Project no. 732027

VIRT-EU

Values and ethics in Innovation for Responsible Technology in EUrope

Horizon 2020

ICT-35-2016
Enabling responsible ICT-related research and innovation
Start date: 1 January 2017 – Duration: 36 months

D6.2
Scripts and materials for workshops

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Project Consortium

Beneficiary no.	Beneficiary name	Short name
1 (Coordinator)	IT University of Copenhagen	ITU
2	London School of Economics	LSE
3	Uppsala Universitet	UU
4	Politecnico Di Torino	POLITO
5	Copenhagen Institute of Interaction Design	CIID
6	Open Rights Group	ORG

Dissemination Level

PU	Public	**X**
CO	Confidential, only for members of the consortium (including the Commission Services)	
EU-RES	Classified Information: RESTREINT UE (Commission Decision 2005/444/EC)	
EU-CON	Classified Information: CONFIDENTIEL UE (Commission Decision 2005/444/EC)	
EU-SEC	Classified Information: SECRET UE (Commission Decision 2005/444/EC)	

Dissemination Type

R	Document, report	
DEM	Demonstrator, pilot, prototype	
DEC	Websites, patent filing, videos, etc.	**X**
O	Other	
ETHICS	Ethics requirement	

Executive Summary

This deliverable presents the workshop scripts and materials that we have developed in order for others to use to convene conversations about ethics and connected technologies with different kinds of stakeholders. As a project, we have defined stakeholders broadly in these three ways:

- Type 1: IOT specific designers, developers and industry leaders
- Type 2: technology-related policy makers, civil society actors
- Type 3: general designers, developers and industry leaders in new technology

Each type of workshop has been iterated at least once. In this document we present our findings in terms of how to bring more voices and perspectives to the research of VIRT-EU, to communicate our ongoing research work, gather feedback, and most importantly, how to make space for a shared language around the ethics of design, development & policy-making for new connected technologies.

These goals require engaging diverse and interdisciplinary groups; therefore, it is with much care that we designed each process as outlined below.

The materials presented in this deliverable will be made available as part of the final VIRT-EU service package in the form of downloadable resources for workshop facilitation.

Stakeholder workshop type 1

Stakeholder type:
IOT specific audience members, seeking to learn about and engage with new ways of talking about ethics in relation to IOT
Test Locations:
CIID, Copenhagen DK, November 2018;
ThingsCon 2018, Rotterdam NE, December 2018
Duration:
3 hours
Number of people:
10-15

Goals:
This workshop is designed to immerse participants in a group process in order to negotiate difficult decision making around the design, development and deployment of new connected technologies.

Note:
This workshop is designed for a broad audience, acknowledging that often facilitators do not have control over who might show up to a publicly announced workshop nor is it possible to know in advance attendee's level of expertise in design and development.

Approach:
The structure of the workshop is built around a fictional company called Bear & Co. Participants are either one or several design teams, new employees joining the company or a design consultancy hired to help the company out of a tight spot.

We recommend the following sequence of steps to run the workshop:

1. Simulate experience of joining a fictional company. The company's product and vision should be presented in a similar way as startups currently pitch. The facilitator should embody the role of an individual working at that company for a longer time than the participants - they are neither the CEO nor the HR manager, simply another designer/developer.
2. The facilitator then defines that reflecting on our values (predefined) is part of the onboarding process for joining the company. The facilitator asks the participants to reflect on their commitment to our values by drawing in the values card (using the handouts in appendix I).
3. After participants finish this exercise, the facilitator introduces a difficult decision for the group to consider. The decision comes from an external source and is designed to uncover a spectrum of opinion on for example, local vs. 3rd party processing power. The decision encompasses a dilemma or "value clash". For example the value of privacy comes in contrast with the commitment of creating a sustainable product that delivers meaningful data over time.
4. The facilitator then gives the group a series of exercises to work through their varying understandings of the implications of the decision's various options. These exercises are designed to focus participants on envisioning diverse contexts, points of view, and time scales when making the decision.

5. Finally, the facilitator gives the groups tools to evaluate the options they have now worked through in step 4, and invites them to take and reflect upon a final decision. The decision taking tool resurfaces the values, where participants are asked to evaluate the options according to how well they do or do not align with the values upon which they have previously reflection in step 2. This final step also includes a template for summarising the experience of the entire simulation, therefore allowing participants to track back their learnings and the steps they followed.
6. The facilitator then ends the simulation and invites participants to reflect and give feedback on the process and paper tools.

Details:
See Appendix 1 for detailed facilitator notes, slides and handouts.
Use the handouts to create your own on-boarding and participation stories.

Stakeholder workshop type 2

Stakeholder type:
Technology-related policy makers, civil society actors, designers, developers
Test Locations:
London, UK, May 2019;
Amsterdam, NE, July 2019
Duration:
4 hours
Number of people:
8-12

Goals:
The objectives of this type of workshop are to develop a shared language about ethics and to help participants secure appropriation of the project's policy developments and outcomes.

How:
The workshop introduces the key elements if the VIRT-EU project with presentations, exercises and discussion:

- Framework for ethics
- PESIA
- Selected tools

Target Participants
The aim is to have diverse participation from key developer communities, policy actors and not individuals trying to use the project outputs for actual technological design and development. Optionally you can involve end users as well. It is useful to promote some manageable conflict through the composition of the group in order for concepts to be challenged.

Approach
We divide the workshop along three main topics designed to walk people through different ways of thinking about ethics, impact and assessment.

1. VIRT-EU Ethical Framework

Most tech ethics workshops seldom cover the foundational aspects of ethics and assumptions made in the development of their instruments. The first session unpacks the selected approach to ethics in an accessible manner and explains it in the context of wider ethical debates. The main objective of this session is to develop a shared language between designers, policymakers and other stakeholders through exercises and presentations that:

- Uncover pre-existing understandings of ethics and tech among participants
- Set out the need for ethics and explain why we are critical of the mainstream approaches
- Present the VIRT-EU ethical framework and elicit critical feedback

Issues to be incorporated in the running of this section of the session:

- How technology ethics will lead to changes in the landscape of IoT and tech. Can consumer pressure or developers by themselves change the status quo? How? Systemic issues beyond devices and individual designers, teams or companies are important and in previous workshops participants have asked about this.
- Keep the buzzwords out as much as possible: ethics, values, particularly avoid rights and legalities. Focus on responsibilities, accountability, dependencies and obligations. In prior workshops a focus on legal issues tended to short-circuit broader discussions.
- Who is responsible for ethics? Some tech ethics practitioners, such as Cennydd Bowles, argue this is the responsibility of the product manager, but many companies don't have the role. Discuss this.

2. PESIA (Privacy Ethical Social Impact Assessment)

This section discusses the PESIA questionnaire model, which has been built into a digital service tool but can also be downloaded as a paper questionnaire.

The main objectives of this section are to:

- Discuss best practices for presenting the PESIA questionnaire (e.g. within an organisation or by consultants or advocates).
- Discuss any usability issues to be communicated to the creators of the PESIA, considering that it is designed as a practical tool that can be used without the need to engage a legal specialist.
- Consider what additional resources, tools or information are needed in order for the PESIA to be implemented in design practice in a useful manner.
- Explore what structure and methods are required for people to engage with PESIA.

Issues to consider in the running of the session:

- The discussion should steer away from GDPR and compliance. You should cover the data protection aspects but it may be useful to mainly focus on the ethical and social sides, testing a selection of the questionnaire and related tools.
- Please refer to our list of examples to illustrate the ethical issues of “pathological cases” you can use in your discussions.
- The participatory aspects of PESIA are critical and you should discuss this as part of the session. For example use breakout groups, ensuring everyone gets a chance to speak.
- Risk is a central element of impact assessments but we want to go beyond consequentialism, mitigation and think about positive values. Try to push the discussion towards positive action and not just mitigations.

3. Tools for designers and developers

The session has two main objectives, testing selected tools or elements and presenting and discussing the project’s portfolio of ethical tools and how to choose the right tool.

Issues to consider in the running of the session:

- This part of the workshop is highly interactive and requires participants to be engaged and the facilitators to be very active.
- You need to be able to elicit and generate good specific questions.
- The tools work standalone but can be used along with the PESIA questionnaire used in session 2.

Suggested Agenda

1. **Introduction and ethical (20 minutes)**
    - Overview of the research and ethical framework using workshop slides.

2. **What does the VIRT-EU toolkit provide to help designers and developers? (60 minutes)**
    - Presentation: overview of the tools developed in the project and the rationale:
        - Why support developers of IOT products to integrate ethical reflection and self-assessment.
        - Impact assessment and tools and how they fit in the process.
    - Exercise: Speculative fiction - mapping and values
        - Imagine you are one of these developers. You are working on this Product (description, diagram). You want to understand what the potential ethical issues might be.
        - State your values / from the list. Draw links from values to materials. Ask a **PESIA** ethical question based on the values and materials you are using.
            - **E.g. WELLBEING**: If you allow for comparisons among users, how will you deal with the risks to self-esteem?

3. **PESIA assessment and issue discovery (45 minutes)**
    - Presentation of PESIA (20 minutes)
        - So you tried to work with your product and PESIA. But the full picture of PESIA is much bigger.
        - Participants are given a worksheet and pens and asked to write down anything that comes to mind during the presentation, sticky points or things that are working. The questions are about how to contextualise PESIA, how to integrate it into an overall ethical but also design process.

    - The puzzle of PESIA (short discussion) (10 minutes)
        - Identifying risks and issues in the technology: expand analysis from individuals to the wider community and society
        - Consultation, participation and external input (integrate in external design and product design methodologies)
        - The “treating people” section, where individual data protection rights overlap with ethical values of participation, dignity, autonomy, etc.
        - Pushing people to speculate beyond their comfort zone.
    - Discussion about notes taken by participants (20 minutes)

4. **Dealing with issues and impacts (30 m)**
    - What we have built: a toolkit to describe systems, elicit values, analyse and find problems, solve them if possible
    - Exercise: Back to fiction: imagine again you are part of a stressed-out start-up:
        - This exercise follows from the point where they have uncovered some issues or risks through the questionnaire. Now they need to deal with these. Apply some mitigation strategy.
            - Now that you know the big picture of PESIA, and considering the experience you had from the product to the PESIA question
            - Brainstorm what you would want before / next
            - Discussion (share your ideas)
    - Exercise on selected tools
        - Convert problems or issues into scenarios to apply storytelling and narrative to elicit further insights into potential impacts. What would be the effects, the impacts on values and people, environment?
        - Alternative paths:
            - **A.** Reformulate the outcome of the PESIA questionnaire as a simple issue that can be shared with another team?
                - Brainstorm solutions
                - Evaluate solutions
            - **B.** If this is not possible (wicked problem) convert scenario to BOWTIE diagram using paper tool.
                - Try to put obstacles / barriers / mitigations to deal with the bowtie.
                    i. If having trouble finding the solution by yourself, describe the issue and send to community (or teammates)
                    ii. If not having trouble, take one obstacle (barrier) you have placed, and brainstorm at least two solutions.
        - Close the cycle: evaluate those solutions against your values from the first exercise. Then update your system/product map.
        - But if you have already figured everything out, and you have trouble understanding the issues with your product in terms of the PESIA question right now: SHIFT perspective: imagining wild users, imagining wild pressures of new technology, extreme popularity
    - Discussion and feedback

5. **More thoughts: final freeform discussion (flexible)**
    - Led by participants or re-present questions raised during the session.

Stakeholder workshop type 3

Stakeholder type:
Public audience of developers, designers, industry leaders and others who are interested in technology, design and ethics
Test Locations:
TechFest, Copenhagen Denmark, September 2019;
MozFest, London UK, October 2019
Duration:
2-3 hours
Number of people:
Flexible - anywhere between 10 and 100
Ideal number of participants - 20-40

Goals:
To convene open conversations for developers and designers about ethics and new technology, linking the two in meaningful ways.

Approach:
The following is an example of the kind of intervention we created, having iterated over this process at least twice. The logic is as follows:

1. Define a case to which the general public can relate. In our example, we presented a fictitious company and wearable IOT product "WearWell." We invited the audience to be part of the company working on the product.
2. Define options that represent a spectrum of different beliefs and values. In this case we look at a data storage decision that had four different options: Track but store data locally on the device only (option 1), Track and store data on the company's cloud but only temporarily (option 2), Track and store data on the company's cloud but don't share with company - share only with WearWell for A/B testing (option 3), Full tracking, data storage and data-sharing both with company and WearWell (option 4). The audience may have an immediate reaction to the options, but eventually through discussion, they should realise that the obvious answer is not as easily upheld as they first thought because it is in tension with another principle of designers developers. For example, the first reaction of Option 1 becomes complicated once a participant realises that taking that decision would mean that the data collected by the device cannot be processed in order to make it more meaningful over time.
3. Create interventions to trouble assumptions. Each intervention should be designed to share new information, where the new information aligns with a particular line of ethical questioning. In this workshop, each intervention aligned with one of the three theories of ethics that compose our Ethical Framework (Virtue, Care and Capabilities). Intervention 1 gets at individual values where the facilitator can either select values or leave it open and select values with the workshop, and in so doing, presents a "behind the scenes" Virtue Ethics line of questioning. Intervention 2 is in line with the Care Ethics line of questioning, and therefore is an attempt to push people outside of their comfort zone, get people to think about difference, go beyond their expectations of the user. The final Intervention 3 is in line with the Capabilities Approach, and demonstrates that there are limits

to what the company and participants can accomplish no matter how much they care or try to align with their principles.

4. After each intervention, we ask participants to make a choice (or revise their previous choice), and then we call upon participants from many standpoints to discuss why they made a given choice. As facilitators, we engage minimally in this section, simply demonstrating respect and full listening to each participant and making sure to call upon a diverse set of the participants. When needed, we moderate and keep the discussion to a time limit in order to meet the constraints of the overall session.
5. Once we have finished the three interventions, the scenario experience is over and we note to the audience that we have exited that section of the workshop. At that point, we explain what we did and describe how each intervention leads you to question things differently according to different ethical frameworks. We describe each theory we used and how they go in each intervention, as well as explain why we use these theories together.

Options:

The workshop can be modified in the following ways:

1. Facilitators can provide a paragraph to explain each option
2. During the choice of options along a spectrum section, there are multiple ways to gather decisions. We advise keeping the decisions visible and public rather than anonymous as the scenario depends upon open discussion and understanding of one another's inclinations. However, we note that this also requires the proper set up of a comfortable and safe play space, where the facilitators should overtly explain that this is a fictional scenario and that participants should treat the experience more as roleplay than a literal job.
    a. Depending on the layout of the room, we can set up a physical space that runs along an X or Y axis and lays out 4 options evenly across this axis. Participants should then physically move to their decisions throughout the intervention / decision section of the workshop. This possibility is well received in that it changes the dynamic of a typical lecture, connects relations between individuals and their decisions in space.
    b. Alternately, participants can write their answers on paper or post-its in large numbers and hold these up to show their decisions.
3. The values intervention can either be defined by the facilitator - where they decide the values the company stands for - or the facilitator can invite all, some participants to add their own values from a predefined list.

Details:

The facilitator notes, slides and handouts are in Appendix 3.

Annex I - Scripts, handouts, slides, facilitator notes

Slides + presenter notes

These detailed descriptions about each part of the workshop are intended to help facilitators understand the kind of issues the workshop is designed to surface, how these have been selected and how the participants may respond. For each part, we provide a description of the primary activity together with a rationale and (if relevant) notes for future iterations.

Part 1: Company and Values
We begin the workshop by inviting the participants to join a new connected toy company, "Bear & Co." We introduce the company by showing a video about the current product that explains how it works and demonstrates some use cases. We then ask participants to reflect upon how they do or do not identify with our company values - a predefined list of what we at Bear & Co. have decided is important. They first draw their engagement with the values by creating a radial visualisation, and then translate this visualisation into the numbers it represents.

Rationale:
Our rationale for using a fictitious company and product is two-fold. Firstly, the workshop is oriented towards a broader audience than just one company, therefore we needed to have a project for the group to be able to understand (still at varying levels given different technical backgrounds) and engage with. Secondly, we are interested in the potential of a simulation or rehearsal of ethics, where individuals and teams are not immediately working on their own problems, rather they are getting familiar with how to talk about and navigate ethical issues without the immediate consequence of impacting their company's own product development. The overarching idea for the rehearsal is that it is part of a series of simulations where the next simulation might be a simulated ethical situation that involves a specific company's own product. The next situation might be the company's actual product and an actual dilemma that they are currently facing or will face in the near future given their product development plan.

Further Iteration Notes:
a. Some groups chose to show their individual lines rather than only draw one single group line. This confirms a potential idea for augmenting the Values Visualisation process such that individuals would first note their own lines and then negotiate their lines with their teammates' lines, coming up with a final visualisation that potentially shows their differences and therefore possible future tensions.
b. We ask participants to take on a role when they sit down to the company table. However, the role immersion is extremely minimal: a piece of paper with a role such as "product designer" on it. Participants suggested that we might include more information so that they would know what their role might care about in terms of the values and scenario evaluation.

Part 2: The Problem
We present "The Problem" as a question that a remote coworker is trying to evaluate, incorporated as a Skype call (pre-recorded video) in the middle of the flow of the workshop. The question has at least two distinct choices. It is not immediately obvious whether one or the other would be better. We also provide a few discussion points for the group to consider the choices. They are invited to create their own alternatives but given the time constraint, this is not the main focus of the workshop's activity.

Rationale:
Pivot points could be moments to integrate an ethical reflection tool. Pivot points could be about technical constraints or getting platform approval, as two examples. "Confronting technical constraints such as not being able to collect data continuously from phone cameras or microphones also spurred values conversations about why these constraints might exist (Shilton and Greene, 2017)." Therefore, we chose to force a situation where certain technical constraints and new features were being added to the product.

Part 3: Moral Imagination
After understanding the question their "remote colleague" posed to them, we asked the participants to evaluate their options by engaging their moral imagination: that is, how could things go well, weird, or bad if they took either one of the options? We asked them to consider "destabilising factors" such as under-represented communities or users in this scenario building. Based on the situations they envisioned could occur if they took either option, they then rated how well each option would do in meeting their core values. If an option was misaligned with a value, they rated it at 0, whereas if an option would clearly support a value, they rated it at 100. This step again crosses between rich storytelling and numerical evaluation.

Further Iteration Notes:
The step of scenario making requires more structure though they work as of now:
a. As they consider an option, they want to more fluidly map out the positive and negative possibilities before diving into a scenario. This is demonstrated by the notes that participants took for themselves on The Problem sheet as well as the discussion that began and often needed to continue for a long time before a group was ready to engage in writing a scenario.
b. Writing a scenario comes more easily to some than others. Furthermore, they would benefit from direction about where in the Futures Cone (Voros, 2007) of likelihood they should aim. The cone includes possible, probable and preferable futures. These are the three areas we would like them to explore but perhaps this could be integrated into the experience both spatially and graphically.
c. How might we weave the consideration of values more directly in the scenarios as opposed to integrating them as bookends to the scenario writing experience? For example, they could work on scenarios that cross the following angles: "weird", "sustainability" and "under-represented populations."
d. Other approaches to scenario writing include the facilitators sharing certain predictions and trends to inspire the participants' understanding of the possible outcomes or futures that could occur from a given dilemma. We could integrate this step more clearly; as of now, those relevant trends are to some extent encompassed in the "Destabilising Factors." However, we only hand out simple cards with a terse description rather than going into depth about each one.

Part 4: Algorithmic Evaluation
Having completed the values and moral imagination exercises, participants input the numbers they have created throughout these exercises into the "Moral Algorithm" spreadsheet. In this spreadsheet, they create weighted ratings (that take the importance of each value into account) and once they add each weighted rating for each option, one option will have gathered more points than another. The points numerically show that one option was evaluated to be more aligned with the group's values and the relative importance of those values.

Rationale:

While a checkmark solution to ethics is strongly against VIRT-EU's ethos, this series of steps towards a mathematical answer is less a checkmark than a complex algorithm that documents participants' internal evaluations. According to Steven Johnson's book, Farsighted, "A moral algorithm is a series of instructions for manipulating data that generates a result in this case a numerical rating for the various options being considered. I suspect many of us will find this kind of calculation to be too reductive, taking a complex, emotional decision and compressing it down to a mathematical formula. But, of course, the whole process is dependent on the many steps that have preceded it."

Part 5: Feedback
After having experienced the workshop, we invited the participants to brainstorm alternatives for the different steps and tools they experienced. They left feedback for each major area and some volunteered to continue to work on the project with us.

Overall:
1. Give an overview of the exercises in the beginning, a personal introduction with people's backgrounds and examples of what an A.I. could or could not do in "The Bear Case."
2. Give more explanation about the roles and their according views. More movement - maybe try changing roles
3. All values seemed equally important. Maybe have more diverse values such as technical, financial, social, environmental impact
4. Make a simple app to fill in certain parts instead of only papers
5. The newspaper is a nice way to summarise.
6. Could we have another session online?
7. We first start with defining the values before validating them - would be interesting and meaningful to understand how people perceive "security" in different roles or projects
8. The statement "if everyone in the world" contradicts the exercise because we are asked to think of specific scenarios and contexts that do not apply to everyone in the world
9. It was not easy to think about under-represented groups. You might come up with a set of cards.
10. In the beginning, it was difficult for me to understand and to put values on moral content but at the end everything became clear with the algorithm method. And I saw how it could help me / us to see which could be a good decision or not for the company.
11. The workshop should be necessary for any AI project at the EU level to start
12. Think before building: this would be useful at the ideation and business strategy phase. For example, when deciding if AI would be a good idea. Then explorations can be done in each expertise before anything is built. Especially in legal/privacy/security matters in context to user needs.
13. Help companies get their priorities straight: I can imagine this as a consultancy service. What values are important in the company, but also some learning about the different values, for example, compare it to the pyramid of Maslow: without basic safety (e.g. privacy), other values are less relevant. And what should be the role of the company? We are quick in assessing that governments should not provide social media, but is it the task of a company to adjust the behaviour of people
14. Useful in IOT Dev: When deciding on what to develop. When considering it being "useful" or "beneficial" for a user.

VALUES
15. To use values it would be good if there was some scarcity in points you can assign. Now there is no reason not to draw a full circle, but in real life that is not realistic.

16. Climate AI Summit: I thought we would do a board meeting. Security, privacy and data careful are inter-related and not ethical dimensions, at least not balanced if you consider a spectrum. Maybe use or base it on another defined model like the international human rights?
17. Describe an example instead of terminology: This can support the team so we can talk about the same thing. Words are open to interpretation, leading to miscommunication.
18. Value Bingo: Make it a method on its own in order to have team members synchronise their values and discuss those where there is less overlap.
19. Maybe leave 1-2 values at the latitude of the participants
20. 1 group noted where each group member placed their value mark.

ALGORITHM
21. Option A scores higher, but has to do with the fact that because of the AI we valued values for AI higher than without, because there was more risk. So we didn't value identically for each.

RATING CARD
22. 1 group divided the rating into a rating for users and a rating for the company.

Handouts

- Algorithmic feelings - translating rich insights into cold numbers
- Algorithmic feelings - values ranking exercise alternative
- Happy or Sad Bears - ethical dilemma discussion
- If everyone in the world - engaging the moral imagination at scale
- The Daily Bear & Co - news article template
- Role selection card
- Rating values exercise
- Bear & Co description + rating values exercise (for new employee/consultant configuration of the workshop)
- Bear & Co description

Welcome!

Designing Ethical Things: A Moral Algorithm?

Co-design workshop
CIID Research x VIRTEU

ThingsCon
Rotterdam
December 6th, 2018

Virt~EU

CIID

thank you for coming.

Agenda

ARRIVAL
Name tags, consent forms

OVERVIEW + INTRODUCTIONS
Internet of Things, Ethics
Our company + Values
––short break––

Our company's problem of the day
A Moral Algorithm?

Feedback and Brainstorm

END

OVERVIEW + INTRODUCTIONS

WITH YOU:

info + consent form
name tag

Let’s meet.

What’s this all about?

Designing Ethical Things: A Moral Algorithm?

Co-design workshop with CIID Research x VIRTEU

December 6th, 2018

Virt~EU CIID

Designing Ethical Things: A Moral Algorithm?

Co-design workshop with CIID Research x VIRTEU

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Virt~EU CIID

Designing Ethical Things: A Moral Algorithm?

Co-design workshop with CIID Research x VIRTEU

December 6th, 2018

Virt~EU CIID

Ethics matter more outside of the classroom -
Design is applied ethics.
Every material, medium, every act of design is a statement about the future.
By choosing the future we want we discard dozens of alternative realities.

Cennydd Bowles,
Future Ethics
NowNext Press, 2018

Designing Ethical Things: A Moral Algorithm?

Co-design workshop with CIID Research x VIRTEU

December 6th, 2018

Virt~EU CIID

Designing Ethical Things: A Moral Algorithm?

Co-design workshop with CIID Research x VIRTEU

December 6th, 2018

Virt~EU CIID

...can we get better at spotting and addressing unintended consequences?
For this, we need moral imagination: the ability to dream up and morally assess a range of future scenarios.

Cennydd Bowles,
Future Ethics
NowNext Press, 2018

GROUND RULES

1. There are no stupid questions
2. I probably don’t know the answer
3. All thoughts, additions, suggestions are useful for us. Please put them on post-its: we will gather and share feedback at the end
4. You are each here for a reason - you know it - so share, wonder and open up
5. If you need to go to the bathroom, get water, take a call for work, go for it and no worries!
6. THIS IS A PROTOTYPE

Agenda

ARRIVAL
Name tags, consent forms

OVERVIEW + INTRODUCTIONS
Internet of Things, Ethics
Our company + Values
––short break––

Our company's problem of the day
A Moral Algorithm?

Feedback and Brainstorm

END

A hammer intends to strike, a vice intends to hold fast, a lever intends to lift. They are what it is made for.
But sometimes a tool may have other uses that you don't know.
Sometimes in doing what you intend, you also do what the knife intends, without knowing.
Can you see the sharpest edge of that knife?

The Amber Spyglass: His Dark Materials
by Philip Pullman

THE COMPANY

The Product

Bear & Co.

Bear & Co, “A message you can hug.”
It’s a special Bear that allows family and friends who are far away from each other to exchange heartfelt voice messages no matter where they are.
Friends of the Bear can record and send messages using the BearApp.
Someone at home gets the message on their BearApp, approves it and delivers it wirelessly to the Bear.
The Bear’s heart will blink when it has a message.
Squeeze the Bear’s paw to play the message. Record a message by squeezing the Bear’s paw again.
The message can be delivered to a BearFriend anywhere in the world!
The Bear is friendly and happy in anyone’s home - from elderly to the teenagers.

A MORAL ALGORITHM?

(in 4 exercises)

Exercise 1:

Our Values

Exercise 1

Main Goal

Our Values

Take a look at the list below and make sure you understand each value we stand for at Bear & Co.

Useful-first: design useful things for people's lives

Security: keep everything and everyone as secure as possible

Privacy: build and promote a culture of privacy

Data-careful: be deliberate about the data we collect

Transparency: be clear about the 3rd parties associated with the product

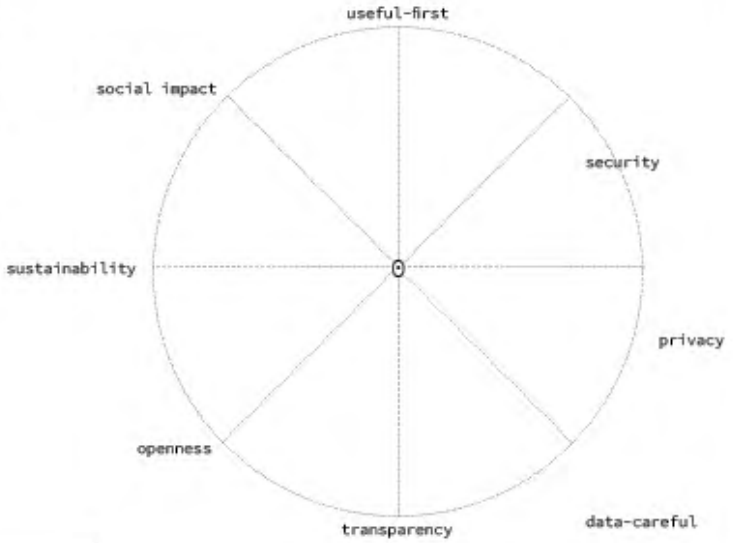
Openness and empowerment: users can be masters of their domain

Sustainability: design things as if they will be on earth forever

Social impact: help people, societies, communities thrive

STEP 1.
Mark how important each value is to you. The closer to the edge, the more important. The closer to the center, the less important.

STEP 2.
Connect your marks to create the shape of your priorities.



KEY
Center of Ring: The Least Important
Edge of Ring: The Most Important

Exercise 1

Main Goal

Our Values

Take a look at the list below and make sure you understand each value we stand for at Bear & Co.

Useful-first: design useful things for people's lives

Security: keep everything and everyone as secure as possible

Privacy: build and promote a culture of privacy

Data-careful: be deliberate about the data we collect

Transparency: be clear about the 3rd parties associated with the product

Openness and empowerment: users can be masters of their domain

Sustainability: design things as if they will be on earth forever

Social impact: help people, societies, communities thrive

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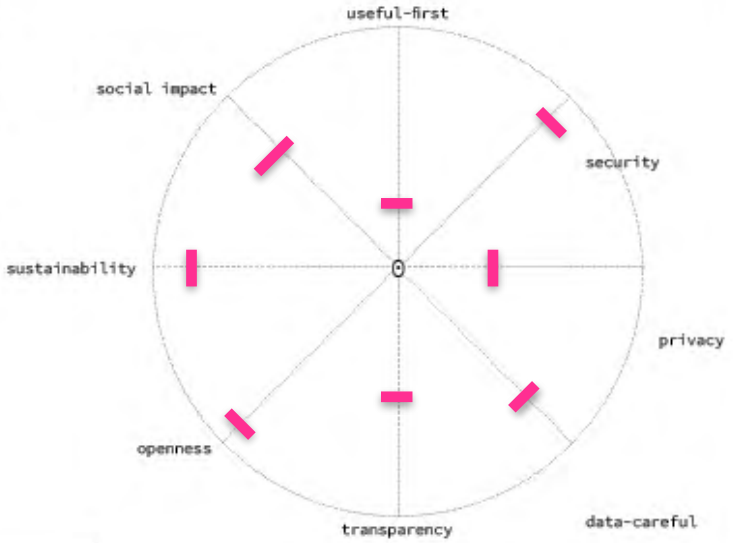

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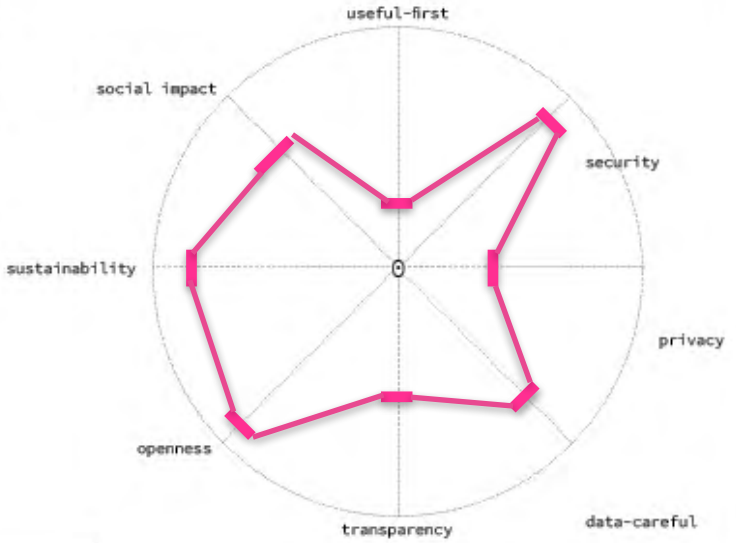

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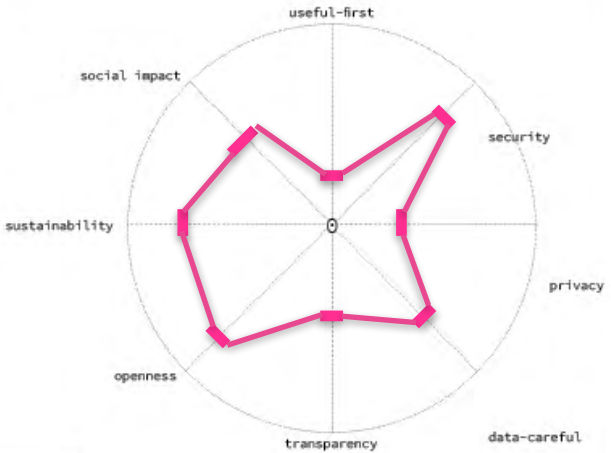

KEY
Center of Ring: The Least Important
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Multiplier Card A MORAL ALGORITHM?

Fuzzy to cold numbers

Write a number for how important each value is, based off the ring below. From 0-1 (e.g. 0,4 or 0,9)

Useful-first 0,_____

Security 0,_____

Privacy 0,_____

Data-careful 0,_____

Transparency 0,_____

Openness 0,_____

Sustainability 0,_____

Social impact 0,_____

Virt~EU

CIID

Exercise 1

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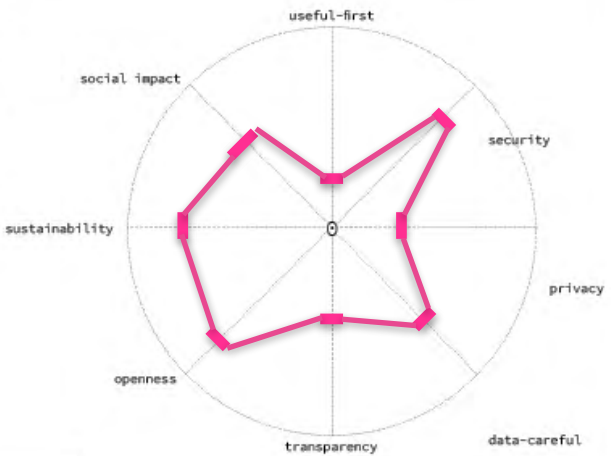

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Multiplier Card A MORAL ALGORITHM?

Fuzzy to cold numbers

Write a number for how important each value is, based off the ring below. From 0-1 (e.g. 0,4 or 0,9)

Useful-first 0,2
Security 0,8
Privacy 0,3
Data-careful 0,6
Transparency 0,4
Openness 0,8
Sustainability 0,7
Social impact 0,6

Virt~EU

CIID

SHORT BREAK!

Agenda

ARRIVAL
Name tags, consent forms

OVERVIEW + INTRODUCTIONS
Internet of Things, Ethics
Our company + Values
––short break––

Our company's problem of the day
A Moral Algorithm?

Feedback and Brainstorm

END

THE PROBLEM

QuickTime Player File Edit View Window Help 75 % Tue 18.55

Skype [1]

An Annelie $10.44

People, groups & messages

Chats Calls Contacts Notifications

RECENT CHATS + Chat

Peter Otto Kuhberg 18.55
no problem

raphael katz Thu
Call ended - 5m 34s

Monika Seyfried 20/11/2018
Call ended - 55m 41s

funda.ustek 12/11/2018
hey funda, any chance yo...

Javier Ruiz, Ed Johnson... 08/11/2018
Call ended - 1h 29m 56s

Javier Ruiz 08/11/2018
ok

Areti Galani 07/11/2018
Should we call you?

Alison Powell 25/10/2018
Call ended - 16m 34s

Mohamed, Petra Nieck... 19/10/2018
Call ended - 1h 50m 10s

Mohamed 19/10/2018
i made a new group with ...

Petra Nieckchen 19/10/2018
Hi Petra, it's Annelie from...

Monika Seyfried

Last seen days ago | Gallery | Find

15.58

skeleton.pdf
1.1 MB
File
Download

16.30

AI for Earth: Helping save the planet with data science - Asia
https://news.microsoft.com

16.31
Call ended 55m 41s

Type a message here

Happy or Sad Bears?

Description

The Bear is up and running and the BearApp is solid. We're now adding a new feature to the app where app holders can track the emotional progression of the voice messages. Super exciting new step for Bear & Co. to push into the field of tracking emotional wellness and providing as much usefulness to our customers as possible.
We're deciding whether to do the machine learning on the chip in the Bear itself, or in the cloud.
What do you all think?

Option A

Let's implement the A.I. feature. People are going to love tracking how their communication progresses.

Option B

No way. People can figure out how each other are feeling by just being in better touch.

Discussion Points

Would implementing machine learning make Bear more or less sustainable? Are there under-represented audiences who might be able to communicate better if they had the support of the emotional tracker? Would people be fearful that they were being monitored?

A moral algorithm: a series of instructions for manipulating data that generates a result in this case a numerical rating for the various options being considered.
I suspect many of us will find this kind of calculation to be too reductive, taking a complex, emotional decision and compressing it down to a mathematical formula. But, of course, the whole process is dependent on the many steps that have preceded it...

Steven Johnson
Farsighted: How We Make the Decisions That Matter the Most
Riverhead Books, 2018

A MORAL ALGORITHM?

(3 more exercises)

Exercise 2:

If everyone in the world…

Main Goal

If everyone in the world...

Key Actions

Engage your moral imagination and discover unexpected outcomes of taking this option

If everyone in the world had your product, and you chose this option, what are the good, weird and bad things that could happen?

STEP 1.
Write the option you are considering. Start with discussing a scenario for how this could go well...

STEP 2.
Describe and sketch!
Use these helper statements and destabilisers to help your narrative.

_____
(the option)

GOOD x CLIMATE (destabiliser)

WEIRD x UNREP'D (destabiliser)

BAD x CONTEXT (destabiliser)

Describe the scenario

Sketch a moment in the scenario

Destabilising Factors

Climate

- Natural disasters
- Electricity outages
- Increased pressure to be as sustainable as possible
- _____

Destabilising Factors

Under-rep'd

- Who do you least expect to use your product?
- To whom do you NOT plan to market your product?
- _____

Destabilising Factors

Context

- Where do you least expect your product to find a home?
- What situations - cultural, social, political - might occur around your product?
- _____

Destabilising Factors

Technology

- Artificial intelligence
- Face recognition
- Speech recognition
- Blockchain
- _____

Main Goal

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Use these helper statements and destabilisers to help your narrative.

implement a.i.

(the option)

GOOD x CLIMATE (destabiliser)

WEIRD x UNREP'D (destabiliser) sexuality

BAD x CONTEXT (destabiliser)

Describe the scenario

In a world where all bears have A.I. and children use bears to send love, an A.I. owned by Bear & Co. will become the sole definition of what it means to express family love. As the A.I. learns about more and more families, it starts to suggest sentences for the children and parents to say to each other based on their location's most typical sexuality. However...

Sketch a moment in the scenario

Main Goal

If everyone in the world...

Key Actions

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If everyone in the world had your product, and you chose what are the good, weir things that could happe

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Sketch a moment in the scenario

implemen

(the optio

=

Rating Card	A MORAL ALGORITHM?	
STEP 3. Based on what you imagined in your scenarios, rate each option based on how well it fits your values on a scale from 0 - 100.	**Option A** rating	**Option B** rating
Useful-first		
Security		
Privacy		
Data-careful		
Transparency		
Openness		
Sustainability		
Social impact		

Main Goal

If everyone in the world...

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Rating Card

A MORAL ALGORITHM?

STEP 3.
Based on what you imagined in your scenarios, rate each option based on how well it fits your values on a scale from 0 - 100.

	Option A rating	Option B rating
Useful-first	20	80
Security	30	90
Privacy	30	
Data-careful	30	
Transparency	40	
Openness	40	
Sustainability	50	
Social impact	40	

Exercise 3:

Algorithmic Feelings

Main Goal

Algorithmic Feelings

Key Actions

Translate your understanding of these options from rich insights to cold numbers

STEP 1.
Check back to your multiplier card. Write the cold numbers in the "multiplier" column.

STEP 2.
Check back to your rating card. Write the ratings you came up with for in their respective columns - Option A, rating column and Option B, rating column.

STEP 3.
Now multiply the multiplier with each rating, for each column, to create the respective weighted ratings.

STEP 4.
Add each weighted rate to sum the column.

STEP 5.
The column with the most points is the option is in best alignment with your values and priorities.

STEP 6.
Take your pulse:
How do you feel about this?

STEP 7.
Look back at your multipliers and ratings. Highlight the highest + lowest.
What would need to change in order for the other option to be better aligned? Or do you need to create another option altogether?

		Option A		Option B	
values	multiplier	rating	weighted rating	rating	weighted rating
Useful-first :					
Security :					
Privacy :					
Data-careful :					
Transparency :					
Openness :					
Sustainability :					
Social impact :					
			SUM		SUM

Exercise 1

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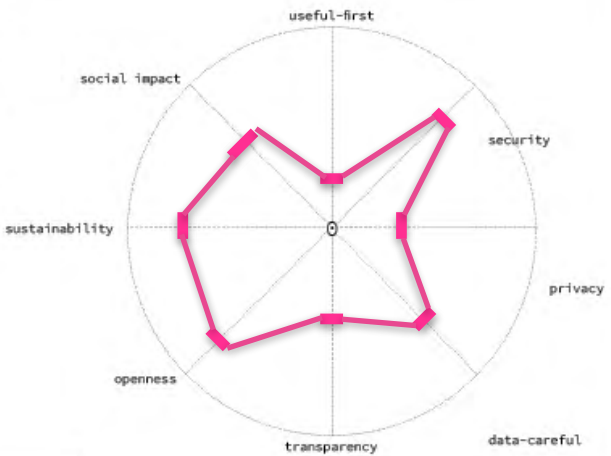

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Security 0,8
Privacy 0,3
Data-careful 0,6
Transparency 0,4
Openness 0,8
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Main Goal

Algorithmic Feelings

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Useful-first :	0,2				
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Openness :	0,8				
Sustainability :	0,7				
Social impact :	0,6				
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Transparency :	0,4				
Openness :	0,8				
Sustainability :	0,7				
Social impact :	0,6				
			SUM		SUM

Rating Card	A MORAL ALGORITHM?	
STEP 3. Based on what you imagined in your scenarios, rate each option based on how well it fits your values on a scale from 0 - 100. You have 100 points in total to spread.	**Option A** rating	**Option B** rating
Useful-first	20	80
Security	30	90
Privacy	30	70
Data-careful	30	70
Transparency	40	60
Openness	40	30
Sustainability	50	30
Social impact	40	30

Main Goal

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Security :	0,8	30		90	
Privacy :	0,3	30		70	
Data-careful :	0,6	30		70	
Transparency :	0,4	40		60	
Openness :	0,8	40		30	
Sustainability :	0,7	50		30	
Social impact :	0,6	40		30	
			SUM		SUM

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values	multiplier	Option A rating	Option A weighted rating	Option B rating	Option B weighted rating
Useful-first :	0,2	20	4	80	16
Security :	0,8	30	24	90	72
Privacy :	0,3	30	9	70	21
Data-careful :	0,6	30	18	70	42
Transparency :	0,4	40	16	60	24
Openness :	0,8	40	32	30	24
Sustainability :	0,7	50	35	30	21
Social impact :	0,6	40	24	30	18
			SUM		SUM

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Transparency :	0,4	40	16	60	24
Openness :	0,8	40	32	30	24
Sustainability :	0,7	50	35	30	21
Social impact :	0,6	40	24	30	18
			SUM 162		SUM 238

Main Goal

Algorithmic Feelings

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			SUM 162		SUM 238

Main Goal

Algorithmic Feelings

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Social impact :	0,6	40	24	30	18
			SUM 162		SUM 238

Exercise 4:

The Newspaper Article

THE DAILY

December 6th, 2018
Rotterdam, NE

Bear & Co. _____?

It all started with a great idea. A cuddly, fuzzy stuffed animal that anyone could use to send voice messages to each other. Then things got a little complicated.
An insider at the Bear & Co. team in Rotterdam told us that they were considering some difficult decisions as they worked on the cuddly Bear. They had to choose _____ _____ _____ _____.

Apparently, they explored both options by using a special foresight tool - similar to "Moral Imagination". Our source told us that the team imagined that everyone in the world had the Bear, and they got _____ when they considered the _____ outcomes.
Some of their scenarios even showed futures where _____ _____ _____ _____ _____ _____ _____ _____ _____ _____.

They literally weighed their options and tried to create some sort of a balancing act between their values and the decision at hand. It was _____ work and a _____ experience for the team. All of the energy and focus on this decision ended up in a _____ choice where the team decided to _____ _____ _____ _____. The decision _____ their values of _____ _____ _____.

Over here in The Daily newsroom, we're _____ by their commitment to figuring out the _____ situation. Watch this space, we'll be keeping an eye on Bear & Co. and all of their _____ friends!

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THE DAILY

December 6th, 2018
Rotterdam, NE

Bear & Co. _____?

It all started with a great idea. A cuddly, fuzzy stuffed animal that anyone could use to send voice messages to each other. Then things got a little complicated.
An insider at the Bear & Co. team in Rotterdam told us that they were considering some difficult decisions as they worked on the cuddly Bear. They had to choose _____ whether to do this or that _____.

Apparently, they explored both options by using a special foresight tool - similar to "Moral Imagination". Our source told us that the team imagined that everyone in the world had the Bear, and they got worried when they considered the weird outcomes.
Some of their scenarios even showed futures where children's perception of love became manipulated by bear _____.

_____.
They literally weighed their options and tried to create some sort of a balancing act between their values and the decision at hand. It was fun work and a mind-bending experience for the team. All of the energy and focus on the easy decision ended up in a _____ choice where the team decided to not use a.i. _____. The decision questioned their values of social impact, which became a much more controversial thing than they realised.

Over here in The Daily newsroom, we're impressed by their commitment to figuring out the sticky situation. Watch this space, we'll be keeping an eye on Bear & Co. and all of their kind-hearted friends!

Get six of our favorite The Daily stories every day by signing up for our newsletter).

Share your newspaper articles

Agenda

ARRIVAL
Name tags, consent forms

OVERVIEW + INTRODUCTIONS
Internet of Things, Ethics
Our company + Values
––short break––

Our company's problem of the day
A Moral Algorithm?

Feedback and Brainstorm

END

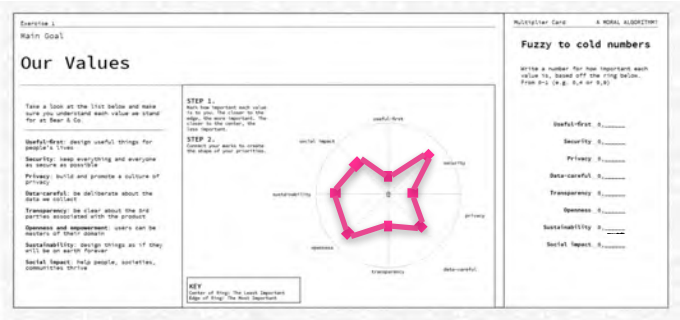
A moral algorithm: a series of instructions for manipulating data that generates a result in this case a numerical rating for the various options being considered.
I suspect many of us will find this kind of calculation to be too reductive, taking a complex, emotional decision and compressing it down to a mathematical formula. But, of course, the whole process is dependent on the many steps that have preceded it...

Steven Johnson
Farsighted: How We Make the Decisions That Matter the Most
Riverhead Books, 2018

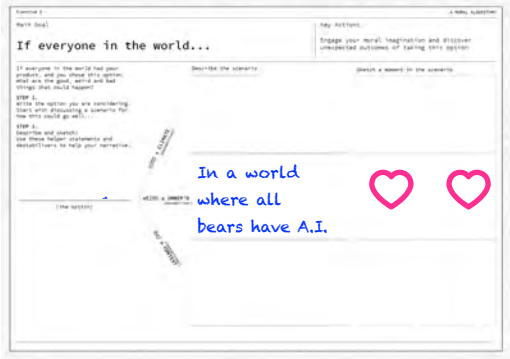
FEEDBACK + BRAINSTORM

A MORAL ALGORITHM?

in 4 exercises

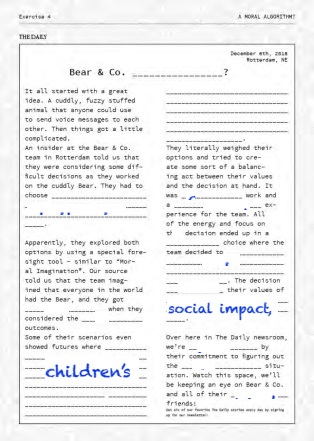


VALUES

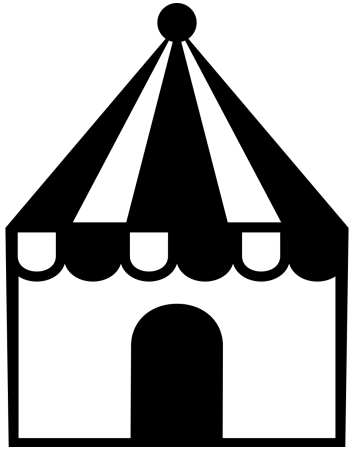


IF EVERYONE IN THE WORLD…

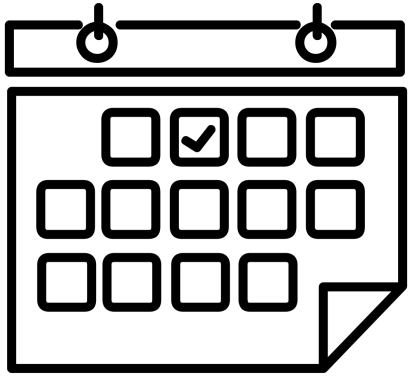
ALGORITHMIC FEELINGS



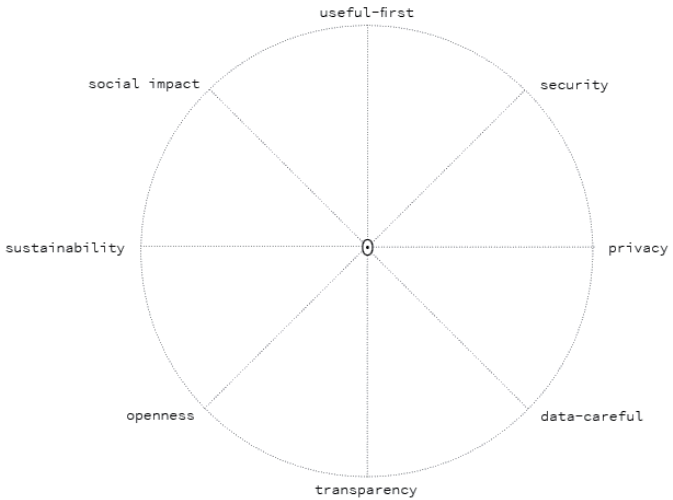
THE NEWSPAPER



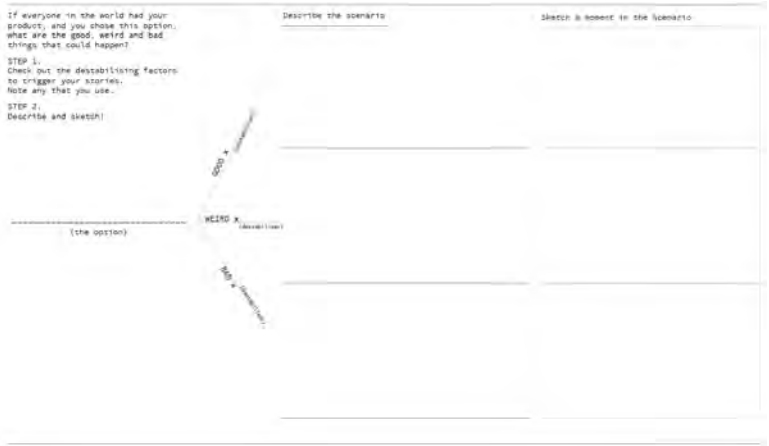
How might we package this experience in different ways?



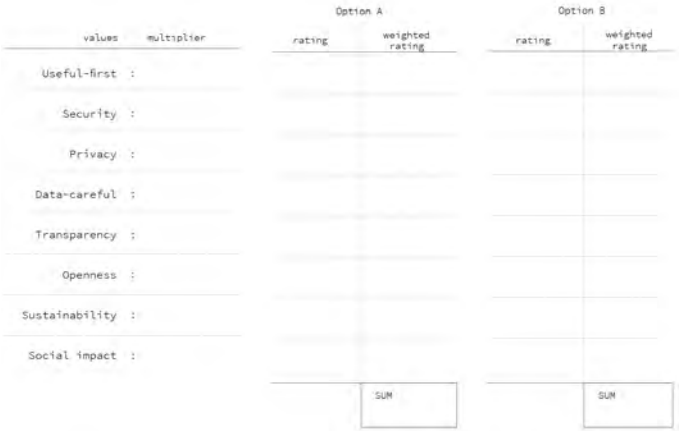
When and where might this be useful in the work of IOT design + development?


useful-first
security
privacy
data-careful
transparency
openness
sustainability
social impact

VALUES



IF EVERYONE IN THE WORLD...



values	multiplier	Option A rating	Option A weighted rating	Option B rating	Option B weighted rating
Useful-first	:				
Security	:				
Privacy	:				
Data-careful	:				
Transparency	:				
Openness	:				
Sustainability	:				
Social impact	:				
			SUM		SUM

ALGORITHMIC FEELINGS

[illegible]

Bear & Co. ______________?

It all started with a great idea. A cuddly, fuzzy stuffed animal that anyone could use to send voice messages to each other. Then things got a little complicated.

An insider at the Bear & Co. team told us that they were considering some difficult decisions as they worked on the cuddly Bear. They had to choose ______________________________.

Apparently, they explored both options by using a special foresight tool – similar to "Moral Imagination". Our source told us that the team imagined that everyone in the world had the Bear, and they got ______________ when they considered the ______________ outcomes.

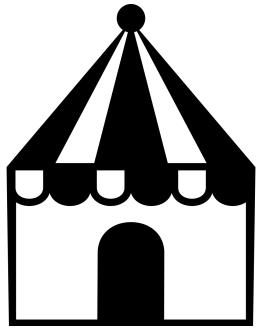
Some of their scenarios even showed futures where ______________________________.

They literally weighed their options and tried to create some sort of a balancing act between their values and the decision at hand. It was ______________ work and a ______________ experience for the team. All of the energy and focus on this decision ended up in a ______________ choice where the team decided to ______________________________. The decision ______________ their values of ______________________________.

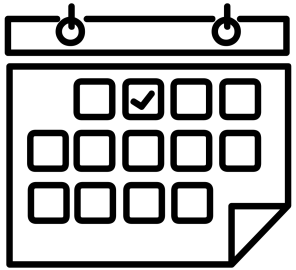
Over here in The Daily newsroom, we're ______________ by their commitment to figuring out the ______________ situation. Watch this space; we'll be keeping an eye on Bear & Co. and all of their ______________ friends!

[illegible]

THE NEWSPAPER



How might we package this experience in different ways?



When and where might this be useful in the work of IOT design + development?

What happens next?

a.berner@ciid.dk


Welcome!
Designing Ethical Things: A Moral Algorithm?
Co-design workshop
CIID Research x VIRTEU
ThingsCon
Rotterdam
December 6th, 2018
Virt-EU
CIID


thank you for coming.
Virt-EU
CIID


Agenda
ARRIVAL
Name tags, consent forms
OVERVIEW + INTRODUCTIONS
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Our company + Values
——short break——
Our company's problem of the day
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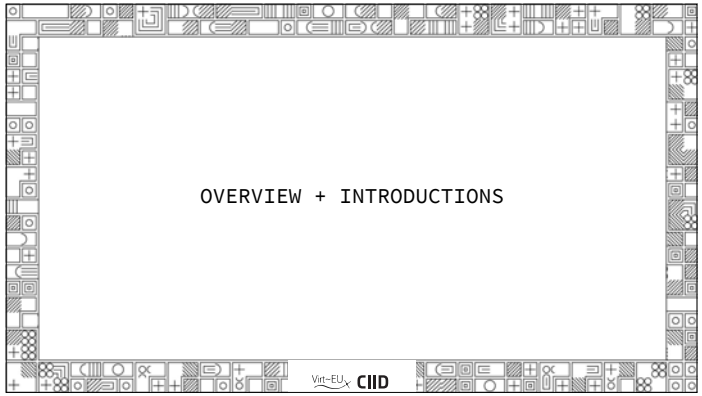

tell us what the project is
what decision you were dealing with and the ecosystem

Make sure you have signed the consent form and read the info sheet / that you put a name tag on / that you have your homework

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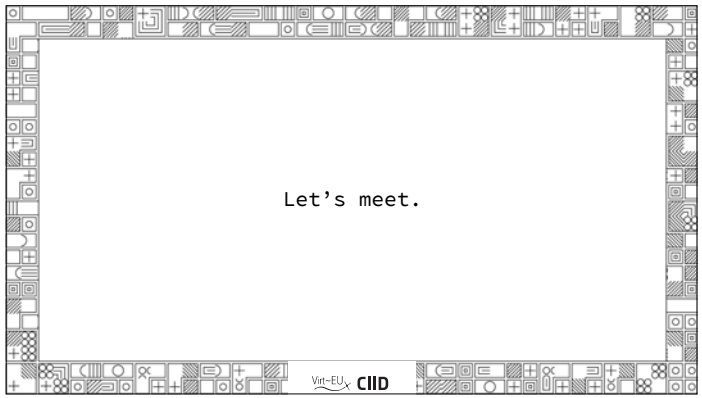
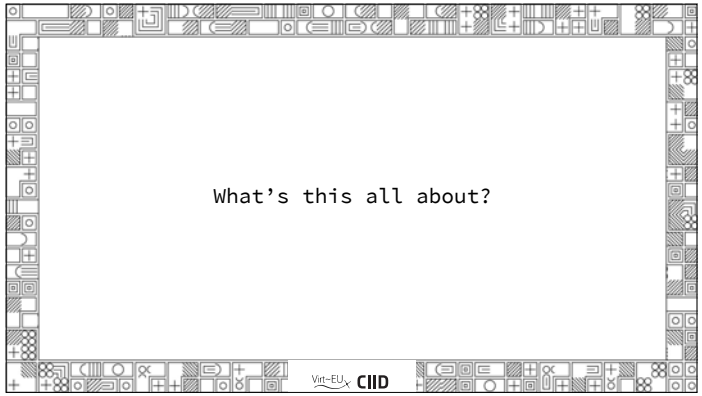
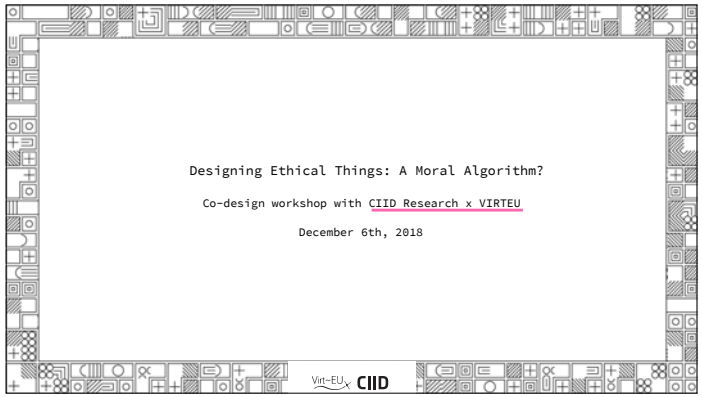


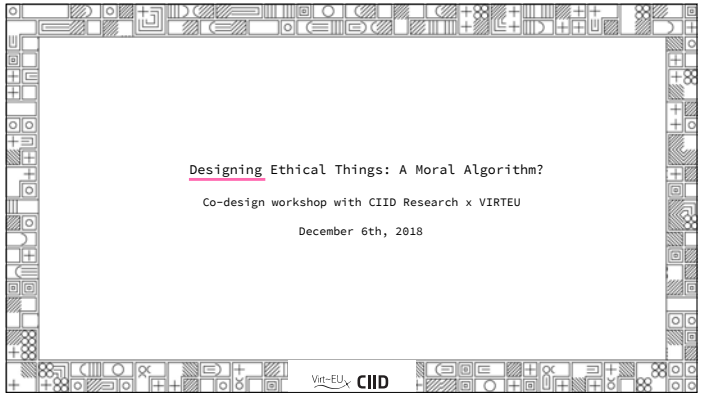
your name and where you traveled here from.



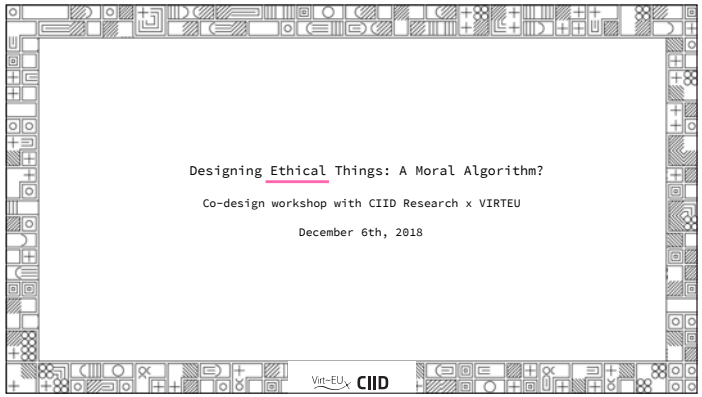
This is the first thing: CIID Research is working on the project VIRTEU - an EU-funded Horizon2020 project to figure out how do European IoT innovators and developers make ethically consequential decisions – about code, hardware and data – for new connective devices? But in this project, we are trying to figure out how ethics might be woven throughout - the actual creation - from the first moment of an idea through the process of making the idea happen.



Let’s take a moment to discuss “Things” and “Ethics.” When we talk about “things” in this workshop, we are thinking of Internet of Things - as in - objects that are connected to the internet. Lights you can control. Fridges that tweet messages to you. And so on.
The numbers are staggering:
Over 20 billion connected things by 2020 and approximately 4.7 million developers with the ability to create them. Jonathan Zittrain,
From Westworld to Best World for the Internet of Things
NYT, June 2018



When we talking about “Designing”, we actually are having in our mind - people who are themselves creating those “Things.” So, start-ups, small companies, all of the kickstarters you never funded. Increasing numbers of formerly human-run processes will be automated using devices and algorithms not easily understandable by the folks affected by them in areas such as data ownership, algorithmic bias, privacy, and regulatory compliance.



If many IoT developers and designers are faced with an overwhelming amount of ethical choices and consequences of their developments, we think it’s important to try to understand from a developer and designer perspective ethics and IoT is concretely about in the everyday practices of IoT creation. Because only then can we create a set of tools that will help developers deal with some of these ethical issues arising throughout the development process of IoT devices.
As a developer told me yesterday: ‘Ethics starts where the law ends’. And this is where we enter with our tools

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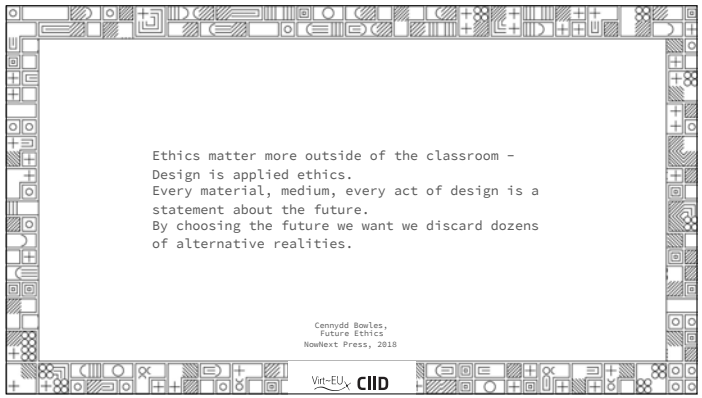

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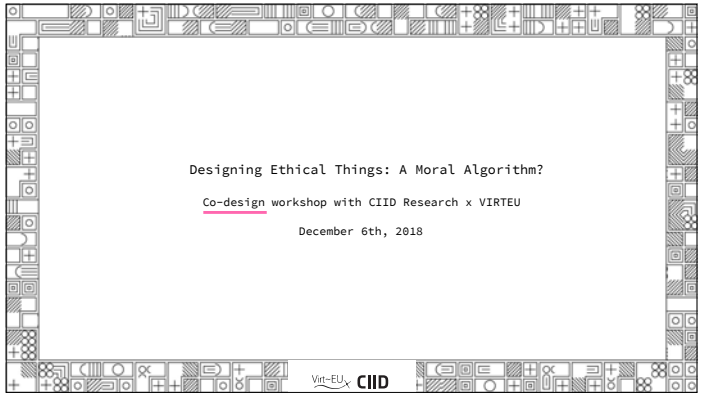

And this is where we enter with our tools. But we need your help! This session is intended for you to imagine you are working at an IOT company, faced with a problem they might be faced with, and take on a series of processes to try a “Moral Algorithm.”

what is this moral algorithm thing? ah ha, you will find that out later

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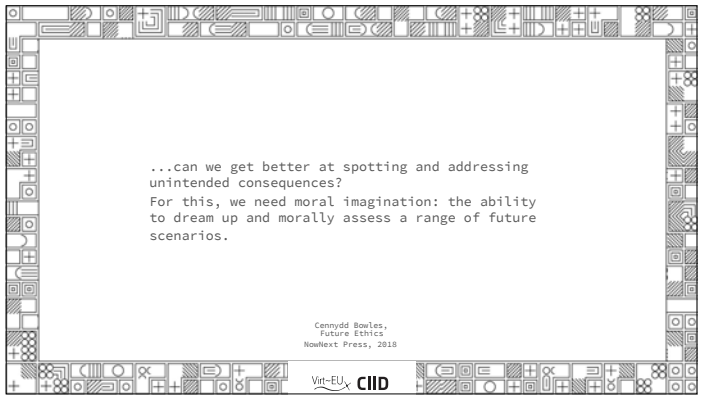

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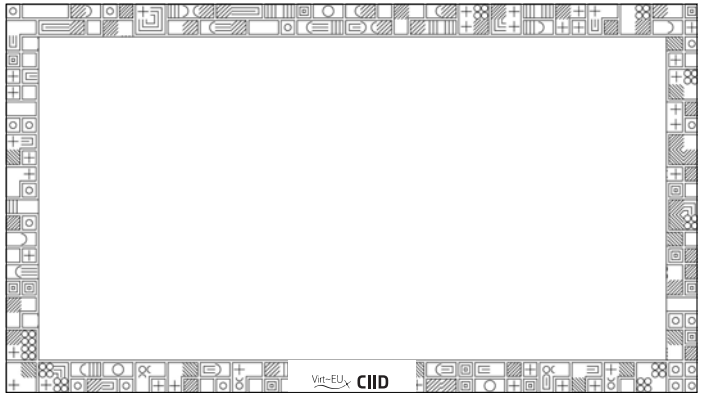

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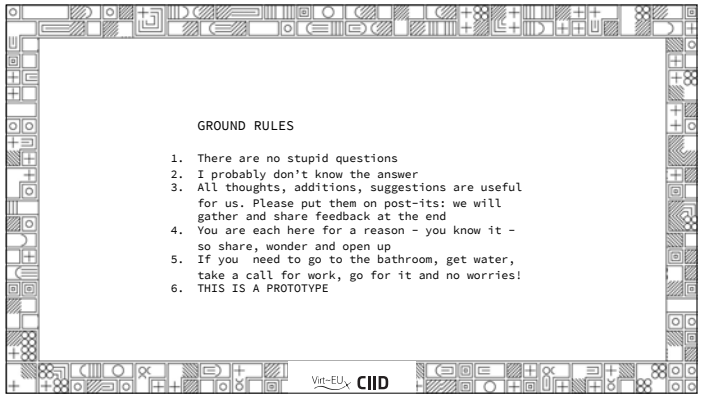
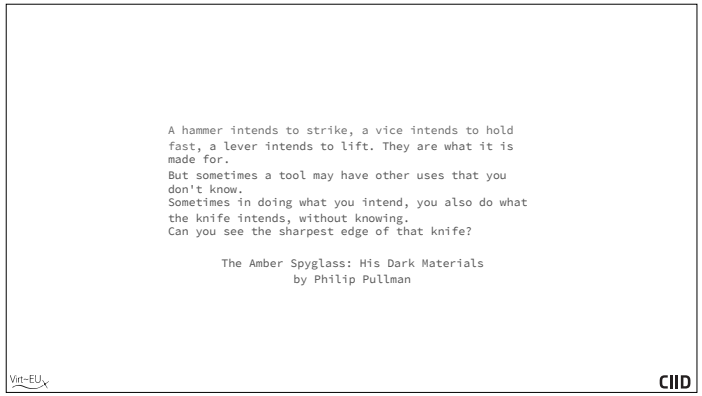
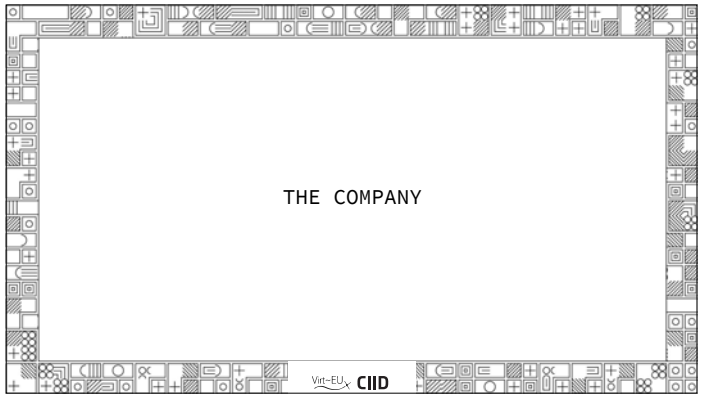
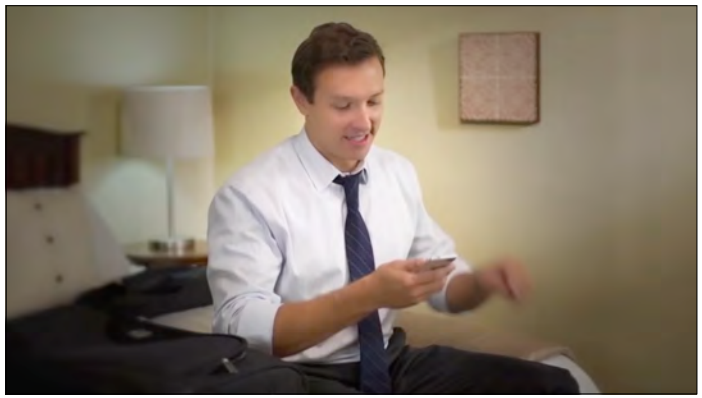
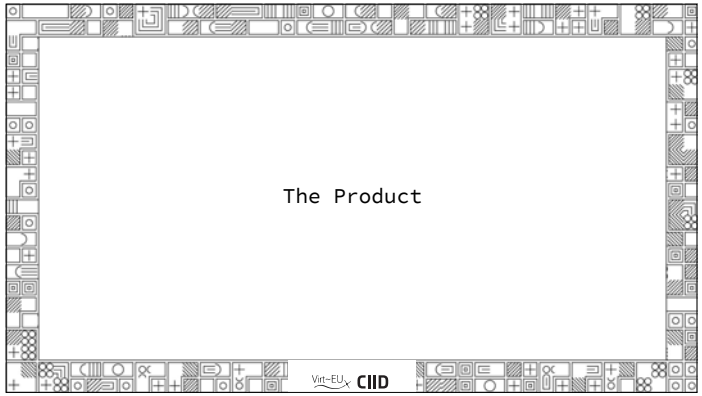




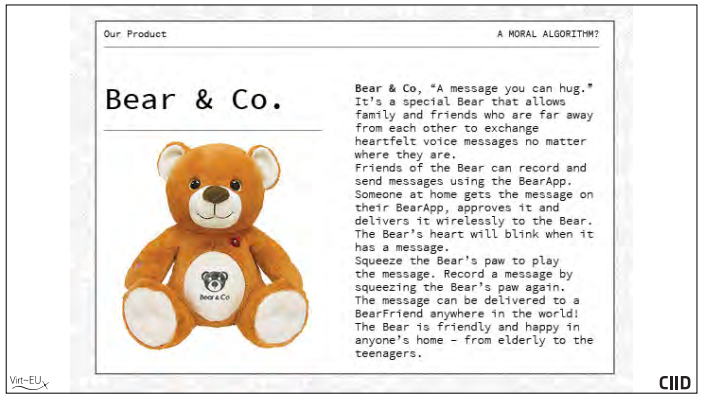


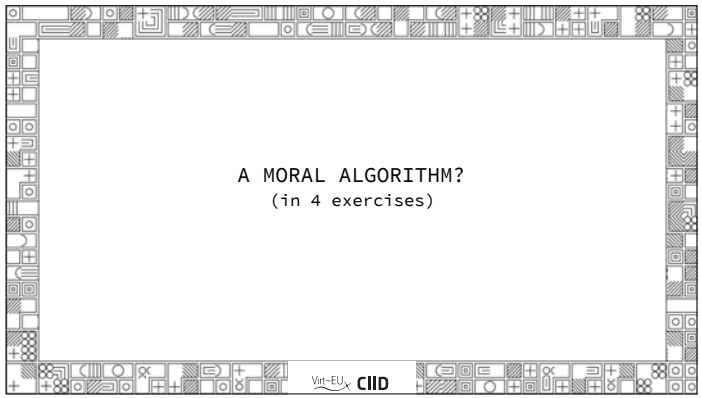
let’s get started. we are working together at a new company. you’ve just been hired in! so let’s watch the video to onboard you again about the company vision



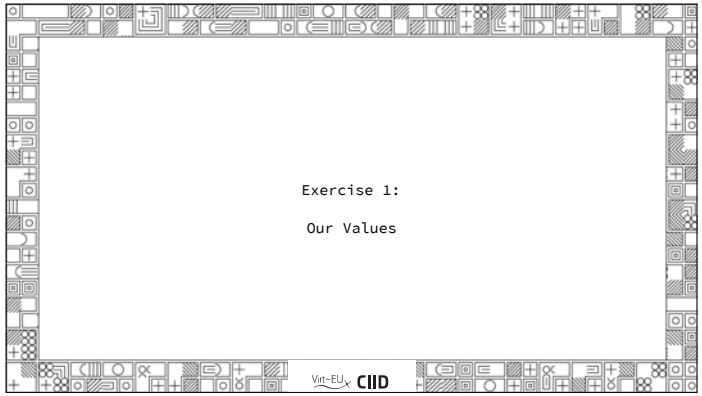


the product we are working on is…

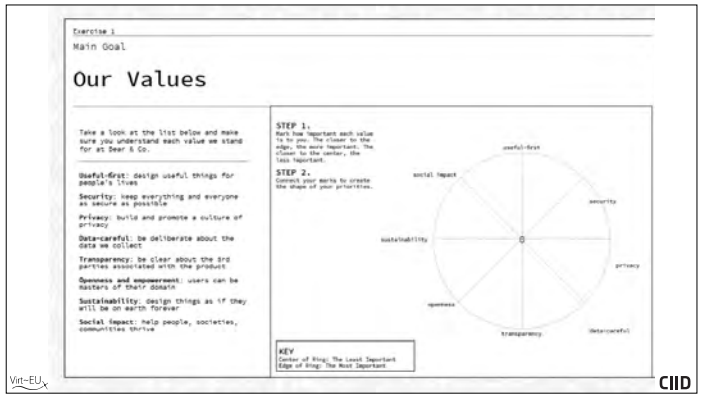




our onboarding today is going to tax our mental muscles: we will range from thinking about the ethical values we want to embrace and uphold at bear+co, and then we will deal with a current design decision through a series of imaginative and evaluative tools. we'll make decisions and share what we learned.



first of all, what are the values you will seek to uphold here at bear and co?



- here's your handout, turn to your partner and work together

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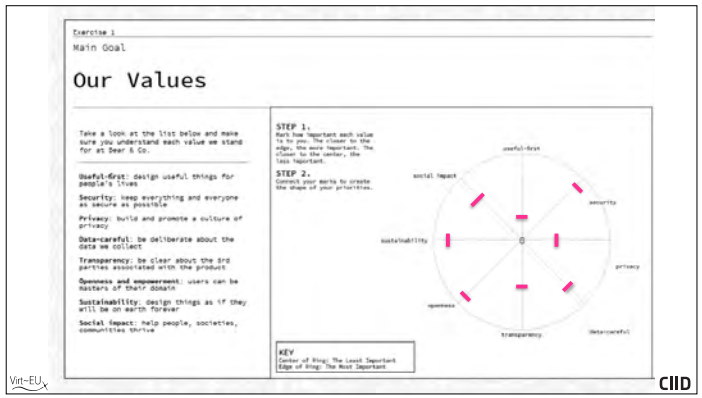
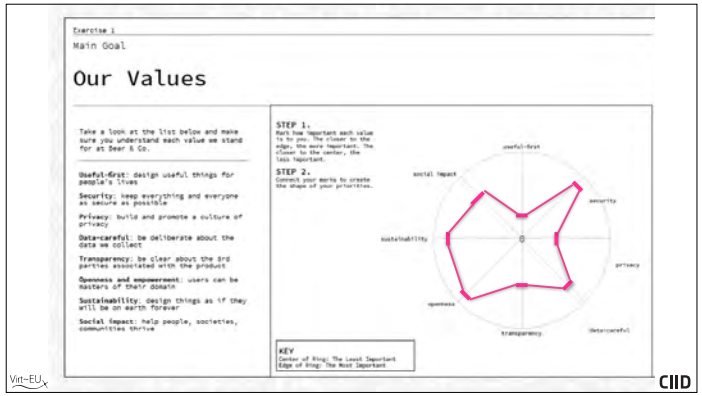
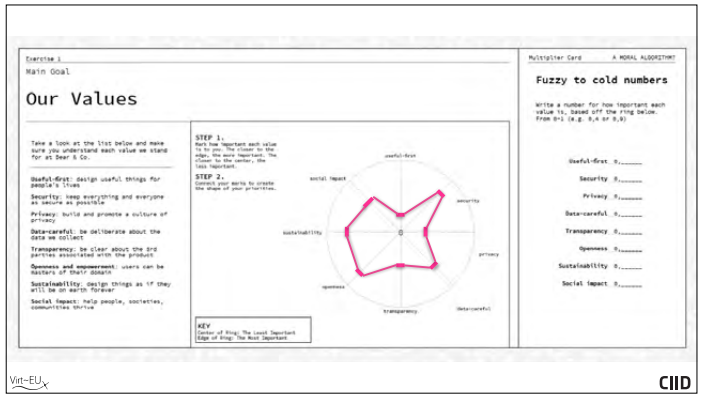


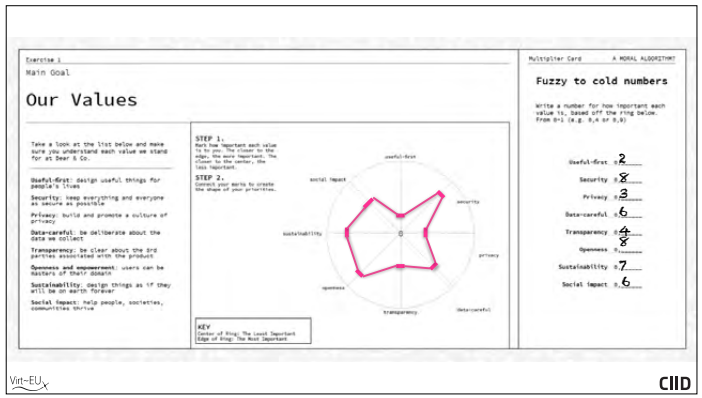
- fill it out like this



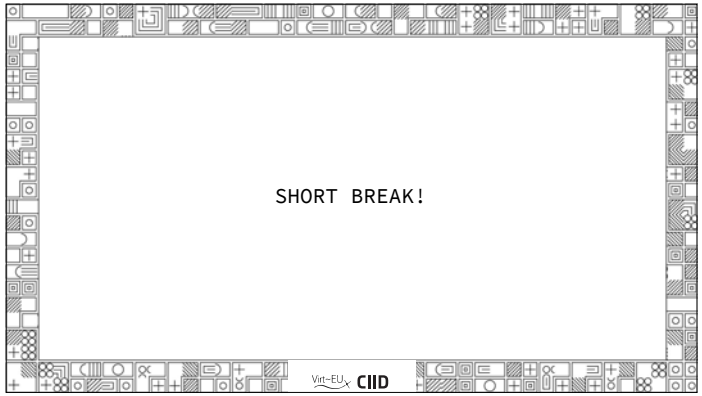
- then connect

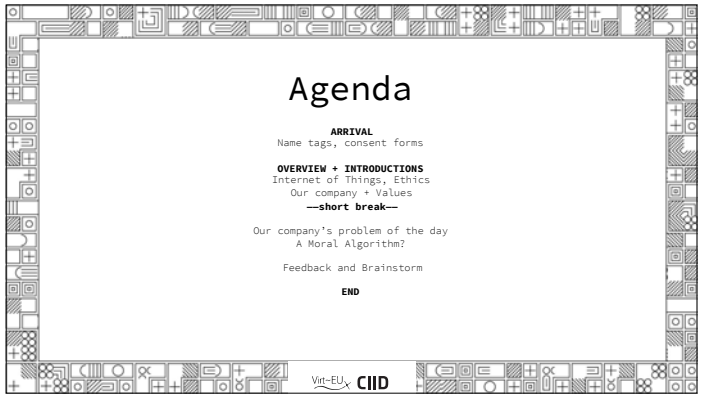


- then put actual numbers to each line you drew

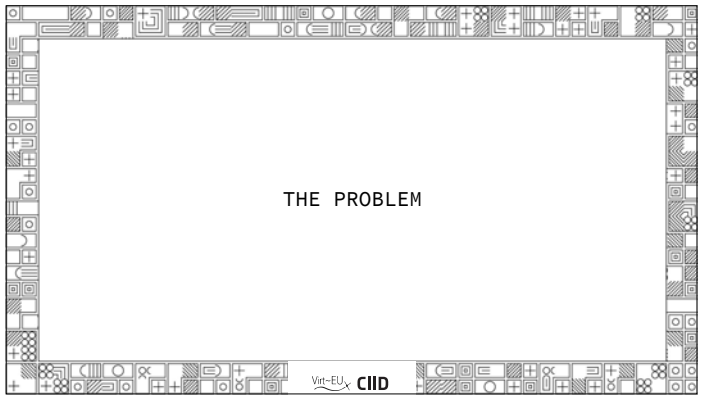


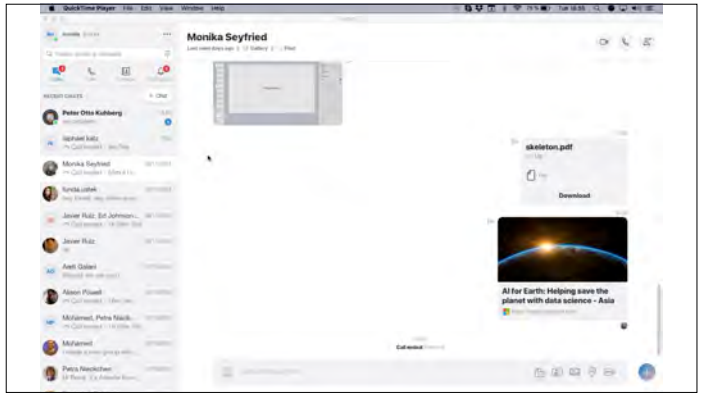
- DOES NOT HAVE TO ADD UP TO 1





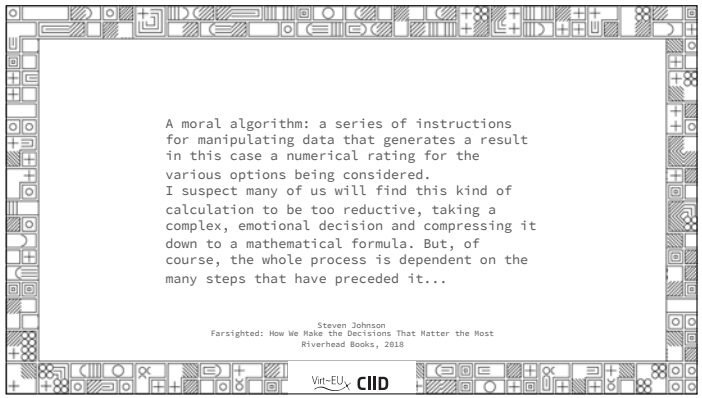
- ok so what is next? the problem of the day



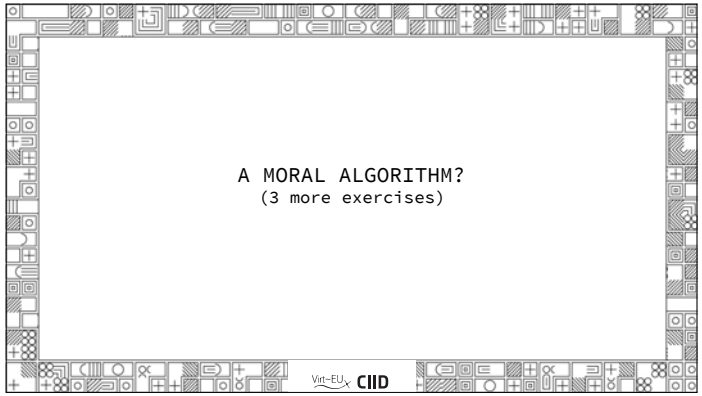


listen to the problem

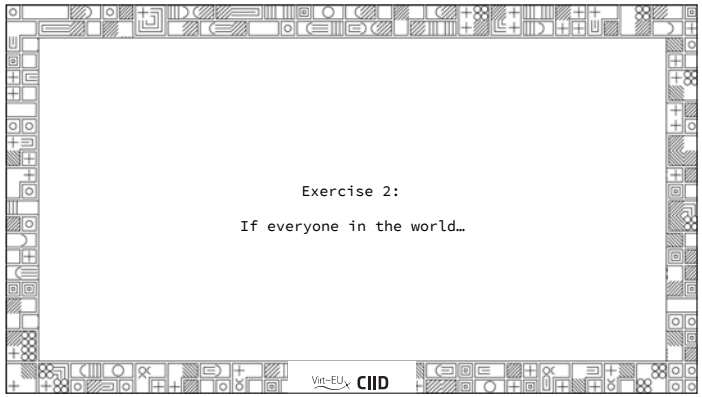
- here's your problem summary sheet

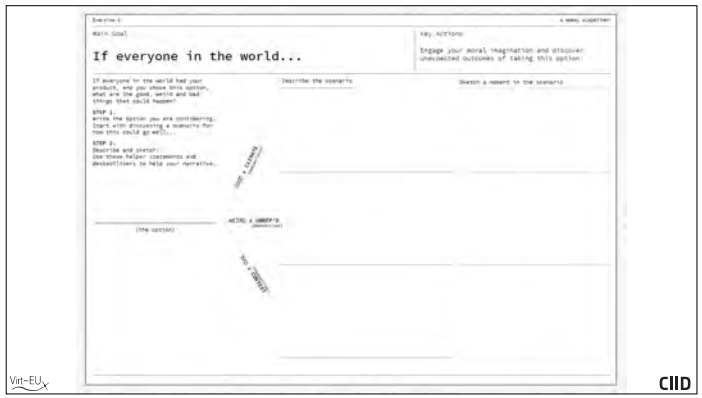


what is this moral algorithm?

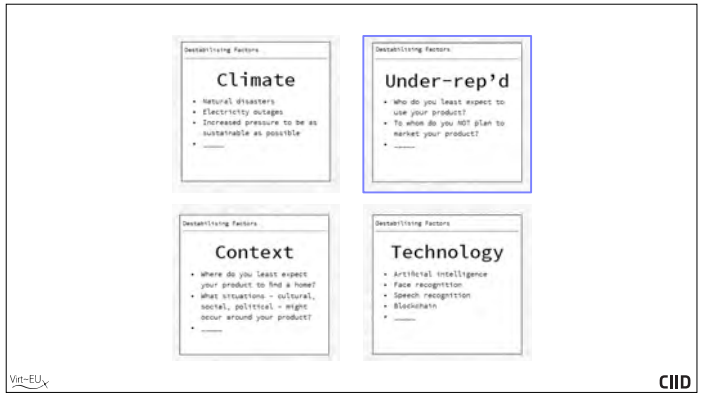


- a way to deal with difficult decisions





- here's your worksheet

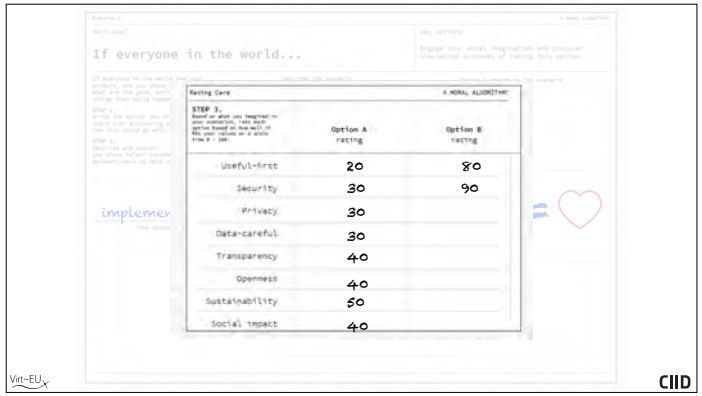


- add one of these to your scenario sheet and try to imagine with it in mind… for example:

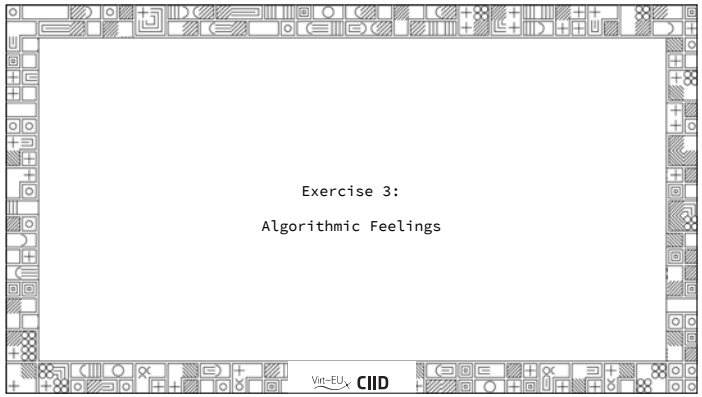
- the option to implement AI, with the destabilising factor of “sexuality” leads to this scenario

---

- after you are done with making scenarios for both options, rate how well the options do in terms of those company values we looked at before the break



- give numeric rating between 0 and 100 (0 is worst, 100 is best)



- now that we have imagined, rated, valued, weighted, let's put it together

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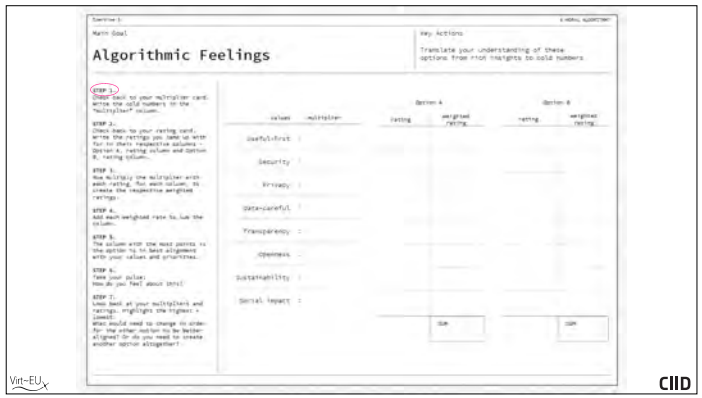
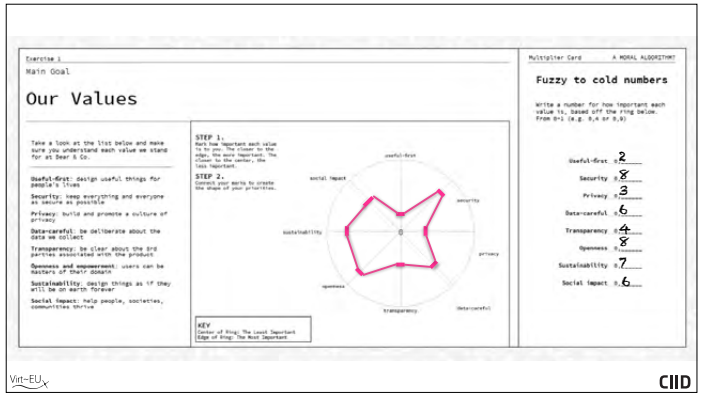
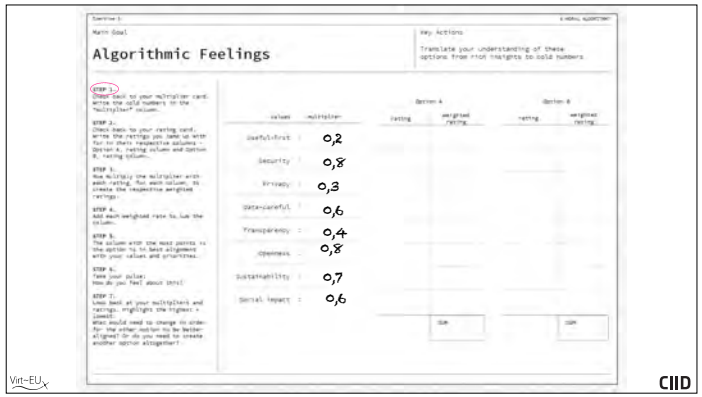
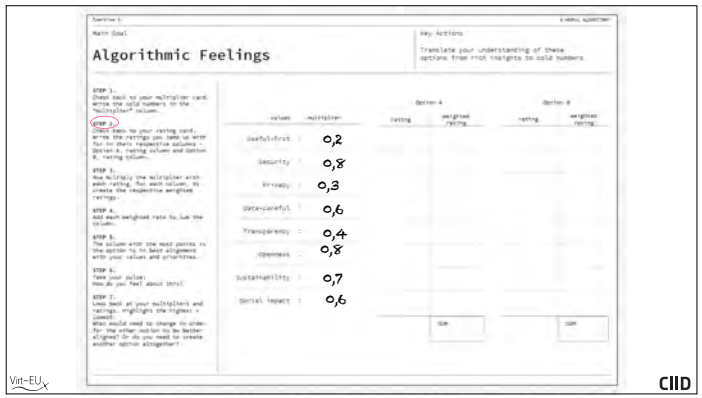
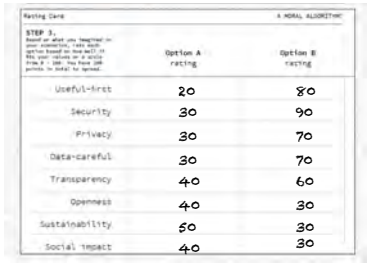




- DOES NOT HAVE TO ADD UP TO 1







Rating Card

A MORAL ALGORITHM

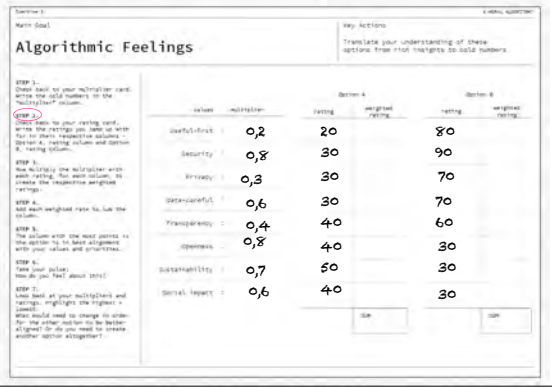
STEP 3.

Based on what you imagined in your scenarios, rate each option based on how well it fits your values on a scale from 0 - 100. You have 100 points in total to spread.

	Option A rating	Option B rating
Useful-first	20	80
Security	30	90
Privacy	30	70
Data-careful	30	70
Transparency	40	60
Openness	40	30
Sustainability	50	30
Social impact	40	30

Virt-EU

CIID



Algorithmic Feelings

Main Goal

Key Actions

Translate your understanding of these options from their insights to cold numbers

values	multiplier	Option A rating	Option A weighted rating	Option B rating	Option B weighted rating
Useful-first	0,2	20		80	
Security	0,8	30		90	
Privacy	0,3	30		70	
Data-careful	0,6	30		70	
Transparency	0,4	40		60	
Openness	0,8	40		30	
Sustainability	0,7	50		30	
Social impact	0,6	40		30	
			sum		sum

Virt-EU

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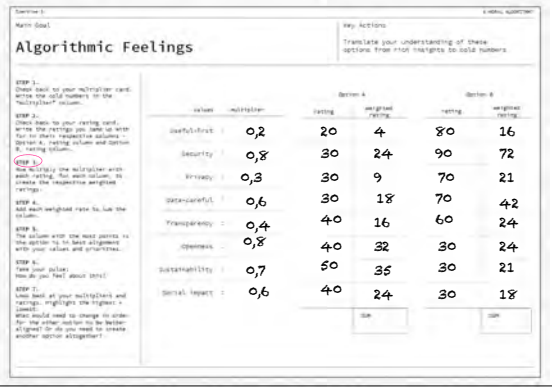


Algorithmic Feelings

Main Goal

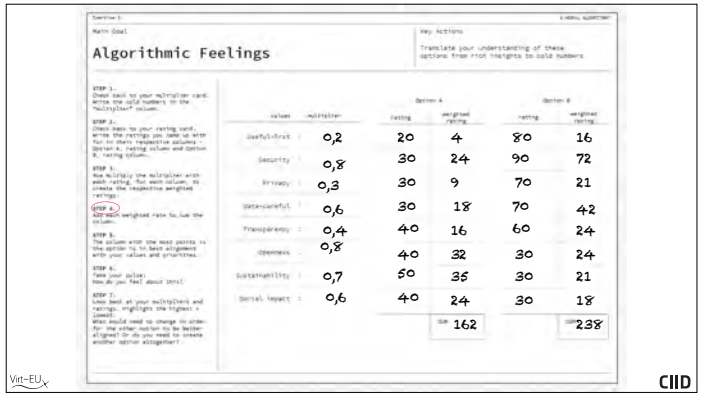
Key Actions

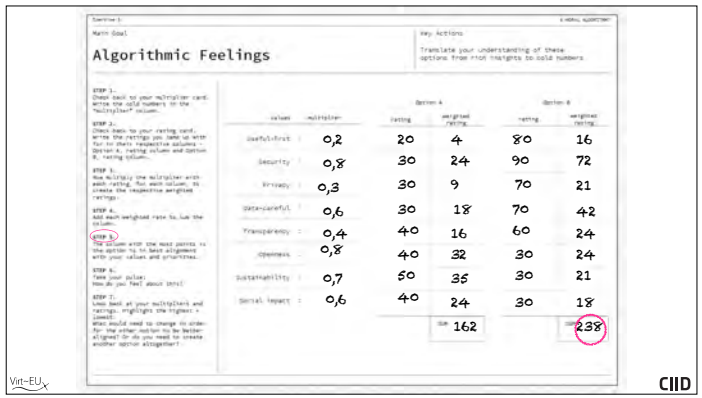
Translate your understanding of these options from their insights to cold numbers

values	multiplier	Option A rating	Option A weighted rating	Option B rating	Option B weighted rating
Useful-first	0,2	20	4	80	16
Security	0,8	30	24	90	72
Privacy	0,3	30	9	70	21
Data-careful	0,6	30	18	70	42
Transparency	0,4	40	16	60	24
Openness	0,8	40	32	30	24
Sustainability	0,7	50	35	30	21
Social impact	0,6	40	24	30	18
			sum		sum

Virt-EU

CIID


Algorithmic Feelings
Key Actions
Translate your understanding of these options from «not insights to cold numbers
STEP 1:
Check back to your multiplier card. Write the cold numbers in the "multiplier" column.
STEP 2:
Check back to your rating card. Write the ratings you came up with for in their respective columns - Option A. rating column and Option B. rating column.
STEP 3:
Now multiply the multiplier with each rating. For each column. to create the respective weighted ratings.
STEP 4:
Add each weighted rate to. Use the column.
STEP 5:
The column with the most points is the option is in best alignment with your values and priorities.
STEP 6:
Take your pulse:
How do you feel about this?
STEP 7:
Look back at your multipliers and ratings. Highlight the highest + lowest:
What would need to change in order for the other option to be better aligned? Or do you need to create another option altogether?
values
multiplier
Option A
rating
weighted rating
Option B
rating
weighted rating
Useful-first : 0,2 20 4 80 16
Security : 0,8 30 24 90 72
Privacy : 0,3 30 9 70 21
Data-careful : 0,6 30 18 70 42
Transparency : 0,4 40 16 60 24
Openness : 0,8 40 32 30 24
Sustainability : 0,7 50 35 30 21
Social impact : 0,6 40 24 30 18
Sum 162
Sum 238
Virt-EU
CIID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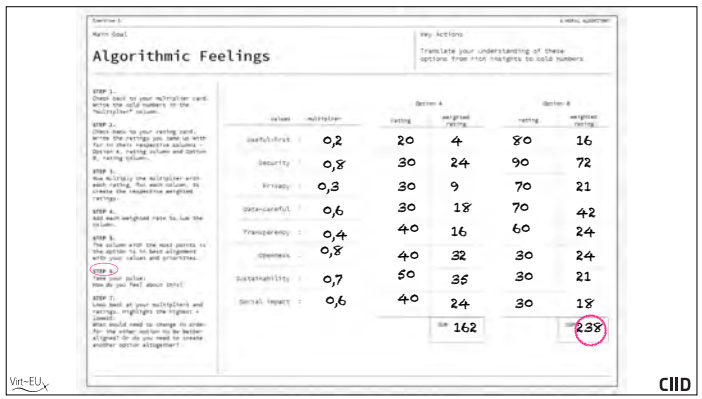
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Virt-EU
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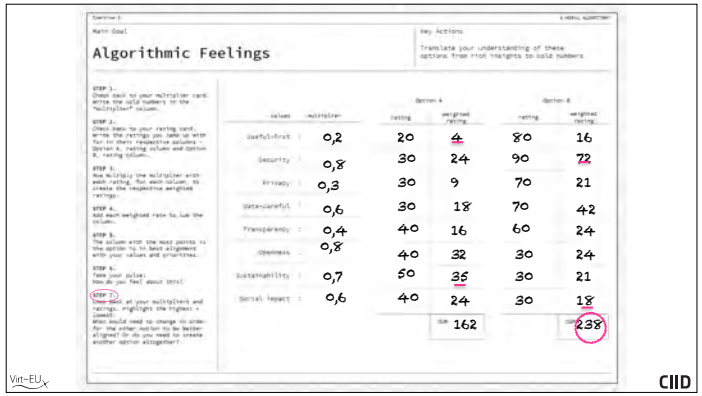

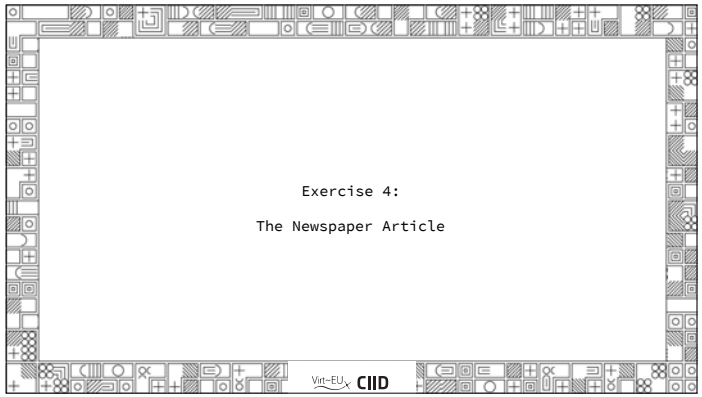

- the newspaper article is the way we can sum up everything we've learned and get ready to present it to the other people

Share your newspaper articles

Virt-EU CIID

Agenda

ARRIVAL
Name tags, consent forms

OVERVIEW + INTRODUCTIONS
Internet of Things, Ethics
Our company + Values
—short break—

Our company's problem of the day
A Moral Algorithm?

Feedback and Brainstorm

END

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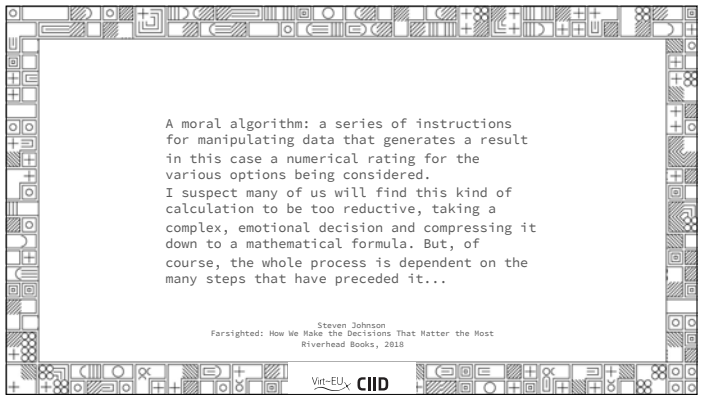
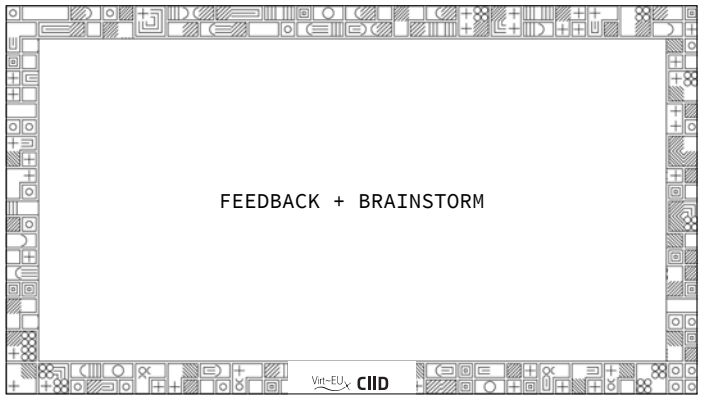


As the IoT grows in importance — Gartner predicts the number of connected things in use will hit 14.2 billion in 2019, and grow to 25 billion by 2021 — increasing numbers of formerly human-run processes will be automated using devices and algorithms not easily understandable by the folks affected by them in areas such as data ownership, algorithmic bias, privacy, and regulatory compliance.
If many IoT developers and designers are faced with an overwhelming amount of ethical choices and consequences of their developments, we think it's important to try to understand from a developer and designer perspective ethics and IoT is concretely about in the everyday practices of IoT creation. Because only then can we create a set of tools that will help developers deal with some of these ethical issues arising throughout the development process of IoT devices.
As a developer told me yesterday: 'Ethics starts where the law ends'. And this is where we enter with our tools.



- how did it go? what did you learn?

A MORAL ALGORITHM?
in 4 exercises

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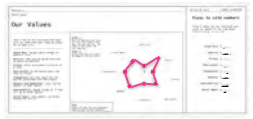


VALUES

IF EVERYONE IN THE WORLD…

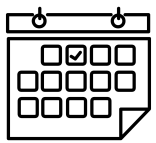
ALGORITHMIC FEELINGS

THE NEWSPAPER

Virt-EU CIID

let's discuss each exercise

How might we package this experience in different ways?



When and where might this be useful in the work of IOT design + development?

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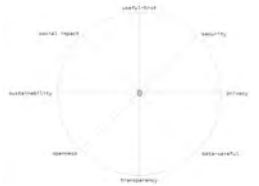
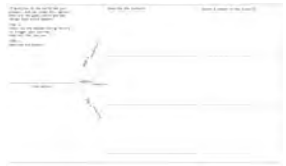
please go around to each board and leave feedback for us?



VALUES



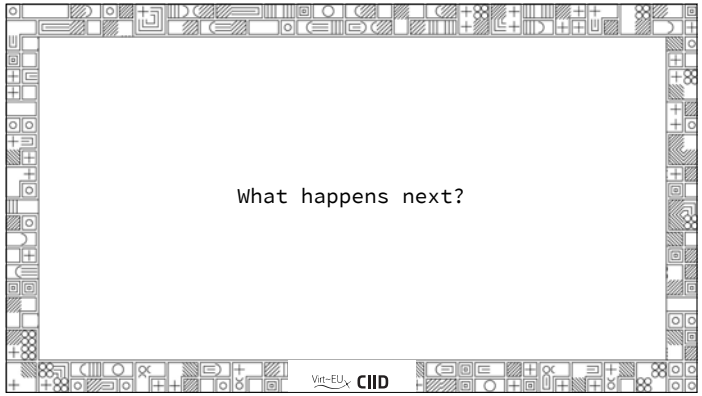
IF EVERYONE IN THE WORLD...

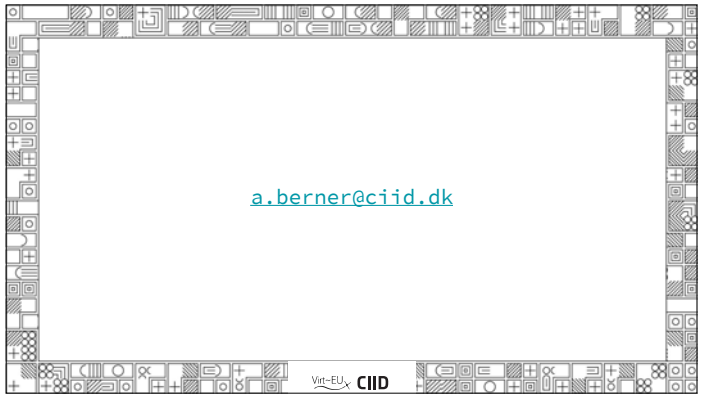
ALGORITHMIC FEELINGS

THE NEWSPAPER

How might we package this
experience in different ways?

When and where might this be
useful in the work of IOT design
+ development?





- Would you consider joining a group to continue the conversation, review other workshop's inputs, be part of the tools design?

Main Goal

Algorithmic Feelings

Key Actions

Translate your understanding of these options from rich insights to cold numbers

STEP 1.
Check back to your multiplier card. Write the cold numbers in the "multiplier" column.

STEP 2.
Check back to your rating card. Write the ratings you came up with for in their respective columns – Option A, rating column and Option B, rating column.

STEP 3.
Now multiply the multiplier with each rating, for each column, to create the respective weighted ratings.

STEP 4.
Add each weighted rate to sum the column.

STEP 5.
The column with the most points is the option is in best alignment with your values and priorities.

STEP 6.
Take your pulse:
How do you feel about this?

STEP 7.
Look back at your multipliers and ratings. Highlight the highest + lowest.
What would need to change in order for the other option to be better aligned? Or do you need to create another option altogether?

values	multiplier	Option A rating	Option A weighted rating	Option B rating	Option B weighted rating
Useful-first :					
Security :					
Privacy :					
Data-careful :					
Transparency :					
Openness :					
Sustainability :					
Social impact :					
			SUM		SUM

Exercise 1

Main Goal

Our Values

Take a look at the list below and make sure you understand each value we stand for at Bear & Co.

Useful-first: design useful things for people's lives

Security: keep everything and everyone as secure as possible

Privacy: build and promote a culture of privacy

Data-careful: be deliberate about the data we collect

Transparency: be clear about the 3rd parties associated with the product

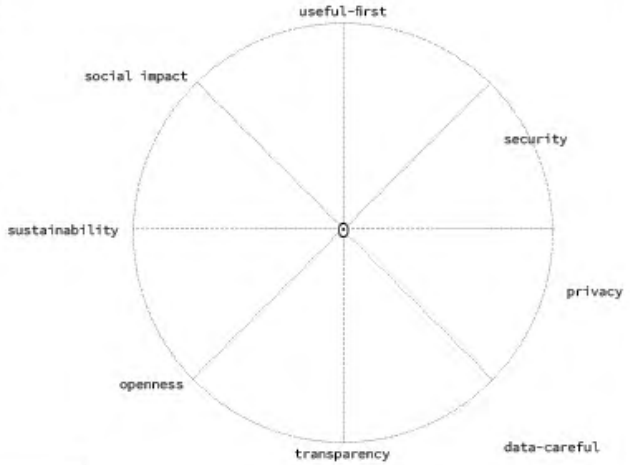
Openness and empowerment: users can be masters of their domain

Sustainability: design things as if they will be on earth forever

Social impact: help people, societies, communities thrive

STEP 1.
Mark how important each value is to you. The closer to the edge, the more important. The closer to the center, the less important.

STEP 2.
Connect your marks to create the shape of your priorities.



KEY
Center of Ring: The Least Important
Edge of Ring: The Most Important

Multiplier Card A MORAL ALGORITHM?

Fuzzy to cold numbers

Write a number for how important each value is, based off the ring below. From 0-1 (e.g. 0,4 or 0,9)

Useful-first 0,_____

Security 0,_____

Privacy 0,_____

Data-careful 0,_____

Transparency 0,_____

Openness 0,_____

Sustainability 0,_____

Social impact 0,_____

Happy or Sad Bears?

Description

The Bear is up and running and the BearApp is solid. We're now adding a new feature to the app where app holders can track the emotional progression of the voice messages. Super exciting new step for Bear & Co. to push into the field of tracking emotional wellness and providing as much usefulness to our customers as possible.
We're deciding whether to do the machine learning on the chip in the Bear itself, or in the cloud.
What do you all think?

Option A

Let's implement the A.I. feature. People are going to love tracking how their communication progresses.

Option B

No way. People can figure out how each other are feeling by just being in better touch.

Discussion Points

Would implementing machine learning make Bear more or less sustainable? Are there under-represented audiences who might be able to communicate better if they had the support of the emotional tracker? Would people be fearful that they were being monitored?

Main Goal

If everyone in the world...

Key Actions

Engage your moral imagination and discover unexpected outcomes of taking this option

If everyone in the world had your product, and you chose this option, what are the good, weird and bad things that could happen?

STEP 1.
Write the option you are considering. Start with discussing a scenario for how this could go well...

STEP 2.
Describe and sketch!
Use these helper statements and destabilisers to help your narrative.

_____
(the option)

GOOD x **CLIMATE** (destabiliser)

WEIRD x **UNREP'D** (destabiliser)

BAD x **CONTEXT** (destabiliser)

Describe the scenario

Sketch a moment in the scenario

THE DAILY

December 6th, 2018
Rotterdam, NE

Bear & Co. _____?

It all started with a great idea. A cuddly, fuzzy stuffed animal that anyone could use to send voice messages to each other. Then things got a little complicated.

An insider at the Bear & Co. team in Rotterdam told us that they were considering some difficult decisions as they worked on the cuddly Bear. They had to choose _____ _____ _____ _____.

Apparently, they explored both options by using a special foresight tool - similar to "Moral Imagination". Our source told us that the team imagined that everyone in the world had the Bear, and they got _____ when they considered the _____ outcomes.

Some of their scenarios even showed futures where _____ _____ _____ _____ _____ _____ _____ _____ _____ _____.

They literally weighed their options and tried to create some sort of a balancing act between their values and the decision at hand. It was _____ work and a _____ experience for the team. All of the energy and focus on this decision ended up in a _____ choice where the team decided to _____ _____ _____ _____. The decision _____ their values of _____ _____ _____.

Over here in The Daily newsroom, we're _____ by their commitment to figuring out the _____ situation. Watch this space, we'll be keeping an eye on Bear & Co. and all of their _____ friends!

Get six of our favorite The Daily stories every day by signing up for our newsletter!

Rating Card	A MORAL ALGORITHM?	
STEP 3. Based on what you imagined in your scenarios, rate each option based on how well it fits your values on a scale from 0 - 100. You have 100 points in total to spread.	**Option A** rating	**Option B** rating
Useful-first		
Security		
Privacy		
Data-careful		
Transparency		
Openness		
Sustainability		
Social impact		

Role: Product Designer

Role: CEO

Role: Product Designer

Role: Electronic Engineer

Role: UX+UI Designer

Role: Product Manager

Role: Marketing

Role: Software Developer

Role: CTO

Role: Software Developer

Our Product

A MORAL ALGORITHM?

Bear & Co.

Bear & Co, "A message you can hug."
It's a special Bear that allows family and friends who are far away from each other to exchange heartfelt voice messages no matter where they are.
Friends of the Bear can record and send messages using the BearApp.
Someone at home gets the message on their BearApp, approves it and delivers it wirelessly to the Bear.
The Bear's heart will blink when it has a message.
Squeeze the Bear's paw to play the message. Record a message by squeezing the Bear's paw again.
The message can be delivered to a BearFriend anywhere in the world!
The Bear is friendly and happy in anyone's home - from elderly to the teenagers.

Rating Card

A MORAL ALGORITHM?

STEP 3.
Based on what you imagined in your scenarios, rate each option based on how well it fits your values on a scale from 0 - 100. You have 100 points in total to spread.

	Option A rating	**Option B** rating
Useful-first		
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Openness		
Sustainability		
Social impact		

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Annex II - Scripts, handouts, slides, facilitator notes

The presenter notes contain examples of how to use the handouts in this workshop. The workshop is built around three sessions focused on the PESIA model questionnaire.

Handouts

- Ethics framework
- Mapping the system - V1 & V2 (facilitator choice)
- PESIA questionnaire
- Share handout
- Shift - looking at how to change the original design - V1, V2 & V3 (facilitator choice)
- Values handout
- Steer - process overview
- Technical diagram for a fictitious IoT platform (discussion aid)

AGENDA

Thursday, July 18th

1. Introduction
2. VIRT-EU’s goals
3. Simulation
4. PESIA framework
5. Simulation continues
6. Discussion

Introduction:
Ethics in VIRTEU

PART ONE:
TALKING TOGETHER ABOUT ETHICS

Ethics in Practice

PART ONE:
TALKING TOGETHER ABOUT ETHICS

ethics comes up
when things go down

PART ONE:
TALKING TOGETHER ABOUT ETHICS

Who is responsible for ensuring connected devices we allow into our lives behave ethically?

Conceptual Framings

1. Definitions of ethics - from philosophical literature in virtue ethics tradition
2. Problems and limitations of virtue ethics (individual focus, incapacity to determine where ‘good’ comes from)
3. Expansion in relation to concepts of capability (Sen) and care (Puig de la Bellacasa)

Beyond Virtue

Individual's attempt to live a "good life"

The ability to act, given the structural opportunities and constraint

Shifting responsibilities and obligations in a web of relations

Do-ers, Postponers, and the convenient ethics researchers

Ethics is understood differently by those interested in building ethical companies from the outset, and those that see ethics as compliance with a regulatory framework.

When making a seemingly technical decision as whether to add a camera and a microphone to a device which might not necessarily need it, they consider not only their own subjective positions, but they also extend a matter of care to the networks they are part of, their potential users as well as the future generations that might be affected by them.

“Unfortunately, ethics never makes it into my ever-growing to-do list. Maybe one day, I will have time for it. But not at the moment, not when I am just starting my company”

“After all” he said, “Google has all the resources, time and money to make sure everything is in order. I neither have the time, nor the money.”

Testing Ethical concepts

How are ideas about ‘goodness’ or ‘good practice communicated?

Which ideas hold tensions?

What are the challenges of putting ethical ideas into practice?

What are gaps between positions expressed by developers and those of other stakeholders?

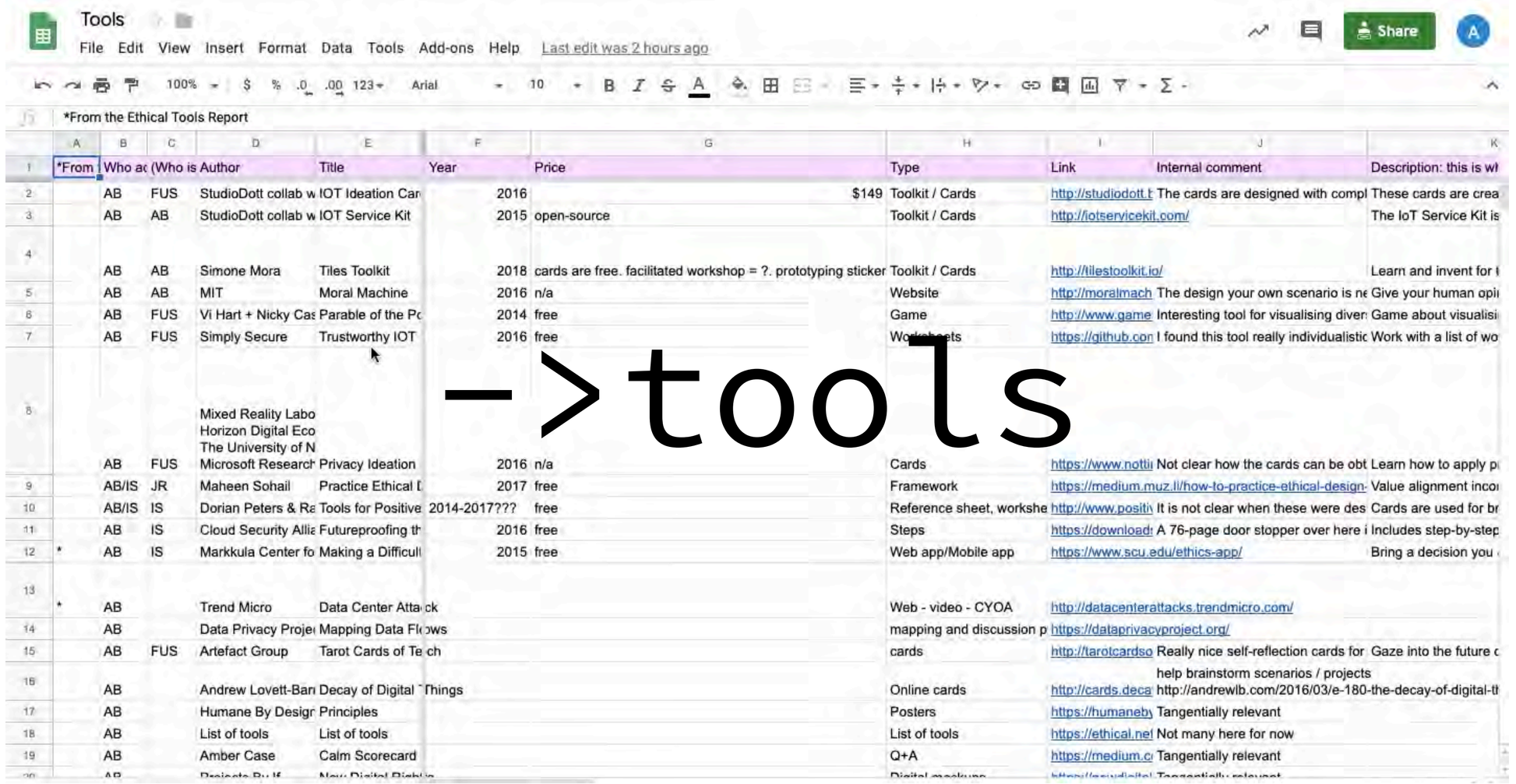
PART TWO:
VIRTEU : TOWARDS TOOLS

VIRTEU

->tools

“ethics starts where the law ends”

“you can’t just go to ethics camp”



Tools

File Edit View Insert Format Data Tools Add-ons Help Last edit was 2 hours ago

Share

*From the Ethical Tools Report

	A	B	C	D	E	F	G	H	I	J	K
1	*From	Who ac	(Who is	Author	Title	Year	Price	Type	Link	Internal comment	Description: this is wh
2		AB	FUS	StudioDott collab w	IOT Ideation Car	2016	$149	Toolkit / Cards	http://studiodott.t	The cards are designed with compl	These cards are crea
3		AB	AB	StudioDott collab w	IOT Service Kit	2015	open-source	Toolkit / Cards	http://iotservicekit.com/		The IoT Service Kit is
4		AB	AB	Simone Mora	Tiles Toolkit	2018	cards are free. facilitated workshop = ?. prototyping sticker	Toolkit / Cards	http://tilestoolkit.io/		Learn and invent for t
5		AB	AB	MIT	Moral Machine	2016	n/a	Website	http://moralmach	The design your own scenario is ne	Give your human opi
6		AB	FUS	Vi Hart + Nicky Cas	Parable of the Pc	2014	free	Game	http://www.game	Interesting tool for visualising diver	Game about visualisi
7		AB	FUS	Simply Secure	Trustworthy IOT	2016	free	Worksheets	https://github.con	I found this tool really individualistic	Work with a list of wo
8		AB	FUS	Mixed Reality Labo Horizon Digital Eco The University of N Microsoft Research	Privacy Ideation	2016	n/a	Cards	https://www.nottii	Not clear how the cards can be obt	Learn how to apply p
9		AB/IS	JR	Maheen Sohail	Practice Ethical I	2017	free	Framework	https://medium.muz.li/how-to-practice-ethical-design-		Value alignment inco
10		AB/IS	IS	Dorian Peters & Ra	Tools for Positive	2014-2017???	free	Reference sheet, workshe	http://www.positiv	It is not clear when these were des	Cards are used for br
11		AB	IS	Cloud Security Alli	Futureproofing th	2016	free	Steps	https://downloadt	A 76-page door stopper over here i	Includes step-by-step
12	*	AB	IS	Markkula Center fo	Making a Difficult	2015	free	Web app/Mobile app	https://www.scu.edu/ethics-app/		Bring a decision you
13	*	AB		Trend Micro	Data Center Attack			Web - video - CYOA	http://datacenterattacks.trendmicro.com/		
14		AB		Data Privacy Proje	Mapping Data Flows			mapping and discussion p	https://dataprivacyproject.org/		
15		AB	FUS	Artefact Group	Tarot Cards of Te ch			cards	http://tarotcardso	Really nice self-reflection cards for	Gaze into the future c
16		AB		Andrew Lovett-Bar	Decay of Digital Things			Online cards	http://cards.deca	help brainstorm scenarios / projects http://andrewlb.com/2016/03/e-180-the-decay-of-digital-th	
17		AB		Humane By Desigr	Principles			Posters	https://humaneby	Tangentially relevant	
18		AB		List of tools	List of tools			List of tools	https://ethical.nel	Not many here for now	
19		AB		Amber Case	Calm Scorecard			Q+A	https://medium.c	Tangentially relevant	

->tools

Tools as a System

GAPS

MAP

questions

#value #ingredient #question

contextualise answer

STEER

solutions

#value #ingredient #question

STATE

weighted evaluation of ideas

SHARE

MAP

SHIFT

futures

Part Two:

Hands On

PART TWO:
TOOLS

Activity!

PART TWO:
TOOLS

We are working on a product at our start-up.

PART TWO:
TOOLS

OldLifeWell has developed a smart bracelet that helps people with dementia (or other kinds of memory loss problems) to keep track of their daily routine tasks.

OldLifeWell's product was used to gain information from individuals with dementia on their wealth, and where and how they keep it. With the tracking capabilities of OldLifeWell's product, a number of individuals with dementia have been kidnapped and such information has been taken from them. But since they do not have memories of it, their families become aware only when the money has left their bank accounts.

OldLifeWell's product is being promoted by political parties because it will enable people with dementia and other types of memory loss to be able to vote in the general elections. They have even come up with push notifications specific for the product that reiterates their campaign title and the name of their political party. Since the push notifications work around the daily routines of people with dementia, their uptake is high, and the users become familiar with the campaign and political parties.

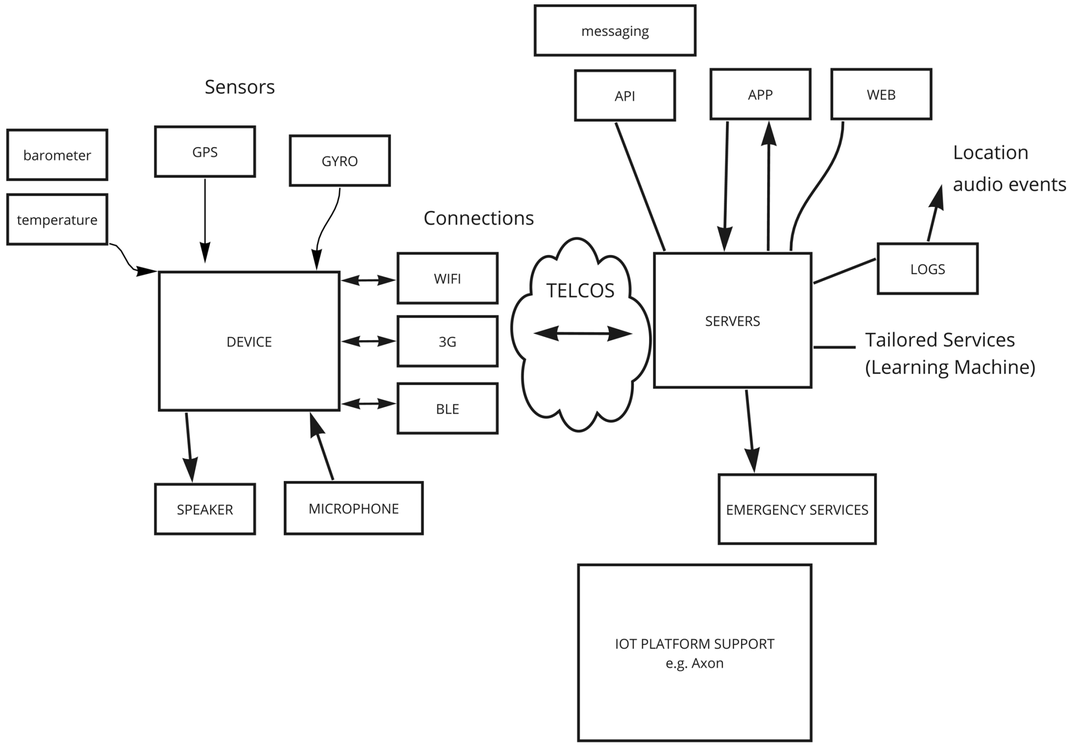
PART TWO:
TOOLS

We are working on a product at our start-up.

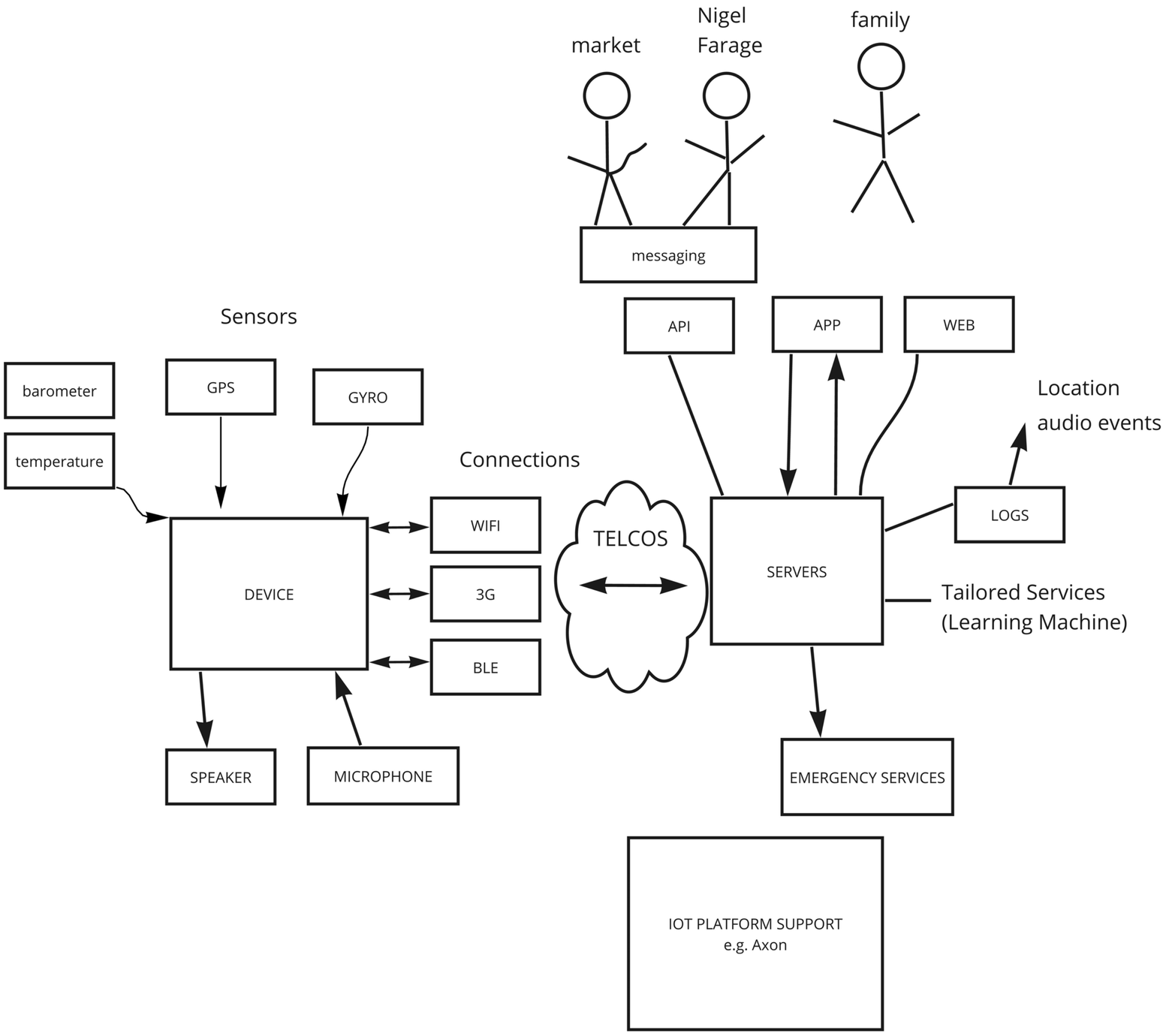
1. Get to know the diagram of the elements of your respective products.

2. Now add any relations (users + makers). Who is related (using, impacted, connected to) to each element in your product?

PART TWO:
TOOLS



- Reminders, routine, medicine, etc.
- Direct voice
- Automatic alarm if outside zone (geo-fencing)
- Real-time tracking app
- Heart rate
- Sudden movement (falls)
- Activity (possible death)
- Subscription for extra services
- Audio record loud noise



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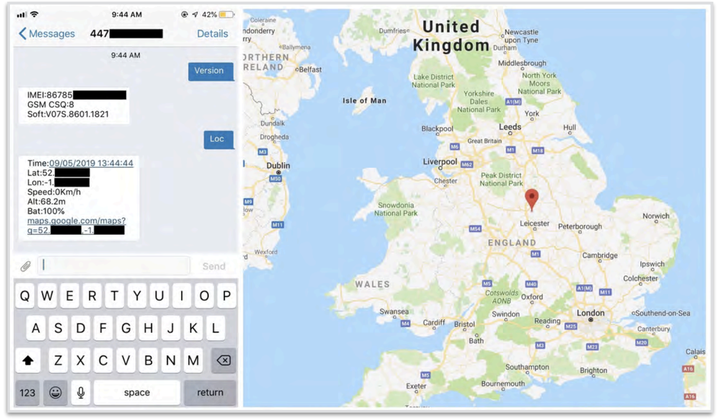
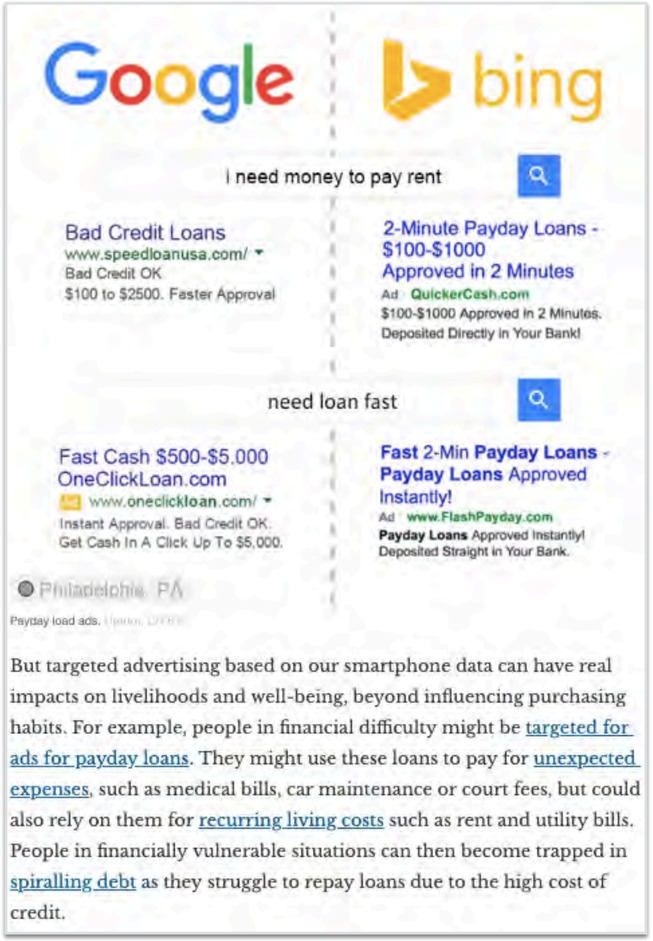
PART TWO:
TOOLS



Flaws in a popular GPS tracker leak real-time locations and can remotely activate its microphone

Zack Whittaker



But targeted advertising based on our smartphone data can have real impacts on livelihoods and well-being, beyond influencing purchasing habits. For example, people in financial difficulty might be targeted for ads for payday loans. They might use these loans to pay for unexpected expenses, such as medical bills, car maintenance or court fees, but could also rely on them for recurring living costs such as rent and utility bills. People in financially vulnerable situations can then become trapped in spiralling debt as they struggle to repay loans due to the high cost of credit.

TECH

Growth business: GPS tracking... the elderly

When Marc Regimbal lost his three-year-old child for 20 minutes – in what he called the "hairiest experience" of his life – he was determined to make sure it would never happen again.

He spent the next four years combining global positioning system (GPS) and cell-phone technologies to make a tracker – called Childtrac – that could be easily attached to a child's clothing or backpack. Parents can set virtual boundaries and locate their children on their smartphones.

Just one year on from the launch of the product, however, and Regimbal said he is seeing growing demand from an unexpected demographic.

PART TWO:
TOOLS

We are working on a product at our start-up.

1. Get to know the diagram of the elements of your respective products.

2. Now add any relations (users + makers). Who is related (using, impacted, connected to) to each element in your product?

3. But before we continue: let’s have a check-in: what do we want to make sure OldLifeWell stands for? We’re just about to hire a new person and we want to make sure she knows what our moral principles are here

Let's start with the best of intentions. What is your North Star for your product? What are the underlying values you will hold on to, no matter what?

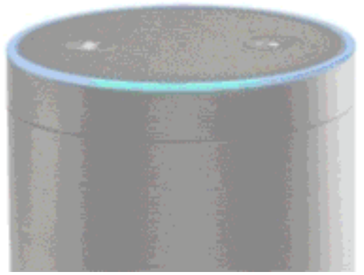
News › World › Americas

Amazon Echo could become key witness in murder investigation after data turned over to police

ethics comes up when things go down

Man on trial for murder has agreed to turn over data from his smart home device

Mythili Sampathkumar New York | @MythiliSk | Thursday 9 March 2017 17:48 GMT | 0 comments

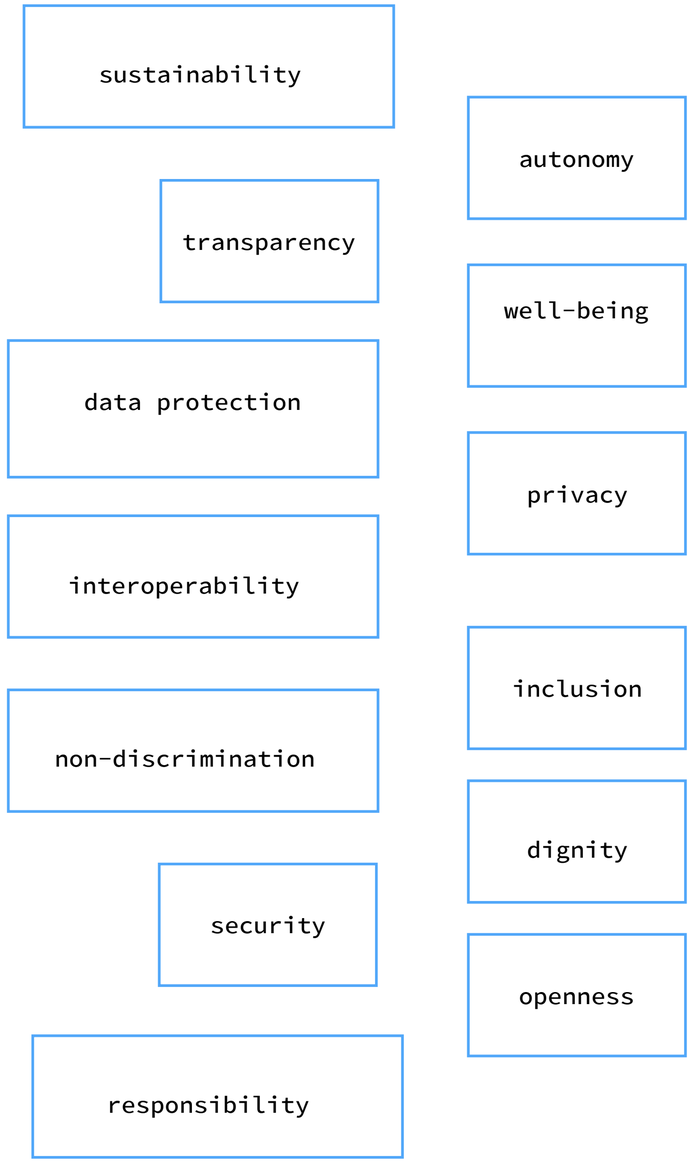


INDIVIDUALLY

1. Write values from this list
2. Then prioritise them

Ethics is defined not only by individuals but also as part of a wider group.

These ethical values have been identified as the outstanding ideas of ethics in the community of IOT creators.


sustainability
transparency
data protection
interoperability
non-discrimination
security
responsibility
autonomy
well-being
privacy
inclusion
dignity
openness

~~INDIVIDUALLY~~

1. ~~Write values from this list~~
2. ~~Then prioritise them~~

AS A GROUP

3. share and compare
4. discuss definitions + priorities
5. find agreement on priorities
6. give each value a weight to show priorities
7. write communal definitions

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6. ~~give each value a weight to show priorities~~
7. ~~write communal definitions~~

COMMIT

-processing-

PART TWO:
ENGAGING WITH PESIA

-> questions from PESIA

Will the bracelet reduce individuals ability to make their own decisions about the best route or pace?

Will the tool include some form of remote control?

If any limitations to user control exist, do they happen in contexts characterised by power asymmetries (e.g. workplace)?

PART THREE:
UNDERSTANDING PESIA

PESIA:

An overview

PART THREE:
UNDERSTANDING PESIA

- **Project outputs:**

- *a toolkit to describe systems, elicit values, analyse and find problems, solve them if possible*
- **PESIA**

  *Impact assessment tool in **questionnaire** form*

  1. *Identify risks*
  2. *Implement mitigation*

PART THREE:
UNDERSTANDING PESIA

- **Where does PESIA come from?**
  - Strong legal research Politecnico di Torino and ethnography from LSE
  - Value analysis in jurisprudence and opinions from privacy regulators
  - Follow best practice PIA and DPIA models but add social and ethics

PART THREE:
UNDERSTANDING PESIA

Understanding your system and establishing compliance

PART THREE:
UNDERSTANDING PESIA

Data mapping and basic legal compliance

(Start with mapping hardware, software and wider system)

- What information is collected?
- Special data
- What do you do want to achieve with the information?
- Where does the information come from?
- What authorisation or rationale do you have to use that information?
- What information do you provide?
- How do you handle consent?
- Where does the data go?
- If the hardware is finished and going to market, do we comply with RED and other relevant regulation?

PART THREE:
UNDERSTANDING PESIA

Identifying issues and risks

PART THREE:
UNDERSTANDING PESIA

Technology, Activities and High Risk

- **Technology**
  Are new technologies used which might be perceived as being privacy intrusive (e.g. facial recognition, use of biometrics)?
- **Automation & Profiling**
  Does the technology allow (full or partial) automated-decisions to be taken with regard to the data subjects?
  Does the technology allow for human intervention in the decision process?
- **Scale & Breadth**
  Does the technology allow the collected data to be easily matched or combined with other data sets?
  Does the technology allow to observe, monitor or control data subjects in a systematic way?
- **Context & Space**
  Does the technology allow the collection of personal data in contexts that are private?
- **Other risks**

PART THREE:
UNDERSTANDING PESIA

Wider impacts in society

Responsibility

- Will there be a way to challenge any decisions made by the system?
- Will there be clear lines of responsibility for any outcomes, particularly between the developers of the tools and the operators to ensure that any issues are always dealt with?

Sustainability

- Are the devices reusable? How will they be disposed of otherwise?
- Will the servers providing remote functionalities keep functioning for the lifetime of the product?

Openness

- Will the device allow for third party add-ons or user re-programming?

Employment

PART THREE:
UNDERSTANDING PESIA

How do you treat users and people whose data you use (Care ethics)

- **Participation and transparency**
  - *How do you consult with users and others?*
- **How well do you support user rights**
  - *Are there adequate measures or procedures which ensure the reply to every request of data subjects?*
- **Data Portability**
- **Dignity**
  - *Does the IoT device need to be implanted into the user's body?*
- **Non-discrimination**
  - *Will the system take into account any particular characteristics of the users when making any determination, such as **age, gender or disability**?*
- **Autonomy**
  Will the device reduce individuals ability to make their own decisions?

.

PART THREE:
UNDERSTANDING PESIA

Challenges:

- Identifying risks and issues in the technology is OK: expand analysis from individuals to the wider community and society harder
- Consultation, participation and external input (integrate in external design and product design methodologies)
- The “treating people” section, where individual data protection rights overlap with ethical values of participation, dignity, autonomy, etc.
- Incorporating other tools: STRIDE, UK Code of IoT Security, etc..
- Pushing people to speculate beyond their comfort zone.

PART THREE:
UNDERSTANDING PESIA

The ethics puzzle

SOCIAL AND ETHICAL VALUES

Non-discrimination

Equality

Participation

Enabling people to effect real change

well-being

Increase individuals' well-being and fostering "IoT for good".

dignity

Avoiding any forms of surveillance or invasive control over individuals using IoT devices. IoT devices shall not be used to collect unauthorised private information or to publicly disclose private facts.

inclusion

Considering diversity and inclusion both in IoT development and with regard to users' experience.

autonomy

Safeguarding individual self-determination and freedom of expression.

safety

Protecting users against any harm due to IoT devices (hardware and software security).
Updatability of devices for security.

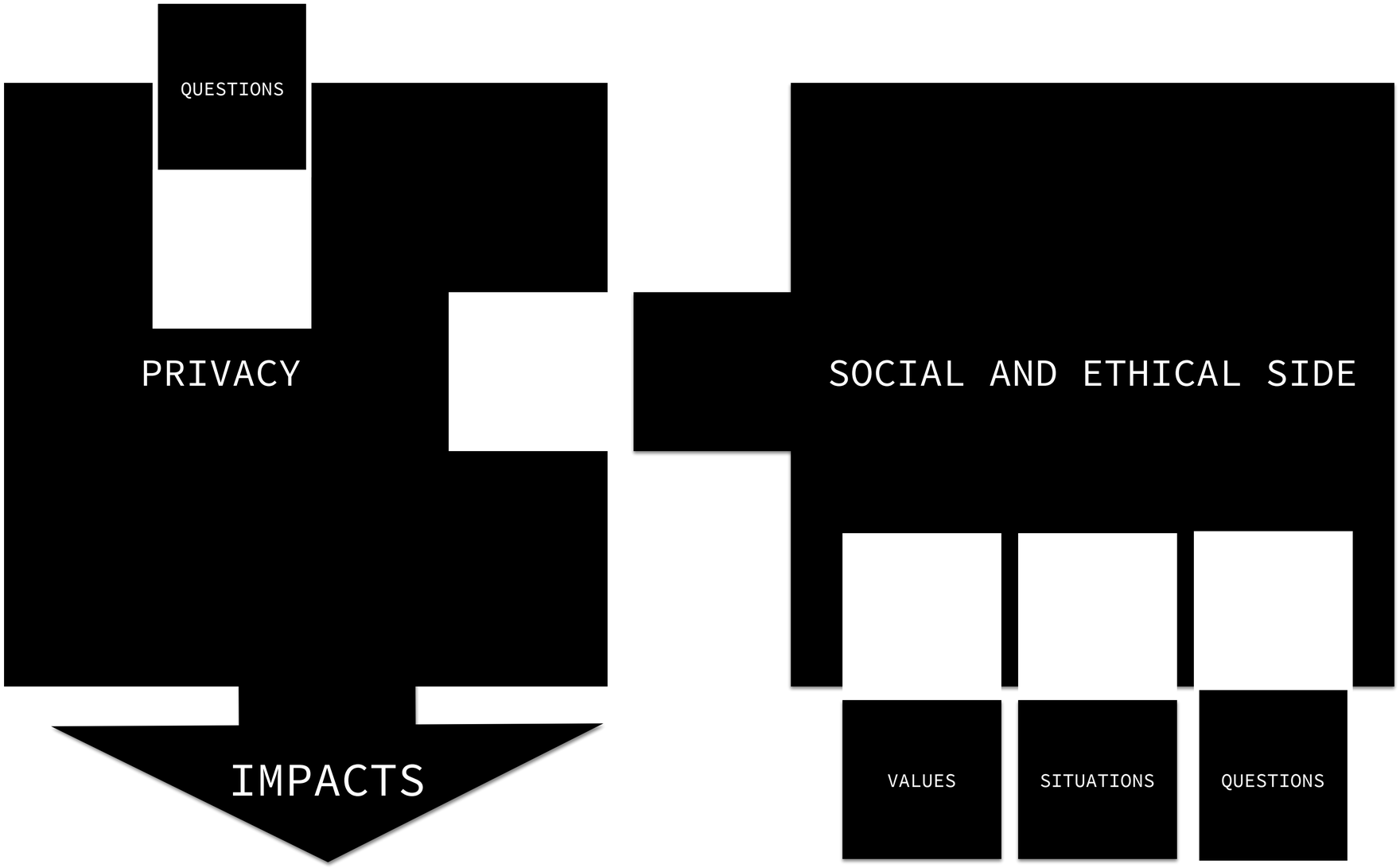
openness

Promoting open hardware and software with open source code.

Sustainability

Social and environmental justice

THE PUZZLE


QUESTIONS
PRIVACY
IMPACTS
SOCIAL AND ETHICAL SIDE
VALUES
SITUATIONS
QUESTIONS

PART THREE:
UNDERSTANDING PESIA

Managing risks

PART THREE:
UNDERSTANDING PESIA

Consequence → / Likelihood ↓	Insignificant	Minor	Moderate	Major	Critical
Almost certain	Medium	Medium	High	Extreme	Extreme
Likely	Low	Medium	High	High	Extreme
Possible	Low	Medium	High	High	Extreme
Unlikely	Low	Low	Medium	Medium	High
Rare	Low	Low	Low	Low	Medium

PART THREE:
UNDERSTANDING PESIA

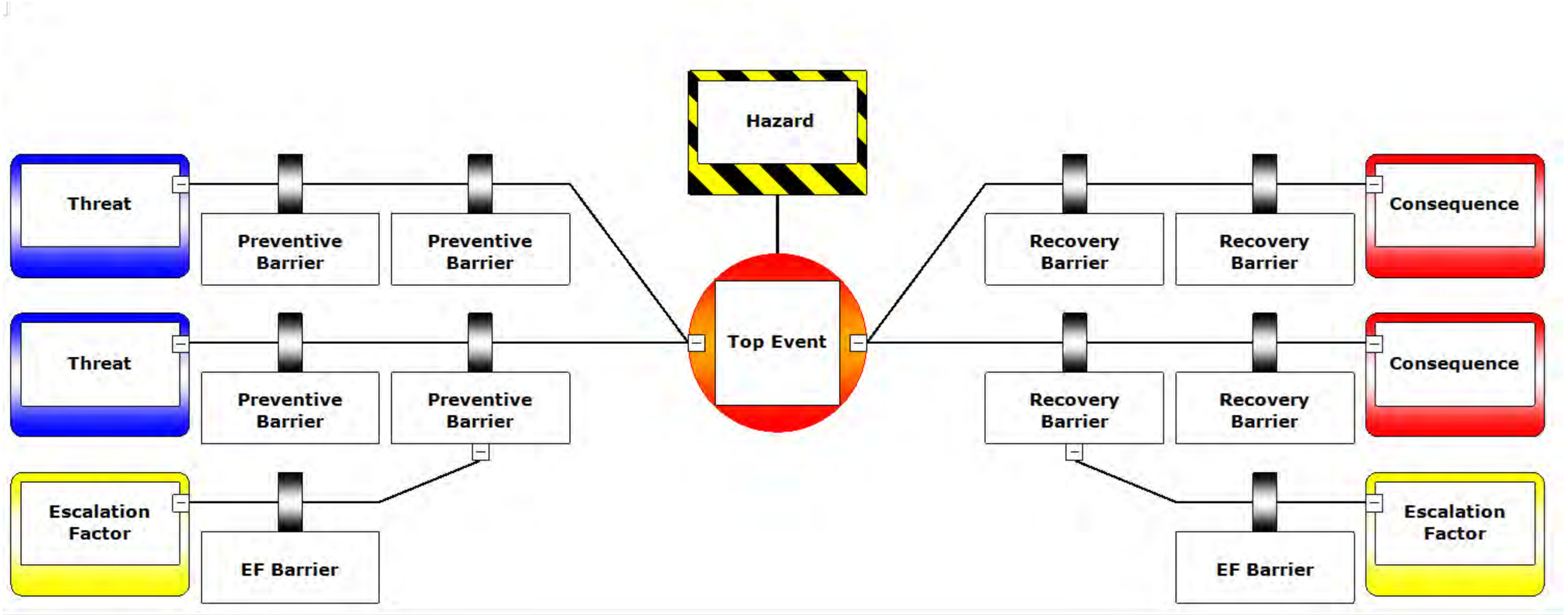
How do you handle data accurately and securely

- **Technical measures**
  Are there procedures or mechanisms to create backups?
  If information is converted in anonymous information, are there procedures which ensure the irreversibility of the process and the impossibility to re-identify data subjects?

- **Policies**
  Is there a data breach management action plan in place?
  Is there a records management policy in place which includes a retention and destruction schedule?

- **Organisational measures**
  Is there an access register to the IT systems containing personal data?
  - **Data processors**
  - **Staff**

PART THREE:
UNDERSTANDING PESIA



PART FOUR:
TOOLS AGAIN

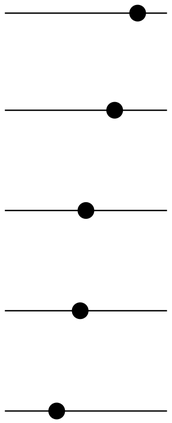
[MORE TOOLS]

“ancillary” tools to support ethical reflection and self-assessment

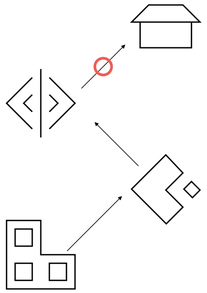
Tools STATE MAP GAPS STEER SHARE

Tools

STATE



MAP

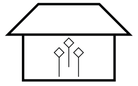


GAPS

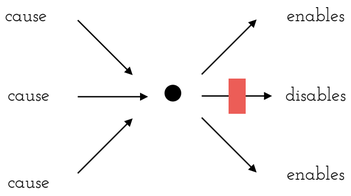
PESIA Question

#value #ingredient #question

contextualise answer through scenario



understand impacts



STEER

Solution ideation

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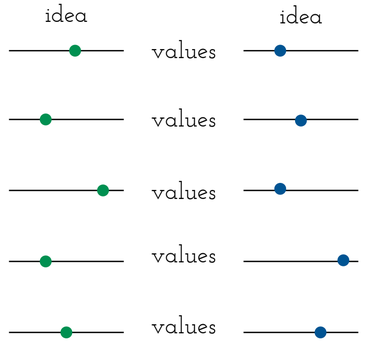
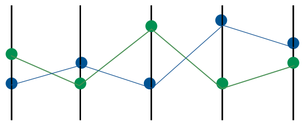
here's an idea for you

weighted evaluation of ideas

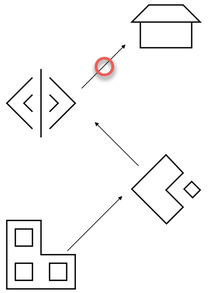


SHARE



Ethical Update

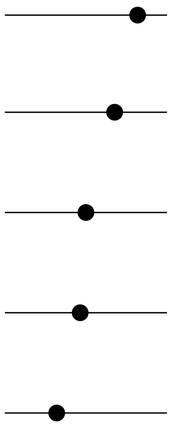
MAP



commit the update

Tools

STATE



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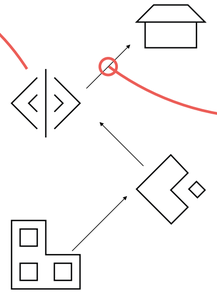

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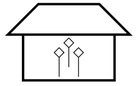

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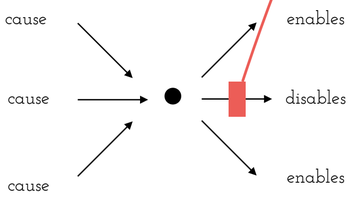

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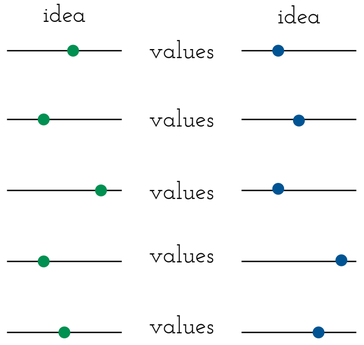
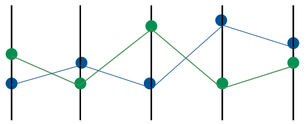
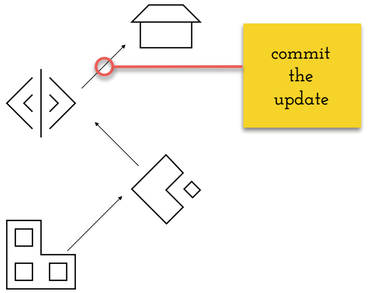


SHARE



Ethical Update

MAP



Data

Moving Manifesto

Values
Numerically weighted

Technical diagram - Blueprint

Technical ingredients
Users
Context
Employees

PESIA database

Values, questions
Materials, values, questions

Solutions library

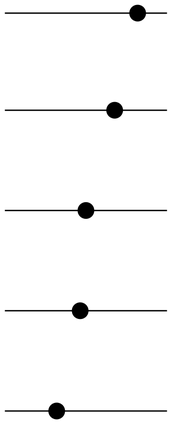
Solutions from VIRTEU group and community tagged with PESIA question / ingredient from map / value

Ethics Log

Updates you have made to your company and / or product because of the realisations

Tools

STATE



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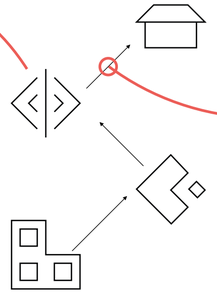

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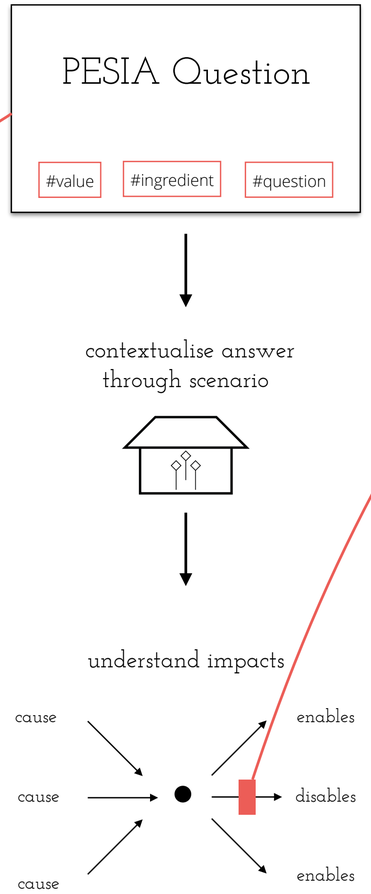

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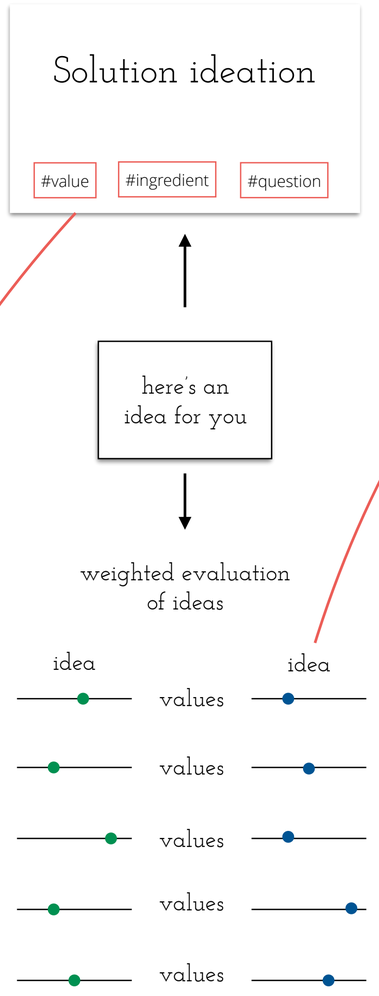
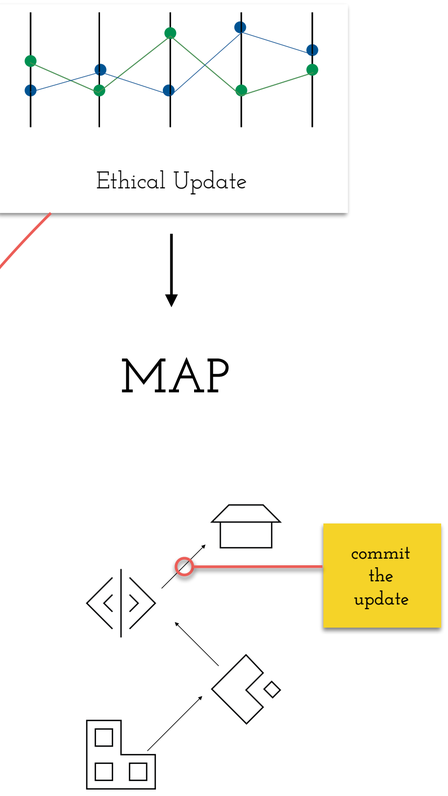
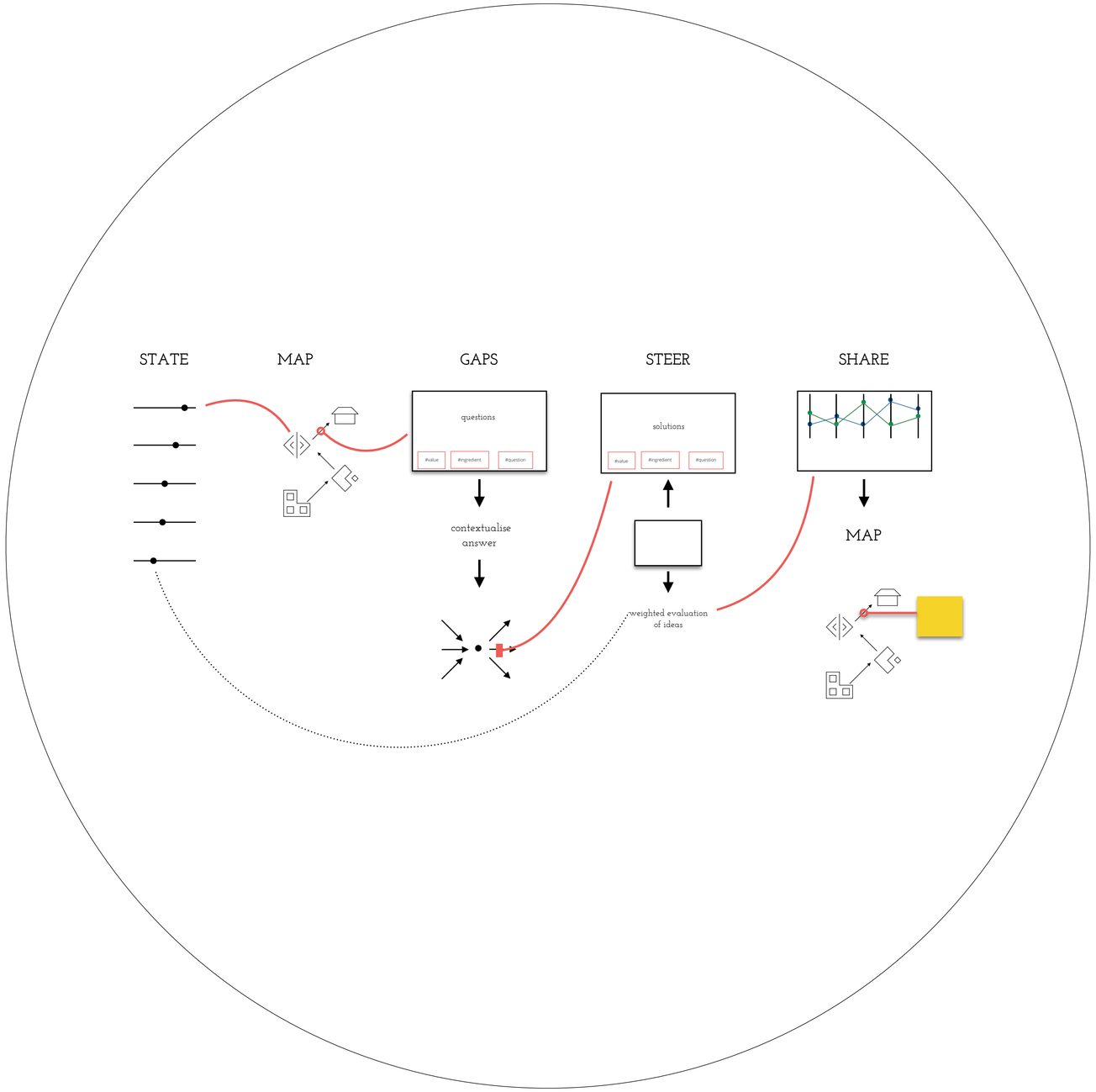


SHARE




STATE
MAP
GAPS
STEER
SHARE
questions
#value
#ingredient
#question
contextualise
answer
solutions
#value
#ingredient
#question
weighted evaluation
of ideas
MAP

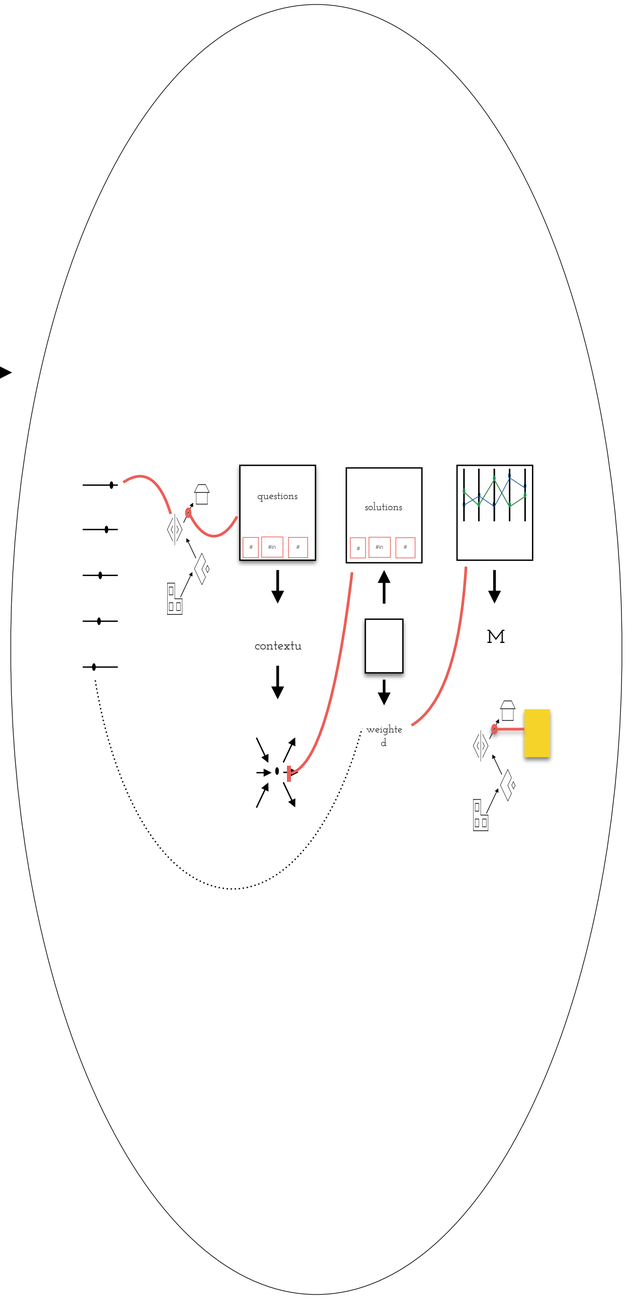
Data

Users identified
Context
Relevant speculations database
IOT trends
IOT Type trends

Tools

SHIFT

speculate beyond the visible issues



GAPS

MAP

questions

#value #ingredient #question

contextualise answer

STEER

solutions

#value #ingredient #question

STATE

weighted evaluation of ideas

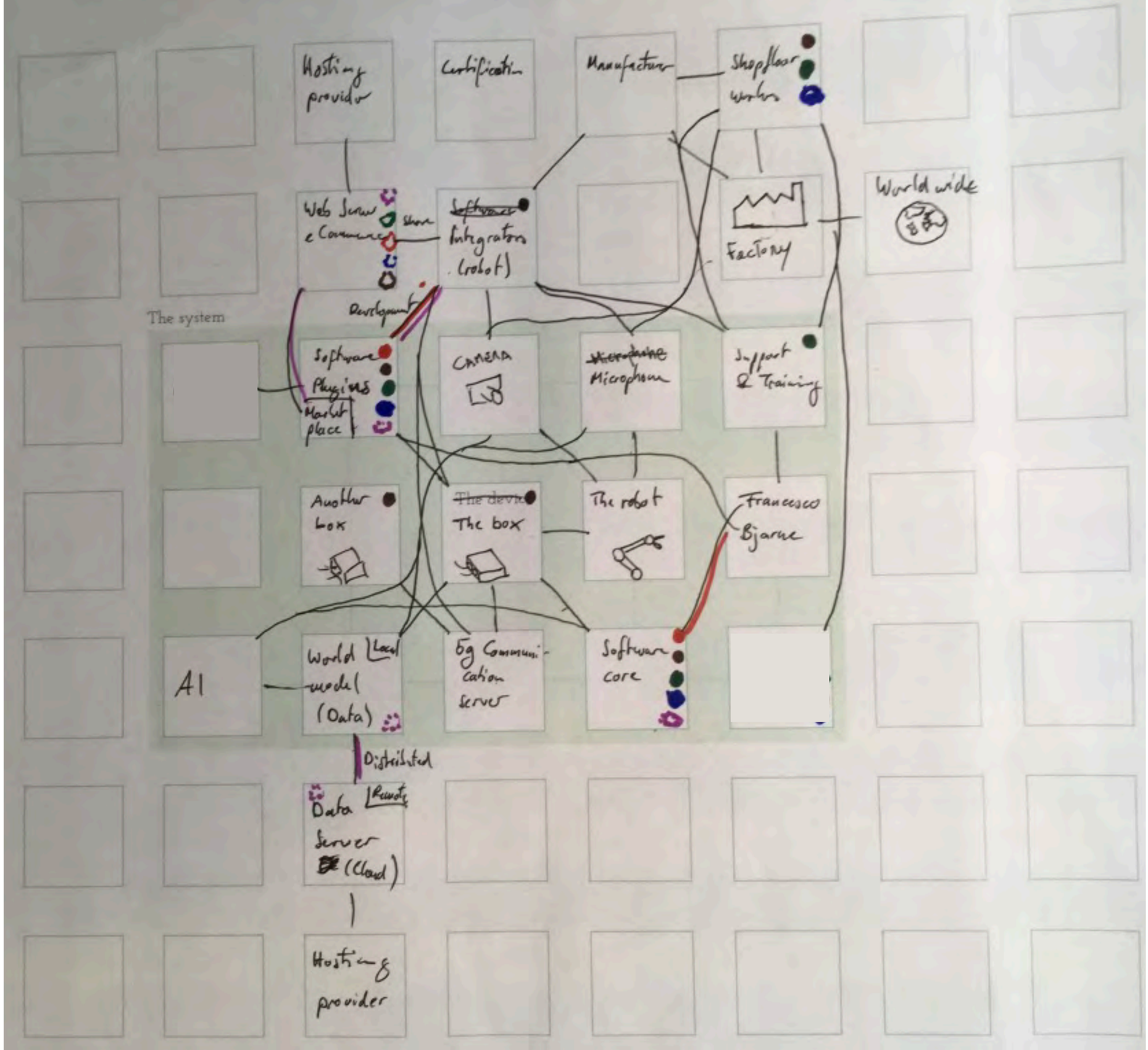
SHARE

MAP

SHIFT

futures

-TESTING-


Hosting provider
Certification
Manufacturer
Shopfloor workers
Web Server e Commerce
Store
Software Integrators (robot)
Factory
World wide
The system
Development
Software Plugins
Market place
CAMERA
Microphone
Support & Training
Another box
The box
The robot
Francesco Bjarne
AI
World model (Data)
Local
5g Communication server
Software core
Distributed
Data server (Cloud)
Remote
Hosting provider

My values

2. Interoperability

1. Ease of use / Empowerment

3. Safety and Security

4. Data protection

5. Accountability

Shortlist

From the list of values please pick up to five to create your own list

My values

1. Responsibility

2. Interoperability

3. Data Protection & Privacy

5. Transparency

4. Safety & Security

otection

Di

tion

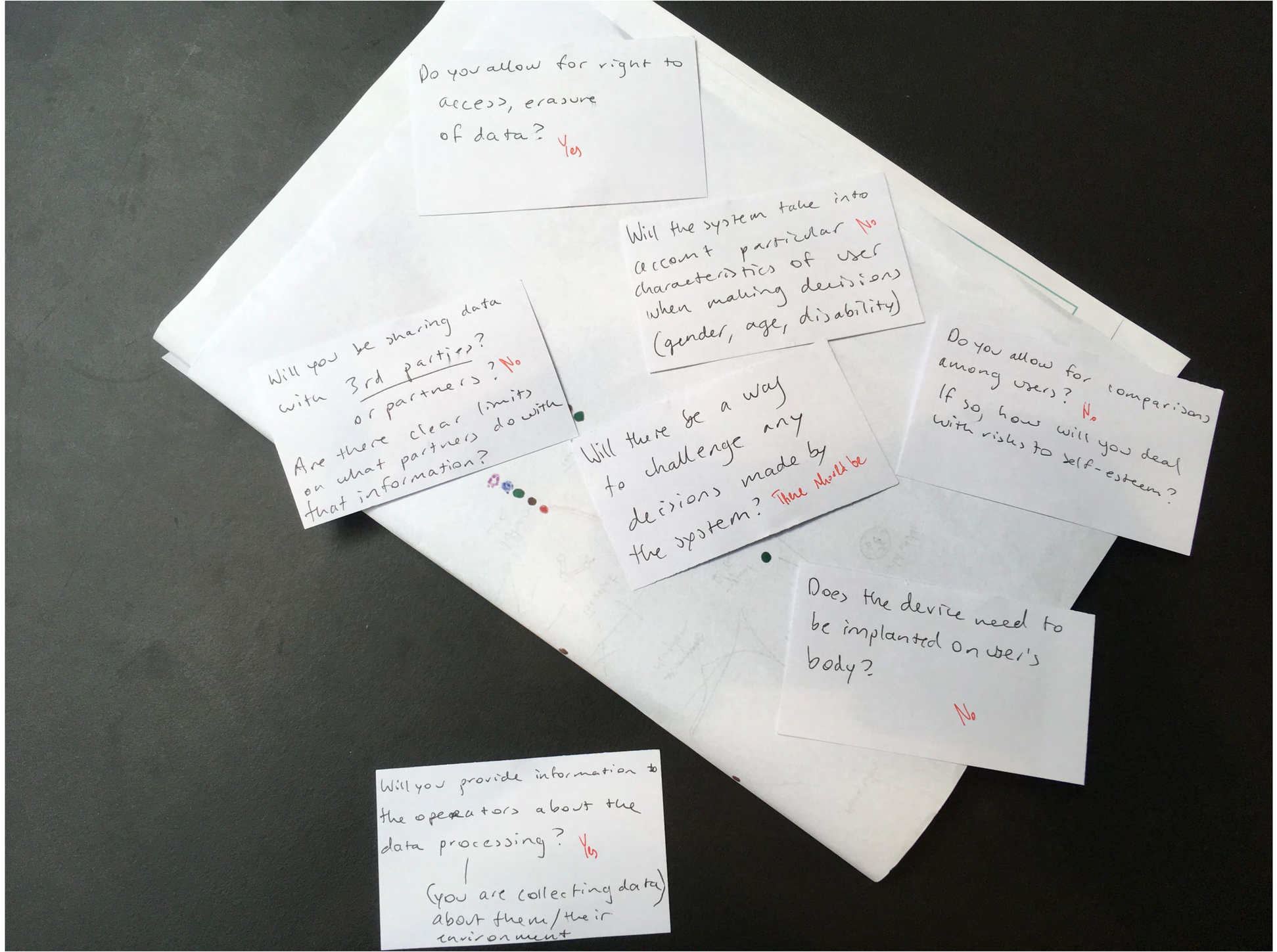
Autono

Final list

now that you've consider each other's priorities, shift the values to show your final list. When done, commit to it. You'll be revisiting this a lot throughout your work.

Our ~~prioritised~~ values

1. Interoperability
2. Human Well-being
3. Data protection & Transparency
4. Safety & security
5. Accountability


Do you allow for right to access, erasure of data? Yes
Will the system take into account particular characteristics of user when making decisions (gender, age, disability) No
Will you be sharing data with 3rd parties? or partners? No
Are there clear limits on what partners do with that information?
Will there be a way to challenge any decisions made by the system? There Would be
Do you allow for comparisons among users? No
If so, how will you deal with risks to self-esteem?
Does the device need to be implanted on user's body?
No
Will you provide information to the operators about the data processing? Yes
(you are collecting data about them/their environment

1. Sketch person or a group, in the context of where your product should be used

The shopfloor worker at a production line in a car manufacturing company collaborating with an autonomous robot controlled by our product. He uses a tablet to reconfigure the robot for a new task by changing parameters of the system.

2. Who is this person? Write a little bit of detail about their life.

Bob is a shopfloor worker who has been working for his company for 32 years already. Back in his starting days he had to do the job manually. Now, he just got a crash course in how to operate the system. He is worried that he cannot remember all his training...

3. How will their daily life be routed / changed / shaped / restricted by your answer

Bob screws up and makes the robot useless. Hot the whole production line stops since the system cannot be recover itself. He might get fired for his incompetency and now get a job again...

1. Sketch person or a group, in the context of where your product should be used

2. Who is this person? Write a little bit of detail about their life.

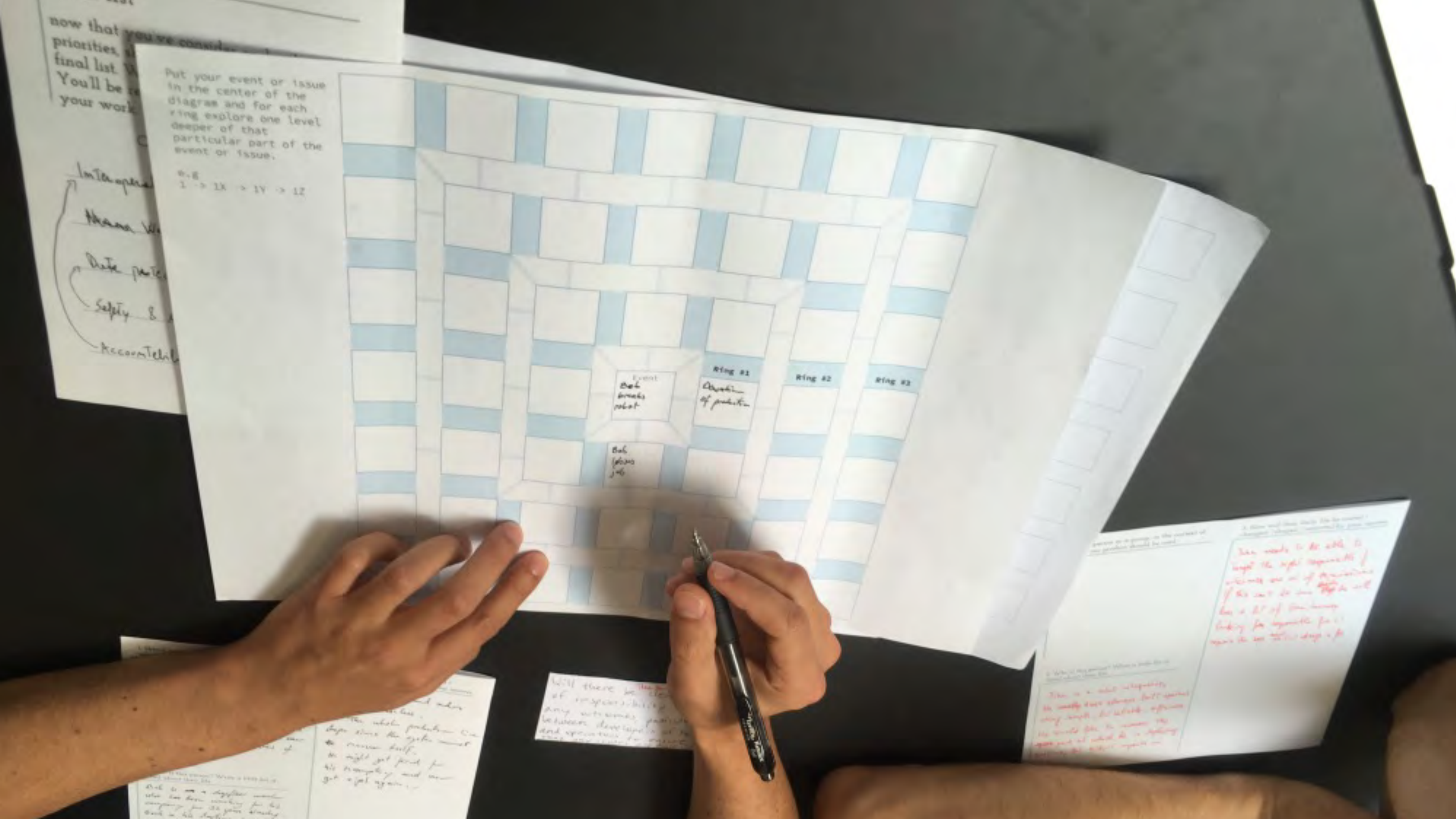
John is a robot integrator. He usually have always built systems using simple, but reliable, softwares. He would like to increase the ~~speed~~ pace at which he is deploying systems, but without impacts on safety.

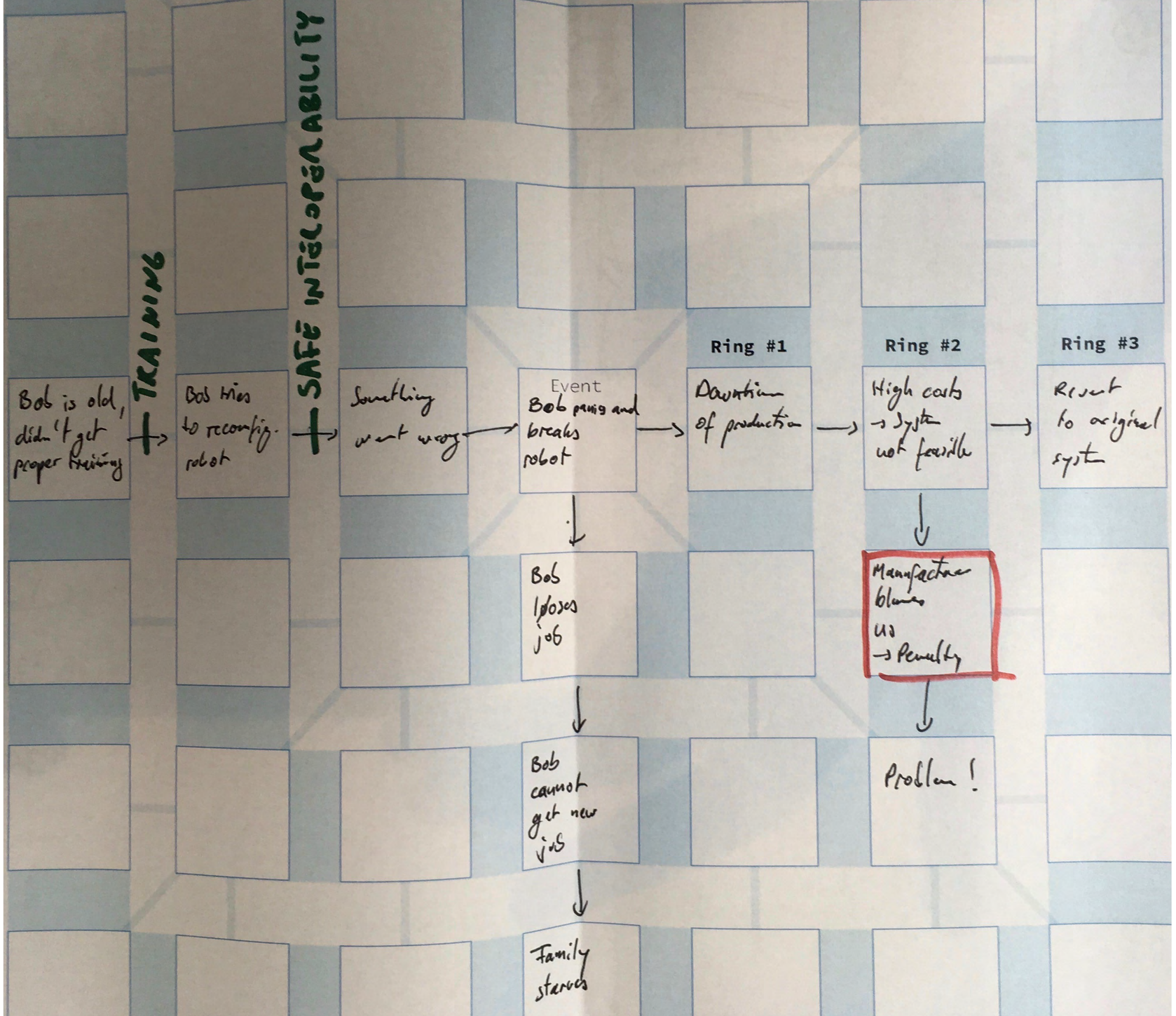
3. How will their daily life be routed / changed / shaped / restricted by your answer

John needs to be able to target the right responsible if outcomes are out of expectations. If this can't be done easily he will lose a lot of time/money looking for responsible. for (i) repair the sys. and/or (ii) charge a fee.

Things to consider

Who is it for | Where is it used | Hardware | Internal people | 3rd parties | Sensors | Power | Wireless


Put your event or issue in the center of the diagram and for each ring explore one level deeper of that particular part of the event or issue.
e.g
1 -> 1X -> 1Y -> 1Z
Ring #1
Ring #2
Ring #3


TRAINING
SAFE INTEROPERABILITY
Ring #1
Ring #2
Ring #3
Bob is old, didn't get proper training
Bob tries to reconfig. robot
Something went wrong
Event
Bob pairs and breaks robot
Downtime of production
High costs → System not feasible
Revert to original system
Bob loses job
Manufacturer blames us → Penalty
Bob cannot get new job
Problem !
Family starves

25

Constraint the user to that wrong choice can't be made.

Safety check on the config.

Here's an idea

25

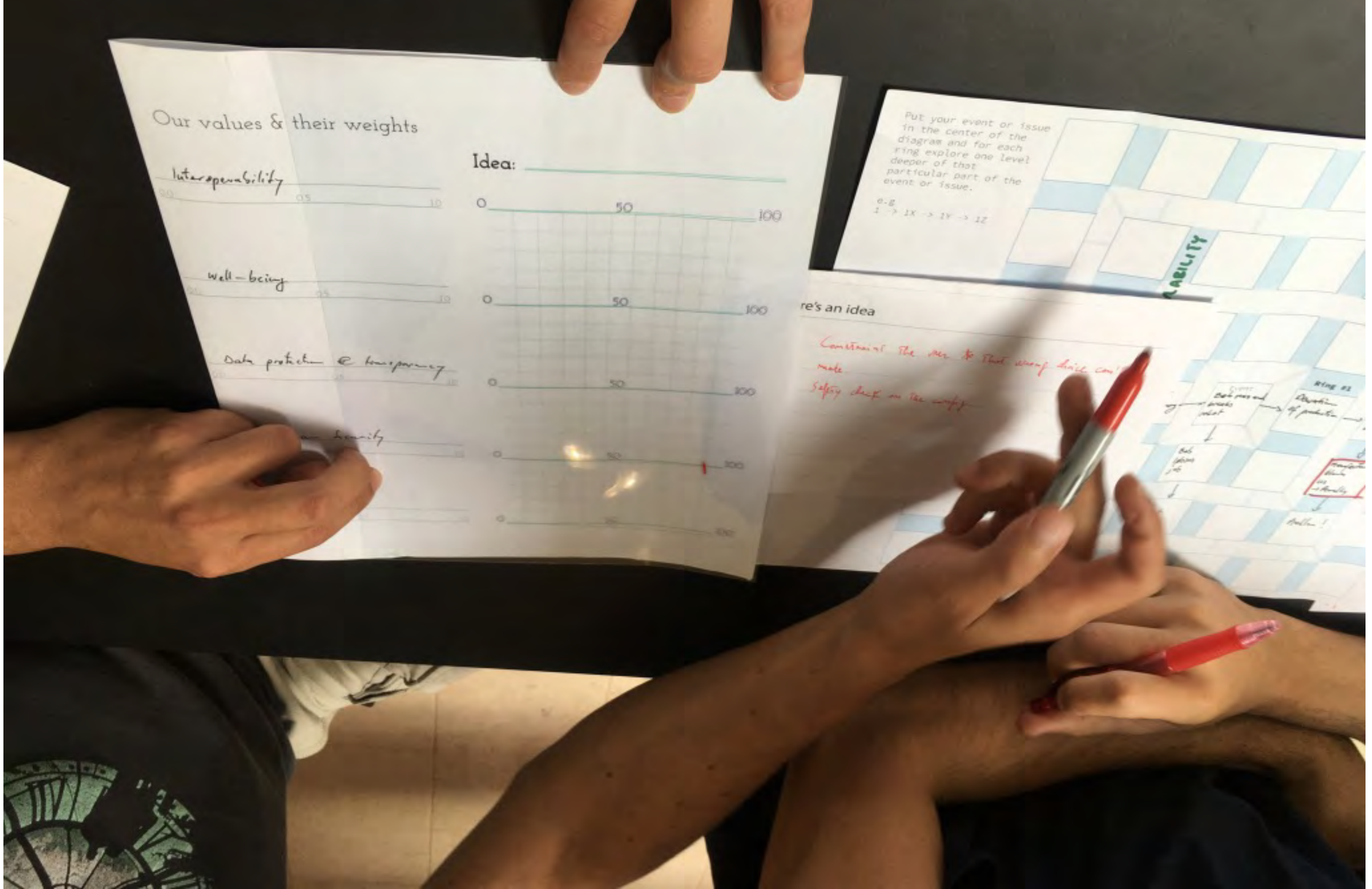
technical safety net and preventive in design phase (testing)

Here's an idea

25

Feedback from shopfloor worker during design phase: Human-centric design

Will there be (There should be) clear lines of responsibility for any outcomes, particularly between developers of tools to ensure


Our values & their weights
Interoperability
Well-being
Idea:
0
50
100
Put your event or issue in the center of the diagram and for each ring explore one level deeper of that particular part of the event or issue.
e.g.
1 -> 1X -> 1Y -> 1Z
re's an idea

Our values & their weights

Idea:

Interoperability

0.0 0.5 1.0

Idea:

0 50 100

well-being

0.0 0.5 1.0

Data protection & transparency

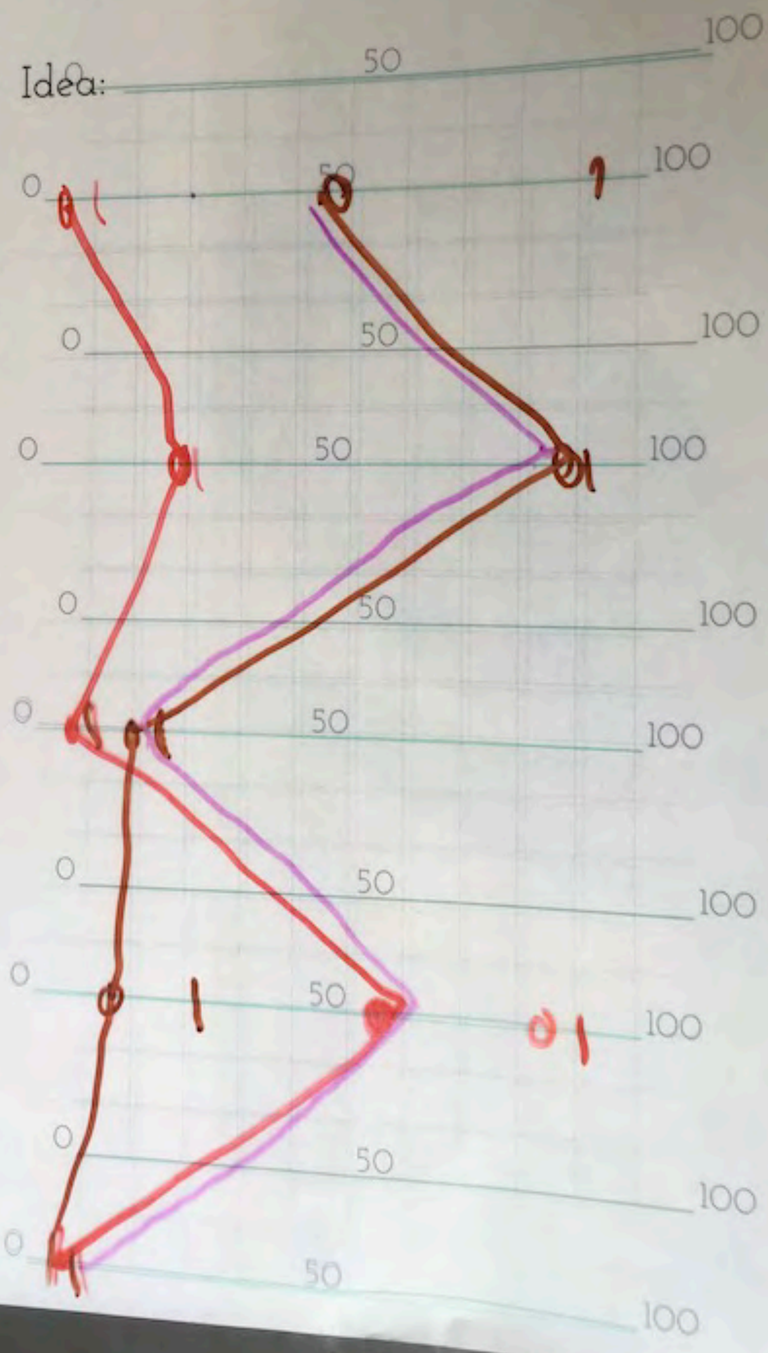
0.0 0.5 1.0

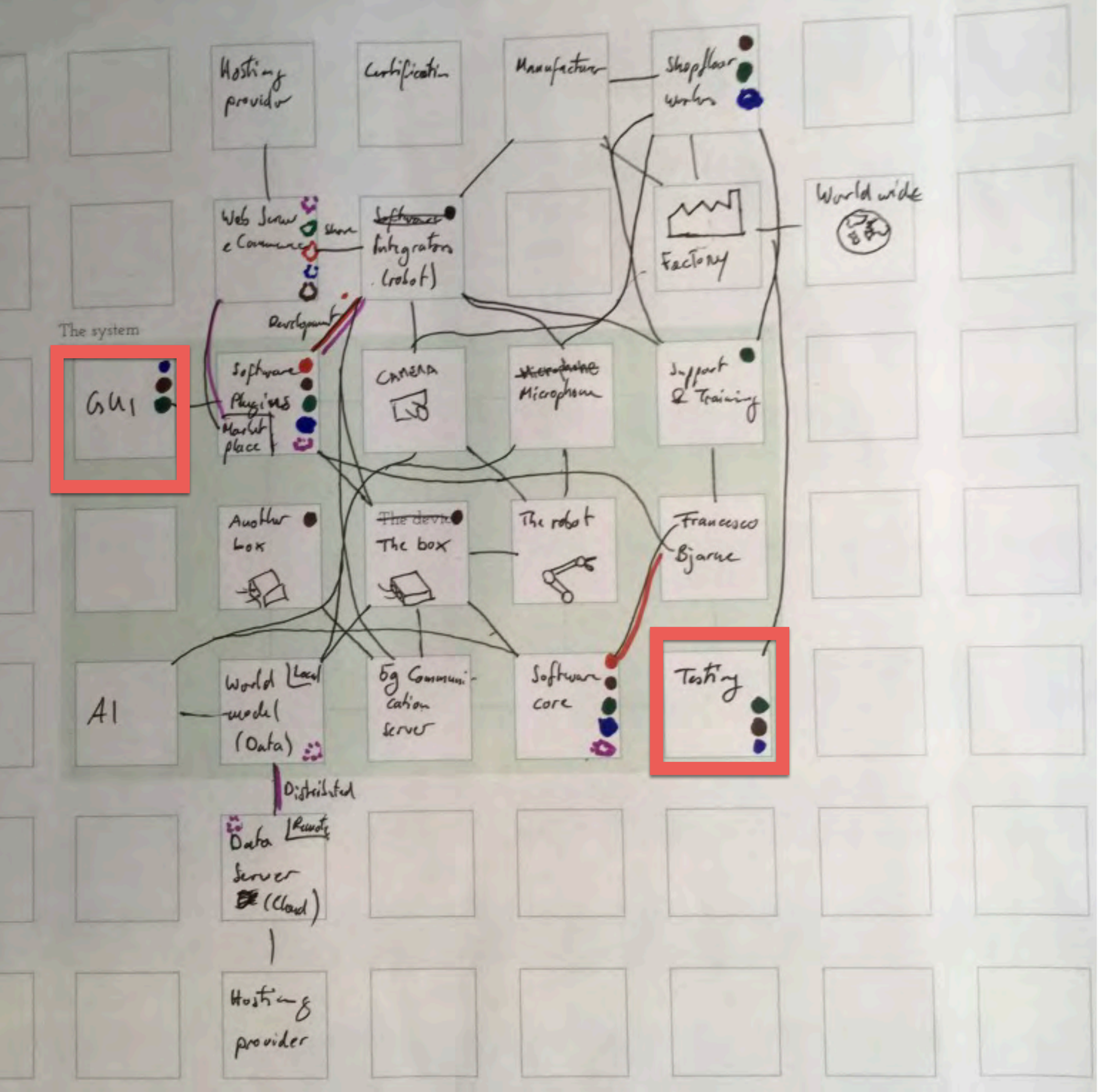
Safety an Security

0.0 0.5 1.0

Accountability

0.0 0.5 1.0



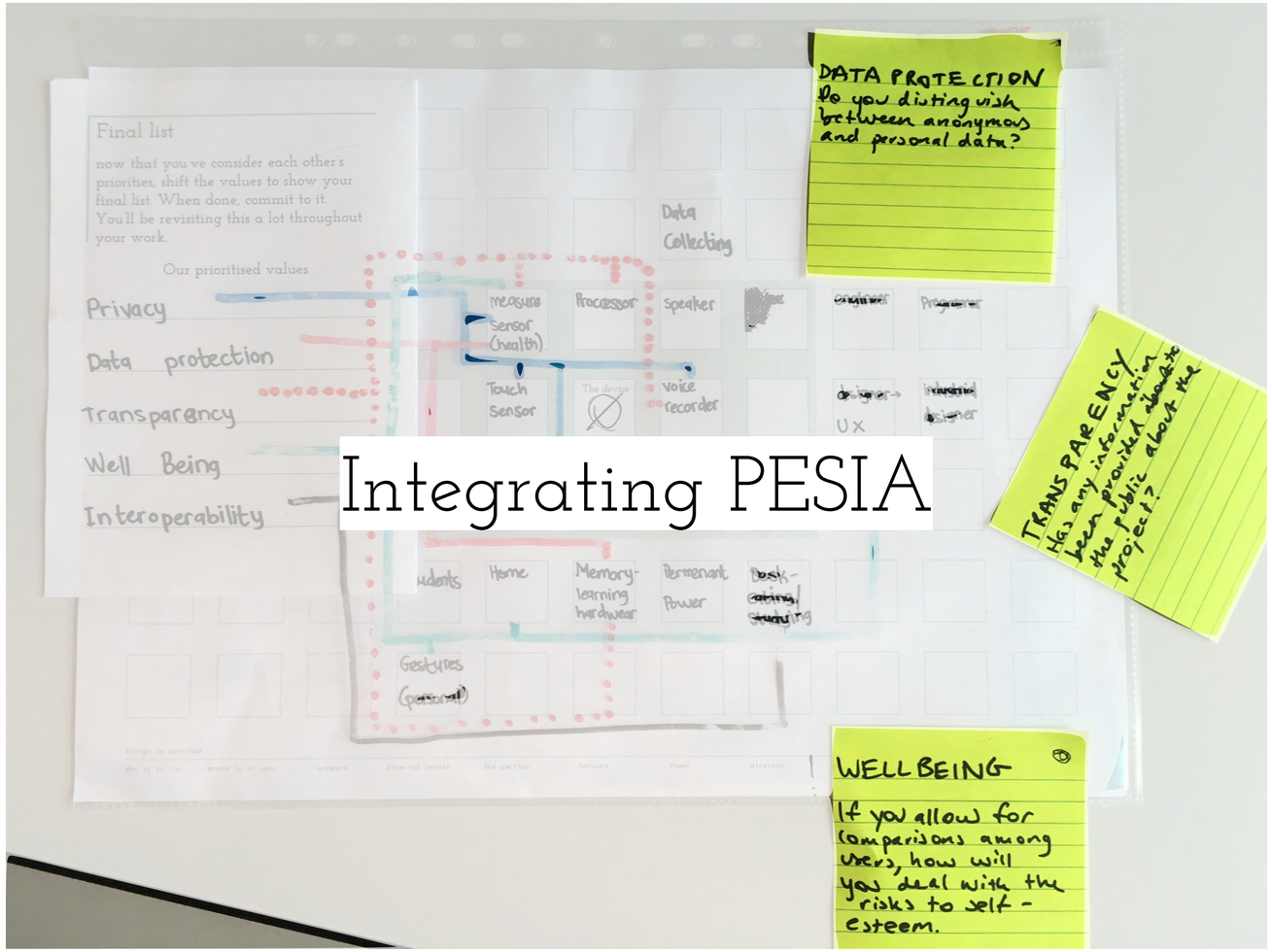


Final list

now that you've consider each other's priorities, shift the values to show your final list. When done, commit to it. You'll be revisiting this a lot throughout your work.

Our ~~prioritised~~ values

- Interoperability
- Human Well-being
- Data protection & Transparency
- Safety & security
- Accountability



Integrating PESIA


Facilitation


THE VERGE
circuit breaker
Amazon preparing a wearable that 'reads human emotions,' says report

Engagement

PART FIVE:
REFLECTIONS

Challenges

PART FIVE:
REFLECTIONS

Challenges:

- What else is needed before, during, after an assessment?
- Impact of hardware design and component decisions
- How do you make sure there are outcomes and not just a nice diagram and ethics washing?

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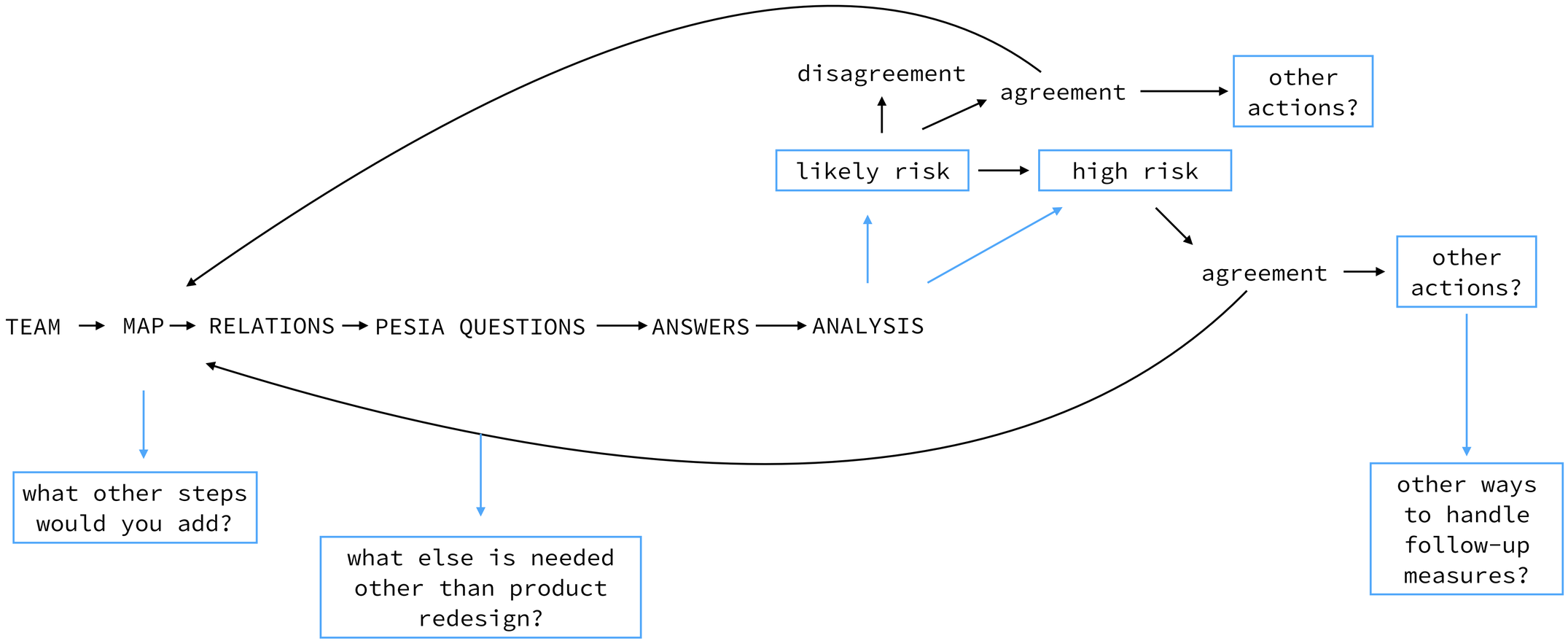
PART FIVE:
REFLECTIONS



*WHAT IS NEEDED BEFORE, DURING AND AFTER PESIA?

*THEN WHAT?

PART FIVE:
REFLECTIONS

What we did:

PART TWO:
ENGAGING WITH PESIA

We are working on a product at our start-up.

1. Get to know the diagram of the elements of your respective products.

2. Now add any relations (users + makers + stakeholders). Who is related (using, impacted, connected to) to each element in your product?

3. What are your ethics, and specifically, your values while working at OldLifeWell?
    a. Individually, take ethical concepts you would like to have at OldLifeWell and bring them back to your table
    b. In your table group, discuss each ethical concept. If there are any with divergent definitions, or words that one group member is “not ok with”, discuss with the knowledge that you need to work together on this product for the next 100 years.

4. Consider **PESIA questions**

5. Is there a problem?
    a. Play a role / devil’s advocate / push each other

PART TWO:
ENGAGING WITH PESIA

5. Is there a problem?
    a. Play a role / devil's advocate
    b. If yes + you **agree** there is a problem:
        - Revisit your product map
        - Mark-up with ±3 ways to address problem
        - Decide which one you will take
        - Commit the change on your product map
    c. If yes but **inconclusive** (1 yes, 1 no):
        - 1st try: create a scenario of why you should care about this PESIA answer: a user story, an imagined possible future outcome that could come from your PESIA answer?
        - Then go back to 4.
        - 2nd try: create a positive / negative news splash from your PESIA answers. What's the headline?
        - Then go back to 4.
        - 3rd try: brainstorm your own.
    d. If no:
        - How would you communicate this good news?
        - To whom, through what medium?

PART TWO:
ENGAGING WITH PESIA

Reflect + Re-make

AMS Stakeholder Workshop

PART TWO:
ENGAGING WITH PESIA

what else is needed to grasp answer's implications?

5. Is there a problem?
   a. Play a role / devil's advocate
   b. If yes + you **agree** there is a problem:
      - Revisit your product map
      - Mark-up with ±3 ways to address problem
      - Decide which one you will take
      - Commit the change on your product map
   c. If yes but **inconclusive** (1 yes, 1 no):
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      - 2nd try: create a positive / negative news splash from your PESIA answers. What's the headline?
      - Then go back to 4.
      - 3rd try: brainstorm your own.
   d. If no:
      - How would you communicate this good news?
      - To whom, through what medium?

did different ideas of "ethics" come out when talking here?

any other actions you would take?

what kind of scenarios were more persuasive?

how else can we get our PESIA respondents to care?

other ideas of "trump" cards?

any other important activities or actions here?

PART TWO:
ENGAGING WITH PESIA

if there were misunderstandings, what would have helped here?

We are working on a product at our start-up.

1. Get to know the diagram of the elements of your respective products.

2. Now add any relations (users + makers + stakeholders). Who is related (using, impacted, connected to) to each element in your product?

was your map at all prioritised, or weighted?

3. What are your ethics, and specifically, your values while working at OldLifeWell?
   a. Individually, take ethical concepts you would like to have at OldLifeWell and bring them back to your table
   b. In your table group, discuss each ethical concept. If there are any with divergent definitions, or words that one group member is “not ok with”, discuss with the knowledge that you need to work together on this product for the next 100 years.

if there were misunderstandings, what would have helped here?

4. Consider **PESIA questions**

5. Is there a problem?
   a. Play a role / devil’s advocate / push each other

PART FIVE:
REFLECTIONS

PLANS

What happens next in the project and how can you continue to be involved if interested?


The Package

PART FIVE:
REFLECTIONS

THANK YOU!

AMS Stakeholder Workshop

AGENDA

Thursday, July 18th

1.Introduction
2.VIRT-EU's goals
3.Simulation
4.PESIA framework
5.Simulation continues
6.Discussion

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Introduction:
Ethics in VIRTEU

AMS Stakeholder Workshop

PART ONE:
TALKING TOGETHER ABOUT ETHICS

Ethics in Practice

We are daily exposed to news telling creepy stories about smart objects gathering people's data, yet such an unethical practice is widely left unaddressed for the sake of technology-led economic-growth. No one yet knows how to solve the challenges of ensuring ethical data practices in the way new technologies are designed. We lack practical guidelines and assessment procedures to embed ethical, social and data protection values in the design and development of data intensive technologies and services.
VIRT-EU applies an interdisciplinary research approach to generate new knowledge and methods that aims to overtake the unproved assumption according to which technological development leaves no room for ethical and moral reasoning.
Virt-EU aims to intervene at the point of design to foster ethical thinking among developers of IoT solutions. In fact, addressing social concerns in new technologies, not only impacts changes in regulatory regimes but also influences the process of imagining and developing the next generation of digital technologies.

VIRT-EU analyses and maps the ethical practices of European hardware and software entrepreneurs, maker and hacker spaces, and community innovators

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Conceptual Framings

1. Definitions of ethics - from philosophical literature in virtue ethics tradition
2. Problems and limitations of virtue ethics (individual focus, incapacity to determine where 'good' comes from)
3. Expansion in relation to concepts of capability (Sen) and care (Puig de la Bellacasa)

virt:eu

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Beyond Virtue

Individual's attempt to live a "good life"	The ability to act, given the structural opportunities and constraint	Shifting responsibilities and obligations in a web of relations

virt:eu

Responsible Tech is multi-faceted and contingent on the actors, contexts and technologies involved.

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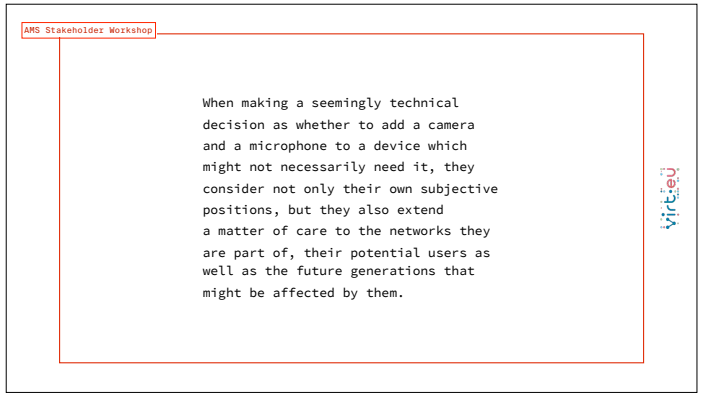
Do-ers, Postponers, and the convenient ethics researchers

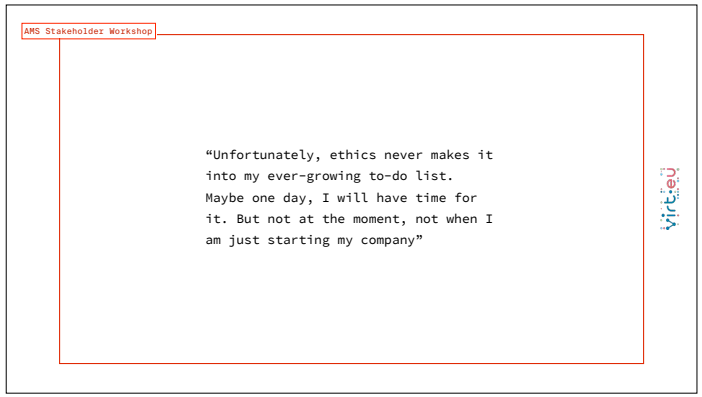
Ethics is understood differently by those interested in building ethical companies from the outset, and those that see ethics as compliance with a regulatory framework.

virt:eu

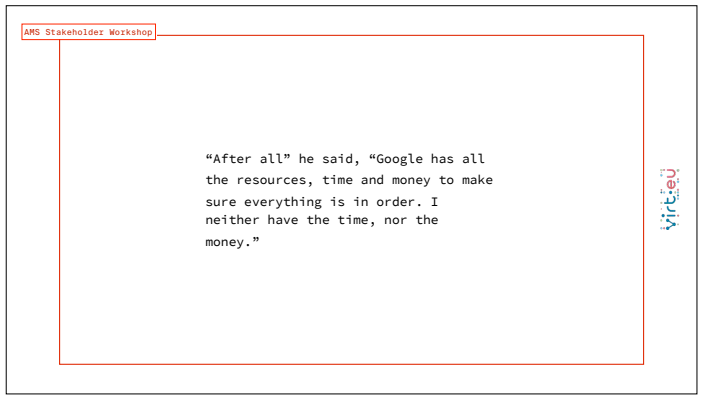
Responsible Tech is multi-faceted and contingent on the actors, contexts and technologies involved.



Responsible Tech is multi-faceted and contingent on the actors, contexts and technologies involved.



Responsible Tech is multi-faceted and contingent on the actors, contexts and technologies involved.

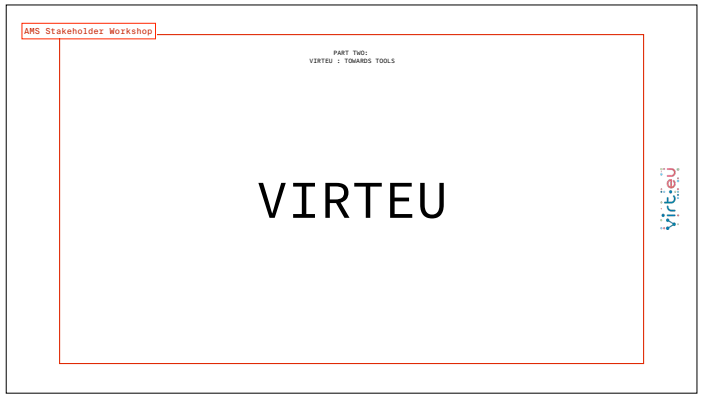


developers building new technologies are not always in a position to be able to identify what they should and should not do and how they would be accountable later for something they could not know today. That there are no ”pre-ordained” duties assigned to any role in the context of a start-up entails that this unknown future (and its unknowability in general) creates a vacuum for developers to choose not to engage with ethical decision-making.

The doers, developers who engage with ethical thinking in all stages of a product as well as in all aspects of the companies they are part of, tell us that we need to think about responsibility differently. Rather than an understanding of responsibility as a matter of personal liability, they are concerned with the future they are building through their products and companies. Instead of creating technologies just because they find them interesting or ‘a challenge’, they would like to improve the current societies they are part of and help future societies at the same time. So, how can we move from a personal understanding of responsibility that feeds into the consequentialist cost-benefit analyses to a *collective* one that cares for the future of the planet and its habitants?[2]

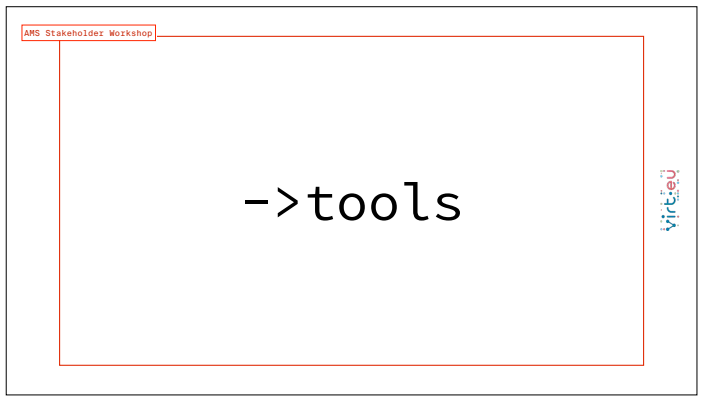
Arendt – becoming a collective is a political process

Responsible Tech is multi-faceted and contingent on the actors, contexts and technologies involved.



This is where our project, VIRTEU, comes in. VIRTEU is an EU-funded project… (shortened version of prior comment)...
If we are designing a connected lock, in order to build a moral connected lock, we need to take the time to work out what moral means to us and why a lock might be immoral
That is, the ethical reflection that can support a designer / developer to build a moral lock
So how might we empower and support developers and designers of new connected devices to engage in ethical reflection?
The answer is complex.
(1) First, we have to understand what we mean by ethics when we’re talking about IOT design and development: that is, what section of the vast landscape of ethics is especially critical and relevant to IOT?
(2) Then, we have to work out what questions and discussions are needed to prompt this ethical reflection on building IOT?
(3) Lastly, what kinds of tools, experiences, and so on would support these questions?
It’s a sort of reverse-engineering process

VIRT-EU applies an interdisciplinary research approach to generate new knowledge and methods that aims to overtake the unproved assumption according to which technological development leaves no room for ethical and moral reasoning.
Virt-EU aims to intervene at the point of design to foster ethical thinking among developers of IoT solutions. In fact, addressing social concerns in new technologies, not only impacts changes in regulatory regimes but also influences the process of imagining and developing the next generation of digital technologies.



Virt-EU will develop actionable tools to encourage reflection among developers on the relationship between technological innovation and societal concerns, to enable a self-assessment of ethical and social impact of the envisioned technologies.
CIID Research will collaborate with our partners at ITU + LSE to create these tools.

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"ethics starts where the law ends"

Responsible Tech is multi-faceted and contingent on the actors, contexts and technologies involved.

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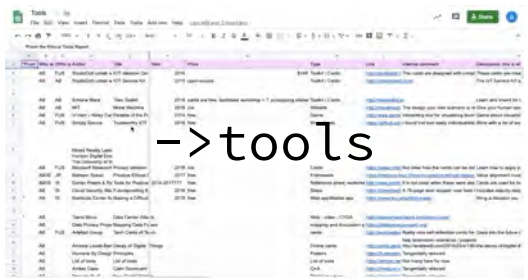
"you can't just go to ethics camp"

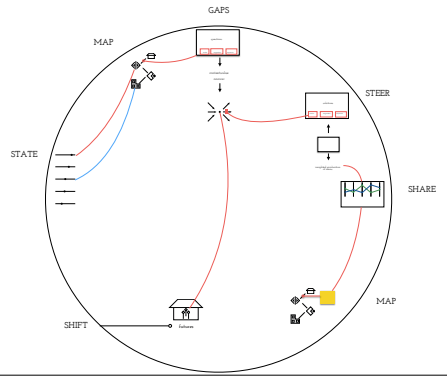
Responsible Tech is multi-faceted and contingent on the actors, contexts and technologies involved.

AMS Stakeholder Workshop



Advisory Board Meeting

Tools as a System



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Part Two:
Hands On

form groups.
each group has a different product.

30 minutes

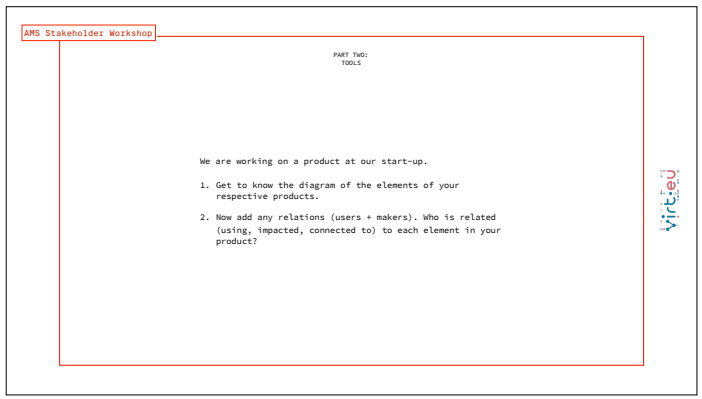
While there are any numbers of privacy concerns about walking around with easily readable personal data on your thumbnail, there's little someone can do once they're diagnosed with dementia. In America, they're typically placed into conservatorship, with power of attorney going to a child. It's creepy and even heartbreaking, but if it prevents a loved one from disappearing into the night, it might be worth it.
Effectively, smartphones can be converted into surveillance devices.
What's more, it is impossible to anticipate and detect the full range of ways smartphone data is collected and used, and to demonstrate the full scale of its impact. What we know could be just the beginning.
But targeted advertising based on our smartphone data can have real impacts on livelihoods and well-being, beyond influencing purchasing habits. For example, people in financial difficulty might be

targeted for ads for payday loans. They might use these loans to pay for unexpected expenses, such as medical bills, car maintenance or court fees, but could also rely on them for recurring living costs such as rent and utility bills. People in financially vulnerable situations can then become trapped in spiralling debt as they struggle to repay loans due to the high cost of credit.

Targeted advertising can also enable companies to discriminate against people and deny them an equal chance of accessing basic human rights, such as housing and employment. Race is not explicitly included in Facebook's basic profile information, but a user's "ethnic affinity" can be worked out based on pages they have liked or engaged with. Investigative journalists from ProPublica found that it is possible to exclude those who match certain ethnic affinities from housing ads, and certain age groups from job ads.

This is different to traditional advertising in print and broadcast media, which although targeted is not exclusive. Anyone can still buy a copy of a newspaper, even if they are not the typical reader. Targeted online advertising can completely exclude some people from information without them ever knowing. This is a particular problem because the internet, and social media especially, is now such a common source of information.

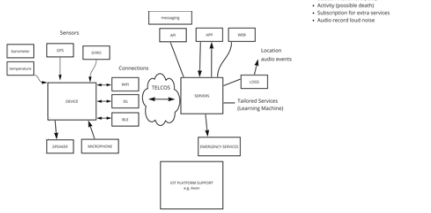
Social media data can also be used to calculate creditworthiness, despite its dubious relevance. Indicators such as the level of sophistication in a user's language on social media, and their friends' loan repayment histories can now be used for credit checks. This can have a direct impact on the fees and interest rates charged on loans, the ability to buy a house, and even employment prospects.



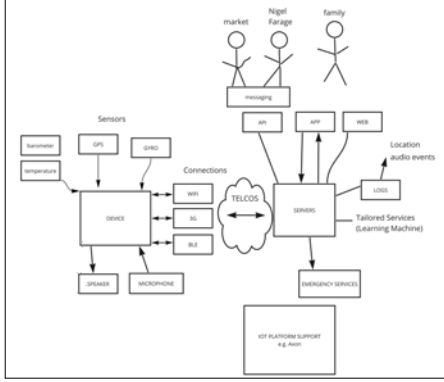
we will hand these out per group - they will already have been sorted

AMS Stakeholder Workshop

PART TWO:
TOOLS



- Reminders, routine, medicine, etc.
- Direct voice
- Automatic alarm if outside zone (geo-fencing)
- Real-time tracking app
- Heart rate
- Sudden movement (falls)
- Activity (possible death)
- Subscription for extra services
- Audio record loud noise



- Reminders, routine, medicine, etc.
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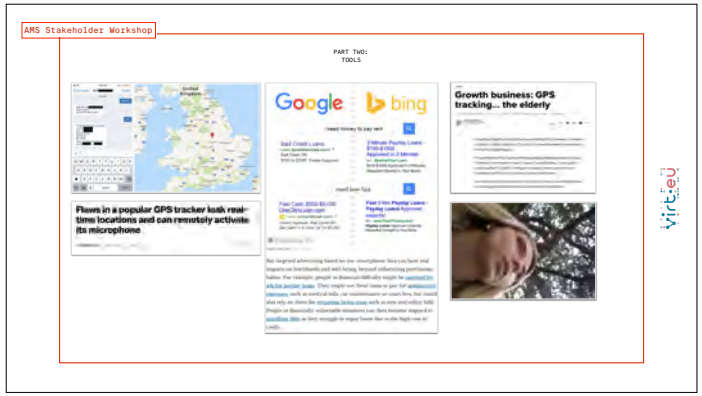
- Heart rate
- Sudden movement (falls)
- Activity (possible death)
- Subscription for extra services
- Audio record loud noise

AMS Stakeholder Workshop

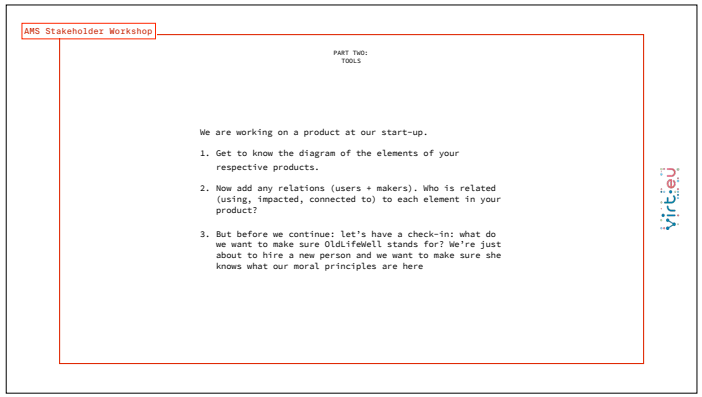
OldLifeWell has developed a smart bracelet that helps people with dementia (or other kinds of memory loss problems) to keep track of their daily routine tasks.

OldLifeWell's product was used to gain information from individuals with dementia on their wealth, and where and how they keep it. With the tracking capabilities of OldLifeWell's product, a number of individuals with dementia have been kidnapped and such information has been taken from them. But since they do not have memories of it, their families become aware only when the money has left their bank accounts.

OldLifeWell's product is being promoted by political parties because it will enable people with dementia and other types of memory loss to be able to vote in the general elections. They have even come up with push notifications specific for the product that reiterates their campaign title and the name of their political party. Since the push notifications work around the daily routines of people with dementia, their uptake is high, and the users become familiar with the campaign and political parties.



do stories help persuade each other, define the value in contrast to what could happen if you don't support it?



we will hand these out per group - they will already have been sorted

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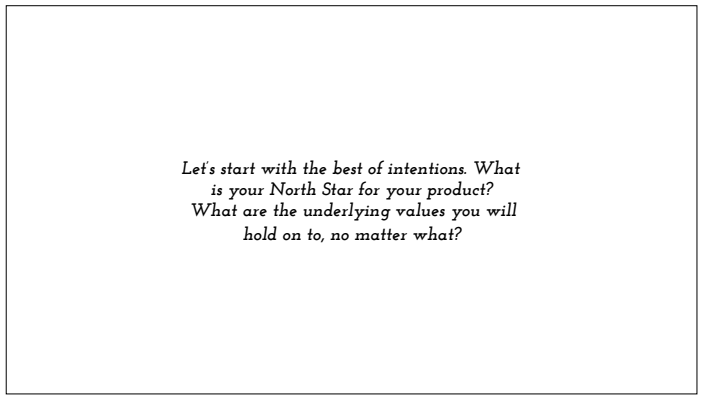
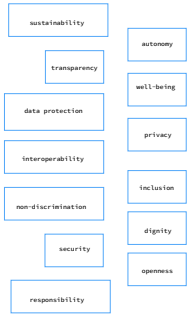


INDIVIDUALLY

1. Write values from this list
2. Then prioritise them

Ethics is defined not only by individuals but also as part of a wider group.

These ethical values have been identified as the outstanding ideas of ethics in the community of IOT creators.



~~INDIVIDUALLY~~

1. ~~Write values from this list~~
2. ~~Then prioritise them~~

AS A GROUP

3. share and compare
4. discuss definitions + priorities
5. find agreement on priorities
6. give each value a weight to show priorities
7. write communal definitions

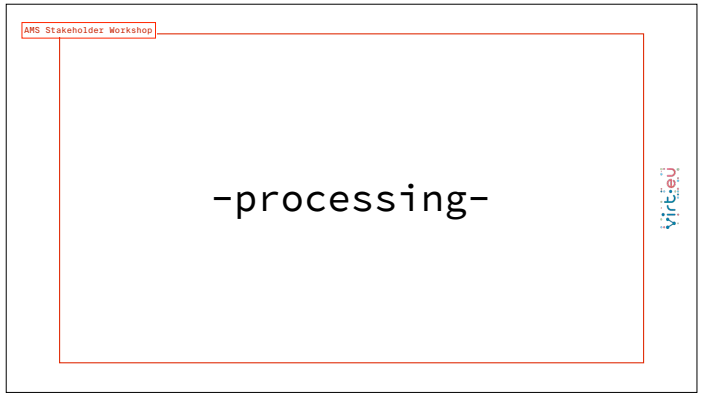
~~INDIVIDUALLY~~

1. ~~Write values from this list~~
2. ~~Then prioritise them~~

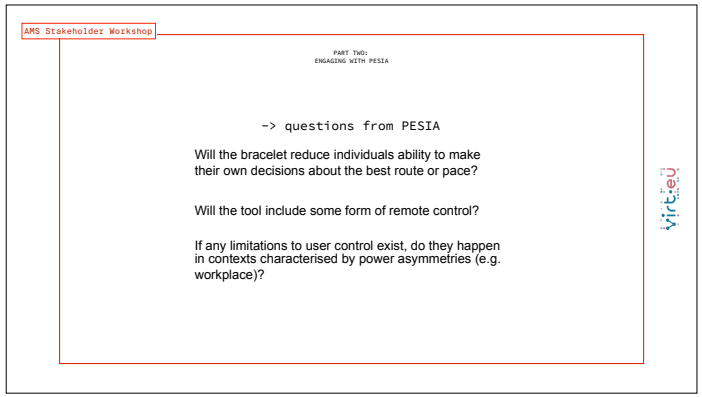
~~AS A GROUP~~

3. ~~share and compare~~
4. ~~discuss definitions + priorities~~
5. ~~find agreement on priorities~~
6. ~~give each value a weight to show priorities~~
7. ~~write communal definitions~~

COMMIT



each group gets 1 section to try



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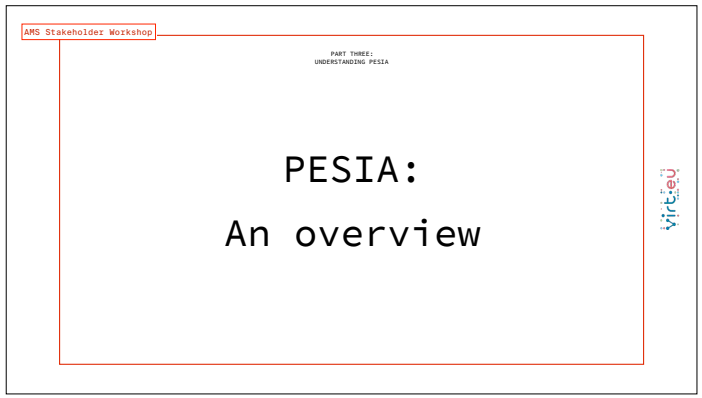

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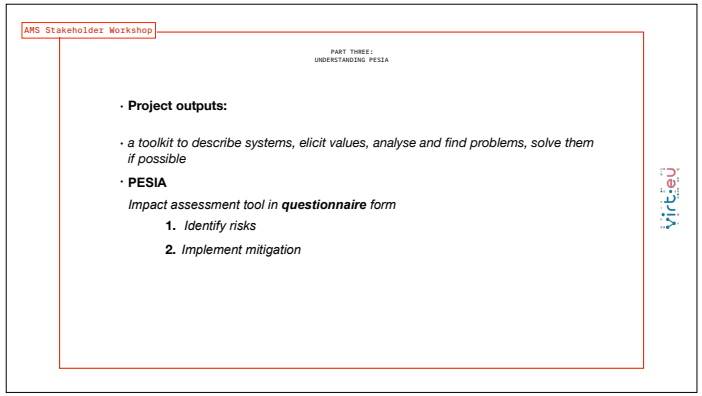


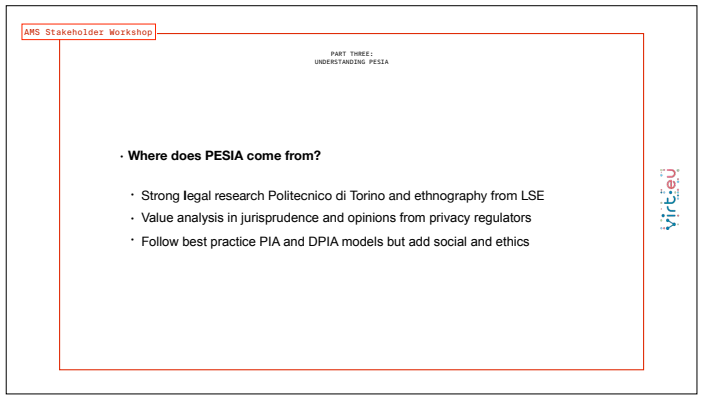
The PESIA stands for privacy, ethical and social impact assessment. It is a questionnaire that we are building into a digital tool.

It is part of a wider range of project outputs, described as we can see in the slide

The impact assessment part is really important. In general all impact assessment tools have two core components that we can see here: risks and mitigation.

Impact assessment generally carries other values, such as measuring consequences.

Our challenge is that many of these may not fit with the ethical framework of our project: virtue, care and capabilities.

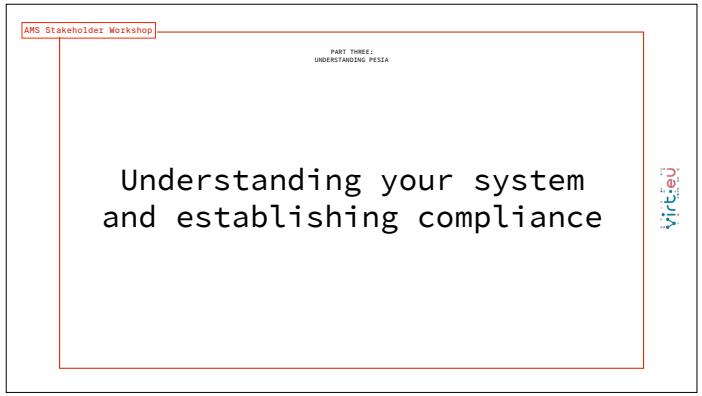


The questionnaire is based on strong research by consortium members.

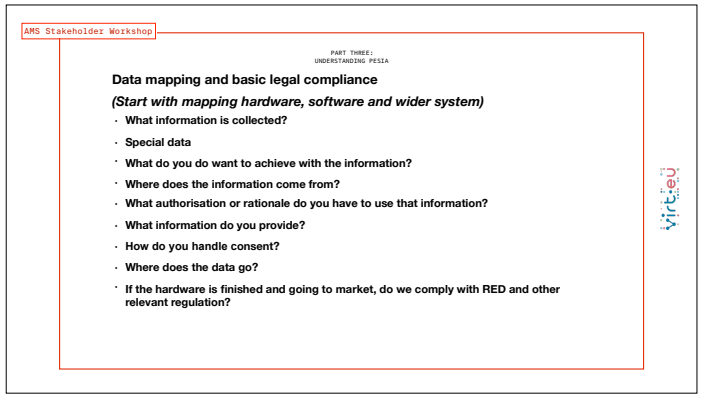
POLITO studied the Privacy Impact Assessment guidance of several data protection authorities. They also studied several hundred opinions and rulings form these authorities to extract ethical and social values included in the legal documents.

LSE did fieldwork with many IoT developer spaces in London, Serbia, and elsewhere to also identify values.

Next let's have a look at the questionnaire



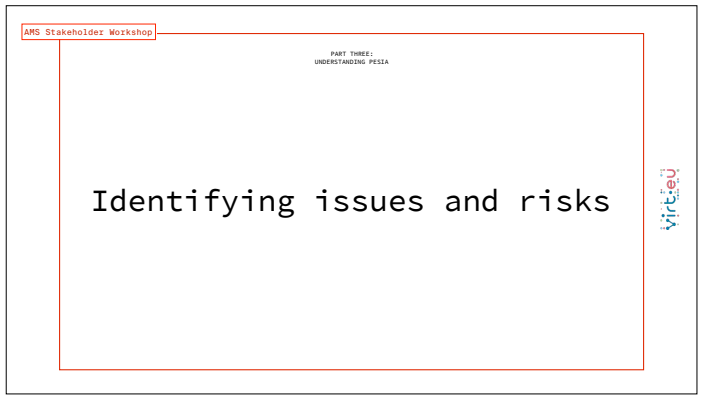
Our first step is to describe what we are doing and check for basic legal compliance with data protection and other laws.



We start with a map of our device, system, software, users, etc. In order to do this you will probably use another tool for our toolkit.

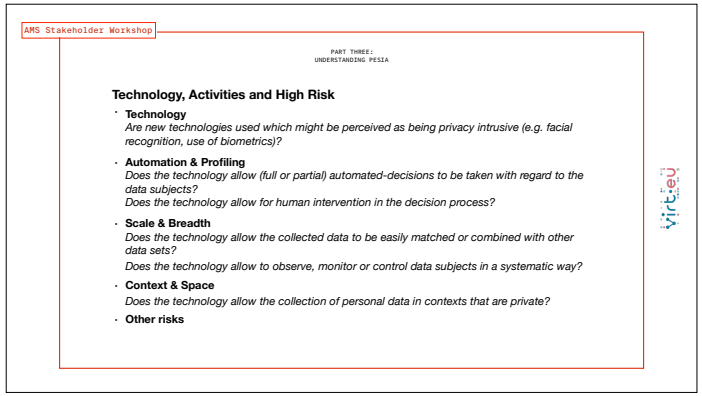
Then we run through a fairly standard series of questions based on GDPR and typical PIAs that establish what you are doing and on what legal basis, who has access to the data. The outputs will serve to build the next series of questions. There are many tools that do this sort of thing.

What we want to add are some hardware specific questions, like the RED electromagnetic certification, although we cannot be too specific if we are to cover any type of IoT device.



Next we want to start identifying issues

If we identify an issue, the tool may trigger a specific action or alert or it may ask you to come back later to explain how you are dealing with it (we will see in the next section)



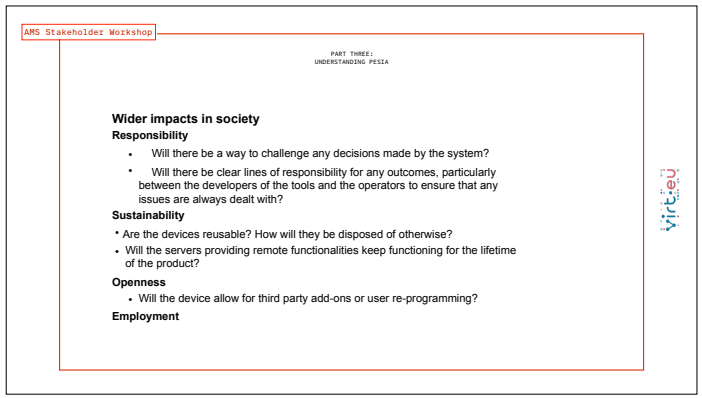
We start with a series of questions about the technology and how it is used.

We can see the slides

We are establishing whether there is “high risk” processing under GDPR. It is not defined in detail but these are the general criteria.

Answering YES to almost any question here would likely trigger the need for a DPIA under GDPR

Then we are crossing a legal threshold



Next we look at the wider impacts of the technology on society, following some the values mapped in the research

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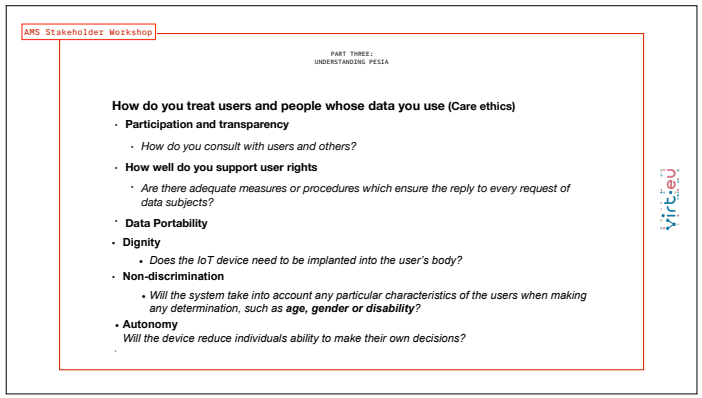
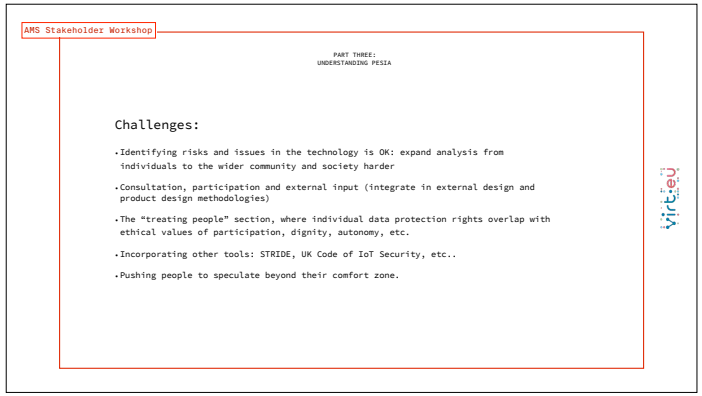
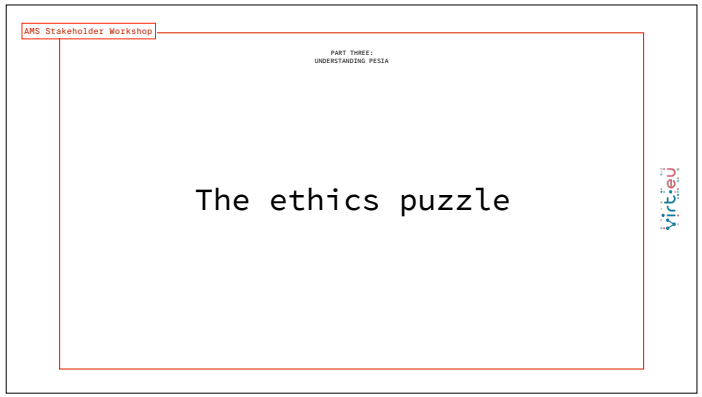


The next set of questions combine several categories:

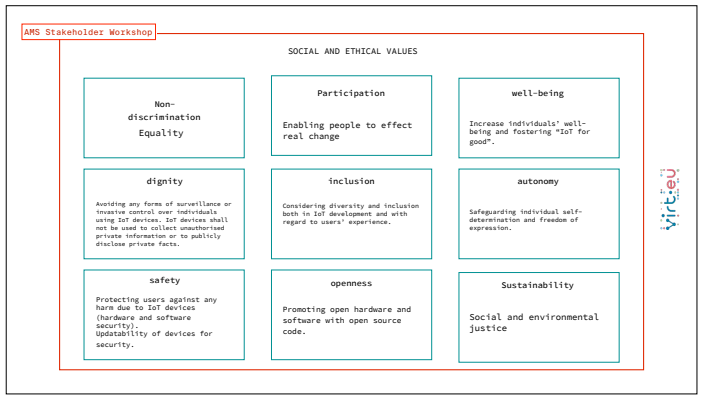
1. some core elements of privacy and data protection, such as transparency and user rights,
2. Ethical questions about individuals, such as dignity, discrimination and autonomy
3. questions about people affected that are not the direct users - data subjects in legal terminology - and may not have their data collected but are still affected by the technology. These are normally ignored in privacy assessments





The puzzle is how to integrate the legal privacy side with the ethical angles

Most ethical data tools we have seen include a heavy dose of legal but you want to do both aspects well



From our research
We have a list of Consolidated Legal and Ethical Values

Main goals/issues in the Internet of Things context

Dignity

Avoiding any forms of surveillance or invasive control over individuals using IoT devices. IoT devices shall not be used to collect unauthorised private information or to publicly disclose private facts.

Well-being

Increase individuals' well-being and fostering "IoT for good".

Non-discrimination

Preventing any forms of discrimination.

Autonomy
Safeguarding individual self-determination and freedom of expression.

Transparency
Providing access to information concerning personal data processing.
Encouraging transparency about data operations, device usage and firmware and software upgrades.

Participation
Effectively engaging data subjects in data processing design. Promoting debate and dialogue (e.g. manifestos).

Accountability

Effectively addressing security and safety issues, adopting adequate risk prevention strategies and measures.

Interoperability

Promoting interoperability as one of the key values to create a trusted IoT ecosystem.
Facilitating data portability, both for taking data out and in.

Safety & security

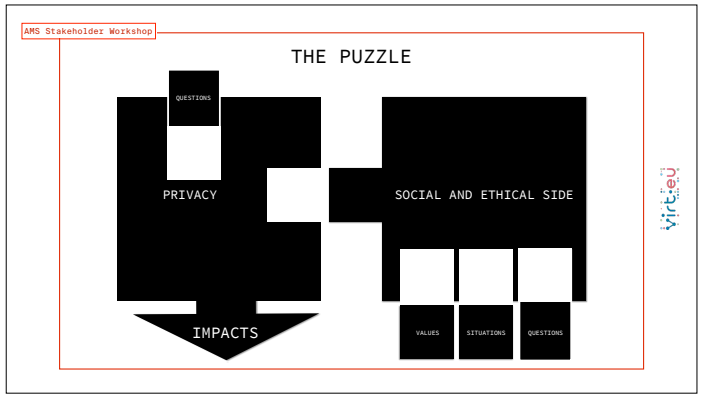
Protecting users against any harm due to IoT devices (hardware and software security).
Updatability of devices for security.

Responsibility
Strengthening algorithmic accountability/liability.
Openness and shareability

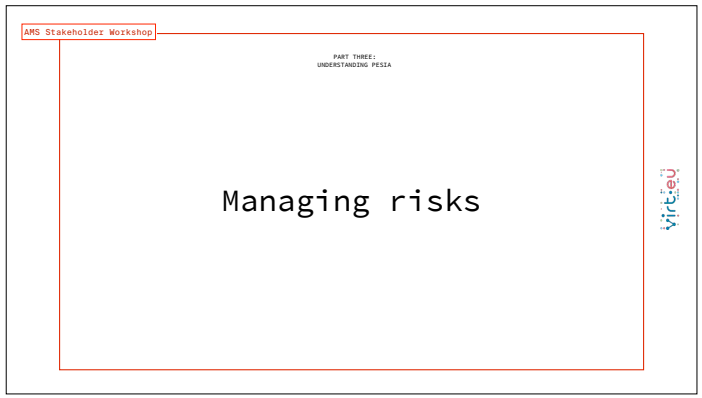
Promoting open hardware and software with open source code.

Sustainability
Issues concerning the potential impact on social and environmental justice.
Inclusion and equality

Considering diversity and inclusion both in IoT development and with regard to users' experience.



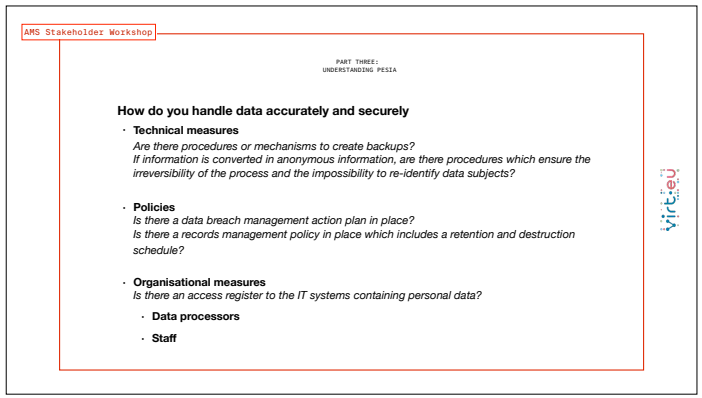
We still need to do more work on this



The final part of an impact assessment is to do something about the risks and issues you have identified

Here is where we see many failings and ethics washing

For example we want to avoid doing the typical matrix



First we look at what you are already putting in place to make sure you handle data properly and safely

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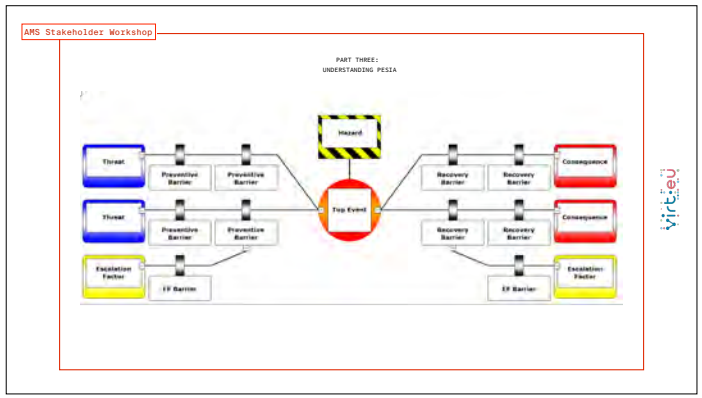


Then we bring a risk management approached called the bowtie.

Annelie will explain in more detail, but this is our basic approach

AMS Stakeholder Workshop

PART FOUR:
TOOLS AGAIN

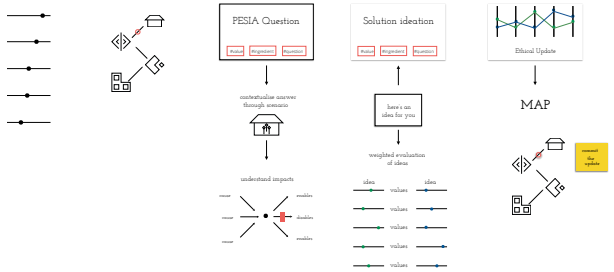
[MORE TOOLS]

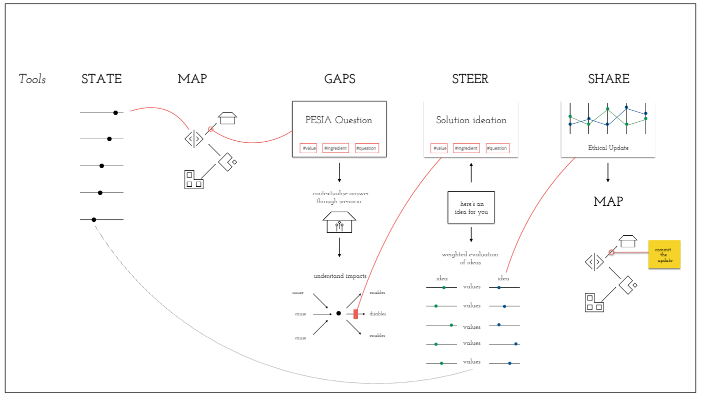
"ancillary" tools to support ethical reflection and self-assessment

what are they, what do they help do, how do they relate to / support / fit in with PESIA

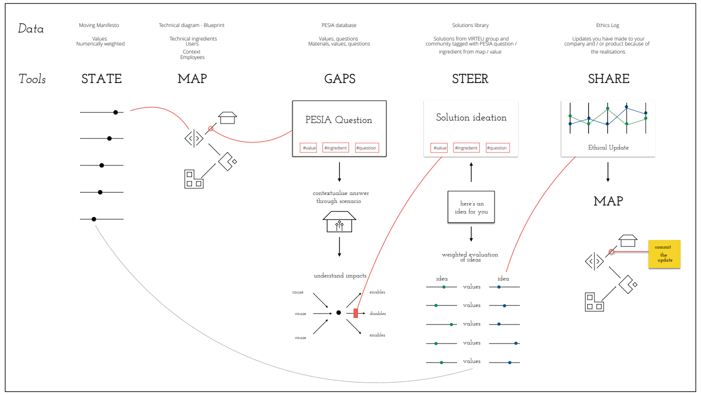
Tools STATE MAP GAPS STEER SHARE

Tools STATE MAP GAPS STEER SHARE





Tools
STATE
MAP
GAPS
STEER
SHARE
PESIA Question
#value
#ingredient
#question
contextualise answer through scenario
understand impacts
cause
enables
disables
Solution ideation
here's an idea for you
weighted evaluation of ideas
idea
values
Ethical Update
MAP
commit the update



Data
Moving Manifesto
Values
Numerically weighted
Technical diagram - Blueprint
Technical ingredients
Users
Context
Employees
PESIA database
Values, questions
Materials, values, questions
Solutions library
Solutions from VIRTEU group and community tagged with PESIA question / ingredient from map / value
Ethics Log
Updates you have made to your company and / or product because of the realisations
Tools
STATE
MAP
GAPS
STEER
SHARE
PESIA Question
#value
#ingredient
#question
contextualise answer through scenario
understand impacts
cause
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Solution ideation
here's an idea for you
weighted evaluation of ideas
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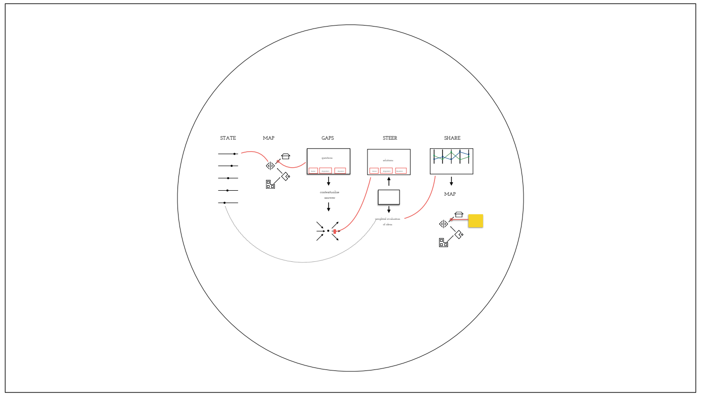
MAP
commit the update



STATE
MAP
GAPS
STEER
SHARE
MAP

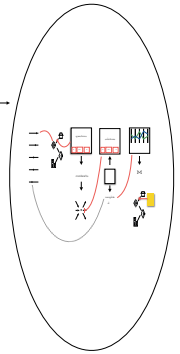
Data

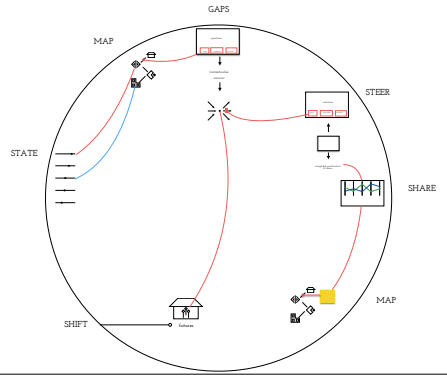
Users identified
Context
Relevant speculations database
IOT trends
IOT Type trends

Tools

SHIFT

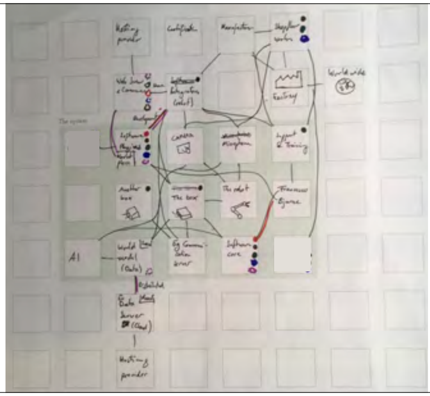
speculate beyond the visible issues

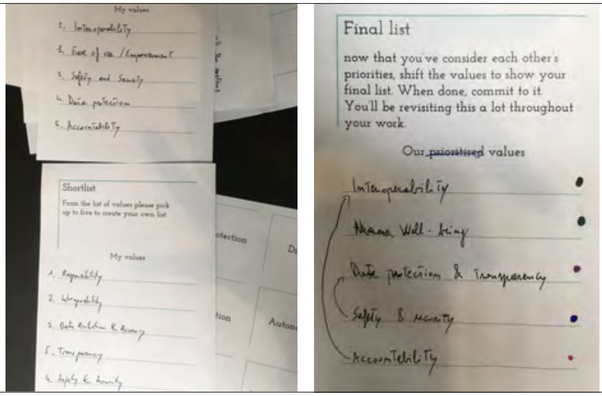


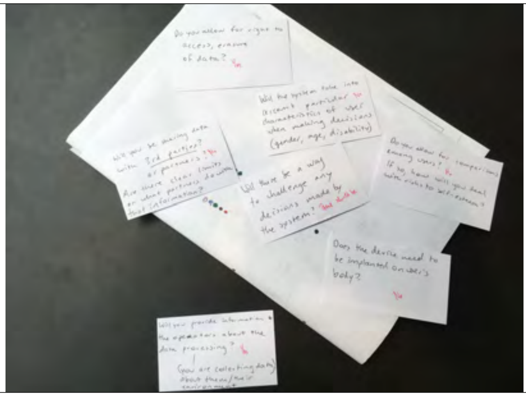


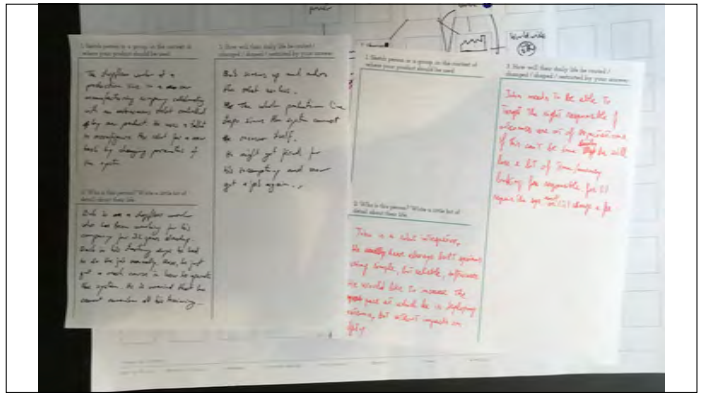
AMS Stakeholder Workshop

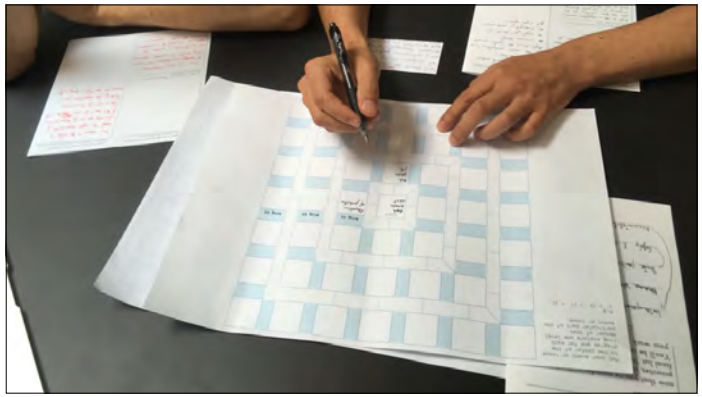
-TESTING-

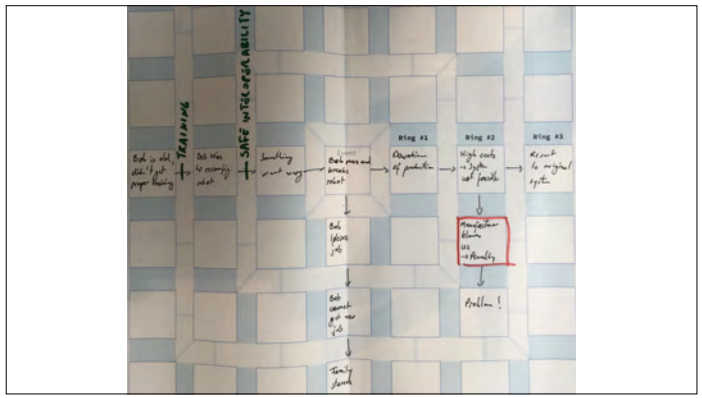


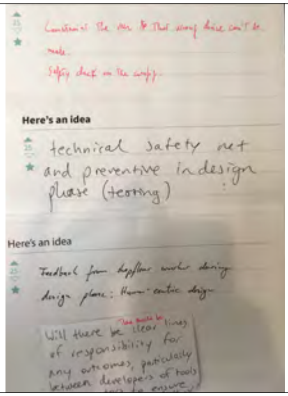

My values
Shortlist
From the list of values please pick up to five to create your own list
My values
Final list
now that you've consider each other's priorities, shift the values to show your final list. When done, commit to it. You'll be revisiting this a lot throughout your work.
Our prioritised values
Interoperability
Data protection & Transparency
Safety & security
Accountability

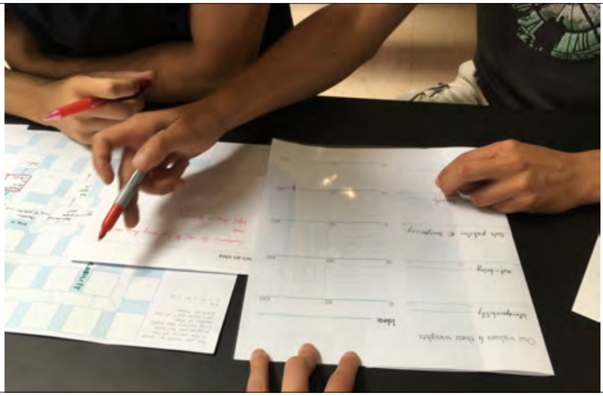

Do you allow for right to access, erasure of data?
Will there be a way to challenge any decisions made by the system?
Does the device need to be implanted on user's body?

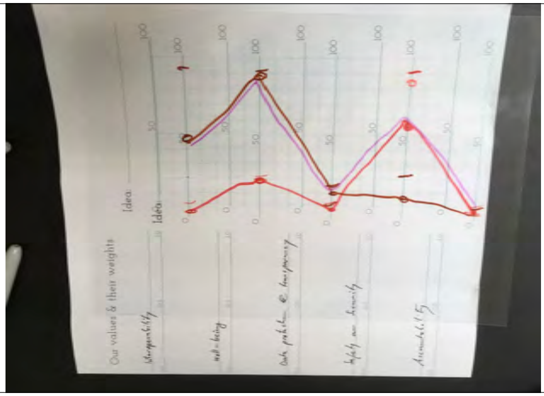


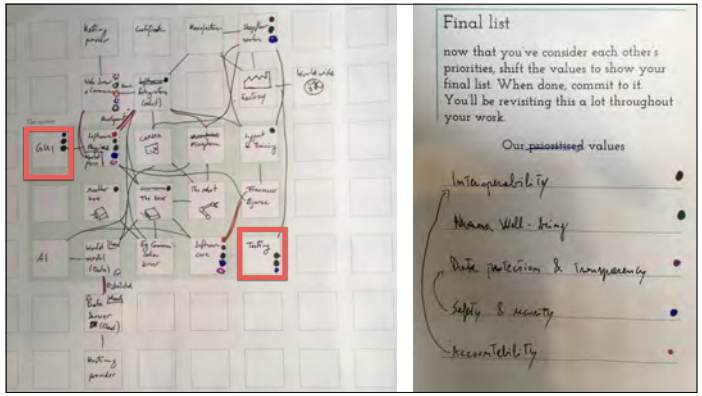


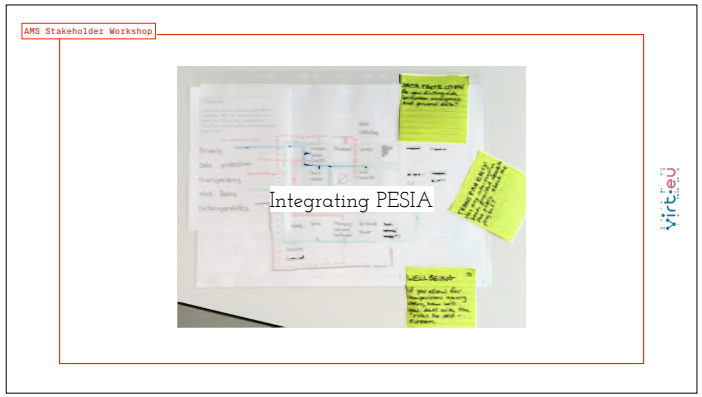

+ TRAINING
+ SAFE INTEGRATION ABILITY
Ring #1
Ring #2
Ring #3
Problem !


Here's an idea
technical safety net and preventive in design phase (testing)
Here's an idea



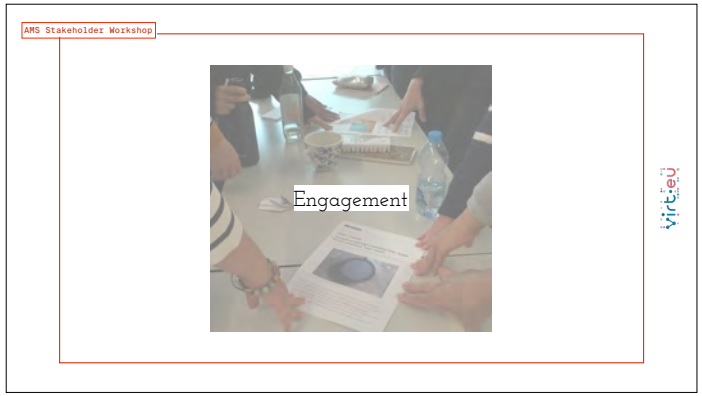

Our values & their weights
Idea



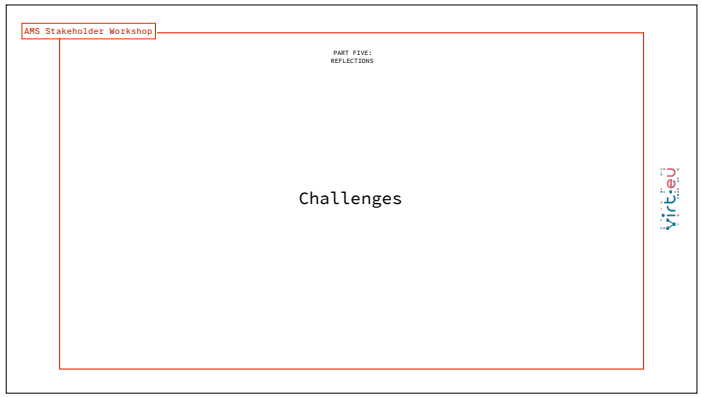


- currently we use some questions from the scenarios on different values - how else? The wording is hard.
WHY SHOULD WE CARE

The problem of facilitation - we will make a playbook for facilitators but it's probably always going to be tough -
The idea of us as a tool of ethical agents?

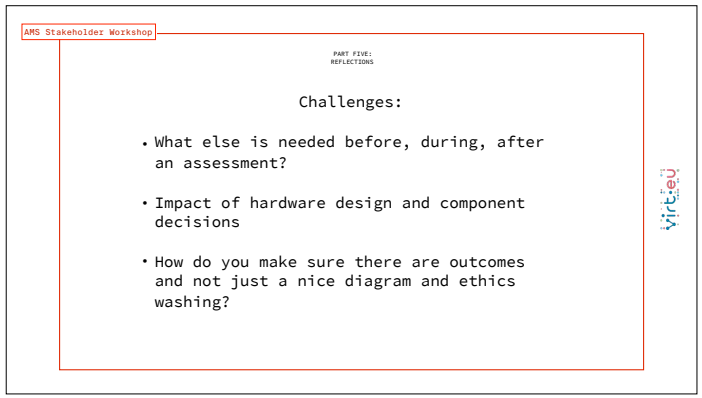


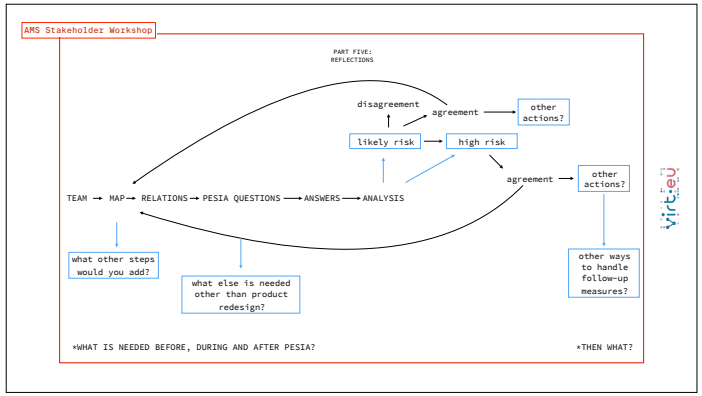
The question of "finding time for ethics" (impossible)
when in the process?
SERVICE DESIGN BLUEPRINT
WHY SHOULD WE CARE



The final part of an impact assessment is to do something about the risks and issues you have identified

Here is where we see many failings and ethics washing





this type of thing normally is seen as high risk
stakeholders: what is the most useful way of dealing with that high risk?
we know what the potential solutions are. but what is the best way of handling the potential extra follow-up measures or tools or recording of action plan

6 months later people review your mitigations. what is the best way of assessing the risk. how do you then follow up the actions in a way that is useful. heatmap.
bowtie diagram.
threat which produces a main event which is something you don't want to happen - the airplane fell out of the sky / my data was stolen. consequences? if we lost our data there is a regulatory fine and so on. what barriers can i put in here to make sure if this threat happens this main event will not occur. if this main event did happen, what are the corrective measures we could take. then you get sliders - this is a 5 or 3 or 1.
this is what we don't want to happen. what would cause it to happen and so on.
rate the consequences - those are the ones you are worried about.
if you gave every passenger a parachute it wouldn't matter if the plane broke in half.
risks -

we tend to be binary. this is gray area. it is where IT people struggle.
the business case for ethics - use cases where have other people fallen off the cliff and what was the actual impact to them - start ups - we said check out data canvas is a good idea - build it in - we don't know what's up with the law - there's a real life reason for you to do this as well as that you want to be seen as an ethical companies -
but i'm working just to get this floating - once its floating then ill think about it -
what are the examples of things going massively wrong that you would nt think about - uber, hostage situation, surge pricing, hadn't predicted that situation - whose responsibility is it?
PR nightmare and relationship with consumers

the workshop was TOO MUCH INFO

GOOD STORIES BAD STORIES - VIRTUE ETHICS ORIGINS - the way you know what is good is by knowing good and bad people
there's loads of stuff happening that's bad is becoming aggregated bad - if we all don't care about consent -
individual responsibility / mass aggregated consequence - climate change -
people don't care about privacy?
they do care but still buy products

regulator, business, government should be responsible

ethics washing
how do you avoid that?
coming out of something with a heat map you can manipulate is going to lead people longer unless it is locked in and you can't edit it until you fix things

ODI is designed to iterative - they have it they learn more and they make changes
its not suppose to be just 67% ethical - we passed
difficulty is figuring out the balance of specificity of who the tool is for and what it is supposed to do - a tool to convene stakeholders - bring voices and experiences and develop a shared language - mapping thing

vocabulary - ada lovelace - reconciling dilemmas

working with local authorities you have solo teams who have their own languages within the organisation.
also fundamental organisational cultures and get to this type of conversation in practical way.

cultural ownership - systemised way
how can it be appropriated into their culture

who are the people who make the bits that are the components of everything else
consumers developed them with vodafone and they worked with the manufacturers - those guidelines and checklists

there's also a cultural problem where eastern cultures don't intervene because they are utilitarian whereas the western do more deontological

its more where the law starts and then ethics needs to go beyond it

its western that law is good. even in western society its not always good.

you make assumptions about what they would do - based on their cultural

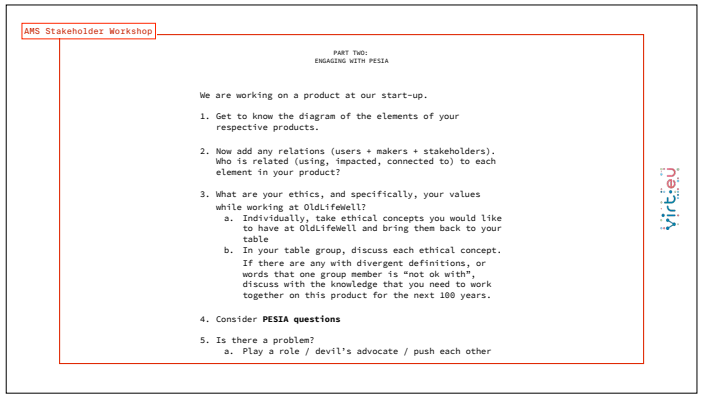
alexa's responses are programmed by men and if she is called hot it says something that comes

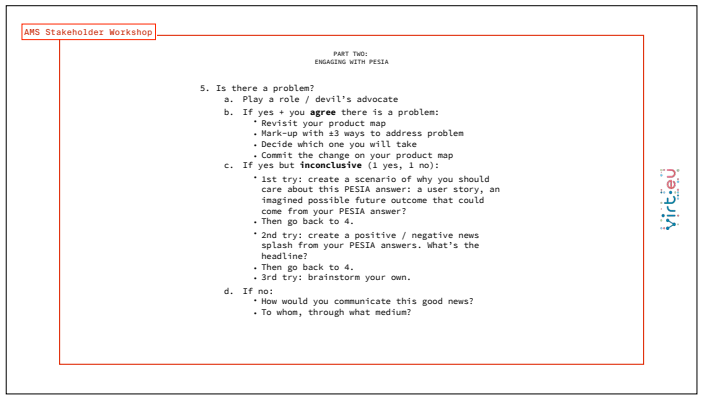
from a man
major social implications but not necessarily…
i have a male siri but it doesn't necessarily talk like that but i won't talk like that because I'm a woman
its not hurting the users its contributing to fundamental gender bias in core training data
kids will grow up speaking to devices
my kids shout at it - alexa do this
you spend all day saying please and thank you
f you are rude to your device in that way it should be deactivated
who takes responsibility?
its in the world now
what do you do
its not explicitly causing harm
apart from all women in an abstract way
you could

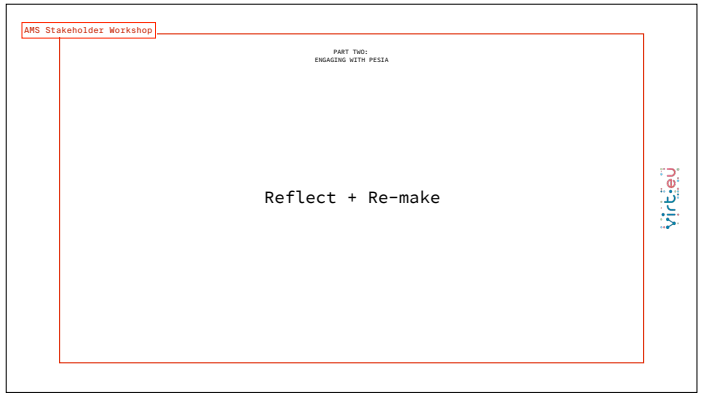
art stuff could be useful as well as and alongside of this is when shit hit the fan - this is something someone built in response -
ODI - crazy pink robot that he is inside of - the brief was trust and data - my relationship with my data would be fundamentally different if i were in chechnya - i would be arrested and tortured - they would be arrest (people i know) - my relationship to my data would be fundamentally different

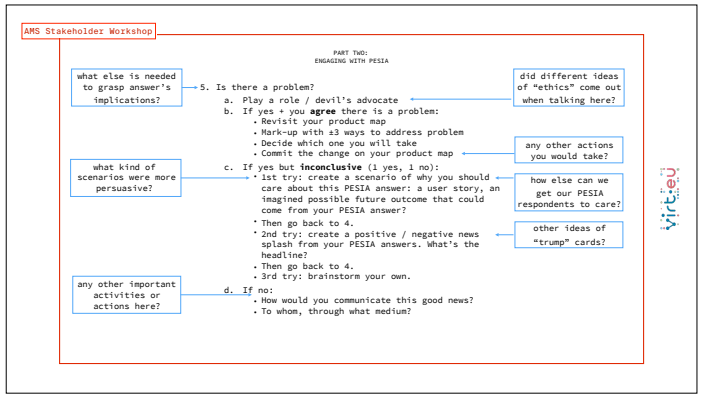
people are taught to do risk assessment for the overall organisation
then you try to get them to get impacts on human - oh identity theft - but then back too organisation - then they don't know
the privacy impact on humans - but then the chairman needs to think of the organisation
if you can help translate then the product person will say look these people will die and this will create this impact on the organisation

really imagine that you are in that situation



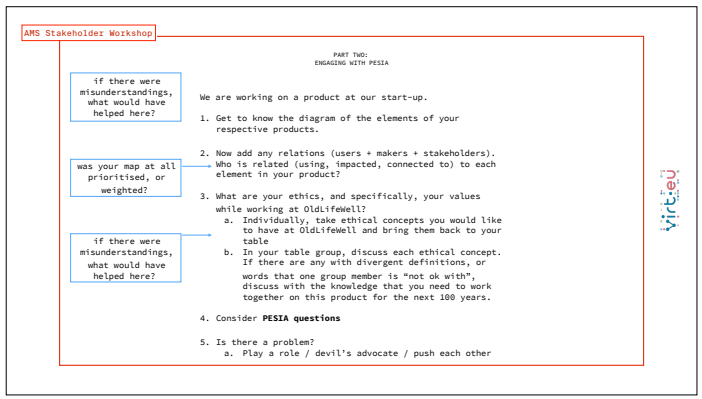






Values

Privacy
Dignity
Well-being
Autonomy
Safety and security
Inclusion and equality



AMS Stakeholder Workshop

PART FIVE:
REFLECTIONS

PLANS

What happens next in the project
and how can you continue to be
involved if interested?

AMS Stakeholder Workshop

The question of "finding time for ethics" (impossible)
when in the process?
SERVICE DESIGN BLUEPRINT

AMS Stakeholder Workshop

PART FIVE:
REFLECTIONS

THANK YOU!

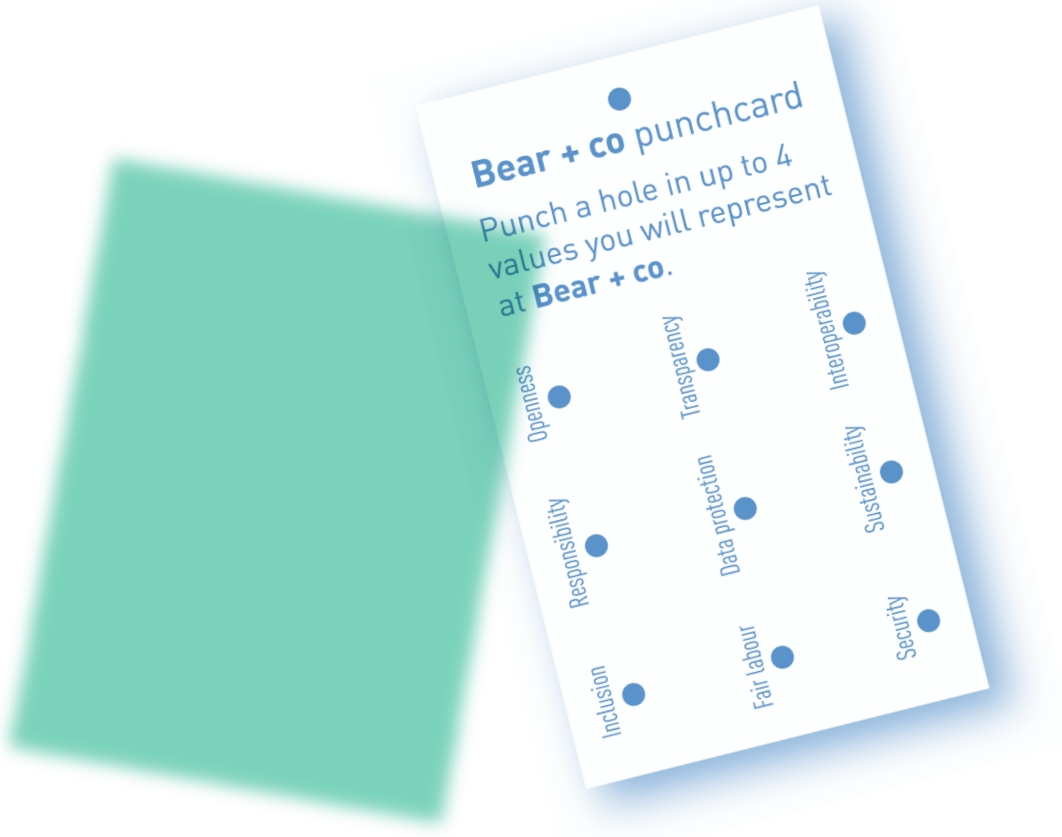
WHY ETHICS?

Ethics has come to have many meanings. In general terms, ethics concerns the frameworks and principles that define our ability to have a good life and to clearly conceptualize our rights and responsibilities. In many fields of ethics, these frameworks and principles are either considered in terms of outcome, as in consequential ethics, or in terms of rules, as in deontological ethics. We propose to go beyond the consequentialist and utilitarian points of view, using alternative ethical approaches that we believe fit better with the problems at hand. These include virtue ethics which tend to focus on an individual's process of attempting to live a good life, capabilities approaches that examine the ability to act, including to choose an alternative given the existing structural constraints and opportunities, and care ethics which not only examine responsibility and care but take into account the shifting obligations and responsibilities of individuals as they are positioned in a web of relations.

VIRTUE ETHICS

An individual's process of attempting to live a good life.

Virtue ethics offers an individualist approach that sits well with the ethos of technological development, focused as it is on augmenting and improving the self. The familiar rhetorical devices such as "technologies for good" or "don't be evil" speak to the idea that the virtuous moral choices of technology developers and designers can lead to bringing about a better life for all. From a virtue ethics point of view, such an outcome hinges on individuals actively cultivating particular virtues in themselves resulting in the kind of moral character that would lead to decisions with good outcomes. Despite this focus on the internal worlds of individuals, virtue ethics also emphasizes the importance of community. Virtue ethics gives most importance to the individual as an ethical agent in their decisions and practices and as a part of a community.



THE CAPABILITIES APPROACH

Choosing an alternative given the existing structural constraints and opportunities.

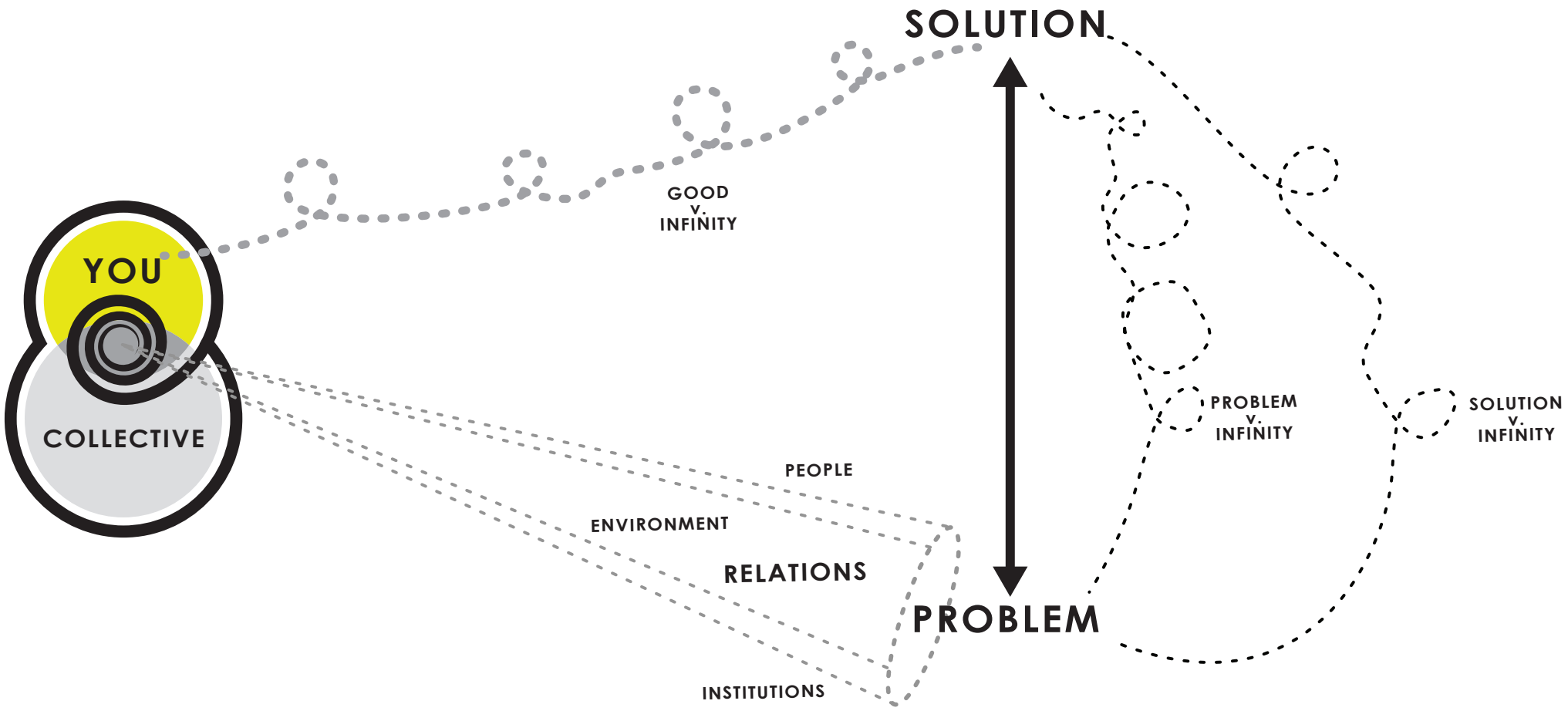
"Capability is thus a kind of freedom to achieve alternative functioning combinations." This means that paying to attention to individual's internal capabilities is insufficient and we must also consider the possibilities created by a combination of internal capabilities and the structural conditions defined by the particular social, economic and political environment within which the individual attempts to act. This recognition that personal principles may need to be compromised to cope with structural constraints point to the importance of understanding what these constraints are and what influence they might exert. Furthermore, technology developers are in a curious position of both having to make decisions within the structural constraints of their context and having to acknowledge that the design decisions they make will result in producing structural constraints and possibilities for their users. Thus for developers to "do good" it is important to not only evaluate how existing constraints affect design but also to consider how these constraints are translated into the design and how these might be mitigated to offer more or different possibilities to the users.

CARE ETHICS

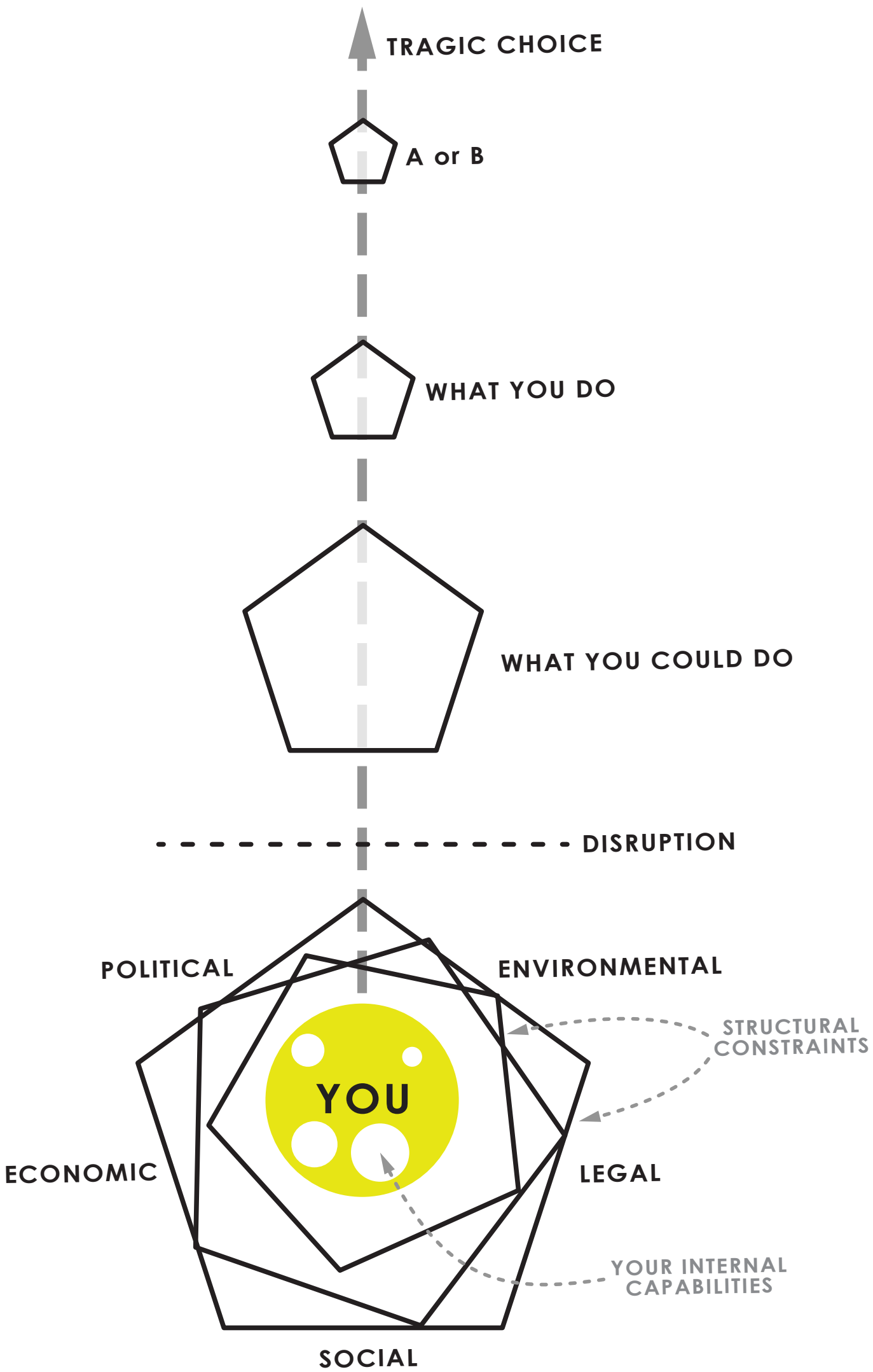
Not only examine responsibility and care but take into account the shifting obligations and responsibilities of individuals as they are positioned in a web of relations.

In our work, we are interested in the tensions between how individuals must negotiate their, at times conflicting obligations and responsibilities to others, and how they are expected to behave virtuously or 'well' in relation to a ideal set of future potential states of being. How then must we consider what constitutes "doing good" given the conflicting relational demands from team members, management, other institutional arrangements, personal relationships, diverse community memberships as well as from the moral objects of hardware, data and code?

But the logic of care has no real use for guilt, because it merely calls for acknowledging problems and trying again. In this way, the logic of care offers a way around the paralyzing realizations of downright apocalyptic possibilities of IoT. Where might we seek solutions to these problems? Julie E. Cohen proposes the idea of "semantic discontinuity" as the opposite of seamlessness - a call for strategically under-designing technologies in order to allow spaces for experimentation and play. Such intentional building in of flexibility may be one way to offer possibilities for alternatives.


SOLUTION
GOOD
v.
INFINITY
YOU
COLLECTIVE
PROBLEM
v.
INFINITY
SOLUTION
v.
INFINITY
PEOPLE
ENVIRONMENT
RELATIONS
INSTITUTIONS
PROBLEM


COMMUNITY
RELATIONS
WHAT IS GOOD?
PRACTICAL WISDOM
VIRTUE
YOU
EXPERIENCE
EXPERIENCE
EXPERIENCE
EXPERIENCE


TRAGIC CHOICE
A or B
WHAT YOU DO
WHAT YOU COULD DO
DISRUPTION
POLITICAL
ENVIRONMENTAL
STRUCTURAL CONSTRAINTS
YOU
ECONOMIC
LEGAL
YOUR INTERNAL CAPABILITIES
SOCIAL

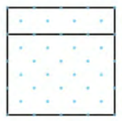
Sensor

Connection

Interaction

Hardware

User interface



3rd party

Data

What it does

The system

The device

Who makes it external internal

Where is it used

Who is it for

Wearable

Home

Urban

Public

Person

People

Private

		who is it for	where is it used	who makes it external	who makes it internal	who makes it external	where is it used	who is it for		
	who is it for	where is it used	who makes it external	who makes it internal	the system	who makes it internal	who makes it external	where is it used	who is it for	
who is it for	where is it used	who makes it external	who makes it internal	the system	the device	the system	who makes it internal	who makes it external	where is it used	who is it for
where is it used	who makes it external	who makes it internal	the system	the device	the device	the device	the system	who makes it internal	who makes it external	where is it used
who is it for	where is it used	who makes it external	who makes it internal	the system	the device	the system	who makes it internal	who makes it external	where is it used	who is it for
	who is it for	where is it used	who makes it external	who makes it internal	the system	who makes it internal	who makes it external	where is it used	who is it for	
		who is it for	where is it used	who makes it external	who makes it internal	who makes it external	where is it used	who is it for		

NEW PESIA structure

NEW 1 Data mapping (Section 1)	
What information is collected?	
1. Does the project involve the collection of information about individuals?	IoT devices may not just "collect information" but generate data through sensors and user interaction that it is then transmitted elsewhere outside the device. Make sure that you consider all forms of data that and information. Personal data[i] is information that relates to an identified or identifiable individual. This will be easy to establish when you are dealing with names or other clear identifiers such as IP addresses or cookies. In some cases, it may be difficult to establish whether the data is personal, for example if you only collect sensor data without any identifiers. In this situation you need to consider whether that data can be linked to other information you may be able to access. If you use anonymisation techniques after collection answer yes here and fill the relevant questions, including details about the anonymisation process in the section on technical measures. There are growing concerns about the risks of re-identification of anonymised data.
1a. If no, consider other ethical and social aspects. Go to the section on ethical and social assessment	Many IoT devices will generate data that may not be directly linked to an individual, but which will still have privacy or ethical implications. For example, the advanced models of robotic vacuum cleaners from Roomba make digital maps of users' homes in order to improve their efficiency. A minor scandal broke out when their CEO was quoted over plans to sell that data, which were later denied by the company[ii]. That data may not be personal if it is not linked to an individual. It will just be the plan of a house somewhere in the world. However, selling that data would still raise ethical issues, and indeed the idea generated a great amount of controversy, even if it is unclear that privacy laws would have been broken. The company is currently partnering with Google to make that data available to other smart home devices.[iii]
4a. What kind of	

information is to be collected? LIST	
What do you do want to achieve with the information?	
5. Which are the purposes of the processing?	Explain how you will use the data
~~6. Which means are used for the processing (e.g. electronic means, non-automated means)?~~	
12. Is the collected information necessary in relation to the purposes for which they are processed?	Are you satisfied that you cannot use other means to achieve the required objectives? Check for each data and purpose. Data minimisation is a fundamental principle of data protection to consider in everything you do.
Where does the information come from?	
11. Where do you get the personal data from?	For each type of data explain whether you obtain it from your users themselves or from third parties?
3. Are users required to provide information about themselves in order to use the device or access certain functions?	Your users may have a user name and password or other identifier, but this question covers real life identifiers, such as names biographical data, or personality related preferences that may be required for configuration, etc. Collecting biographical data that is not strictly necessary is generally a bad idea. For a start it is very difficult or impossible to change. If you ask someone where they went to school, they cannot undo that if your system is later compromised. In addition, that data is increasingly easier to access. Old schools, place of birth and mother's maiden name can be available in public online registers. Finally, such data is the basis of identity theft. If you need to collect biographical records make sure you have a god reason. Above all avoid using such information for "security questions".

4. Are users required to give consent in order to proceed at any point?	You should explain how you obtain the consent of the user. E.g. whether asserting consent is required for the system to function or whether you operate on the basis of consent but there is no barrier.
4a. If yes, do you follow GDPR requirements?	Under EU data protection law, GDPR, consent must be "freely given, specific, informed and unambiguous". This is one of the areas that has generated a lot of concern among companies. There is very detailed guidance from many data protection authorities.[iv] Freely given means that users should not be forced to agree, it has to be a real choice. If there is a detriment to the user, e.g. very negative consequences or the device is useless without the data, there is no real choice. Imbalances of power, such as an employment context, make freely given consent inviable. Consent bundled with general Terms and Conditions will be presumed not to be freely given. If the data is necessary for the performance of the service you should not use consent, but see below. If it is not necessary, then you cannot bundle it. Specific consent means that users agree to each different use of the data with a good level of granularity. Agreeing to have your data processed for an enhanced service is not the same as agreeing to the sale of the data. Using generalities is not OK but neither is confusing users with too much detail. Finding the right balance between detail and overwhelming users is not straightforward. Explain how you try to achieve this. There is no completely right or wrong answer here. Informed consent mean that the user needs to be provided with enough information in plain language about the data you will use and how, as per above. The requirement for unambiguous consent means that you cannot use pre-ticked boxes or rely on the user simply continuing to use your device or systems. You need an affirmative action, typically ticking a box. It is OK to ask for consent in the context of a specific process, like with a pop up.

4b. If no, on what basis do you make use of personal data?	It is very important to have clarity on the separate legal bases for processing data. Different data processes can have a different basis. For example, you could use consent to obtain financial data, but later on if you have to disclose that data to the authorities you will likely do it under a legal obligation. Think this through and make sure you separate all the uses of personal data and can justify why you can do each of these. Importantly, other than consent, all other provisions require *necessity* for the use of data. The barrier is higher.
i. Is the use of data necessary for the delivery of the agreed service or under a contract?	As mentioned above, be careful not to mix this up with consent.
ii. Are you required to do this by law?	You may not need to explain this to the users in detail (a reference to the specific legal obligation is considered enough in several EU countries), but you should know yourself and keep a record.
iii. Are you doing it in order to protect someone's life?	In life or death situations, you are allowed to use personal data, for example by sharing it with emergency services. This can mean the life of anyone, not just your users. But you have to be careful not to overstretch this provision, particularly with health data. Long term damage to health or other risks are not covered, only emergencies.
iv. Is it needed for some public purpose defined in law?	This applies where you are not mandated by law to do anything but if you do it, it would be under a legal provision. Public interest is typically applicable to public sector organisations but, in some cases, it can cover private actors. Examples of tasks carried out in the public interests include taxation, reporting crimes, humanitarian purposes, preventive or occupational medicine, public health, social care, quality and safety of products/services, and election campaigns.[v] However, this is not a blank cheque. The public interest tasks are defined by law and data protection regulations or other laws at national level may require you to adopt specific safeguards to comply with. If you are not sure you are almost certainly not able to use this justification.
v. Is the processing	Legitimate interest is a controversial concept in data

necessary for the satisfaction of the legitimate interest of the controller?	protection. These are catch all terms that can cover anything an organisation does that is *necessary* for its business. Another important requirement is that the uses of data under legitimate interests must not be overridden by the interests or fundamental rights and freedoms of the individual. For this reason, you need to carefully balance your interests with data subject's interests, fundamental rights and freedoms and this is not always easy. The rule of thumb criteria is whether your users would be shocked or surprised (reasonable expectations). Examples of valid legitimate interests include fraud protection and general uses of employee or client data. Finally, legitimate interest is not enough to process special categories of personal data (personal data revealing racial or ethnic origin, political opinions, religious or philosophical beliefs, or trade union membership, genetic data, biometric data processed for the purpose of uniquely identifying a natural person, data concerning health or data concerning a natural person's sex life or sexual orientation)
Special data	
4b. In particular, specify if special categories of data are processed)	List all the types of personal data collected or generated in the project. You should make a table with all the types of personal data that you collect or generate. Special categories of sensitive data are defined in GDPR: racial or ethnic origin; • political opinions; • religious or philosophical beliefs; • trade union membership; • data concerning health or sex life and sexual orientation; • genetic data; and • biometric data where processed to uniquely identify a person. These categories of data receive a higher level of legal protection[vi]. For example, in some countries like Spain you cannot even use consent to handle such data. Using such sensitive data automatically triggers a risk flag in your assessment and requires specific checks to ensure compliance. In some countries other types of data can be treated as sensitive; for example, criminal convictions and offences in

	the UK.
Where does the data go?	
10. Who else has access to the persona information?	In the table, list for each type of data who may receive it
Section 4. Transfer	
34. Does the project involve transfers of personal data outside the EU?	The UK is in a special case here. Until Brexit takes place transfers of data to the UK are the same as to any other EU country. International transfers of data outside the EU can only take place under fairly strict conditions. European countries have identified a high privacy risk in the handling of personal data in countries that lack adequate levels of data protection in their laws. This is not just about bureaucracy for its own sake. IoT devices in the home can offer a window into people's private lives. In some cases, quite literally, as in the case of unsecured IP cameras without proper security. Check where your partners and service suppliers (e.g. cloud service providers) have their operations. You need to have a proper system for your sharing of data with partners and be satisfied that they have systems in place for any transfer they may do outside the EU. Independently of any arrangements, organisations anywhere in the world that offer services to people in the EU must comply with GDPR. These companies need to have privacy policies and security mechanisms in place, be able to delete data on request, etc. List all non-EU countries where personal data may be handled or stored.
36. Is there an adequacy	If there is an official decision on the adequacy of the data

decision in relation to the third State importer of personal data?	protection regime of the country, personal data can flow from the EU (and Norway, Liechtenstein and Iceland) to that third country without any further safeguard being necessary. The European Commission has so far recognised Andorra, Argentina, Canada (commercial organisations), Faroe Islands, Guernsey, Israel, Isle of Man, Japan, Jersey, New Zealand, Switzerland, Uruguay and the United States of America (limited to the Privacy Shield framework) as providing adequate protection.
36a. If no, skip to section 5XX	
37. In the absence of adequacy, are there any other safeguards?	Sending data to a non-EU country not covered by an adequacy decision is not straightforward. The rules are complex and can be daunting for a small company. You should be able to explain how any data you send out of the EU is not creating a risk for your users. GDPR provides several mechanisms and safeguards for this to happen. Many of these safeguards, such as Binding Corporate Rules, are not adequate for SMEs or independent developers. However, if you use a third-party service there is a chance that they rely on Binding Corporate Rules or EU approved model or standard contract clauses. Check for these terms in their documentation. Standard model clauses approved by the European Commission can be added to contracts with partners or service suppliers.[vii] Data protection authorities are legally allowed to authorise bespoke contracts but at present the authorities of many European countries refuse to do this, so standard model clauses from the EU remain a better option. If you try to use standard model clauses yourself in a contract with a non-EU suppliers we would recommend you obtain legal support. Other mechanisms will become available in the near future, such as certification schemes or codes of conduct. These are not ready at the time of writing so beware of any claims by suppliers in this regard.

38 Can you use any of the exceptions approved in the law?	GDPR provides for various exceptions to the rule. As the name indicates these provisions are designed to provide avenues for the routine uncontrolled flow of data towards places without safeguards. You should not try to justify retrospectively any transfers using such exceptions as an argument. You still have to inform your users of any transfers and the mechanisms applied.
a. Have you obtained consent from users?	A common mechanism to send personal data outside the EU is to obtain consent. This should follow the principles outlined elsewhere. You cannot just ask for consent for international transfers in general. You must explain what data is going where and what the risks may be, such as the lack of appropriate enforcement in case of any problems.
b. Is the transfer necessary for the performance of a contract?	The transfer can be allowed if it is *necessary* for the performance of a contract between you and your users or clients, or for the implementation of pre-contractual measures taken at their request. Contracts between you and third parties to provide a service to your users are also allowed. It is important to remember that this and other exceptions only apply to occasional transfers. If you need to routinely send data you need to get consent or find an approved safeguard. For example, you may include standard model clauses in your contract.
~~c. The transfer is necessary for the conclusion or performance of a contract concluded in the interest of the data subject between the controller and another natural or legal person~~	
d. The transfer is necessary for important reasons of public interest	Considering the very specific nature of this case, you should justify in detail.
e. Is the transfer necessary for the establishment,	

exercise or defence of legal claims?	
f. The transfer is necessary in order to protect the vital interests of the data subject or of other persons, where the data subject is physically or legally incapable of giving consent	This exception mainly applies to medical emergencies, for example, but not general treatment.
g. The transfer is made from a public register	This only covers registers created under a legal basis, e.g. company or land registers, and not private registers such as credit reference. You cannot make wholesale transfers.
37h. Are you using exceptional legitimate interests?	GDPR provides for a final very restrictive backstop mechanism for when a transfer is absolutely necessary for your legitimate interests, there are no other options, and it concerns only a limited number of data subjects. In order to do this, you need to inform the data protection authority of your country. You should be very careful if claiming this exception.
NEW 2 Technology, Activities and Risks (Section 7)	
TECHNOLOGY	
7. Are new technologies used which might be perceived as being privacy intrusive (e.g. facial recognition, use of biometrics)?	
73. Is the technology that I am developing new in terms of the potential impact on data subjects?	If the technology in the system is new in terms of how it processes personal data you will likely require a formal data protection impact assessment. Defining what counts as a new technology is of course open to debate, but similar problems with defining what is the state of the art are encountered in other areas, such as patents. New applications of existing technologies to solve novel organisational issues will also count as new. For example, combining the use of fingerprint and face recognition for improved physical access control.

74. Am I using a product/component developed by others who have already carried out an impact assessment?	
a. If yes, check whether the producer is willing to share the assessment and integrate their work in your own assessment.	
75. Am I developing a technology similar to others that are being developed?	
a. If yes, consider the possibility to carry out a joint DPIA.	
78. Have I identified the assets on which the personal data rely (e.g. hardware, software, people, paper…)?	
AUTOMATION & PROFILING	
58. Does the technology allow to perform evaluation or scoring of the data subjects?	
69. Does the technology allow (full or partial) automated-decisions to be taken with regard to the data subjects?	Examples of automated decisions are common in computing. Scoring systems and online recommendation systems are clear examples, but a core premise of IoT is to automate daily life to provide convenience. Automation does not always require the creation of personalised profiles, but these two activities tend to go together. Learning your users' habits will be profiling.
~~70. Do such decisions affect legal rights of the~~	

~~data subjects (for instance, if the data collected by the device allows to detect alleged non-performance of the data subject and therefore prevents the device to work properly)?~~	
71. Do these automated decisions have a significant effect on the users of the system?	Will the decision have the potential to significantly influence the circumstances, behaviour or choices of the individuals concerned? At its most extreme, could the decision lead to the exclusion or discrimination of individuals? The typical examples of such effects would be credit applications or recruitment. In the world of IoT a prime example of significant effects would be systems that trigger medical alerts.
72. Does the technology allow for human intervention in the decision process?	
a. If yes, is such human intervention enough to prevent risks to the rights of the data subjects?	Is the intervention able to steer the process and have a significant impact on the outcome? Rubberstamping a computer decision may not be enough.
SCALE & BREADTH	
59. Does the technology allow the collected data to be easily matched or combined with other data sets?	
60. Does the technology allow the collection of personal data on a large scale?	Your intuitive assessment of your project will likely include an understanding that size and volume matter and that something that affects large numbers of people will be inherently riskier than a project that only impacts a small number. This principle is embedded in EU privacy law. Large scale is a very important term in privacy compliance, but unfortunately there is no simple clear definition. There is some guidance on what may constitute large scale, considering:

	• The number of people concerned - either as a specific number or as a proportion of the relevant population. • The volume of data and/or the range of different data items being processed. • The duration, or permanence, of the data processing activity. • The geographical extent of the processing activity. Accepted examples of large-scale data processing include: • travel data of individuals using a city's public transport system (e.g. tracking via travel cards); • real time geo-location data of customers of an international fast food chain for statistical purposes by a processor specialized in these activities; • customer data in the regular course of business by an insurance company or a bank; • behavioural advertising by a search engine; and • processing of data (content, traffic, location) by telephone or internet service providers. Some national data protection bodies have set clearer criteria, such as specific thresholds, say 5,000 people if dealing with criminal convictions, but this is not the case in every European country[viii]. It is important to keep in mind that this does not mean that individual breaches of the right to privacy are not important. If you are dealing with large scale processing, you will need to take a formal data protection impact assessment. See official guidance if required.[ix]
65. Does the technology allow to observe, monitor or control data subjects in a systematic way?	Systematic monitoring is considering a higher risk because it is more likely that people will, not be fully aware. This could be because the people affected will at some point normalise the collection of data and "lower their guard" or simply because by collecting data all, the time you increase the likelihood that some people will not be aware.
CONTEXT & SPACE	
61. Does the technology allow the collection of personal data in contexts that are private?	Private contexts could refer both to private spaces, such as the home, or to private situations, such as devices that could record private conversations. By the way, some contexts will have an added level of confidentiality. For examples, journalists dealing with

	sources, lawyers with their clients or doctors and patients.
66. Does such collection take place in a publicly accessible area?	Collecting data in publicly accessible spaces increase the risk that people affected will be unaware. Additionally, it may be impossible for individuals to avoid having their data taken.
67. Does the technology allow the users or other people affected to be aware of the monitoring in process?	This is a particularly relevant issue in the context of IoT. Ambient computing and devices without an obvious interface can make it hard to know when data is being collected.
68. Is the data subject able to avoid such monitoring and control?	This may be the case in public spaces, but also in other circumstances such as when wearable IoT devices are worn by users. Glasses with cameras and microphones, for example.
New question: Do you track the location of data subjects?	
NOTE: EDPB does not see a risk in location but some DPAs do	
OTHER RISKS	
62. Does the technology allow for the collection of sensitive personal data (i.e. data revealing racial or ethnic origin, political opinions, religious or philosophical beliefs, or trade union membership, biometric data, data concerning health, sex life or sexual orientation) or data relating to criminal convictions and offences?	In the first section you listed all the types of data involved in the project, included all sensitive and special categories. At this stage, have another look at your technical system and think whether you may be collecting such data even if inadvertently .
63. Does the technology allow for the collection of personal data whose leak could risk damaging the data subject?	This question aims at establishing whether there are any special concerns above the legal and ethical obligation to deal with personal information in a fair and secure manner. Examples of enhanced risk could be financial data that could be used for fraudulent payments.
64. Does the technology allow the collection of	European data protection bodies have issued guidance on this issue[x].

personal data referring to vulnerable people?	Vulnerable data subjects may include: • children, or any people that can be considered as not able to knowingly and thoughtfully oppose or consent to the processing of their data, • employees or any case where there is an imbalance of power in the relationship between the person whose data is handled and the person or organisation doing it, • segments of the population requiring special protection: mentally ill persons, asylum seekers, or the elderly, patients, etc.
77. Have I clearly identified the nature, scope, context and purposes of the processing operations?	Review your responses to this section and check that they describe the activities you intend to pursue.
RECAP	
13. Is the personal data you collect or generate used for different purposes than those established and communicated to your users?	At this point you should have a good understanding of what you thought - and told your users - you were doing with their personal data and what you may actually be doing in reality. Now is time to check whether there is too much divergence. One of the fundamental principles of data protection is “purpose limitation”, meaning that you should only use the data for the purposes you collected it for and never for “incompatible purposes”. Incompatible purposes are not defined as such in the law, but the general criteria are how removed it is from the original purpose and what would be the impacts. As a rule of thumb anything your users may find creepy or shocking could be incompatible Incompatible purposes may be a breach of data protection law and you should check this further if unsure. At least you may want to change the information you provide to your users.

## NEW 3 How do you handle data accurately and securely (Section 6. Security)	
TECHNICAL	
81. Have I envisaged measures to restrict the collection and further processing and storage of data to what is strictly necessary for the purposes of the processing?	
50. Are there procedures or mechanisms to create backups?	
20. If information is converted in anonymous information, are there procedures which ensure the irreversibility of the process and the impossibility to re-identify data subjects?	
15. Do you store personal data?	Yes or no Storage could cover building persistent databases, temporary logs, etc. Data stored in RAM or other transient copies may not count, unless there is a clear risk that it can be exploited. You may need to check with your partners and suppliers whether they store data.
17. Are there any technical impediments to supporting access rights due to how data is stored?	Some companies keep personal data in separate databases, ostensibly to protect the confidentiality of the information. But in so doing they may make it very difficult to ensure that data can be accessed, corrected or deleted by data subjects.

	For example, a company could store the recordings of its voice assistant in a database with a device identifier that is not directly linked to the user name. When users try to obtain a copy of their own recordings the company would be unable to comply with their request because it cannot easily link their recordings to the person. The company's feature provides more "privacy", but it also clashes with privacy rights.
18. Which storage mechanisms/procedures are provided? (centralized databases, archives, smart card, and so on)	
POLICIES	
14. Do you have any procedures in place to check the information you collect is accurate and up to date?	You should make a reasonable effort to maintain the quality if the data you process.
16. For how long is information stored?	
51. Does the controller periodically verify the proper functioning of security procedures and measures?	
54. Is there a data breach management action plan in place?	
19. Is there a records management policy in place which includes a retention and destruction schedule?	
56. Does the controller join code of conducts or adopt certification mechanisms?	
57. Does the controller adopt data protection seals and marks?	

76. Are there codes of conduct that could be taken into account?	
ORGANISATION	
42. Is a data protection officer or an information security officer appointed?	
49. Do you keep an access register to the IT systems containing personal data?	
a. For how long is the access register stored?	
b. Do procedures exist which allow the DPO or the IT security officer periodically to check the access register?	
52. If you maintain your own infrastructure, are there controls of physical access to the places where personal data are stored?	Please consider that, in many cases, developers will use cloud systems.
a. No -> Then this	
b. Yes –> then this	
STAFF	
45. How do you control access to personal data and its use by staff?	If you have subcontracted some of your work or engage collaborators, you should have clarity on who has access to what data and what they can do with it, whether they are staff or external providers (likely processors). The company is responsible for their staff. You cannot treat them as if they were processors, but this gets complicated. Many small organisations rely on a very dynamic and flexible structure and the definition of employee, external contractor or temporary worker varies in different countries. You will need to make an assessment.
46. How are staff informed of your security procedures?	
47. Can you be sure that staff only access data that is	

necessary for their functions?	
48. Do you use unique individual accounts for your staff members that allow for personalised authentication and access controls?	
SUBCONTRACTORS AND SERVICE PROVIDERS	Data *processors* are the partners and service suppliers that handle personal data on your behalf. As data processors, they have a specific and detailed legal status in GDPR. If they breach any privacy laws you could be held responsible, so you need to be very careful.
39. Do you have contracts with any processors or other legal documents defining your relation and the sharing of data?	This may be straightforward with companies where you pay for a service but check any online tools you may use for their terms and conditions. It is a legal requirement to have some form of GDPR compliant contract with processors.
40. Are the instructions to the processor outlined?	The difference between you as a data controller and a processor is precisely control. If your providers set out the terms on which they use data without your say they may well also be a controller. Online service providers – analytics, cloud or AI workbench - could fall in either category and establishing this may not be completely clear. For example, there has been a lot of controversy over Google setting in its terms of service when it is a processor (e.g. Google Cloud or Analytics) and when it is a controller (ad exchange)[xi]. In an IoT environment you can have situations with more than one controller and even joint controllers.[xii] In that case you need to identify the responsibilities and the applicable supervisory authorities and may need to consult guidance on this topic[xiii]
41. Might the processor engage another processor under the prior authorisation of the controller?	Your data processors are not allowed to further outsource the handling of any personal data without your permission.

43. Does the controller implement appropriate technical and organisational measures, such as pseudonymisation, which are designed to implement data-protection principles, such as data minimisation?	
53. What security measures do you have in place for personal data?	The security of personal data is a fundamental principle in data protection. You need to make sure you protect information against theft, loss, unauthorised access, use or disclosure or unauthorised copying, modification or disposal. Security measures could be: • Technical: encryption and pseudonymisation techniques, disaster recovery plans, backups, operational continuity plans. • Physical: locks, reinforced doors, window bars. Organisational: rules and procedures.[xiv]
44. How do you minimise the data to what is necessary?	The principle of data minimisation is central to data protection. In previous sections, you have already considered whether all the data you use is *necessary.* Now you should explain what specific practical measures you have taken or will take to make sure this minimisation happens. This could include design decisions to restrict certain sensors, delete data that is automatically generate, etc.
NEW 4 How do you treat users and people whose data you use (Section 3. Rights of data subjects)	
INFORMATION	
8. At the moment of the data	There is a requirement for concise, transparent, intelligible

collection, is a clear notice (and if applicable consent) given to the user?	and clear information to be provided. This is independent of whether you rely on consent or other legal bases.
33. Are there procedures which allow data subjects to know the evaluation criteria of the automated individual decision-making?	
New question: Do you explain data subject rights?	
CONSENT	
9. Can users easily withdraw their consent?	You should make it as easy to revoke consent as it was to obtain it in the first place. For example, if you used a simple tick box on a website you should not require a postal letter.
New question: Do you delete data after withdrawal of consent?	
COMPLIANCE WITH BASIC RIGHTS	
25. Can you give users access to their personal data?	There may be some limitations to the right to access due to competing interest and rights
26. Can you rectify and wrong or mistaken information after being notified by users?	Is the information stored in such a way that you cannot change it?
27. Might data subjects have the opportunity to obtain from the controller restriction of processing?	
28. Might data subjects have the opportunity to obtain from the controller	The right to erasure, also known as the right to be forgotten has generated a lot of controversy. In principle you have to delete the data when asked to do so, including when a user

the erasure of personal data concerning him or her without undue delay?	withdraws their consent. There will be circumstances where you don't have to delete the data, for example to keep it for auditing or security purposes. This can be a complex issue and you may want to check guidance from the relevant authorities[xv].
83. Does the technology allow the collected data to be modified and erased?	
24. If someone asks, and are able to provide the required identification, are you able to confirm whether or not you process their data?	
32. If decisions are based solely on automated processing, including profiling, which produces legal effects concerning, might data subjects refuse to be subject to this kind of decision?	
HOW WELL DO YOU SUPPORT RIGHTS?	
21. Can your users exercise their rights in a simple way free of charge?	
22. How do you check the people who ask for their data are who they say they are?	You should not give someone other people's data, but neither should you impose excessive conditions that make the exercise of data subject's rights too difficult.
23. Do you have systems in place to make sure you reply to every request from data subjects?	
How can your users know you have complied with their requests for rectification, erasure or restriction?	

PORTABILITY	
87. . Is there anything inherent in the technology that would hinder you being able to give your users their data to take it to another provider of a similar device or service?	
30. If requested, is information provided by the controller in a structured, commonly used and machine-readable format?	GDPR creates a new right to data portability. This is very important to avoid people being locked into a particular platforms or technical system. Being a new right there is little best practice to follow upon, but in principle you should provide data in a structured, commonly used and machine-readable format such as CSV. It is important to understand the difference between data portability and the right of access. Portability only applies to information provided by users and not that created by you. This can be a grey area sometimes. For example, your device may collect data like heart rate -covered by portability – which you then convert into an estimate of effort or stress, not covered. You may want to consider how strictly you want to apply the scope of portability and be more generous with your users. Also keep in mind that users still have the right to have a copy of their data, just not in a specific format with the view to take it somewhere else.
31. Might data subjects have the opportunity to transmit those data to another controller without hindrance from the controller to which the personal data have been provided?	Ideally the portability format should be a standard that other similar products would use. Many fitness and sports applications with GPS use the proprietary file formats such as FIT and TCX, from the company Garmin, for data exchange. There is less consistency in other sectors. The law does not compel a company to accept the data from another company, but you should not cause any undue issues to users who want to use your data elsewhere.

PARTICIPATION & TRANSPARENCY	
82. Does the technology makes it possible to provide the data subject with all the necessary information regarding the processing?	You may have an issue if you use “black box” components or third party services, but remember that if they are processors they should only be doing what you tell them with the personal data of your users.
80. Is it feasible to consult the data subjects or their representatives on the impact of the technology on their rights and interests? If yes, have I done so?	Consider doing some focus groups or interviews. You could incorporate privacy and ethics research as part of your general user or market research. The best way to avoid conflicts and potential rejections from users is to ask them early for their views.
79. Have I consulted all the subjects that are involved in the processing operations (e.g. the DPO, the processors)?	
90. Is it possible to publish the DPIA partially or in a summarised way without hindering the rights of the technology developers or of the data subjects?	
NEW 5 RISK MANAGEMENT	
55. Did the controller, prior to the processing, carry out an assessment of the impact of the envisaged processing operations on the protection of personal data?	
a. Did the data protection impact	b.

assessment indicate that the processing would have resulted in a high risk in the absence of measures taken by the controller to mitigate the risk?	
c. Since the high risk indicated by the data protection impact assessment, did the controller consult the supervisory authority prior to processing?	d.
e. Will the controller carry out a data protection impact assessment?	f.
84. Have I clearly identified the risks to the rights and freedoms of natural persons?	
85. Have I assessed the severity of such risks?	
86. Have I assessed the likelihood of such risks?	
88. Have I identified specific measures for each of the assessed risks?	
89. Have I identified	

measures to mitigate risks of illegitimate access, modification or disappearance of the data collected by the devices?	
91. Are the measures that I have designed sufficient to mitigate the risks to the rights and freedoms of the data subjects? If the answer is no, have I consulted the national supervisory authority?	

[i] https://ico.org.uk/for-organisations/guide-to-data-protection/guide-to-the-general-data-protection-regulation-gdpr/key-definitions/what-is-personal-data/

[ii] https://www.nytimes.com/2017/07/25/technology/roomba-irobot-data-privacy.html

[iii] https://betanews.com/2018/11/01/google-irobot-house-mapping/

[iv] https://ec.europa.eu/newsroom/article29/document.cfm?action=display&doc_id=51030

[v] https://community.jisc.ac.uk/blogs/regulatory-developments/article/gdpr-whats-your-justification

[vi] https://www.twobirds.com/~/media/pdfs/gdpr-pdfs/25--guide-to-the-gdpr--sensitive-data-and-lawful-processing.pdf?la=en

[vii] https://ec.europa.eu/info/law/law-topic/data-protection/international-dimension-data-protection/standard-contractual-clauses-scc_en

[viii] https://iapp.org/news/a/on-large-scale-data-processing-and-gdpr-compliance/

[ix] http://ec.europa.eu/newsroom/document.cfm?doc_id=47711

[x] https://ec.europa.eu/newsroom/article29/item-detail.cfm?item_id=611236

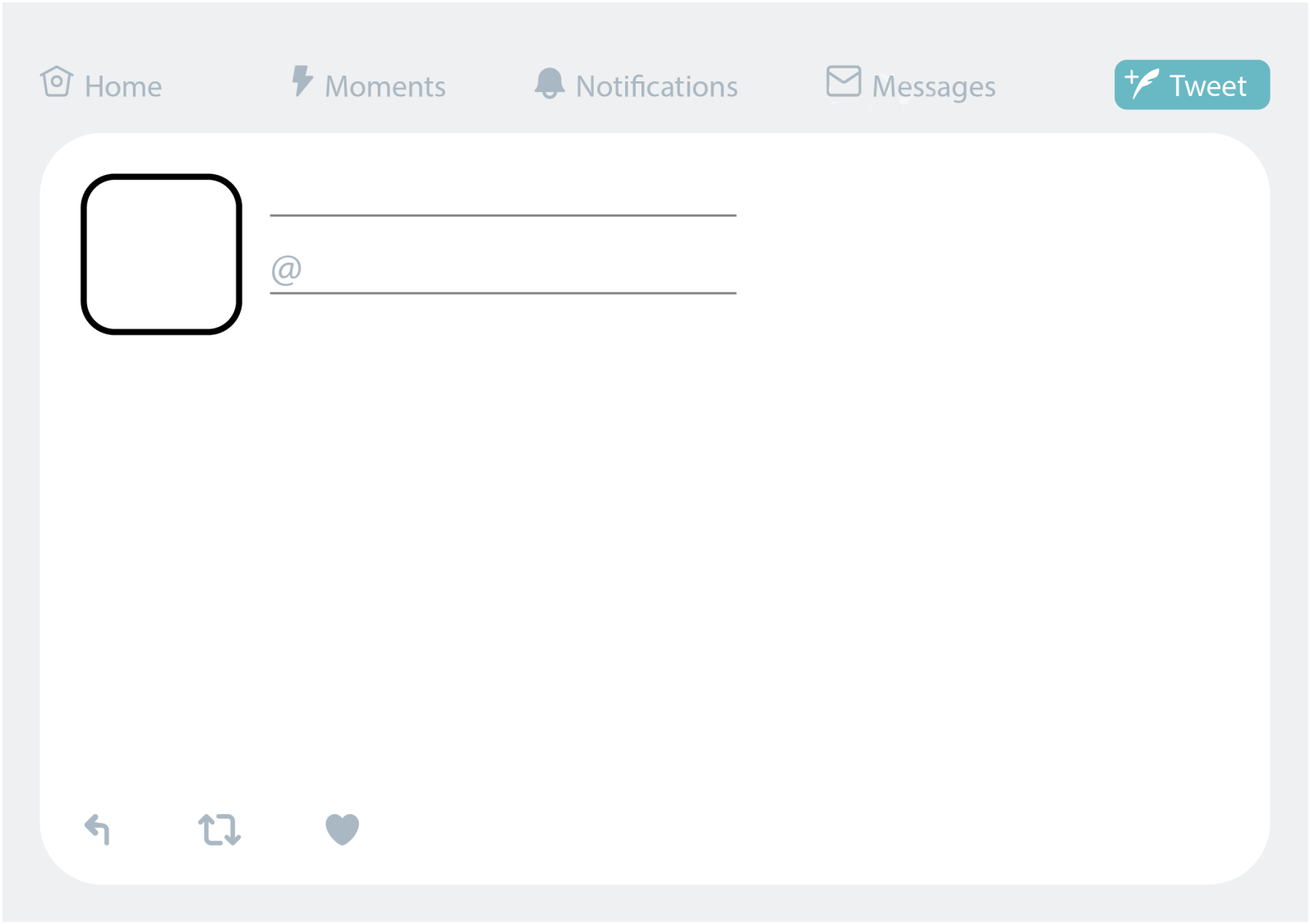
[xi] https://techcrunch.com/2018/05/01/google-accused-of-using-gdpr-to-impose-unfair-terms-on-publishers/?guccounter=1

[xii] https://ec.europa.eu/justice/article-29/documentation/opinion-recommendation/files/2014/wp223_en.pdf

[xiii] http://ec.europa.eu/newsroom/document.cfm?doc_id=44102

[xiv] https://www.enisa.europa.eu/publications/privacy-and-data-protection-by-design

[xv] https://ico.org.uk/for-organisations/guide-to-data-protection/guide-to-the-general-data-protection-regulation-gdpr/individual-rights/right-to-erasure/


Home
Moments
Notifications
Messages
Tweet
@

Return to present day

Place roadblocks between the scenario and why it occurred.

Implications

If this scenario occurred

It could enable/disable these things

which could enable or disable these things

The dilemma

Lens: Care Ethics
This lens makes me consider...

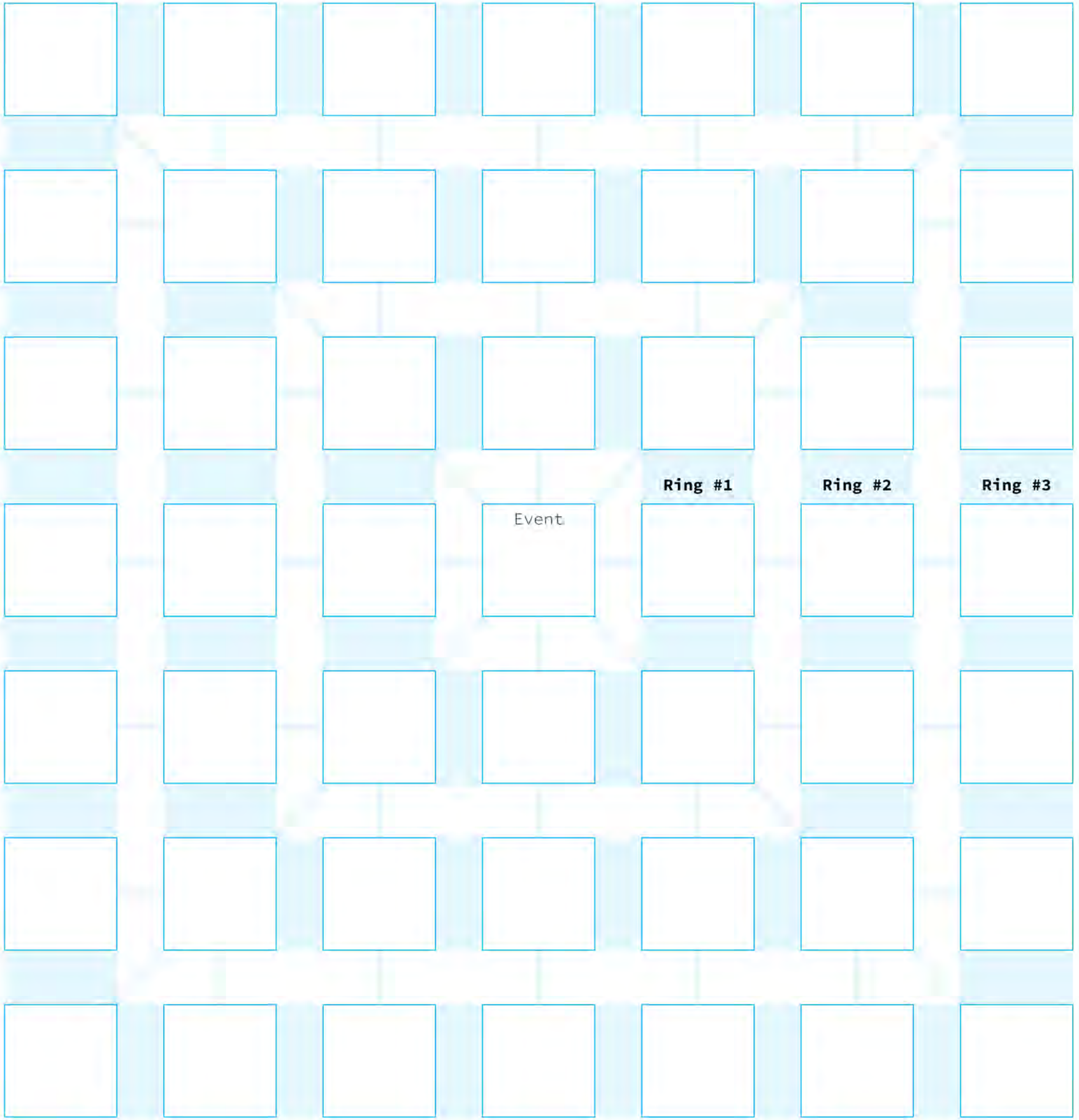
Brainstorm
With this lens I see this solution:

Lens: Capabilities Approach
This lens makes me consider...

Lens: Virtue Ethics
This lens makes me consider...

Put your event or issue in the center of the diagram and for each ring explore one level deeper of that particular part of the event or issue.

e.g
1 -> 1X -> 1Y -> 1Z



Shortlist

From the list of values please pick
up to five to create your own list

My values

Prioritise

Shift the order to reflect your priorities.
It's hard to uphold all things equally at
the same time, so be realistic and consider
what is most crucial to you.
When you're done, share to the group.

My prioritised values

Final list

now that you've consider each other's priorities, shift the values to show your final list. When done, commit to it. You'll be revisiting this a lot throughout your work.

Weight

Lorem ipsum

Our prioritised values	Our values weighted		
	0.0	0.5	1.0
	0.0	0.5	1.0
	0.0	0.5	1.0
	0.0	0.5	1.0
	0.0	0.5	1.0

Communal definition of values

means

means

means

means

means

Privacy	Data Protection	Dignity
Well-being	Non discrimination	Autonomy
Transparency	Participation	Accountability
Interoperability	Safety & security	Responsibility
Openness and shareability	Sustainability	Inclusion and equality

We are having a ethical issue?

17

Our team name is _____

and we are building _____

it's using _____

and that's causing an issue _____

_____

can you help?

Here's an idea

25

_____

_____

_____

_____

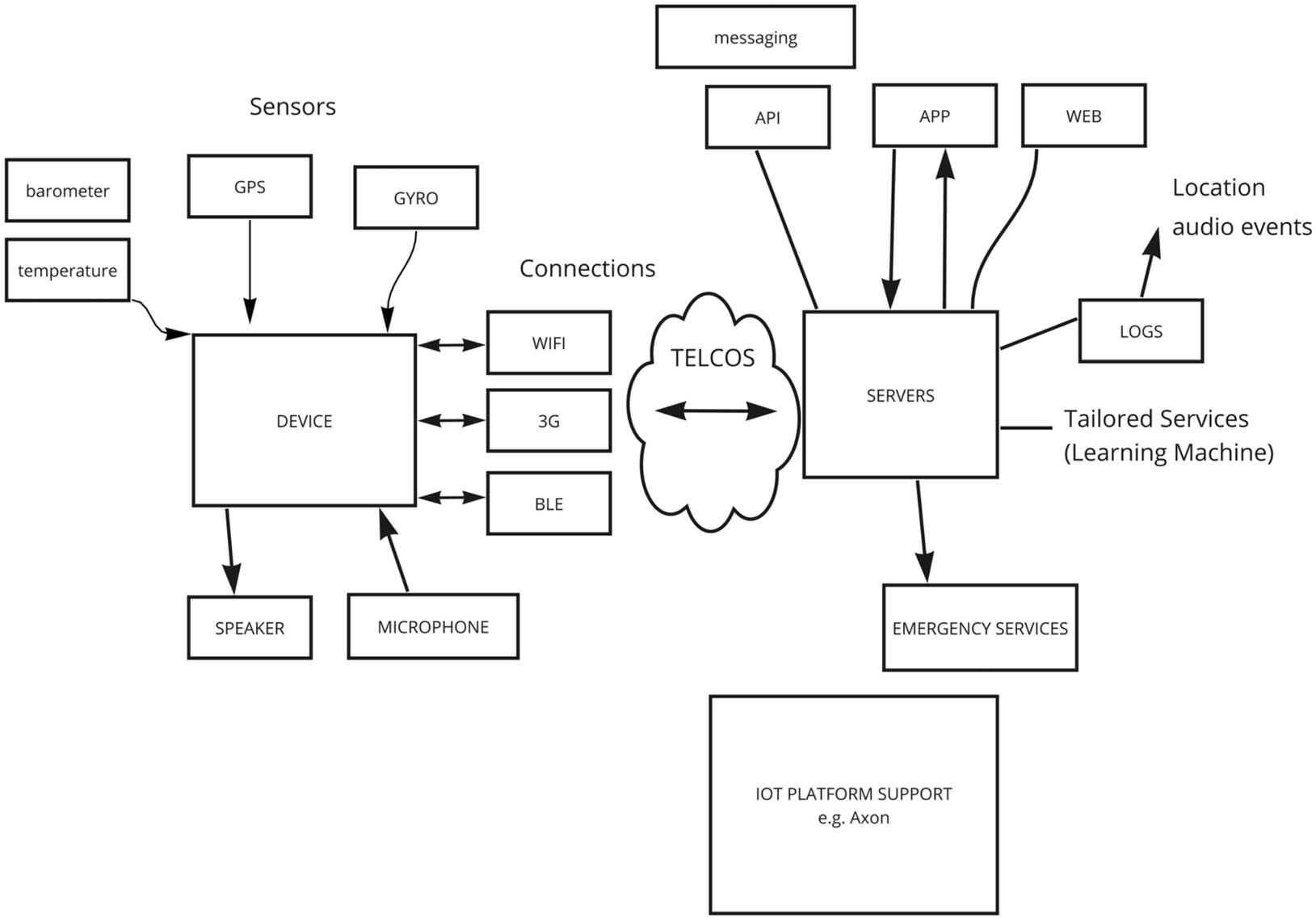
_____

_____

_____

_____

- Reminders, routine, medicine, etc.
- Direct voice
- Automatic alarm if outside zone (geo-fencing)
- Real-time tracking app
- Heart rate
- Sudden movement (falls)
- Activity (possible death)
- Subscription for extra services
- Audio record loud noise



Annex III - Scripts, handouts, slides, facilitator notes

This workshop is designed to work with discussion and have participants move around the room. The materials here include slides and facilitator notes. Some of the slides can be printed out by the facilitators and used as handouts as needed to help participants get further into the simulation exercise. The presenter notes focus on one particular example of a company and a set of design options for discussion. These can be changed depending on workshop context.

Alison Powell & Irina Shklovski

VIRT-EU SANDBOX: Design Dilemmas in Connected Technologies

Presenters:
Alison Powell, London School of Economics
Irina Shklovski, IT University of Copenhagen
Carolina Némethy, IT University of Copenhagen

background: the VIRT-EU project

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moral simulation
interventions
interventions as Ethics
the framework
futures

We are working at a company

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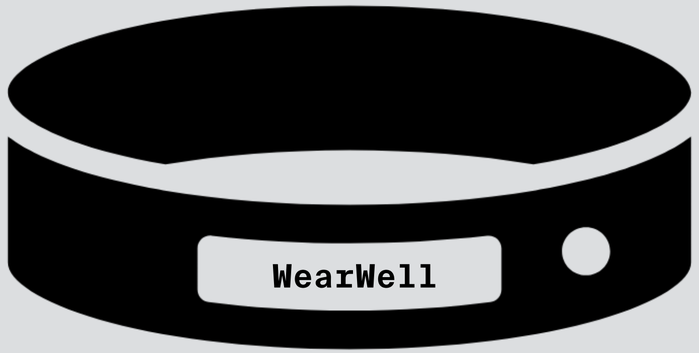
Alison Powell & Irina Shklovski

WearWell

Track your wellbeing while working productively!

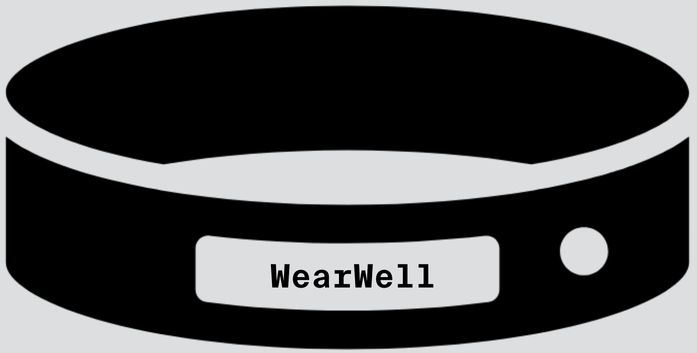
WearWell is equipped with GPS, heart rate monitor, step counting and body temperature sensors.

When an employee wears WearWell, s/he will become more aware of their mental and physical wellbeing throughout the day.



WearWell

How should we design WearWell in order to capture the clearest picture of data and give all of us the best suggestions based on that data?



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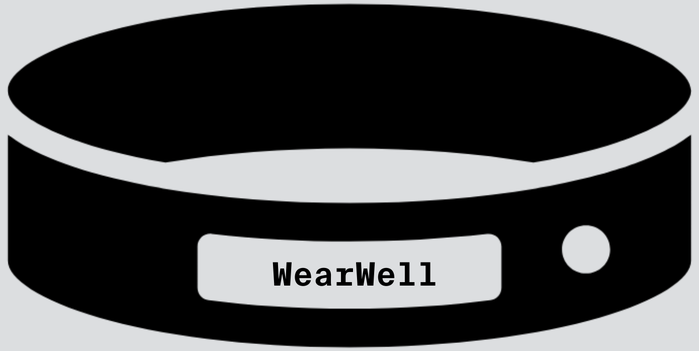
Goals:

- A device to support employee well-being as mental and physical fitness.
- Provide goal-setting capability and feedback based on personalized goal suggestions.
- Allow push notifications to/from management team based on unusual or problematic deviations from established goals and norms
- Ability to “snooze” reminders for helping to achieve established goals



Approach:

- Technical team reviews sensor suite and specs
- UX team develops available interface elements
- We will work with potential users to ensure relevant functionality

Device Sensors:

1. GPS
2. Heart-rate sensor
3. Step-count (accelerometer)
4. Temperature
5. Galvanic skin response

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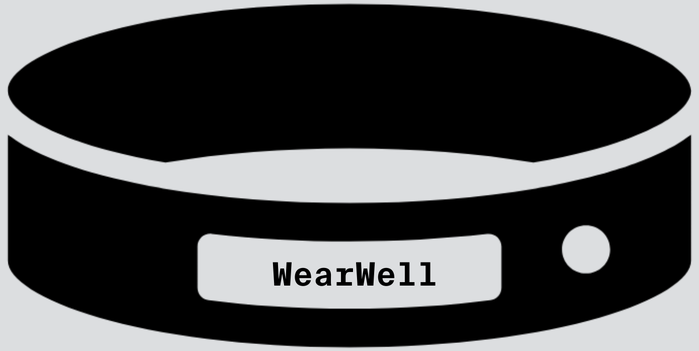
Measuring impact:

- Up-take and feedback from employees
- The number of sick days employees take (reduction in the number of sick days would be evidence of positive impact)
- Keep track of the number of interactions between employees and managers
- Keep track of productivity levels (KPIs)



Security and privacy:

- Employees will have the option of turning off internal location tracking
- Employees will have an option of turning off tracking on weekends
- Managers and employees will have to confirm some more sensitive tracking options together

Other options:

1. other sensors?
2. data storage & management options?

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the axis of options

A

Track but store
data locally
on the device

B

Track but store
data temporarily

C

Track but don't share
with company
Share only with
WearWell for A/B testing

D

Full data-sharing
Both with company
and WearWell

Option A

Track but store data locally on the device
Company gets aggregate reports

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Option B

Track but store data temporarily
Company gets aggregate reports

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Option C

Track but don’t share with client company
Share only with WearWell for A/B testing
Company gets aggregate reports

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Option D

Full data-sharing with company, WearWell and any third-parties that are relevant

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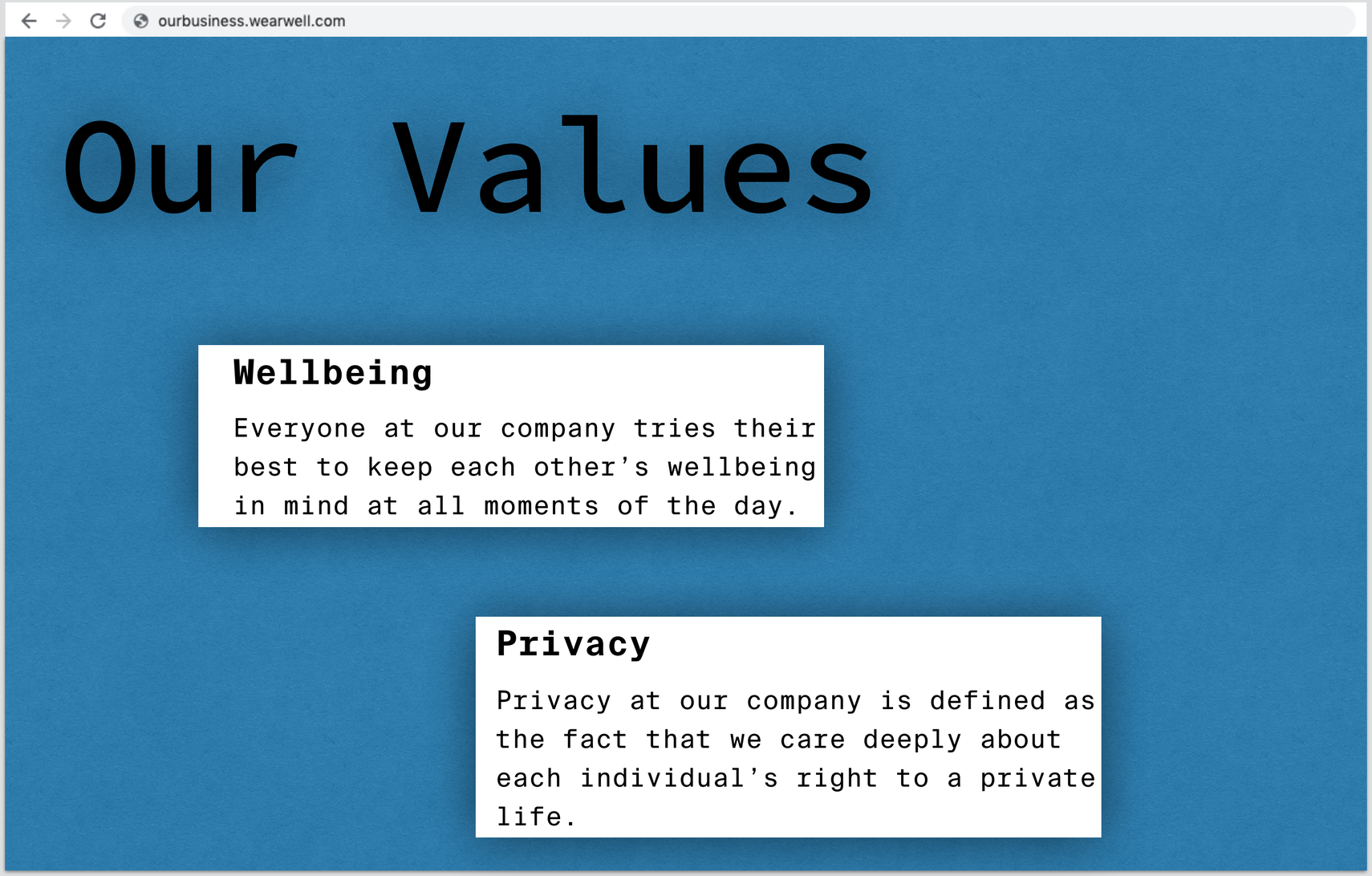

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Full data-sharing
Both with company
and WearWell

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User Interview

Let’s have a user interview with one of the employees in a company that is currently testing the WearWell prototype.
She works at the Sales Department and she’s a mother of two.

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the axis of options

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WearWell for A/B testing

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Full data-sharing
Both with company
and WearWell

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Jake Sijtlos <jake.sijtlos@wearwell.com> 00/00/2019, 18:20
to Irina, Alison

Hey Irina

We've been analysing the WearWell sensors and we realised that actually the demographic of Asian women is not being picked up very clearly - the heart rate count and step count aren't working very well.

But we can't tweak our setting to have different targets for different ethnic groups until we gather enough data.

We need to try to encourage our WearWell users to use the product as much as possible so that we can improve the targets.

Best,
Jake

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the axis of options

A

Track but store
data locally
on the device

B

Track but store
data temporarily

C

Track but don't share
with company
Share only with
WearWell for A/B testing

D

Full data-sharing
Both with company
and WearWell

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so what did we do here?

A
Track but store data locally on the device

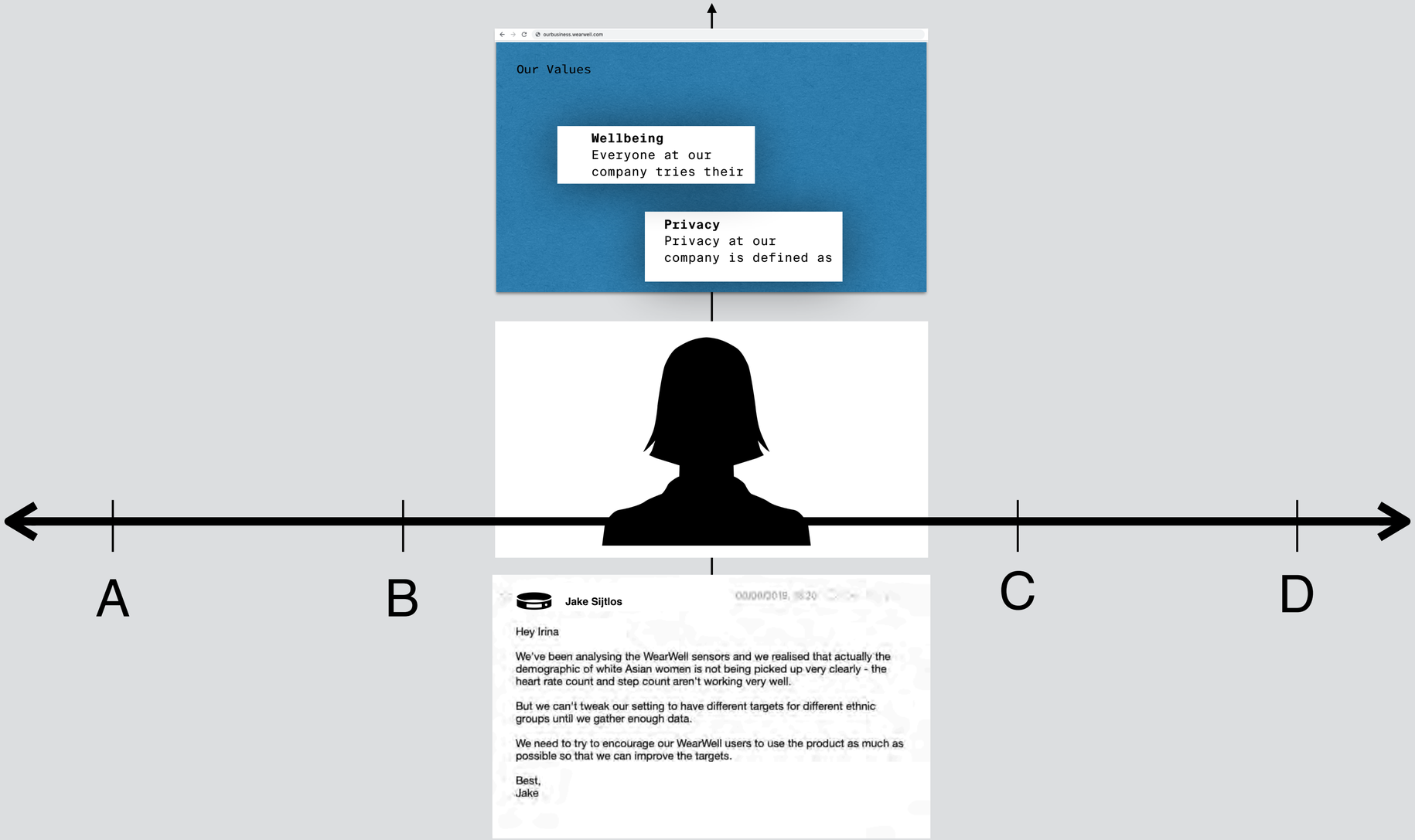
B
Track but store data temporarily

C
Track but don't share with company
Share only with WearWell for A/B testing

D
Full data-sharing
Both with company and WearWell

moral simulation / interventions

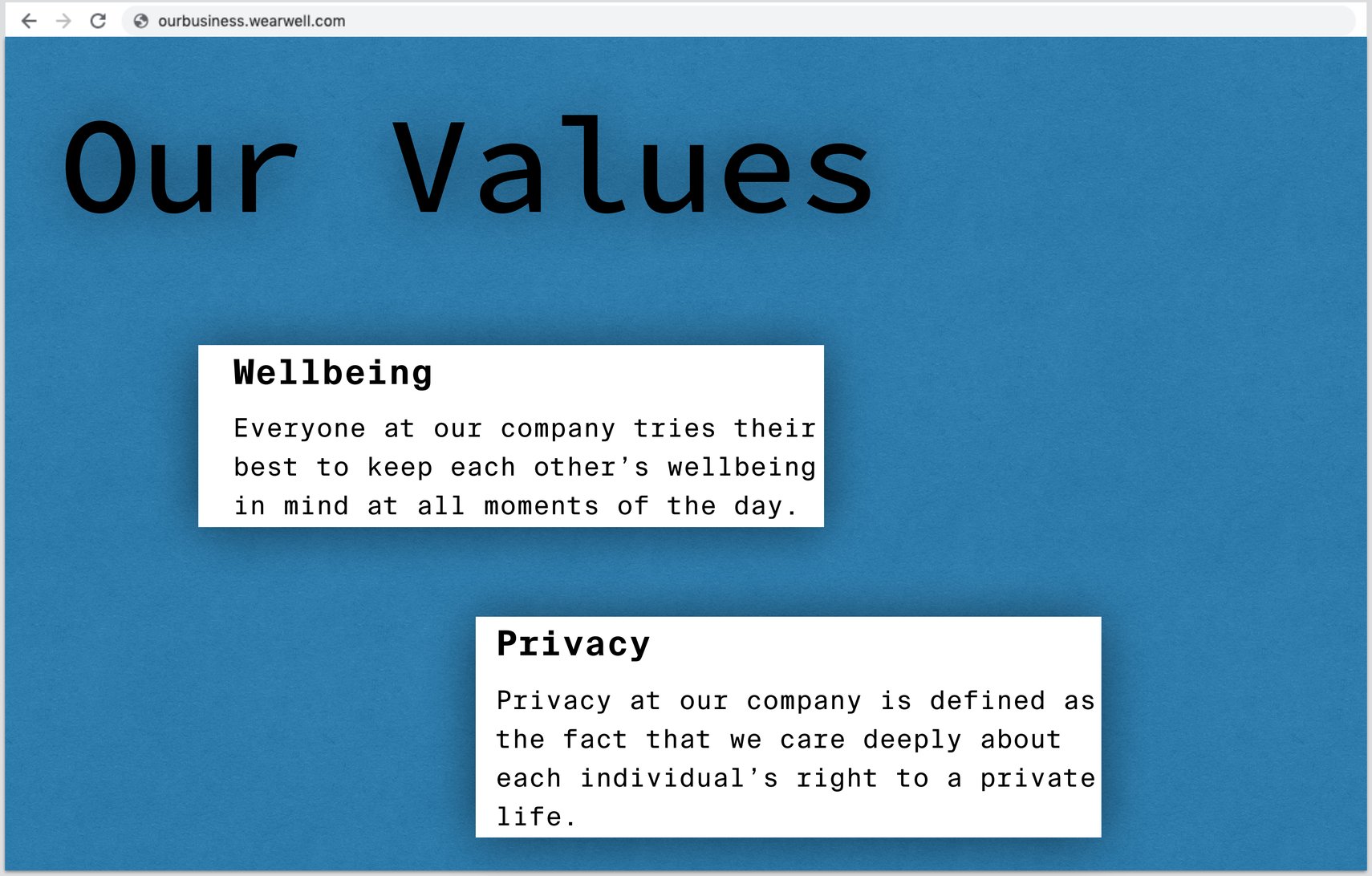
Alison Powell & Irina Shklovski



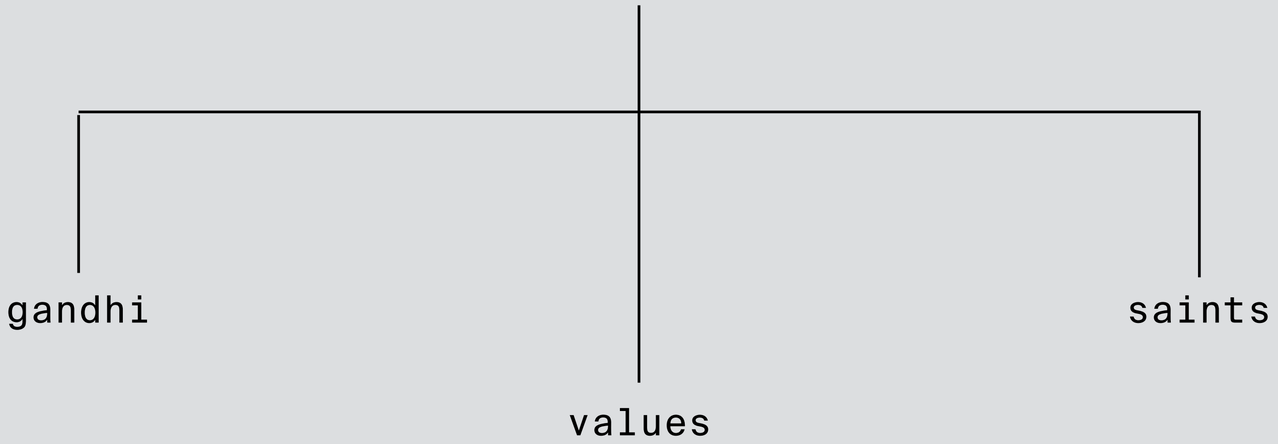
ethics as interventions

Alison Powell & Irina Shklovski

Alison Powell & Irina Shklovski



virtue



Alison Powell & Irina Shklovski

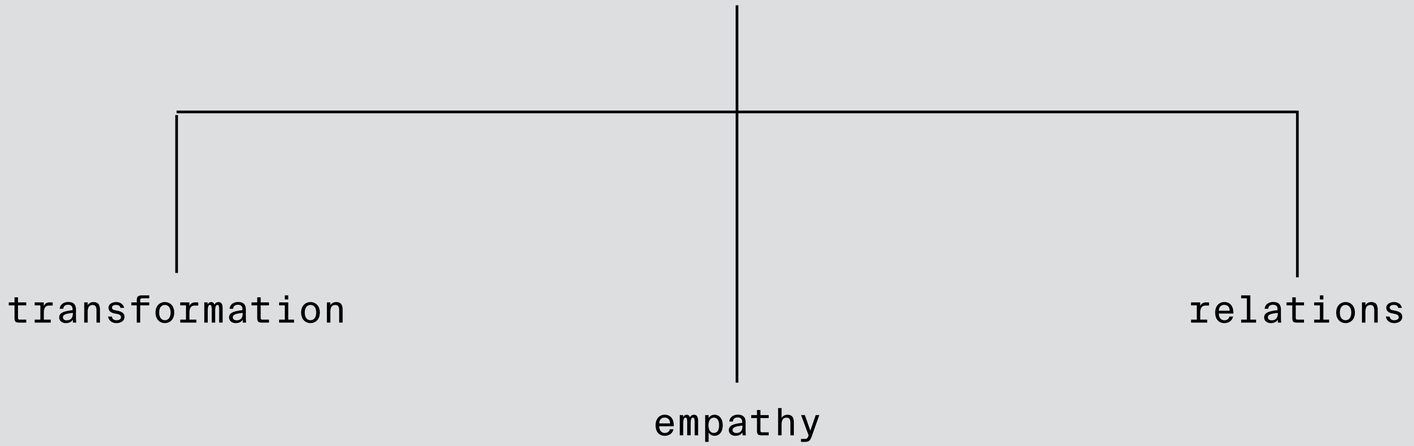
*thank you: James Zhou

Alison Powell & Irina Shklovski

user interview

Let’s have a user interview with one of the employees in a company that is currently testing the WearWell prototype.
She works at the Sales Department and she’s a mother of two.

care



Alison Powell & Irina Shklovski

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Alison Powell & Irina Shklovski

Jake Sijtlos <jake.sijtlos@wearwell.com> 00/00/2019, 18:20
to Irina, Alison

Hey Irina

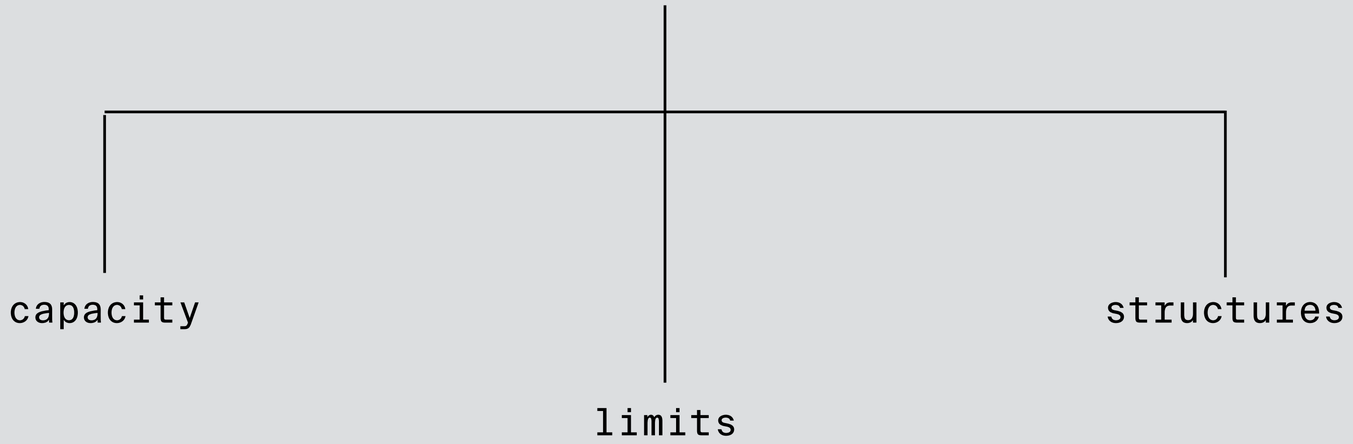
We've been analysing the WearWell sensors and we realised that actually the demographic of Asian women is not being picked up very clearly - the heart rate count and step count aren't working very well.

But we can't tweak our setting to have different targets for different ethnic groups until we gather enough data.

We need to try to encourage our WearWell users to use the product as much as possible so that we can improve the targets.

Best,
Jake

capabilities



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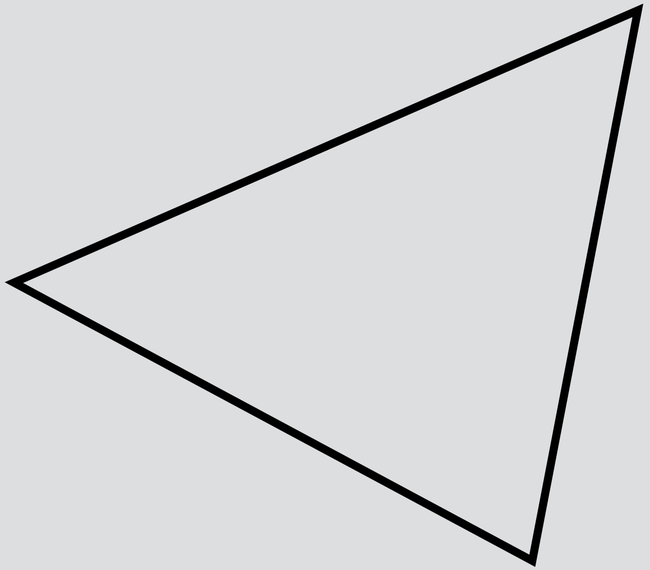
care



virtue

capabilities

moral simulation / interventions / Ethics / framework

Alison Powell & Irina Shklovski

moral simulation / interventions / Ethics / framework

virtue

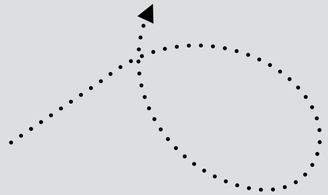
Annelie Berner & Irina Shklovski

Unforeseeable Futures, Ethics and New Technologies

Annelie Berner & Irina Shklovski

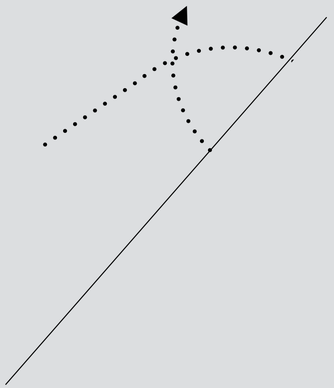
virtue

care



Annelie Berner & Irina Shklovski

virtue



care

capabilities

moral simulation interventions as Ethics the framework discussion

Alison Powell & Irina Shklovski

ethics, a journey

Alison Powell & Irina Shklovski

Q + A

Alison Powell & Irina Shklovski

moral simulation / interventions / Ethics / framework / discussion

VIRTEU: Tools for ethical reflection

Alison Powell & Irina Shklovski

Design Dilemmas in Connected Technologies

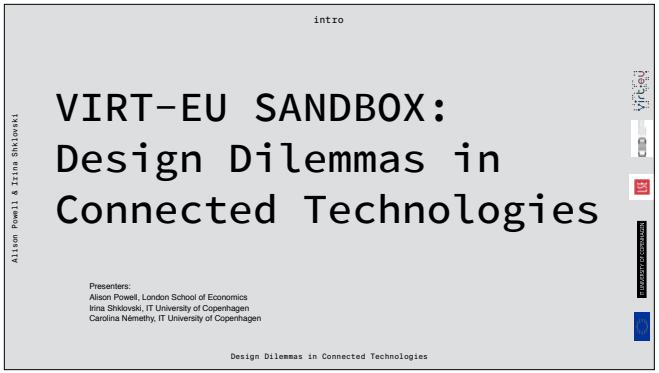
Alison Powell & Irina Shklovski

Thank you!

and an extra big thank you to:
Annelie Berner (CIID)
Funda Ustek-Spilda (our partner from LSE)
Raffaella Rovida (CIID)
Monika Seyfried (CIID)
Peter Kuhberg (CIID)
Carolina Némethy (ITU)
Barbara Nino Carreras (ITU)
and all of our VIRTEU partners

Values and Ethics in Innovation for Responsible Technology in Europe 2017-2020

Funded by the EU Horizon 2020 research and innovation programme under grant agreement No 727040



We are Irina and Alison, from ITU and LSE, researchers and professors

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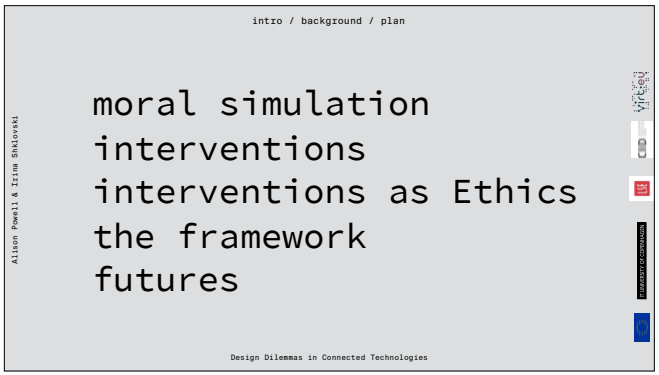
IRINA

Together we have been working on a project to try to understand and then address the gap between the Good intentions of new technology companies and the reality of countless stories of tech gone wrong. We called our project VIRT-EU which stands for Values and Ethics in Innovation for Responsible Technology in Europe. We focus specifically on the design of connected devices and for the last three years we have been working with IOT start-ups. Our goal is to develop tools and means to support developers in learning to think in terms of ethics as they develop new technologies.



Alison

Today, in this talk, we will introduce you to how we have begun to understand this gap and how we understand the potential of ethics to help creators of new technology to think critically about the products they put into the world.
Why creators? Why
We'll start with the worry - what is going on and why do we care? And then transition into the ethics - a way to frame, critique and address the worries.
We'll get a little active and then wrap up with some time for Q+A.

[Read the dilemma out loud and explain] Imagine that… we are building a new technology… and it could do this… or this… how do we decide?
We are now entering a bit of fiction, so feel free to also imagine yourself as a bit of a different person

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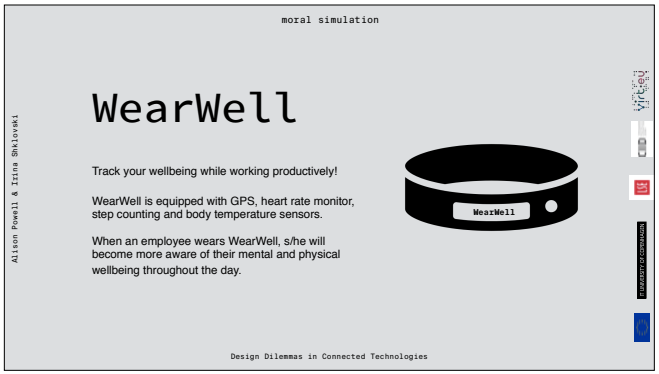

Our company is developing an IoT-based technology, WearWell. With WearWell, our intention is to tap into the employee well-being market.
We have defined employee well-being as mental and physical fitness of employees. We hope to market (and sell) WellWear to companies. If a company decides to buy our product, all of their employees would receive our state-of-the-art wearable device (an electronic bracelet) equipped with GPS technology, heart rate sensor, step counting, body temperature. We really worked hard on the range of functionalities of WearWell and the tracking capabilities. As a result, the WearWell bracelet is able to track employees in the workplace, including the restrooms. Our company is able to

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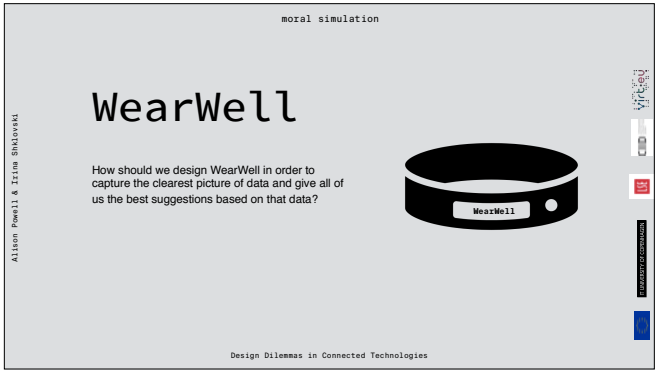
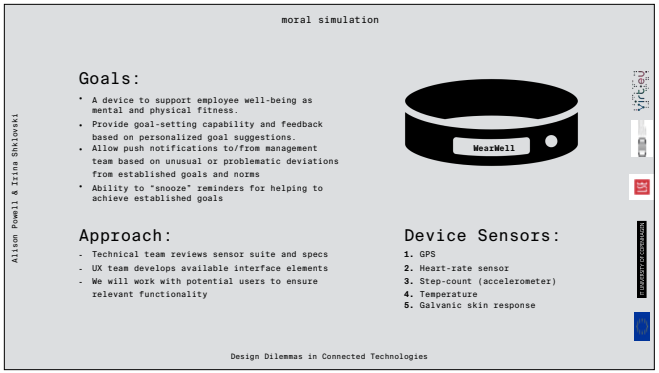


You (the audience) are all part of the team that is building the new wearable device. You're a great mixture of technology developers, designers, researchers and project managers and we are so happy to have you to work on The WearWell!
We (Irina and Alison) are the communication managers for our company.
We need to decide on a couple of things before we start pitching our product to companies.

First, how should we design WearWell in order to capture the clearest picture



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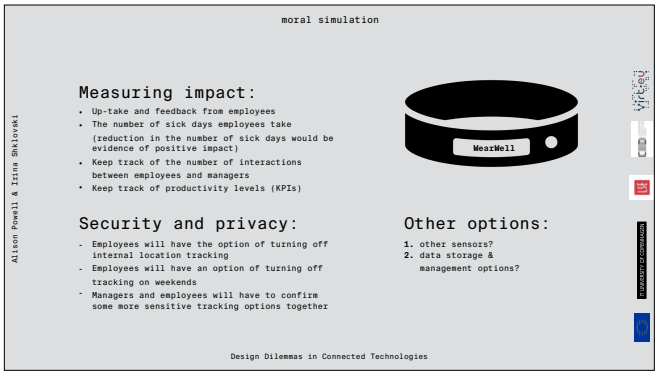

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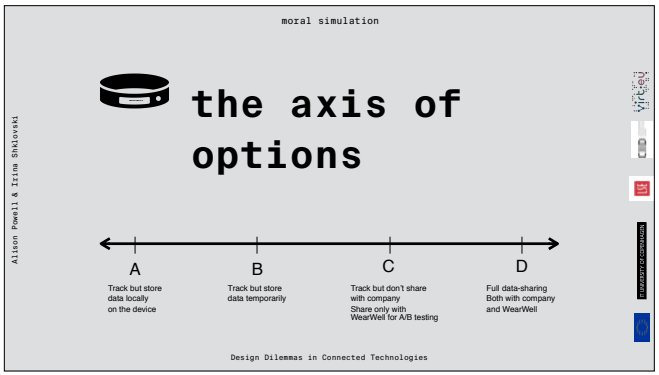

As you see, the far left side of the room has been designated as a very confident decision of A and the far right side of the room is for a confident decision B. Anywhere in between is not neutral, but shows that you're not so sure.
So everyone who can stand up, stand up, and move to your decision place.
If you cannot stand up, but you can move your arms, you can raise a left or right hand.
Thank you! Can we hear from [randomly chosen you]? Why do you feel that way?
Alright, well, let's see what happens if we try to think through the decision

moral simulation

Option A

Track but store data locally on the device
Company gets aggregate reports

Alison Powell & Irina Shklovski

Design Dilemmas in Connected Technologies

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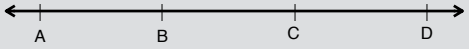
moral simulation

Option B

Track but store data temporarily
Company gets aggregate reports



Alison Powell & Irina Shklovski

Design Dilemmas in Connected Technologies

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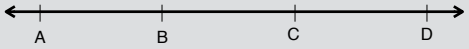
moral simulation

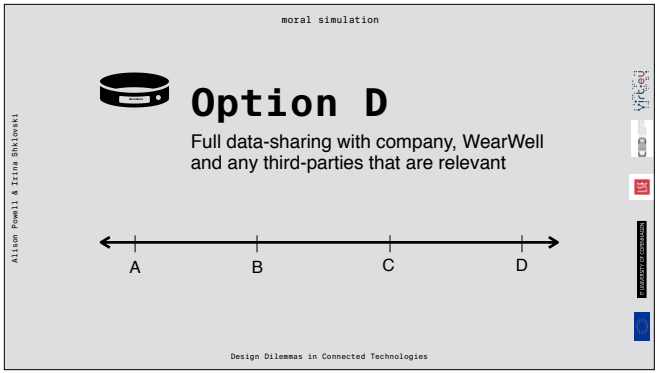
Option C

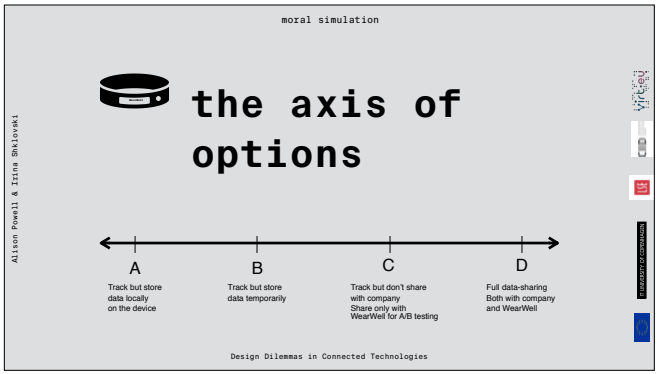
Track but don't share with client company
Share only with WearWell for A/B testing
Company gets aggregate reports



Alison Powell & Irina Shklovski

Design Dilemmas in Connected Technologies





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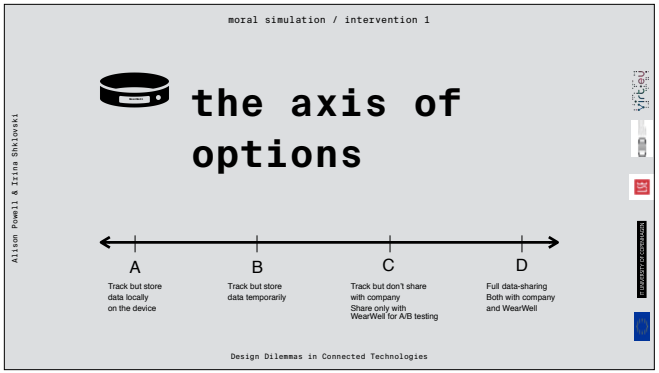
Thank you! Can we hear from [randomly chosen you]? Why do you feel that way?

Alright, well, let's see what happens if we try to think through the decision

What about privacy? Is it going to allow them to have a right to a private life? But in order to define wellbeing in the clearest way possible, and track how well the employees are doing over time, the device should really collect all of the data possible, otherwise it is showing an incomplete picture and we care about the Whole Self.

Now that you see this, you can move to a different decision or stay put



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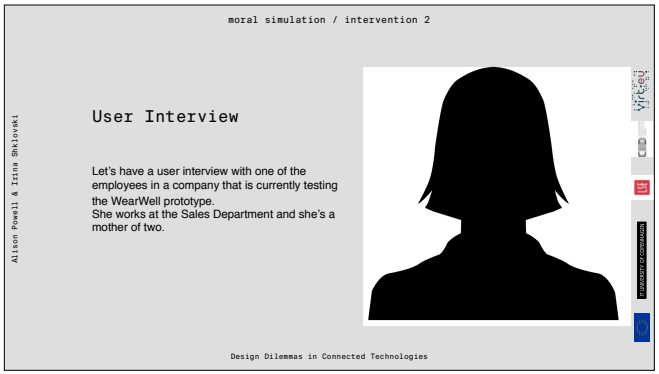

Carolina, tell us about how WearWell is affecting your life these days?

I love WearWell, it's helped me keep a lot of mental clarity on difficult days. I'm also super excited about the new period-tracking feature - I've always had a lot of pain and mood shifts when I have my period which makes it hard to come to work on those days. I've shared my data with my line manager - finally he understands and lets me work from home when I need to. The meditation requirement goes up when I have my period but that's cool - I hear that studies show it helps.
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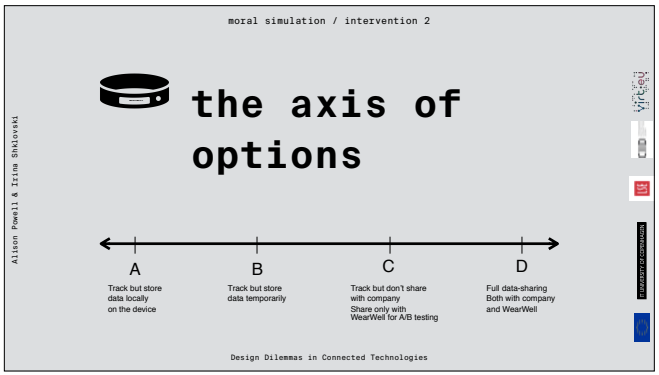

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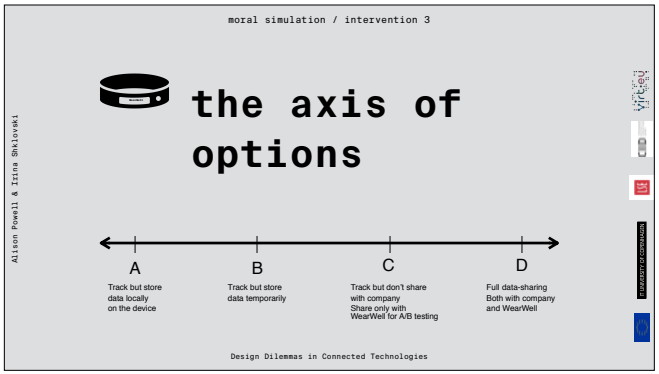
We find out that the heart rate count and step count do not work very well for asian women.
{We think there might a problem. We don't know if the gap in the email was left intentionally or deleted out. Maybe they are referring to Black & Asian women?}

But currently we are unable to tweak our settings to have different targets for different ethnic groups but if we could gather more data we could make the wellbeing targets much better aligned to all of the different ethnic groups represented at our company. Unfortunately, it will take longer for under/



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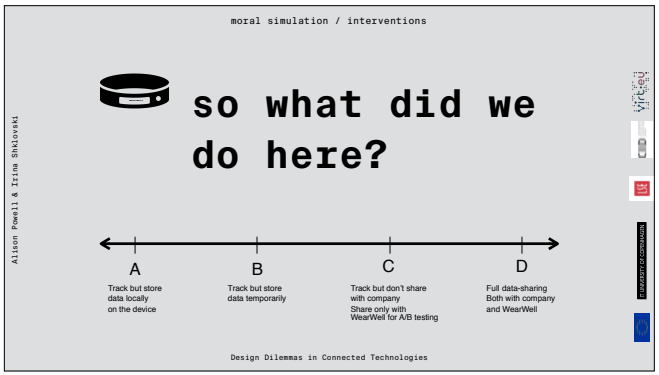

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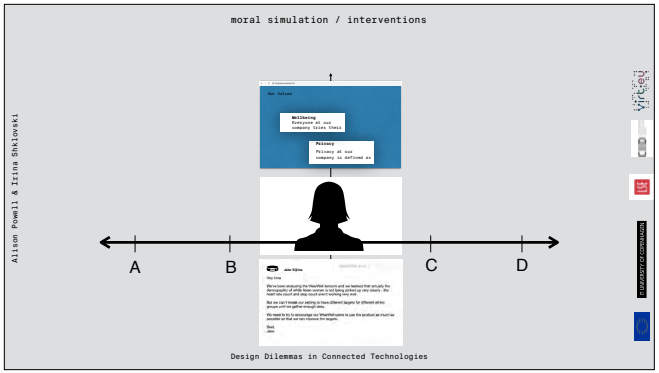
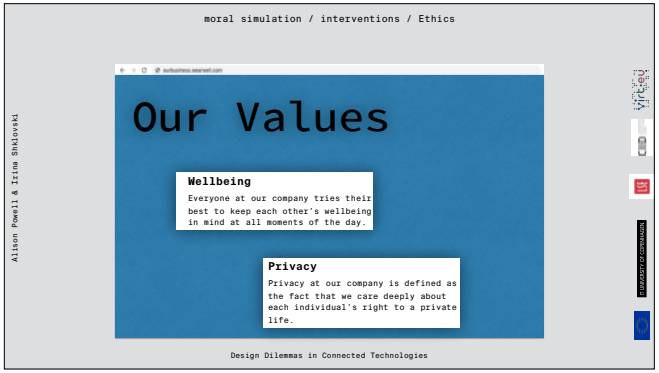


So your last prompt is: reflect on those 3 intervention moments and if there was one that resonated with you, that changed how you thought about your decision, move towards that place on the Y axis
Thank you! Can someone tell us about why?

IRINA
The three main branches of ethics are utilitarian ethics, deontological ethics and virtue ethics.



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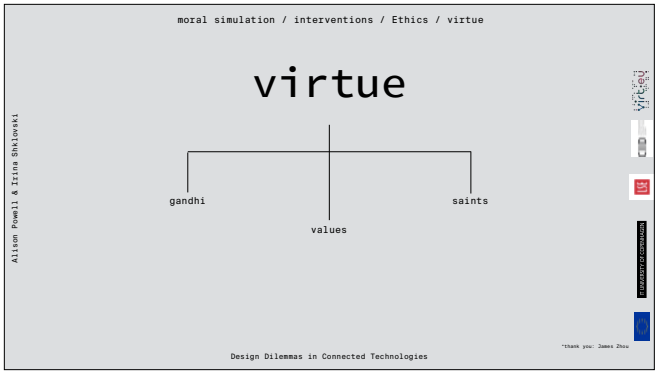

IRINA
We should strive to become courageous, honest, generous, and compassionate. We should strive to have a good life. We must develop our moral character and demonstrate virtues in our decision making and behavior. This comes down to developing a kind of practical wisdom that allows people to determine how to make choices that will help them further develop as virtuous beings. A virtuous agent knows the correct way to act in various contexts while also desiring to act in such a way. In virtue ethics, we constantly strive to become better people by trying to align with a set of [communally-defined?] ethical values and ethical idols

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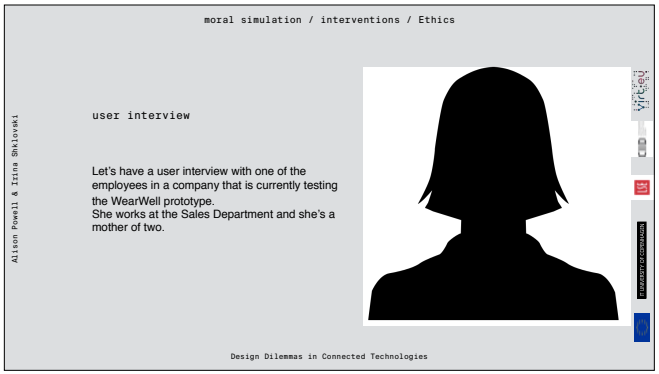

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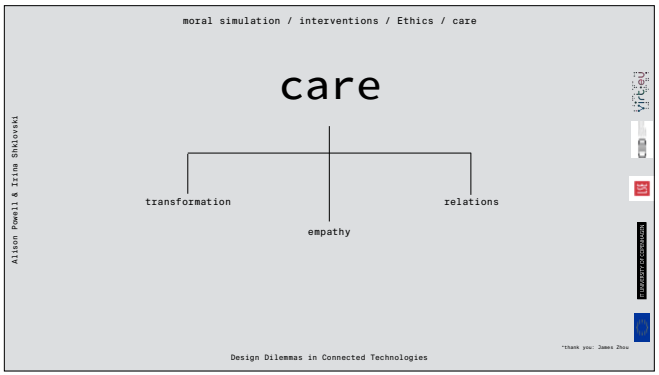

This school of thought pays attention to the value conflicts and contradictions, offering a way to deal with failures that does not entail merely accepting vast amounts of personal guilt. Care ethics recognises that relationships are central to being human because they enable individuals to face uncertainties of the future - together is better than alone. So, care ethics focuses on our responsibilities and obligations to others. One of the main tenets of this approach is that it places the emphasis on an engaged, active agent who acknowledges that she is entangled in a broad web of relationships and is aware that she requires the constant negotiation of disparate and often conflicting demands and obligations. Consequently,

We find out that the heart rate count and step count do not work very well for asian women.
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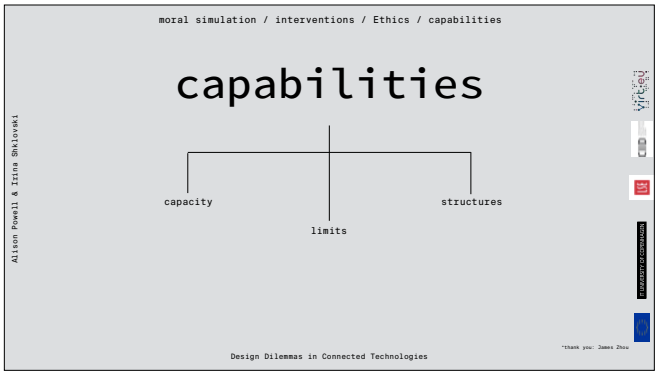

The capabilities approach recognises that personal principles may be compromised in order to cope with structural constraints. As such, it promotes the idea that ethical thinking is also a capability in itself and not a given for individuals – or intrinsic to some. Instead, it can be trained as a capability [skill], but it can also be constrained. Consequently, it recognises that individuals are not equal in their power to make ethically consequential decisions or voice their concerns in the process.

Technology developers are in a curious position of both having to make decisions within the constraints of their contexts and having to acknowledge

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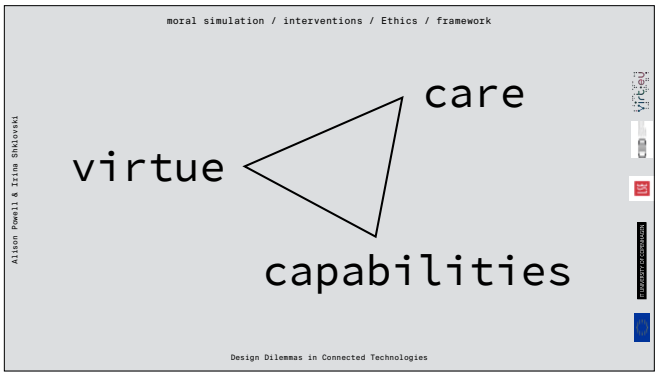
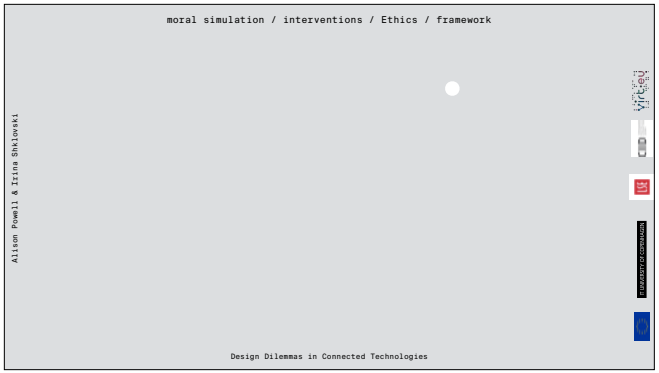


Alison
and when thinking through capabilities we realise that in fact we can only care about So much, that which is within our capacity to act



So actually these 4 options: data, storage and design came from the 3 theories

IRINA
At first we focused on virtue ethics but we quickly realized that the relentless focus on the individual and their internal ideals ignores the structural pressures and constraints placed on the developers we studied.
So we're adding in the capabilities approach and care ethics.
The capabilities approach augments the internally oriented focus of virtue

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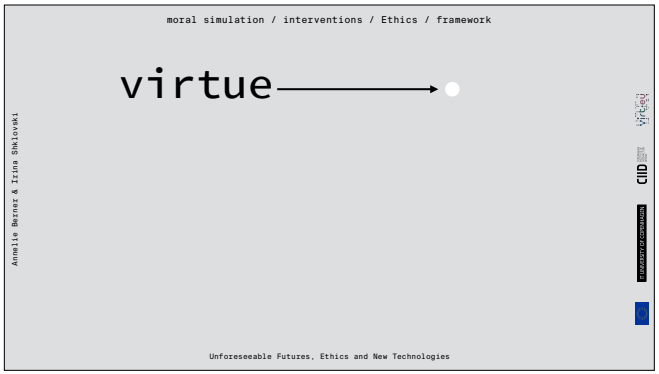
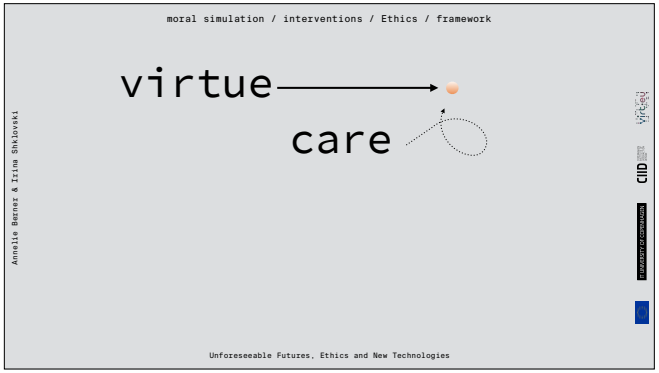
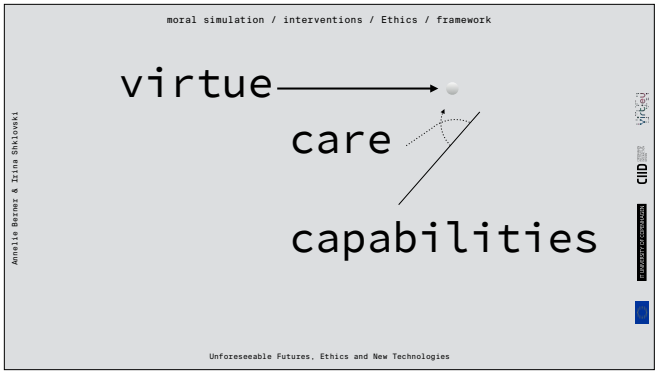


ANNELIE
so if in virtue we are trying to strive towards goodness (our lovely blue ball of goodness)



IRINA
when we think through with care ethics we find that the route towards that goodness is actually a bit more complicated



ANNELIE
and when thinking through capabilities we realise that in fact we can only care about So much, that which is within our capacity to act

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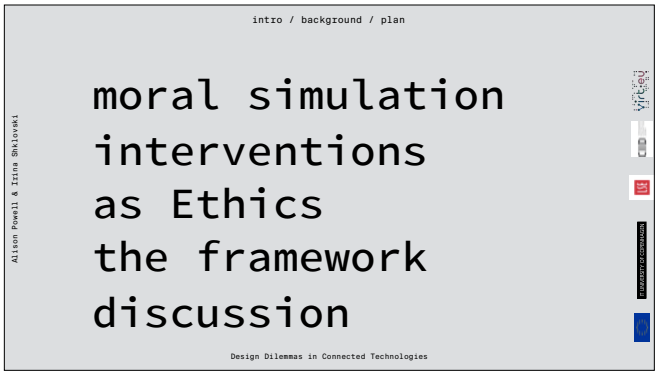
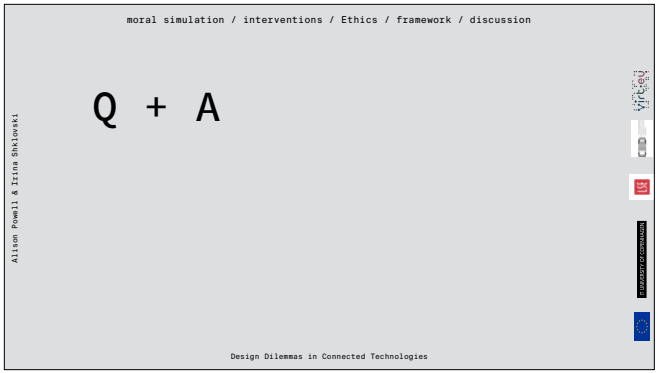


So today we thought through a decision from the point of view of the tech creators, when using different ethical theories as intervention points for new questionings, we positioned the tech-ethics worries, discussed how ethics could help us foresee unforeseeable impacts of what new technology could do
That was a lot to process. We hope you learned something new. Anyone have a reflection or question?



As a starting point to identifying an “opportunity”, challenge, or possible point of intervention

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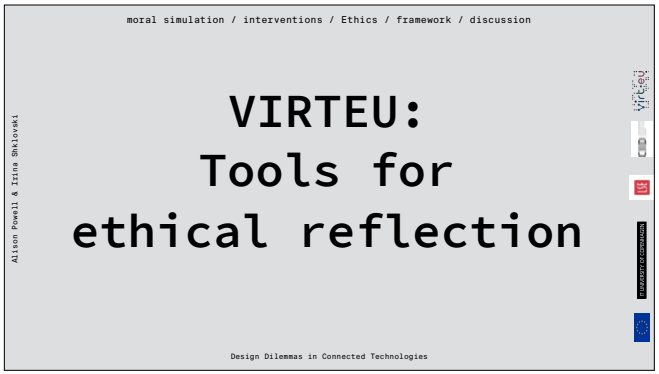

This talk and exercises all come from the VIRTEU project, which is coming to websites near you in December of this year. Tickets are free :)
Please stay in touch!