CEADS: The Data Space as an Accelerator for Digital Twins in Agri-Food

Jürgen Vangeyte

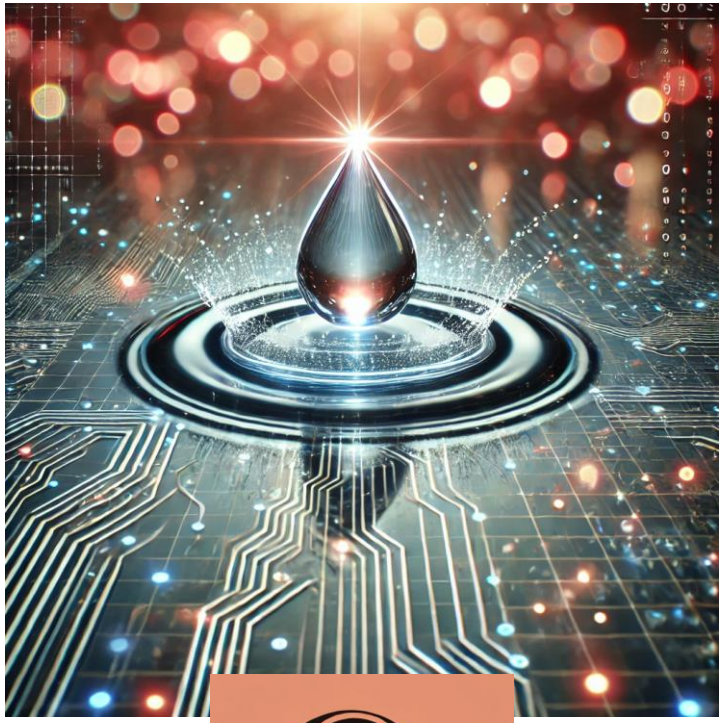
ILVO

- Ambassador for Digital AgriFood
- Digital Farming is part of the solution towards sustainable food production
- Support our ecosystem to bring valuable products for the end-users

- Ag. Engineer fascinated by all farm machinery and equipment

- Director of the Agrifood Technology department at ILVO
- (Technical) expert in precision and digital farming with interest in the business aspect

UNLIMITED AGRIFOOD DATA POTENTIAL



What conditions must be met to scale data for Digital Twin deployment?

Access to qualitative data :

-Data must be easily accessible for farmers, companies, policymakers, and researchers.

- Availability of high-quality data to create real value.

Security and Trust:

- Data ownership, sovereignty, and privacy must be guaranteed

Interoperability and Scalability:

- Systems must communicate through standardized protocols.collen

Clear Governance

- A European approach to data sharing to accelerate innovation and collaboration

What do we need to achieve impact with data?

European Strategy for Data

A common European data space, a single market for data

Availability of highly qualitative data for accelerated innovation

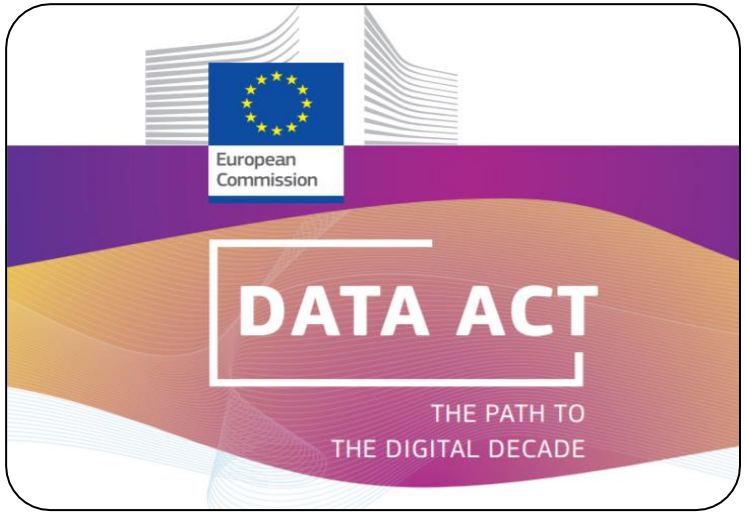
Data can flow within the whole EU and within all sectors

Rules for access and use of data are FAIR, easy to use and with practical and straightforward

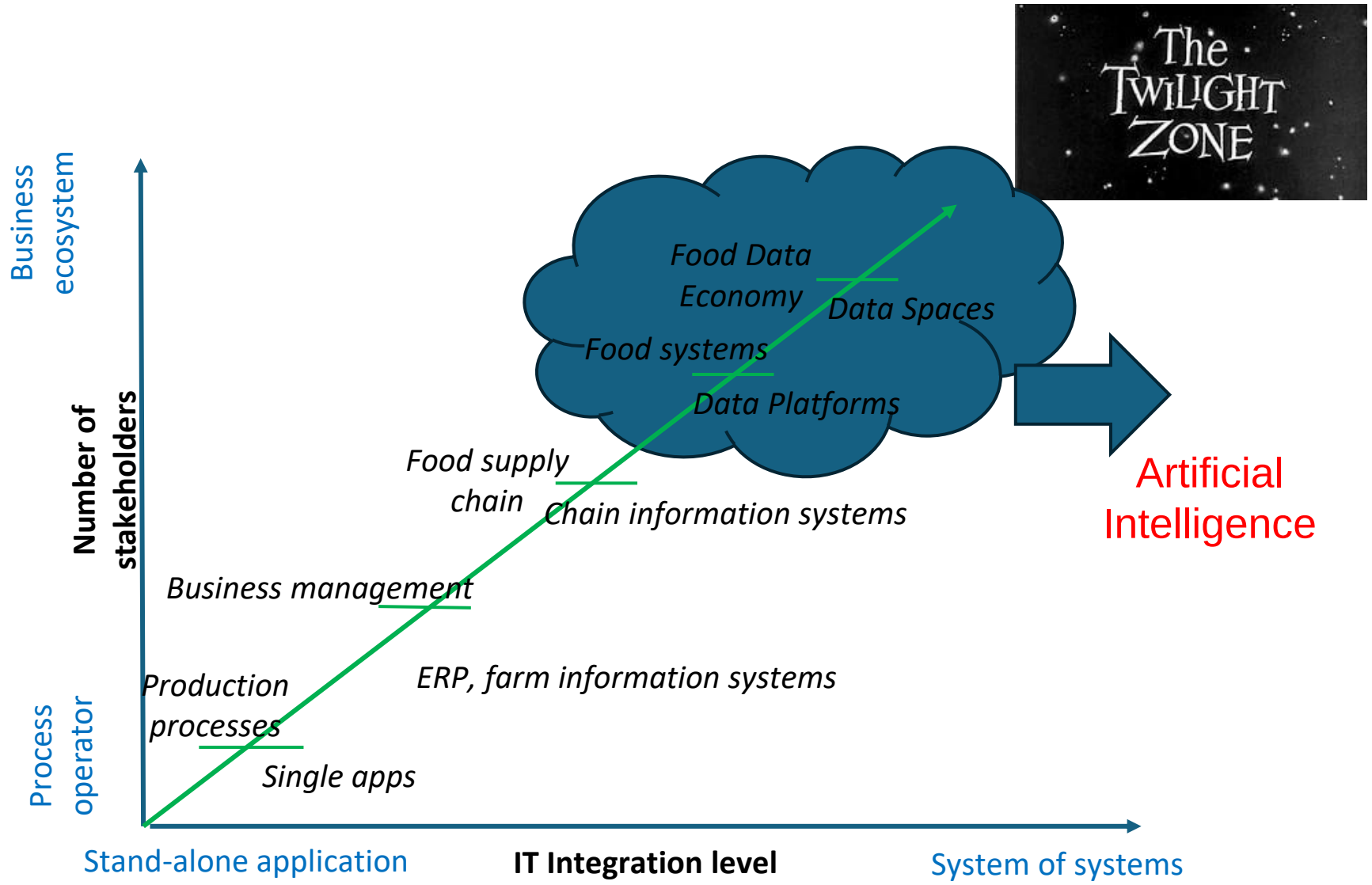
European rules and are always fully respected

European Commission

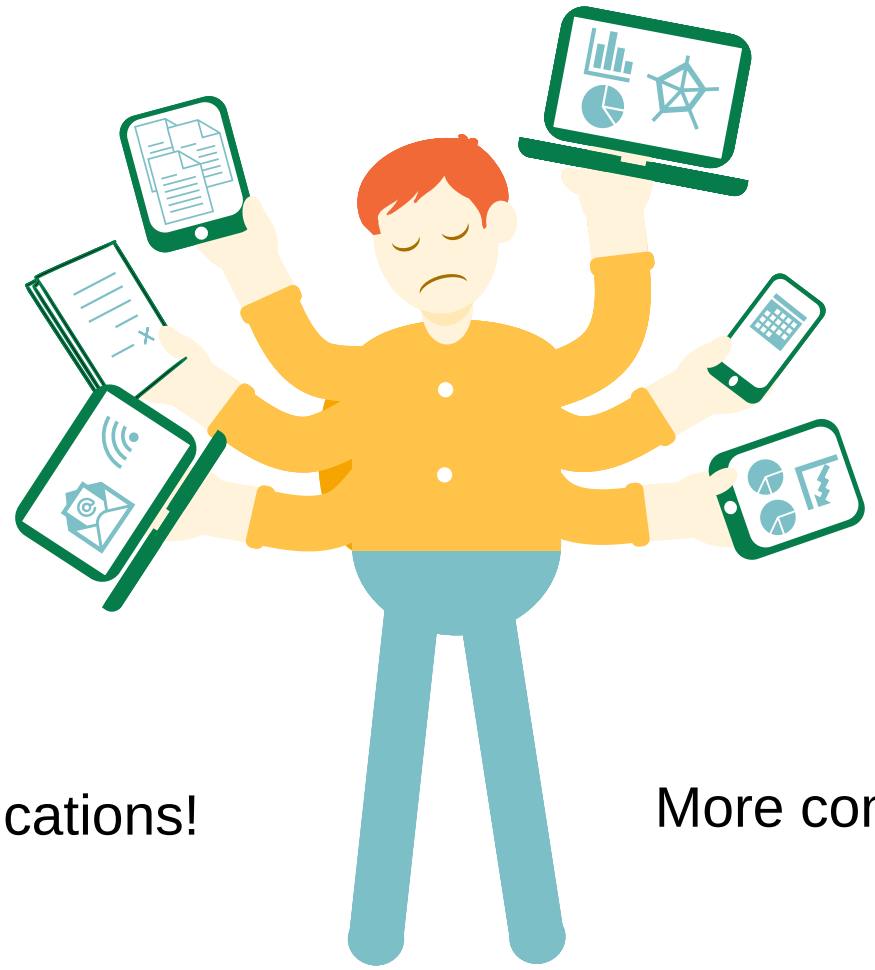
THE BIG FIVE OF THE EUROPEAN DATA STRATEGY




The
Twilight
Zone



Wolfert et al., 2021. Navigating the Twilight Zone - pathways towards digital transformation of food systems, Mansholt Lectures. Wageningen University & Research, https://doi.org/10.18174/552346

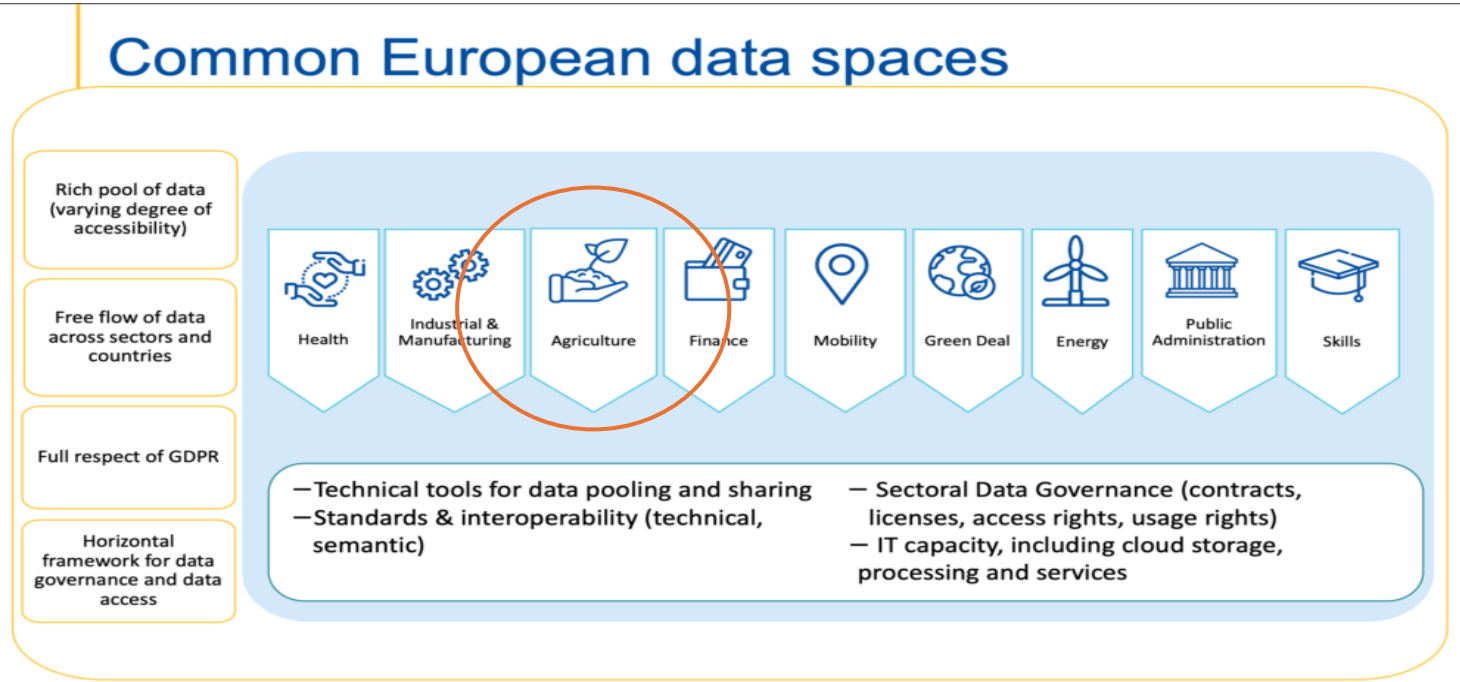


Too many applications!

More complexity!

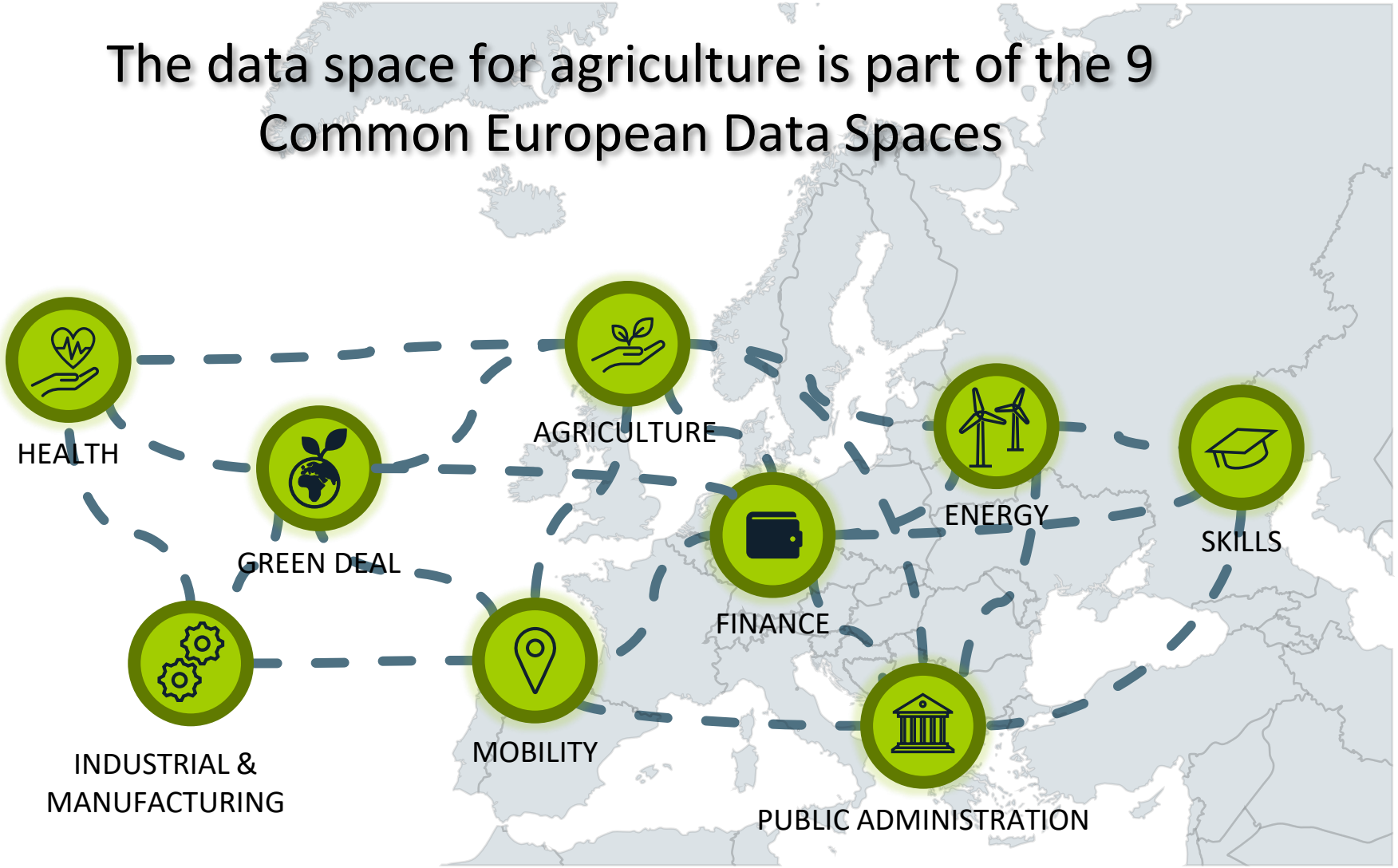
How to escape from the twilight zone back … and build actionable Digital Twins??

A Digital Twin is only as good as the data behind it."
The Common European Agricultural Data Space (CEADS) enables:
•Interoperability across actors & systems
•Trusted access to high-quality data
•A shared framework to scale innovation like Digital Twins



➤ **The Data Space is not the Twin**
=> it's the bloodstream that feeds it

The data space for agriculture is part of the 9 Common European Data Spaces



What is a Data Space?

A data ecosystem, defined by a sector or application,

whereby decentralised infrastructure enables trustworthy data sharing

How can we build our data space?

✓Legal and Ethical framework

✓Technology agnostic

✓Multi-stakeholder governance

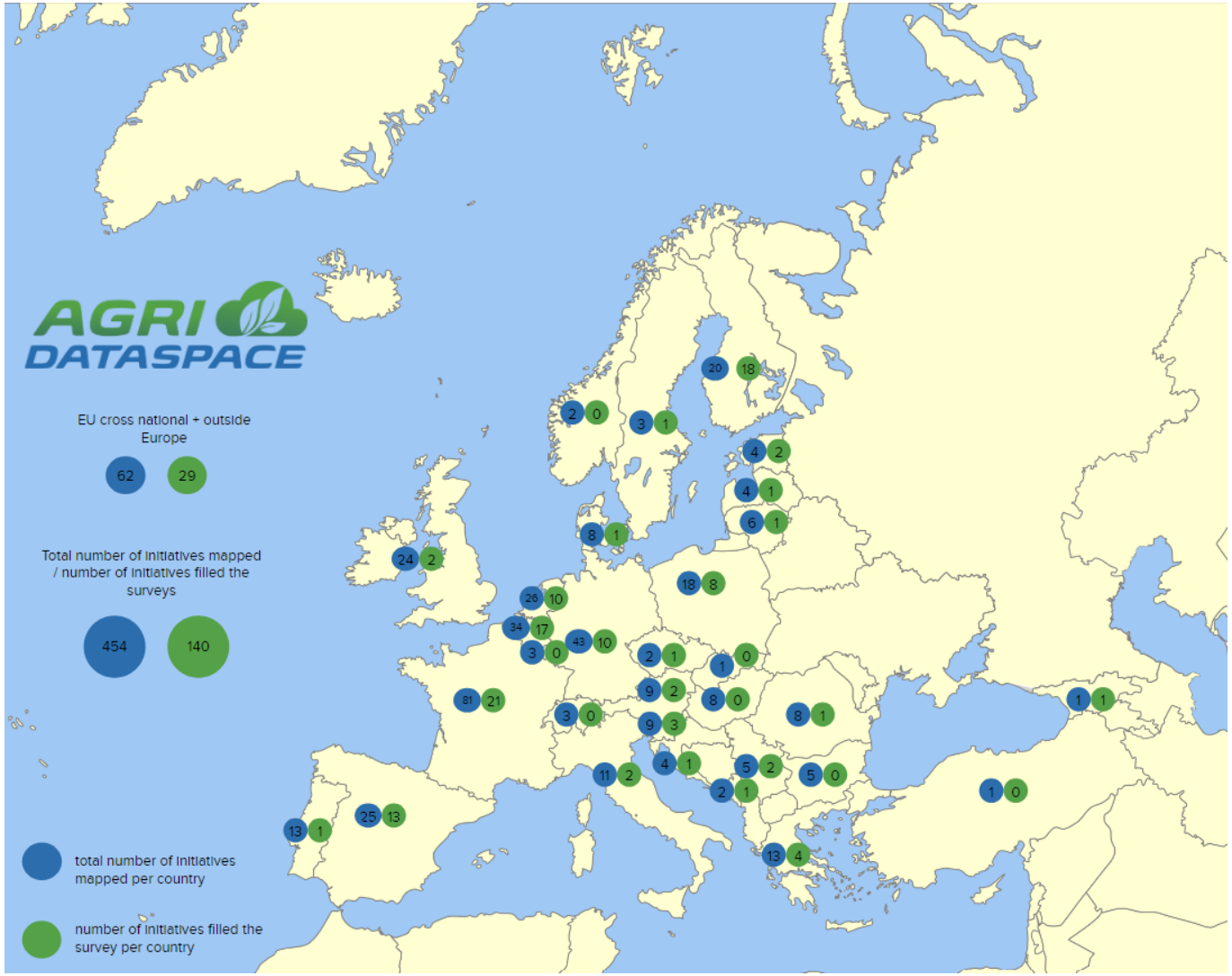
✓Sustainable business model

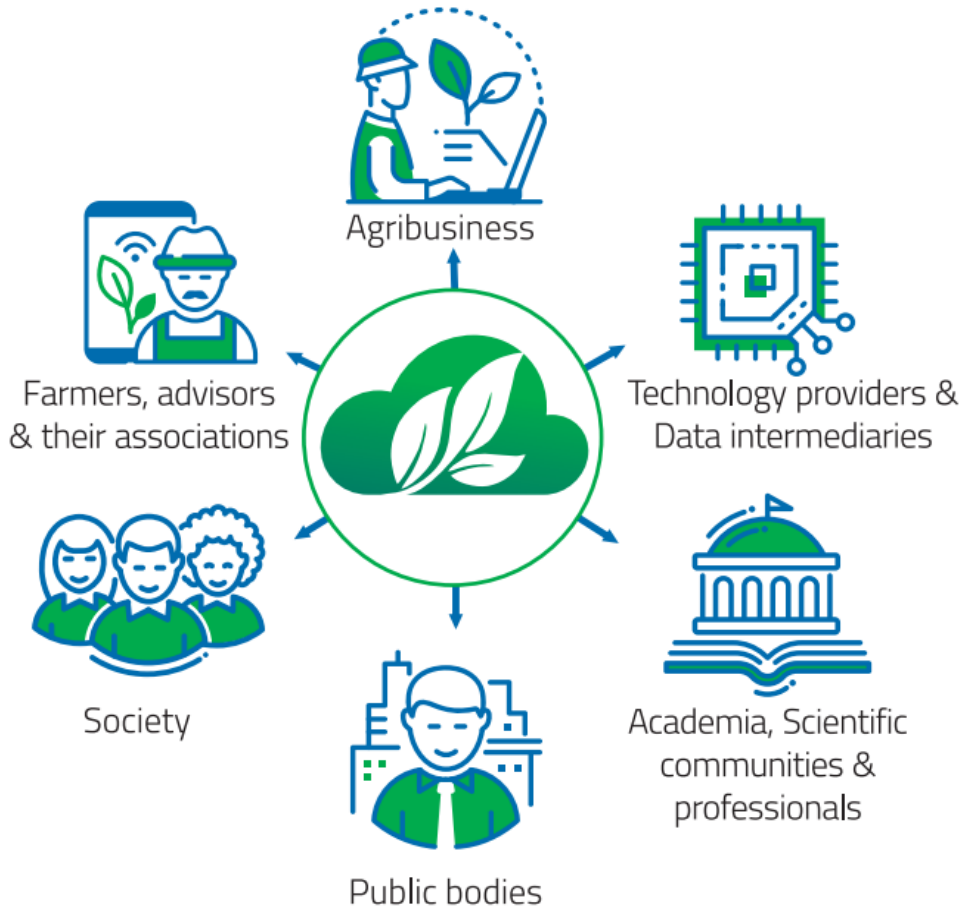
BLUEPRINT

AGRI DATASPACE

BLUEPRINT

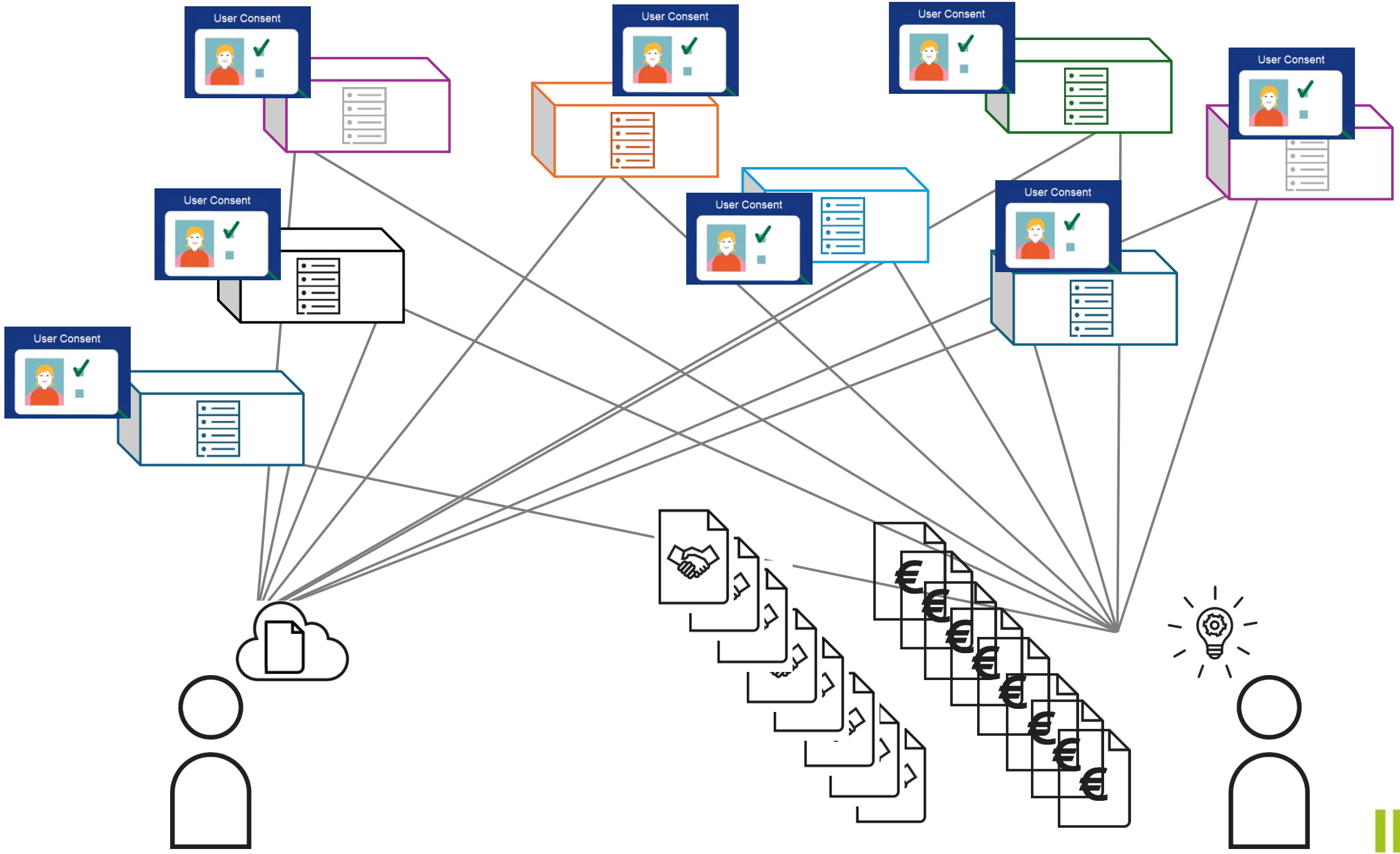
So it is just project based?


AGRI DATASPACE
EU cross national + outside Europe
62
29
Total number of initiatives mapped / number of initiatives filled the surveys
454
140
total number of initiatives mapped per country
number of initiatives filled the survey per country



Just a concept?

Flemish Agri Data Space


User Consent
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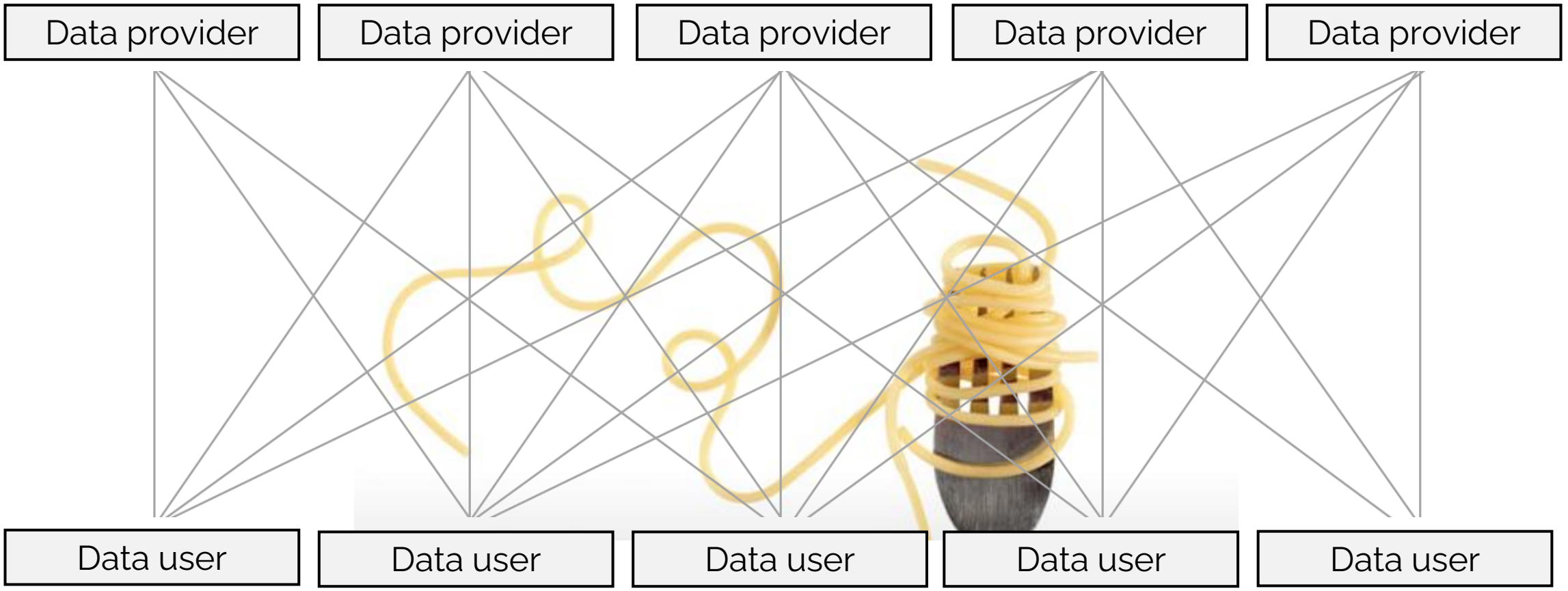
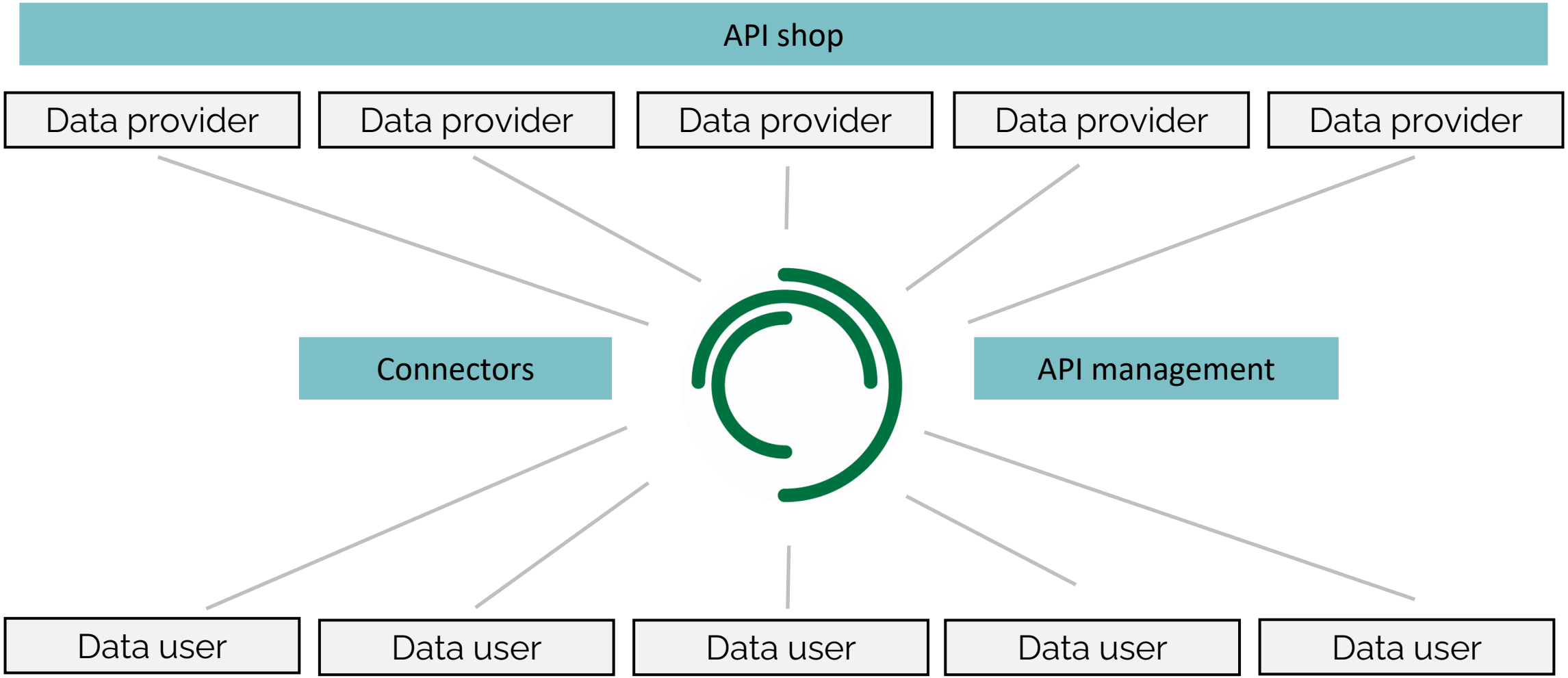
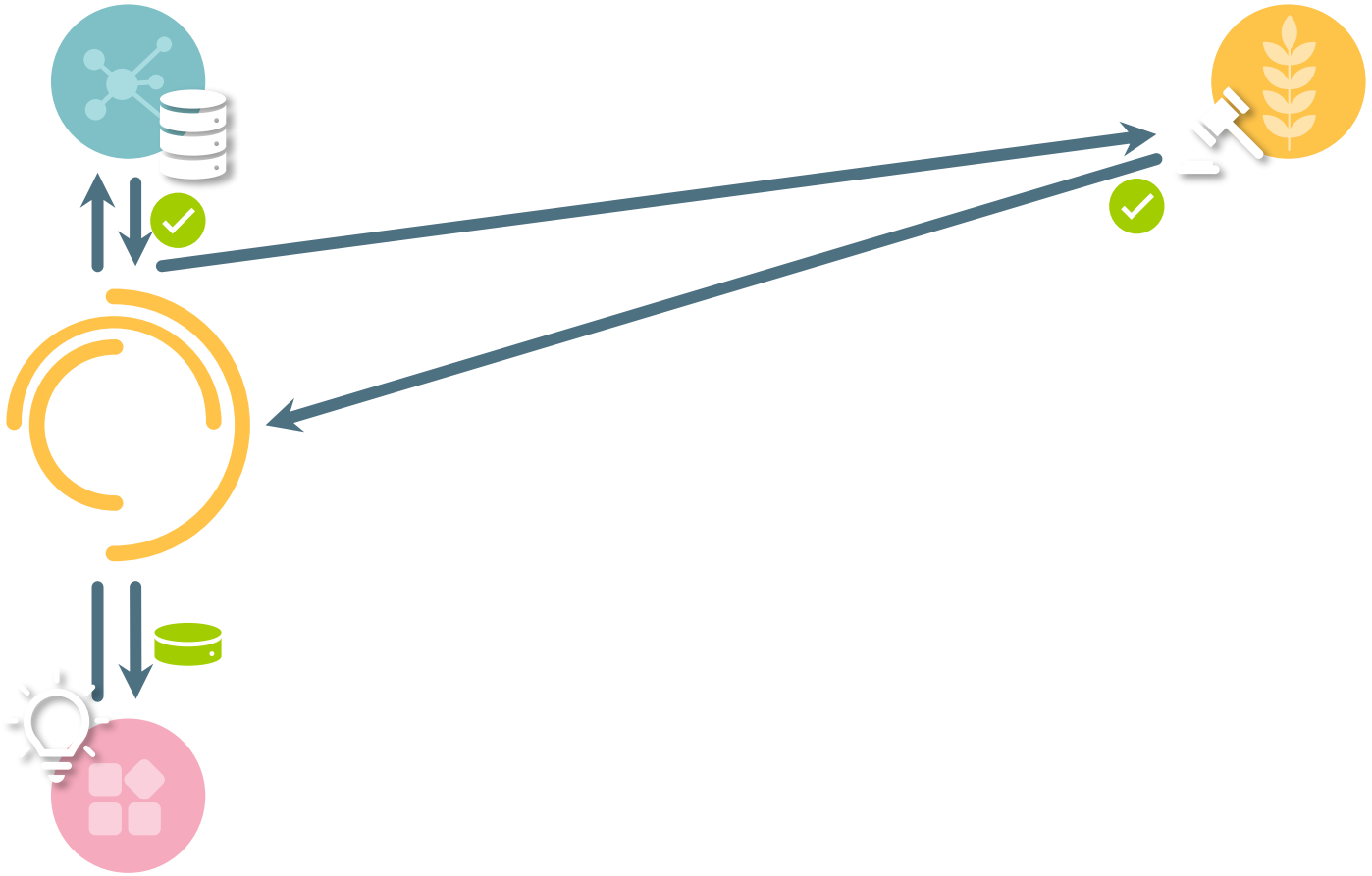
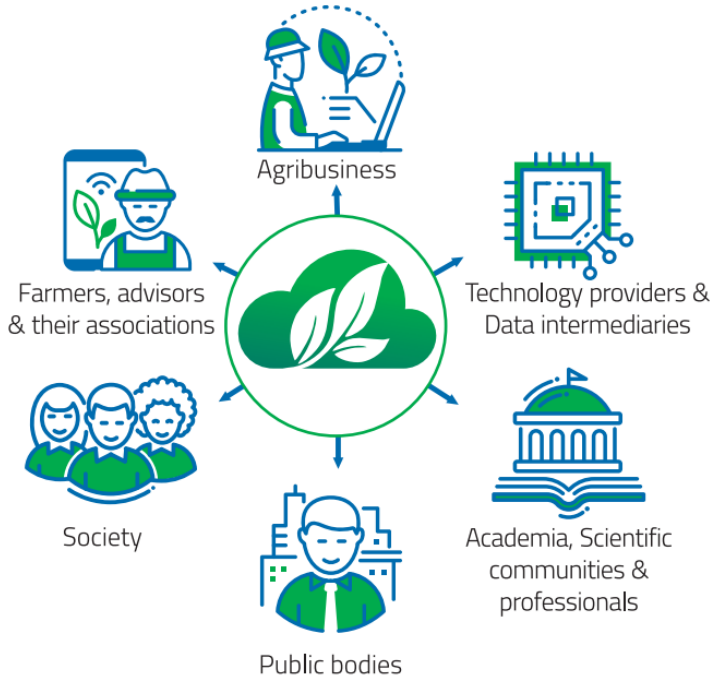

Data provider
Data provider
Data provider
Data provider
Data provider
Data user
Data user
Data user
Data user
Data user


API shop
Data provider
Data provider
Data provider
Data provider
Data provider
Connectors
API management
Data user
Data user
Data user
Data user
Data user



ILVO


Agribusiness
Farmers, advisors
& their associations
Technology providers &
Data intermediaries
Society
Academia, Scientific
communities &
professionals
Public bodies

Impact ?


GEE, I JUST NEVER GET TIRED OF THIS!

More data shared

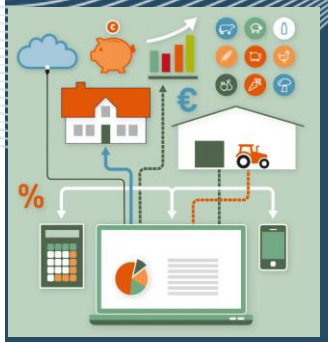
→ more AI

→ less admin

Parcel information

Farm identification mapping

Soil analysis



API

IKM INTEGRALE KWALITEITSZORG MELK

QFL QUALITE FILIERE LAIT

QMK QUALITÄT DER MILCHKETTE

80% less follow up

Quicker scan

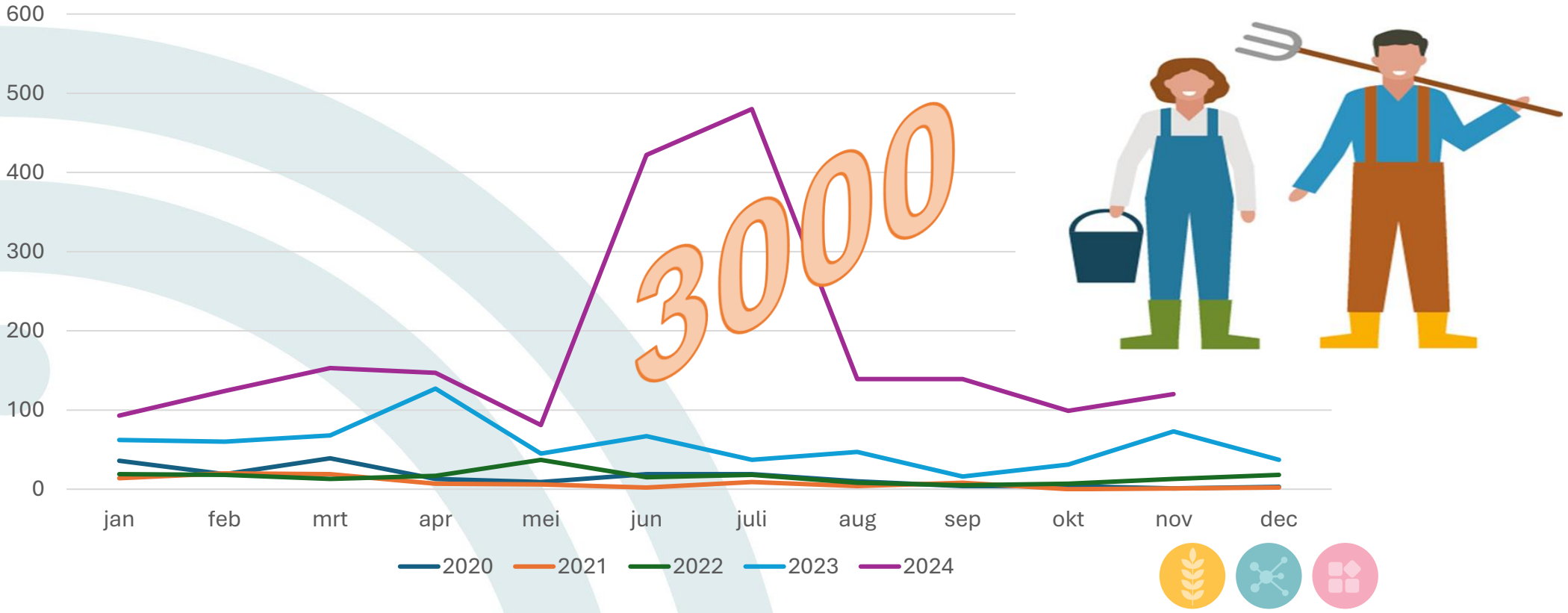
Farm specific advice

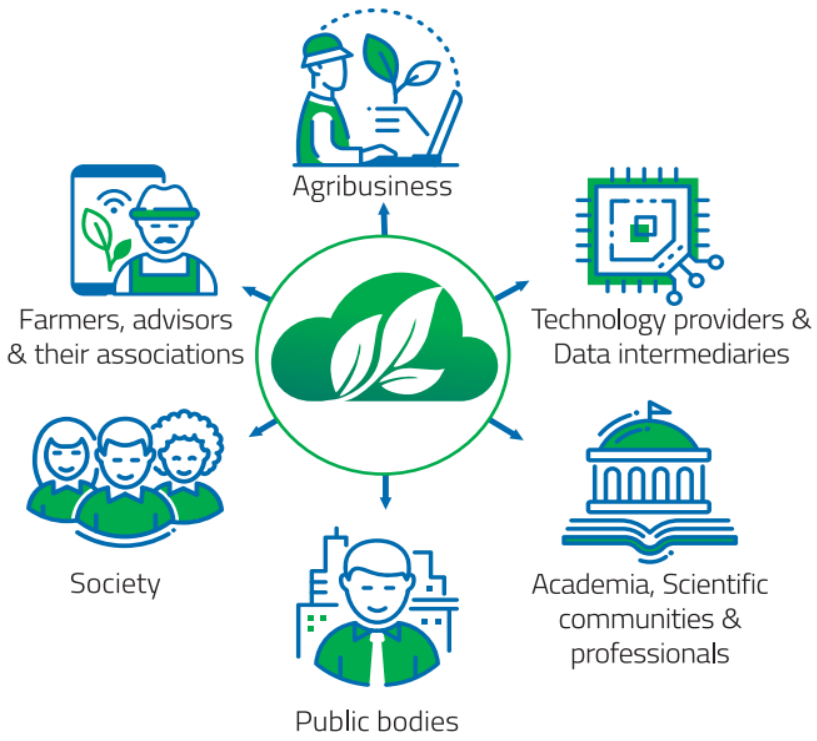
KLIMREK

watchIT grow

JUST CONNECT
boer & data

Number of new farmers joining every month





BUT

IT

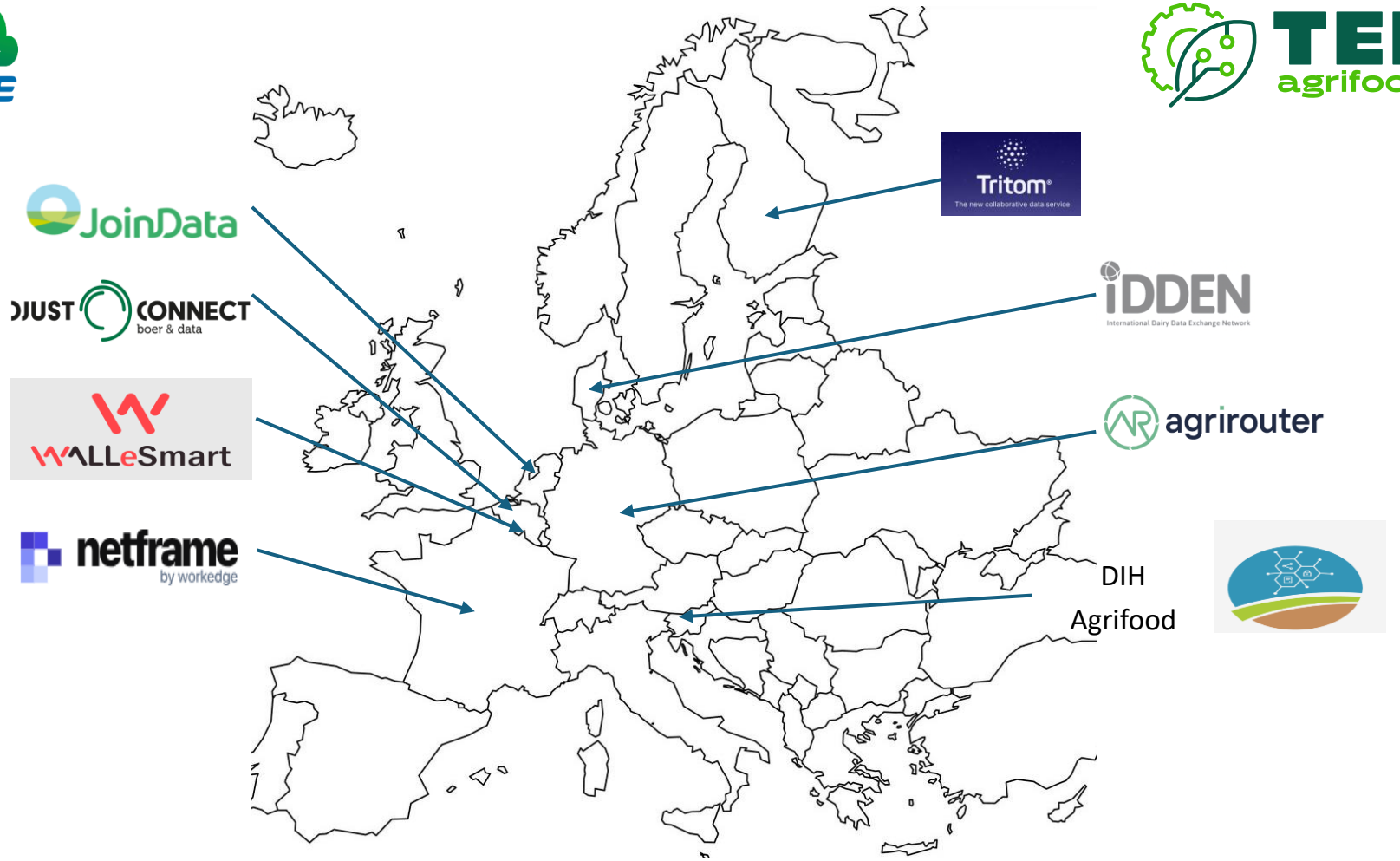
ONLY

WORKS

IN REGIONALLY?

AGRI DATASPACE

TEF agrifood



CEADS

Deployment and operating a European framework for the secure and trusted data space for agriculture

Deploying and operating a European framework for the secure and trusted data space for agriculture

1 April 2025 — 36 months

Project: 101195295 — CEADS — DIGITAL-2024-CLOUD-DATA-AI-06

KO1 – Disclose and provide **access to relevant private and public data sets**, including HVDS for the agri-food sector

KO2 – **Demonstrate the added value** – both economic and social – of cross-border data sharing in the agri-food sector

KO3 – Develop an **operational governance structure**

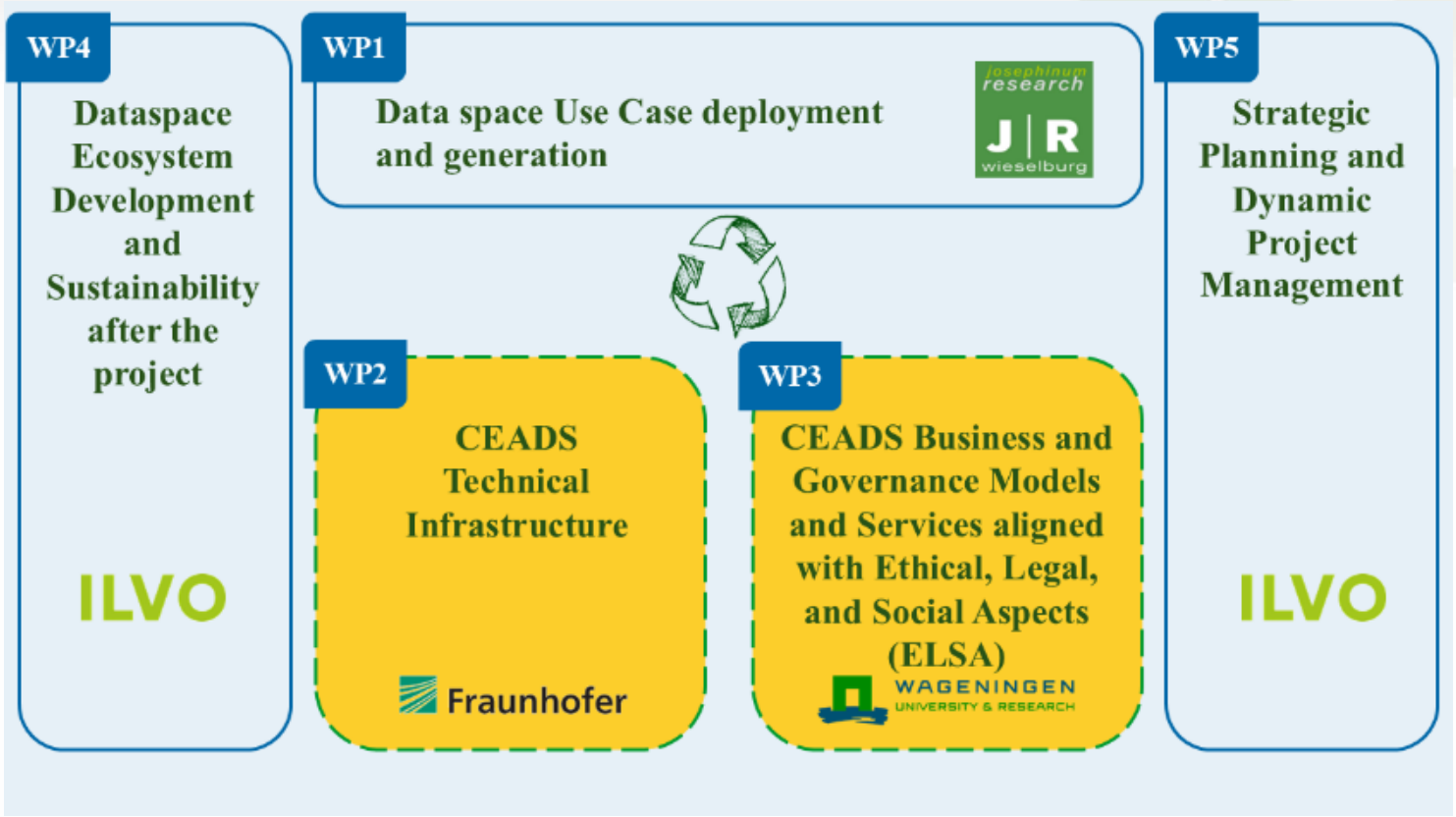
KO4 – Develop an overarching **business model** to financially sustain CEADS on the long term

KO5 – Set ethical standards for data sharing in **compliance with European legislation**

KO6 – Develop a **technical infrastructure**, that enables secure and trusted data sharing in agri-food across the EU

KO7 – Develop **services** for technical and organisational support

KO8 – Build a thriving **EU-wide data ecosystem**


WP4
Dataspace Ecosystem Development and Sustainability after the project
ILVO
WP1
Data space Use Case deployment and generation
josephinum research
J | R
wieselburg
WP2
CEADS Technical Infrastructure
Fraunhofer
WP3
CEADS Business and Governance Models and Services aligned with Ethical, Legal, and Social Aspects (ELSA)
WAGENINGEN
UNIVERSITY & RESEARCH
WP5
Strategic Planning and Dynamic Project Management
ILVO

UC1:
Agri-environmental and accountancy data for monitoring farm performance

Federated KPI insights will allow reuse and valorisation of existing data flows from farmers to public National and EU administrations for CAP monitoring and enriching high value datasets, particularly agricultural parcels, with added value information.

≥20 data sets connected to CEADS covering at least 9 EU countries

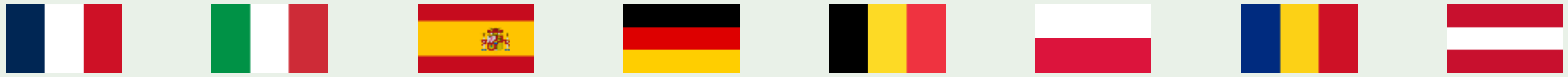
1. WR (LEAD), 2. ISHARE, 3.UDL, 4. DATACOLAB, 5. SYN, 6. INRAE, 7. EV ILVO, 8. IESE, 9. TEAGASC, 10. CREA 11. CTIC

UC2:
Research and innovation data for improved AI algorithms performance

Collecting high-quality datasets within controlled environments will create valuable assets needed for the proper training of AI algorithms and optimal benchmarking of robotics solutions.

≥8 data sets connected to CEADS covering at least 8 EU countries

1. INRAE (LEAD), 2. IESE, 3. FBK, 4. UDL, 5. EV ILVO, 6. PSNC, 7. ANAMOB, 8. JR



UC3: Certified data to secure farms environmental sustainability
Calculate more accuracy the indicators ESCA (Emission Saving from Soil Carbon Accumulation) and EEC (GHG Emissions from the extraction or cultivation of raw materials) respecting the biofuel sustainability certification schemes (2BSvs, ISSC etc.) The data sets from other uses cases could be reused (CAP data, machinery data).
≥10 data sets connected to CEADS covering at least 4 EU countries
1. CDAF (LEAD), 2. EV ILVO, 3. FNSEA, 4. INRAE, 5. PSNC, 6. ANAMOB
   

UC4:
Genetic data for animal production improvement

Achieve more accurate breeding values in the cattle sector due to extended data sources and improved tools for herd management.

≥25 data sets connected to CEADS covering at least 4 EU countries

1. ZUCH (LEAD), 2. LKV, 3. EV ILVO .



UC5:
Enhancing Machinery Data Sharing Across Europe

i) Enhanced Decision-Making and Risk Management for Farmers; ii) Improved Subsidy Management by Paying Agencies and iii) Transparency and Sustainability in the Food Processing Chain.

≥30 data sets connected to CEADS covering at least 7 EU countries

1. EV ILVO (LEAD), 2. LUKE, 3. FINFOOD, 4. DSE, 5. RISE, 6. AGRONOD, 7. PSNC, 8. AEF, , 9. FNSEA, 10. WODR, 11. JR, 12. SJV

UC6: Using data spaces for risk management in agriculture
the core of one of the key issues farmers will face in the future: dealing with the consequences of climate change aiming to reduce risk in agrifood production with tailored low-cost insurance covers.
≥8 data sets connected to CEADS covering at least 3 EU countries
1. FBK (LEAD), 2. DEDA, 3. CREA, 4. FNSEA, 5. INRAE, 6. EV ILVO
  

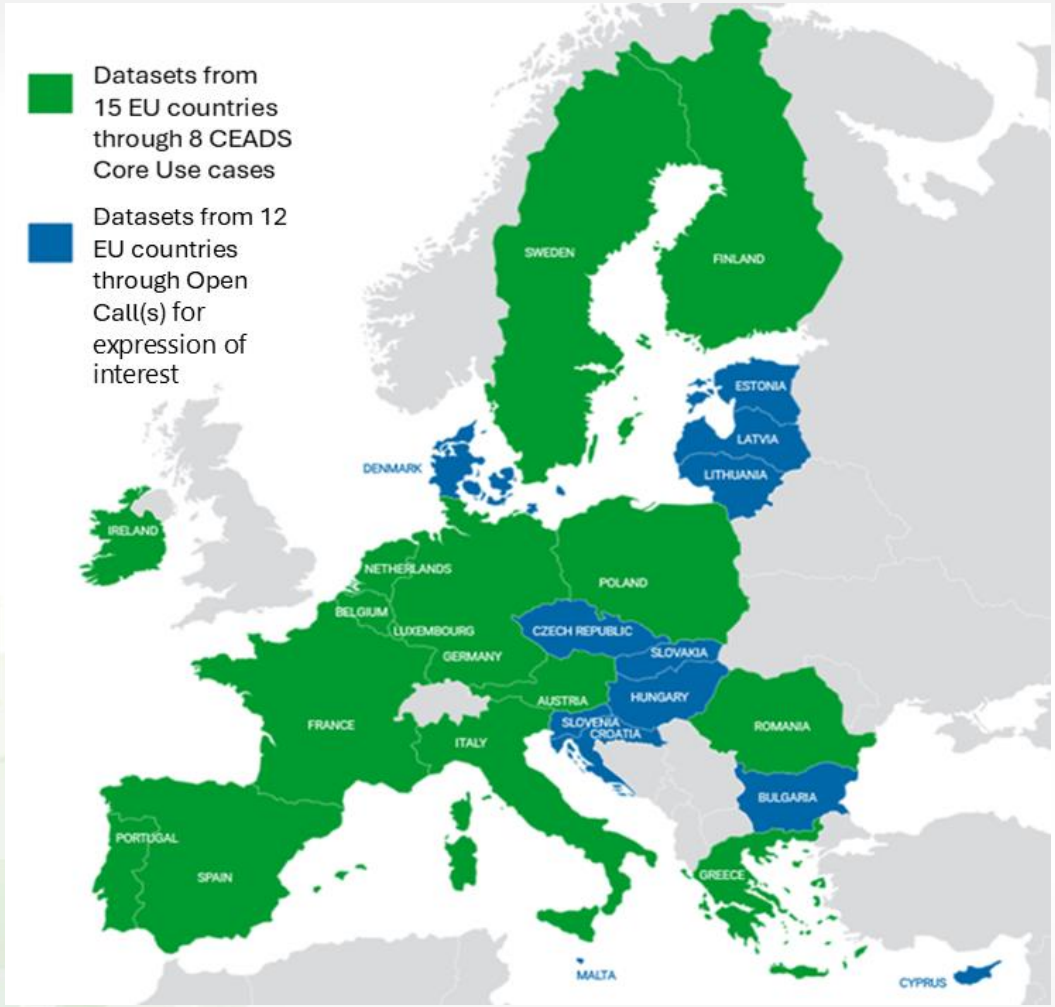
UC7: Cross-sectoral data for sustainable agrotourism
enhances sustainability by integrating renewable energy, eco-friendly transport, and local food production, boosting local economies and improving visitor experiences. It provides actionable, real-time data for better decision-making and supports community empowerment and policy development for sustainable agrotourism.
≥10 data sets connected to CEADS covering at least 4 EU countries
1. PSNC (LEAD), 2. ANYSO, 3. EV ILVO, 4 CDAF
   

UC8:
Climate Resilience, Nutritional, and Traceability Data for a sustainable wine industry

Deliver transparent and verifiable information to consumers. Wineries can create detailed nutritional labels and implement robust traceability measures ensuring that each bottle's journey from vineyard to table is meticulously documented and easily accessible through virtual product passports. The data provision/consumption from the dataspace in agriculture will ensure high standards of quality and authenticity, fostering consumer trust, promoting sustainable practices and supporting regulatory compliance.

≥15 data sets connected to CEADS covering at least 6 EU countries

1. LIST (LEAD), 2. NETCOM, 3. UDL, 4. FBK, , 5. SYNELIXIS, 6. DATACOLAB



Open Calls
for expressions of interest
will be launched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