Goals and requirements
Question

“Non-functional requirements are always hard to capture in use case-driven requirements approaches that user-centered requirements approaches can improved. In that case, how the non-functional requirements can be captured in user-centered requirements approaches?” Group 15
• Usability
• User requirements
• functional requirement
• UCD
• non-functional.
Question

“Donzel and setola present in their paper that e.g hard goals can be gathered from the soft goal modeling and from the organizational structure modeling. What methods can be used to collect hard and soft goals?” Group 7
• The Goal Question Metric (GQM)
• Conceptual level (GOAL):
  – Products
  – Processes
  – Resources
- Operational level (QUESTION)
- Quantitative level (METRIC)
  - Objective
  - Subjective
Requirement negotiation and prioritizing
Question

“What are the steps in Mayhew's nine-step procedure for setting usability goals?”  Group 3
Identify requirements referring to:

1. The user profile
2. The contextual task analysis
3. The business goals

===> 4. express them qualitatively in a draft
Analyze the goals

5. Prioritize the usability goals
6. Formulate quantitative usability goals

==> 7. *Document them*

8. Review and validate the goals
9. Collect benchmark data for relative goals
References

“In the paper by Seffah et al. (2001), it's mentioned that the issue of human-to-human collaboration amongst users, stakeholders, usability engineers and software engineers has to be addressed for reconciling use case and usability driven approaches. How could this be done?” Group 4 and Group 14
Usual stakeholder groups

<table>
<thead>
<tr>
<th>Users</th>
<th>Usability researchers or academics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Developers and designers</td>
</tr>
<tr>
<td></td>
<td>Customers</td>
</tr>
<tr>
<td></td>
<td>Marketing and business</td>
</tr>
</tbody>
</table>

*usability researchers, users VS marketing and business (oos)*
*customers VS marketing (oos)*

*users + usability researchers VS customers + developers*
Where is the collaboration most problematic in this process?
Where is the collaboration most problematic in this process?

- Requirement negotiation (see next question: conflict solving)
- Throughout the actual development!
Practice suggestions

• focus groups
• informal meetings between users and clients/developers
• have the developers and clients assist to workshops
• have the developers and clients take notes at evaluations
Practice suggestions

• - organise design studios
  (collaborative, informal, space usage, empathy)
• - less paper work (agile)
• - face-to-face
• - empathy tools
• - common values ! (necessity to add up a framework like agile)
Are those approaches compatible with ACUDUC?

• Agile methods have proven to facilitate UCD practices in a number of examples
• Requirements are often flexible, and negotiable
• All principles of Agile methods need to be applied strictly in order to get good results
• Not all projects/structures are suitable for agile: philosophy/mentality
• Requires developer experience, and less paper
References


Volvo IT presentation at IT university

The Art of Innovation by Tom Kelley

IDEO cards
Question

“In handling the knowledge acquired during the requirements engineering process an example was given where two of the stakeholders gave conflicting requirements. Can we identify some approaches that can be used to help resolve conflicts such as this?”

Group 2
Methods to facilitate communication in general

• Mayhew's nine steps: good for waterfall projects
• MoSCoW: divide the requirements in categories, in order to prioritize them
• Remote communication tools?
Methods to specifically solve conflicts

• Basic psychology
• Systematic process with multi-dimensional analysis
• Requirement prioritization based on risk estimation (MOQARE)
• Oz (groupware)
• WinWin framework
Methods to specifically solve conflicts

WinWin Negotiation Model:

Figure 1: WinWin Artifact Relationships and Taxonomy
Win Win

• Advantages:
  – Cognitive approach: gives equal voice to stakeholders
  – Promotes more cooperativeness
  – Helps focus on key issues
  – Effective for large and distributed groups

• Limitations:
  – Requires more preparation, and overhead
  – Does not replace interpersonal interaction in practice
References

Hoh In, David Olson, Tom Rodgers, *A Requirements Negotiation Model Based on Multi-Criteria Analysis*, IEEE 2003

Daniela E. Herlea Damian, Armin Eberlein, Mildred L.G. Shaw, and Brian R. Gaines, *Using Different Communication Media in Requirements Negotiation*, University of Calgary, 2000

Barry Boehm, Prasanta Bose, Ellis Horowitz & Ming June Lee

Easterbrook S., *Resolving Requirements Conflicts with Computer-Supported Negotiation*
School of Cognitive and Computing Sciences, University of Sussex, 1993


Software Quality by Misuse Analysis, a result of the SIKOSA project, Technical Report SWEHD-TR-2005-01, 2005
Measurements
Question

• “How should you set good, measurable requirements and attributes for a usability test?” **Group 7**

• “How can the efficiency of a GUI be measured in collaboration with users?” **Group 13**

• “In what way you will measure the usability goal which includes: Effectiveness, Efficiency and Satisfaction of a software developing process? For instance could the ISO definition of usability function as quality criteria for measuring it?” **Group 6**
ISO standard and requirements

• General ambitions
• Goals have to be measurable
Effectiveness

- Success rate
- Error rate
- Attempts
Efficiency

- Mean response time
- Consistence
- Expert as reference
Satisfaction

• Questionnaires
• Interviews
• Compare
Question

“How can the different usability methods be analyzed and measured in terms of their Efficiency, in order to form the set of usability methods for the specific methods/system.”

Group 8
• Importance of the context
• Make statements
• Many actors in a products life
“How do you measure the usability of a product? Even if a certain product meets all of its usability requirements, it doesn’t mean that it has good usability if the requirements are few or narrowed to start with. Are there any standards for how many requirements and how much percentage of it has to be fulfilled, or what aspects it must cover? Perhaps it is in the maintenance stage that usability rate can be revealed, when less complains is received?”  Group 8
• Clear and measurable goals at the beginning
• More research – more requirements
• Many stakeholders
• Larger list of goals at the end
Question

How would you select a scale of score when measuring the usability attributes in order to justify each difference in level of scores (like 1 to 2)? For example, is it meaningful to set scale of 7 instead of 5? Group 6
• No standards
• Depends on the level of details
• Odd or even number will make a difference
References


• [4] page 474 in beyond human-computer interaction
Frameworks and processes
Question

“Since in RE framework, the achievement of the goals (soft or hard goals) is depending on the abilities and expertise of the Agents, does the RE framework have guidelines to improve the performance of the Agents. if yes how & How can a framework model help to understand the organizational structure?”

Group 8 and Group 13
• Organization Modeling
• agents and their goals identified
• goals refined
• agent thinks
Question

“What constraints does "easy to learn" bring to the development?” Group 11
• employee has to require a system and facilitating the collaboration
• adopt new technologies
Question

“In Comparing and Reconciling Usability-Centered and Use Case-Driven Requirements Engineering Processes, the authors said that the steps contained in the ACUDUC process were defined and validated through industrial projects. Can we find an example of a project where the process was implemented? If so, did they find any disadvantages with using the ACUDUC process?” Group 2
• No
• Validated through industrial projects
Question

“What can be the risk (from a usability product point of view) for the company due to introducing new technology(ies)? (paper: Handling the knowledge acquired during the requirements engineering process)” Group 1
• marketing analysis to gain and to suit
• misunderstandings and failures
• too short research
• no time, limited budget
References

[grp 8,13]: Software Engineering for Multi-agent Systems II By Carlos J. P. de Lucena, Alessandro García, Alexander Romanovsky, Jaelson Castro (http://books.google.com/books?id=LkhiXmymnXsC&pg=PA1&dq=%22requirements+engineering+framework%22&ei=7TTPSdT6FIGuyASDhu3QBA#PPA3,M1)

[grp 11]: software Engineering for Multi-agent Systems II By Carlos J. P. de Lucena, Alessandro García, Alexander Romanovsky, Jaelson Castro (http://books.google.com/books?id=LkhiXmymnXsC&pg=PA7&dq=%22easy+to+learn%22+soft+goal&ei=0ErPSe-IaTGzQSI76y4DQ#PPA8,M1)

[grp 2]: Comparing and Reconciling Usability-Centered and Use Case-Driven Requirements Engineering Process (seffah 2001.pdf)

[grp 1]: http://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=00855592
Methods
Question

“How do you create a non-standard method from the existing standard methods? Isn't the existing methods not applicable for all different use-cases? (How and why?)” Group 10
Why

• The standardized methods might not provide you with the data that you need
• The standardized methods might provide you with too much data
How?
Question

“Which advantages and disadvantages does non-standardized methods for improving usability have, compared with standardized? (Jokela, et. Al., 2006)” Group 4
Standardized

- You know what you get
- More reliable results
Non-standardized

- You can make them fit your needs
• Use standardized methods when you can
• But when you have to, make up your own
Question

“In "Methods for quantitative usability requirements: a case study on the development of the user interface of a mobile phone" is says that "Questionnaires measuring user satisfaction provide quantitative, though subjective usability metrics for related usability attributes". How come the questionnaire can make the subjective usability metrics for related usability attributes?” Group 5
• What we want to investigate:
  – If users are more satisfied with a given design compared to another one
• Why questionnaires can answer this question:
  – You can ask the participants to grade how satisfied they are with a given design
  – Compare that result with the same question for a different design
  – Yes the result is subjective, but
  – User-satisfaction is hard to measure without being subjective
“In which cases do questionnaires provide the most valid and reliable results and assessing usability?” Group 3
• You can measure anything with a questionnaire, but...
  – Measuring effectiveness and efficiency is better measured with other methods
• But it’s great for measuring user satisfaction
• The alternatives:
  – Counting the number of positive and negative comments during a user test
  – Or long-term measurements such as:
    • Rate of absenteeism
    • Rate of complaints
    • How often users requests to be transferred to other jobs
References

• User interface design and evaluation
  AvDeborah L. Stone, Debbie Stone, Caroline Jarrett, Open University
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  Publicerad av Morgan Kaufmann, 2005
  ISBN 0120884364, 9780120884360

• DIALOGUE-BASED DESIGN OF WEB USABILITY QUESTIONNAIRES USING
  ONTOLOGIES

• http://sumi.ucc.ie/uksample.pdf

• Ergonomic requirements for office work with visual display terminals
  (VDTs) – Part 11: Guidance on usability
  http://www.idemployee.id.tue.nl/g.w.m.rauterberg/lecturenotes/ISO9241
  part11.pdf

• http://www.btt-research.com/quantifying_qualitative_requirements.htm

• http://www.idemployee.id.tue.nl/g.w.m.rauterberg/lecturenotes/UserCen
  teredRequirementsHandbook.pdf
Question

“For the paper: ”Methods for quantitative usability requirements a case study on the development of the user interface of a mobile phone”, besides the quantitative usability requirements, how do you collect the qualitative usability requirements?” Group5
• In many processes the qualitative usability requirements are the basis of the quantitative requirements...

• ... so by eliciting the quantitative requirements you automatically elicit the qualitative.
Qualitative descriptions

- Identifying and prioritizing the user groups
- Identify and prioritize the user’s goals
- Identify the critical goals
- Bunch the goals together
- Make qualitative descriptions of requirements
Question

• “Could you (as a group) assemble guidelines or a framework for eliciting an appropriate set of usability attributes and proper target values for them? (Jokela, et al., 2006)” Group 4

• “What are the practical guidelines to use when defining a set of usability attributes and targets for the attributes? (paper: methods for quantitative usability requirements...)” Group 1

• “From the paper: ”methods for quantitative usability requirements: a case study on the development of the user interface of a mobile phone”, in the topic of future research they mention that too little research have been done in the subject of measurable usability requirements. And there are few guidelines about how to derive the usability requirements. So how is it possible to define a good set of usability attributes?” Group 14
• Derive the quantitative attributes from the qualitative descriptions
• Easier to set relative attributes
• You should define four levels:
  – Worst
  – Planned
  – Best
  – Current
References

- http://books.google.se/books?id=280l94M1KC0C&pg=PA489&dq=quantitative+usability+requirements#PPA490,M1
- http://www.idemployee.id.tue.nl/g.w.m.rauterberg/lecturenotes/UserCenteredRequrementshandbook.pdf
Question

“How can you estimate the number of iterations needed when using an iterative process?” Group 12
• The size of the iteration depends on the size of the development team
• The number of iterations depends on the size of the iterations and what you’re developing
• A reasonable number could be between 3-10
UCD and iterations

• Since you’re involving the users it can be hard to estimate the number of iterations
• The solution could be Agile methods:
  – Short iterations (1-3 weeks)
  – Fixed budget and fixed time
References

• http://www.yoopeedoo.org/upedu/process/gdlines/md_prpln.htm
• http://www.thoughtworks.com/pdfs/agile_and_UCD_MM.pdf
Question

“In the early stage of the development of a completely new product which methods, qualitative and quantitative would be reasonable? Why?” Group 13 and Group 12
The lead users method

• They have needs that will be general to the market, but they have it earlier
• They expect to benefit from a solution to those needs
The lead users method cont.

- Identify trends
- Identify high expectations
- Identify lead users
- Mix the lead users and the developers in a workshop
User toolkits

• Provide the users with resources so that they can come up with their own designs
• Innovative design stresses the requirements on the prototype
• Make the users understand what you’re designing
References
