Module 5: Prototyping

Goal: will be better at meeting the needs of the user than the existing design

An early model of a novel design

two types:

- Low fidelity- bares little similarity to the final design in either form or function
- High fidelity- are very similar to the final design in form and function

Manage resources

Iterate on the design

What will be prototyping?

- Horizontal Prototype
  - Model breadth of design features
- Vertical Prototype
  - Model a few features in depth

A design example

We want to prototype a study session organizer.

Identified the following features

- verify student identification
- register for multiple classes they want to study for
- enter preferred study location
- Enter preferred study time
- Rank classes in order of priority

Low Fidelity First

It's quick and easy!

Helps to verify design objectives

- For ourselves
- With colleagues
- With stakeholders

paper prototyping
- sketching
- Storyboards
- Card-based

Sketching

Sketch a scene of why a study organizer is a good idea

Storyboards

Storyboard a successful scenario with the study organizer

Card-based

Do a card-based prototype of the first 5 screens of your study organizer

High Fidelity Prototyping

A model of novel design

Designer

- General software
  - For example, slide presentation software or PDF software can be adapted for this purpose
- User interface prototyping tools
  - Allow designer without development/coding skills to build high end prototypes

Other professionals

- Software engineers
  - can build technical functionality
- Graphic designers
  - Ensure that new design fits in with the brand's visual specifications

High Fidelity Prototyping Exercises

- Find a UI platform and build out the 5 screens you designed in the card-based exercise from your previous lesson
  - Or build out the one that I suggested if you like it better
- Go to the "play store" of your choice and look up a study app. Consider what you would have to do to incorporate our design features into a preexisting app...

Other Prototyping Techniques

Wizard of Oz Technique

- Used to model functionality of a product by having a human perform the task usually performed by the computer
- User is unaware that the product is not functional

- Advantages
  - Saves time and money when compared to building a functional system
- Disadvantages
  - Considerable time is required for this to work appropriately
  - Always requires multiple people to operate including a well trained "wizard"
  - User may have unrealistic expectations for the system

Metaphor Technique

- Help user build a mental model of how a new design functions
- Communicates the functionality of the novel design by comparing to artifacts or systems the user knows

Example

- "It's like Mechanical Turk for individuals with special needs"
- Does the metaphor work?
  - User need to know what Mechanical Turk is
  - However Mechanical Turk workers are all strangers that do tasks for pay

Can you come up with a metaphor for Social Mirror?

Module 6 Evaluation

- Evaluation is a data driven process
- You will collect both and qualitative and quantitative data

Brainstorming

- Advantage: Individual experience leads to differences in the lists that are created

Affinity Diagrams to help streamline brainstorming data

- Individual ideas are placed on sticky notes
- Team members organize the sticky notes according to how similar they are
- Teams decide on what interface can meet all of the functional requirements in one category

Where prototyping and evaluation meet

- Formative Evaluation conducted early on in design process with low-fidelity prototypes
- Summative Evaluation conducted with high-fidelity prototypes or final interface

The type of data we collect is related to the type of prototype we are using

- Low fidelity prototype requires that the designer collects the data
  - Time to complete a task, count number o clicks, etc
- High fidelity prototype may produce data of how the system was use
  - Time stamps of when the user started and ended a session
  - Log data of how the user interacted with the system
- Design is efficient with regards to execution of task demands
  - Least amount of time
  - Least number of clicks
  - Few or no errors

Design interfaces that are useful and usable

- Useful - allows a user to complete a task
- Usable – "…refers to the effectiveness, efficiency, and satisfaction with which users can achieve tasks when using an [interface]" (Courage, Baxter & Caine, 2015)

Design is effective with regards to degree to which the goals of the task are met

- Quantitative data- questionnaires or log data
- Qualitative data-interview with the user

- Learnability: how easy it is to carry out a task successfully
  - Measure amount of time or number of clicks to complete task and compare these to expert performance
- Memorability: how easy it is to remember how to use a product
  - Compare amount of time or clicks to complete a task after the user is away from task for a while.

User feedback about their interaction with the design.

- Cognitive measures: Mental effort
  - –For example were the steps required to complete the task intuitive?
- Emotional measures: Feelings experienced
  - –Was the visual layout appealing?
  - –Did she feel frustrated while completing the task
  - –After completing the task did she have negative or positive emotions about the new design

Review material from previous modules, especially

- M1L2-Fundamental features of good design
- M1L3-Cover the essentials of interacting with users
- M2L2-Covers users and data types