

CS 3041: Human-Computer Interaction

Assignment 4: User Evaluation Plan & Hi-Fi Prototype

Goals

In this stage you will produce a high-fidelity implementation of your system and plan an evaluation of the system.

Part A. Prototype Planning

You will need to create and submit **6 slides** (e.g. Powerpoint) that describe your idea and the features you are developing:

- **Slide 1** should have your name, date, and project name.
- **Slide 2** should provide a high-level description of your project, the intended users and their goals and needs as you perceive them. Much of this is also described in Assignment 1 and 3, and it is fine if nothing has changed. However, you may have made modifications to your project. So, make sure to include the most up-to-date description.
- **Slide 3** should include a list of usability and user experience goals. These were already identified in Assignment 1, and it is acceptable if they are the same. However, through the iterative process, you may have shifted goals. Make sure to include the most up-to-date list of usability and user experience goals. As in Assignment 1, translate these three most important goals into two or three specific questions each. These questions should provide concrete means for evaluating the usability and user experience. Include these questions/metrics in the slide.
- **Slide 4** should list at least 2 key features that are implemented. Again, these may be the same as in Assignment 2, but they also may have changed.
- **Slide 5** should list changes that have been made in each iteration of your design to your concept, goals, features, targeted users, user interface design, etc. Please identify at what stage each change was made (e.g. after heuristic evaluation feedback). *[Note: This can be split into more than one slide, if many modifications have been made]*
- **Slide 6** should have instructions for using the prototype. [to be completed after the prototype is complete]. If your prototype is online, it should have the URL where your prototype can be found. Otherwise, please indicate how the prototype was created and what will be submitted to Canvas, as well as any requirements for running it. These instructions should be self-explanatory.

Submission:

- Submit **one PDF file** on Canvas that includes your 6 slides that introduce your prototype.

Rubric:

Excellent (10 points), Good (7 points), Average (4 points), Poor (1 point), Missing (0 points)	10	7	4	1	0
Slides provide a clear description of the overall design idea and well-defined usability and user experience goals for the system. The description of features you plan on prototyping is complete and the modifications of the design are clear. There is no missing information that was required.					

Part B. User Evaluation Plan

In this part, you will plan an evaluation of the high-fidelity interface prototype you will build in Part C.

By now, you have a preliminary design, which you've already subjected to a heuristic evaluation. You will later evaluate the high-fidelity prototype you will build in this stage. The high-fidelity prototype's primary job is to support that evaluation. Thus, it is crucial to consider the evaluation before you specify the prototype (its type and scope).

1. **Evaluation Goals.** Establish goal(s) of evaluation. Assess your design's key usability challenges or uncertainties. What needs to be answered which will establish whether this is a good design? Your study should be built around the usability and user experience goals that you identified and the metrics that you identified for measuring their success in Part A as well as the heuristic evaluation and any other input you have obtained. Make as comprehensive a list as you are able, then rank items by (a) importance and (b) your ability to test them within the scope of the class (observation, interview or questionnaire, think-aloud, formal experiment). The outcome of this step should be a brief list of evaluation goals (1 substantial or up to 3 smaller ones), which you will address in your evaluation.
2. **Evaluation Design.** Determine the type of evaluation you will use. Which of the evaluation methods covered in class (e.g., interview, questionnaire, think-aloud, formal experiment, A/B testing, other) will best support you in addressing your evaluation goals? Consider the type of information and insights accessed by each mechanism in your decision. This can involve comparing your prototype to another application already on the market. You will briefly justify the choice in the report. Your report should describe what kind of evaluation you will run and justify the choice of evaluation.
3. **Participants.** Identify representative users who will act as volunteer subjects. Your subject pool must be limited to adult volunteers recruited from friends, family and classmates. Identify an appropriate number (see below) of representative users for your system that you will be able to use in your evaluation. If you cannot find/use

representative users, you need to explain why and justify the selection of the users that you do involve in the evaluation.

The number required varies by evaluation type. The more time- and labor-intensive (on the part of participant and/or experimenter) the method, the fewer the users that can be assessed (in the context of this course). Surveys and questionnaires are generally the lowest effort in this sense, but because of the nature of the feedback, more data points need to be sampled in order to get useful results. Observation methods can vary in their expense.

In general, for this course we anticipate 2-3 participants for interviewing, think aloud, or formal experiment, and 6-10 for questionnaires. Deviation from this guideline requires consent from the course staff.

It is acceptable and encouraged to recruit subjects from among your classmates (in class or via email or the course discussion boards), although their participation is not required.

4. **Procedure.** Prepare for the study. It is crucial to decide in advance on a "protocol" for any evaluation. You should provide a brief overview of this protocol, with just enough detail that someone else could approximately replicate your evaluation with the help of your evaluation instruments (actual questionnaires, list of interview questions, etc) provided in the Appendix.

For example, a protocol plan requires thinking carefully through the following tasks:

- Work out details of face-to-face techniques (whether they are actually in person or virtual through Zoom) meticulously ahead of time.
- Decide where face-to-face (in person or virtual) evaluations will be conducted. Observation techniques should be conducted in the context of typical use. Interviews require a quiet environment, with access to the interface being discussed.
- Decide how you will administer a survey given the nature of your target user group. Free online survey tools are available, e.g. <http://www.surveymonkey.com/>, or google spreadsheet forms.
- Decide in advance how you will analyze your data (e.g., collate questionnaire responses, or integrate / summarize interview and observation method results), and make sure that you are collecting it in a format that will be amenable to this analysis.
- Verify that your evaluation's session length (or time required to fill out a questionnaire) is reasonable given subjects' anticipated availability.

Submission:

Submit **one PDF file** on Canvas that includes your evaluation plan. The report should have separate sections for Evaluation Goals, Evaluation Design, Participants, Procedure, as described above.

Rubric:

Excellent (10 points), Good (7 points), Average (4 points), Poor (1 point), Missing (0 points)	10	7	4	1	0
The evaluation goal(s) are well-reasoned and appropriate.					
The evaluation method is well justified and is appropriate for the application and usability/user experience goals.					
The participants targeted are well-justified and achievable.					
The evaluation procedure is complete and well-documented, such that another person could roughly replicate the study.					
The evaluation procedure is appropriate and achievable.					

Part C. Hi-Fi Prototype

The next step in this assignment is completing the implementation of your system. Fix any problems that have been identified in the previous stages. The goal is to have a medium-fidelity prototype that runs well enough for a user to try it out for your evaluation. For example, you may not actually write anything to a database, but you should have all the dialogs set up so that the user can enter required information, and then the system should respond as if everything was fully functioning, even if it is "canned".

The prototype you build must both a breadth and depth component:

- **breadth:** include all the main features/sections of your interface, but only at a high level. Give illusion of a fully functional prototype. For instance, when you open the application, the user should be presented with all the functions of your application. In reality, all of these tasks will not be functional, but at this point you should give the illusion that they are.
- **depth:** For the two features you are focused on, you must support a substantial part of those tasks. Substantial would include: screens, error messages, handling of unexpected input, defaults, etc.

You may use placeholders for sub-tasks you are not implementing (e.g., certain actions may return an 'Under development' message).

Guidelines:

1. You can use any tool you like to build the prototype (you can use a prototyping tool, or if you prefer, mock up something in code), but you need to be able to easily share the prototype, and it should be high fidelity, meaning that it looks very close to the envisioned final application. If you decide to build your prototype with code, you are free to use whatever you feel the most comfortable (HTML, CSS, JavaScript, PowerPoint, Java or other languages/frameworks you know). Use a combination of your skills / comfort level, and the requirements for the prototype to make this choice.

- It must minimally support testing for each of the interface improvements that you developed, but doesn't need to be fully functional; it should just go through the dialogues or screens that make up the user interface.
- You should use canned data (canned = fake, or preloaded data) where necessary to simplify your prototype. We do not expect you to implement everything.
- The goal is to get the most useful evaluative results with the least amount of production effort. Less is good! But, choose wisely where to direct your effort.

Submission:

- Submit on Canvas your actual **prototype** either as a link or as a zip file containing all of the necessary files for someone to run your prototype themselves. For code, please put all materials in a directory "project" and include a plain text file "README" with any details about compilation, included modules, etc. that would be needed to compile and run the system.
- Submit on Canvas a PDF with instructions for how to execute the features that the prototype supports. This should also include a description of which part of the prototype are "shallow" and not completely implemented, so that it is clear what should and should not work. The goal of these instructions is to help us out when grading, in the event that we cannot figure out how to use your prototype from the design alone.

Rubric:

Excellent (10 points), Good (7 points), Average (4 points), Poor (1 point), Missing (0 points)	10	7	4	1	0
The prototype does well at simulating the experience of using the application outlined in Part A. Content is realistic and it seems like the user is interacting with a real service.					
The prototype is sufficiently complete to test the tasks desired. The user can make errors or take multiple paths when interacting with the prototype. Watching the user interact with the prototype would give you good feedback on your design.					
The prototype avoids violating Nielsen's heuristics.					
List of features and specific instructions for accomplishing each task are included and complete. It is clear how to interact with the prototype (without relying on the list of features).					