

Announcements, 3/14/2023

Today: **User Interfaces**

Break around 11:15am

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Acknowledgements

Some of these slides are from Prof. Alex Kuhn.

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Outline

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

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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/>

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Why care about UI and UX?

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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

images from <https://news.softpedia.com/news/the-early-days-of-the-battle-original-iphone-vs-samsung-s-2007-windows-phone-519766.shtml>

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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**

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User-centered design

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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.

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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)

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Design for everyone?

No. Design for your target audience.

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Understand your users

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

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How can you understand and interact with users?

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

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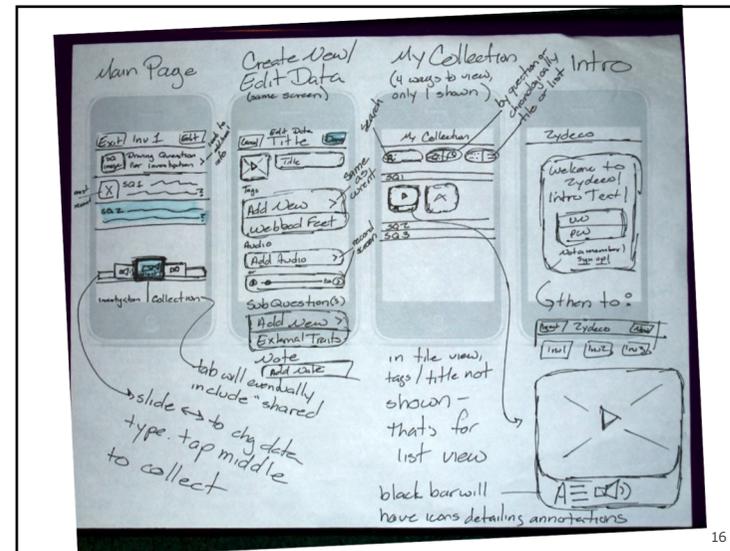
Designing for Users

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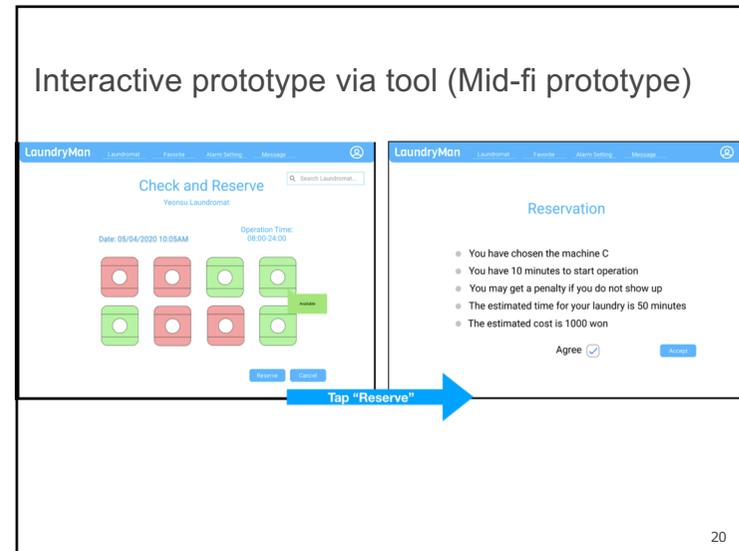
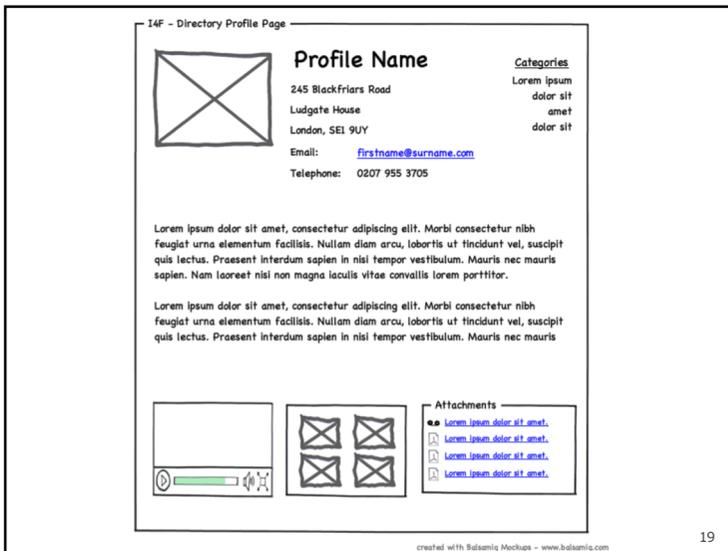
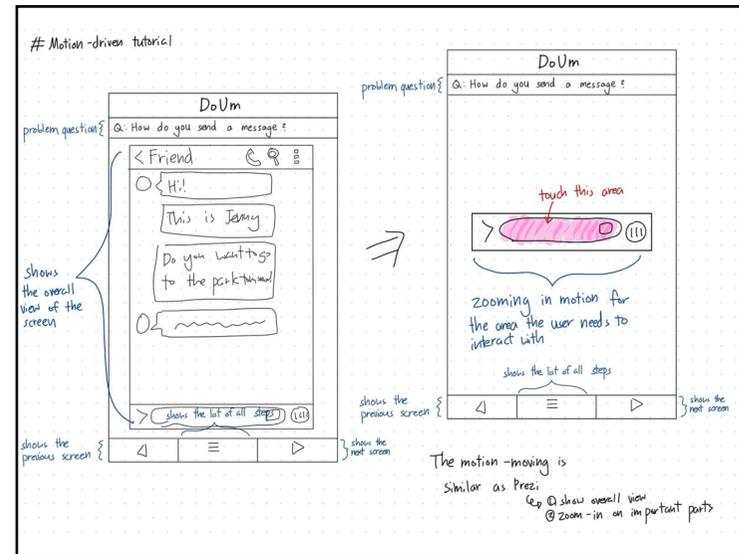
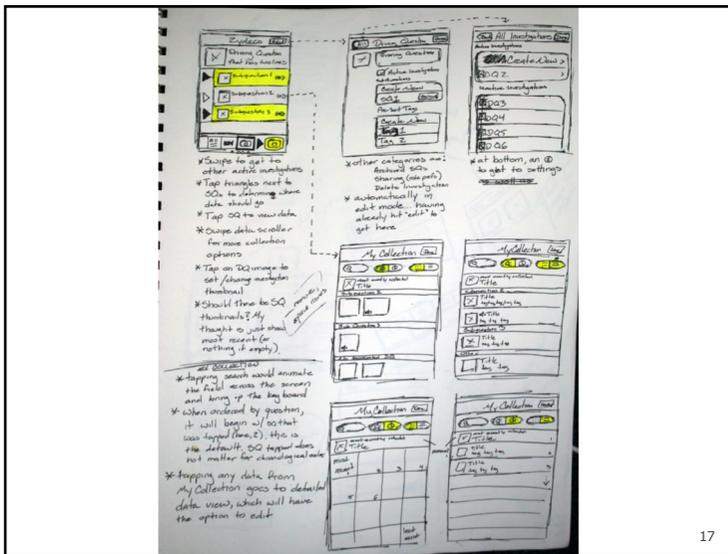
Different levels of fidelity

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

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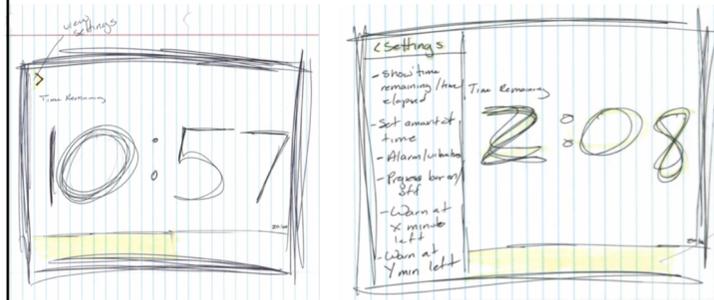
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Example: **Big Presentation Timer** An iPad App to time presentations (Released in 2013)

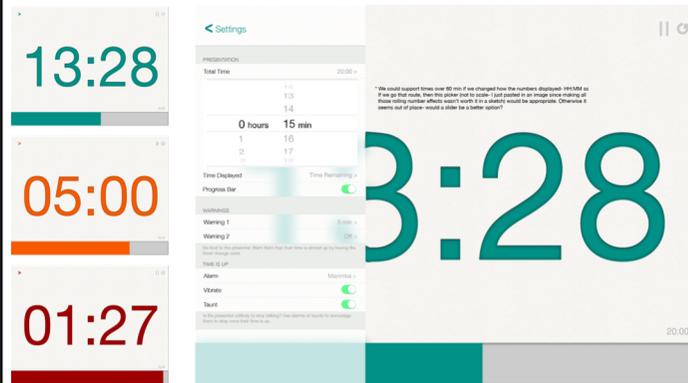
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Early sketches



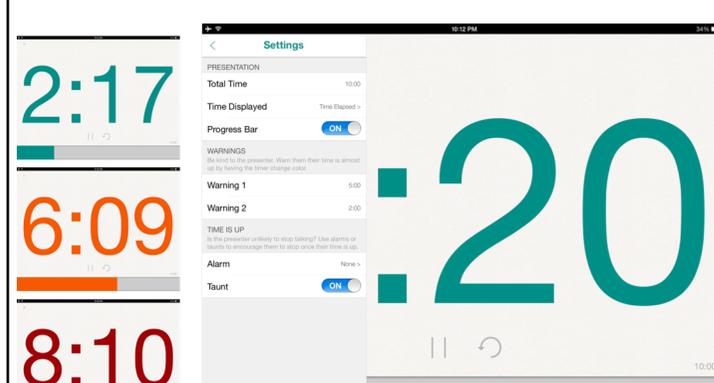
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Higher fidelity digital mockups



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Released app



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Progression over time



Sketch

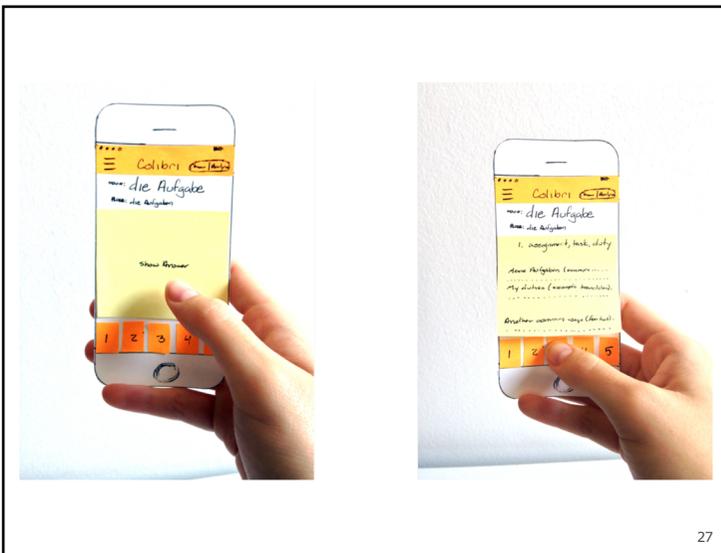
Higher Fidelity Mockup

Released App

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Example: **Colibri**
An iPhone app to learn German
(Released in 2014)

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Increasing fidelity over time



Paper prototype

Higher Fidelity Mockup

Released App

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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

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Design tips

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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

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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](#)

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Questions?

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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

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In-class activity

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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

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