# Timelines Facilitation Guide

Richmond Y. Wong, Tonya Nguyen
University of California Berkeley

Companion Material to the CHI 2021 paper "Timelines: A World-Building Activity for Values Advocacy"

This facilitation guide shows: the steps of Timelines, the instruction slides, an example from a group that participated in the activity, and tips for running the activity. More information including the research paper and templates for a digital version of this activity can be found at http://tinyurl.com/TLActivity.

Most of our deployments used the activity in groups of 3-6 people. However, the activity can be run with with fewer people, as an individual self-reflection activity, or with a larger group. Large groups can also can be split into smaller groups that conduct the activity in parallel.
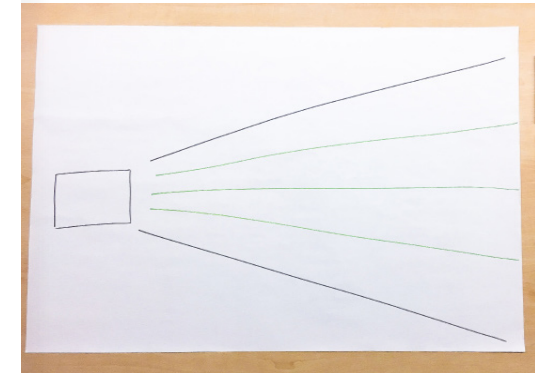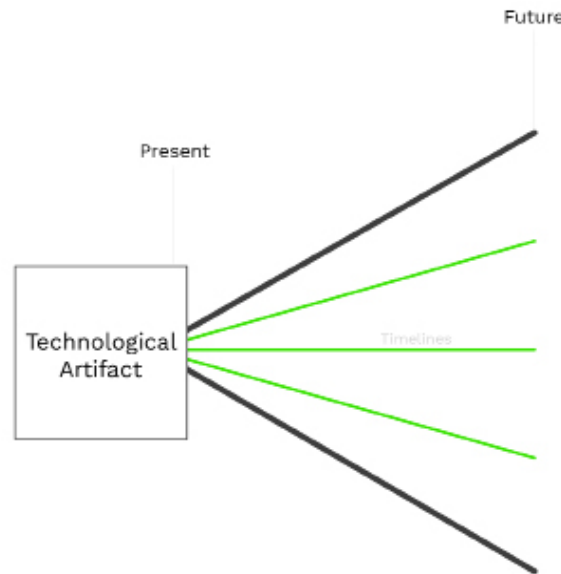
This triangle represents multiple timelines (left). The left side represents the introduction of a new technology or artifact. Going towards the right, lines indicate different possible stories about the artifact going into the future. Participants use a large version of the timeline triangle to create a storyworld around different ways an artifact gets used and adopted. The timeline triangle can be easily drawn on a large piece of paper or whiteboard, allowing the activity to be done in a wide variety of contexts (right).

Materials

Digital Version
- Digital shared whiteboard where partici-pants can place virtual sticky notes

Face to Face Version
- A large timeline triangle drawn on a large piece of paper or white board
- Sticky Notes
- Index Cards
- Sharpies or markers

Timelines Overview

Step 1
As a group, decide on an artifact—a technology, system, or feature—that you want to explore.

Step 2
On index cards, brainstorm stakeholders for their artifact—someone who is related to the system, either directly or indirectly.

Step 3
Using sticky notes, participants individually brainstorm potential news headlines related to their artifact.

Step 4
Take turns to place the headlines on the large shared timeline triangle to create timelines of events related to the technology.

Step 5
Return to the stakeholder index cards from Step 2. Brainstorm possible social media posts from situated points of view of different stakeholders.

Step 6
Share your social media posts, and shift into a broader discussion to reflect on insights from the activity.

Step 1: Choose Artifact and Context

We start the activity by telling participants:

"In today's activity, we will create a range of future stories surrounding a system or artifact, and explore those stories from different viewpoints. The goal of this activity is to think about possible futures, and critically reflect on the social values implicated by emerging technologies by looking at a range of stakeholders, contexts, and uses. Our goal is to explore and reflect on possibilities, we are not predicting the future."

Participants then decide on an artifact—a technology, system, or feature—that they want to explore. Some groups (such as a project team) may already have one in mind.
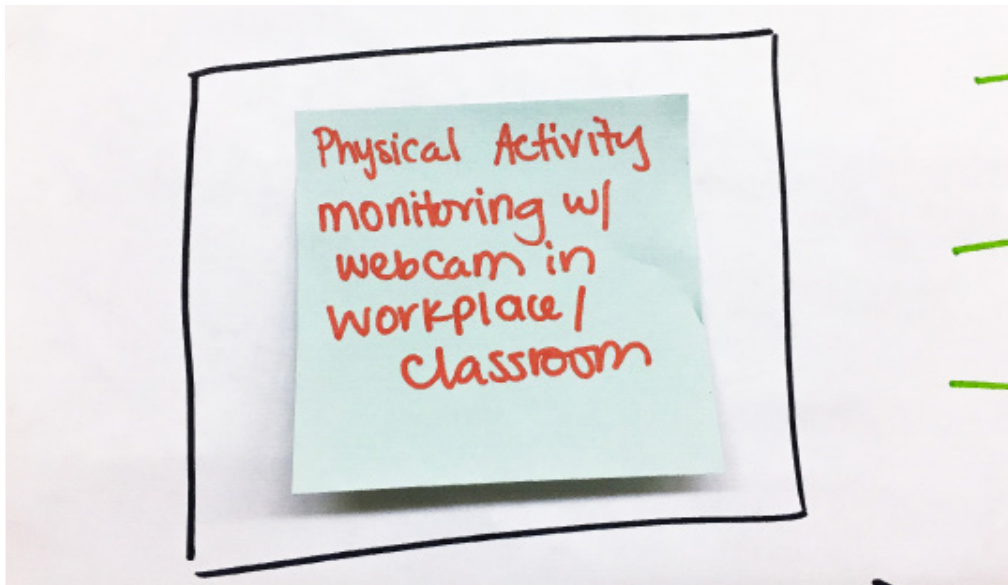
One group of participants decided to discuss a webcam that monitors a user's posture and physical activity in the workplace and in classrooms. This was based on a prototype technology that the participants had seen at an event several months earlier. This group consists of three graduate students in a professional-oriented information technology program; one has had prior professional experience as a UX researcher at a software company.

1. Choose Artifact and Context

• Choose a technology, system, or feature, and a context where it might be used

• Write that on a sticky note, and place it in the square on the left side of the triangle
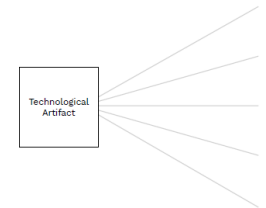
Facilitation Tips
Suggested timing: 5 minutes

• Participants might want to take a few seconds on their own to brainstorm some ideas before discussing with the group
• The artifact doesn't necessarily need to be "speculative" or "futuristic" – it can be done with existing or even historical technologies!
If participants come up with more than one context, have them choose one for now, but save the other ideas for a later step.

Step 2: Generate Stakeholders

On index cards, participants then brainstorm stakeholders for their artifact—someone who is related to the system, either directly or indirectly. This step draws on value sensitive design's focus on both direct and indirect stakeholders [9]. It also tries to help surface relationships that people have with technologies beyond "use" [1], such as non-use [2], maintenance and repair [10,11], regulation [12], and re-appropriation [16].

At the end of step 2, we ask participants place the stakeholder index cards to the side for now; we'll return to them later.


Participants are free to share, sort, and organize stakeholders on the table or virtual whiteboard in a way that makes sense to them.

The participants in this group thought of over 30 stakeholders, including health insurers, parents, policymakers, law enforcement, and rival technology companies

2. Generate Stakeholders

• Brainstorm stakeholders of this artifact, write one stakeholder on each index card
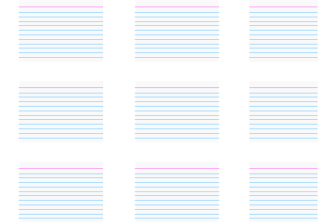
• **Tip:** Try to think of stakeholders who are **individual people,** and stakeholders who are groups or **institutions**
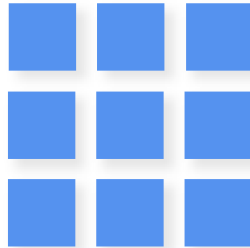
Facilitation Tips
Suggested timing: 3-5 minutes for individual ideation; 5-15 minutes for group sharing

- Splitting this step into an individual brainstorming stage and group sharing stage allows individuals to self-select what they want to share with the group.
- If the activity is done at a large table, participants can sort and group their stakeholder index cards together when they share them.
- Participants can continue coming up with new stakeholders while sharing them.
- Encourage participants to try to think of a broad range of stakeholders. We like to ask questions like: "Who might not like this?", "Who might indirectly affected by this?", or "Who has the power to make changes to this?"
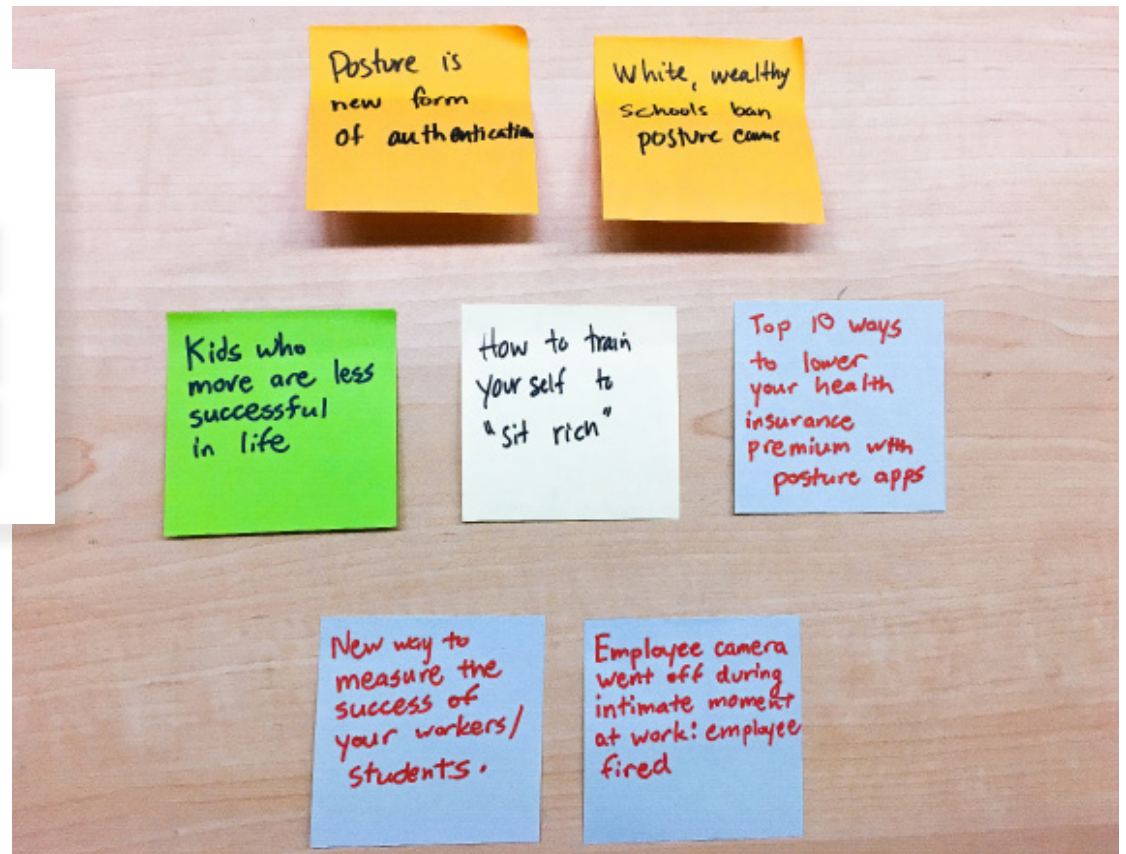
3. Brainstorm News Headlines

• Write headlines on a sticky note

• What happens when this artifact is deployed in the world?

• **Tip:** Try to come up with at least 1 more positive and 1 more negative headline

Step 3: Brainstorm News Headlines

Next, using sticky notes, participants individually brainstorm potential news headlines related to their artifact. Asking participants to use the form of news headlines draws from several sources. Interviews suggest that reading current news articles, as well as speculating about "worst case scenario" headlines provides a way to think about values and ethics.

Moreover, news headlines are a form that most people are familiar with and can easily create in a short amount of time. Headlines also help participants think about potential large-scale events and shared effects of technologies that are still situated in forms of everyday life.

Step 4: Place Headlines on the Timeline

Participants take turns to place their headlines on the large shared timeline triangle to create stories or chains of events related to the technology.

This step draws inspiration from several sources. One source is the scenario planning "implications wheel" activity [6]. The activity asks people to think of a positive and negative effect of a technology, then a secondary positive and negative effect following each of those, and so on. This helps surface secondary and tertiary effects, and creates worlds that are neither fully positive nor fully negative. Thus we emphasize that participants create both positive and negative headlines. A second source is design fiction's exploration of possible worlds through stories [3] and world-building [5]. The headlines each act as a different "entry point" into the speculative world of the artifact, highlighting a different event, conflict, or perspective. Organized into chains of events, the headlines begin to tell a number of narratives and stories about the artifact.

4. Place Headlines on the Timeline

• Try your best to place headlines in a chronological order

• Verbalize if it comes "after," "before", "at the same time," or "separate from"

• Conflicts are ok!

• Feel free to brainstorm new headlines
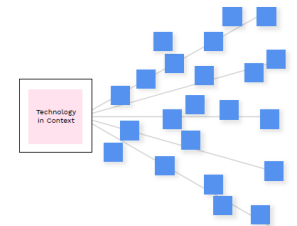
Facilitation Tips
Suggested timing: 10-20 minutes

• While headlines do not need to be placed in a "strict" chronology, placing them roughly in a logical order provides a useful, but flexible set of constraints and helps elicit discussion of secondary and tertiary effects, as well as potentially unanticipated outcomes.
• When participants place a new headline on the timeline, have them verbalize if it comes "after," "before," "simultaneously," or "separate from" another headline already on the chart.
• Encourage participants to continue writing and sharing new headlines as new ideas come up.
• Some participants may dispute the congruence of some headlines. Remind participants that conflicting headlines are fine. Real technologies get adopted and used in varying, sometimes conflicting ways, and that should be reflected in these activities.

Step 5: Create Stakeholder Social Media Posts

Participants return to the stakeholder index cards from Step 2. Now that participants have created a broad imagined world from the headlines, they can consider that world from the situated points of view of different stakeholders.

Recognizing research that shows how values are experienced in specific, situated contexts [13,14], and critiques that speculative work often creates worlds from privileged perspectives [22,23], this step asks participants to look at the world they created from a broader range of perspectives. This surfaces different and potentially conflicting ways that stakeholders might interact with or be affected by the same artifact [24]. While social media posts allow for a short amount of text, and acknowledging that stakeholders use social media in very different ways, it nevertheless provides a format familiar to most participants, and it provides an initial entry point for participants to begin having deeper discussions about differential experiences and impacts of technology. Naming the activity Timelines also refers to both the headline storylines and "feed" of social media posts created by participants.
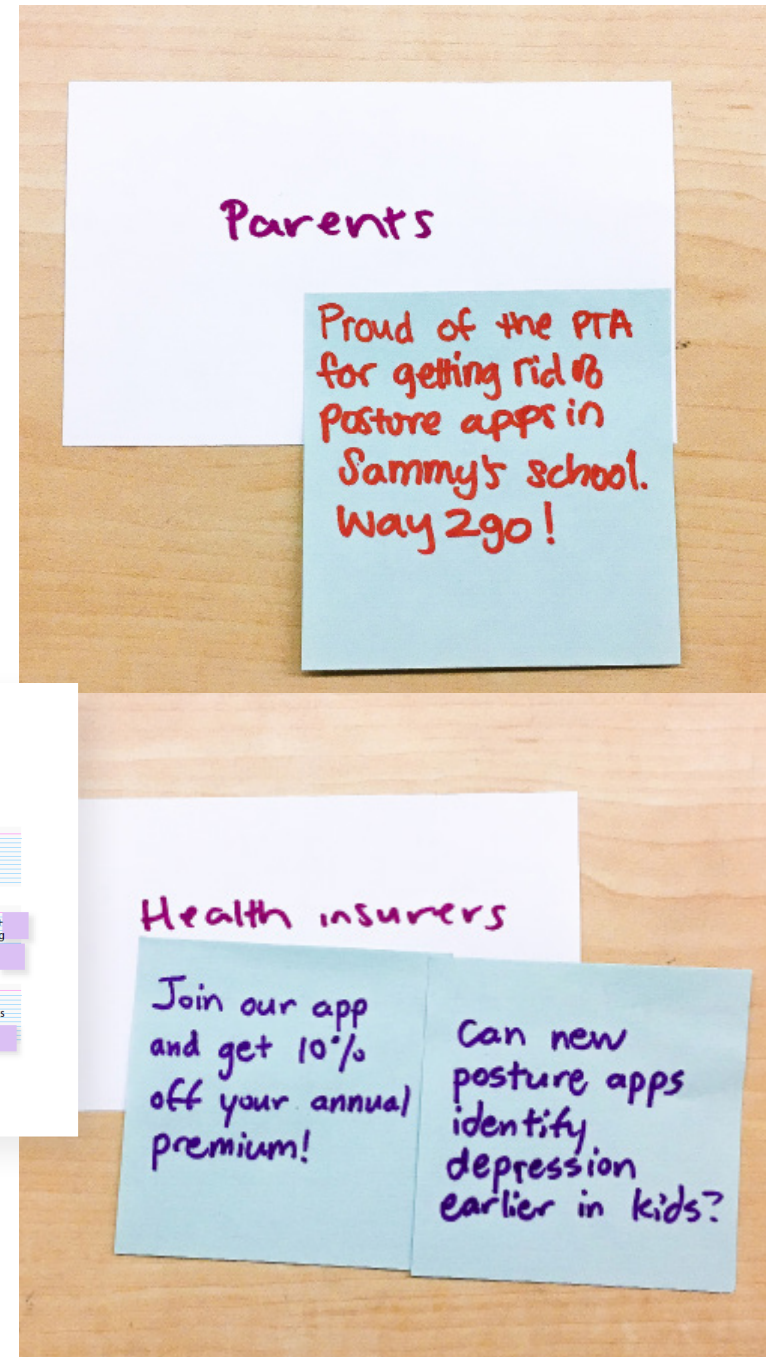

Facilitation Tips
Suggested timing: 5-10 minutes

- Encourage participants to consider writing social media posts from stakeholders who experience the technology differently

- Participants may consider choosing a specific headline from the timeline triangle, and create social media reactions from different stakeholders' viewpoints.

5. Stakeholder Social Media Post

• On another index card or sticky note, create a social media post written from the perspective of one of your stakeholders

• Place the social media post in a stack under its "author" stakeholder
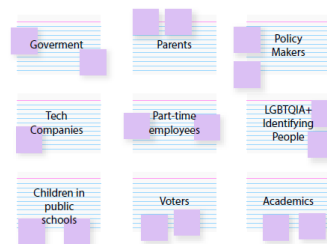
Step 6: Share-Out and Discussion

Participants then share their social media posts, and shift into a broader discussion to reflect on insights they have had going through the activity.

A common reflection we have heard from participants is that while the stories are fictional or speculative, they are surprised to find that the issues they discuss—such as inequalities, biased algorithms, or systems of power—are present in existing systems as well. This suggests that the activity can be useful for helping people reflect on their current technical practices.

6. Share-Out & Discussion

• Read the social media posts aloud from your group

Discussion questions:
• What themes came up from this activity?
• What was surprising to you?
• What things are missing from our stakeholders, headlines, and social media posts?
 • What aspects from the headlines and social media posts is already occurring today?

Facilitation Tips
Suggested timing: 5-15 minutes

• Consider asking participants to reflect on what they might change or do going forward, after completing this activity.

Reflection Exemplars
Participants' reflections may span many topics and perspectives. Some types of reflections from this example group included:

• **Highlighting conflicting perspectives**. Responding to a social media post expressing joy for a gamified posture app, a participant said, "I had a similar one, but reverse. Like 'I was so points hungry that I got my co-worker fired for a posture game.' Like feeling guilty about it."

• **Connecting to existing technologies and issues**. "I would be most concerned about [...] the disproportionate effects that it will definitely have with low-income people of color [...] it has very similar parallels to facial recognition."

• **Debating how technologists might address potential harms.** "Do you [as a user researcher] say like [...] 'the harms outweigh the benefits of this technology and so I don't support it'? [...] Or 'It's better to understand all of this [potential risk] [...] and try to think about how you might from a technical perspective make sure that like images or pieces of identifying information are stored in particular ways.'

Optional Extensions and Adaptations

The preceding pages present a general set of instructions for Timelines. However, the activity can be modified to focus more specifically on issues that a researcher, facilitator, or participants are interested in exploring. Each step can be extended or adapted using other design tools, and conceptual and analytical frameworks.

In one deployment, we wanted participants to explicitly discuss the types of privacy harms that different stakeholders might encounter or perpetuate. We created a set of "privacy harm cards", based on an existing conceptual framework [33]. When creating social media posts in Step 5, participants were asked to incorporate a privacy harm from a card into their posts. In a similar way, frameworks surrounding other social values such as accessibility, security, fairness, can be used to inform participants' social media posts.

At other steps, facilitators can incorporate other existing design tools and kits, should they want to emphasize certain types of exploration. An partial list of potential extensions or adaptions of Timelines is outlined on the right.
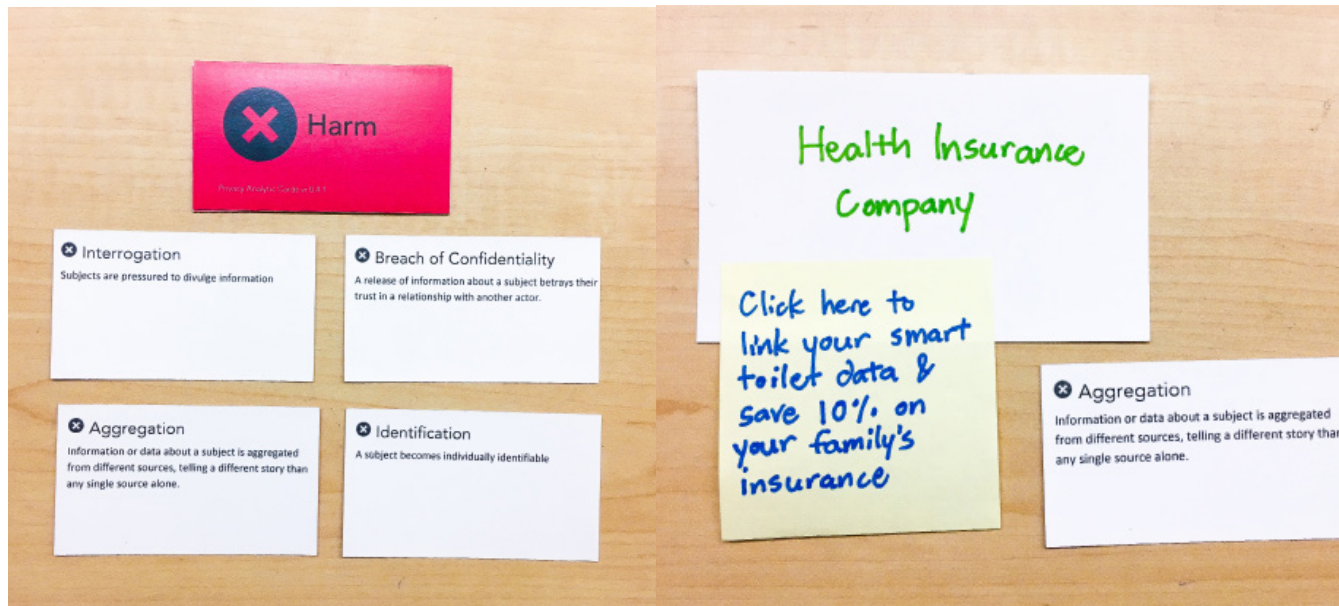
In a privacy-focused version of Timelines, participants had to incorporate a data privacy harm into their social media posts. This social media post uses the "aggregation" harm in relation to a health insurance company's data collection practices.

References

1. Eric P S Baumer and Jed R Brubaker. 2017. Post-userism. In Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems - CHI '17, 6291–6303. https://doi.org/10.1145/3025453.3025740

2. Eric P. S. Baumer, Jenna Burrell, Morgan G. Ames, Jed R. Brubaker, and Paul Dourish. 2015. On the importance and implications of studying technology non-use. interactions 22, 2: 52–56. https://doi.org/10.1145/2723667

3. Mark Blythe. 2017. Research Fiction: Storytelling, Plot and Design. In Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems - CHI '17, 5400–5411. https://doi.org/10.1145/3025453.3026023

4. Mark A. Blythe and Peter C. Wright. 2006. Pastiche scenarios: Fiction as a resource for user centred design. Interacting with Computers 18, 5: 1139–1164. https://doi.org/10.1016/j.intcom.2006.02.001

5. Paul Coulton, Joseph Lindley, Miriam Sturdee, and Michael Stead. 2017. Design Fiction as World Building. Proceedings of the 3nd Biennial Research Through Design Conference, March: 1–16. https://doi.org/10.6084/m9.figshare.4746964.Image

6. Mo Fahnestock. Introduction to the Implications Wheel. Retrieved from http://orgs.gustavus.edu/ric/pdfs/Introduction to the Implications Wheel.pdf

7. Casey Fiesler. 2019. Ethical Considerations for Research Involving (Speculative) Public Data. Proceedings of the ACM on Human-Computer Interaction 3, GROUP: 1–13. https://doi.org/10.1145/3370271

8. Batya Friedman and David Hendry. 2012. The envisioning cards: a toolkit for catalyzing humanistic and technical imaginations. In Proceedings of the 2012 ACM annual conference on Human Factors in Computing Systems (CHI '12), 1145–1148. https://doi.org/10.1145/2207676.2208562

9. Batya Friedman, David G. Hendry, and Alan Borning. 2017. A Survey of Value Sensitive Design Methods. Foundations and Trends® in Human–Computer Interaction 11, 2: 63–125. https://doi.org/10.1561/1100000015

10. Sarah E. Fox, Kiley Sobel, and Daniela K. Rosner. 2019. Managerial Visions: stories of upgrading and maintaining the public restroom with IoT. In Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems - CHI '19, 1–15. https://doi.org/10.1145/3290605.3300723

11. Lara Houston, Steven J Jackson, Daniela K Rosner, Syed Ishtiaque Ahmed, Meg Young, and Laewoo Kang. 2016. Values in Repair. In Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems - CHI '16, 1403–1414. https://doi.org/10.1145/2858036.2858470

12. Steven J. Jackson, Tarleton Gillespie, and Sandy Payette. 2014. The policy knot. In Proceedings of the 17th ACM conference on Computer supported cooperative work & social computing - CSCW '14, 588–602. https://doi.org/10.1145/2531602.2531674

13. Nassim JafariNaimi, Lisa Nathan, and Ian Hargraves. 2015. Values as Hypotheses: Design, Inquiry, and the Service of Values. Design Issues 31, 4: 91–104. https://doi.org/10.1162/DESI_a_00354

14. Christopher A. Le Dantec, Erika Shehan Poole, and Susan P. Wyche. 2009. Values as lived experience: Evolving value sensitive design in support of value discovery. In Proceedings of the 27th international conference on Human factors in computing systems - CHI 09, 1141. https://doi.org/10.1145/1518701.1518875

15. Kevin Lefeuvre, Sören Totzauer, Andreas Bischof, Albrecht Kurze, Michael Storz, Lisa Ullmann, and Arne Berger. 2016. Loaded Dice: Exploring the design space of connected devices with blind and visually impaired people. In Proceedings of the 9th Nordic Conference on Human-Computer Interaction - NordiCHI '16, 1–10. https://doi.org/10.1145/2971485.2971524

16. Silvia Lindtner, Ken Anderson, and Paul Dourish. 2012. Cultural appropriation. In Proceedings of the ACM 2012 conference on Computer Supported Cooperative Work - CSCW '12 (CSCW '12), 77. https://doi.org/10.1145/2145204.2145220

17. Microsoft. 2018. The Future Computed - Artificial Intelligence and its role in society.

18. Simone Mora, Francesco Gianni, and Monica Divitini. 2017. Tiles: A card-based ideation toolkit for the Internet of Things. In Proceedings of the 2017 Conference on Designing Interactive Systems - DIS '17, 587–598. https://doi.org/10.1145/3064663.3064699

19. Deirdre K. Mulligan, Colin Koopman, and Nick Doty. 2016. Privacy is an essentially contested concept: a multi-dimensional analytic for mapping privacy. Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences 374, 2083. https://doi.org/10.1098/rsta.2016.0118

20. Deirdre K. Mulligan, Joshua A. Kroll, Nitin Kohli, and Richmond Y. Wong. 2019. This Thing Called Fairness: Disciplinary confusion realizing a value in technology. Proceedings of the ACM on Human-Computer Interaction 3, CSCW: 1–36. https://doi.org/10.1145/3359221

21. Daniel J. Solove. 2003. A Taxonomy of Privacy. University of Pennsylvania Law Review, 477: 477–560.

22. Marie Louise Juul Søndergaard and Lone Koefoed Hansen. 2018. Intimate Futures: Staying with the Trouble of Digital Personal Assistants through Design Fiction. In Proceedings of the 2018 on Designing Interactive Systems Conference 2018 - DIS '18, 869–880. https://doi.org/10.1145/3196709.3196766

23. Cameron Tonkinwise. 2014. How We Intend to Future: Review of Anthony Dunne and Fiona Raby, Speculative Everything: Design, Fiction, and Social Dreaming. Design Philosophy Papers 12, 2: 169–187. https://doi.org/10.2752/144871314X14159818597676

24. Richmond Y Wong, Vera Khovanskaya, Sarah E Fox, Nick Merrill, and Phoebe Sengers. 2020. Infrastructural Speculations: Tactics for Designing and Interrogating Lifeworlds. In Proceedings of the 2020 CHI Conference on Human Factors in Computer Systems - CHI'20. https://doi.org/10.1145/3313831.3376515

25. Richmond Y Wong, Nick Merrill, and John Chuang. 2018. When BCIs have APIs: Design Fictions of Everyday Brain-Computer Interface Adoption. In Proceedings of the 2018 on Designing Interactive Systems Conference 2018 - DIS '18, 1359–1371. https://doi.org/10.1145/3196709.3196746

26. Richmond Y. Wong, Ellen Van Wyk, and James Pierce. 2017. Real - Fictional Entanglements: Using Science Fiction and Design Fiction to Interrogate Sensing Technologies. In Proceedings of the 2017 ACM Conference on Designing Interactive Systems (DIS '17). https://doi.org/10.1145/3064663.3064682