

Walton Institute and EU Agri Data Spaces

IoTWeek 2022, June, Dublin

Kevin Doolin – Exec Director, Walton Institute

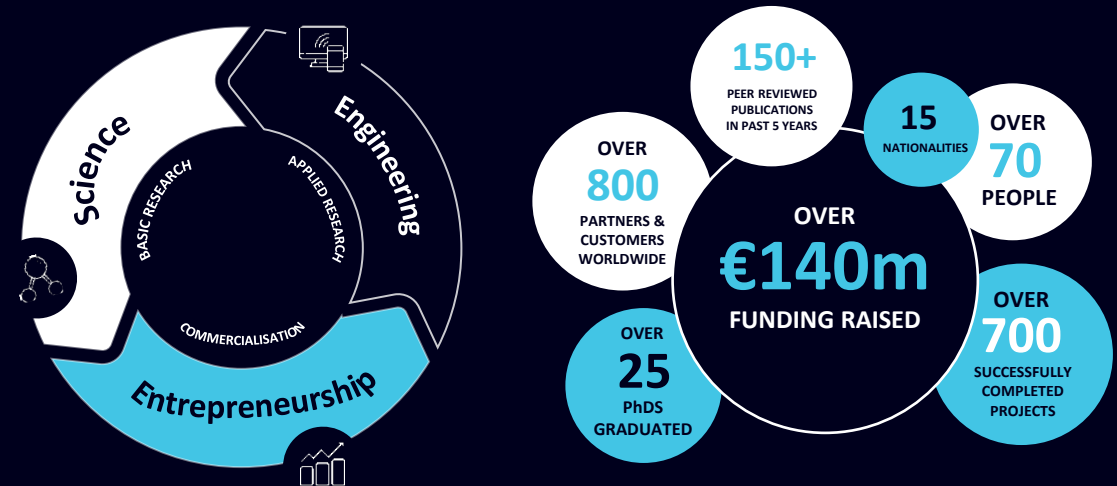
Walton

Institute for Information and Communication Systems Science

- International Research Institute hosted by SETU.
- Founded as TSSG in 1996 by Prof. Willie Donnelly
- Upgraded to Walton Institute in 2021
- Executive Director Kevin Doolin
- Director of Research Dr. Deirdre Kilbane
- 100% self-funded.

Fundamental Expertise

- Communications Networks and Wireless Systems
- Machine Learning and Artificial Intelligence
- Emerging Communication Technologies
- Pervasive Environments and Computing
- Molecular Communication Theory
- Quantum Technologies



EU Opportunities - Digitalisation

Digitising European Industry Promoting adoption of digital technologies



Focus Area 'Digitising and transforming European industry and services', Platforms and Pilots Funded Under Horizon 2020



Next generation platform building and piloting through large scale federating projects

EU Challenges - Digitalisation



Digital technologies as enabler for achieving the new CAP reform

- Precision farming (remote sensing & earth monitoring, IoT)
- Automation (IoT, AI, robotics, drones...)
- Agri-food chain (traceability, new business models, market organisation...)
- CAP administration

Still Current challenges:

- **Lack of interoperability between platforms/systems**
- Digital applications are not bundled - **no flow of data between different apps**
 - integration to be further improved
 - platforms
 - interconnection between platforms
- Limited availability of reliable cost/benefit analysis
Show benefits → pilots/use cases

EU Challenges - Digitalisation

Digitalisation brings opportunities to the EU farming sector and rural areas...

... but there are limiting factors and bottlenecks to overcome

- Infrastructure / connectivity / broadband
- Farmers' awareness about benefits
- Farmers' skills
- Standardisation/interoperability of systems
- Data ownership
- Financing investments

...and potential risks to consider

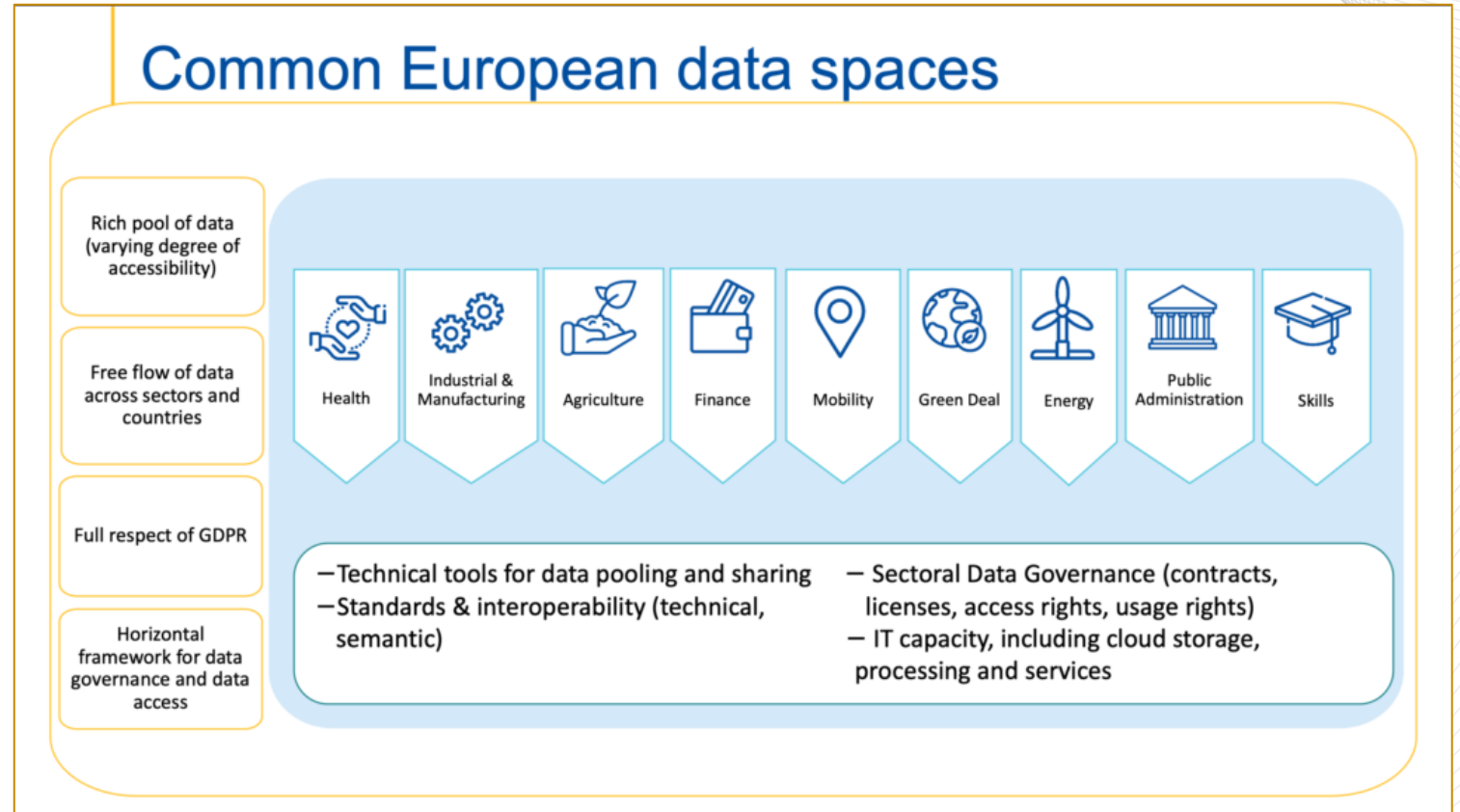
- Digital divide
- Data ownership
- Increased concentration in the agri-food chain
- Uncertain impact on jobs
- Socio-economic impact overall

European
Commission



Addressing the challenges – data spaces

European Data Spaces: “...The European strategy for data aims at creating a **single market for data** that will ensure Europe’s global competitiveness and data sovereignty. Common European data spaces will ensure that more data becomes **available for use in the economy and society, while keeping companies and individuals who generate the data in control**. Data is an essential resource for economic growth, competitiveness, innovation, job creation and societal progress in general...”



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Addressing the Challenges

- DEMETER
- CYBELE
- NIVA
- VISTAMILK
- AGRIDISCRETE
- DIVINE
- AgriDiscrete
- SmartAgriHubs
- AgRoboFood
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Topics

- Sensor networks and Fog Analytics
- Edge AI/ML
- Molecular Comms
- HPC Data Analytics
- Digitalisation of CAP
- Application/service development
- Interoperability papers
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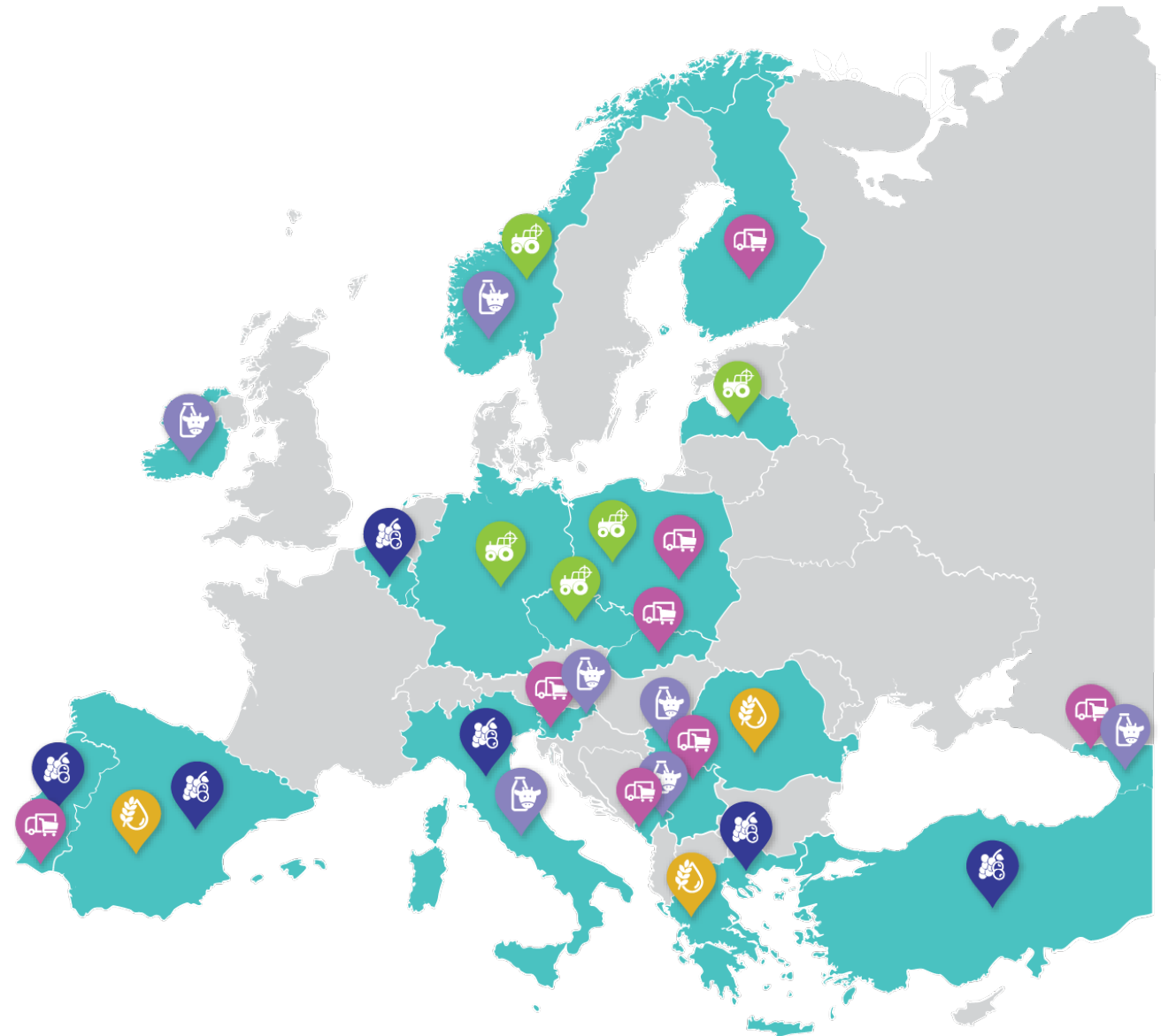
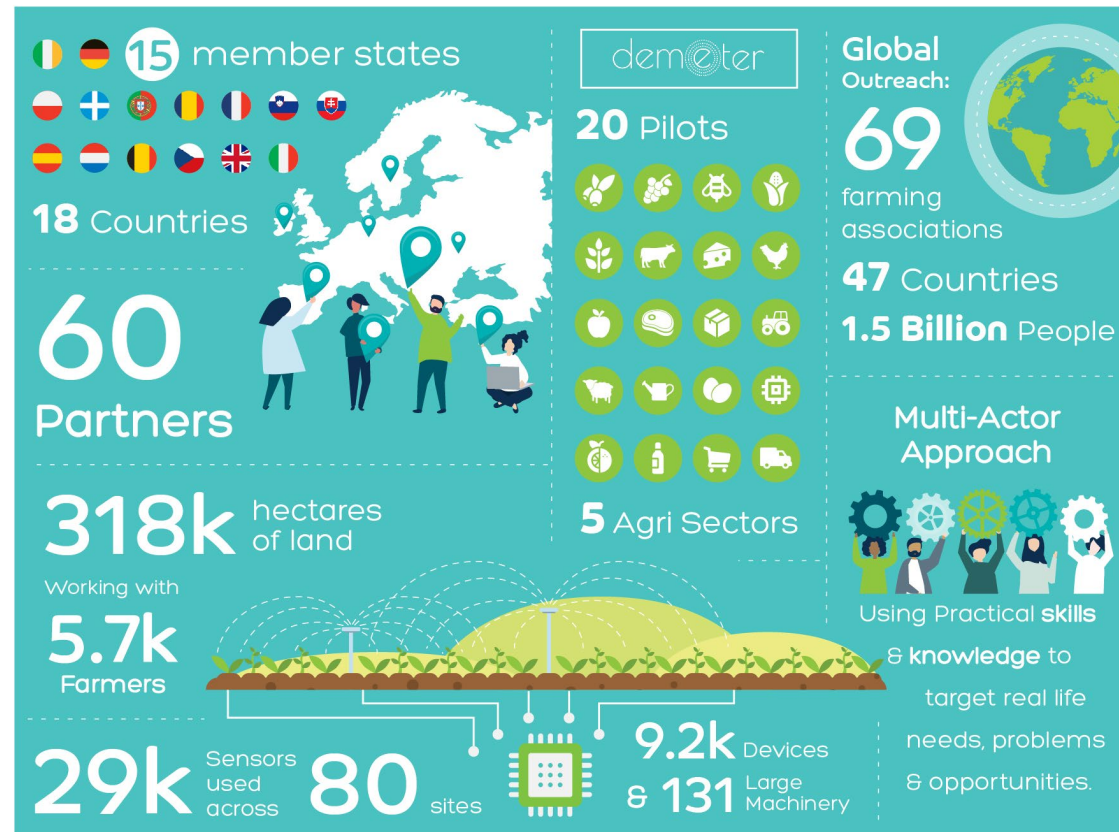


H2020-demeter.eu





DEMETER - In a nutshell





The DEMETER Approach



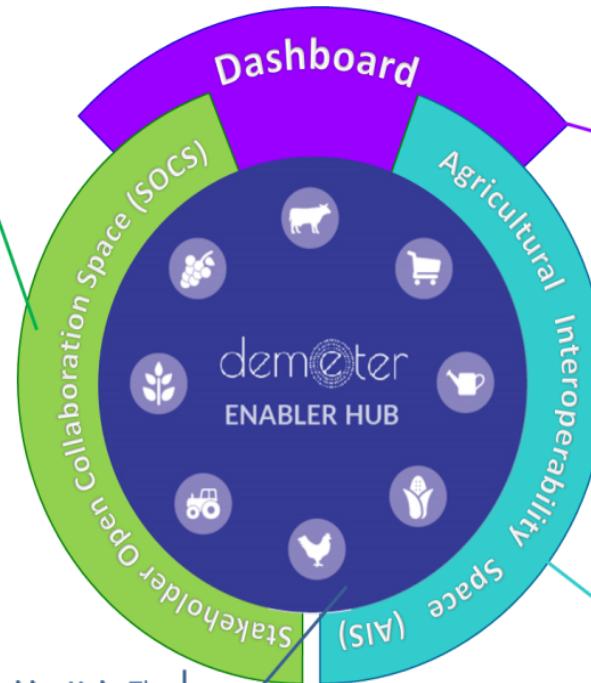
Knowledge sharing and co-creation space where

- Farmers/service advisors express their needs and
- Service advisors and providers team-up to define the most appropriate combination of tools.

DEMETER MAA

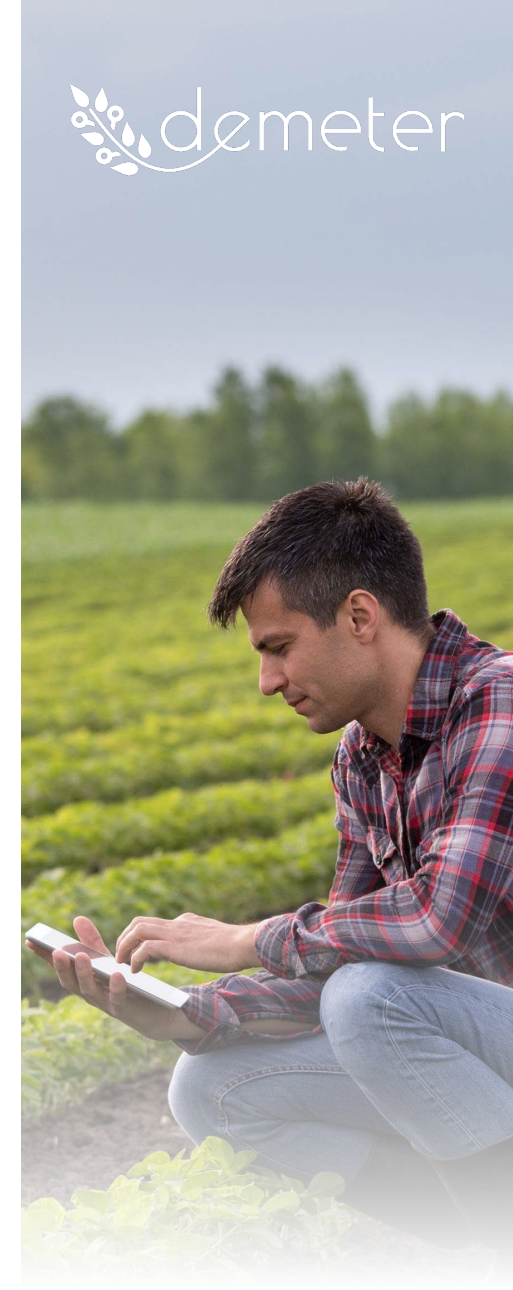
- Co-creation of needs
- Co-generation of solutions
- Co-shared responsibility for efficient deployment
- Co-organise support for optimal adoption

DEMETER Enabler Hub: The available collaboration spaces (SOCS and AIS) are built around this hub that enables access to all resources that are available for integration and deployment.



DEMETER Dashboard: Sole entry point to the DEMETER ecosystem for all DEMETER Stakeholders.

Implementation Space: A virtual space where providers team-up and interoperate to develop and deliver the appropriate combinations and customisations of tools to the farmers ensuring interoperability with existing solutions.





Research Verification - Pilots Overview



Sector: **Arable Crops**
Focus: **Water & Energy Management**

- Water savings in irrigated crops
- Smart energy management in irrigated & arable crops
- Optimal Quality Rice Irrigation
- IoT Corn Management & Decision Support Platform



Sector: **Arable Crops**
Focus: **Agricultural Machinery, Precision Farming**

- In-Service Condition Monitoring of Agricultural Machinery
- Automated documentation of arable crop farming processes
- (Farming)Data Brokerage Service and Decision Support System for Farm Management
- Benchmarking at Farm Level Decision Support System



Sector: **Fruit & Vegetables**
Focus: **Health and high-quality crops**

- Decision Support System to support olive growers
- Precision Farming for Mediterranean Woody Crops
- Pest Management Control on Fruit Fly
- Open platform for improved crop monitoring in potato farms



Sector: **Livestock**
Focus: **Animal Health, High Quality**

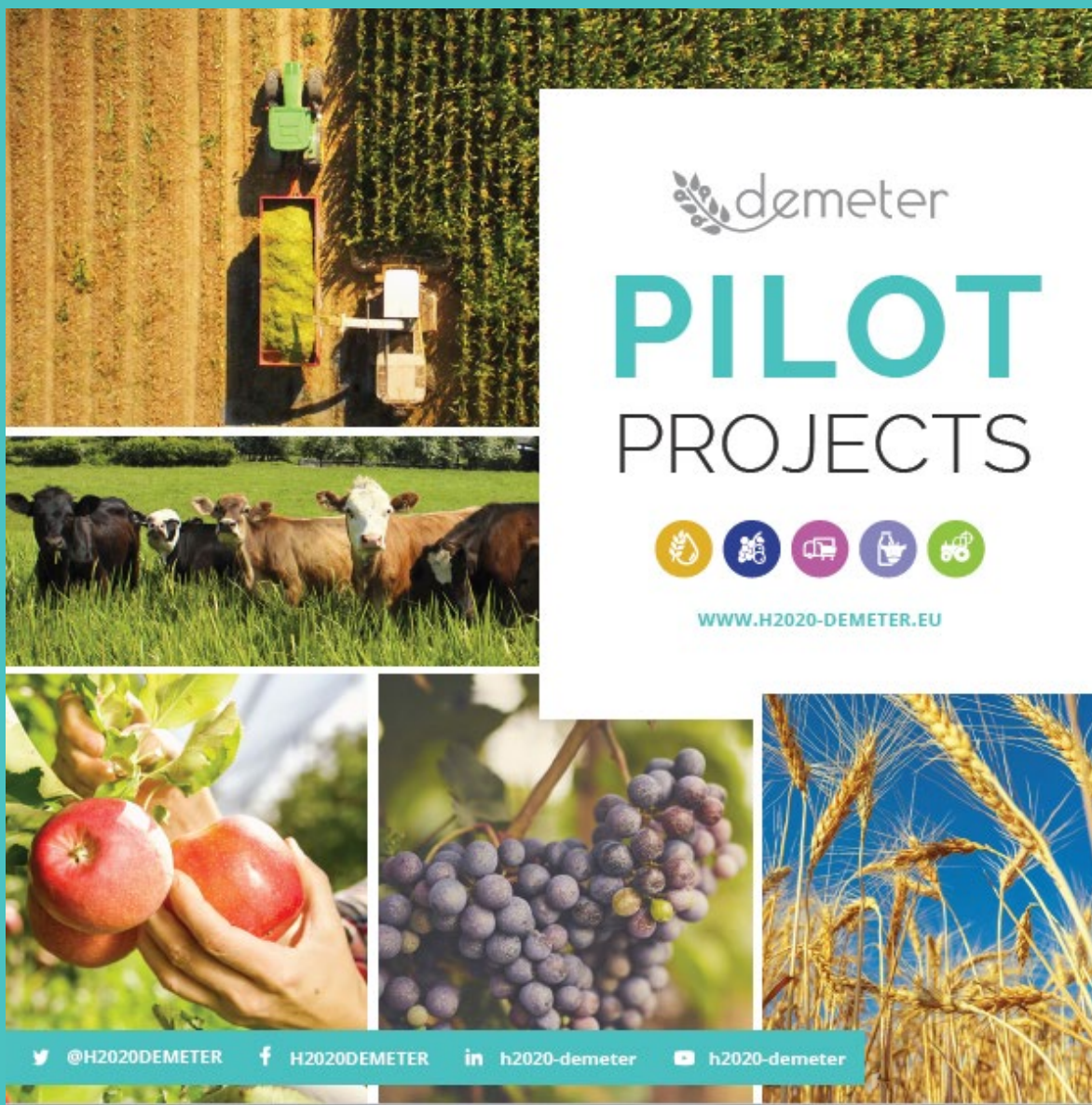
- Dairy Farmers Dashboard for the entire milk and meat production value chain
- Consumer awareness: Milk quality and animal welfare tracking
- Proactive milk quality control
- Optimal chicken farm management



Sector: **Cross-sectorial**
Focus: **Full supply chain, interoperability, robotics**

- Disease prediction and supply chain transparency for orchards/vineyards
- Farm of things in extensive cattle holdings
- Pollination optimisation in apiculture
- Transparent supply chain in poultry industry





DOWNLOAD OUR BOOKLET
EXPLAINING ALL OUR PILOT
PROJECTS





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Thank you for your time.

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