

IAT 432-- Assignment 2 (15%)

A Usability Study

Due: Printed copy due as per course schedule deadline by 2:30 pm in the IAT 432 drop box. Followed by digital version by email any time Wednesday.

Resources

- Part Two Rubin and Chisnell, Handbook of Usability Testing
- Class lecture notes.
- *Client Briefing* (Tyze.com)

Introduction

How can we tell if a computer system is any good for a person to use? Most developers simply create the system, try it out themselves until they are satisfied with it, and then release it out to the user audience. The result is usually a product that people have problems with.

One of the easiest methods for getting to "know the user" and evaluating the human computer interface is through *usability studies*. Although these come in many flavors, many methods require an observer to *watch* a typical user try the system out for a real task. It is surprising how many design flaws can be detected this way.

This usability study will be an *observational usability test*, a user participation evaluation method. There is more than one way to do an observational usability test. In this assignment, you will try two approaches or methods: the *think-aloud* method and the *co-discovery* (also called *constructive interaction*) method. A usability session may also conclude with different methods of *asking* the user about their experience during the usability test. We will use a post-test *questionnaire* to do this.

Usability studies are increasingly popular in industry. Many modern software companies now have usability labs staffed by HCI professionals whose job it is to find usability problems in products as they are being developed. Most labs contain all the equipment permanently in place (e.g., computers), and are instrumented with audio, video, screen-capture software, one-way mirrors, and so on.

Usability studies are extremely practical, and you can do them 'on the cheap' without these special usability labs. The simplest studies just require you to: pull up a chair next to a typical user and watch them do their work (and perhaps have them explain what they are doing as they are doing it). As well, you will need to jot down any noteworthy events that occurred and to listen to the user's comments.

Project (overview)

You work for Usability Inc., a consulting firm that specializes in evaluating interfaces. You and your team have been contracted to do a usability study of the system described in the Client Briefing document. Your deliverable will be a report written for Ms. Natasha Moore, Research Manager, Tyze Personal Networks.

Your job (description of your role on project)

Imagine that you have been hired by Ms. Moore of Tyze Personal Networks. Your job is to do a usability study of the existing personal network manager application. The best reports (from the class) will be forwarded to Ms. Moore for consideration. If chosen, your work will influence the redevelopment of the product.

The assignment will be done in teams of three to five students and will follow the major steps below:

1. Things to prepare ahead of time

Planning: Usability Test Preparation

Subject selection. While the audience for Tyze Personal Networks products is quite specific, the product you are testing operates like many social networking sites and applications. Thus, your test subjects need only have some experience with social networks to be suitable for this test. You will need team members and four subjects recruited from your friends and family to complete this assignment.

You will be doing two different methods of observational usability test: think aloud and co-discovery.

Method 1: Think Aloud (see below). You will require your team and two subjects recruited from friends and family. You will run two sessions, each with one subject. Select one member in your group to be an experimenter. Select one member in your group to be the

silent observer and note taker. You need to recruit two subjects from friends and family.

For method 2: Co-Discovery (see below). You will require your team and two different subjects recruited from friends and family. You will run two sessions, each with a pair of subjects. Select a team member to be the experimenter. Select the other team member to be the silent observer and note taker. The two remaining team members should be included in each of the pairs. The novice users (non team member) should control the interaction (via the mouse and keyboard). See notes on this below under Method 2.

Pre-test questionnaire. Create a short pre-test questionnaire (approx. 7-10 questions) to better understand your subjects. Questions must probe for people's age, gender, education, language preferences as well as their experience with social networking.

It is extremely important that you ask relevant questions that help you understand a subject's background and beliefs, as related to the task and system. Here are is a suggestion to get you thinking.

How often have you used a social networking site or application (e.g. Facebook, Twitter, LinkedIn)?

- never used them,
- used them once or twice over the last few years
- used them approx. 3 -7 times this year, but not regularly
- use them regularly (how often?) _____

You should also ask about age, gender, education, language preference. What else might you ask? You will need six copies of the pre-questionnaire, one per subject.

Post-test questionnaire. You will also administer a post-test questionnaire. Good questions will give you information about how participants judge the system's usability, where they think they had most problems and so on. You may want to leave space after each question for comments, where you would encourage people to say why they answered a question a certain way. For example, here is an example of a question that uses a rating scale:

I found the system:
Easy to use 1 2 3 4 5 hard to use.

Reason for your rating:_____

For this assignment, the post-test questionnaire has been provided and is included in Appendix 3 of the Tyze Briefing document. You may want to add spaces for subject's comment to the questionnaire (as exemplified above). Question 1 may only be applicable if subjects are involved in the support of someone facing a life challenge.

You will need six copies of the post-questionnaire. Both subjects in a pair will fill this out.

Tasks. Usability testing requires an observer to watch someone go through the paces with critical or typical tasks. It is usually your job as an experimenter to prepare a set of example tasks ahead of time that the subjects will try to perform. These tasks should be realistic ones that typical users would try to do with the system! But how do you discover what those typical tasks are?

In this case, you have been given a set of tasks Ms. Moore would like to use. These tasks are listed in the Client Briefing document. You will need to review and finalize a task set to ensure you know all the steps required to accomplish each task before the usability testing. See page 79 – 85 in Rubin for guidelines on developing tasks.

Note: It is important that the two team members who will be test subjects in method 2, are not involved in task development.

Usability Test Protocol You will need to work out a protocol which outlines the timeline and actions involved in for a session using each of the two usability test methods. A protocol lists the start and end time or duration for each activity in the session and includes notes about what will be happening for each activity. You should also include the test time, date and location. It is a blueprint for your sessions.

Instruction Scripts Now you need to prepare short scripts that will be used to communicate the tasks to the users. Prepare a script of the instructions you will administer to subjects based on the task scenarios.

Note Sheets You will need to make note sheets that list the tasks, codes for task result (Success, Success with Prompting, Failure), and have room for comments from the experimenter and the silent observer/note taker. Thus, you will need two sheets for each

session, that is you will need 2 x (2 Think aloud sessions) + 2 x (2 Co-Discovery Sessions) = 8 sheets.

Preparing equipment You should have subjects work on a computer that you've set up ahead of time. You need to access the web site and login. You will be provided with a temporary login by the TA for IAT 432. Note that you will need to reset the tasks after each first session where appropriate so that the subject can't see the results of previous subject's actions.

Review the Product and the Tasks It is extremely important for the experimenter and the note taker to review the product and actually do the tasks before the usability sessions. Otherwise you won't know if the subject is doing something right or wrong. Determine your roles.

2. Doing the Usability Test

Reference Material: *Rubin Chapter 9*

Questionnaire. Take the pre-test questionnaire you had created previously and have each subject fill it out before they do the tasks.

Method 1: Think Aloud (2 subjects)

First, you should have a single subject carry out the tasks on the system with the experimenter (remember, task scripts were prepared ahead of time!), AND the silent observer will be taking notes of the subject's behavior and where the system appears to break down (e.g. errors, problems, etc.). The subject is asked to say what they are doing as they are doing it, and they should elaborate on any problems they are having. For example, here is what a subject may say:

"I'm going to try to do this task ... OK, this is probably the menu item I should select. Hmmm ... It's not doing anything, what's wrong? Oh, I see, I have to double click it..."

As before, the experimenter AND the silent observer must take notes of the subject's behavior and key comments. They should also record the completion of each task as a Success, Success with Prompting, or Failure. While the experimenter is allowed to encourage the subject to talk freely (i.e. "What is it you are doing now? Why did you do that?"), the experimenter should not interfere or help the subject in any way, no matter how tempting!

Note: Talking aloud is sometimes uncomfortable and unnatural for people to do. It may also interfere with the task the person is trying to accomplish.

Caveat: If subjects get stuck

While the experimenter should not help the subject with the task, there are a few exceptions to this rule:

- If a subject has problems getting started, record the problems and give them a hint to get going. This is OK, because if they can't get started, they will not be able to do the tasks! Note that this constitutes a failed task on your data sheet.
- If a subject cannot complete a particular task after a reasonable amount of time, tell them to stop and start them on the next task. Or, give them a hint if they cannot overcome some conceptual problem necessary to trying out other parts of the system. Again, record all problems.

Getting stuck is discouraging for subjects. Try to give them an early success experience, and remind them that they can quit at any time, for any reason, if they wish to. Remember that in order to help them or move them on to the next task, you need to have worked through the tasks.

See Rubin p. 204-206 for *Think Aloud* for hints on how to encourage subjects to think aloud.

Method 2: Co-Discovery (two pairs of subjects = four subjects)

This method involves the pairs of subjects working together on the tasks, with the experimenter and silent observer taking notes as in Method 1. See notes above under Subjects for the assignment of roles.

The difference in Method 2 is that the natural communication between the two subjects will replace the unnatural talking aloud in Method 1. Also, the differences between subject's knowledge may lead to interesting questions, explorations, and answers between them. The best match of subjects is a semi-knowledgeable person matched with a fairly new user, with the latter being in charge of interacting with the system. Thus you hear the new user asking questions and the knowledgeable one explaining how to do things (sometimes incorrectly!).

Questionnaire

At the end of the test take the post-test questionnaire you created previously (included in Appendix 3 of the Client Briefing) and have

subjects fill it out. For the paired method, have both subjects fill it out.

3. Data Analysis

Once all the subjects have been run through the tasks, meet as a team and review your findings from your eight note sheets (2 per session). For each task, use the top down approach to analyze result as discussed in class and described in Rubin Chapter 10. You will need to work out overarching as well as specific issues or problems as they emerge from your review (bottom up approach).

You may want to use stickies to group together common findings for your categories of problems. Summarize your findings and include severity ratings where appropriate (e.g., severe, moderate, minor). Be sure to compare findings from each session and each method. You may also find common problems that affect all the tasks. You can list these under General Findings and General Problems sections in your write-up. Brainstorm recommendations for each problem.

4. The Write Up

Your write-up (report) should be oriented towards a senior design person at Tyze Personal Networks that will make the major decisions on the interface and system changes. Here is a template for you to follow.

Important Notes

Remove all References to Company, Product, Client

In your report you must remove all references to the company name, product name and client name in your text report and in your graphics and/or screen shots. Use "Company" for Tyze; "Product" for the Networking application and "Ms. Smith" for Ms. Moore. You must also black out all logos and visual references to Tyze in screen shots. If you do not meet this requirement you will not be able to post this report to your portfolio. Your mark will also be affected.

NDA

You must also sign and hand in the NDA (non-disclosure agreement) for each member of your team. If you do not meet this requirement you will not be able to post this report to your

portfolio. Your mark will also be affected. This is a requirement of the assignment as dictated by the client.

Executive Summary

A summary of the key problems of the system and some recommendations for improvement.

Section 1. Scenario

Give a very brief reminder (overview) to Ms. Moore on what the system is and then explain purpose of your product evaluation. [Two paragraphs at most.]

Section 2. Methodology

Explain what you did. Assume that Ms. Moore knows what the particular usability methods are (as described in this sheet) and their purpose. Include the number of subjects and briefly summarize the pre-test results which describe your subjects.

Section 3: Summary of Findings

Organize the results by task. For each task summarize the difficulties users had based on your observations from the usability test sessions and any comments which were written on the post-usability test questionnaire. Where appropriate, use selected raw and collapsed data, paraphrasing, comments, questionnaire results, screen shots etc. to illustrate your points. It is important to present as much information as possible with economy! Highlight areas that were identified in both methods (think aloud and co-discovery) of the usability test sessions.

Section 4: Problems & Recommendations

Based on your findings and analysis, identify common and important problems of the system. This should be more than a checklist of all the problems seen. Try to generalize problems when necessary, although you can and should use examples to highlight them (taken from Section 3 findings and/or the general ratings on the post-test questionnaire). For each problem, recommend a solution(s) which would specifically address the problem.

Section 5: Suggested Improvements

Describe five important changes that you would make to the design of the system, with explanation. **Note:** You must stay within the style of interface presented, for example, your

modification cannot turn (say) a form fill-in system into a graphical map.

Appendix 1: Comparison of different techniques

For future usability studies, you will want to tell your product team what worked well and what did not in this usability study. Briefly summarize your experiences with each user participation method (think aloud and co-discovery), contrasting them for ease of use, the richness of the information obtained, their advantages, etc. Discuss what kinds of problem each turned up. Discuss the kinds of problems that each method showed up and the common problems. Then recommend the methods you wish your group to use in the future. Which was most useful? Which was least useful? What would you keep? What would you throw away?

How do the kinds of problems you discovered compare to the kinds of problems you discovered in the analytical evaluation you did in Assignment 1: Heuristic Evaluation? If they are different, why do you think this is? Which approach(es): user participation or expert analysis would you recommend and why?

Appendix 2: Raw data

All original observational note sheets and filled in pre and post questionnaires etc. should be attached here.

Appendix 3: NDAs (non-disclosure agreements)

Signed NDAs for all team members (not family and friends subjects).