Expanding Our Toolkit: From Descriptive Techniques to In-Depth Analyses

ADVANCED TOPIC SEMINAR SUMMARY

Number of Presenters:	1
Topic Category:	[X] Usability method implementation or adaptation [ ] Building usability within the organization or product life cycle [X] Issues and strategies for experienced usability professionals [ ] "Outside the box" [ ] Other: _____
Presentation Type	[ ] Business case study [X] How-to Discussion [ ] Advanced concepts, philosophy or methodology [X] Presentation of advanced approaches to design [ ] Other: _____
Audio Visual Requirements	A computer projector, lectern and microphone will be provided for each presentation session. Since these sessions are interactive, 3 flip chart holders and flip charts will be provided. Additional flip charts will require an extra fee. List any additional AV or other special requests. If you require any additional equipment, a cost estimate will be provided

ABSTRACT:

The commonly practiced definition of usability goals and task analysis will be extended into in-depth analyses. The takeaways are relative, context-sensitive weighted definition of usability goals and the use of link analysis. The resulting benefits are more practical information to better support the user interface design and testing.

GOALS FOR THE SESSION:

Background: The discipline of usability engineering has many recognized and accepted approaches and techniques for both design and testing. The definition of usability goals and task analysis are techniques that probably every usability professional is aware of, and are being used extensively for both usability design and testing. The following is a brief discussion on less addressed aspects of usability goals definition and task analysis. These aspects serve as the basis for the proposed session.

Using Tradeoff Analysis in Usability Goals Definition

The Problem: The definition of usability goals, both in general and measurable terms, is well documented and practiced. However, often is the case when the practical consequences of usability goals may be conflicting (e.g., efficiency vs. fun) or a given usability goal may have different practical implications for different tasks or different user profiles. What is often lacking in the definition of usability goals, even with experienced practitioners, is the identification of their relative weight or impact as a function of various important factors in the system.

"Take Away": In this session, participants will learn how to apply tradeoff analysis to the definition of usability goals. This analysis results in determining the relative weight of usability goals and applying it in design and testing. The benefits of using the analysis are the ability to make design and testing decisions based on the potential tradeoff between usability goals and consequently better meet or test those goals.

Link Analysis as Part of Task Analysis

The Problem: The most commonly practiced parts of task analysis are a variety of techniques for information gathering on user tasks and the analysis of the tasks resulting in descriptive lists, tables, diagrams, and narratives. However, the gathered information and its descriptive analysis are often not sufficient to inform the details of the design and/or testing. For example, the descriptive analysis of tasks of a bank teller may indicate that there is a major task of deposit, which is broken down into several sub-tasks. However, such an analysis does not necessarily provide the designer with sufficient information on how this major task and its sub-tasks are to be represented in the user interface, and if and how they are to be combined or integrated with other tasks.

"Take Away": In this session, participants will learn to use link analysis and apply it as an extension of task analysis for usability design. This analysis results in a mapping of the links or inter-relations between elements (tasks, tasks and objects, etc.). The benefit of this analysis is the grouping of the inter-related elements in interaction sequences, menus and dialogues, and visual layout.

In summary, participants in this session will:

- Become familiar with two analysis techniques that can be used to improve aspects in usability design and testing
- Learn how to apply these techniques
- Discuss and debate the efficacy of the techniques in everyday usability engineering practice

HANDOUTS OR OTHER SESSION MATERIAL

Material to the participants will include the following:

- Hardcopies of the presentation slides.
- A short paper describing the application of the presented techniques.

PREVIOUS PUBLICATION OR USE OF THIS MATERIAL

This material has not been published previously. I have used these analyses extensively in my practice, and have taught them in numerous courses and workshops, in both the industry and university courses.

YOUR BACKGROUND IN THIS MATERIAL

My professional career in Human Factors Engineering (HFE), usability engineering, and Human Computer Interaction (HCI) spans over 20 years. The academic background prior to the practical experience is in cognitive-experimental psychology. I have been involved as a human factors and usability professional in a large variety of domains and projects. My primary involvement was both in the design and testing phases. In all activities I learnt, mastered and employed a variety of analysis, design, and testing techniques. Throughout the years I have adapted and developed variations of some of the techniques and used some innovative approaches of applying those techniques in HCI and usability (some of which I propose to present in this session). Throughout my career I have also trained and instructed others in the various approaches and techniques. This instruction and training took place both as professional courses and workshops in the industry and as academic courses in various university programs.

REFERENCES

Meister, D. (1985). Behavioral Analysis and Measurement Methods. John Wiley & Sons.

Chapanis, A. (1996). Human Factors in System Engineering. John Wiley & Sons.

DETAILED DESCRIPTION OF SEMINAR CONTENT

Following is a brief explanation of the techniques, based on lessons learnt from Human Factors Engineering that I propose to present in this session, along with the session agenda.

Link Analysis: This analysis is typically used for layout design of elements in the system. It could be the layout of a kitchen, control room, a control panel, or display elements. It is a technique that aids in mapping the relationships and interactions between all possible system components. The mapping can be done as a graphic diagram or as a link matrix. The technique has several steps: 1. Decision on the elements to be analyzed (information items, actions, or both). 2. Definition of the links (frequency of the association between the elements, sequential association, importance of links). 3. Mapping of the links, usually in a link matrix. 4. Analysis and interpretation of the links in terms of display proximity or interaction steps or links between interactions and display elements. In this presentation I will demonstrate the adaptation of this technique for both interaction and display design.

Trade-off Analysis: Trade-off analysis is one of the techniques used in human factors to decide among several design alternatives as a function of several determining criteria or requirements. It has been traditionally used as part of the procedure to determine human-machine task allocation or to distinguish between several design proposals (before actual design and implementation). The basic steps in the original technique are the definition of the various alternatives, definition of the requirements or criteria (e.g., cost, reliability, human workload, etc.), assignment of a weighting factor for each criterion, and the computation of the final weight of each design alternative as a function of the criteria.

In this session, I will present how to apply this approach to the weighting of usability goals. We often define several usability goals for a given application (e.g., walk up and use, efficiency, fun, etc.). Often there can be a conflict between the implementation of the usability goals (e.g., efficiency vs. fun) and we need to determine the relative impact of each usability goal for the design or testing. In addition, when we design or test for several user profiles or several different tasks, the relative importance of each usability goal may be different for each of the alternatives. I have employed trade-off analysis to deal with this issue. The steps are very similar to what is described above: 1. Define the alternatives (e.g., user profiles or the various usability goals). 2. Define the criteria. The criteria can be usability goals themselves when they are being used to determine their relative weight for each factor such as user profile, or other criteria such as development cost, performance, reliability, etc. if they are being used to determine the relative weight of each usability goal. 3. Computation of the final weight for each alternative.

Summary content and time table

Item	Details	Estimated time
Introduction	Personal introduction and a quick survey of the participants' backgrounds and experiences.	5 min.
Overview of the task analysis context	Very brief presentation of task analysis approaches as learnt from human factors engineering. The purpose is to set the stage for the more detailed presentation of the specific techniques.	5 min.
In depth presentation of trade-off analysis	Presentation of the steps to perform trade-off analysis. The presentation will address the utilization of this analysis for the weighting of different usability objectives, and how this is applied to both design and usability testing.	15 min.
In depth presentation of link analysis	Presentation of link analysis and how it can be applied to user interface design.	15 min.
Break-up groups	Depending on the amount of attendees, people will break up into small groups to discuss and formulate a short list of criteria for the tradeoff analysis.	20 min.
Summary of group work	Each group will present their criteria which will be presented on the flip-charts. I will act as a facilitator to attempt and integrate the lists into a comprehensive one.	20 min.
General discussion	The summary discussion of the session will address the question how the techniques presented can be deploying as part of the usability process. The take-away of this discussion will be some criteria of when and how to use or not use these methods.	15 min.