# Welcome!

Designing Ethical Things: A Moral Algorithm?

Co-design workshop
CIID Research x VIRTEU

ThingsCon
Rotterdam
December 6th, 2018

Virt-EU x CIID

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thank you for coming.

Virt-EU x CIID

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# 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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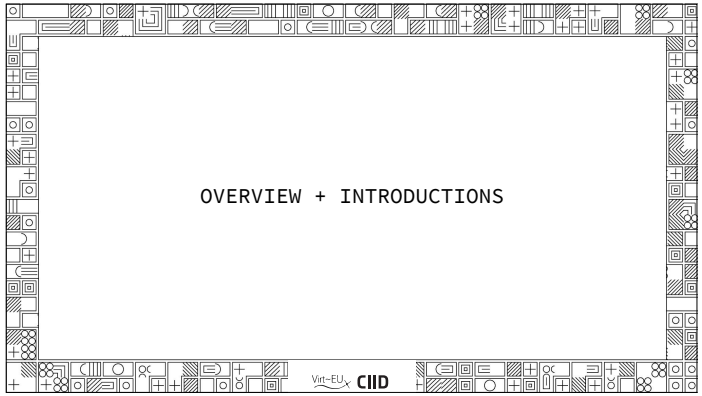


tell us what the project is
what decision you were dealing with and the ecosystem

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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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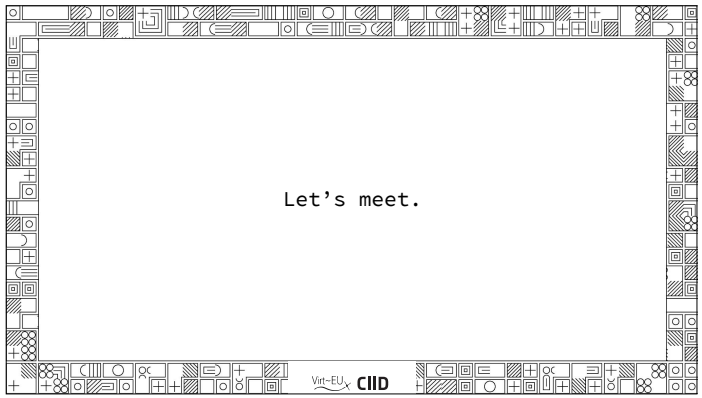
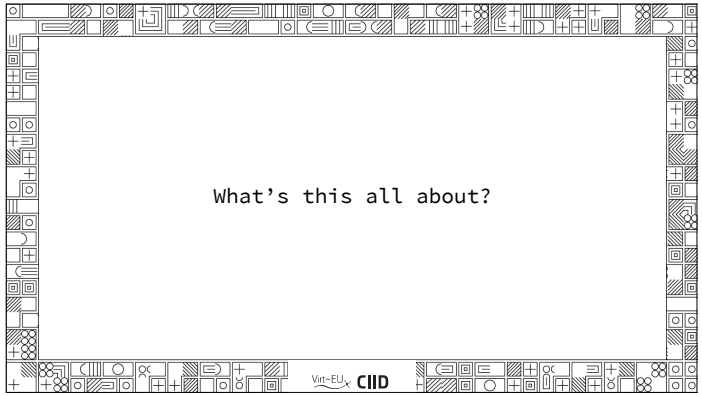
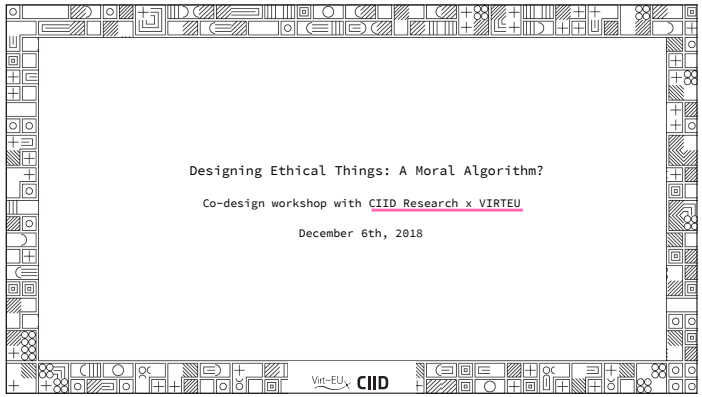


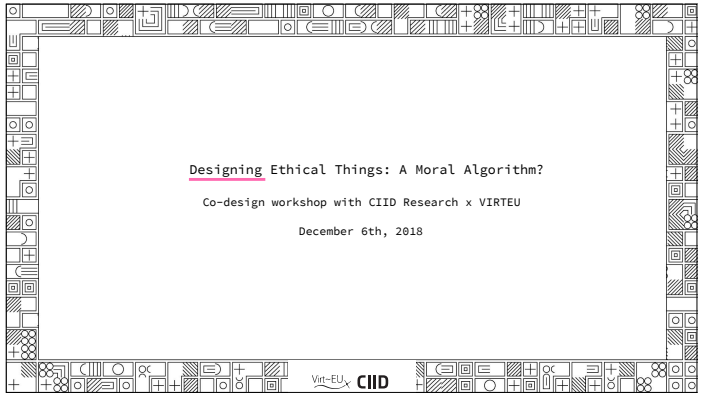

your name and where you traveled here from.




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.

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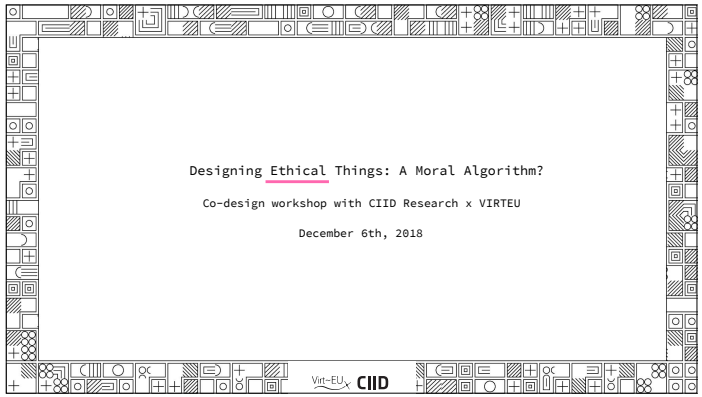


If many IoT developers and designers are faced with an overwhelming amount of ethical choices and consequences of their developments, we think it’s important to try to understand from a developer and designer perspective ethics and IoT is concretely about in the everyday practices of IoT creation. Because 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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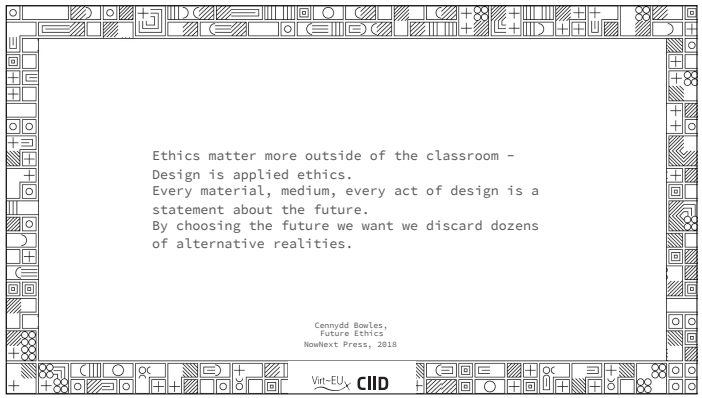


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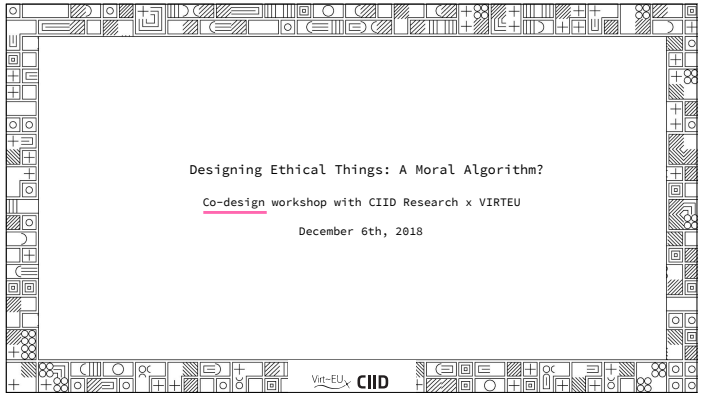


And this is where we enter with our tools. But we need your help! This session is intended for you to imagine you are working at an IOT company, faced with a problem they might be faced with, and take on a series of processes to try a “Moral Algorithm.”

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

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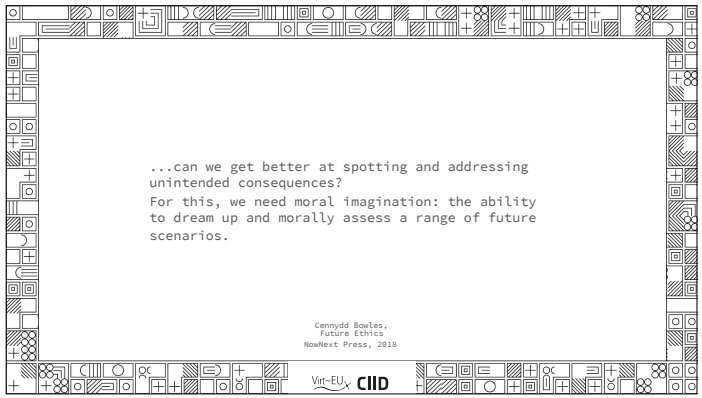


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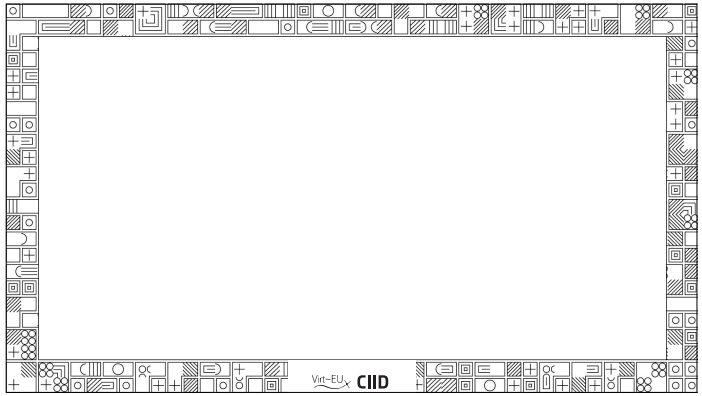

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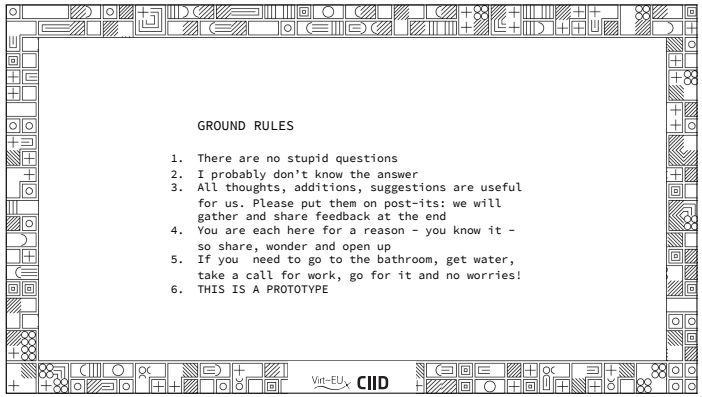

A hammer intends to strike, a vice intends to hold fast, a lever intends to lift. They are what it is made for.
But sometimes a tool may have other uses that you don't know.
Sometimes in doing what you intend, you also do what the knife intends, without knowing.
Can you see the sharpest edge of that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

The Amber Spyglass: His Dark Materials
by Philip Pullman

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THE COMPANY

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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

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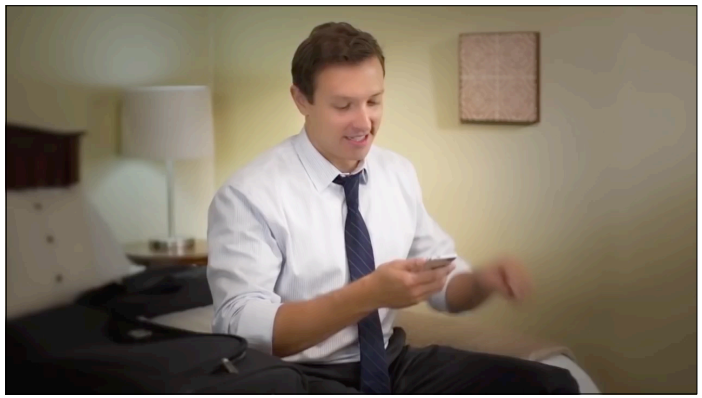
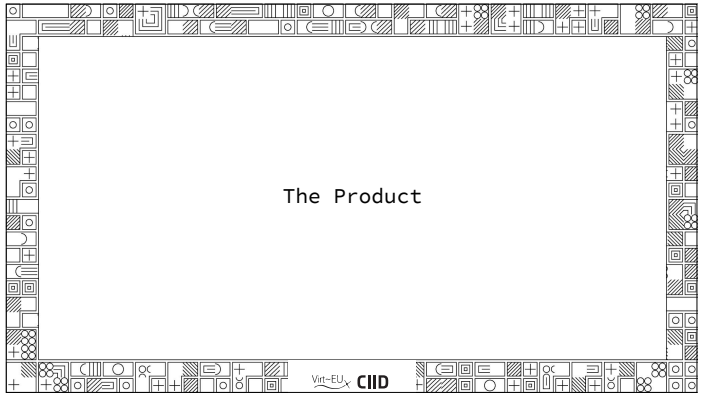
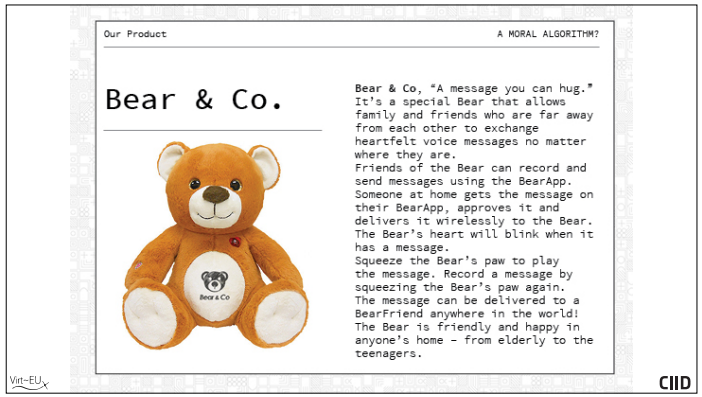
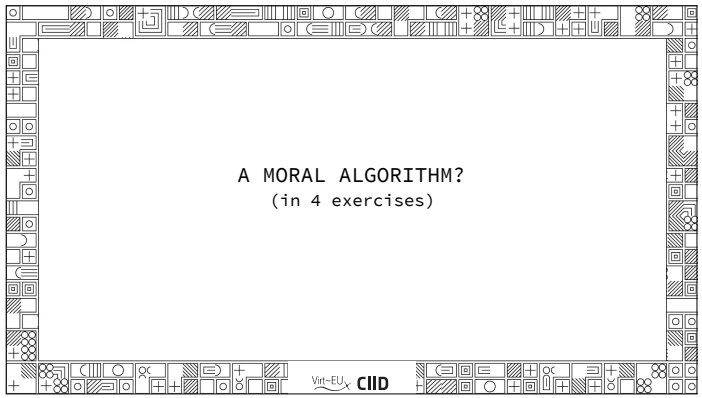


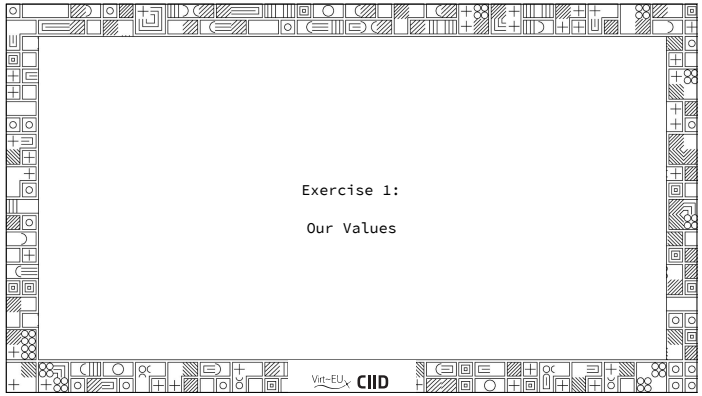



the product we are working on is…

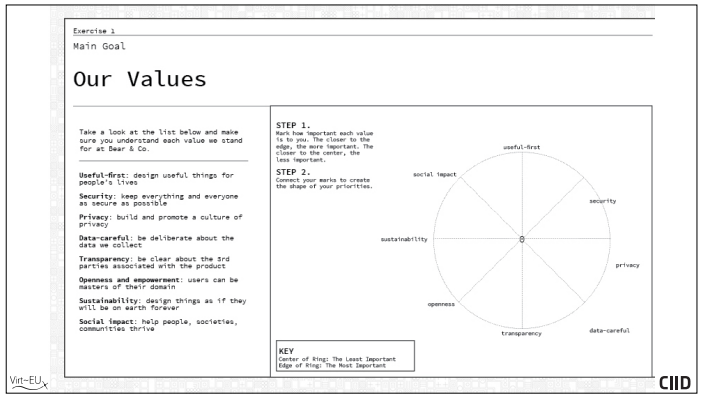


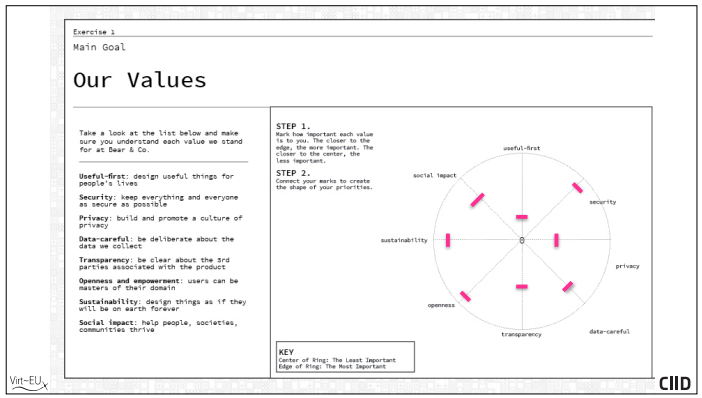

our onboarding today is going to tax our mental muscles: we will range from thinking about the ethical values we want to embrace and uphold at bear+co, and then we will deal with a current design decision through a series of imaginative and evaluative tools. we'll make decisions and share what we learned.



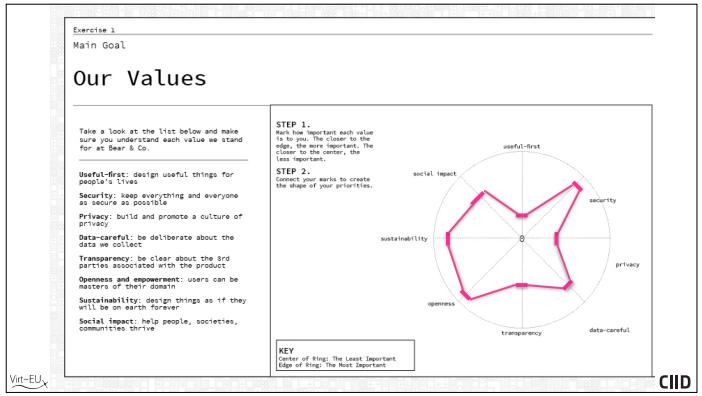

first of all, what are the values you will seek to uphold here at bear and co?



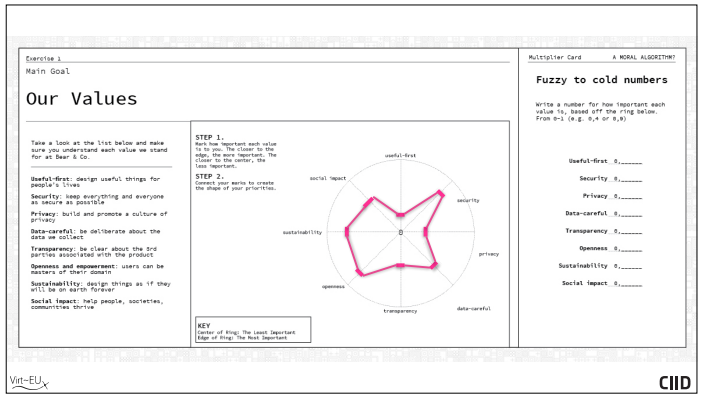

- here's your handout, turn to your partner and work together



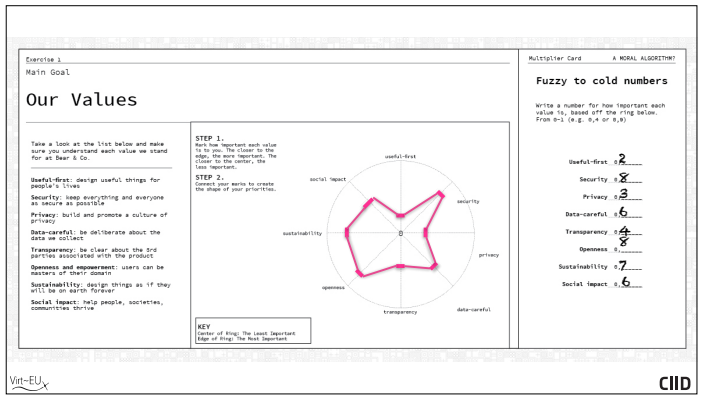

- fill it out like this



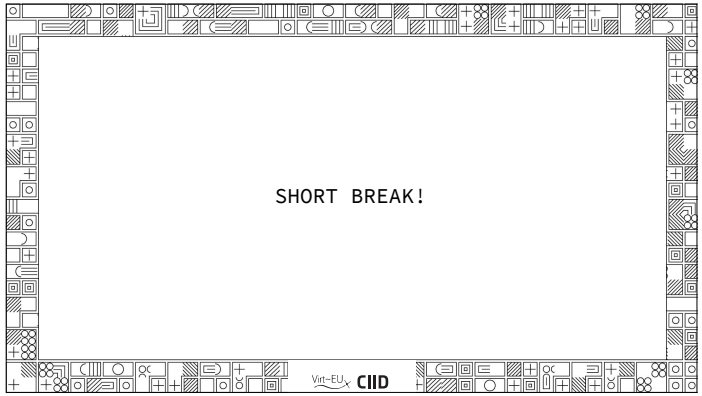

- then connect



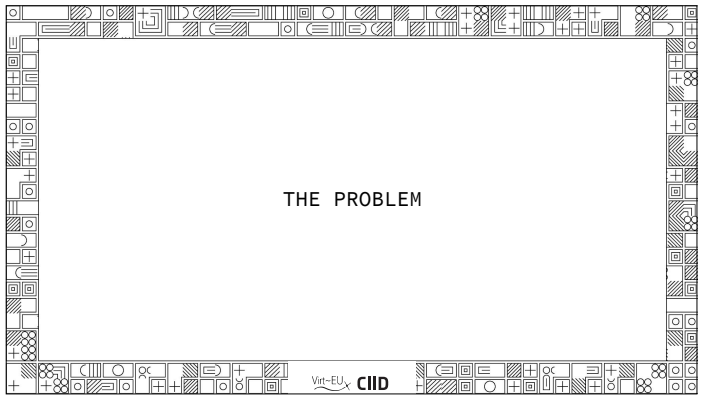

- then put actual numbers to each line you drew

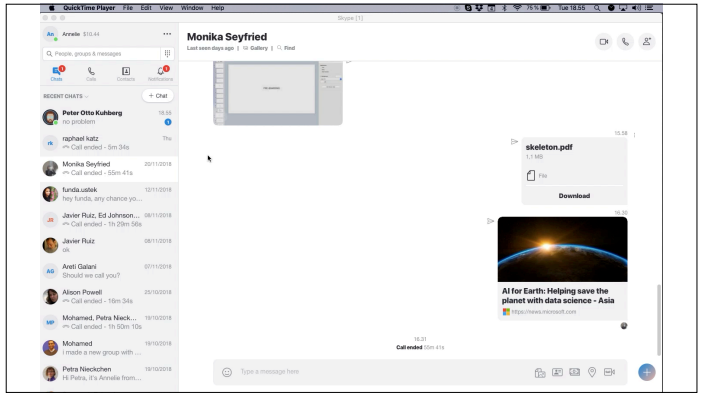



- DOES NOT HAVE TO ADD UP TO 1

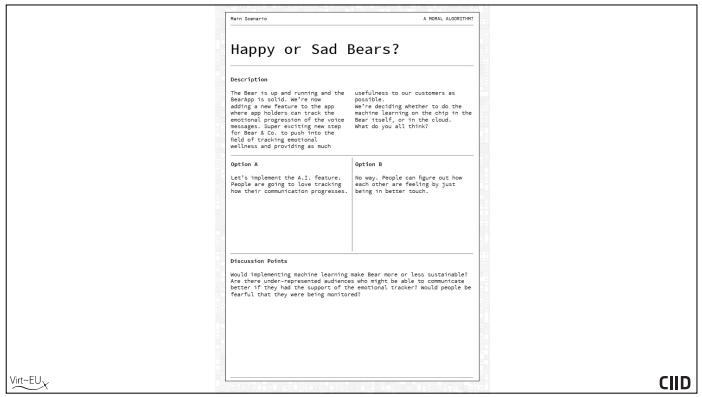


- ok so what is next? the problem of the day






listen to the problem



Main Scenario

A MORAL ALGORITHM?

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?

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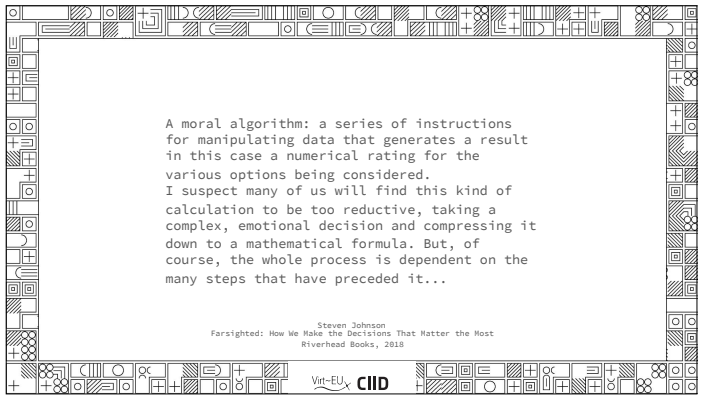
- here's your problem summary sheet



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

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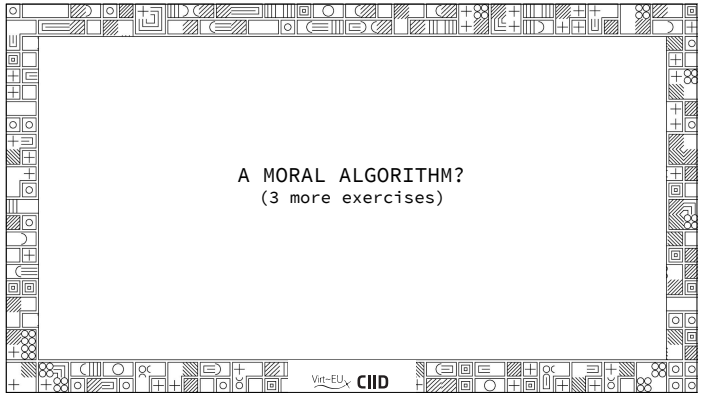
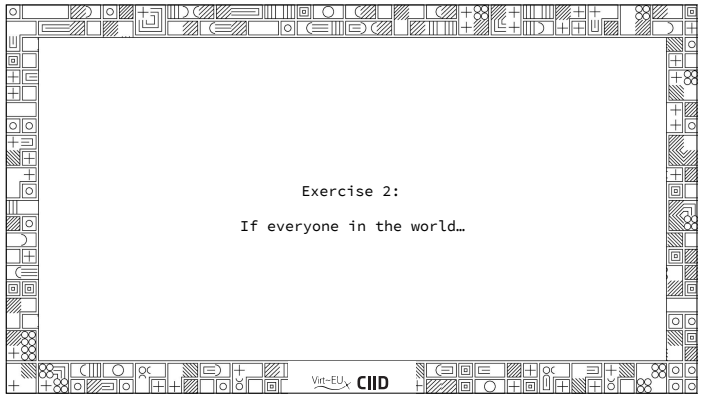
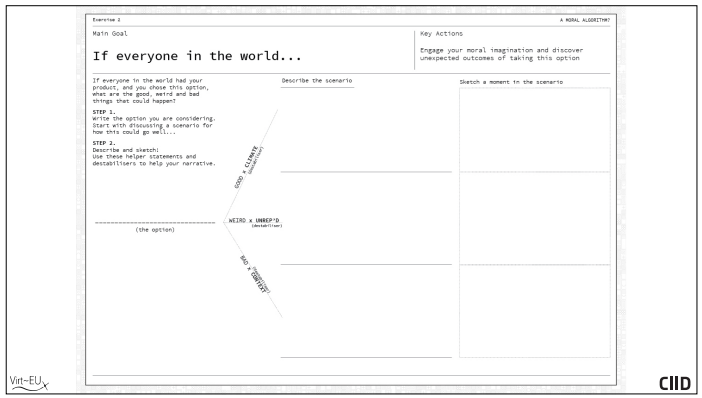
what is this moral algorithm?

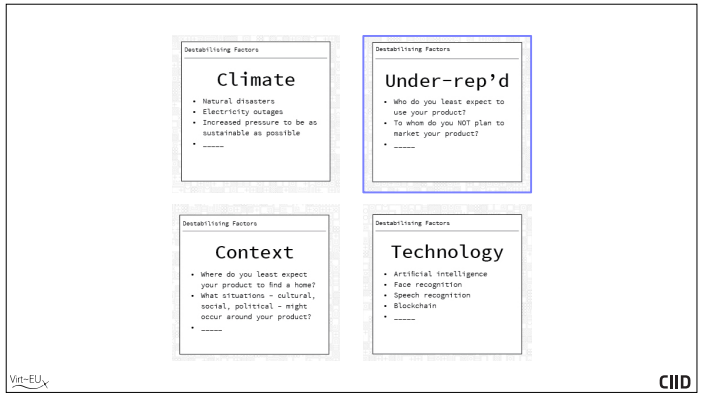



- a way to deal with difficult decisions

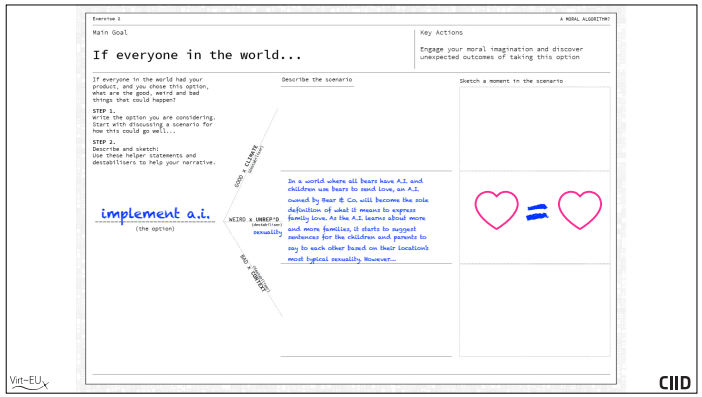



- here's your worksheet

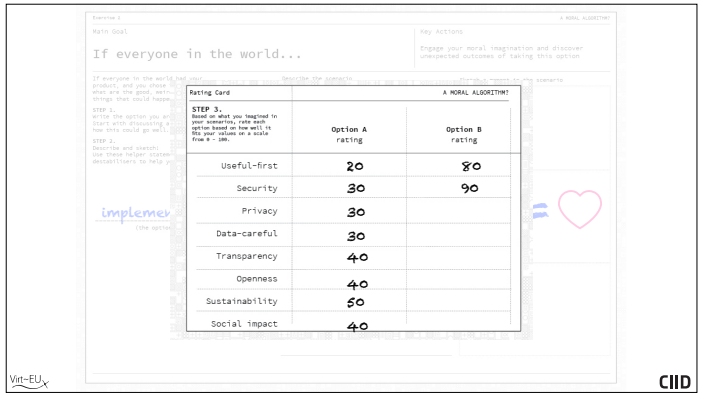



- add one of these to your scenario sheet and try to imagine with it in mind… for example:




- 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



Exercise 3 — A MORAL ALGORITHM?

Main Goal

If everyone in the world...

Key Actions

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

Rating Card — A MORAL ALGORITHM?

**STEP 3.** Based on what you imagined in your scenarios, rate each option based on how well it aligns with 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 | |

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

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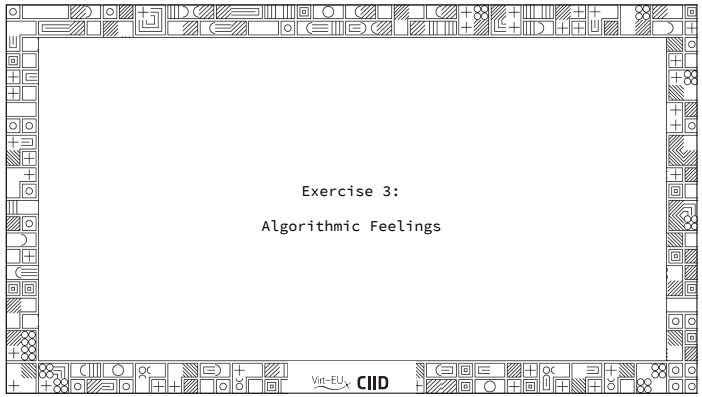

Exercise 3:

Algorithmic Feelings

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

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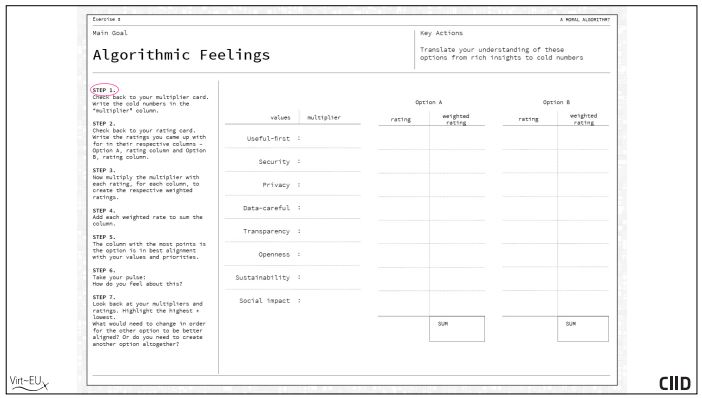

Exercise 3 — A MORAL ALGORITHM?

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 |

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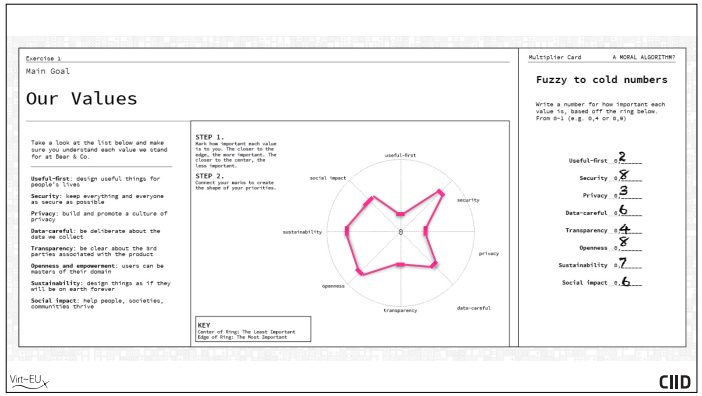

Exercise 1

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, based off the ring below. 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 0,8)

| | |
|---|---|
| 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 |

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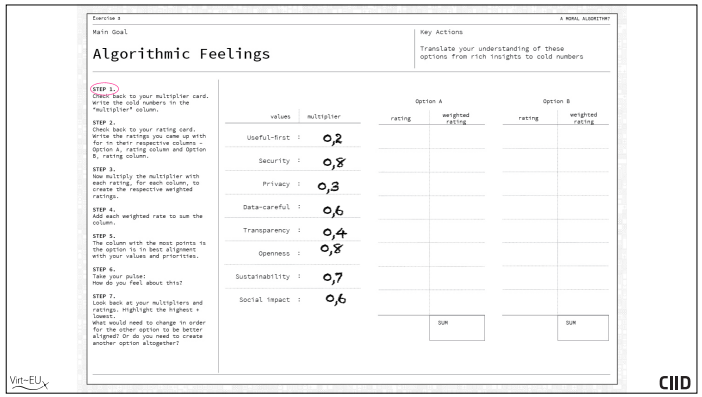
- DOES NOT HAVE TO ADD UP TO 1



Exercise 3 — A MORAL ALGORITHM?

Main Goal

## Algorithmic Feelings

Key Actions

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**STEP 2.**
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**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 : | 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 | | | | |
| | | | SUM | | SUM |

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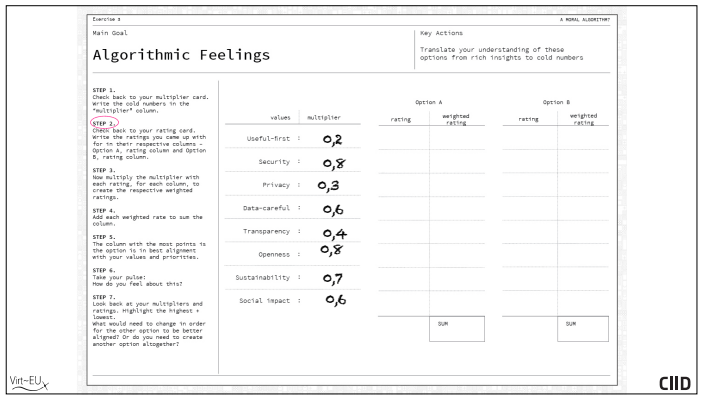

Exercise 3 — A MORAL ALGORITHM?

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.**
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| Openness : | 0,8 | | | | |
| Sustainability : | 0,7 | | | | |
| Social impact : | 0,6 | | | | |
| | | | SUM | | SUM |

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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. 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 |

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Exercise 3

A MORAL ALGORITHM?

Main Goal

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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 : | 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 |

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Exercise 3

A MORAL ALGORITHM?

Main Goal

## Algorithmic Feelings

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**STEP 7.**
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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 : | 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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Main Goal

# Algorithmic Feelings

Key Actions

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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 |

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Exercise 3 A MORAL ALGORITHM?

Main Goal

Algorithmic Feelings

Key Actions

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

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| | | Option A | | Option B | |
|---|---|---|---|---|---|
| values | multiplier | rating | weighted rating | rating | weighted rating |
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| 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 |

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Exercise 3 A MORAL ALGORITHM?

Main Goal

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| Sustainability : | 0,7 | 50 | 35 | 30 | 21 |
| Social impact : | 0,6 | 40 | 24 | 30 | 18 |
| | | | SUM 162 | | SUM 238 |

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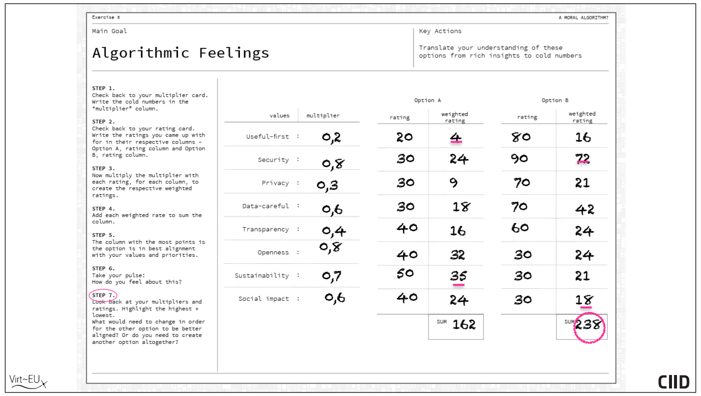

Exercise 3 A MORAL ALGORITHM?

Main Goal

## Algorithmic Feelings

Key Actions

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| | | | SUM 162 | | SUM 238 |

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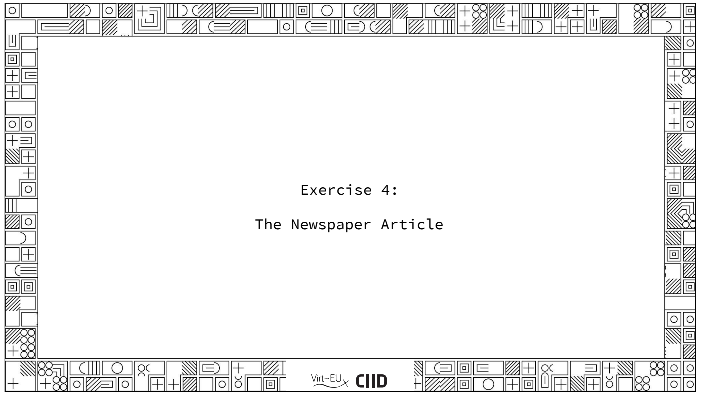

Exercise 4:

The Newspaper Article

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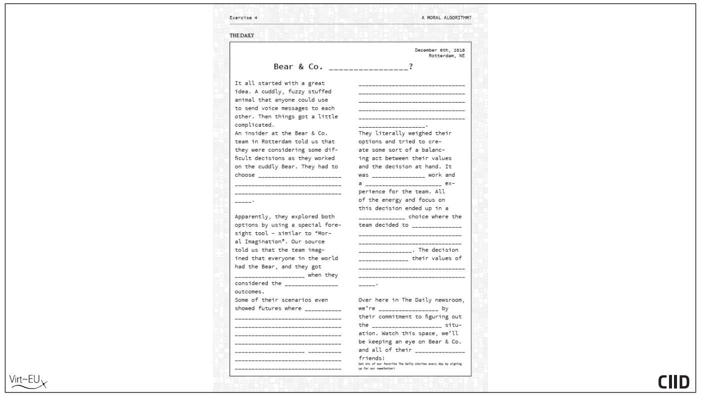
- the newspaper article is the way we can sum up everything we've learned and get ready to present it to the other people



Exercise 4 A MORAL ALGORITHM?

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!

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Exercise 4 A MORAL ALGORITHM?

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!

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Share your newspaper articles

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# 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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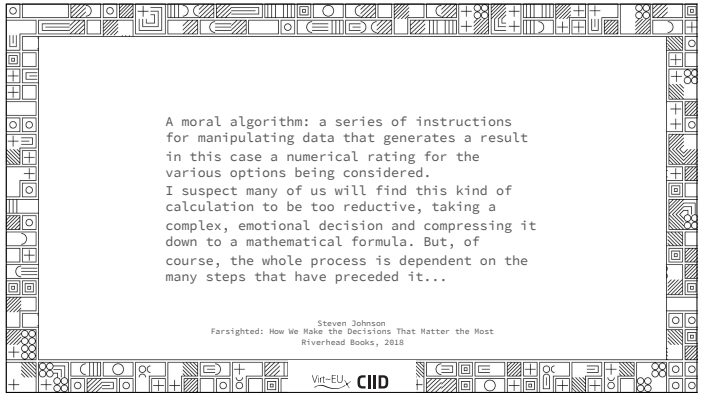


As the IoT grows in importance — Gartner predicts the number of connected things in use will hit 14.2 billion in 2019, and grow to 25 billion by 2021 — increasing numbers of formerly human-run processes will be automated using devices and algorithms not easily understandable by the folks affected by 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.

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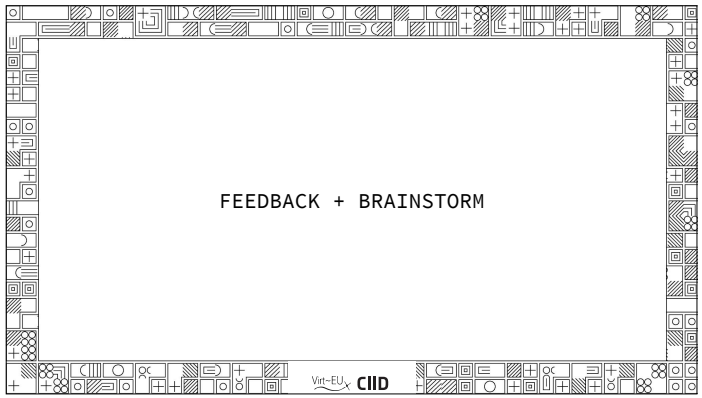
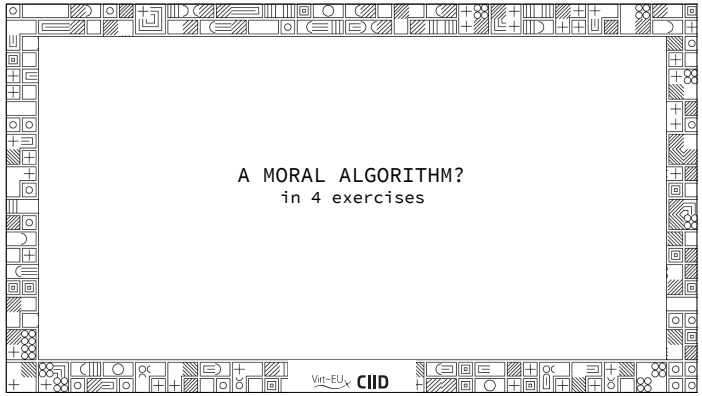
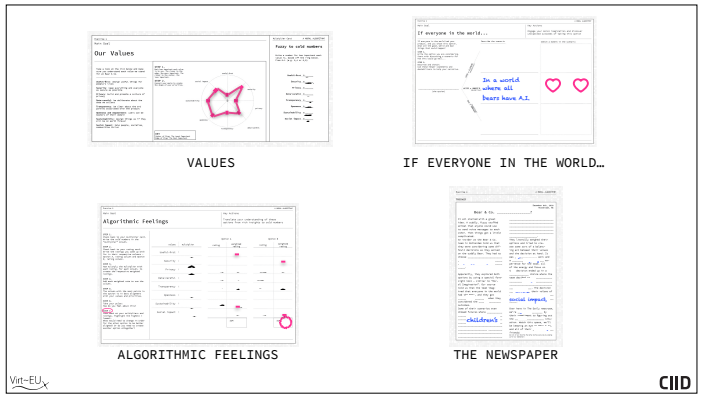


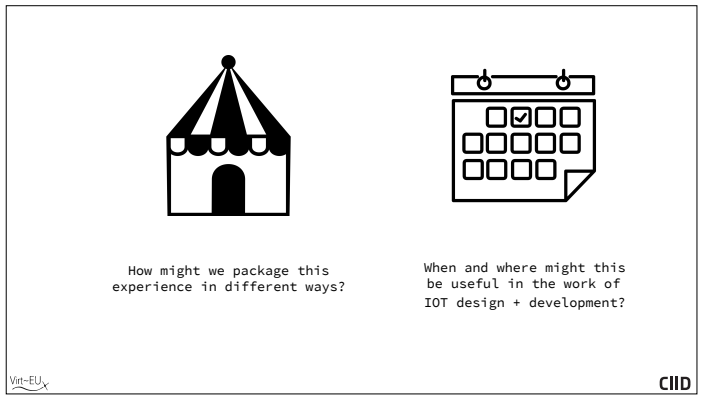

- how did it go? what did you learn?

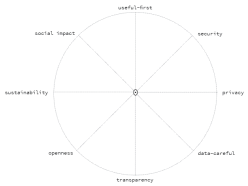



let’s discuss each exercise




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






VALUES

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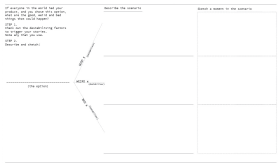


IF EVERYONE IN THE WORLD...

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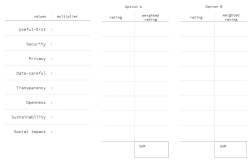


ALGORITHMIC FEELINGS

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?

What happens next?

a.berner@ciid.dk

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