

The Human Factor (THF)

Week 8: Prototyping

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THE UNIVERSITY
of EDINBURGH

Week 9 Student Led Inquiry

- Student led slot in Week 9
- What have we not covered in this class yet that you would like to learn about?
- Share your ideas

Week 8 Outline

- Prototyping Overview
- Prototyping Techniques
- Prototyping Activity

Prototyping Overview

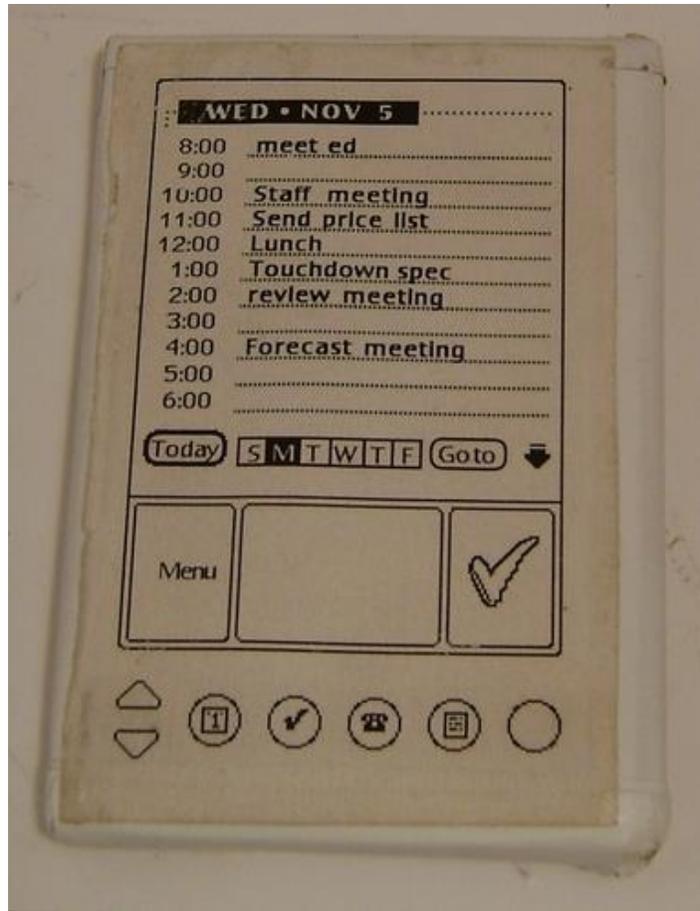
Prototyping Experiences

A **prototype** is an early sample, model, or release of an interactive product built to test a concept and to get feedback from others.

An **experience prototype** is implemented to convey an experience with an interactive product.

1. Help others develop an understanding about the essence or essential factors of an experience
2. Explore and evaluate ideas, and get feedback
3. Communicate issues and ideas about a proposed new experience

Prototype Example: Jeff Hawkins' PDA prototype



- A screen mockup printed on wood and a stylus (low fidelity prototype)
- Jeff used the prototype for 1 week throughout the day to explore the novel experience of digital notes and calendaring



Prototype Fidelity

Fidelity is the degree of exactness to which a model reproduces the real thing



Low fidelity prototypes

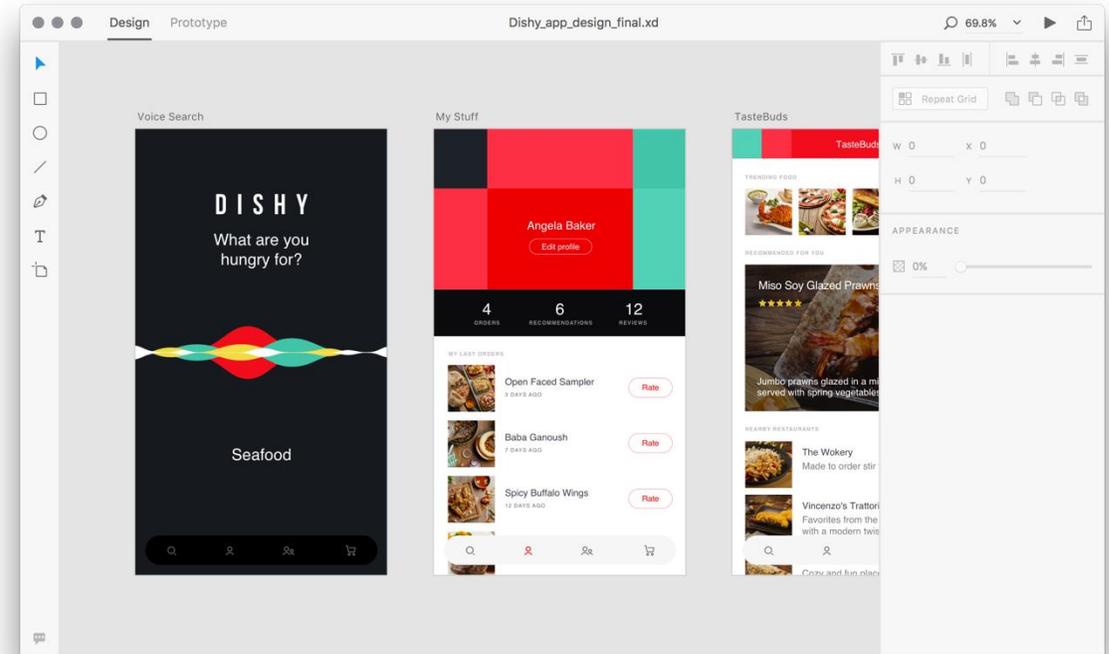
- Use a medium which is unlike the final medium, e.g. paper, cardboard
- Are quick, cheap and easily changed

High fidelity prototypes

- Uses materials that you would expect to be in the final product
- Prototype looks more like the final system than a low-fidelity version

Think-Pair-Share: Experiences with Prototyping

1. Have you prototyped something before?
2. Have you used any prototyping tools before?
3. What tool/s did you use?
4. What was your experience like?



<https://blogs.adobe.com/creativecloud/making-adobe-xd-redefining-beta/>

Prototyping Techniques

Prototyping Techniques for CW2

For CW2, your group will select one of the three sketched ideas to develop into an interactive prototype. You can create a:

- Paper prototype
- Interactive Wireframe
- High-fidelity prototype
- Wizard-of-oz prototype
- Video prototype

Paper Prototype

- Easy to produce and change
- Require a human facilitator (known as the human computer)



Usability test with paper prototype

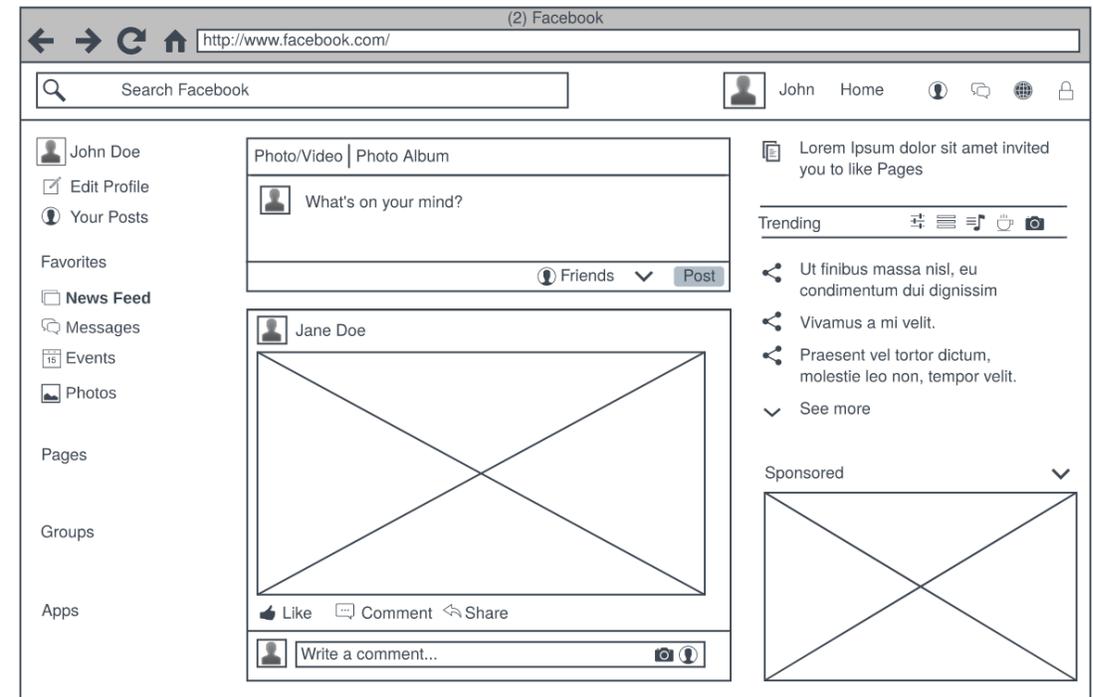
- <https://youtu.be/yafaGNFu8Eg>

Interactive Wireframes

- Like a blueprint for a house
- Focus on information, layout and interaction, without the distraction of colours and fonts

Tools:

- Balsamiq: <https://balsamiq.com/>
- Figma
- Adobe XD



Example: Data Visualisation Platform for Cotton Growers

- The initial concept of the platform was for cotton growers to be able to visualise the number of birds and bats on their farm, however growers have only a general interest in this information.
- The main interest in the platform is its potential for pest management, which stems from the drive not to use pesticide or insecticide sprays on the cotton for both environmental and economic reasons.
- The insect-eating bats are the main point of interest in engaging growers in the wider platform. There is potential to use this interest to build more awareness of both the bats and birds on the farm and the actions growers could take that would lead to greater numbers of these species, further encouraging responsible farming practices.

Sensor View

- This dashboard displays a map view of the farm with markers to indicate where the sensors are placed.



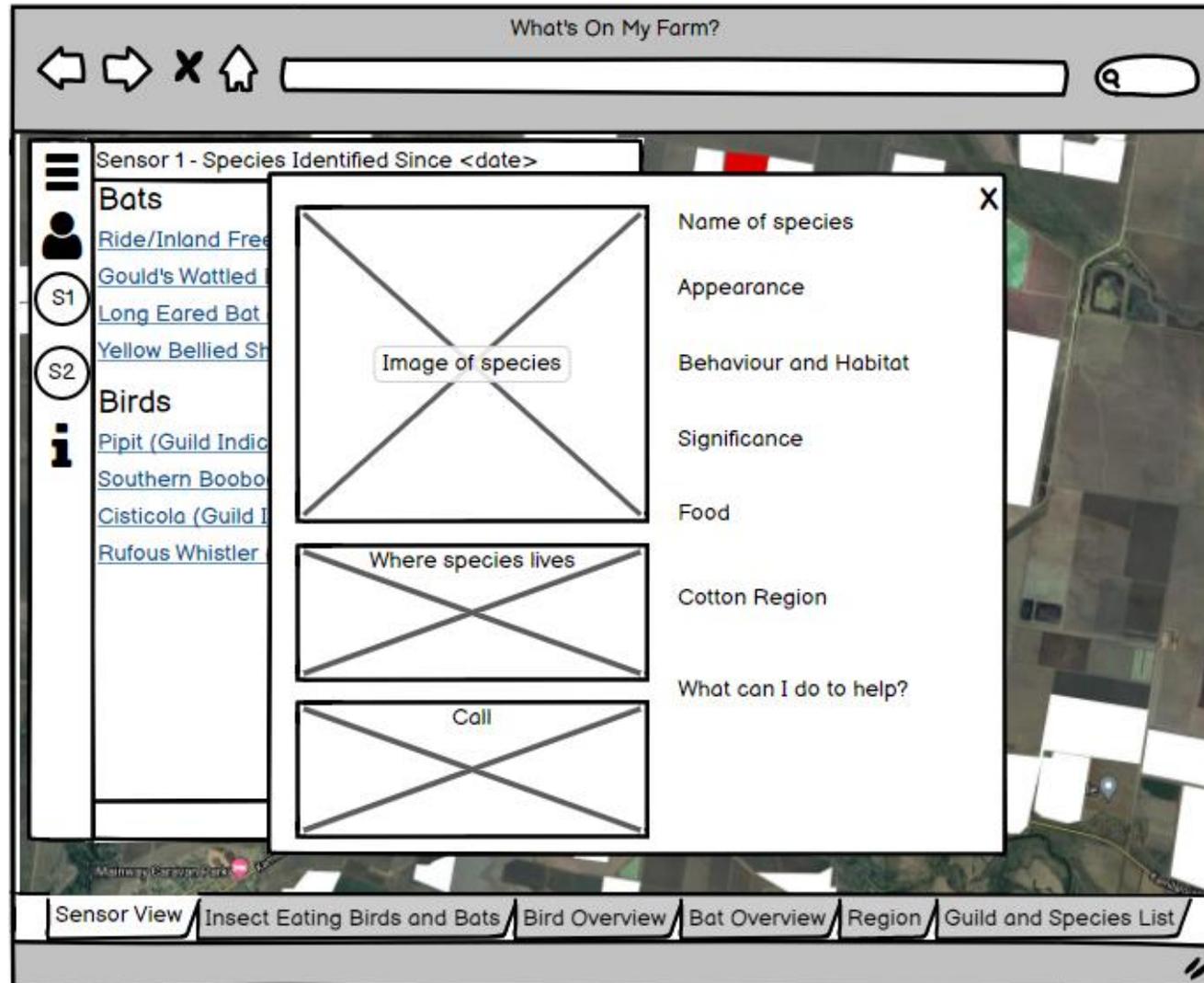
Sensor View

- When a sensor is clicked, a list of the species detected on that sensor will appear.



Sensor View

- When the species name is clicked, a pop-up will appear with information about that species. Information layout is displayed similar to the Birds on Cotton Farms PDF, specifically the Indicator Species Overview.



Insect Eating Birds and Bats

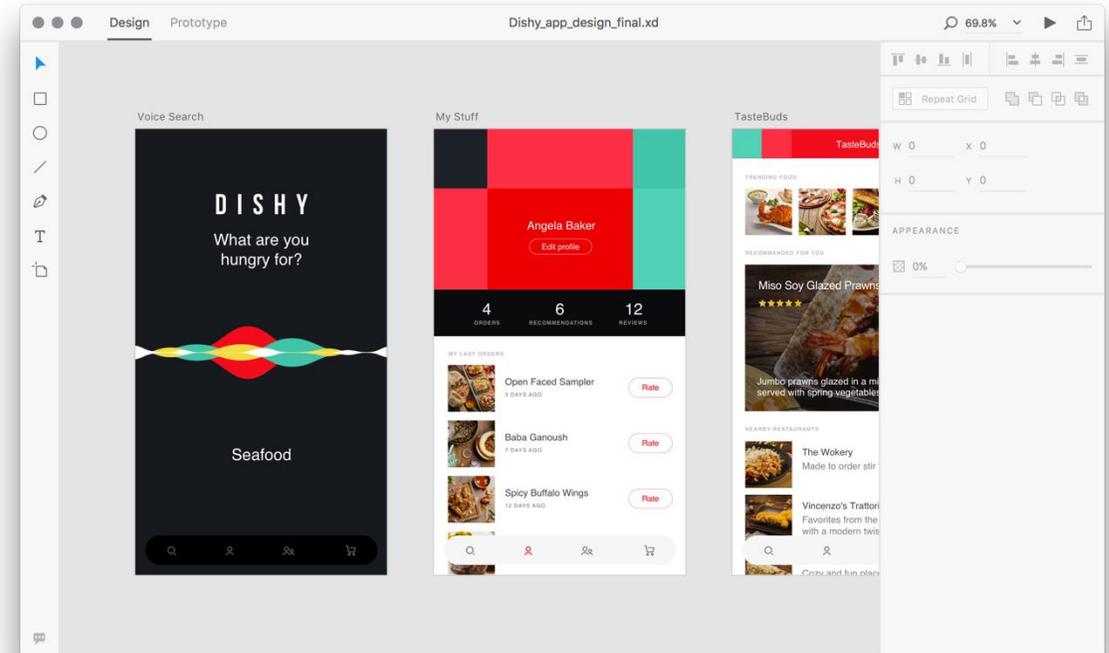
Dashboard contains graphs with the following information:

- Number of insect-eating bird species.
- Number of insect-eating bat species.
- Insect-eating bat activity – line graph.
- Insect-eating bat activity – bar graph with species listed, include species present and absent so growers are able to learn about species that are absent. When the species name is clicked, a pop-up will appear with information about that species similar to the Sensor View.



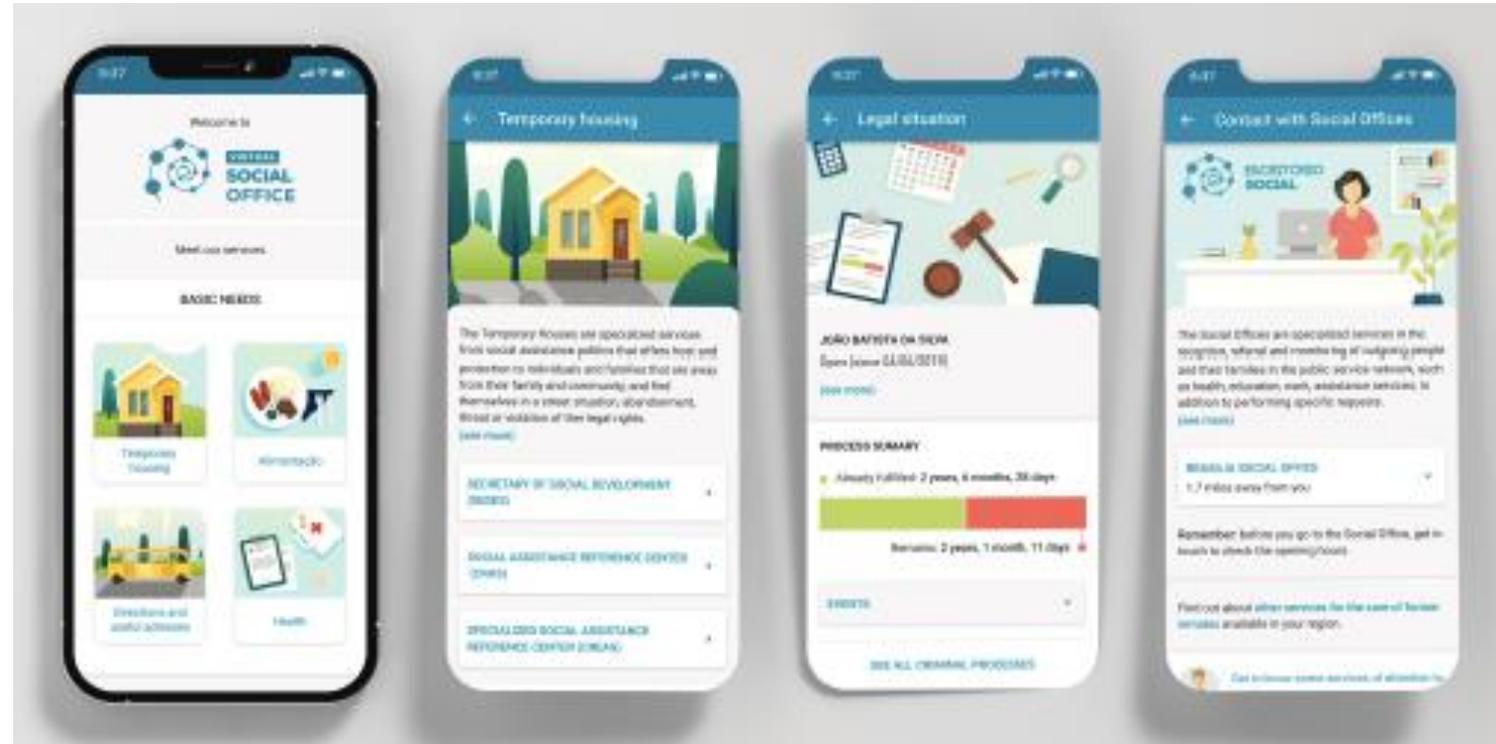
High Fidelity Prototype

- Look and behave like the final product
- Interactive: click from screen to screen
- Focus on interaction and look & feel
- Share prototypes with users or clients for testing
- Tools:
Adobe XD
Figma



<https://blogs.adobe.com/creativecloud/making-adobe-xd-redefining-beta/>

Example: App for Former Inmates



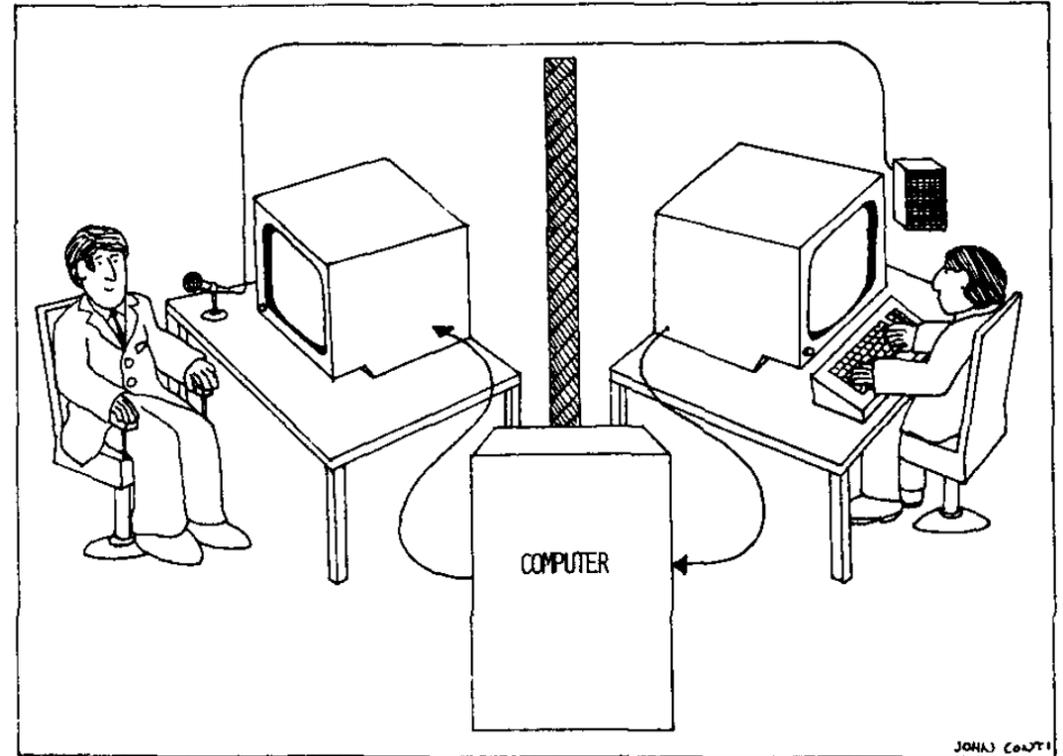
Example: The Messaging Kettle



Ambe, Aloha Hufana, Alessandro Soro, Daniel Johnson, and Margot Brereton. "From collaborative habituation to everyday togetherness: a long-term study of use of the messaging kettle." *ACM Transactions on Computer-Human Interaction (TOCHI)* 29, no. 1 (2022): 1-47.

Wizard-of-Oz Prototype

- The user thinks they are interacting with a computer, but a developer is responding to output rather than the system
- Example: experience of listening typewriter (1980)



Example: Robotic Ottoman



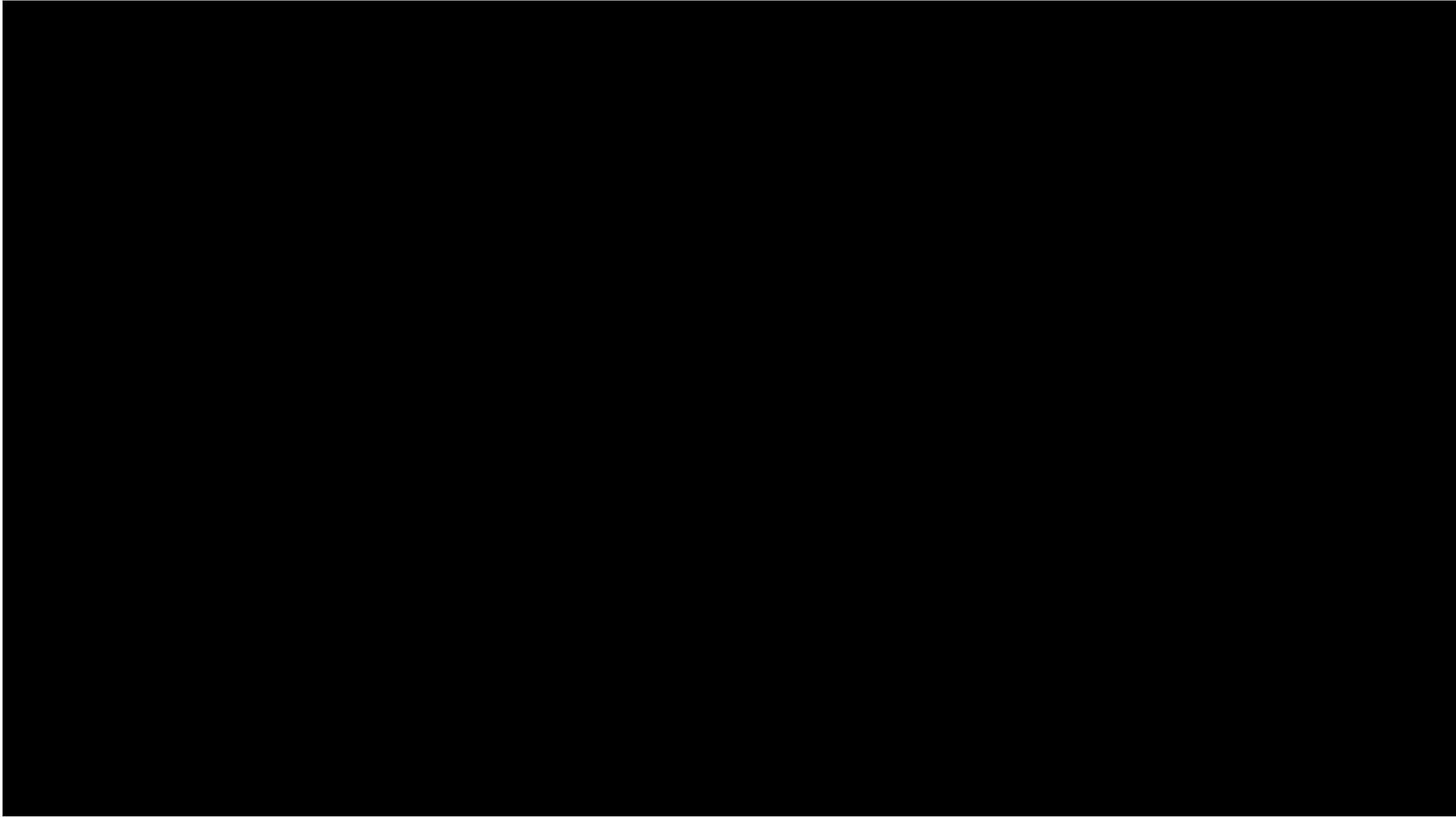
Simulated Experience

- Humans simulate functionality as in Wizard-of-Oz prototype to create a real experience
- The difference is that participants are aware that the system is simulated (no deception)
- Example: recipe recorder

Video Prototype

- Create a video to convey the interaction and experience with your prototype
- 2-3 minute video showing a user interacting with the prototype in a real-world context
- Tells a story that:
 - Describes context
 - Demonstrates the prototype functionality and how people interact with it
 - Conveys the experience of using the prototype
- Not a marketing pitch or selling your prototype

Example: Uninvited Guests by Superflux



<https://vimeo.com/128873380>

Video Prototype Tips

- Create a storyboard to prepare your video: shots, actions, interactions and narration
- Identify the locations, actors and materials you will need to film the video prototype
- Rehearse the scenario before you film
- Create a high-quality video recording – can use your phone or a camera
- Edit the video snippets into a final narrative - review and refine your edits to create a clear and succinct video

Video Prototype Resources

- Creating a storyboard:
 - Sketching the User Experience: The Workbook Chapter 4.4
 - <https://doi.org/10.1016/B978-0-12-381959-8.50024-9>
- Video editing tools:
 - iMovie
 - Adobe Premiere
 - PowerPoint

Prototyping Activity

- 1. Review** your 3 sketches and select 1 to prototype, remember to consider:
 - a. Experience:** will it enhance the experience of your participants?
 - b. Innovation:** is the design idea novel?
 - c. Insight:** what will you learn from its deployment?
 - d. Feasibility:** can you build a prototype to test it?
- 2. Consider** the prototyping techniques and discuss which one would work best
- 3. In Thursday's workshop,** we will create an initial paper prototype of your design sketch

Any questions?