

Designing Interfaces

Prepared by:

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Topics of Discussion

- Designing for Usability
- Tools for Designing Interfaces
 - Sketching
 - Wireframing
 - Storyboards
 - Prototypes
 - Paper Prototypes
 - Physical Prototypes
 - Interactive Prototypes

Designing for Usability

According to Nielsen [1], we can make things more usable by making them:

- **Learnable:** How easy is it for users to accomplish basic tasks the first time they encounter the design?
- **Efficient:** Once users have learned the design, how quickly can they perform tasks?
- **Memorable:** When users return to the design after a period of not using it, how easily can they reestablish proficiency?
- **Reducing Errors:** How many errors do users make, how severe are these errors, and how easily can they recover from the errors?
- **Increasing Satisfaction:** How pleasant is it to use the design?

Designing for Usability

Affordances and *Signifiers* play an important role in designing for usability:

- **Affordance:** Physical properties of an object that defines how it can be used [2].
- **Signifier:** Perceptible cues to the physical properties of an object that influences its affordance [2].



Good Usability

The Physical Affordances:

- The glass screen physically **affords touching**.
- The internal RFID antenna physically **affords contactless data transfer** (tapping a card).
- The slot physically **affords card insertion**.

The Signifiers (How the machine *communicates* those actions):

- "TOUCH TO START"
- "TAP CARD HERE" + Arrow + Wireless Icon

Bad Usability

The Physical Affordance:

- The screen still physically affords touching; the system is interactive.

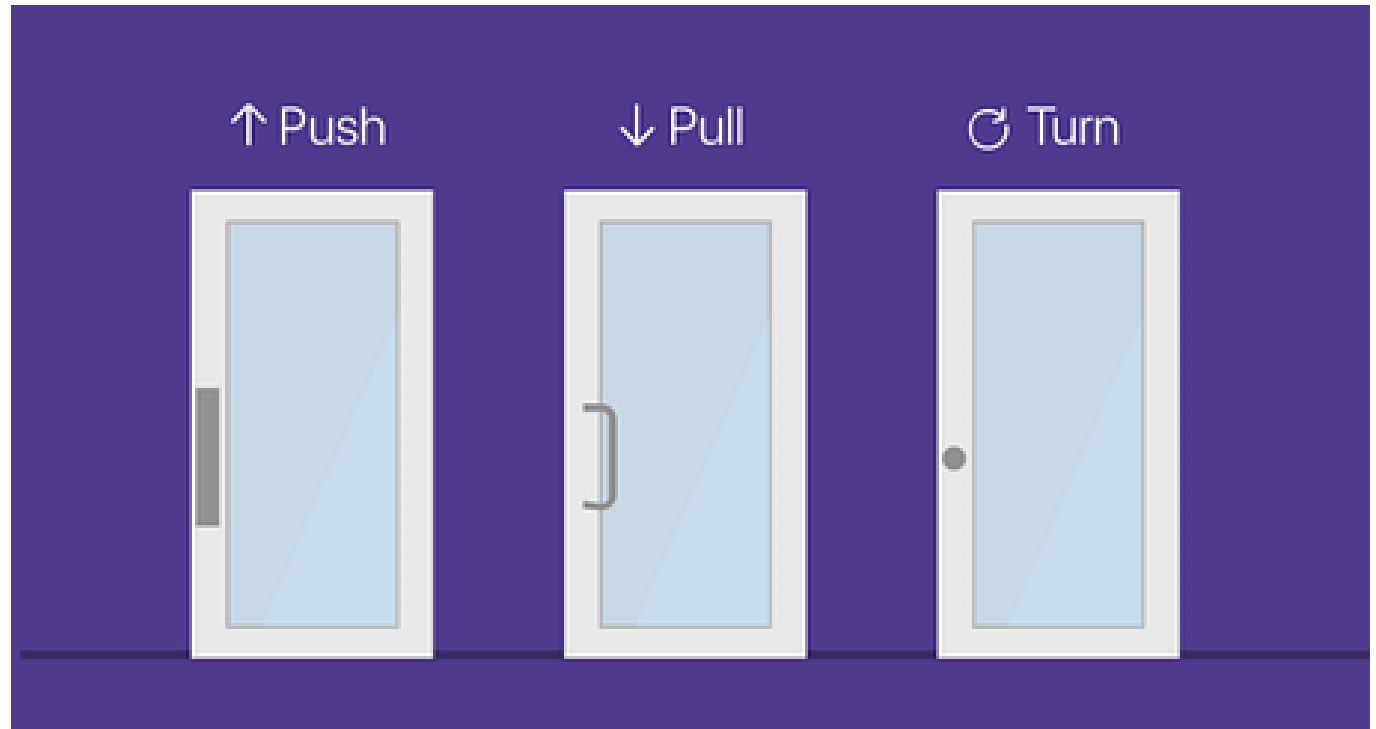
The Signifier Failure:

- The text "INFO" is flat and ambiguous
- The user is left pointing tentatively at the screen.
- The physical affordance of touch exists in the hardware, but because a proper signifier is completely absent or poorly executed, the user cannot determine if the text is an interactive button or just a static label.



Designing for Usability

- Norman Doors



Designing for Usability

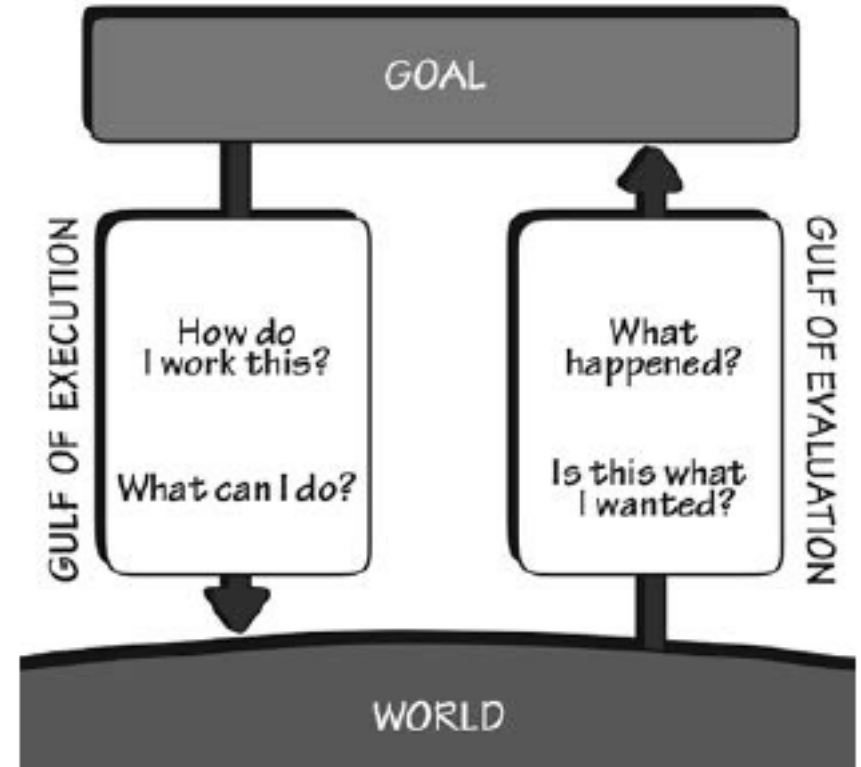
To design truly usable systems, we must bridge the psychological gaps between user intention and system state.

The Gulf of Execution: The difference between the user's formulation of an action and the actions allowed by the system.

- *Design Imperative:* Minimize this by providing clear **affordances** and **signifiers**. The system must explicitly reveal *how* it can be interacted with without requiring conscious deliberation.

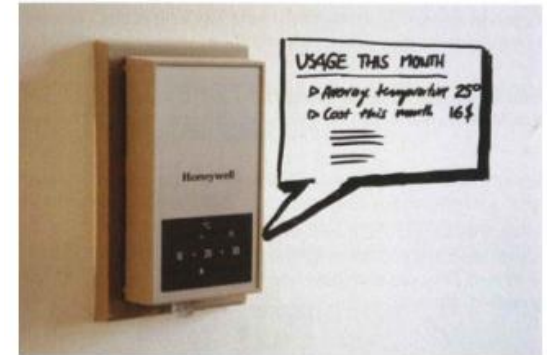
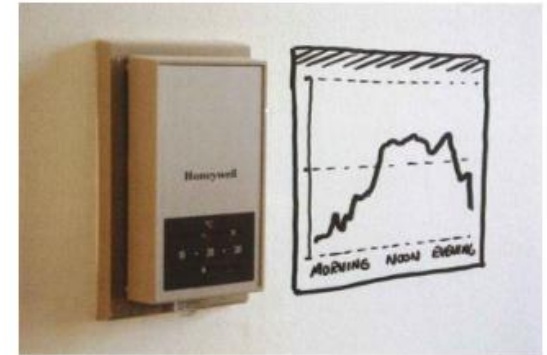
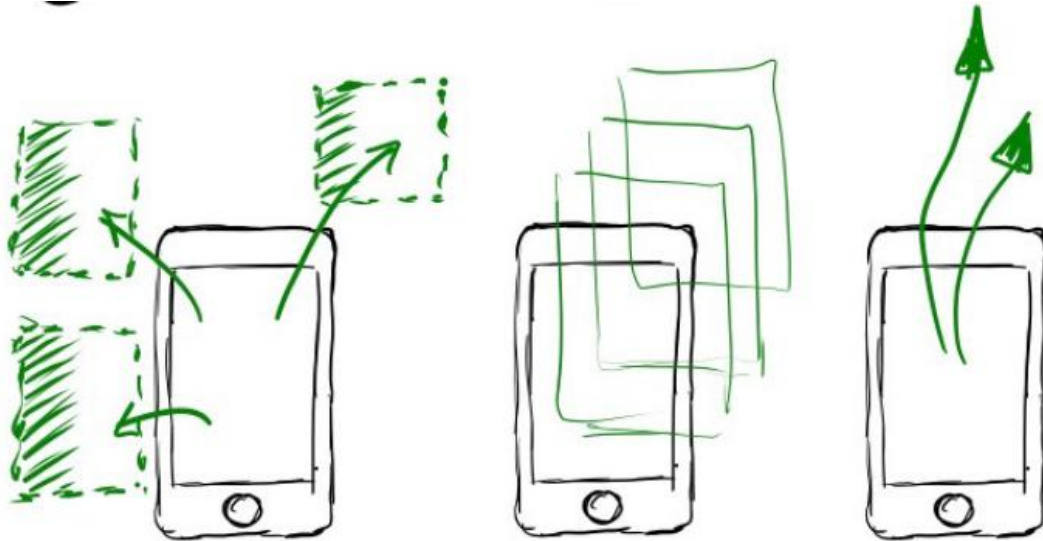
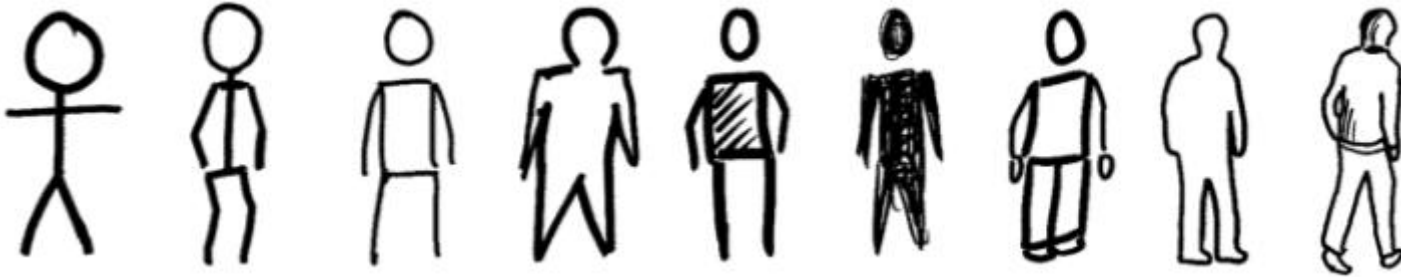
The Gulf of Evaluation: The amount of effort required by the user to interpret the state of the system and determine how well their expectations have been met.

- *Design Imperative:* Provide immediate, low-latency, and context-aware **feedback**.



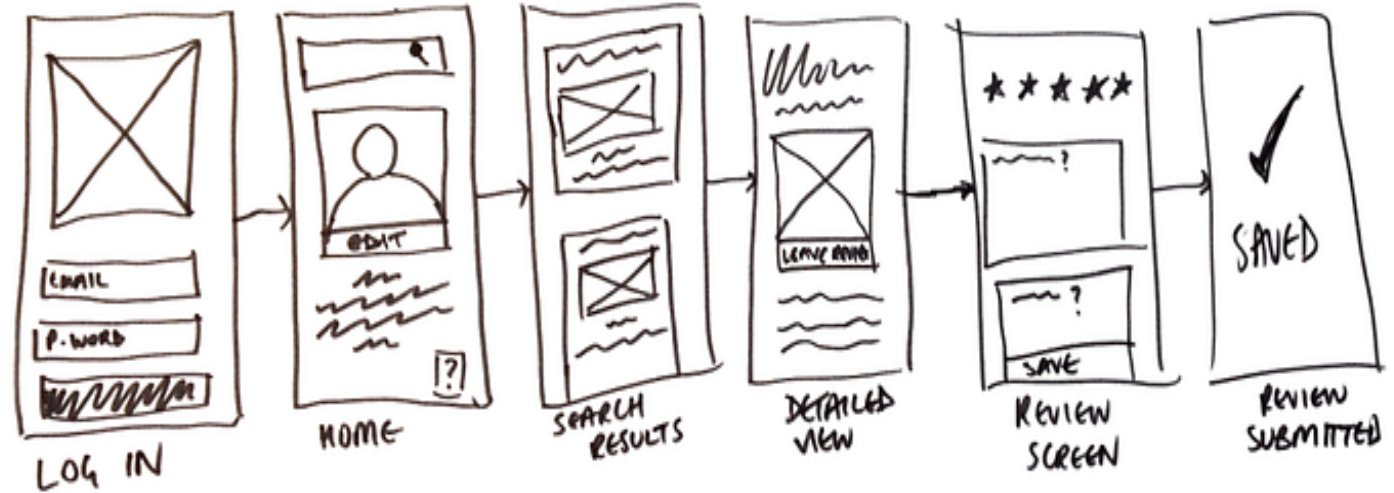
Tools for Designing Interfaces

- Sketching



Tools for Designing Interfaces

- Wireframing
 - Lo-Fi:

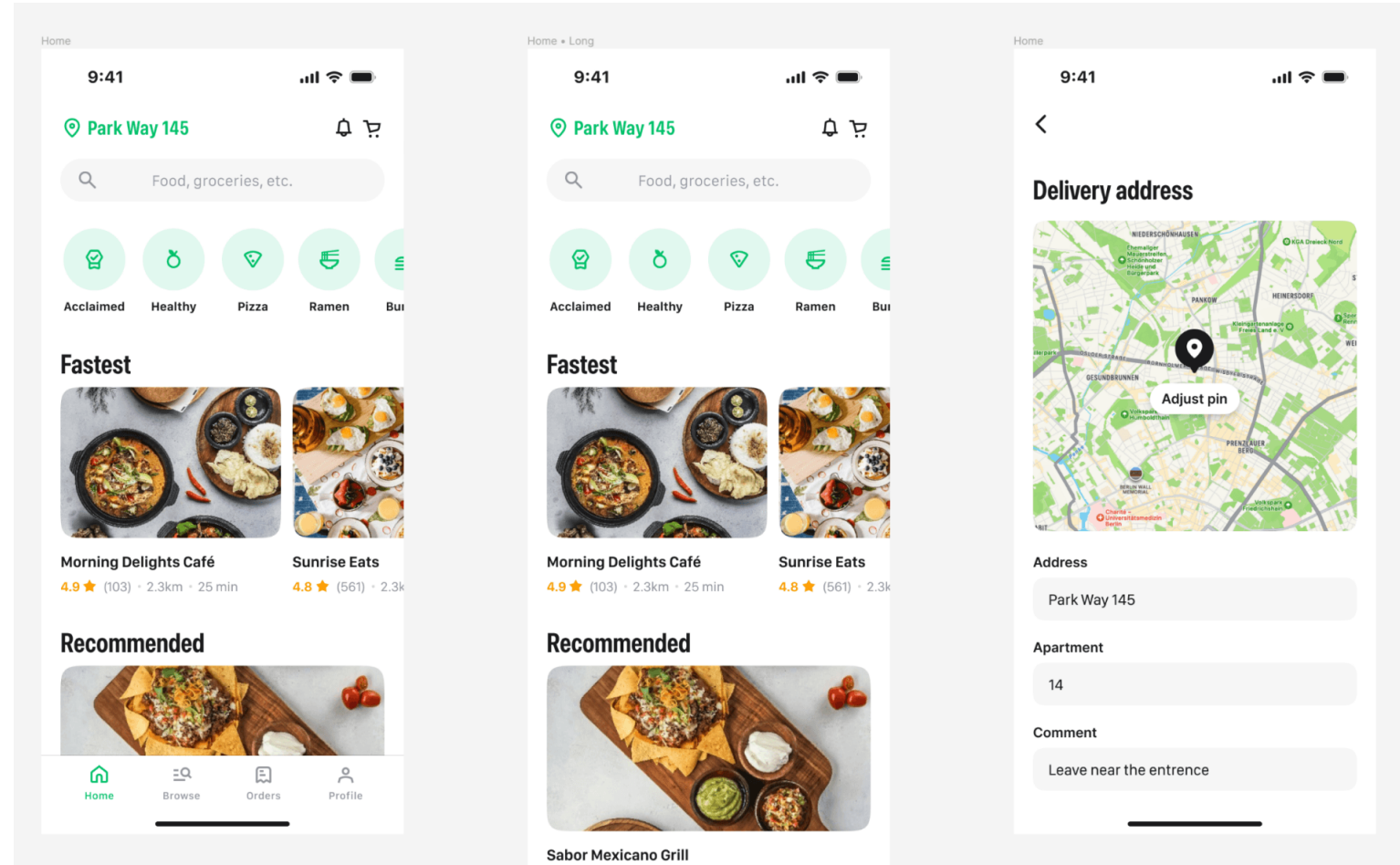


- Mi-Fi:



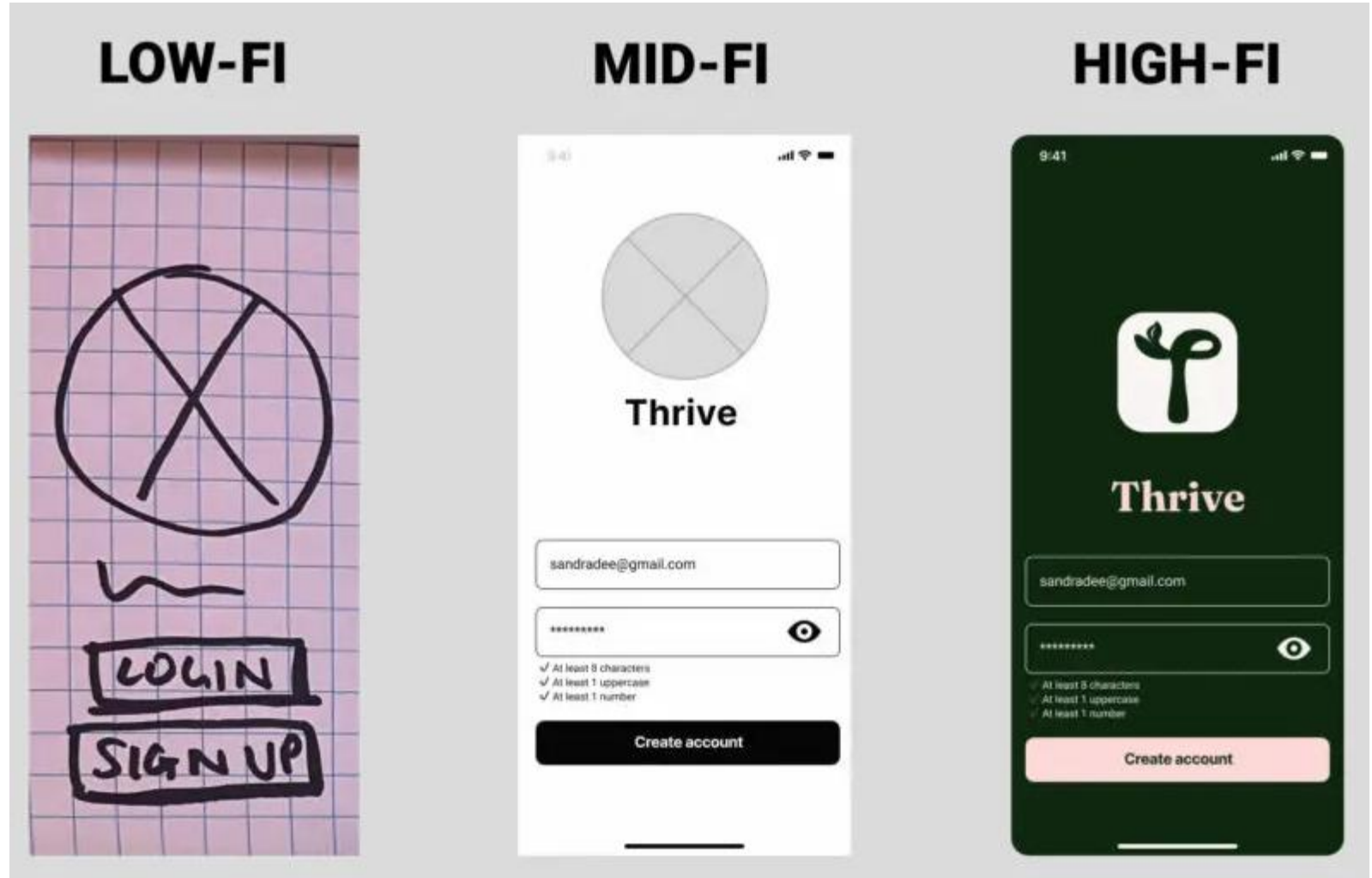
Tools for Designing Interfaces

- Wireframing
 - Hi-Fi:



Tools for Designing Interfaces

- Wireframing



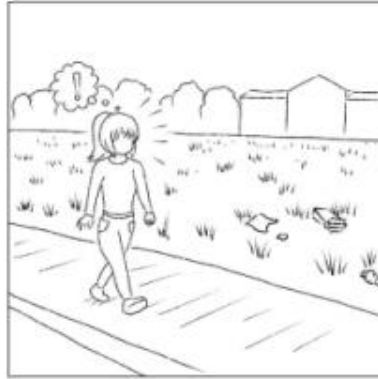
Tools for Designing Interfaces

- Storyboards

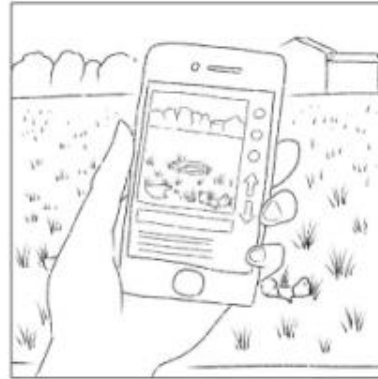


Tools for Designing Interfaces

- Storyboards



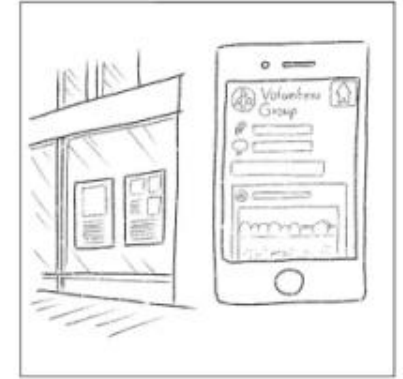
1 Mary walks across a green space and finds that the area is not well maintained.



2 She takes a picture of the issue and uploads it onto the application.



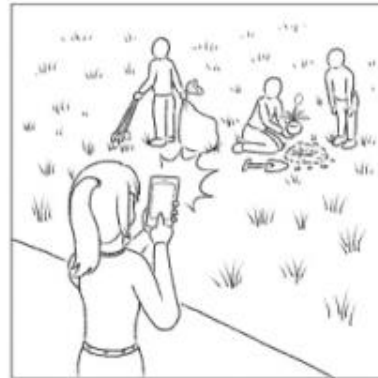
3 Council reviews the issue, but does not have enough public funding. Council approves for volunteering work.



4 Community organization creates volunteering group on the app to search for local resources and knowledge to solve the issue.



5 Volunteers meet regularly to fix the green space.



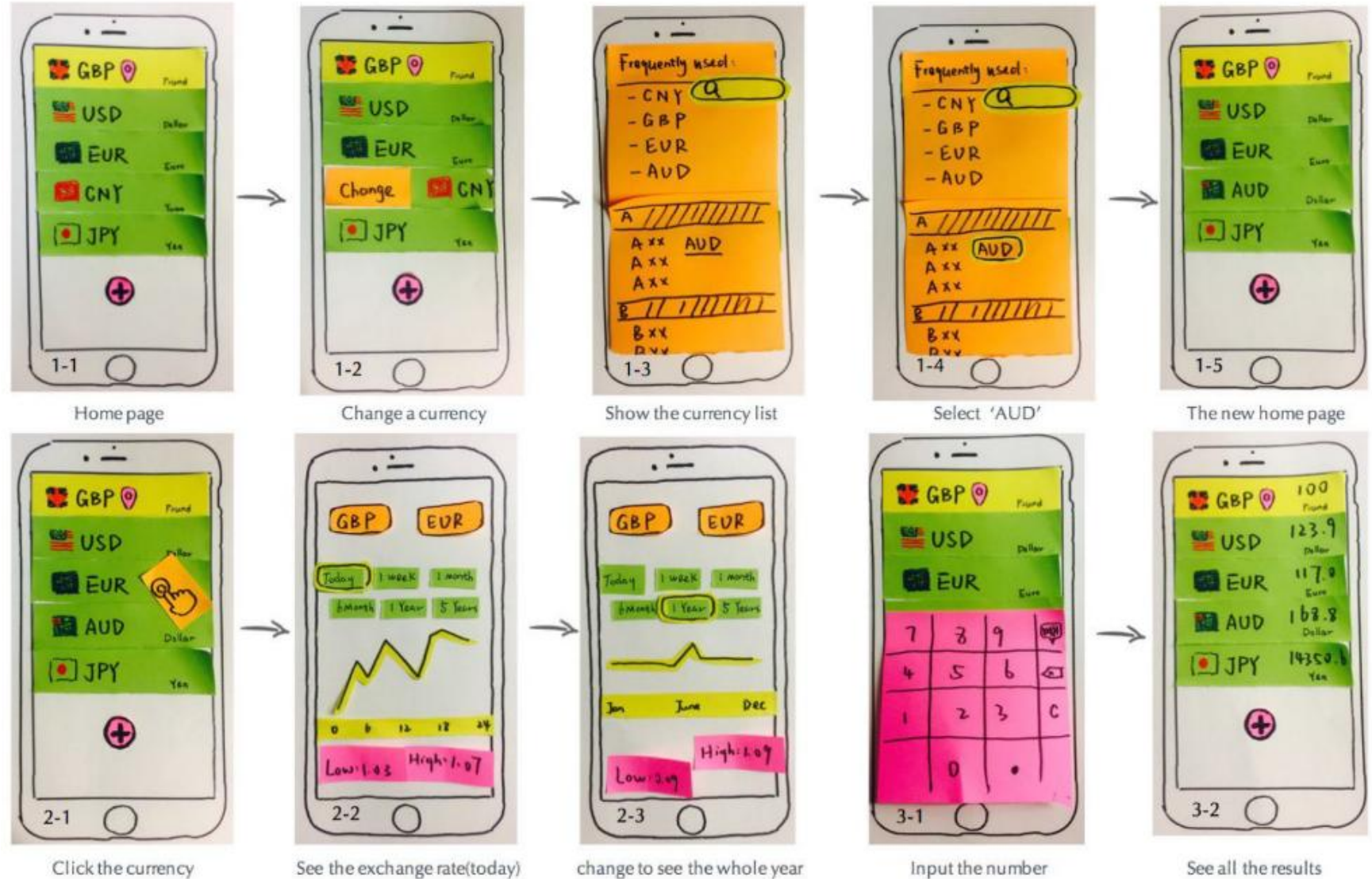
6 Mary documents the process and reports regularly on the application.



7 The Council and residents receive notifications for the updates.

Tools for Designing Interfaces

- Prototyping
 - Paper Prototyping



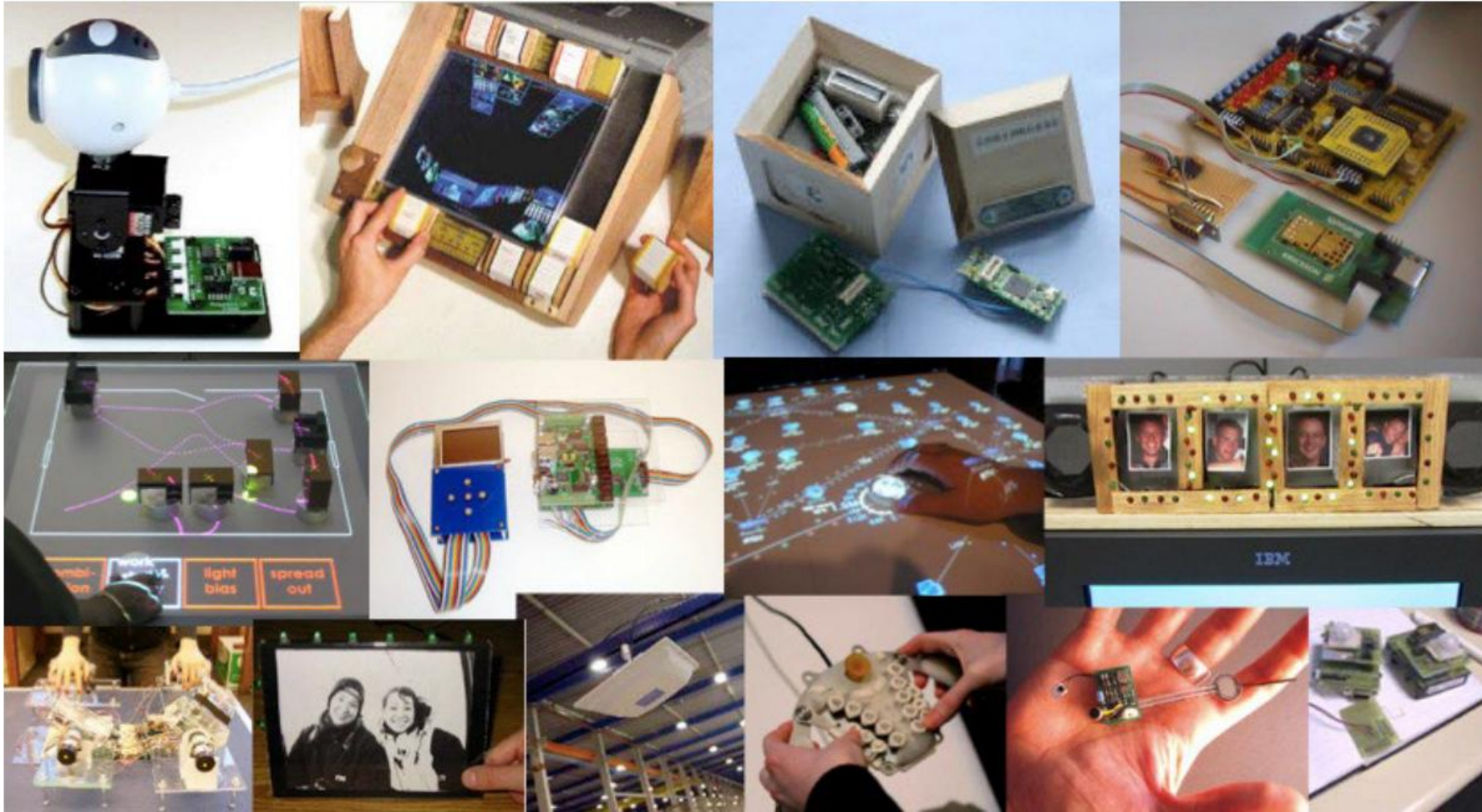
Tools for Designing Interfaces

- Prototyping
 - Physical Prototyping



Tools for Designing Interfaces

- Prototyping
 - Interactive Prototyping



Thank you for your attention!

Questions?