Moral and Technical Imagination: Value Sensitive Design + Drones

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Moral Imagination

Technical Imagination

Human Values

What is important to people in their lives,
with a focus on ethics and morality.

Being Human: Tool Use

Tool use is a fundamental part of the human condition

Our tools shape how we interact with and experience the world; which in turn, lead to new tools

“ …in designing tools we are designing ways of being. ”

Winograd and Flores (1986, p.xi)

Technology shapes interaction which shapes human experience *and vice versa*

- Enables: What's easy to do
- Hinders: What's hard to do but doable
- Prevents: What's impossible to do

Value Sensitive Design

An interactional theory and method that accounts for human values in a principled and structured manner throughout the design process.

(Friedman, 1997; Friedman and Hendry 2019)

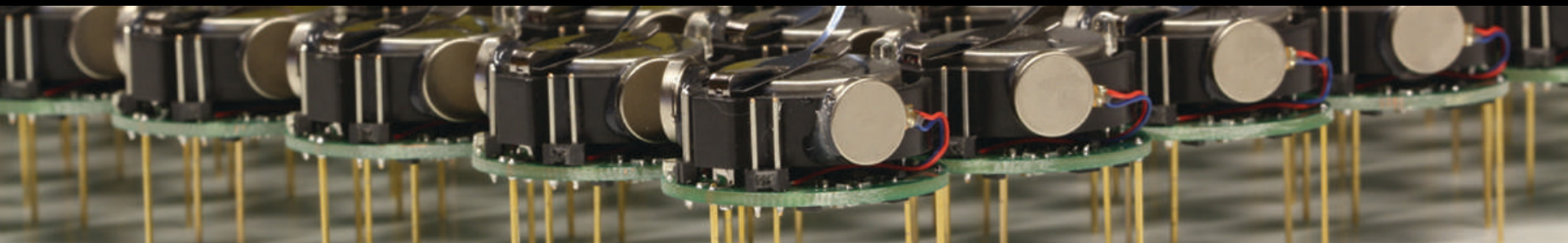
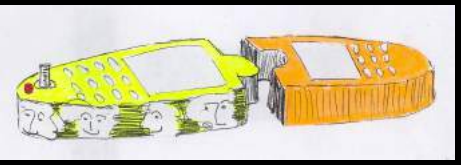
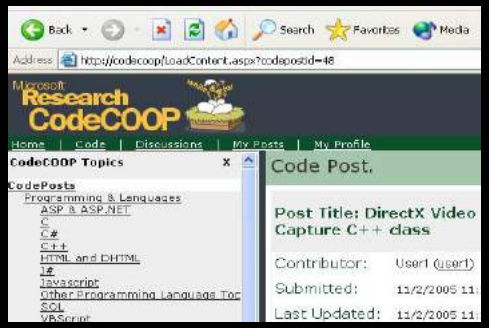


Photo Credit: Maxwell Andrews

Design and Technology Spaces





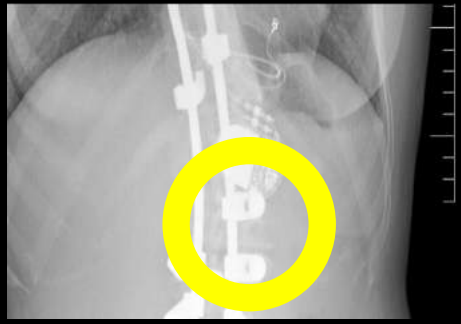
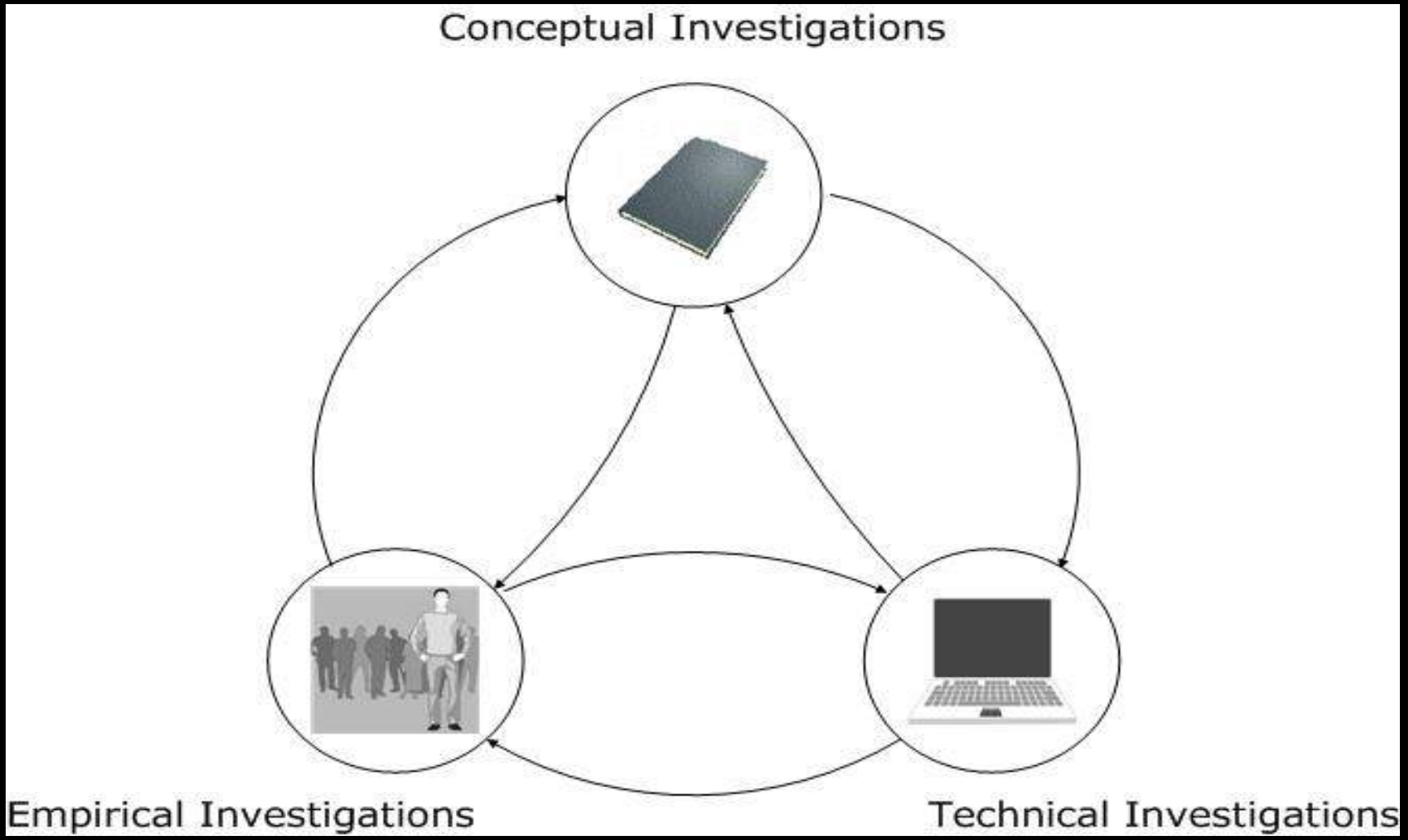


Photo Credit: Snow Leopard Trust

Tripartite Methodology



Value Tensions

1. Within a person
2. Between people
3. Between a person and a group
4. Between a person and institutions
5. Between institutions

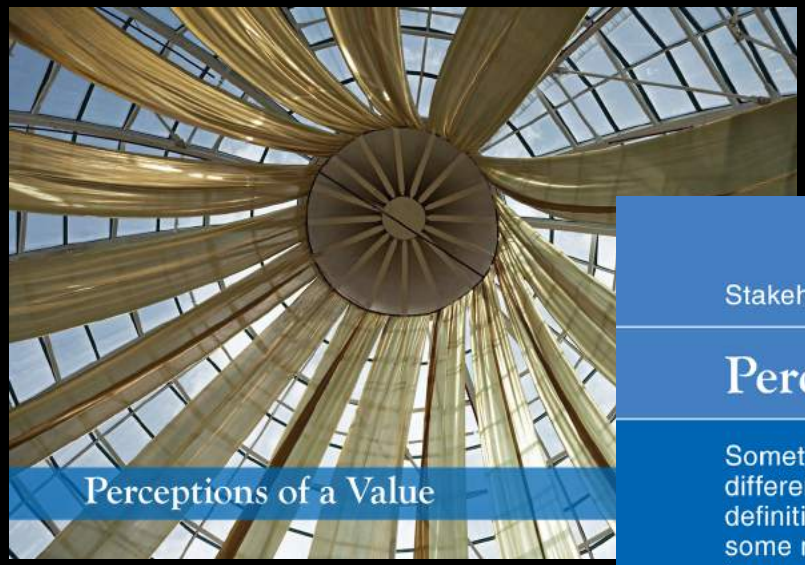
Design Activity

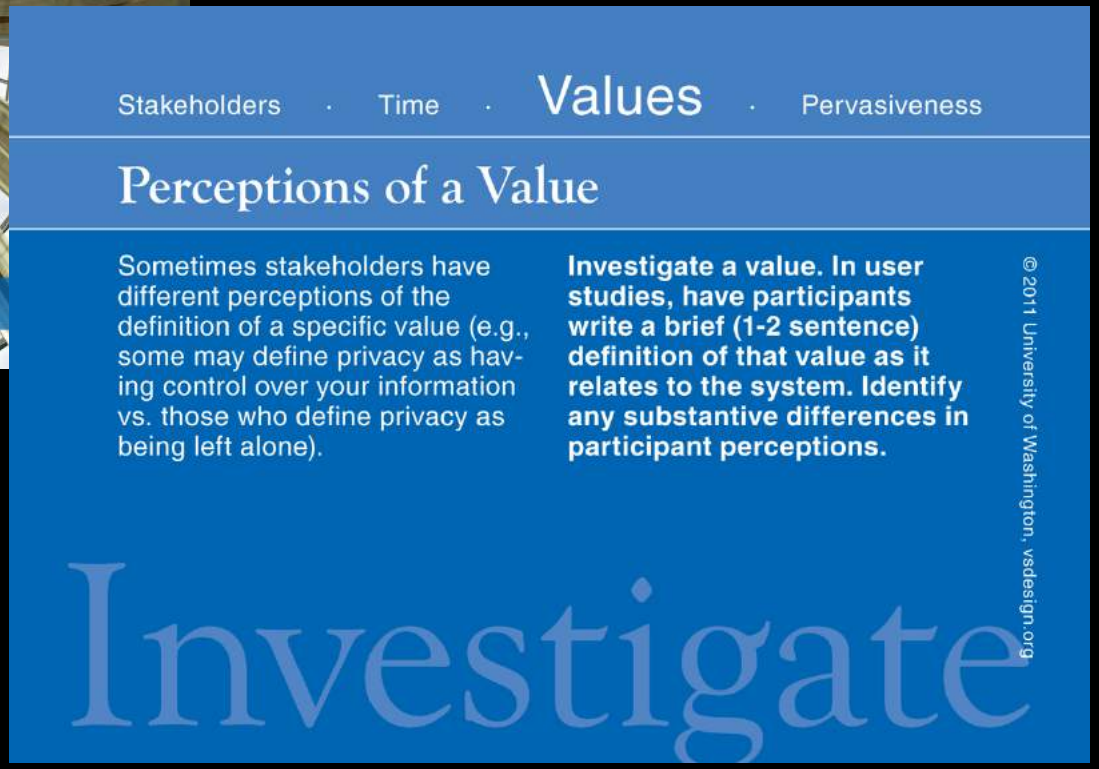
PolliDrone

PolliDrones are micro-drones used for precision pollination. A PolliDrone flies up to a plant, collects its pollen on textured fabric, and redistributes it to other plants. PolliDrones have a pollination success rate double that of bee or hand pollination. When their batteries are low, PolliDrones charge themselves on stations distributed throughout a farm. The drones, equipped with a variety of sensors, also monitor temperature, humidity, and plant health.

A Toolkit: Envisioning Cards

envisioningcards.com





(Friedman, Nathan, Kane and Lin, 2011)

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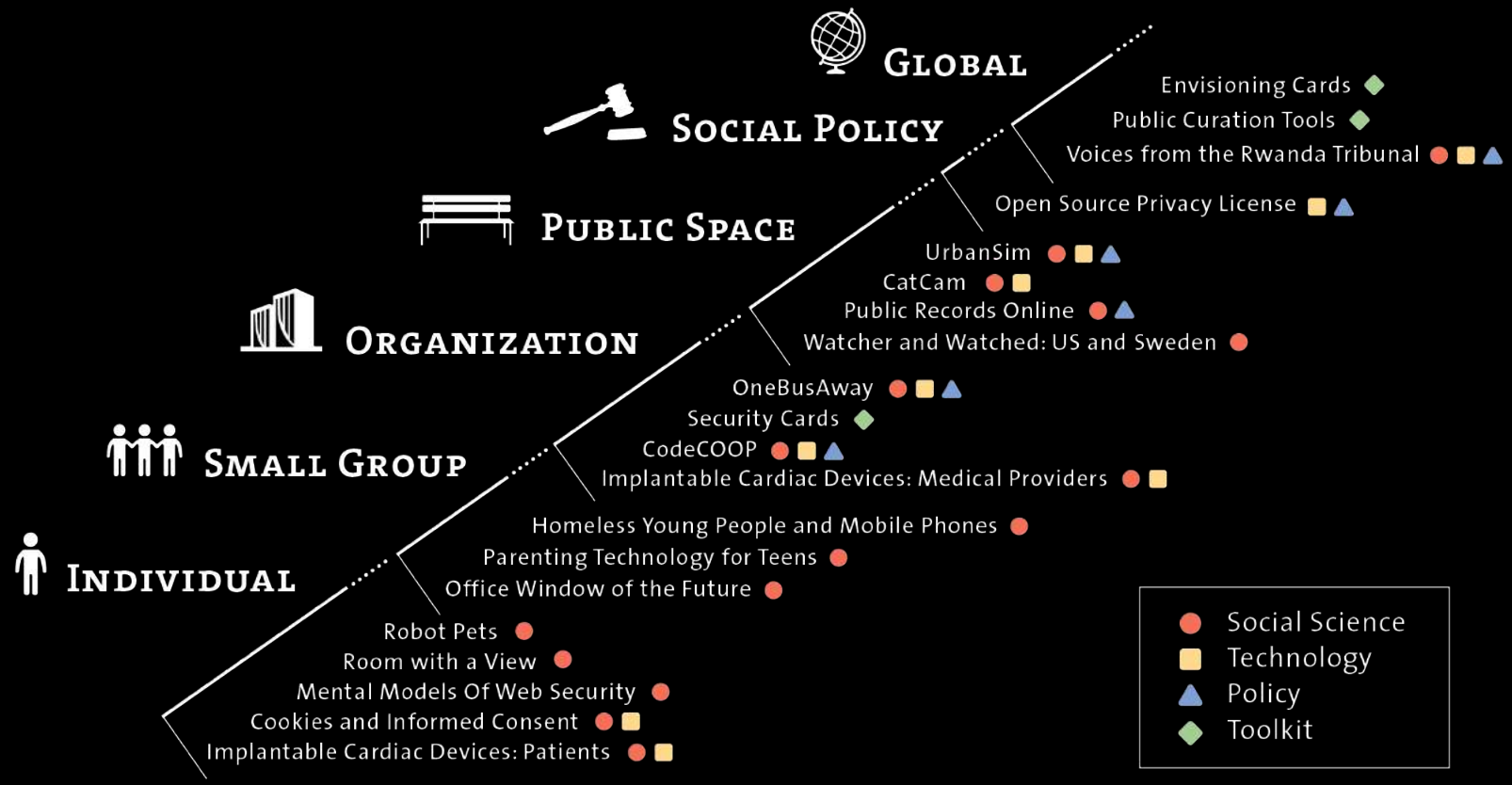
Value Scenario:
PolliDrone

(Nathan, Klasnja, and Friedman, 2007;
PolliDrone: Ballard, Friedman, Greendorfer, Logler, and Hendry, 2020)

Level of Human Experience



Care ethics and robots:
for healthcare

CRITERIA	AUTO-LIFT	EXOSKELETON
Safety	X	X
Reliability	X	X
Efficiency	X	X
Cost effective	X	X
Care: touch & dignity		X

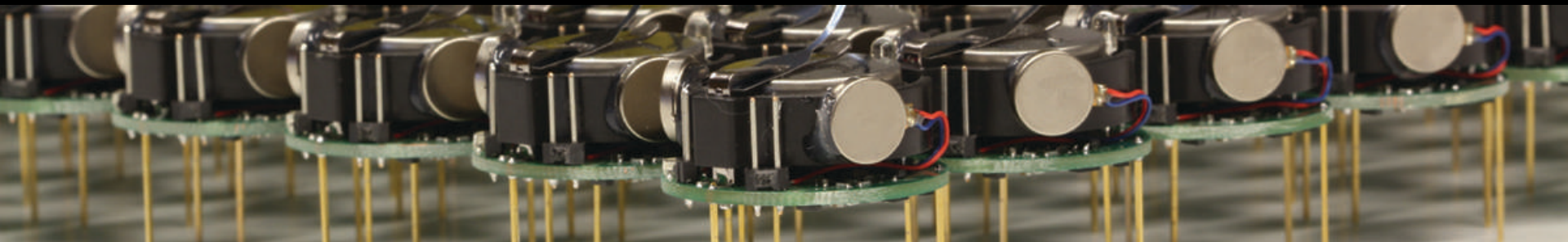
(Van Wynsberghe, 2013)

“Invisible” Materiality of IT

(Borning, Friedman, and Logler, *CACM*, in press)

Responsibility

Best practices. Negligence.
Standards.



Two Principles

Dignity.

Planet: finite, yet regenerative.

6 Practical VSD + Drones Takeaways

1. There are methods. Use them. Frequently and throughout the product development (design and engineering) process.
2. Use human values as a criteria for evaluating system performance (alongside of other criteria such as reliability).
3. Co-evolve technology and social structure (policy).
4. Think long term. And at scale.
5. Planet: finite, yet regenerative. Engineer within this constraint.
6. Have the courage NOT to build. Just say "no."

Progress

not perfection

Collaborators & Community

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Norah Abokhodair | Robert Alsdorf | Ron Baecker | Stephanie Ballard | Emily Bender | Liam Bannon | Ryan Calo | Alexei Czeskis | Sunny Consolvo | Janet Davis | Tamara Denning | Katie Derthick | Abigal Evans | Edward Felten | Gerhard Fischer | Nathan Freier | Shaghayegh Ghassemian | Brian Gill | Elias Greendorfer | Ken Goldberg | Nell Carden Grey | Maaike Harbers | Kristina Höök | Daniel Howe | Alina Huldtgren | Catholijn Jonkers | Peter Kahn | Zoe Kahn | Shaun Kane | Mike Katell | Ian King | Rose Paquet Kinsley | Travis Kirplean | Pedja Klasnja | Tadayoshi Kohno | Milli Lake | Christopher Le Dantec | Peyina Lin | Nicholas Logler | Lassana Magassa | Jessica Miller | Lynette Millett | Michael Muller | Lisa Nathan | Cliff Nass | Bryce Newell | Trond Nilsen | Helen Nissenbaum | Jennifer Rode | Ben Shneiderman | Ian Smith | Deborah Tatar | John Thomas | Elizabeth Utter | Robert Utter | Jeroen van den Hoven | Ibo van den Poel | Aimee van Wynsberghe | Åke Walldius | Kari Watkins | Terry Winograd | Jill Woelfer | Volker Wulf | Jason Yip | Meg Young


Thank you