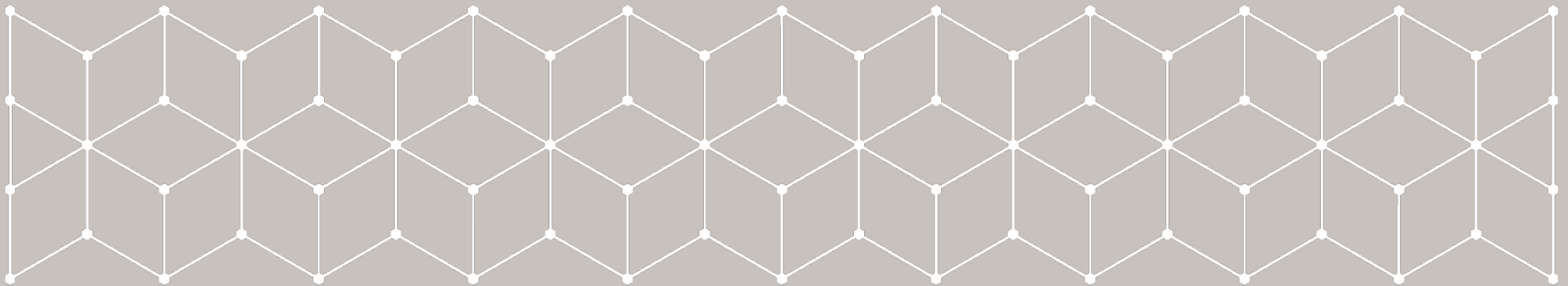




Participatory Design Fictions: Supporting Ethical Awareness in the Digitalisation of Smart Cities' Critical Infrastructure

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Who am I

- Associate professor at the Faculty of Computer Sciences, Engineering and Economics at Østfold University College. Currently, I research the Co-creation compelling and meaningful museum experiences, as part of the project pARTiciPED, funded by the Research Council of Norway (2021–2024).



Background

- Co-Creation, Smart Cities and Critical Infrastructure
 - Infrastructuring
 - Articulate, Critisize and Improve
 - Citizen involvement
 - Going beyond surveys and focus groups!
 - Participatory Design Fictions
 - Participatory design (having a say and mutual learning)
 - Design Fictions (scenario based, provocative & fun)
 - Themes
 - Privacy
 - Safety
 - Sustainability

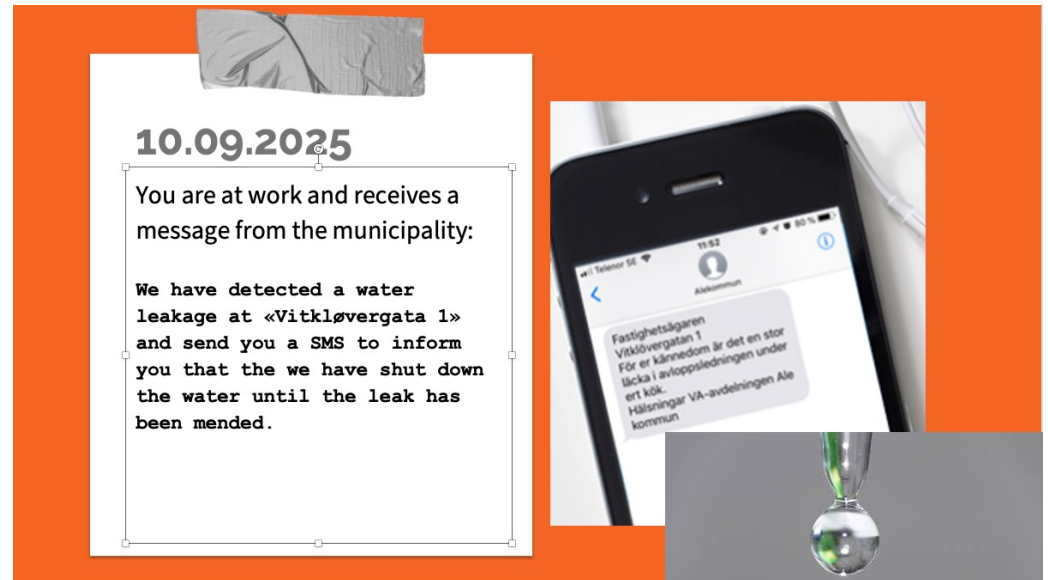
Workshop

- The workshop brought together citizens and key stakeholders from the city administration who had expertise in the smart water project. Design fictions were created to raise the three key themes.
- The workshop lasted for 1,5 hours and the participants were divided into three groups. Each group was seated at a round table together with a representative from the city with expert knowledge related to the smart water project.
- One of the PD experts moderated the workshop by guiding the groups through the design fiction scenarios.



Security

- We tell a story about how a citizen suddenly receives a SMS from the city stating that there probably is a water leak at in their home (shown in Figure 1).
- The participants get a copy of the SMS and must decide how this should be handled.



Security

- Questions based on the scenario:
 - What should happen if digital water meters detect a water leak?
 - Should there be a service so residents can request that the water be turned off?
 - How do residents and the city agree that the problem has been solved?
 - Complete the sentence: If the digital water meter detects a possible water leakage...

Managing scarce resources

- This design fiction raises how sustainable water consumption needs to be governed by the city in a situation with severe water shortage during an unusually hot summer
- The participants are issued a "watering fine" by the city and a paper copy of the local regulations. Their challenge is to revise the regulations by removing, modifying, or adding new rules, giving them an opportunity to share their thoughts on sustainability and incorporate them into applicable regulations.



Managing scarce resources

- Questions based on the scenario:
 - What does it mean to waste water?
 - How can digital water meters reduce water use?
 - How should the administrative regulations be adapted when new water meters are introduced?

Privacy

- A household has been put in a COVID-19 quarantine but due to low water consumption, the city contacts the household by phone to check that the quarantine is being properly observed.
- The participants receive a bill with a detailed overview of the household's water consumption, broken down into days. They are tasked with discussing how this information may possibly be used / misused as illustrated in Figure 3. They can then delete, change, or add to the bill based on what they come up with.



Privacy

- Questions based on the scenario:
 - How do you want your data to be handled and stored?
 - Who should have access to your data?
 - What information are you interested in?
 - How may your data be used or misused?

Result

› Securing participation

- › In general, most of the participants engaged in the discussions and were able to formulate opinions on the themes brought up by the design fictions.
- › The experts understanding of his / her own role in the discussions to a large degree influenced the power dynamics in the group.
- › All three groups came up with concrete suggestions for each design fiction scenario. The solutions were modest and not as radical as we might have hoped.

› Raising Ethical Concerns

- › The overarching ethical concern brought up in the discussions in all three groups, was how data from the new digital water meters trigger privacy concerns. When the groups discussed questions of security and sustainability, however, dilemmas pitting privacy regulations against conceived utility surfaced.

Discussion

- We believe it is crucial for designers, wanting to use this method to heed the basics of storytelling as applied in journalism, to make the stories both relevant and provoking.
- Rules of engagement should be defined and more specific instructions for how the contributions should be captured and summarized for each scenario should be provided.
- We should have asked the experts to play with the scenario a while longer, before providing the facts (with its many constraints), for the sake of provoking more lively discussions.
- Adding design fictions to the toolbox of PD gives PD practitioners more opportunities to make ethical dilemmas with future smart city technologies relevant and available to citizens.

Future Work

- We find that we need to strengthen the method further by adding some more rules of engagement. The main challenge is to move the discussions beyond the easily observable facts and political correctness and towards addressing alternative and maybe thought-provoking visions of the future.



Thank you!

