Introduction to HCI
Fall 2021

Course Overview

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Instructor

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- Office hours: Tuesdays 4:00 to 5:00 PM EST @ LGRT, T220
  - Zoom link - https://umass-amherst.zoom.us/my/mjasim
- Background:
  - Human-Computer Interaction, Citizensourcing, Digital Civics, Information Visualization, Social Computing.

TAs

Mahsa Sahebdel Alamdari
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Office hours: 12:30 to 1:30 PM EST on Tuesdays @ LGRT, T220

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Email: mrashik@umass.edu
Office hours: 12:00 to 1:00 PM EST on Thursdays @ LGRT, T220

Course overview

- The role of design for crafting appropriate systems that truly meet people's needs, abilities, and expectations.

- This course covers the theories and concepts important for all professionals and researchers that design interactive technology for human use.

Topics covered

- Human-centered design
- Design methodologies
- Field studies
- Design requirements
- Prototyping
- Evaluation methodologies (quantitative and qualitative)

Learning goals for today

- Be familiar with the course components and logistics
- Understand the course expectations in general
- Understand the basic principles and stages of a human centered approach to design

Course components

- Lectures and in-class activities
- Individual assignments
- Midterm
- Group project
  - 3 milestones
    - Presentation
    - Report
  - Final
    - Demo
    - Report

Course logistics

- Lectures are posted online in the course website
  - https://people.cs.umass.edu/~mjasim/teaching/umasscicsintrotohcifall2021.html
- Resources: optional readings and lecture slides

Course communication

- Discussion and general communication:
  - https://piazza.com/umass/fall2021/compsci325
- Instructor
  - confidential (email)
- TAs
  - Assignment / project / course related questions

Grading scheme

Component	Weight	Type
Assignments (4)	20%	Individual
Midterm Exam	20%	Individual
Milestones (3, Presentation + Report)	30%	Group
Final Project (Demo + Final Report)	20%	Group
Project peer review	5%	Individual
Participation (In-class + Piazza)	5%	Individual

Project

- Be in 7-8 member teams
- Made up of 3 milestones

- Given a design brief:
  - Investigate status quo, come up with several possible solutions, and systematically choose the best
  - Iteratively prototype your solution, gradually increasing its detail and polish
  - Evaluate your solution

Class rules

INTERACT

Class rules

- Ask questions and answer questions
  - Even if there are no definite answers
  - Have an opinion

- Be respectful of others' opinions
  - Critique the design, not the designer
  - Be objective and thorough
  - Always provide support for your claims

Class rule

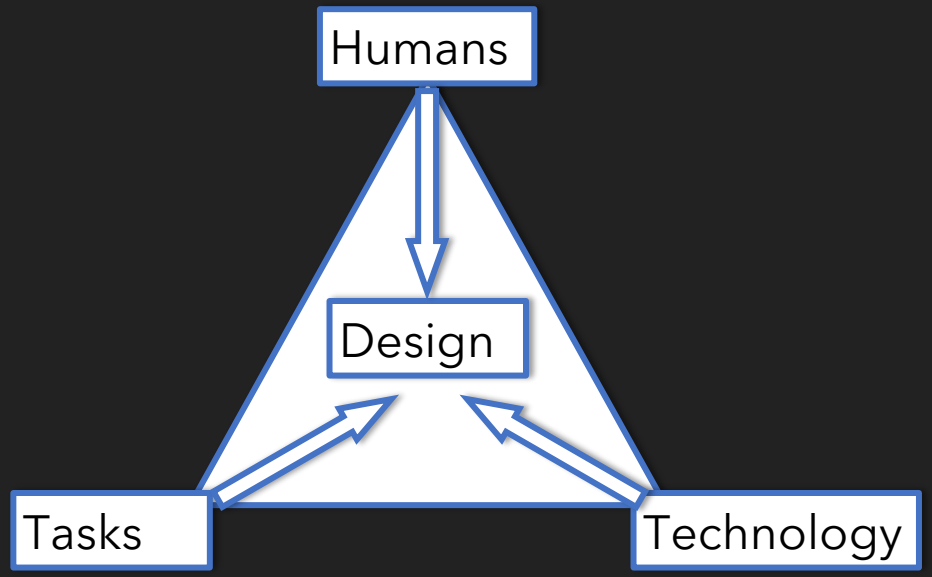
FACE MASKS ARE
REQUIRED
All individuals are required to wear face coverings in all indoor public places and in outdoor locations where social distancing is not possible
1
MASK UP
2
FEEL FREE TO WEAR A SMILE TOO
IT'S HARD, BUT IT HELPS.
UMassAmherst

What is HCI?

A discipline that applies Human-Centered Design methods to the design of interactive technologies to support human users.

Attitude of user-centered design

Incorporate users into the design process



Human

- Individuals – John doe, Justin Trudeau
- Groups – teachers, CS325 students, older adults, hockey players
- Organizations – UMass, American Association of Candy Technologists

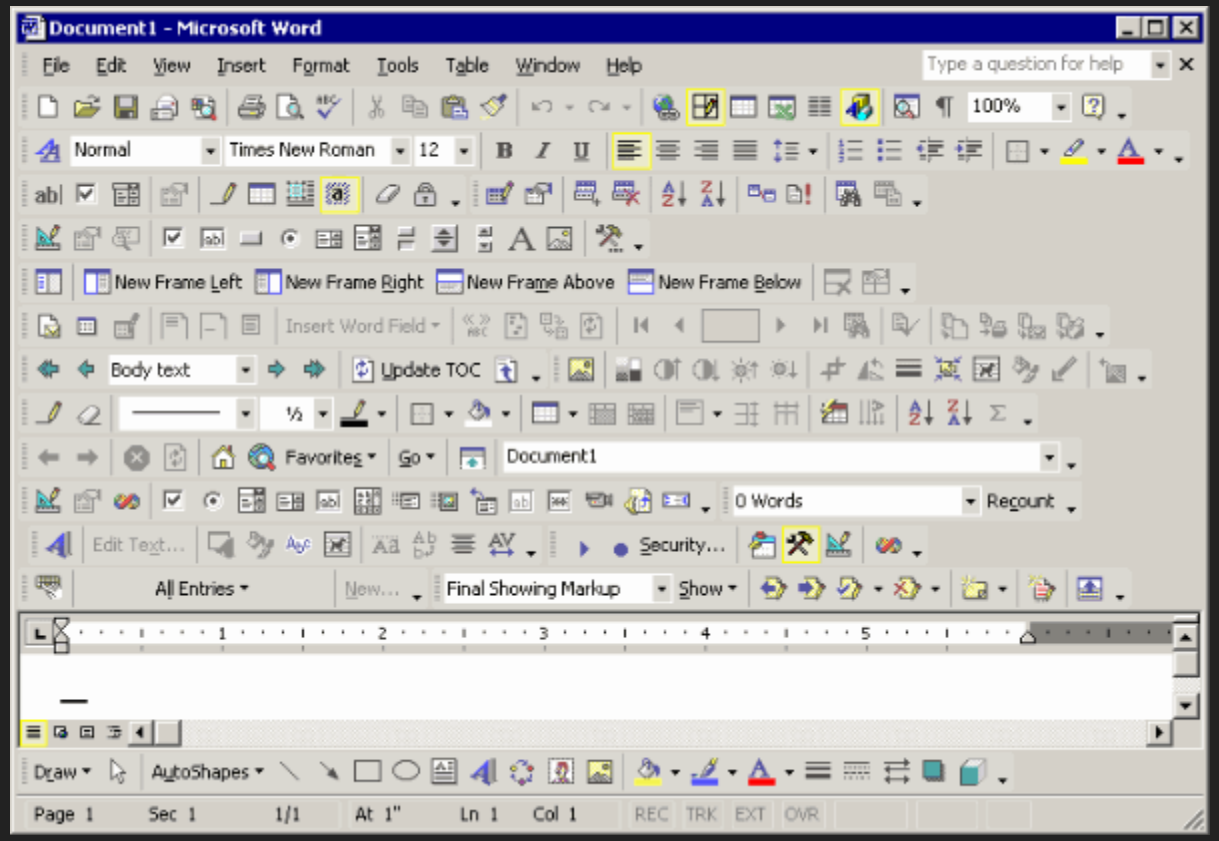
Computer

- Monitor & keyboard
- Smartphone
- Your car
- The fridge
- Your dog’s collar
- Wearables
- Workstation
- Spacecraft cockpit
- Microwave
- Smart thermostat

Interaction

- Pull out sofa
- Open the refrigerator door
- Snooze the alarm
- Control volume
- Ask Alexa to set a timer

Why bother learning HCI?



https://uxplanet.org/design-principles-kiss-the-feature-creep-7eb84b09603f

Why bother learning HCI?

https://www.outofsightdesigns.com/norman-doors/

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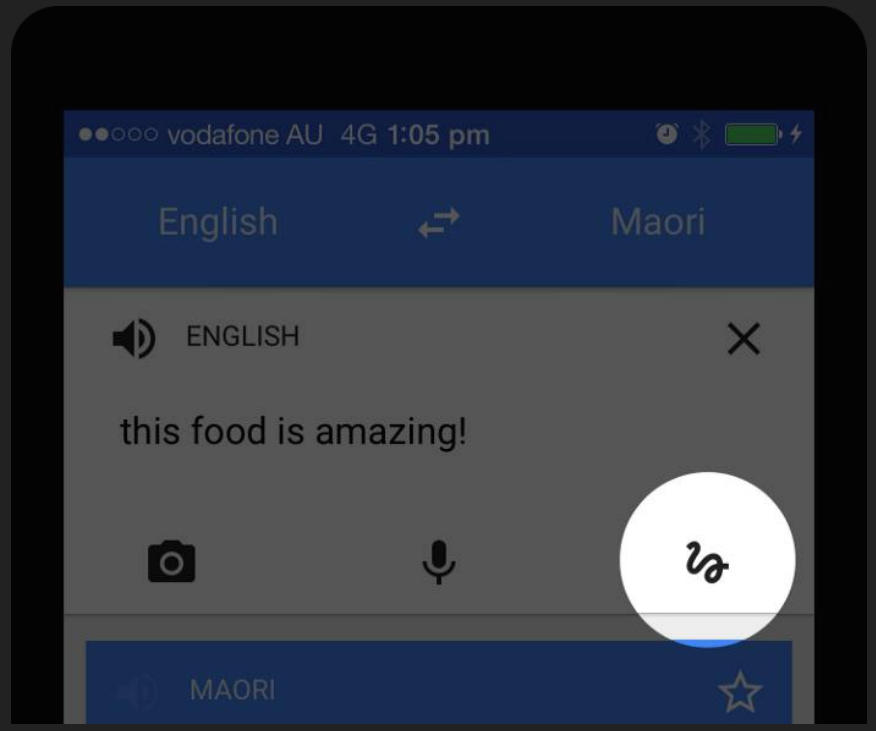

https://medium.com/@kollinz/misused-mobile-ux-patterns-84d2b6930570

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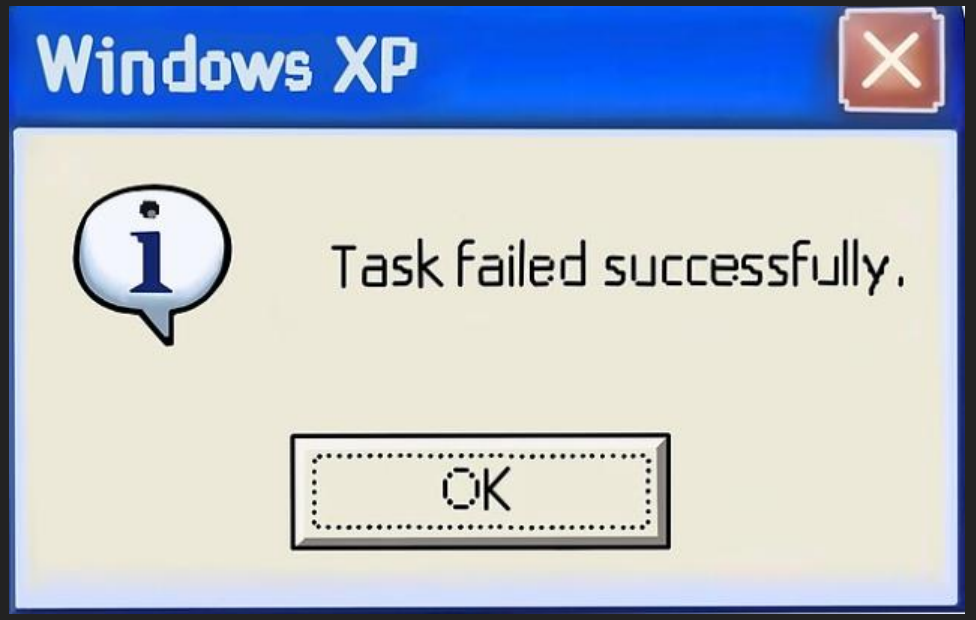

https://medium.com/swlh/the-ten-most-ridiculous-error-messages-in-the-history-of-software-4198d710ea8e

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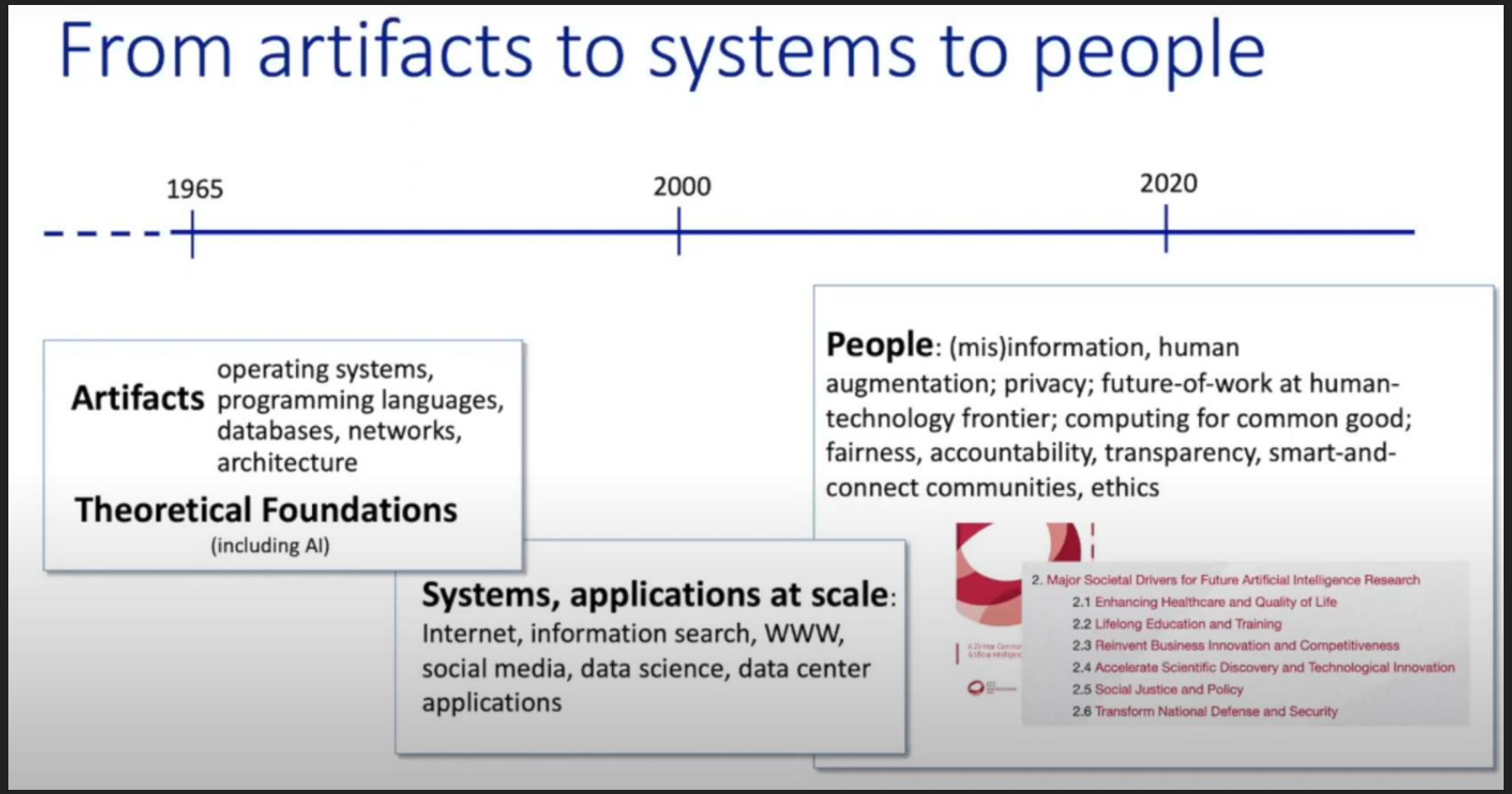


https://www.youtube.com/watch?v=dA60EFuZmS8

Some early landmark: HCI innovations

- Behind the emergence of the personal computer in the mid-80s
  - Mouse [Engelbart, ’65]
  - Spreadsheet [VisiCalc, Frankston & Bricklin, ’77]
  - Desktop metaphor [Xerox Star, ’81]

- What’s the biggest HCI (or tech enabler) in your time?

Applications of HCI

- On the purely machine side:
  - Computer graphics
  - Operating systems
  - Programming languages
  - Development environments
  - Networking
  - Software engineering
- And increasingly…
  - Industrial & product design
  - Digital media processing
  - Robotics
  - Machine Learning

What makes it HCI?

- Where they come together:
  - The joint performance of tasks by humans and machines
  - The structure of communication between human / computer, and human/human mediated by computers
- Design methods:
  - Analysis of interface flaws
  - Specification, design, and implementation of interfaces to support human activity
  - Design trade-offs

Human-centered design (HCD)

- Is a design framework that develops solutions to problems by involving the human perspective in all steps of the problem-solving process. (Wikipedia)

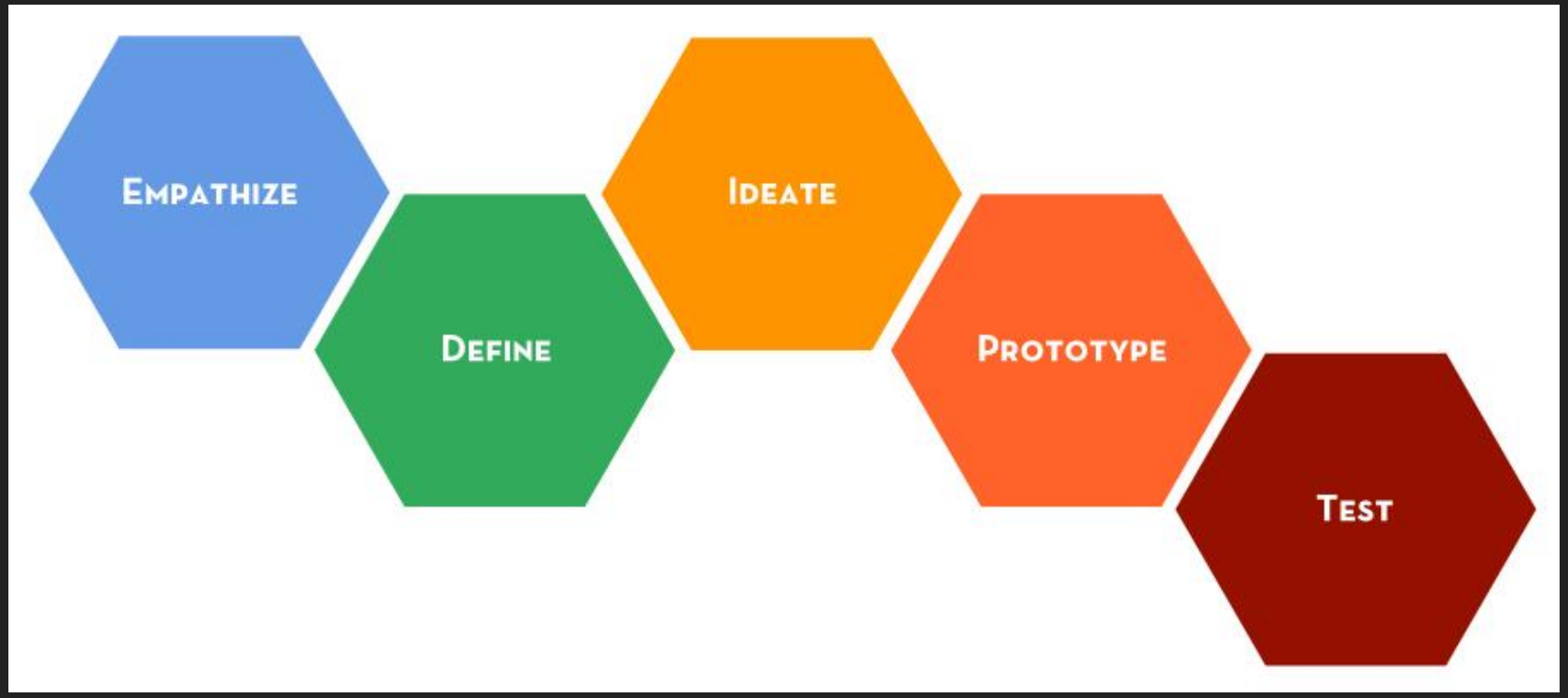
- Is the process of ensuring that people's needs are met, that the resulting product is understandable and usable, that it accomplishes the desired tasks, and that the experience of user is positive and enjoyable. (Norman, The design of everyday things)

Principles of human-centered design

https://www.nngroup.com/videos/principles-human-centered-design-don-norman/

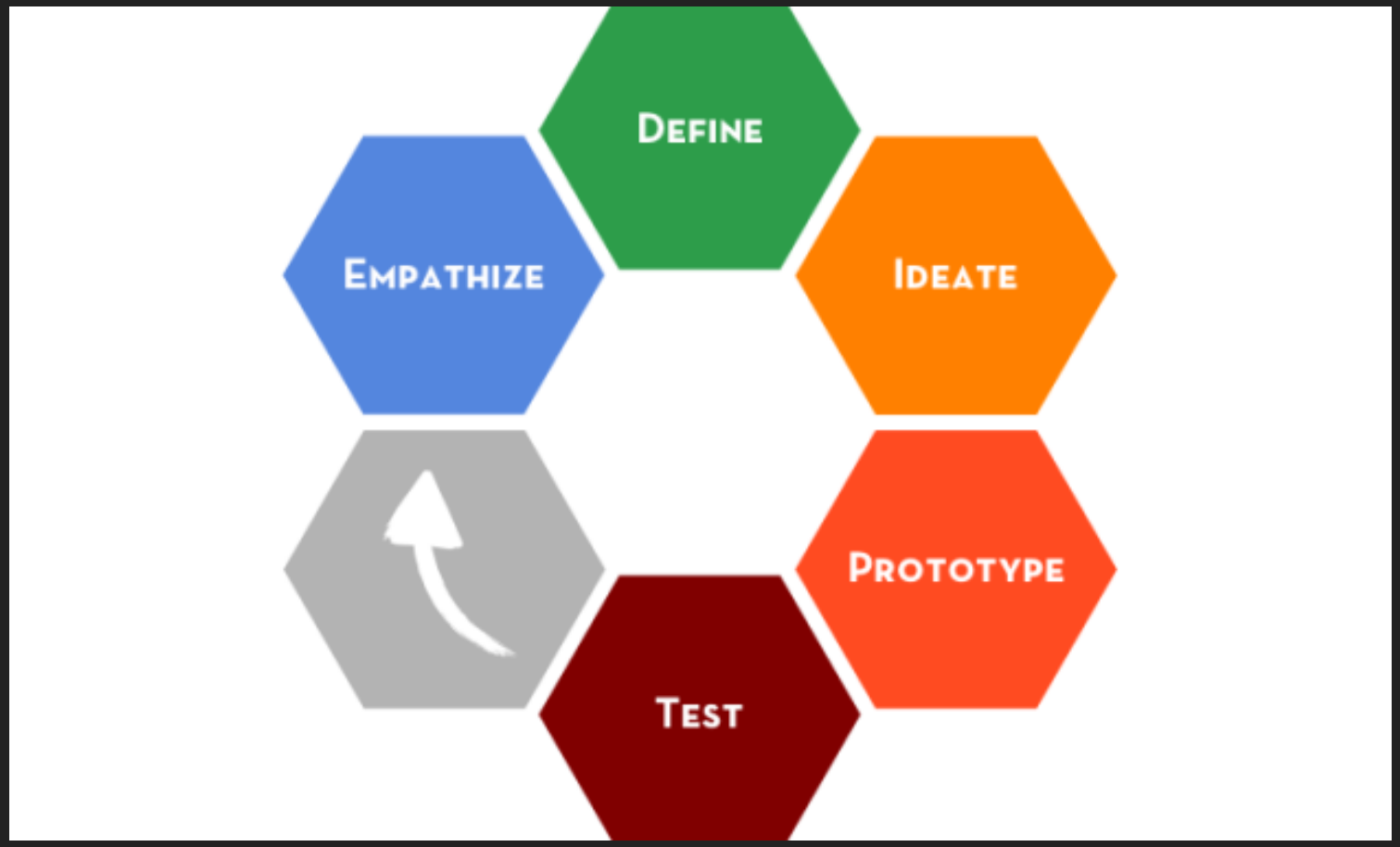
Additional Information

Design thinking



Stanford d.school,

An iterative process



Design Thinking vs. HCD?

- Differences are not clear cut
- Conceptually very similar
- Design Thinking comes from a design tradition and can apply to any design (not specific to interactive technologies)
- HCD comes out of a more technology-centered tradition (first user-centered design)
- Design Thinking has a stronger emphasis on solving the right problem and ideating than HCD
- Can be confusing: Norman calls Design Thinking to be a Human-Centered Design Process

Design Thinking Activity

- Worksheet:
  https://stanford.io/2R4Fs8c

- Link to the video:
  https://video.search.yahoo.com/yhs/search?fr=yhs-Lkry-SF01&hsimp=yhs-SF01&hspart=Lkry&p=Virtual+Crash+Course+Video+d+school+deisgn+thinking#id=0&vid=e07823a223629a87008453d539b31942&action=click

Optional reading

- Chapter 1, Part 1 of The Design of Everyday Things: "The psychopathology of everyday things“
  - https://drive.google.com/file/d/1CbyAiuPwiIPPJG7MIZzHfnkJrq-gyKpN/view?usp=sharing

- Chapter 1 of "Research Methods in Human Computer Interaction“
  - "Research Methods in Human Computer Interaction" is available as an e-book through the library. This links to the entire book and you will be asked to log in using your UMass credentials. Please read Chapter 1, Section 1.1-1.10
  - https://go.oreilly.com/umassamherst/https://learning.oreilly.com/library/view/~/9780128093436/?ar