



Group Bis-Bis

Feeding Madeira

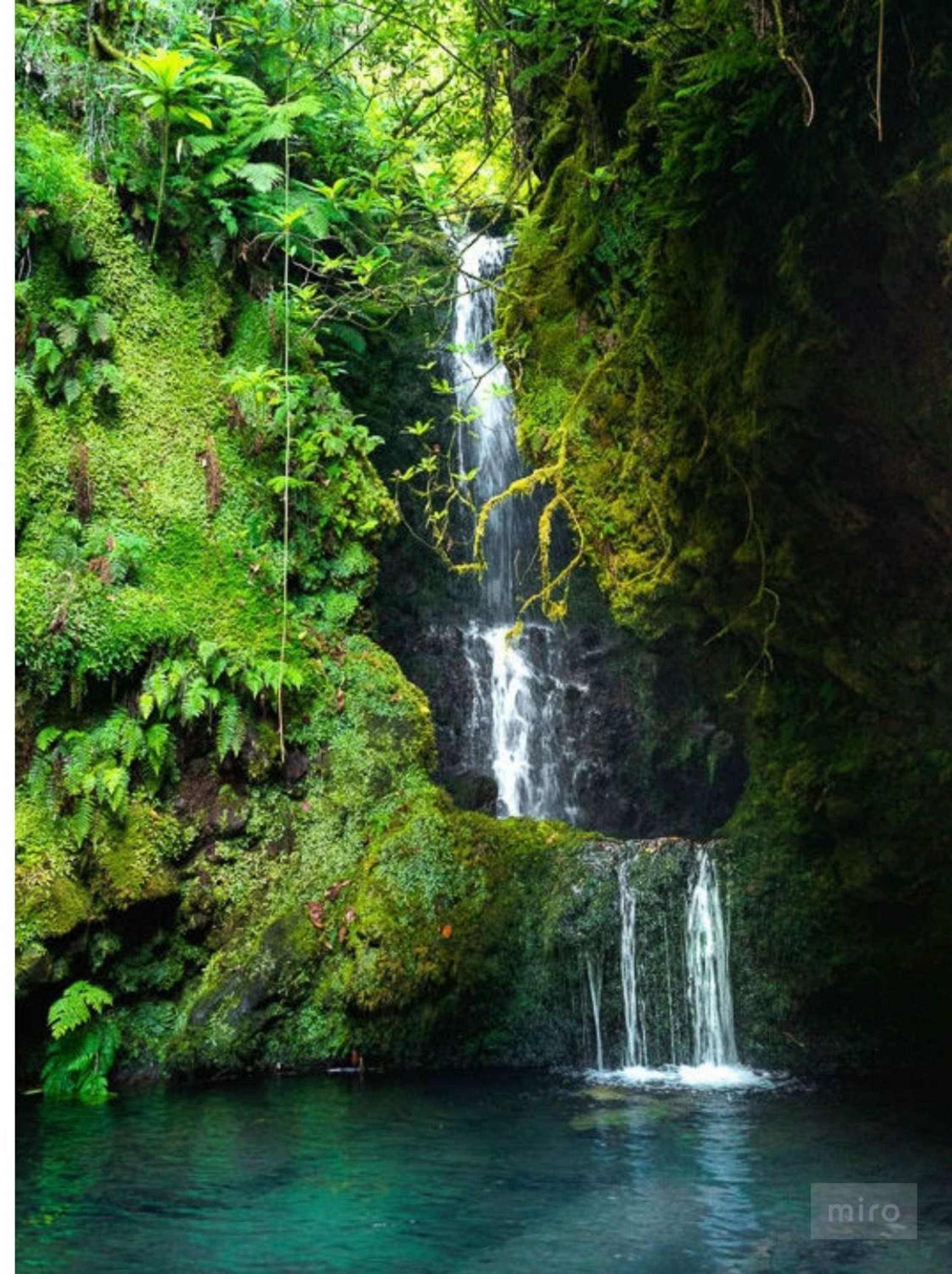
DC4DM

Assigned macro-theme
Water & Forest
island life-blood

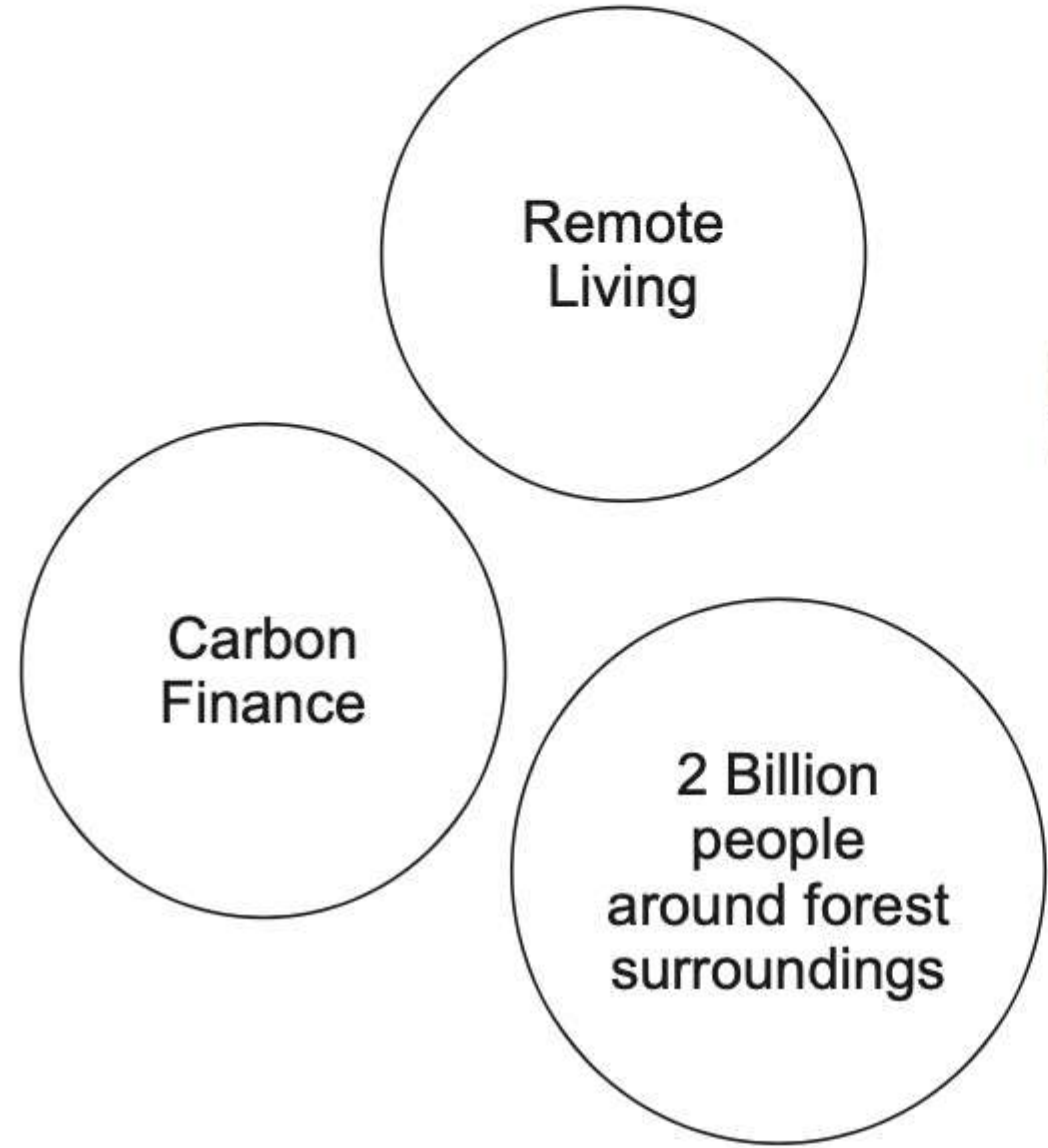
How can we make the local human communities acknowledge the importance of protecting the forest and its ecosystems to make them thrive?

How can water be recognised as a precious product of the forest and its cycles? How should it be managed?

Would it be possible for the local non-human communities to have a say on what is to be decided on the future of the forest?



Horizon Scanning



Smart Living



Unlimited Information; Ecosystem restoration and management



Population growth and food crisis



Madeira



Conservation Tourism



"Conservation Investing"

Smart Forest Communities

Co-existence between Smart Lifestyles & Forest Linked Livelihoods



Slow Living



Gen Z Climate Activists



Forest Megadisturbances

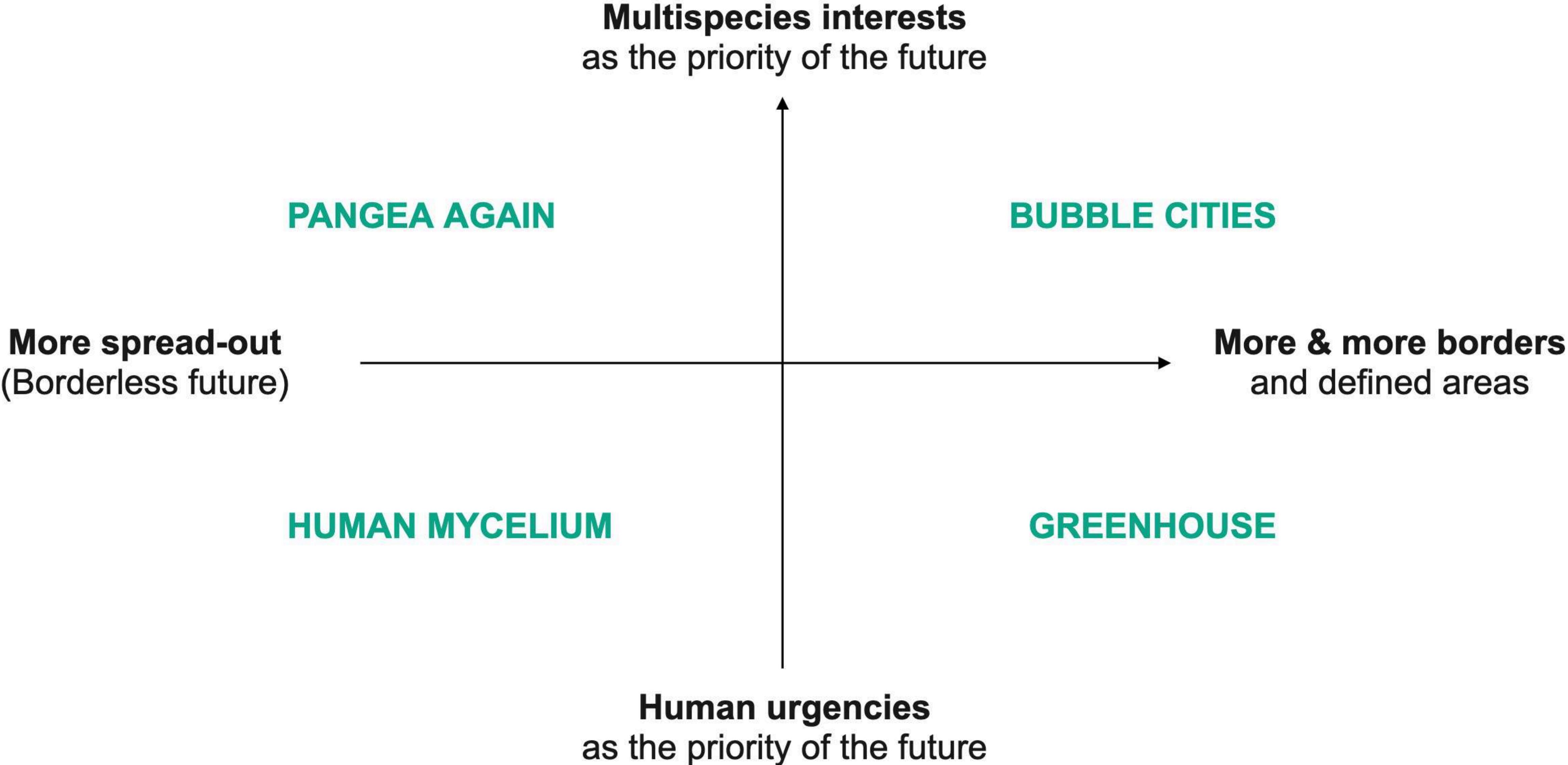
Vision Statement

In 10 years time,
we will **expand the interactions
with other species**
for a **deeper integration of our
surroundings** because such an
interaction is and will be crucial
for coexistence of smart forest
communities.

Focal Question

How might we
**change the interactions
with plants and other species**
for a deeper integration
of our surroundings ?

Polarities



Scenario Matrix

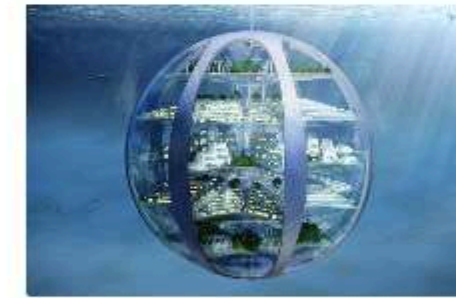
PANGEA AGAIN

Multispecies interests
as the priority of the future

confined living
environments

BUBBLE CITIES

Dark
Cities



"humanity
in a
bottle"

Rewilding

Depaving
the
ground



More spread-out
(Borderless future)

More & more borders
and defined areas

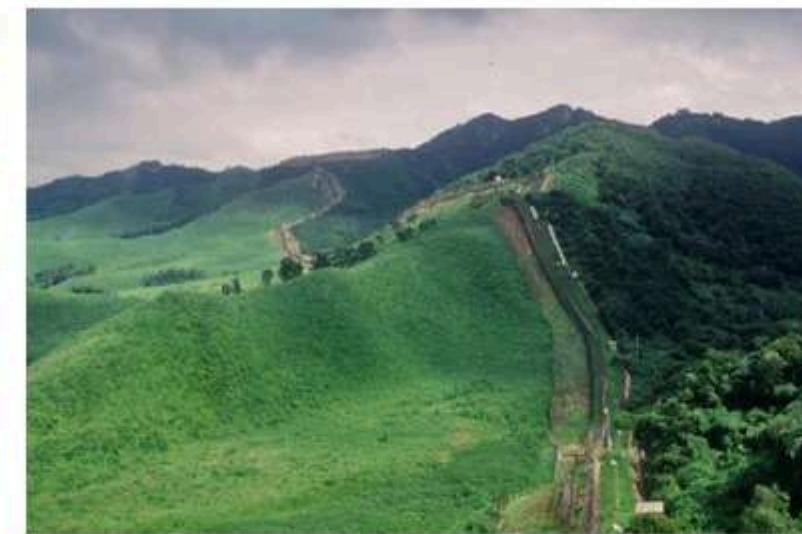
Interact with
other species
using without
prioritising the
their needs



Humans
use all
resources



Human
urgency in
defined
spaces



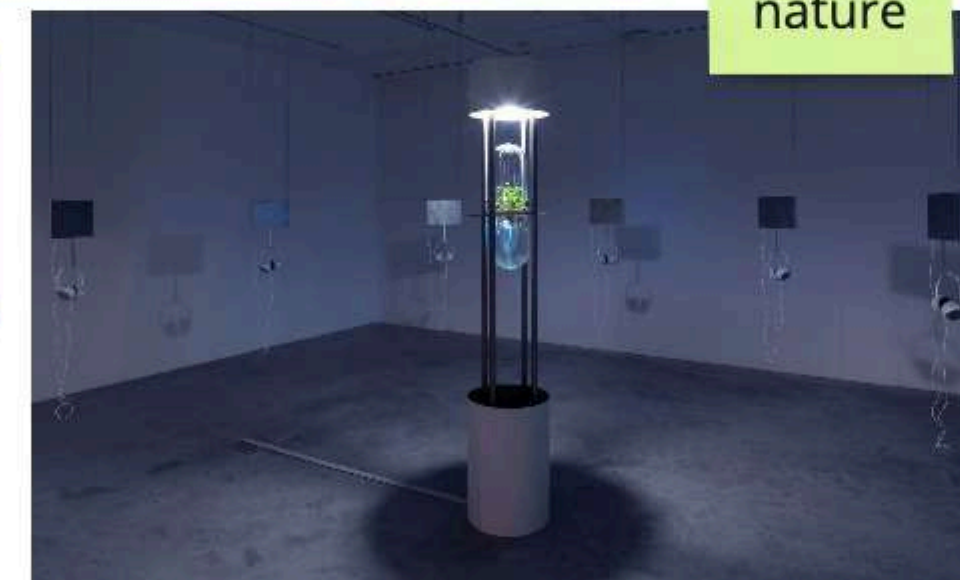
Responding
directly to
needs

fenced-
off
nature

HUMAN MYCELIUM

Human urgencies
as the priority of the future

GREENHOUSE



PANGEA AGAIN

Changing the ways we interact with the other species in a **smart borderless more connected way** while prioritising the multispecies interests.

Multispecies interests
as the priority of the future



Dark
Cities

Rewilding

Depaving
the
ground



More spread-out
(Borderless future)

Multispecies interests
as the priority of the future



BUBBLE CITIES

Humans will create boundaries, **defined spaces and communities for themselves** while understanding the multispecies interests and their priority as well as leaving the priority spaces for them.



Confined living environments

"Humanity in a bottle"

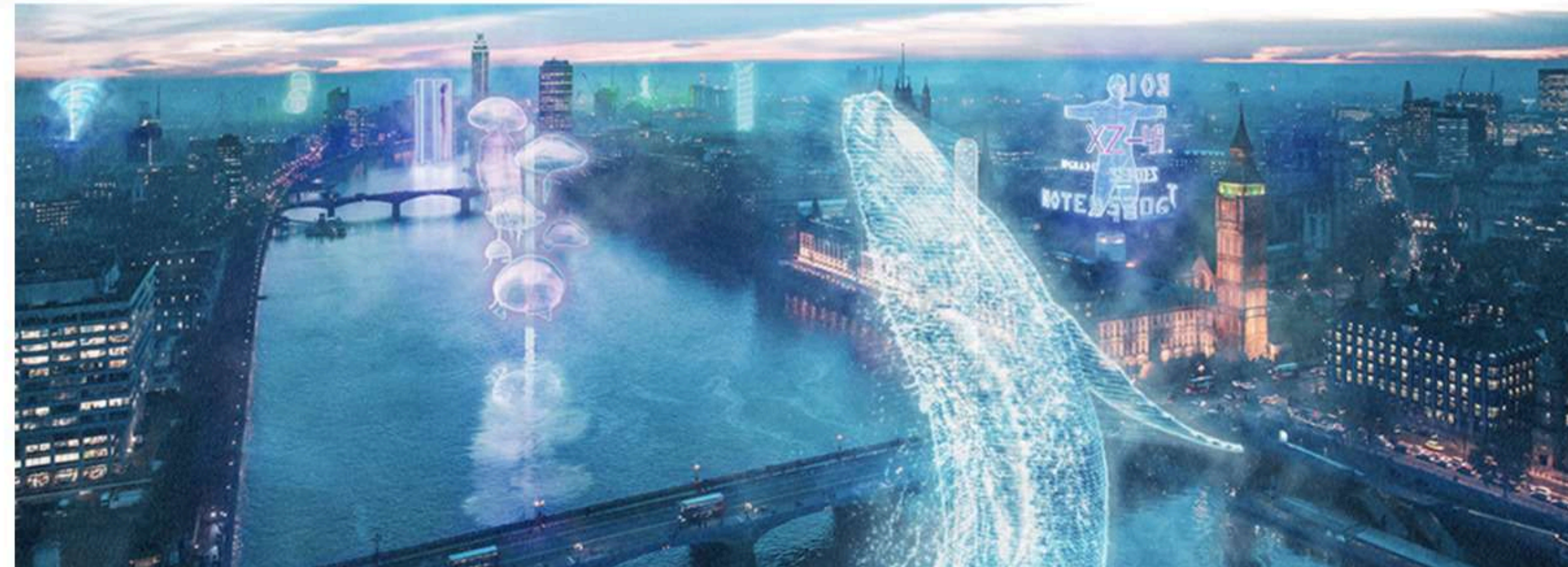
More & more borders
and defined areas

More spread-out (Borderless future)

Interact with
other species
using without
prioritising the
their needs



Humans
use all
resources



HUMAN MYCELIUM

Humans have crossed all the conservancy boundaries and **exploited all the resources**. Nature exists in holographic chambers and all food and water is synthetic.

Human urgencies
as the priority of the future



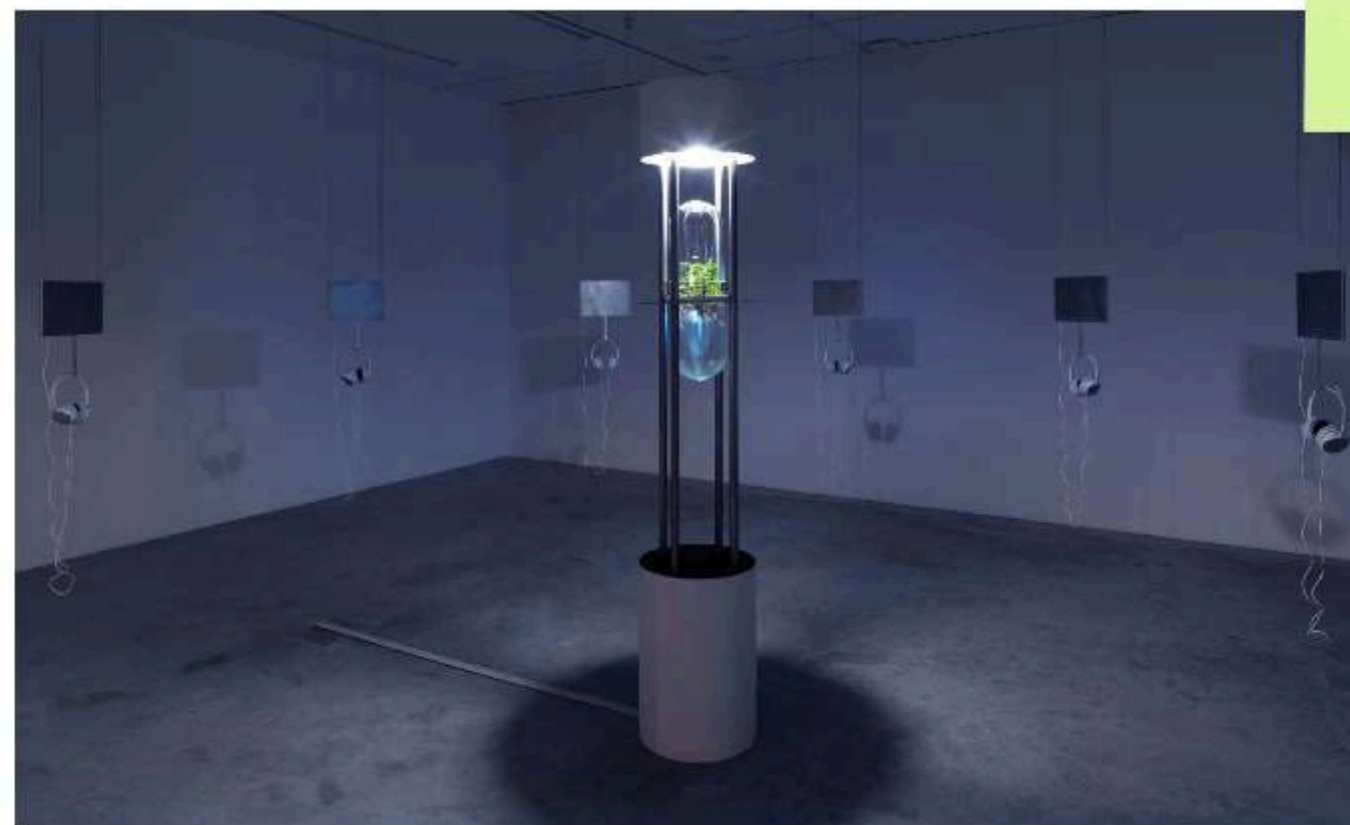
**More & more borders
and defined areas**

Responding
directly to
needs

Fenced-
off nature

Human
urgency in
defined
spaces

**Human urgencies
as the priority of the future**




GREENHOUSE

Intact nature exists only in some well defined areas where human presence is close to none. Outside of those spaces, nature is now gone.


Scenario Selection

PANGEA AGAIN



Dark Cities



Rewilding



Depaving the ground



More spread-out
(Borderless future)

Multispecies interests
as the priority of the future

confined living environments

BUBBLE CITIES



"humanity in a bottle"



More & more borders
and defined areas

Interact with other species using without prioritising their needs



Humans use all resources




HUMAN MYCELIUM


Human urgencies
as the priority of the future



Human urgency in defined spaces



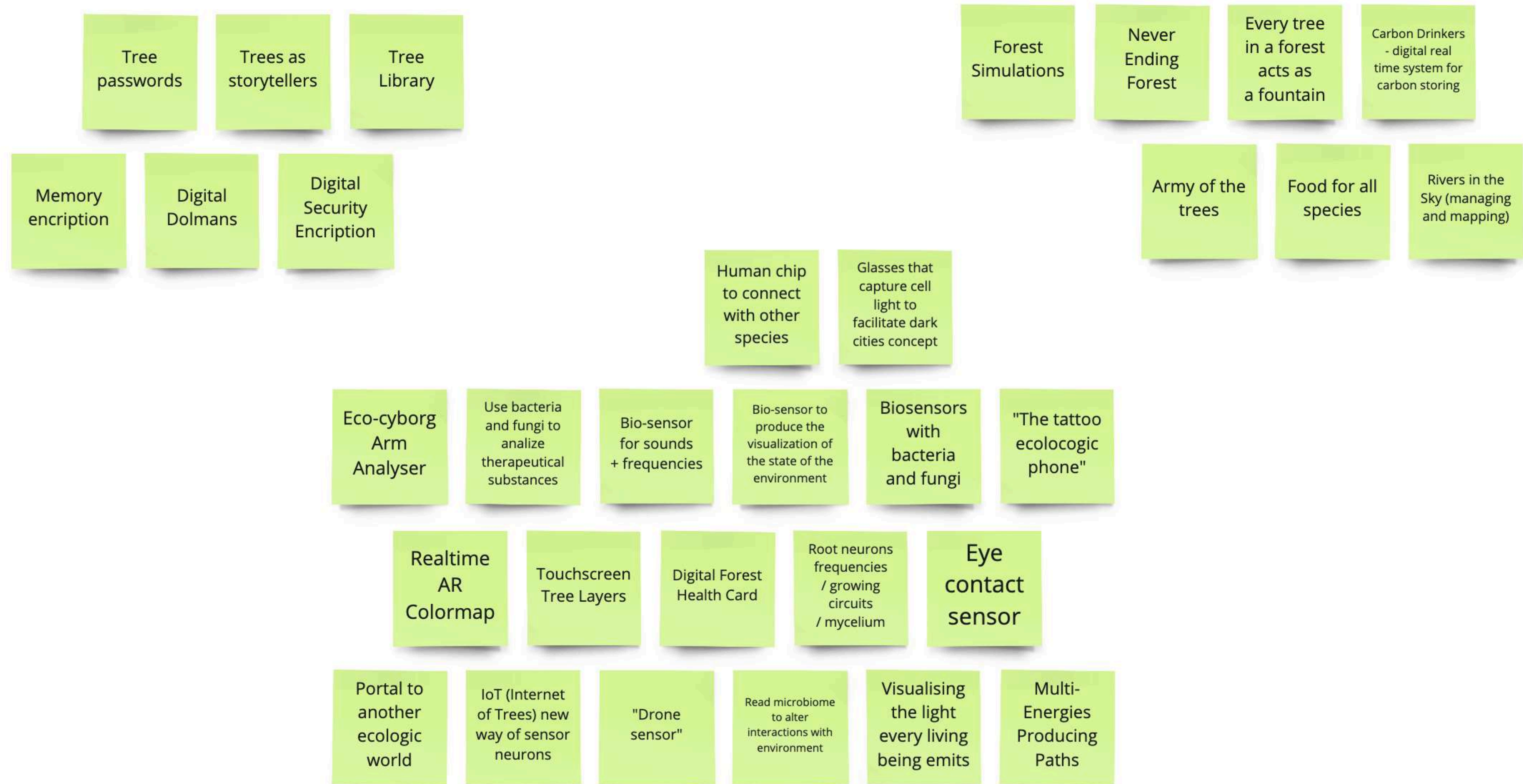
Responding directly to needs



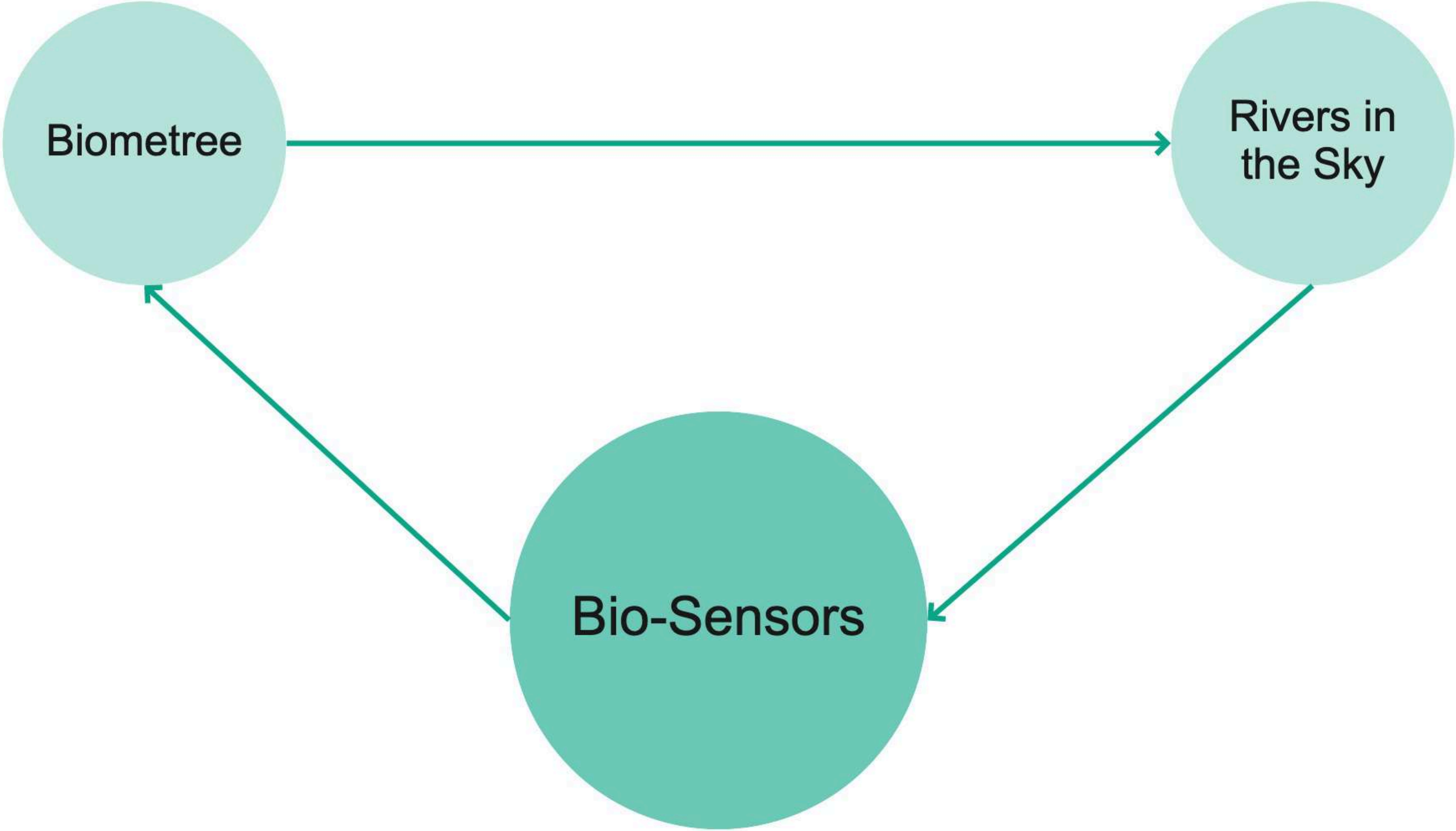
fenced-off nature

GREENHOUSE

Brainstorming



Concept Triangle



Concept 1 - BIOMETREE

Plant Species Biometrics for Encryption

One of the main challenges in encryption is the **creation of randomness and characteristics that are uniquely identifiable codes.**

Plant Biometrics are consistently random, and as a result, observing plant identities is a great source for random data.

But most importantly plants grow and evolve, like a password that changes but still with an encrypted identity.



Research evidence

Why does Cloudflare use lava lamps to help with encryption?

Randomness is extremely important for secure encryption. Each new key that a computer uses to encrypt data must be truly random, so that an attacker won't be able to figure out the key and decrypt the data. However, computers are designed to provide predictable, logical outputs based on a given input. They aren't designed to produce the random data needed for creating unpredictable encryption keys.

To produce the unpredictable, chaotic data necessary for strong encryption, a computer must have a source of random data. The "real world" turns out to be a great source for randomness, because events in the physical world are unpredictable.

As one might expect, lava lamps are consistently random. The "lava" in a lava lamp never takes the same shape twice, and as a result, observing a group of lava lamps is a great source for random data.

Concept 1 – BIOMETREE



What digital maturities will it use?

Plant species biometric encryption using feature hierarchies

NFT (New Forest Tokens)

This will create **encrypted codes and identities for plants**, leading to a new way of conservation investing where we can generate value through the New Forest Token and translate that value into **real world forest conservation restoration and prediction.**

Madeira can be the first New Forest Token Lab and we hope this lab chain will spread beyond the island through all the continents.



Concept 2 - RIVERS IN THE SKY

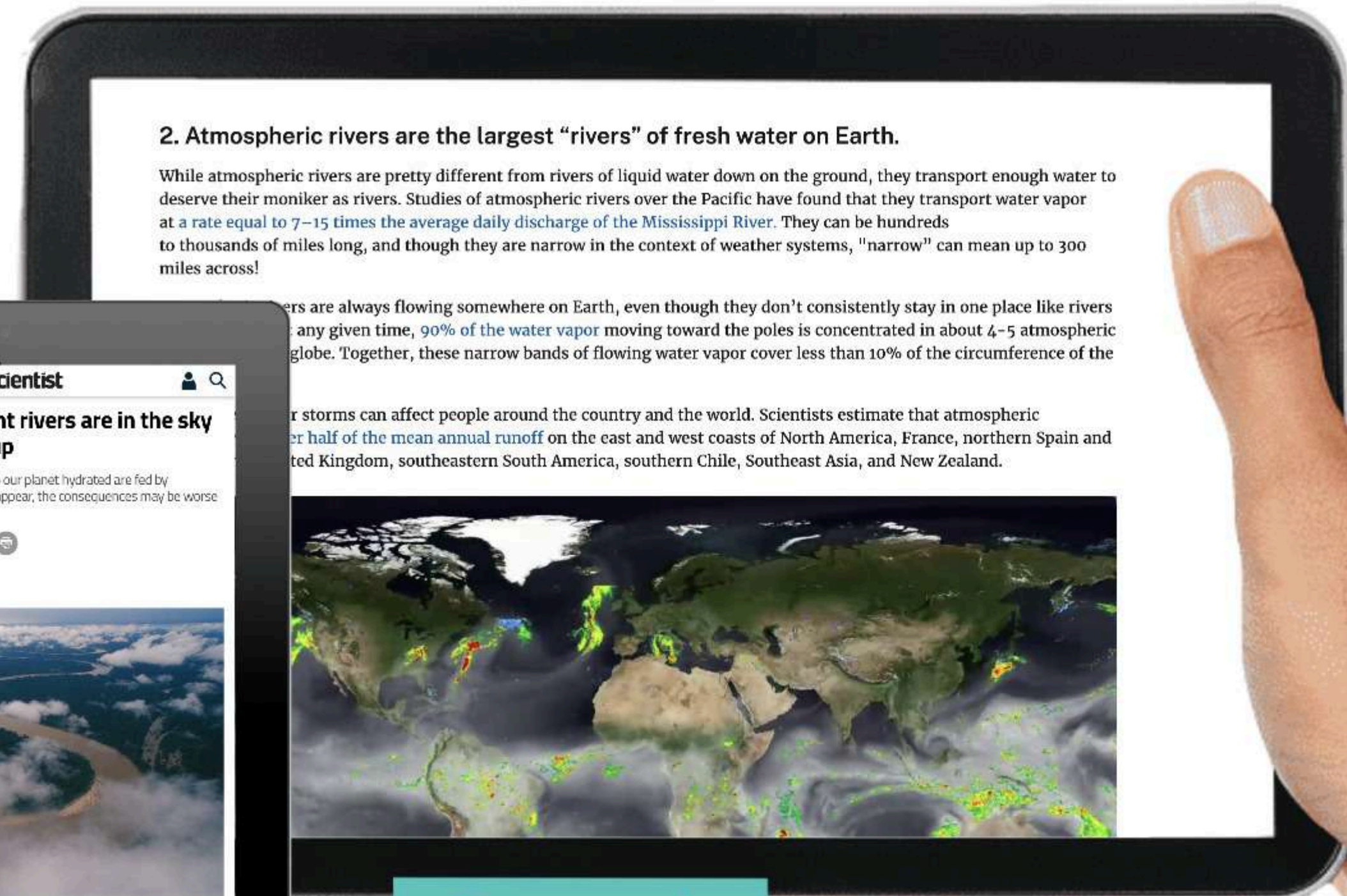
Mapping the river layer above us through simulations

Every tree in the forest acts as a fountain, when all the trees in a forest act together, fountains turns into a river in the Atmosphere. **Atmospheric rivers are the largest “rivers” of fresh water on Earth.**

Imagine a way we are mapping these rivers in a visible way where people start to **embrace not only the rivers they have in land but also the ones we have in the sky.** This will change and expand the way we interacting with these rivers.

Did you know...?

Laurisilva has its own Atmospheric river and Amazon has its own but the interesting thing is the people who benefit from Madeira' Atmospheric river can be the farmers in Australia and people who benefits from Amazons' Atmospheric river can be the farmers in Africa.



Research evidence

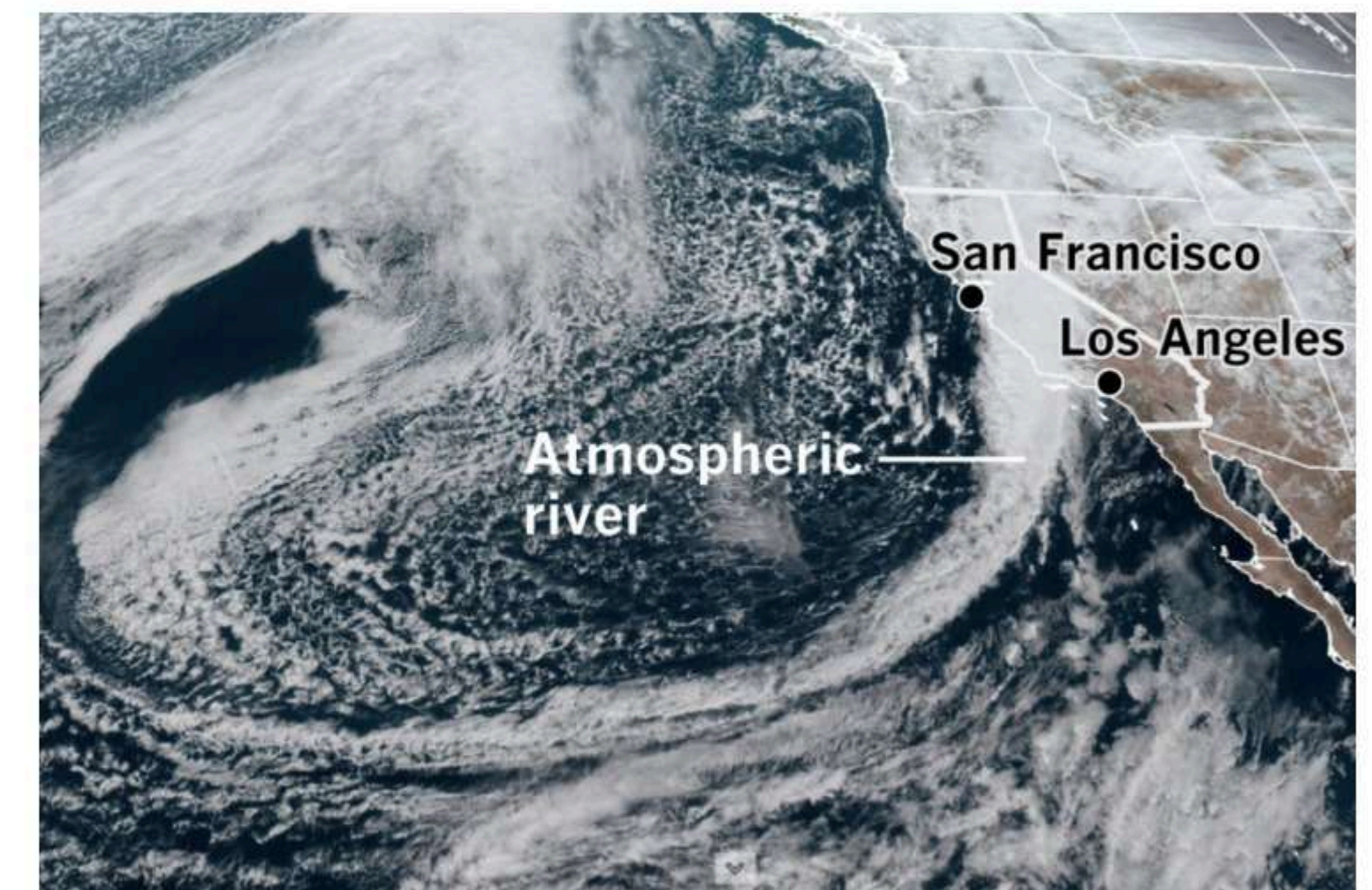
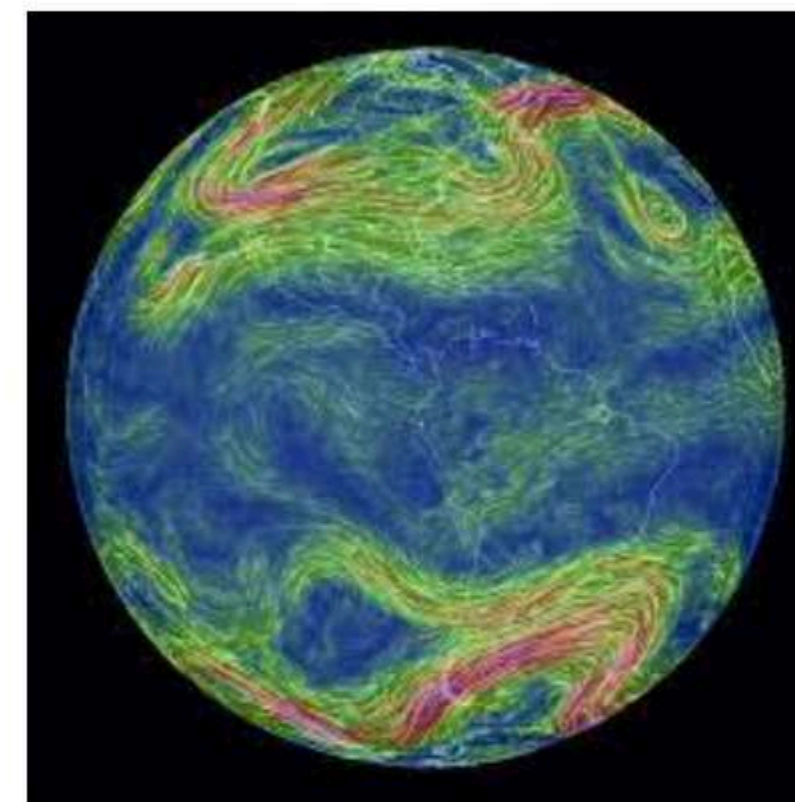
Concept 2 - RIVERS IN THE SKY

*What digital maturities will it use?
(Projected maturities)*

Hyper Simulations
Real time data mapping

This mapping will lead to a **new way to connect people in a borderless ecosystem.**

This can generate value through data and prediction, where it can apply to agriculture as well as disaster mitigation in a large scale.
Imagine a future where people plan and forecast their agriculture not only based on rivers on the land but also based on the rivers in the sky.



Concept 3 - **BIO-SENSORS**

Understanding the eco-system through self growing sensor networks

Plant biologists have discovered that when a leaf gets eaten, it warns other leaves by using some of the same signals as animals. The network is starting to unravel a long-standing mystery about **how different parts of a plant communicate with one another.**

We think this can lead to a **new system design** that starts generating more data about plant species and the eco system they belong to in order to **change the interactions** we have with them.



Research Evidence

Living Fungal Electronic Devices Made of Mycelium or Composites

Download PDF Copy

Request Quote



By [Reginald Davey](#)

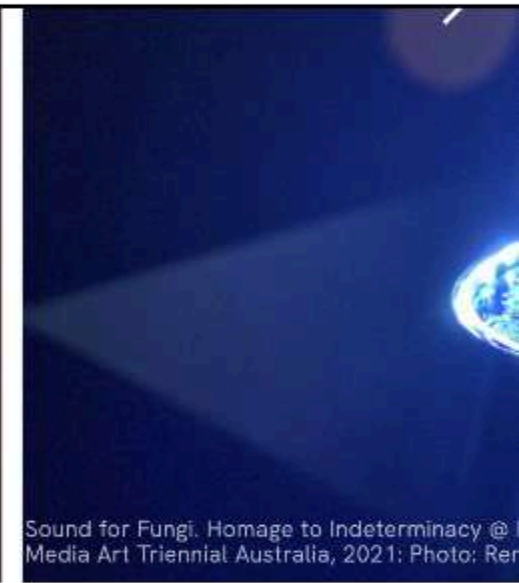
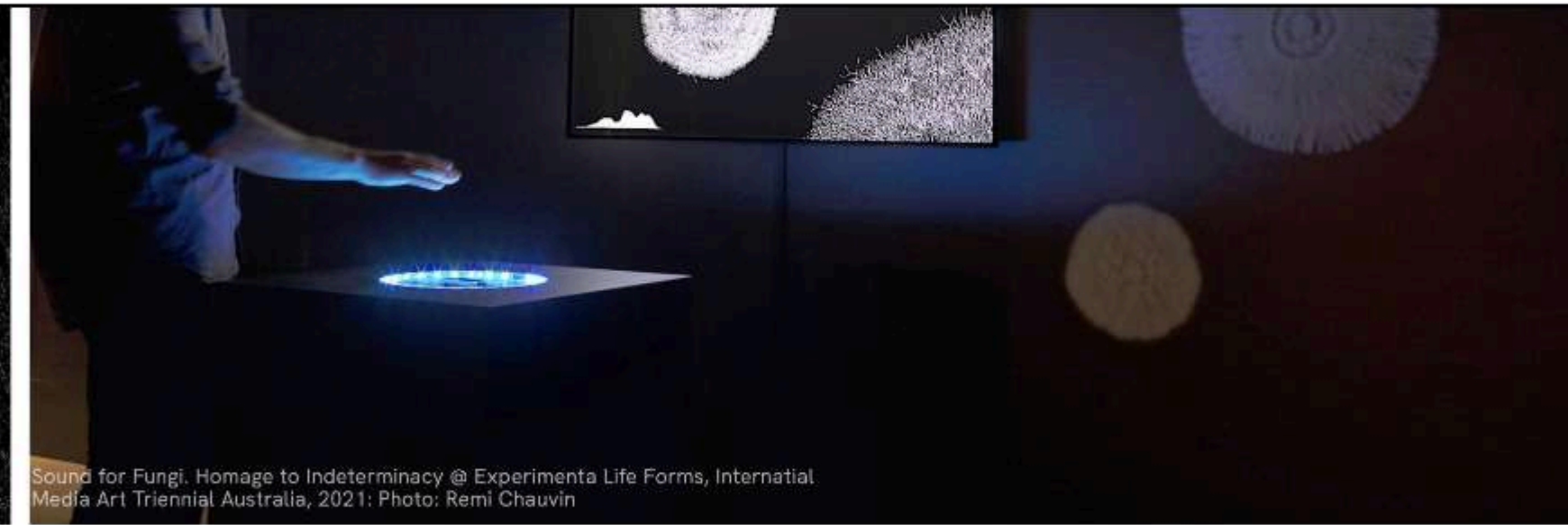
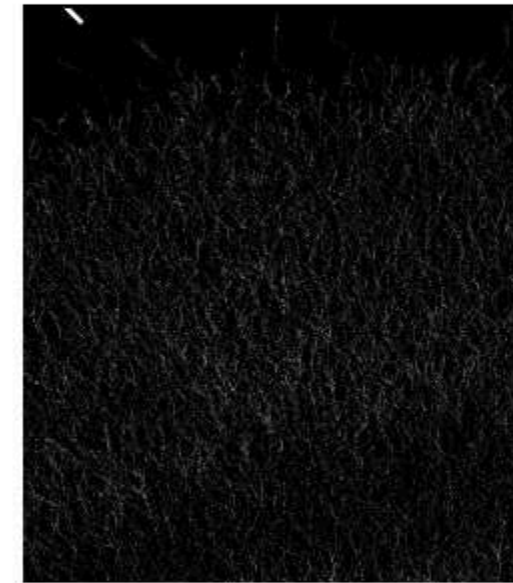
Nov 30 2021

Reviewed by [Skyla Baily](#)

Flexible electronics are a technology that is growing in popularity due to its potential applications in a variety of fields such as sensors, medical devices, and soft robotics. To explore the possibilities of manufacturing devices from pure mycelium or mycelial composites, a paper has been published in [arXiv*](#).

Theresa Schubert

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Sound for Fungi. Homage to Indeterminacy @ Experimenta Life Forms, International Media Art Triennial Australia, 2021. Photo: Remi Chauvin

Sound for Fungi. Homage to Indeterminacy @ Experimenta Life Forms, International Media Art Triennial Australia, 2021. Photo: Remi Chauvin

Chapter

PDF Available

The Potential of Plants and Seeds in DNA-Based Information Storage

July 2017

DOI: [10.1007/978-3-319-59090-5_4](#)

In book: [Understanding Information](#) (pp.69-81)

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Sound for Fungi. Homage to Indeterminacy

Sound for Fungi. Homage to Indeterminacy is a generative video that simulates hyphae's growth and via a hand tracking sensor allows people to interact with these. Thus, a visitor can take on the role of a sound frequency modulating the hyphae growth in real-time and move through the network. The multiplicity of fungi becomes tangible through being able to change perspective in a 3D environment and fluidly shift from a macro view to a cellular level opening up fragile topologies made of nodes, connections and their environment.

Plant and fungus communication via mycorrhizal networks

From Wikipedia, the free encyclopedia

Plants and fungi communicate via [mycorrhizal](#) networks with other [plants](#) or [fungi](#) of the same or different species. Mycorrhizal networks allow for the transfers of signals and cues between plants which influence the behavior of the connected plants by inducing [morphological](#) or [physiological](#) changes. The chemical substances which act as these signals and cues are referred to as infochemicals. These can be [allelochemicals](#), [defensive chemicals](#) or [nutrients](#). Allelochemicals are used by plants to interfere with the growth or development of other plants or organisms, defensive chemicals can help plants in mycorrhizal networks defend themselves against attack by pathogens or herbivores, and transferred nutrients can affect growth and nutrition. Results of studies which demonstrate these modes of communication have led the authors to hypothesize mechanisms by which the transfer of these nutrients can affect the [fitness](#) of the connected plants.

Plants communicate distress using their own kind of nervous system

Model mustard plant uses the same signals as animals to relay distress

13 SEP 2018 · BY [ELIZABETH PENNISI](#)

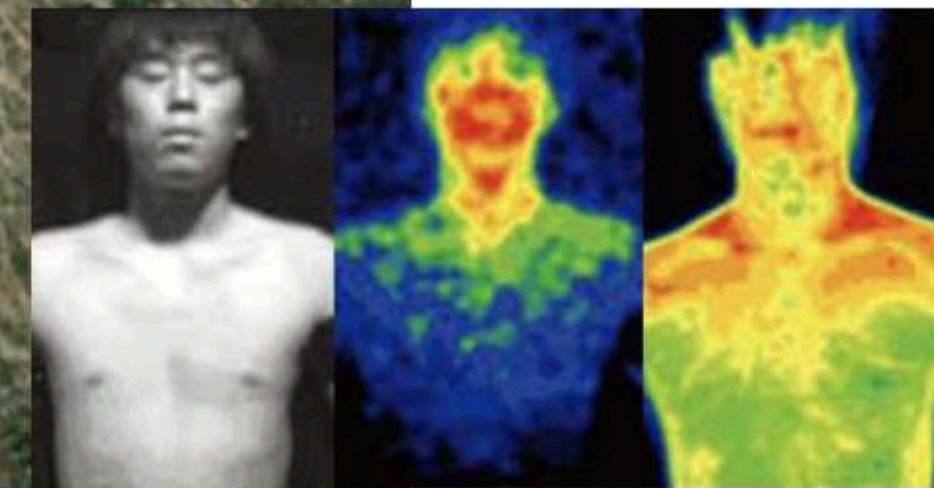
BIO-SENSORS

Store your data, Nature's way

Grow Your Own Cloud

Blomstersk
Værnedamsvej 3
Frederiksberg Cph

30.0



Control 1 3 5 kHz

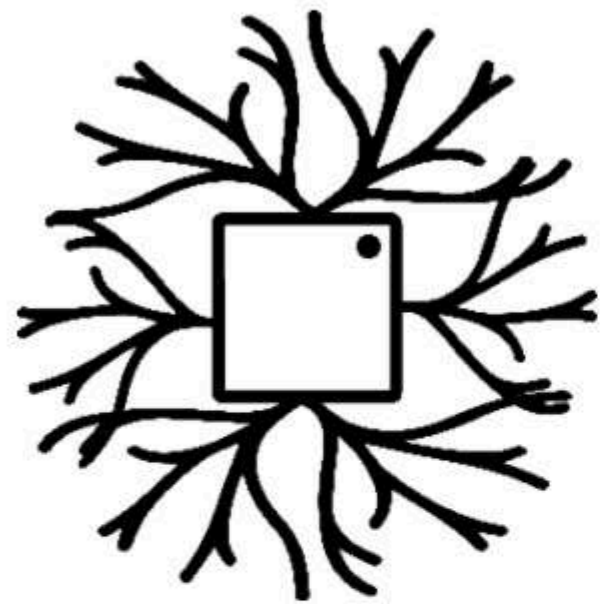
Effect of sound waves on *B. cinerea* mycelial growth. Agar disks (5 mm in diameter) of *B. cinerea* were placed in the center of Petri plates and treated for 5 days with sound waves of the frequencies indicated.

Concept 3 - BIO-SENSORS

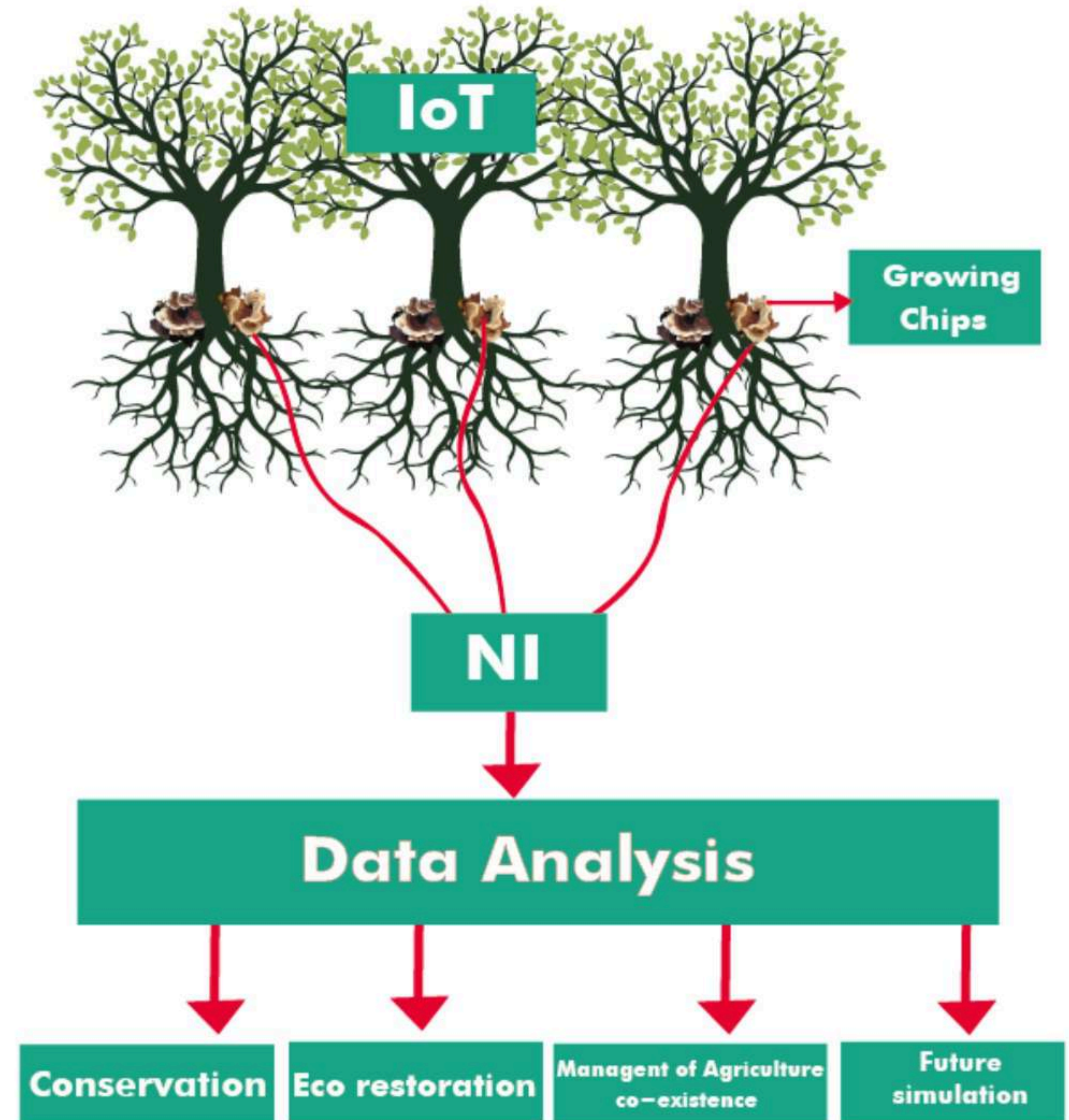
What digital maturities will it use? (Projected maturities)



IoT (Internet of Trees) - The internet of trees, or IoT, is a **system of interrelated plants, mycelium and other natural organisms with sensors and processing ability** and other technologies that connect and exchange data with other species and ecosystems.



NI (Natures Intelligence) - Natures intelligence is the **simulation of plant and other species intelligence** processes by machines, especially computer systems through **bio networks**. Specific applications of NI will include mycelium and fungi as the medium of networks, tree language processing, frequency recognition and root simulations.



BIO-SENSORS

*How does it work with the **start-up**?*

After gathering the data through our projected maturities, we can **simulate a whole world of a new layer under the plant species** and this can be a new parallel digital world like Metaverse.

(Roota-verse - the parallel world below us)

So the system design will be generated around this parallel world where stats and predictable data can generate value.

Certification system can be another business model to generate capital and value.

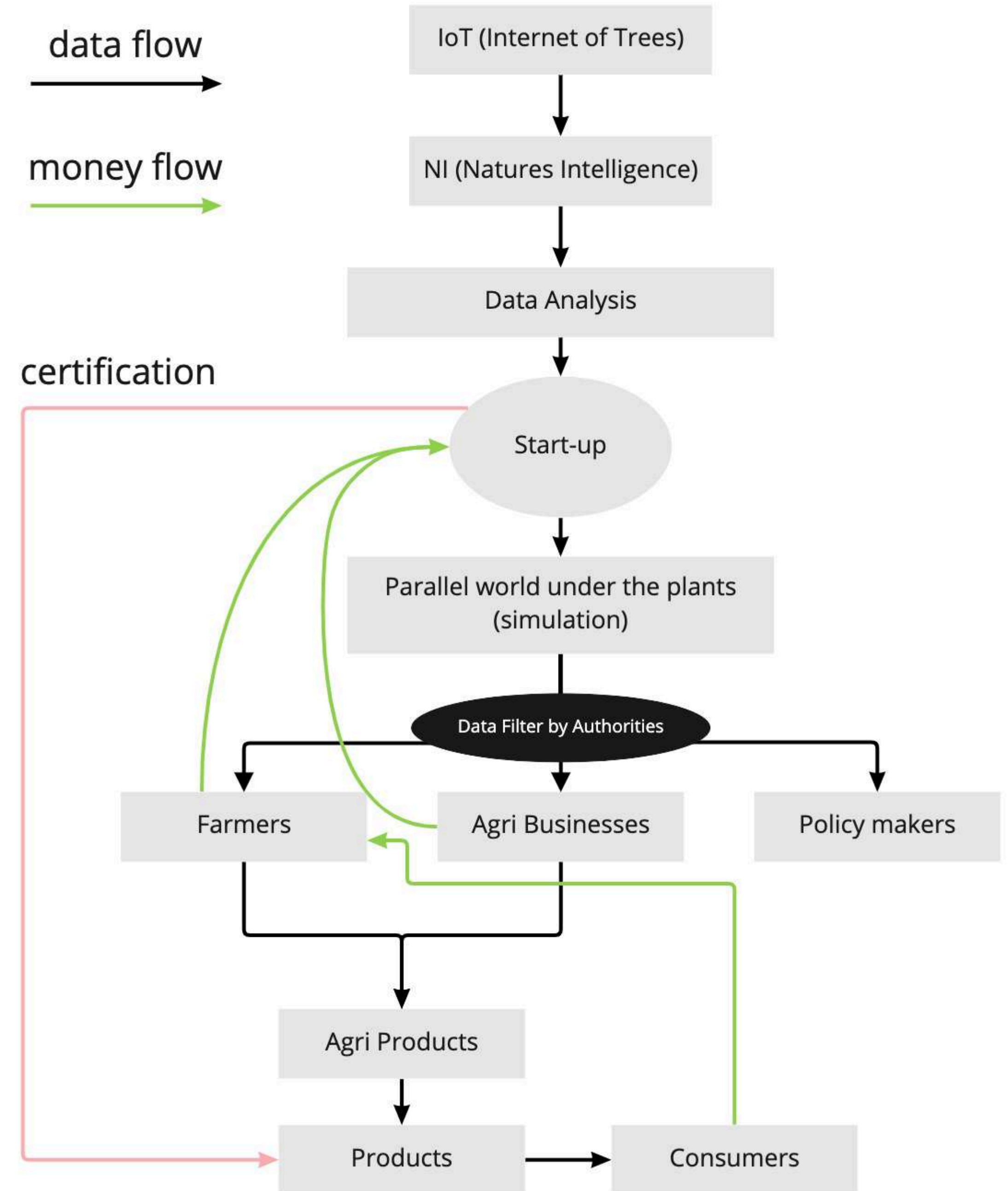


BIO-SENSORS

How it connects with the **Smart Forest Community** ?

This will change the way we connect with other species prioritising their needs in a smart-way.

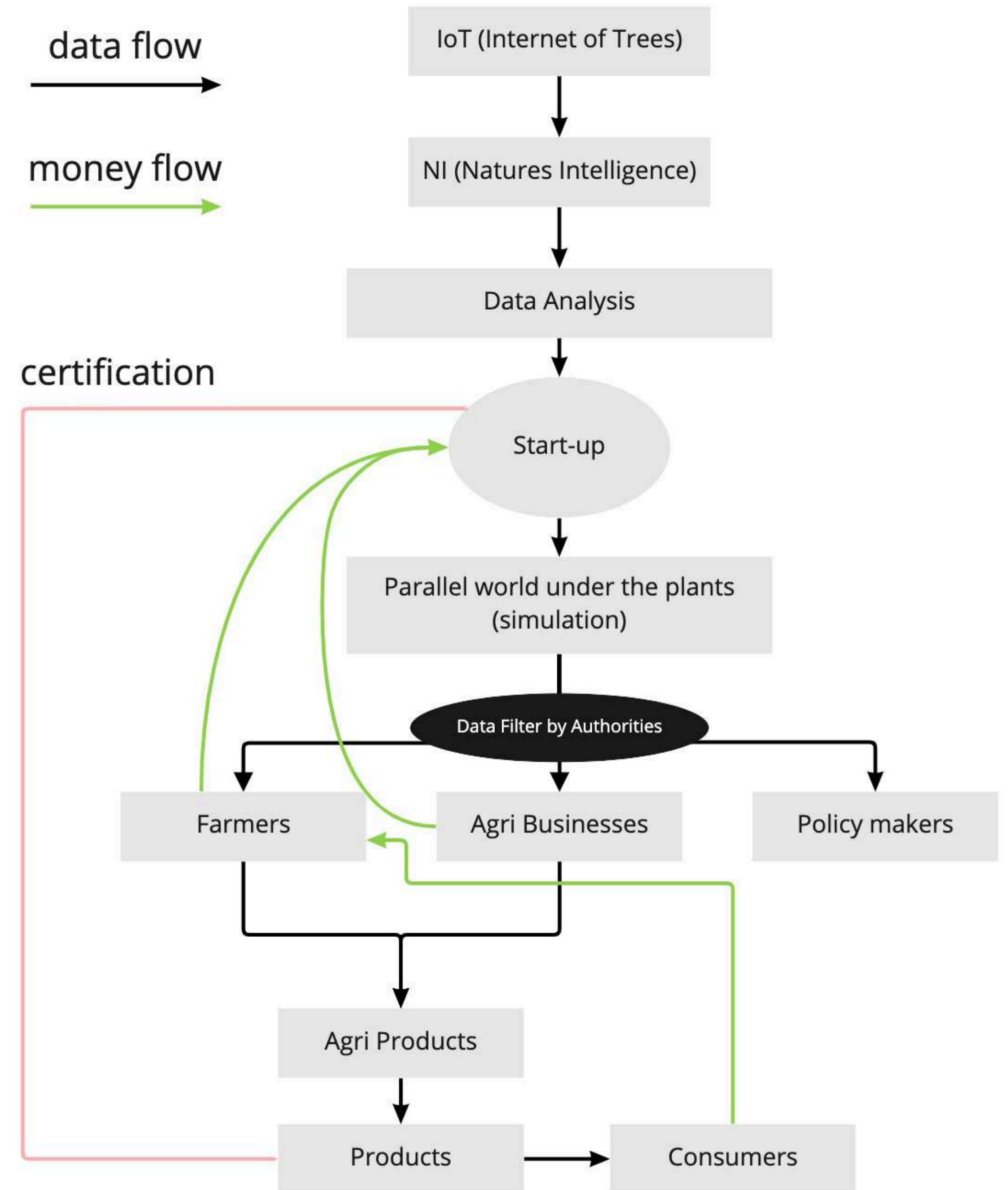
E.g. **Once we get the data communities can take decisions** in their agriculture while **respecting the priorities of plants and their soil.**



BIO-SENSORS

Effects on Agriculture

- restoring degraded parts of the landscape;
- enhancing productivity on the most fertile land;
- integrating different production systems such as livestock, crop, tree production or watershed management, into the same landscape;



BIO-SENSORS

How it connects with *Feeding Madeira*

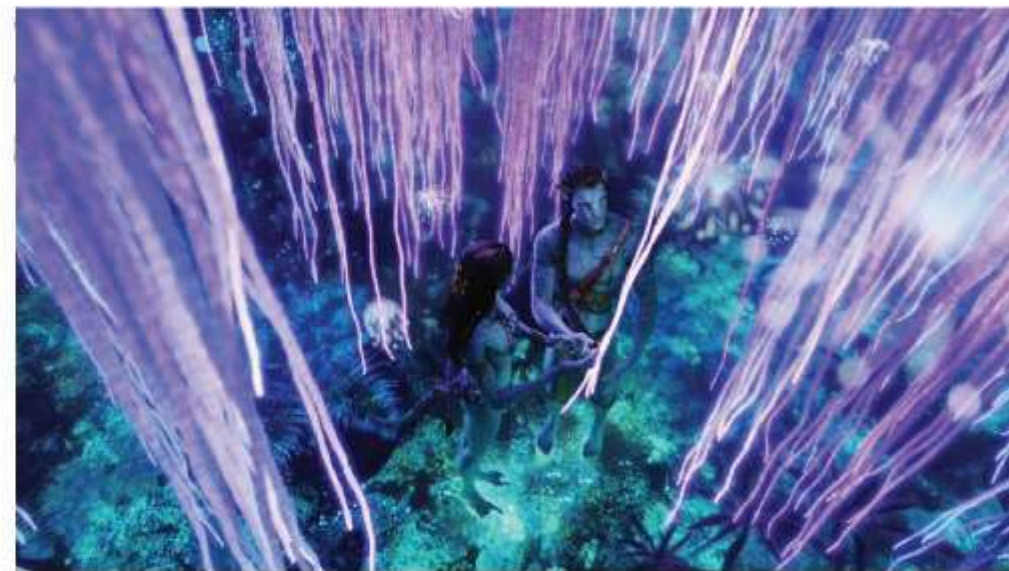
Madeira can be the best pilot project to create this agriculture based on smart forest community. We are imagining a future where **farmers of Madeira take agricultural decisions based on other species interests** and **people buy agricultural products that respected the interests of nature over human urgency.**



IoT Times

I CAN'T STAND THE PAIN ANYMORE, I'M GOING TO KILL MYSELF. -

Polystichum maderensis



... years ago, in April 2013, Canada's La Presse—published in French since 1884 in Montreal—began the most innovative project to date: a complete multimedia newspaper, which offers a complete multimedia experience created for tablets, every morning from 6 a.m. to 6 p.m.

... saw the negative evolution of both sites. The print edition took a radical bet on a new type of digital newspaper. They had a very clear aim: to move advertisers from the print edition to the digital platform in as little time as possible. They wanted to transform their business but keep a daily newspaper instead of in print—as the focal point. After, La Presse's daring plan has borne fruit. It has claimed 251,000 daily users of the new digital edition by Friday in April, hitting 268,000 at the end of the month. The average reader spent an average of 40 minutes on the digital edition, 60 minutes on Saturdays. The plan, to get rid of the print edition, moved forward. La Presse stopped publishing the print edition back in 2009. Now it is just a digital newspaper on Saturdays.

... tion is also happening: in April 2013, La Presse's ad income was already down 10%. If we add online and mobile advertising, which 88% of the paper's total ad revenue comes from, advertisers have launched new ad campaigns, on the tablet version.

The water's murmur is the
voice of my father's father.

Chief Seattle

Thank you

Team Bis-Bis