ETHICAL STACK

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: _____

Data Protection
Control over access to and use of private data. Making sure that users are not adversely affected by the data that is collected, processed or analysed about them- both as individuals and as groups. Giving them the control to erase or alter their data, should they wish to do so.

Dignity
The feeling of control over one's own destiny that entails relationships of respect. Having a say in tracking, surveillance and control through IoT products. Ensuring that no individual or group should be adversely affected or dehumanised as a result of using or not using a product. Reflecting on the implications of connectivity in spaces and contexts users might consider as private.

Well-being
Paying attention to the physical and mental welfare of the users and developers, designers and testers of the product.

Non-discrimination
Making sure no person or group are adversely affected by the use or non-use of the product. Including data processed about them.

Autonomy
The capacity of the user to act, make decisions and express herself without being influenced or forced by a technology.

Transparency
Striving towards achieving clarity throughout the technology development process about the source of materials, hardware and data that goes into the product, including communication of the source of funding for the product.

Participation
Encouraging the users to take active part in the design and development of technology development, whenever possible. Engaging in a dialogue with users throughout the lifetime of a product and ensuring that their voices are heard.

Privacy
A state of being unobserved or disturbed by others. The ability to control access to the self and to data about the self. Giving the users the ability to decide on their own privacy settings. Protecting and ensuring the sanctity of user's private life and personal information.

Accountability
Assuming responsibility and explaining why a decision has been taken the way it has been, if or when potential risks are identified or when adverse consequences of a decision take place.

Interoperability
Supporting connectability of the technology to other IoT technologies, even when they are produced by different companies, and they work on different software architectures. Upholding data portability as a value for both technology developers and users so that they can move their data to other connected products, should they wish to do so.

Safety and Security
Paying attention to all the vulnerabilities the product might cause to users and taking all necessary steps to prevent them from happening. Ensuring that whenever new vulnerabilities are discovered, timely steps are taken to mitigate all risks. Risks, including risks to physical well-being of the users, but also their mental well-being.

Openness and Shareability
Supporting open hardware, software, source code and data. Also supporting platforms that bring together coders, developers and creators to exchange and share ideas and codes. Accepting the idea that the greater the number of people who work on a codebase, the better and stronger it will be.

Sustainability
Considering and accounting for the environmental impacts of sourcing materials and minerals, global production chains and end-of-life technologies. Emphasizing the materiality of technologies that are often considered as non-material (e.g., software, algorithms, cloud).

Inclusion and Equality
Acknowledging diversity as part of the technology development process and striving towards including variety of opinions, backgrounds and capabilities when building a product. Aiming to increase diversity of the teams that build products to minimise bias and potential discrimination.

Responsibility
Assuming duty to take care, being in charge of the decisions taken in a technology development process.

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:

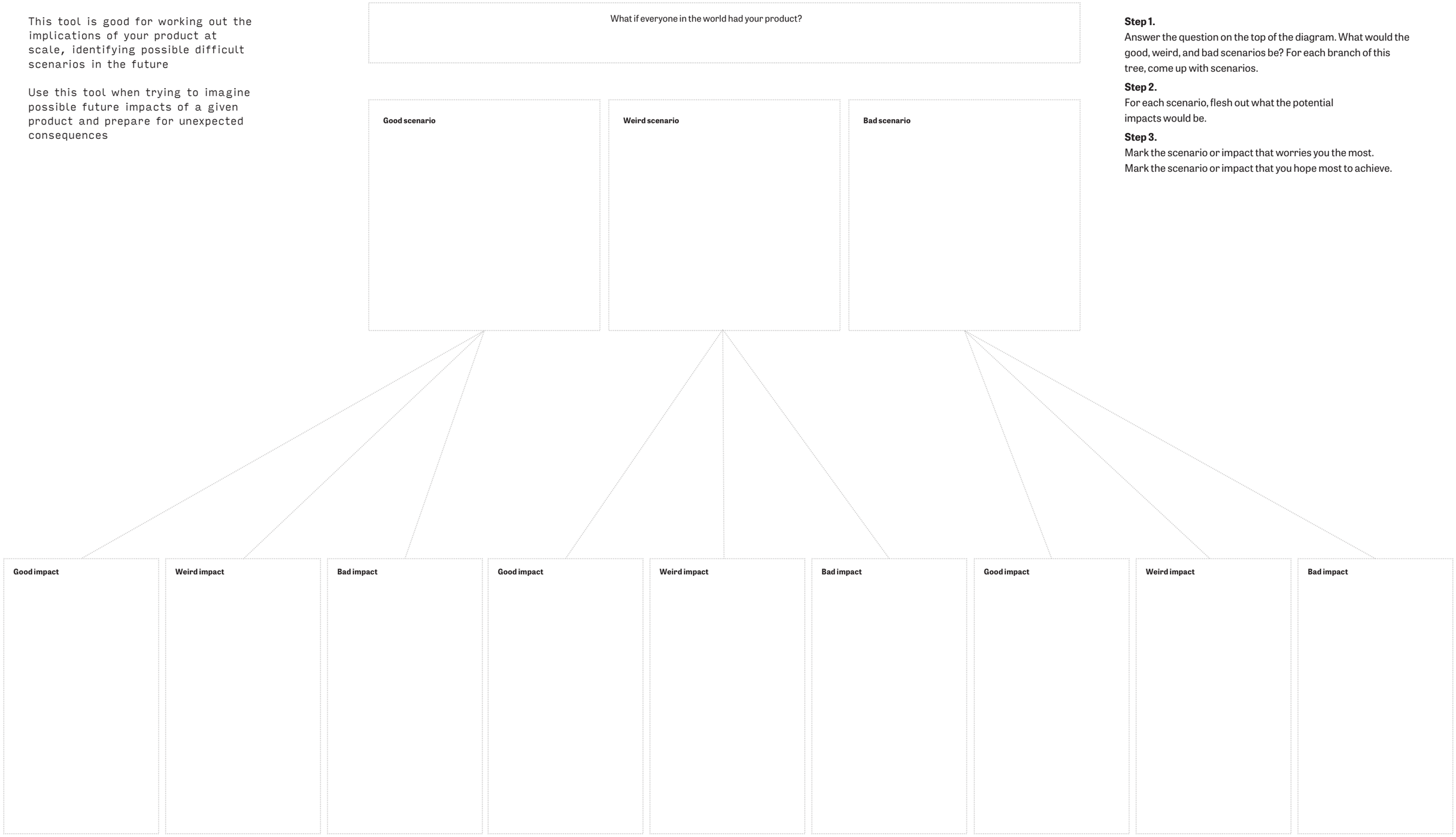
Your names: _____

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 product at scale, identifying possible difficult scenarios in the future

Use this tool when trying to imagine possible future impacts of a given product and prepare for unexpected consequences



Step 1.
Answer the question on the top of the diagram. What would the good, weird, and bad scenarios 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.

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OPTIONS
Negotiate decisions
Suggested time: 30 minutes

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?

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.

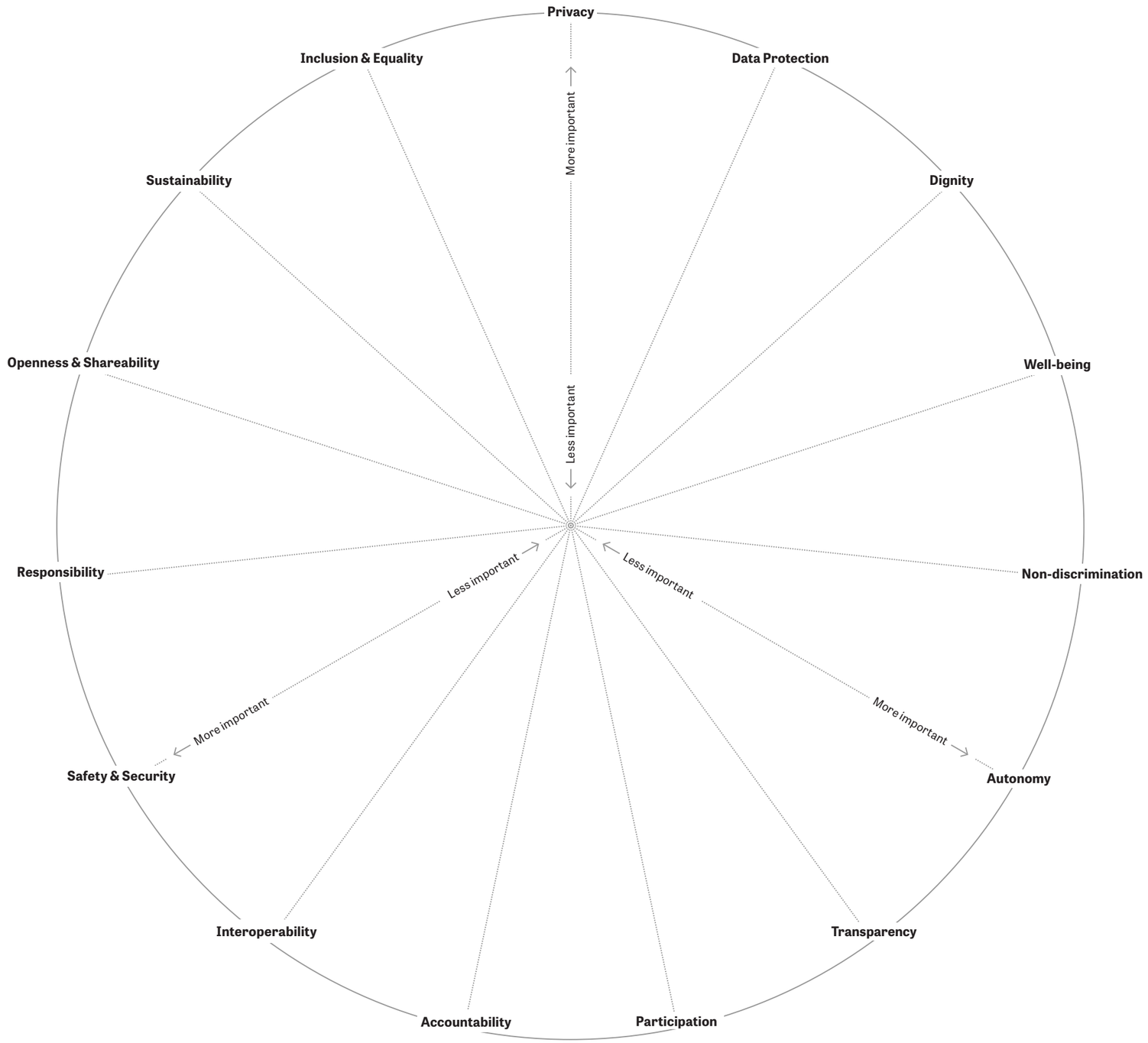
The closer to the edge of the circle, the more important the value is. The closer to the center you mark the line, the less important the value is.

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.



MAP
Lay out your stack
Suggested time: 30 minutes

ETHICAL STACK

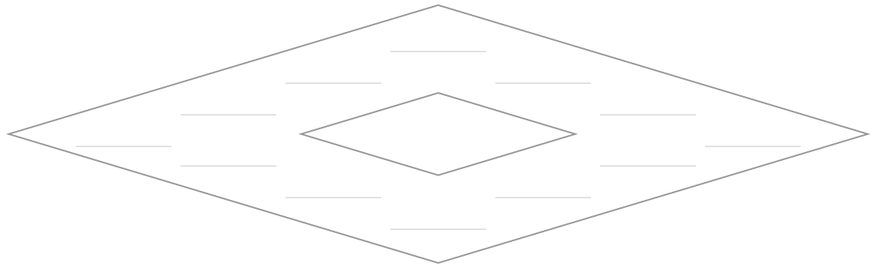
Step 1.
Populate this stack with elements from all different parts of your product - from sensors to data processing algorithms to the people who will use it and the values that underlie it.

For each layer, fill in the relevant elements.

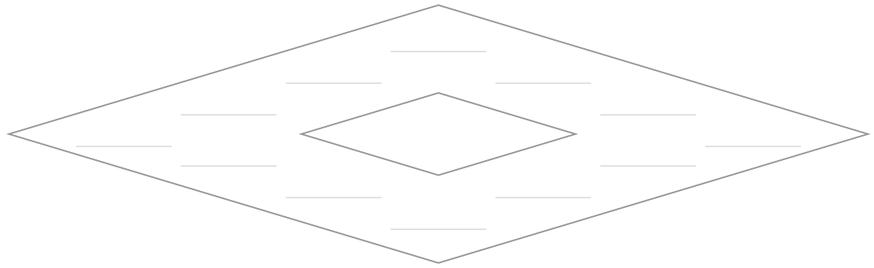
Step 2.
Circle the values you have already identified in the State exercise at the bottom of your map.

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

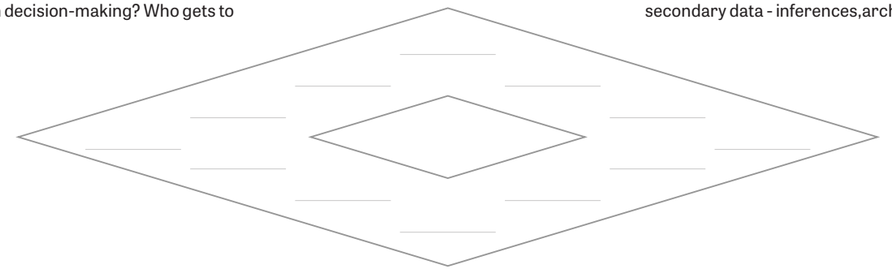
Draw connections from values to materials to demonstrate where the values are being embedded. What values do you strive to uphold in your product? Even if everything in the product "works", it is still important to ask what it is working towards. What are the ethical values that you hold dear, that ground 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.



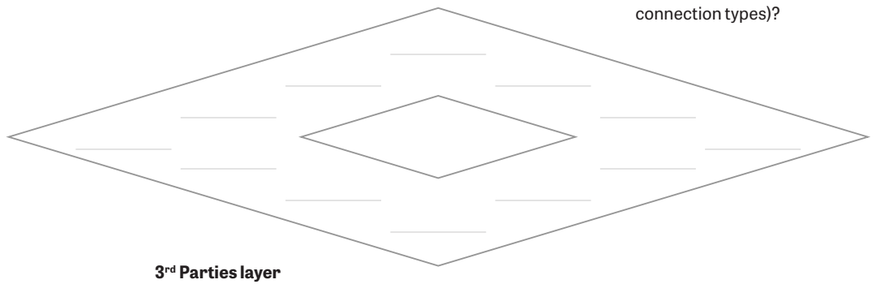
Team layer
Who is working in your core product team? Who makes decisions at the executive level? Do you have external partners (e.g. investors, shareholders) who have executive roles in decision-making? Who gets to have the final say?



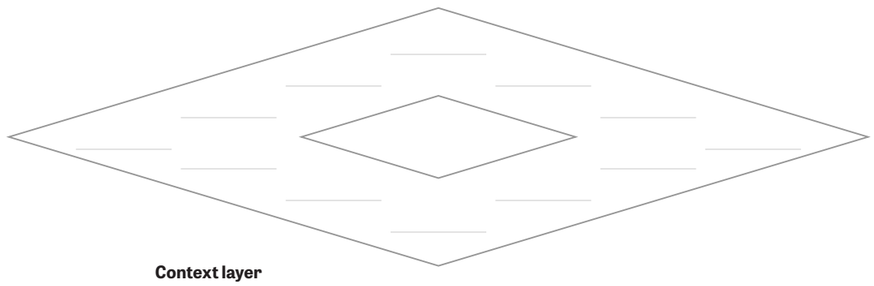
Data layer
What data does your device gather and use? Note primary data gathered from sensors, people - sound levels, steps, heart rate, email address - and secondary data - inferences,architecture, analytics.



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**

Responisbility **Dignity** **Transparency** **Non-discrimination** **Inclusion & Equality** **Openness & Shareability**

Interoperability **Data Protection** **Safety & Security** **Well-being** **Sustainability**

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IWW
In a World Where...

Suggested time: 45 minutes – 1 hour

ETHICAL STACK

This tool is good for working out the implications of your product if it lived in just one of the many possible futures

Use this tool when trying to imagine possible future impacts of a given product within [a] future

In a world where _____, what would your product's impacts be in that world, or how would that world change your product's intentions?

Good scenario

Weird scenario

Bad scenario

Good impact

Weird impact

Bad impact

Good impact

Weird impact

Bad impact

Good impact

Weird impact

Bad impact

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

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