DEPARTMENT OF COMPUTER SCIENCE
UNIVERSITY OF TORONTO

CSC 318S
THE DESIGN OF INTERACTIVE COMPUTATIONAL MEDIA
Fall Term, 2002-3

Assignment 6
USEFULNESS AND USABILITY EVALUATION OF PROTOTYPE SYSTEM; REVIEW AND SYNTHESIS OF ENTIRE EXPERIENCE

HANDED OUT: Wednesday, November 13, 4 p.m.
DUE BACK IN: Thursday, December 5, 4 p.m.
WORTH IN MARKING SCHEME: 12 points

The purpose is this assignment is to give you experience in developing and carrying out an evaluation of the usefulness and usability of your prototype, and to encourage you to reflect thoughtfully on and learn from your project experience over the term.

USEFULNESS AND USABILITY

Our emphasis on the user interface to new interactive computational media should not blind us to the fact that elegant interfaces cannot make up for inadequate or inappropriate functionality. In other words, our systems must be both **useful** and **useable**.

Usefulness refers to the extent to which the system's functionality meets the needs of the user and of the task he or she is carrying out. *Usability* refers to the degree to which the interface facilitates carrying out of the task, and incorporates such criteria as ease of learning, ease of use, protection against catastrophic errors, and provision of user support.

Your work on Assignment 4 should have included a careful development of appropriate system functionality based in part on work done in Assignment 3, i.e., discussions with and observations of prospective users and possibly also on a task analysis. Yet users and clients often cannot really evaluate the sufficiency of stated requirements and functional specifications until the implications of these can be seen in the context of a working system prototype. Given your work in Assignment 5, you are now at a stage where you can show such a prototype to prospective users in order to better understand its usefulness and usability.

Find **at least three (3)** individuals who are not working as part of your team. **Ideally**, these should be senior citizens who fit the specifications of your intended users. If you cannot recruit enough senior citizens, they should be individuals who have relevant and significant expertise with senior citizens, for example, people who spend a great deal of time with and possibly work with senior citizens. Finally, if you cannot do this, then they can be students in the class or friends.

Although we will not require you to develop and get signed a consent form, you must brief these individuals appropriately about the purpose of the meeting, assure them that they can stop the interview and observation at any time, and assure them that everything they say and do will remain confidential and not be attributed specifically to them by name. You will, however, need to describe these people and their background and situation in general terms in your report.

EVALUATING USEFULNESS
Describe the purpose of the system you are building. Ask them to describe, however they choose to, the capabilities they believe would be required if they were going to use the system for the stated purpose. This is called a *free-form interview*.

Later (see below) you should carry out a structured inquiry about their reactions to your proposed functionality. We return to this topic below.

TESTING USABILITY
You are now ready to look at usability. Ideally this should be done with the same individuals.

Sit each individual down at your interactive prototype. Demonstrate and explain (1) its capabilities in general terms and (2) how to use the mouse and keyboard to work your application. Then allow them to explore it on their own. This is called *free-form exploration*.

Next, ask them to carry out 2 or 3 pre-designed tasks without your help. Carefully design these tasks to emphasize key functionality and the basic interface style of your system. Ask your informants to *think aloud* as they are carrying out the tasks. Look for *critical incidents* in the interaction, in other words, serious errors or stumbling blocks.

As a third step, inquire about the *conceptual model* they have acquired while working with the system. Is this conceptual model identical to your *designer's model*, in other words, have they understood the system as you intended?

Finally, ask them if they have any suggestions for improving the interface.

If you have built other prototypes, such as physical models, you need to evaluate the usability of these prototypes as well.

EVALUATING USEFULNESS (REVISITED)
We now return to the evaluation of usefulness. Make up a structured description of the functionality of your system. For example, a word processor has capabilities for entering and correcting text, for formatting text, and for saving, retrieving, and printing text. The tools for entering and correcting text include insertion, deletion, substitution, and iterative search and replace. The tools for formatting text include .....

Go through this functional description with your informants. Ask them to comment on the importance of each item. Then ask them if they can think of anything you've forgotten.

Throughout all these tasks, you should be taking detailed notes. Videotaping the sessions would be better, but we don't have the equipment and facilities to make this possible for a large class. You are welcome to use your own video equipment, which might help you get a better grade.

DESIGN REVIEW
What have you learned from the results of your usefulness and usability evaluation in terms of?
- Possible additions of new goals or changes of stated goals
- Changes to the description of the intended user
- Changes to the proposed use model (as represented by, for example, in an activity scenario)
- Changes to the target users' mental model (conceptual model)
- Additions or changes to the proposed functionality
- Changes to the proposed user interface.

YOUR TASK

Your task is to design and carry out usefulness and usability tests for your prototype system, and to write a report describing your work. **You need not follow the above procedure precisely, if you believe you see a better way to proceed. If so, explain your methodology. However you proceed, you will need to describe carefully what you did and what you learned.**

Put as much of the "original data" as you can in Appendices to the report, for example, a photocopy of the original notes from your interviews or observations, or copies of the questionnaires that were filled out. The body of your report, not counting the appendices, is likely to be on the order of 15-25 pages, double-spaced. The report must include discussions of (not necessarily in this order):

- a review of the design concept, and how it has evolved through your work over the semester
- a summary of the procedures you used in your user testing of both usefulness and usability
- a summary of the major insights obtained in the user testing
- a summary of the major enhancements and additions to the functionality of the prototype (if any) implied by the user testing
- a description of changes (if any) to the user interface implied by the user testing
- any other comments about your experience over the term, what you learned, how you might have done things differently, etc.

KEEPING THIS ASSIGNMENT WITHIN BOUNDS

If you spend more than 15-21 hours per person on this assignment, you are spending too much time. To achieve this goal, it is very important that all members of your group participate actively and collaborate in the work.

WHAT YOU SHOULD HAND IN

You need to hand in your report in **TWO COPIES**.

The report must be typed and submitted on 8.5"X11" paper. **Structure and organization, spelling, grammar, word usage, and document appearance will count for roughly 15% of your grade.** Sketches, diagrams, and tables should be used where appropriate to assist in conveying the concepts. **Papers submitted that are not written in minimally acceptable English will be returned for rework and resubmission.**

Each submission must include a title page with a meaningful title, your names, your student ID#s, your tutor's name, the course name and number, and the date. The second page should contain a very short one-paragraph executive summary of the document, a table of contents, and **a statement of who did what on this assignment**.

REQUIRED ADDITIONAL SUBMISSION

Part of your grade this term will be based on an evaluation of each individual's contributions to the team project <u>over the semester</u>. Each student must individually fill in and submit in an individually sealed envelope (to Prof. Baecker at the last class, or to Kelly Rankin's office in BA7214) the form which is attached. The 8% class participation grade will be based in part on judgments expressed in these forms and information known to the teaching assistants.

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Evaluation of Individual Contributions to Team Project

RETURN TO PROF. BAECKER (BA 7228) OR KELLY RANKIN (BA 7214)

Assume that you have $100 to pay the group members who have participated in your team project. On the basis of each member's overall contribution **over the entire semester**, please allocate this money among the members. You should consider quality of ideas, time invested, group participation, personal effort, commitment, and "going beyond the call of duty" in this allocation. **Make sure to rate your own contribution as well.**

Project Name _____

Name of Group Member	"Pay"
1) _____	$ ____.00
2) _____	$ ____.00
3) _____	$ ____.00
4) _____	$ ____.00
5) _____	$ ____.00
TOTAL	$ 100.00

Additional comments (optional, use reverse side if more space is needed):

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Your name (optional): _____

Approx. no. of **hours/week** (including class) spent on this course (optional): _____