

Low-fi Prototyping & Pilot Usability Testing

Due: At the start of your studio (Thur/Fri Oct 25-26)

Overview

The goal of this assignment is to learn how to use low-fi prototyping in the early stages of UI design. You will first **sketch many different design realizations** that will implement your solution. You will then **select the best** of these realizations to test further. You will build a low-fi prototype of this best design and then **perform a simple usability test**. You will incorporate the results of the test into design changes in your prototype for the next assignment.

Project Requirements

1. Concept and UI Exploration: Sketches and Storyboards

- a. *Concept Sketches*: Based on your insights from needfinding and your 3 tasks, **brainstorm at least 5 different design ideas** (realizations) to implement your chosen application idea. Each design idea should be composed of 3-5 rough sketches (resulting in a total of at least **15-20 rough sketches**). Look at a *wide variety of input/output modalities* (e.g., speech, wearable, AR/VR, or gestural) to explore the space. [See examples](#) of the variation & style.
- b. *UI Sketches*: **Pick the top two yet diverse realizations of mobile applications** from (1a) and **storyboard** the interface designs in **more detail**. The entire interface does not need to be fleshed out, but a few key “screens” should be there (e.g., **3-5 sketches for each** of the two design ideas) as well as some **transitions** between them (i.e., arrows showing relationships between interaction on one screen and movement to another screen or changes in states).
These should still be rough sketches (**include both designs in the final report**), but you should be starting to get at more of the details necessary for your design idea. Scan in or take high quality photographs of these UI sketches for the report (details below). (See examples listed below under Deliverables)
- c. *Design Selection Rationale*: **Pick the single best of the two** design ideas for continued exploration. Please **give the reasoning for your choice** from field data and/or design reasoning and intuition. **Make a list of pros and cons** for each of the two designs.
- d. *UI Task Flows*: Given your simple, moderate, and complex tasks from the previous assignment, **storyboard a task flow for each task**, for a total of **at least three task flows**, that shows (visually or a flowchart for voice) *how* the

tasks will be performed using your best proposed user interface from (1c). These storyboarded task flows will also show the transitions between screens (i.e., arrows showing relationships between interaction on one screen and changes in state). Make sure these are self-explanatory with any additional notes annotating the storyboard to explain. Scan in or take high quality photographs of these **UI Storyboards** for your report.

2. **Design and construct your low-fidelity prototype.**

Use the techniques described in the Snyder chapter as a guideline. Make your low-fi prototype on paper (if you'd like to use electronic tools like POP or Balsamiq let your TA know in advance to ensure these tools are appropriate for your project).

Your low-fi test will use the three (3) or more tasks that you turned into UI Storyboards in (1d). These benchmark tasks should include at least **1 simple task, 1 moderate task, and 1 complex task** (if your project has a different combination of tasks difficulty, make sure your TA has OK'd it). These tasks should give good coverage of your interface.

3. **Find at least three (3) participants to work through your tasks.**

You should **not use friends, class members, or people who have already been exposed to your project**. The type of people you recruit should be based on your needfinding (**do not use more than one Stanford student** unless you have explicit permission from your TA or Professor Landay). Remember it must be voluntary. You should get them to **sign a consent form** ensuring their confidentiality (see an example at <http://hci.stanford.edu/courses/cs147/2018/au/assignments/consentform.html>).

Testing Procedures

- **Determine and practice roles** each team member will play. For example, one will be the computer, the facilitator, or the observer(s).
- **Have one of your teammates demo the system** to show the participant how they would interact with your prototype, but **do not show your participants exactly how to perform your tasks**. Just show how the system works in general, demonstrate speaking aloud, and give an example of something that is different from your tasks (or even sketchup some other sample app to demo this).
- **You should write a script for your demo** and follow the same script with each participant. Give the participant task directions for the first task that tells them what they are trying to achieve, **not how to do it**. When they are finished, give them the

directions for the next task and so on. Keep each task on a separate sheet of paper/card.

- **Make a log of critical incidents** (both positive and negative events) during the experiment. For example, the user might make a mistake or they might see something they like and say, “Cool.” **Write it down** along with a description of what was going on. Later you should prioritize these events and **assign severity ratings** to the problems (use the ratings of 0 = no problem, 1 = cosmetic problem, 2 = minor usability problem, 3 = major usability problem, 4 = usability catastrophe).
- **Each participant will perform all 3 tasks.** Keep the data separate for each task and participant. **Keep participant names confidential in your logs** (use the “participant number” from the consent form in all other data).

Deliverables

A **written report** and **presentation slides** (presented in studio) are due on your team’s Google Drive directory before the start of your studio. Make sure to create a new subdirectory titled “Assignment 5” in your team’s directory and upload your deliverables into that folder. Your TA will check the time of submission, as well as whether or not the file was modified after the submission deadline.

Here are some good examples from past years:

- Bettr: [Presentation Report](#)
- GoFit: [Presentation Report](#)
- Knock: [Presentation Report](#) (Note: this report was from before we had the word limit. It is much longer than yours should be)

Report

We require your report be **no more than 1500 words of text** (images are free—put the word count at the bottom of your report). Your report should follow the outline below and will be graded using the guidelines that follow. Put **images inline** (i.e., where they belong in the text) along with a **caption** and **figure number**. Page estimates are suggested.

1. Title, each team member’s name (first name plus **last initial**)
2. Introduction (¼ page)
 - a. Mission Statement / Value Proposition
 - b. Problem / Solution Overview
3. Sketches (images w/ caption)
 - a. Overview image of the 15-20 sketches you made
 - b. Top two designs storyboarded in more detail
4. Selected Interface Design (¼ page)
 - a. Storyboards for 3 or more tasks

- b. Reasoning for selection (pros/cons for each)
5. Prototype description & images of all screens used in tasks and a picture of the entire system (½ page)
6. Method (¾-1 page)
 - a. Participants: demographics, how **recruited/compensated**
 - b. Environment
 - c. Tasks
 - d. Procedure
 - e. Test Measures
 - f. Team Member Roles
7. Results (½ page)
8. Discussion (¾ page)
9. Appendices (as many pages as necessary - link from text into the appendices)
 - a. Include all forms (blank consent forms, surveys, etc.) handed out to participants
 - b. Include raw data (cleaned up and readable) - **no names**, use participant #s
 - c. Include any extra figures that don't fit in the body

Report Grading Criteria

Mission statement / Value proposition / Problem-Solution Overview (10 pts)

The value proposition should concisely convey what customers get out of your product in a short phrase (e.g., stripe.com “Payment infrastructure for the Internet”, evernote: “Remember everything!”). Your problem/solution overview should be a concise statement of the problem you are tackling and a brief synopsis of your proposed solution.

Writing quality (10 pts)

Check your essay for **grammar errors** and make sure it is **easy to read**. First and foremost this means making sure your writing is clear and **concise**. This also means using bolded section headings, liberally adding whitespace, having short paragraphs, and including images in the body of the write-up with appropriate **figure numbers and captions**. Refer to the figures (e.g., “(see Figure 2)”) in the body of your text.

Sketches (10 pts)

Include a picture of your **15-20** concept sketches. For the 2 selected designs, we are looking for *two different mobile application interface designs* that are detailed, seem plausible, but each take a **very different** approach. We will be grading the **quality** and **diversity** of these ideas, as well as the execution (sketches are rough, **arrows showing transitions** are clear, and

that there are enough screens for each to get the idea across). We also want to see that you generated a variety of sketched ideas. Include a 1-2 sentence description providing context and/or explaining the concept.

Selected interface design (10 pts)

We want to have a good understanding of the interface you have chosen to detail further and your rationale for choosing it. **Why did you choose it? What makes this design superior** to your other design? **Any reasoning from data or constraints** of the target platform? Include **pros/cons** for each.

Given this idea, we need a good description of what it is. What can you do with it? This section should clearly indicate the **functionality** of your artifact (**use a table to summarize** this information in a clear form). Add more sketches if necessary and **annotate** (i.e., drawing an arrow to something to indicate its function) in a different color if that helps us to understand these questions.

UI Storyboards (10 pts)

We want to see that you know how to turn tasks into **sketched task flows** by adding the details to accomplish your tasks. Task flows include the steps customers will go through to accomplish the task. Your task flows do not have to detail every little step, but they should be dependent on the design you have chosen. You will be graded on **how complete** your task flows are and **how well they are written to communicate how a user will accomplish the task**. *Annotate your sketches* in a different color if that helps us to understand this better.

Prototype (20 pts)

Describe your low-fi prototype. What are the main pieces of functionality? What are the **key interaction ideas** (i.e., what are the key ways to use it? Touch input to move through visual screens? Speech input? VR?) How does the user operate it? Reference sketches of the interface screens in your description (scan them in/photograph – make sure they are readable). Finally, **take one picture of the entire paper-based system** with all of its elements laid out.

Method (15 pts)

Describe the **participants** in the experiment, **how they were selected**, and any **compensation** they received. Also describe the testing environment and how the prototype and any other equipment were set up. Include images. Describe some details of your testing procedure. This should include the **experimental roles of each member of the team**. To prepare for the experiment, you should assign team members to the different tasks (i.e., computer,

facilitator, etc.) and practice with someone playing the participant. The test measures detail what you looked for or measured during the experiment. You should **concentrate on process data** (i.e., what is happening in the big picture) in addition to bottom-line data (i.e., time or # of errors).

Results and Discussion (15 pts)

Summarize the results of the experiment from your process data and the discuss your the **meaning** of your results. **What did you learn** from the experiment? How will the results **change the design** of your interface? Was there anything that the experiment couldn't reveal?

Presentation Guidelines

The presentation grading will be broken into two components: the individual grade of the presenter and a group grade for the presentation of the initial UI design ideas & the study results. Note that you should **use images liberally** and try to **keep the text on the slides brief** (and use large fonts – no less than 20 pt anywhere). One member of your team who has not yet presented will make a **12-minute presentation** in studio (with 6 additional minutes for questions). The grades for each of these components are explained in more detail below.

Group grade

___ **Selected interface design:** Why did you choose it? Any reasoning from data or constraints of the target platform? What can you do with it? (25 points)

___ **Representative tasks & task flows:** Did they provide coverage of the functionality in the application? Was it **clear on how a user carried out the task**? (25 points)

___ **Low-fi prototype:** Was the interface **novel** (different from existing products)? Was it **appropriate** for the supported tasks? Did it follow from **sound reasoning**? Were **appropriate low-fi techniques**/style used? (25 points)

___ **Experiment:** Was the experiment carried out in a **sound manner** (e.g., participants, location, method)? Were the results given in **sufficient detail to understand** what occurred? Were the suggested **UI improvements sound & follow** from the results? (25 points)

Presenter's grade

Suggested Organization

- Overview of talk (1 slide) – don't read this, **tell it like a story**
- Team mission statement/Value proposition (1 slide)
- Selected Interface & Rationale (1 slide)
- Low-fi prototype structure (1 slide – mainly images)
- 3 tasks & task flows shown carrying out each task w/ low-fi (1 slide per task)

- Experimental method (1 slide)
- Experimental results (1-3 slides) (w/ images to describe)
- Suggested UI changes (1-2 slides)
- Summary of talk (1 slide)

Presentation

___ Use well-designed slides. Ensure that the presentation shows appropriate preparation, and that visual aids are aesthetic, effective, prepared, and properly employed. Make sure that people at the back of the room can read your slides (50 points)

___ Cover the required scope within the **12 minute time period** (not including 6 minutes for questions/feedback). Practice and time your presentation in advance, as we will cut you off if you go over. You will be unable to gain points for uncovered material (20 points)

___ Ensure the presenter makes eye contact (10 points)

___ Ensure the presenter projects their voice well, uses no filler words, and has good pacing throughout (20 points)