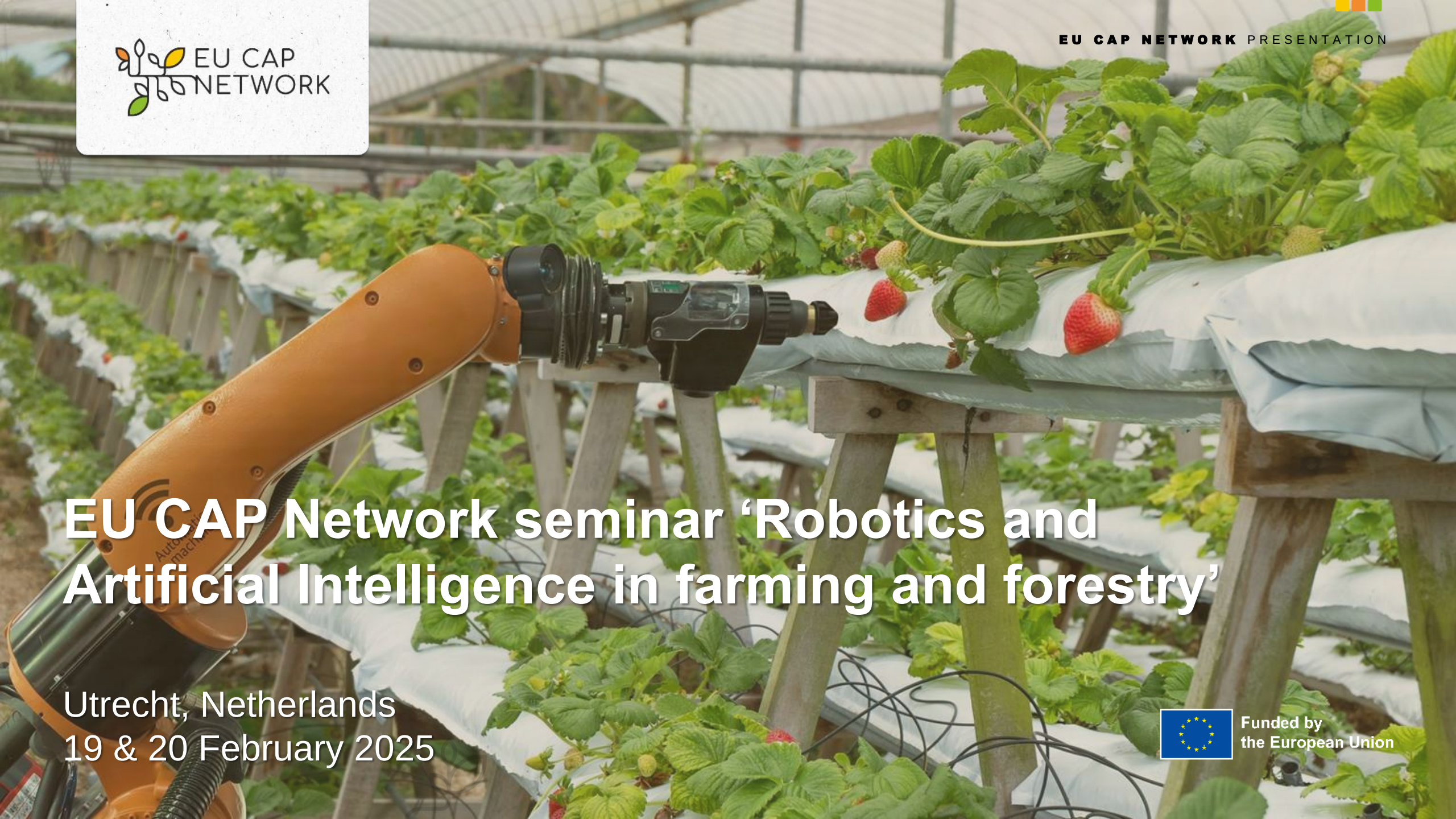
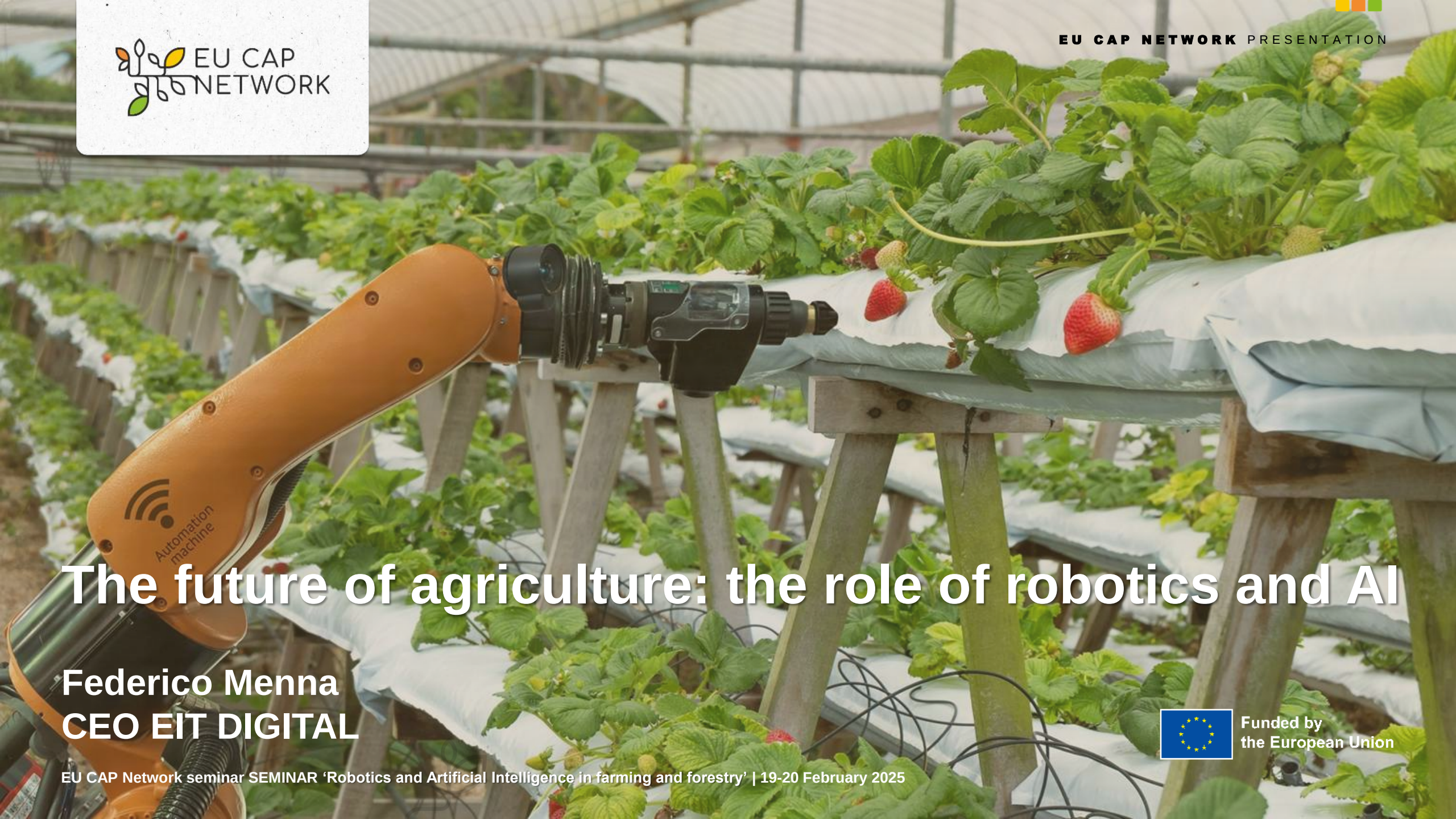


EU CAP Network seminar ‘Robotics and Artificial Intelligence in farming and forestry’

Utrecht, Netherlands
19 & 20 February 2025

Funded by the European Union

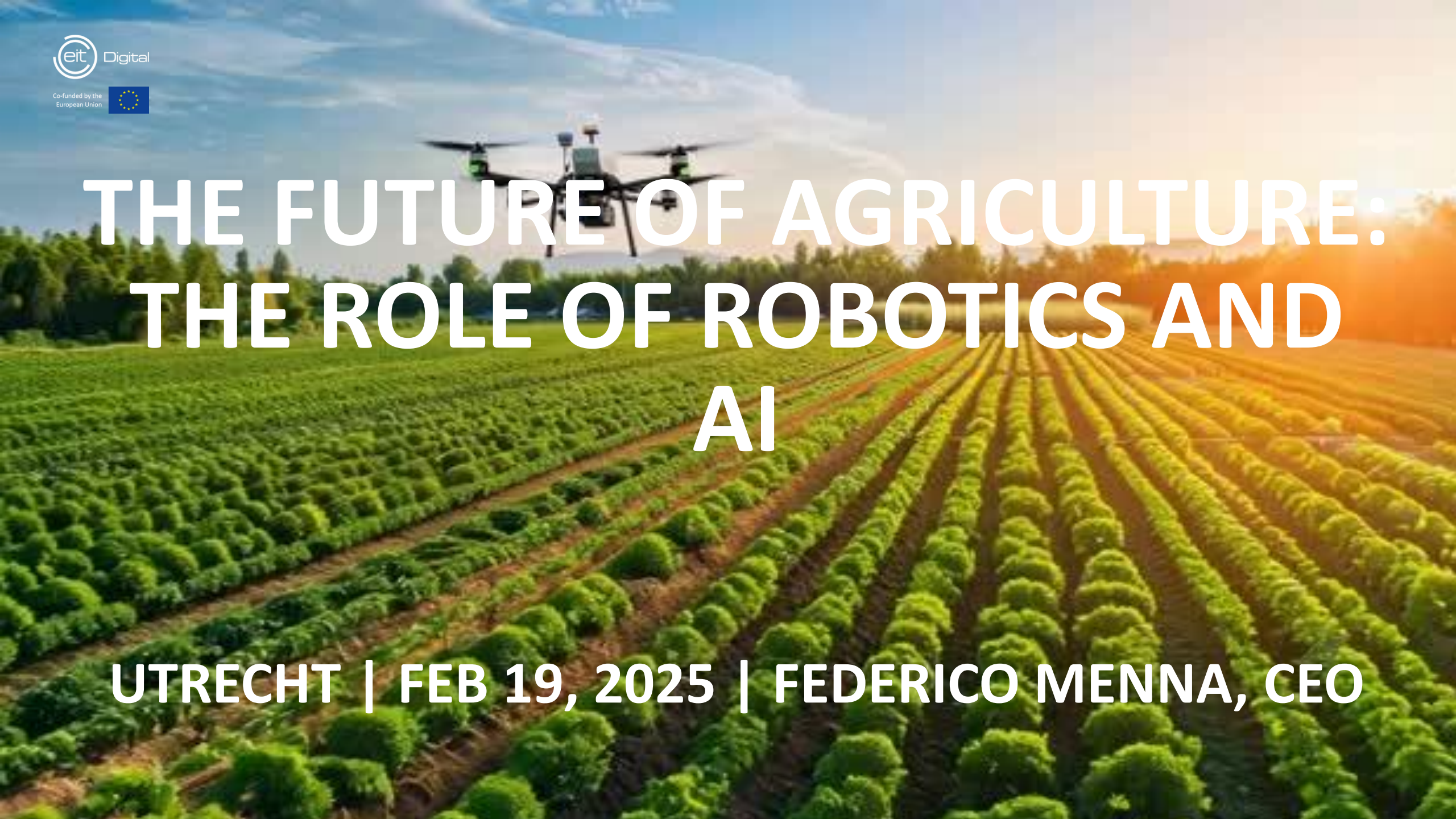


The future of agriculture: the role of robotics and AI

Federico Menna
CEO EIT DIGITAL

Funded by
the European Union

EU CAP Network seminar SEMINAR ‘Robotics and Artificial Intelligence in farming and forestry’ | 19-20 February 2025



THE FUTURE OF AGRICULTURE: THE ROLE OF ROBOTICS AND AI

UTRECHT | FEB 19, 2025 | FEDERICO MENNA, CEO

CHALLENGES

Agriculture is not just a sector; it's a strategic pillar for Europe's **sustainability**, **food security**, and **economic resilience.**

European agriculture faces challenges

- climate change
- declining productivity
- labour shortages
- geopolitical pressures impacting supply chains and food production

Technology offers a path to **sustainable**, **efficient** farming solutions, helping preserve biodiversity, reduce emissions, and ensure food security for future generations.

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OVER THE PAST 20 YEARS, EUROPE'S AGRICULTURAL LAND HAS STEADILY DECLINED BY ABOUT 10%, IMPACTING ALL LAND USES.

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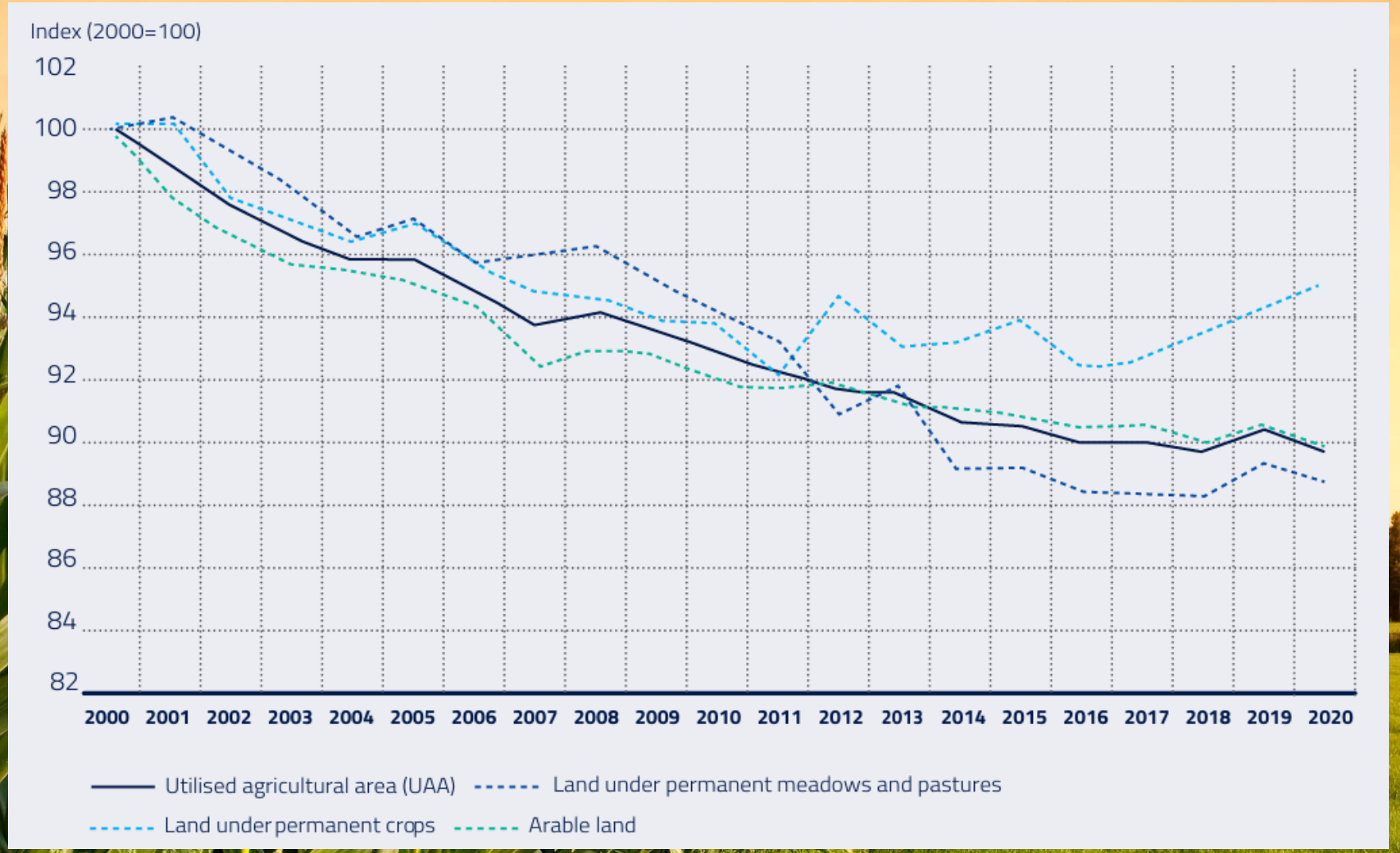

Developments in land use in the EU, 2000-2020, Source: FAO (2022), Land use indicators

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THE EU FARMING SECTOR HAS BECOME MORE CONCENTRATED, WITH FEWER FARMS AND LARGER FARM SIZES

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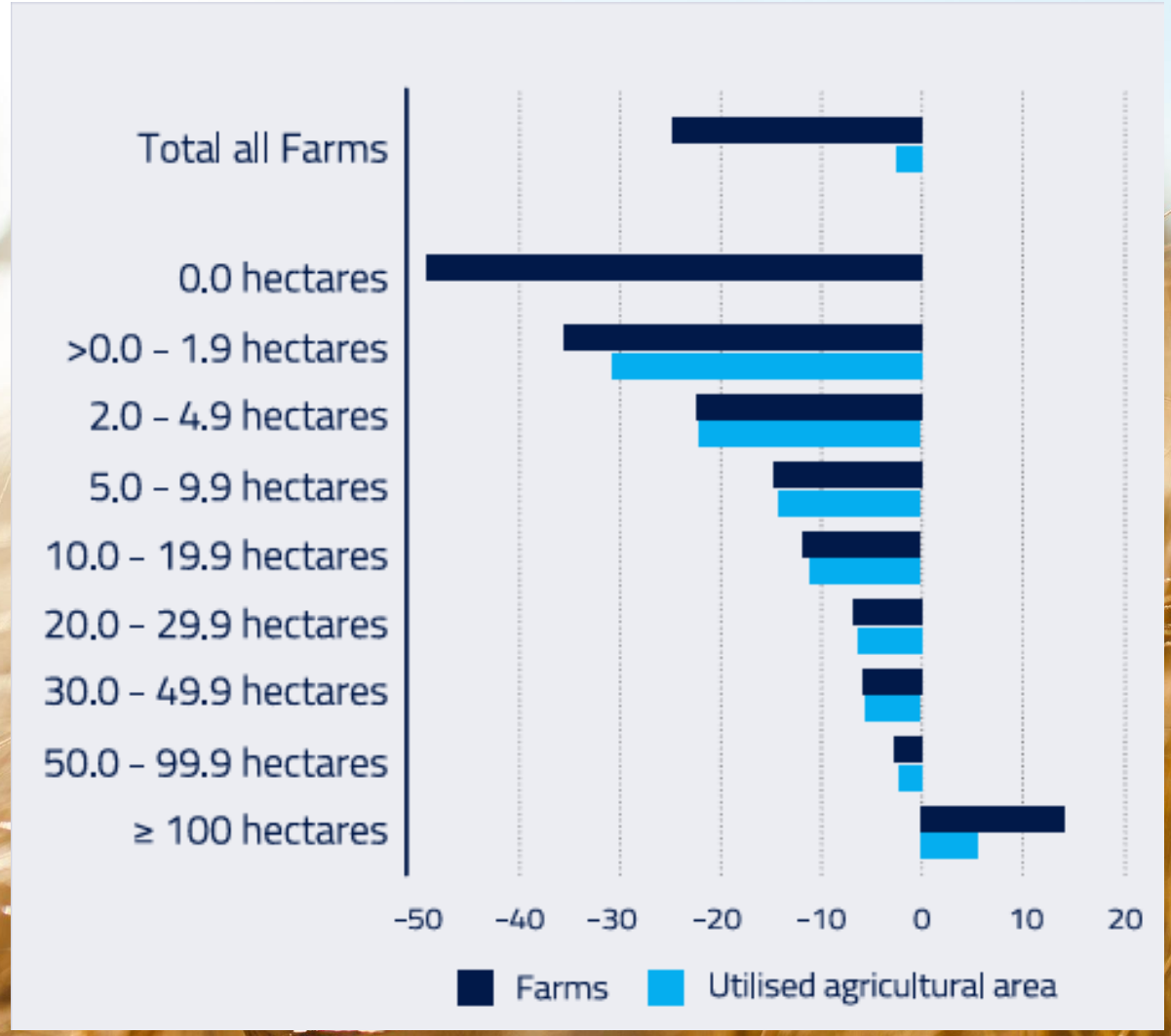

Overall change in farms and farmland by farm size (%), 2010-2020, Source:Eurostat, 2023

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FACING A DECLINING AGRICULTURAL WORKFORCE

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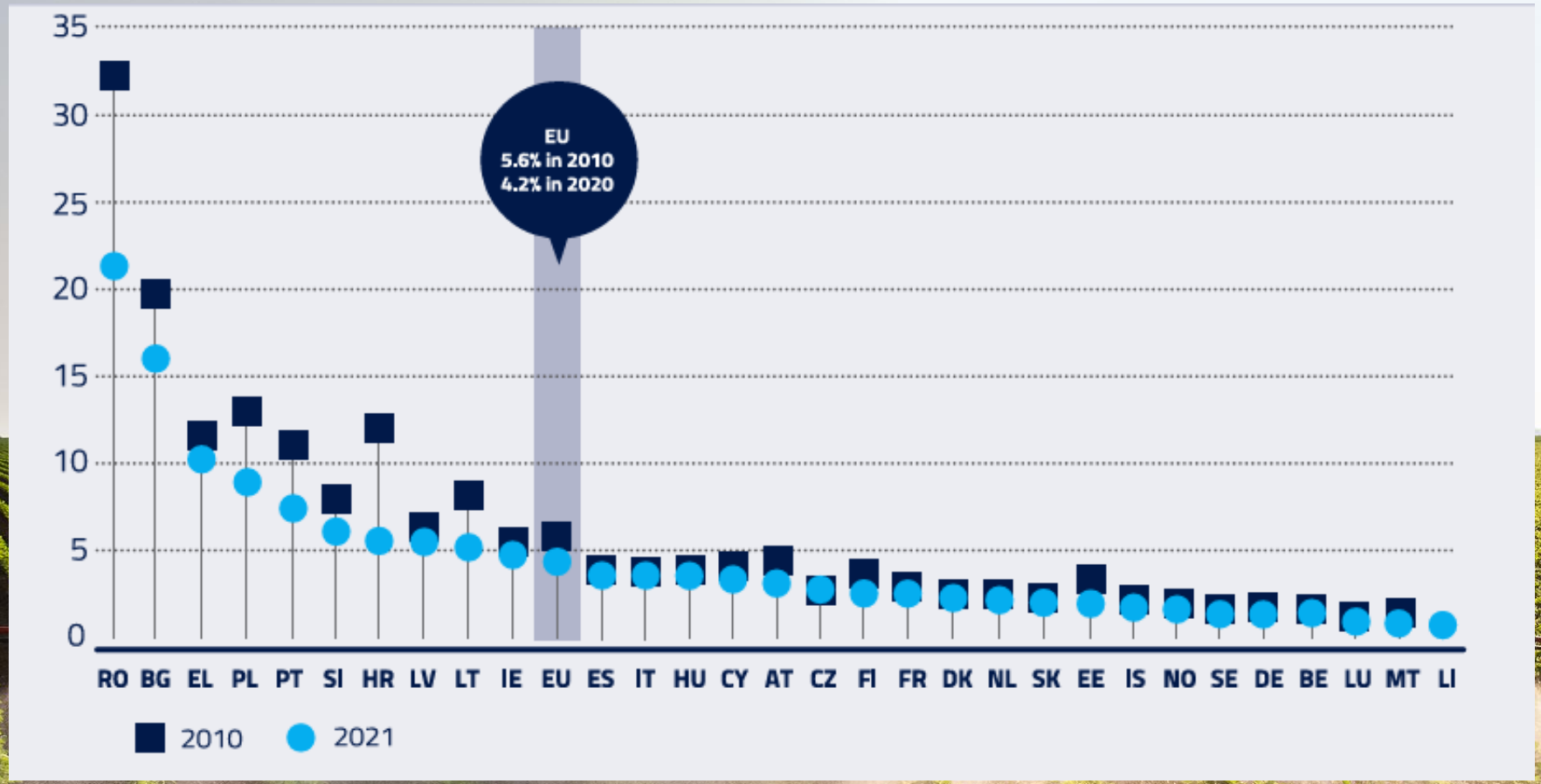

Employment in agriculture (% of total employment), 2010-2021, Source: Eurostat, 2023

PRODUCTIVITY IN THE EU HAS GROWN

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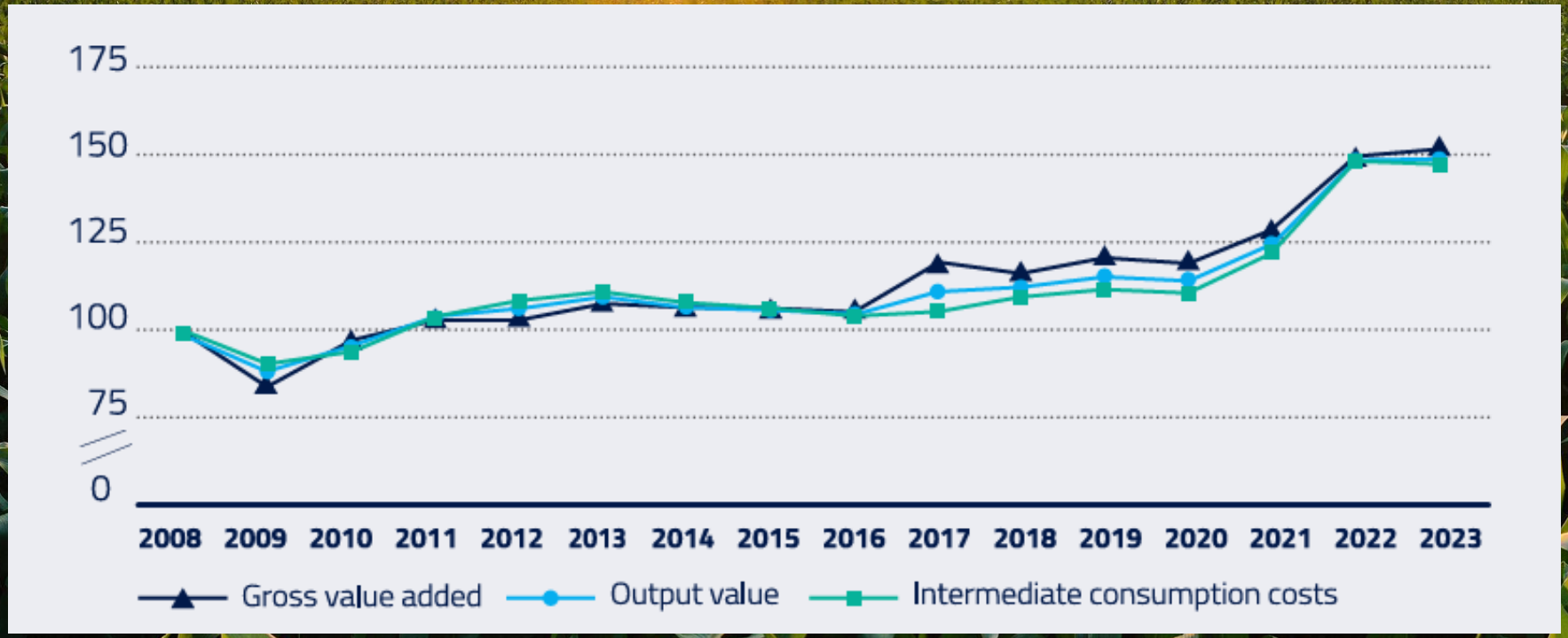

Developments in Gross Value Added, 2008-2023, Source: Eurostat, 2023

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BUT AT A SLOWER RATE COMPARED TO OTHER ADVANCED COUNTRIES

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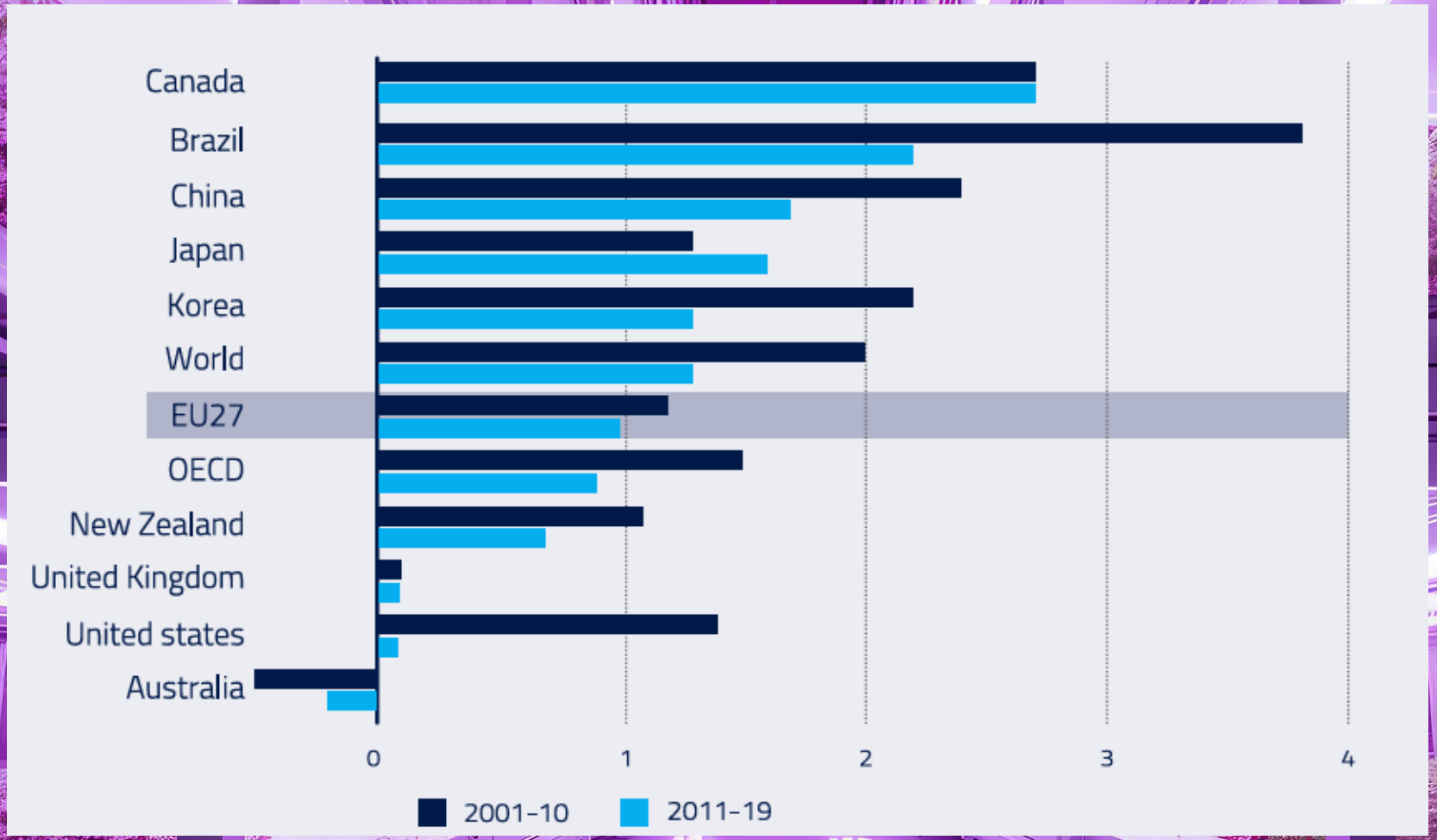

Total factor Productivity (TFP), average annual growth rate, Source: OECD, 2023

WHILE THE SECTOR'S ENVIRONMENTAL SUSTAINABILITY PERFORMANCE HAS FALLEN SHORT OF EXPECTATIONS

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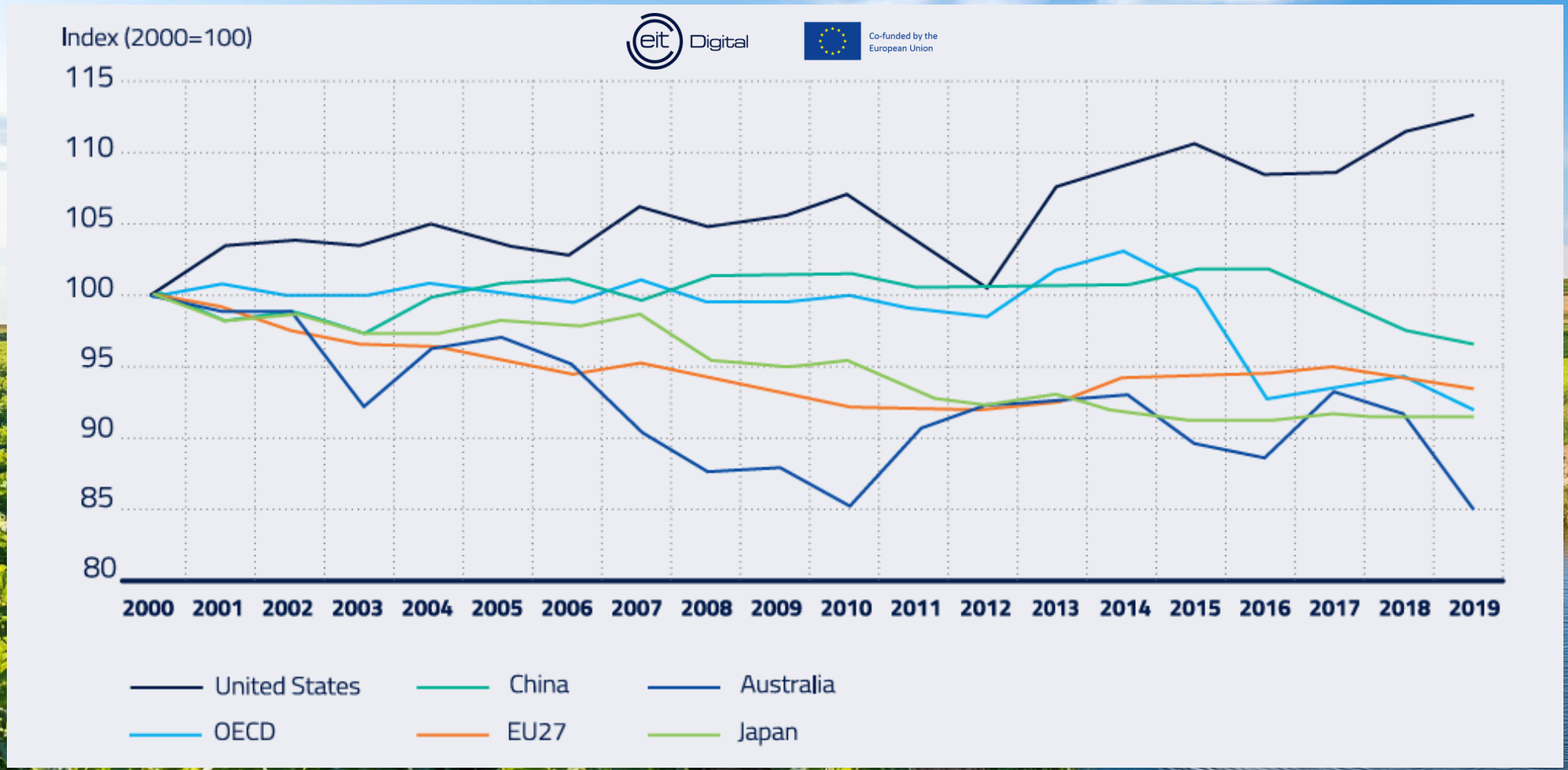

Greenhouse gas emissions trends from the agricultural sector in the EU and selected countries, 2000-2019, Source: OECD, 2022

KEY TRENDS OF AI & ROBOTICS IN AGRICULTURE

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THE DIGITAL BACKBONE

Digital Twins

Virtual models of crops and machinery enable **real-time monitoring and optimization**

Autonomous Robotics

Self-operating robots equipped with sensors and AI algorithms perform **precise agricultural tasks**, from soil analysis to automated harvesting, reducing labour dependency and enhancing productivity

AI and Vision Technology

Advanced algorithms enable robots to **detect, analyze, and act in real-time** across diverse environments

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DIGITAL TWINS

AI-Powered Precision Farming

Machine learning **optimizes irrigation, fertilization, and disease prevention** through real-time data analysis, predictive analytics, and digital twins.

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AUTONOMOUS ROBOTICS

Smart Machinery

AI-driven tractors, robotic weeders, and fruit-picking robots enhance efficiency, reduce costs, and promote sustainable farming.

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AI AND VISION TECHNOLOGY

Agri-Drones

AI-powered drones and computer vision **monitor crop health, automate pesticide application, and improve yield forecasting** with precision imaging.

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FUTURE-PROOFING AGRICULTURE

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THE FUTURE OF SPRAYING

ecorobotix

EUR 80M+ Funding

ecoRobotix develops **autonomous robots** for **ecological weeding** of row crops, meadows, and intercropping cultures.

The robot covers the ground by getting its bearings and positioning itself with the help of its camera, GPS RTK, and sensors. Its system of vision enables it to follow crop rows and to detect the presence and position of weeds in and between the rows. Two robotic arms then apply a microdose of herbicide, systematically targeting the weeds that have been detected.

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SMARTER AGRICULTURE WITH COMPUTER VISION AI

ROBOVISION

EUR 60M+ Funding

Robovision is a **Belgian** company providing AI-powered vision technology to help farmers automate tasks like **crop monitoring, weed detection, and yield estimation—without requiring AI expertise.**

Their platform operates in the cloud and on the edge, enabling real-time image recognition and decision-making to optimize farm operations, reduce costs, and boost yields.

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YOUR TRUSTED SOURCE OF SOIL CARBON DATA

SmartCloudFarming GmbH was founded in Germany in 2019.

SmartCloudFarming has developed an AI-based service for measuring the carbon content of soil. The intended beneficiaries include food/drink companies, landowners, and carbon project developers.

EIT Digital backed the development of SmartCloudFarming's **soil monitoring service** with an investment in 2023

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SKILLS AND KNOWLEDGE TRANSFER

Interreg CENTRAL EUROPE

Co-funded by the European Union

AGRI-DIGITAL GROWTH

This project introduces **central European farmers** and food companies to precision and digital farming trends through training programmes and a new knowledge-transfer ecosystem.

MATE HUNGARIAN UNIVERSITY OF AGRICULTURE AND LIFE SCIENCES

Plan4all

FENICE GREEN ENERGY PARK

ARR

LINZ CENTER OF MECHATRONICS

josephinum research J|R wieselburg

FEDER UNACOMA Federazione Nazionale Costruttori Macchine per l'Agricoltura

FSB

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crea Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria

University of Maribor Faculty of Agriculture and Life Sciences

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AN OPPORTUNITY FOR EUROPE

AgriTech stands at the forefront of Europe's efforts to create a more **sustainable, resilient, and future-proof agrifood sector**.

Main conclusions:

- Future **ownership of data** is crucial
- **Balanced digital transformation** that includes environmental issues and sustainability
- **Moderate inequalities** and support small farms

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European Union

EIT Digital is the **leading EU multi-stakeholder collaboration platform** for digital technologies, mobilising and deploying private and public funding to address the top priorities of the EU in terms of **innovation and skills**.

THANK YOU

FEDERICO.MENNA@EITDIGITAL.EU

EU CAP Network seminar
‘Robotics & AI in farming & forestry’

19-20 February 2025
Utrecht, NL

All information on the seminar is available on the event webpage:

https://eu-cap-network.ec.europa.eu/events/eu-cap-network-seminar-robotics-and-artificial-intelligence-farming-and-forestry