Panos Ilias (Belgium)

funded by European Commission

Breakout Session I: 'Lighthouses and living labs'
EIP-AGRI brokerage event
'Get involved in the EU Mission: A Soil Deal for Europe'

A user-centered innovation for Soil management in the new CAP

8 June 2022
EIP-AGRI Brokerage event 'Get involved in the EU Mission: A Soil Deal for Europe'.

envision

EJP SOIL
STEROPES

JUST CONNECT
boer & data

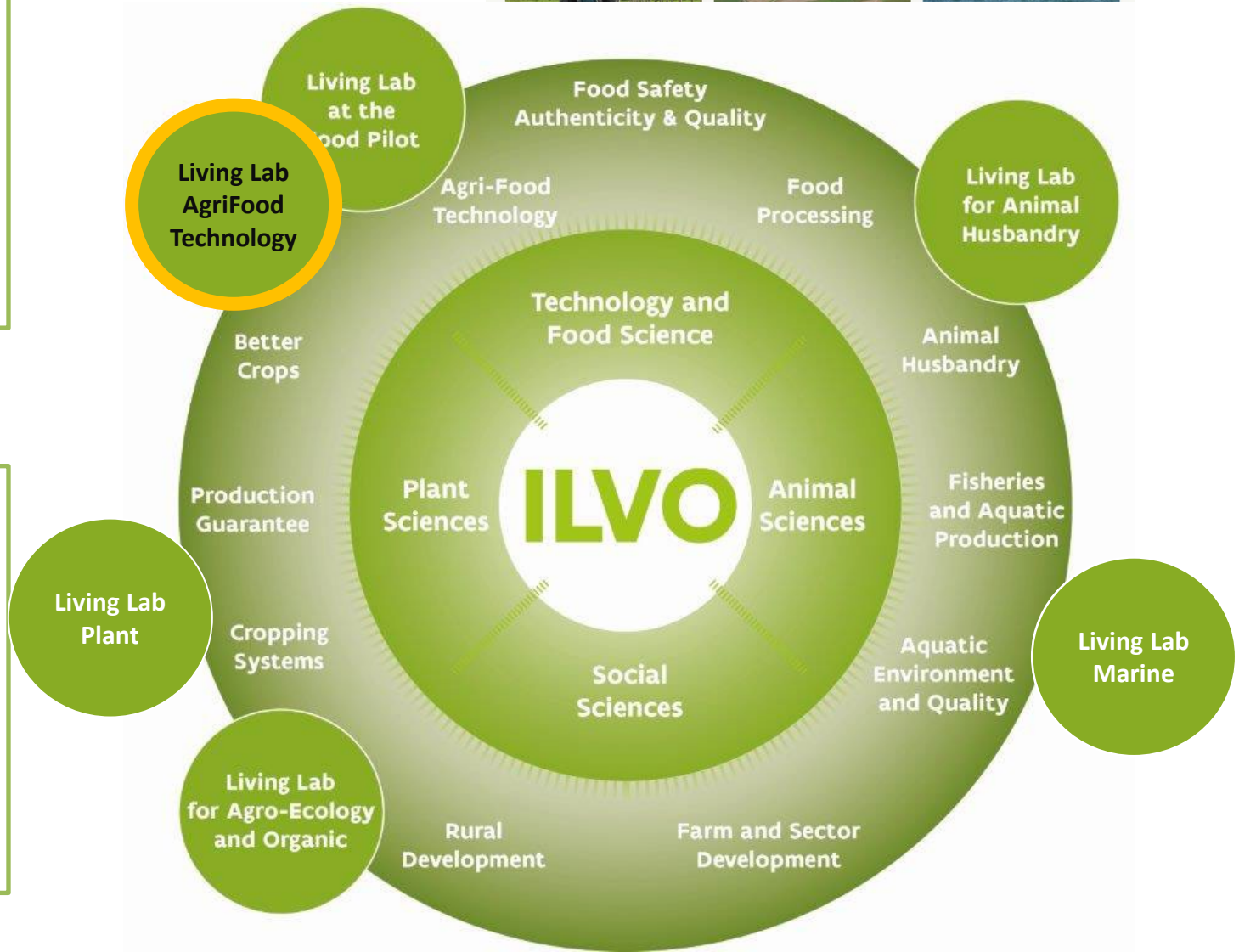
ILVO
Flanders Research Institute for Agriculture, Fisheries and Food

ABOUT ME:

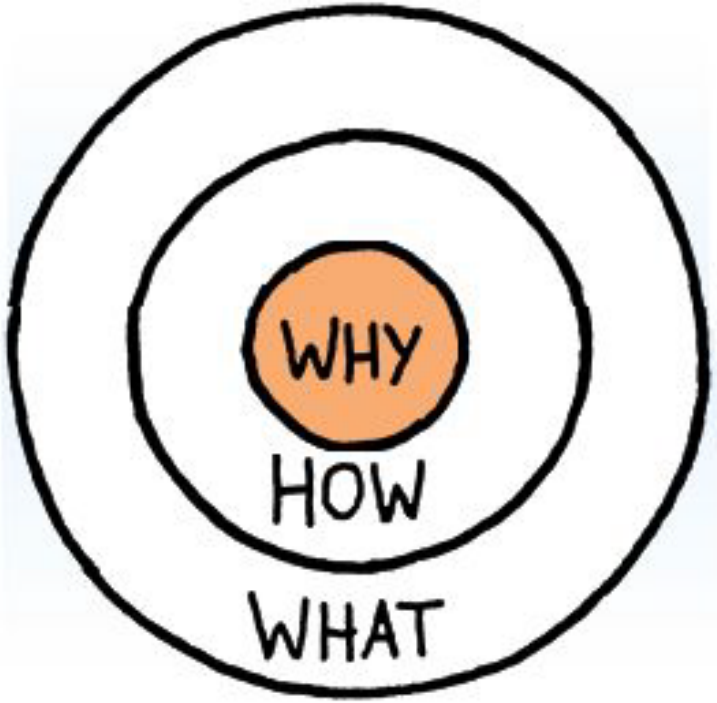
- Researcher at ILVO, PhD GeoAI
- Smart Farming, Data Sharing, Data Spaces & Platforms
- Support our ecosystem to bring valuable products for the end-users
- BDVA TF.AgriFood Leader

ABOUT ILVO:

- Flanders Research Institute for Agriculture, Fisheries and Food.
- Linked to the Flemish government.
- Research line: Healthy crops, animals and soils for healthy food.
- “Living labs” as an instrument



Let’s start with the why?



Why do we need
End User Centric Innovation?

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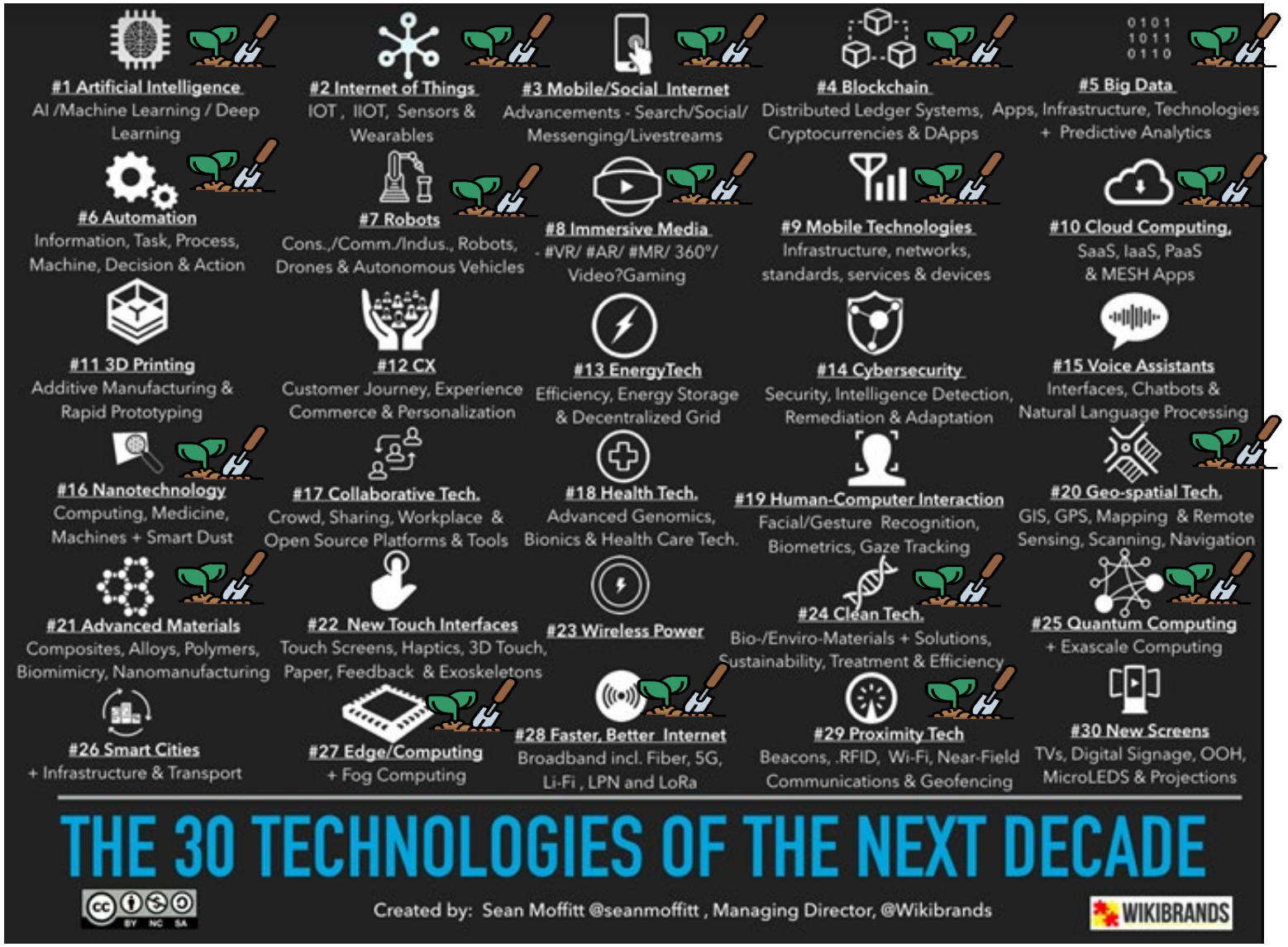
Technological industry keep up with high grow rates



Agricultural applications!!!

The Space Sector and … Mr. Moore

Exhibit 3: The space sector already plays a role in many non-space industries.

Energy and mining
Monitoring methane emissions, informing development of sustainable energy services, providing imagery of mining sites

Agriculture
Monitoring soil, rainfall, and snow cover to inform irrigation plans, predictions of agricultural output, etc.

Pharmaceuticals
Conducting experiments leveraging microgravity (e.g., protein crystallization) to improve pharmaceuticals

Telecom
Providing broadband internet to planes and remote areas, including emergency backup coverage

Automotive
Collaborating on lunar rovers, enabling autonomous driving and in-car entertainment

Transportation
Tracking moving shipping containers, providing positioning and navigation information, monitoring temperature of sensitive containers and road congestion

Consumer
Experimenting in space under specific aerodynamic conditions to inform design and manufacturing of sneakers, soccer balls, etc.

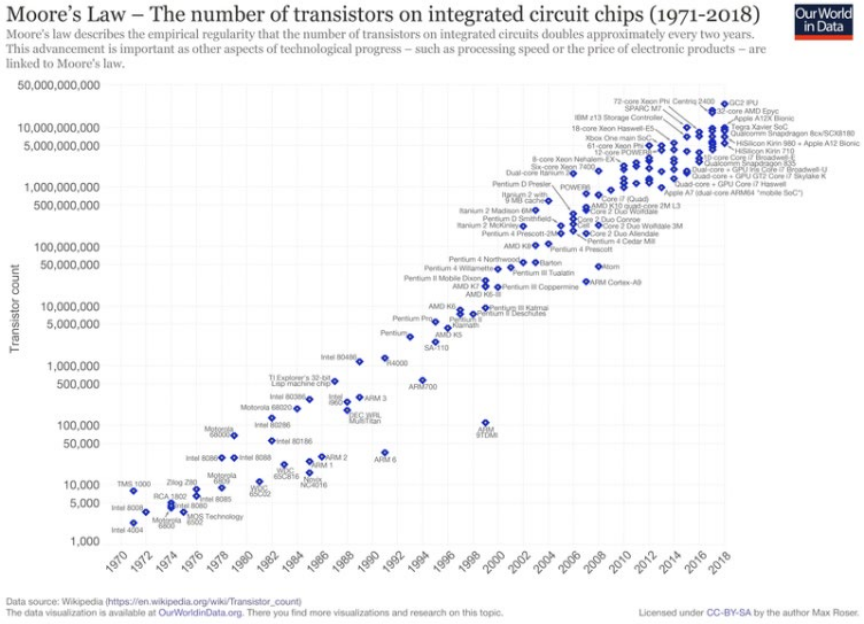
Finance
Leveraging commodities geolocation tracking (e.g., vessels) to inform trades

Insurance
Using radar satellite-based flood monitoring capability to inform risk management and tailor solutions

Tech
Developing in-space computing offerings

Media
Filming movies on International Space Station

Source: Public press



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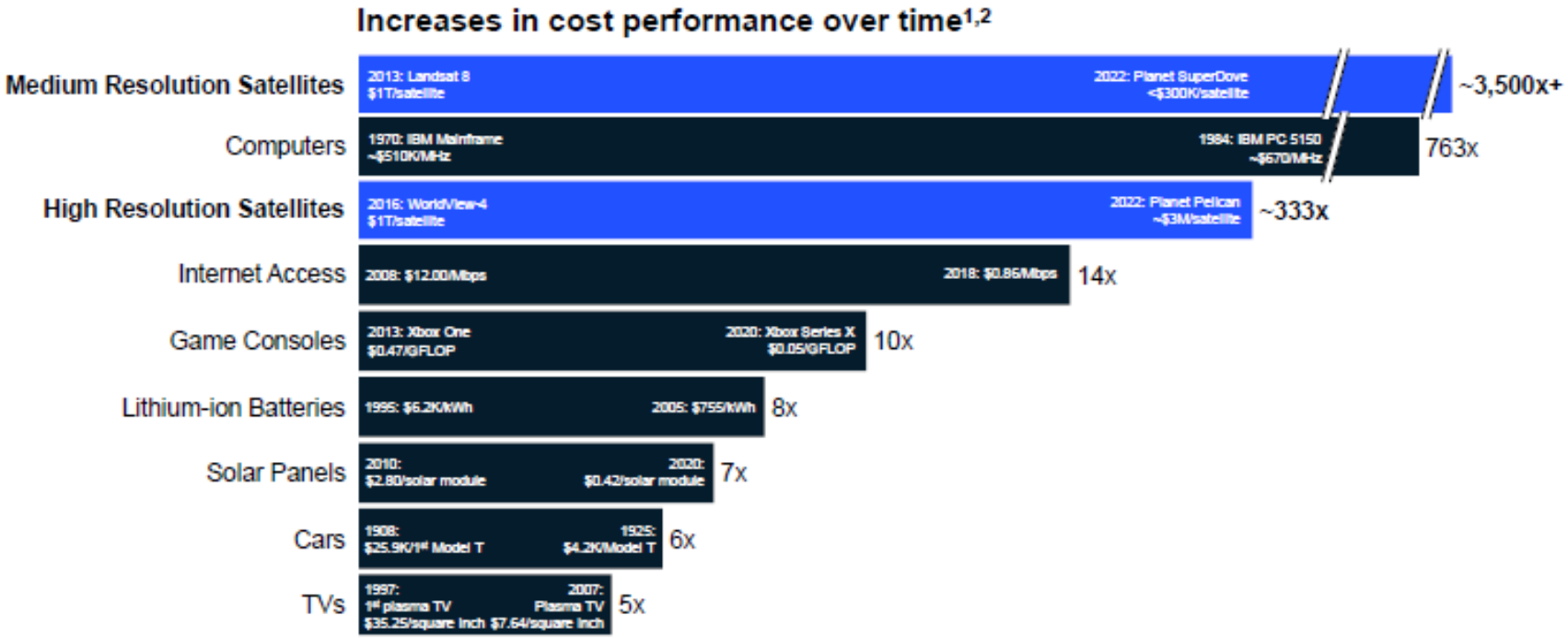
The Space Sector and … Mr. Moore

Exhibit 2: Satellite cost performance improvements within a 15-year time horizon far surpass those seen in most other technologies.

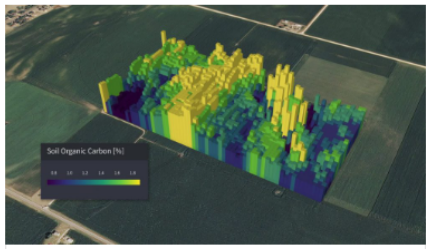


1. Prices are converted to 2022 dollars
2. Comparisons reflect products with similar end-markets; however, they are not meant to construe perfect substitutes. Products may not be comparable on other factors (eg, satellites may not be comparable on data rates, signal to noise ratio, lifetime – however, increase is notable even on other measures such as dollar per bit)

Source: Public press; CPI Inflation Calculator; Center for Strategic and International Studies; National Renewable Energy Laboratory; NCTA; American Enterprise Institute; expert interviews; McKinsey analysis

Within this framework Earth Observation based services appears as:

A promising investment to replace soil sampling and support soil management in the New CAP



Cloud Ag visualization showing variable soil carbon levels across a single field. Image credit: Cloud Ag

Startup Spotlight: Cloud Ag seeks to replace soil sampling by measuring carbon from the air

December 1, 2020 Jack Ellis

The agriculture industry is slowly but steadily switchin on to carbon sequestration, its potential environmenta impact, and the opportunity for it to provide additiona income streams for farmers.

PROJECT PLANET

Scientists say this new satellite is a game changer for tracking how our environment is changing

By Danya Gainor

Updated 1731 GMT (0131 HKT) April 15, 2022

Success Stories

Copernicus Sentinel-2 data to estimate soil organic carbon in croplands

03 May 2019

One of the main threats for soil degradation is the decline of soil organic carbon—the Copernicus Sentinel-2 satellites are currently being exploited to monitor soil conditions in croplands, in turn supporting the Common Agricultural Policy of the European Union.

EUROPEAN UNION

EU MISSIONS SOIL DEAL FOR EUROPE

Soils in the new CAP

- Soil management is recognised in the new CAP as an important element to improve farm sustainability in economic and environmental terms:
  - Specific objective 5: **"Foster sustainable development and efficient management of natural resources such as water, soil and air".**
- Higher environmental ambition of the new CAP is channelled e.g. via
  - stronger requirements for conditionality
  - new GAEC 2: preservation of carbon rich soils such as peatlands and wetlands
  - eco-schemes
  - agri-environment-climate measures
  - farm investments
  - Farm Sustainability Tool for Nutrient Management (FaST)

Research and innovation recognised as an enabler for achieving CAP objectives

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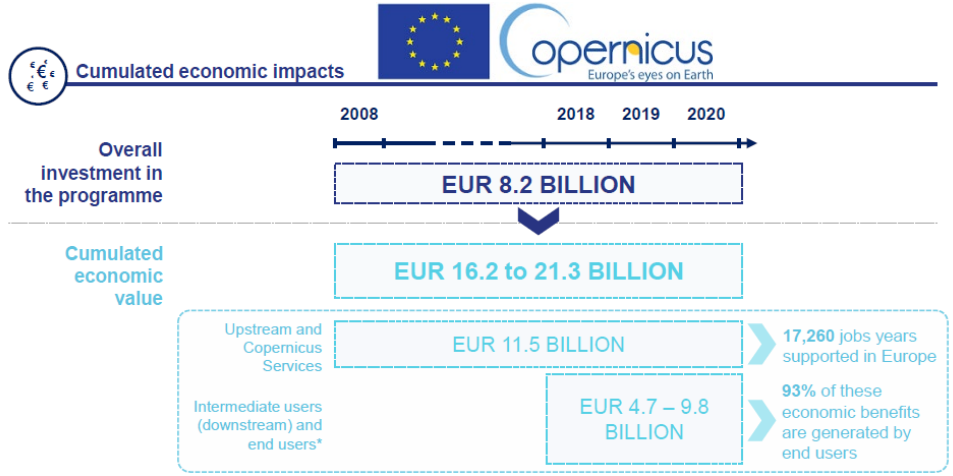

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However, adoption of innovative technology lacks behind & The end-user(s) has questions …

How can we integrate this service? Another APP?

Accuracy issues? Technological problems?

Are there independent reviews? Will it work in practice?

How to get started? Solution for my specific problem?

Is it applicable for me?

What about my data? Are others happy with the change?

Payback time? How will this improve my life?

Added value? High investment costs!

Reduce of cost and when?

Studie Departement Landbouw en Visserij: "Toepassing van precisielandbouwtechnieken"
VIS studie: "Digitale transformatie in de voedingsindustrie, wat is een ideaal concept voor living labs?"

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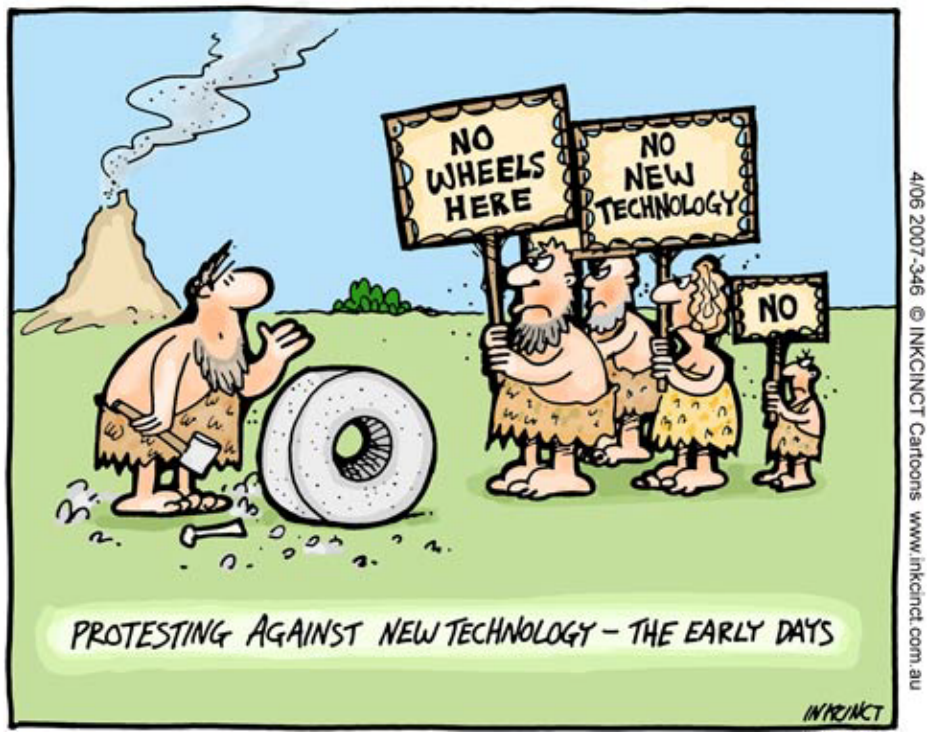
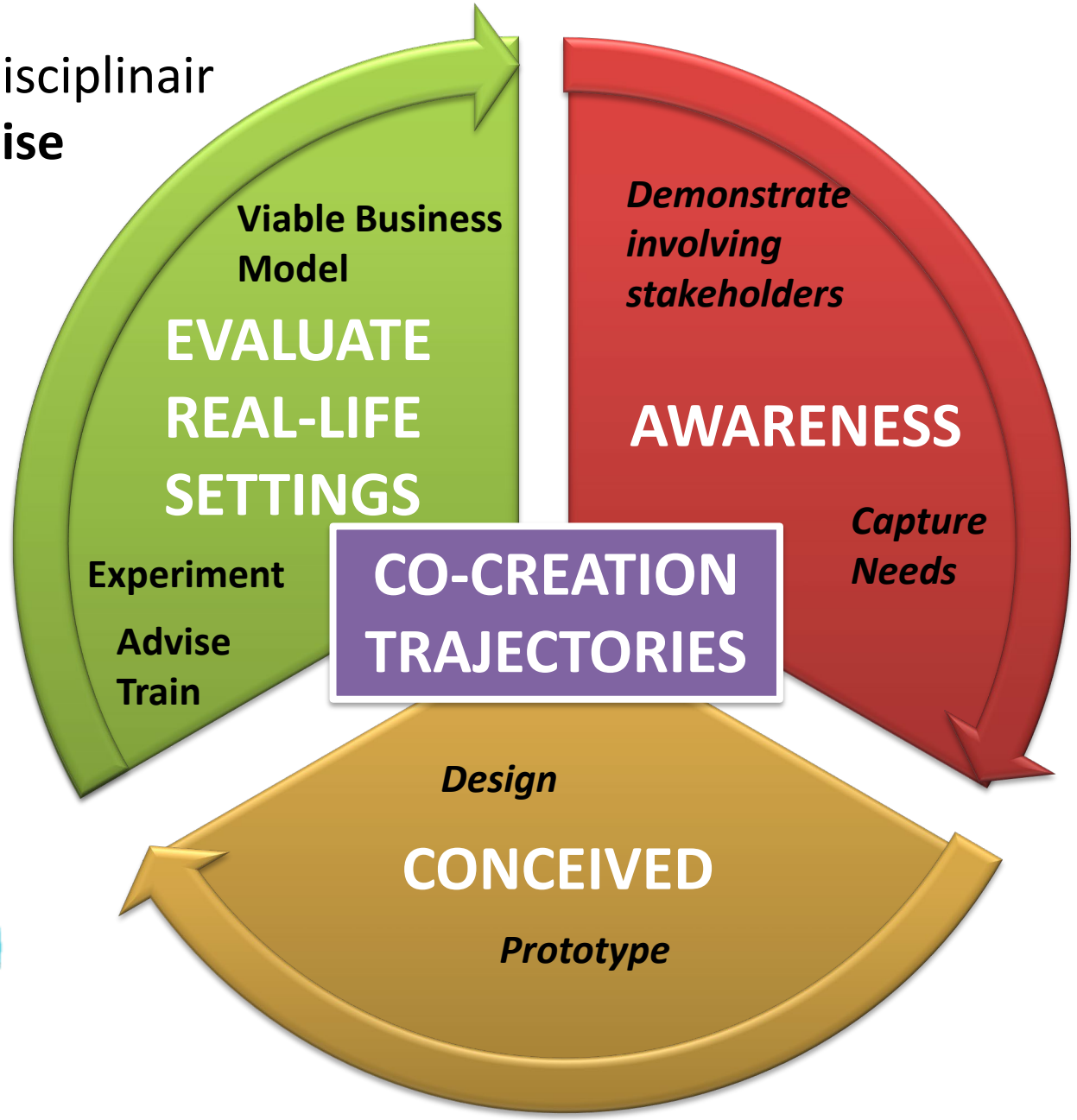


Clear need for End-user Involvement!

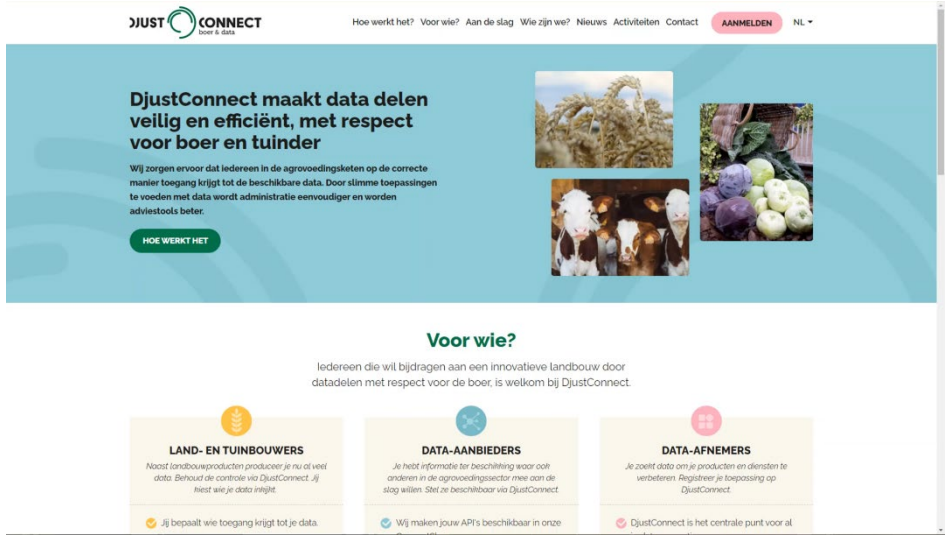
HOW? Living Lab x DIH?

- ✓ Multidisciplinair **expertise**



FARMERS, CONTRACTORS, TECHNOLOGY COMPANIES, SOIL LABS, RESEARCH INSTITUTIONS, GOVERNMENT, CITIZENS, …

HOW?



- LL is ILVO culture
  - Integrated (one stop)
  - Be there if they need you
  - Understand (All)
  - Build bridges – **Innovation Road Map** - Bring Solutions
  - Open doors – leading by example (e.g. zerow pesticides)
  - Farmers staff - own farm – at farms
  - Funding Channels => Projects

  => Trust!!!

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What? An Innovation Road Map for our community

Soil Sampling Optimization
Robotics

MRV system
'Carbon farming action platform'

*Emerging technologies to indirect measure and model SOC – **CAP, Smart Climate Farming***

Soil services relay on data sharing –
Data Spaces

=> Targeted Projects

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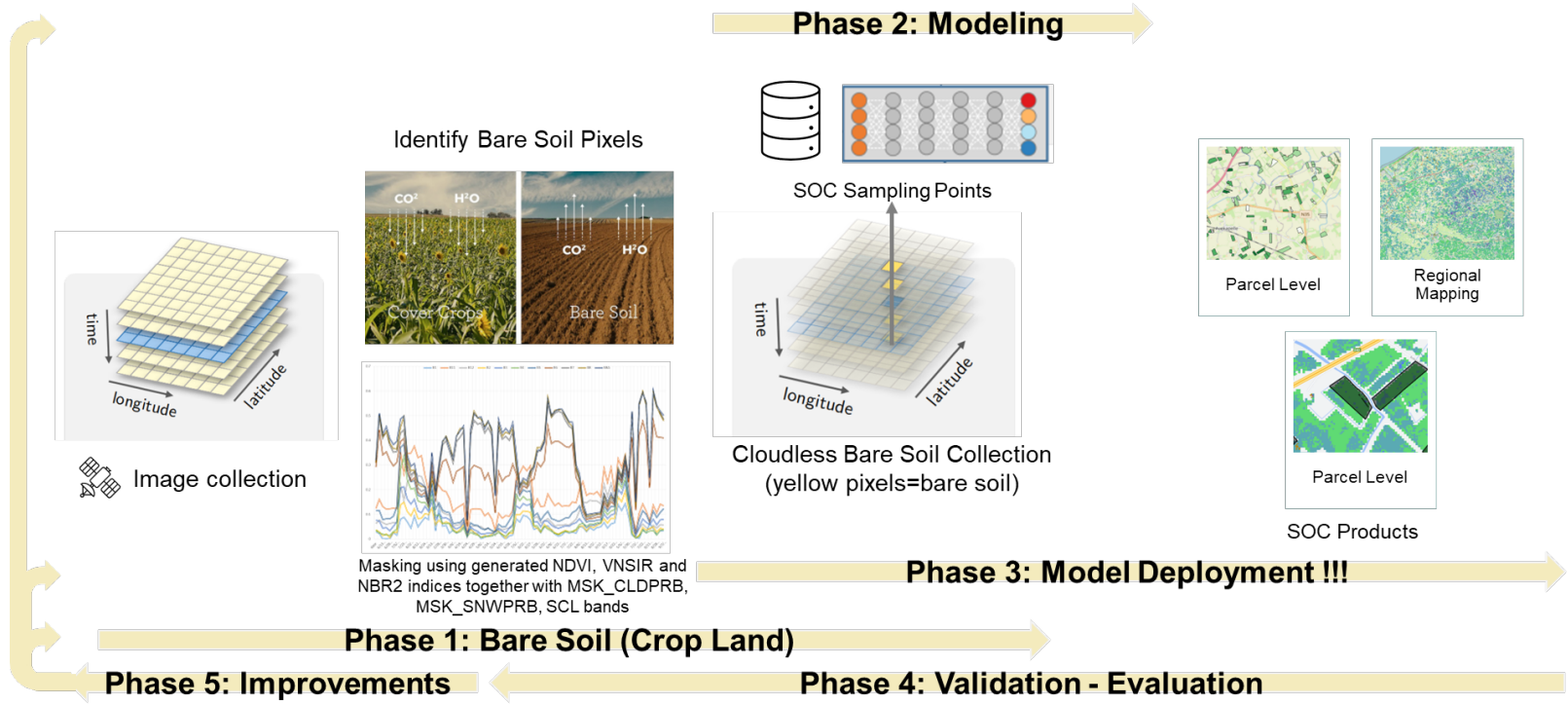
Our goal (in short) within ENVISION?

A service that delivers top-soil qualitative Soil Organic Carbon estimations at a parcel level, governing the CAP needs for soil organic carbon monitoring in cropland. The Service will adjust to provide estimations for the whole Flemish region (large scale). Working together with the **Flemish Paying Agency (LV).**

AN INNOVATION ACTION & CO-DEVELOPMENT



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 869366.

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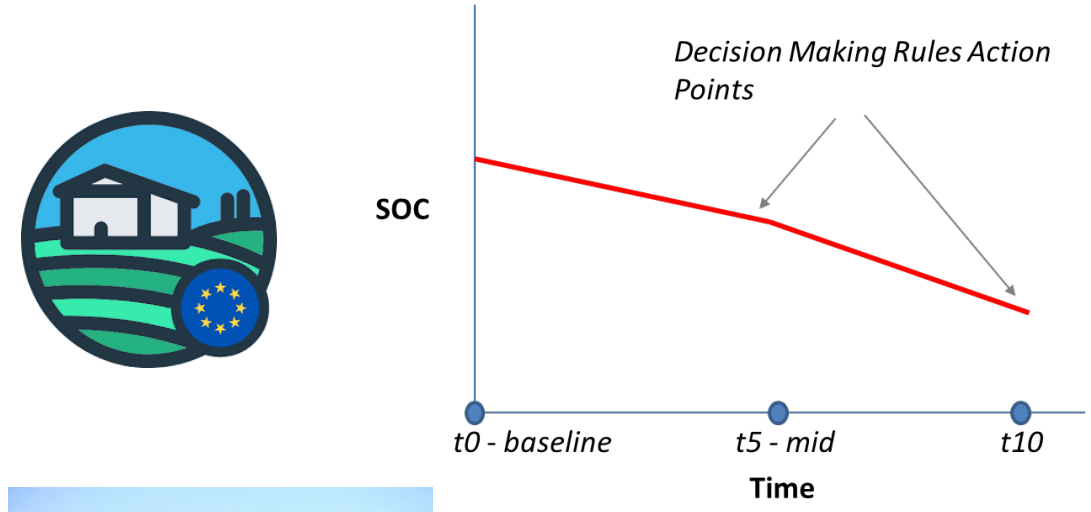
Main Co-Development Challenge in Phase 3: Model deployment

Co-Define a Meaningful Service business logic and a Sustainable Service Business Model

- Different options to deal with accuracy and error transferring => Which one to select?
- A decision make challenge => How can we support better the decision-making process? What is needed?
  - ✓ Different options to present SOC change over time.
  - ✓ Different options to present the modeling results (PAs – Farmers – Service Providers).
- The goal is to support CAP Strategic plans=> Any Reusable components?
- Alignment of CAP SOC monitoring with Monitoring Report Verification systems? Do we need to bring together different communities?
- Ground truth data are needed in Model building and Data sharing can support it. Which are the options for viable Business Models? What can be the benefit for the actors? Trusted partner? Governance?
- When do we have to stop? What is the common accepted optimum cost-accuracy level? What controls it? Can technology further support this by automating soil sampling activity?
- Part of the equation is the Environmental, Societal and Economic Impact. How to assess? Improve?



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Thank you

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EIP-AGRI brokerage event
'Get involved in the EU Mission:
A Soil Deal Europe
8-9 June 2022, Brussels, Belgium

All information on the brokerage event is available on
www.eip-agri.eu

on the event webpage:
https://ec.europa.eu/eip/agriculture/en/event/eip-agri-brokerage-event-%E2%80%99get-involved-eu-mission

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