

Low-fi Prototyping & Pilot Usability Testing

Due: At the start of your studio (Thur/Fri Feb. 3-4)

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 selected 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 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 application idea. These design ideas can be based on the prompts from your in-studio Crazy 8's exercises (e.g. 'wearables', 'chat-based systems', etc.), or similarly-scoped ideas. Create 3-5 rough sketches for each design idea, resulting in a total of at least **15-25 rough sketches**. Look at a **wide variety of input/output modalities** (e.g., speech, wearable, AR/VR, or gestural) to explore the space. See the variation in design ideas & style in these [examples](#) (pgs. 3-7).
 - b. **UI Sketches: Pick the top two, diverse realizations of mobile/wearable/off desktop 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 interactions on one screen and movement to another screen or a change in state). We referred to these in lecture as **storyboards** or **task flows**. These should still be rough sketches, 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 written report (details below).
 - c. **Design Selection Rationale: Pick the single best of the two** design ideas for continued exploration. **Give the reasoning for your choice** from field data and/or design reasoning/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 *how* the tasks will be performed using your best proposed user interface from (1c). These storyboarded task flows should 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. You can add additional notes or annotations to the storyboard if needed. Scan in or take high quality photographs of these **UI task flows** for your report.

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

Use the techniques described in the [Snyder chapter](#) (password: hcid) as a guideline. Make your low-fi **prototype on paper**. Since you will likely be doing testing remotely, we suggest uploading photos of your paper prototype into a tool like [Marvel POP](#) or [InVision](#), adding in the interactions between screens, and sending the link to your prototype to your participants. You could also use a purely electronic tool that keeps the look and feel sketch-like, such as [Balsamiq](#).

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

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

You should **not use friends, family, 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). You should get them to **sign a [consent form](#)** ensuring their confidentiality.

Testing Procedures

- **Determine and practice roles** each team member will play (e.g. facilitator, observer, note-taker, or computer -- in this last case if you are manipulating the prototype remotely).
- **For remote testing**, we recommend sending your participants a link to your prototype and using one of the following methods to observe the testing session:
 - Participant runs prototype on their device and screen shares with you.

- Participant runs Zoom on their laptop and "hugs" their laptop so their phone screen is in their laptop camera's view, and you can see what's going on on their phone ([article](#)).

Note that if your prototype is for a mobile app, you should try to get participants to test your prototype on a mobile device.

- **Have one of your teammates demo the system** to show the participant how they would interact with your prototype (e.g., how buttons or scrolling works), but **do not show your participants how to perform any tasks**. Just show how the system works in general at a high level, demonstrate speaking aloud, and give an example of something that is different from your tasks.
- **You should write a script for your demo & test procedure** 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 directions for the next task and so on. **Remind participants to think out loud**.
- Come up with **2 usability goals** (see [Lecture 1](#)) along with **2 key measurements** or metrics to assess whether your prototype is achieving its goals. These will be revisited in A6 with some assessment of how your product is progressing toward hitting those goals.
- **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 in 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.

Here are some good examples from past years. Take a look at these examples to see not only what good slides and written reports look like, but also what good low-fidelity prototypes and testing procedures look like:

- Patch: [Report](#)
- Local.ly: [Report](#)
- upbeat: [Report](#)

- voices: [Presentation](#)
- ALTogether: [Presentation](#)
- Sprite: [Report](#)

Report

We require your report to be **no more than 1500 words of text**. 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 (1/4 page)
 - a. Mission Statement / Value Proposition
 - b. Problem / Solution Overview
3. Sketches (images w/ captions)
 - a. Overview image of the 15-25 sketches you made
 - b. Top two designs storyboarded in more detail
4. Selected Interface Design (1/4 page)
 - a. Task flows 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 (see grading criteria for details) (1/2 page)
6. Testing Methodology (3/4-1 page)
 - a. Participants: demographics, how they were recruited
 - b. Environment
 - c. Tasks
 - d. Usability Goals
 - e. Procedure
 - f. Key & Other Test Measurements
 - g. Team Member Roles
7. Results (1/2 page)
8. Discussion (3/4 page)
9. Appendices (as many pages as necessary)
 - a. Include all forms (**blank** consent forms, surveys, etc.) handed out to participants (**put signed consent forms in a separate PDF file**).
 - b. Include all critical incident logs and any other data collected (cleaned up and readable) - **no names**, use participant #s
 - c. Include any extra figures that don't fit in the body

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Instructor: James Landay

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 **grammatical errors** and make sure it is **easy to read**. First and foremost this means making sure your writing is clear and **concise**. This can also mean 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 **15-25** concept sketches. For the 2 selected designs, we are looking for *two different mobile/wearable/off-desktop 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 of the two.

Given this selected interface design, 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. Add more sketches if necessary and **annotate** (e.g., drawing an arrow to something to indicate its function) in a different color if that helps us to understand these questions.

UI Task Flows (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? Is the interface **novel** (different from existing products)? 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 (e.g. note-taker, facilitator, etc.) and practice with someone playing the participant. Describe the **test measures in 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 spent per task or # of errors) and other key metrics for your goals.

Results and Discussion (15 pts)

Summarize the results of the experiment from your process data and then discuss the **meaning** of your results. **What did you learn** from the experiment? How well are you achieving your **usability goals** in terms of your **key measurements**? 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. **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.

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 (1-2 slides)
- 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 (3-5 slides) (w/ images to describe)
- Suggested UI changes (1-3 slides)
- Summary of talk (1 slide)

Group grade

___ **Selected interface design:** Is the rationale for choosing it clear? Any reasoning from data or constraints of the target platform? What can you do with it? (25 points)

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

___ **Low-fi prototype:** Is the explanation of the prototype clear? Why was it **appropriate** for the supported tasks? Did it follow from **sound reasoning**? Were **appropriate low-fi techniques**/style used? (25 points)

___ **Experiment:** Are all the procedures explained 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** & do they follow from the results? (25 points)

Note that the presentation should only include content about the prototype, results, and ideas for revision (none of the sketching that leads up to it). This is so that the studio audience can focus on giving feedback on the final prototype.

Presentation Grading

___ Use well-designed and visually pleasing slides. Visual aids are aesthetic, effectively prepared, and properly employed. (30 points)

___ Slides are well-functioning and convey the content effectively and clearly. (25 points)

___ Presentation is well-rehearsed, with good pacing and minimal filler words. (25 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)