Requirements and Specification, ESOF 328, Spring 2020
"The essential software requirement" (Chapter 1)
"Requirements from the user's perspective" (Chapter 2)
Jan. 8

The essential software requirement, Chapter 1

Definition of requirement:

> A statement of a customer need or objective, or of a condition or capability that a product must possess to satisfy such a need or objective. A property that a product must have to provide value to a stakeholder.
>
> <div align="right">Glossary, page 601</div>

Requirement can be:
- Customer need or objective – user requirement
- Condition – business rules, constraint
- Capability – feature, functional, system requirement
- Property – non-functional, quality attribute

Different types of requirements information:

Business requirement – Business objective of the organization that builds the product or the customer who procures it

Business rule – Policy, guideline, standard or regulation that defines or constrains some aspect of the business; not a requirement in itself, but may be the origin of several types of requirements

Constraint – Restriction that is imposed on the choices available to the developer for the design and construction of a product

External interface requirement – Description of a connection between a software system and a user, another software system, or a hardware device

Feature – One or more logically related system capabilities that provide value to a user and are described by a set of functional requirements

Functional requirement – Description of a behavior that a system will exhibit under specific conditions

Nonfunctional requirement – Description of a property or characteristic that a system must exhibit or a constrain that it must respect

Quality attribute – Type of nonfunctional requirement that describes a service or performance characteristic of a product (availability, integrity, performance, reliability, robustness, security, usability, verifiability , …)

System requirement – A top-level requirement for a product that contains multiple subsystems, which could be all software or software and hardware

User requirement – goal or task that specific classes of users must be able to perform with a system, or a desired product attribute

Tech standards:
- Wiegers vision and scope document - "Software Purpose and Scope" (Section 1.1)
- User Requirements Documentation is in "Product Functions" (Section 2.2) and Analysis User Cases (Section 3)
- Software Requirements Specification – "Functional Requirements" (Section 5.1)

Project requirements:
Development environment
Schedule
Budget limitations
Need for a tutorial to help new users get up to speed
Releasing a product and moving it into the support environment

Tech standards:
- Wiegers says to keep project requirements out of requirements document. Our SRS includes project requirements in the non-functional requirements section (Section 5.2)

Requirements engineering "Subdisciplines":
1. Elicitation
2. Analysis
3. Specification
4. Validation
5. Management

Common requirements risks:
- Insufficient user involvement
- Inaccurate planning
- Creeping user requirements
- Ambiguous requirements
- Gold plating
- Overlooked stakeholders

Benefits of spending time doing requirements engineering tasks:
- Fewer defects in requirements and in the delivered product
- Reduced development rework
- Faster development and delivery
- Fewer unnecessary features and unused features
- Lower enhancement costs
- Fewer miscommunications
- Reduced scope creep
- Reduced project chaos
- Higher customer and team member satisfaction
- Products that do what they're supposed to do

Requirements from the user's perspective, Chapter 2

Without frequent customer engagement a gap develops between what the customers really need and what developers deliver based on what they heard at the beginning of the project. See slide

Stakeholder – An individual, group, or organization that is actively involved in a project, is affected by its process or outcome, or can influence its process or outcome. (Glossary) See slide

Stakeholders:
1. Customers who fund a project, or acquire it to satisfy their organization's business objectives, procurers
2. Users
3. Requirements analysts
4. Developers
5. Testers
6. Documentation writers
7. Project managers
8. Legal staff
9. Manufacturing people
10. Sales, marketing, field support, help desk and those who will work with the product and its customers.

Wiegers recommends that the sign-off page of a requirements document describe the subtext of what the signature(s) mean.
> "I agree that this document represents our best understanding of the requirements for this project today and that the system described will satisfy our needs. I agree to make future changes in this baseline through the project's defined change process. I realize that approved changes might requirement us to renegotiate the cost, resource, and schedule commitments for this project." (Page 39)