REQUIREMENTS ENGINEERING and SYSTEMS ANALYSIS

Elements and Definitions

Who does requirements engineering?

customer
↓
requirements engineer
↓
system designer

What are the activities?

customer needs
↓
problem analysis
“complete” understanding of requirements
↓
product description
↓
consistent SRS

Typical Methods & Techniques

- interviews
- hands-on experience
- documentation analysis
- scenarios
- (formal) description
- completeness and consistency checking
- conflict resolution techniques

- Problem Analysis:
  - understand the problem (space)
  - expand information
  - specify constraints:
    - find them
    - analyse them
    - resolve conflicts
  - specify the solution space

- Product Description:
  - describe the problem
  - compress information
  - set limits:
    - constraints
    - assumptions
  - check
    - completeness
    - consistency
The Product: SRS

- Standards:
  - IEEE / ANSI 830-1984
  - DoD 2167A / DI-MCCR-80025A (SRS)
  - NASA SFW-DID-08 (SRS)
  - company internal standards?

Elements of an SRS

- user goals
- context description
- behavioural requirements
- non-behavioural requirements
- constraints
- assumptions

=== WHAT

NOT included in an SRS:

- project management
- design information
- quality assurance plans
- staffing
- cost analysis

=== HOW

An SRS should be:

- correct
- non-ambiguous
- complete
- verifiable
- consistent
- understandable
- modifiable
- traceable
- annotated

=== formal vs. informal requirements specification

IEEE Std 830-1984

1. Introduction
   1.1 Purpose of SRS
   1.2 Scope of product
   1.3 Definitions, acronyms, abbreviations
   1.4 Overview

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2. General description
   2.1 Product perspective
   2.2 Product functions
   2.3 User characteristics
   2.4 General constraints
   2.5 Assumptions and dependencies
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3. Specific requirements
   3.1 Functional requirements
   3.2 External interface requirements
   3.3 Performance requirements
   3.4 Design constraints
   3.5 Attributes
   3.6 Other requirements

Alternatives!

End of Section 3

coming up:
Data Flow Diagrams