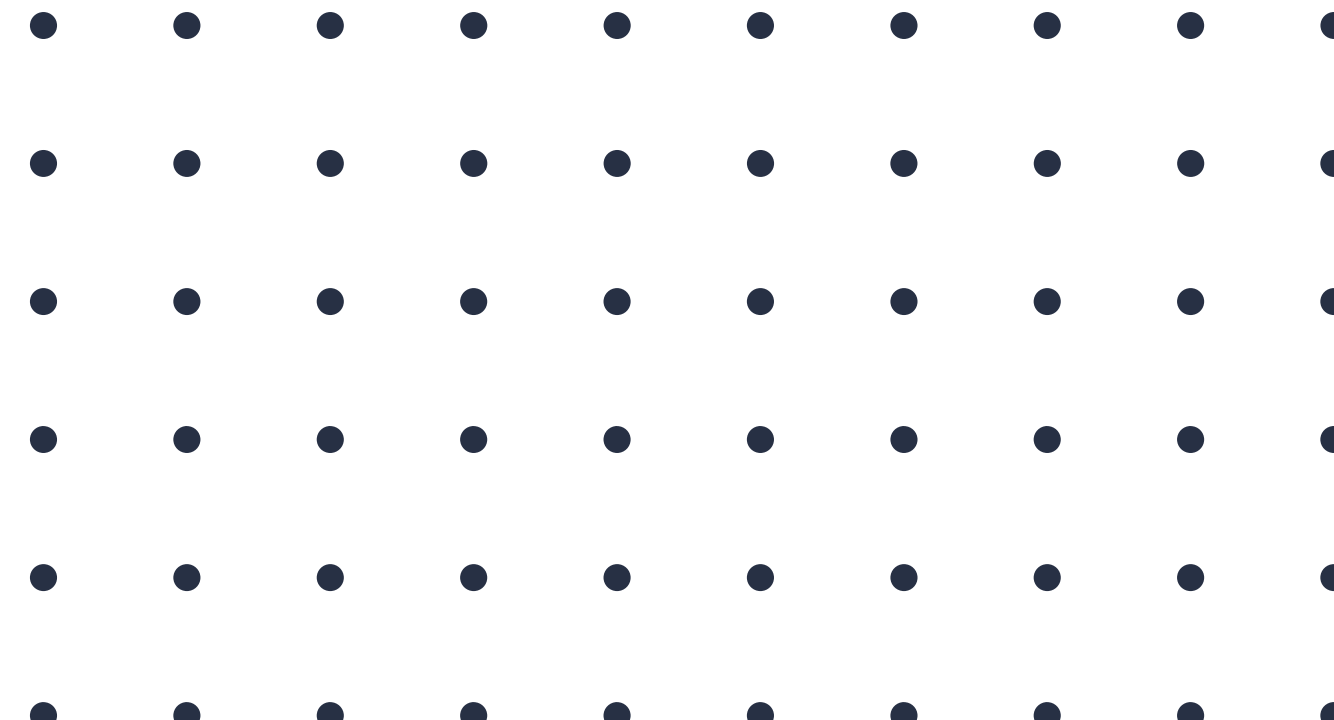
ELICIT | ANALYSE | DOCUMENT | VALIDATE | MANAGE

- Monitoring, updating, and tracking requirements throughout the project

- Ensures requirements are aligned with project goals and final products meet stakeholder needs.
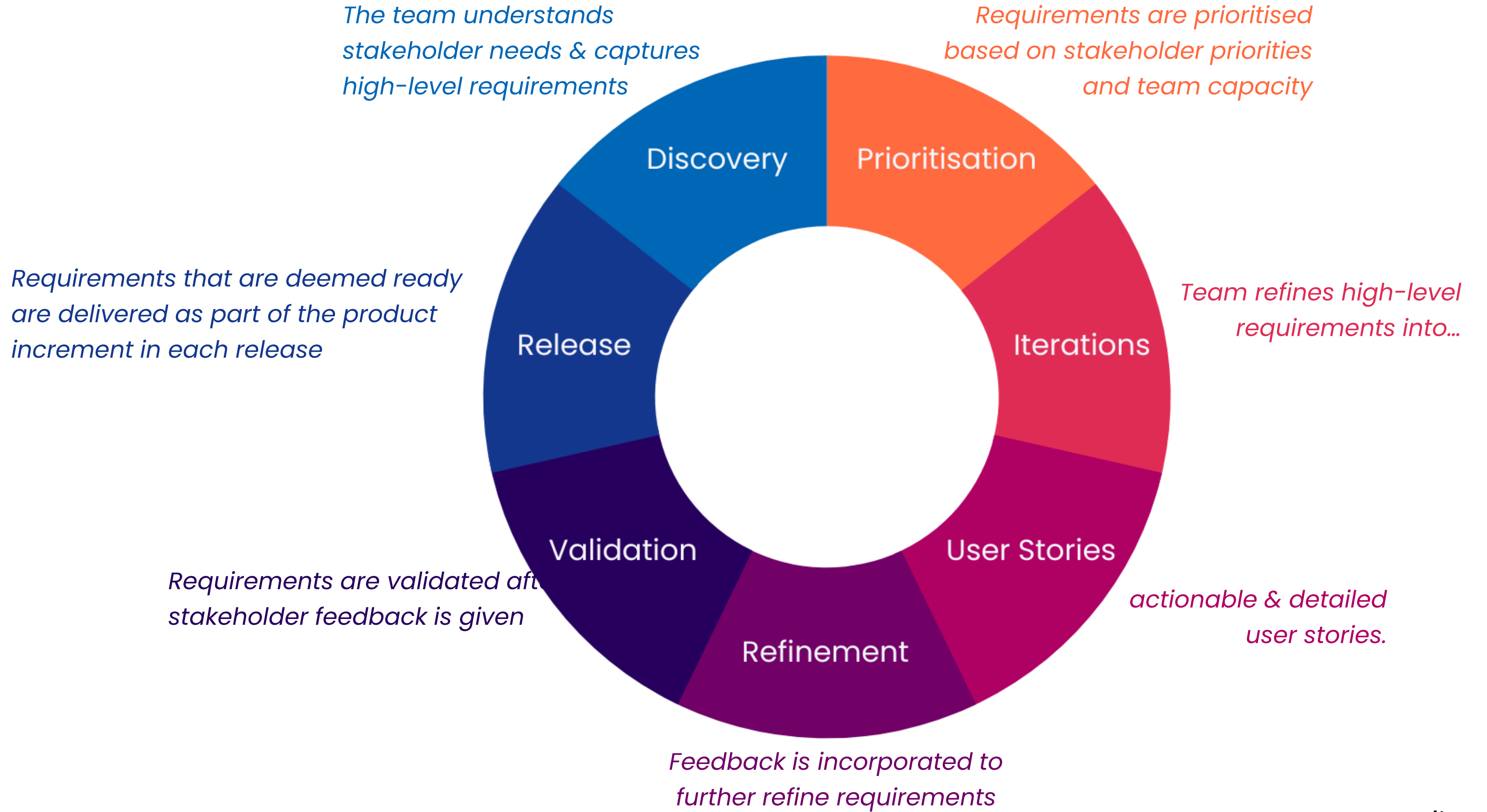
REQUIREMENTS ENGINEERING

- Not a linear process

- There are different approaches

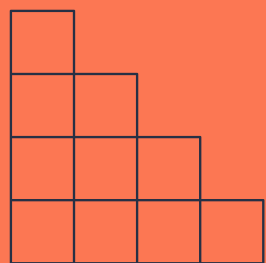- This is the general structure for most Waterfall projects

AGILE PROCESS MODEL

The team understands stakeholder needs & captures high-level requirements

Requirements are prioritised based on stakeholder priorities and team capacity

Requirements that are deemed ready are delivered as part of the product increment in each release

Team refines high-level requirements into…

Discovery

Prioritisation

Release

Iterations

Validation

User Stories

Refinement

Requirements are validated after stakeholder feedback is given

actionable & detailed user stories.

Feedback is incorporated to further refine requirements
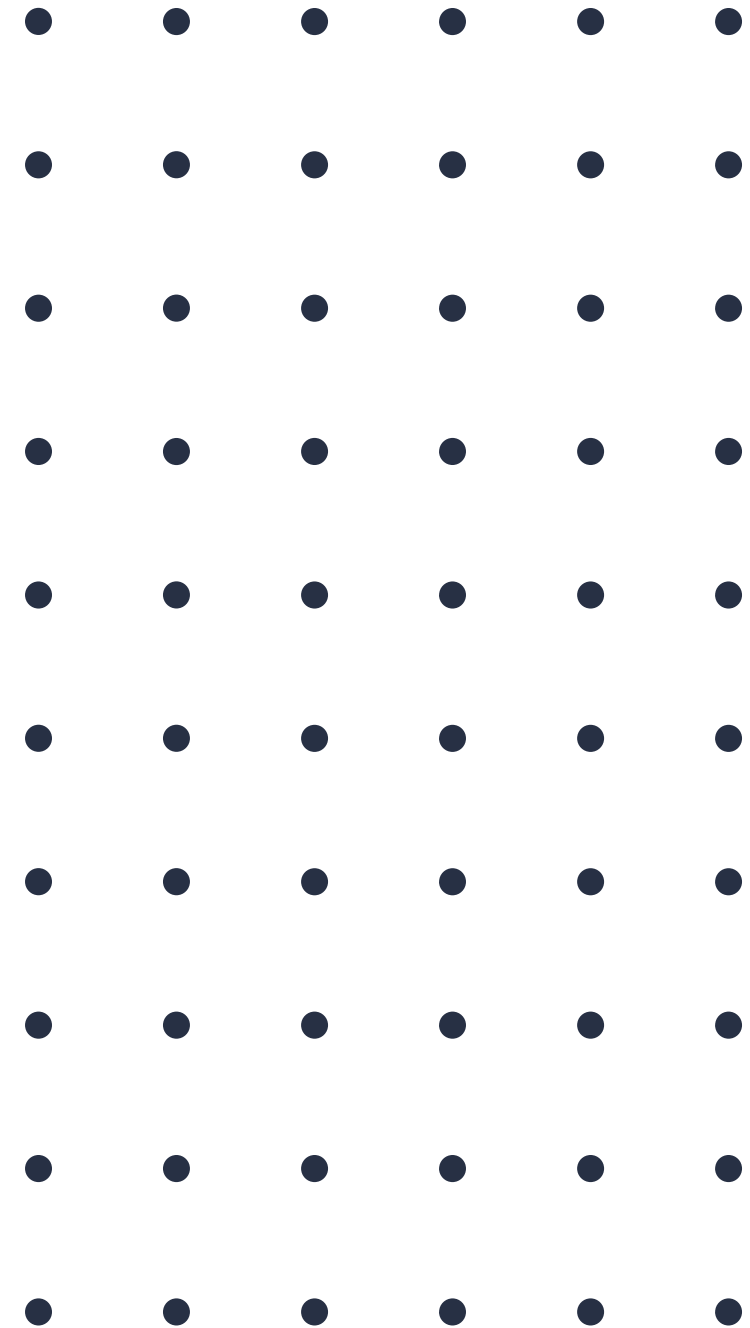
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DEFINING REQUIREMENTS ENGINEERING

- In the world of software development, requirements engineering is a crucial aspect of the development process as it sets the foundation for the entire project and establishes the features of the system to be built

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THE IMPORTANCE OF REQUIREMENTS ENGINEERING

- The needs and expectations of stakeholders are well understood and defined.

- The development team is clear on what needs to be delivered.

- Risks are identified and addressed early in the project.

- Change requests are managed in a controlled manner.

- The final product meets the stakeholders' needs and expectations.

VIDEO INTERVIEW WITH ELON MUSK

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