Project #2
User-Centered Requirements Analysis and Design

Due dates:
> • 9AM, Monday, Nov 4: Observation and interview notes for at least one user; initial scenario; initial HTA (hierarchical task analysis).
> • 9AM, Monday, Nov 11: Complete project due.

The point of the project
> In this project, you will learn methodologies that can be applied to the requirements-analysis and design phases of building easy-to-use and easy-to-learn user interfaces. Specifically, the project will help you to learn how to conduct interviews, write scenarios, conduct hierarchical task analyses and, if you do this portion of the assignment, conduct GOMS (Goals, Operators, Methods, and Selection rules) analyses.

The major steps and components of the project
> 1. Pick an educational, creative, civic, or health-related activity that people engage in on or near campus. This could be a UO-related event that contributes to learning, creative expression, political activism, or good health. It cannot be the planning of a party. It should be something that most students could participate in. It could, for example, be the planning and running of a class or lab, taking a class or building something in the craft center, a UO club organizing and executing an event, a band or deejay planning and completing a performance, a "get out the vote" campaign, or the planning and executing of an activity through the UO Outdoor Program. Observe a situation in which users are truly engaged in the actual planning or execution of the activity. You should observe some of the actual planning and, ideally, the actual event (so select an event that will take place before the project deadline).

> 2. Observe two real users engaged in the tasks, and interview these users. Find two people, ideally not students in the class, who will permit you to observe them doing the task, and would be willing to answer questions about how they do the task. First, try to get each participant to show you exactly how they do the task. Listen carefully and take notes. After they do the task, interview them. The observation and interview process should take about 30 to 60 minutes per participant. Optionally, take some photos. Pages 51-54 of the course textbook (Rosson & Carroll, 2002) provides some guidance on how to observe and interview users. The observations and interviews should produce two sets of notes, one per participant, that you submit with your project submission. If you handwrite your notes during the observation and interview, consider typing

them up; it would make it easier for you to draw from them for the next part of the project. The grammatical structure of the notes does not need to be perfect, but the writing should be easy to read and understand.

3. Write a scenario based on the interview materials. Create a scenario that is a narrative of how the task is accomplished based on your observations of real users doing the task, and interviews of these people. You may supplement the users' stories with your personal beliefs of how you think that people do the task, but keep in mind that your personal opinions should generally carry less weight that what you actually observe other people doing, and the reports of other people. Be clear about what parts of the scenario are derived from your opinions and assumptions versus what you observed in and learned from other people. You may include photos in the scenario if you like, but only submit photos that convey useful information and are of good quality (such as with good exposure, focus, and composition).

The scenario should be well-composed and well-written, following the guidance for "Good writing" in the syllabus. You can model your scenario after the examples in the textbook, such as the "problem scenarios" on pages 68-70 of the textbook, or the "activity design scenarios on pages 96-99 of the textbook. (Do not worry about the fine distinctions between these two different kinds of scenarios.) The scenario should be roughly 1,000 words in length.

This [photojournalistic essay of the Classic Tetris World Championship](#) accomplishes some aspects of the assignment. It captures some scientific activities that take place within a computer gaming event. Note how the photo-essay captures the people, the tasks, and the artifacts, and provides a wealth of information that would be useful for anyone who wanted to build technology to support any of the tasks. But please note that the Tetris competition photo-essay would not satisfy this assignment very well. The assignment calls mostly for a textual essay, with photos complementing the essay. This Tetris photo-essay is mostly photos, with a little bit of text complementing the photos. Also, it is much easier to produce a good written document than a high-quality photo-essay.

4. Conduct a hierarchical task analysis (HTA) that accurately characterizes the hierarchical nature of the tasks described in the scenario. The HTA should have at least thirty nodes and should be be at least as detailed and thorough as the supermarket checkout task example in Figure 2.1 in Annett (2003) (from Shepherd, 2001). Annotate nodes with additional information such as is done in the Figure. For example, specify whether all of the subtasks in a particular level need to be accomplished, or just some of them; and whether the subtasks can be accomplished in a strict order, or any order. Create a diagram like Figure 2.1,

not a table like Table 2.2. Start your HTA using paper and pencil. This is essentially a design task, and should require some iteration. It should take some time for you to decide what hierarchical structure best characterizes how people do the task.

5. Write some GOMS methods. *This step is required for graduate students, and can be done for extra credit by undergraduate students*. Select one subtree from your HTA that has a task with roughly four or five subtasks, and write the GOMS methods for that subtree. For example, if it is the top node of the tree, your GOMS methods might correspond to the "top level algorithm" or "TLA" GOMS methods discussed in the Kieras & Butler (2014) paper. Alternatively, you may choose to write the GOMS methods for a subtree in the middle of the tree, or you may take one of the branches down to the keystroke-level and write the GOMS methods for that lowest level. You should submit at least four or five GOMS methods that follow the examples in the Kieras & Butler article, as well as the Kieras (1996) NGOMSL Guide that is available on the UO Canvas website. Feel free to re-use methods from the NGOMSL Guide, with attribution, but do not count these towards your four or five methods. Try to write the GOMS methods for a part of the task that would be worthy of consideration in the design or redesign of (a) the task or (b) an interface to support the task.

6. Write a brief reflection on the project. This should be roughly 400 words in which you reflect on the project, including what went well, what was difficult, what you learned, and how the approaches used here relate to designing easy-to-use and easy-to-learn user interfaces.

You may work in groups of two but only for Steps 1 and 2 (picking a task, and interviewing and observing users) but ...

the two of you must observe and interview *three* people, both of you must be present at all three interviews, and you must take separate observational and interview notes. You must then complete Steps 3 through 6 completely separately. All of the submitted materials should be very different except that the you will have observed and interviewed the same three people.

What to Submit

Submit, via Canvas, a single PDF file with a filename of "<lastname>-P2-Preliminary.pdf" for the preliminary submission, and "<lastname>-P2-Final.pdf" for the final submission. The PDF file should include:

1. Two sets of notes from your two user observation sessions and interviews. But put these notes at the end of the entire document, as an addendum.
2. A scenario. (Roughly 1,000 words.)
3. A hierarchical task analysis, annotated as needed. (At least thirty nodes and as detailed as Annett, 2003, Figure 2.1.)
4. GOMS methods. (Required for CIS 543; optional for CIS 443.) (Four or five methods.)
5. Reflections on the project. (Roughly 400 words.)

Grading criteria

Do the participant observations and interviews, and the scenario, accurately capture the true complexity of the task? Were these studies conducted and was this scenario written in an earnest and thoughtful manner? Does the HTA provide a thoughtful and accurate decomposition of the task hierarchy, with roughly equivalent levels of abstraction at each level of the hierarchy? Is the HTA adequately annotated so that the task decomposition is completely clear? If GOMS methods are written, do they follow the structure of the methods in the two readings? Are they complete and accurate? Does the reflection on the project demonstrate analytical and critical thinking? Is the submission clear and well-written, following the "Good Writing" guidance in the syllabus? Is the assignment completed as specified?

Extra Credit

For undergraduates, you can get up to 5% extra credit by writing GOMS methods as described above. For all students, you can get 5% extra credit by including, in the scenario, five or more high quality (good exposure, focus, and composition; and each photo under 1MB) photos that vividly help to convey the story. To progress towards taking high quality photos, you can read about topics such as holding the camera, cropping and framing, exposure compensation, the use of histograms, and photographing in sunlight at geofflawrence.com and elsewhere.