

# Human Computer Interaction

Taslima Akter

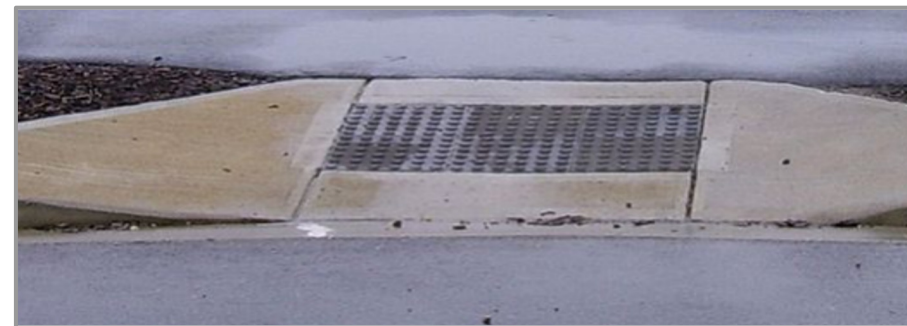
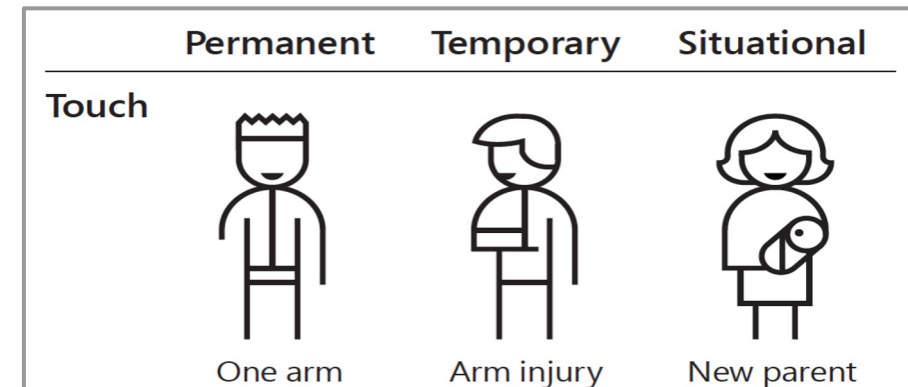
Value Sensitive Design

Materials in this course were compiled from courses taught by: Matt Bietz, Stacy Branham, Daniel Epstein, Tyler Fox, Nigini Oliveira, Katharina Reinecke, Andrew Davidson, Jennifer Turns, Andrea Hartzler, Paul Dorish, Jeroen van den Hoven.

# Housekeeping

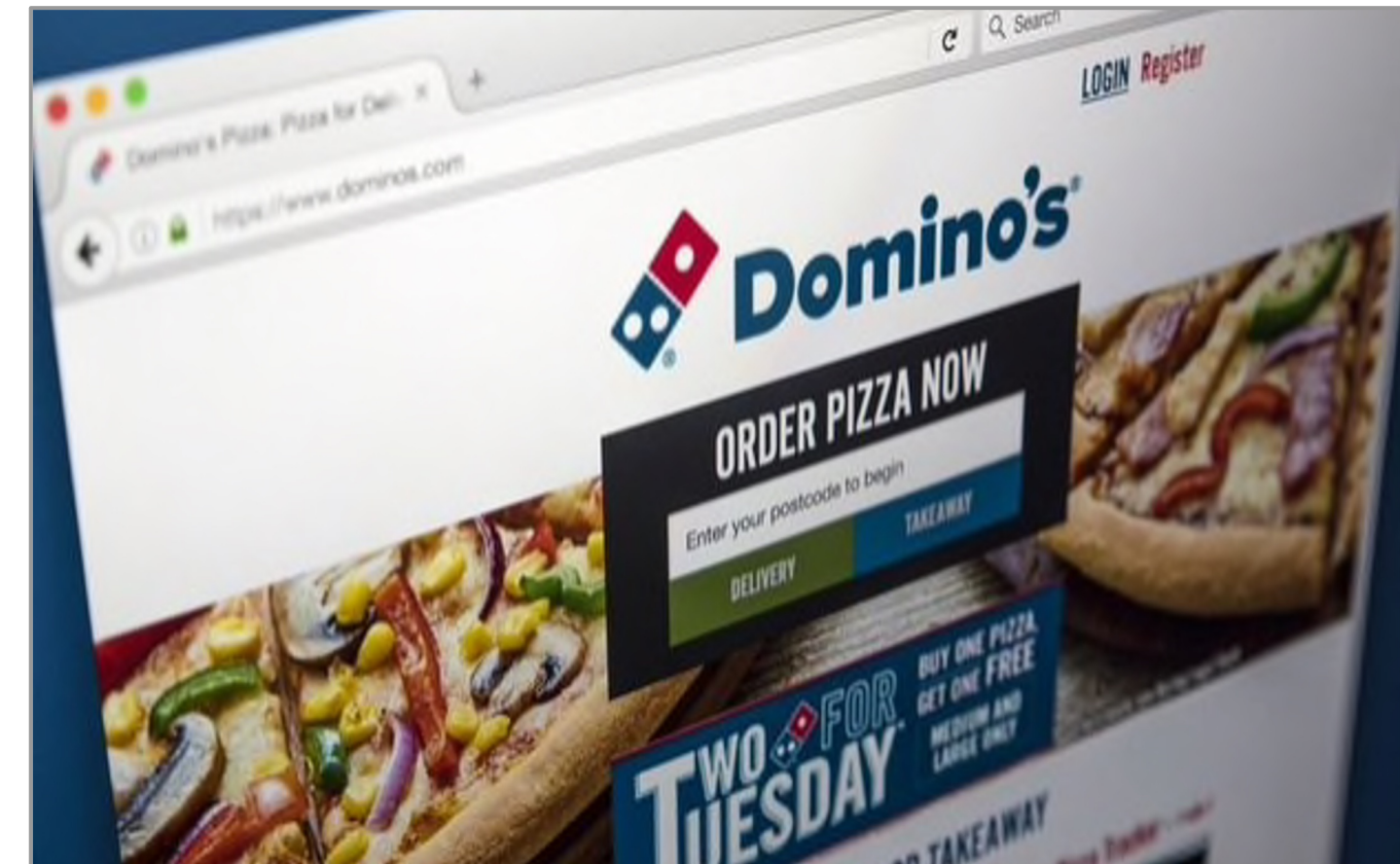
- There will be no in-person classes on **Nov 12 & 14**. Video lectures and activities will be posted on Canvas
- Next week classes will be **in-person**.

# Last Class



Many disabilities are temporary or situational. We all benefit from curb cuts. This is an example of Universal Design.

UX Designers seek “digital curb cuts.”



Reasons to create accessible interfaces: (1) better design, (2) bigger profit, (3) decrease inequality, (4) it's the law!

# Computer First Stage: Technology Only





# Second Stage: Users & Contexts



# IT is More than Technology

Information Technology:

- graduate shift to social contexts, usage and users
- User friendliness, usability, and user acceptance

# Third Stage: IT Should Accommodate Value

In society on-going debate about equality, property, privacy, sustainability, autonomy, and accountability

If appropriate our computer systems should accommodate these values

# Value Sensitive Design



# What is value sensitive design?

*“As Winston Churchill said in 1943, ‘**We shape our buildings, and afterwards our buildings shape us.**’ We think the same is true...for any tool or technology.”*

**Value sensitive design** = a framework for systematically considering human values in the design of technology

Design approach that keeps human values at the forefront of the design process

# What Values?

**“what a person or a group of people consider  
important in life”**

e.g. privacy, ownership and property, physical welfare, freedom from bias, universal usability, autonomy, informed consent, trust or nice manners, art, morning tea, friendship etc.



# Langdon Winner

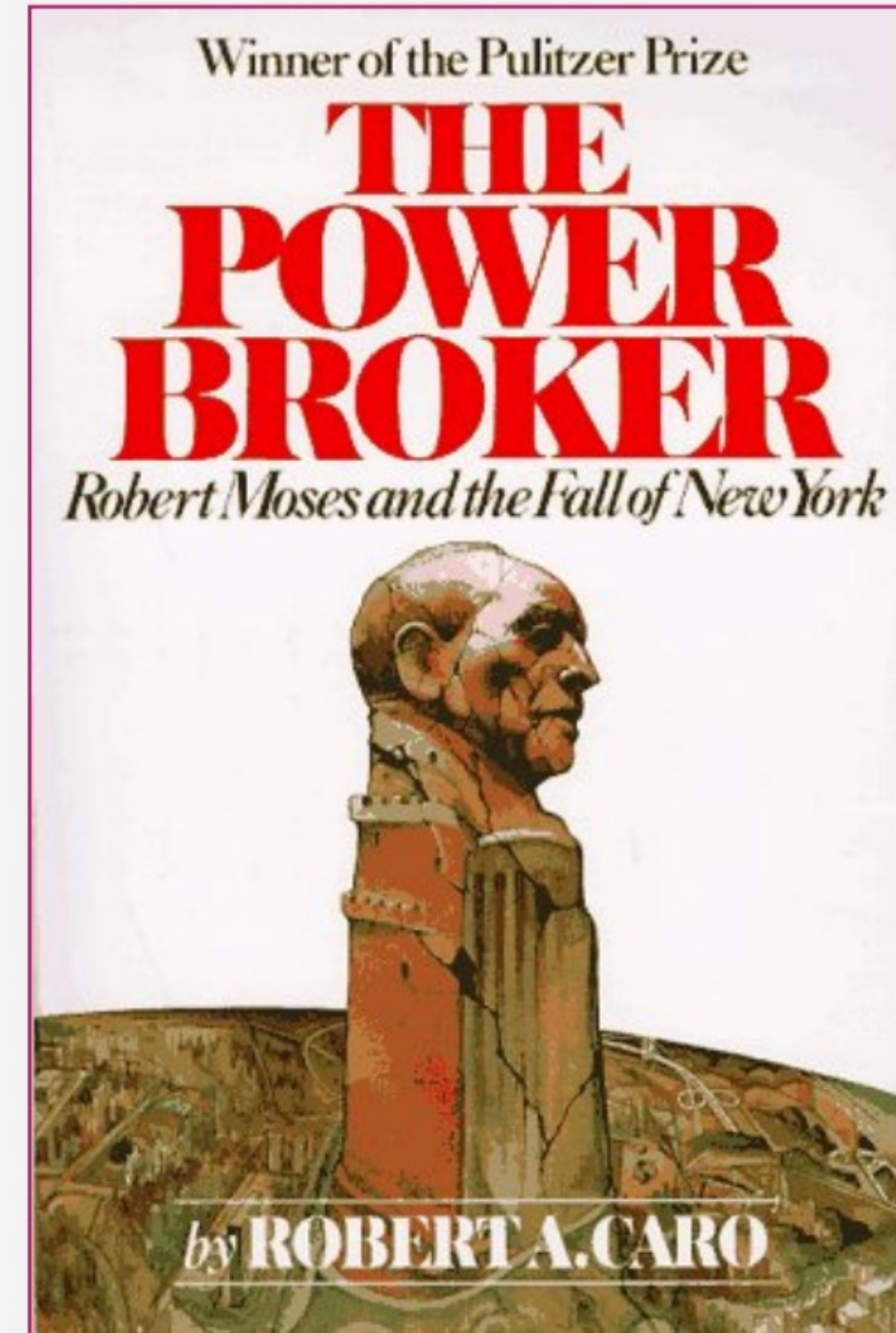


“Do Artifacts have Politics?”





# Robert Moses (1888–1981)





EXIT 28B

Brooklyn Br  
RIGHT LANE EXIT ONLY

11' - 0" CLEARANCE  
NO COMMERCIAL TRAFFIC





# Science and Technology Studies (STS research) in the eighties

- New York example not an exception
- Numerous case studies showing social and political biases could be inscribed in technical artifacts, systems and infrastructures



Ethically and Morally Biased Technologies are **Everywhere!**

# Ethically and Morally Implicated Technologies are **Everywhere!**

- Facial recognition
- Third-party data collection for hyper-targeted advertising
- Als that gate access to loans, insurance, employment, government services...
- Self driving cars, autonomous drones
- Deceptive user interface “dark patterns”



Eighties: specialized areas of design and engineering start to use VSD





# Batya Friedman: Value Sensitive Design





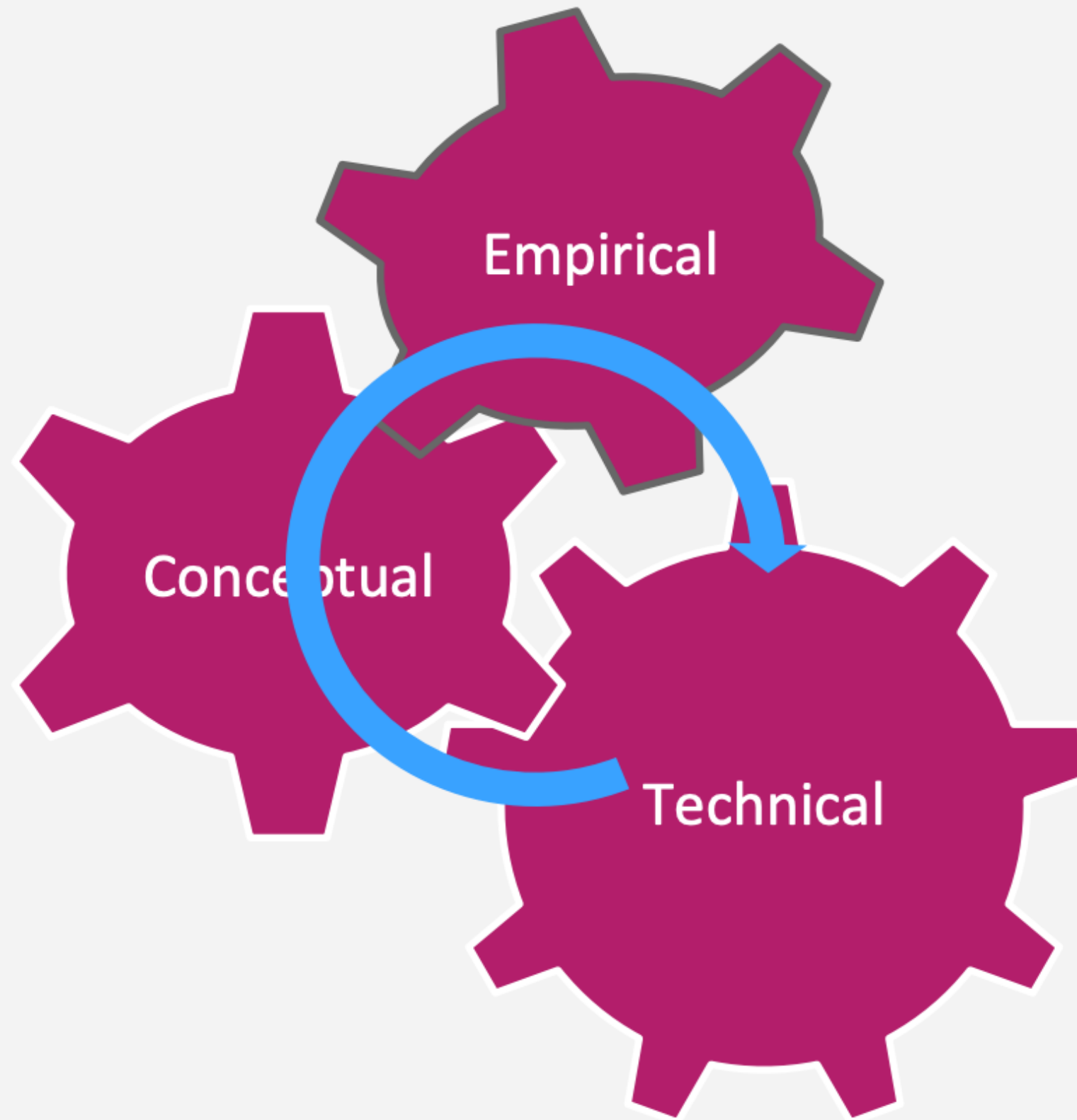
# VSD: incorporating human and moral values into design of technology

- Primarily concerned with values that center on human wellbeing, human dignity, justice, welfare, and human rights
- Advance human values; a way of doing ethics that aims at making moral values part of technological design, research and development
- Connects the people who design systems and interfaces with the people who think about and understand the values of the stakeholders who are affected by the systems.

# VSD Definition

“Ultimately, VSD requires that we broaden the goals and criteria for judging the quality of technological systems to include those that advance human values.” (*Friedman*)

# VSD Methodological Structure



iteratively, mutually  
informing and being  
informed

# Conceptual Investigations

- Identifying & understanding stakeholders
  - their values
  - values conflicts that might arise for these stakeholders through the use of the technology
  - identify if moral values  $\geq$  non-moral values?



# Empirical Investigations

- qualitative or quantitative design research studies
  - inform the designers' understanding of the users' values, needs, and practices
- “How” questions
- Takes a social science approach
  - focus on the groups that use the technology
  - what people say vs. actually do
  - which values do people consider throughout the design process?

# Technical Investigations

- Examination of how existing systems reflect human values
- Design of the systems to support values identified in the conceptual and empirical investigations

# The World's First Smart Earplugs.

“**Hush** lets you block out all the noise that keeps you up at night while letting you rest easy knowing that you’ll still be woken up by the things that matter most.”



**HUSH**

# HUSH: Conceptual Investigations

## *Stakeholders:*



The creators/managers



Consumers



Backers



# What matters?

Creators/Managers:

- Cost efficiency, funding, social responsibility, perceived brand value

Consumers:

- Need for selective sound blockage, safety, durability, affordability, comfort, health impacts, brand image, aesthetics, compatibility/sync with devices

Backers:

- Profitability, success, return on investment

# Possible conflicts

- Safety: In case of fire breakout > burnt to death
- Over-reliance on other devices > what if battery of phone dies/bad connectivity? (e.g. for alarm clock/phone calls)
- Fitting of ear device > subjective for individuals
- Free returns > affects profitability?



# Empirical Investigations

- Will the earplugs be comfortable?
  - “The process was highly iterative as we had multiple people sleep through entire nights with the prototypes to provide real-world feedback so that we could learn and adjust accordingly.”
- What if the batteries die while I’m sleeping?
  - The Hush device can stay powered for over 10 hours
- What if I misplace the earplugs?
  - Using the Hush App, you can make your Hush emit a sound that you can track

# Empirical Investigations

Hush “tested almost every foam earplug [they] could find on the market and 3D printed hundreds of housing shapes to find the ideal design that would accommodate a broad range of ears.”

# Technical Investigations

Systems Design: Peace of mind, power conservation, comfort, convenience

- Hush App on phone syncs to earbuds and sets an alarm
- Conservative use of power allows for over 10 hours of battery life
- If there is no response to the first alarm in 30 seconds, a failsafe alarm is issued on the phone

# Frequently implicated values

Human welfare

Ownership & property

Privacy

Freedom from bias

Universal usability

Trust

Autonomy

Informed consent

Accountability

Identity

Calmness

Environmental sustainability

Human Value	Definition
Human Welfare	Refers to people’s physical, material, and psychological well-being
Ownership and Property	Refers to a right to possess an object (or information), use it, manage it, derive income from it, and bequeath it
Privacy	Refers to a claim, an entitlement, or a right of an individual to determine what information about himself or herself can be communicated to others
Freedom From Bias	Refers to systematic unfairness perpetrated on individuals or groups, including pre-existing social bias, technical bias, and emergent social bias
Universal Usability	Refers to making all people—with an emphasis on diverse, underserved, and otherwise excluded populations—successful users of information technology
Trust	Refers to expectations that exist between people who can experience good will, extend good will toward others, feel vulnerable, and experience betrayal



Autonomy	Refers to people's ability to decide, plan, and act in ways that they believe will help them to achieve their goals (as opposed to being subjected to or dependent on the decisions or goals of others)
Informed Consent	Refers to garnering people's agreement, encompassing criteria of disclosure and comprehension (for "informed") and voluntariness, competence, and agreement (for "consent")
Accountability	Refers to the properties that ensures that the actions of a person, people, or institution may be traced uniquely to the person, people, or institution
Identity	Refers to people's understanding of who they are over time, embracing both continuity and discontinuity over time
Calmness	Refers to a peaceful and composed psychological state
Environmental Sustainability	Refers to sustaining ecosystems such that they meet the needs of the present without compromising future generations

# Frequently implicated values

Human welfare

Informed consent

Ownership & property

Privacy

Freedom from bias

Universal usability

Environmental sustainability

Trust

Autonomy

Think of this as a “starter kit” of values. This list is **not** comprehensive.

# A disclaimer about value sensitive design (VSD)

Value sensitive design is not meant to prescribe what is right or to answer ethical debates.

Instead, it is meant to support designers in *actively investigating and navigating ethics in design*.



# Value Sensitive Design

By Friedman & Hendry (and the VSD Lab)



# Value Sensitive Design

By Friedman & Hendry (and the VSD Lab)

To explore VSD beyond what is discussed in class, consider the following resources:

Friedman, B. and Hendry, D. G. (2019). *Value Sensitive Design: Shaping technology with moral imagination*. Cambridge, MA: The MIT Press. (cover image left)

Value Sensitive Design Research Lab  
<https://vsdesign.org/>

Friedman, B., Kahn, P. H., Jr., and Borning, A. (2008). Value Sensitive Design and information systems. [pdf also on Canvas, in this week's module]





## Activity 18

15 minutes

# A18: Exploring Value Sensitive Design

- Explore the app Horizon
- Think about the three Investigations of VSD
- Answer the questions
- Submit to Canvas



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