Project Proposal Requirements

I want:

• Name of team members
• Project description (what do you want to do)
  – This should include a description of this problem as a **USABILITY** problem
  – A justification why this is a good/interesting project
  – Brief description of who the target population is
  – A useful use-case/scenario to help illustrate the problem and/or potential solution
• Reasons you think you are the best team for this, and why you’ll be able to complete this before the end of the term

• 1-2 pages typically
User-Centered Design Process

1. Identify users
2. Identify activities/context
3. Identify needs
4. Derive requirements
5. Derive design alternatives
6. Build prototypes
7. Evaluate prototypes
8. Iterate (rinse and repeat)
9. Ship, validate, maintain

Studying Users

• Survey/Questionnaires
• Interviews
• Focus groups
• Naturalistic observation
  – Ethnography
  – Contextual inquiry
  – Participatory design
• Documentation
Surveys

• General criteria
  – Make questions clear and specific
  – Ask some closed questions with range of answers
    • Sometimes also have a no opinion option, or other answer option
  – Do test run with two or three people

Surveys - Example

• Seven-point Likert Scale (use odd #)

Evaluation Questionnaire
Please complete the following questionnaire by indicating how strongly you agree or disagree with the following statements. Your responses will be kept confidential and will be used only for improving the interface that you worked with in this experiment.

1. I felt that the computer agent’s help was *worthwhile*.  

   ![Likert Scale](image)

2. I found the computer agent to be *intrusive*.  

   ![Likert Scale](image)

3. I found the computer agent’s help to be *distracting*.  

   ![Likert Scale](image)

• Could also use just words
  – Strongly agree, agree, neutral, disagree, strongly disagree, less “flexible”
Other Typical Questions

• Rank the importance of each of these tasks (give a list of tasks)

• List the four most important tasks that you perform (this is an open question)

• List the pieces of information you need to have before making a decision about X, in order of importance

• Are there any other points you would like to make? (open-ended opinion question; good way to end)

Interviews

• Structured
  – Efficient
  – Require training

• Unstructured
  – Inefficient
  – No training

• Semi-structured
  – Good balance
  – Often appropriate
Semi-Structured Interviews

• Predetermine data of interest - know why you are asking questions - don't waste time

• Plan for effective question types
  • How do you perform task x?
  • Why do you perform task x?
  • Under what conditions do you perform task x?
  • What do you do before you perform...?
  • What information do you need to...?
  • Whom do you need to communicate with to ...?
  • What do you use to...?
  • What happens after you...?
  • What is the result or consequence of...?
  • What is the result or consequence of NOT...?

Guidelines

• Stay concrete
  – “So when the new guy joined the team and hadn't got his email account set up yet, what happened then?” vs. “What generally happens here when someone new joins the team?”

• Signs to out look for
  – Interviewee waves hands expansively and looks up at ceiling => generalization coming
  – Use of passive voice, “generally”, “usually”, “should”, “might.”
Typical Open-Ended Questions

• Why do you do this (whatever the task is you are studying)

• How do you do this?
  – Gets at task-subtask structure
  – Then ask about each subtask

• Why do it this way rather than some other way?
  – Attempts to get user to explain method so you can assess importance of the particular way of doing task

• What has to be done before you can do this?
  – To understand sequencing requirements

Focus Groups

• Similar to interviews, except whole group interacts together

• Useful for discussion, introducing different viewpoints and contrasting opinions

• Sometimes combined with quizzes/surveys (!)

• Potential pitfalls
  – Group-think
  – Dominant characters
  – Rationalization
Think-aloud protocol

- User describes verbally what s/he is thinking while performing the tasks
  - What they believe is happening
  - Why they take an action
  - What they are trying to do

- Researcher takes notes about task and actions
- Very widely used, useful technique

- Potential problems:
  - Can be awkward for participant
  - Can modify way user performs task

Alternative

- What if thinking aloud during session will be too disruptive?

- Can use post-event protocol
  - User performs session, then watches video and describes what s/he was thinking
  - Sometimes difficult to recall
  - Opens up door of interpretation
Related: Diary studies

• Subject asked to keep a journal of their daily activities
  – Record actions, reasons, any other observations

• Not always subjective but prevents researcher from having to be everywhere 24/7

Observational research

• Question of how involved you want to be
  – Ethnography
    • Fly on the wall

  – Contextual inquiry
    • Apprentice

  – Participatory design
    • Become part of the team
Observations

We are observing the:

- **Space**
  - Description
  - Meaning
  - Appropriateness

- **Objects**
  - Description
  - Meaning
  - Appropriateness

- **People/activities**
  - Description
  - Meaning
  - Success/failure

- **Technology**
  - Description
  - Purpose
  - Success/failure

On Space
Space: Appropriateness

People (desc)

My first “victim” was a male between 19/22 years old. He was about 5.9 feet tall and he was thin. He was wearing khaki short and a black T-shirt. He had black sport shoes. He was carrying with him his skate board. He had a big black back pack but it seemed almost empty. He had a lot of brown curly hair.

Because of his age and his skate board, I assumed he was a student; he “looked like” all the other teens. Furthermore, he seemed to know exactly where he was going, what he was looking for and how to get it. He never stopped during the time he was there and never gave the impression to be lost.
Actions (desc)

At 4:40pm, he came in from the A entrance and was looking toward the computer area. He decided to take a right just after Section 2. He walked a few steps and stopped. I assumed he realized no more desks were available in this area. It didn’t bother him, he didn’t feel embarrassed and turned back and went back from where he entered the area. He didn’t hesitate once then because he had seen a free desk. He chose to sit down in the Section 2 on a stool.

Observations

• Diagrams are worth 1000 words
Is that all the User involvement in User-Centered Design?

Participatory Design

- Scandinavian history
- Emphasises social and organisational aspects
- Based on study, model-building and analysis of new and potential future systems
Users as part of design team: Why?

- Expectation management
  - Realistic expectations
  - No surprises, no disappointments
  - Timely training
  - Communication, but no hype
- Ownership
  - Make the users active stakeholders
  - More likely to forgive or accept problems
  - Can make a big difference to acceptance and success of product

Structuring data
Input & Output

• Gather data:
  – Surveys/questionnaires
  – Interviews
  – Observation
  – Documentation
  – Automatic data recording/tracking

• Represent Data:
  – Task Outlines
  – Scenarios & Use Cases
  – Hierarchical Task Analysis
  – Entity-Relationship Diagrams
  – Flow charts

Task Outline

Using a lawnmower to cut grass

Step 1. Examine lawn
  • Make sure grass is dry
  • Look for objects laying in the grass

Step 2. Inspect lawnmower
  • Check components for tightness
    – Check that grass bag handle is securely fastened to the grass bag support
    – Make sure grass bag connector is securely fastened to bag adaptor
    – Make sure the deck cover is in place
    – Check for any loose parts (such as oil caps)
    – Check to make sure blade is attached securely

  • Check engine oil level
    – Remove oil fill cap and dipstick
    – Wipe dipstick
    – Replace dipstick completely in lawnmower
    – Remove dipstick
    – Check that oil is past the level line on dipstick
    – ...

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Task Outlines

• Use expanding/collapsing outline tool
• Add detail progressively
• Know in advance how much detail is enough
• Can add linked outlines for specific subtasks

• Good for sequential tasks
• Does not support parallel tasks well
• Does not support branching well

Scenarios & Use Cases

• Describe tasks in sentences
• More effective for communicating general idea of task

• Scenarios: “informal narrative description”
  – Focus on tasks / activities, not system (technology) use

• Use Cases
  – Focus on user-system interaction, not tasks

• Not generally effective for details
• Not effective for branching tasks
• Not effective for parallel tasks
### Personas

<table>
<thead>
<tr>
<th>Plan 0: On instruction from supervisor do 1; When all evidence is collected do 2 through 5.</th>
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**Plan 1:** First do 1 and 2, then 3 and 4, then 5; Repeat 3 and 4 if necessary.

1. Walk the accident site  
2. Identify and preserve evidence  
3. Identify witnesses  
4. Interview witnesses  
5. Review records

**Plan 1.4:** Do 1, 2, 3; Do 4 if insufficient data from 3; Then do 5; Repeat 3 and 4 to meet conditions of 5.

1. Establish meeting room  
2. State purpose of interview  
3. Let witness describe what happened  
4. Ask open-ended questions  
5. Ensure that what, where, when, who, how, why is covered