



Project Overview

THEROS: An integrated toolbox for improved verification and prevention of adulterations and non-compliances in organic and geographical indications food supply chain

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THEROS 

THEROS Key Facts



- 🌿 **Project Title:** An integrated toolbox for improved verification and **prevention of adulterations** and non-compliances **in organic and geographical indications food** supply chain
- 🌿 **Call identifier:** HORIZON-CL6-2022-FARM2FORK-01-04
- 🌿 **Topic:** “Innovative solutions to prevent adulteration of food bearing quality labels: focus on organic food and geographical indications”
- 🌿 **Duration:** **01.01.2023 - 31.12.2025** (36 months)
- 🌿 **Funding scheme:** IA – Innovation Action
- 🌿 **EU contribution:** **EUR 3,999,961.00**
- 🌿 **Coordinated by:** **Institute of Communication and Computer Systems (ICCS), Greece**



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THEROS Consortium

- **4 Research Institutes & Technology Organizations** (ICCS, AUTH, JSI, CERTH)
- **4 Control and Certification Bodies / Authorities** (ELGO, OCS, KIWA, BIO-HELLAS)
- **5 Large Enterprises & SMEs** (NTT DATA, SINERGISE, EBOS, SEABILITY, WRLS)
- **1 Regulatory Council for a PDO** (MEXILLON)
- **2 Retailers / Wholesalers** (UNIVER, SUMAVA)
- **1 Cooperative and Producer Association** (BIO-NET)



6 Participating Countries



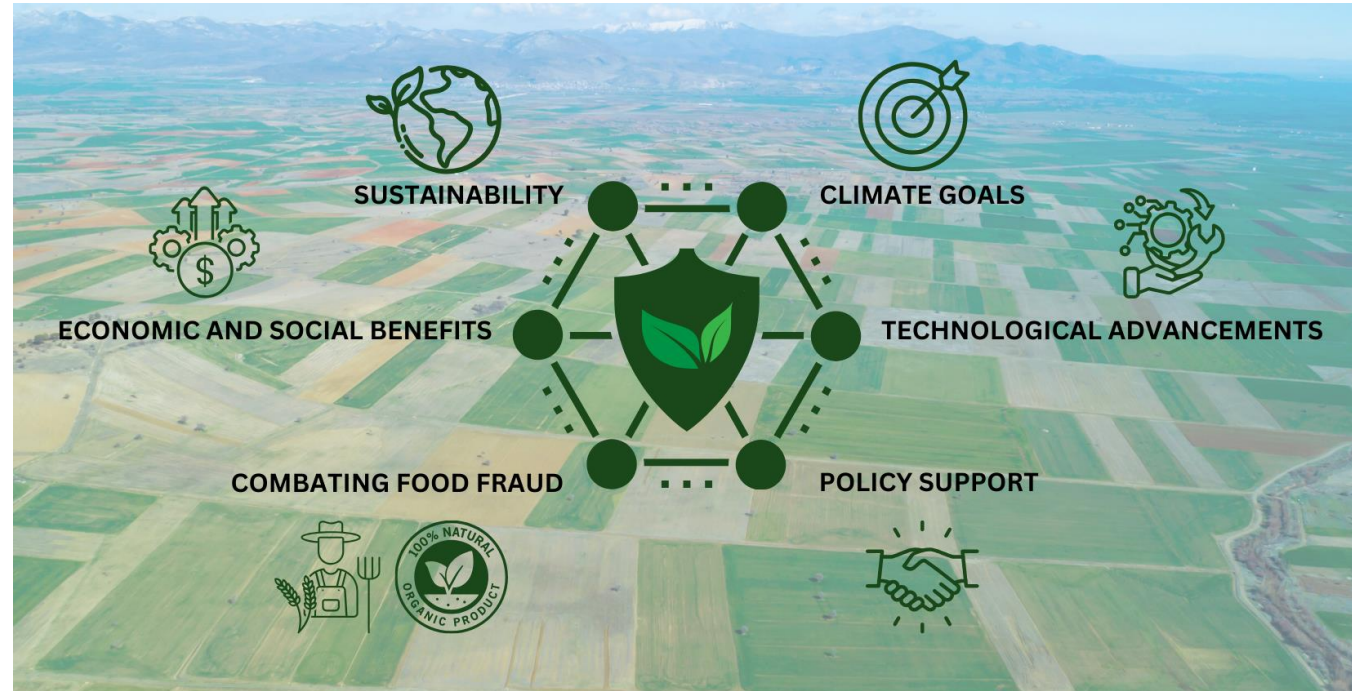
17 Partners



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Motivation

- ✓ Sustainability and Climate Goals: Aim for a **climate-neutral Europe by 2050 through sustainable food systems** and eco-friendly farming.
- ✓ **Combating Food Fraud**: Prevent adulteration and fraud in high-value organic and GI foods to protect consumer trust and product integrity.
- ✓ Technological Advancements: Use digital **technologies like blockchain** and digital passports **to improve traceability, integrity, and security** in the food supply chain.
- ✓ Economic and Social Benefits: Support **fair economic returns for local farmers**, contribute to economic growth, and ensure safe, healthy, high-quality food for consumers.
- ✓ Policy Support and Consumer Confidence: **Align with European Commission** initiatives to enhance **transparency and restore consumer confidence in organic trade**.





THEROS Objectives



Improve detection of adulterations and non-compliances in the organic and GI food products including efficient monitoring of quality and sustainability parameters through low-cost, digital & scalable solutions.



Enhance traceability in the quality labelled food supply chain via novel technologies and approaches that will **ensure secure** and transparent data governance across the whole value chain.



Ensure efficient management and **harmonization of data** collected from the different stages of **the supply chain**, enable their uptake for **improved decision making** and assure interoperability and integration with existing systems.



Assess and formulate **new business-oriented models** and approaches towards preventing quality labelled food adulteration as well as increasing awareness and **quality assurance**.



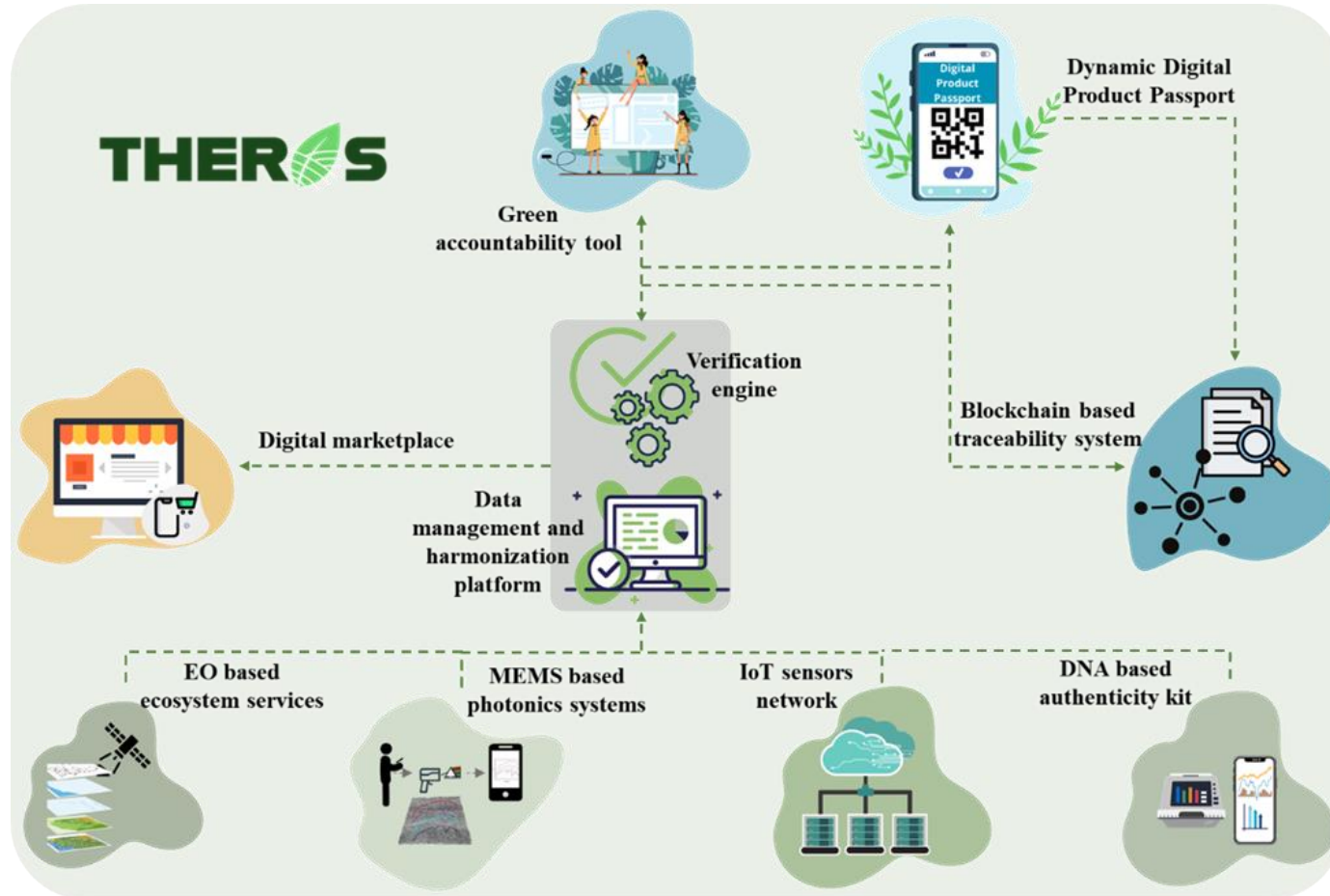
Validate and **demonstrate the effectiveness** of the THEROS integrated toolbox through **4 validation campaigns** that will pave the way for rapid uptake of the proposed **systemic innovations**.



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THEROS Vision & Concept



THEROS aims to implement an integrated toolbox being capable to modernize the process of verifying organic and geographical indications food products and preventing adulterations and non-compliances, while demonstrating enhanced traceability, security and transparency in the supply chain, through the use of various technologies and innovations

that leverage *Earth Observation, photonics, internet of things (IoT), DNA metabarcoding, blockchain, digital interfaces and product passport, advance analytics, machine learning, artificial intelligence and business models.*

At the same time, efficient mechanisms will be employed in order to ensure interoperability with existing control systems, as well as improved accessibility and sharing of data through harmonized and standardized means, whilst also demonstrating their uptake by relevant stakeholders for improved decision-making.

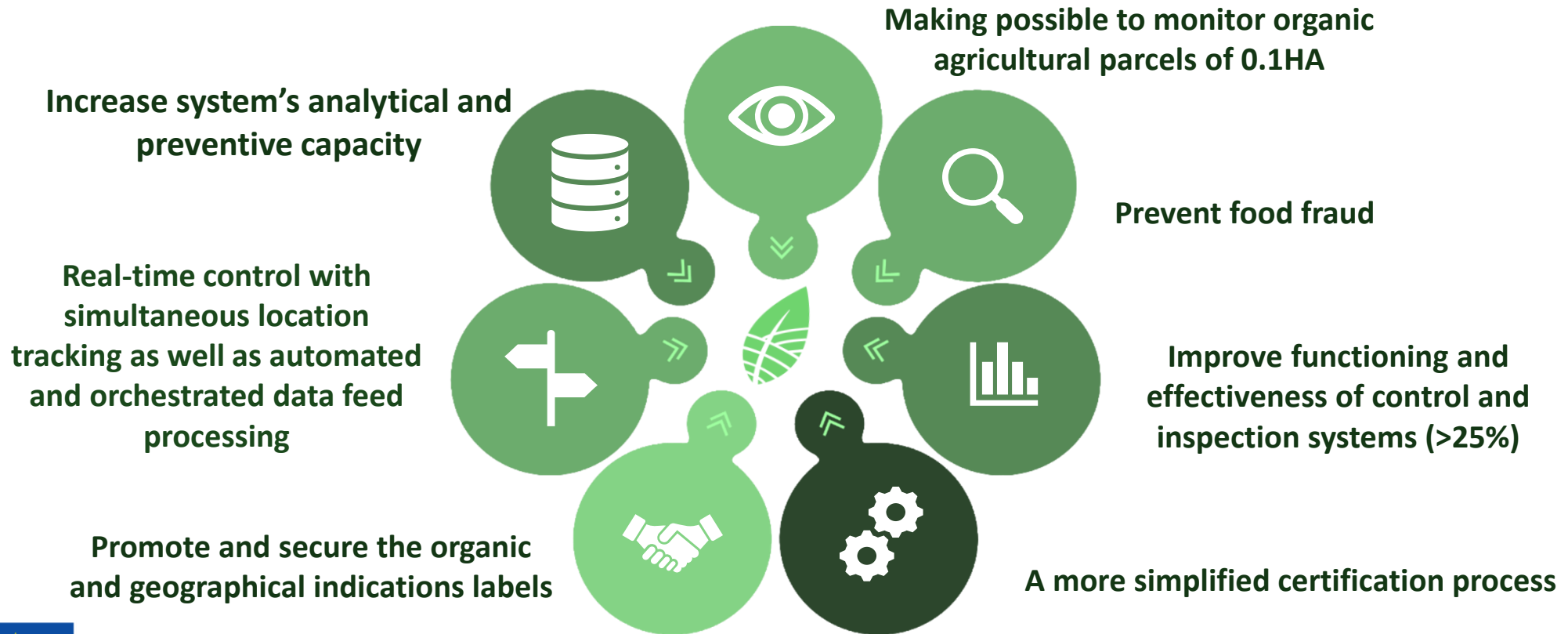


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What THEROS Project brings to you?



If you're Food authority or Control/Certification Body



What THEROS Project brings to you?



If you're EC institution or Policy Maker

Tools for improved monitoring performance of the organic and GI food supply chains



More accurate and reliable environmental impacts assessment



What THEROS Project brings to you?



If you're a Supply Chain Actor

Reduce complexity in the organics and GIs supply chain

Ensure business logic towards addressing claims



Increase transparency, traceability, trust and security in the organics and GIs supply chain



What THEROS Project brings to you?



If you're a Consumer



A game-changing innovation that will provide sustainability of organic farming systems and ensure rapid and cost-effective verification of organic and geographical indications food products



THEROS Pilot Demonstrations



Pilot 1: Serbia



The pilot demonstration will focus on the employment of THEROS toolbox components in order to facilitate efficient large-scale monitoring of organic food assets.

Pilot 2: Greece



The pilot demonstration will focus on the verification of organic production practices.

Pilot 3: Czech Republic



The pilot demonstration will focus on the design and validation of an extended innovative business model aimed primarily at supporting the availability of organic food.

Pilot 4: Spain



This pilot demonstration will define and engage a group of supply chain participants, aiming to cover 100% of the value chain, including initial harvesting, aggregation, transformation, shipping, packaging and selling events.

Pilot Scope

Use of THEROS innovations

EO based ecosystem services, MEMS based photonics systems, Green accountability tool, Dynamic Digital Product Passport, Blockchain based traceability system, Verification engine, and Data management and harmonization platform

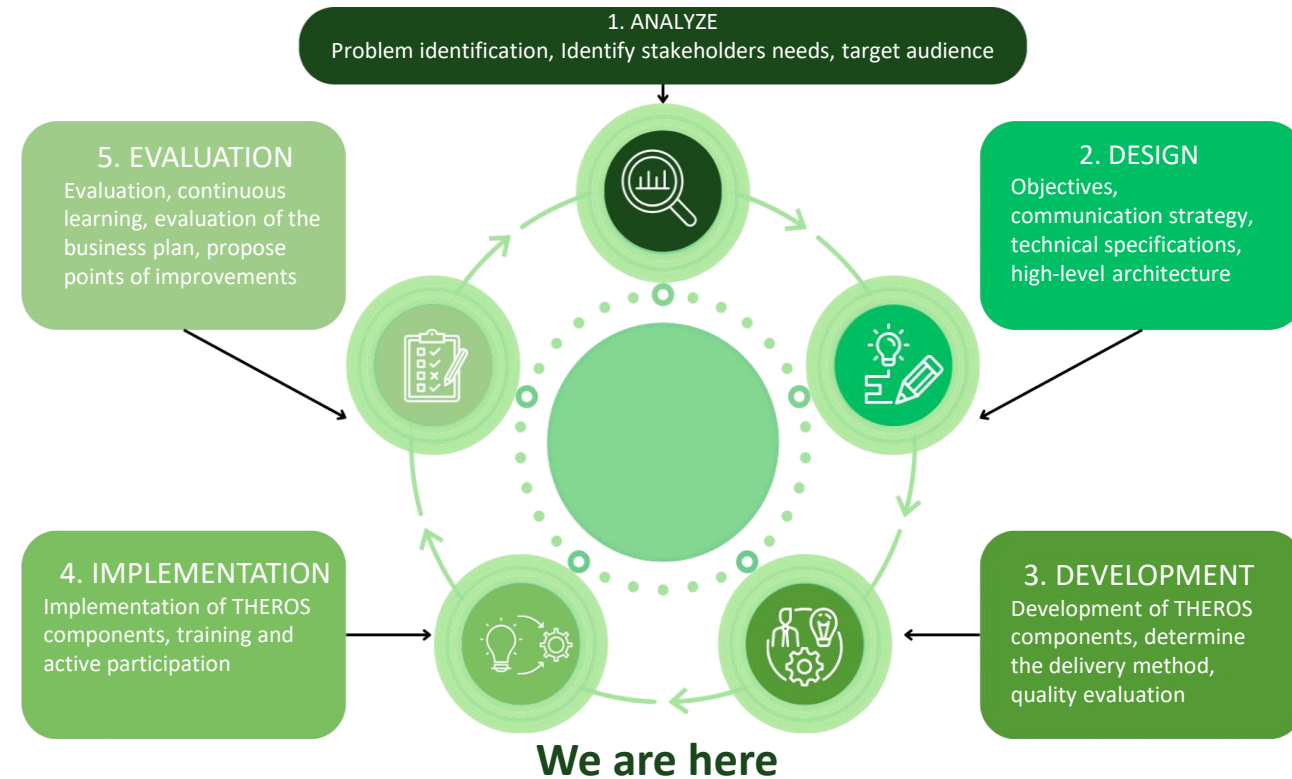
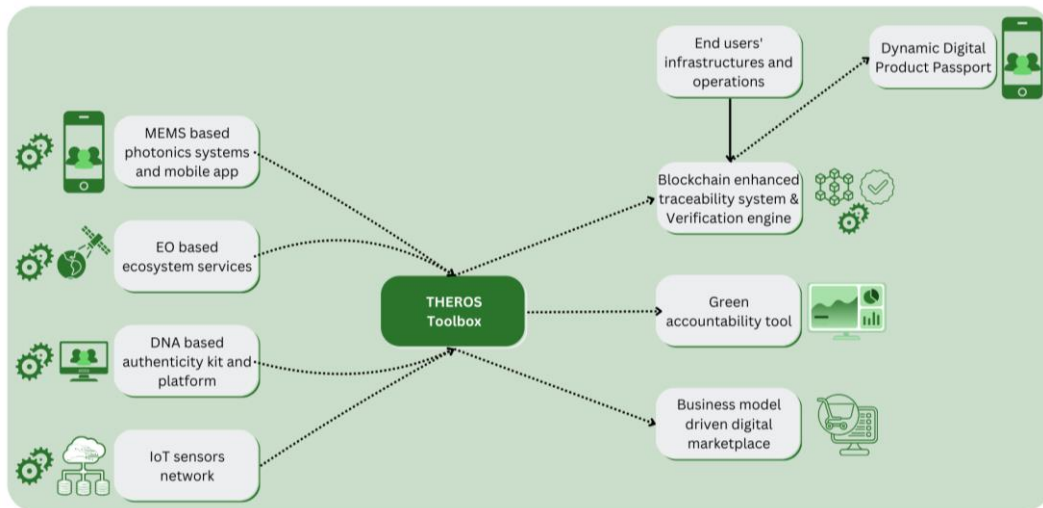
IoT sensors network, Blockchain based traceability system, Verification engine, Digital marketplace, and Data management and harmonization platform

DNA based authenticity kit, Dynamic Digital Product Passport, Blockchain based traceability system, Verification engine, and Data management and harmonization platform



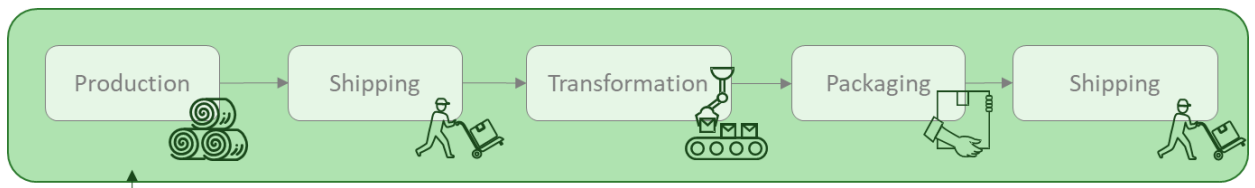
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THEROS Pilots Methodology

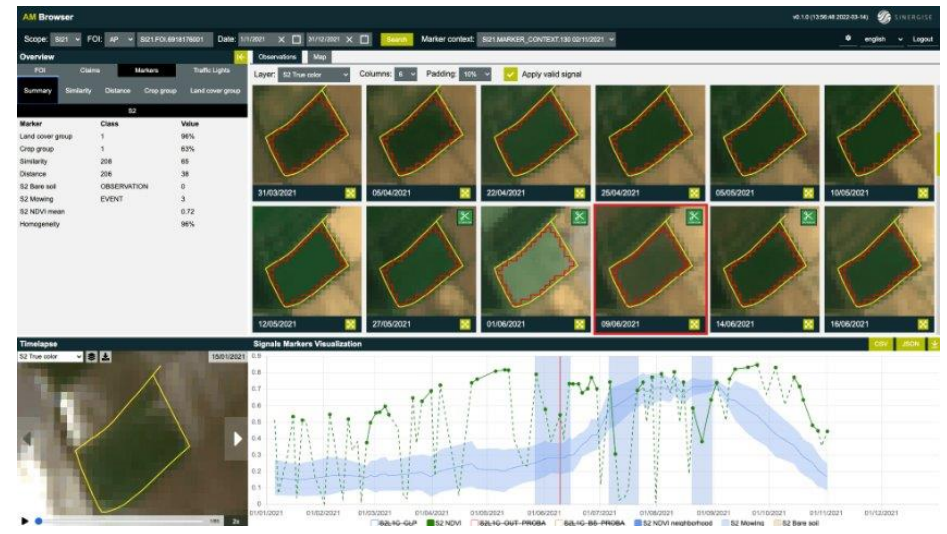
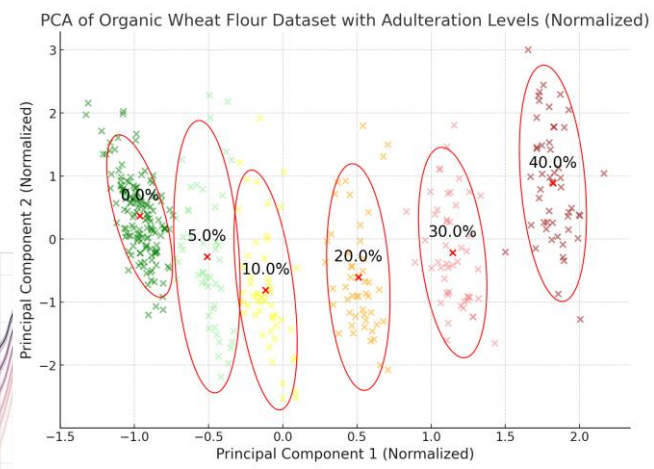
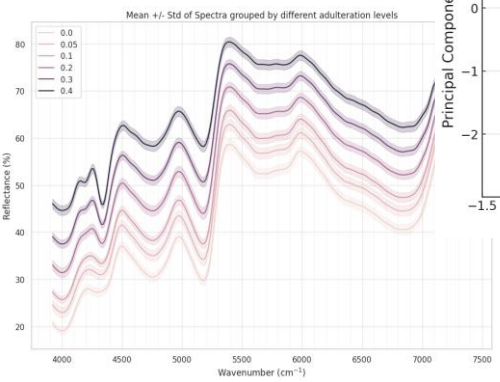




Serbia



Certification

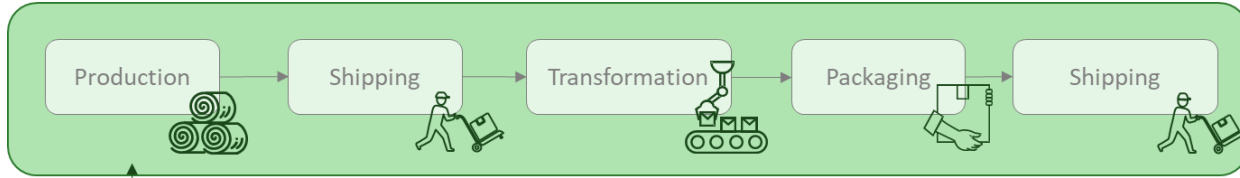
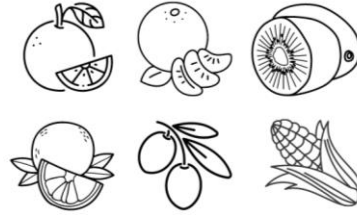


- Bare-soil Marker
- Homogeneity Marker
- Distance/Similarity Markers
- Greening and Harvest Marker
- Crop Marker
- Organic vs. Conventional Marker

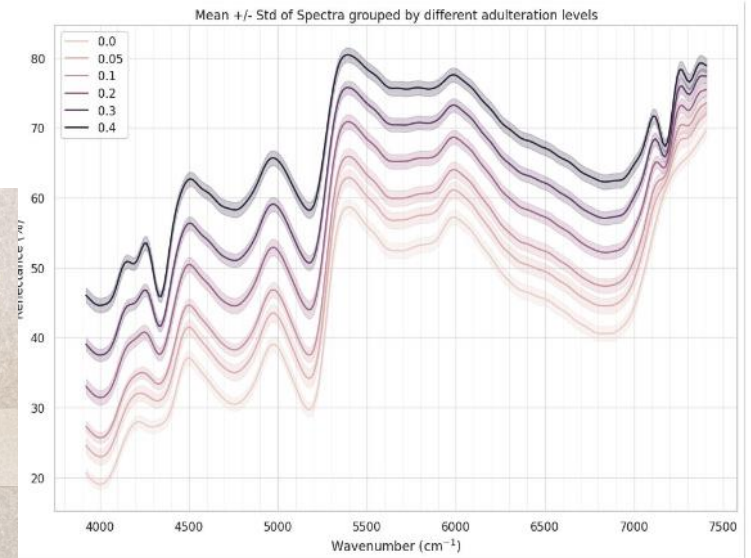
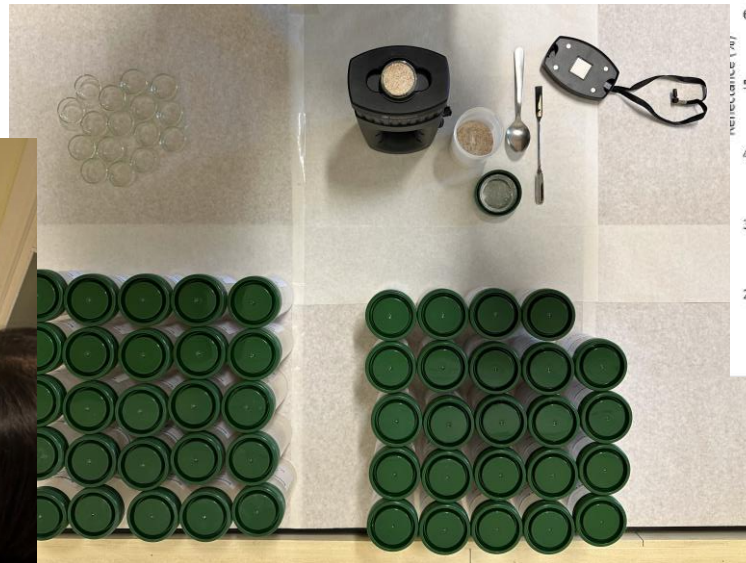
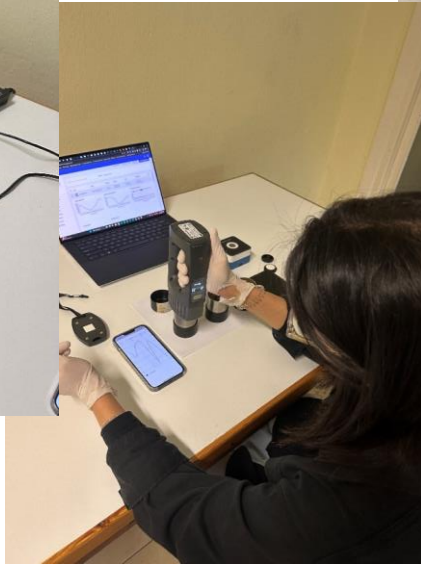




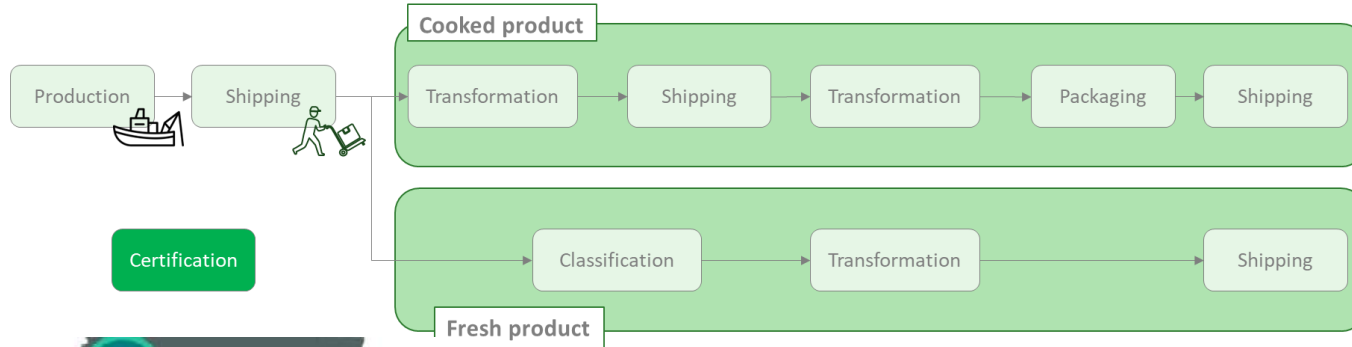
Greece



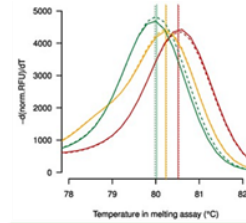
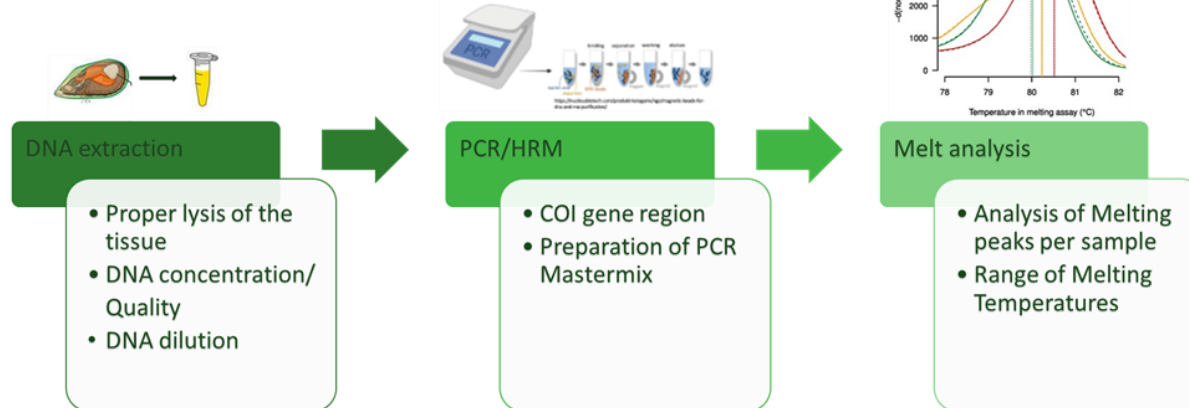
Certification



Spain



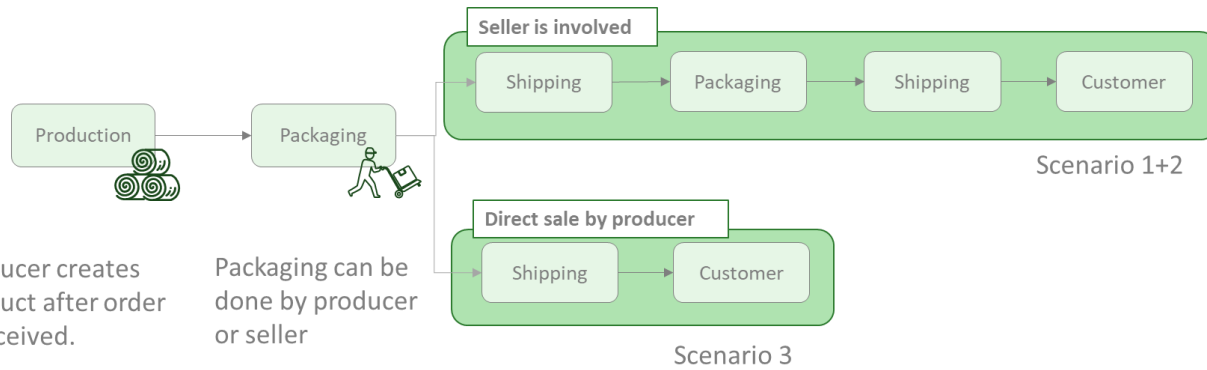
DNA Authenticity Kit Data Ingestion App								
Submission form		Manage pending records				Stored records		
Labelled origin	Lot number	Sample code	Organism result	Melting temperatures	Query cover %	Sequence identity %	Submission timestamp (UTC)	Actions
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THEROS Pilots

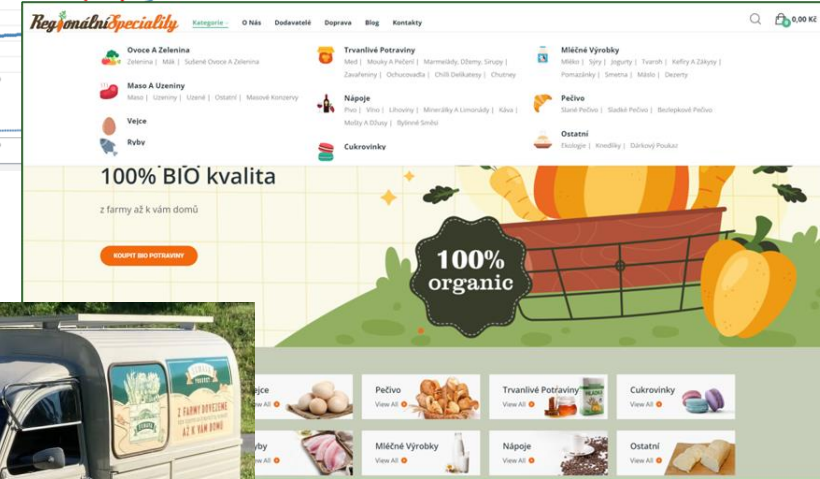
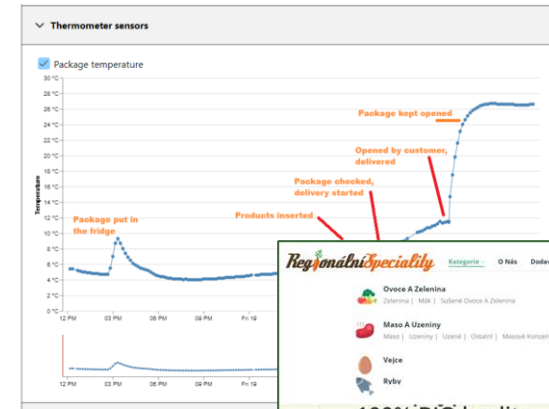


Czech Republic



Producer creates product after order is received.

Packaging can be done by producer or seller



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 www.theros-project.eu

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Thank you for your attention!

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