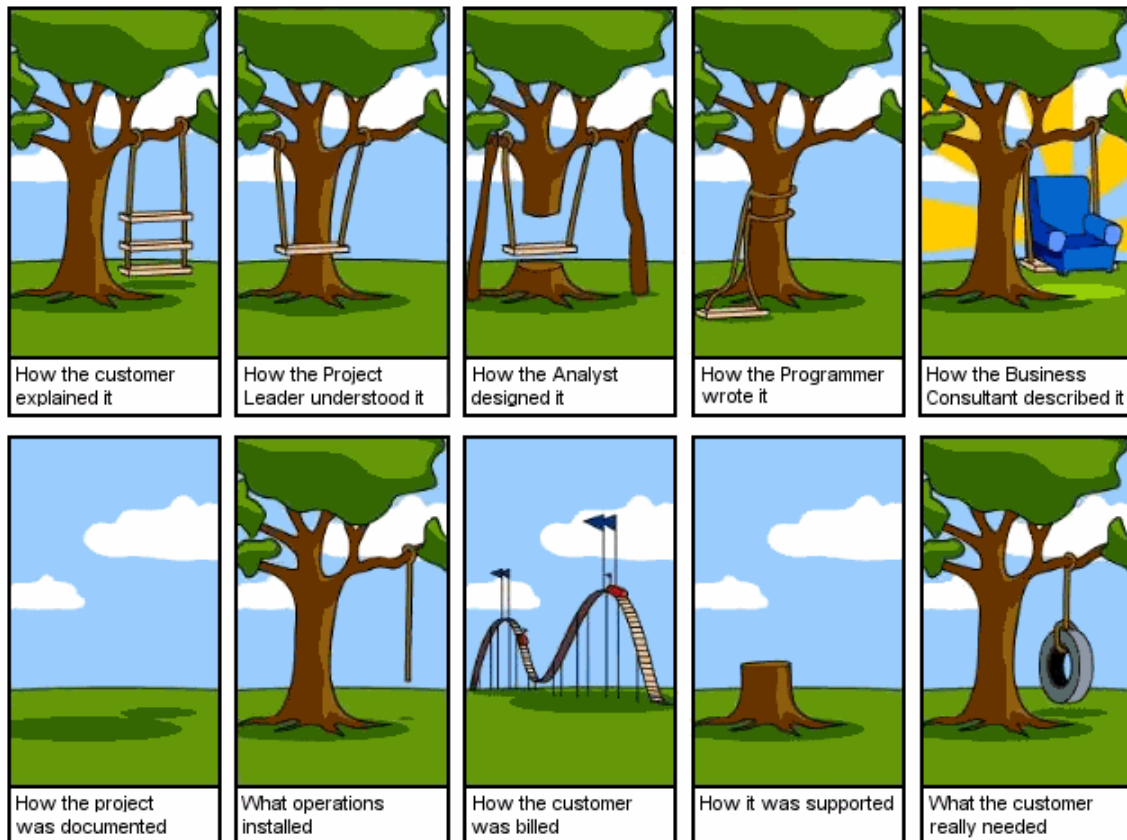


Lesson 3

Systems Analysis and Requirements:

Self-Referral Dynamics Present At Every Point Of Creation

We rarely have consistent requirements when we start a project, that is why there are different forms of the following cartoon.



If you don't do all the following:

- Interview all stakeholders for requirements
- Get end-users to articulate their real needs by product management
- Synthesize consistent requirements

Then you will fail to build the correct software. So if you skip any of this work then you are guaranteed to get the response, "It doesn't do what we need".

Problem Analysis

1. First step in a project is to understand the problem to be solved or the opportunity to be realized. This is accomplished by System Analysts in conjunction with stakeholders
2. This step is known as Problem Analysis. Performing this analysis requires sufficient knowledge of the domain. The problems to be solved must be agreed upon by all stakeholders of the system.

Who Are The Stakeholders?

1. A Stakeholder is anyone who represents an interest group whose needs must be satisfied by the project. The role may be played by anyone who is (or potentially will be) materially affected by the outcome of the project.
2. Different projects may have widely varying stakeholders, and stakeholders may belong to seemingly unrelated groups. Determination of the stakeholders for a project requires careful consideration for each project.

3. Typical examples of interest groups that might be considered Stakeholders for a project:

- Customer or customer representative,
- User or user representative,
- Investor,
- Shareholder,
- Owner,
- Board member,
- Production manager,
- Buyer,
- Designer,
- Tester,
- Documentation writer

Problems → Needs → Features

1. Problems to be solved are typically reformulated as *user needs*, and from these, an initial set of *features* for the new system are listed.
2. Each of these steps of refinement moves in the direction of a concrete specification of requirements for the system. In fact, the goal of System Analysis is ultimately a Software Requirements Specification.
3. The difference between Problems, Needs, and Features is a matter of both detail and orientation. Every problem should be mapped to one or more needs, and every need should be mapped to one or more features that would meet the need.

4. Example:

Problem	Need	Feature
Paper catalogs are clumsy and unsatisfactory to customers	Online catalog	a) System should support online browsing of catalog b) System should support online purchases
System response time is too slow	The part of order processing that depends on paper processing needs to be automated	System should permit orders to be submitted online. Order fulfillment staff should be able to access orders that are stored via a handheld device.

The Vision Document

1. The main artifact emerging from Problem Analysis is the Vision Document.
2. The Vision Document documents the problem, the key needs and features, the business case for the project, and clarifies the scope of the project. It also provides a list of the stakeholders.
3. From RUP:

The Vision Document defines the stakeholders' view of the product to be developed, specified in terms of the stakeholders' **key needs and features**. Containing an outline of the envisioned core requirements, it provides the contractual basis for the more detailed technical requirements.

4. The Vision document is a primary goal of the Inception phase of development.

Needs And Features → Requirements

1. The Needs and Features discussed in the Vision document are further refined into a list of detailed requirements.
2. Requirements differ from needs and features:
Requirements are testable.
3. Example:

Needs/Features from Vision Doc	Software Requirements
<u>Feature 6.1</u> The defect-tracking system will provide trending information to help the user assess project status	<u>SR6 3.1</u> Trending information will be provided in a histogram report shoing time on the x-axis and the number of defects found on the y-axis <u>SR6 3.2</u> The user can enter the trending period in units of days, weeks or months <u>SR6 3.3</u> An example trend report is shown in attached Figure 1.

Requirements Elicitation

1. Requirements elicitation has inherent challenges because stakeholders are not typically accustomed to thinking about or discussing the kinds of ideas that lead to a software solution. Therefore, requirements (as well as needs and features) often need to be *elicited*.
2. Techniques for eliciting requirements:
 - a. Interviewing
 - b. Requirements workshops
 - c. Brainstorming
 - d. Storyboarding
 - e. Use Cases
 - f. Role playing (become the user for a while)
 - g. Prototyping