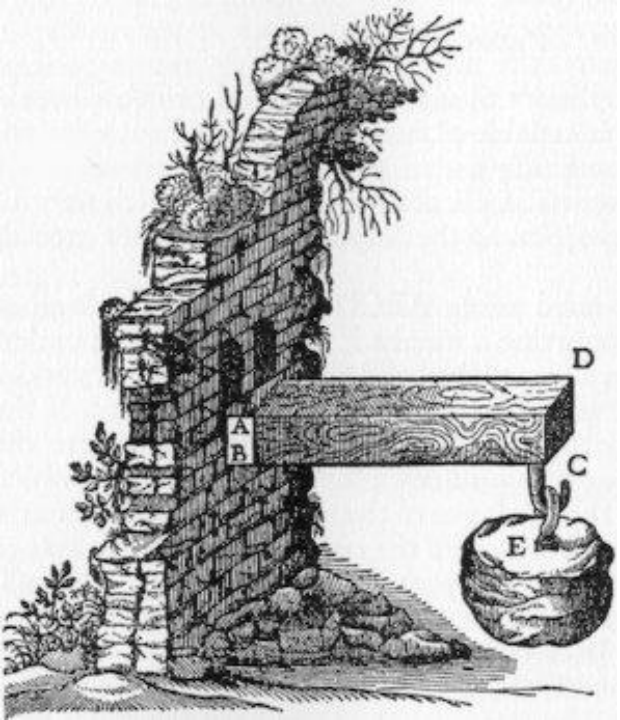
System Requirements Specification

Specifying the Specifications

System Modeling

- **Function & Information Flow Model**
  - **what we will do with the data**



Data Model

- **structure of the information**

Behavior Model

- **how we interact with the system**

Technically Speaking, "requirement" ≠ "specification"

- Requirement – understanding between customer and supplier
- Specification – what the software must do
- Requirements that are not in the SRS
  - Costs
  - Delivery dates
  - Acceptance procedures
  - etc

Purpose of SRS document?

- SRS establishes basis of agreement between the user and the supplier.
  - Users needs have to be satisfied, but user may not understand software
  - Developers will develop the system, but may not know about problem domain
- SRS is
  - the medium to bridge the communications gap, and
  - specifies user needs in a manner both can understand

Uses of the SRS

- **Design**
- **Validation**
- **Customer Contract** – rarely

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Role of SRS

1. "The SRS must correctly define all of the software requirements, but no more."
2. "The SRS should not describe design, verification, or project management details, except for required design constraints."

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Characteristics of a Good SRS

1. Unambiguous
2. Complete
3. Verifiable
4. Consistent
5. Modifiable
6. Traceable
7. Usable during the Operation and Maintenance Phase

Characteristics…

- Correctness
  - Each requirement accurately represents some desired feature in the final system
- Completeness
  - All desired features/characteristics specified
  - Hardest to satisfy
  - Completeness and correctness strongly related
- Unambiguous
  - Each req has exactly one meaning
  - Without this errors will creep in
  - Important as natural languages often used

Characteristics…

- Verifiability
  - There must exist a cost effective way of checking if sw satisfies requirements
- Consistent
  - two requirements don't contradict each other
- Traceable
  - The origin of the req, and how the req relates to software elements can be determined
- Ranked for importance/stability
  - Needed for prioritizing in construction
  - To reduce risks due to changing requirements

SRS Table of Contents

1. Introduction
    1. Purpose
    2. Scope
    3. Definitions
    4. References
    5. Overview
2. General Description
    1. Product Perspective
    2. Product Functions
    3. User Characteristics
    4. General Constraints
    5. Assumptions and Dependencies
3. Specific Requirements

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3. Specific Requirements

3.1 Functional Requirements

3.1.1 Func Req 1

Introduction, Inputs, Processing, Outputs

3.1.2 Func Req 2

3.2 Usability

3.3 Reliability

3.4 Performance and Security

3.5 Supportability

3.6 Design Constraints

Standards Compliance

Hardware Limitations

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3. Specific Requirements cont.

3.7 User Documentation

3.8 Purchased Components

3.9 Interface Requirements

User Interface
Hardware Interfaces
Software Interfaces
Communication Interfaces

3.10 Database Requirements

3.11 Licensing, Legal, Copyright, and Other Notices

3.12 Applicable Standards

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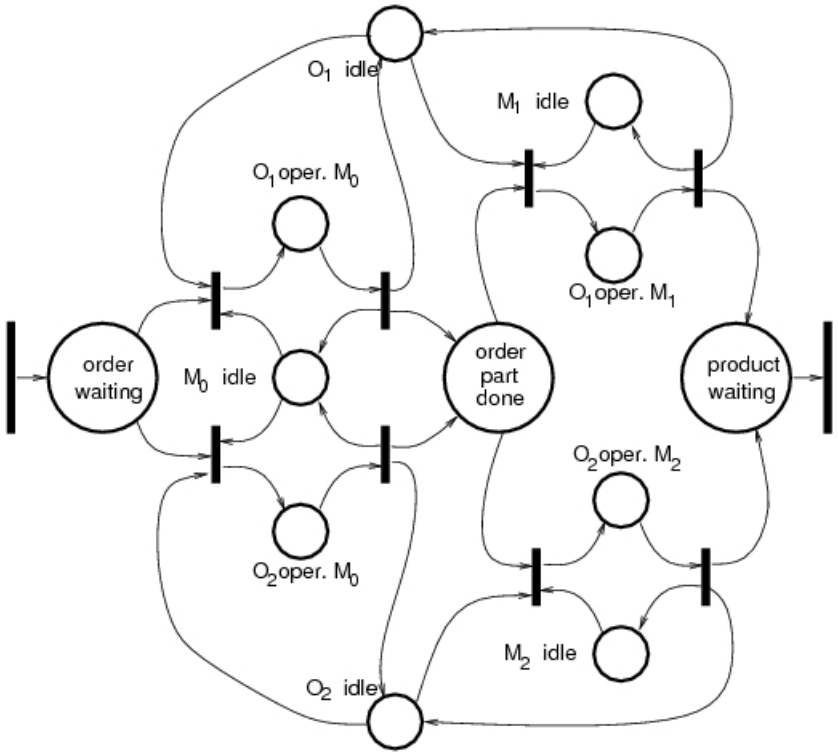
Non-830-Style Requirements

User stories encourage the team to defer collecting details. An initial place-holding goal-level story ("A Recruiter can post a new job opening") can be written and then replaced with more detailed stories once it becomes important to have the details. This technique makes user stories perfect **for time-constrained projects**. A team can very quickly write a few dozen stories to give them an overall feel for the system. They can then plunge into the details on a few of the stories and can be coding much sooner than a team that feels compelled to complete an IEEE 830–style software requirements specification.

Quote from "Advantages of User Stories for Requirements"
By Mike Cohn
http://www.awprofessional.com/articles/article.asp?p=342885&seqNum=3

Other Specification Techniques

- Use Cases
- Formal Specification Languages
  - e.g. Petri Nets



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