

Unit – 02: Software Requirement Engineering

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- Requirement Gathering and Analysis.
- Types of Requirements.
- Requirement Elicitation.
- Software Requirement Specification.
- Need of SRS and its Characteristics.

Questions to be discussed:

1. Describe the various steps of requirement engineering. Is it essential to follow these steps?
2. What do you mean by “Requirement Elicitation”? Discuss any two techniques in detail.
3. What is SRS? List out the advantage of SRS.

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What is requirements engineering?

- Clients have a long list of goals when creating new software.
- Requirement Engineering provides a framework for meeting those goals.
- It is the process of defining, documenting and maintaining the requirements.
- Here, Important needs are transformed into a detailed set of requirements and creates a blueprint.
- The terms “requirements management” and “requirements engineering” are often used interchangeably, but they are different.
- RE transforms a real-world problem into a highly functional software solution.



Steps of requirement engineering:

1. Requirement Elicitation and Analysis
2. Requirement Specification
3. Verification and validation
4. Requirement Management



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Elicitation requirements:

- Elicitation is about becoming familiar with all the important details involved with the project.
- The customer will provide details about their needs and furnish critical information.
- You will study those details and also become familiar with similar types of software solutions.
- This step provides important context for development.

Requirements specification:

- During the specification phase, you gather functional and nonfunctional project requirements.
- A variety of tools are used during this stage, including data flow diagrams, to add more clarity to the project goals.

Verification and validation:

- Verification ensures the software is built to the customer's requirements.
- In contrast, validation ensures the software is implementing the right functions.

Requirements management:

- In RM, you're matching all the relevant processes to their requirements.
- You will analyze the requirements – and communicate with relevant stakeholders.
- Any requirements that need modification are handled in an efficient and systematic manner.

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Types of Requirement:

- There are three types of software requirements as follows:
 1. Functional requirements
 2. Non-Functional requirements
 3. Domain requirements

Functional Requirements:

- In this the end user demands as basic facilities that the system should offer.
- It can be a calculation, data manipulation, user interaction, or any other specific functionality.
- They are the requirements stated by the user which one can see directly in the final product.
- For example, in a hospital management system, a doctor should be able to retrieve the information of his patients.

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Non-functional requirements:

- Non-functional requirements, not related to the system functionality.
- They are also called non-behavioral requirements.
- They basically deal with issues like:
 - Security
 - Maintainability
 - Reliability
 - Performance
 - Flexibility

Domain requirements:

- It is the requirements which are characteristic of a particular category or domain of projects.
- Domain requirements can be functional or nonfunctional.
- For instance, in an academic software that maintains records of a school or college, the functionality of being able to access the list of faculty and list of students of each grade is a domain requirement.

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What is Requirement Elicitation?

- It is all about obtaining information from stakeholders.
- Once the business analysis has communicated with stakeholders for understanding their requirements, it can be described as elicitation.
- Requirement Elicitation is also known as "requirement gathering".
- It is an important part of requirements management for understanding of the project.
- It can be done by communicating with stakeholders directly or by doing some research, brainstorming or survey etc.



Requirements Elicitation Techniques:

There are many elicitation techniques some of them are given below:

1. Stakeholder Analysis
2. Brainstorming
3. Interview
4. Survey

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Stakeholder Analysis

- Stakeholders can include team members, customers, any individual who is impacted by the project or it can be a supplier.



Brainstorming:

- This technique is used to generate new ideas and find a solution for a specific issue.
- The members included for brainstorming can be domain experts, subject matter experts.



Interview:

- This is the most common technique used for requirement elicitation.
- Interview techniques should be used for building strong relationships between business analysts and stakeholders.

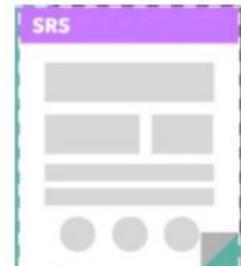
Survey:

- For Survey, a set of questions is given to stakeholders to quantify their thoughts.

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Software Requirements Specification (SRS):

- It is a description of all the requirements stated by the user for software development.
- The SRS fully describes what the software will do and how it will be expected to perform.
- Software documentation is also called a software requirements specification.
- An SRS minimizes the time and effort required by developers to achieve desired goals.
- It is also minimize the development cost of the software.
- A good SRS defines how an application will interact with system hardware, other programs and users.



Advantages of SRS:

- An SRS provides a reference for validation of the final software.
- A high-quality SRS reduces the development time and effort.
- Software requirements specification reduces development efforts.
- SRS provides a baseline for verification and validation.

Need of SRS:

- SRS is a Communication Point
- SRS Includes Final Description of Features
- SRS is a Standard Guide for Product Developers

