

Prototypes: Design and Evaluation

Some content from: Camburn, Bradley, et al. "Design Prototyping Methods: State of the Art in Strategies, Techniques, and Guidelines." Design Science, vol. 3, 2017, <https://doi.org/10.1017/dsj.2017.10>.

Each Prototype Focuses on a Question

- "Acquire sufficient information to move forward in product development with minimal expenditure of time and cost. Therefore, every prototype test should answer a specific question (Otto & Wood 2001)."
- Web app or native app?
- Accounts, or anonymous access?
- Free-form text, or fields?
- How "live" does interaction need to be?

General Findings on Prototyping

Variable	Design Heuristic
Testing	Construct a clear testing objective
Timing	Early prototyping is the most critical
Ideation	Prototypes lead to functional ideas
Fixation	Fast prototyping reduces fixation
Feedback	Feedback may induce corrections but also increase fixation
Usability	End-user testing may enhance performance assessment accuracy
Fidelity	Higher fidelity representations lead to accurate interpretation of the design

Timing

- Earlier is better (first 30% of project by time)
- Late prototyping is correlated with unsuccessful efforts
- "late adoption of prototyping was an especially clear hallmark of unsuccessful design teams." (Jang and Shunn)

Ideation

- Frequent early prototyping leads to new design ideas
- In chess, it's hard to think many moves ahead
 - Instead, actually play the game, starting several different ways

Fixation

- We tend to get "stuck" (fixate) on designs that seem compelling
- But are those designs really the best?
- "a slow fabrication process may induce fixation, but a rapid one will not, as compared to sketching only (Viswanathan & Linsey 2013)."
- Implementing your idea is usually slow

Feedback

- Reluctant to show managers? Show peers.
- Managers often expect high-fidelity prototypes
 - Show peers your low-fidelity prototypes
- Receiving feedback on a design may increase fixation
 - To mitigate, present *multiple* designs

Usability

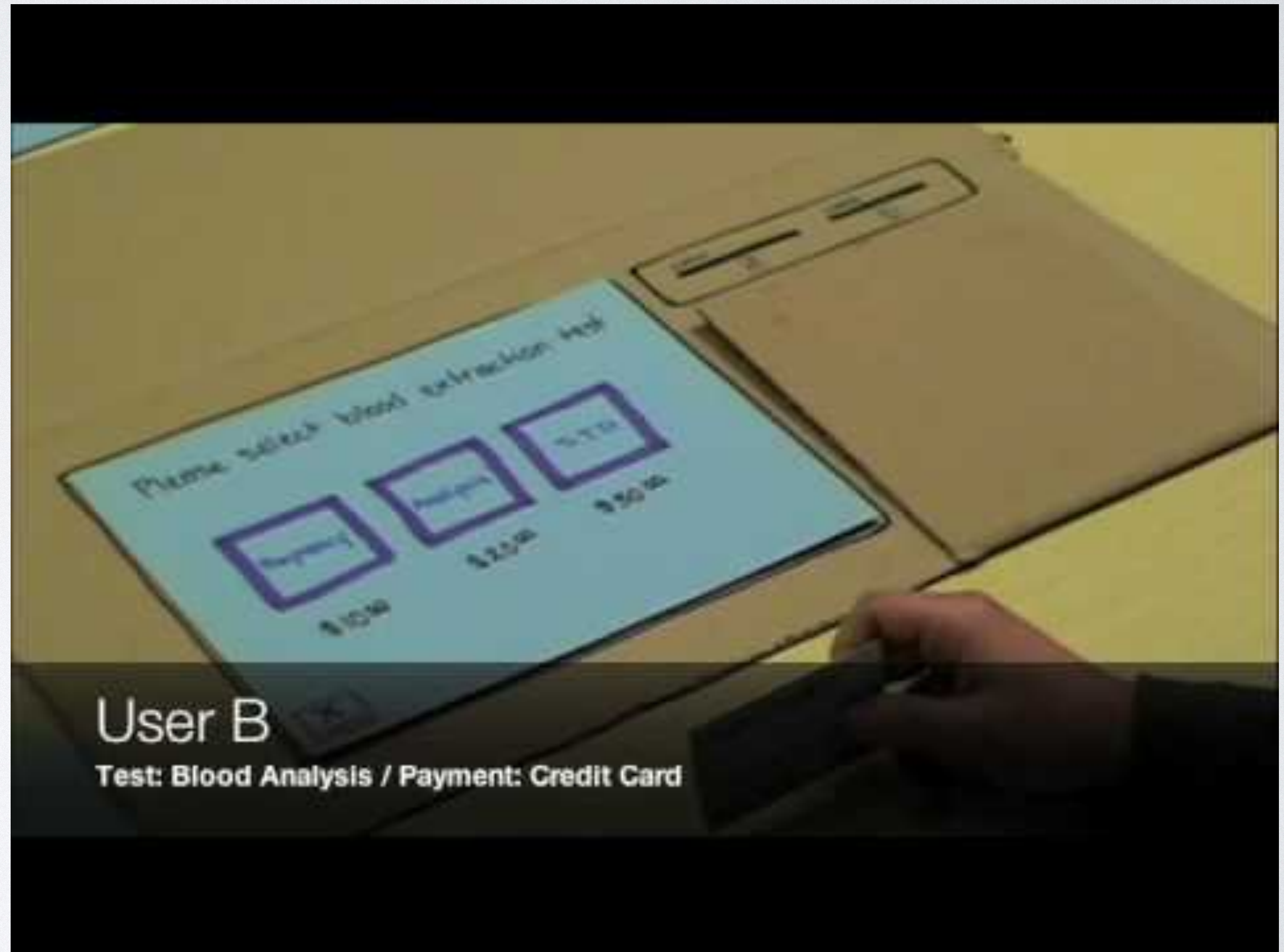
- Interactivity level is a key fidelity parameter
- High interactivity levels can enable usability testing

Fidelity

- Higher-fidelity representations lead to more accurate interpretations by reviewers
- But more rapid prototyping reduces fixation
- Select fidelity level wisely

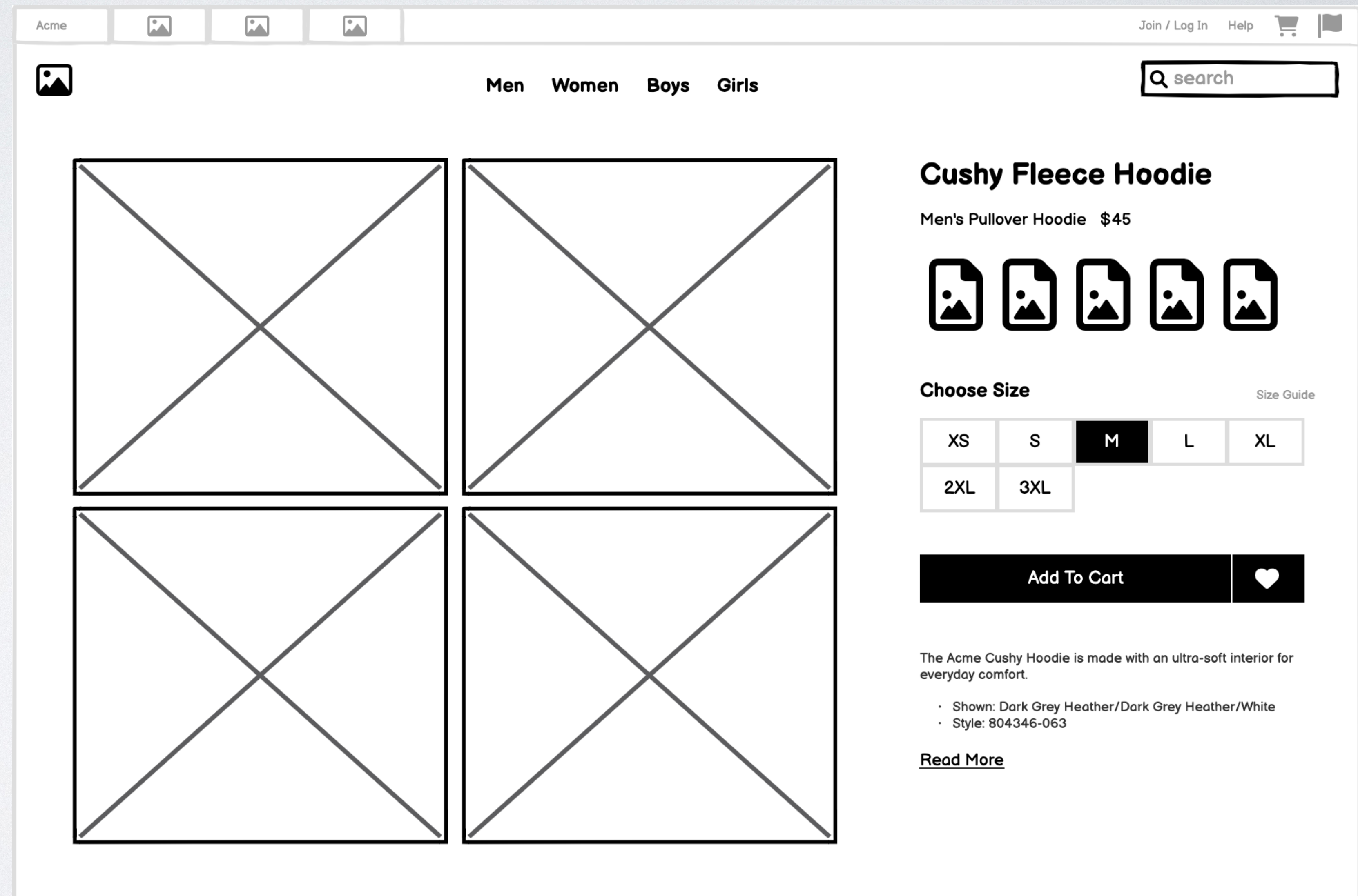
Paper Prototypes

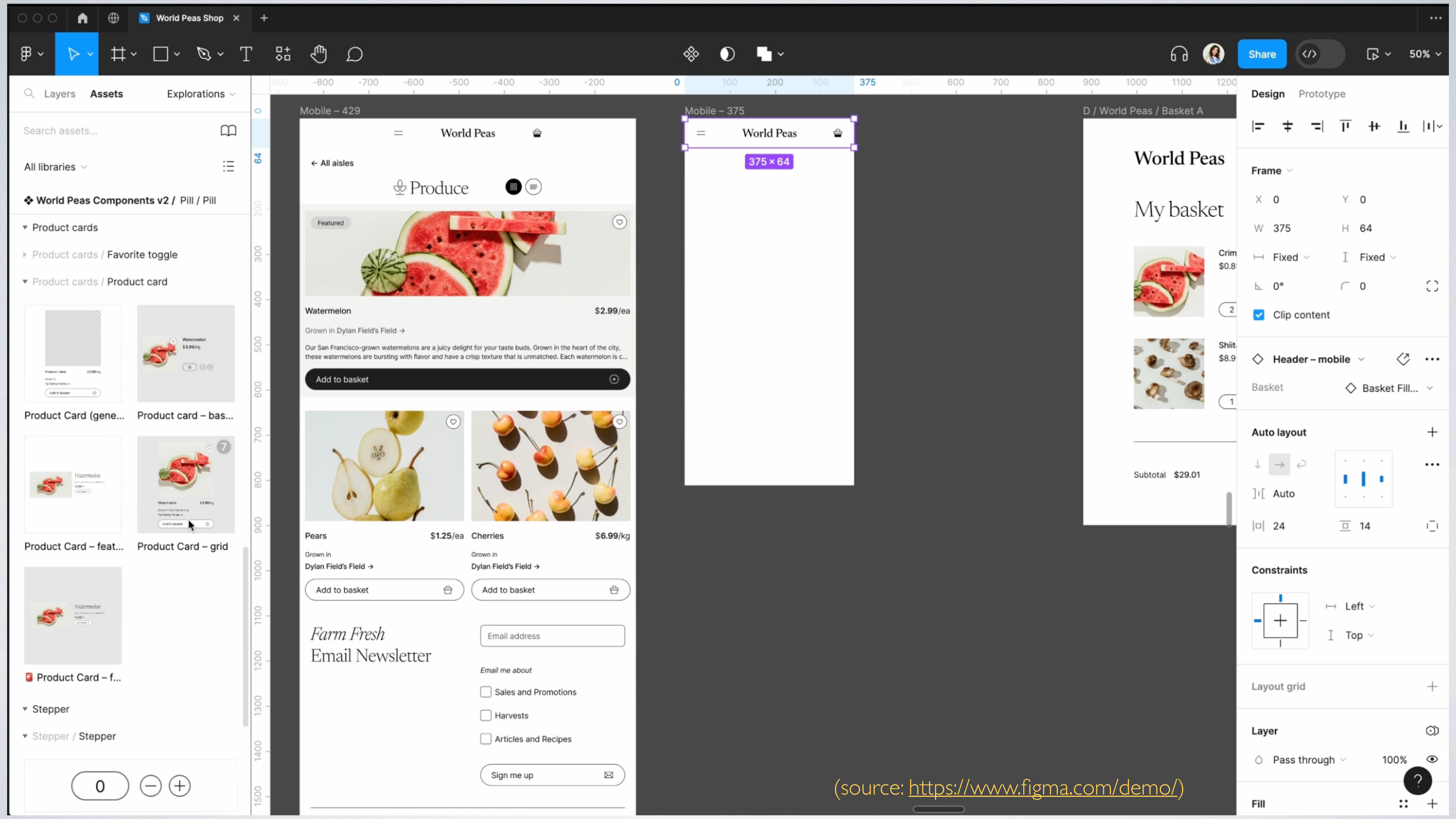
- Neater drawings of various interfaces
- Enable showing the interface to potential users
- Ask users to tell you what they would do



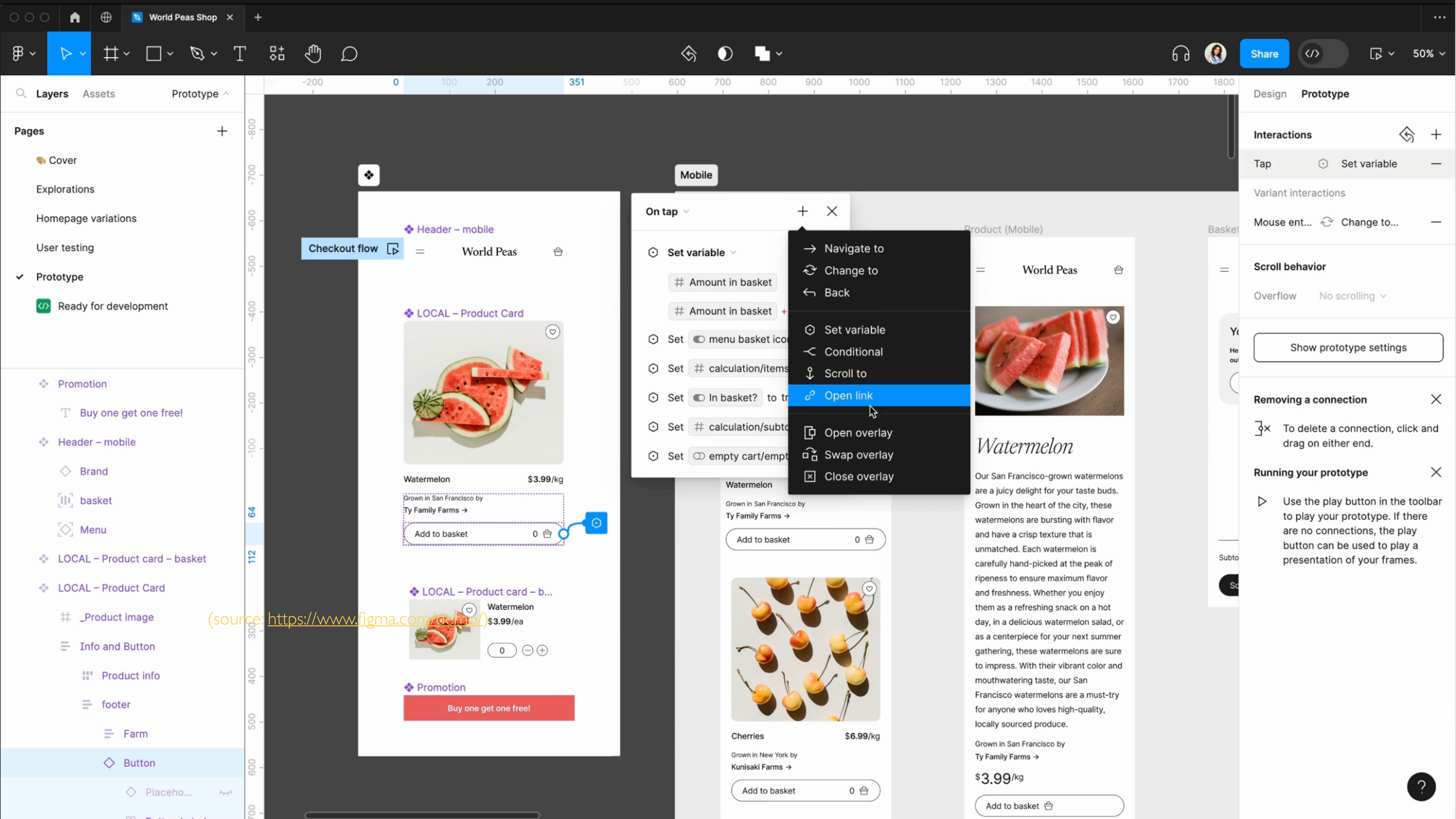
Wireframes

- Balsamiq (<https://balsamiq.com/>)





(source: <https://www.figma.com/demo/>)



(source: <https://www.figma.com/demo/>)

Banner at top shows how much more to spend for free delivery

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1

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#2: Match Between System and the Real World

- The design should speak the users' language. Use words, phrases, and concepts familiar to the user, rather than internal jargon. Follow real-world conventions, making information appear in a natural and logical order.



What Does This Button Do in Word?

- Floppy drives were obsolete in 2001
- This is Word 365, ©2024



I'm Looking at YOU, Microsoft

Undo Typing ⌘ Z

Redo Typing ⌘ Y

Cut ⌘ X

Southwest

- Can't set return date before departure date

Return date

January 2023

S	M	T	W	T	F	S
1	2					

Clockify Desktop

Time entry details

Start:

04:56 PM

1/20/2023

End:

04:56 PM

1/20/2023

Total:

What have you worked on?

No project

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