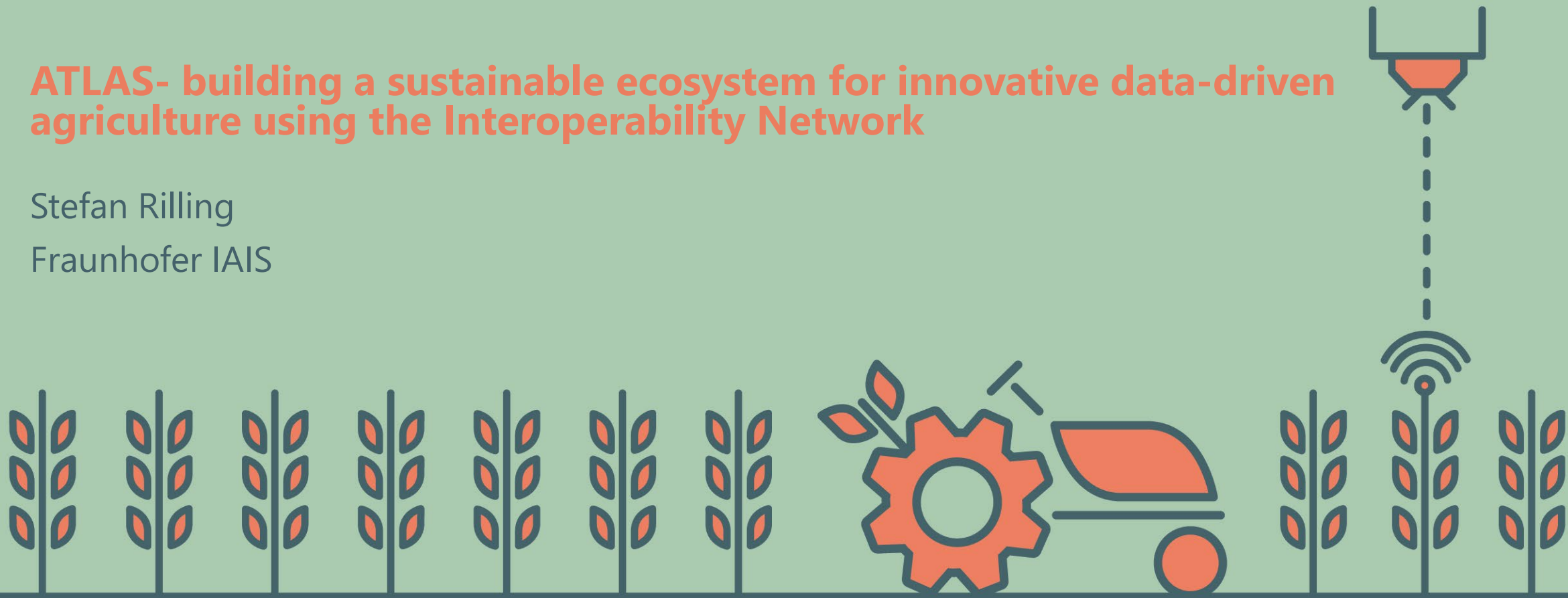
ATLAS
AGRICULTURAL INTEROPERABILITY AND ANALYSIS SYSTEM

Enabling data exchange in agrifood | +++
IoTWeek 2022, June 23rd 2022 | +++

ATLAS- building a sustainable ecosystem for innovative data-driven agriculture using the Interoperability Network

Stefan Rilling
Fraunhofer IAIS



This project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement no. 857125.

Facts and numbers

ATLAS will run over 42 months

1,399.5 person months

9 work packages

53 deliverables

13 milestones

12,890,976.25€ grant requested

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Consortium

30 partners from 7 different European countries

UNIVERSITIES & RESEARCH INSTITUTIONS

INDUSTRY

Machine Manufacturers through AEF (as LTPs)

SMEs

AgriCircle, Agroapps, Robot Makers, Meteomatics, fodjan, Libelium, ETAM

AGRICULTURAL COOPERATIVES & COMMERCIAL FARMS

DLG, Hellenic Agricultural Organization, Association of Latvian Organic Agriculture

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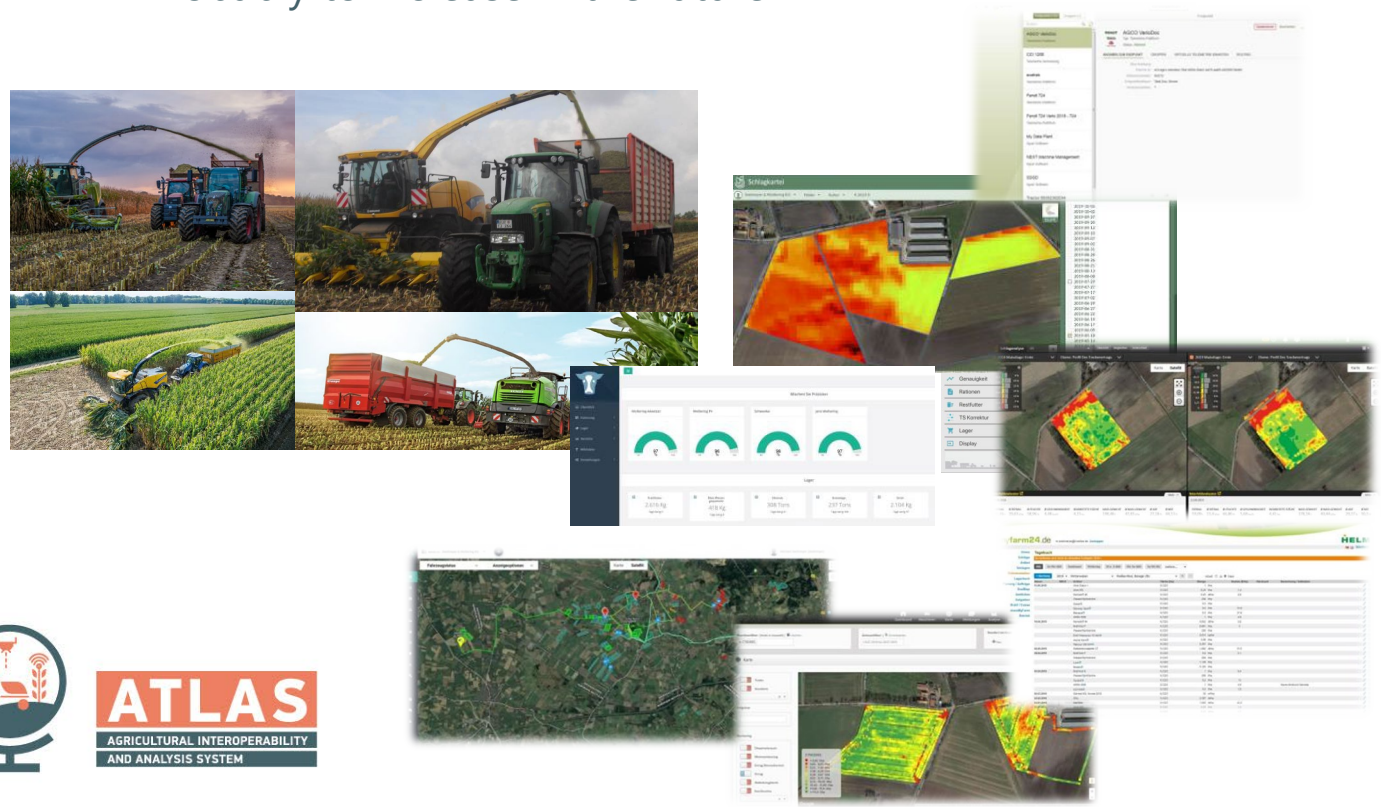
Farming is complex!

- Lots of things to manage
- Heterogeneous fleets
- Example: 1 Farm, 7 different Software Systems
  Probably to increase in the future



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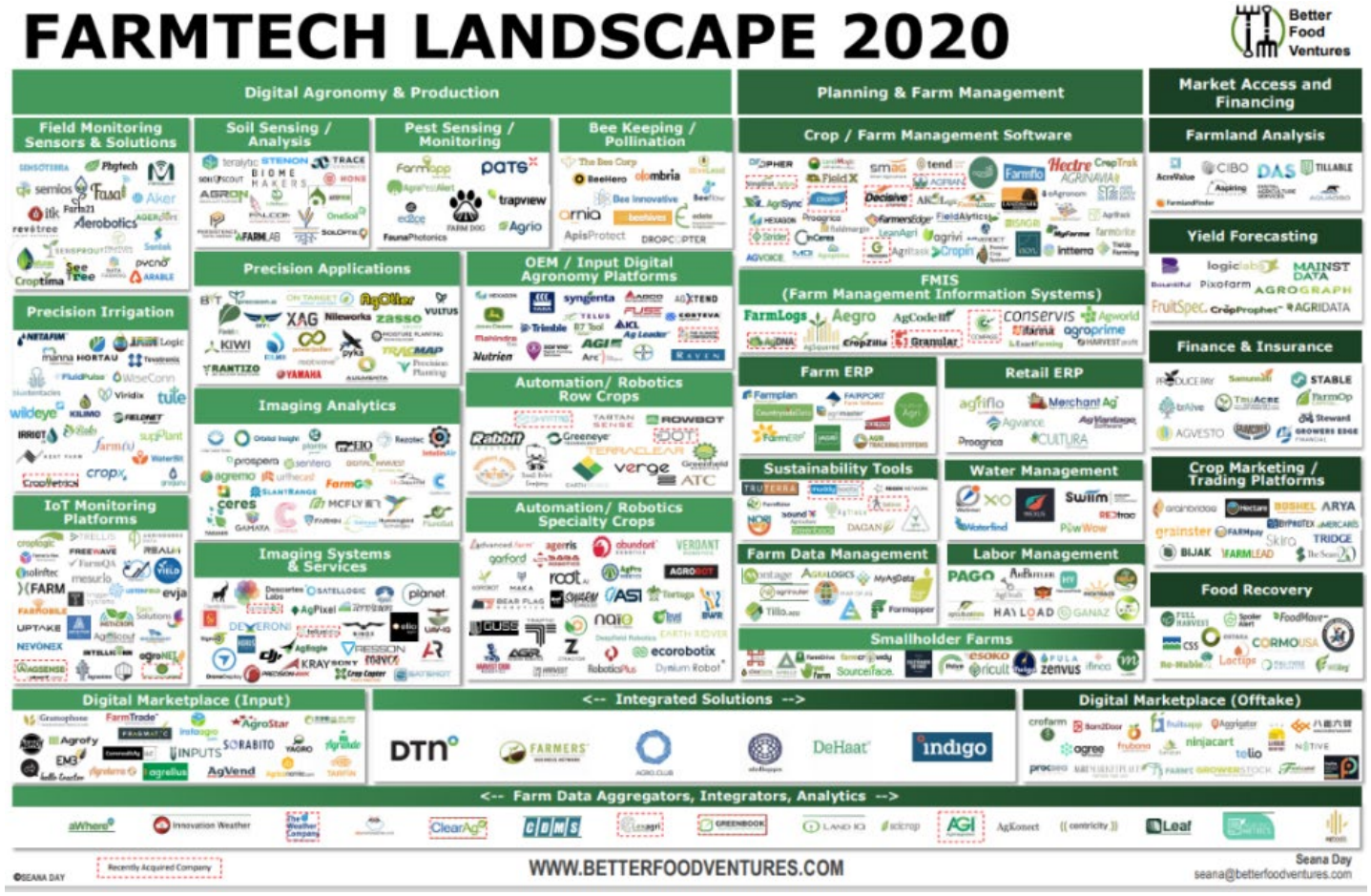
Dozens of Software Tools on the Market



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Interoperability in digital Agriculture

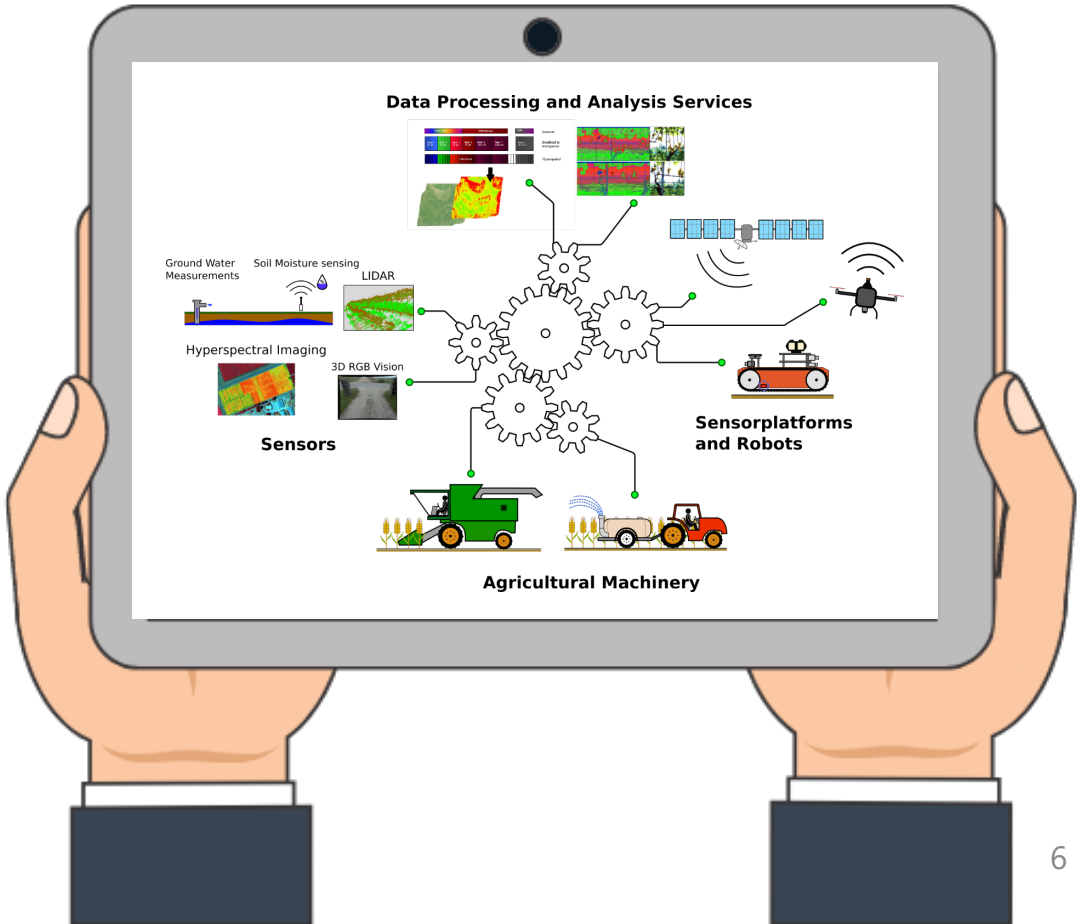
Exchange of data between all entities is a key-capability

SYNTACTIC LEVEL

compatible messaging standards, programming language agnostic

SEMANTIC LEVEL

transmitted data conveys a shared meaning that enables the integration of business processes



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ATLAS Interoperability Network

- Trusted and autonomous participants.
- Minimum of centralized components.
  - No data silos, no central data hubs.
- Data Exchange through dedicated connectors (Services).

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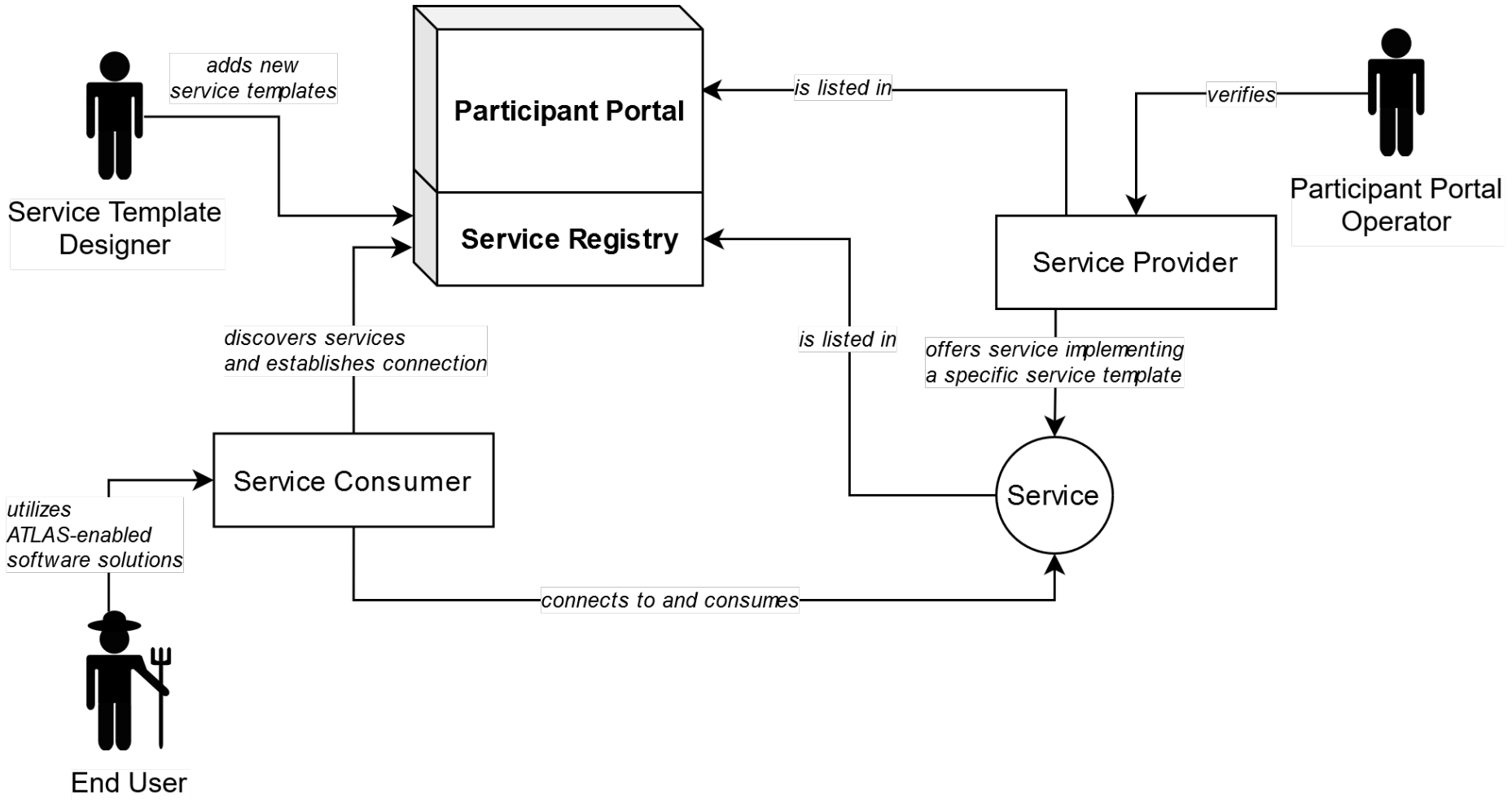
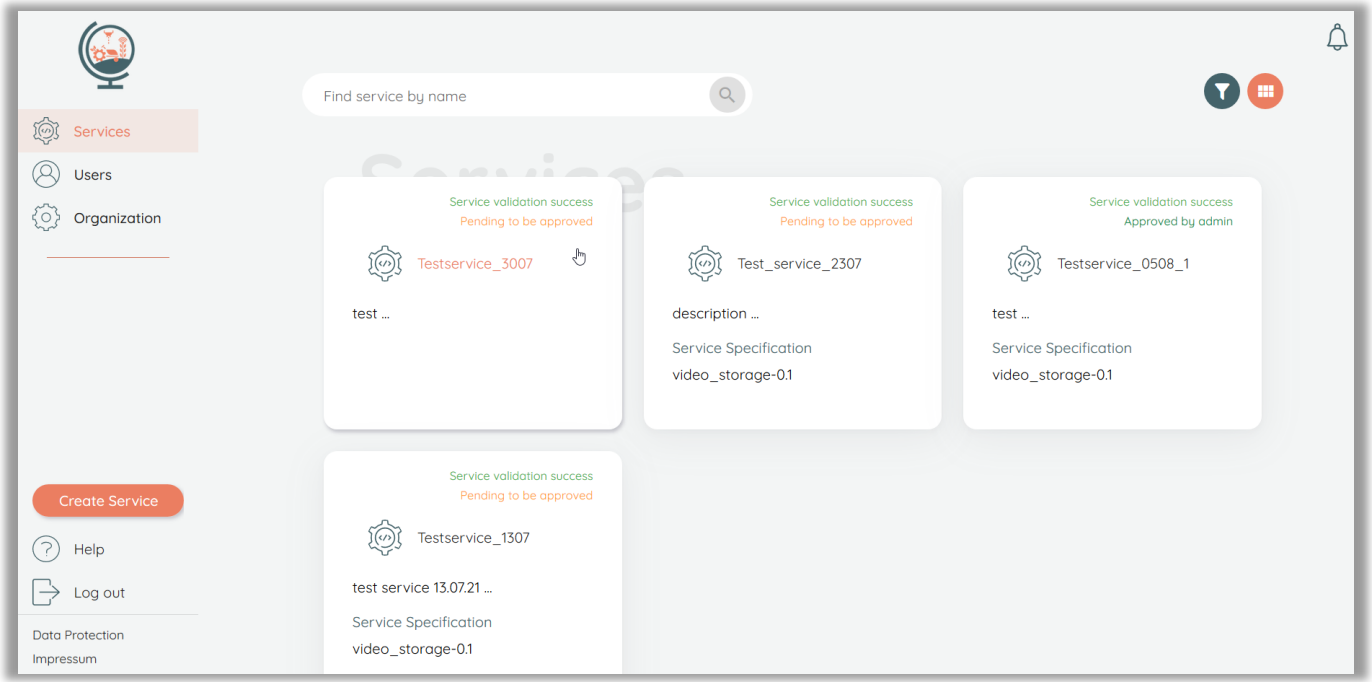
ATLAS Ecosystem



ATLAS Participant Portal

- The main “entry point” for ATLAS participants
  - Management of Services
  - Management of Participant Data
  - Validation of Services



https://participants-portal.iais.fraunhofer.de/

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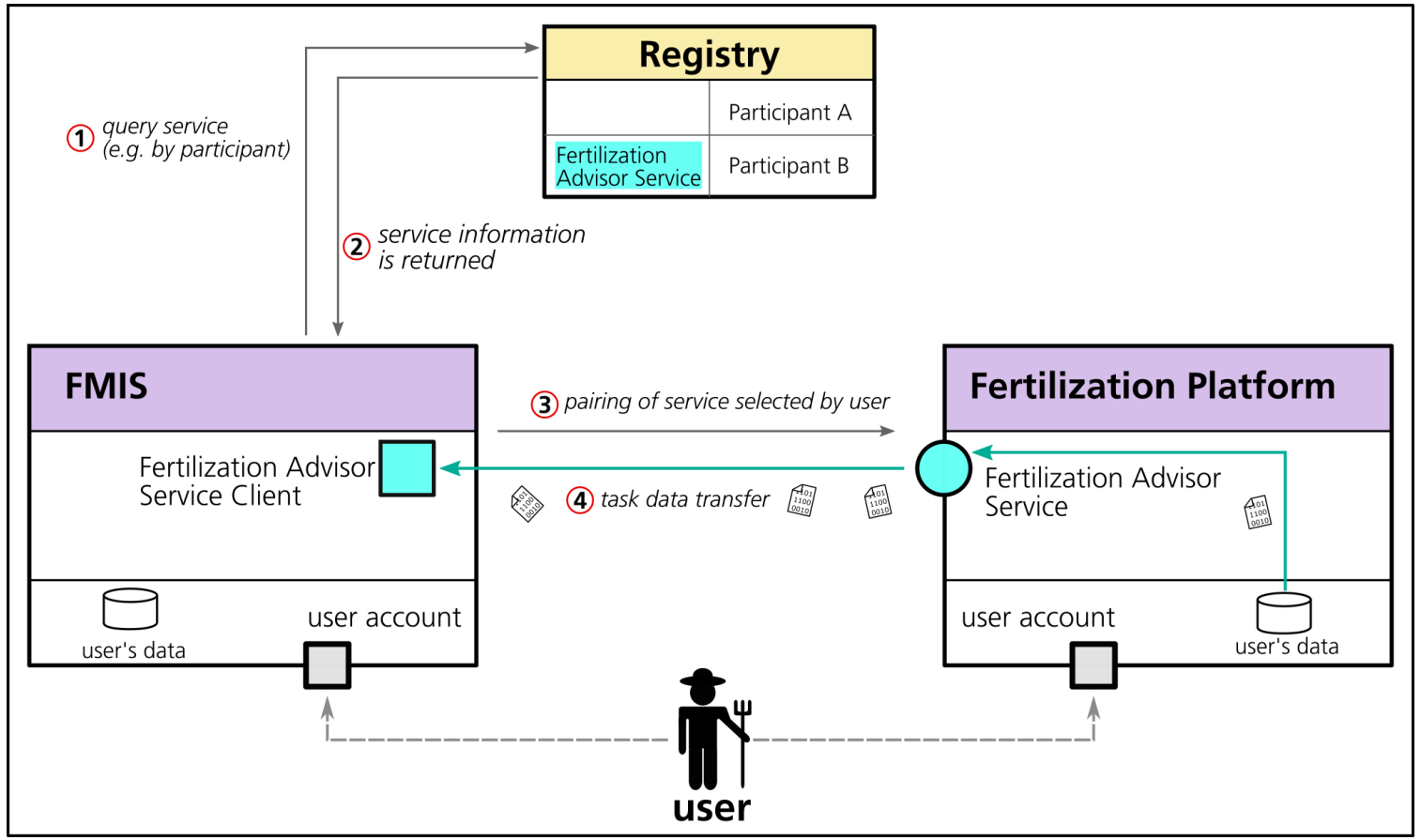
Service Pairing and Registry



Challenges for Interoperability

- Standard API and data formats through service templates
  - Standards to ensure semantic interoperability
  - Common service templates

CHALLENGE

level of granularity vs. generalization

- Service Registry as the central infrastructure
  - Governance and operation needed

CHALLENGE

How to ensure fair access with low entry barriers to meet farmers' interests?

- Safety, security and privacy

CHALLENGE

How to ensure safety and security of the ATLAS Network while staying GDPR-compliant?

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Opportunities through Interoperability

- ATLAS enables the **interconnection** of **existing systems**
  - Leverages existing systems by “retro-fitting” ATLAS capabilities
- ATLAS is an **innovation catalyst** through flexibility and openness
  - It enables small and innovative companies to bring working solutions to the market
- ATLAS adds **flexibility for farmers**
  - It enables users (farmers) to avoid vendor lock-in, get rid of data silos, allows flexible choices and decisions
- ATLAS enables **complex** digital **data- and operation flows**
  - Dataflows from sensors to cloud services to robots and machines are built based on the efficient combination of participating services

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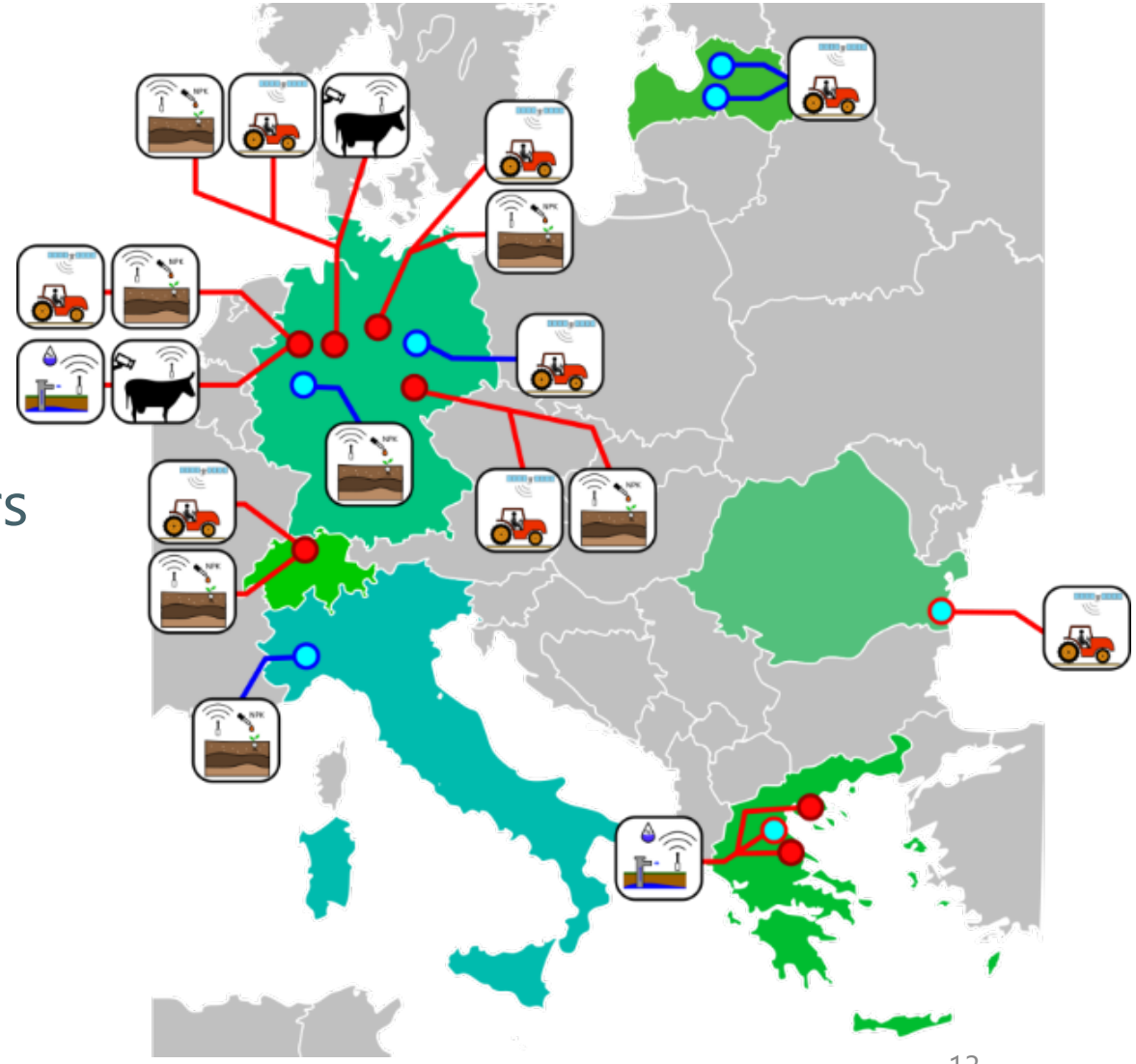
Pilot studies & use cases

- Conducted on the test sites
  to demonstrate and evaluate the Network
  and the interoperability of sensors,
  machines and services.

- Use cases defined through ATLAS end-users
  - Targeted application of plant protection
  - Advanced Irrigation Management
  - Soil state and soil readiness analysis
  - Behavioural analysis of livestock



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Current Project Output

- Service Registry and Participant Portal operational
- Service Templates specified
- Code examples on GitHub

- Sensor Networks installed on the pilot sites
- Sensor-Box and on-board processing on tractor demonstrated

- Specification and Implementation of various services
  - Livestock
  - Digital field twin
  - Fertilization
  - Irrigation
  - Satellite data analysis

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Online Ressources

ATLAS example code on GitHub

https://github.com/atlasH2020

ATLAS Service Templates on GitHub

https://github.com/atlasH2020-templates

ATLAS Participant Portal

https://participants-portal.iais.fraunhofer.de/

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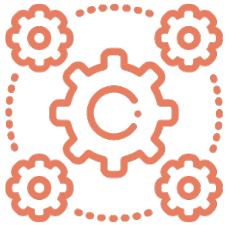
Summary



NEW LEVEL OF INTEROPERABILITY

- Agricultural machines, sensors, data services
- Decentralized, service-oriented architecture
- Digitalize farm operations

ATLAS enables

Simplified processes from farm to fork

- Simplified Communication
- Digital connection to the consumer
- Avoidance of multiple data collection processes
- Data sovereignty is at the farmer

New business models for and with the farmer

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Thank you!

Fachforum DLG Feldtage 2022

Kompatibilität und Konnektivität, Datenaustausch entlang der Wertschöpfungskette

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