Project (Part II): Medium Fidelity Prototyping and Evaluation
Weeks 11, 12 and 13

Part II - Overview

This document describes the second part of your design project, which as a whole spans the last 6 weeks of the course. In Part I, you created alternative conceptual designs for which you developed low fidelity prototypes, evaluated these with cognitive walkthroughs, and developed a plan for your next steps.

In Part II, you will build a medium fidelity prototype, and evaluate it with users in a usability study.

Part II has weekly in-workshop design reviews, and a final set of deliverables as follows:

> *W11 Checkpoint design review – Evaluation plan + Prototyping Progress.* Submit an evaluation plan for a usability study and associated materials. Present your in-progress prototype to your workshop class mates for peer critique.

> *W12 Checkpoint design review – Medium Fidelity Prototype + Analysis Plan.* Present your completed prototype to your TA and discuss your plans for completing the project.

> *W13 Report – Usability study and Recommendations.* Conduct a small usability study on your medium fidelity prototype. Document this prototype in a video. Report your findings, and propose recommendations that future design iterations could address.

Checkpoints, Reports and Planning

Again, there are two **checkpoints** (keep on track, get fast feedback); and a final **report** marked in more detail, including elements from the full period.

Review this entire document before beginning: assess what's coming, and plan your time.

Note about time management

You will need to work on your evaluation plan (Steps 1-2) and medium fidelity prototype (Steps 3-4) in parallel. **The medium fidelity prototype will take more than one week of effort**, and it will probably be necessary to divide and conquer these steps among your teammates.

Part II - Outline of Steps

Step 1: Finalize evaluation goals and choose evaluation methods.

Finalize your Part I **evaluation** goals (questions you want to answer) based on TA feedback.

This evaluation will be a usability study that includes an assessment of a user's performance on a set of predefined tasks, using your medium-fidelity prototype (later steps).

Step 2: Develop a study protocol and study materials

You must conduct your study with a minimum of 1 participant per group member.
Your study protocol should briefly summarize the results of these additional planning questions:

- Who will you recruit for **participants**? Will you be able to recruit users representative of your task examples? If not, who will you use instead? Justify choice.
- **What evaluation methods** will you use?
- **What will you measure** (metrics) and **what data will you collect** with each method?
- Work out **details of the task the user will complete**.
- Plan how you will conduct the evaluation **in order from start to finish**.
- Decide **where the evaluations will be conducted**.
- Decide **how you will analyze your data** (e.g. collate questionnaire responses; quantify and summarize interview / observation results). Record data in a way that supports this analysis.
- Determine the **session time** your study requires, and verify it **is reasonable** for your subjects.

Step 2 outcome must include any study instruments, e.g. interview questions or coding sheets.

If you do a questionnaire: We recommend using the UBC-hosted Qualtrics.

Ethics: Review posted 344 ethics instructions and materials. Use 344 templates for your **consent form** and recruitment (if advertising for participants).

Step 3: Continue planning your medium fidelity prototype.

Continue to develop your initial **prototyping** plan from Part I, incorporating your TA feedback and making changes based on your evaluation plan as necessary.

Your team will build one med-fi prototype. We generally don't expect you to build *everything* in terms of features and functionalities. Aim for highly useful (given your evaluation goals) with the least amount of production effort.

Step 4: Implement the medium fidelity prototype

Embody your design in a **medium fidelity semi-functional prototype.**

> **W11 CHECKPOINT (Steps 1-4)**
> **Completed:** Steps 1-3. **In progress:** Step 4.
> **Peer Sharing** and **TA Design Review:** Present your in-progress medium fidelity prototype to the class, and your evaluation plan to your TA (evaluation goals, participant pool, protocol and rationale).
> *See the W11 Checkpoint Design Review Details (below) for more specifics.*

Step 5: Pilot your study, finalize evaluation plan and materials

Your TA will review your ethics materials and study instruments submitted at the W11 checkpoint design review within ~48 hours and either sign-off or request revisions via email.

Develop any other materials you need to conduct the study that were not submitted for review (e.g., coding sheets). Then, **pilot your study to work out any kinks.** See the ethics guidelines on the course website for information about piloting.

Plan your recruiting now. It is acceptable to recruit subjects from among your classmates, but remember that their participation is not required.

Your TA must sign off on your final materials BEFORE your conduct your study. If you make revisions to previously signed-off materials, post these to Piazza for a quick verification.

Be ready to start running your evaluation by the W12 workshop (at the latest) to ensure enough time to conduct the study, analyze your results and complete your final report.

W12 CHECKPOINT (Steps 4-5)
Completed: Steps 4-5. **TA Design Review:** Present your medium fidelity prototype.
See the W12 Checkpoint Design Review Details (below) for more specifics.

Step 6: Conduct evaluations. Note any changes from your plan, to document in your report.

Step 7: Analyze and present evaluation data

For informal techniques, analysis usually consists of collation of any quantitative results, summarizing, looking for themes, and looking for key representative examples.

Quantitative results: Summarize numerical data (questionnaire responses, time on a task). Provide sample size and standard deviations where appropriate, e.g. on plots.

Qualitative results: Report themes and insightful details from your qualitative findings, such as:

- Reactions shared by many of your subjects; responses typified by subject demographic.
- "Outlier" responses – specific reactions out of line with most other users
- Other responses that provided extra feedback and useful design ideas.

Analysis includes presenting, interpreting and discussing your results. Present data for maximum readability. Use plots when they will add clarity and be compact. Use words to interpret the plots. Structure findings into a frame (Do not present a laundry list). Critique your method and data sources; to what degree do you trust your data?

Step 8: Formulate evaluation conclusions

Summarize what you learned from the study, given your data considered all together. Your conclusions should address your evaluation goals, but may also include unexpected findings that came to light. *Distinguish **your findings** from **your decision of how to act on them (next).** The latter might be influenced by additional factors.*

Step 9: Formulate design recommendations.

Reflect on your interface design. What parts work well, versus needs improvement? What evidence do you have that the system will work well for your users / tasks, in what ways?

Recommend the next logical design step. Giving details, choose: validated as is / minor adjustments needed, overall approach validated / worth investigating but serious problems identified / or approach not validated.

Step 10: Reflect on your process

Since 6 weeks ago, what has changed in *your perspective*? What have you learned about the user-centered design process? What did / did not work? This part is free-form, and we aren't looking for a specific answer. We want your candid reflections, and suggestions for how the project could have done better in illustrating and giving experience in user-centered design.

You might try doing this in a brainstorm session with your group. E.g., (add others):

- Did the methods you chose for your evaluation and prototyping get at what you were looking for? In hindsight, would a different design *process* approach have been better?
- What seemed the most, and least, valuable among the activities we've asked you to try, either generally or specifically for your project?
- Having gone through this course, how might you approach your next interface design project (whether for fun/personal or work, large or small) differently?

W13 REPORT (Steps 6-10)
Completed: Steps 6-10. **Submit:** a report detailing your evaluation, results and reflection on the entire project + a paper prototype video. *See the W12 Report Deliverables for details.*

W11 CHECKPOINT DETAILS –
Evaluation Plan & Prototyping Progress (Steps 1- 4)

Type: In-workshop peer sharing + TA design review
Length, peer sharing [13 min]: 6 min to present design/prototype to the class + 5 min questions + 2 min buffer/change
Length, TA design review [10]: 5 min to present evaluation plan to TA + 5 min for questions and document checks.

Design Review Components

The two-part structure of this workshop (peer sharing of prototype followed by TA review of your evaluation plan) aims to both give you an opportunity to see what your peers are working on, and get explicit TA feedback to ensure your project is on the right track. Your evaluation plan and materials should be complete and ready for sign-off, and your prototype in progress.

Timing is tight. Follow timing guidelines closely; come prepared to begin immediately.

Part I. Peer sharing: Informally present your design and prototype to the class. See time limit above. Your demonstration should cover the following points (1-5), supported with slides (~1 / point):
1. Describe your interface topic, briefly
2. List your evaluation goals. If changed from W10, summarize modifications.
3. Describe your prototype's *conceptual* and *interface* design
4. Demonstrate what the prototype does so far (i.e. screens, functions implemented)
5. Questions for the group and/or areas you would like feedback on

Part II. TA Design Review: Plan to cover the following points (6-7). Support an initial informal presentation (time limit above) with ~1 simple slide / point. Each slide can have just a list on it; DO think about what you will say, and the feedback you want.
6. Planned evaluation methods and protocol (Step 2 items). List on slide, and prepare to describe.
7. Study materials that TA will need to check – list on slide.

Required Materials:

(A) A slide deck (handin) with two sections, which cover the points for Parts I and II respectively. Precede each section with a title slide (<Teamname: Part I. Peer Sharing>, etc).

(B) Your prototype, ready to demonstrate, and tested on the classroom projector (bring your own adaptor).

(C) Paper copies of your study materials (e.g., finalized questionnaire and consent forms) for check-off. Your TA will respond within ~48 hours to approve or give feedback/request changes.

Marking Scheme

Your group will be evaluated on preparation and quality of presentations (coverage as listed above), content and progress, and cohesiveness of group. Your individual mark will be affected by your participation in the design review and ability to describe personal contributions to the project.

See further details in mark rubric (appended to this document).

	LEVEL		MARK	WEIGHT
Prototype Demonstration to Workshop Class			*0.0%*	**20%**
Effectively covered your topic, your evaluation goals, and your prototype's conceptual and interface design.		←		20.0%
Prototype Demo and Feedback Request			*0.0%*	**20%**
Demonstrated the main things the prototype does so far.		←		10.0%
Was prepared with feedback requests for the class.		←		10.0%

	LEVEL		MARK	WEIGHT
Evaluation Plan			*0.0%*	**20%**
Evaluation methods, protocol, and study materials address evaluation goals and are ready to pilot.		←		20.0%

	LEVEL		MARK	WEIGHT
Study Materials	1 or 0		*0.0%*	**15%**
Provided hard/PDF copies of all study materials requiring sign-off (consent forms, full questionnaire, etc.)		←		15.0%

	LEVEL		MARK	WEIGHT
Overall Quality			*0.0%*	**10%**
Overall quality of work presented as a whole e.g., organized presentation, preparedness, coherence, cohesiveness, etc.		←		10.0%

	LEVEL		MARK	WEIGHT
Individual Participation	1 or 0		*0.0%*	**15%**
Participated in the design review (presenting, and/or engaging in effective discussion with TA). Upon request, was able to articulate appropriately scoped personal contributions to the team's work this week.		←		15.0%

Penalties and Bonuses			
Up to 5% deduction for issues with any of: Presentation (grammar, misnamed files, unreasonable length, etc.); Timeliness			
Up to 5% bonus for creativity, originality, etc.			

W12 CHECKPOINT DETAILS – Analysis Plan (Steps 5 - 7)

Type: In-workshop design review with TA
Length: 5 minutes to present to TA + time for discussion, TA questions

Design Review Components

In this checkpoint, your team will give a brief status update and walk your TA through your plans for analyzing the data you will collect in your usability study. The goal is to ensure you're on track, and to give you a chance to ask questions about the evaluation or final deliverables.

By the end of the workshop you should be ready to start running your evaluation to ensure enough time to conduct the study, analyze your results and complete your final report. You may plan to use the remainder of the workshop time to conduct the study.

Format

The design review will start with your informal presentation to your TA. You'll need to:
- Demonstrate the completed med-fi prototype that you will use for the usability study; if you ran into complications, discuss how/if this will affect your study.
- Outline your planned timeline for completing your evaluations, analyzing the results and completing your final report + video.
- Describe your proposed strategy for analyzing the data from your usability study.
- Ask questions you have regarding analysis, the final report, the video, etc.

Required Materials:

(A) Slide deck (handin) that covers the points listed under "Format" above. Include a title page with your team, member and deliverable names and the date on it.

(B) Completed medium fidelity prototype ready to demonstrate to your TA.

Marking Scheme

Your group will be evaluated on preparation and quality of presentations (coverage as listed above), content and progress, and cohesiveness of group.

Your individual mark will be affected by your participation in the design review and ability to describe personal contributions to the project.

See further details in mark rubric (appended to this document).

	LEVEL		MARK	WEIGHT
Prototype and Analysis Plan			*0.0%*	**75%**
Medium fidelity prototype is complete and ready for the usability study. If any major adjustments had to be made, discussed these and their implications for project		←		25.0%
Provided a reasonable timeline for completing evaluations, analyzing data, and final report + video (including deadlines for each).		←		25.0%
Strategy for data analysis is appropriate, considers all collected data, and is well justified.		←		25.0%

	LEVEL		MARK	WEIGHT
Overall Quality			*0.0%*	**10%**
Overall quality of work presented as a whole e.g., organized presentation, preparedness, coherence, cohesiveness, etc.		←		10.0%

	LEVEL		MARK	WEIGHT
Individual Participation	1 or 0		*0.0%*	**15%**
Participated in the design review (presenting, and/or engaging in effective discussion with TA). Upon request, was able to articulate appropriately scoped personal contributions to the team's work this week.		←		15.0%

Penalties			
Up to 5% deduction for issues with any of: Presentation (grammar, misnamed files, unreasonable length, etc.); Timeliness Up to 5% bonus for creativity, originality, etc.			

W13 REPORT – Usability Study Report + Video (Steps 6-10)

Type: Group assignment
Hand-in: Group hand-in

Deliverables

1) A report that covers (see template for report organization):
   • A summary of your evaluation, and rationale for your evaluation and prototyping efforts
   • Analysis and conclusions from your evaluation
   • Overall recommendations and reflections on your design process

2) A short video demonstrating your medium fidelity prototype

Video Component

Length: max 4 minutes

Create a short video documenting your medium fidelity prototype. It must be understandable and clear enough to see the details of your prototype, and communicate the following information:

   i.   Introduce the topic your prototype focuses on and briefly describe the requirements/tasks and evaluation that the prototype is meant to support.

   ii. Justify your overall prototyping approach (what is faked, what works, etc.), major design decisions and important limitations.

   iii. Overview the functionalities your prototype supports, and walk through the steps of the tasks covered in your usability study.

Before you start, prepare your points (see marking scheme) and address them succinctly. You may not be able to say/show everything you did, so make it count!

Resources for recording video and editing for submission

   • Video recording and analysis tips: [courseweb]/res/resources_Video_Editing_Pointers

   • Use any device to record your video. Phone/digital camera video are fine, or try screen capture software (e.g., Camtasia - http://www.techsmith.com/camtasia.html).

Formatting and Submission

1) Report: Follow general instructions on [courseweb] / Deliverables.

   Submit a .zip file that contains two PDFs as follows:
   1. Report (including Appendix A) – Filename: <team_name>_W13_Report
   2. Appendix B - Additional documentation (consent forms + raw data)
      Filename: <team_name>_W13_AppendixB
   2. Do NOT include a video file.

2) Video: Post online and submit a link to your video in Appendix A.1
   • Post your video to a website that supports streaming (e.g., YouTube or Vimeo).
     Ensure your TA won't need to create an account to view them. You may NOT change your video after the deadline. Evidence that you have done so will result in a mark of 0.

Marking Scheme

See mark rubric appended to this document.

W12 Checkpoint – Analysis Plan   10

Report Components (Max 5 pages – hard length limit)

Evaluation and Analysis Results (3-4 pages)

a) Topic: *Restate your project topic.*

b) Evaluation Goals: *List the 2-3 questions (evaluation goals) addressed. (0.25 pg)*

c) Summary of evaluation: *Summarize your final methods and protocol. E.g., include descriptions of the users that you actually used as subjects and their number. (0.5 pg)*

d) Evaluation Rationale: *(outcome of Step 2) Justify your evaluation, including goals, choice of evaluation methods and protocol. (0.25-0.5 pg)*

e) Prototyping Rationale: *(outcome of Step 3) Outline and justify the decisions made in developing your medium fidelity prototype (scope, level of functionality, appearance, etc.). Reference the video as appropriate. (0.25-0.5 pg)*

f) Summary of Data, Findings and Analysis: *(outcome Step 7) Report on the most interesting or representative quantitative and qualitative results. (1.0-1.5 pgs)*

g) Conclusions: *(outcome of Step 8) Summarize key insights from the evaluation in terms of strengths and deficiencies of your interface design, their relative importance as you have learned them from users, and how your perspective may have changed. (0.5-1 pgs)*

Recommendations and Critique (1 page)

h) Design Recommendations: *(outcome of Step 9) Comment on the quality of your interface design, and ways in which you feel it is (or is not) validated. (0.5 pg)*

i) Self Critique: *(outcome of Step 10) Assess your design and evaluation process. (0.5 pg)*

Figures

Put all figures (tables, plots) after the main text and before the appendices. Figures do not count toward the page limit, but all included figures should be referred in the main text. The figures should be properly numbered and captioned.

Appendix A

The following appendices should be included in **the same PDF as your report**. Clearly mark the appendices (e.g., separate each appendix with a title sheet and start on separate pages)

A.1) Medium Fidelity Prototyping Video reference. Provide a link to the video.

A.2) Include blank copies of actual evaluation instruments (e.g. question list for interviews, questionnaire used for surveys, coding sheets, protocol for other types of observation). *Include a copy of **whatever the participant saw** – e.g. the actual questionnaire, rather than just a list of the questions that were asked.*

A.3) (Optional) Include supplementary analysis, if any (e.g., extra plots which you did not have room for in the report but feel should be included for completeness).

Appendix B - Additional Documentation (separate from Report)

To ensure that confidential participant materials are kept separate from reports, which your team may wish to share in future, the following appendices should be included in **a second PDF, separate from your report**. Separate each appendix with a title sheet; start on separate pages.

B.1) Signed 'Adherence to Ethics Protocol' form –from course resources page; one form / team.

B.2) Signed participant consent forms from the evaluation

B.3) Scanned or digital raw data (e.g., completed paper questionnaires or data, interview transcripts, measurements taken).

	LEVEL		MARK	WEIGHT
Medium Fidelity Prototype			*0.0%*	**30%**
Video of prototype describes prototype and tasks, explains major design decisions and limitations, and provides a clear walkthrough of major goals/tasks		←		10.0%
Creativity, resourcefulness, effectiveness, reuseable, apprioriateness for purpose, etc. as evident from video		←		10.0%
Usability of design (appears efficient, easy to use, memorable, etc.) as evident from video		←		10.0%
Evaluation and Analysis			*0.0%*	**42%**
Project Topic		←		1.0%
Evaluation goals - impact, relevance, completeness, measurability (b)		←		4.0%
Evaluation summary (c) - quality of evaluation actually conducted, details of evaluation included.		←		9.0%
Justification of the evaluation plan - evaluation goals, methods and protocol (d)		←		5.0%
Justification of the prototyping plan - scope, functionality, etc. (e)		←		5.0%
Data analysis and presentation (f)		←		10.0%
Evaluation conclusions (g)		←		8.0%
Recommendations and Critique			*0.0%*	**13%**
Design recommendations (h)		←		5.0%
Critique of process (i)		←		8.0%
Appendix			*0.0%*	**5%**
Appendices A.1 and A.2, and all of Appendix B present and prepared correctly. If A.3 is included, prepared correctly and adds effectively to content in report.		←		5.0%
Overall Quality			*0.0%*	**10.0%**
Overall quality of work as presented as a whole e.g., organization, coherence, creativity, etc.		←		10.0%
Penalties				
Up to 5% deduction for issues with any of: Submission; Presentation (professionalism, etc.) Formatting (coverpage, length, font size, etc.); Organization and quality of writing (spelling, grammer, etc.); Visuals and other supporting materials (understandable, annotated where necessary, etc.);				
		TOTAL:	**0.0%**	**100%**