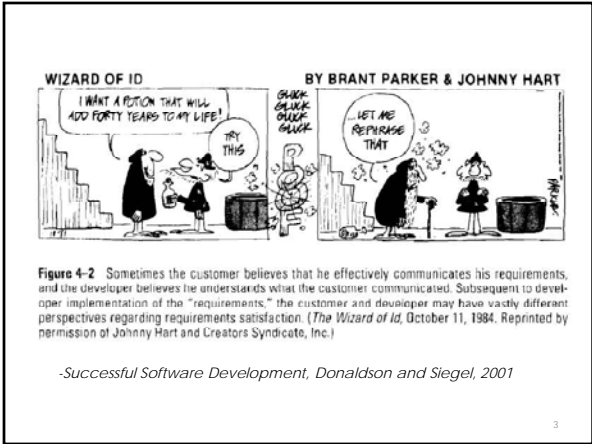


Requirements and Specification

Week 2

1

- ## Agenda
- Review
 - The concept of software engineering
 - The concept and the importance of requirements and specification
 - The process of requirement engineering
 - Functional and non-functional requirements
- 2



WIZARD OF ID BY BRANT PARKER & JOHNNY HART

Figure 4-3 A customer and a developer refine their understandings of what needs to be done to build a software system satisfying customer requirements. This mutual refinement of understanding continues throughout the development life cycle. The change control board (CCB) provides the wizard and king with a business forum to achieve this mutual refinement. The end result is successful software systems development. (*The Wizard of Id*, September 30, 1983. Reproduced by permission of Johnny Hart and Creators Syndicate, Inc.)

-Successful Software Development, Donaldson and Siegel, 2001

4

That happens!

- "I know you believe you understood what you think I said, but I am not sure you realize that what you heard is not what I meant."

5

Phase	Approximate relative cost to detect and correct a fault
Requirements	3
Analysis (specification)	30
Design	52
Implementation	200
Postdelivery maintenance	368

Schach, Figure 1.6

Q. Fifteen months after delivery, a fault is detected in a product that tracks pizza consumption in each of the largest urban areas. The cost of fixing the faults is \$14,594. The cause of the fault is an ambiguous sentence in the specification document. Approximately how much would it have cost to have corrected the fault during the analysis phase? Show the steps of the answer. Use the dashed line (IBM AS/400) which is new data in Figure 1.6

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The Process of Requirements Engineering

- Study feasibility
- Extract client's requirements
- Elaborate the requirements and develop specification
- Validate the requirements and specification
- Maintain the requirements and specification

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Study Feasibility

- Contributing to the overall objectives of the organization
- Implementable using current technology and within given cost and schedule
- Integrated with other systems which are already in place

8

Extract Client's Requirements (1)

- Understanding application domains
- Every member of the development team must become fully familiar with the application domain
- Correct terminologies are essential

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Extract Client's Requirements (2)

- Interviewing
- Questionnaires
- Examination of business forms

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Extract Client's Requirements (3)

- Direct observation
- Scenarios
- Use-cases

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Types of Requirements

- Functional requirements
- Non-functional requirements

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Functional Requirements

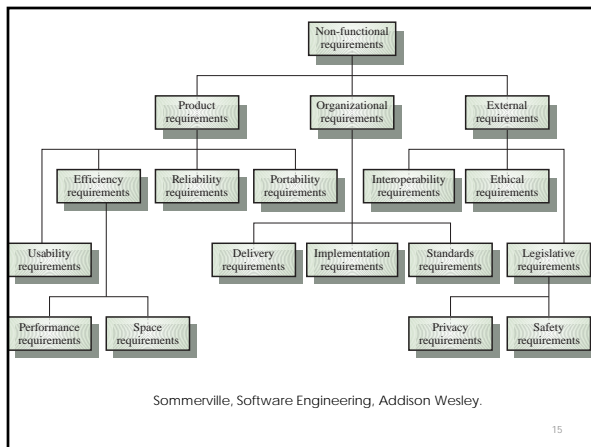
- Describe functionality of products (system)
- Functional **user requirements** may be high-level statements of what the system should do
- Functional **system requirements** should describe the system functionality in detail

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Non-functional Requirements

- Non-functional requirements may be more critical than functional requirements. If these are not met, products are useless
- They are related to the product, organization, and external requirements

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Requirements Validation

- Make sure that the requirements define the system that the customer really needs
- The costs of fixing requirements error in the late are high so validation is very important
 - Fixing a requirements error after delivery may cost up to 100 times the cost of fixing an implementation error

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Requirement Management

- Moving target problems
- What if you have (hundreds of) thousands of requirements?

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Review HW #1

- "No Silver Bullet: Essence and Accidents of Software Engineering" by Brooks

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Requirements and Specification Documents

- Sample 1
 - ATM Simulator
- Sample 2
 - Insulin Pump Simulator

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Homework Assignments 2 and 3

- <http://www.csun.edu/~twang/380/HW/HW2.pdf>
- <http://www.csun.edu/~twang/380/HW/HW3.pdf>

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Lab Session Activities

- By Week 2, the topic of the group project must be decided
- The topic of the project should be approved by the instructor
- <http://www.csun.edu/~twang/380/HW/HW2.pdf>

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