



An initiative of the European Union

#SingleMarket30

CLUSTERS MEET REGIONS

PRAGUE

23 · 24

CZECH REPUBLIC

OCTOBER 2023



CZECH CLUSTERS AS LEADERS OF GLOBAL DIGITAL
AND GREEN ECOSYSTEMS

EUCLUSTERS



MATCHMAKING EVENTS



Seeds of Tomorrow: AI & Cybersecurity Innovations in AgriFood Manufacturing

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European Cluster Manager of the Year 2022, Vice-
President European Clusters Alliance, CEO AgriFood
Lithuania



AGRIFOOD LITHUANIA ECOSYSTEM

Incubators
Government
Investors
Others
Industry, associations



Science institutions
Startups
SMEs
Large Enterprise



Big Data



Artificial intelligence



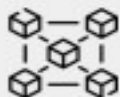
High Performance Computing



Cyber Security



Robotics & Drone Systems



Blockchain

AgriFood **DIH** Lithuania
AgriFood **CLUSTER** Lithuania



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MAIN ACTIVITIES



Climate decision-making



Regenerative agriculture



Young people



Empowering women



Alternative proteins



Environmental labeling



Transforming food systems



European
StartupVillage
alliance

 EUROPEAN
CLUSTERS ALLIANCE

 Food  Co-funded by
the European Union

 SMART
AGRI
HUBS

 EUROPEAN CLUSTER
COLLABORATION PLATFORM

 pic
Plant InterCluster

 SMART
SENSORS
AGRI
FOOD

 KlasterLT

**WE ARE THE
MEMBER OF :**

Recognized as one of two good practice examples of European sectoral DIHs in the JRC science for policy report handbook

1 of 4 DIHs funded in Lithuania by Ministry of Economy

EDIH Lithuania – out of 35 Agrifood EDIHs in EU

 **EDIH LT**
INDUSTRY | AGRIFOOD | ENERGY

AgriFood Lithuania DIH has become EITFOOD Hub in 2021

 AgriFood DIH
Lithuania

 AgriFood CLUSTER
Lithuania

 CLUSTERS MEET
REGIONS

 EUROPEAN CLUSTER
COLLABORATION PLATFORM

 European
Commission

 NCA
NATIONAL CLUSTER ASSOCIATION

 CE DIGITAL
& ENVIRO
GROUPING

 edih
NORTHEAST

 KLASTR
СТРАВ
МЕХАТРОНИКА

 FZU
Institute of Physics
of the Czech
Academy of Sciences

 PRA
HAGUE
PRA
G

 MINISTERSTVO
PRŮMYSLU A OBCHODU



The AgriFood Industry - A Global Powerhouse

The AgriFood Industry is a critical pillar of the global economy, generating trillions in revenue annually and employing over 1 billion people worldwide. This vital sector faces the monumental challenge of sustainably feeding a population expected to reach 9 billion by

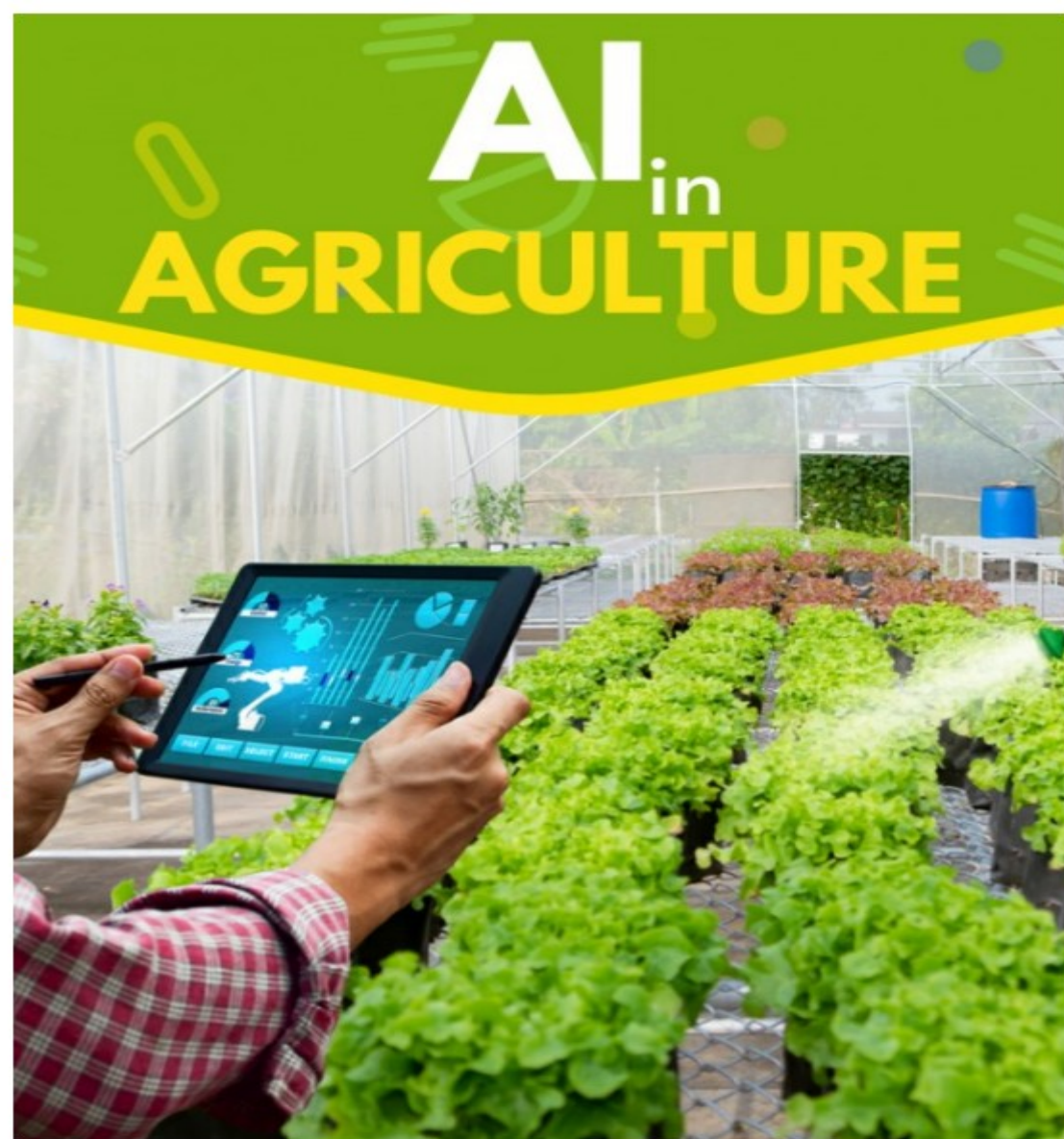


1 In 2021 62% of farmers globally use some form of precision agriculture (FAO)

2 The global market value of smart agriculture is forecast to reach around 34 billion U.S. dollars by 2026 (Statista)

3 The overall AI in agriculture market had a size of almost 1.1 billion U.S. dollars in 2019 and is forecast to grow to more than 8.4 billion U.S. dollars by 2030 (Corteva)

4 The global spending on “smart” agriculture, including AI and machine learning, is projected to triple to \$15.3 billion by 2025 (Forbes)



The Role of AI in AgriFood Manufacturing



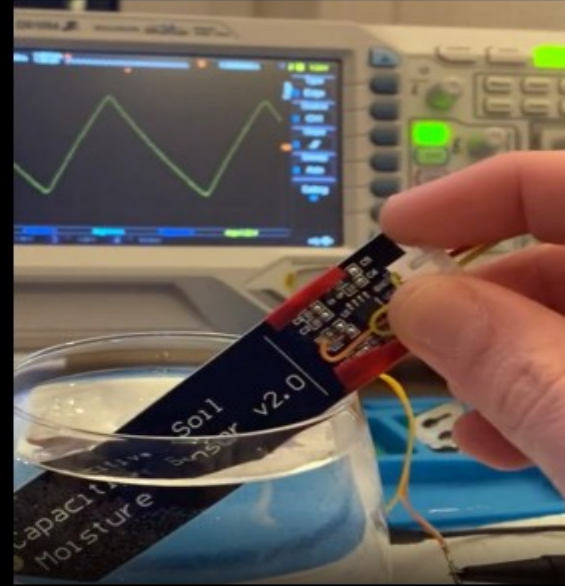
Robot harvesting tomatoes

Robots equipped with AI can harvest crops, optimizing efficiency and reducing reliance on manual labor



Drone spraying pesticides

Drones with precision spraying guided by AI enable targeted pesticide application to crops



Sensors monitoring soil moisture

IoT sensors connected to AI systems can monitor soil moisture and regulate irrigation for optimized water usage



Supply chain management dashboard

AI-powered supply chain optimization reduces food loss by ensuring efficient transportation and storage



The Cybersecurity Challenge in AgriFood

Digital Transformation

Widespread adoption of digital technology and IoT devices expands the attack surface

Data Breaches

Vulnerabilities expose sensitive data like farming records, equipment info, and proprietary research

Supply Chain Disruptions

A cyber attack can disrupt critical supply chain operations, impacting productivity

Severe Consequences

Cyber attacks can cause financial losses, operations downtime, and reputation damage

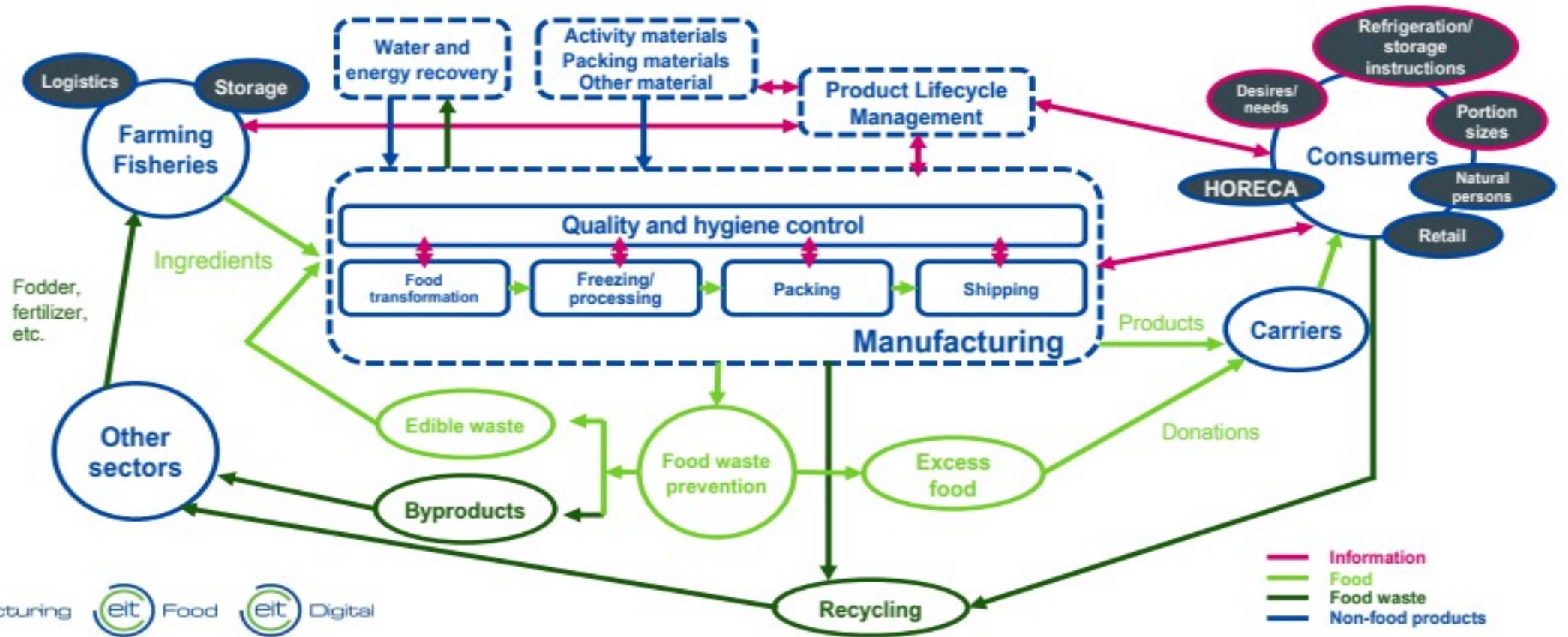
Evolving Threats

The threat landscape is continuously evolving as hackers develop new attack methods

The Need for Action

Proactive measures like AI-driven security, training, and best practices are crucial

DIGITAL FOOD VALUE CHAIN



* Based on



and according to the data of the "Agrifood supply chain optimization" work group

Information
Food
Food waste
Non-food products

AgriFood Lithuania AgriFood Lithuania



AGRIFOOD INNOVATION ECOSYSTEM

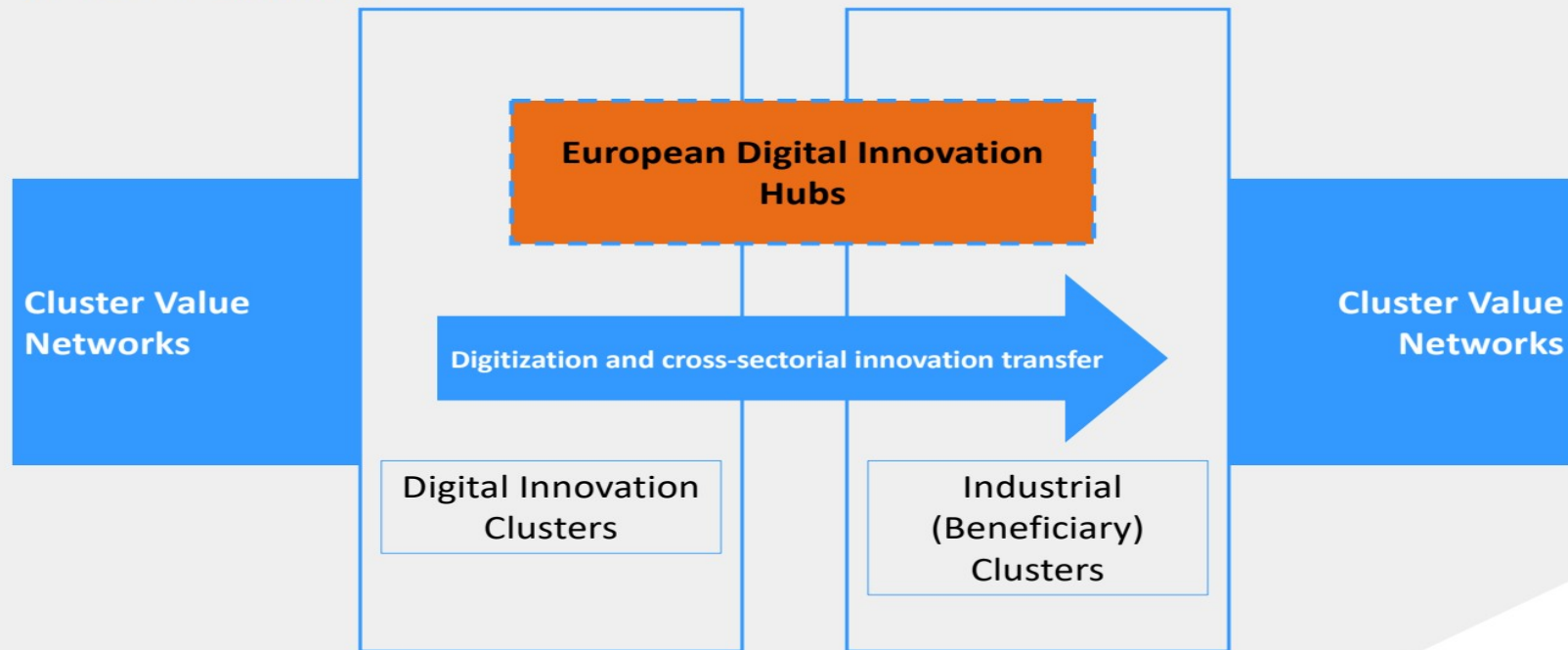


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Linking E-DIHs and Clusters through the value chain



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ICAERUS

Main Objective

The ICAERUS vision is to explore opportunities and provide a more complete and interconnected account of the potential and impact of drones as multi-purpose vehicles in EU agriculture, forestry and rural areas. **The aim of ICAERUS is to showcase and support**, through application, the effective, efficient and safe deployment of drones as well as, **identify the risks and added values** associated with their use.

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Forestry and Biodiversity Use Case
(Lithuania)

art21

Forest health evaluation and prediction AI models

Wild boar monitoring, identification and counting machine learning and computer vision models

AI models for high fire risk evaluation from multispectral and thermal imagery



Main Objective

ZeroW directly addresses the challenge of food loss and waste (FLW) by developing and testing a synergetic mix of innovations in real-life conditions with the aim to deliver ambitious reductions at all stages of the food value chain from post-harvest to consumption.

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LitMEA



Reduction of FLW in tomato greenhouses (Lithuania)

- 🍅 Computer vision for tomato identification and counting
- 🍅 AI models for tomato ripeness estimation
- 🍅 AI models for the detection of substandard fruit
- 🍅 Models for prognosis of future tomato yield





Funded by
the European Union

FARMTOPIA

The overall objective of the Farmtopia project is to democratize digital farming by creating a paradigm shift in the way ADSs for small farms are created, deployed and paid for. This will be achieved by:

- a) fostering co-creation of ADSs to ensure they will solve real problems and fit the needs of small farms;
- b) lowering the cost for both farmers and ADSs providers, by creating a set of reusable software modules, a number of business and governance models, and identifying public provision of infrastructure that can enable scale-out of ADSs.

18 Sustainable Innovation Pilots (SIPs) in 15 countries across Europe.

The Lithuanian SIP on industrial hemp:

- Development of the AI models based on the use of UAVs, soil sensors and hyperspectral imaging for the purposes of reduction of operational costs and increase of productivity.



farmtopia.eu



Overall Concept

Smart Droplets revolutionizes chemical applications by:

- **optimizing resources,**
- **reducing waste**
- **enhancing hardware and software capabilities**

It develops a comprehensive system that translates **field data into valuable insights** and **effective spraying commands**, aligned with the **Green Deal's goals**.



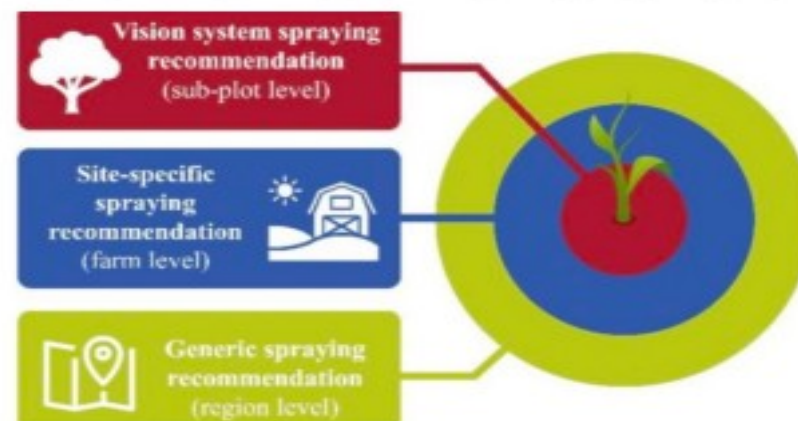
Digital Twins



The **core** of SmartDroplets intelligence is an **accurate digital version** of a real farm:

- Powered by AI
- Historic data collected from real farms
- Precision in predictions for:
 - Yield
 - Disease occurrence and distribution
 - Weeds occurrence and distribution
 - Plant health

AI and Machine Vision on the field



- **On site detection** of weeds and plant disease **using AI**
- Real-time spraying recommendation **powered by Machine Vision**
- **Benchmarking** the accuracy of the **Digital Farm Twin** recommendations
- **Data Collection** to further develop the AI models and Digital Twins



Transforming AgriFood SMEs through the collaboration between E-DIHs and Clusters

Access to Technical Expertise

EDIHs provide agrifood SMEs with consultations, workshops, and knowledge sharing opportunities with specialists in data analytics, cybersecurity, and

Testing Facilities

EDIHs offer access to state-of-the-art testing facilities for agrifood SMEs to validate innovations and conduct trials

Innovation Services

EDIHs provide services like funding advice, digital skills training, and integration guidance to enable effective innovations

Networking Opportunities

EDIHs facilitate networking and collaboration among agrifood SMEs by organizing industry-specific events, workshops, and matchmaking sessions. These opportunities connect SMEs with other businesses, research institutions, and potential partners within the agrifood ecosystem. Collaborations formed through these networks can lead to joint ventures, research projects, and market expansion opportunities, fostering growth and competitiveness.

Access to Funding

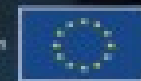
Digital transformation often requires significant financial investment. EDIHs assist agrifood SMEs in identifying and accessing funding sources, such as grants, subsidies, or loans, specifically earmarked for digital innovation projects. By navigating the complex landscape of available funding options, EDIHs ensure that SMEs have the financial resources necessary to embark on their digital transformation journey.



Let's meet in Vilnius!



An initiative of the European Union



CLUSTER COLLABORATION LABS

Vilnius, Lithuania

14-15 November 2023

**NEXT
GEN
EU**



WHAT/WHO IS “AN INNOVATOR”?





THANK YOU

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