This tool is good for gathering your team to articulate your ethical values as individuals and as a group in relation to your product development

Use this tool at the beginning of product development

Consider the list of ethical values from VIRTEU's fieldwork on communities of new connected technology developers in relation to your product.

As individuals, consider: which values do you strive to uphold in your product? Even if everything in the product "works", it is still important to ask what it is working towards. What are the ethical values that you hold dear, that ground your product? Put another way: would you quit your job or feel as though you've failed your mission if any of these ethical values were compromised?

Please identify the values important for you from the list below. Write them in order of priority on this sheet.

_____

_____

_____

_____

_____

_____

_____

Your name: _____

Privacy
Safeguarding intimacy, identity, and physical integrity.

Data Protection
Providing users access to their collected data, giving them explanations about how personal information is used. Issues concerning the distinction between anonymous and personal data that could allow companies to avoid data protection but still have impacts on groups and individuals. Ensuring the rights to access, rectification, erasure (right to be forgotten) and to object with regard to personal data processed by means of IoT devices and facilitating data portability.

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 & 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.

STATE
Part 2: Share back in pairs
Suggested time: 20 minutes

ETHICAL
STACK

Place your lists, from the individual reflection, next to each other and identify the differences between the ethical values you chose and / or the priorities.

Discuss: Share with a teammate, and discuss your priorities. What's different? What's the same? Can you negotiate, bargain as needed to make a common list?

People can talk about the same words and mean completely different things.
Ask each other: what do you mean by that - can you bring it down to earth? Make a story?
Ask each other: where would we embed this value in our actual product? How can we really uphold it? Does it compromise another value?

If this step is taking you longer than 20 minutes, get some water.

If this step is taking you longer than 1 hour, consider looking into more detailed value articulation exercises such as http://blogs.brighton.ac.uk/wevalue/

Now that you've considered each other's priorities, write a common final list, in priority.

Write short descriptions of what each value means to your team.

When done, commit to it. You'll be revisiting this a lot throughout your work.

Your prioritised list of values and descriptions:

Your names: _____

WIEITW
What if everyone in the world?
Suggested time: 45 minutes – 1 hour

ETHICAL STACK

This tool is good for working out the implications of your ethical challenges, assessing the roots of the challenge and ideating options to address the challenge

Use this tool when trying to understand why a given decision has ethical dimensions

What if everyone in the world had your product?
And your product does not take into consideration _____?
What kind of impact would it have on the world?

Good scenario

Weird scenario

Bad scenario

Step 1.
Answer the question on the top of the diagram. What would the good, weird, and bad scaenarios be? For each branch of this tree, come up with scenarios.

Step 2.
For each scenario, flesh out what the potential impacts would be.

Step 3.
Mark the scenario or impact that worries you the most.
Mark the scenario or impact that you hope most to achieve.

Step 4.
Focus on one and brainstorming with following guiding questions:

Worry:
How can you prevent this from happening?
How can you mitigate its impacts?

Hope:
What actions can you take to ensure that this will happen?
If it happens, how can you support its continuation?

Good impact	Weird impact	Bad impact	Good impact	Weird impact	Bad impact	Good impact	Weird impact	Bad impact

This tool is good for facilitating a discussion and evaluation of different ideas you came up with when working through the ethical challenges and/or WIEITW.

Use this tool when assessing solutions.

The goal of this tool is to facilitate a discussion and evaluation of different ideas you came up with when working through the ethical challenges and/or the following tool of **WIEITW**.
You can use this tool either directly after receiving your ethical challenges, as a brainstorm map, or after using the **WIEITW** paper tool.

Step 1.
The Element of Discussion should be the focus of the ethical challenge you received, or, the main impact you focused on at the end of the WIEITW tool. Write this focus under "Element of Discussion".

Step 2.
Under **Options**, write each idea you are considering in order to solve the challenge / impact.

Step 3.
Under **Arguments**, write the arguments from your team that support each idea (in the same line as that idea)

Step 4.
Under **Values**, write the values that would support each argument (values should come from the list you previously identified and used in the digital Ethical Stack tool)

Based on how each idea aligns with your values, and how important those values are in relation to one another, choose an idea to implement.

Return to your digital Ethical Stack **Create** stage, and add the new element somewhere in your stack.

Values
What are the ethical values behind this element choice?

Element of Contention

Options
What are the different options you are considering?

Arguments
What are the arguments for and against?

Source
Who is advicing you?
Where is your information from?

REFLECTION
What are your core values?
Suggested time: 30 minutes

ETHICAL STACK

This tool is good for checking in with your **North Stars** – the values that you had identified at the beginning of your ethical stack – and being realistic about how well you can align with them.

Use this tool as a periodic check–in during the process of product development

Each teammate should get a coloured pen/pencil.

Given the challenges you have come up against while using the previous tools, reflect upon which values you are really going to be able to stand for.

Prepare to make a mark on the line that goes from the value word to the center point.

The closer to the edge of the circle, the more important the value is. The closer to the center you mark the line, the less important the value is.

Each teammate should make their own colored mark for each value.

Then, connect the marks per value across the lines to create an oddly shapen polygon.

You can connect across individual colormarks and have one shape per person or find an average per value so that you have one shape.

Hint: think about the scenarios that worried you the most. Having a strong sense of your core values can help you to bargain and make sure you don't end up in the worst cases.

Privacy
Inclusion & Equality
Data Protection
Sustainability
Dignity
Openness & Shareability
Well-being
Responsibility
Non-discrimination
Safety & Security
Autonomy
Interoperability
Transparency
Accountability
Participation

More important
Less important

MAP
Lay out your stack
Suggested time: 30 minutes

ETHICAL STACK

Step 1.
Populate this stack with elements from all different parts of your product - from sensors to data processing algorithms to the people who will use it and the values that underlie it.

**For each layer, fill in the relevant elements.**

Step 2.
Circle the values you have already identified in the State exercise at the bottom of your map.

Step 3.
Draw connections between materials with other materials to demonstrate dependencies in your system.

Draw connections from values to materials to demonstrate where the values are being embedded. What values do you strive to uphold in your product? Even if everything in the product "works", it is still important to ask what it is working towards. What are the ethical values that you hold dear, that ground your product? Put another way: would you quit your job or feel as though you've failed your mission if any of these ethical values were compromised? If any are important for you, show where you are putting them into action by connecting them to those material elements.
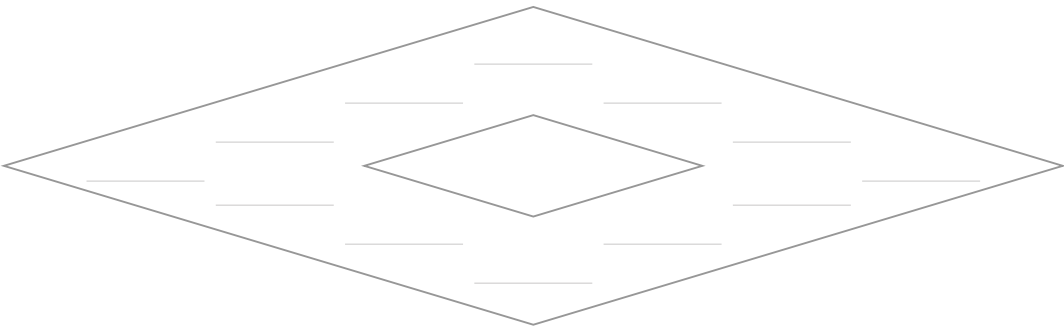
Team layer
Who is working in your core product team? Who makes decisions at the executive level? Do you have external partners (e.g. investors, shareholders) who have executive roles in decision-making? Who gets to have the final say?
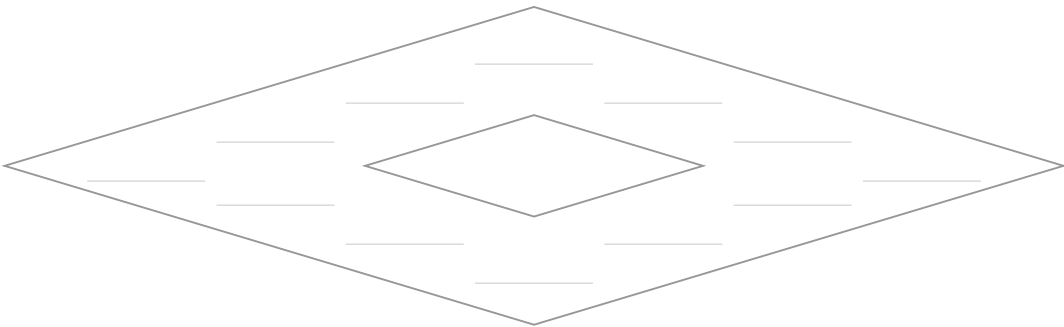
Data layer
What data does your device gather and use? Note primary data gathered from sensors, people - sound levels, steps, heart rate, email address - and secondary data - inferences, architecture, analytics.
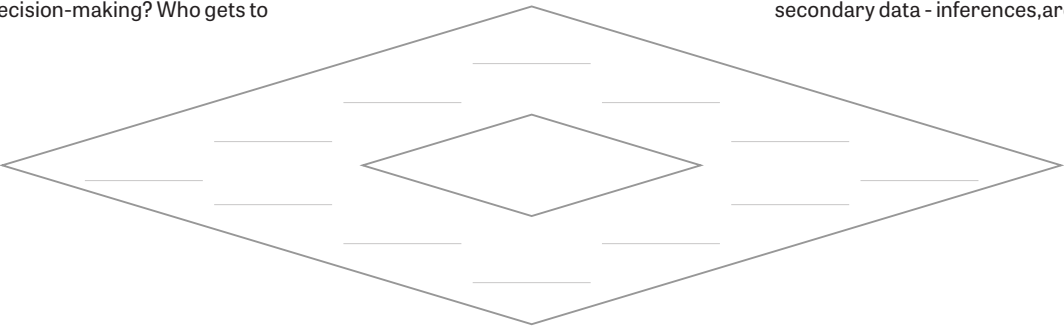
Device/Service layer
Add anything that describes the product itself. Is it software, hardware, medium-ware? What kind of a product is it (wearable? smart home industrial IoT?), what is inside the device (sensors, microprocessors, connection types)?
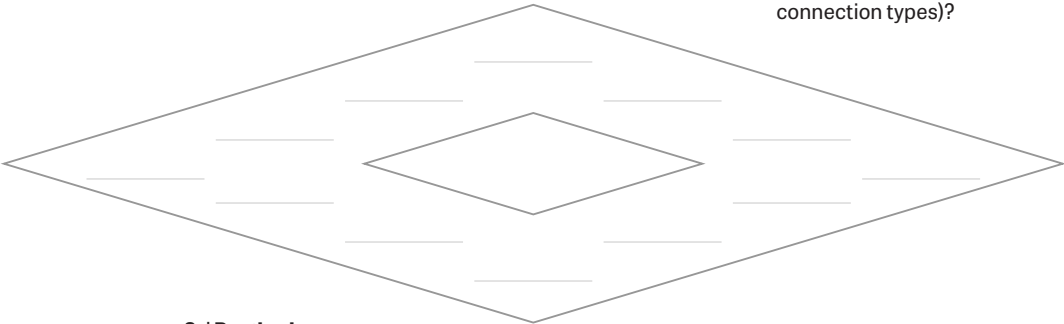
3rd Parties layer
Who or what else is needed to make the device work. Are you using a 3rd party for data storage, data processing, APIs, SDKs, or other service providers?
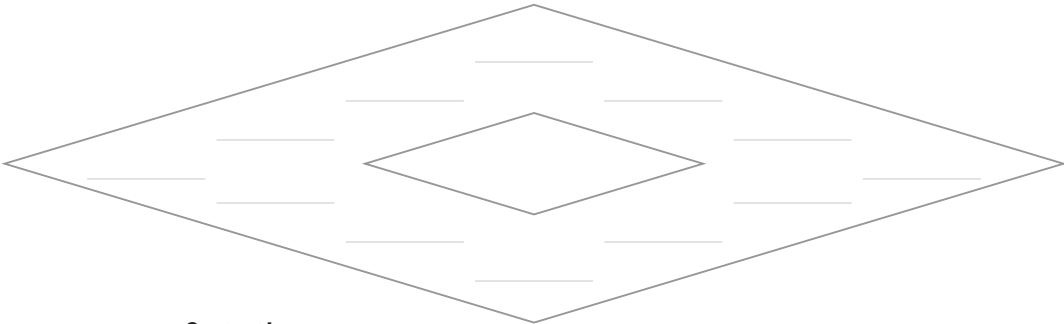
Context layer
Tell us about the context where the device is used and who uses it. Is it for the home, the body, the workplace? Is it for children, adults, elderly or disabled people? Do you imagine vulnerable populations (of your own defining) using your product?

Privacy	Participation	Accountability	Autonomy	Interoperability
Responsibility	Dignity	Transparency	Non-discrimination	Inclusion & Equality	Openness & Shareability
Interoperability	Data Protection	Safety & Security	Well-being	Sustainability