# Feasibility Analysis
CSE 3223

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Requirements Engineering Process

- Goal of RE Process → to create and maintain a system requirement document

- The process used for RE vary widely depending on the **application domain**, the **people** involved and the **organization** developing the requirements.

- RE processes may Include four high level activities
  - Assessing whether the system is useful to business and customer (Feasibility Study)
  - Discovering requirements (elicitation and analysis)
  - Converting theses requirements into some standard form (specification)
  - Checking that the requirements actually define the system that the customer wants (validation)

The Requirements Engineering Process
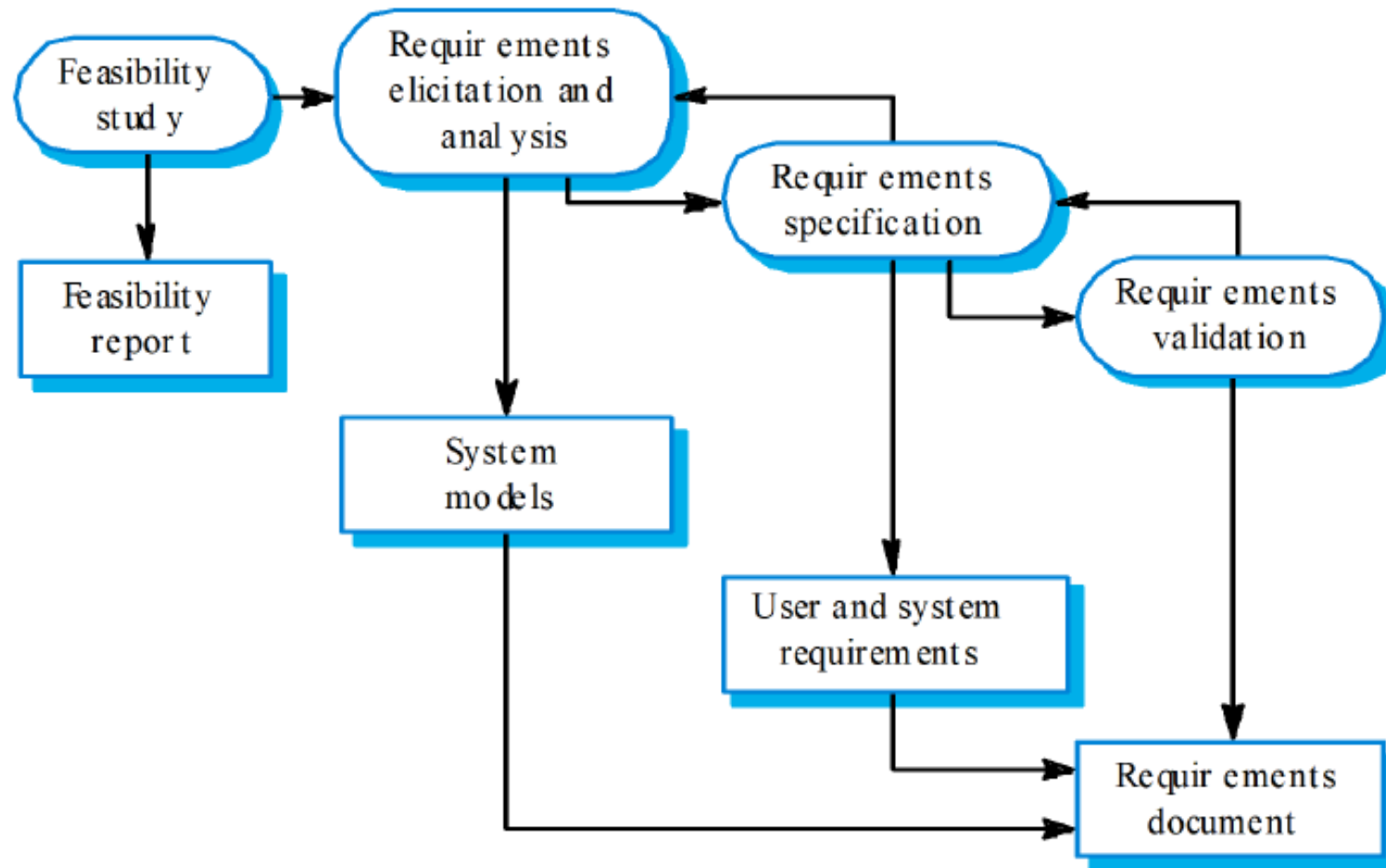
Feasibility Study

- A feasibility study decides whether or not the proposed system is worth implementing.
- A feasibility study is short, focused study that take place early in the RE Process.
  - Does the system contributes to **organizational objectives?**
  - Can the system be implemented **within schedule and budget using current technology?**
  - Can the system can be **integrated** with other systems that are used?
- If the answer to any of these questions is no, you should probably not go ahead with the project.

Important Feasibility Questions

- What are the user's demonstrable needs and how does a candidate system meet them?

- What resources are available for given candidate system?

- What are the likely impacts of the candidate system on the organization?

- Whether it is worth to solve the problem?

Technical Feasibility

- A study of resource availability that may affect the ability to achieve an acceptable system.
  - Can the work for the project be done with current equipment existing software technology & available personal?
  - Can the system be upgraded if developed?
  - Will the proposed system provide adequate response to inquiries, regardless of the number or location of users?
- This is concerned with specifying equipment and software that will successfully satisfy the user requirement.
- The technical needs of the system may include: **Front-end and Back-end selection**

Technical Feasibility (cont..)

- **Front-end Selection**
  - It must have a graphical user interface that assists employees that are not from IT background.
  - Scalability and extensibility
  - According to the organization requirement and the culture
  - Must provide excellent reporting features with good printing support.
  - Platform independent.
- **Back-end Selection**
  - Multiple user support
  - Provide inherent features for security
  - Popularity
  - Operating System compatible

Technical Feasibility (cont..)

- The system is technically viable because can run on PC with the following hardware and software configuration (*minimum*):-
- **HARDWARE REQUIREMENTS**
  - Processor : Pentium IV
  - Memory : 128 MB RAM or more
  - Hard disk capacity : 40GB or more
- **SOFTWARE REQUIREMENTS**
  - Operating System : Windows XP or higher / Linux / Mac
  - Front end Tool : Web browser
  - Back End Tool : My SQL / MS SQL / Oracle / MS access

There is nothing that is not feasible technically.

Economical Feasibility

- This feasibility checks whether the system can be developed with the available funds.
- Economic justification includes a broad range of concerns that includes cost benefit analysis.
  - The cost to conduct a full system investigation.
  - The cost of hardware and software for the class of application being considered.
  - The benefits in the form of reduced cost.
- The **Hospital Management System** does not require enormous amount of money to be developed.
- This can be done economically if planned judicially, so it is economically feasible.
- The cost of project depends upon the number of man hours required.

Example: Online Store (CSE 3224)

- **Cost of Development:** The project is economically feasible as the only cost involved is having a computer with the minimum requirements mentioned earlier. Moreover, PHP & MySQL is open source , so no cost is associated with it .
  - A team of 3 members is required for completing the task.
  - It takes a time span of 12 weeks to shape the project.
  - There are no specific environmental constraints.
  - Other than that extra costs are:-
    - Internet Bills, for accessing useful resources in the web
    - Phone bills to communicate with the group members.

Example: Online Store (CSE 3224)

- **<u>Cost of Using the System:</u>** The project is economically feasible as the only cost involved is having a computer with the minimum requirements mentioned earlier.

- For the users to access the application, its free of charge during registration, the only cost involved will be in getting access to the Internet.

- **<u>Benefits:</u>**
  - The necessary need for potential buyers to visit the shop which may take a lot of time, money and discomfort will be reduced.
  - In reach of distant users.
  - The product cost will be less compare to traditional system as only 2 parties are involved.

Operational Feasibility

- It is mainly related to human organizations and political aspects.
    - What changes will be brought with the system?
    - What organization structures are disturbed?
    - What new skills will be required?
    - Do the existing staff members have these skills? If not, can they be trained in due course of time?
- The system is operationally feasible as it very easy for the End users to operate it. It only needs basic information about Windows platform.

Feasibility Study Implementation

In feasibility study you may consult information sources such as

- Managers of department where the system will be used
- Software engineers who are familiar with the type of proposed system
- Technology experts
- End user of system

- **Should complete a feasibility study in two or three weeks**

- Once you have information → write feasibility report

- Make a recommendation → whether or not the system should continue

- In a report → you may propose changes to scope ,budget and schedule of the system.

Requirement Elicitation and Analysis

May involve a variety of people in an organization

- End-users, managers, engineers involved in maintenance, domain experts etc. These are called *stakeholders*
- **Requirements discovery**
  - Interacting with stakeholders to discover their requirements. Domain requirements are also discovered at this stage.
- **Requirements classification and organization**
  - Groups related requirements and organizes them into coherent clusters.
- **Prioritization and negotiation**
  - Prioritizing requirements and resolving requirements conflicts through negotiation.
- **Requirements documentation (Specification)**
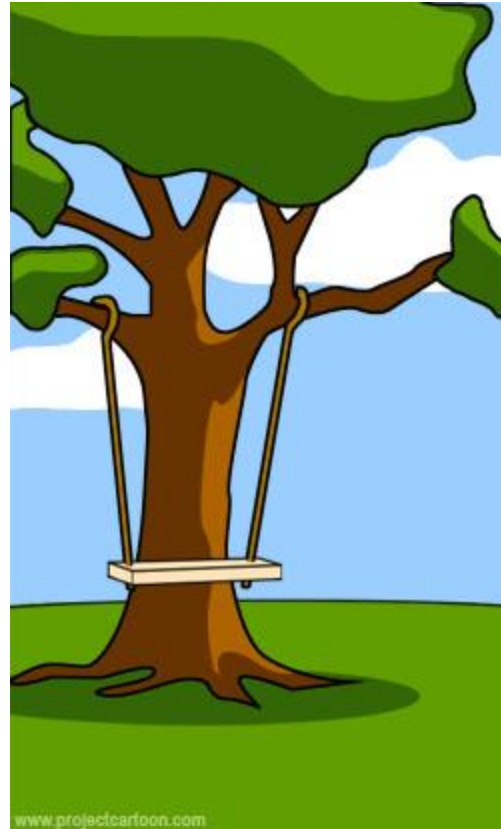 - Requirements are documented.

Problems of Requirements Analysis

Understanding stakeholder requirements is difficult for several reasons

- Stakeholders don't know what they really want.

- Stakeholders express requirements in their own terms.

- Different stakeholders may have conflicting requirements.

- Organizational and political factors may influence the system requirements.

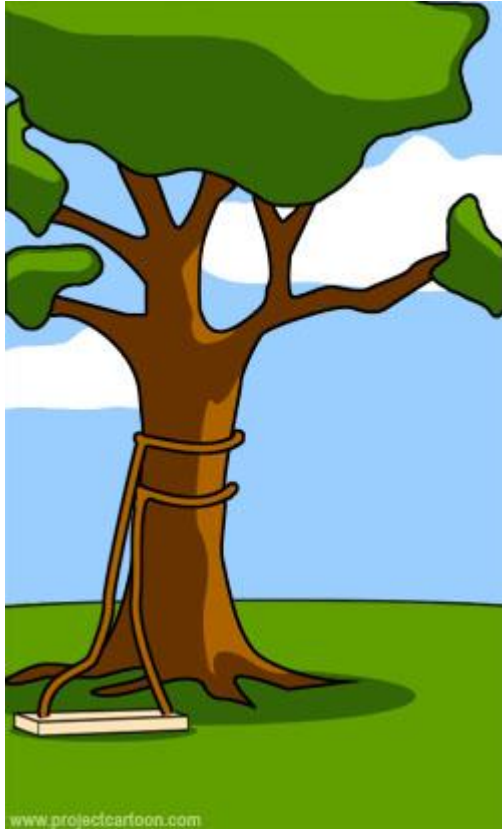- The requirements change during the analysis process. New stakeholders may emerge and the business environment change.

How the customer explained it   How the project leader understood it   How the analyst designed it
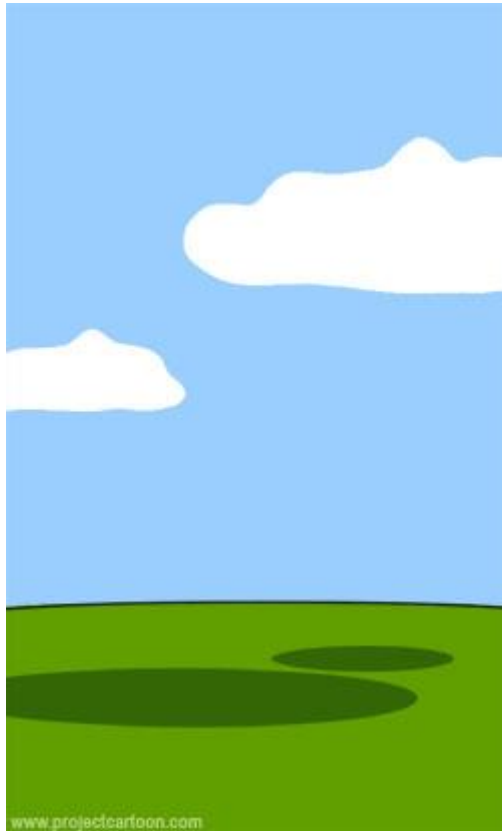
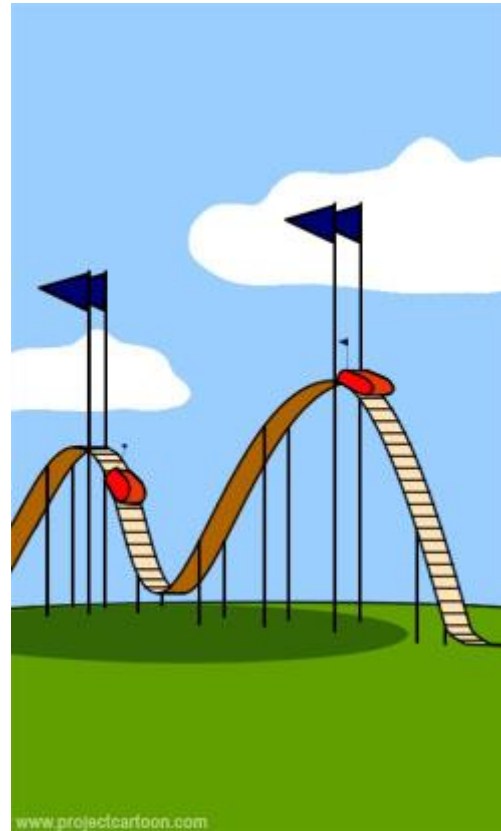How the programmer wrote it

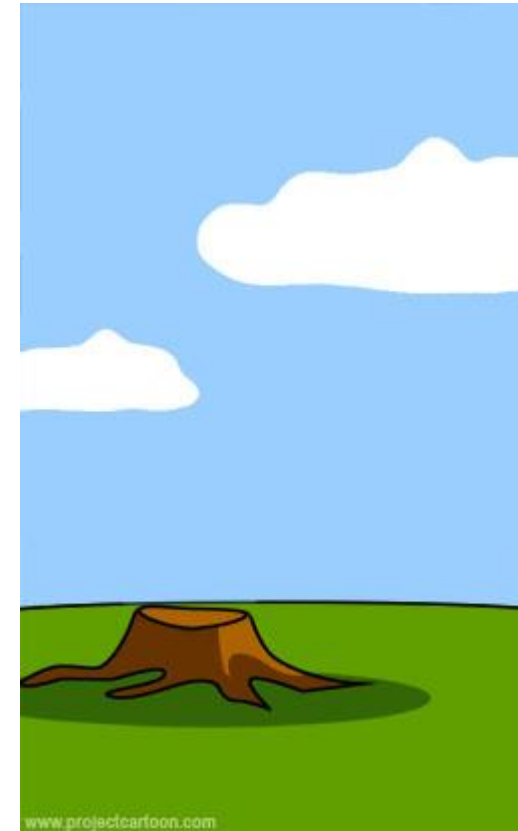What the beta testers received

How the business consultant described it

How the project was documented

How the customer was billed

How it was supported

What marketing advertised

When it was delivered

What the customer really needed

END
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