

2. Requirements Capture

- First activity of the process
- Goal: find out what to build
- Communication between users and developers
 - thus: no complex notations possible (unless scientific domain)
 - mostly natural language
 - contract
- Methods for finding requirements
- Methods for formulating requirements
 - Scenarios, Use Cases, Mockups / Prototypes, Feature Lists
- Stakeholders
 - everybody interested in the product

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Sources of Requirements: Clients

- Interviewing clients
 - the people who pay you
 - other stakeholders
 - users
 - managers
- Problems:
 - clients may not know what they want / need
 - software is abstract and complex
 - may often change their minds
 - may not be able to express their needs in technical terms
 - communication between computer scientists / regular people
- Techniques
 - mockups, prototypes
 - walkthroughs
 - differences to existing systems

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Sources of Requirements: Market

- Evaluating competing products
 - what has been done before?
 - where is a niche for us?
 - but take care not to violate copyrights, trademarks, patents
- Evaluating own abilities
 - what are we better at than the competition?
 - what knowledge, skills do we have?
- Market survey
 - interview consumers
 - difficult to do right; polling companies
 - marketing and advertising: create the demand
 - consider future trends
- Problems:
 - people don't know what they want
 - example: video telephones
 - markets change quickly

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Sources of Requirements: Standards

- Standards and interoperating systems
 - system standards, file formats, network protocols
 - usability standards
 - domain standards
- Official standards
 - written by a standards body
 - ANSI
 - ISO (e.g. Unicode)
 - IEEE (e.g. Posix)
- Industry standards
 - Wintel Platform
 - Java, Dot-Net
 - Wimp user interface

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Milestone 1: Requirements

Document

- 32 (team of 4) / 40 use cases (team of 5)
 - actors (people or machines)
- Mockups of Gui
- Specifications of file/data formats
 - input data
 - output data
- Specification of provided API
- Informal
 - depending on expertise of your customer
 - your customer can understand it without trouble

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Kinds of Requirements

- Functional
 - features
 - user interface
 - input / output
- Non-functional
 - user qualities
 - performance
 - precision
 - reliability
 - developer qualities
 - maintainability
 - reusability
 - interoperability

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Scenarios and Use Cases

- Scenario
 - A sequence of events describing an interaction between the program and a user
- Use case
 - Set of related scenarios with a common goal

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Scenarios

- Example:
 - Successfully retrieve cash from ATM**
 - 1. User enters ATM card
 - 2. ATM asks for PIN
 - 3. User enters PIN
 - 4. ATM displays menu
 - 5. User selects "Get cash - \$100"
 - 6. ATM disburses 5 bills for \$20
 - 7. User takes cash and ATM card
- Scenario captures a typical event sequence

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Use Cases

- Related scenarios with common goal:
 - Successfully retrieve cash from ATM
 - Failed attempt to retrieve cash because ATM out of service
 - Failed attempt to retrieve cash because of insufficient funds
 - Failed attempt to retrieve cash because of invalid ATM card
 - Failed attempt to retrieve cash because of invalid PIN

⇒ **grouped together as use case “Retrieve cash from ATM”**
- Elements:
 - Describe main success scenario (numbered steps)
 - List exceptions and variations separately
 - Short title that shows main goal, using imperative form
 - Start state, end state, additional conditions

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Example of a Use Case

(abbreviated)

Retrieve cash from ATM

1. User enters ATM card
2. ATM asks for PIN
3. User enters PIN
4. ATM displays menu
5. User selects “Get cash - \$100”
6. ATM disburses 5 bills for \$20
7. User takes cash and ATM card

Variations:

- 1a. ATM says card is invalid or ATM out of service, end.
- 3a. ATM says PIN is invalid, repeat 3.
5. User may select \$20, \$40, or \$100. All amounts will be disbursed in \$20-bills.
- 5a. ATM says user’s account has insufficient funds, end.

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