‘Finnish Future Farm’

-supporting resilience and viability of Finnish farms with application of data and technology

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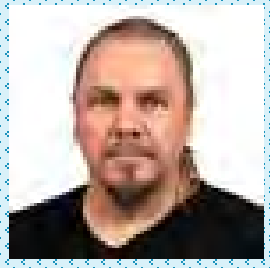
Smart Bioeconomy Team

Hannu

Jyrki

Juho



Juha

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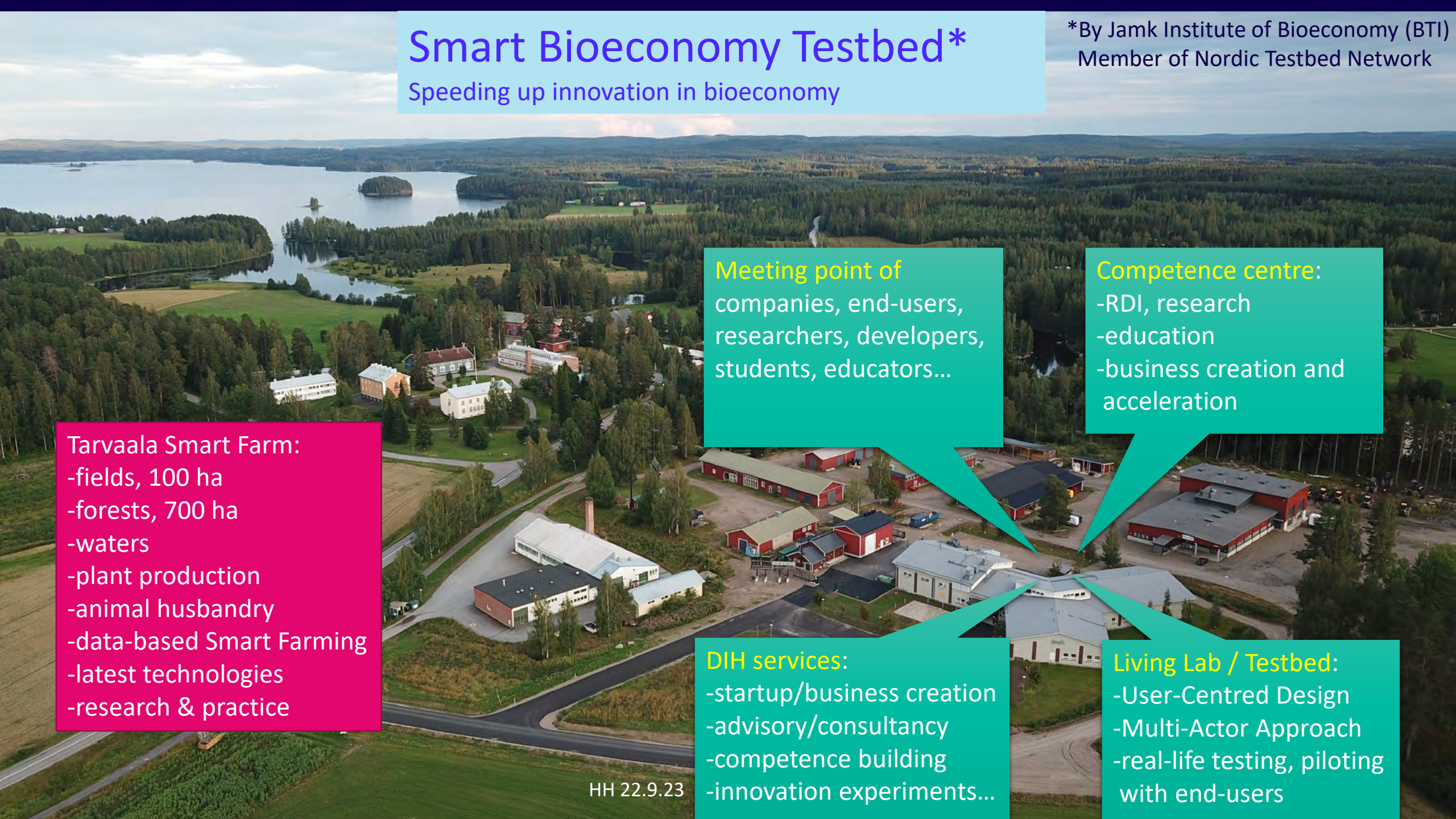
Smart Bioeconomy Testbed*

Speeding up innovation in bioeconomy

*By Jamk Institute of Bioeconomy (BTI)
Member of Nordic Testbed Network



Meeting point of companies, end-users, researchers, developers, students, educators…

Competence centre:
-RDI, research
-education
-business creation and acceleration

Tarvaala Smart Farm:
-fields, 100 ha
-forests, 700 ha
-waters
-plant production
-animal husbandry
-data-based Smart Farming
-latest technologies
-research & practice

DIH services:
-startup/business creation
-advisory/consultancy
-competence building
-innovation experiments…

Living Lab / Testbed:
-User-Centred Design
-Multi-Actor Approach
-real-life testing, piloting with end-users

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→ Making the **Dual Transition** happen!

+

= Dual Transition

Sustainable Development Goals

Data

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How to speed up innovation in Future Farms?

Obstacles of the needed innovation need to be removed

- Better acceptability* of technologies (usefulness, usability, learnability, …)
- Better interoperability* of technologies (systems level fit)
- Building trust** in technologies (own experiences, peer success, …)
- Support** for all innovation phases (”free actors” and specialists needed)
- Better ROI*** (cost-benefit analysis)

*Haapala OECD study (2012)
**AgriSpin H2020 project (2015-2017)
*** McKinsey (2022)

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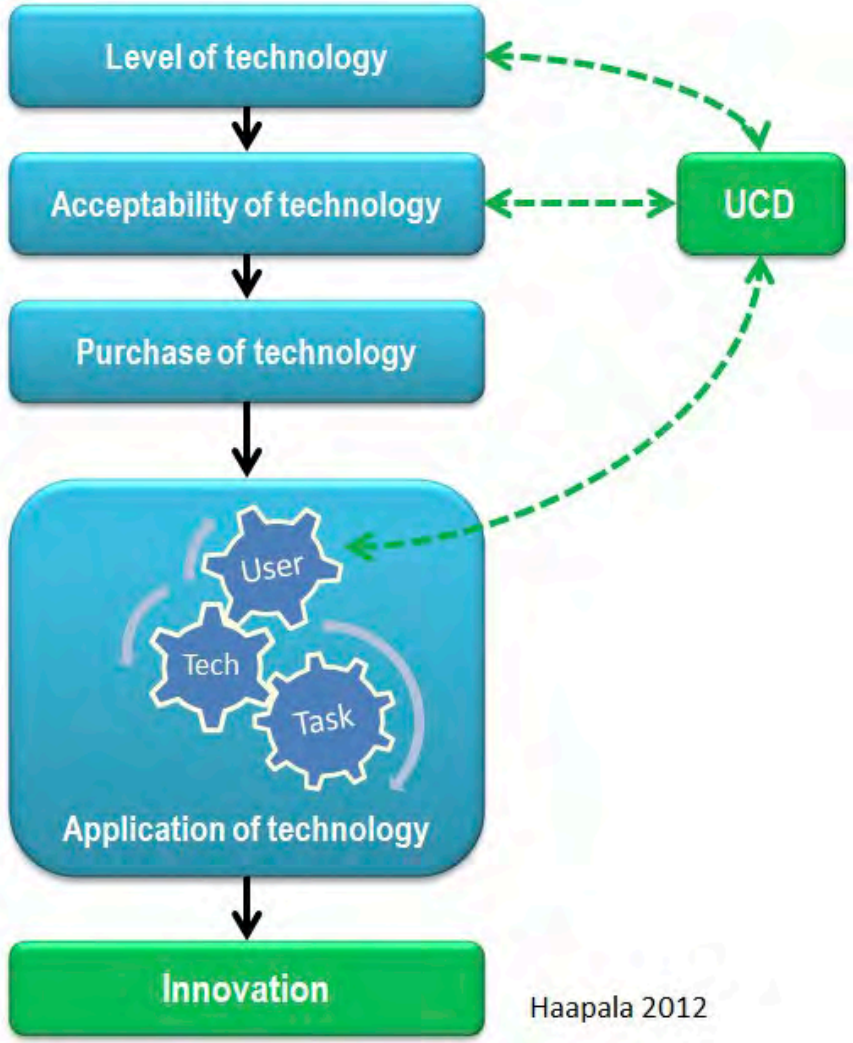

User-Centred Design
as a tool to speed up innovation

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Future Farm?

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”Future Farm” technologies

1. **Data Collection**: Future Farms rely on extensive data collection from various sources, including sensors, satellites, drones, and farm equipment.
2. **Analytics and Decision Support**: Advanced analytics and machine learning algorithms process the collected data to provide actionable insights to farmers.
3. **Precision Farming**: Farmers adopt techniques, such as variable rate application of fertilizers and pesticides, based on real-time data and recommendations. This reduces waste, lowers costs, and minimizes the environmental impact of farming practices.
4. **Smart Farming and automation**: optimized labor efficiency, reduced resource consumption
5. **IoT (Internet of Things)**: Sensors placed throughout the farm monitor conditions like soil moisture, temperature, and humidity. Livestock are equipped with sensors for health monitoring.

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”Future Farm” features

6. **Climate Resilience**: the Future Farm focuses on climate resilience strategies, involving crop diversification, selecting climate-resilient crop varieties, and implementing water management techniques
7. **Education and Training**: The farmers learn about the benefits and operation of these new tools and practices.
8. **Data Privacy and Security**: robust data privacy and security measures are in place to protect farmers' information.
9. **Government Support**: Government policies and incentives support the adoption of these technologies. This includes subsidies for purchasing equipment and tax incentives for sustainable farming practices.
10. **Research and Development**: Continuous research and development efforts are made to stay at the cutting edge of technology and adapt to the new agricultural challenges.

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CarbonEye Europe

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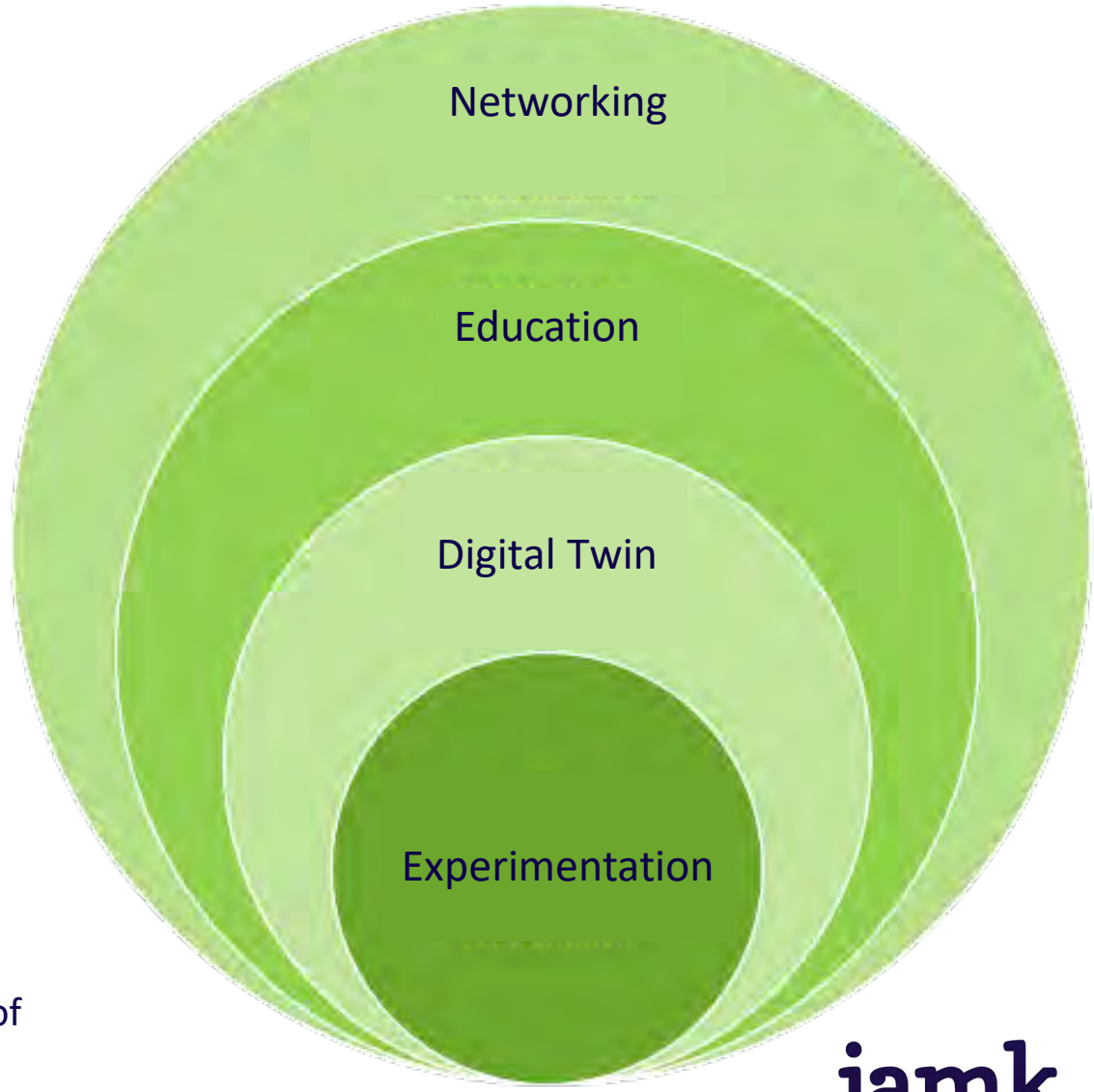
Finnish Future Farm 2023-2026

The outcome will be a smart agriculture experimentation, demonstration, and co-development environment that promotes the adoption of new Precision Farming technologies and methods.

This involves both physical and virtual co-development environments for data collection and the creation of solutions that renew and enhance the region's economic activities, engaging top experts, funding, and investors in the development process.



Company partners: Valtra, AGCO Power, Neste, Nokian Heavy Tyres, Valio, HRV Farm Oy, Data Space Europe
Other partners: POKE, Luke, Aalto University, University of Helsinki/BioSphere, ProAgria, MTK, City of Saarijärvi

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sFMIS

(smart Farm Management Information System)

Situational awereness
Informed decisions
Ease-of-use

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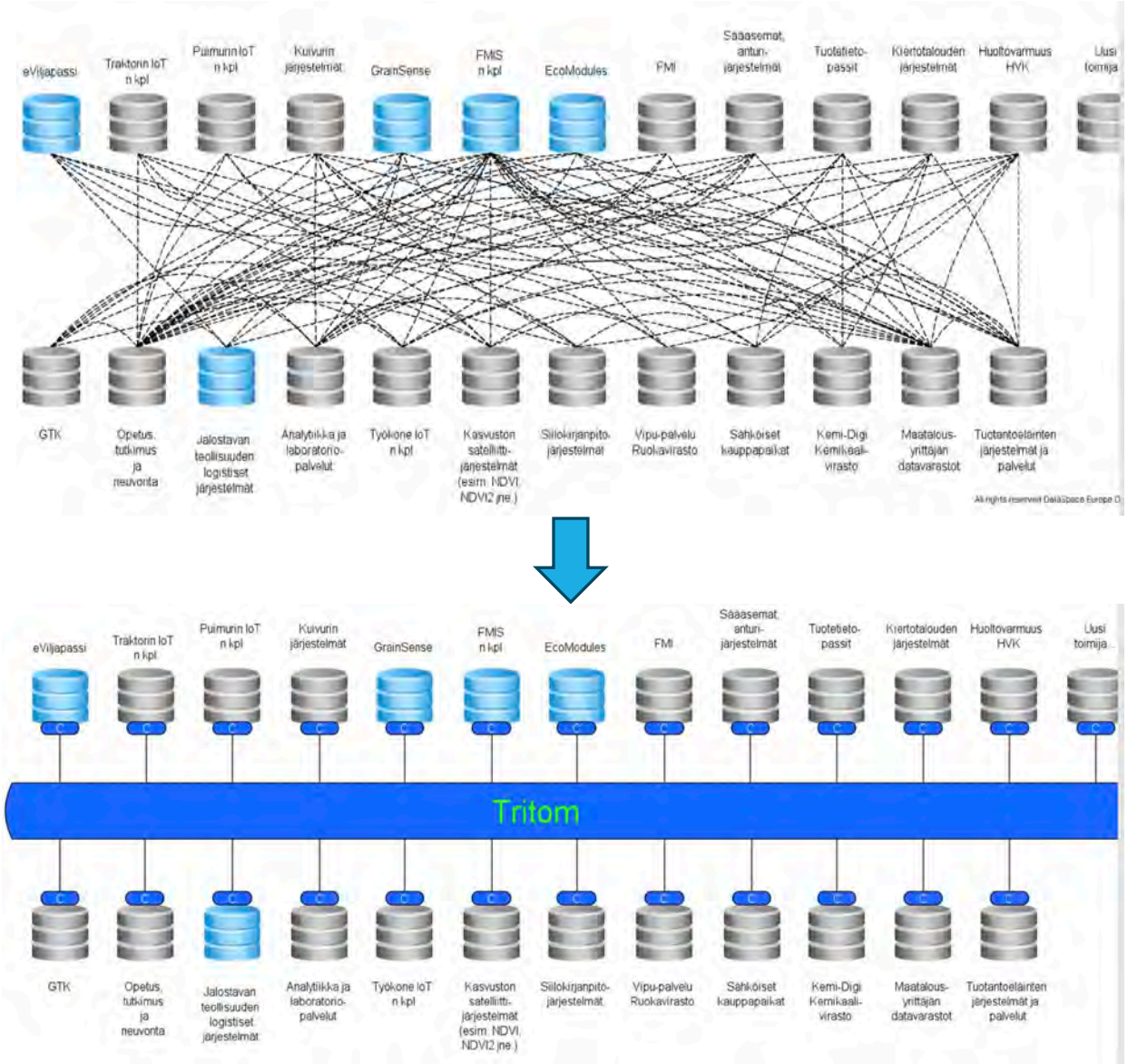
Data Spaces & data sharing as a solution



currently

with Tritom

Co-operation:

DataSpace Europe

YIELD SYSTEMS

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Test Fields

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Planning

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Valtra Tractors

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Tume & Kverneland –ISOBUS machines

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Instrumented test fields

- Soil Scout soil sensors
- Weather stations
- Drone measurement
- Yield mapping…

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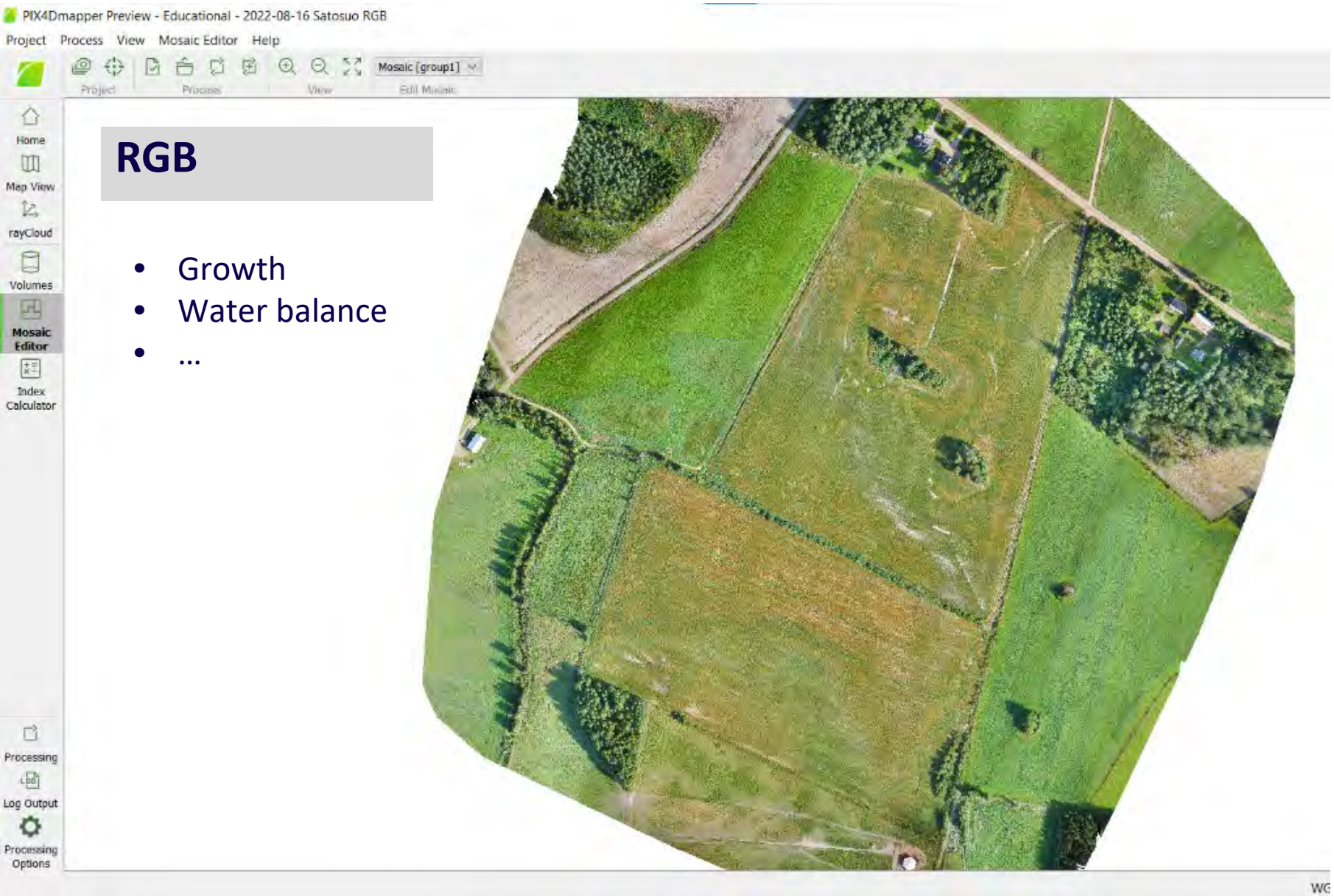
RGB

- Growth
- Water balance
- …



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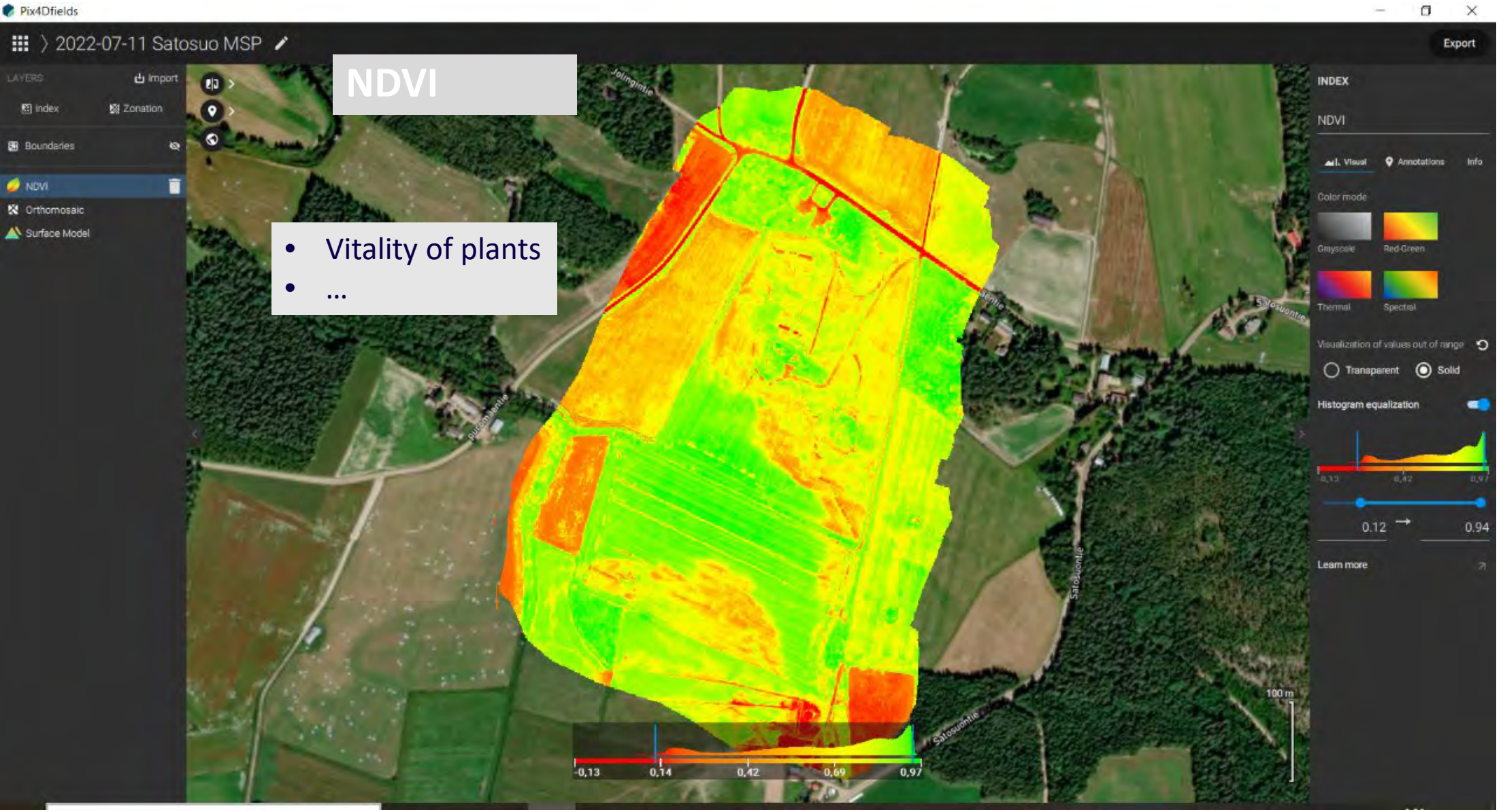

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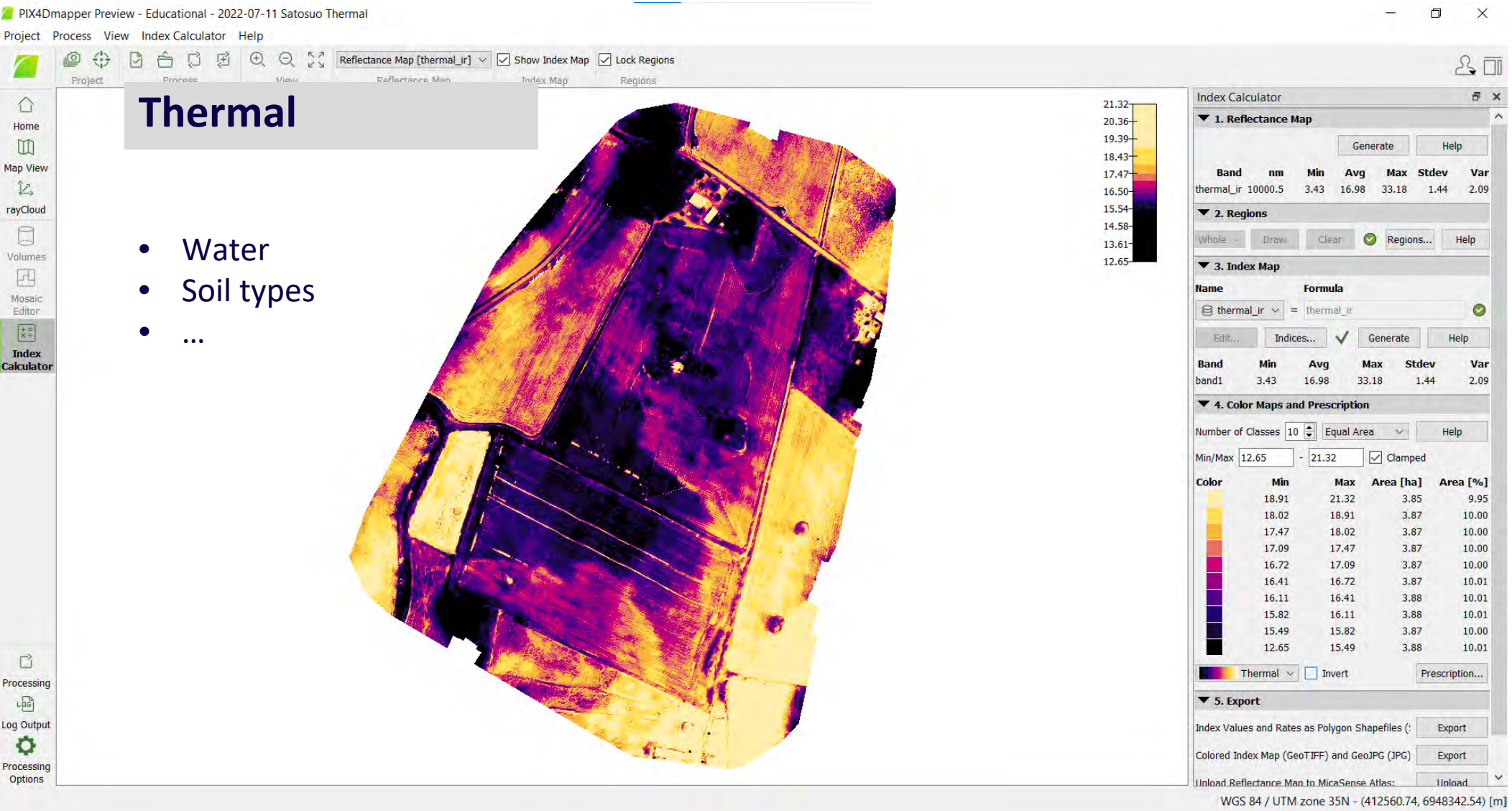
Thermal

- Water
- Soil types
- …



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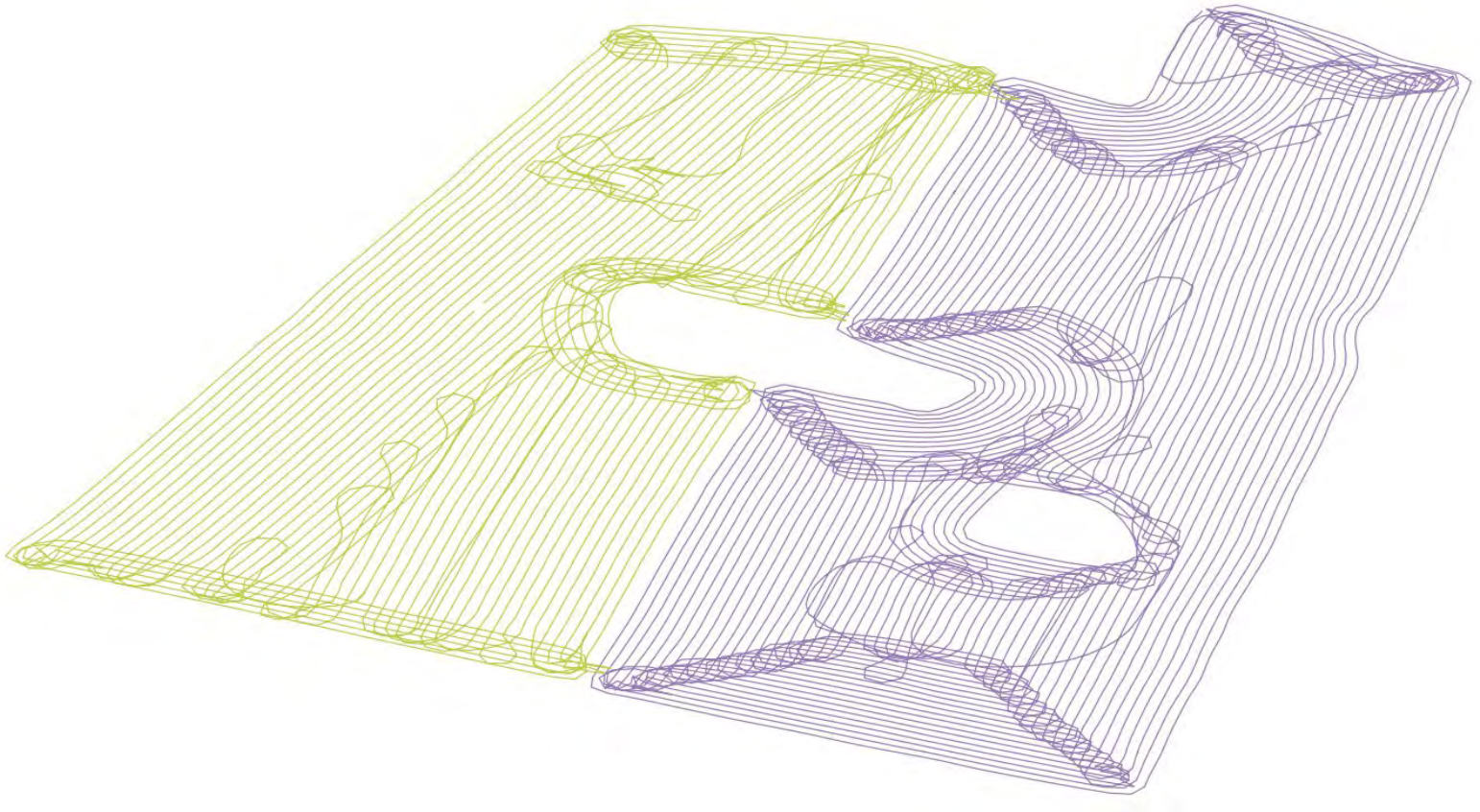
Comparison of automation and traditional



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Demonstrating Data Spaces

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Soil Scanning

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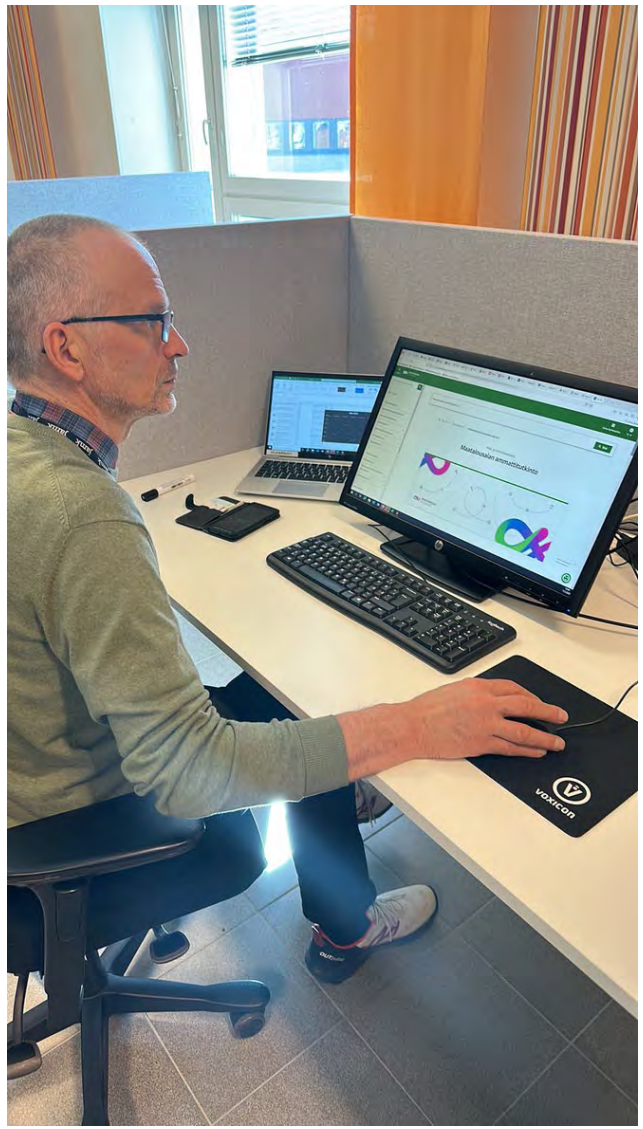
5G measurements
-pop-up 5G



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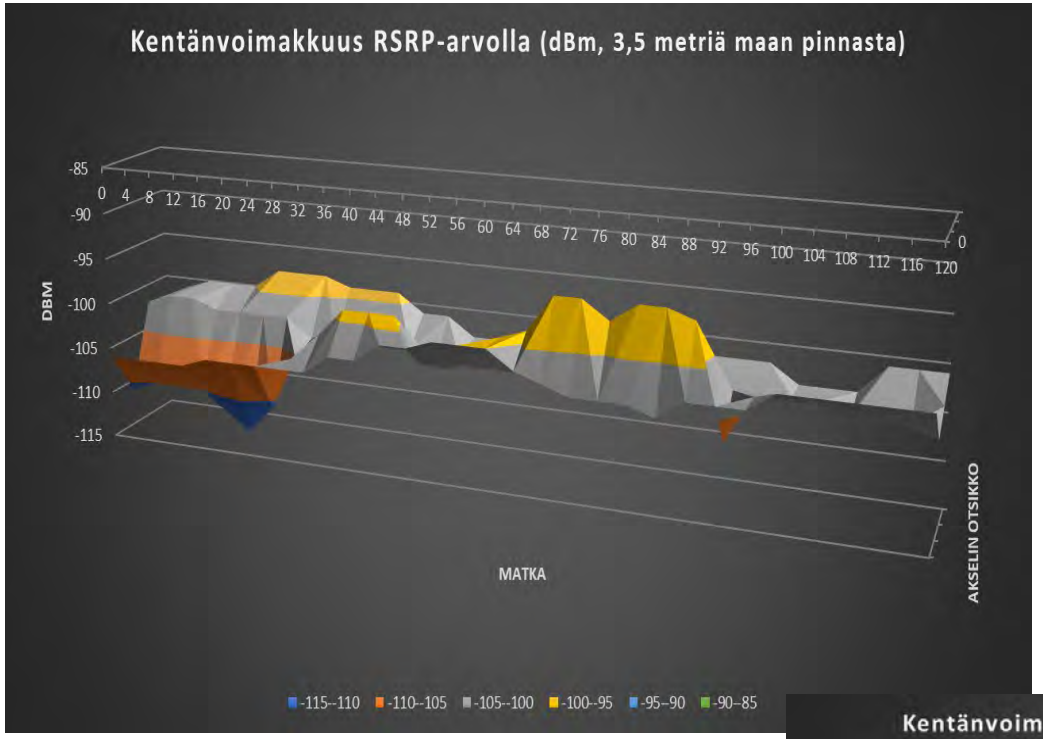

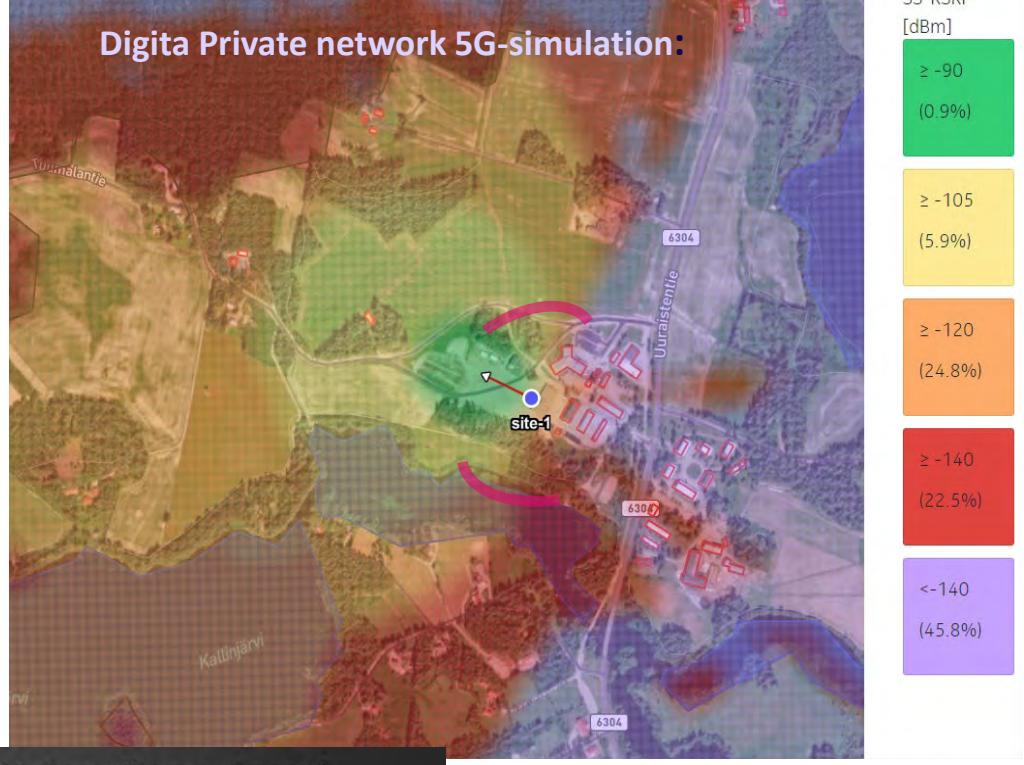

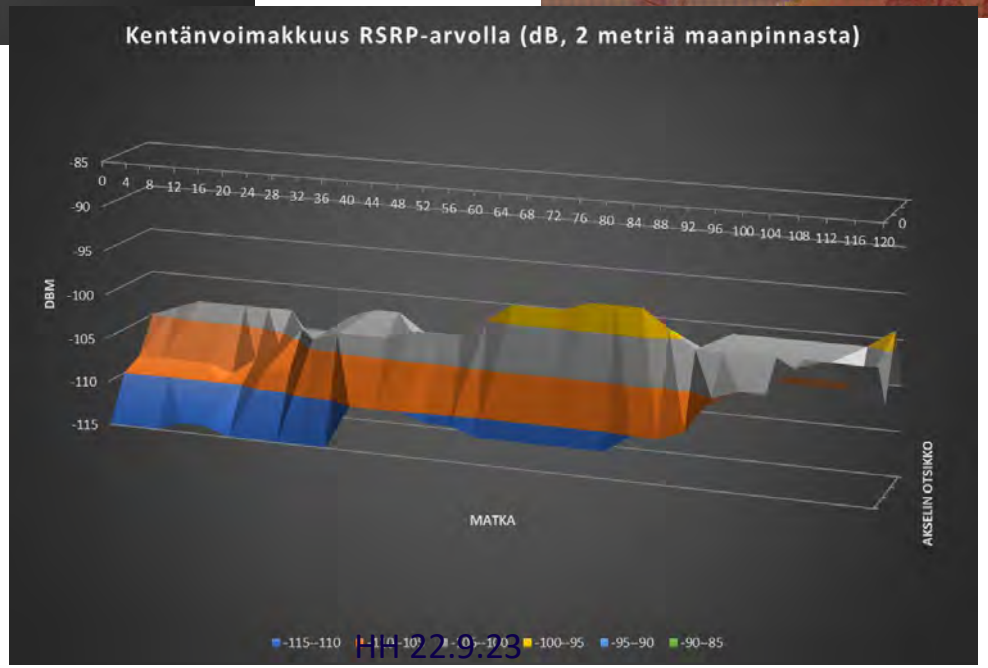

Signal usability simulation and measurement

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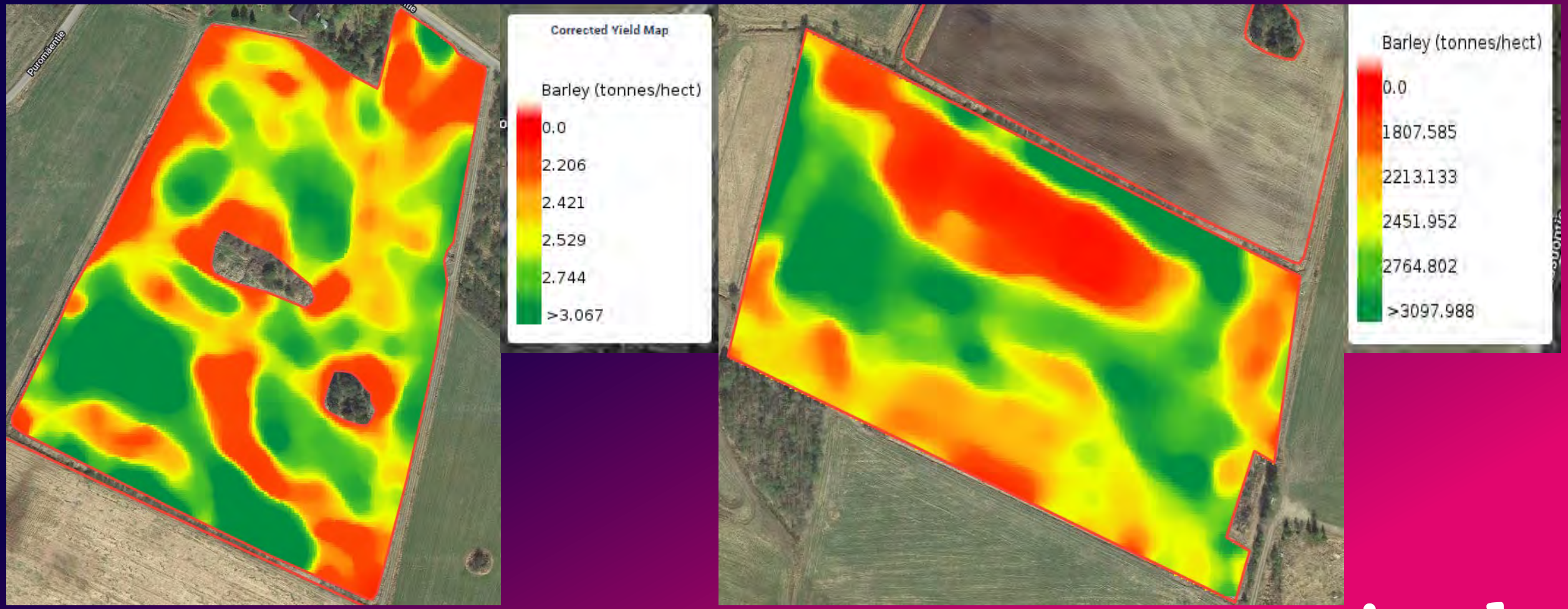
Yield mapping



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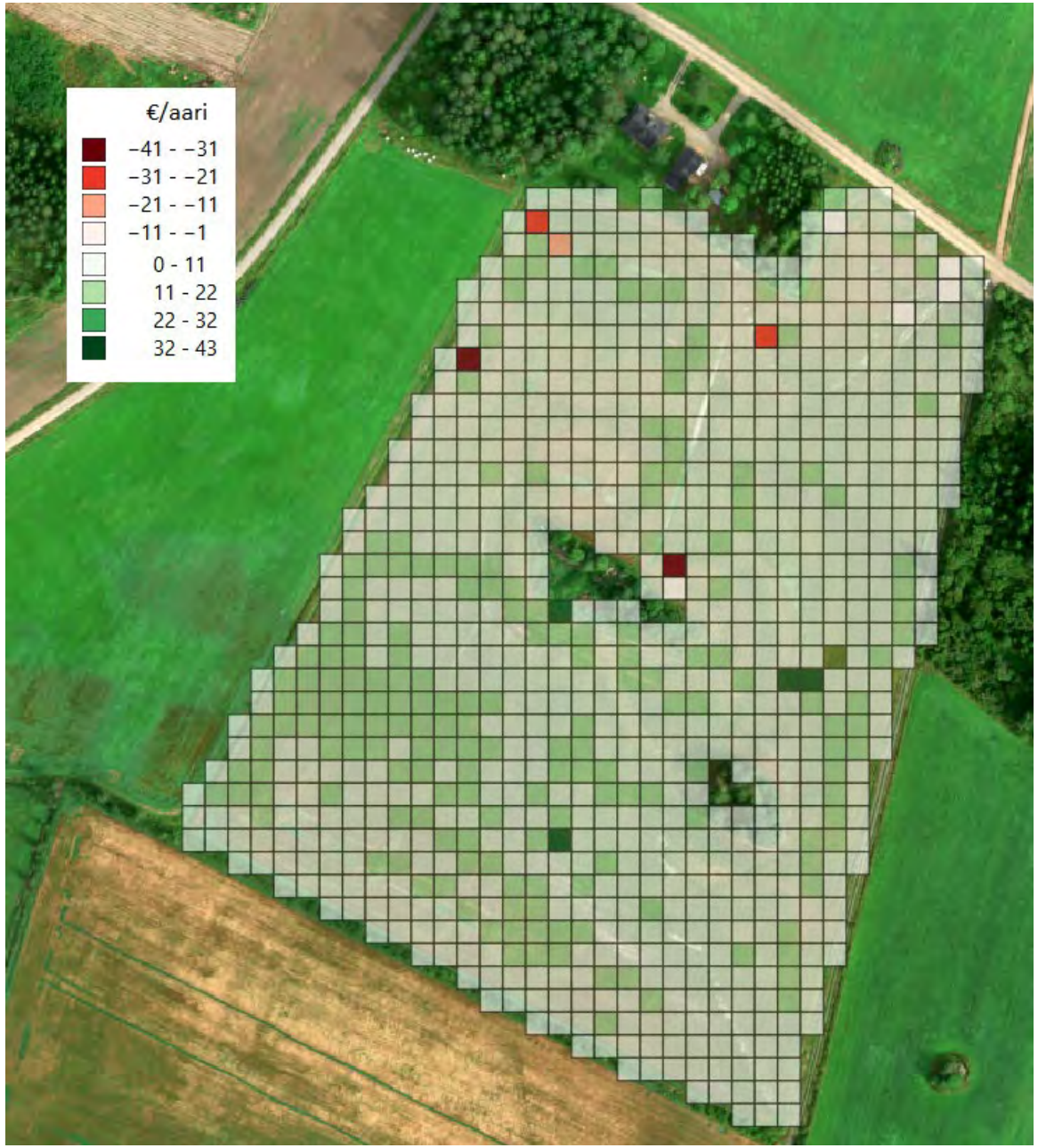
Profitability Map by Jamk©



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Summary

-Goal: Smart Bioeconomy Competence Hub / Finnish Future Farm

- Competences are built through projects
- Business-oriented operational approach
- Implementation of data economy/double transition: Accelerating the adoption of the necessary innovations that promote Green Deal

”Data economy has the potential to revolutionize the food industry by enhancing sustainability, reducing waste, and driving innovation. By leveraging data-driven technologies and insights, stakeholders can work together to create a more resilient, efficient, and environmentally friendly global food system.”

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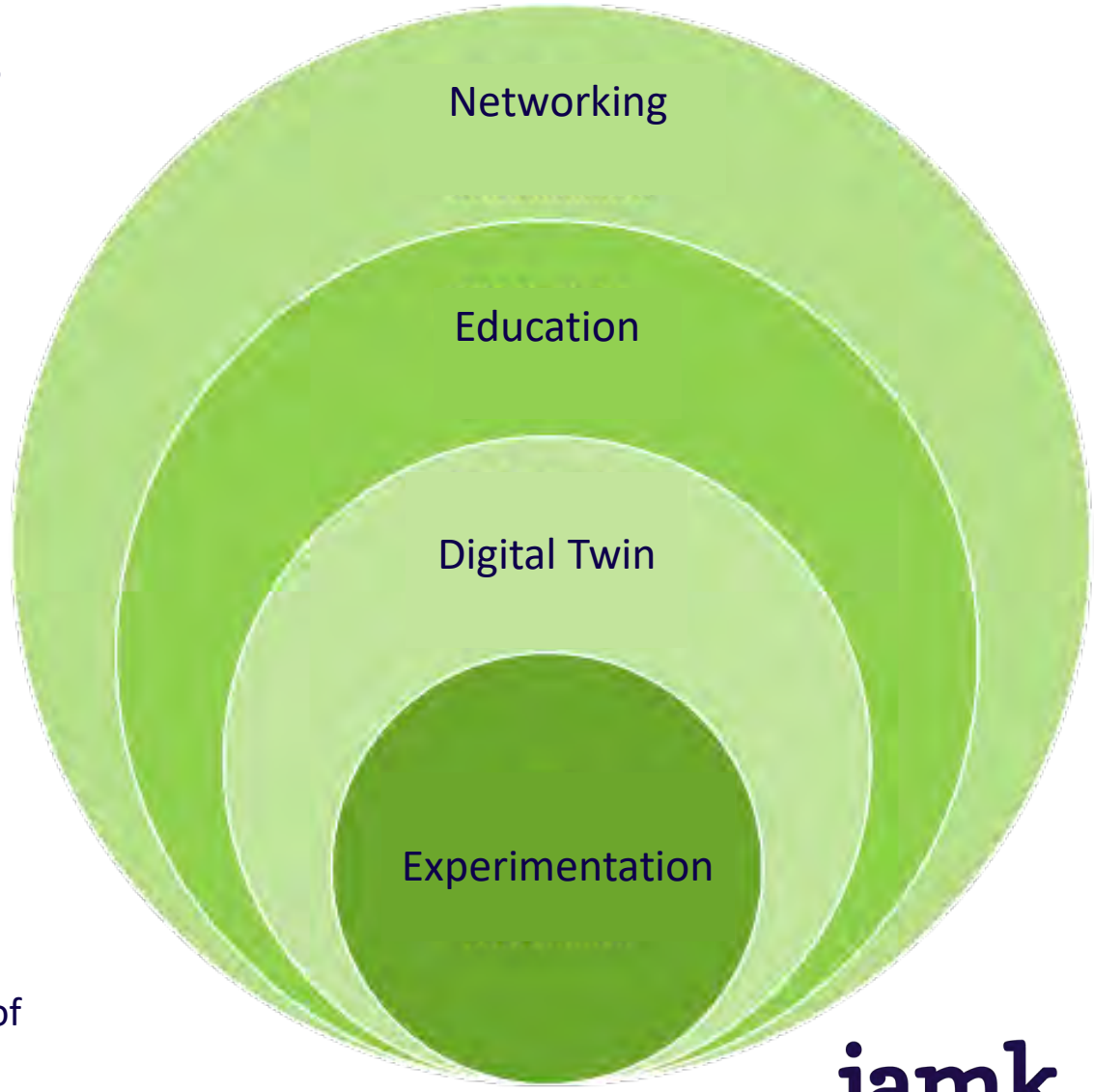

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