

Announcements, 3/14/2023

Today: **User Interfaces**

Break around 11:15am

Acknowledgements

Some of these slides are from Prof. Alex Kuhn.

Outline

- Why care about user interfaces (UI) & user experience (UX)?
- User-centered design
- Mockups and prototyping
- In-class UI mockup activity

First: Definitions

- **User interface** is the way that a user interacts with an application or device.
- **User experience** encompasses all aspects of the end-user's interaction with the company, its services, and its products.
- **Usability** it is a quality attribute of the user interface, covering whether the system is easy to learn, efficient to use, pleasant, and so forth.

From Don Norman & Jakob Nielsen's Definition of User Experience
<https://www.nngroup.com/articles/definition-user-experience/>

Why care about UI and UX?

User experience affects market success



“You’ve got to start with the customer experience and work back toward the technology—not the other way around.”

– Steve Jobs

Good design

- Satisfies the client (if you have one)
- Works for the user (does what they need and want)
 - Easy to use
 - Able to avoid and recover from problems
- **Good design is easier said than done**

User-centered design

User-centered design (UCD)

- Iterative design process
- Takes the needs, wants, and limitations of the actual end users into account during each phase of the design process
- Evaluates the design with empirical measurements with users

From Designing the User Interface: Strategies for Effective Human-Computer Interaction by Schneiderman et al.

People are very different

- **Demographics** (e.g., age, gender, ethnicity)
- **Skill & knowledge levels**
- **Physical & mental abilities**
- **Context of use** (why they will use and in what environment)

Design for everyone?

No. Design for your target audience.

Understand your users

- Needs
- Motivations
- Behaviors
- Limitations
- Context for their problem / activity / task

How can you understand and interact with users?

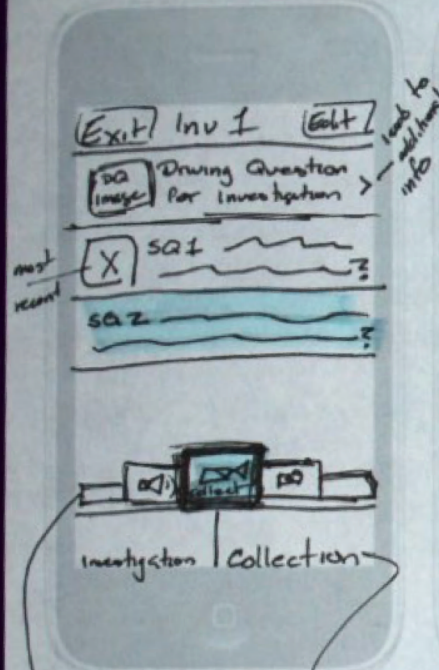
- Observe
- Interview and survey
- Prototype
- Run usability studies

Designing for Users

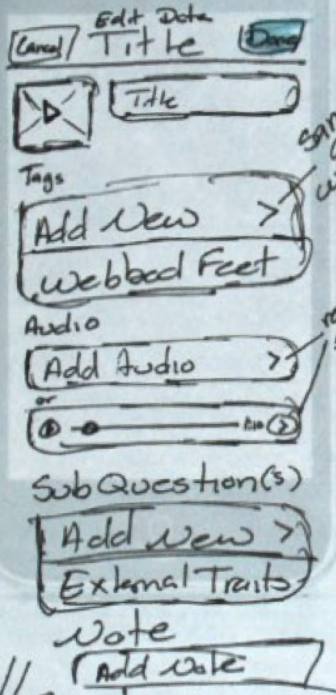
Different levels of fidelity

- Paper sketches, paper prototyping
- Wireframes
- High fidelity or pixel perfect mockups
- Functional prototypes

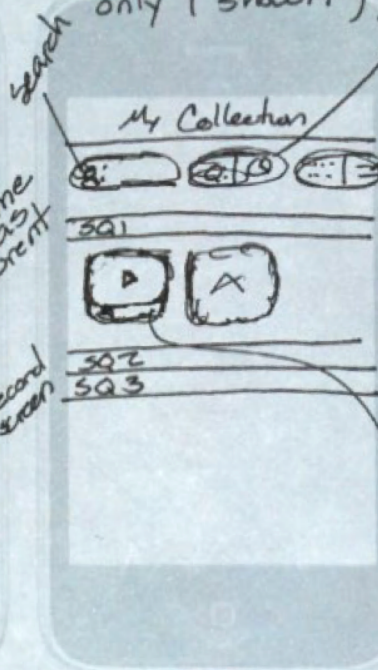
Main Page



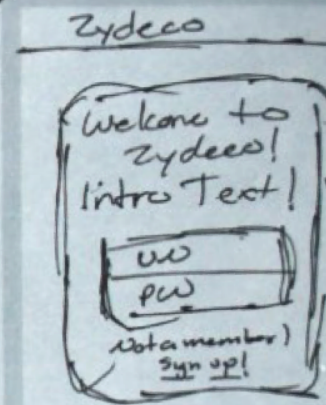
Create New / Edit Data (same screen)



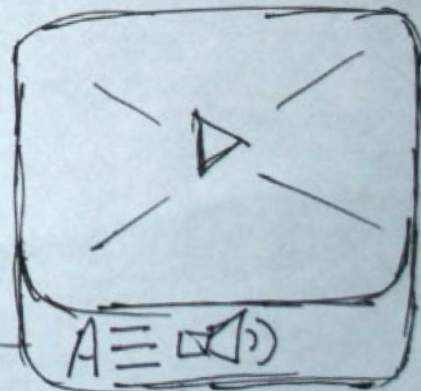
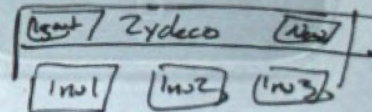
My Collection (4 ways to view, only 1 shown)



Intro



Then to:

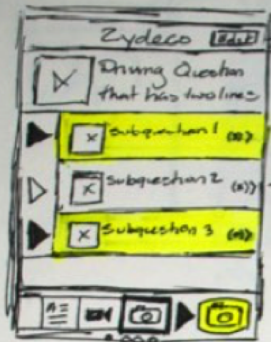


tab will eventually include "shared"

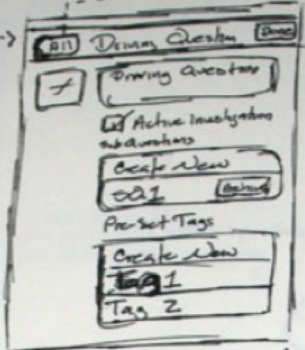
slide \leftrightarrow to chg data type. tap middle to collect

in file view, tags / title not shown - that's for list view

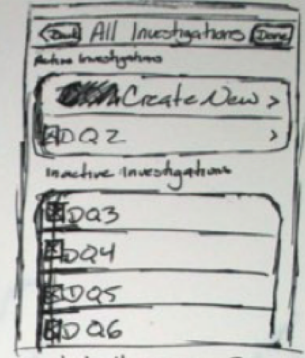
black bar will have icons detailing annotations



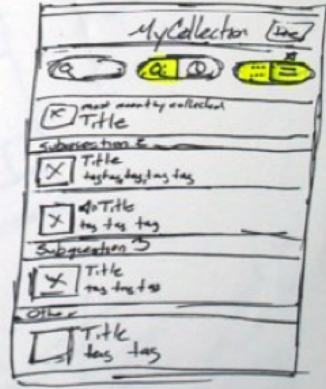
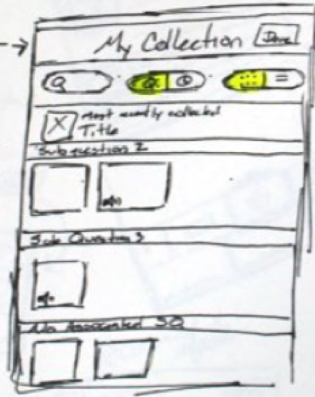
- * Swipe to get to other active investigators
- * Tap triangles next to SQs to determine where data should go
- * Tap SQ to view data
- * Swipe data scroller for more collection options
- * Tap on DQ image to set/change investigation thumbnail
- * Should there be SQ thumbnails? My thought is just show most recent (or nothing if empty).



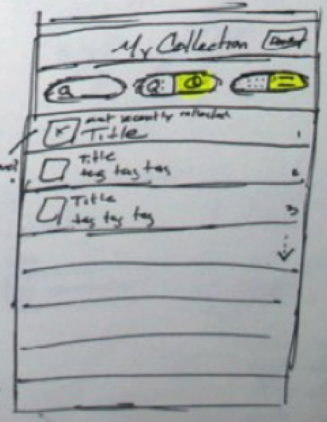
- * other categories are: Archived SQs, Sharing (role perms), Delete Investigation
- * automatically in edit mode... having already hit "edit" to get here



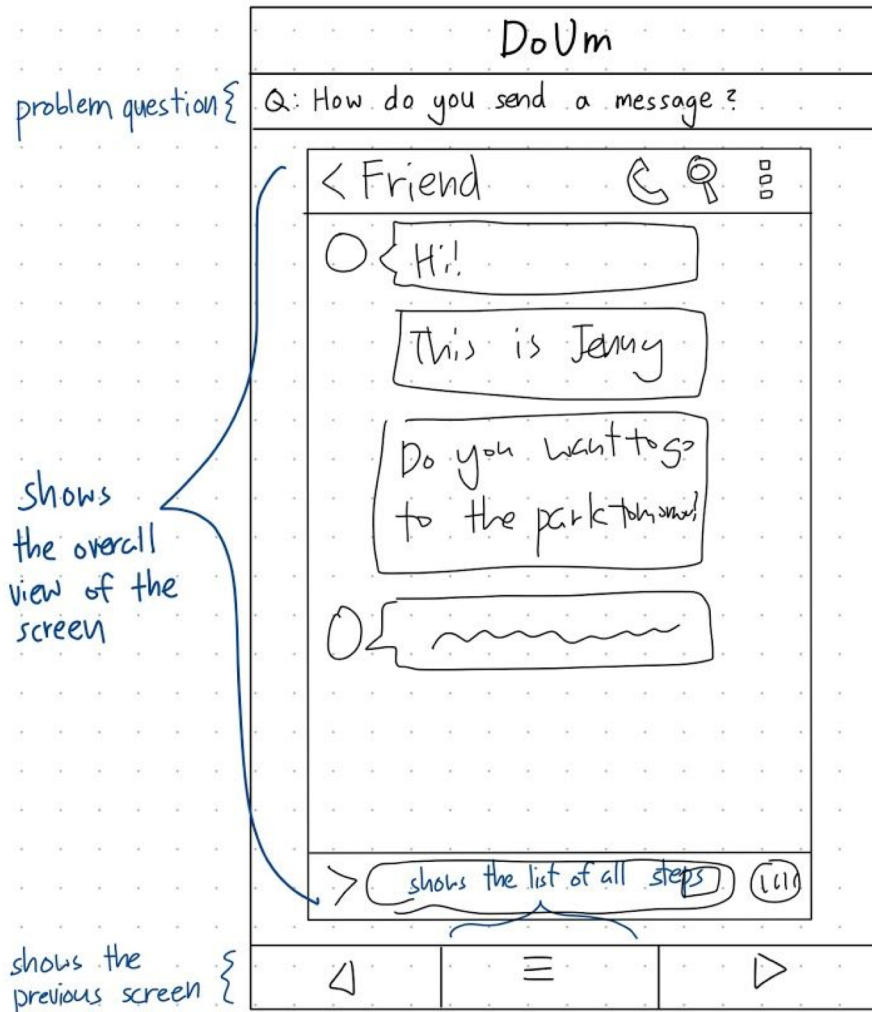
- * at bottom, an @ to get to settings



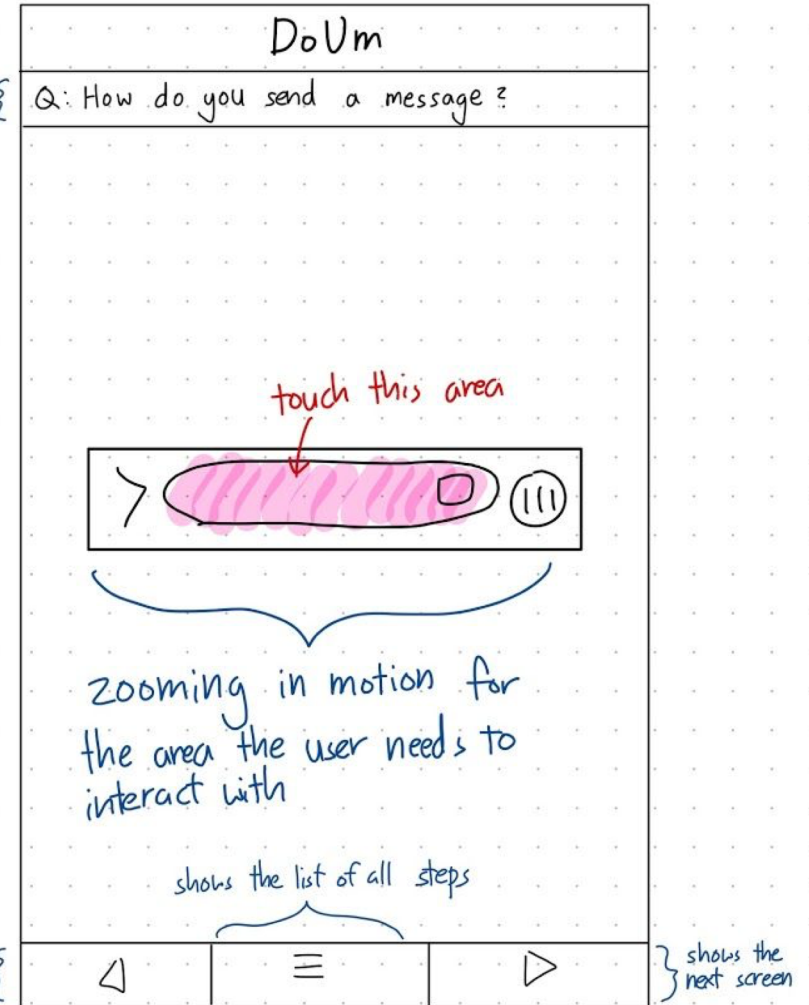
- MY COLLECTION
- * tapping search would animate the field across the screen and bring up the keyboard
 - * When ordered by question, it will begin w/ sq that was tapped (here, 2). this is the default. SQ tapped does not matter for chronological order
 - * tapping any data from My Collection goes to detailed data view, which will have the option to edit



Motion-driven tutorial



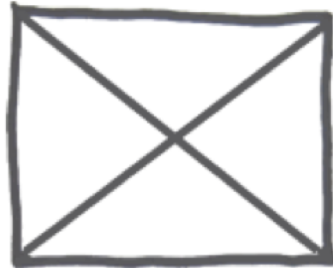
problem question {



The motion-moving is

similar as Prezi

- ① show overall view
- ② zoom-in on important parts



Profile Name

245 Blackfriars Road
Ludgate House
London, SE1 9UY

Email: firstname@surname.com

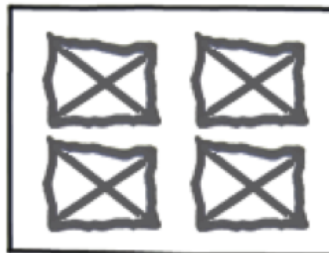
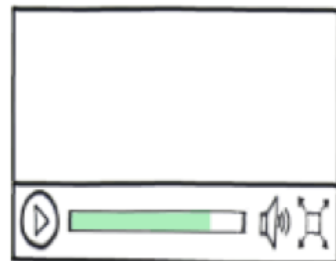
Telephone: 0207 955 3705

Categories

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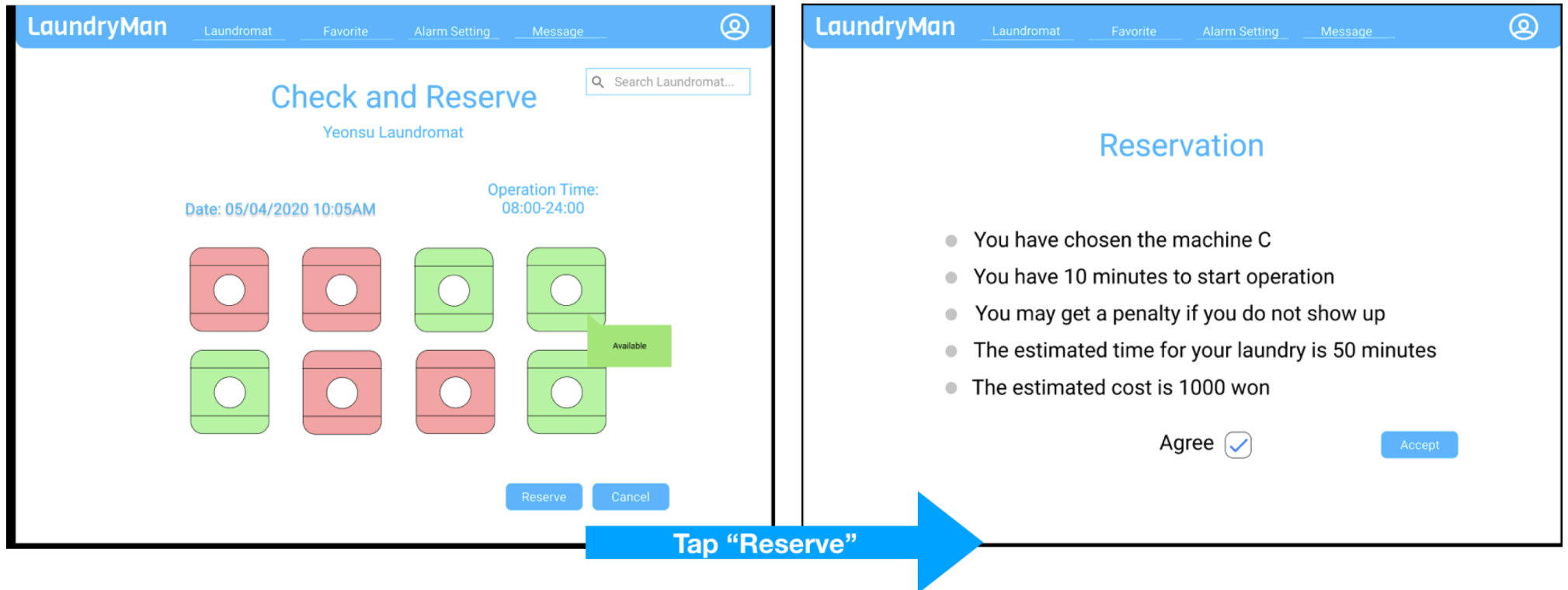
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Attachments

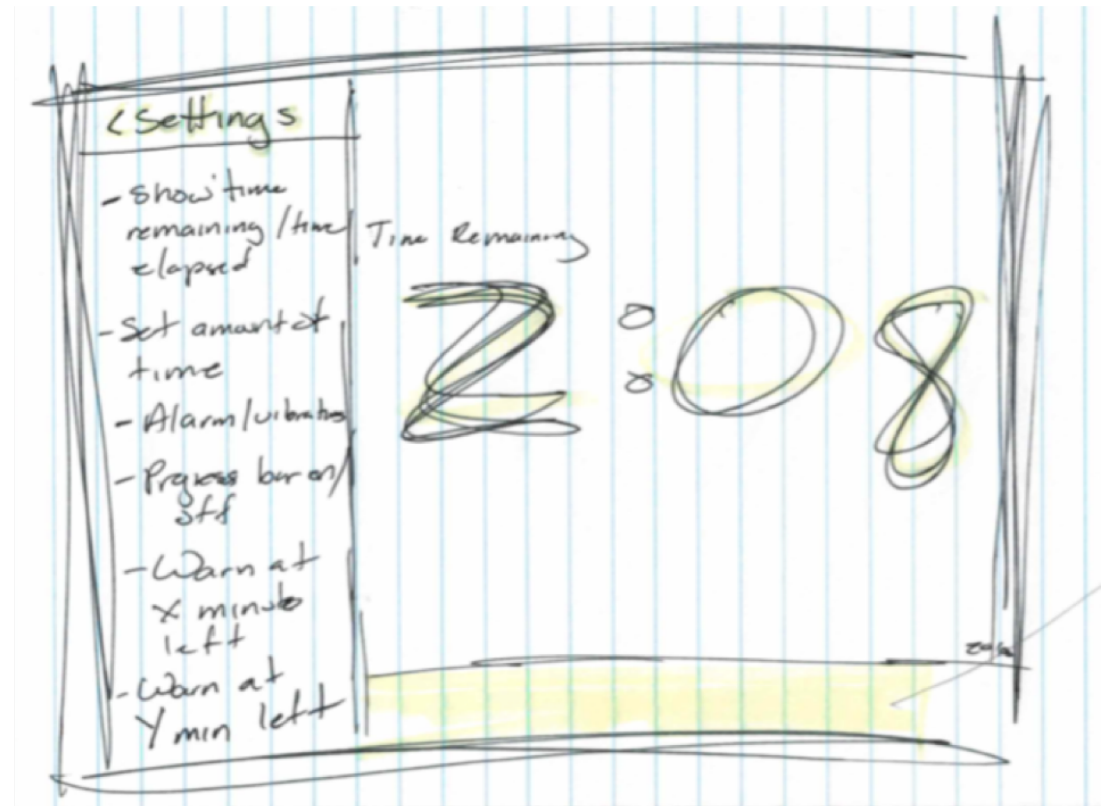
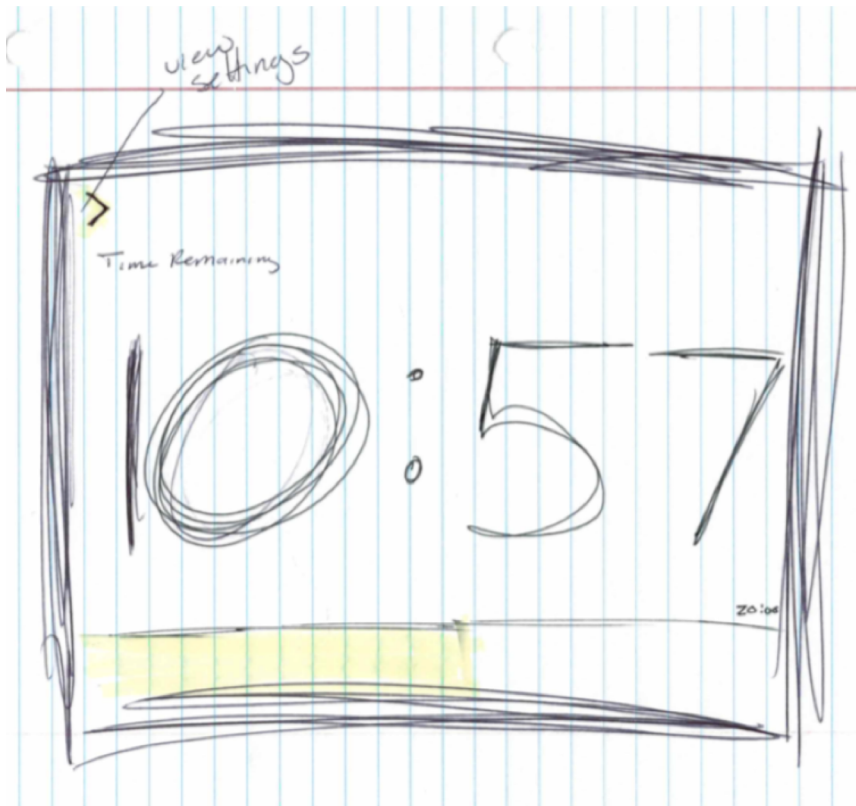
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Interactive prototype via tool (Mid-fi prototype)

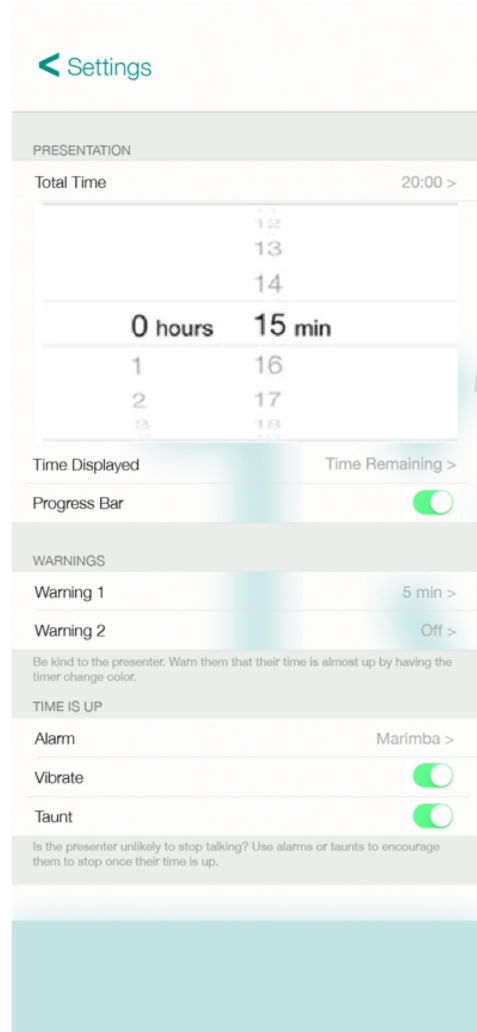
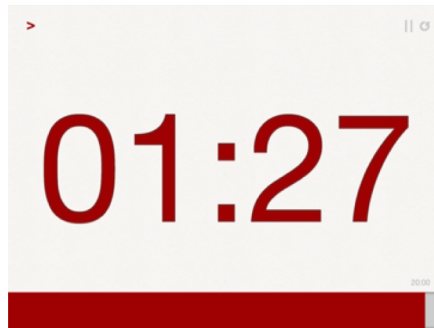
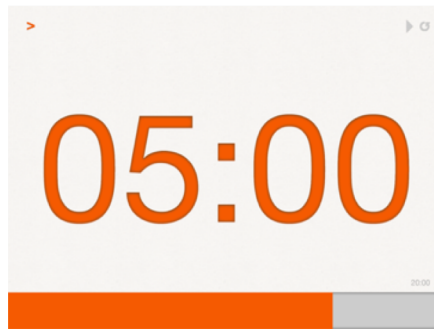
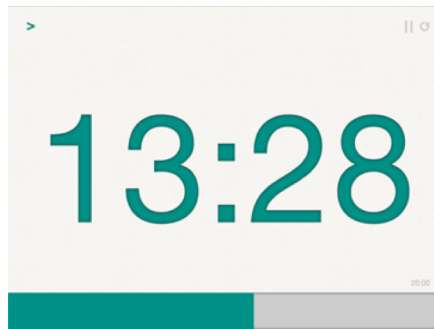


Example: **Big Presentation Timer**
An iPad App to time presentations
(Released in 2013)

Early sketches

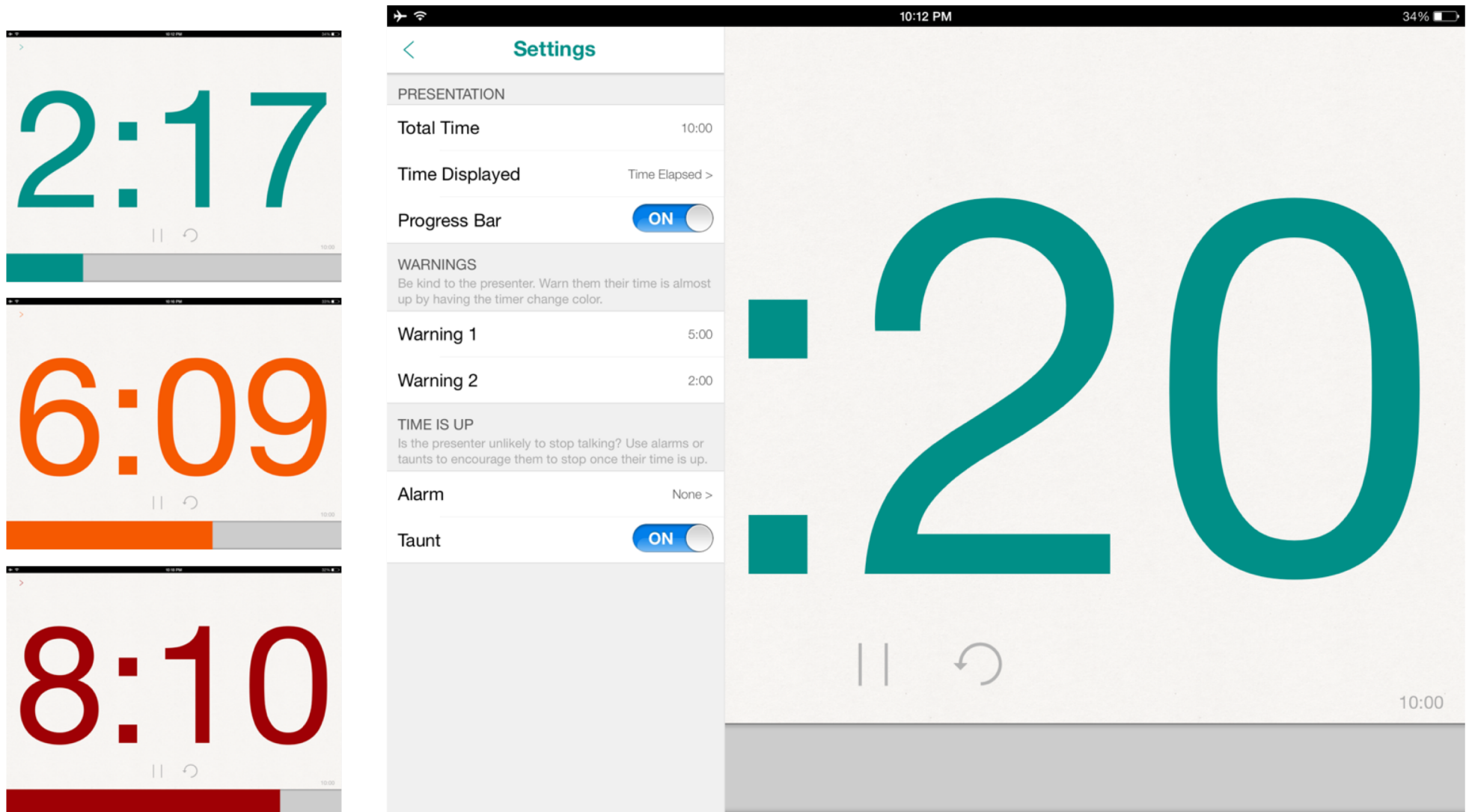


Higher fidelity digital mockups

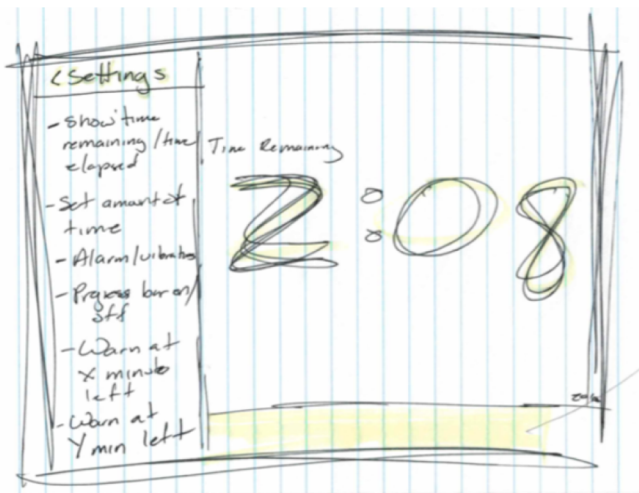


* We could support times over 60 min if we changed how the numbers displayed- HH:MM ss
If we go that route, then this picker (not to scale- I just pasted in an image since making all those rolling number effects wasn't worth it in a sketch) would be appropriate. Otherwise it seems out of place- would a slider be a better option?

Released app

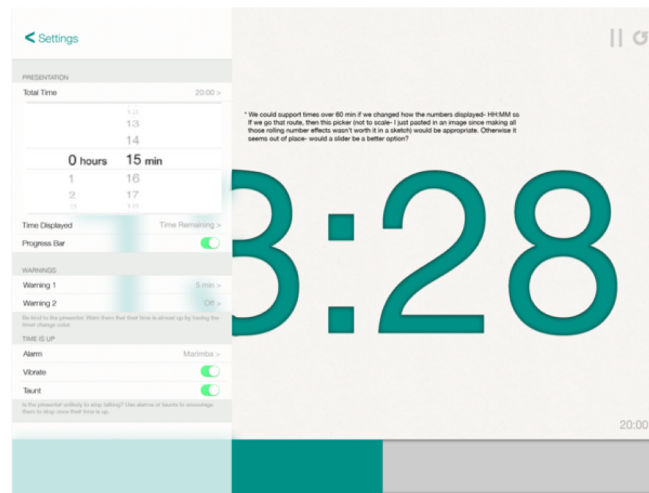


Progression over time



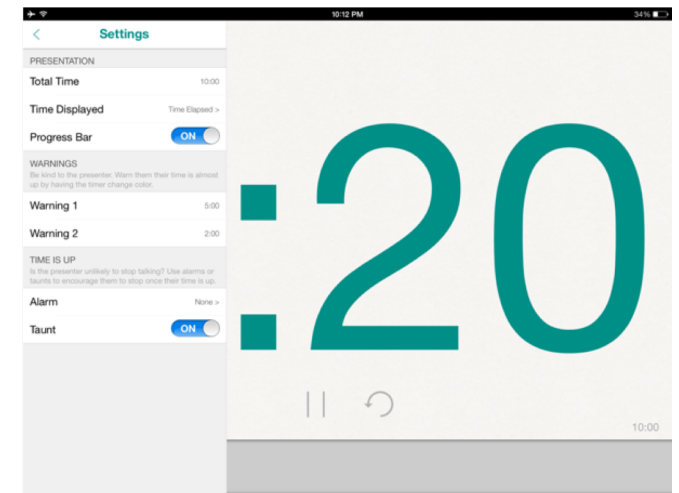
Sketch

Sketch



Higher Fidelity Mockup

Higher Fidelity Mockup



Released App

Released App

Example: **Colibri**

An iPhone app to learn German
(Released in 2014)



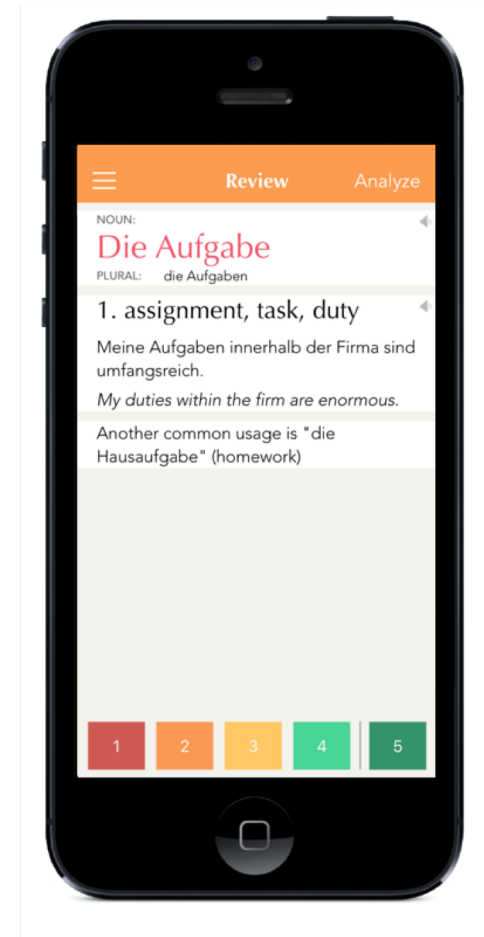
Increasing fidelity over time



Paper prototype



Higher Fidelity Mockup



Released App

Tradeoffs on fidelity level

- Low fidelity mockups and prototypes
 - Quick and cheap
 - People more comfortable suggesting edits
 - May be unacceptable to present to stakeholders
- High fidelity mockups and prototypes
 - Communicate what the final design will look like
 - May be clearer to stakeholders
 - More expensive and time consuming
 - May make design seem more finalized than it actually is

Design tips

General design tips

- Learn from existing software
- Follow design patterns for the platform
- Create mockups and prototypes and see how the system works and feels
- Test and get feedback from your target audience

Additional resources

- [Usability 101: Introduction to Usability](#) by Jakob Nielsen
- [Tognazzini's First Principles of Interaction Design](#)
- [10 Usability Heuristics for User Interface Design](#) by Jakob Nielsen
- [Ben Schneiderman's 8 Golden Rules of Interface Design](#)
- [Google Mobile Web Design & User Experience Guide](#)
- [Apple UI Design Do's and Don'ts](#)

Questions?

Reminders

- Draft of Product Description, Scope, Functional Requirements, UI Mockups due by March 14 (may change depending on our progress of lecture)
 - 5-10 minute presentation on your project in-class (showoff mockups)
 - This is NOT graded, but to confirm your project and scope is appropriate for the course and get early feedback

In-class activity

User interface mockups

- In your teams, have each person choose a different important functional requirement for your project:
(e.g., The customer should be able to book a flight between any two cities.)
 - Each member should individually make user interface mockups for their chosen requirement
 - Create a rough sketch or mockup of each screen needed to complete the requirement
 - Show the progression between the screens (with arrows or some other method)
- Show the mockups at the end of class
 - If not finished by end of class: email the instructor by end of day (take a photo of paper sketches)
 - On the mockup, list out in 1 sentence bullets all the different tasks a user can do or access when they are on that UI screen
- If your requirement takes only 1-2 screens, sketch out a second alternative design for the same requirement