

Requirements Analysis and Specification

RAJIB MALL

Computer Science and Engineering Department
IIT KHARAGPUR

What are Requirements?

- A Requirement is:
 - A capability or condition required from the system.
- What is involved in requirements analysis and specification?
 - Determine what is expected by the client from the system. (Gather and Analyze)
 - Document those in a form that is clear to the client as well as to the development team members. (Document)

Understanding and specifying requirements

- **For toy problems:** understanding and specifying requirements is rather easy...
- **For industry-standard problems:** Probably the hardest, most problematic and error prone among development tasks...
- The task of requirements specification :
 - **Input:** User needs that are hopefully fully understood by the users.
 - **Output:** Precise statement of what the software will do.

Requirements for Products

- When a company plans to develop a generic product:
 - Who gives the requirements?
- **The sales personnel!**

Activities in Requirements Analysis and Specification

Requirements Gathering



Requirements Analysis

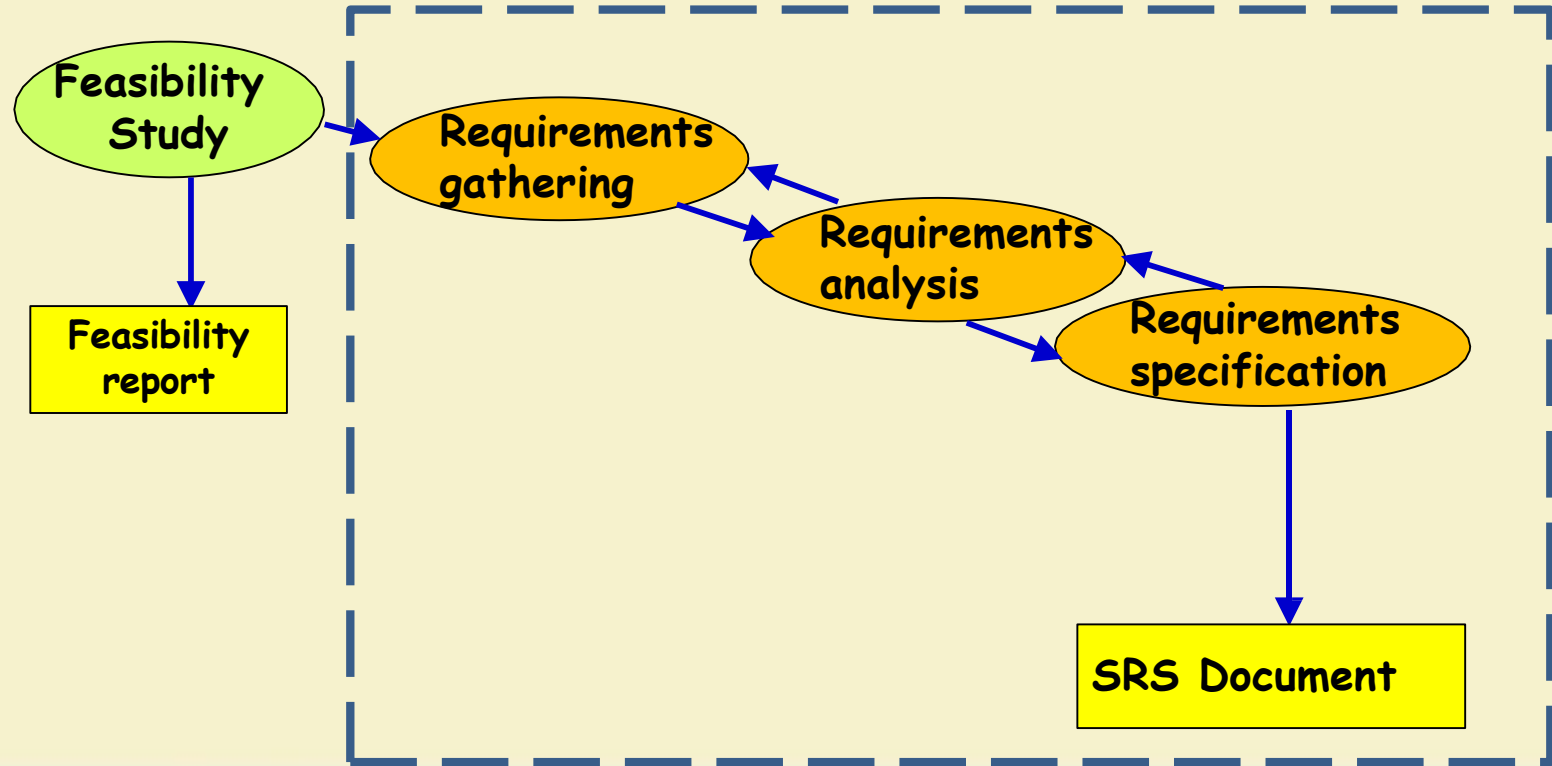


Requirements Specification



SRS Document

Requirements Engineering Process



Requirements Analysis and Specification

- Requirements Gathering:
 - Fully understand the user requirements.
- Requirements Analysis:
 - Remove inconsistencies, anomalies, etc. from requirements.
- Requirements Specification:
 - Document requirements properly in an SRS document.

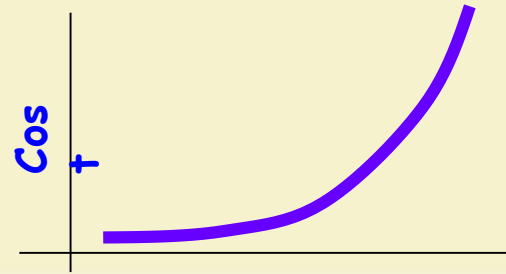
- **Good SRS reduces development cost:**

- Req. errors are expensive to fix later
- Req. changes cost a lot (typically 40% of requirements change later)
- Good SRS can minimize changes and errors
- **Substantial savings --- effort spent during req. saves multiple times that effort**

Need for SRS...

- **An Example:**

- Cost of fixing errors in req. , design , coding , acceptance testing and operation increases exponentially



What are the Uses of an SRS Document?

- Establishes the basis for agreement between the customers and the suppliers
- Forms the starting point for development.
- Provide a basis for estimating costs and schedules.
- Provide a basis for validation and verification.
- Provide a basis for user manual preparation.
- Serves as a basis for later enhancements.

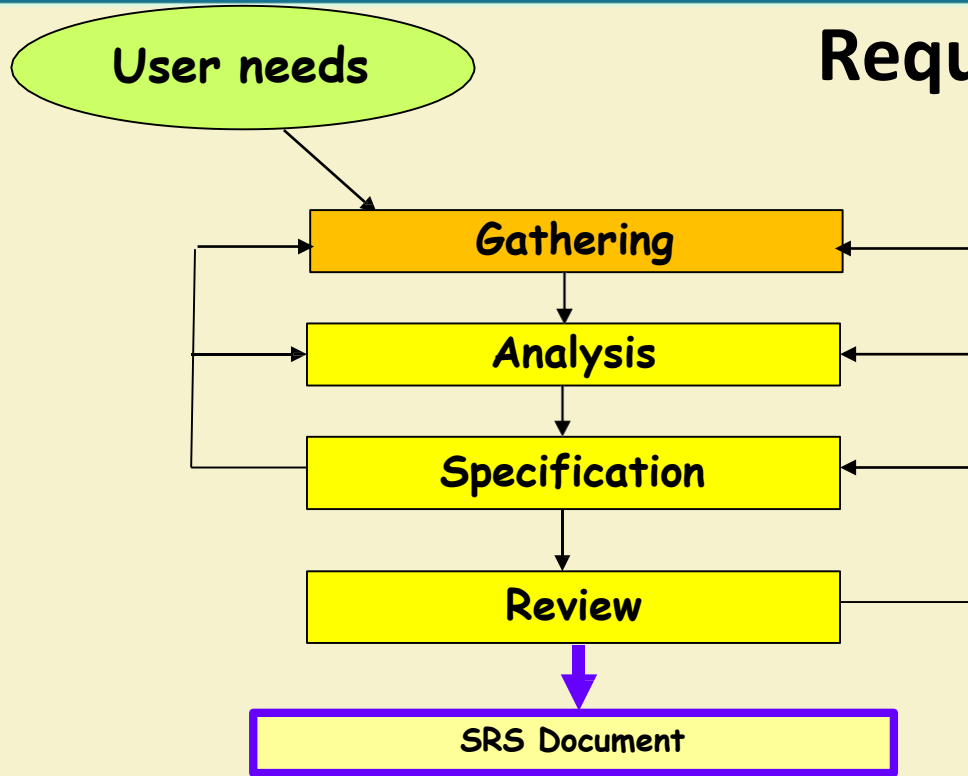
Forms A Basis for User Manual

- The SRS serves as the basis for writing User Manual for the software:
 - **User Manual: Describes the functionality from the perspective of a user --- An important document for users.**
 - Typically also describes how to carry out the required tasks with examples.

SRS Document: Stakeholders

- SRS intended for a diverse audience:
 - Customers and users use it for validation, contract, ...
 - Systems (requirements) analysts
 - Developers, programmers to implement the system
 - Testers use it to check whether requirements have been met
 - Project Managers to measure and control the project
- Different levels of detail and formality is needed for each audience
- Different templates for requirements specifications used by companies:
 - Often variations of **IEEE 830**

Requirement process..



- Specification and review may lead to further gathering and analysis.

Thank You!!

