

DEPARTMENT OF COMPUTER SCIENCE
UNIVERSITY OF TORONTO

CSC 318S
THE DESIGN OF INTERACTIVE COMPUTATIONAL MEDIA
Winter Term, 1997-98

Assignment 3

CONCEPT DEVELOPMENT FOR TERM PROJECT

HANDED OUT: Wednesday, January 21, 1:10 p.m.
DUE BACK IN: Friday, February 6, 1:10 p.m.
WORTH IN MARKING SCHEME: 12 points

This term all students will work in multidisciplinary 4-5 people teams on a semester-long course project to carry out the user-centred, iterative design of prototypes of computational tools or systems appropriate to the needs of the elderly. The job of each project team is to conceive, design, prototype, and evaluate a novel approach to this design problem.

THE PURPOSE AND TASK OF THIS ASSIGNMENT

The purpose of this assignment is to give you some experience in envisioning, specifying, developing, and assessing the suitability for users of a concept that seeks to provide a solution for the design problem.

Your task is to envision, specify, develop, and explore a concept as a proposed solution for the design problem.

Your team will then document your understanding of these issues in a brief (circa 15-20 page, double-spaced) report.

Your report should address the following issues (the following list may suggest a suitable outline for the report):

1. The basic idea
2. The target user
3. User contact ideas and insights
4. Brainstorming ideas and insights that could lead to an initial design specification
5. Proposed functionality
6. Proposed use model documented with a “storytelling” or “Day in the Life” scenario
7. The design team.

1. Describe the basic idea for your solution as clearly and succinctly as possible. Define the goals for a system that would embody the solution with some precision and some detail.

2. Describe your target user. This characterization may be in terms such as:

- age (e.g., elderly, very elderly)
- educational level (e.g., high school, university, advanced degrees, etc.)
- health (e.g., healthy, having specific illnesses, infirmities, or handicaps, etc.)

- level of familiarity or expertise with computers and technology (e.g., novice, intermediate, highly skilled)
 - feeling about technology (e.g., comfortable, nervous, hostile, etc.)
 - relevant activities (e.g., learning, communicating, playing cards, taking medications, etc.)
 - geographical setting (e.g., in an apartment, on a tennis court, at a doctor's office, in the bathtub, etc.).
3. Talk to and understand your prospective users. John Gould's paper *How to Design Usable Systems* (BGBG, 1995, 93-121) suggests a variety of methods for doing this which are described below. Other readings assigned for the week of Jan. 19 may also prove helpful. Your paper must document what you have done in this area and the ideas and insights gained from these activities.
4. Brainstorm with members of your team. Throw out ideas and record them using a whiteboard or post-its. Organize and rearrange them. Debate them. Pick the most promising and try to elaborate them. Iterate 2 or 3 times between steps 3 (talk to and understanding your users) and step 4 (brainstorming) so that insights from users can aid your brainstorming and so that your best ideas can be vetted with prospective users. Your paper must document what you have done in this area and the ideas and insights gained from these activities. S. Joy Mountford (*Tools and Techniques for Creative Design*, BGBG, 1995, 128-141) suggests a variety of methods to help in your brainstorming. L. Vertelney (*Using Video to Prototype User Interfaces*, BGBG, 1995, 142-146) suggests methods to explore and document initial design ideas.
5. Document the functionality proposed for your system. List the proposed capabilities.
6. Develop a use model for the system, which describes how it will be used and will operate in the target environment. One effective way in which this can be done is in terms of a storytelling prototype (see G. Salomon, *A Case Study in Interface Design: The CHI'89 Information Kiosk*, BGBG, 1995, 25-34). Such scenarios of use are often called "A Day in the Life of ...".
7. List the members of your design team with a sentence or two about the background, expertise, and likely areas of prime responsibility of each member.

METHODS FOR UNDERSTANDING USERS (Issue 3 from above)

- 3a. Try the task yourself. (Beware of generalizing too far, but first-hand experience is always useful.)
- 3b. Talk with the intended users, asking them about their problems, difficulties, wishes, as well as what works and doesn't work now.
- 3c. Visit the homes, living spaces, and workspaces of users, observing the kind of environment in which your users now live, play, and work.
- 3d. Observe the users, observing what they do and how they do it. In some cases, it may be appropriate to have them think aloud as they are actually carrying out tasks and activities.
- 3e. Learn about the organization and environment in which users live, play, and work.

The technique of contextual inquiry is one good way to approach 3b through 3e. See Holtzblatt and Jones, *Conducting and Analyzing a Contextual Interview*, BGBG, 1996, 241-253, for a description of contextual inquiry applied to a workplace.

3f. Do participatory design, making intended users or experts part of the design team. Some students in the class who come from disciplines other than computer science may be somewhat expert in their chosen discipline, for example, molecular biology, physiology, history, physics, economics, political science, English, or landscape architecture. Try to leverage your expertise in choosing your target users.

3g. Carry out a task analysis (see Lewis and Reiman, *Getting to Know Users and the Tasks*, BGBG, 1995, 122-127). Task analysis is the process of identifying, understanding, systematizing, and documenting the significant activities and processes whereby a user carries out a task.

In practice, some of the above activities would be carried out by video taping interviews with and behaviours of your intended users. We cannot in this course make available the equipment to do this, but you may find it helpful to tape record your sessions with users, possibly to transcribe them, and definitely to review and analyze them.

NOTE: You are not required to do contextual inquiry or participatory design, but the ideas are useful. A task analysis is also not specifically required, but will undoubtedly help you in formulating a design and is therefore recommended.

You are expected to attempt insofar as it's possible and appropriate methods 3a through 3e.

KEEPING THIS ASSIGNMENT WITHIN BOUNDS

If you spend more than 15-18 hours per person on this assignment, you are spending too much time.

WHAT YOU SHOULD HAND IN

You need to hand in your report, one report per group.

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 20% 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 one short paragraph executive summary of the document, and a table of contents.

Your report should also be entered onto a Web page. You can do this on a Web page that you yourself own and email us the location to graff@dgp.toronto.edu, or deliver to graff@dgp.toronto.edu by email or snail mail an electronic copy of your report for us to enter onto the course Web page.