

Software Engineering

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Requirements Engineering

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Requirements Engineering

What are the Requirements ?

- A **software project starts** when someone gets an **idea or a demand** presents itself
 - new company/organization
 - new department
 - new product
 - new rules and regulations
 - new business processes
- The requirements **state what** a system **should do** and **under what constraints**
- **Requirements** are a **fundamental** part of the **communication** between the client and the software engineering team
 - Often, they are part of a legal contract signed

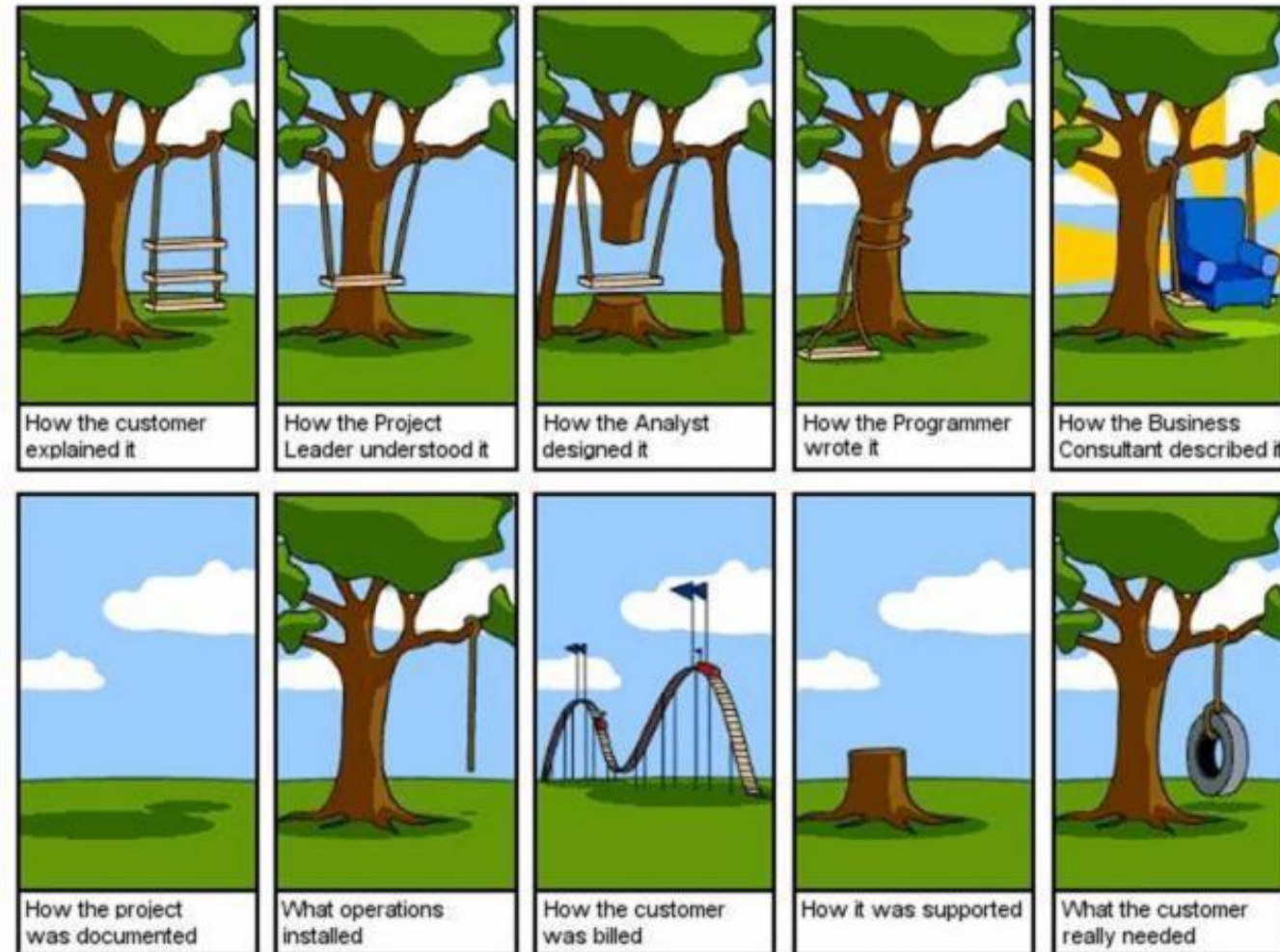
Requirements Engineering

Definition in SWEBOOK

-a **software requirement** is a **property** which must be **exhibited** in order **to solve** some **problem** in the real world.....

Requirements Engineering

Why are they needed ?



Requirements Engineering

Topics covered

- **Product** and **process** requirements
 - **Functional** and **non-functional** requirements
- **User** requirements
- **System** requirements
- The software **requirements document**

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Types of requirement

- **User requirements**

- Statements in **natural language & diagrams** of the **services** the system provides & its operational **constraints**
- Written for customers

- **System requirements**

- A structured document setting out **detailed descriptions of system's functions, services & operational constraints**
- Defines what should be implemented, **may be part of a contract between** client and contractor

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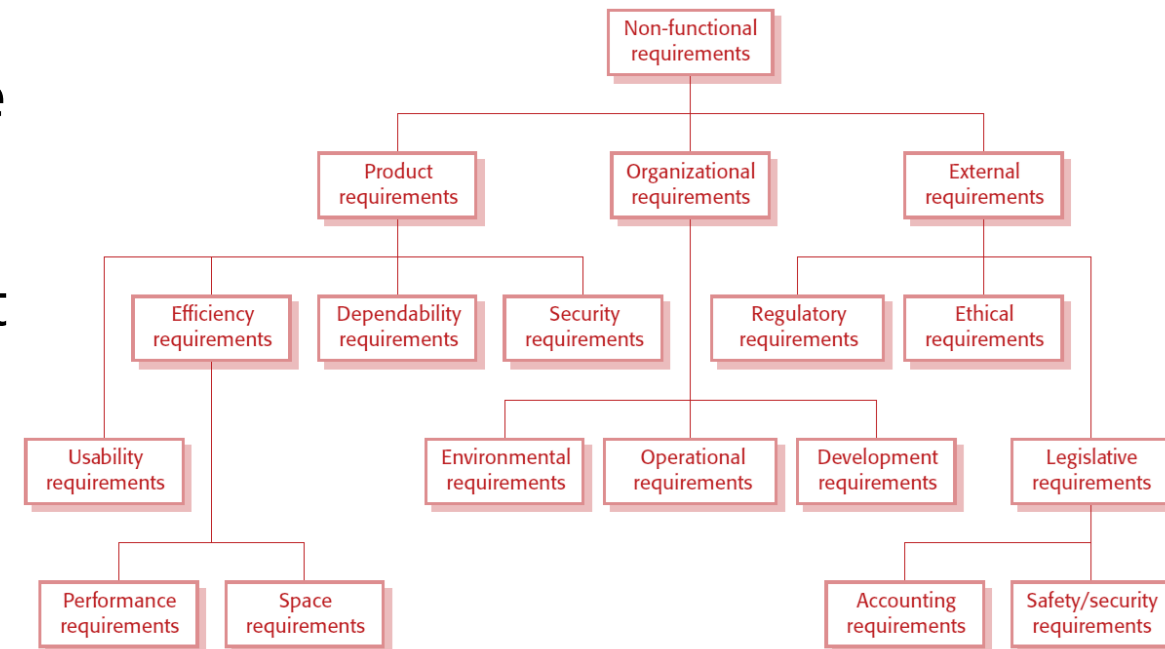
Types of requirement

- **Functional requirements**
 - Statements about the services the system **should provide**
 - How the system should react to particular inputs, and how the system should behave in particular situations
 - Sometimes it also explicitly state what the system **should not do**

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Types of requirement

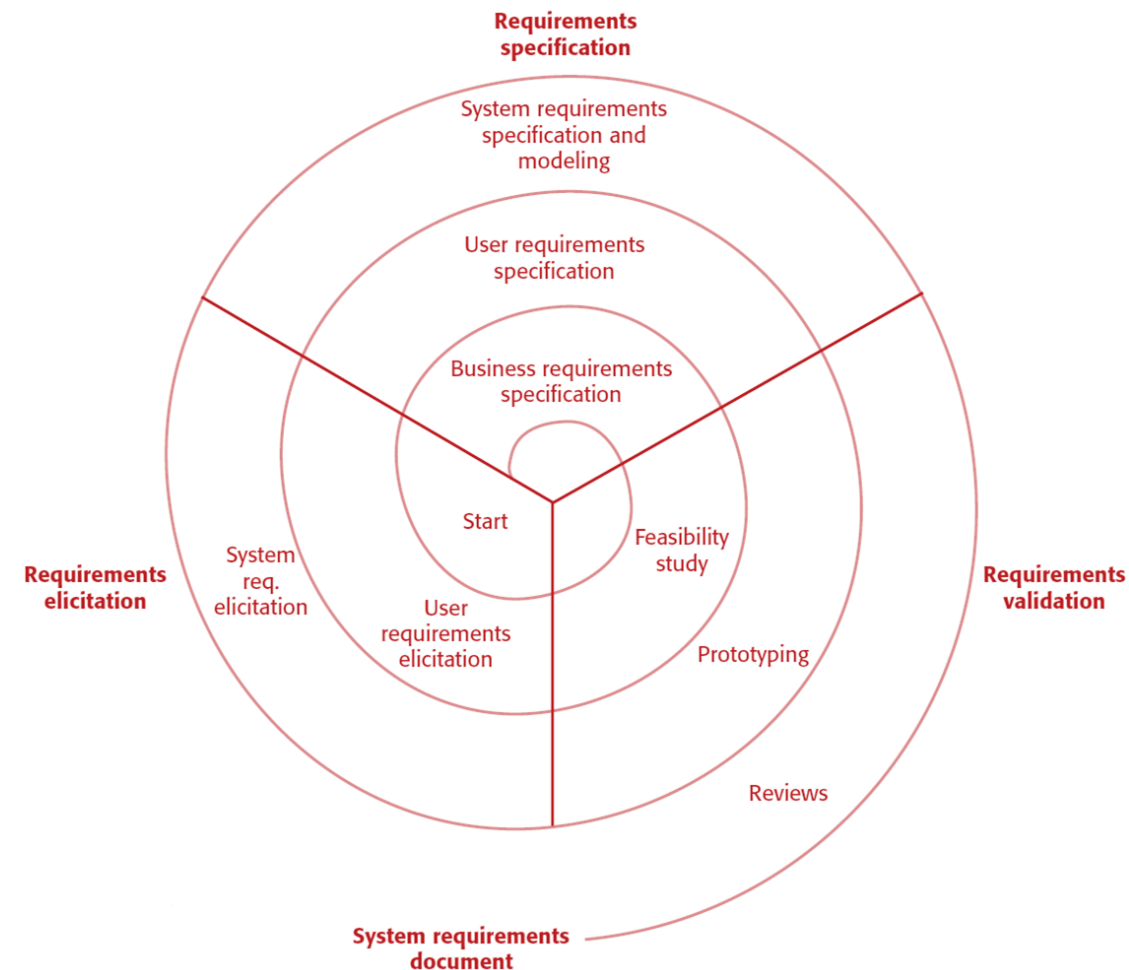
- **Non-functional requirements**
 - These are constraints on the services or functions offered by the system
 - Include timing constraints, constraints on the development process, and constraints imposed by standards
 - Often apply to the global system not to individual features or services



Requirements Engineering

About the process

- **Key activities**
 - **Elicitation and Analysis.** Discovering requirements by interacting with stakeholders
 - **Specification.** Converting these requirements into a standard form
 - **Validation.** Checking that the requirements actually define the system that the customer wants

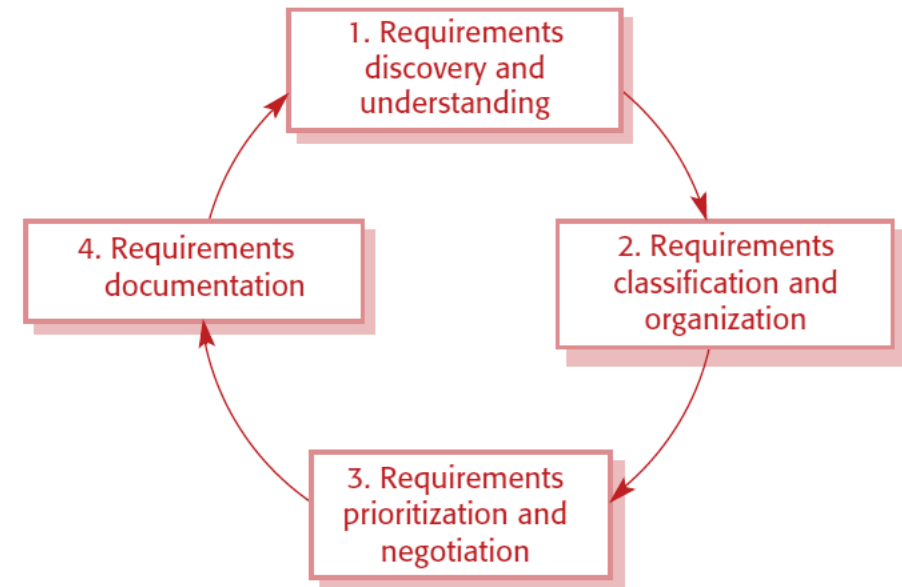


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Elicitation and Analysis

- **Key activities**

1. Interacting with stakeholders of the system to discover their requirements
2. Takes the unstructured collection of requirements, groups related requirements and organizes them into coherent clusters
3. Concerned with prioritizing requirements and finding and resolving conflicts
4. Requirements are documented and input into the next round of the spiral



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Elicitation and Analysis

- **Techniques**

1. **Interviewing.**

- **Open interviews** where there is no agenda
- **Closed interviews** when the stakeholders answers a predefined set of questions

2. **Ethnography.**

- **Observational technique** that can be used to understand operational processes and help derive requirements for software to support them
- **An analyst immerses** in the working environment

