The Human Factor (THF)

Week 9: Prototyping

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Week 10 Student Led Inquiry

- Student led slot in Week 10
- What have we not covered in this class yet that you would like to learn about?
- Share your ideas

Week 9 Outline

- Prototyping Overview
- Prototyping Techniques
- Activities:
  - Create an initial paper prototype of one of your sketches
- Next steps

Prototyping Overview

Prototyping Experiences

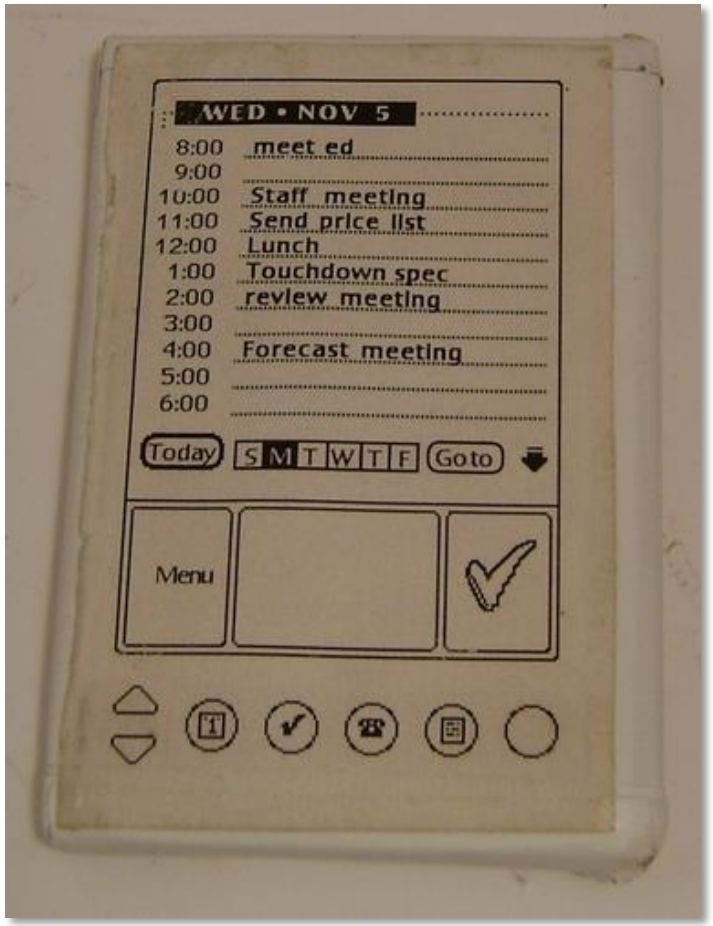
A **prototype** is an early sample, model, or release of an interactive product built to test a concept and to get feedback from others.

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

Marion Buchenau and Jane Fulton Suri. 2000. Experience prototyping. In *Proc. DIS 2000*. ACM, New York, 424–433. DOI: https://doi-org.ezp01.library.qut.edu.au/10.1145/347642.347802

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

http://www.computerhistory.org/collections/accession/102716262

Prototype Fidelity

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

Low fidelity prototypes

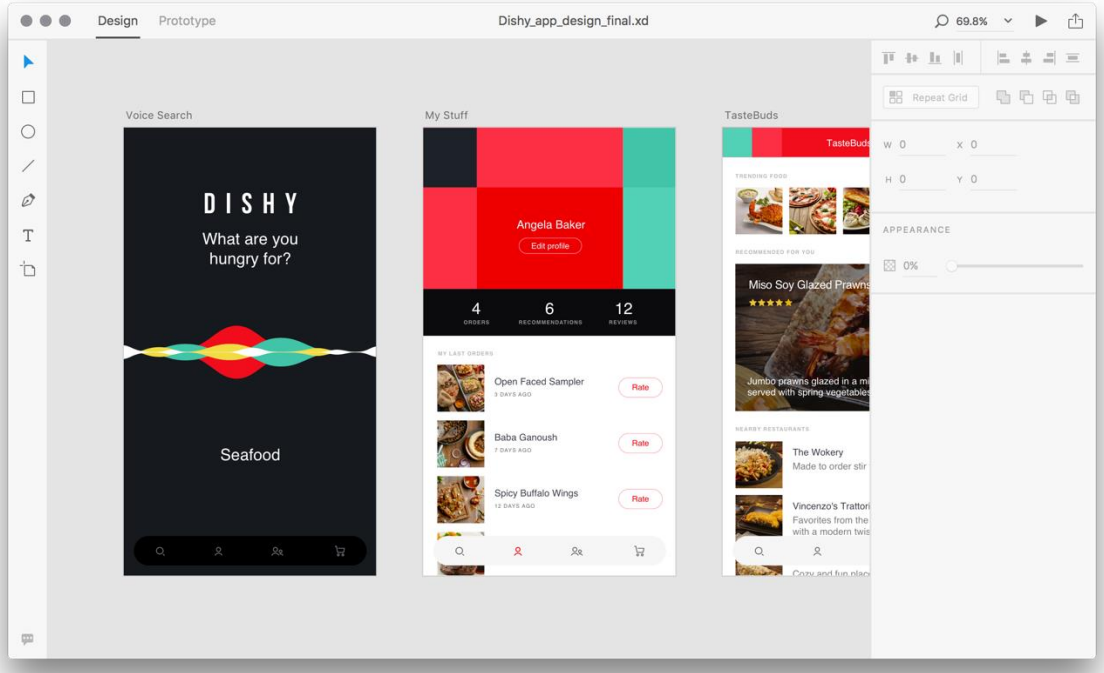
- Use a medium which is unlike the final medium, e.g. paper, cardboard
- Are quick, cheap and easily changed

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

Prototyping tools: any experiences?

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



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

Prototyping Techniques

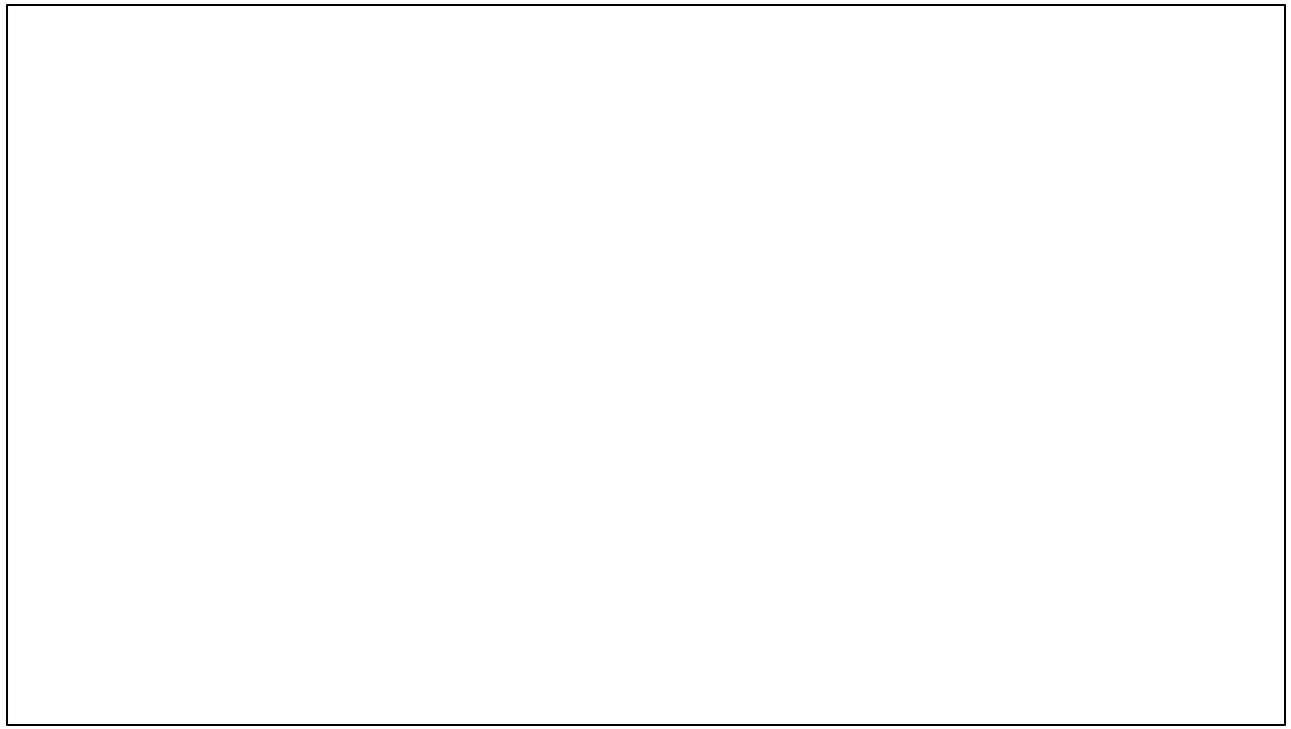
Prototyping Techniques for CW2

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



Usability test with paper prototype

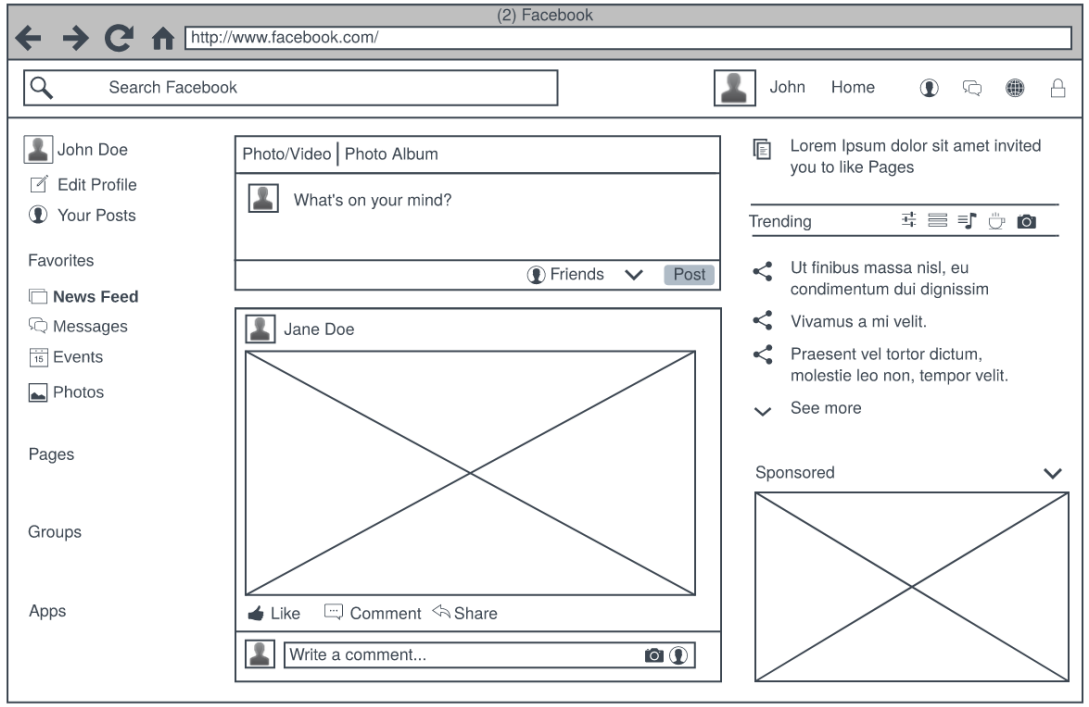
- https://youtu.be/yafaGNFu8Eg

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/
- Adobe XD
- Figma



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

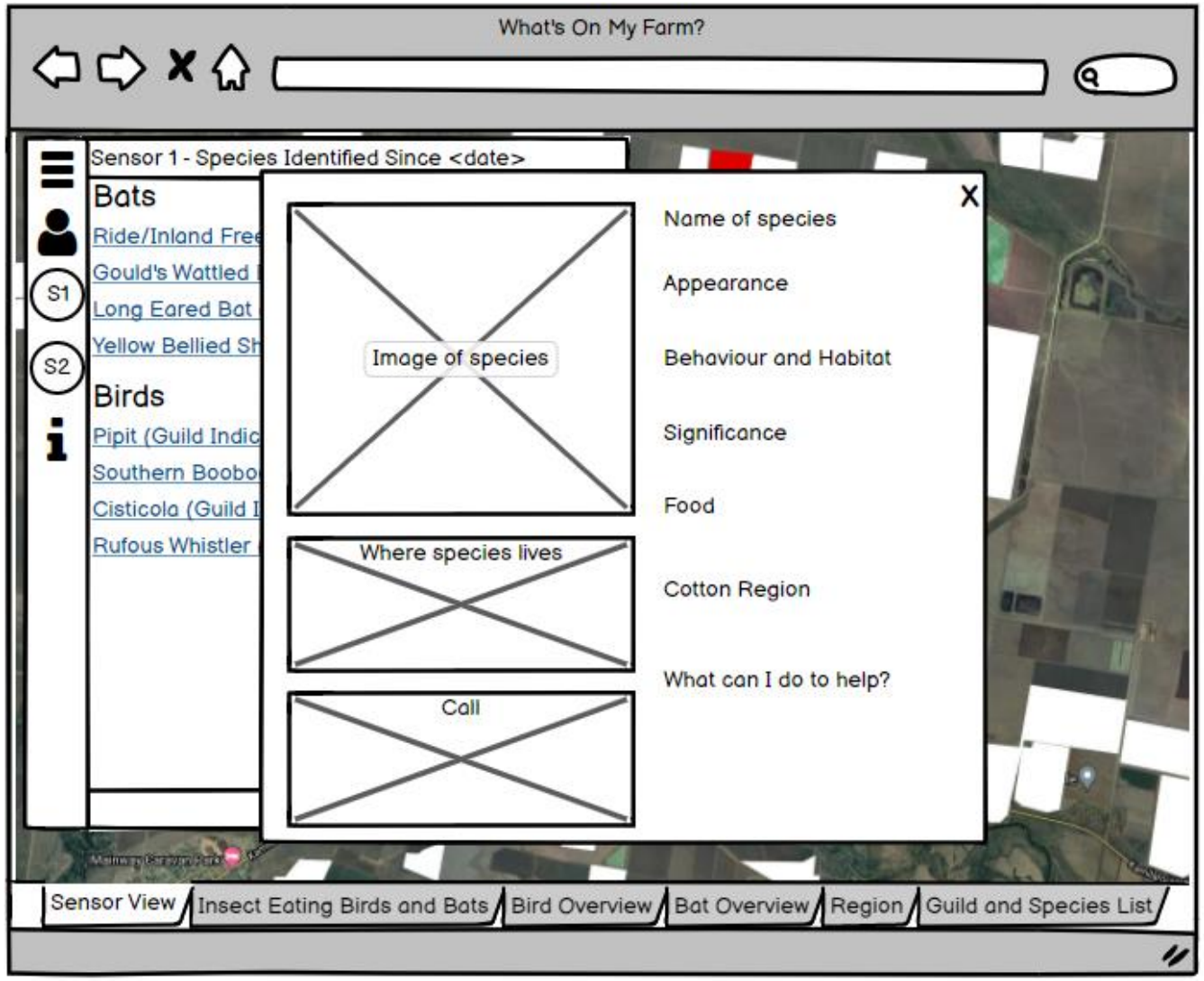
- This dashboard displays a map view of the farm with markers to indicate where the sensors are placed.

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.



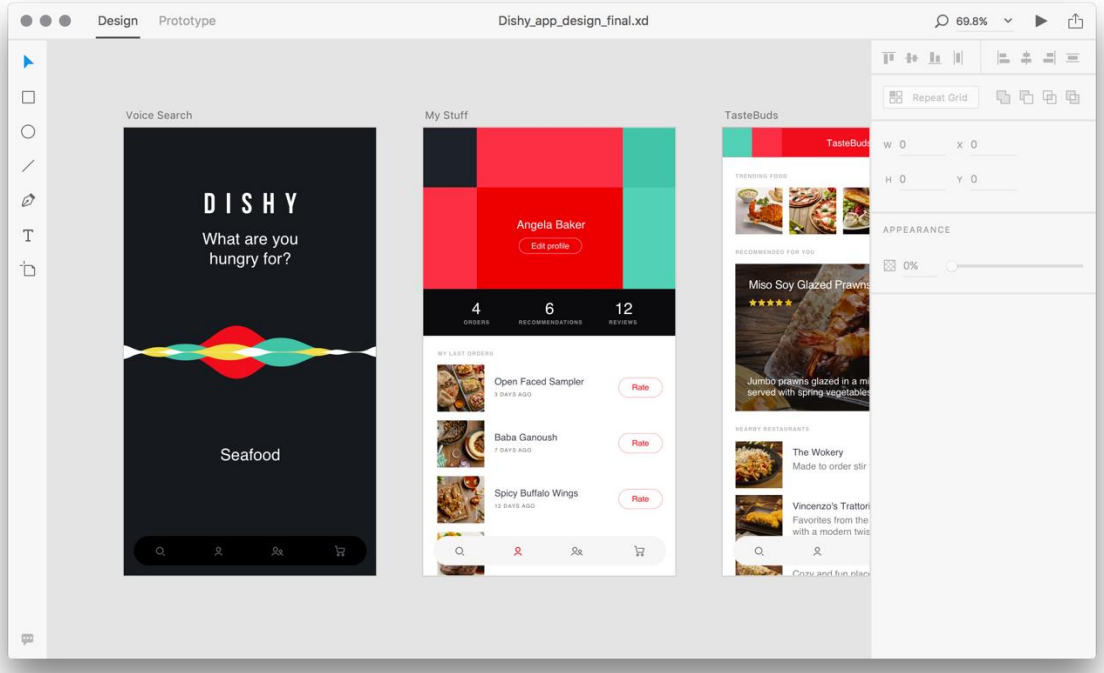
Insect Eating Birds and Bats

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
- Simple interactivity: click from screen to screen
- Focus on interaction and look & feel
- Share prototypes with users or clients for testing
- Tools:
  Adobe XD https://letsxd.com/
  Sketch https://www.sketch.com/
  Figma https://www.figma.com/



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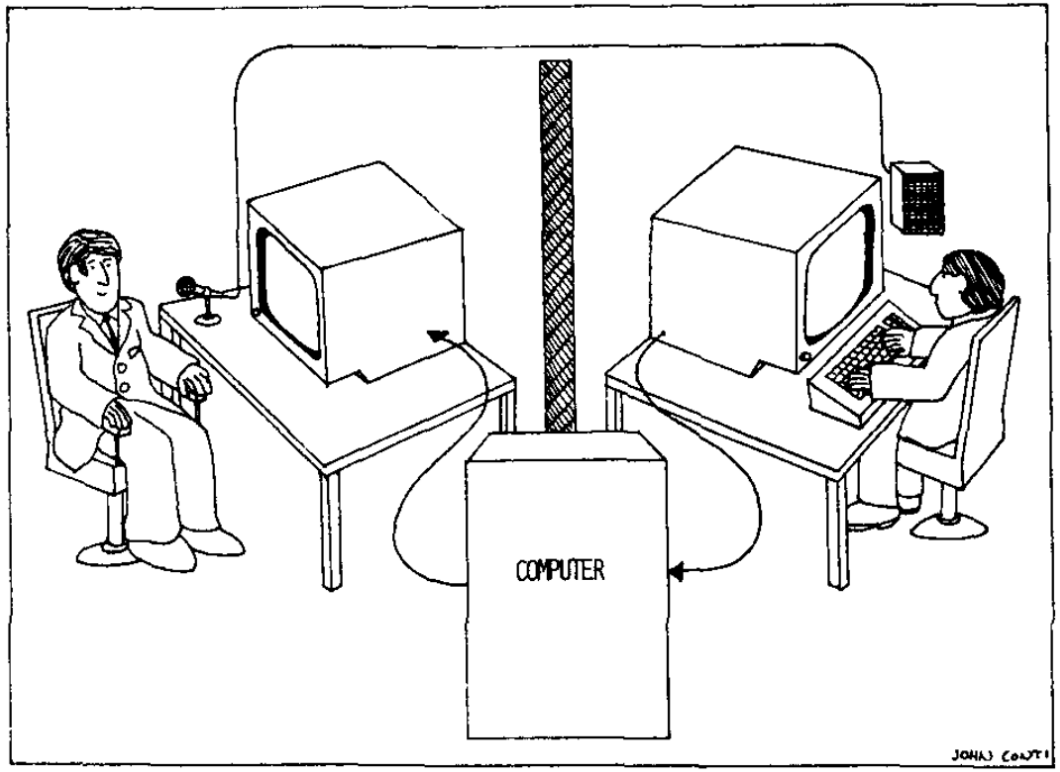
Example: The Messaging Kettle

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.

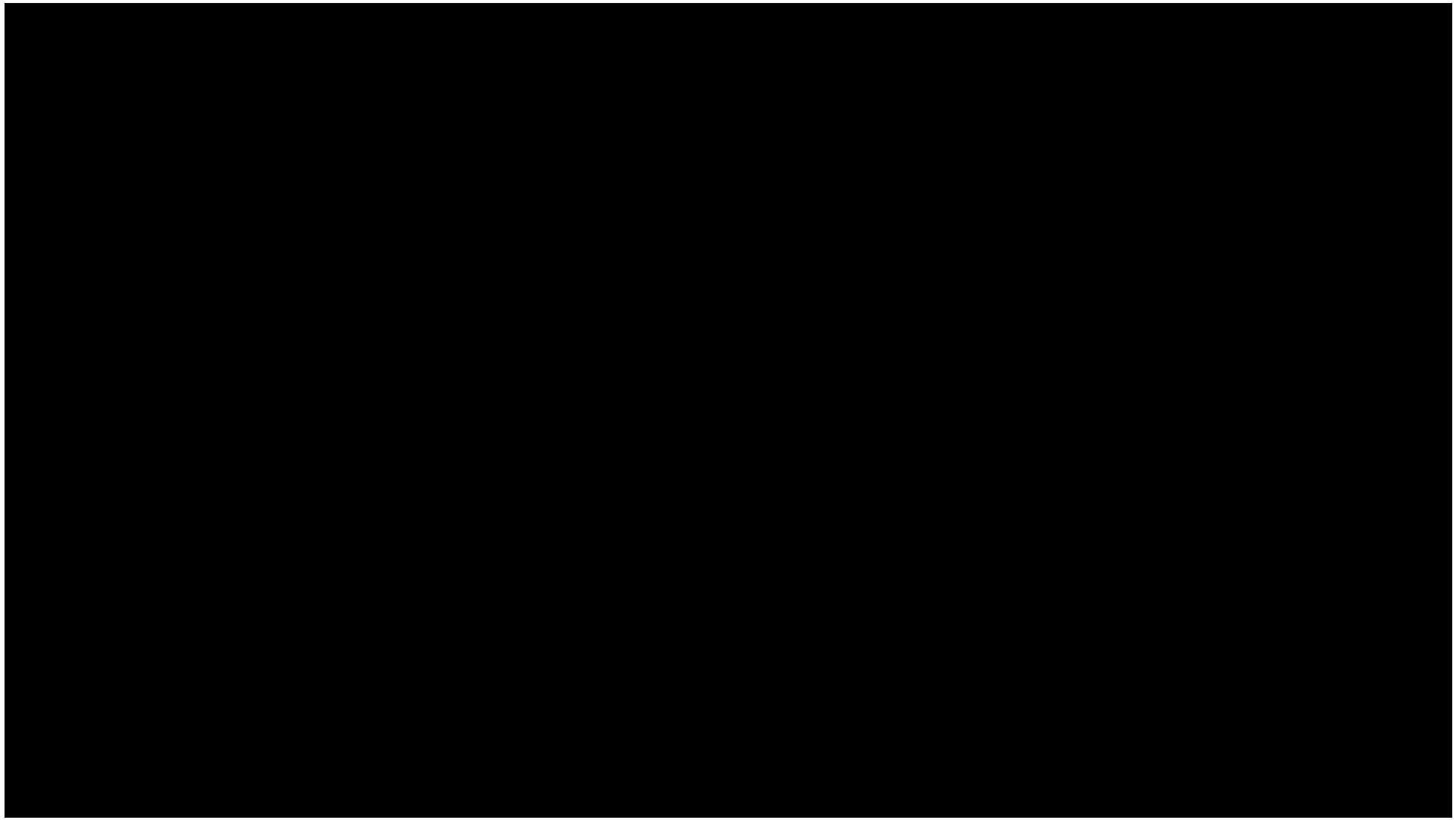
Wizard-of-Oz Prototype

- The user thinks they are interacting with a computer, but a developer is responding to output rather than the system
- Particularly useful in machine learning and robotic prototypes
- Example: experience of listening typewriter (1980)



https://dl.acm.org/doi/pdf/10.1145/2163.358100

Example: Robotic Ottoman



https://vimeo.com/114106164

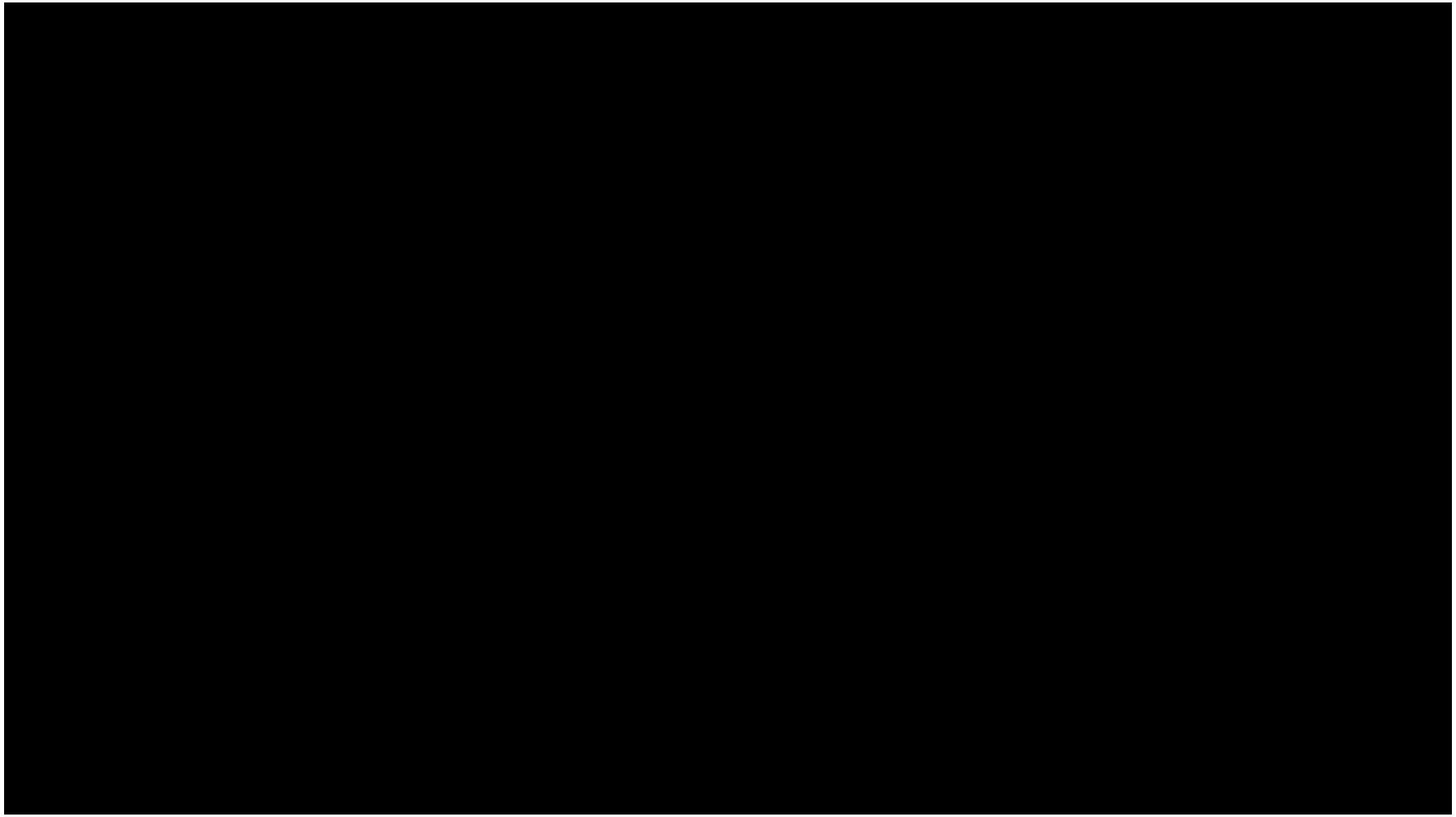
Simulated Experience

- 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
  - InShot
  - 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. **Feasibility**: can you build a prototype to test it?
2. Using paper, create a paper prototype of your design sketch

Next Steps

CW2 Steps

- **Ideate:** Brainstorm 10 design ideas and describe them in 2-3 sentences
- **Sketch:** Create sketches for 3 of your design ideas and describe them in a paragraph
- **Prototype:** Develop 1 of your ideas into an interactive prototype that a potential user could try out
- **Prepare and rehearse** your 8-minute presentation

Any questions?