

DESIGN SUSTAINABLE AI

**INTER
NET ZERO**


Imagination
Lancaster

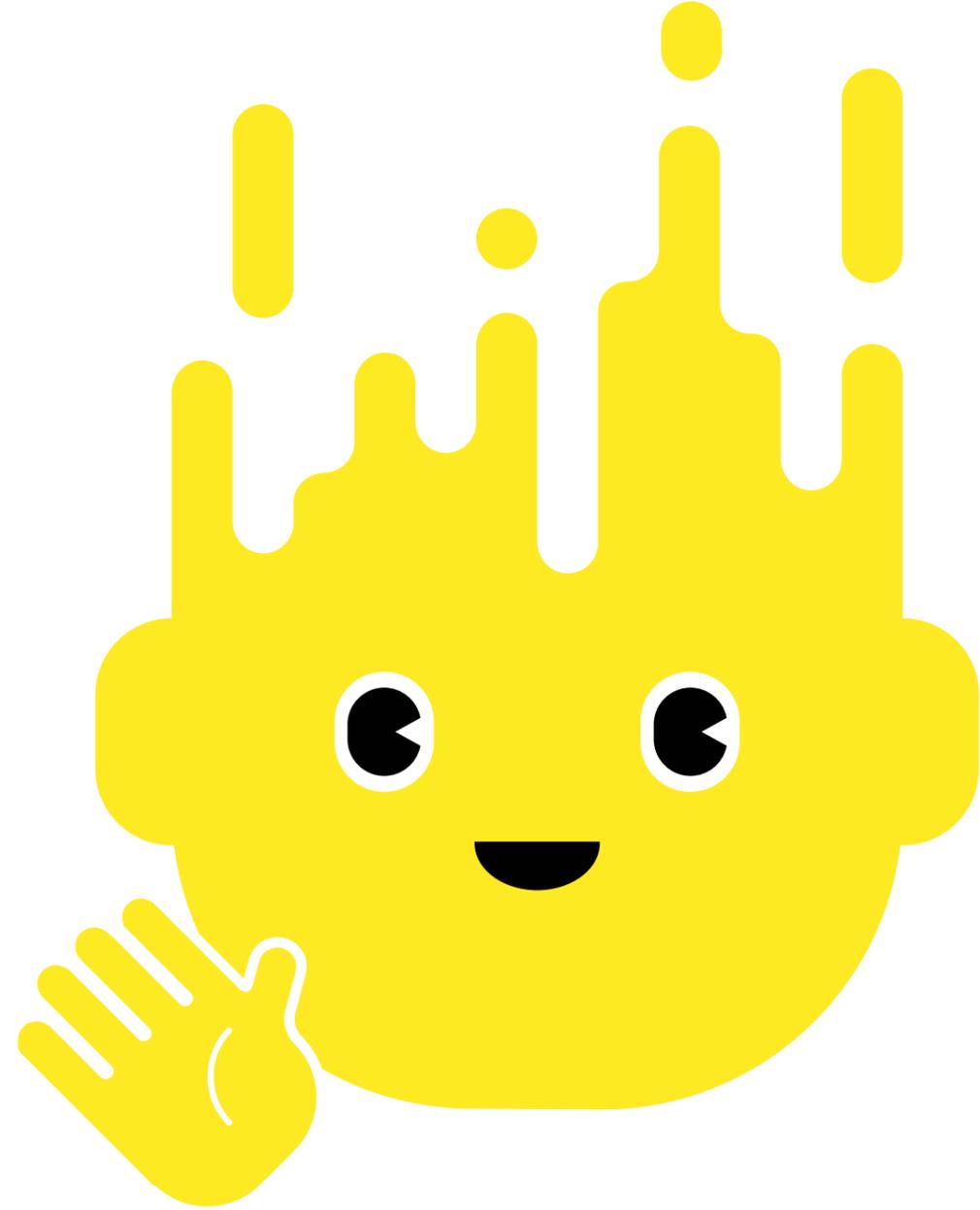
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**Trustworthy
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Please help us design sustainable AI

Why Design Sustainable AI?

More and more AI-driven products and services are being integrated into daily life which means they are often making more decisions for us.

This raises important ethical considerations because these technologies are extremely energy hungry and carbon intensive but are also regularly put forward as a solution for fighting climate change and helping us reach Net Zero targets.



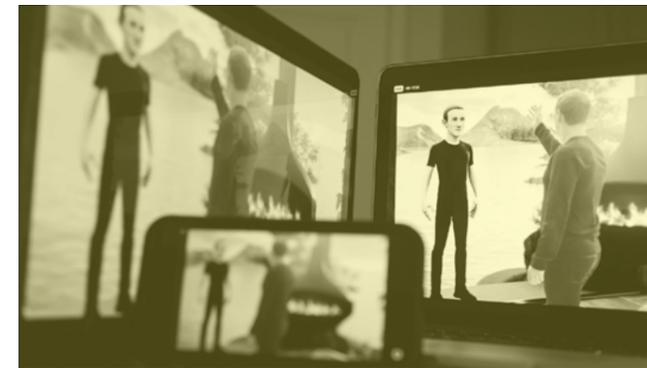
'Smart' devices



Videotelephony



Massively Multiplayer Online Games



Metaverse



The Cloud

Prototyping Sustainable AI Systems

AI can often feel like an abstract concept. It is good to consider a new AI in terms of the products and services it may provide as well as a system

- Many great ideas have started life as a simple sketch on a napkin
- Sketching is a quick but essential (and fun!) part of prototyping a new design

In this example,
is a sketch and
annotations for a
AI-driven personal
solar energy
generating hat

Sketch your prototype ...



Describe your prototype in 6 words ...

energy efficiency cheap electricity solar generator wearable tech

stylish AI privacy preserving

What does this AI do?

solar micro-generator head gear personal energy management
AI / AR type reality filtering glasses

How does it work?

even with max cloud cover future arrays are solar tech advances
hat can still gen energy 3D printable onto out pace other
anywhere on planet anything renewables

What kind of data does it collect?

edge computing - power gen AI / AR glasses - cheap but secure
done at edge of network on biometric data + ads privacy preserving too
hat not in cloud + sharing your data

Who is responsible for this AI?

becomes ubiquitous design choice large scale solar arrays
- fashion - even with rather than technical still being built due to
older people! choice cost/demand

Is it sustainable? If so, how? If not, why not?

more efficient than plants! sharable energy - AI
self powering power coop - pluggable
into other devices -
powering them

Prototype Your Own Sustainable AI System

Imagine what your future sustainable AI might look like and what it might do. Then draw a picture of it

- Keep it simple and write a response to each criteria too!

Sketch your prototype ...

Describe your prototype in 6 words ...

What does this AI do?

How does it work?

What kind of data does it collect?

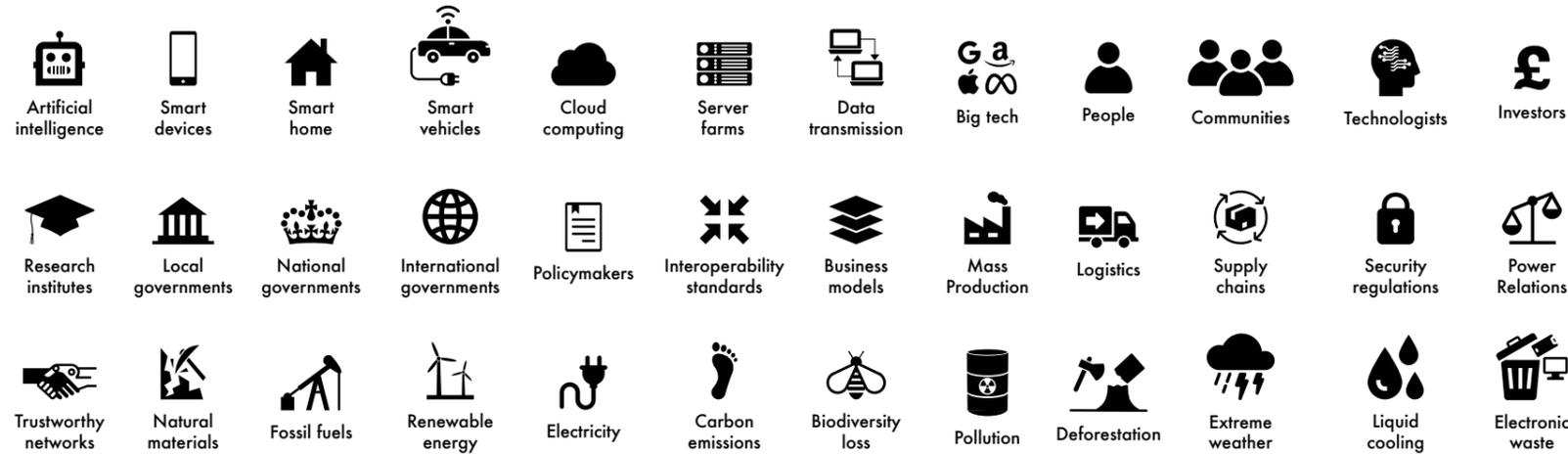
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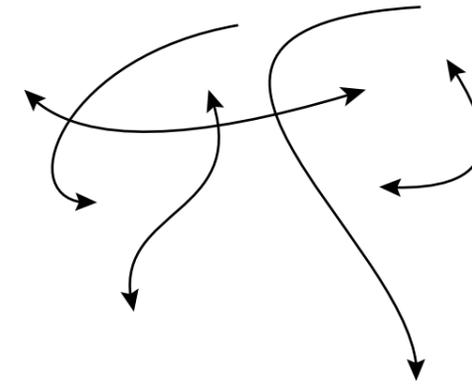
Mapping Sustainable AI Systems

Giga-mapping is a technique we can use to identify the main stakeholders who might exist throughout a new AI system

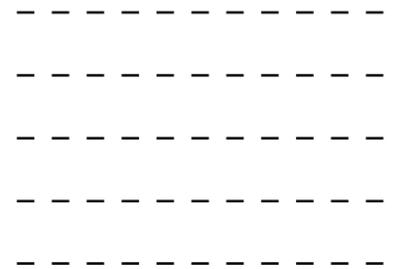
1 Draw stakeholders, e.g. ...



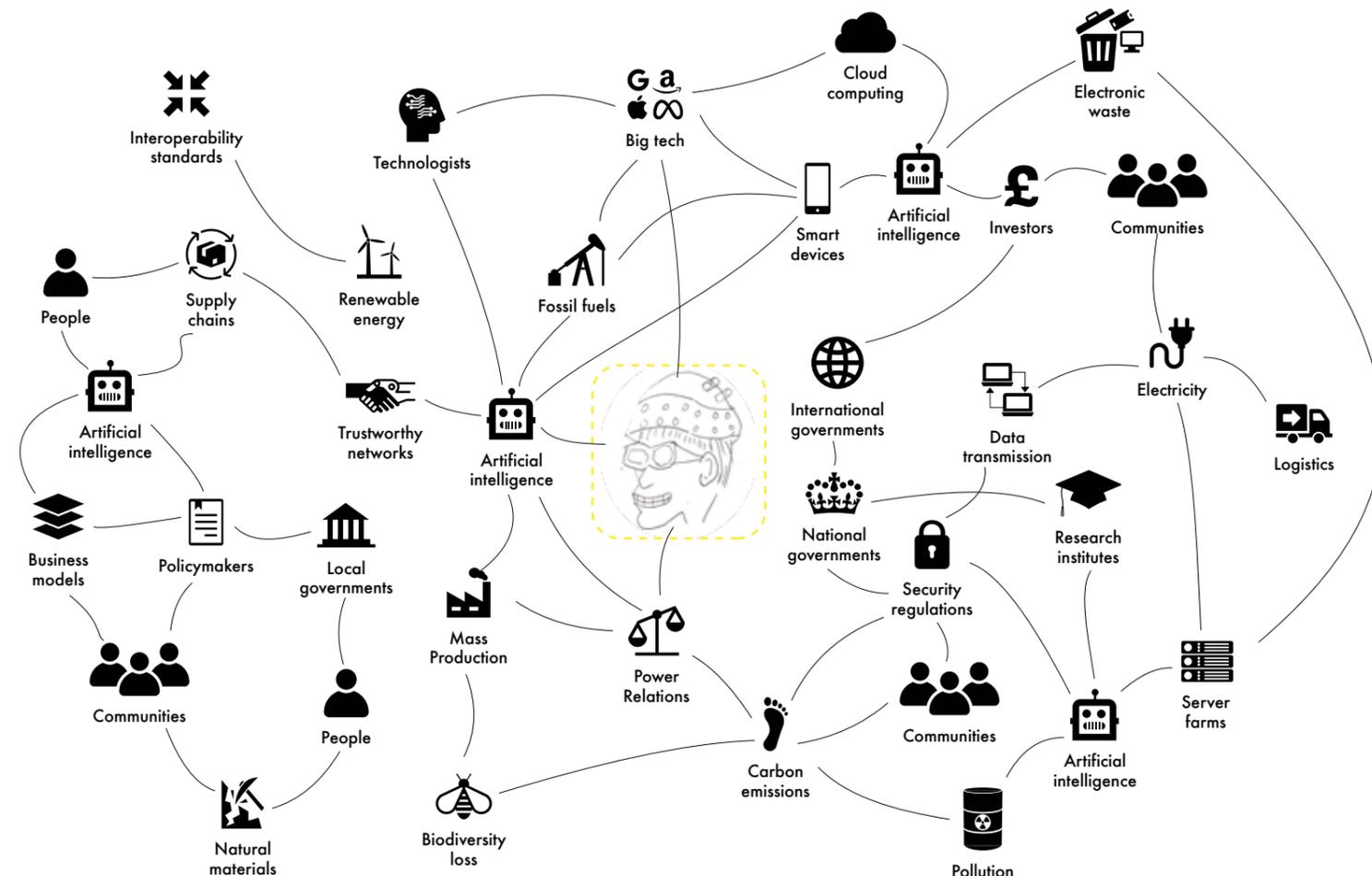
2 Draw connections



3 Write comments!



In this example, we show how an AI prototype would connect to lots of different stakeholders across many sectors and scales



Map Your Own Sustainable AI System

Add another quick sketch of your AI prototype to the centre square and map your sustainable support system around it

- Use stakeholders from the example above but also make up your own and add in any comments/thoughts you might have about your design!

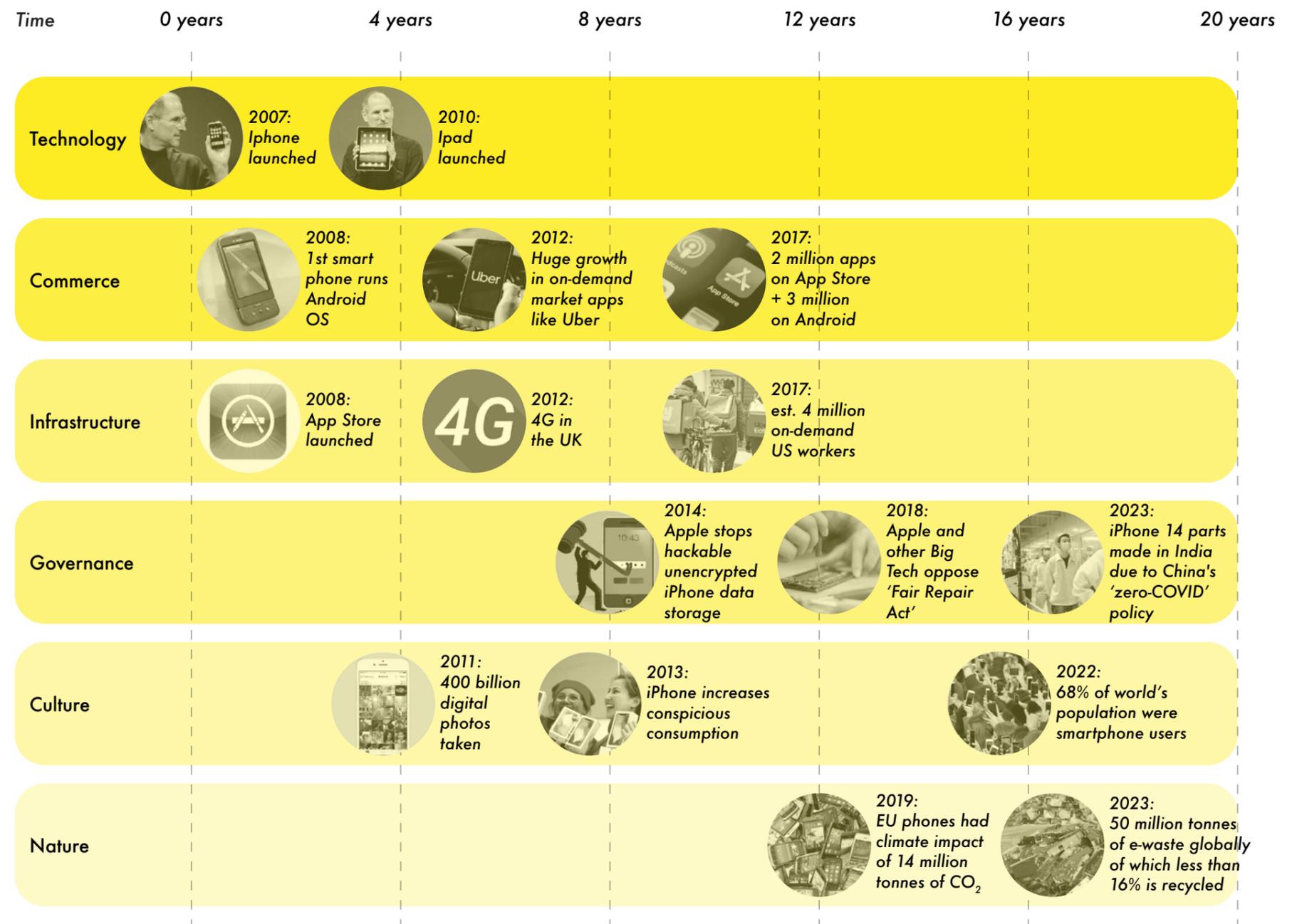


Timetabling Sustainable AI Systems

Pace layering is a framework we can use to imagine the time it might take for complex tech to impact in different ways across society

- Each layer is functionally different
- But each layer is not disconnected from the other
- The fast layers innovate and the slow layers stabilise!

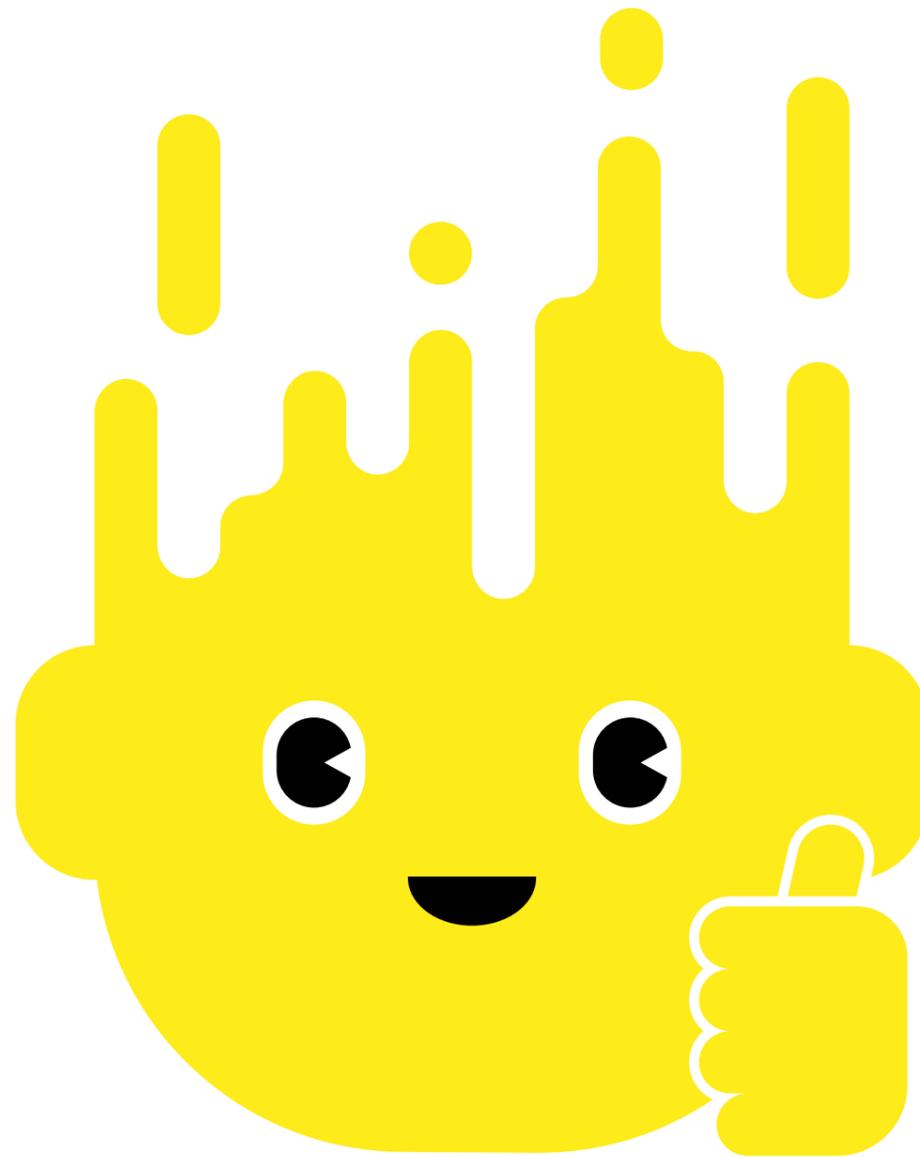
In this example, we show how Apple's iPhone technology impacted across the 6 key layers



Timetable Your Own Sustainable AI System

Draw a timetable for how you think your Sustainable AI system might impact across the 6 layers - in the next few years and beyond!

	0 years	5 years	10 years	30 years	50 years	75 years	
Technology							Big key benefit
Commerce							
Infrastructure							Big key risk
Governance							
Culture							
Nature							



Thank you for helping us design sustainable AI

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Towards Resource Responsible Trustworthy Autonomous Systems



