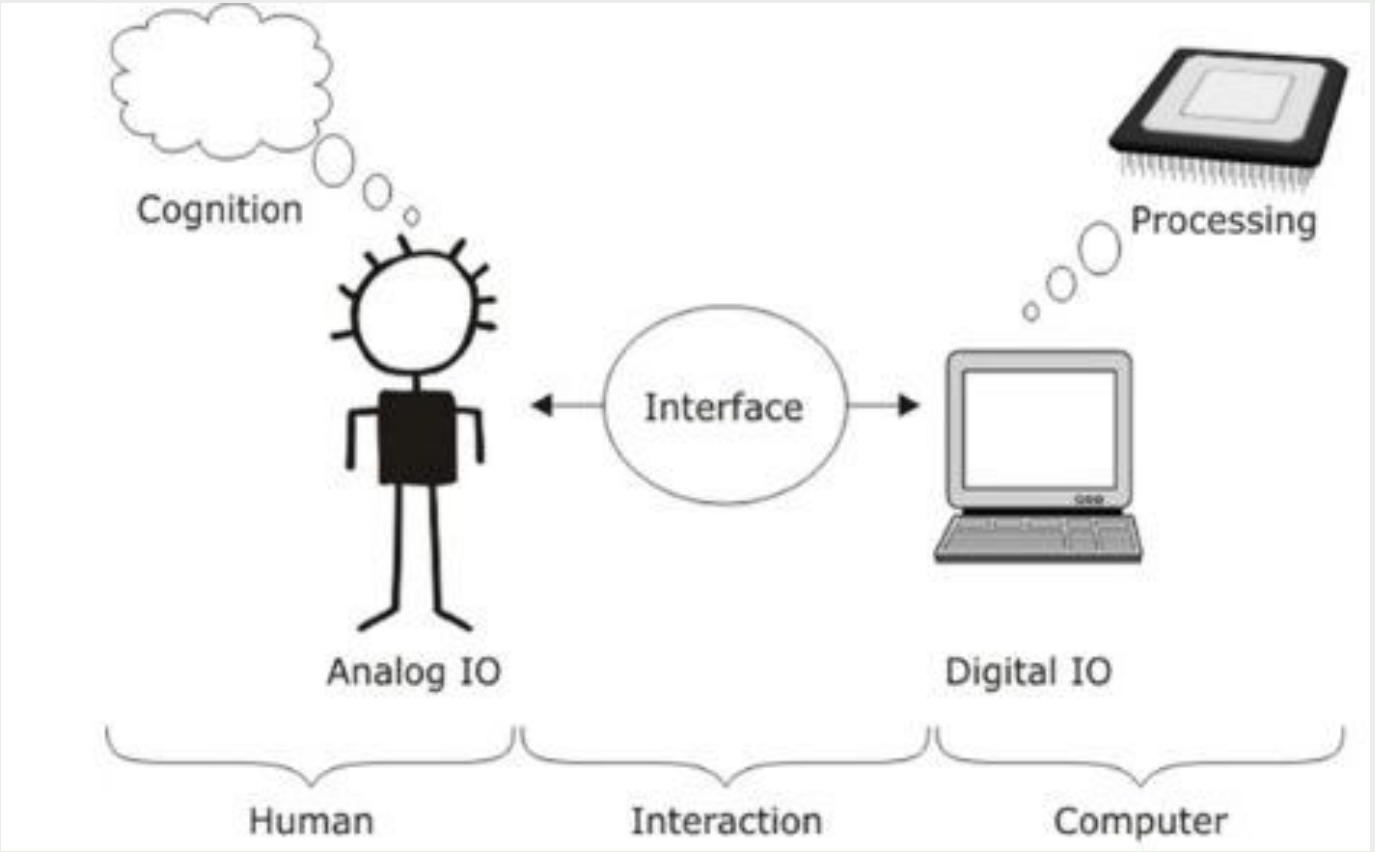
CSE 4451: HUMAN-COMPUTER INTERACTION

Week 1: Introduction to HCD

What is Human-Computer Interaction?



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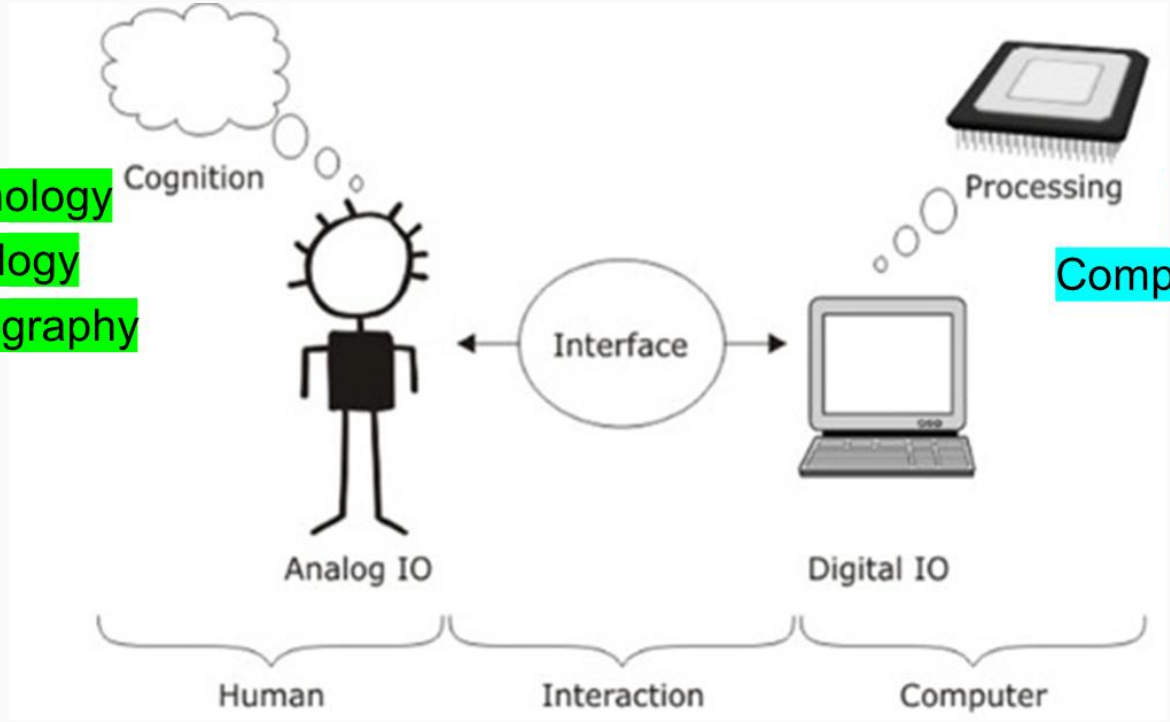
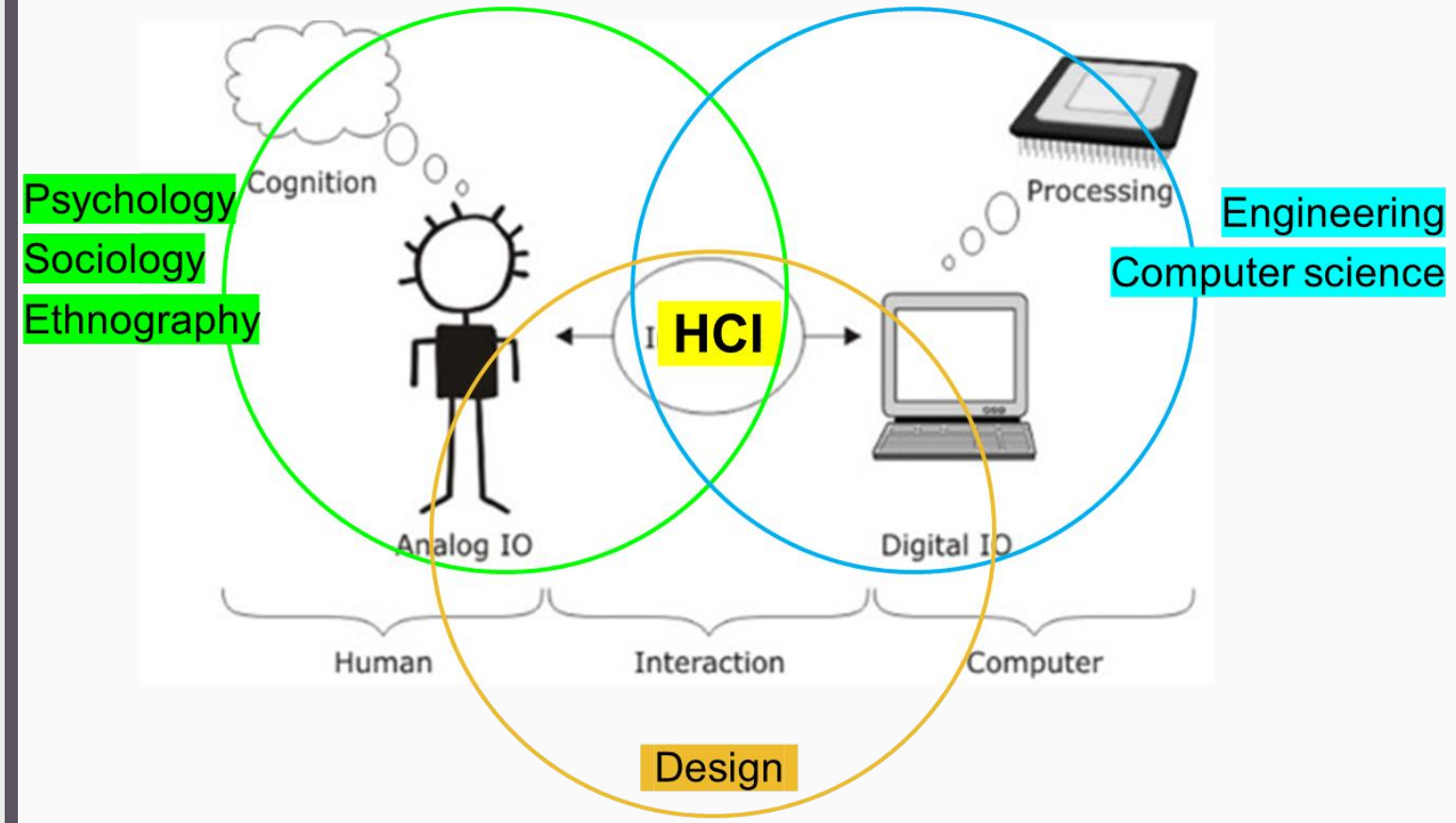


Psychology
Sociology
Ethnography

Engineering
Computer science

Design

What is Human-Computer Interaction?




package com.ds.ucd.be.becore.solr;
import ...
public final class LocationUtils {
/**
* Parses Point from it's String representation.
* @param locationString - String that represents location, as 2 double values split with coma. Accepts space after/before
* @return org.springframework.data.solr.core.geo.Point instance
*/
public static Point parseLocation(String locationString) {
Preconditions.checkNotNull(locationString, errorMessage: "Location String should not be null");
Preconditions.checkArgument(locationString.contains(","), errorMessage: "Location must be split with coma");
locationString = locationString.trim();
if (locationString.contains(" ,")) {
locationString = locationString.replaceAll(regex: " ,", replacement: ",");
}
if (locationString.contains(", ")) {
locationString = locationString.replaceAll(regex: ", ", replacement: ",");
}
String[] location = locationString.split(regex: ",");
Preconditions.checkArgument(expression: location.length >= 2, errorMessage: "Location should constist at least 2 Double parameters");
double lat = Double.parseDouble(location[0]);
double lon = Double.parseDouble(location[1]);
return new Point(lat, lon);
}
}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VR Headsets

Siren Diabetic Sock and Foot Monitoring System

Image source: TechCrunch (2020). Retrieved from https://techcrunch.com/2020/05/27/siren-raises-11-8m-for-its-limb-saving-smart-socks/

The Nest Thermostat

Image source: HelloTech (2020). Retrieved from https://www.hellotech.com/blog/google-nest-hvac-alerts-home-report

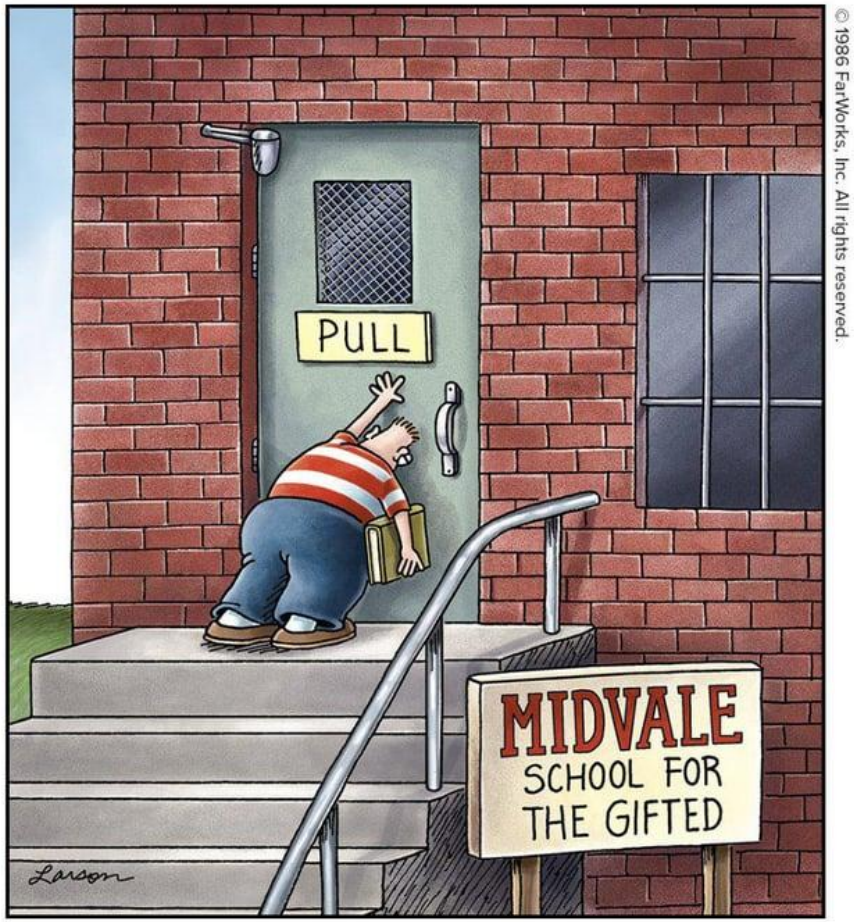
What is Human-Computer Interaction?

"Human-computer interaction (HCI) is a multidisciplinary field of study focusing on the design of computer technology and, in particular, the interaction between humans (the users) and computers." **- Interaction Design Foundation (n.d.).**

Interaction Design Foundation (n.d.). *Human-Computer Interaction (HCI).* Retrieved from https://www.interaction-design.org/literature/topics/human-computer-interaction

“Is a system only successful if it's usable? What if it’s usable—but no one wants to use it?"

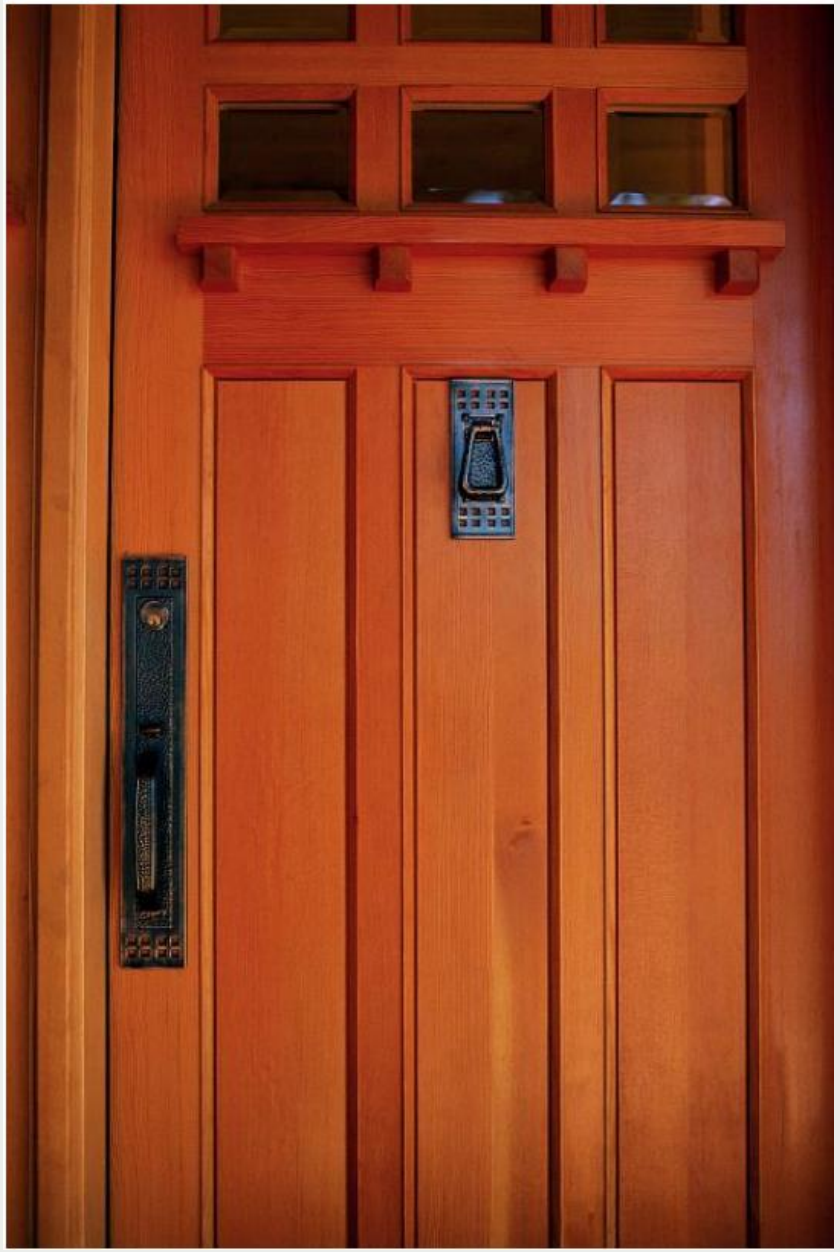
DOOR QUIZ



Door Quiz

Say it loud, what action do you use to open the door

- Push
- Pull



Door Quiz

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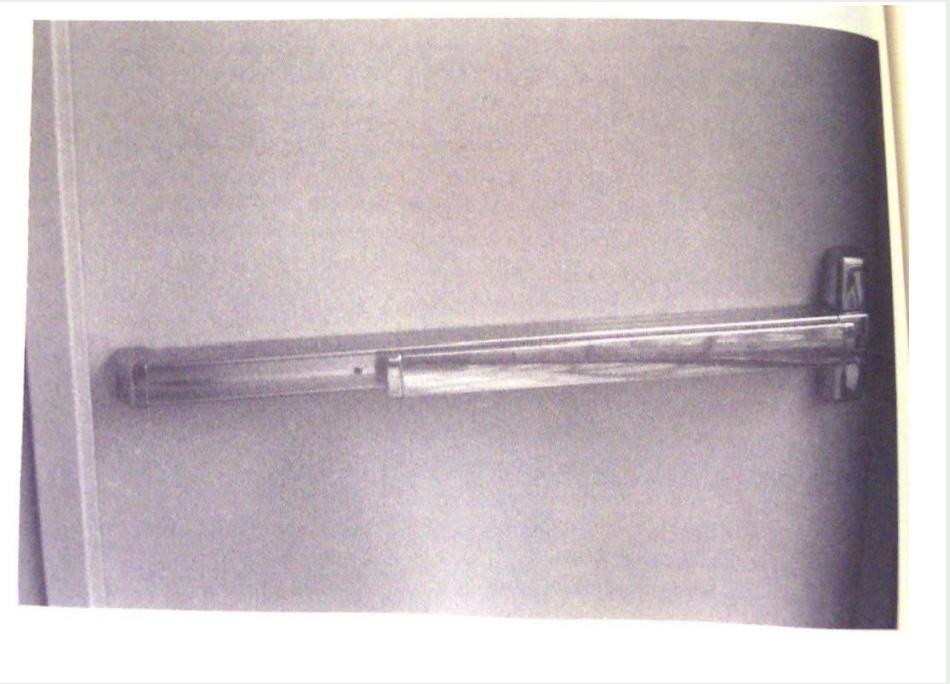

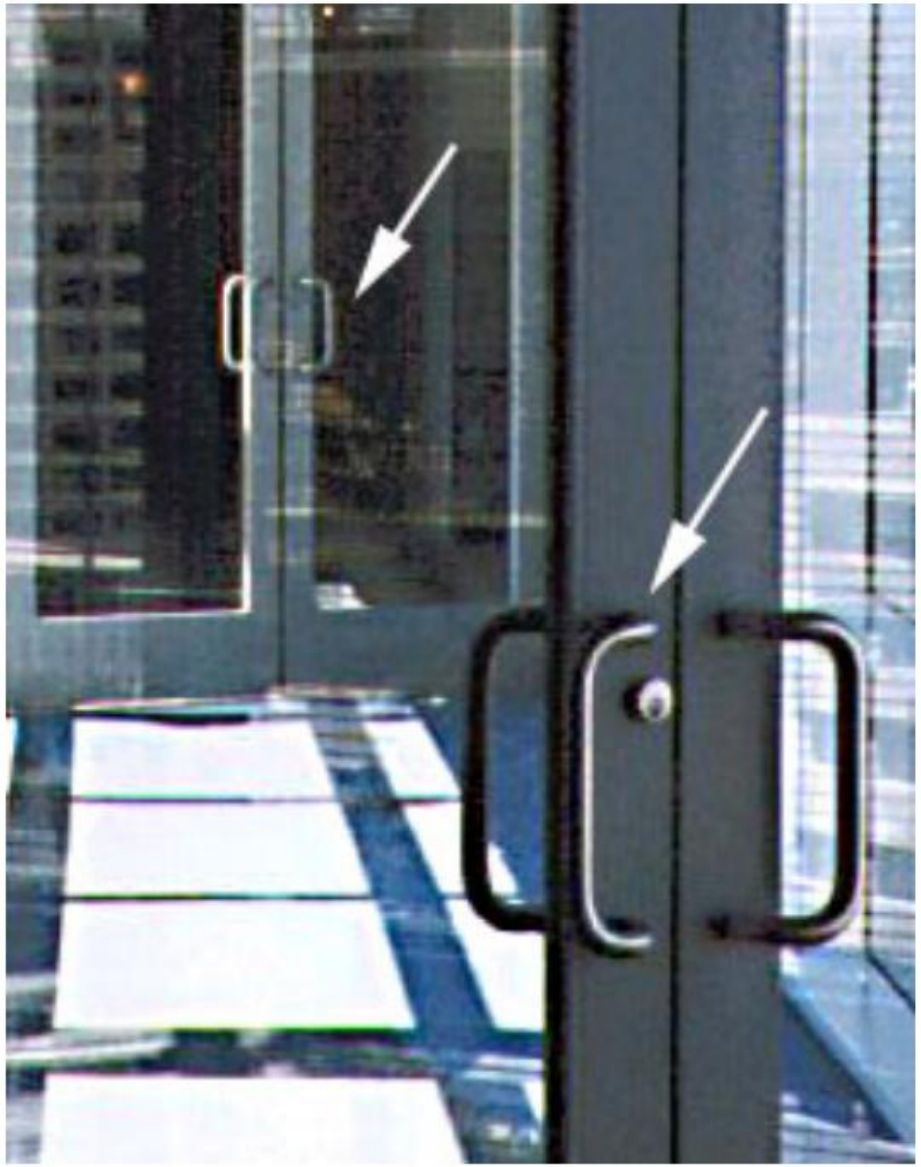

Door Quiz

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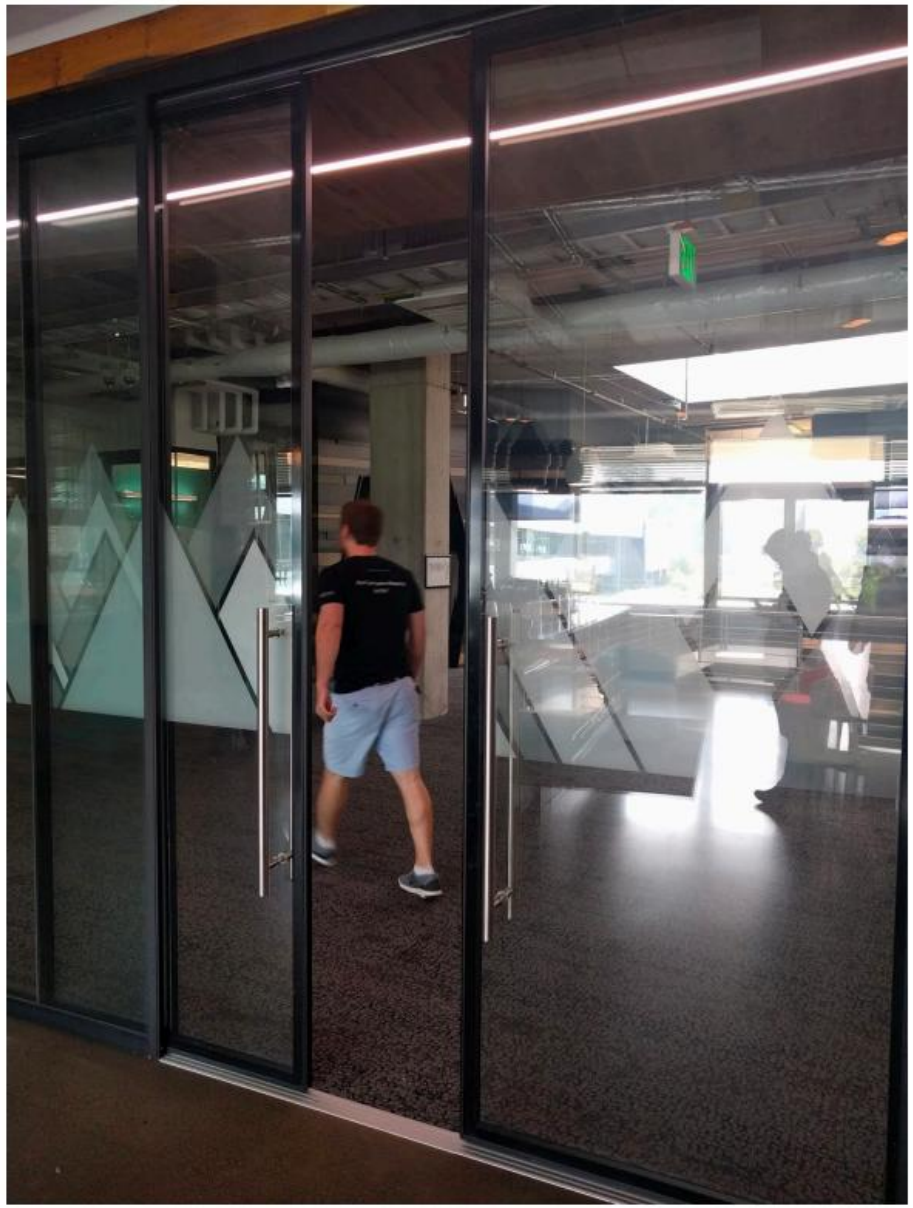
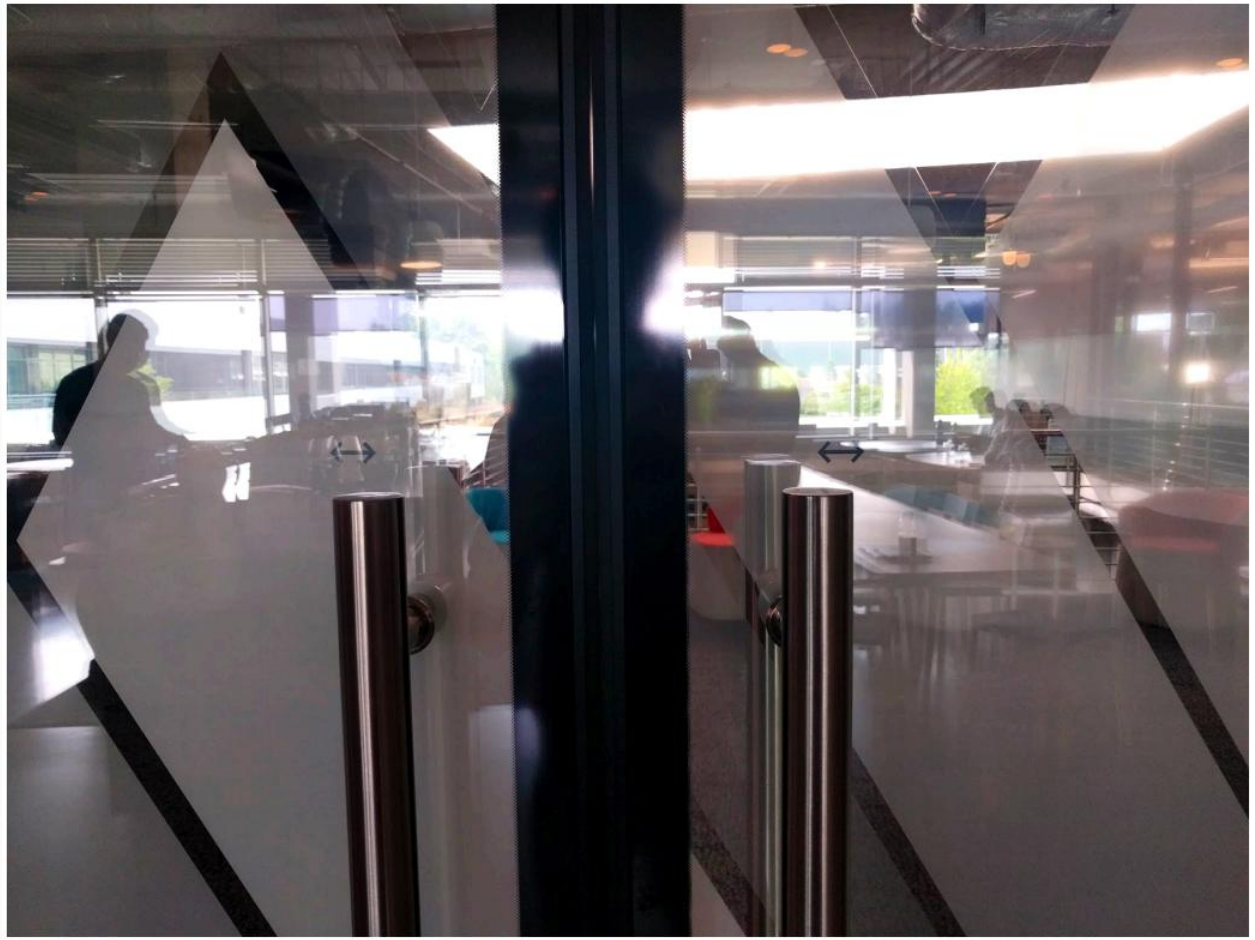
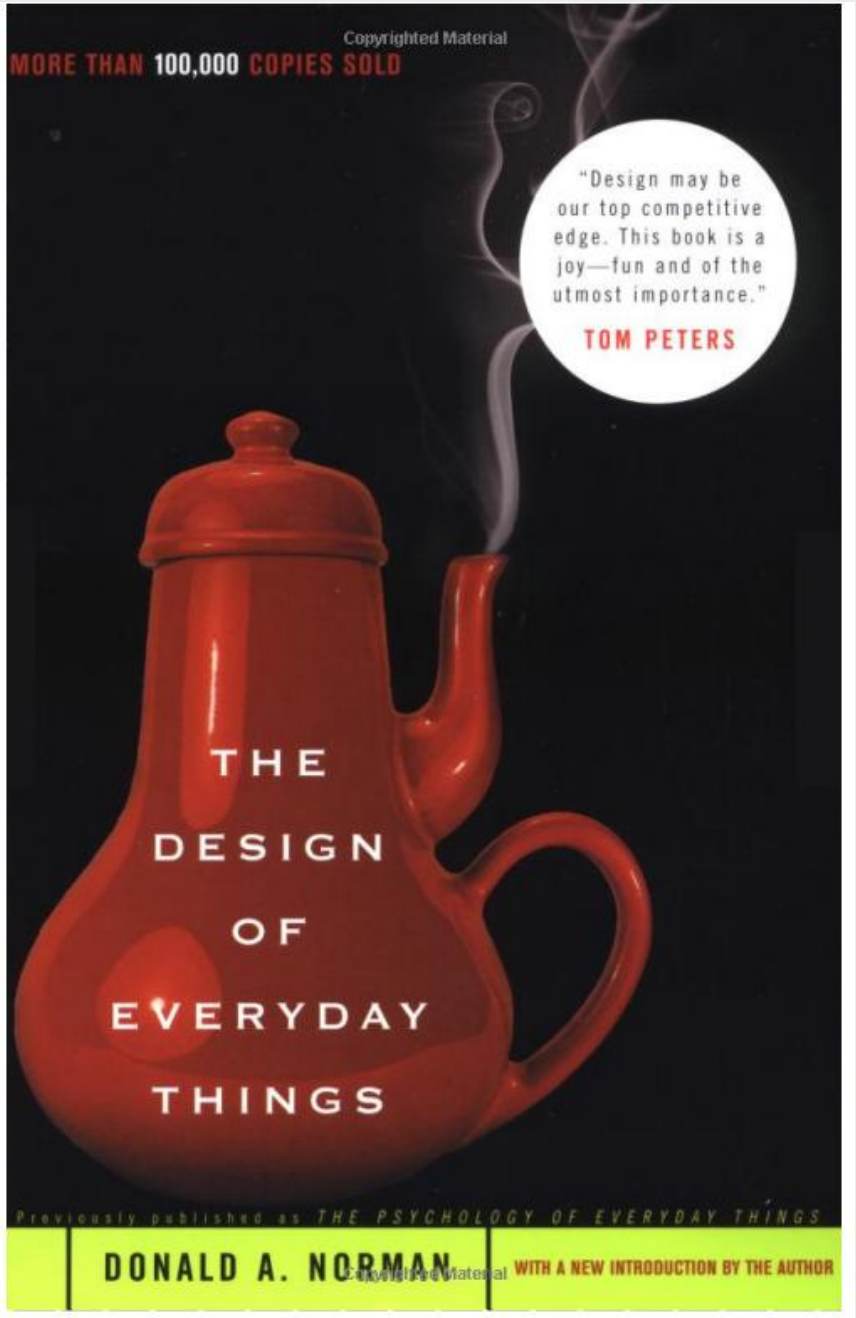


Door Quiz



Signs don’t Help



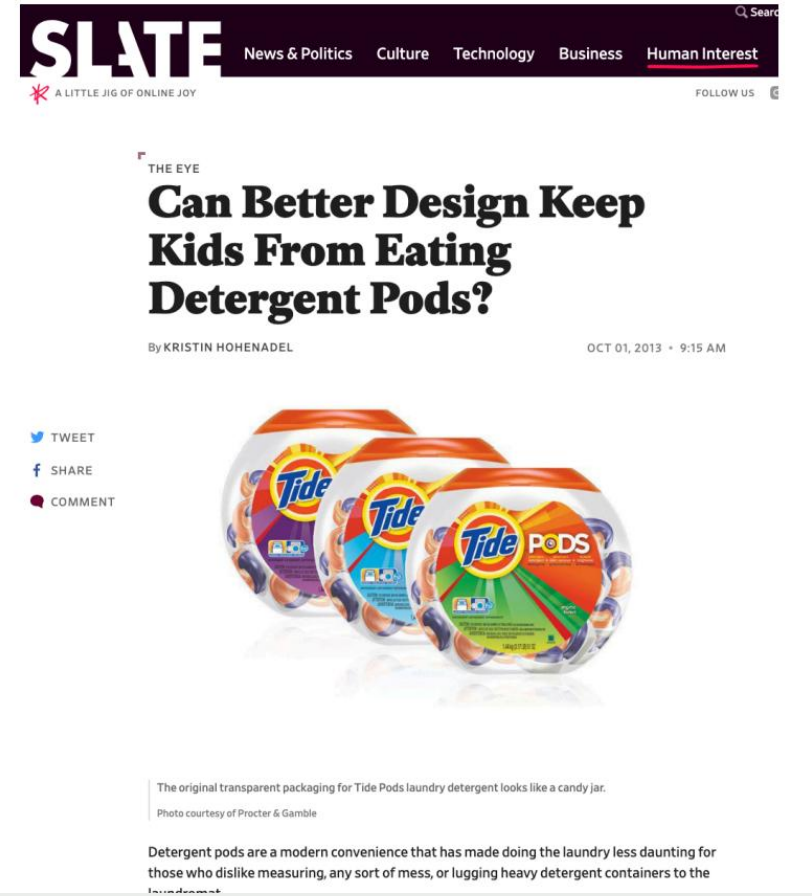
What is Special about Computers?

- 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

Think and Share Activity

Something poorly designed in the real world (try to avoid software, if possible)

Poor Design can have Serious Impacts



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A LITTLE JIG OF ONLINE JOY

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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

https://asn.flightsafety.org/asndb/325614

"Good Design" Means

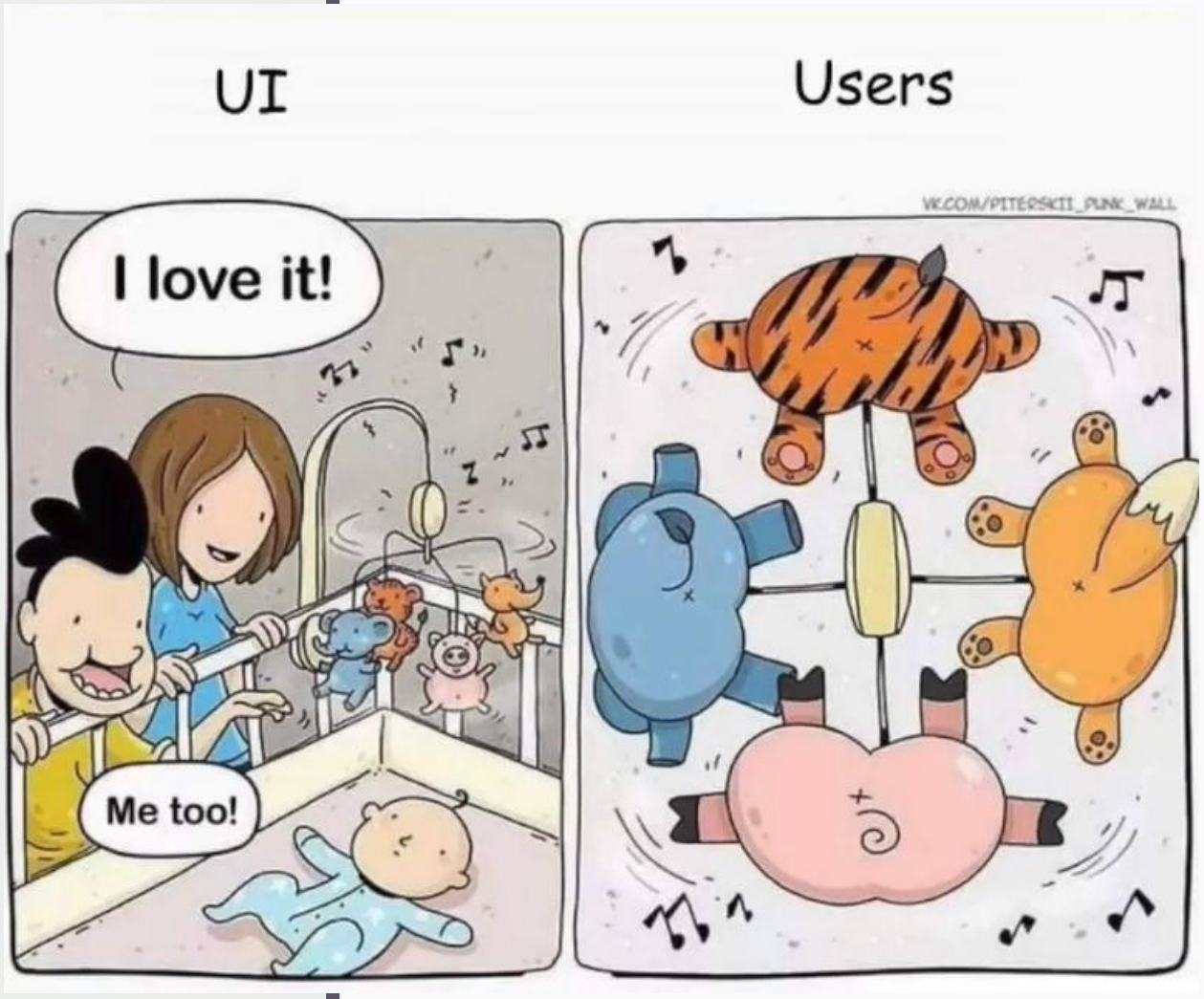
- Systems are built for humans; must be designed for the user
- Recognize individual differences; appreciate design implications of these human factors
- Recognize the design of things, procedures, etc., influences human behavior and well-being
- Emphasize empirical data & evaluation
- Rely on the scientific method
- Things, procedures, environments, and people do not exist in isolation

Good Design Is Not…

- ☹ **NOT just applying checklists and guidelines**
  - These can help, but UCD is a whole philosophy
- ☹ **NOT using oneself as the model user**
  - Know your real users; recognize variation in humans
- ☹ **NOT just common sense**
  - Knowing how to design a fire alarm so it will be heard over background noise is not something we all know
  - The HF specialist knows where or how to get the information needed to answer design questions

And always remember…

… YOU *ARE NOT* THE USER!



HUMAN-CENTERED DESIGN (HCD)

Human-Centered Design (HCD)

- Approach to design usable systems via direct user engagement

Principles

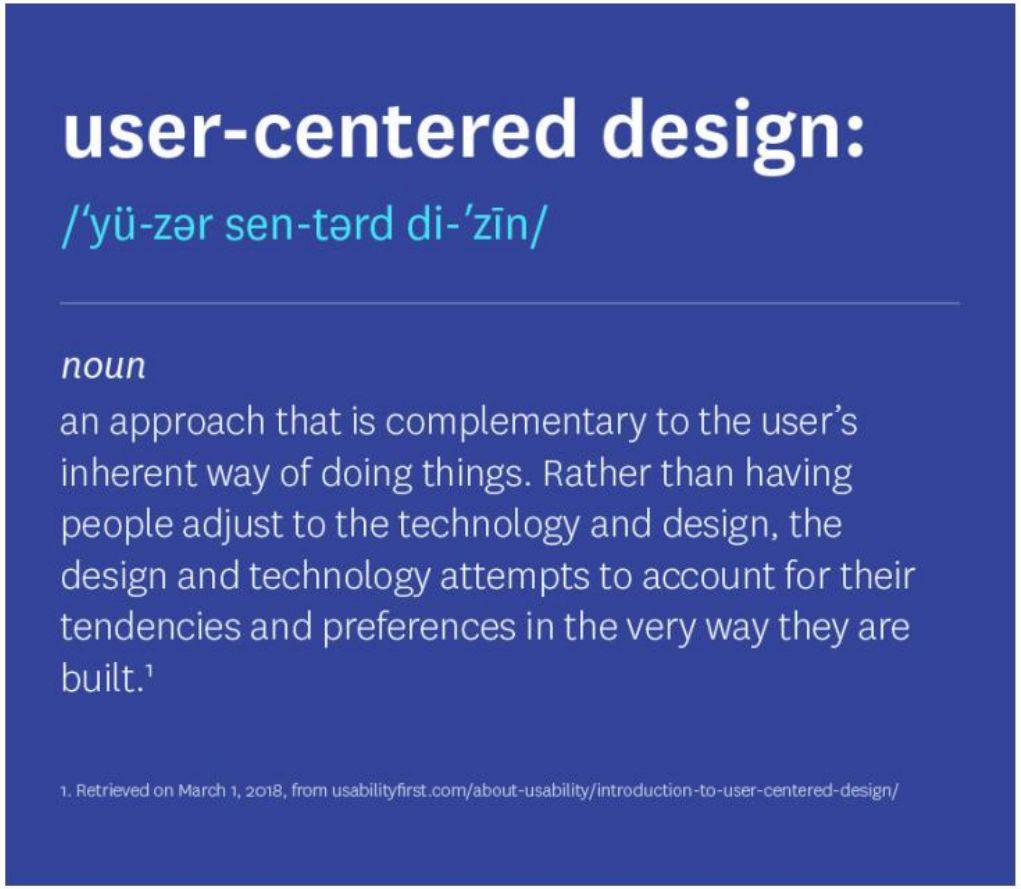
1. Holistic: grounded in needs & context to address the whole user experience
2. Participatory: users engaged throughout
3. Formative: not “solution jumping”
4. Iterative: driven and refined in multiple stages
5. Multidisciplinary: design team includes multiple perspectives

- Applied broadly in information & computer science

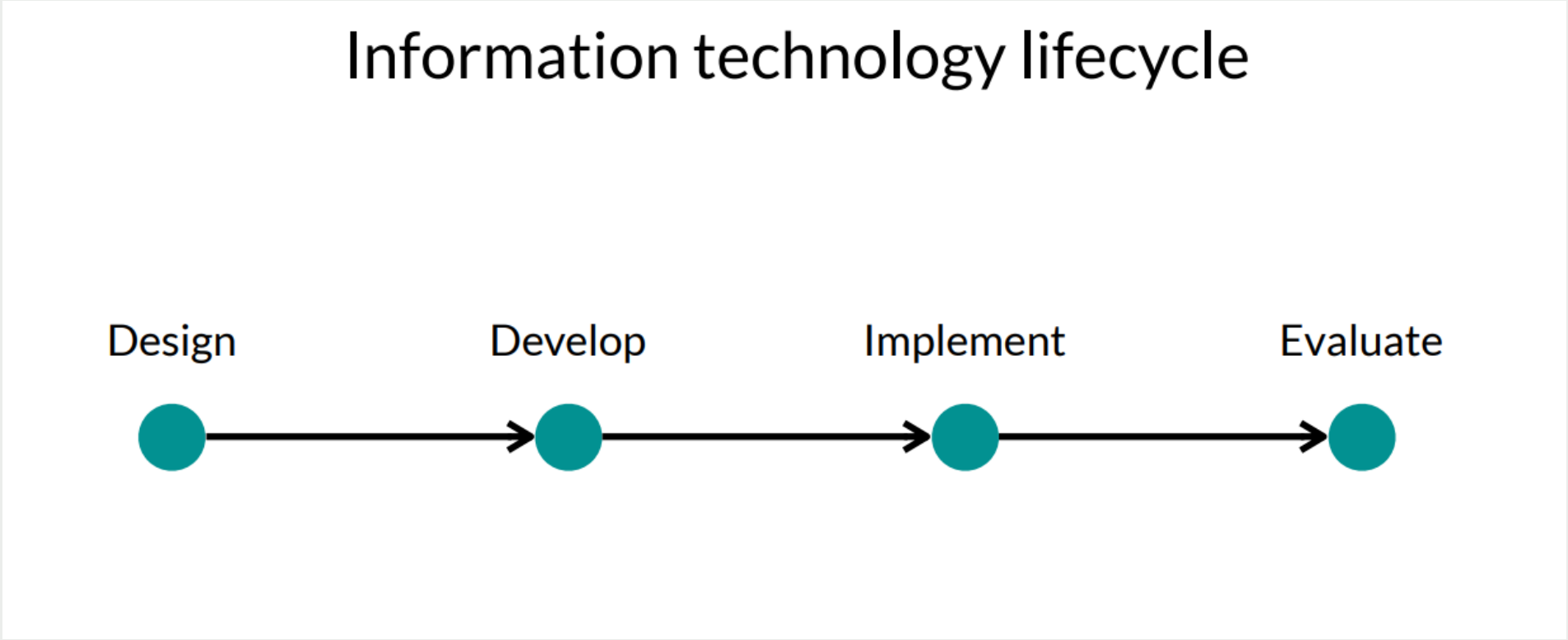
Why HCD is Important?

- 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

Human-Centered vs User-Centered



Applying HCD



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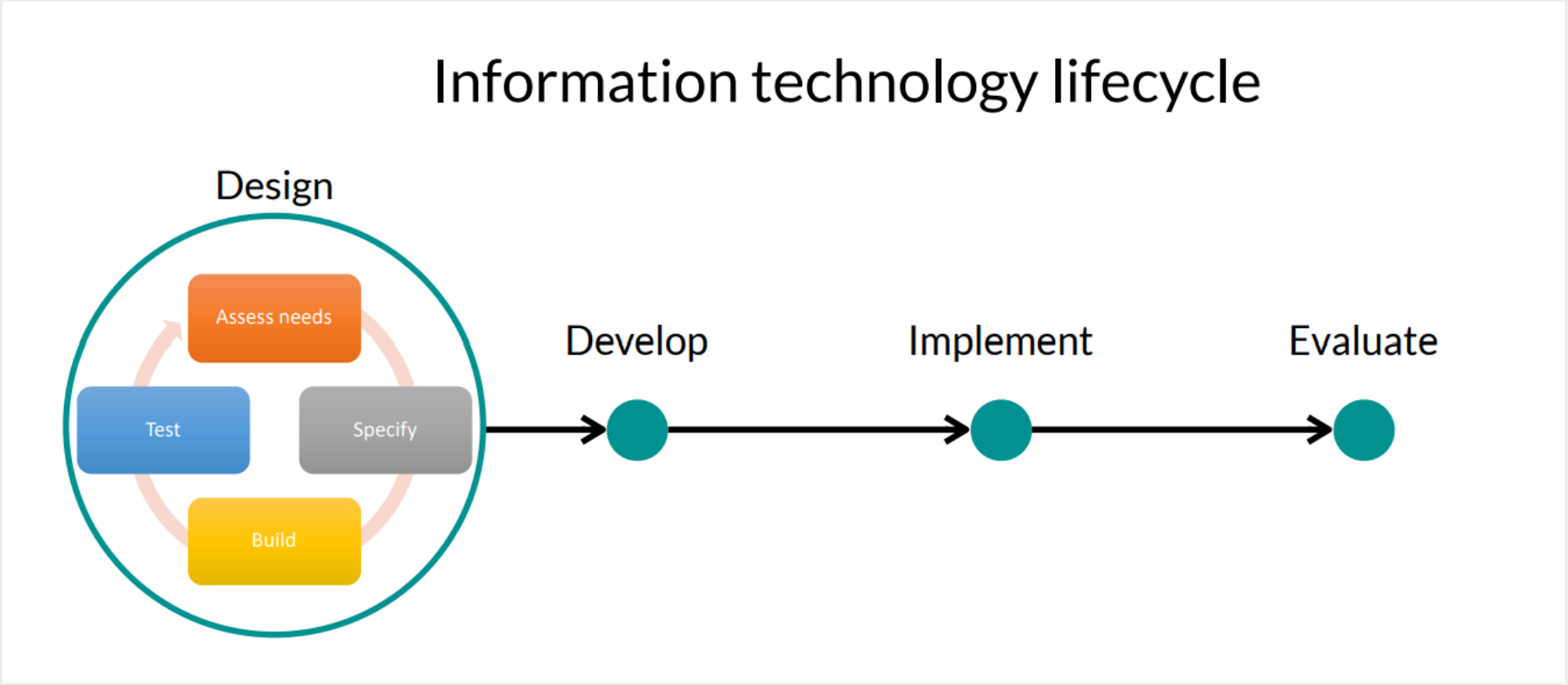

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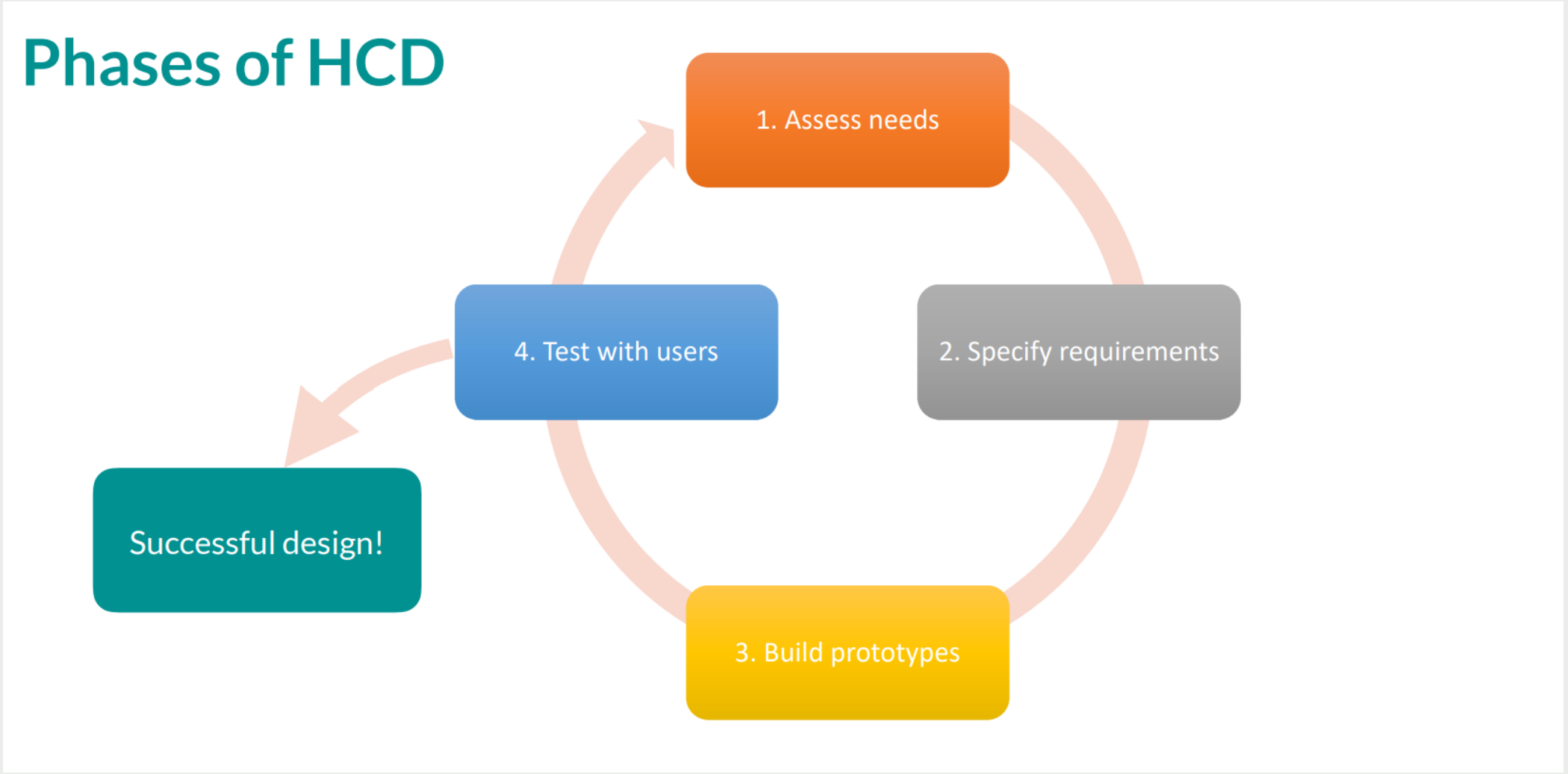

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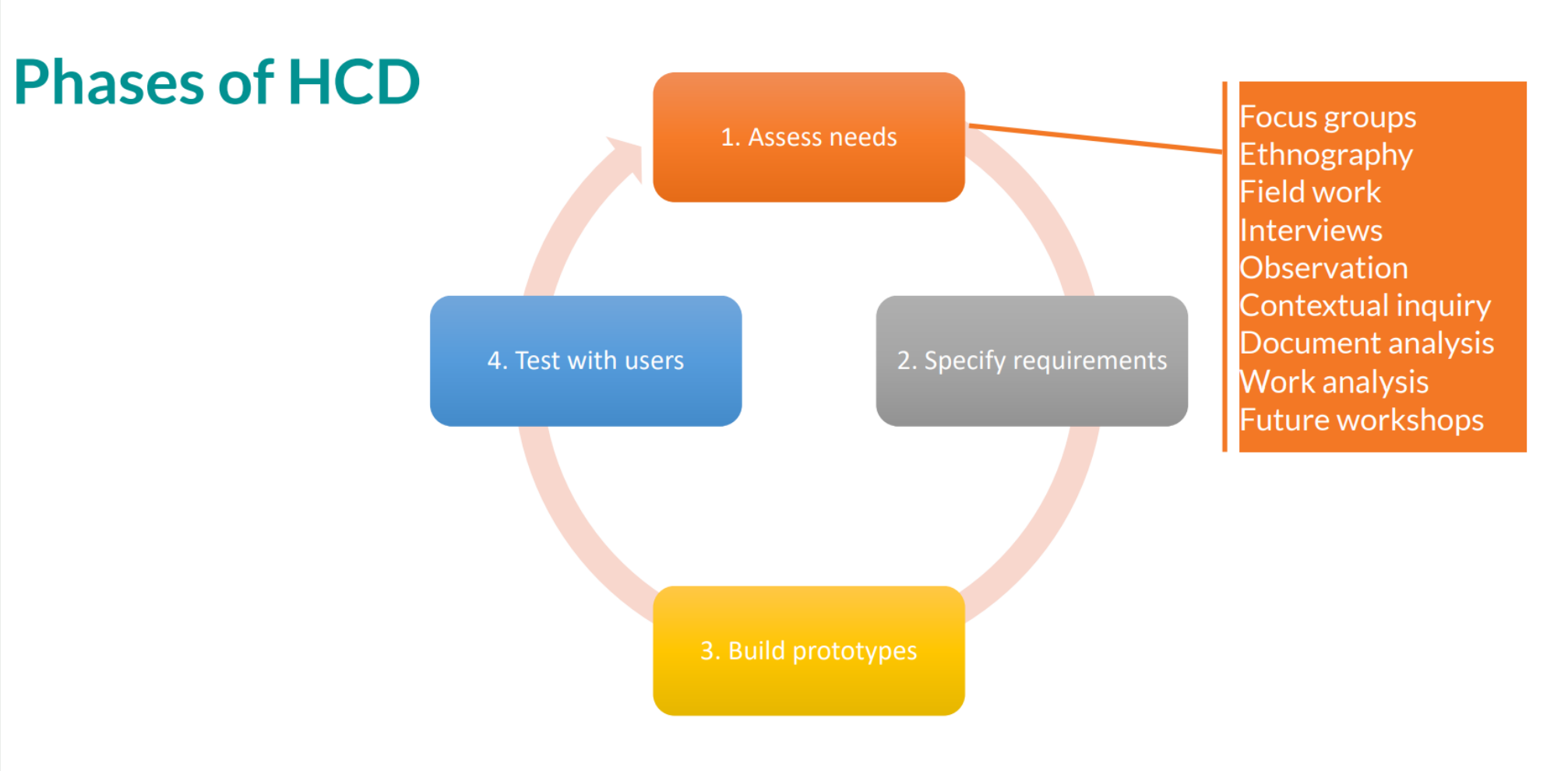

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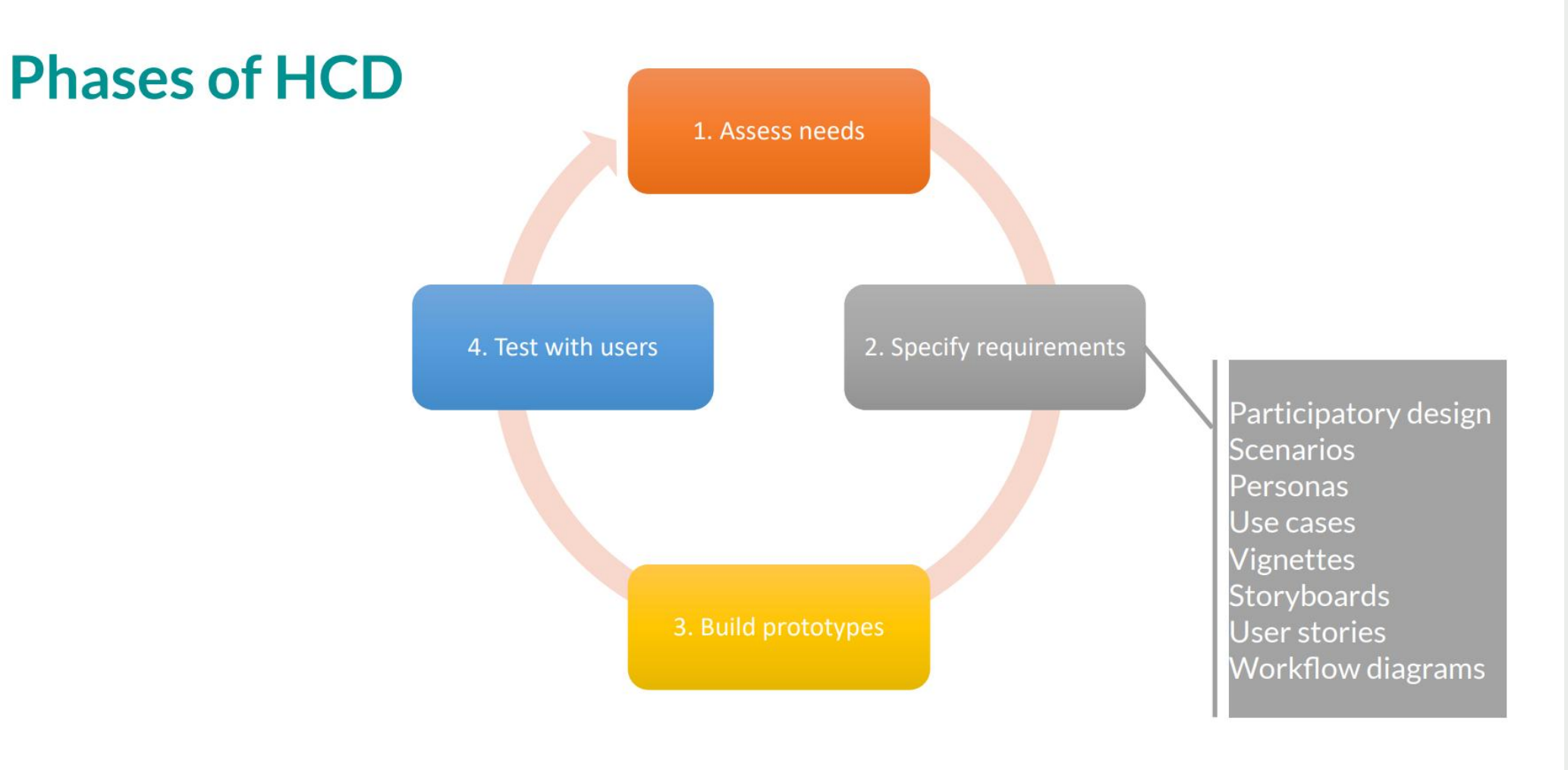

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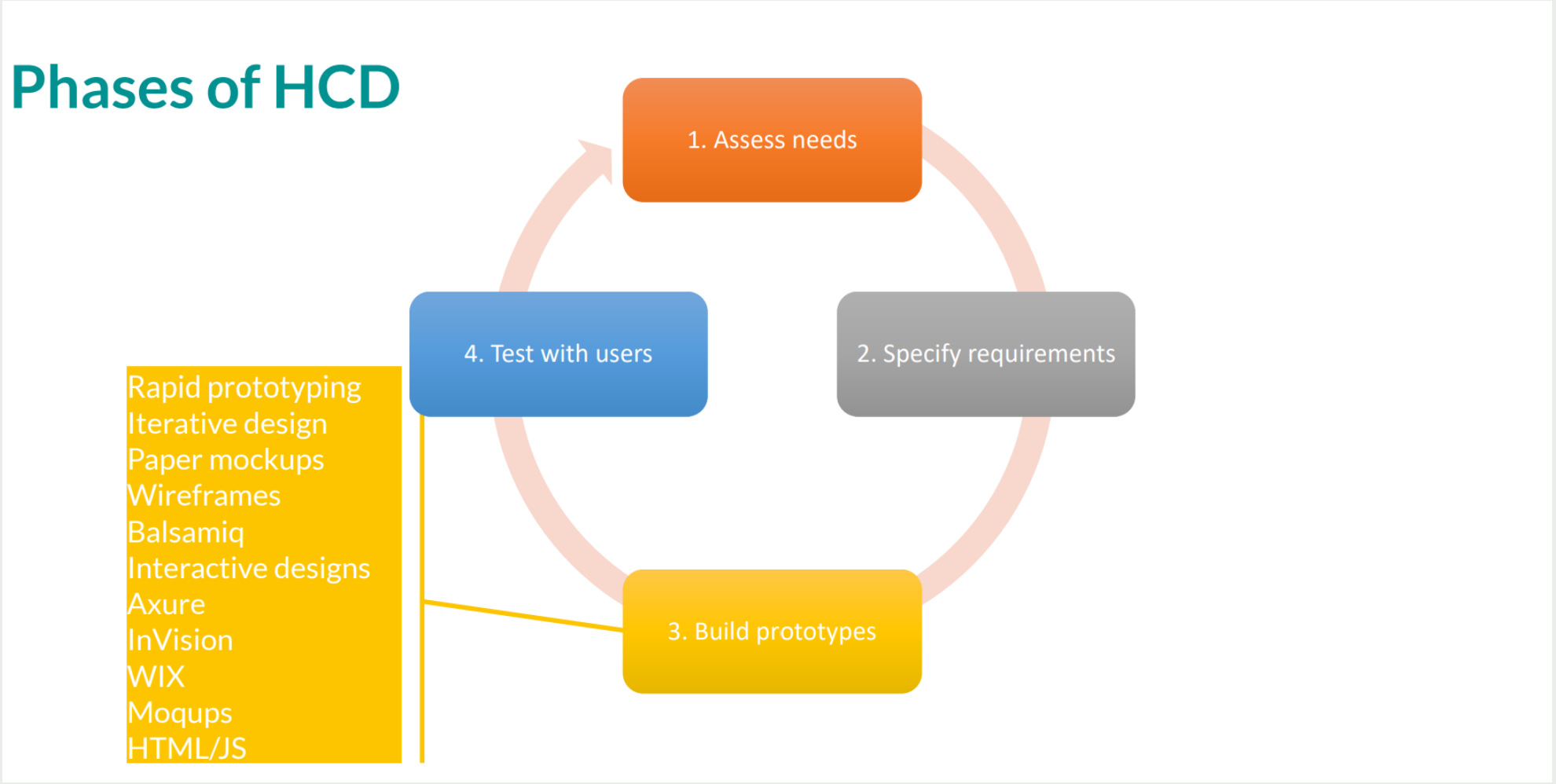

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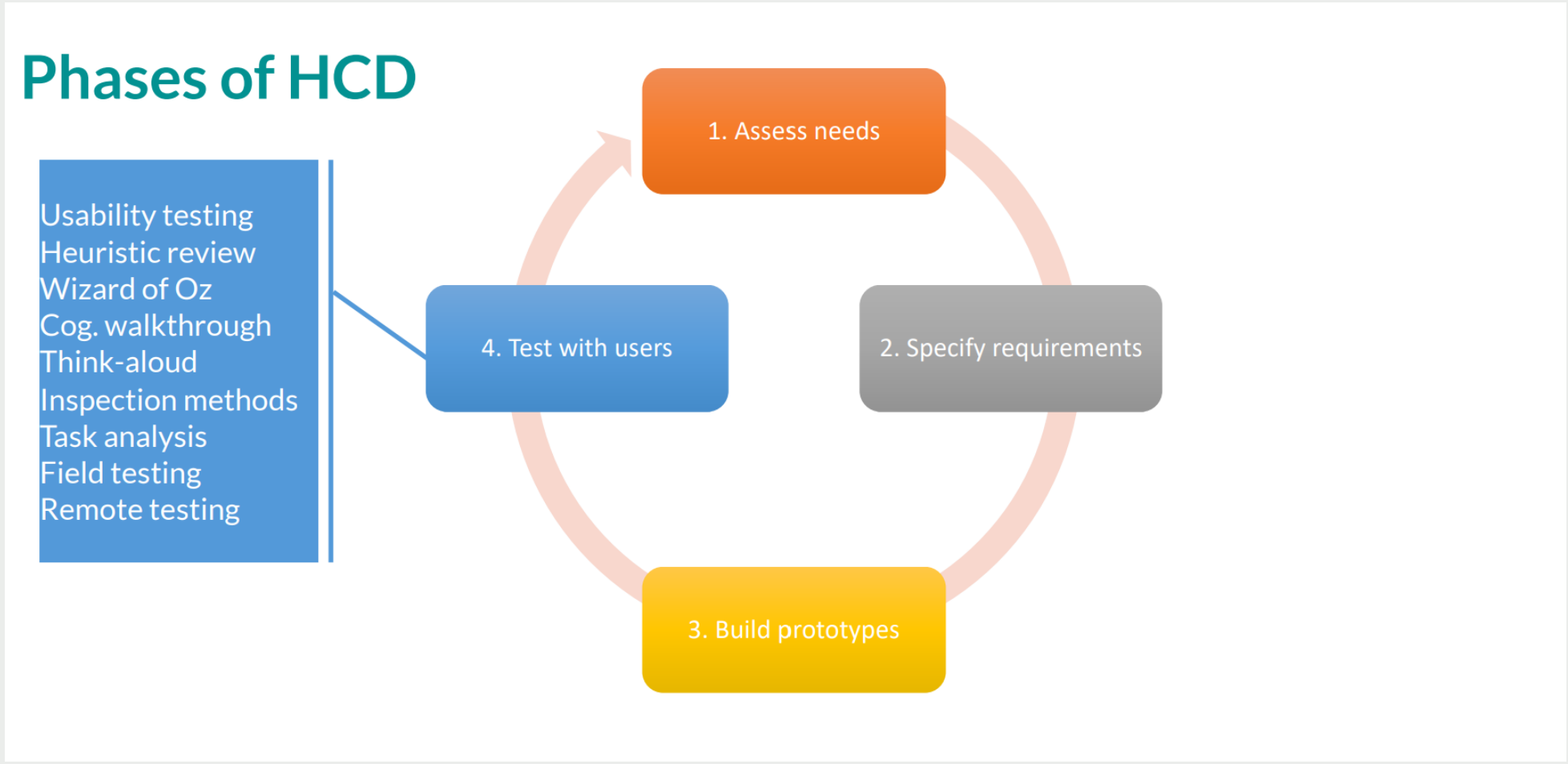

Today’s Goal

- Explain HCD and its phases at a very high level
- Structure of the course, tasks, and expectations

Course Overview

About me

Project Description

Readings, class, and discussion

About Me

HCI researcher working with community who face marginalization in terms of age (older adults), gender (women), and religion (Muslim)

About Yourself

- Introduction !!!! A tag defining yourself
- Name
- Student Id
- Some professional interest (e.g., research interest)
- Some personal interest (e.g., hobbies, fun facts)
- Expectations from this course
- Expectations/supports envisioned from me as a faculty member
- Link: https://bit.ly/introduction-hci

How We Stay in Touch

- Via WhatsApp group???????

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

- As it might be difficult to pull through a rigorous version of the project within the short course duration, we would be aiming for the “lite” version of each steps
    - Formative: conduct a few interviews (<10)
    - Design: support 3 tasks for the low-fidelity
    - Evaluate: evaluate with a few people (<8)

- Poster Session at the end of the semester
- Final Report at the end of semester

Reading

- 1-2 per class
- To be read before the class
- We would discuss and practice them in the class
- Link: https://bit.ly/courseplan-4451

Marks distribution

- Group project (80%)
    - 10% Project proposal
    - 15% Report on formative component
    - 15% Report on design component
    - 15% Report on evaluative component
    - 10% Final poster
    - 15% Final report
- Reading queries (10%)
- Participation (10%)

Themes for the Project

(GEN) Artificial Intelligence and Society