Integrated & Smart Food Value Chain

The Data Challenge

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Trusted partner for your **Digital Journey**

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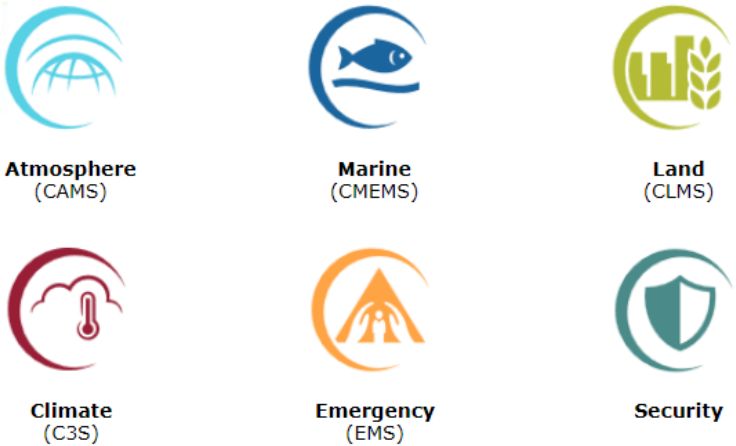
Challenge & Opportunity 1: Access to data

Access to data: COPERNICUS for Agriculture

- Copernicus is the European Union's Earth Observation Programme, looking at our planet and its environment for the ultimate benefit of all European citizens. It offers information services based on **satellite Earth Observation and in situ (non-space) data.**
- Information services provided are **freely and openly accessible to its users**



Copernicus for Agriculture: user needs

	Agricultural production (including up- and down-streaming sectors)	Agricultural policy implementation
Short-term	Farm management	Compliance checks
Medium-/long-term	Product develop-ment & Sector's resilience	Monitoring and evaluation

Short-term

- Status of specific land parcels as basis for **farm management decisions,** e.g. support to fertiliser application.
- "**Early warnings**" of, e.g. effects on vegetation at regional level, and harvest forecast.

Medium-/Long-term

- **Coherent data sets of wider outreach** reflecting on trends in bio(geo)physical developments for, e.g.
  - **Product development**, selection of crops, and benchmarking
  - Increasing the **sector's resilience** through adaptation to changing environmental conditions

Short-term

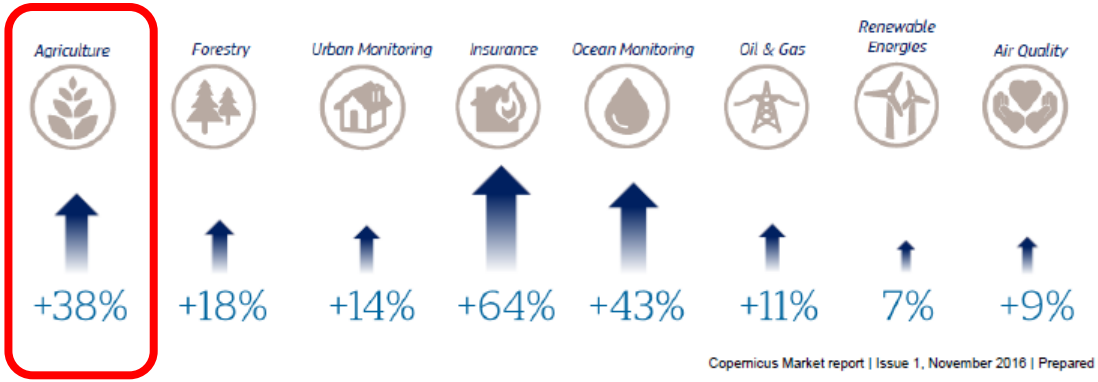
- Parcel-specific information for simplification of **compliance checks**, e.g. on the spot controls; focus on satellite image data with **sub-meter resolution** (trend to "Ongoing Monitoring").
- Monitoring at regional level for the set-up of preventive interventions ("**Early warnings**").

Medium-/Long-term

- **Coherent time series of pan-European datasets** for **monitoring and evaluation** of **policy effectiveness** (need increases with a stronger performance orientation of the CAP, e.g. delivering on SDGs).
- Information at European, national and regional scale on agricultural land and its context for the **targeting of interventions.**

Access to data

Expected average annual growth rate of Copernicus benefits up to 2020



Copernicus Market report | Issue 1, November 2016 | Prepared by PwC

70% Cost reduction of a precision farming service in Austria, thanks to Copernicus

€ 60k Yearly savings for each construction company using a work progress monitoring app

60% Higher accuracy for analysis of the impact of trans-boundaries pollutants on air quality

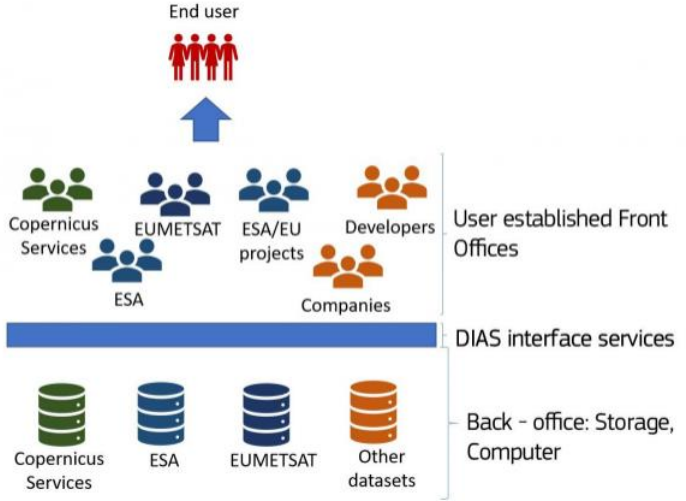
5% Productivity gain for fish farmers, by monitoring toxic algal blooms

50% Copernicus-based forecasts generate 50% more benefits to solar energy producers than traditional forecasts

€ 186M Benefits of Copernicus on the insurance market in 2015

DIAS
Copernicus Data and Information Access Services

- DIAS aims to **facilitate access to Copernicus data and information from the Copernicus services**. By providing data and information access alongside processing resources, tools and other relevant data, this initiative is expected to boost user uptake, **stimulate innovation** and the creation of new business models based on Earth Observation data and information.



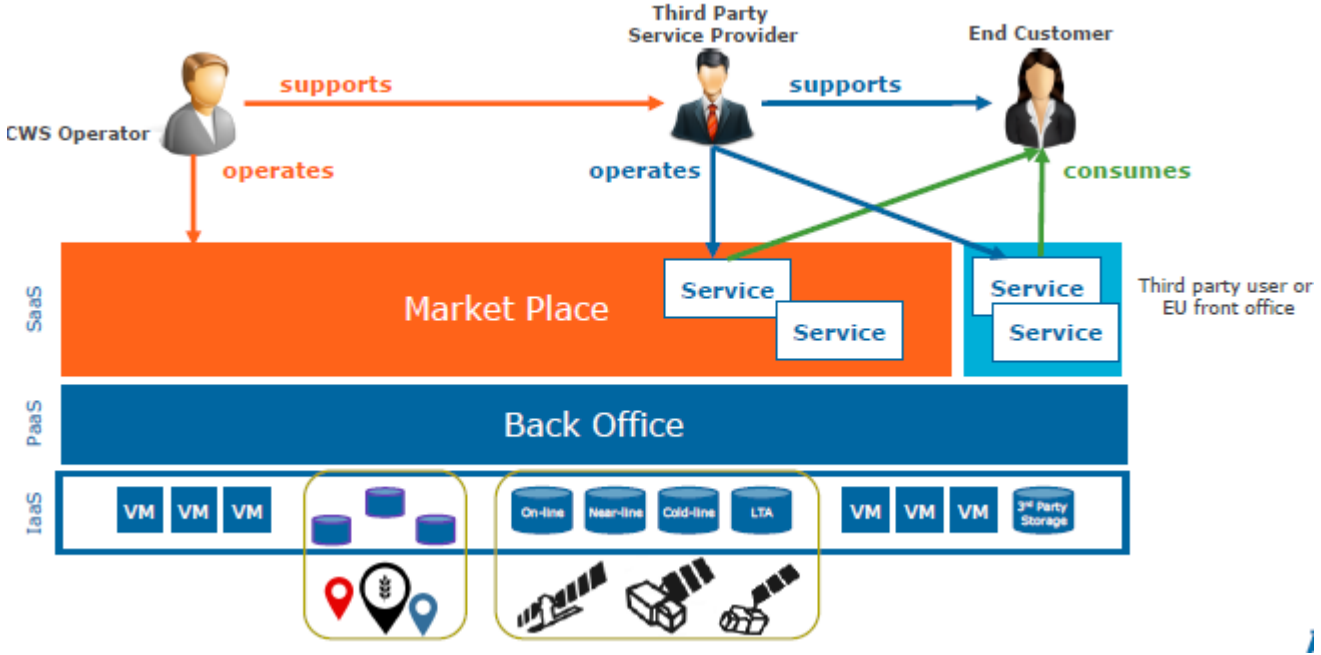
- 4 contracts:
  - Led by Serco Europe, consortium includes OVH, Gael Systems and Sinergise Ltd.
  - Led by Creotech Instruments, consortium includes Cloud Ferro, Sinergise Ltd, Geomatis SAS, Outsourcing Partner Sp. z o.o., Wroclaw Institute of Spatial Information and Artificial Intelligence Sp. z o.o.
  - **Led by ATOS Integration**, consortium includes T-SYSTEM International, DLR, eGEOS, EOX, GAF, Sinergise Ltd, Spacemetric, and Thales Alenia Space.
  - Led by Airbus Defence and Space, consortium includes Orange SA, Airbus Defence and Space, Geo SA, Capgemini Technology Services SAS, CLS and VITO.

Copernicus Web Services: solution

Solution overview

Multi-sector platform and eco-system to build new services and business models with earth observation data.

- merge data with other data sources
- combine data with high added-value data processing methods
- transform data into market-ready, monetizable solutions



CWS: data catalogue and services

Advanced services

PaaS Core services

Viewing service (Discovery Service, View service)
Catalogue
Infrastructure
Data access
Support/helpdesk (basic)
Application (librairies)
Cloud coverage service
Product & subsets product download

Advanced PaaS

Service Manager
Pipeline
Notebook
Geometrical control service

On demand services

Datacubes service (S2)
Auto-mosaicking Service
Orthorectification Service (S1)

Enhanced services

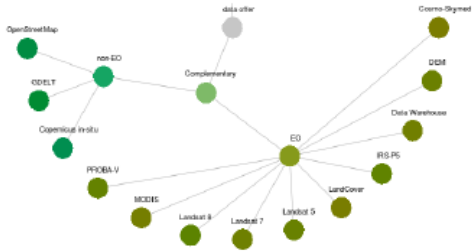
EOX Cloudless Mosaic
Spacemetric SWEA
E-Geos grassland

Core Data Offer

Sentinel Data

Copernicus Services

Enhanced Data Offer



EO data: Landsat, Proba-V, CartoSat, MODIS...

Non EO-Data: Maps, In-situ Data, Media...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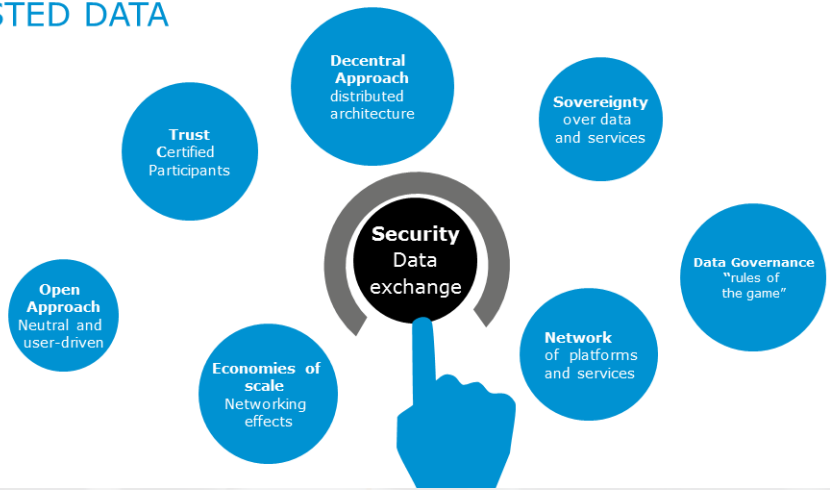
Challenge & Opportunity 2:
Data Sharing

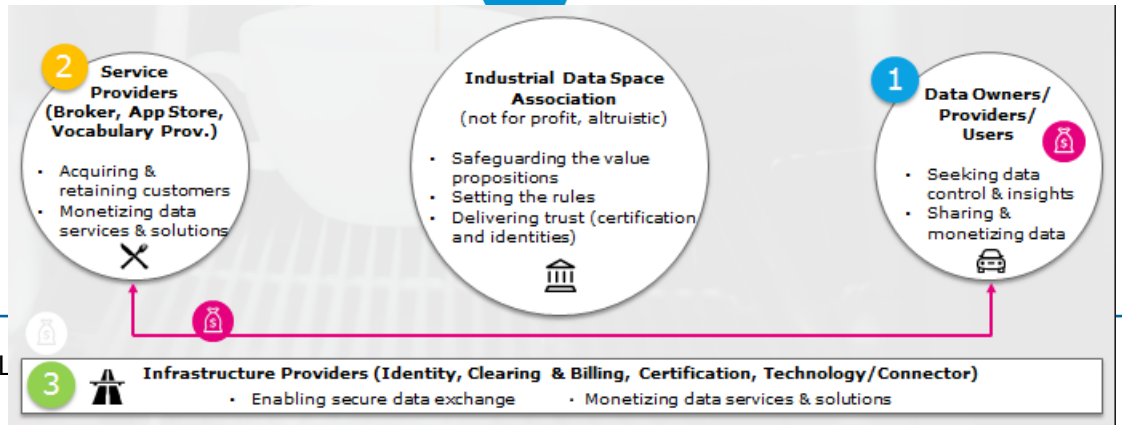
The "problem" of secured data sharing

INDUSTRIAL DATA SPACE
P2P NETWORK OF TRUSTED DATA

- All actors oblige themselves to play by the rules of Industrial Data Space
- Actors and technical components are to be certified
- Usage control for data and different tailor-made levels of trust



INDUSTRIAL DATA SPACE ASSOCIATION



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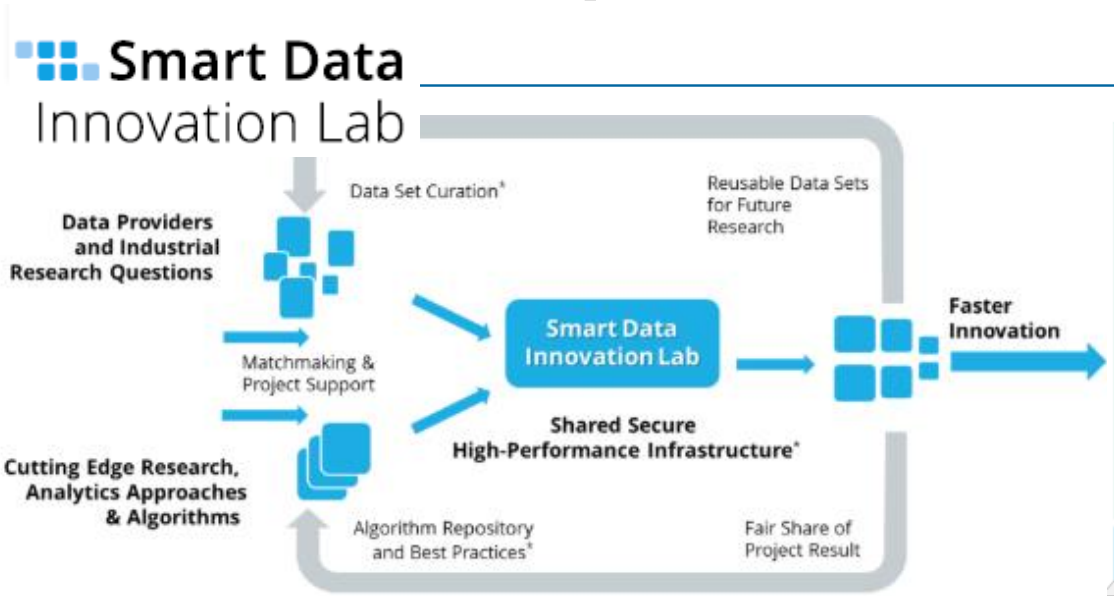
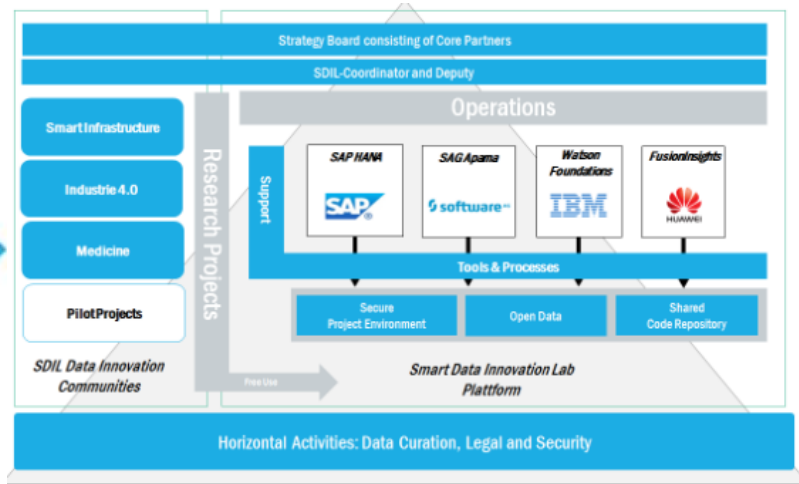
Challenge & Opportunity 3:
Data-driven
experimentation

Data-driven experimentation

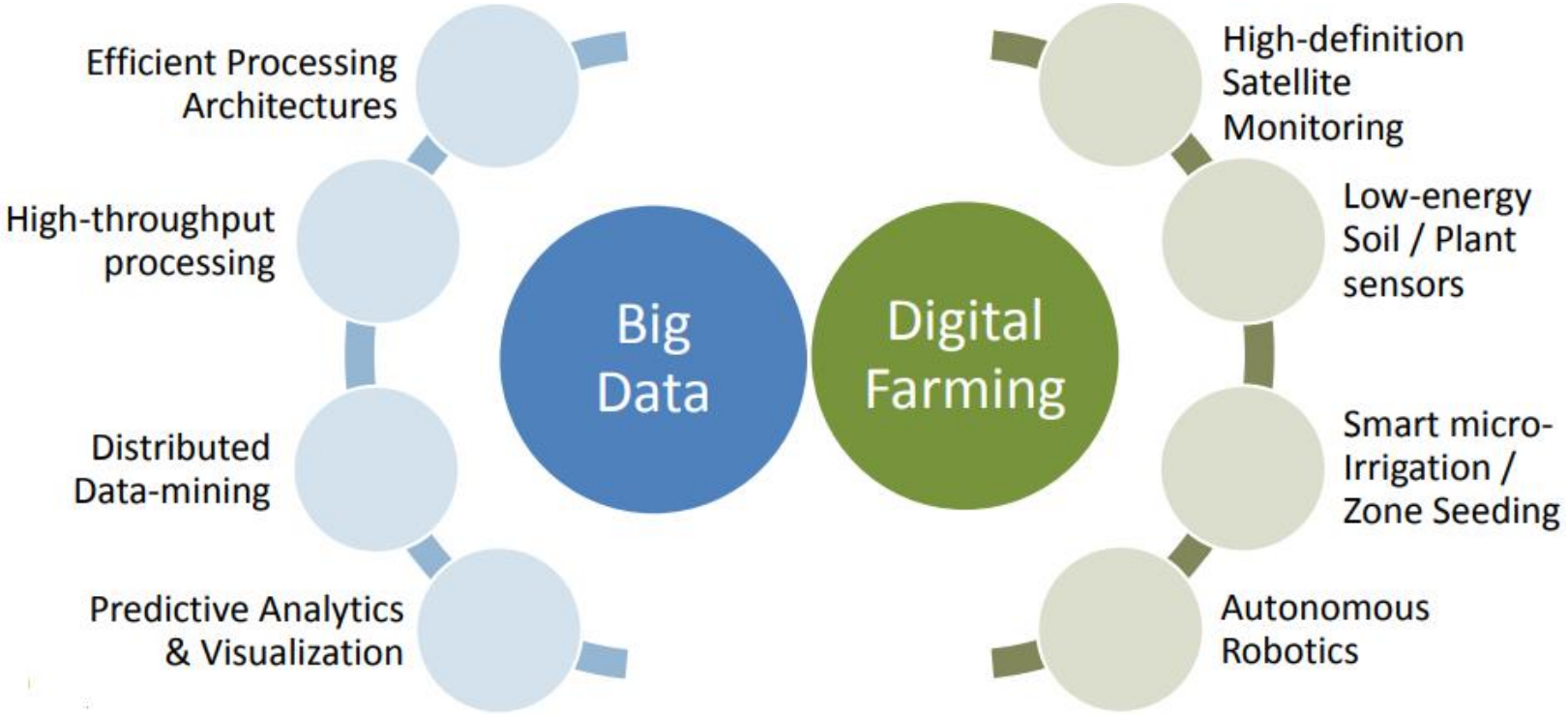




Optimization of the production processes at John Deere

The project mainly aims at the reduction of the rework and the avoidance of errors during the production of tractors at the John Deere factory in Mannheim. These two objectives are realized through a data analysis of the error information, the test protocols and their interdependencies. Based on the results of the data analysis, we can make prognoses and rules for the production planning that help the company to take one step further in the process of self-optimization.

Still a number of challenges to solve



Source:

Agroknow

BIG DATA EUROPE
Empowering Communities with Data Technologies

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The Big Data Value PPP, BDVA & “TF on Big Data for Agriculture”

The **mission** of the BDVA is to develop the Innovation Ecosystem that will enable the data-driven digital transformation in Europe delivering maximum economic and societal benefit, and, achieving and sustaining Europe's leadership on Big Data Value creation and Artificial Intelligence.

Future Challenges of the European Data Economy and Society

• **Secure (industrial) prosperity of Europe** in the context of the global data-driven economy • **Industrial leadership in Big Data and AI platforms and technologies** (develop, operate, promote its own Data / AI platforms) • Secure autonomy in Big Data and AI technology • Interoperable Data ecosystems (open, private, research, personal, …)	Next Generation Data and AI Platforms
• **Trusted co-evolution between humans and AI-based** systems • Legal issues with data decisions • **Trust in algorithms and data**	Trust in Data-Driven Critical Decision Making
• **Scalable value chains** involving key enabling technologies • **Extracting value** from the fusion of technologies	Extract Value from Next Generation Digital Infrastructure (5G, HPC, Cloud, IoT, BD, AI,..)
• **New data-driven business models** across value chains • Lack of **data interoperability**. Data sharing and exchange • Data-driven **industrial cooperation** across value chains	Scaling Industrial Cooperation Models in the Data Economy
• **Specialisation** required (sophistication of the leading-edge tools and algorithms) • **Data will become a significant part of most jobs** (Managers, workers and decision makers) • **Retaining talent**: driving new forms of academic and industrial research and educational partnerships	Digital/Data Skills and Know-how

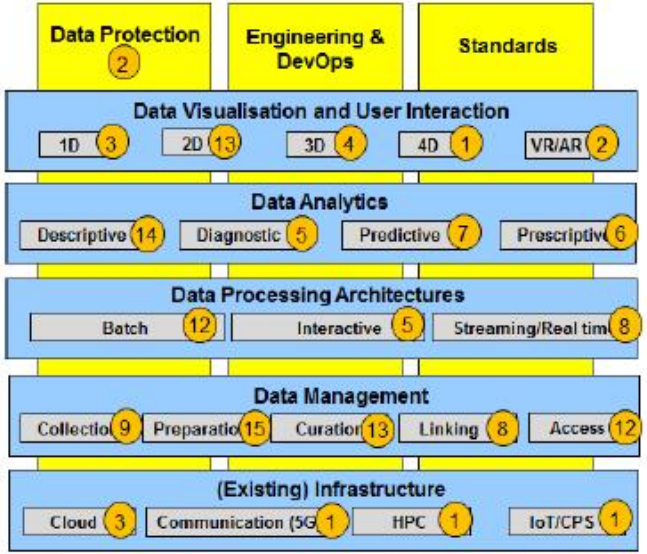
DataBio: Large Scale Pilot in the Big Data PPP

DATABio
Data-driven Bioeconomy

Combining drivers and assets

26 pilots, in 3 sectors x 3 thematic groups

Sector	Variety	Volume (TB)	Velocity (TB/Year)
Agriculture	8 sources, 4 types	53	197
Forestry	8 sources, 7 types	11,39	12,12
	Aerial/UAV		100 GB/h
Fishery	20 sources, 13 types	8,82	6,27



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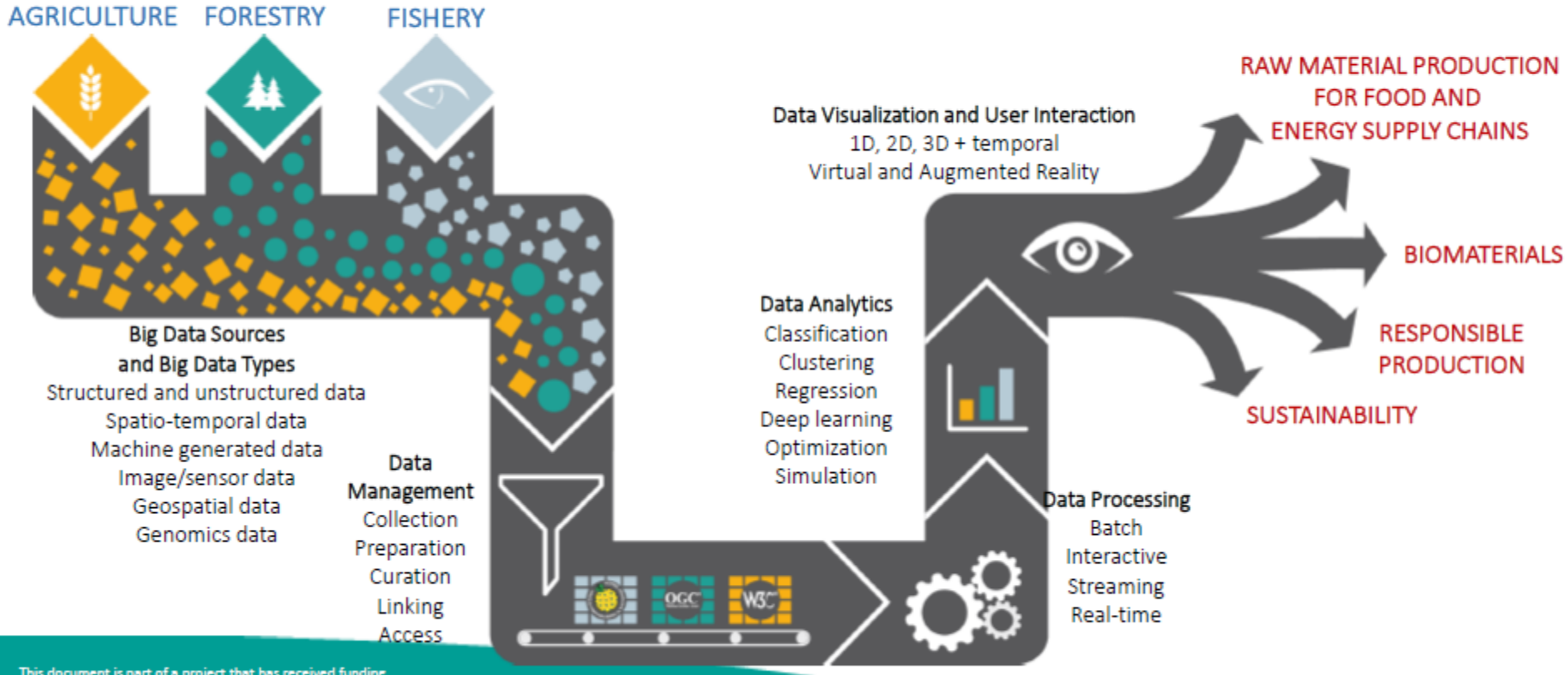
Big picture and expected outcomes



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Next steps

IoT Week Bilbao 2018
4-7 JUNE 2018, BILBAO (SPAIN)
EUSKALDUNA CONFERENCE CENTRE

- **Join BDVA and the discussions of the TF "Big Data in Agriculture"**

Interested in Big Data Benchmarking?

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About DataBench

The DataBench project addresses the significant gap in the current benchmarking community's activities, by providing certifiable benchmarks and evaluation schemes of BDT performance of high business impact and industrial significance.

- **Do you want to know which are the most suitable Big Data technologies for your case?**
- **Do you want to understand the technical performance of your big data technologies?**
- **Do you want to see the business impact?**

DataBench

Thanks

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