Intro To Human-Computer Interaction

Why Study HCI?

- Software Engineering is about meeting user needs
- If you build the wrong software…oops.
- Q: How do you build software that people can actually use effectively?
- A: Apply principles of HCI; iterate; hire a designer.

Design

- Design is not "graphic design"
- Design is not primarily about aesthetics (beauty)
- Design is about leveraging principles about humans (psychology) to build interactions people can use

Your Examples: Bad Design

- Think of something that you used that was designed badly
- What about it was designed badly?

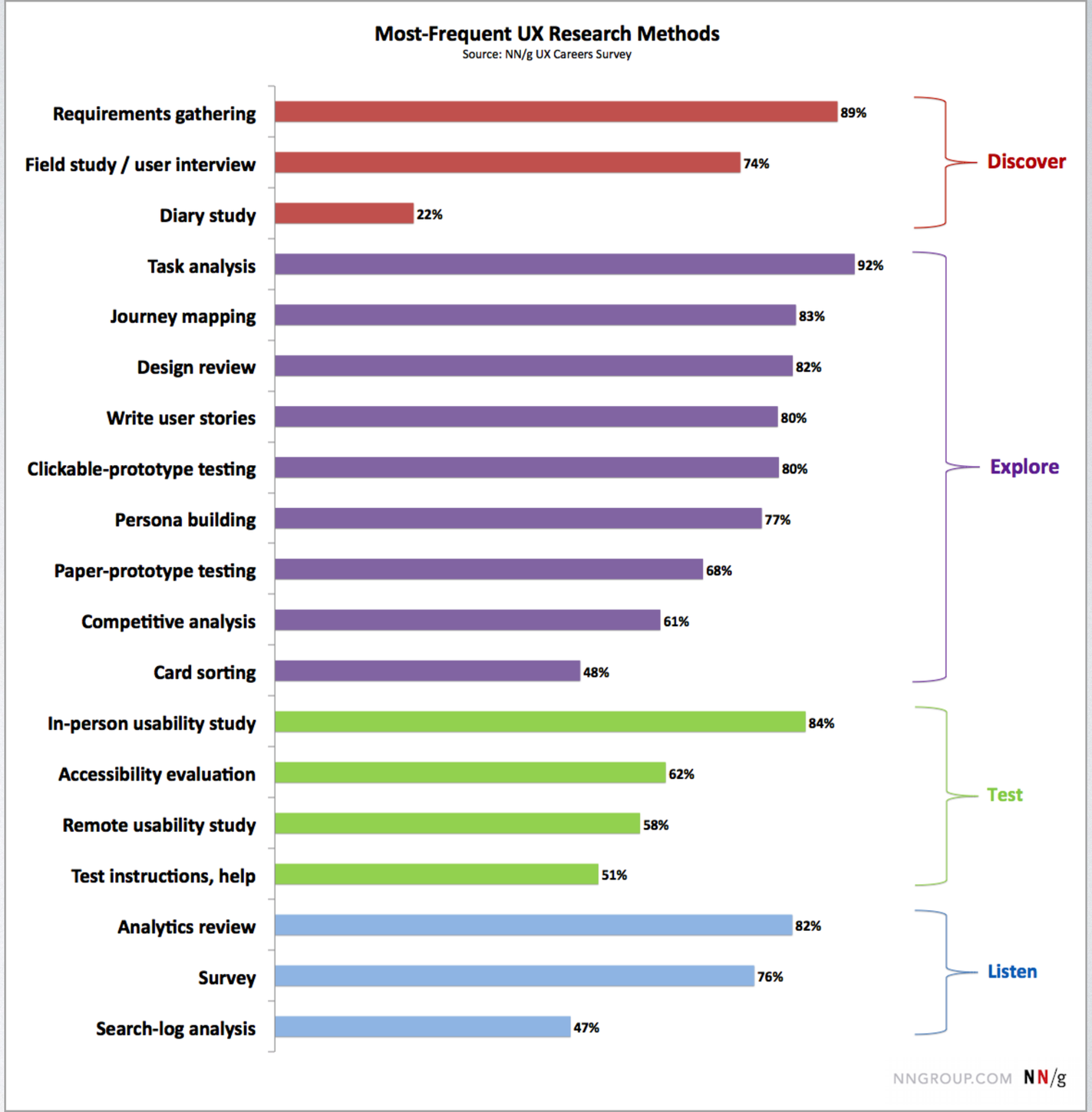
Agenda

- We don't have enough time to teach you interaction design
- But we can give you a taste
- HCI has a whole collection of methods…

Process

1. Understand your users
2. Create a prototype
3. Evaluate/get feedback
4. Go to step 1

https://www.nngroup.com/articles/ux-research-cheat-sheet/



Contextual Design

- People are experts at their own work
  - But cannot articulate their work practice
- Solution: observe people doing their work
- Build personas to bring users alive

Personas

- Build empathy
- Help you think like the user
- Not necessarily specific, real people
    - But have enough detail that you can believe…

Persona 5: Jason, a Regional Director

- Name: Jason Carter
- Occupation: Regional Director
- Demographic: 34 years old, single, lives in San Francisco but travels a lot, has a high-income level.

Jason's story:

Jason is a regional director who needs to catch flights a lot. He sometimes has to 7-8 times a month for work purposes. His company has assigned Jason to a specific region so that he travels to the same cities and stays at the same hotels for convenience.

What challenges Jason:

However, Jason finds this situation rather inconvenient if anything. He thinks he wastes the time he doesn't even have, trying to book flights or hotels out of many options. Also, being an introvert, he finds it frustrating that he needs to make phone calls, speak to tons of people or go through numerous websites and waste time.

What Jason needs:

Jason needs a quick and easy process regarding his travel appointments. A site or a mobile app that would simplify the planning process of his travels would be excellent for him. That way, he would narrow down his options in just a few seconds and clicks and not have to carry his laptop everywhere with him since all he wants is comfort, convenience, and speed.

Credit: https://userguiding.com/blog/user-persona-examples/

Designing a Prototype

- This is a whole course!
- Short version: create storyboards
- Try Figma (www.figma.com)
  - Free for education (https://www.figma.com/education/)

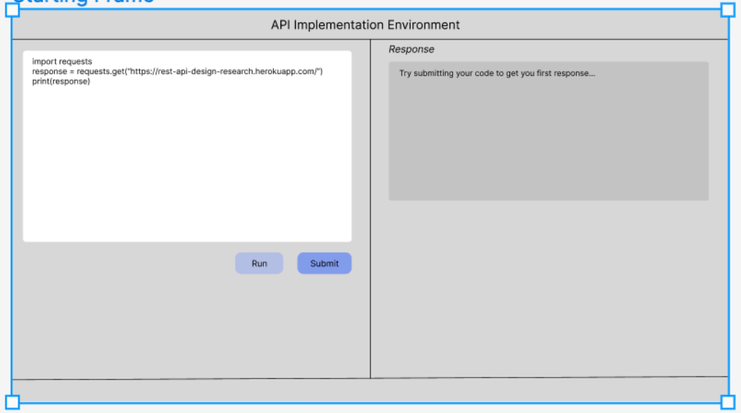
Layers Assets Page 1

Intermediate Frame

Starting Frame

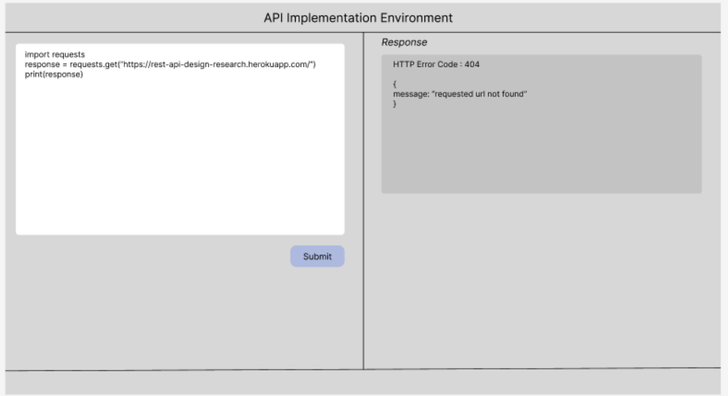
End Frame

Starting Frame

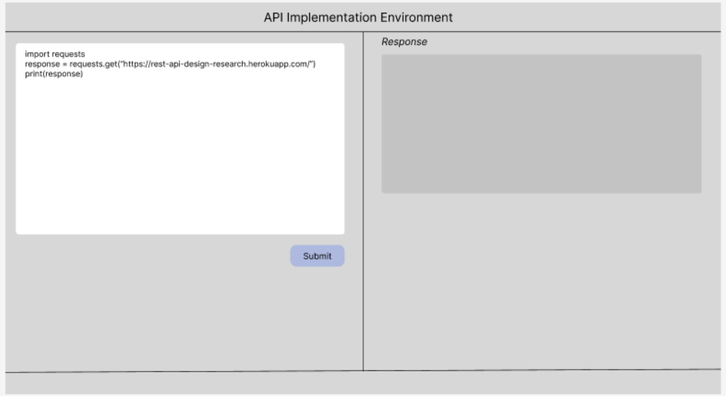


1160 × 636

End Frame



Intermediate Frame



Design Prototype Inspect

Frame

X -1562 Y -438

W 1160 H 636

0° 0

Clip content

Auto layout

Layout grid

Layer

Pass through 100%

Fill

Stroke

Selection colors

000000 100%

859CEF 100%

B6C1E8 100%

See all 6 colors

Principles

- Lots of visual design principles
- Ways of assessing designs
  - Usability studies
  - "Discount methods": don't need users (users are expensive)

Rest of Today: Nielsen's 10 Usability Heuristics

- Date from 1994, but still very useful today
  - Timeless? I'm teaching a well-tested approach, anyway
- No need for user tests
- Instead, need an expert evaluator (you?)
- Goal: identify usability problems

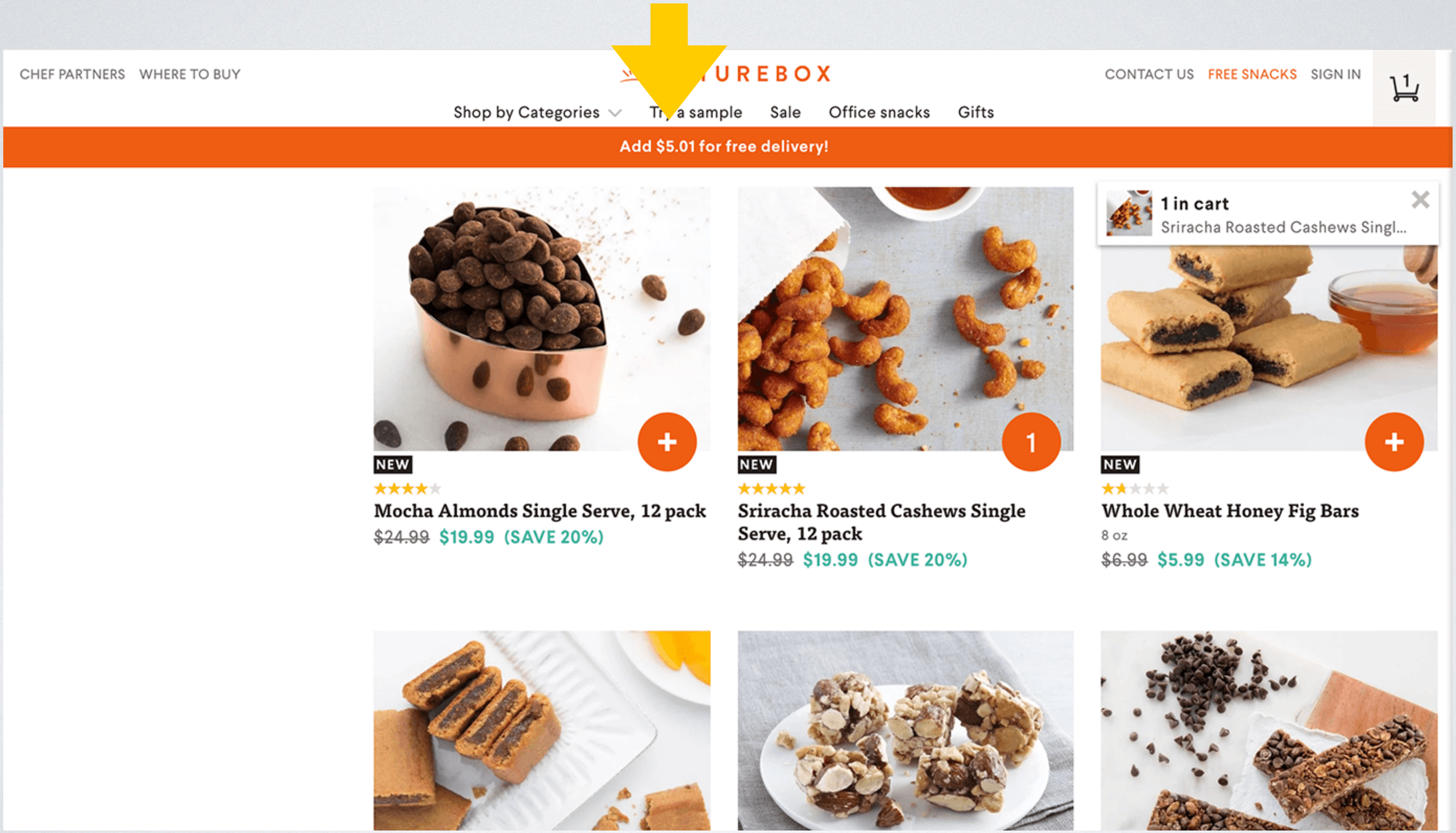
Priorities

- Can't fix every problem
- Instead, consider:
  - *Frequency* with which problem occurs
  - *Impact*: easy or difficult for user to overcome?
  - *Persistence*: one-time, or will users be bothered repeatedly?

#1: Visibility of System Status

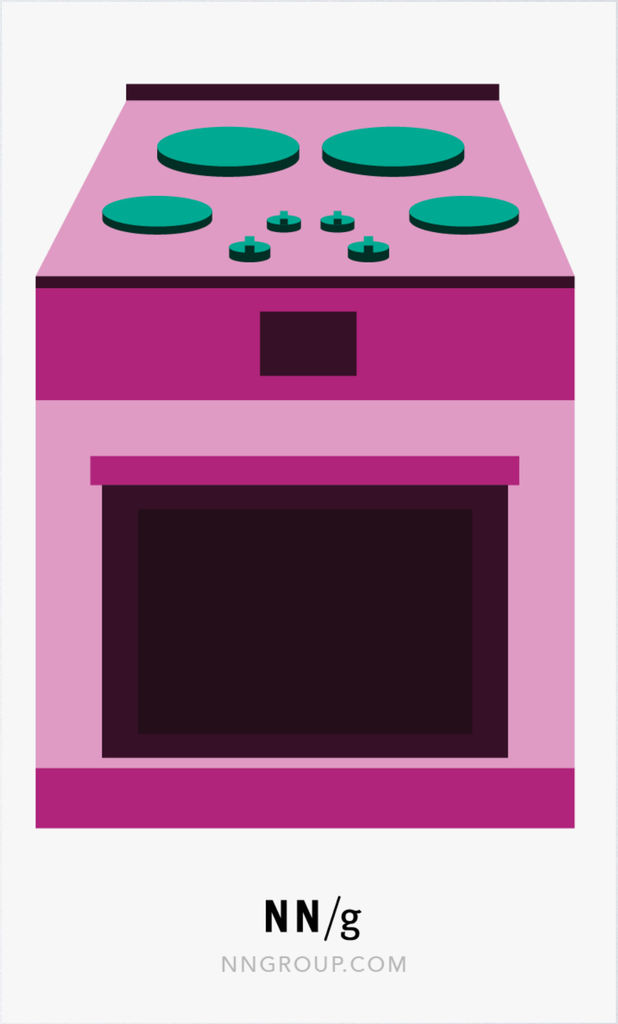
- Examples:
  - *you are here* on mall maps
  - Progress indicators (is the system processing?)

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

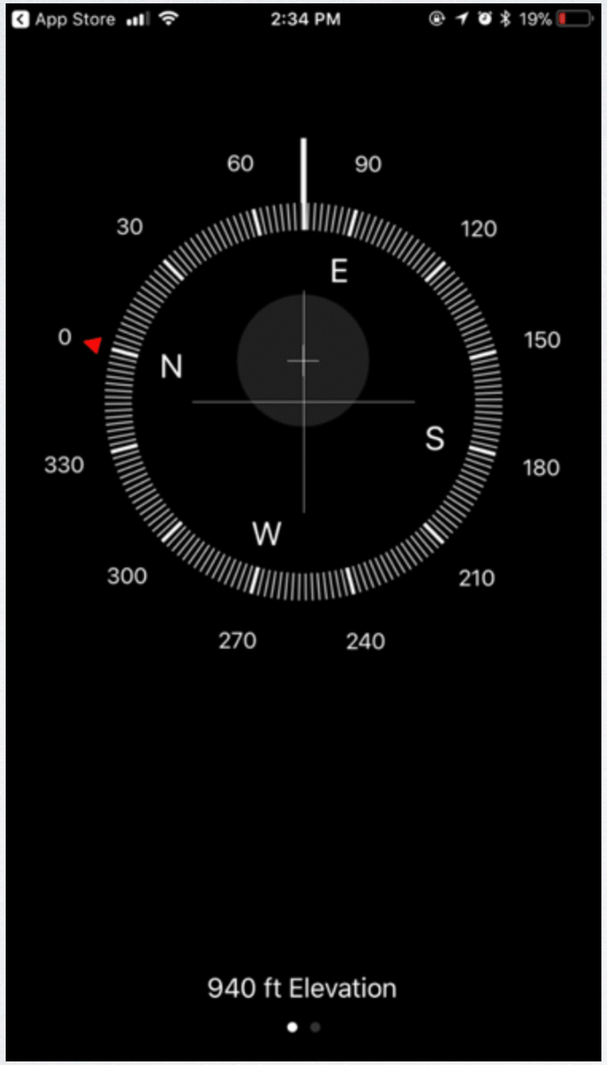


#2: Match Between System and the Real World

- 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.



The Compass Looks Like a Compass



How is the user supposed to know this means "back"?

suspension doesn't isolate bumpy roads well, and at lower speeds it feels a touch busy on *all* roads," said Mays.

Research the 2018 Volkswagen Tiguan | Search Inventory | Car Seat Check | Photo Gallery

How the Competitors Fared in Each Category

INTERIOR QUALITY	JUDGES' AVERAGE SCORE
2017 Mazda CX-5	**9.7**
2017 Honda CR-V	7.7
2017 Ford Escape	6.3
2018 Volkswagen Tiguan	6.3
2017.5 Nissan Rogue	6
2017 Jeep Compass	5.3
2018 Chevrolet Equinox	4.7

Cars.com graphics by Paul Dolan

How We Tested

Our weeklong test took place in the Chicago suburbs where judges drove each car on the same loop for back-to-back impressions. Other areas scored included awarding points for as-equipped crash avoidance technologies including forward collision warning with automatic emergency braking, blind spot warning, lane departure warning, lane departure steering and lane-centering steering. Plus, we evaluated and scored how well child-safety seats fit in each SUV.

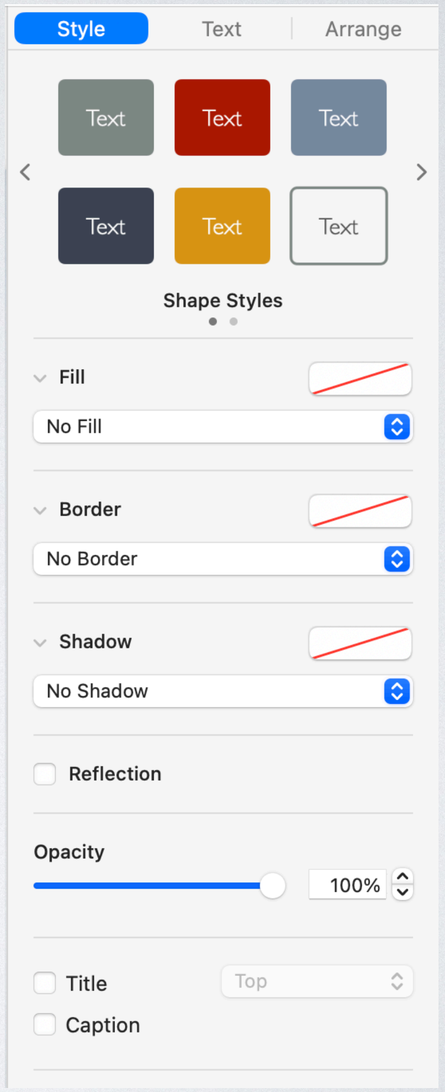
Feedback

What Does This Button Do in Word?

- Floppy drives were obsolete in 2001
- This is Word 365, © 2022

#3: User Control and Freedom

- Users often perform actions by mistake. They need a clearly marked "emergency exit" to leave the unwanted action without having to go through an extended process.
- Support Undo and Redo.
- Show a clear way to exit the current interaction, like a Cancel button.
- Make sure the exit is clearly labeled and discoverable.

Let Users Pick the Order

- "Wizards" force users to make choices in an order the developer chose
- Inspectors let users choose in any order