Phi-Lab NET

Finland

Miika Kostamo – Project Manager

Introduction to new projects

Agenda for today

- What has ESA Phi-Lab Finland been up-to lately
- Introduction to new startups and project that just started in the ESA Phi-Lab program in Finland

https://www.esa.int/ESA_Multimedia/Images/2025/02/Sodankylae_Finnish_Lapland

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Phi-Lab NET Finland

Next Open Call Cutoff Day is now decided

7 of September 2026

CALL IS STILL THE SAME

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We are looking for new space related geospatial innovations

Agriculture YIELD SYSTEMS	Aviation and drones	Climate, environment and biodiversity KOKO FOREST	Consumer solutions, tourism and health
Emergency management	Energy and raw materials	Fisheries and aquaculture	Forestry
Infrastructure	Insurance and Finance	Navigation SHARPNAV	Rail
Road and automotive	Space	Urban development and land management ZERO GRAVITY	and many more

ESA Phi-Lab support 200k€-500k€ per project

Technical Advisory
Business Advisory
IPR/Legal advisory

Phi-Lab NET Finland

Updated application documents will be released soon

www.esaphilab.fi

Phi-Lab NET Finland

Two new project have started since last Space Business Forum

Companies now in ESA Phi-Lab Finland

KOKO Forest
Sharpnav
Zero Gravity
Yield Systems

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Welcome to stage KOKO Forest Yield Systems

KOKO FOREST & LUONTOA

Seeing Biodiversity from Space

Turning Earth Observation into a legally recognised, market-ready biodiversity metric

KOKO Forest Oy
Jyrängöntie 2, 00550 Helsinki

KOKO FOREST

WHY THIS MATTERS

55% **$58 TRILLION**

of global GDP is moderately or highly dependent on nature (WEF)

BIODIVERSITY & NATURE-RELATED RISKS

Operational, regulatory, and financial risks

EU policies, finance, and markets require measurable biodiversity outcomes (e.g. CSRD, CSDDD, Green Claims directive)

WEF GLOBAL RISKS REPORT 2025 - Ranked by severity

KOKO FOREST

THE CHALLENGE

All effective biodiversity action depends on access to reliable, high-resolution data.

Today, biodiversity is expensive to measure (limited field sampling, indirect proxies)

The lack of a common and comparable metric blocks the scaling of biodiversity credit markets, nature-positive investment, and credible impact monitoring.

KOKO FOREST

Our solution – Scalable high-resolution biodiversity data within a legally established biodiversity framework

We combine:

- very-high-resolution & Sentinel-2 satellite imagery
- airborne LiDAR
- AI-based ecological modelling

To detect key structural biodiversity indicators:

- structural heterogeneity, large aspens
- standing and downed deadwood (quality & quantity)
- forest development stage
- tree species diversity

And human-impact on forests:

- management activities

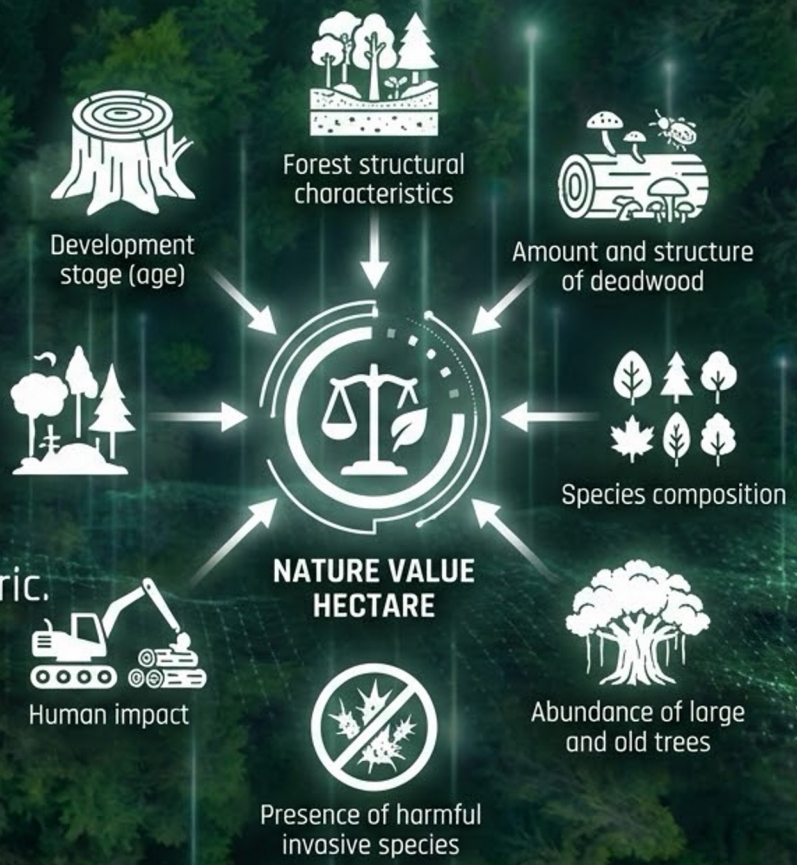
...And Integrate them into one quantitative biodiversity value established under the Nature Conservation Act.

KOKO FOREST

THE METRIC

The biodiversity metric produced is called **Nature Value Hectare** (luonnonarvohehtaari), a legally defined unit embedded in Finnish environmental legislation.

- Based on identifying the most critical structural elements of an ecosystem and integrating them into a standardised metric.
- The underlying methodology is globally applicable



KOKO FOREST

Key development steps towards scalable biodiversity data

1. Development of aspen mapping method

- Aerial and very-high-resolution satellite imagery
- Annotation production
- Novel computer vision method for detecting large aspens

2. Development of deadwood mapping method

- Existing models on mapping spatial distribution of standing deadwood
- Estimation of both standing and downed deadwood volume by combining airborne LiDAR with spatial maps

3. Integrating data streams for a single value on forest biodiversity

- Field inventory data for calibration and validation (all tasks)
- Multi-source remote sensing data (satellite, aerial and lidar)
- Aspen and deadwood data

KOKO FOREST

MARKET DISRUPTION: THE DIFFERENTIATOR

Direct **biodiversity estimation** using **remote sensing**, no extensive field sampling required

Direct linkage to a **legally** recognised, transparent, and **tradable** unit for biodiversity outcomes

Comparable to **tonnes of CO_2** in carbon markets

KOKO FOREST

SCALABILITY & SOCIO-ECONOMIC IMPACT

Biodiversity credit markets create strong long-term market pull

Within EU, a functional regulatory framework for biodiversity markets by 2027

Supports industrial transformation and delivers long-term socio-economic value across public and private sectors

KOKO FOREST

TEAM

KOKO FOREST TEAM - Remote sensing & AI

Samuli Junttila, PhD.
Chief Scientist

Einari Heinaro, PhD.
CTO

Minna Blomqvist, PhD.
Forest Health Specialist

Ville Laukkanen MSc.
Machine Vision / AI Specialist

LUONTOA TEAM - Biodiversity

Lauri Moisander
Senior Consultant

Johanna Haapala
Senior Consultant

Lauri Tamminen
Senior Consultant

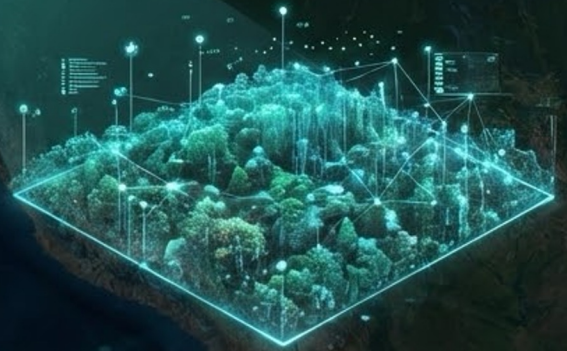
Inka Musta
CEO

KOKO FOREST

OUR VISION: A Nature-Positive Future, Powered by Space & Data

We turn biodiversity from an abstract concept into a **measurable, verifiable, and scalable asset**, enabling a global market for nature-positive action.

NATURE VALUE HECTARE
(Market-Ready Metric)



Enabling Global Biodiversity Credit Markets

Verifiable Nature-Positive Investment & Reporting

Foundation for a Thriving, Nature-Dependent Economy

THANK YOU

Samuli Junttila

Chief Scientist / Partner

+358 40 715 3477

samuli.junttila@kokoforest.com

KOKO FOREST

LUONTOA


YIELD SYSTEMS


+70%
Increase production
90%
Yield Intensification
YIELD SYSTEMS


Cereals +200-300%
Vegetables left behind
YIELD SYSTEMS

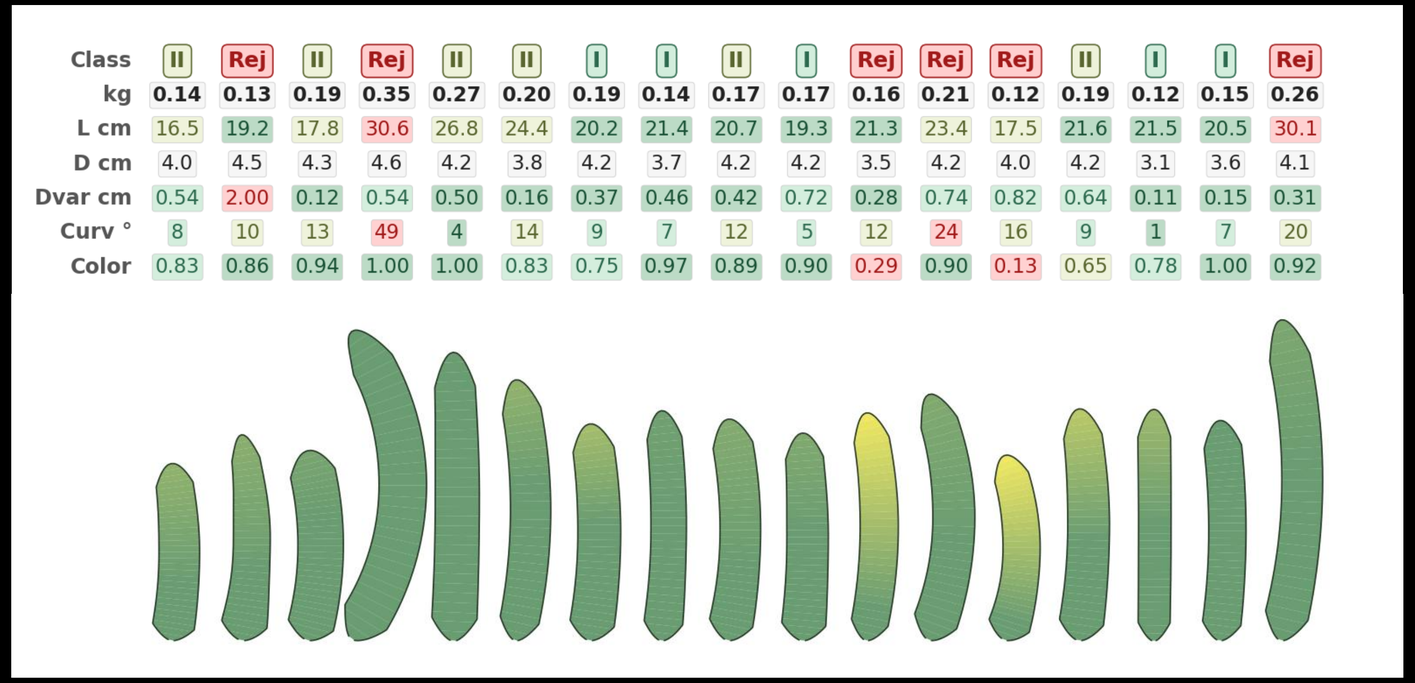

YIELD SYSTEMS

From Video to Accurate Data

Measure and grade each fruit per harvest individually

Summary

Class	n	kg
Extra	0	0.00
I	5	0.76
II	6	1.16
Rej	6	1.23
Total	**17**	**3.15**



Acquire the data to calculate **total marketable yield.**

Yield Systems

From Pixels to Insights

RAW Video Input

Synthetic Data Engine

Model Based Inference

- Height (mm)
- Yield estimate
- Weight (g)
- Volume (cm^3)
- Shape

Individual vegetable insights

Proprietary synthetic data engine eliminates expensive real-world data collection

VegSat = Yield Systems + Satellite

From Pixels to Insights

RAW Video Input

Synthetic Data Engine

Model Based Inference

- Height (mm)
- **Yield estimate**
- Weight (g)
- Volume (cm^3)
- Shape

Field Level Detailed Insights

YIELD SYSTEMS

YIELD SYSTEMS

Thank You

Sami Semenius, CEO

Jussi GIllberg, Founder