

# **IN4MATX 231:**

# **User Interface Design & Evaluation**

**Class 1: Introduction  
to Human-Centered Design**

Daniel Epstein

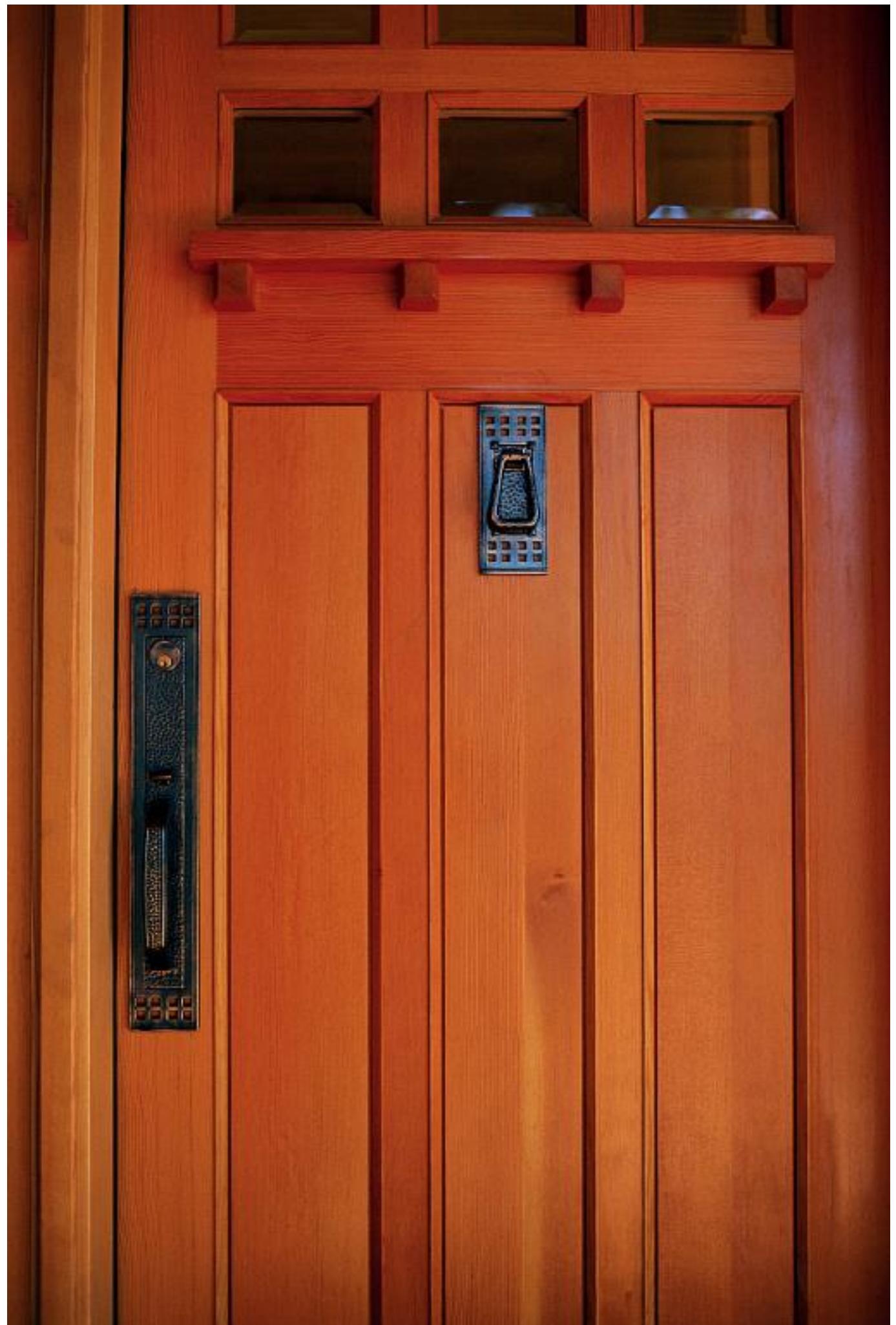
# What is this Course?

## Door Quiz!

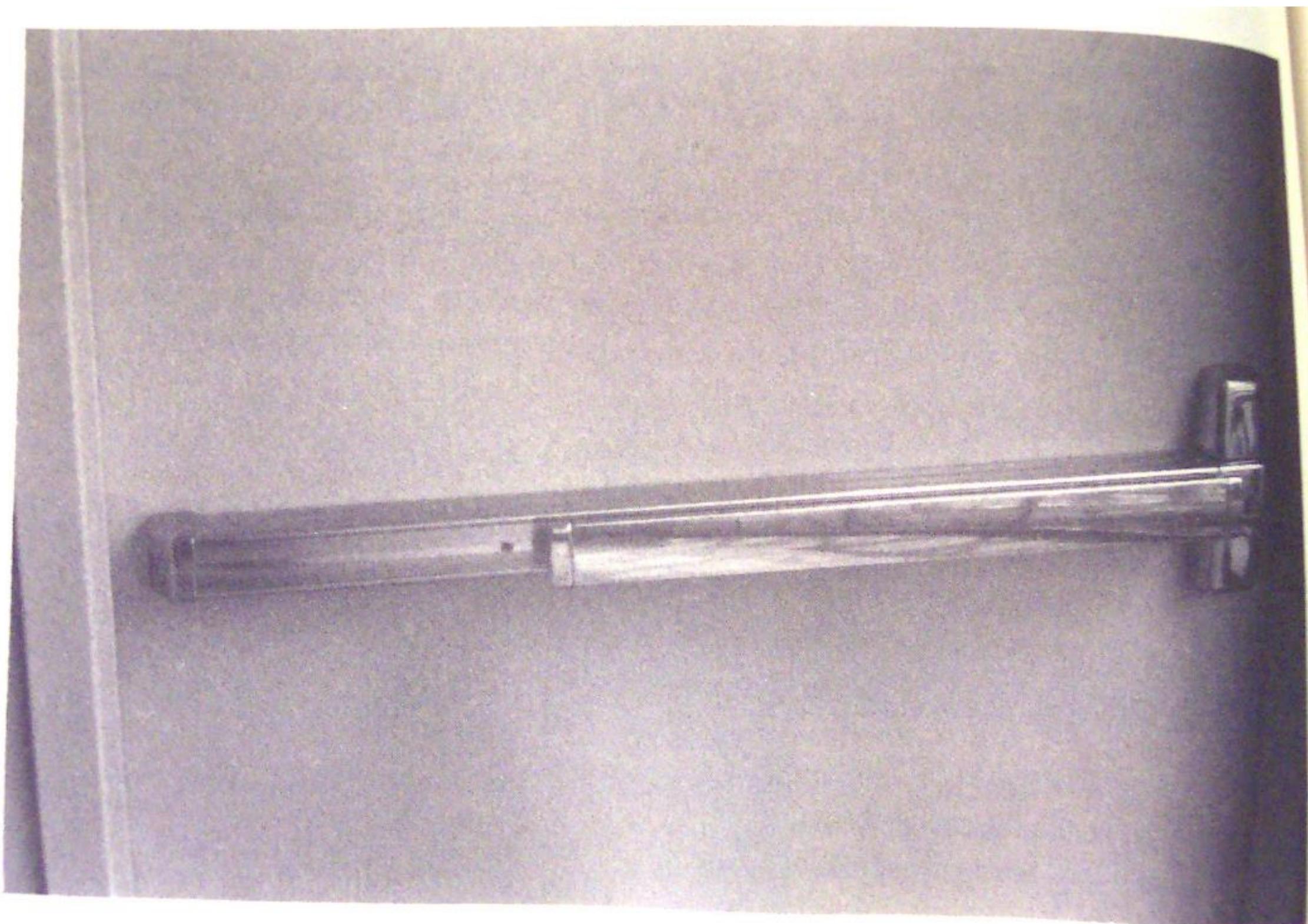
- Say out loud what action you use to open the door.
- Push
- Pull



# Door quiz



# Door quiz



# Door quiz



# Door quiz



# Door quiz



# Door quiz



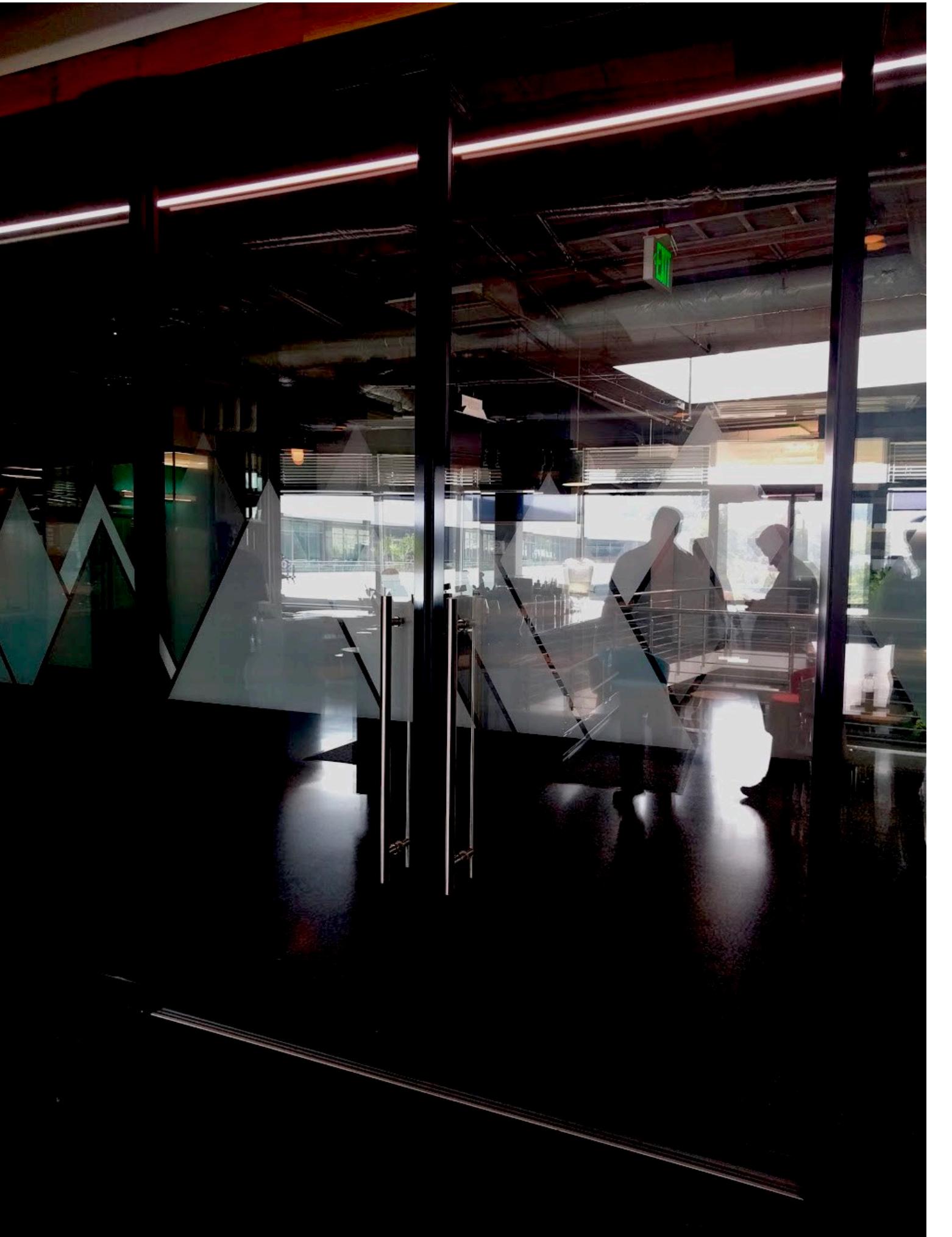
# Door quiz



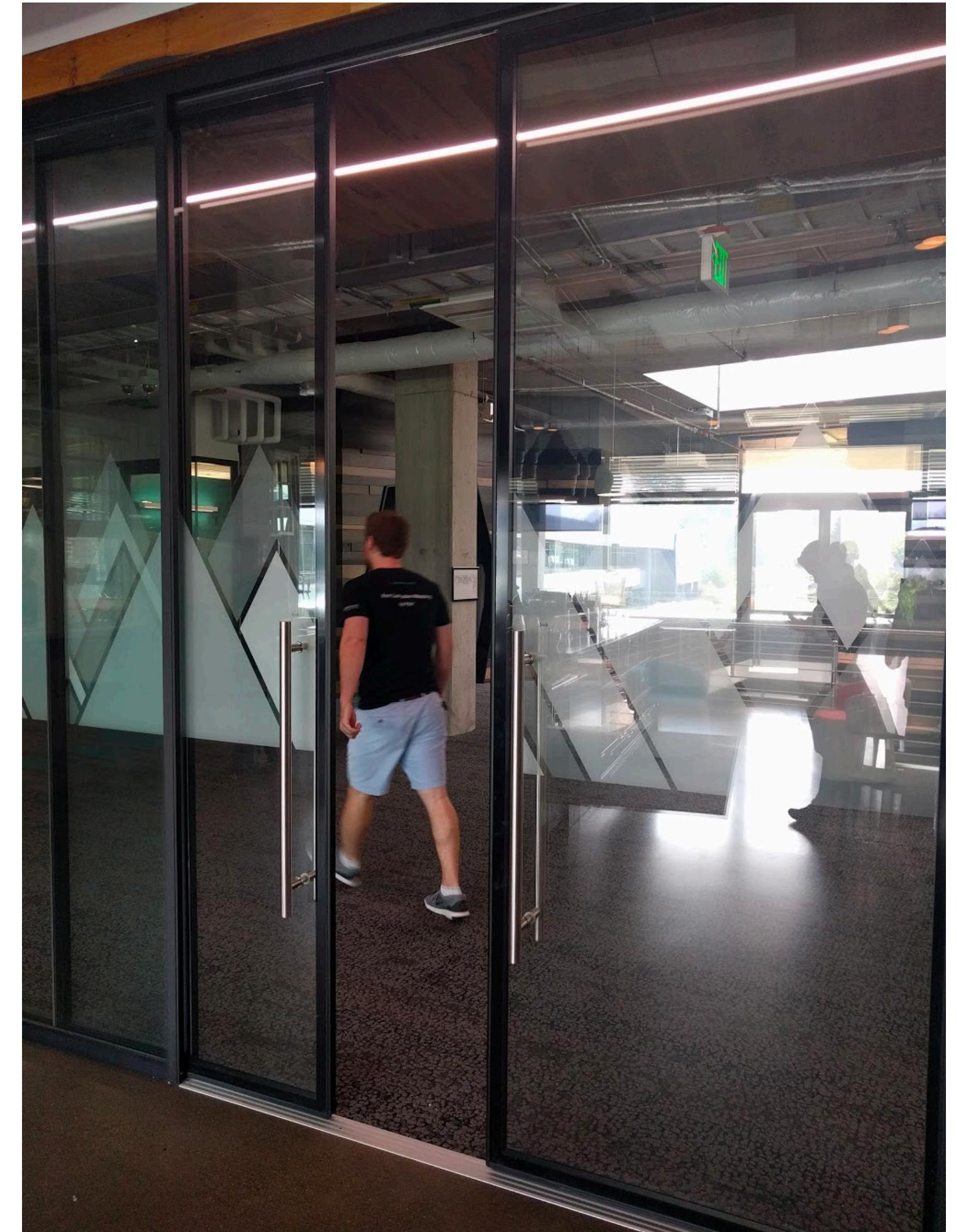
# Door quiz



# Door quiz

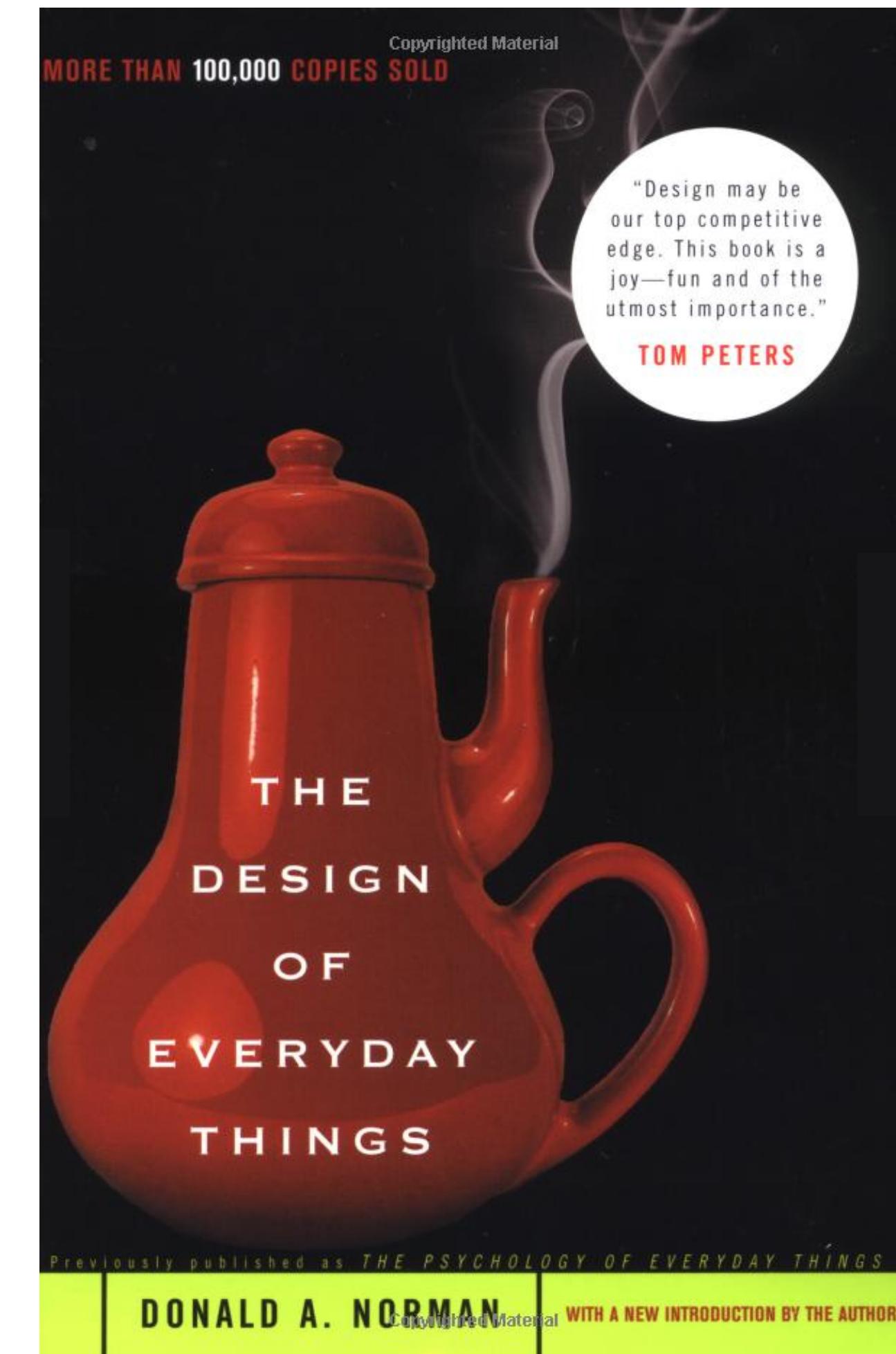


# Door quiz



# What is so special about computers?

- Nothing! It's about good designs and bad designs
- We make push/pull decisions many times per day
- We all encounter doors that do this badly
- We all see signs that do not change what we do



# Signs do not help

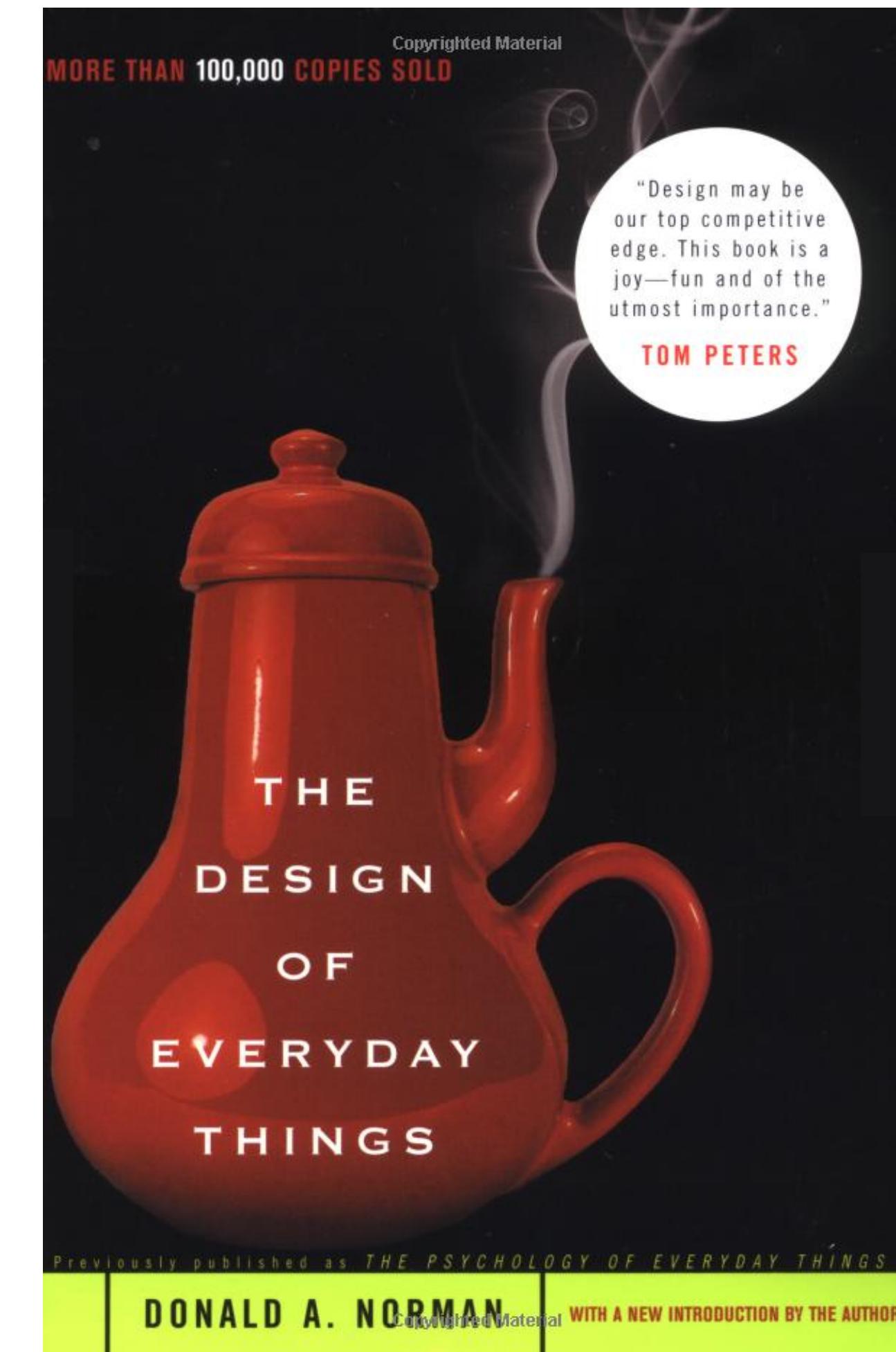


# Signs do not help



# What is so special about computers?

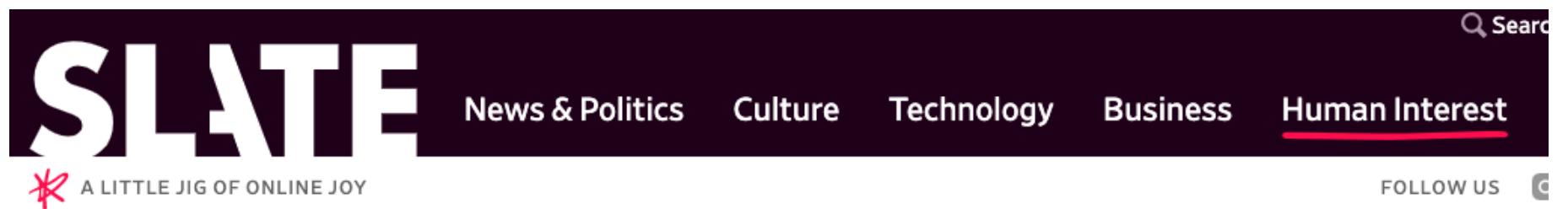
- Yet we blame ourselves
- Absolutely everything we encounter in the made world was designed
  - Too often poorly designed
- If you haven't yet, read this book
  - But you can't unread it, and you will become angry whenever you see something designed poorly



**Think-pair-share:**  
**Something poorly designed in the real  
world (try to avoid software, if possible)**



# Poor design can have serious impact



THE EYE

## Can Better Design Keep Kids From Eating Detergent Pods?

By KRISTIN HOHENADEL

OCT 01, 2013 • 9:15 AM

TWEET  
 SHARE  
 COMMENT



The original transparent packaging for Tide Pods laundry detergent looks like a candy jar.

Photo courtesy of Procter & Gamble

Detergent pods are a modern convenience that has made doing the laundry less daunting for those who dislike measuring, any sort of mess, or lugging heavy detergent containers to the laundromat.

# Poor design can have serious impact

Make a contribution    Subscribe    Find a job    Sign in    Search ▾

News    Opinion    Sport    Culture    Lifestyle    More ▾    US edition ▾

US   World   Environment   Soccer   US politics   Business   Tech   Science   Homelessness

**Technology**

## Hawaii missile false alarm due to badly designed user interface, reports say

Alert occurred after employer pressed button labelled 'missile alert', instead of the one next to it marked 'test missile alert'

Alex Hern  
@alexhern  
Mon 15 Jan 2018  
04.51 EST

f t e ...  
2387

most popular in US

- Bitcoin biggest bubble in history, says economist who predicted 2008 crash
- 'I was flat-out raped': Amy Schumer says she was assaulted as a teenager
- Live Dow slides as US stock market suffers worst week in two years - as it happened
- 'Nunes memo' published after Trump declassifies controversial document
- Dow Jones suffers worst fall in two years amid fears of interest rate rise

A false alarm warning Hawaiians of an [incoming ballistic missile on Saturday](#), was reportedly issued because of a "terribly designed" user interface.

The computer system that allows the Hawaiian Emergency Management Agency (HEMA) to send emergency alerts asks employees to select the type of alert that they are sending from a drop-down menu.

Among the options available are two for missile alerts, [according to the source](#).

# Today's goals

**By the end of today, you should be able to...**

- Articulate what needs were not accounted for in the poor designs you encounter in the world
- Explain the Human-Centered Design Process at a high level
- Summarize the course structure and tasks

# Human-Centered Design\*

- Approach to design usable systems via direct user engagement
- Principles
  - *Holistic*: grounded in needs & context to address the whole user experience
  - *Participatory*: users engaged throughout
  - *Formative*: not “solution jumping”
  - *Iterative*: driven and refined in multiple stages
  - *Multidisciplinary*: design team includes multiple perspectives
- Applied broadly in information & computer science

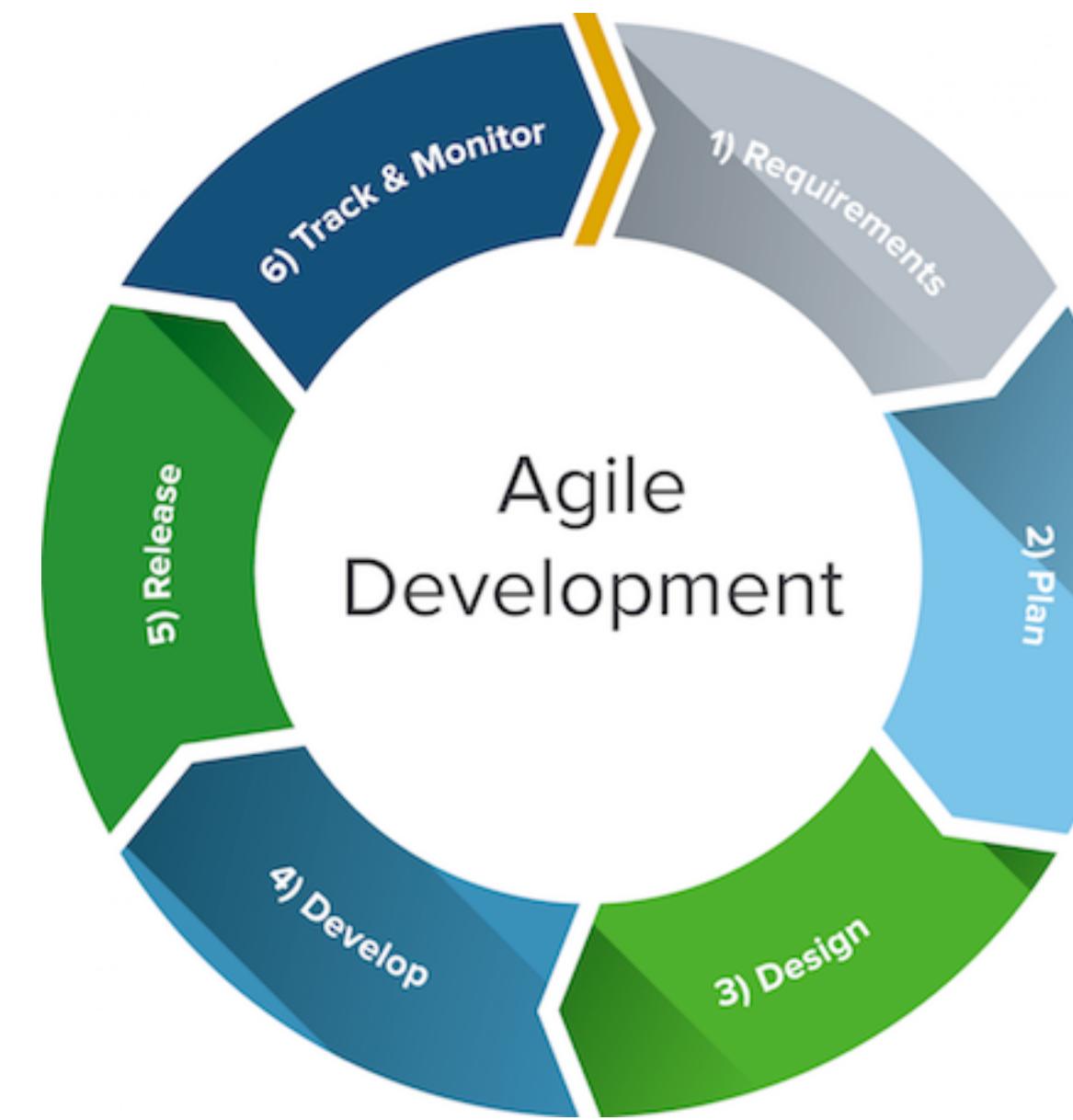
\*ISO 9241-210, “Human-centered design for interactive systems”, 2010

# Why is HCD important?

- “*Highly usable systems tend to be more successful both technically and commercially*”\*
- HCD can improve user experience and system adoption
- HCD may reduce software development costs in the long term

\*ISO 9241-210, “Human-centered design for interactive systems”, 2010

# Applying Human-Centered Design



Agile development, agile manifesto

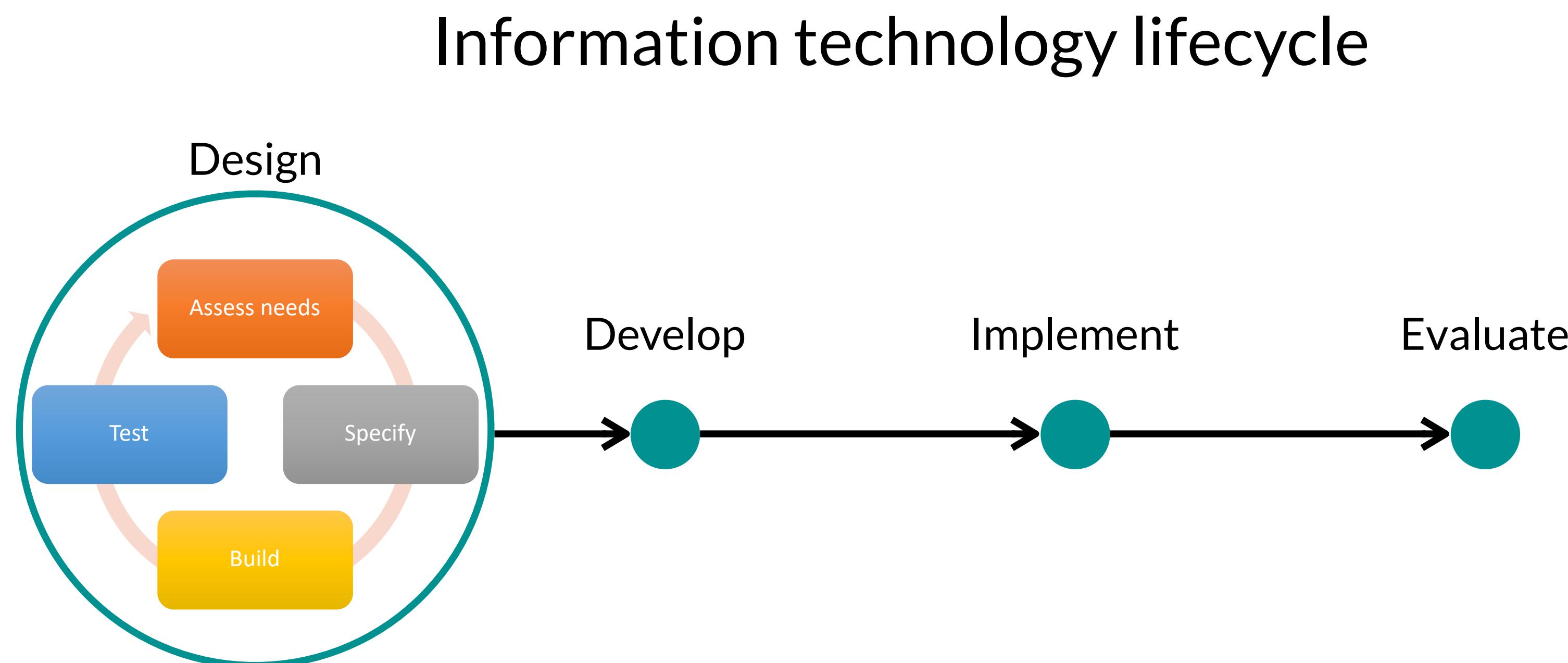
<http://agilemanifesto.org>

# Applying Human-Centered Design

Information technology lifecycle

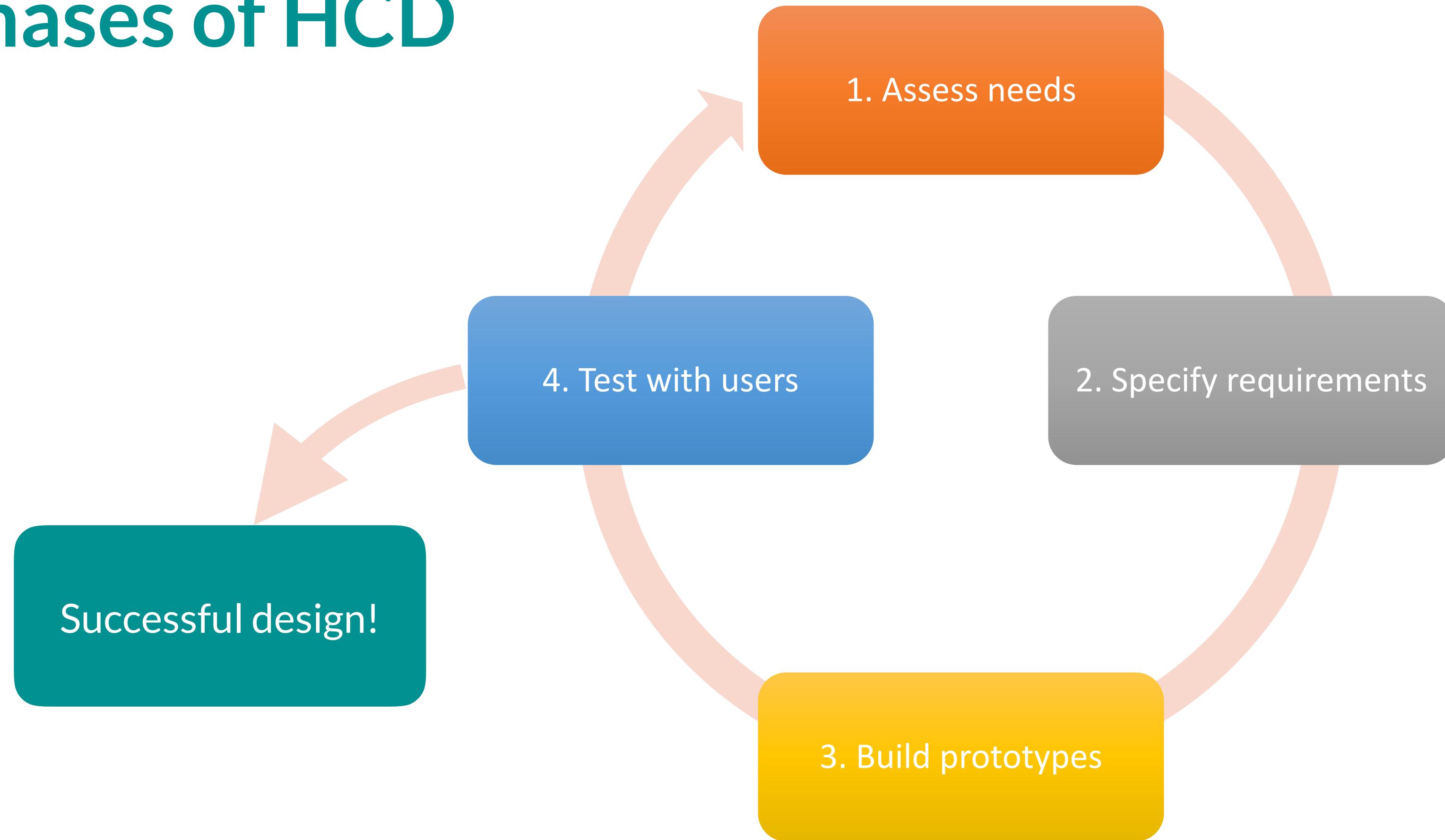


# Applying Human-Centered Design



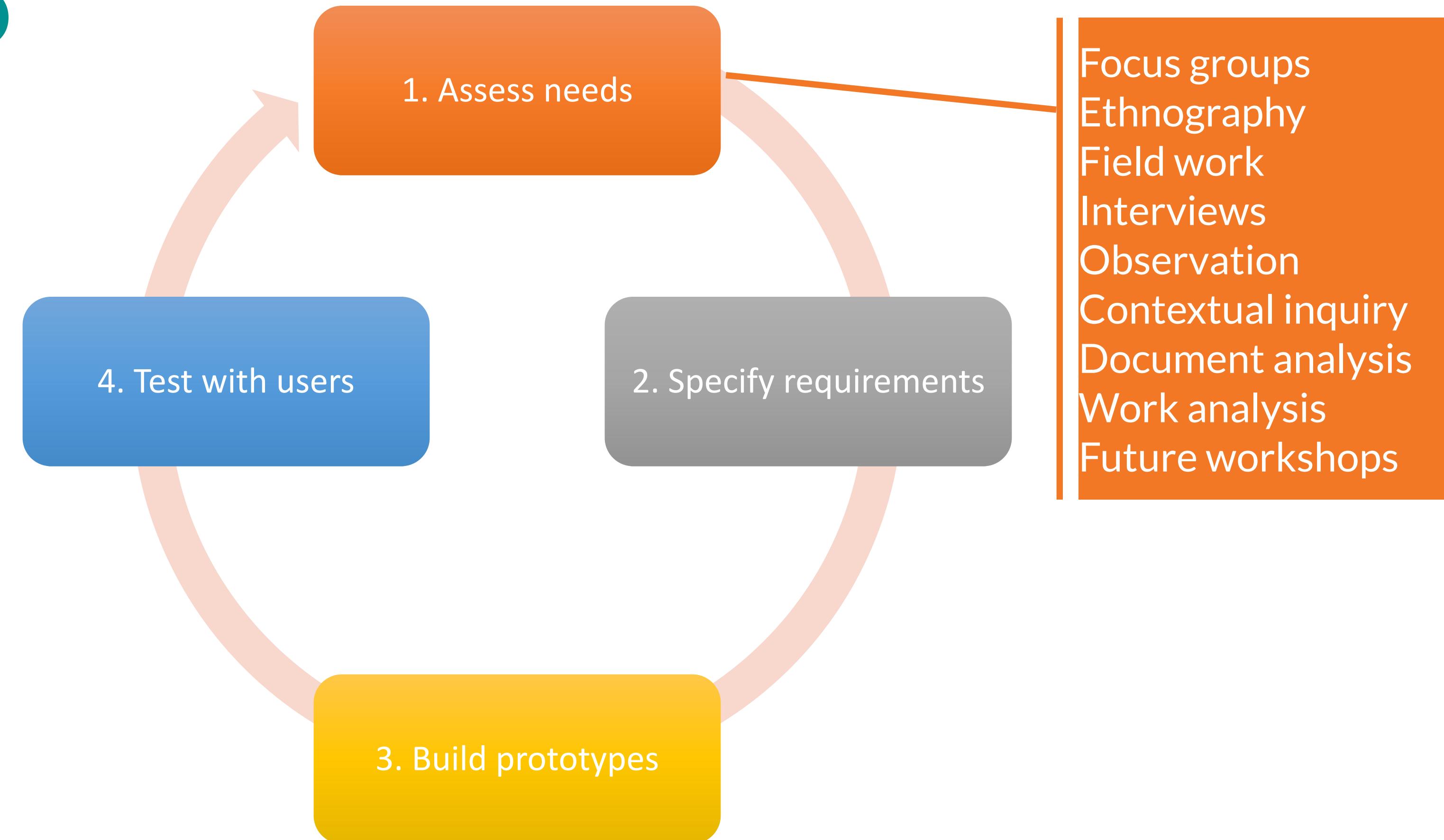
# Applying Human-Centered Design

## Phases of HCD



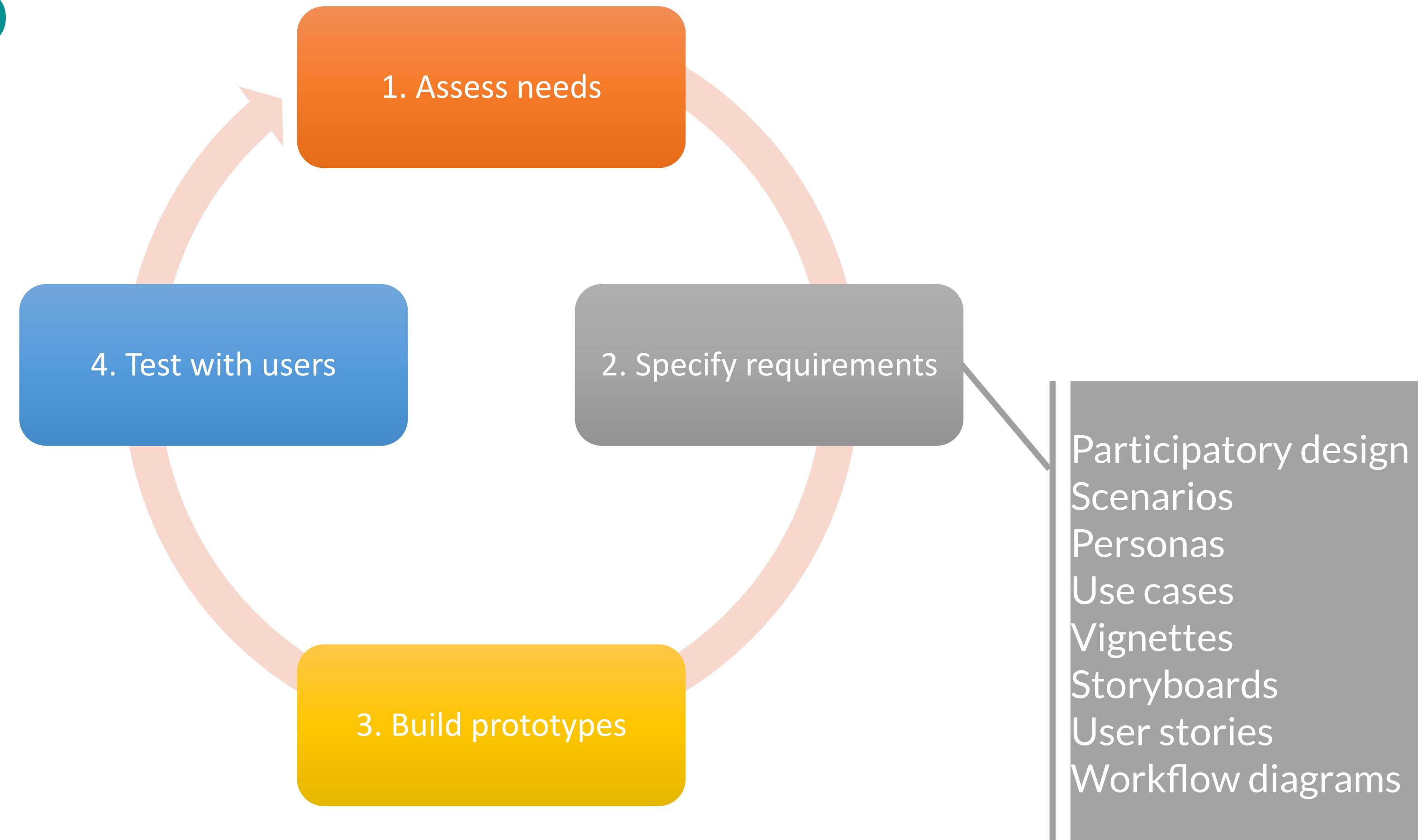
# Applying Human-Centered Design

## Phases of HCD



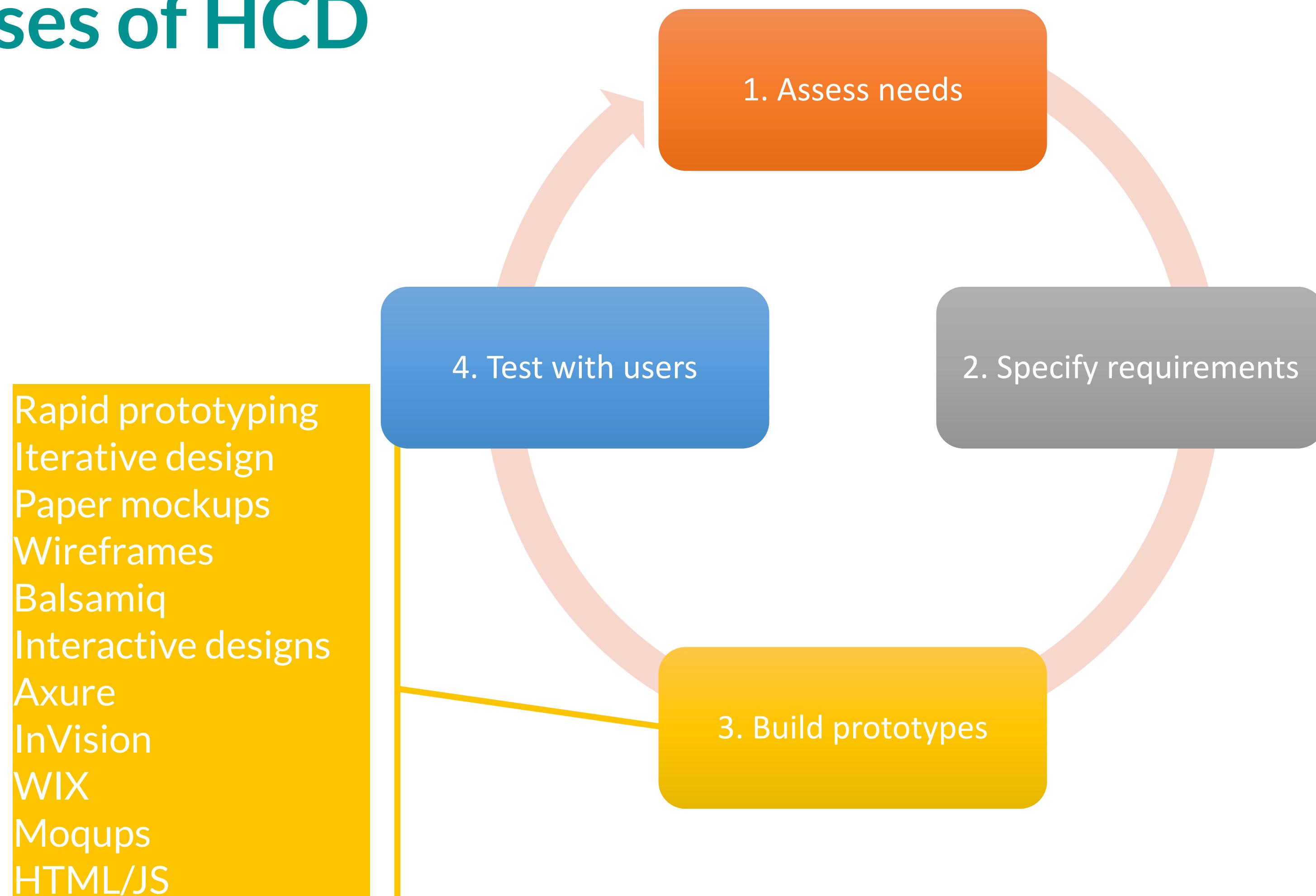
# Applying Human-Centered Design

## Phases of HCD



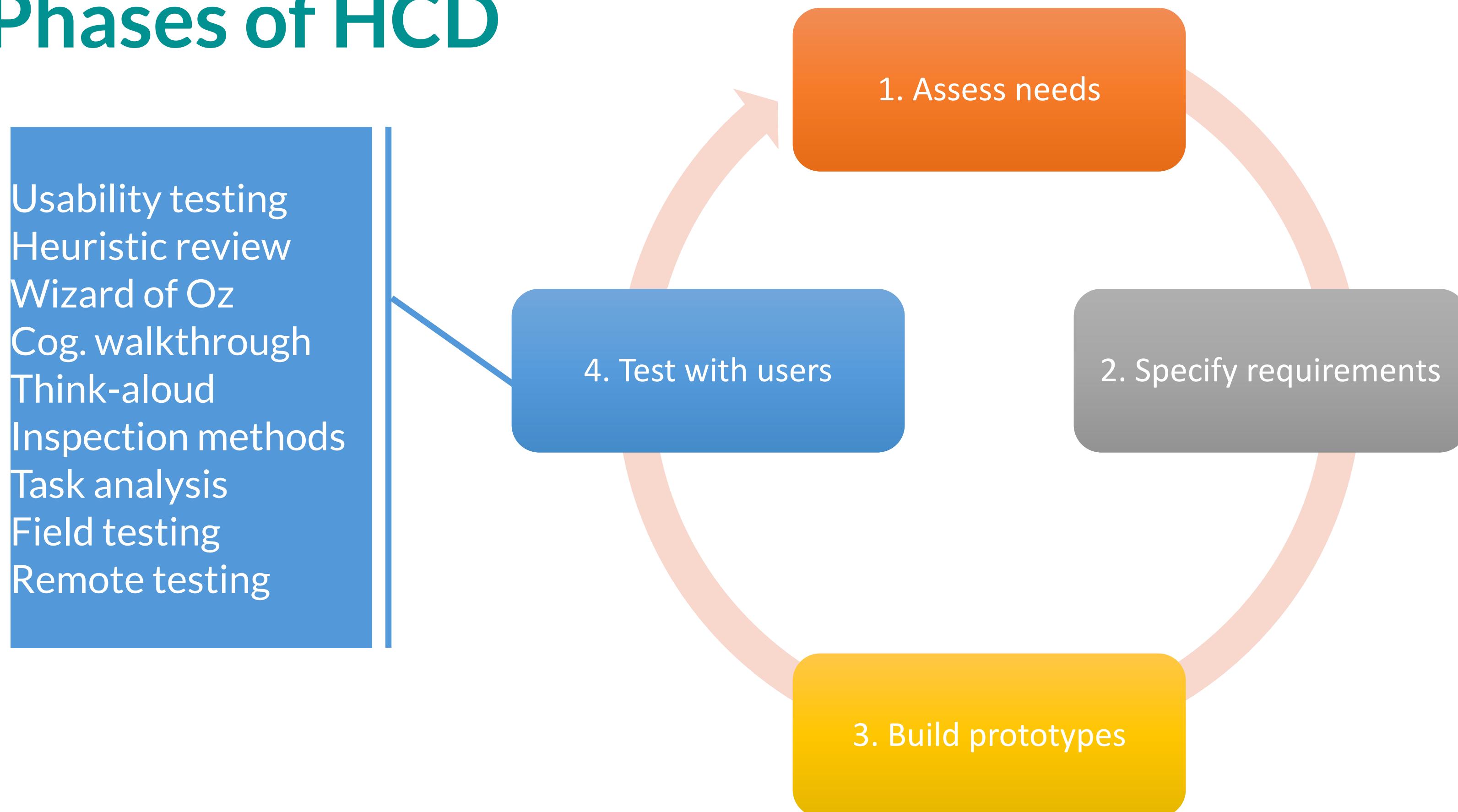
# Applying Human-Centered Design

## Phases of HCD



# Applying Human-Centered Design

## Phases of HCD



# Applying Human-Centered Design

- HCD is ideally iterative
  - Insights from testing inform questions to answer through needs assessment
- Common ICS research methods support the HCD process
- Engaging with potential users is central to the process

# Applying Human-Centered Design

- Applying HCD in research is often much messier
  - In practice, too
- Researchers often skip phases, complete them out of order, merge them, etc.

# Human-centered vs. User-centered

## human-centered design:

/hyü-mən sen-tərd di-'zīn/

*noun*

an approach that focuses on fully understanding the perspectives of the people the design is for in each step of the process. Human-centered design requires a large amount of ideation, testing, learning and adjusting based on the feedback from a sample of the intended audience.<sup>1</sup>

1. Retrieved on March 1, 2018, from [designkit.org/human-centered-design](https://designkit.org/human-centered-design)

## user-centered design:

/'yü-zər sen-tərd di-'zīn/

*noun*

an approach that is complementary to the user's inherent way of doing things. Rather than having people adjust to the technology and design, the design and technology attempts to account for their tendencies and preferences in the very way they are built.<sup>1</sup>

1. Retrieved on March 1, 2018, from [usabilityfirst.com/about-usability/introduction-to-user-centered-design/](https://usabilityfirst.com/about-usability/introduction-to-user-centered-design/)

# User-centered vs. Human-centered

- Many argue that they are the same
  - Both are focused on providing a person with a design that is beneficial to their life
- But “user” tends to feel less empathetic, focused on the physiological interaction and ignoring emotional or psychological preferences
- I try not to describe people as “users” and encourage you to do the same
  - But I will slip up occasionally

# Today's goals

**By the end of today, you should be able to...**

- Articulate what needs were not accounted for in the poor designs you encounter in the world
- Explain the Human-Centered Design Process at a high level
- Summarize the course structure and tasks

# Course Overview

- About me
- Staying in touch
- The project
- Readings, class, and discussion

# About me

**Daniel (he/his/him)**

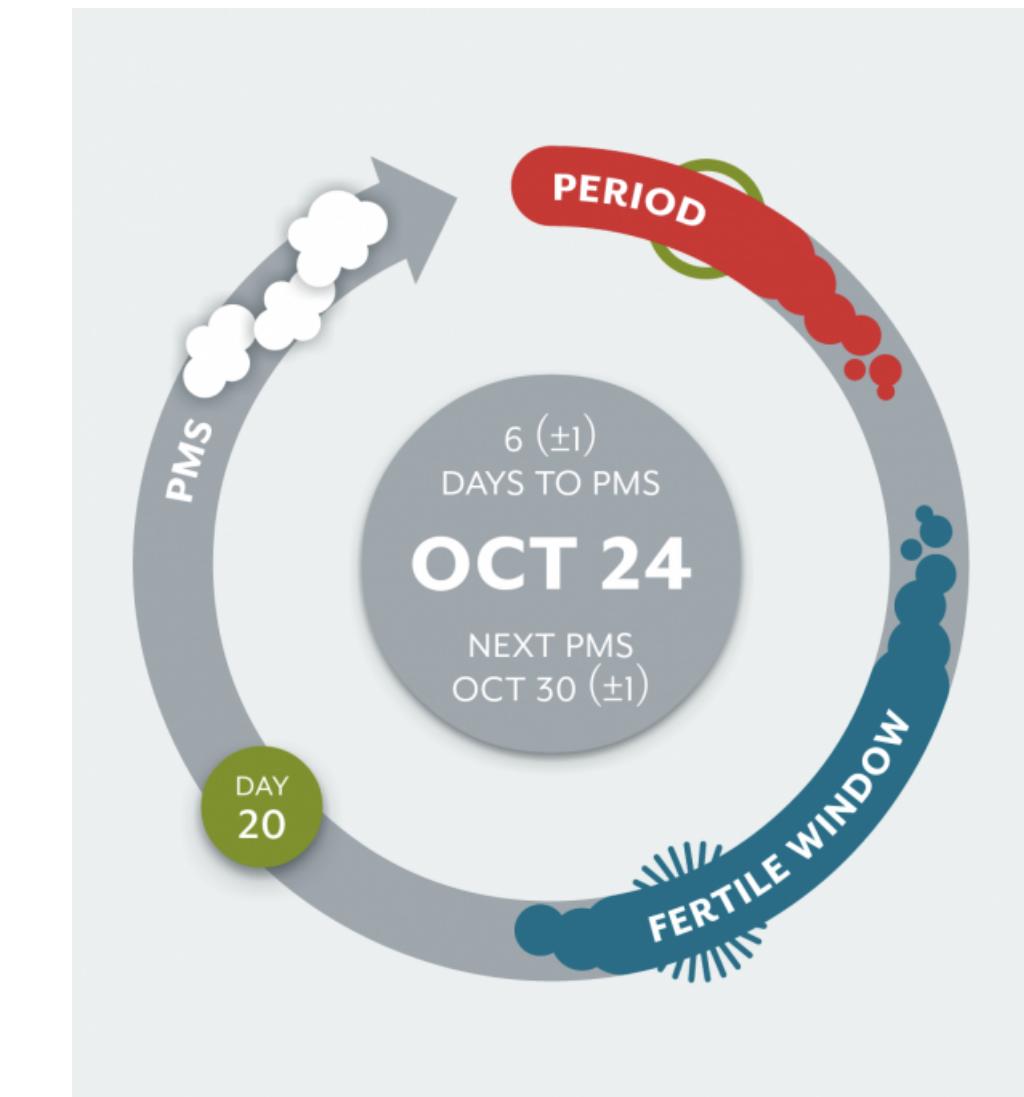
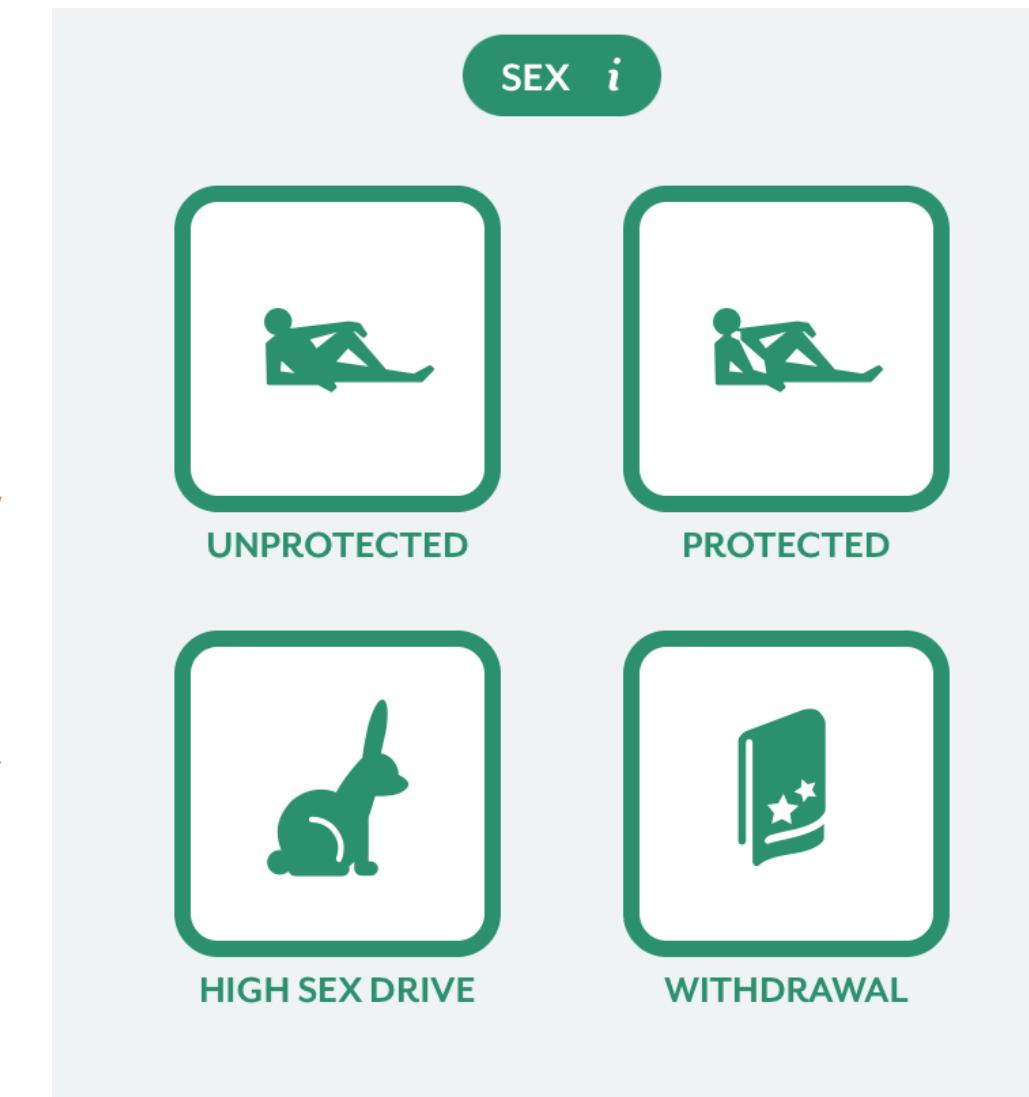
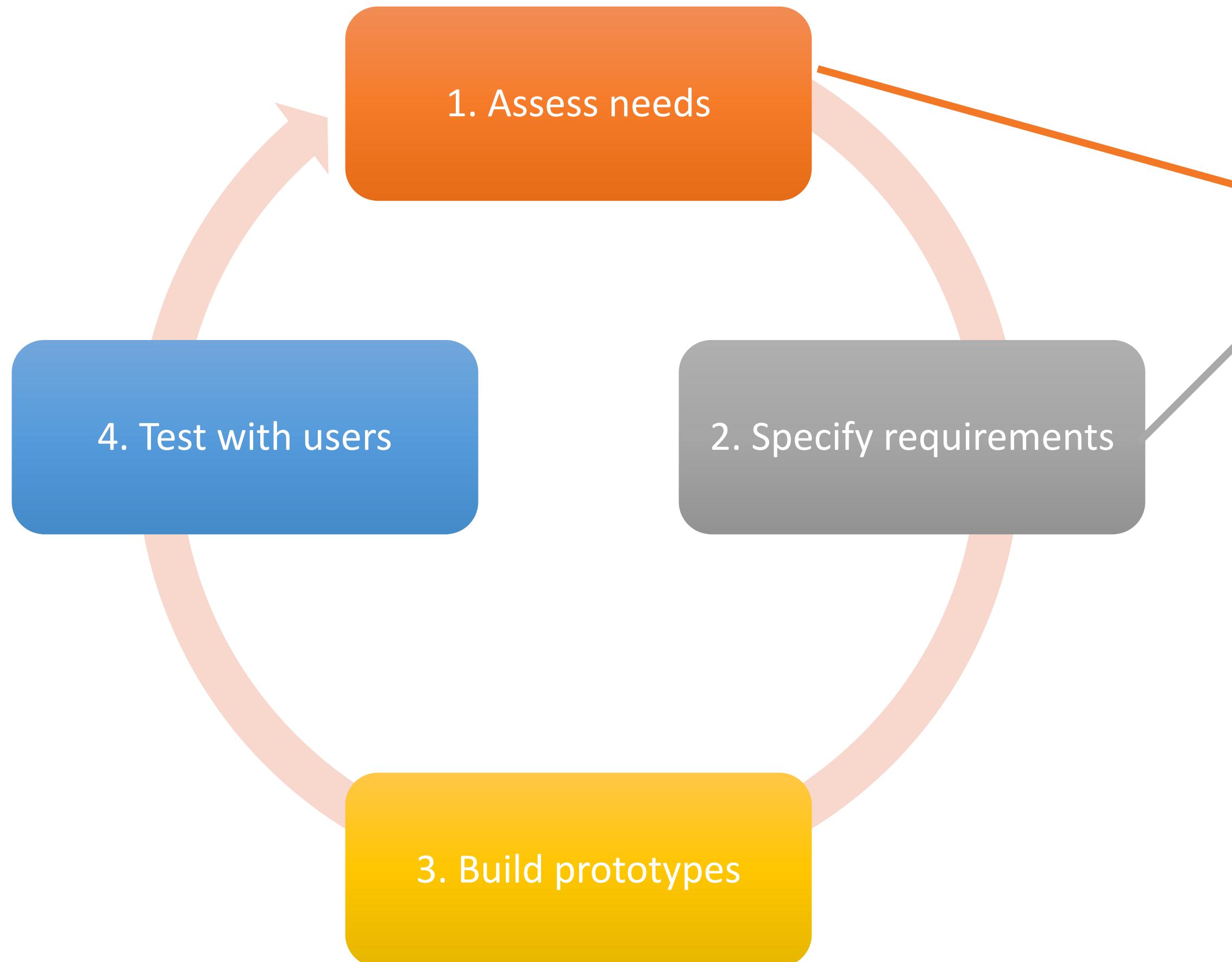
- Ph.D. Computer Science & Engineering,  
University of Washington 2018
- B.S. Computer Science,  
University of Virginia 2012
- Joined UCI Informatics in 2018
- Internships at Microsoft & Adobe



# About me

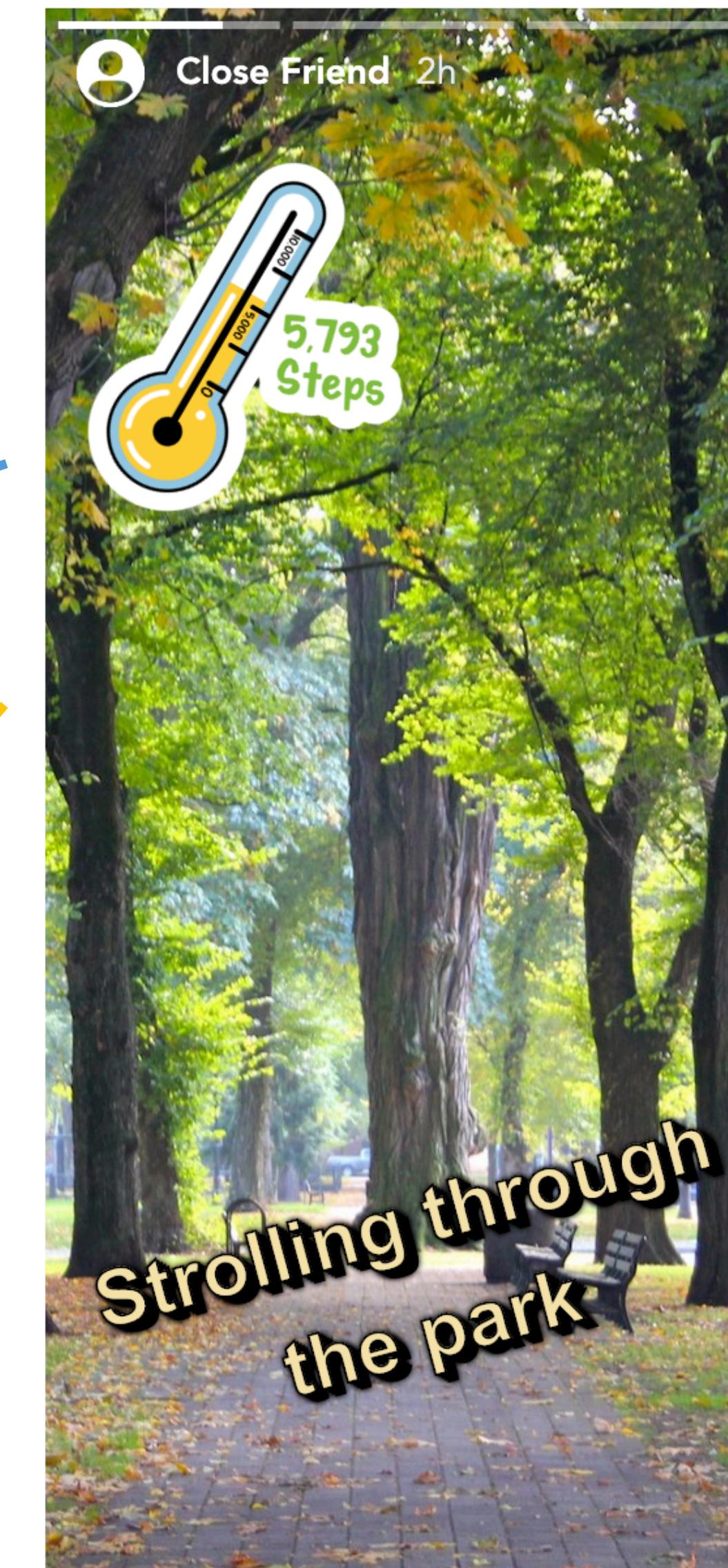
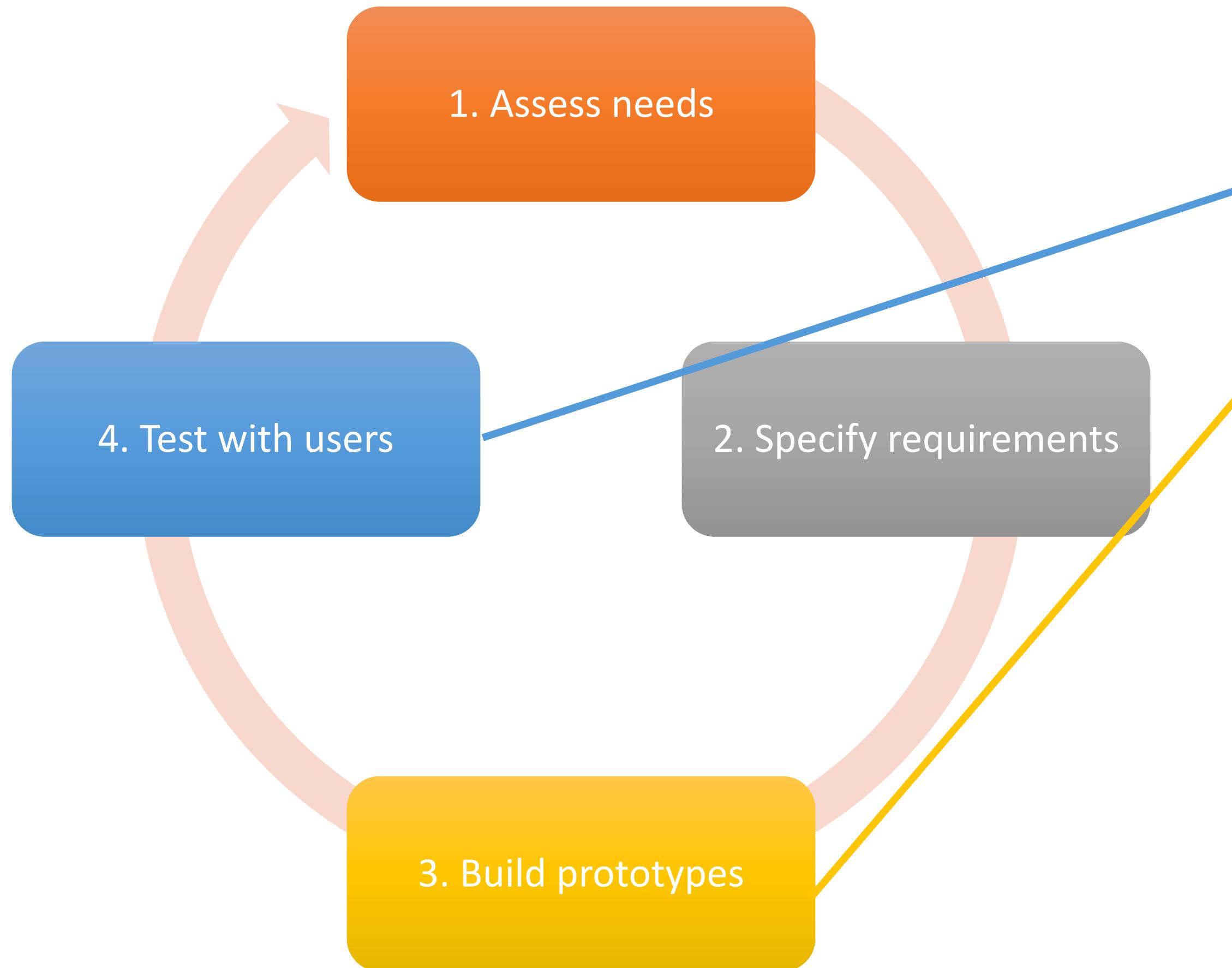
- I research personal informatics systems
  - “systems that help people collect personally relevant information for the purpose of self-reflection and gaining self-knowledge”\*
  - Common examples include fitness trackers (Fitbit), mood trackers (Daylio), financial management apps (Mint), menstrual cycle apps (Clue)
- I specifically examine how the design of personal informatics systems can better account for people’s everyday lives and realities

# About me



*“Sex options assume sex with a man, and a reminder of ovulation cycle both remind me that I am not a normal woman whenever I use the app... but it’s not overly pink so I deal.”*

# About me



*“The sticker itself is honestly very motivating because of the way it displays progress.”*

# About you

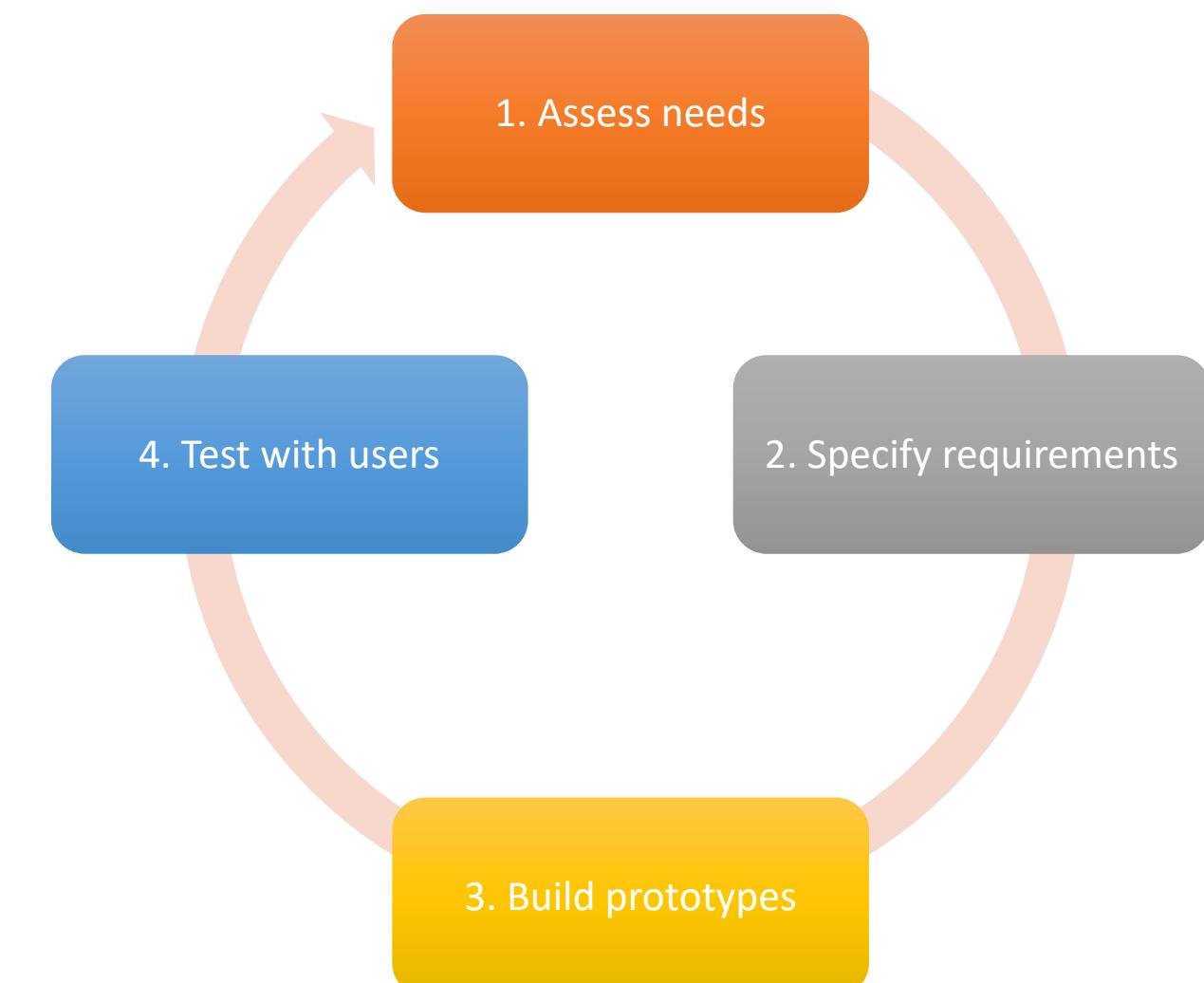
- Introductions!
- Name
- Preferred pronouns
- Some professional interest (maybe research topic)
- Some personal interest (maybe something fun you did this summer)
- <https://bit.ly/2luoy9g>

# Staying in touch

- Web: <http://inf231-fa19.depstein.net/>
- Slack: <https://uci-inf231-fa19.slack.com/>
  - Information will go out to Slack first!

# The project

- The majority of your classwork this quarter
- Three components
  - *Formative*: understanding the needs of the people you are designing for
  - *Design*: design a prototype to meet those needs
  - *Evaluative*: evaluating that prototype
- You can choose what method to use for each component
  - e.g., if you're already doing interviews...



# The project

- In one quarter, it is unrealistic to assess needs, design a prototype, and evaluate it at the rigor required for research publication
- You will therefore do “lite” versions of each
  - e.g., conduct a few interviews (<5)
  - e.g., support two tasks in a low-fidelity prototype
  - e.g., heuristically evaluate with a few people (<5)

# The project

- You are welcome, and even encouraged, to appropriate parts of your research or another class project for this class
  - But it *must* have all a formative, design, and evaluative component
- #project on Slack has some ideas
- Most projects should be completed in pairs
  - Groups of three are possible, individuals strongly discouraged

# The project

- Project proposal due October 8th (1 week from Tuesday)
  - 1 page describing the problem and plans for each stage (to the extent possible)
- Subsequent components due every 2-3 weeks
  - 2-4 page report, depending on the component
  - In-class presentations and critiques in class
- Poster session during finals week (location TBD)
- Final report due at the end of finals week

# Readings

- 1-2 per class
- Intended to *augment* in-class time rather than duplicate
- Reading queries due at midnight the day before class
  - 1 question you have on the method or topic after doing the reading
  - Posted on the Slack channel
  - Binary grading scale
  - Can miss up to 2 without penalty

# Class time

- A mix of lecture, activities, and discussion
- Will draw on topics covered in the readings, but hopefully not repeat them
- This class is small, it's better for everyone if we ask and discuss questions rather than me stand here the whole time

# Discussions

- Project-related activities
  - Team meetings
  - Design critique
- Are optional, but a great opportunity to schedule project meetings or gather feedback with other students in the class
  - I'll occasionally suggest a topic or activity which could be useful for your projects
  - But ultimately, your schedules and other responsibilities may make other times more convenient

# Grading

- 75% group project
  - 5% Project proposal
  - 15% Report on formative component
  - 15% Report on design component
  - 15% Report on evaluative component
  - 10% Final poster
  - 15% Final report
- 15% Reading queries
- 10% Participation

# Reflection

- This class is intended to give *practical* HCI skills and training
- It will not cover HCI as a research topic
  - IN4MATX 232 (Winter) focuses on that

# Reflection

- Everyone is coming in with different backgrounds and expertise
  - Programming and visual design training are not required, nor will those topics be covered in much detail
  - Prior knowledge of particular software (Axure, Invision, InDesign) will be a boon
- Consider pairing up with someone with different expertise
  - And help each other outside of class
- I'm happy to give extra credit to someone interested in teaching a piece of software or a skill in a discussion section
  - If a peer has been particularly helpful, let me know!

# Today's goals

**By the end of today, you should be able to...**

- Articulate what needs were not accounted for in the poor designs you encounter in the world
- Explain the Human-Centered Design Process at a high level
- Summarize the course structure and tasks

# **IN4MATX 231:**

# **User Interface Design & Evaluation**

**Class 1: Introduction  
to Human-Centered Design**

Daniel Epstein