



Requirement Analysis – Getting the Big Picture

School of Computer Science | Software Analysis & Design

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Content

- Why do users want to use the software?
- Describing the “Big Picture”
- Functional Requirements

- Reading:
 - Chapter ID ch. 10.1 - 10.4, 10.6



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How Will You Benefit from this Lecture?

- You will make a map (draw the big picture) during the next problem solving class
- You will make a requirement list during the next problem solving class
- You will use that experience in your group work assignments



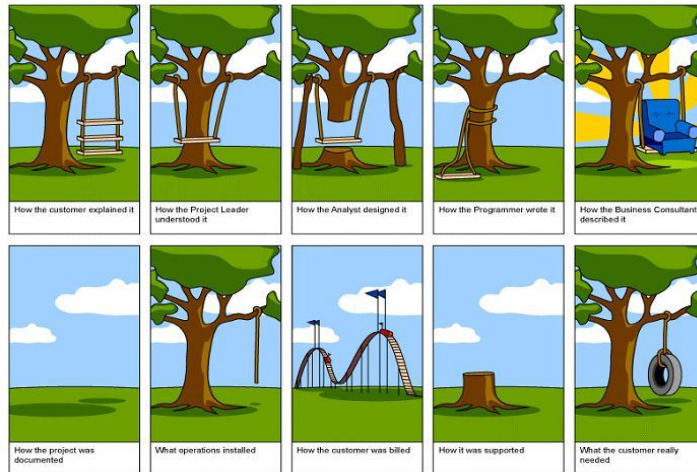
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Why do user want to use software?



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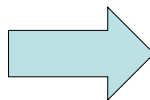
Understanding different views



... maybe we need to learn to communicate?

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The picture should be like this



This is what the user (customer) needed

This is what the customer got



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Does the user always know what he needs?

IF I HAD ASKED MY
CUSTOMERS WHAT
THEY WANTED, THEY
WOULD HAVE SAID A
FASTER HORSE.

- Henry Ford



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I want to control my information

- What does this mean?
 - You need information on the user
 - Several ways to design it



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When the users wanted a faster horse

- What did they need?



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Good system design – in this course

User needs analysed
through interviews

Your own knowledge
and creative thinking

Good System

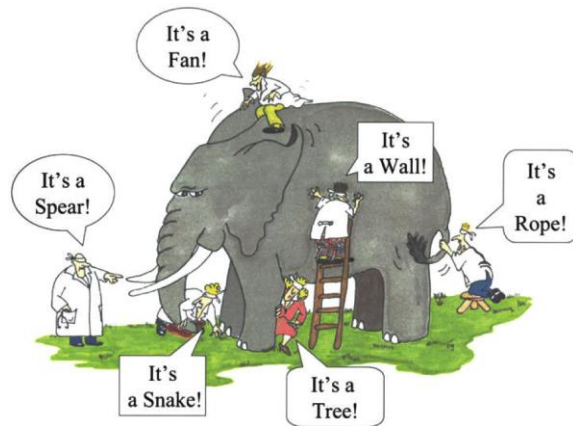
Analysing other
designs

Trends today



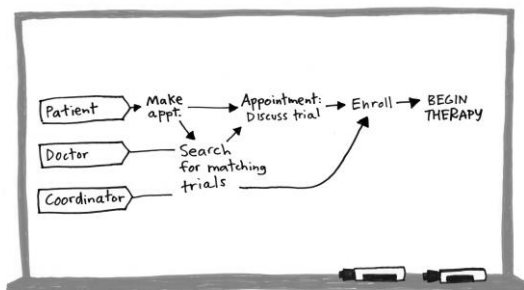
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Describing the „Big Picture“ by Drawing a Map



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Make a map



This will be a simple diagram with around 5-15 steps.



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Drawing a map of the big picture – Instructions

1. List the user groups
 - On the left
2. Write the long term goal
 - The overall goal of the product
 - On the right
 - Buying coffee, Finding info on persons easily,
3. Words and arrows between
 - Describing the steps that need to be taken
4. Keep it simple
 - The map should have from five to around fifteen steps
5. Ask for help
 - This is a teamwork process



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Let's take an example

- A customer wants to buy good fabric to make curtains from in his/her livingroom
- Who are the users?



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Write the user groups to the left

Fabric Seeker

Agent

Manufacturer



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What is the long term goal?

- Examples
 1. Bring great coffee to new customers online
 - Wanted to keep the quality of the experience in the goal
 - Wanted to challenge themselves to reach new customers
 2. Using a Relay robot to make a better guest experience
 - Wanted to focus on customers
 - Use the same goal as the hotels: better guest experience
- In the fabric seeking example?
 - Write that to the far right



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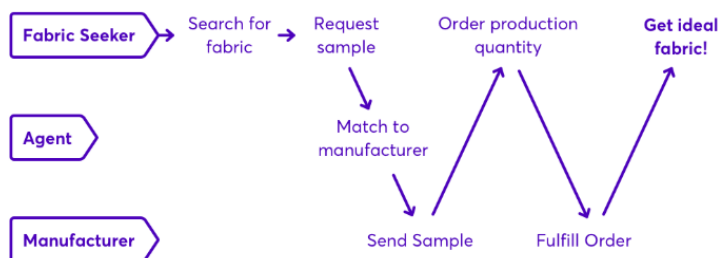
The Big Picture with the Long Term Goal



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What are the steps?

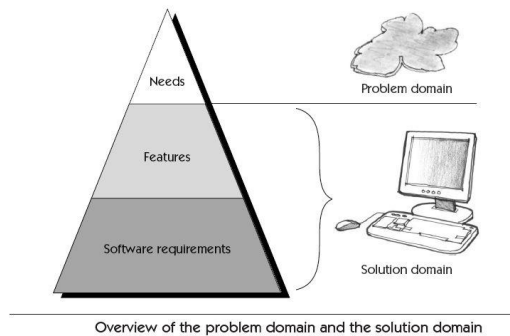
- Make a flowchart in between showing how the users interact with your product
 - Keep it simple 5 – 15 steps



- The steps are the functions that need to be in the product

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Functional Software Requirements



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What is a requirement?

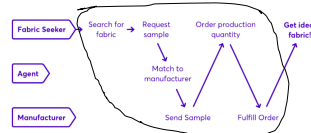
- A well defined, testable statement that can be verified
- Example of a good requirement:
 - "All users shall be able to rent a book"
 - short, single responsibility
- A bad requirement:
 - "The system should be really fast"
 - vague, how fast is really fast?
- Better:
 - "The average response time should be less than 500 milliseconds when executing a query"
 - This is precise and measurable



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Functional requirements

- Functional requirements
 - implemented features
 - "it should be possible to borrow a book"
 - rules
 - "a user may not borrow more than 3 books simultaneously"
- Functional requirements
 - Describe what the users should be able to do in the system
 - The functions that will be available in the system
- Functional requirements
 - Describe in more detail the steps on the map



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For stating functional requirements

- Think about **USERS**
 - What do they need to be able to do?
 - What does each users group want?
- Describes **WHAT** the user wants to do but not **HOW**
 - Example: Order healthy food for a family
- Has a start and an end
 - The user can achieve his goal and start doing something else
 - NOT: I want to log in
 - this is an action, for partly fulfilling the user goal, but the user has not finished – therefore this is not a user goal



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In The Problem Solving Project 1

The minimum functional requirements

1. Find a biking route from A (starting point) to B (destination).
2. Look at a description of the biking route, how long it takes approximately, etc.
3. Look at information on road conditions.
4. Rate how the cyclist experienced the particular biking route.
5. Look at ratings from other cyclists for a particular biking route.
6. Comment on a particular biking route.
7. Look at comments from other cyclists for a particular biking route.
8. Get additional suggestions from A to B.
9. Get a suggestion of a particular type of biking route in a particular area.
10. Get an overview of all the biking routes in a particular area.
11. Zoom in and get a closer look on the biking routes for a particular area.
12. Register the biking routes that a particular cyclist has biked.
13. Get an overview of the biking routes that a particular cyclist has biked.
14. Connect information from a wearable health watch for a particular cyclist.



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The Rules – Problem Solving Project 1

1. Each biking route is grouped by some characteristics, like good for families, for fast biking, etc.
2. Each biking route has the possibility to have more than one characteristics.
3. The information on the time for biking each routes are calculated from the health watches that are connected to the website.
4. The information about road condition are from the Icelandic rad and coastal administration .
5. The receipt for the monthly fee is sent monthly, using the form that the user decides.



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Functional Requirements + User Groups

	Námsmenn vegna lána	Greiðendur námslána	Lífnumarskygðagjar	Umboðsmenn	Ábyrgðarmenn	Aðrir notendur
1. Fásvör við: hvernig á að sækja um lán	X			X		
2. Fásvör við: hvernig kjörin eru	X			X		
3. Fásvör við: hvenær kemur lán til útborgunar	X			X		
4. Fásvör við: hvaða nám er lánshæft	X			X		
5. Fásvör við: ábyrgðir á lánum	X	X		X	X	
6. Ferlið frá a - ö (umsókn, útborgun, afborgunir...)	X			X		
7. Upphæðir og gjalddagar afborgana		X			X	
8. Hve lengi standa endurgreiðslur yfir	X	X		X	X	
9. Möguleikar að borga upp lán	X	X		X	X	
10. Úrræði vegna greiðsluferfðleika		X			X	
11. Hvað gerist ef afborgun er ekki greidd		X			X	
12. Hvernig á að sækja um styrk			X			
13. Hvenær kemur styrkur til útborgunar			X			
14. Hvaða nám er styrkhæft			X			
15. Hvaða skilyrði eru fyrir styrk			X			
16. Upplýsingar um hlutverk umboðsmanna				X		



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Definitions – Functional Requirement

- Functional requirements
 - Describes WHAT the user wants to do but not HOW
 - Example: Order healthy food for a family
 - Has a start and an end
- For describing HOW to fulfill the requirements
 - You have tasks
- For each task
 - You have actions



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Definitions – What is a Task?

- Task (ísl. Verkbáttur eða verkefni)
 - Is a structured set of related activities that are undertaken in some sequence
- Task are what a person has to do in order to accomplish a goal
 - Examples of tasks:
 1. Go to a web site that sells healthy food
 2. Pick the meal
 3. Pay with a card
 4. Insert information on delivery
- The goal is not achieved until all tasks have been completed



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Definitions – What is an Action?

- Action (ísl. Aðgerð)
 - Is an individual operation or step that needs to be undertaken as part of the task
 - In the task: Pick the meal the actions are:
 1. Select the particular meal
 2. Pick the date
 3. Define how many proportions you want to buy

Functional requirement 1: Order healthy food for a family

Task 1: Go to a web site that sells healthy food

Task 2: Pick the meal

Action 1: Select the particular meal

Action 2: Pick the date

Action 3: Define how many proportions you want to buy

Task 3: Pay with a card

Task 4: Insert information on delivery



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Two examples

Functional requirement 1 = To buy a Vegan meal

Functional requirement 2 = Find a meal for next week

- Are the tasks and actions the same for the two goals?
- Let's look at eldumrett.is



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**Requirements based on
user needs
= the fundamental item
in all software development**



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Requirement list

- A requirement list will often look something like this:

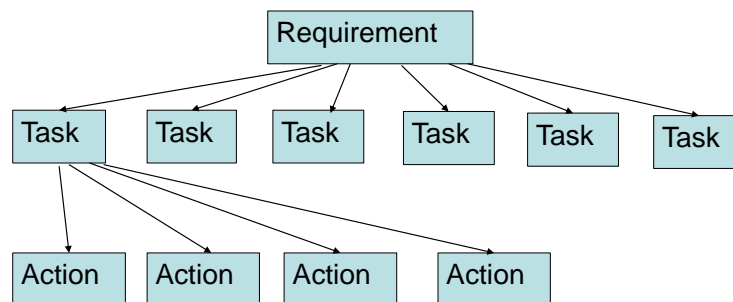
Number	Name (and possibly a short description)	User group(s)	Priority (A/B/C)	Additional info
...

- **Number:**
 - an incrementing number which identifies each requirement
- **Name/description:**
 - short description of the requirement
- **User group(s):**
 - a list of user groups which have to do with this requirement
- **Priority:**
 - how important this requirement is:
 - A: absolutely essential
 - B: useful, but not mission critical
 - C: nice-to-have
- **Additional information:**
 - Can be used to connect to more detail, such as use case descriptions



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The Hierarchy



- In the requirement list there are only requirements
 - Not tasks nor actions



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Summary

- Why do users want to use the software?
- Describing the “Big Picture” by drawing a map
- Functional requirements

