



The LifeWatch ERIC Biodiversity
& Ecosystem eScience Conference

PLOVDIV, BULGARIA

7-10 JULY 2026

Tracking Agroecological Transitions in Europe: Architecting a Data-Driven Monitoring Platform

Presenter: Salvador Fernández

8 July 2026

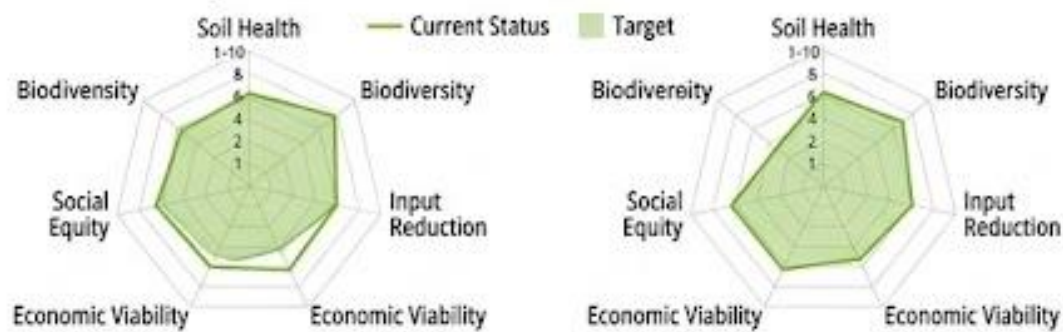




AGROECOLOGY Monitoring Platform

User Profile Settings

Farm TAPE Analysis: [Farm Name - Sim]



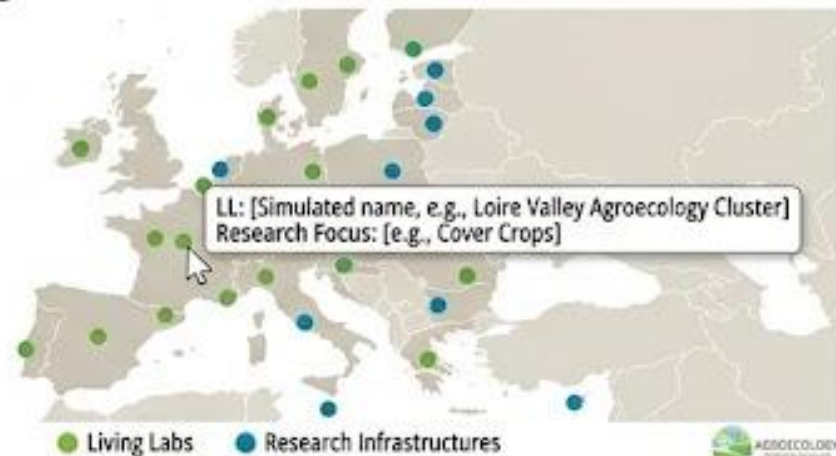
Sustainability Index: 7.2 [Simulated]

Next Step: Water Management [Simulated]

Simulated or Illustrative



EU Agroecology Living Labs & Research Infrastructures (LL&RI) [Simulated]



Simulated or Illustrative



Value Network Relationships*

Value Network & Stakeholder Relationships [Simulated]



Simulated or Illustrative



Agroecology Tool Decision Support*

Tool Selection Decision Tree



Simulated or Illustrative



Holistic Assessment Meta-framework

Source: Lamana et al., 2021 (LAMANA MF)

Defining

1. Define system boundaries (Scale and Entity)
2. Determine Purpose and Goals for monitoring
3. Decide end-users



Scoping

4. Select the most relevant theoretical basis
5. Identify what matters to measure



Implementing

6. Identify what can be measured and relevant indicators
7. Select appropriate methods and tools*
8. Data collection
9. Organise and process the data
10. Choose integration and presentation approach**



* Methods and tools should be fit-for-purpose, context-specific, and scalable.

** Integration and presentation should support transparency, relevance, and actionable insights.

This **meta-framework** provides the common structured 10-step process adopted by all **Working Groups (WGs)**.

Operationalization through Working Groups (WGs)

WG 1

Local,
farm

MS 1.x

Setting x



Monitoring
Action Plan
1.x

WG 2

Local-national,
Living Labs

MS 2.x

MS 2.y

Setting y



Monitoring
Action Plan
2.x

WG 3

Agri-food
value chain

MS 3.x

MS 3.y

Setting z



Monitoring
Action Plan
3.x

WG 4

National – Europe,
agrisector

MS 4.x

Setting w



Monitoring
Action Plan
4.x

Holistic Assessment Meta-framework

Source: Lamana et al., 2021 (LAMANA MF)

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Monitoring
Action Plan
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WG 4

National – Europe,
agrisector

MS 4.x



Monitoring
Action Plan
4.x

What are data in Agroecology?

WPS. DATA FLOW SESSION **WG 1**

① RESEARCH QUESTION (FARM SCALE)

→ TRANSITION HISTORY (R1)
→ PERFORMANCE (R2)

② METADATA

2.1 TYPE OF DATA?

R1: AUDIOTAPES, VIDEO, PHOTO, STUDENTS, RESEARCH, CITIZEN SCIENCE, FARM, SENSORS, DATA SPACES, SURVEYS, AMPLIFIERS, UPDATE FREQUENCY (20 YEARS), DEPENDS ON FARMER, FARMER'S SENSING AND COMPUTING, FARMER'S TO push out policies, PARTNERSHIP Beyond

R2: CATEGORICAL, QUANTITATIVE, BIOCLIMATICS, VOLUNTARY, FARMERS

WPS. DATA FLOW SESSION **WG 2**

① RESEARCH QUESTION

How do LL facilitate the transition towards more AE practices + principles in agro-food systems?

② METADATA

2.1 TYPE OF DATA?

Qualitative data: Interviews, Focus groups, Diaries, Journals, etc.
Quantitative data: Surveys, Interviews, etc.

2.2 WHO?

Case studies, Workshops, etc.

2.3 HOW?

Network Analysis, Quality checking, Active Learning Cycle, etc.

2.4 WHEN?

End of 2024 / Start 2027.

2.5 WHERE?

Extramadura (ES), Gelderland (NL), etc.

2.6 END USER RESULTS / MAP

LL themselves, Partnerships Beyond

Concerns: Time, Compensation for time, Participant Fatigue

WPS. DATA FLOW SESSION **WG 4**

① RESEARCH QUESTION

Did EU somewhere become more sustainable the last 10 yrs?
→ What was the role of Agro-ecology in this development?
→ What was the contribution of EU policies?

② METADATA (also impact of research projects)

2.1 TYPE OF DATA?

Satellite data, Farm data (digital), JPI, TSDN, consumption, Surveys, etc.

2.2 WHO?

Project, local, how to monitor, unmeasurable things, etc.

2.3 HOW?

Be clear on what data, Protocols data-use, identify data-gaps, etc.

2.4 WHEN?

distinction between: Case Studies / Broad data collection, 2026 - ?

2.5 WHERE?

COPERNICUS, CEADS (common EU agr. data space), Agriculture of Data

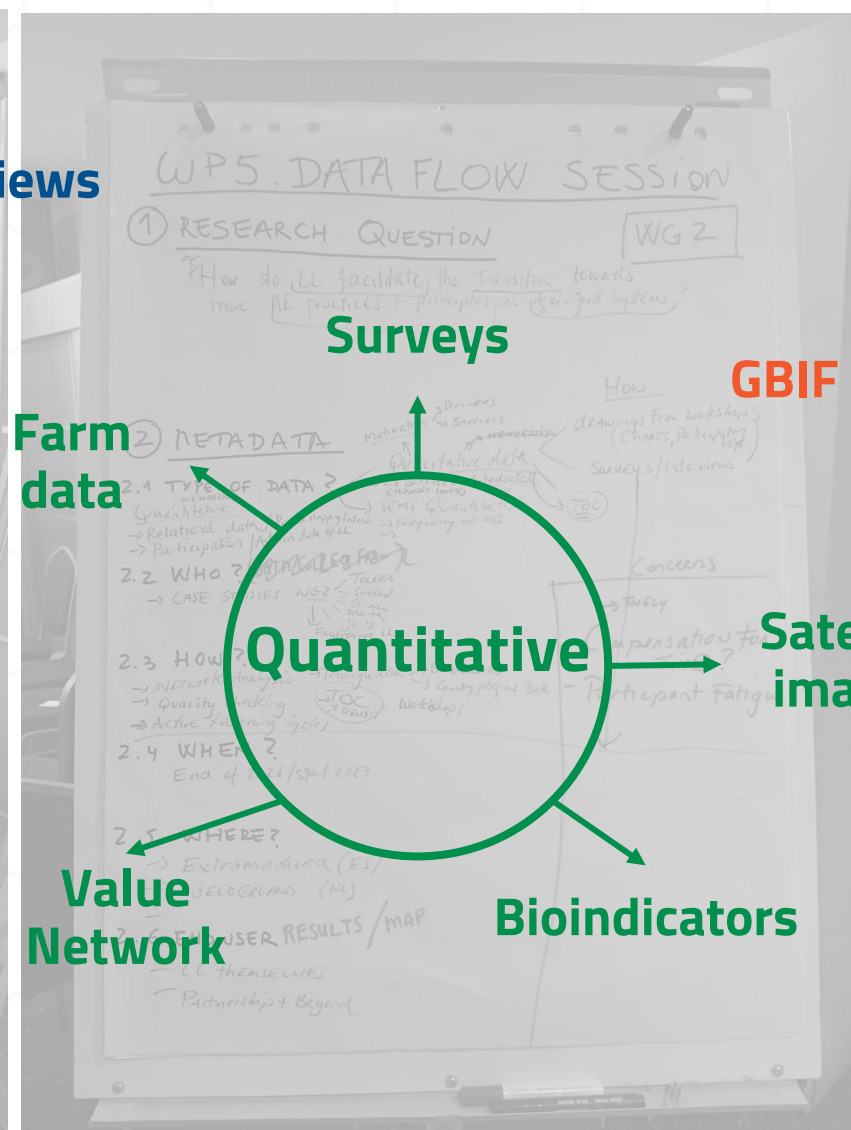
2.6 END USERS?

Policy makers, Policy evaluators, NGO's, Public authorities

ISSUES

Data availability, Data Gaps, GHG update, etc.

What are data in Agroecology?



③ RESULTS

③.1 DATA ORGANISATION

③.2 DATA VISUALISATION

- VIDEO
- STORY MAPS
- RICH PICTURE
- FOTO PICS
- WORD CLOUDS
- SENTIMENT ANALYSIS

- DASHBOARDS WITH TIMELINES
- SELECT WHAT DATA TO SHARE
- REFERENCE VALUES TO COMPARE
- WHAT-IF SCENARIOS
- REGOOD PRACTICES
- TREE TOOL DECISION
- SATELLITE IMAGINERY (GIS)

③ RESULTS

③.1 DATA ORGANIZATION

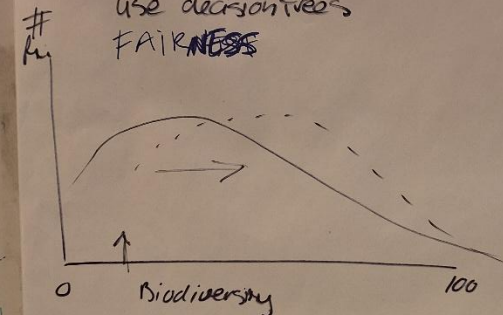
- Transcripts
- Interviews & Workshops
- Survey
- PICTURES

③.2 VISUALIZATION

As a Learning Tool

③.1 DATA ORGANIZATION

Connect with the DST (36)
use decision trees
FAIRNESS



③.2 DATA VISUALIZATION (DASHBOARD)

MAPS

DATA VIEWER

DATA WORKFLOWS (Combination of data → new indicators) & DEVELOPMENT OF INDICATORS

SUSTAINABLE AGRI. COMPASS

AgroEcology compass (include narratives)

AI ↔ ARTS

BENCHMARKING (visualize)

AI CHATBOX (SPECIFIC QUESTIONS) FEEDING ON THE DATA PLATFORM



Visualisations

- Interactive Maps
- Benchmarking
- Workflows
- Word cloud
- Heatmaps
- Spider plots



Tools

- Hierarchy tree decision tools
- What-if scenarios
- Sentiment analysis
- AI chatbot



Data Catalogue

- Interview transcripts
- Surveys
- Video
- Pictures
- Podcasts
- Story maps

How to monitor?



Data sources

Surveys
Narratives
Interviews
Video
Podcast
Workshop outputs

Farm data
Surveys
Satellite images
Value Network
Bioindicators

FSDN
GBIF
Eurostat
Agriculture of Data



Monitoring Platform

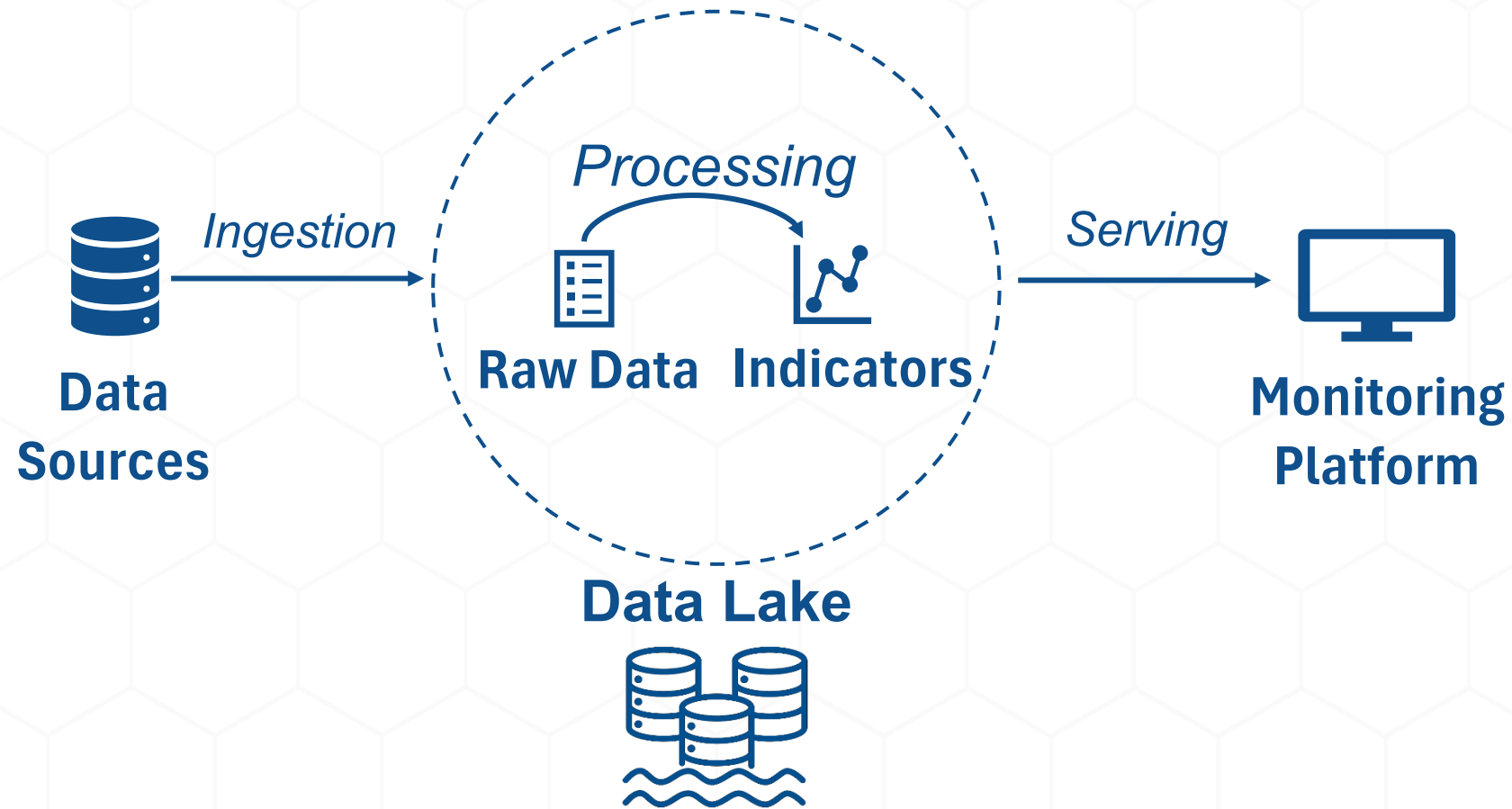
Interactive Maps
Heatmaps
Spider plots
Word Clouds
Benchmarking
Workflows

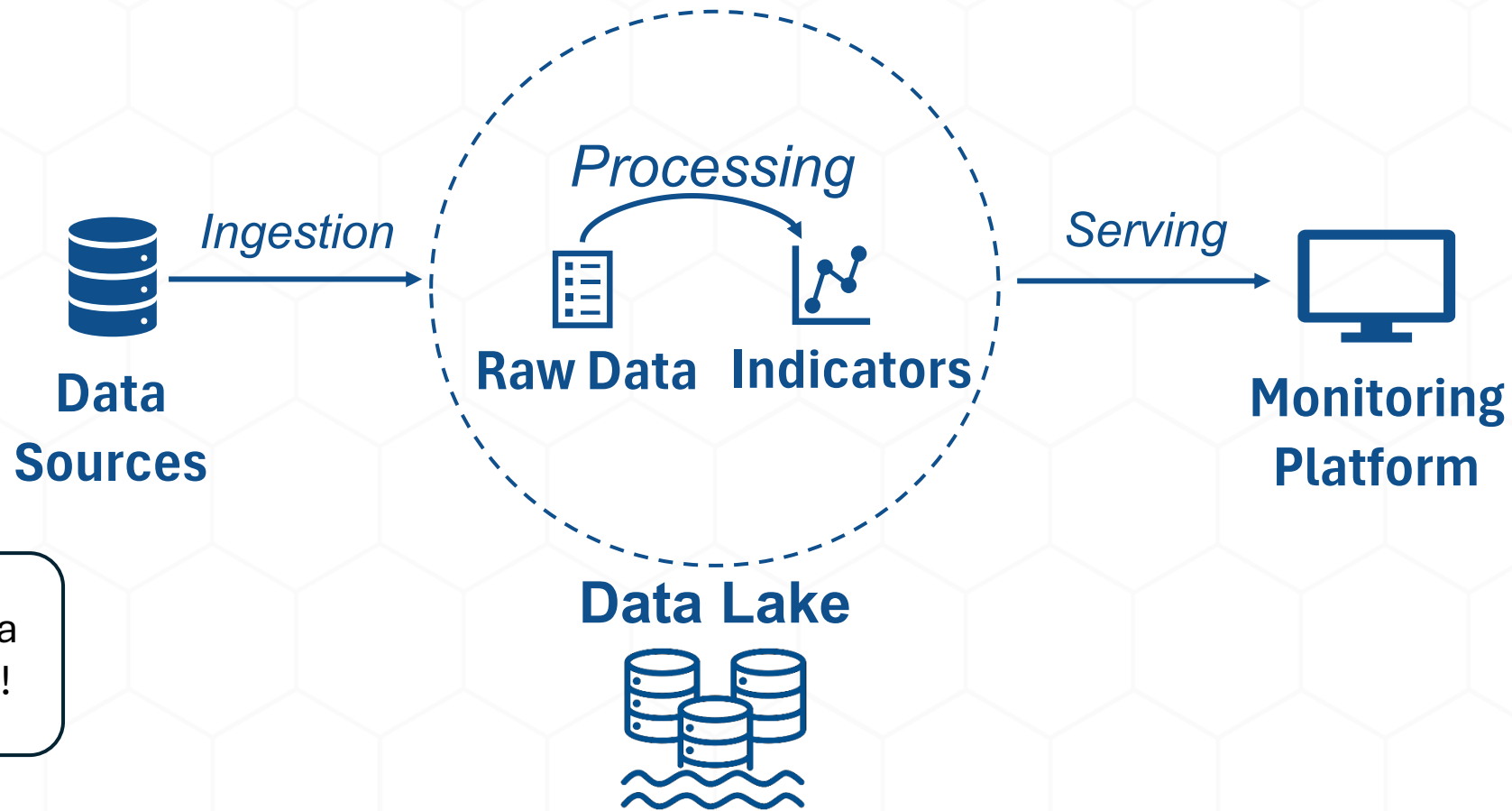
Hierarchy tree decision tools
What-if scenarios
Sentiment analysis
AI chatbot

Surveys
Interview transcripts
Video
Podcasts
Story maps
Pictures

How to monitor?

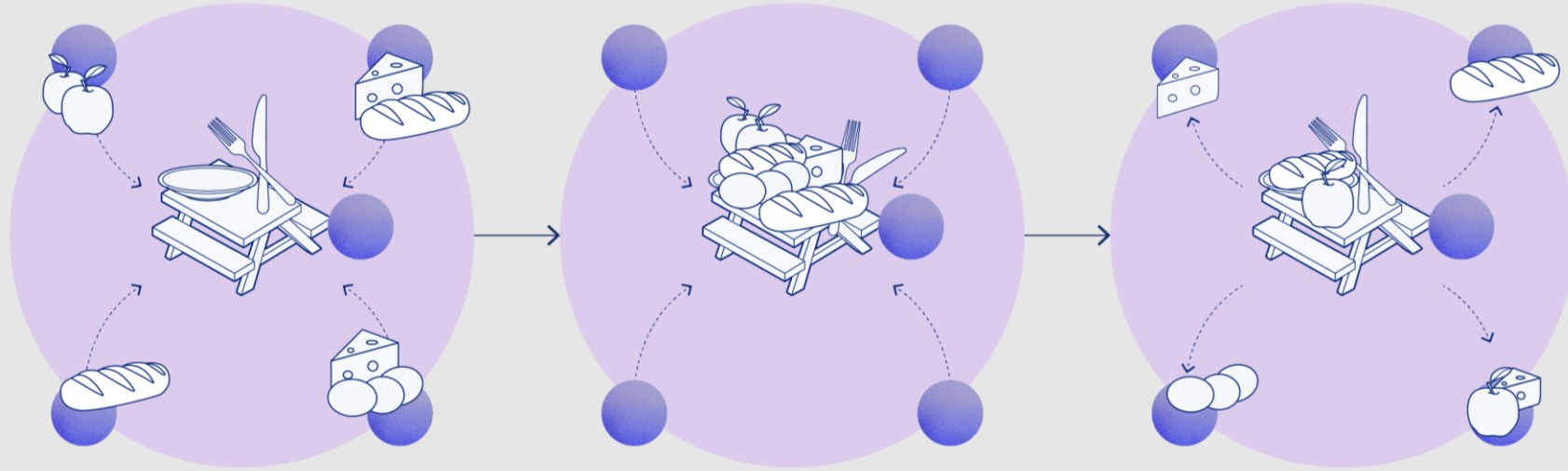






A DATA PORTAL AS A PICNIC

Exchange happens under the rules of the host



The host (open data portal) is the organiser of the picnic and provides the table and the cutlery (portal). Participants (data providers) are invited to join with their food and drink.

This is similar to the portal host that offers the infrastructure and various services to other data providers (participants).

The picnic is open to everyone, so they can come and access the food and drinks according to their needs.

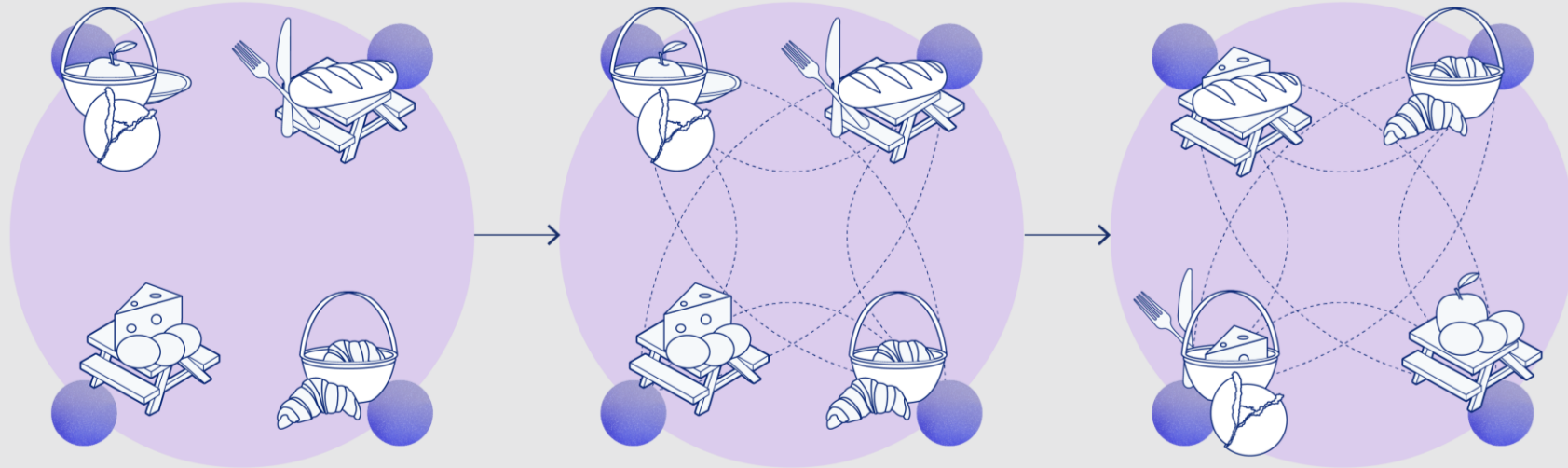
As a data portal, every user has free access to the data from data providers, allowing reuse and distribution.

The host, as the organiser, is responsible for the picnic, and if the host leaves with the table the picnic is over.

To provide visibility to this data, the role of the portal is essential as a gateway to information.

A DATA SPACE AS A PICNIC

Exchange happens under the rules agreed upon in a data space between participants



Each participant has their own table to offer food and drink. Each participant is normally focused on one particular speciality (vegetables, meat, desserts, etc.)

Data providers may have their own infrastructure from which they give access to open and non-open datasets.

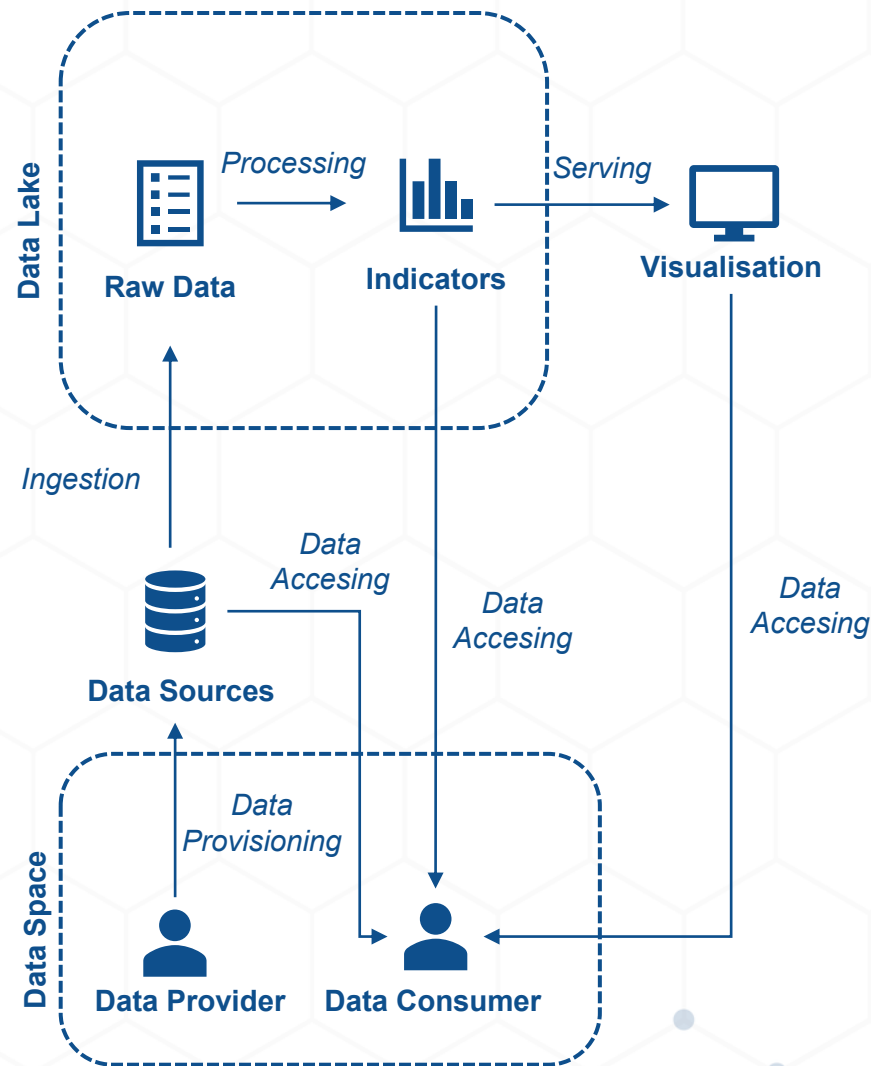
The participants of the picnic agree on their own rules to share goods, interacting and negotiating directly with one another to grant and ask for the access they need.

Data spaces have their own governance structure, agreed between stakeholders, and each data provider has rights and control over their data.

Participants do not rely on a host to allow this transaction to happen. It may take longer to have access to all necessary food and drink, but the picnic will last longer and be more resilient. However, each participant provides water on their table to all participants, without any cost (open data).

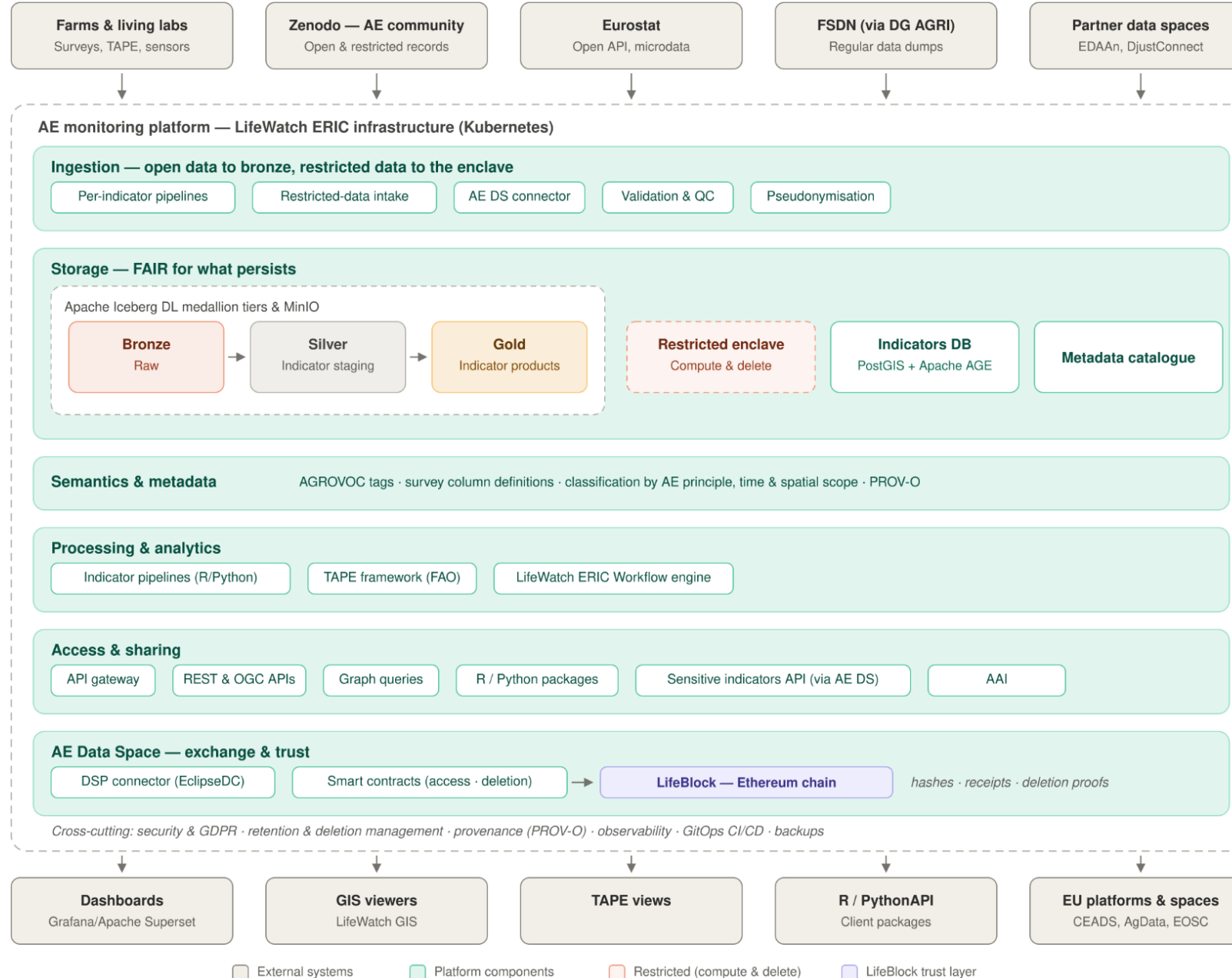
The decentralised aspect of this data space allows each participant to have sovereignty over their data and decide with whom to share it. Open data can be accessed at every table for free.

The role of the AE Data Space



AGROECOLOGY Project— T5.5 monitoring platform

Architecture proposal - draft v0.4



Data in **agroecology** are very **heterogeneous**.

The **Data Lake** acknowledges the diversity by **ingesting raw data "as-is"** and **performing case-by-case transformations into indicators**

A **Data Space** allows data owners to choose **with whom and for what purpose they share their data**.



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THANK YOU!

Questions?

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