

JOIN THE JOURNEY WITH US!



1st ANNUAL SEMINAR

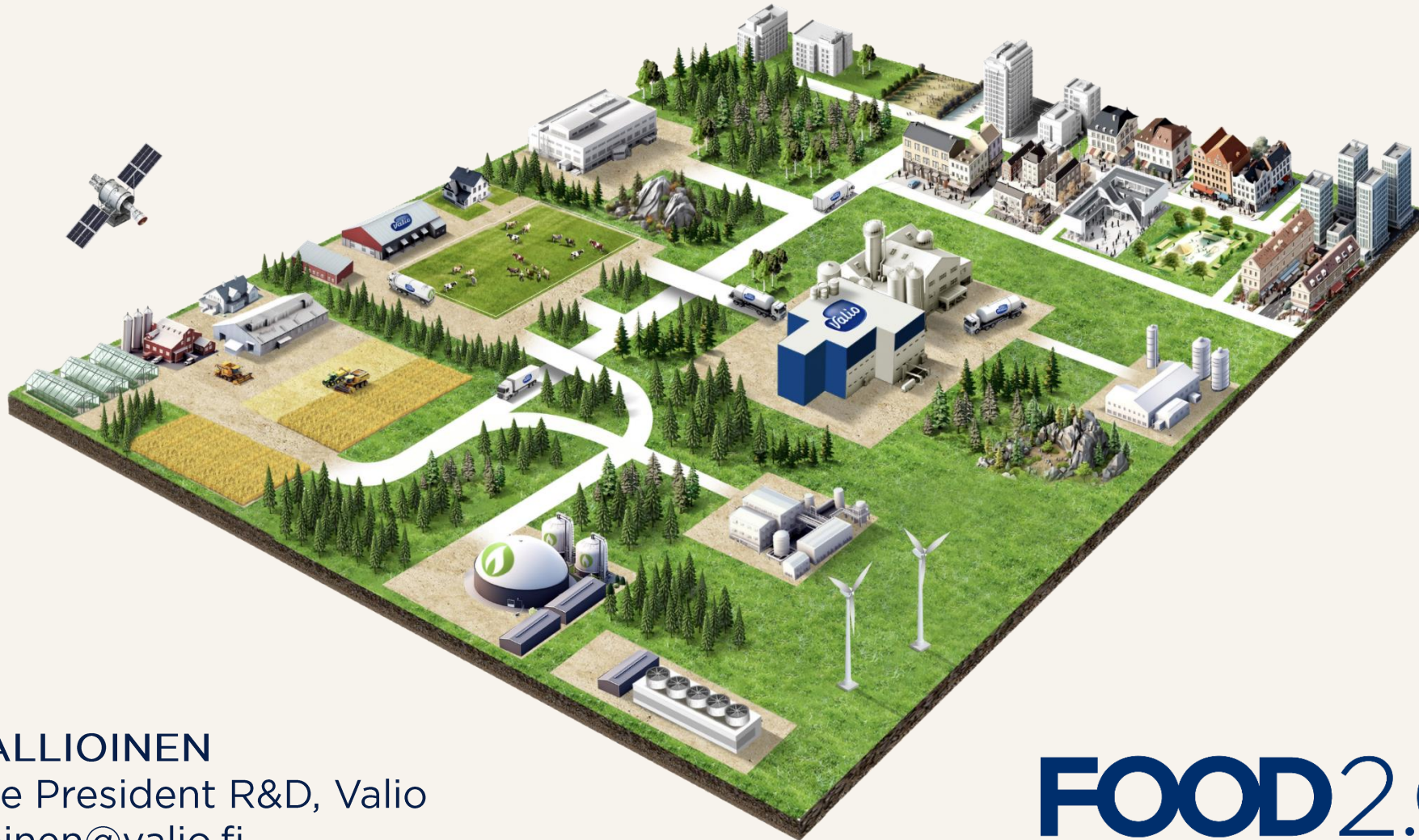
FOOD2.0



AGENDA

13.00	Opening - Harri Kallioinen, Valio
13.10	Collaboration for future success with Business Finland - Eeva Salminen, Business Finland
13.35	Highlights of the first year of Food 2.0 - Veera Virtanen, Valio Co-innovation project intros <ul style="list-style-type: none">• NSF Global Center: Food Innovation and Diversification to Advance the Bioeconomy - Nesli Sözer, VTT• Animal welfare verification system - Lilli Frondelius, LUKE
14.20-15.00	Coffee break with networking and exhibition
15.00	New food sector export support actions - Jukka Vainionpää, Ruokatieto
15.20	Company pitching for collaboration ideas <ul style="list-style-type: none">• 3D printing in food industries: co-creation opportunity for maintenance - Pekka Ketola, 3DStep• Enhancing the efficacy of existing processes with nanobubbles - Henna Niskakoski, EOD Europe• From algae to action: Let's co-create the future of food & industry - Mari Granström, Origin by Ocean
15.50	Closing remarks

OPENING WORDS

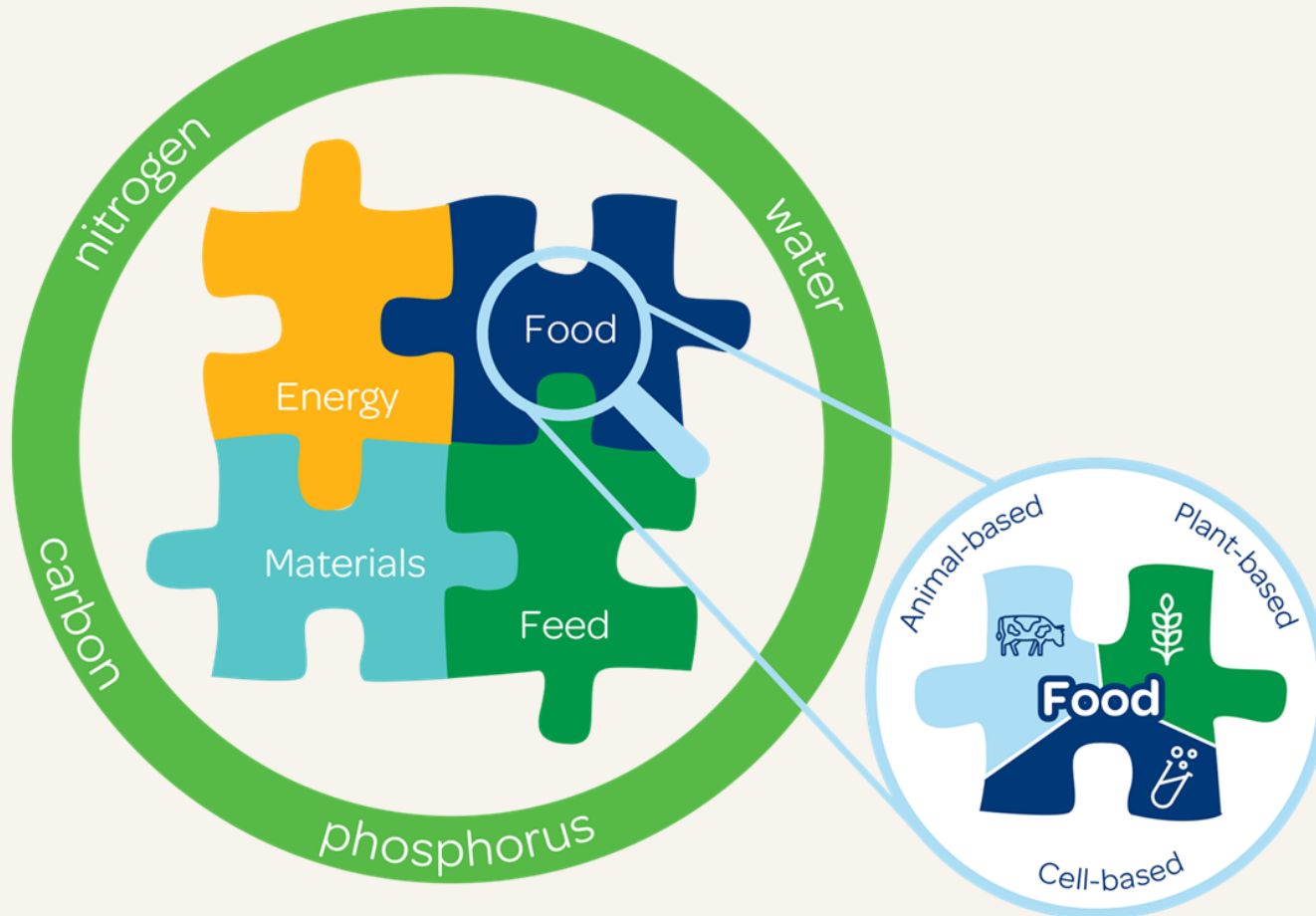


HARRI KALLIOINEN
Senior Vice President R&D, Valio
harri.kallioinen@valio.fi

FOOD2.0



FOOD 2.0 – NATURE-SMART FOOD SYSTEM



- Circular economy
- Smart integration of
 - value chains
 - food production methods
- Environment and climate
- Resilience
- Economic feasibility
 - Innovative products
 - Food Export

ROADMAP

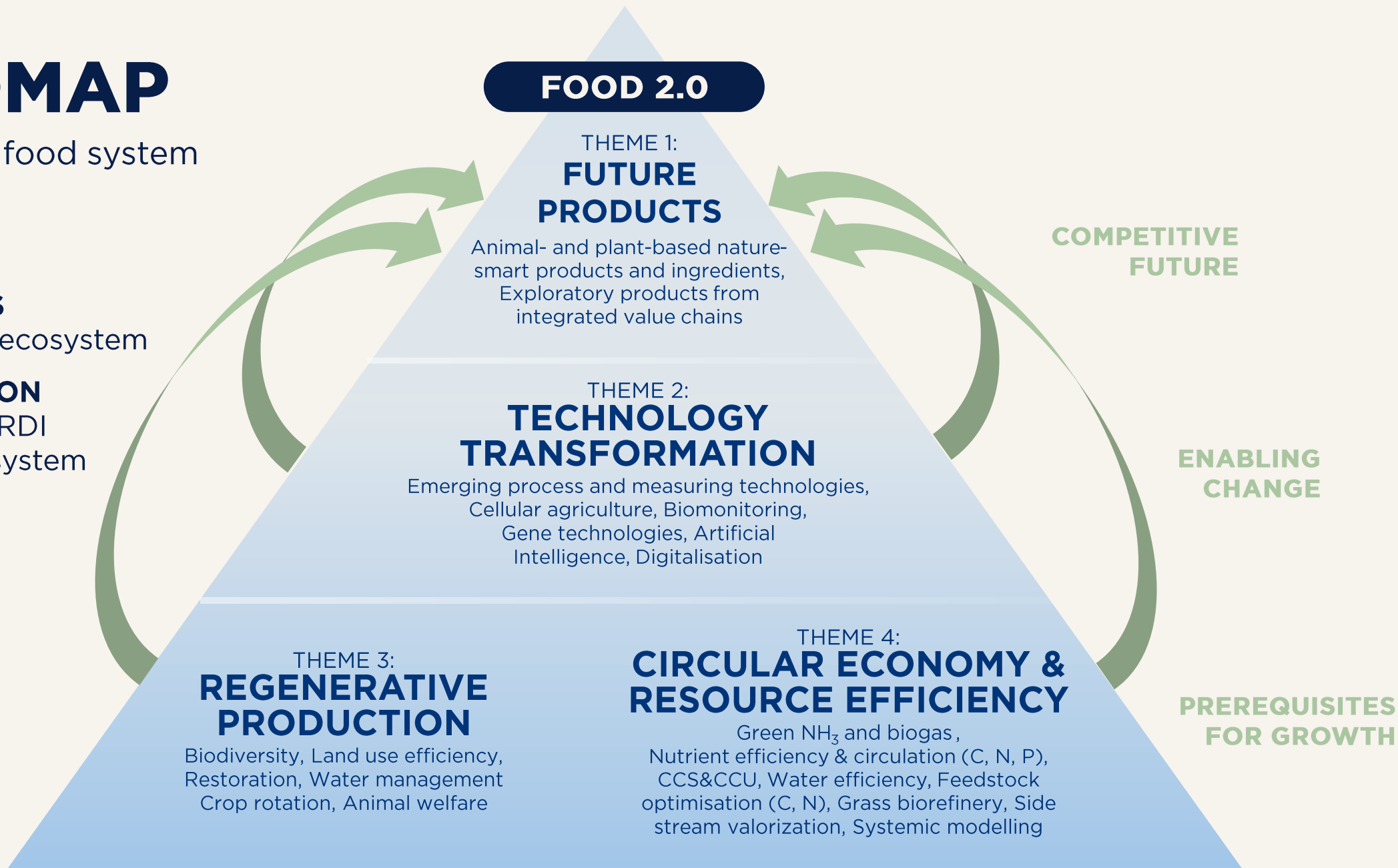
Nature-smart food system

TARGETS:

100 PARTNERS
involved in the ecosystem

EUR 100 MILLION
investments in RDI
across the ecosystem

**EUR 1 BILLION
GROWTH**
in food exports
by 2032



TARGETS

100 PARTNERS
involved in the ecosystem

EUR 100 MILLION
investments in RDI
across the ecosystem

**EUR 1 BILLION
GROWTH**
in food exports
by 2032

170

**BUSINESS
FINLAND**



Ministry of Agriculture
and Forestry of Finland



**European
Union**



Other
financiers

FOOD2.O

Ruokatieto



**THE FINNISH
FOOD EXPORT
ASSOCIATION**

COLLABORATION FOR FUTURE SUCCESS WITH BUSINESS FINLAND



EEVA SALMINEN
Senior Director, Health and Consumer Business
Business Finland

FOOD2.0



Collaboration for future success with Business Finland

Food 2.0 annual seminar 19.3.2025

Eeva Salminen

Senior Director, Health & Consumer Business

Agenda

- Business Finland in brief
- Business Finland funding
- Recent changes in BF funding
- BF and Food & foodtech sector
- Q&A

**BUSINESS
FINLAND**

BUSINESS FINLAND **in brief**

From possibilities to breakthroughs

We create prosperity and well-being for Finland by accelerating the sustainable growth of our customers globally.

BUSINESS
FINLAND



BUSINESS FINLAND

WE PROVIDE FUNDING FOR RESEARCH, DEVELOPMENT AND INNOVATION

Innovations are the most important source of growth, according to research.

WE ATTRACT INVESTMENTS

Foreign investments bring new customers and partnerships and improve the international competitiveness of companies.

WE SUPPORT EXPORTS AND INTERNATIONALIZATION

Finland depends on exports. The internationalization of companies is important for the national economy.

WE PROMOTE TOURISM

Tourism is an important industry for our national economy. A positive country image also benefits other industries.

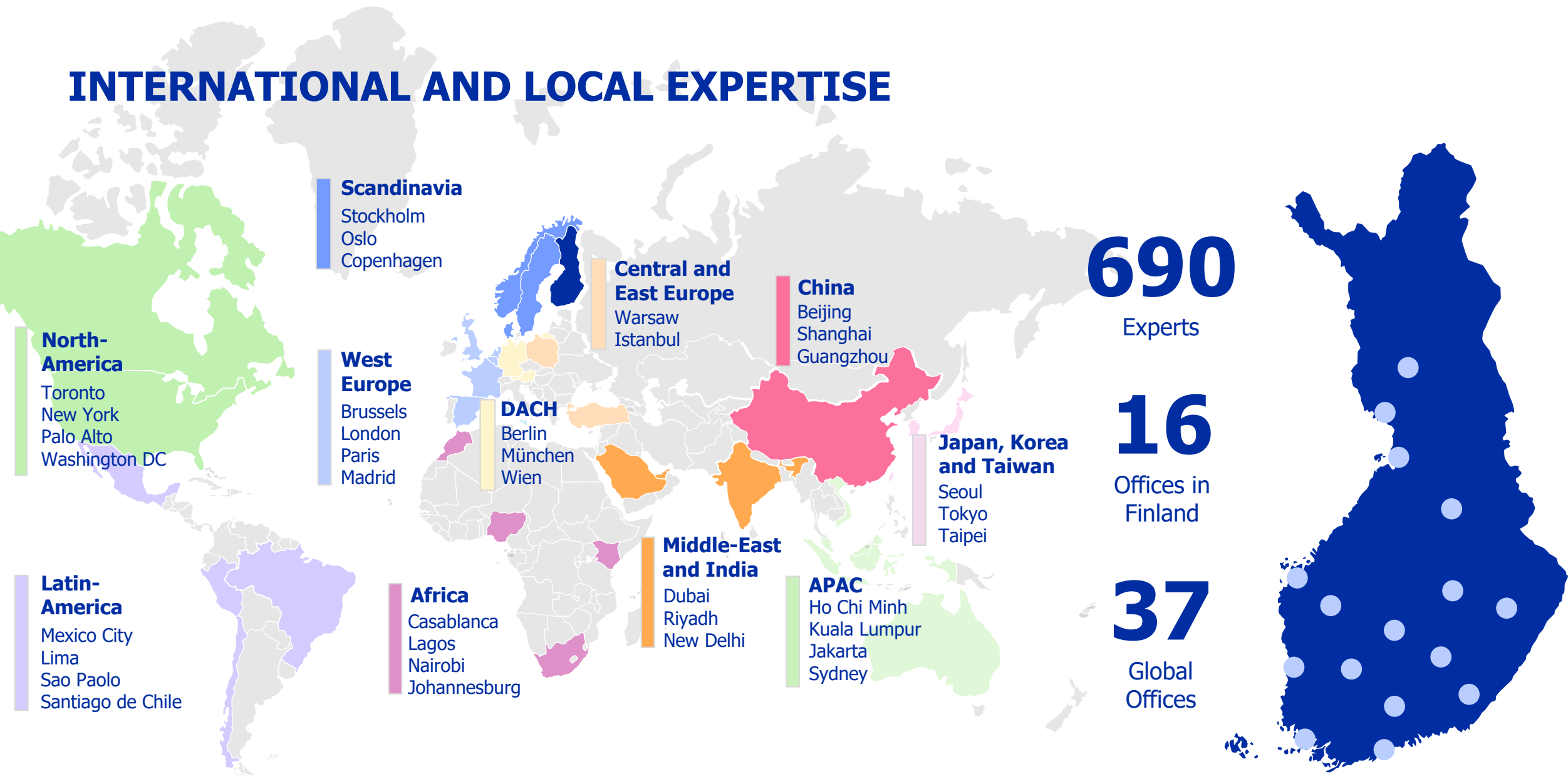
WE CREATE NETWORKS AND ECOSYSTEMS

Networks and ecosystems create cooperation that improves the ability of companies to innovate, grow and succeed in international competition.

WE ATTRACT TALENTS

International talents increase the internationalization of companies. Diverse work communities are more innovative and productive than others.

INTERNATIONAL AND LOCAL EXPERTISE



BUSINESS FINLAND **funding**

FUNDING GRANTED IN 2024

Funding requested
875 M€

- 4947 applications
- 2075 rejected applications

Funding awarded
610 M€

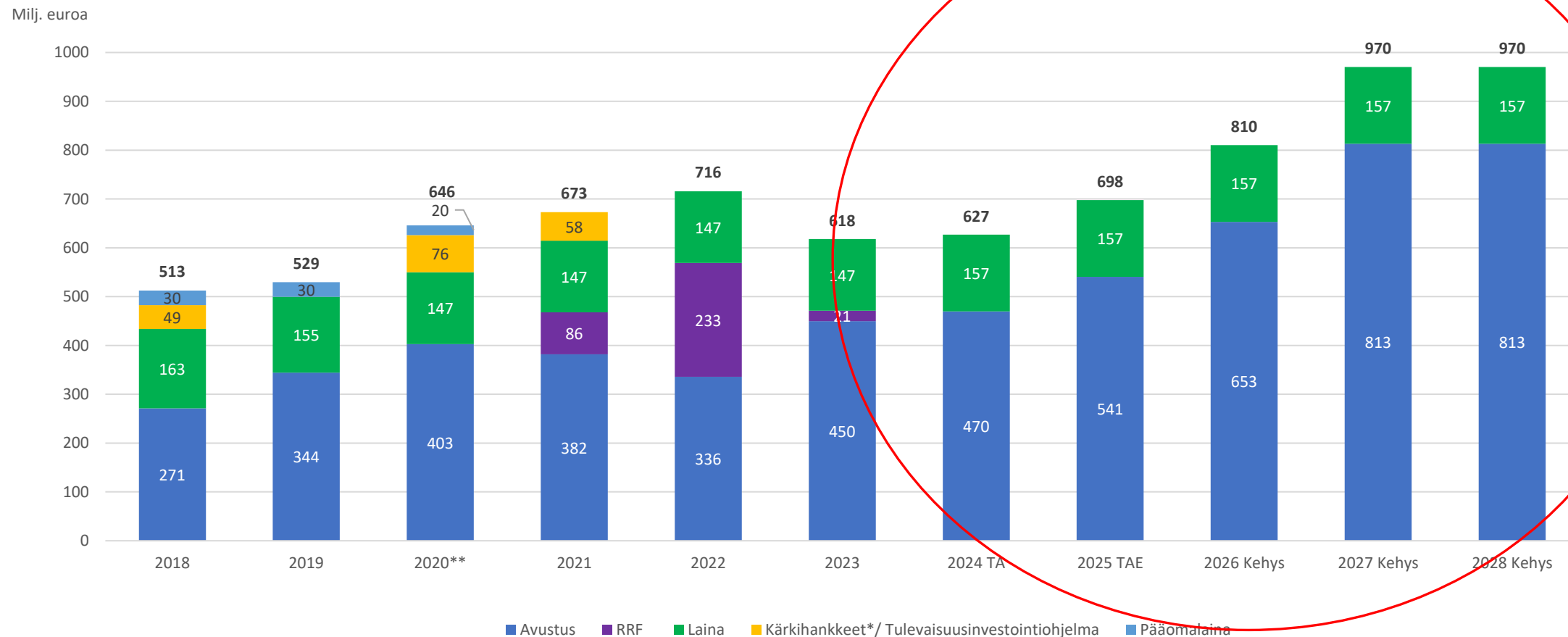
- 3318 funded projects
- 2413 companies

RDI funding
383 M€

Businessfunding
50 M€

Research organizations
177 M€

BUSINESS FINLAND'S FINANCIAL AUTHORITIES 2018-2028



PUBLIC R&D FUNDING CREATES JOBS AND EFFICIENCY

- Business Finland's R&D funding has a positive and statistically significant impact on employment and turnover in SMEs and micro-enterprises
- Funding from Business Finland has a positive impact on a company's ability to scale up within three years
- 1% increase in R&D support euros increased the R&D intensity of funded companies by approximately 2.5% and lasted for 8 years
- R&D support significantly increases the probability of innovation
- The most effective innovation policy is to target R&D support to companies with the highest innovation capacity

THE SMEs WE FUND ARE THRIVING

Exports of SME customers increased in 2020–2023

45 %

Net sales of SME customers increased in 2020–2023

31 %

Number of jobs in SME customers increased in 2020–2023

11 000 Prs.

Export share of net sales 2023

45 %

SME customer companies' value added grew in 2020–2023

20 %

Value added generated by exports to Finland in 2023

€ 2.4 billion

Changes in BF funding

CHANGES TO FUNDING SERVICES 2025



- Increase in Business Finland's R&D funding, cuts will be made to non-R&D funding (eg. Explorers, Tempo, NIY, DTA)
- New funding:
 - Funding for R&D activities in the creative industries and industries that leverage the creative industries
 - Funding for the R&D activities of university hospitals
- From the beginning of 2025, Business Finland's funding in **public research projects will be 80 %** of the project's eligible costs.
- Low-demand funding services to be discontinued, [Into](#) and [Ecosystem Integrator](#)
- The criteria for Exhibition Explorer funding to be tightened
- Changes to the minimum costs and terms and conditions of the Production incentive for the audiovisual industry
- Changes to the criteria of the Market Explorer funding

Rise to challenge – Pilot call for groundbreaking research ideas

- Goal: Create **capabilities** and **international top level knowledge** for future growth areas; Big future challenges are solved with research.
- Main theme in this first call are **digital solutions** which enhance security and continuity to the needs of defence sector, critical infrastructure and society and industries.
- Business Finland is also preparing to launch funding calls under other themes in the future.
- The call supports Finnish governments goal to raise r&d expenses to 4% of GDP by 2030.
- This call will fund projects of research organizations with identified productivity benefits and/or international commercial potential that cannot yet be accurately assessed. The first phase of the funding call does not yet require the participation of companies.
- Projects are funded in 3 phases:
 - Preliminary phase, deadline for applications **31.3.2025** (pitching + selections in April-May)
 - Phase I, 2 years, 10 M€, funding max 2 M€/project (80 % grant)
 - Phase II, max 3 years, funding 3-5 M€, (80%)
- [Rise to challenge funding call for groundbreaking research ideas - Business Finland](#)



BF & Food & Foodtech sector



BUSINESS FINLAND ACTIVITIES IN FOOD & FOODTECH SECTOR

- Business Finland customer companies
 - **1 000** companies - **250** active
 - Main food export markets
 - Sweden, Estonia, Germany, Netherlands, Poland, Denmark, France, China
- Business Finland services in 2024
 - **46.5 M€** funding
 - **150** funding projects, >90 % R&D projects (in euros)
 - **Valio Food 2.0** veturi
 - **470** company advice cases
 - **367** company activations to market opportunities
- BF is a member in “Kestävä ja kannattava ruokajärjestelmä” national growth strategy coordinated by MMM
- **Sustainable growth from new value chains – cellular agriculture** report
 - Conducted by VTT, Luke and University of Helsinki
 - Funded by Business Finland and Ministry of Agriculture
 - **Webinar on April 9th**
ssl.eventilla.com/event/1Ez81#main-content



GERMAN-FINNISH INNOVATION CALL

- **Funded by**
 - Business Finland - Finnish companies
 - ZIM (das Zentrale Innovationsprogramm Mittelstand) - German companies
- **Deadline September 15th**
 - [German-Finnish Call for Proposals for joint R&D projects by Small and Medium-sized Enterprises \(SMEs\) - Business Finland](#)
- **Info webinars**
 - March 13th
 - April 10th - [Webinar in the course of the Finnish-German call for proposals registration - Webex](#)
- **Online matchmaking platform**
 - [Home | German-Finnish Joint R&D Projects Matchmaking 2025](#)
- **More info**
 - lili.lehtovuori@businessfinland.fi

Mittelstand Definition and Goal

The Government Program states: "The cornerstones of the economy and exports will be strengthened by committing to measures ***to double the number of growth-oriented medium-sized entrepreneur-driven companies*** (so-called growth companies - Mittelstand) by 2030.

Accordingly **Business Finland's goal** (all sectors incl. Food sector): ***doubling*** the number of growth-oriented, medium-sized entrepreneur-driven companies to **660 by 2030**

Food sector in Finland

Approximately 2,600 companies (in nearly 3,000 locations) , dominated by small businesses:

- 79% of companies employ fewer than 4 people
- 8% of companies employ 4 - 10 people
 - In other words, 87% of companies employ less than 10 people
- 12.3% (320 companies) employ between 10 - 250 people
- 0.7% (19 companies) employ more than 250 people

In accordance with the objective of the **Ministry of Economic Affairs and Employment**, Mittelstand's companies that want to grow and employ 50–499 people **must be attracted to the sector.**

Business Finland actively is looking for companies willing to grow to Mittelstand size, employing 50–499 people

- **growth seeking companies please contact us !**

Source : TEM toimialapalvelu

To conclude

12 disruptions that challenge our operating environment



Accelerated mitigation and adaption against climate change



Race for resources



Shift in demographics



Erosion of shared experience and trust



The energy market shift into renewables



De-globalization



Shift in values



Transformation and division of work



Deterioration of the living environments – biodiversity crisis



Interconnected and digital world



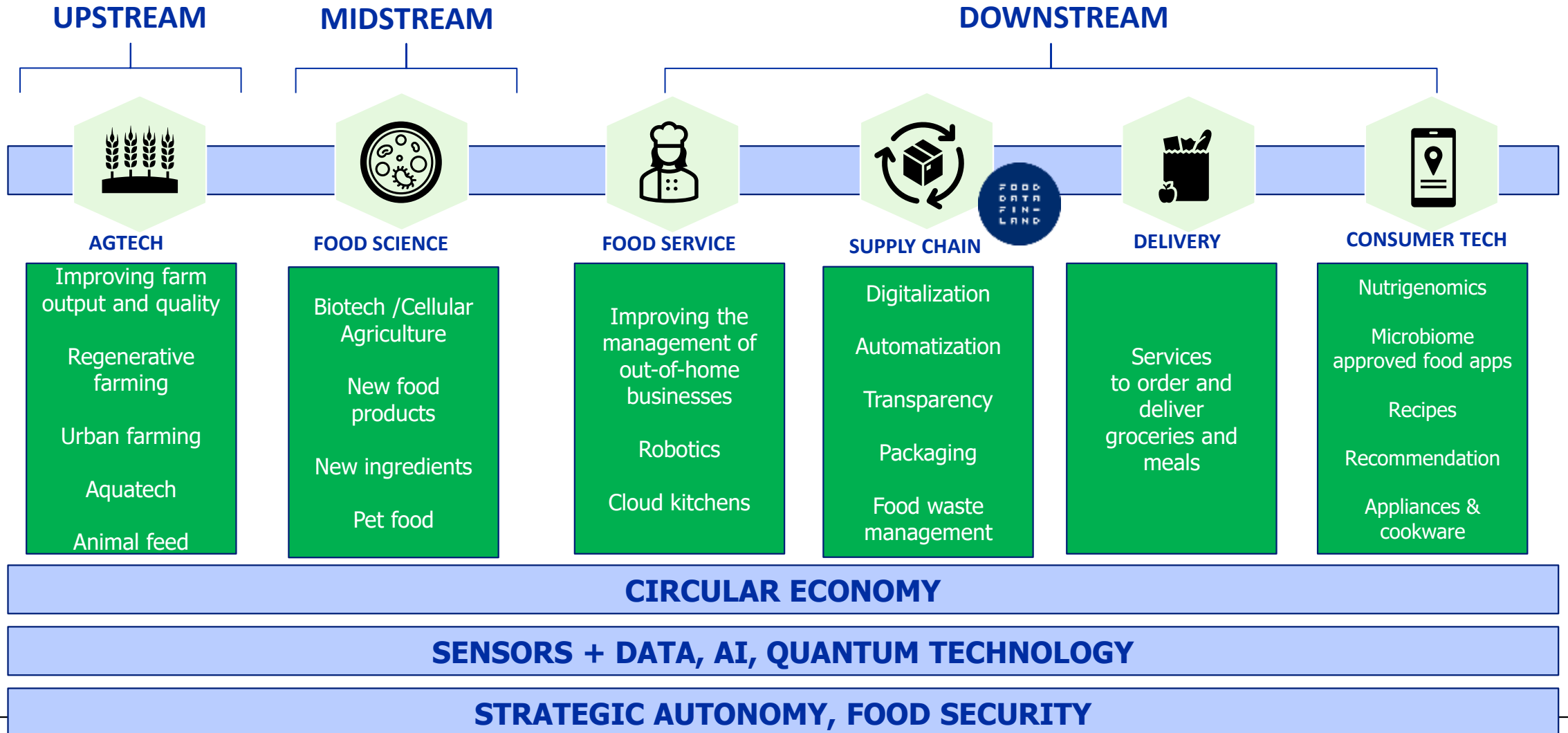
Challenges to prevalent societal systems and the world order



Global knowledge scarcity and race for talent

FOODTECH

= The ecosystem made up of **all the agrifood entrepreneurs/start-ups** innovating in the **FOOD CHAIN** in terms of products, distribution, marketing or business model



Fortum & Metsä Group
ExpandFibre

Neste
Transportation
and chemicals

Nokia
Unlock
Industrial 5G

KONE
Flow of
Urban Life

ABB
Green
Electrification

Sandvik
SHIFT '25

**Borealis
Polymers
Spirit**

**Nokia
Competitive
EDGE**

TietoEvy
Trusted Digital
Societies

**Valmet
Beyond
circularity**

Wärtsilä
Zero Emission
Marine

**Meyer
NEcOLEAP**

Danfoss
Fossil Free
Future

Mirka
SHAPE

Picosun
Chip Zero

Ponsse & Epec
Forward27

Bittium
Seamless and
Secure connectivity

Konecranes
ZERO4

Orion
Virtual
BigPharma

Valio
Food 2.0

Wärtsilä
WIDE

Kempower
HETE

Patria
eAlliance

Nokia
LEAD

ABB
H2 Springboard

Nokian Renkaat
Futureproof

TBA

TBA

TBA

TBA

BFers present at this event:



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Please contact your BF contact person or

BUSINESS FINLANDIN ASIAKKAAKSI

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Tarjoamme rahoitus- ja asiantuntijapalveluita Suomeen rekisteröidyille yrityksille, jotka haluavat kasvaa ja kansainvälistyä. Koko palveluvalikoimamme ei ole käytössä heti alusta alkaen, vaan laajenee, kun yritys etenee tavoitteiden mukaan kansainvälisellä kasvupolullaan. Katso palvelukohtaiset kriteerit palveluiden omilta sivuilta.

Startup- ja pk-yritykset

Business Finlandin asiakkaita voivat olla startup- ja pk-yritykset, joilla on

1. suomalainen Y-tunnus ja todellista yritystoimintaa Suomessa
2. riittävät rahalliset resurssit kansainvälistymiseen
3. monipuolinen osaaminen ja tiimi: vähintään 2 hlöä täysipäiväisesti töissä yrityksessä Suomessa
4. halu kasvaa kansainvälisillä markkinoilla
5. kilpailuetu kansainvälisillä markkinoilla

Vastaa yritystäsi koskeviin kysymyksiin ja saat heti tietää, onko Business Finland oikea taho tarjoamaan rahoitus- ja kansainvälistymispalveluita yrityksellesi. Kartoitus sopii startup- ja pk-yrityksille. Kartoituksen tekemiseen menee 5-10 minuuttia ja sitä ei voi tehdä toisen yrityksen puolesta. Vastaa kysymyksiin rehellisesti, niin osaamme suositella vain yrityksellenne aidosti sopivia palveluita.

[SIIRRY KARTOITUKSEEN](#) 

BECOME OUR CUSTOMER

Do you want to launch your business towards new, growing and international opportunities?
Become our customer. Together we'll find the best ways of working for your company.

BECOME OUR CUSTOMER

BUSINESS FINLAND'S SERVICES


We provide funding and expert services for companies registered in Finland that want to grow and enter the international market. You will not have access to our entire service selection right from the very beginning. Instead, you will gain access to more services as you progress on your international growth path according to your goals. For service-specific criteria, please see the page on the service in which you are interested.

Start-ups and SMEs

Start-ups and SMEs that have the following can become customers of Business Finland:

1. Finnish business ID and has genuine business activities in Finland
2. Financial resources required for internationalization
3. Versatile expertise and team: employs at least two persons full-time in Finland
4. Willingness to grow on the international market
5. Competitive edge on the international market

Complete a survey and you will find out whether Business Finland can offer services for your company. Answering questions will take 5-10 minutes.

[TO THE SURVEY](#) 

**BUSINESS
FINLAND**

THANK YOU

HIGHLIGHTS OF THE FIRST YEAR OF FOOD 2.0



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FOOD2.0





FOOD 2.0 ECOSYSTEM – MARCH 2025

AND LINKS TO THE OTHER VETURI COMPANIES

ENERGY AND TRANSPORT



MATERIALS AND CHEMICALS



CONSULTANCY



FOOD AND FEED, PROCESS TECHNOLOGY



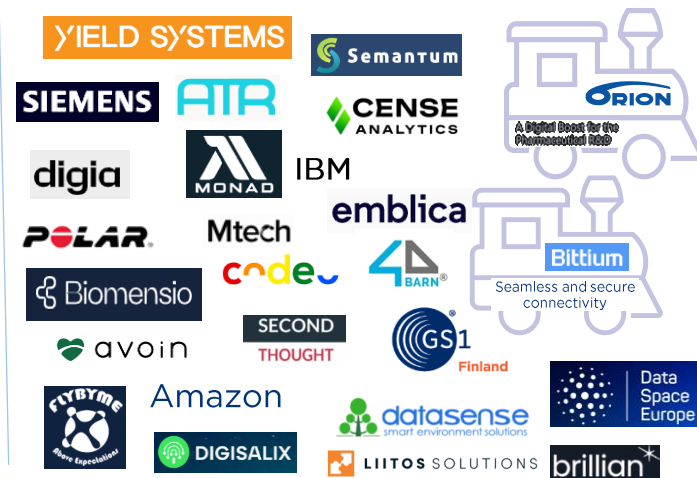
HONKAJOKI



ORGANIZATIONS



DIGITAL, DATA, AI



RESEARCH AND EDUCATION



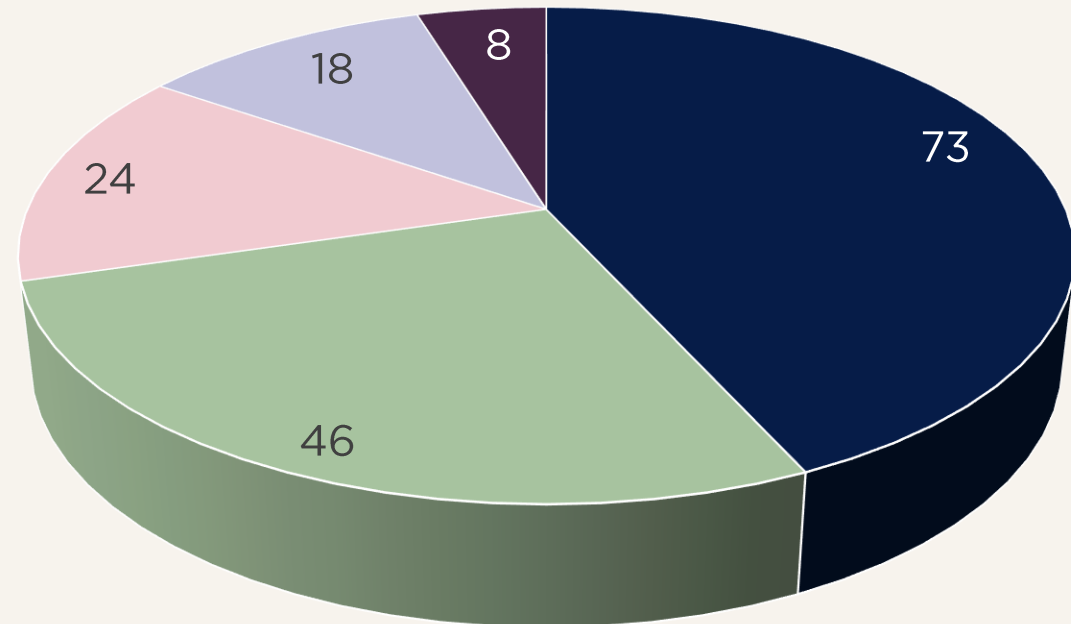
FINANCIERS AND ENABLERS



OVERVIEW OF THE ECOSYSTEM

Member organizations by type

- ✦ Industry: 73
- ✦ Services: 46
- ✦ University or research institute: 24
- ✦ Other: 18
- ✦ Public sector: 8

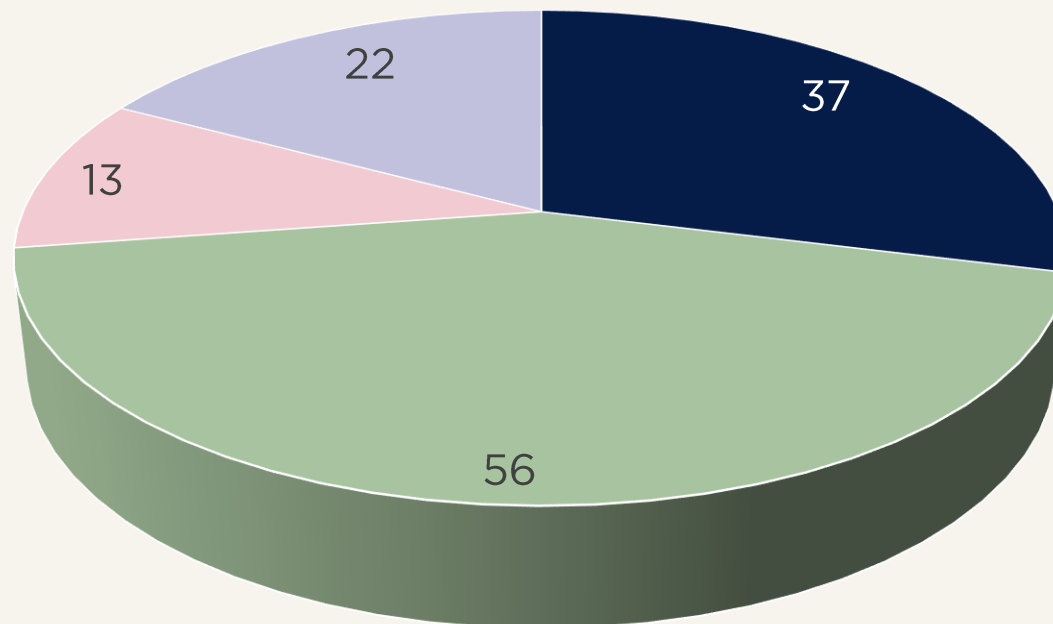


■ Industry ■ Services ■ University or research institute ■ Other ■ Public sector

OVERVIEW OF THE ECOSYSTEM

Member organizations by size excluding universities, research institutes and other

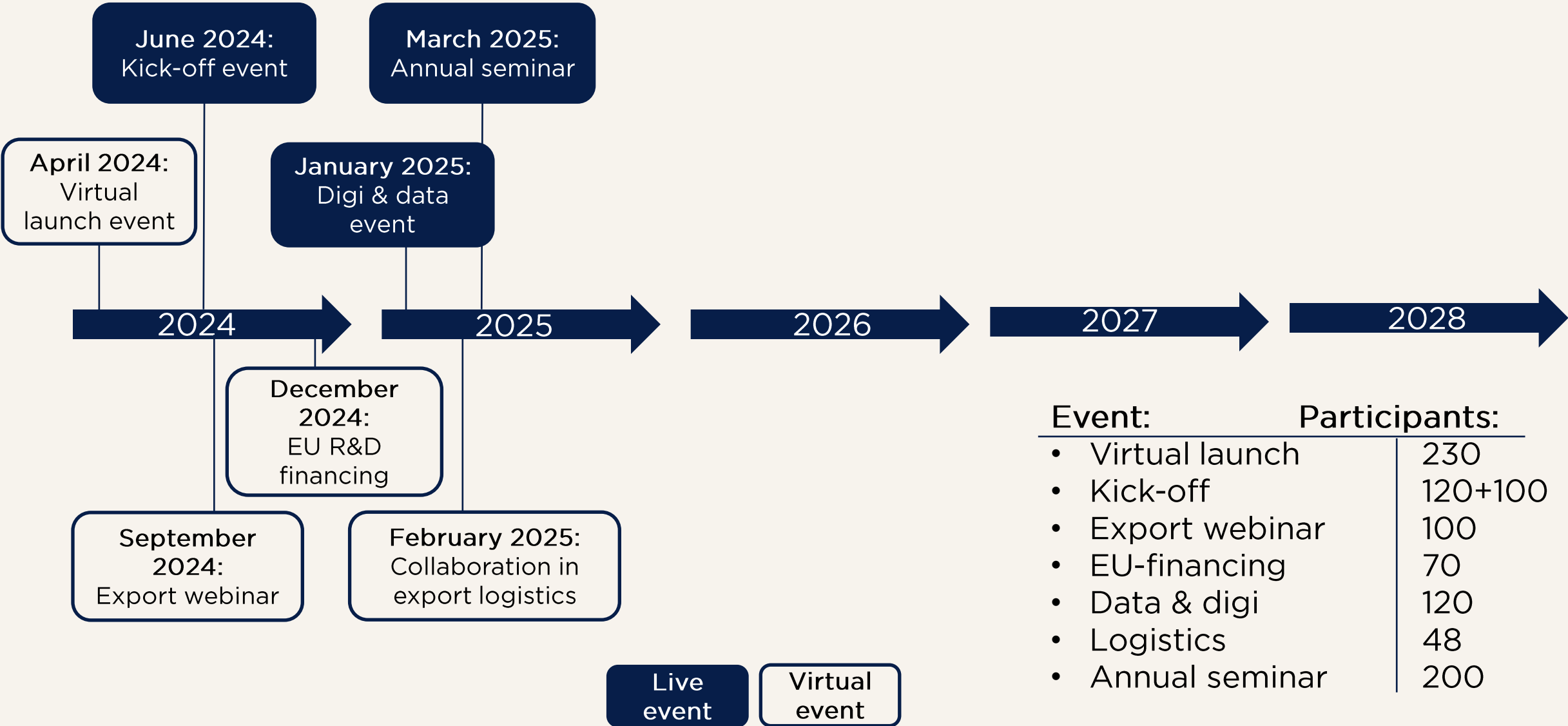
- ✦ Start-ups: 37
- ✦ Small or mid sized: 56
- ✦ Midcap: 13
- ✦ Large: 22



- Start-up: young SME aiming at fast growth
- Small or mid sized: less than 250 employee, annual turnover below 50 million euros
- Midcap: annual turnover below 300 million euros
- Large: more than 250 employees, annual turnover over 300 million euros



FOOD 2.0 EVENT SUMMARY



Event:	Participants:
• Virtual launch	230
• Kick-off	120+100
• Export webinar	100
• EU-financing	70
• Data & digi	120
• Logistics	48
• Annual seminar	200

ECOSYSTEM PROJECTS

Food 2.0 - Nature-smart food system

RCF: AI in food R&D (UH)
• Linked to BF-FoodID

BF Co-innovation: **AWVS** (LUKE)
• Animal welfare verification system

BF Co-research: **CARBON+** (UH)
• Agricultural aerosols

FOOD 2.0

THEME 1:
FUTURE PRODUCTS

BF Co-innovation: **FoodID** (VTT)
• Hybrid food & cellular agriculture

BF Co-research: **FABuLOATS** (LUKE)
• Production of uniform and high-quality oats and faba beans

MMM Makera: **PROTETURVA** (Finnish Food Authority)
• Safety of plant-based meat analogues

MMM Makera: **FINNUTRI** (LUKE)
• Domestic food production and dietary needs

THEME 2:
TECHNOLOGY TRANSFORMATION

BF Co-research: **AlgaCircle** (UTU)
• Microalgae & circular economy

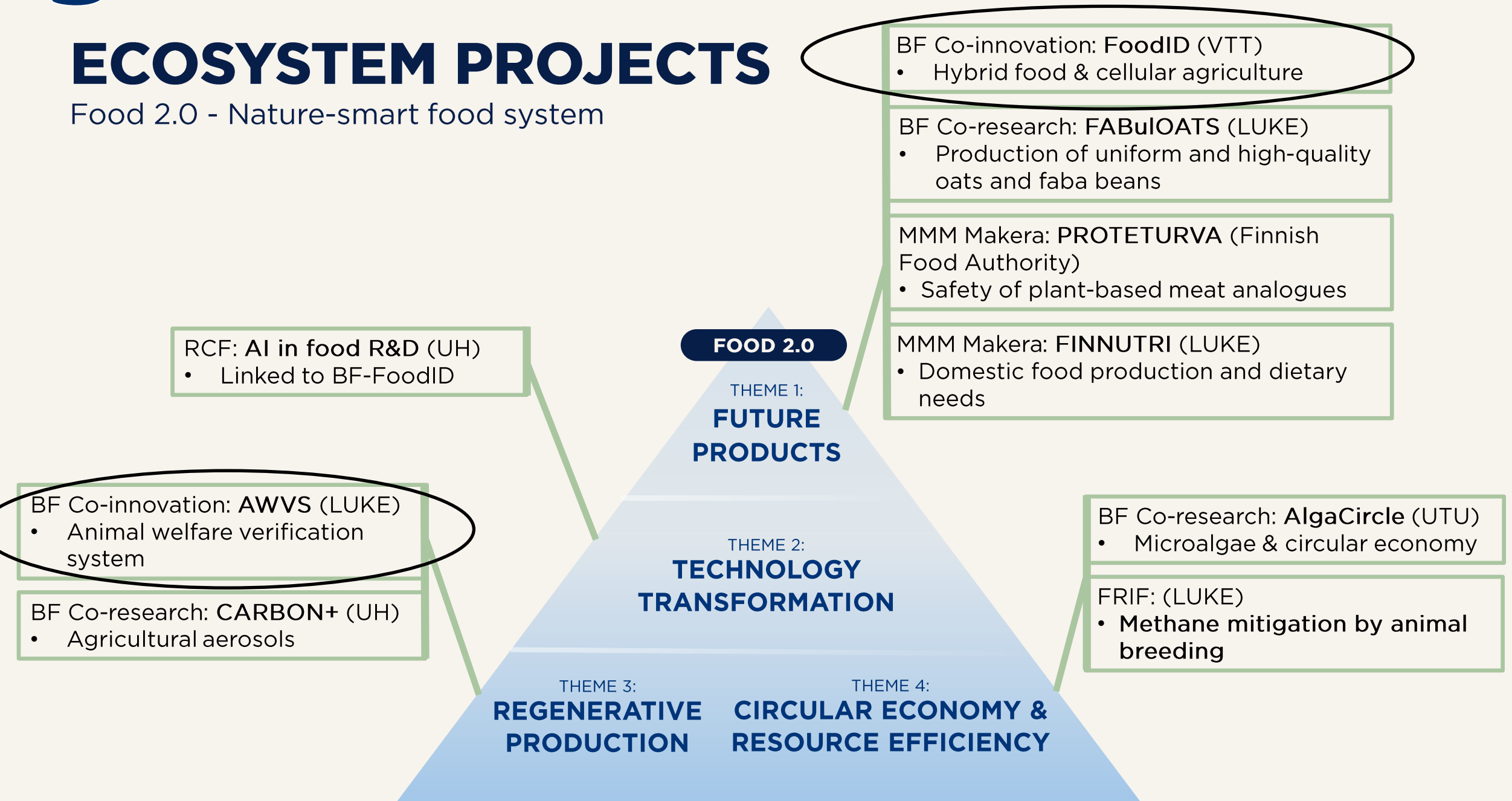
FRIF: (LUKE)
• Methane mitigation by animal breeding

THEME 3:
REGENERATIVE PRODUCTION

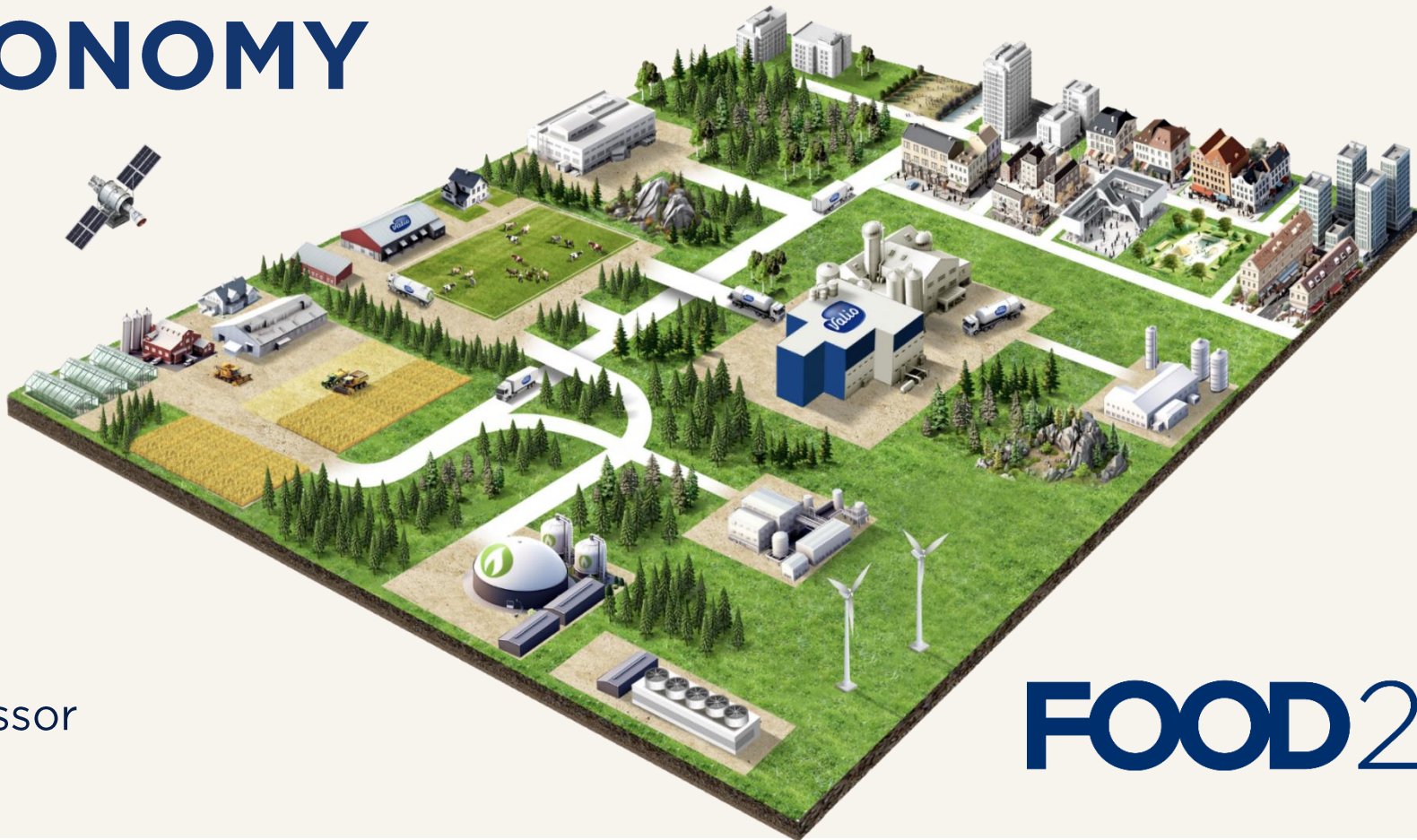
THEME 4:
CIRCULAR ECONOMY & RESOURCE EFFICIENCY

ECOSYSTEM PROJECTS

Food 2.0 - Nature-smart food system



CO-INNOVATION PROJECT: FOOD INNOVATION AND DIVERSIFICATION TO ADVANCE THE BIOECONOMY



NESLI SÖZER
Research Professor
VTT

FOOD2.0



NSF GLOBAL CENTERS

Use-Inspired Research Addressing Global Challenges through the Bioeconomy



Food Innovation and Diversification to Advance the Bioeconomy : **FoodID**

Nesli Sözer, Research Prof., VTT

Valio Food 2.0 Annual seminar and Food RDI-forum kick-off,
March 19, 2025 Helsinki

NSF GLOBAL CENTERS and Addressing Global Challenges Through the Bioeconomy call

Global Centers' Key Elements

- International partnership
- Multidisciplinary
- Use-inspired research
- Stakeholders beyond academia
- Workforce development
- Engaging diverse talents

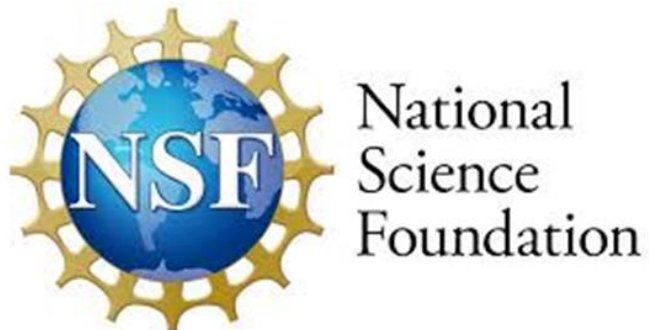
Themes of the Bioeconomy call

1. Leveraging Biodiversity Across the Tree of Life to Power the Bioeconomy

- Biotechnology solutions and processes based on living organisms
- Interactions and genomics of microbial, plant and animal organisms

2. Bio foundries

- Learning iterative biological processes and AI solutions
- Biotechnology, genomics, metabolomics, synthetic biology and biorefineries
- Data, modelling, computation and prototyping for bioeconomy processes and applications
- Political, economic and ethical issues of the green economy



FINLAND was very successful with 3 projects co-funded!

- 53 proposals evaluated and best 10 funded with 82 million \$ internationally
- 6 Global Center projects were funded for 5 year period and 5 M\$ for NSF applicants
- Four 3 year PoC- projects in conjunction to Global Centers Program with 2 M\$ for NSF applicants
- FINLAND SUCCESSFUL - 3 projects from Finland funded with total budgets of 20 M€
 - Reliable and Scalable Biofoundries for Biomanufacturing and Global Bioeconomy. 5 years, BF 3,8 M€, RCF 1,5 M€ (**VTT** & Aalto Univ)
 - Alliance for Socially Acceptable & Actionable Plants, 5 years, RCF 1,85 M€ (Vaasa Univ)
 - Food ID – Food Innovation and Diversification to Advance the Bioeconomy, 3 years PoC, BF 6,2 M€, RCF 0,65 M€ (**VTT** & Helsinki Univ)
- BF budget allocation under this call to Research organisations, 5,1 M€ & to Companies, 4,9 M€



Research Council of Finland



**BUSINESS
FINLAND**

FoodID's International, Transdisciplinary Team



Our Innovation Ecosystem





Ozan Ciftci
U.S. Hub Leader

Professor of Food Engineering



Nesli Sözer
Finland Hub Leader

Research Prof. Smart &
Sustainable Food Production

FoodID research project set-up: Finnish hub

Finnish hub (VTT, UH, companies)

Leader res. Prof. Nesli Sözer

Business Finland (BF) sub-project:

- VTT (coord) and Finnish industry;
- Focus on foodtech and biotech R&D
Responsible Leader Emilia Nordlund
Project Manager Kaisu Honkapää

Pirjo Hakanpää, BF FoodID advisor

Research Council of Finland (RCF) sub-project:

- VTT (coord) and University of Helsinki
- Focus on computing, AI, modelling, data science
RCF PI: Dr Samuli Ollila (VTT)
RCF co-PI: Prof Arto Klami (UH)

Risto Vilkkö, RCF FoodID advisor

FoodID vision: Food systems transformation is needed to reach a sustainable bioeconomy



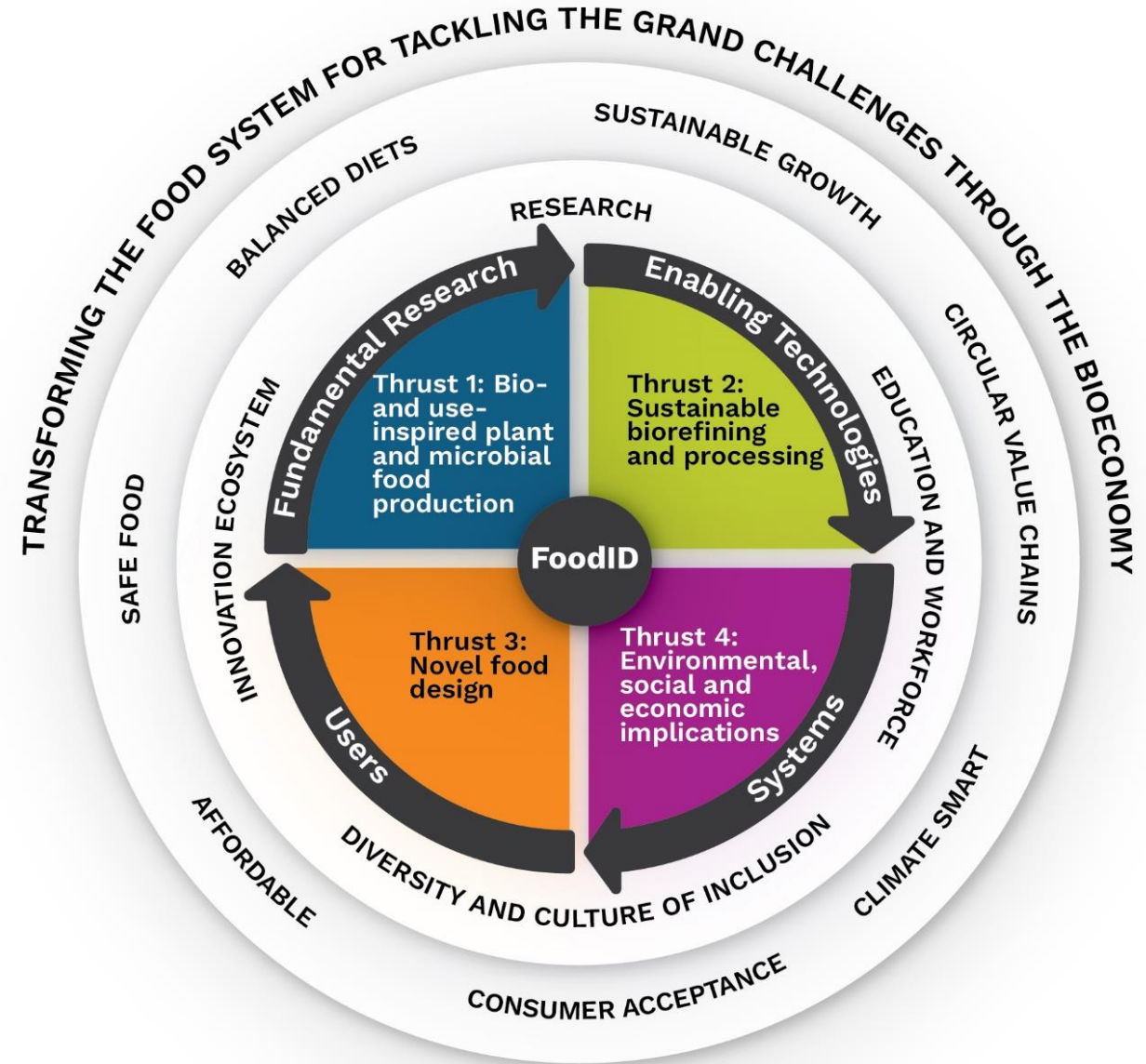
Food Diversification

A promising approach toward a sustainable food system

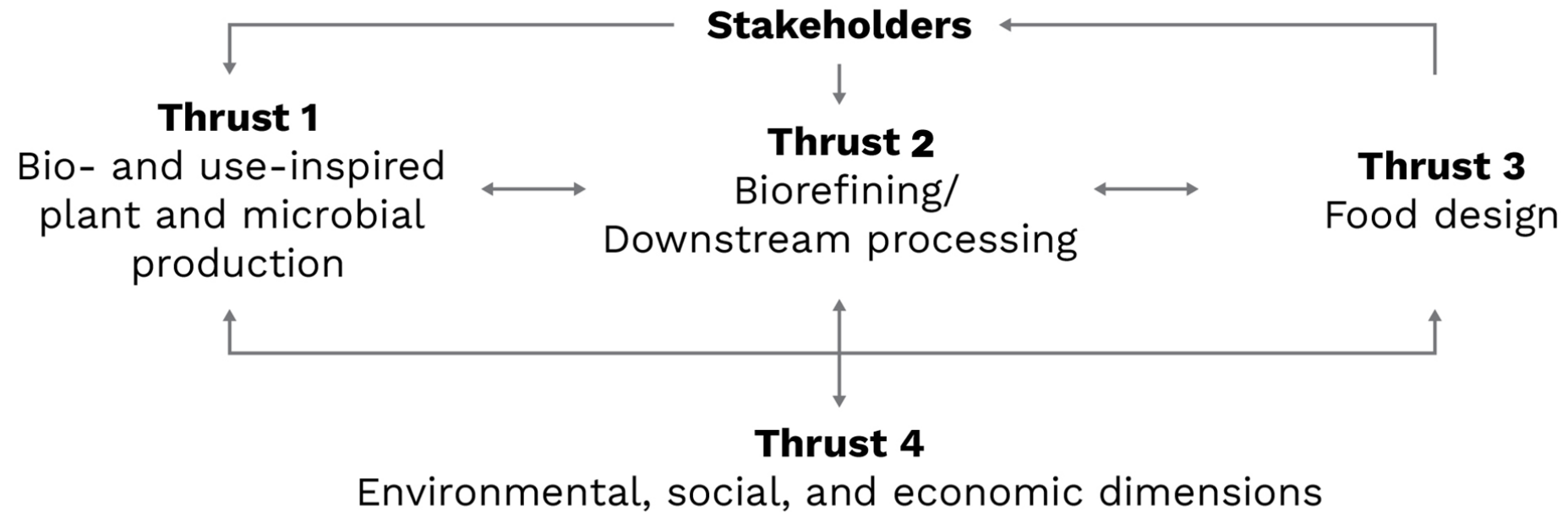
Shift to a more balanced food system including more of plant and microbial sources.

The Overarching Goal

FoodID is to diversify the global food system by advancing fundamental knowledge of novel food production processes comprising alternative **plant and fermentation-based proteins and lipids** at the micro and macro level—all **facilitated by computer-aided design and artificial intelligence (AI)** and underpinned by a holistic approach **integrating educational, societal, and economic dimensions.**



Overview of the research thrusts

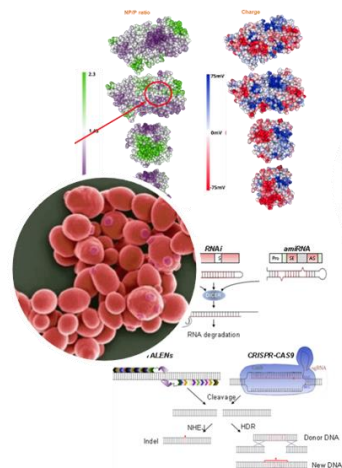


Research Thrusts

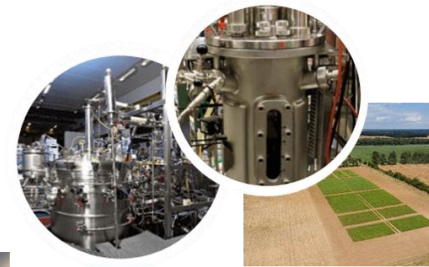
Thrust 1. Bio- and use-inspired plant and microbial food ingredient production

A biofoundry approach for the manipulation and predictable production of food ingredients in plants and microbes.

Synthetic biology
Metabolic engineering
Computational biophysics
Biomolecular simulations



Crop design, Microbial production:
Precision and biomass fermentation
Biofoundry
High throughput screening
Automation



Scale up and piloting
Crop production in fields

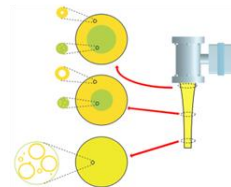


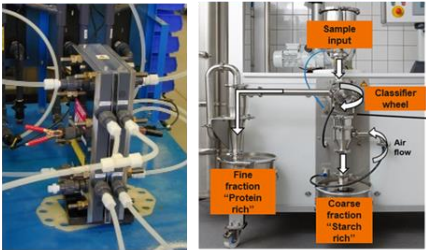
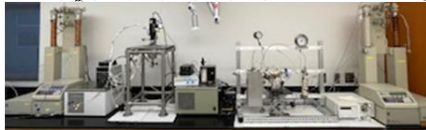
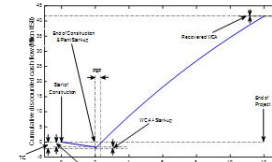
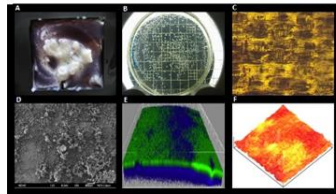
Thrust 1
Bio- and use-inspired
plant & microbial
production

Research Thrusts

Thrust 2. Sustainable biorefining and processing for functional plant and microbial ingredients

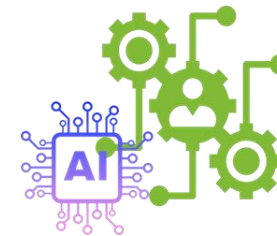
Modeling and simulation
Mechanistic understanding
Material characterization
Kinetics and thermodynamics


$$NP = a_0 + \frac{a_1}{p^3} + a_2 e^{-0.1T} + a_3 e^{FHSO}$$
$$PD = b_0 + \frac{b_1}{p^3} + b_2 e^{0.5T} + \frac{b_3}{FHSO}$$



Process scale-up
Sustainability and economic analysis

Lab scale process development and optimization

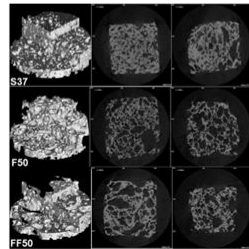
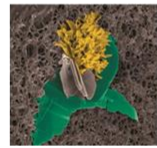
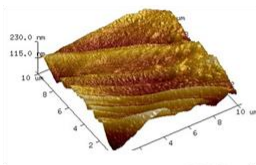


Thrust 2
Sustainable green
biorefining and processing

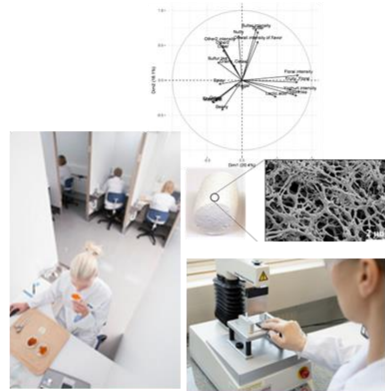
Research Thrusts

Thrust 3. High quality affordable and diversified food design

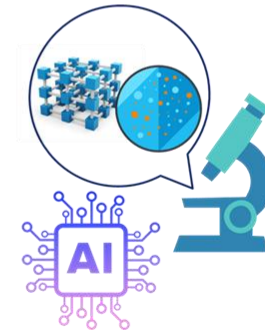
Nano- and microscale
design
Functionalization



Novel food ingredients and
hybrid food products



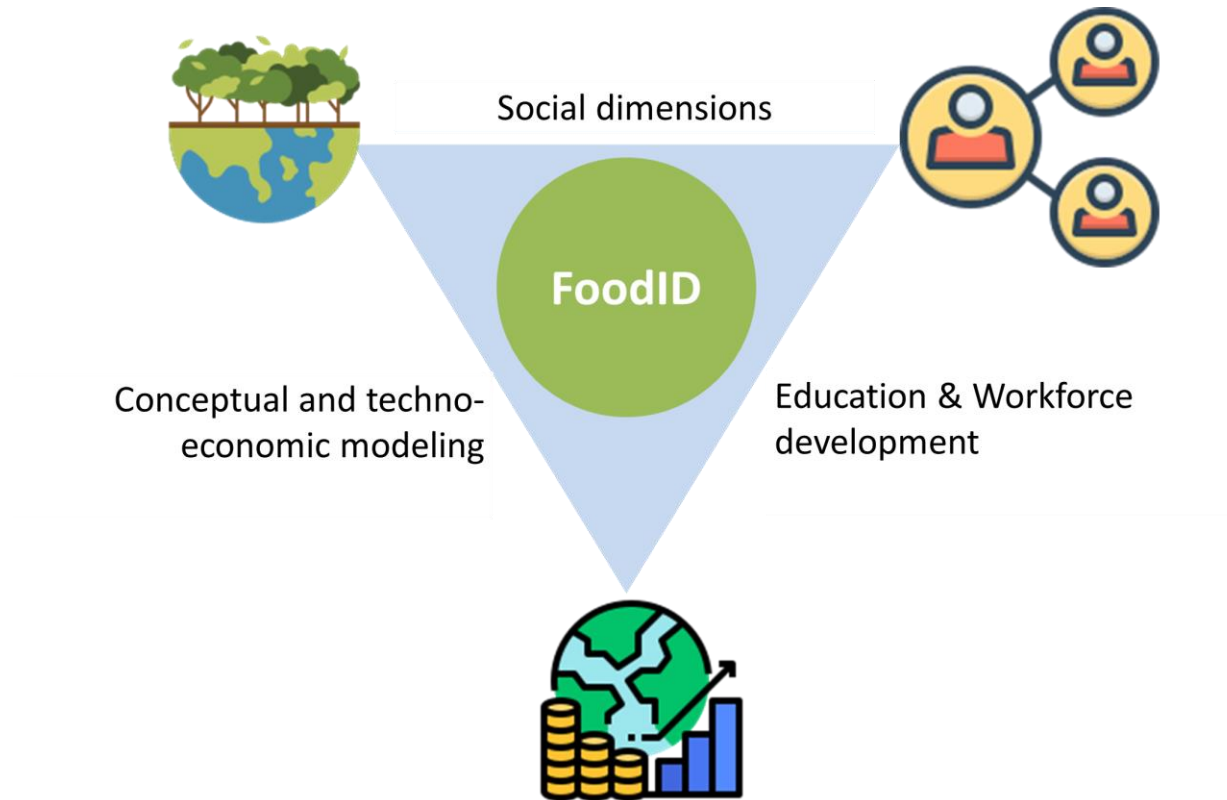
Macroscale characterization
Sensory, textural, and
nutritional properties



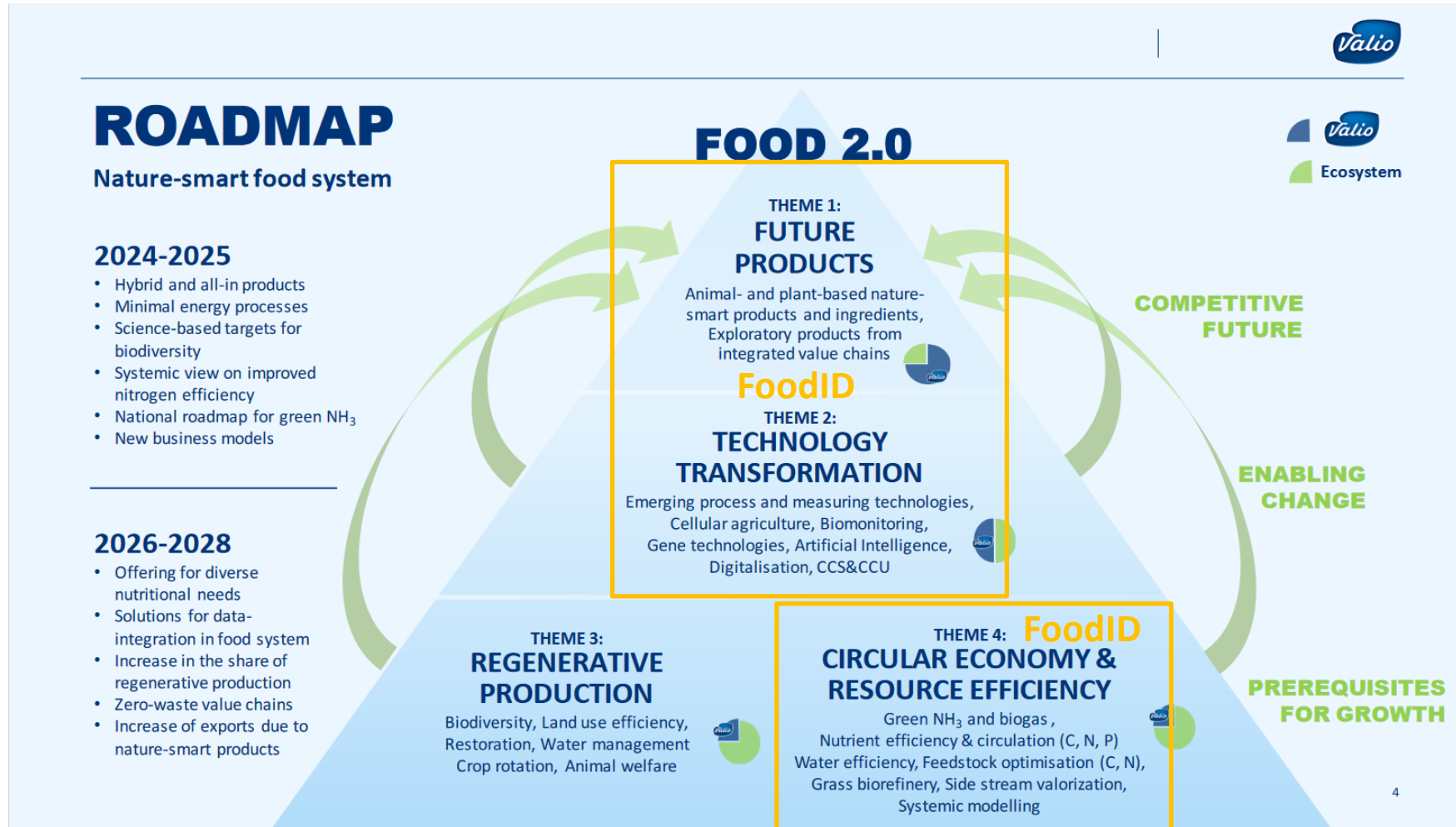
Thrust 3
Food design

Research Thrusts

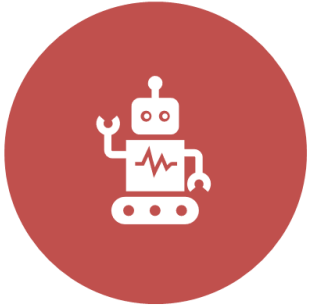
Thrust 4. Environmental, social and economic implications of the future food bioeconomy



FoodID project is part of Valio Food 2.0 leading company program.



FoodID Core Functions & Impact



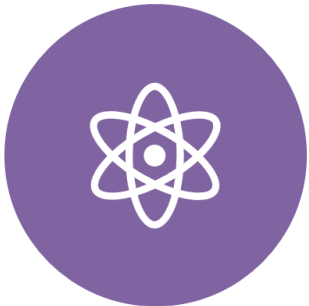
Knowledge Hub

Explore the science behind flexible, efficient, safe, and scalable food systems that produce healthy food sustainably.



Workforce Development

Catalyze the change in workforce development for the future's food system



Education

Foster global collaboration and inclusivity in STEM to drive discoveries transforming our food system, with a focus on underrepresented and rural communities.



Innovation Hub

Build a global innovation ecosystem to drive food diversification through technology, education, workforce development, and public awareness.

Thank you

Further information:

email: Nesli.Sozer@vtt.fi

Phone: 0401523875



National
Science
Foundation

**BUSINESS
FINLAND**



CO-INNOVATION PROJECT: ANIMAL WELFARE VERIFICATION SYSTEM



LILLI FRONDELIUS
Research Scientist
LUKE

FOOD2.0



Animal Welfare Verification System

Lilli Frondelius

Food 2.0, 19.3.2025



Photo: Lilli Frondelius/Luke

Verified welfare data from Finnish cattle farms

There is an increasing societal pressure for production animal welfare enhancement and verification.

- Current methods are insufficient and harmonisation of welfare data collection is needed (EFSA 2024)

Aim of the Animal Welfare Verification System Co-Innovation is to develop a system that enables

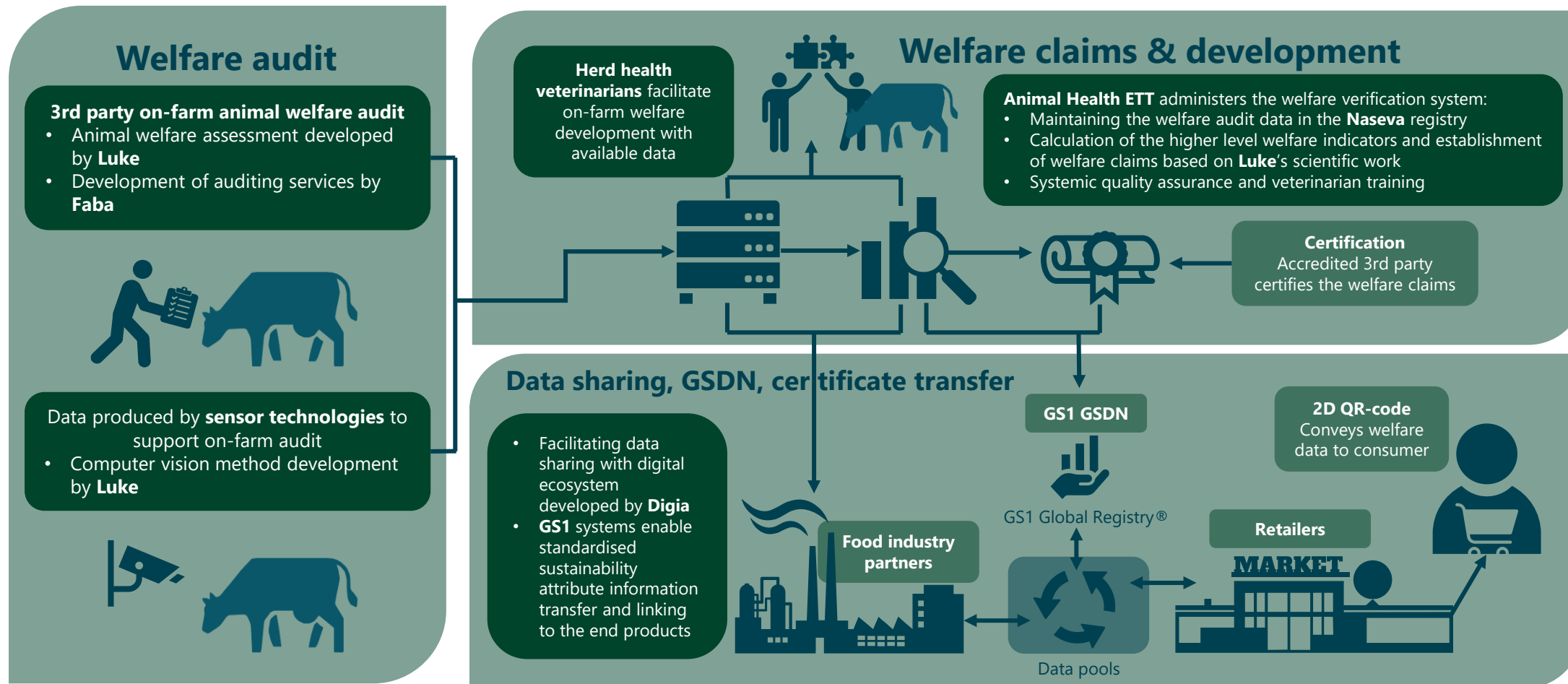
- **Scientifically valid** measurement and verification of animal welfare in dairy and beef primary production
- Collecting, maintaining and transferring certified and **comparable** data describing animal welfare
- **Traceability of sustainability attributes** throughout the entire food production chain
- Granting and displaying a **data-based welfare information** to consumers



Photo: Lilli Frondelius/Luke

A comprehensive animal welfare assessment produces information for the needs of producers, industry, retailers and consumers.

Animal Welfare Verification System



Animal welfare verification system

Co-Innovation consortium

Total consortium budget ~6 M €
Business Finland funding ~3 M €

Public Project

Luke

Develop and validate
overall AW scoring and
benchmarking indicators

Develop and validate of
automated technologies
for AW monitoring

DeLaval

Funding and
data sharing

Company R&D Projects

Valio

Food 2.0
WP3 O3.6
Animal Welfare

Commercial
applications for
AW as added value

Faba

AW auditor
training & piloting

AI tools for AW risk
assessment

Animal Health ETT

Welfare database
development and
administration

Quality control &
certification

Digia Finland

Digital ecosystem for
data transfer

GS1 Finland

Certificate transfer
2D QR-code

GDSN-development

Atria

Commercial
applications for
AW as added value

HKFoods

Commercial
applications for
AW as added value



Scientifically valid and comparable animal welfare data

Continuation of Luke's work on on-farm welfare assessment protocols for cattle starting from 2015.

The specific scientific aims of Luke's public project are:

- to develop **scientifically valid and feasible aggregation of welfare data** for transparent and intelligible communication of the level of animal welfare in a farming system
- to generate an assessment and verification system that is **dynamic and adaptable to continuous improvement** as scientific knowledge on animal welfare increases and the level of animal welfare improves at farm level
- to investigate **business models to valorise animal welfare** improvements and to increase value of animal welfare in businesses using digital tools
- to **increase acceptability and intelligibility** of animal welfare communication within different customer groups
- to **develop computer vision-based methods for dairy cattle monitoring** and investigate how the new methods can complement human assessor-based on-farm welfare assessments



Photo: Lilli Frondelius/Luke

Additional information:
lilli.frondelius@luke.fi



luke.fi

AGENDA

13.00

Opening - Harri Kallioinen, Valio

13.10

Collaboration for future success with Business Finland - Eeva Salminen, Business Finland

13.35

Highlights of the first year of Food 2.0 - Veera Virtanen, Valio
Co-innovation project intros

- NSF Global Center: Food Innovation and Diversification to Advance the Bioeconomy - Nesli Sözer, VTT
- Animal welfare verification system - Lilli Frondelius, LUKE

14.20-15.00

Coffee break with networking and exhibition

15.00

New food sector export support actions - Jukka Vainionpää, Ruokatieto

15.20

Company pitching for collaboration ideas

- 3D printing in food industries: co-creation opportunity for maintenance - Pekka Ketola, 3DStep
- Enhancing the efficacy of existing processes with nanobubbles - Henna Niskakoski, EOD Europe
- From algae to action: Let's co-create the future of food & industry - Mari Granström, Origin by Ocean

15.50

Closing remarks

JOIN THE JOURNEY WITH US!

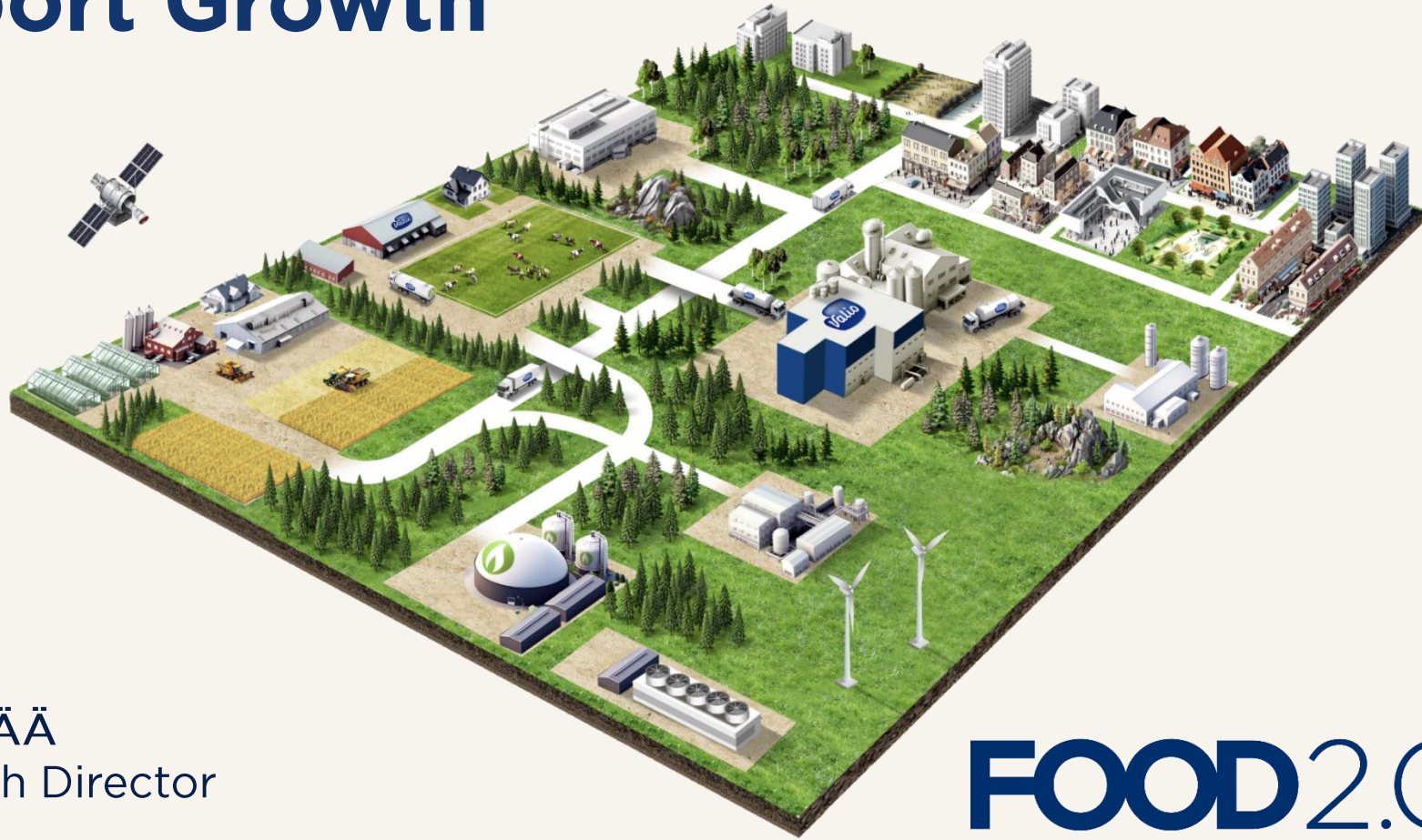


1st ANNUAL SEMINAR

FOOD2.0



NEW FOOD SECTOR EXPORT SUPPORT ACTIONS: Food Export Growth Platform



JUKKA VAINIONPÄÄ
Food Export Growth Director
Ruokatieto

FOOD2.0

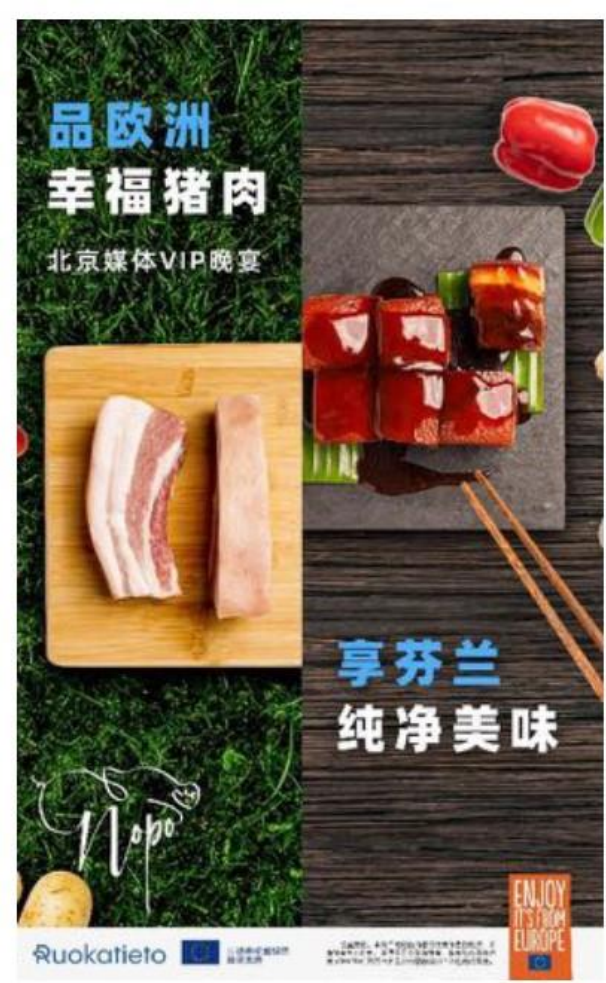


Food Export Growth Platform


Food Export Growth Director

Jukka Vainionpää

03/2025



Ruokatieto Organization and Activities

The background of the slide is a dense, light blue illustration of various food items, including vegetables like carrots, tomatoes, and leafy greens, as well as fruits, fish, and dairy products like cheese and butter. The items are scattered across the entire page, creating a textured, food-themed backdrop.

“Out of love for our own country's food, we are strengthening the demand for domestic food so that it will continue to be available!”



Ruokatieto Background

- **Core competence:**

Combining knowledge and communication of the food chain and operating at the interface of the private, public sector and organizations.

- **Representing the whole food chain:**

the entire Finnish food value chain from field to table, a total of 350 organizations: agriculture, industry, trade, industry organizations, small and large, all sectors.

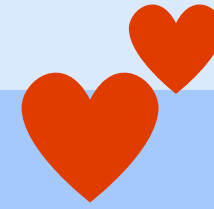
- **From field to table:**

Strongly involved in food industry networks.

- **Financing =**

membership fees + campaigns + project activities





For The Love of The Finnish Food



Vision

- “Hyvää Suomesta” is Finland's most respected brand of origin
- The Finnish food chain is highly valued
- Food knowledge enables business-driven export of Finnish food



Mission

- We are strengthening the demand for domestic food so that it will continue to be available.



Values

- Finnish Origin
- Reliability
- Collaboration

Main Tasks

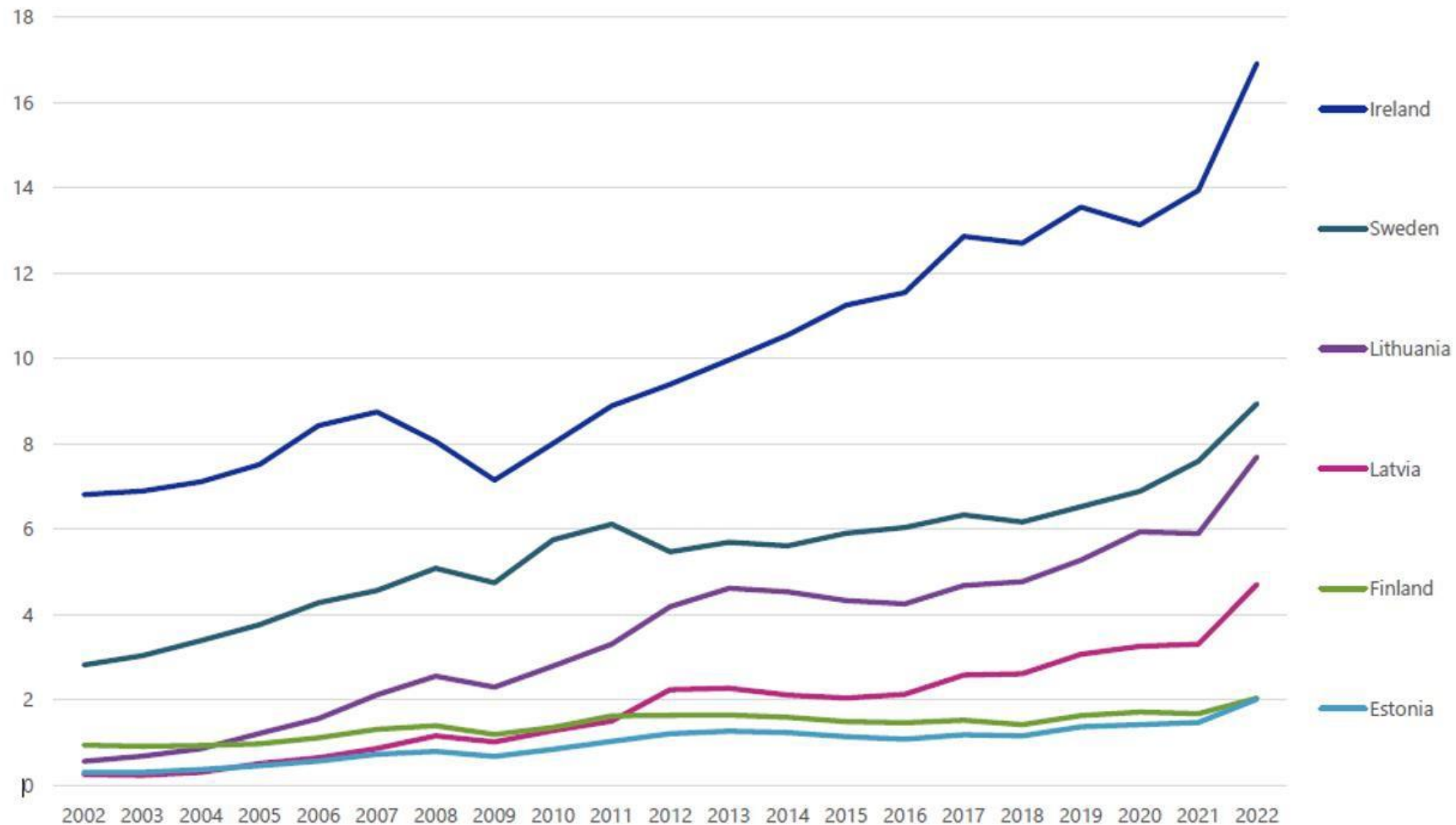
- Actively maintaining and strengthening the “Hyvää Suomesta” brand system
- Increasing the awareness and appreciation of the Finnish food chain in Finland
- Representing the food sector in the strategic management of food export growth

Business-driven Food Export Growth Platform



Food Export Growth in EU Countries

78



©LUONNONVARAKESKUS

Food Export Growth Platform

Leadership Group: Ruokatieto, Authorities, Ministries,,
Interest Groups

Supporting Industry



Food Export Strategy



Food Export Operations

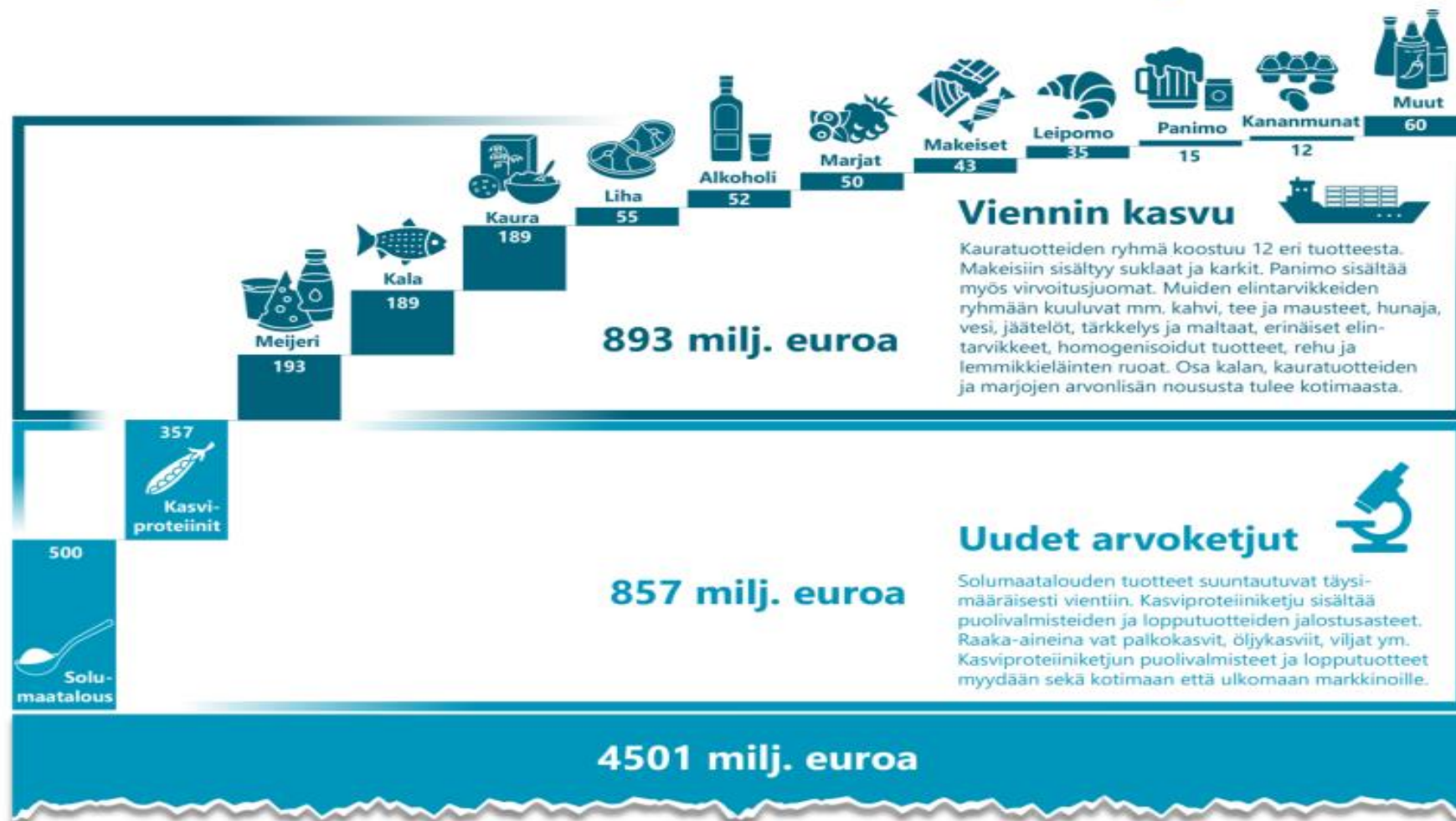


**FINNISH
FOOD
EXPORT
> €4 billion**

**CUSTOMERS
MARKETS**

Scenario Hope - Food Export Growth

TOIVO-skenaario 1735 milj. EUR



Food Export Growth Platform

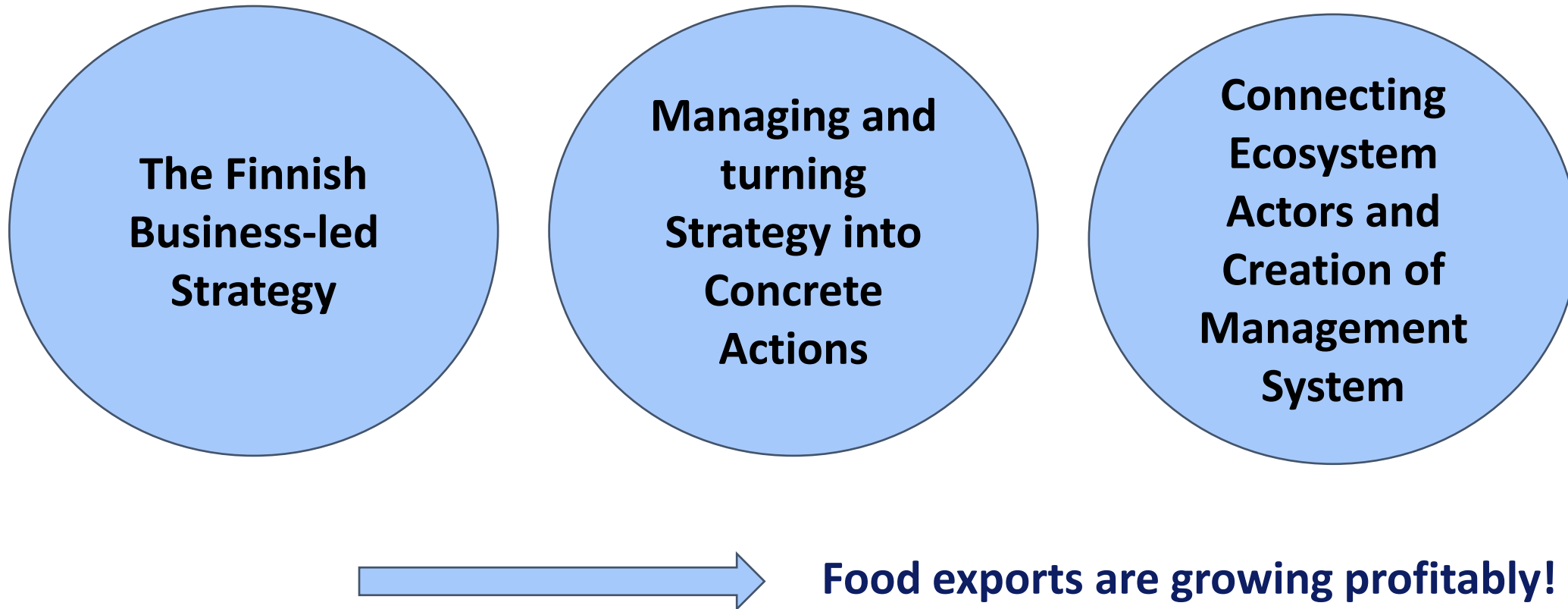
Project

- Ruokatieto ; Applicant
- Suomen elintarvikevientiäyhdistys SU-VI ry,
Operational Partner
- Schedule 12/2024 – 11/2027
- Budget €1 259 945,
Finnish Food Agency share 80 %
€1 007 956

Activities

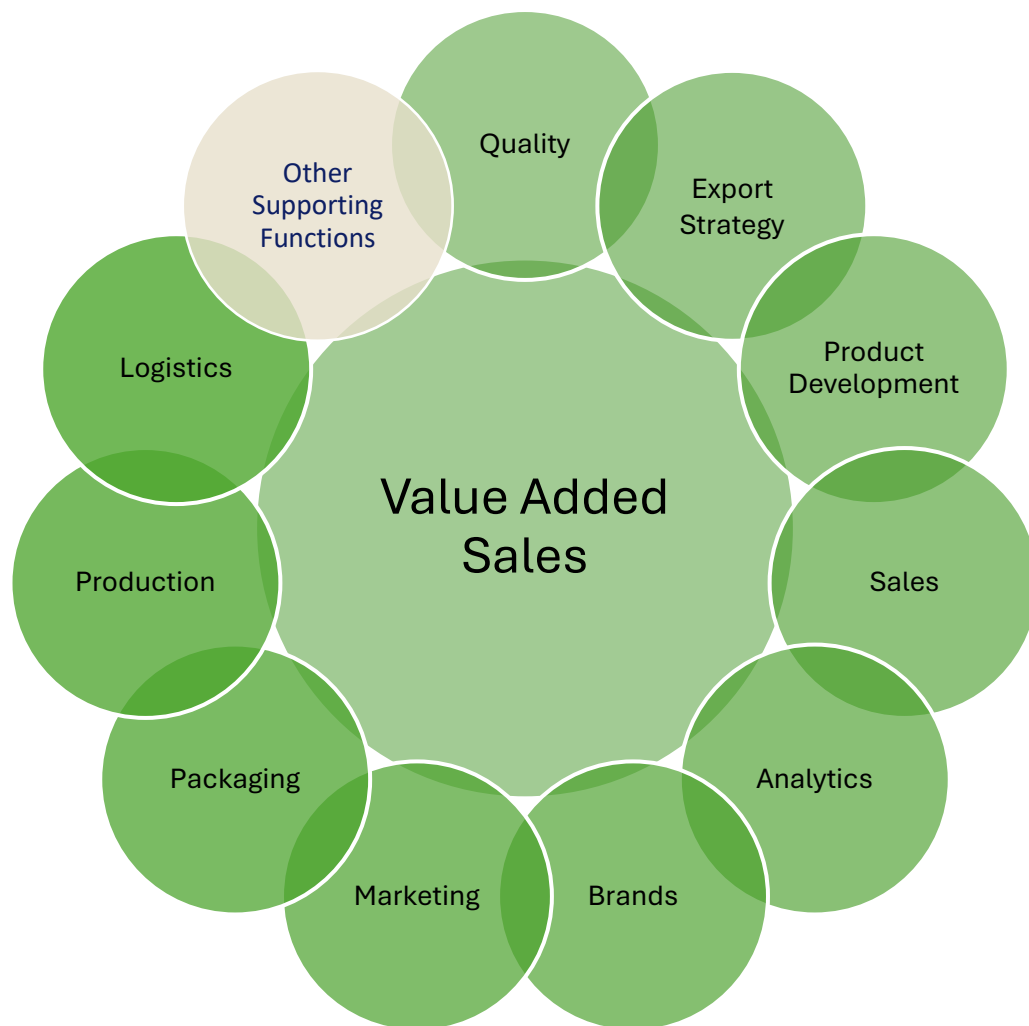
- WP 1 – Strategy and Management, Ruokatieto
- WP 2 – Food Export Sales Service Activities and Promotions, SUVI
- WP 3 – Communications, Ruokatieto & SUVI
- Networking in close collaboration with food companies, government agencies and other ecosystem actors

Food Export Growth Platform Targets



- Ruokatieto leads and coordinates the preparation and implementation of a business-oriented strategy together with export companies and SUVI ry.

Food Export from Company Perspective (Value Added Sales)



Every company has different export functions depending on the product, sales channel, target market, etc.

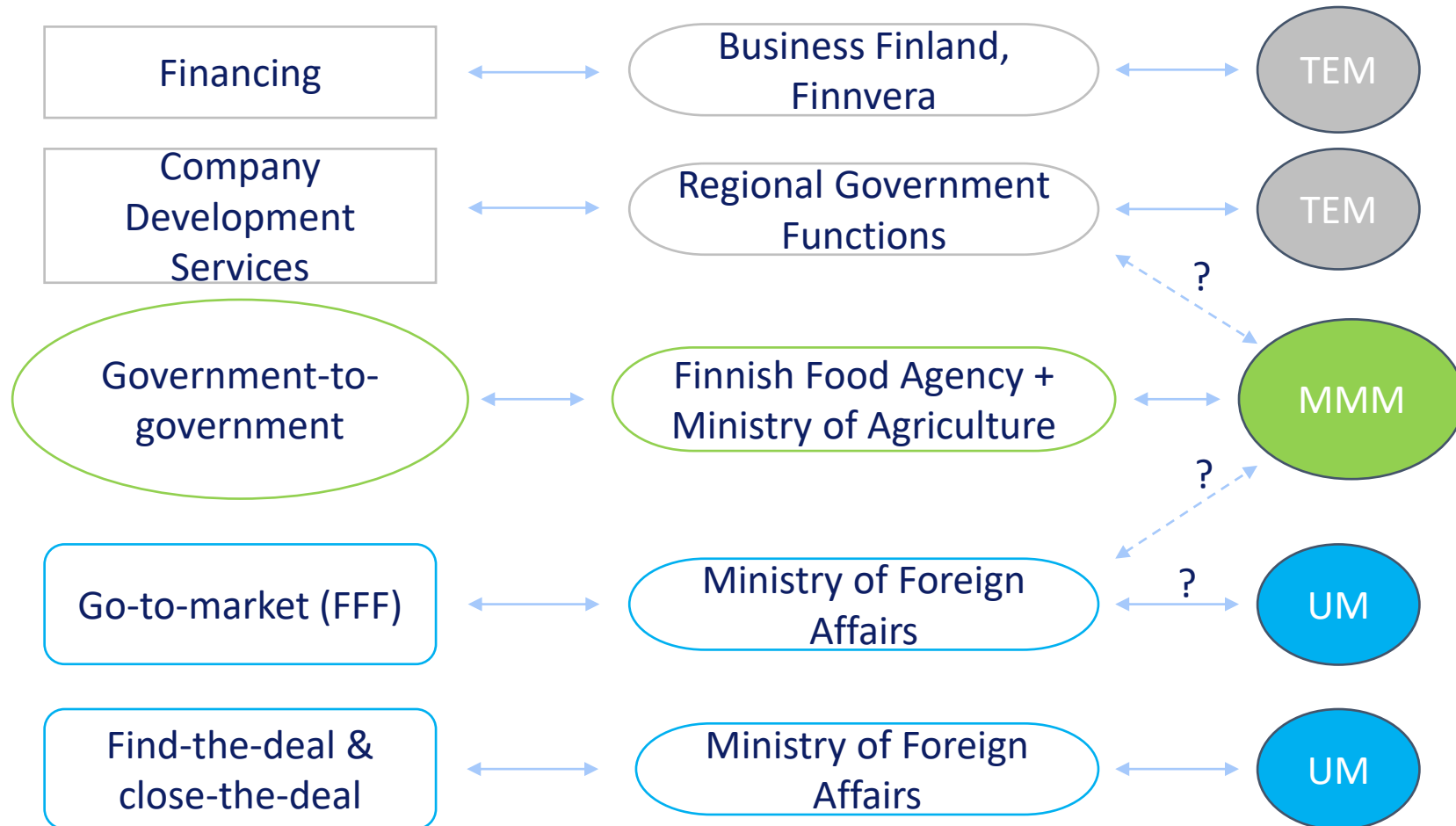
Most often, each function must be modified for the target market and sales channel.

Creating, maintaining and developing each function to support value-added sales requires financial and human resources from the company.

Food Export Growth is a serious investment.



Government Export Services



With the reorganization of the state, three ministries and administrative branches have a significant impact on the conditions for food exports.

It is increasingly important to ensure that the service chain remains intact and takes into account the needs of food exports.

Government Export Services

Government-to-government

The service package enables the export of products where interstate dialogue and agreement are necessary for the trade to take place. The most important role is played by the Finnish Food Authority (and the Ministry of Agriculture and the Ministry of Foreign Affairs) in enabling new exports and maintaining existing exports. Includes export permits, export control, investigations, etc.

Go-to-market

Is a basic service package for export promotion. In Finland, these were produced by the Food from Finland program in 2013–2023.

- Joint stands at major trade fairs
- Buyer meetings
- Networking events, training and coaching days
- Retail campaigns
- Media events and visits
- Collection of delegation trips

Close-the-deal

Close-the-deal is an order/delivery model that helps companies more concretely implement deals, reducing risk-taking and the risk of internationalization failure.

Market access assistance, including:

- Market analyses and research
- Product and service-specific market surveys
- Cultural and linguistic support
- Research on target country export requirements and legislation
- Competitor analyses
- Price and price point analyses
- Logistics-related advice
- Identification of potential customers (B2B and B2C)
- Optimization of partners, importers, distributors and sales channels
- Legal interpretation and assistance

Accelerating sales, including:

- Finding suitable partners
- Identifying and contacting key decision-makers and stakeholders
- Arranging meetings
- Resolving language and cultural barriers
- Finding and assessing the right customer segments and customers
- Reviewing and building a growth strategy
- Coaching and sparring sales staff to stabilize operations
- Evaluating and managing operations

Business-to-government, including:

- Growth strategy and tactical planning
- Updates on changes in the target country's legislation and/or market
- Identifying key contacts and clarifying their activities and roles
- Advising on the opportunities offered by partners
- Planning and developing an effective communications strategy
- Adapting marketing communications to the local market and key stakeholders
- Removing political obstacles

Financing

Effective and versatile financial tools

Education

Diverse and multifaceted but coordinated education that supports internationalization.



System is supporting Growth when...

1. Government-to-government

Finnish Food Agency,
Ministry of Agriculture,
Ministry of Foreign Affairs

5. Education

University of Helsinki

2. Go-to-market

Ministry of Foreign Affairs

4. Financing

Business Finland, Finnvera

3. Close-the-deal

Ministry of Foreign Affairs

Ruokatieto

Company A

Company B

Company D

Company C

Company G

Company E

Company F

Company I

Company H

Company J

Company K

Company L

Company M

Company O

Company N

Nordic Oats

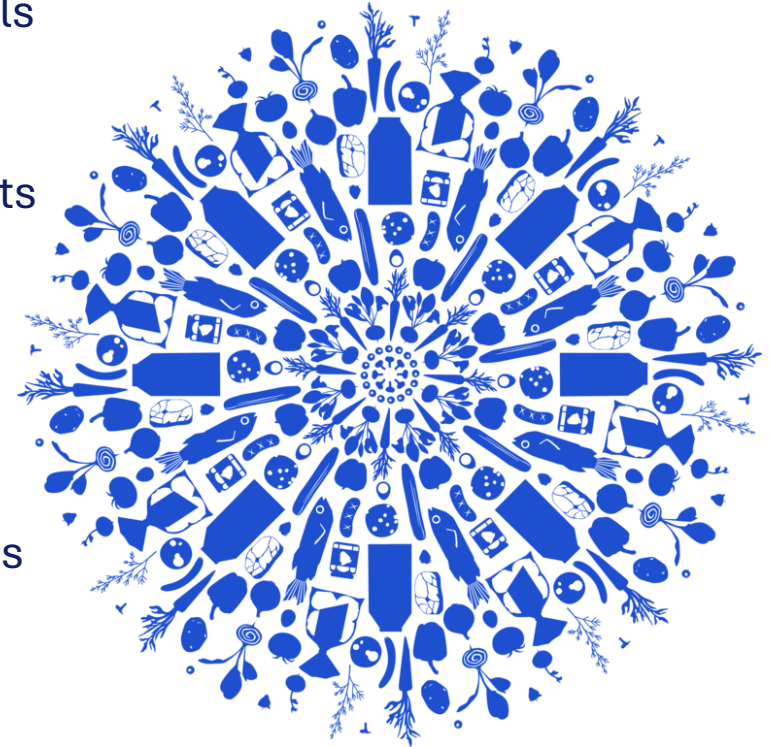
SUVI

Cluster X

International Customers

Ruokatieto – Activities in 2025

- Compilation of export companies, mapping of strategies and goals
 - Export group, export network – modeling and activation of operations
- Identification of international market potential and growth markets
 - Mapping, prioritization
- Description of the food export ecosystem
 - Commissioned in cooperation with Ministry of Agriculture
- Coordination of internationalization training for Export Companies
 - In cooperation with Ministry of Agriculture and MikiLink



Food Export Strategy

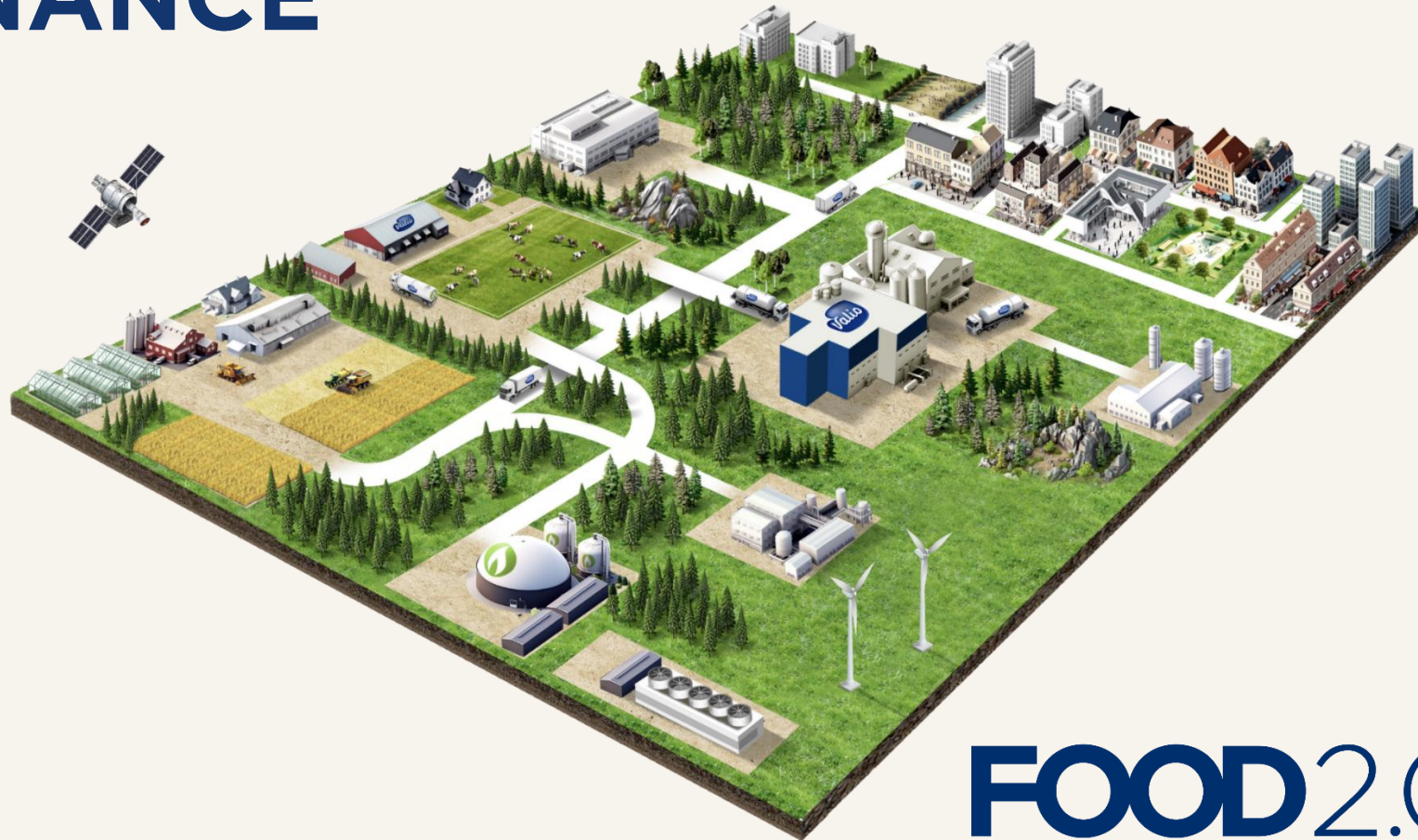
Thank You! More Information:

jukka.vainionpaa@ruokatieto.fi ; 050 511 7982

anni-mari.syvaniemi@ruokatieto.fi ; 050 511 8909

www.ruokatieto.fi

3D PRINTING IN FOOD INDUSTRIES: CO-CREATION OPPORTUNITY FOR MAINTENANCE



PEKKA KETOLA
CIO
3D Step

FOOD2.0



3D printing for food industries



**What are the
opportunities?**



Value & innovation



Processes

Hygiene, process
improvement



Maintenance

Spare parts,
repair, re-use,
tools



Efficiency

More efficient
use of resources
& materials

Call for participation:



3D printing for food industries

**Kick-off meeting & ideation, online
Monday 31.3. 15.00**

Objectives:

- 1. Explore 3D printing opportunities in food industries**
- 2. Solutions & pilots**
- 3. Co-innovation project**

Contact: pekka.ketola@3dstep.fi



Thank You!

Contact:

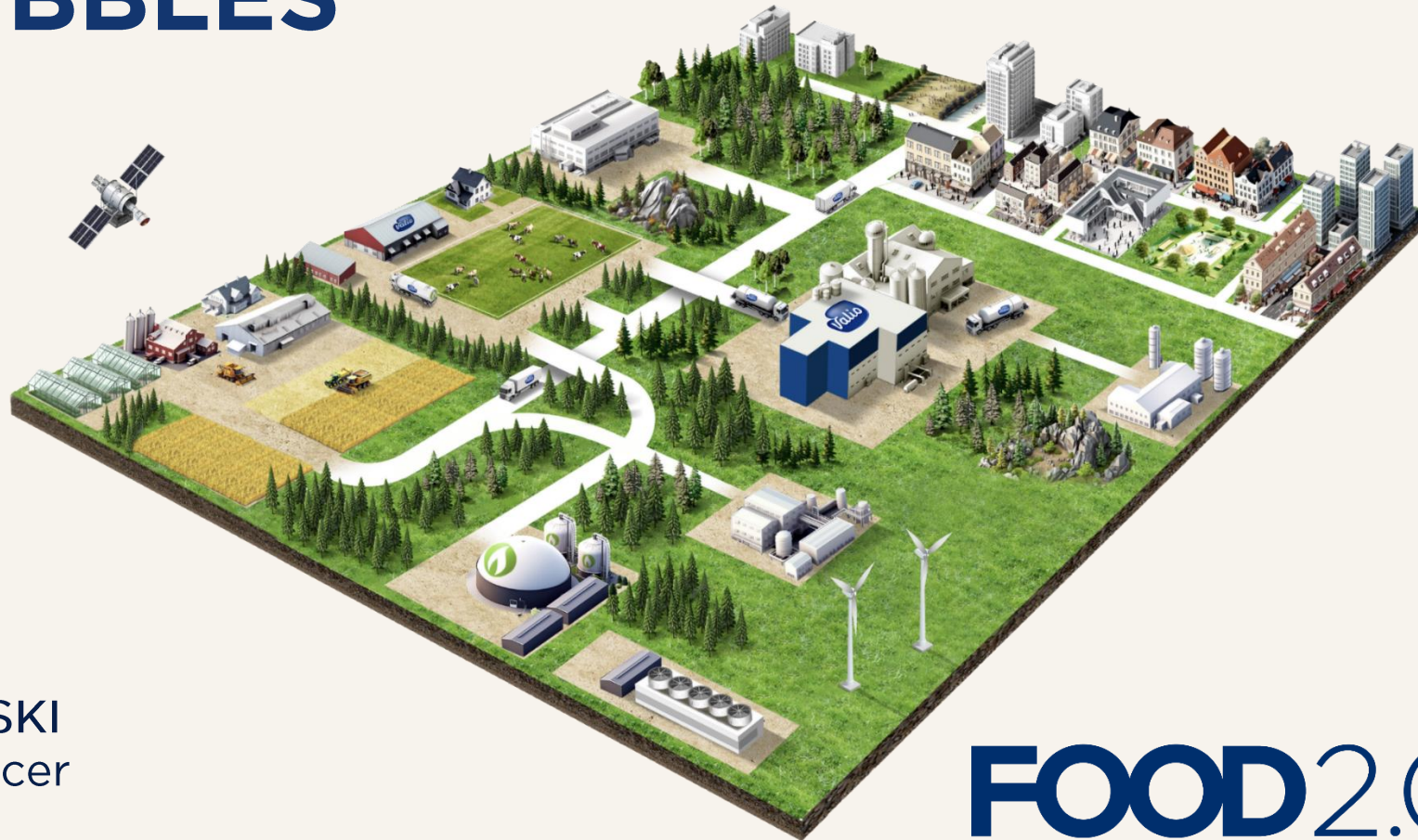
Pekka.ketola@3dstep.fi

sales@3dstep.fi

www.3dstep.fi



ENHANCING THE EFFICACY OF EXISTING PROCESSES WITH NANOUBBLES



HENNA NISKAKOSKI
Chief Scientific Officer
EOD Europe

FOOD2.0





ENHANCING THE EFFICACY OF EXISTING PROCESSES WITH NANOBUBBLES

COMPANY

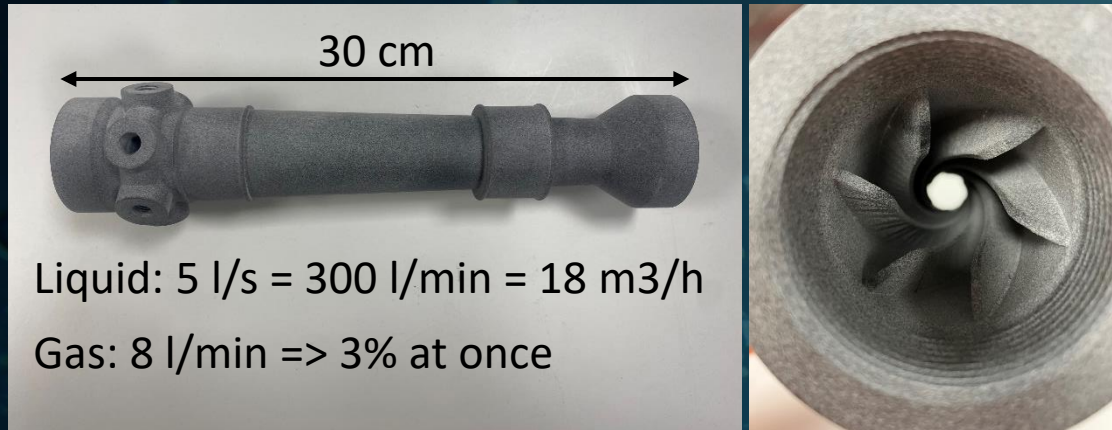
EOD Oy is a Finnish company founded in 12/2019,
based in Salo IoT Campus

We provide technological solutions to improve
production efficiency of the food chain.

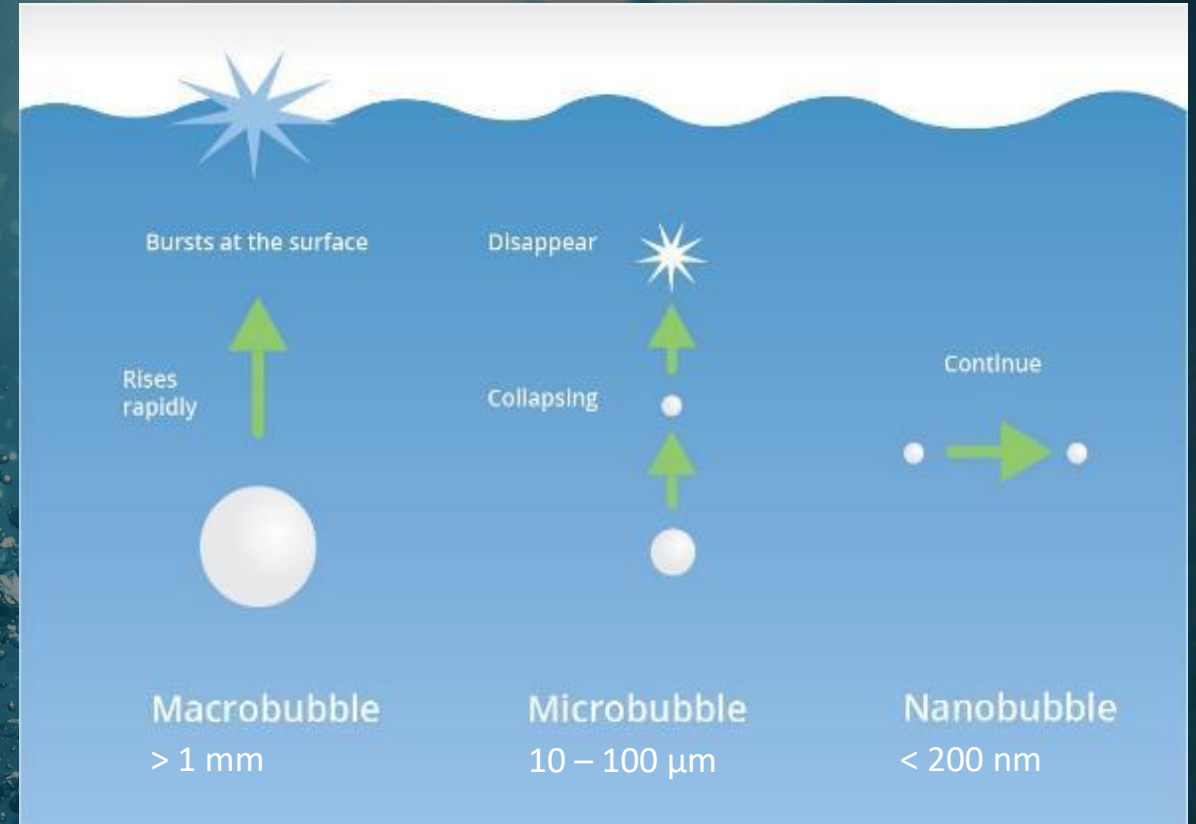
Our applications introduce “raw material gas” into
the process within nanobubbles.

NANOBUBBLE PROPERTIES AND BEHAVIOUR

We utilise hydrodynamic cavitation in our solution to generate nanobubbles into water.



- ✓ < 200 nm in size
- ✓ Cannot escape from water
- ✓ Exceptionally stable
- ✓ High negatively charged surface area provide e.g. surfactant-like properties



BENEFITS TO DIFFERENT PROCESSES

Depending on the application, nanobubbles can:

PROVIDE PROCESS EFFICIENCY

- ✓ Enhancing **gas transfer**
- ✓ Increasing **gas storage** and holding capacity of liquids

IMPROVE WATER QUALITY

- ✓ Physicochemical benefits to **process performance**
- ✓ **Antimicrobial** properties through generation of ROS

GENERATE ECONOMIC SAVINGS

- ✓ Provides **energy efficiency**
- ✓ Improves **yield**
- ✓ Decreases **chemical consumption**

VALIDATION AND CUSTOMER CASES

Technology validation is done in greenhouse environment during EIP reseach project 2022-24 in collaboration with Satakunta University of Applied Sciences, pilot farms and the early bird customers

check out the
VIDEO



Research result
+ 15 % better yield
+ 20% nutrient uptake

Erno Mikkola, CEO



Research result
+ more even sized salads
+ 20% nutrient uptake

Robert Jordas, CEO

Österlund &
Paavola Oy Ab



"Pythium caused huge
crop losses but now
the challenges are
gone and tomatoes
grow healthy!"

Alexander Österlund,
CEO

Johan Prinsén
Handelsträdgård



"We have all the latest
greenhouse technology.
Since commissioning
Nanoblast in 08/2024
+13% yield increase
+Better slept nights"

Johan Prinsén, CEO



"Instead of disinfecting the
irrigation water, we focus on
improving a healthy
microbiome in our nutrient
solution with oxygen
nanobubbles."

Stefan Hey, CSO

NANOBOOST® OXYGEN NANOBUBBLE GENERATOR

The most efficient method in stabilizing and enriching oxygen into irrigation water

Greater crop
~ 15 %

Less fertigation
~ 20 %

Less pesticides
~ 20 %

ROI 3-12 mo

→ 10-20% more profitability with
minumum additional resources



EOC
EUROPE

COLLABORATION AND SCALABILITY IN FOOD SECTOR

AGRICULTURE



AQUACULTURE



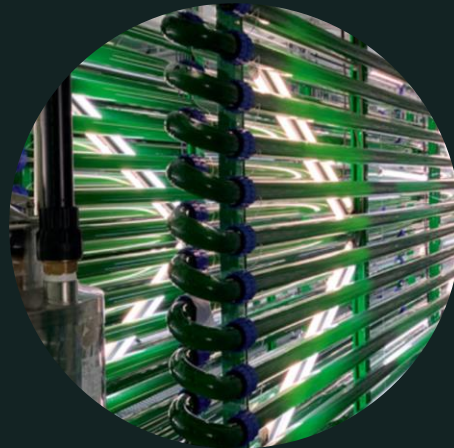
WATER TREATMENT



FOOD PROCESSING



**MICROALGAE
PRODUCTION**



BIOGAS PRODUCTION



COLLABORATION

- RESEARCH PROJECTS
- PILOTS AND VALIDATION IN NEW APPLICATION FIELDS
- SCALING UP THE CAPACITY
- LOOKING FOR FUNDING

MSc HENNA NISKAKOSKI

Chief Scientific Officer

EOD Oy

henna@eod.fi

THANK YOU FOR YOUR ATTENTION

QUESTIONS?

FROM ALGAE TO ACTION: LET'S CO-CREATE THE FUTURE OF FOOD & INDUSTRY



MARI GRANSTRÖM
Chief Executive Activist
Origin by Ocean

FOOD2.0



The image features a collection of Origin Ocean products against a dark blue background. On the left, a clear glass bowl holds a scoop of white ice cream. Next to it is a box of Origin Ocean Ice Cream, which has a large white 'O' logo and text stating 'OCEANTHIX™ reduces ice crystal formation'. In the center, a glass is partially filled with white plant-based milk, with another glass lying on its side in front of it. Behind the milk glass is a carton of Origin Ocean Plant Based Milk, also featuring the 'O' logo and text 'enhanced with OCEANTHIX™'. To the right is a white tub of Origin Ocean Yogurt, with a spoon resting on top. The overall aesthetic is clean and modern, emphasizing the brand's focus on algae-based food products.

From Algae to Action Let's Co-create the future of Food & Industry





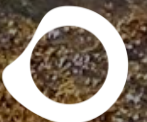
Turning ocean overgrowth Into ingredients for tomorrow's products

TRANSFORMING INVASIVE ALGAE INTO VALUABLE BUSINESS VENTURES



Global volume of *invasive*
brown algae species
is surging, *requiring urgent* commercial-
scale
local *solutions*

By targeting Sargassum, we aim to leverage this *Underutilised and cost-effective resource* to address the environmental issues they pose and bring 100% biobased chemicals to the markets.



ORIGIN BY OCEANS

LIFE CYCLE IMPACT

1. BIOMASS AS FEEDSTOCK

Harvesting invasive seaweed species and Cultivating native seaweed species.

We remove nitrogen and phosphorus from the oceans by using invasive algae before it decomposes and emit greenhouse gases.

2. OUR BIOREFINERY

Environmentally sustainable technologies, multiproduct process value and resource utilization maximization

Closed loop production with non-toxic process chemicals and clean energy

3. CHEMICAL PRODUCTS

Biodegradable products enable substituting existing oil-based chemicals in everyday goods.

Decarbonizing consumer products and reducing the carbon footprint.

4. BIOMASS PRODUCTS

Biodegradable biomass residue becomes can be utilised substituting grass silage in animal feed, eco-friendly concrete fillers, peat alternatives and biochar for agriculture.

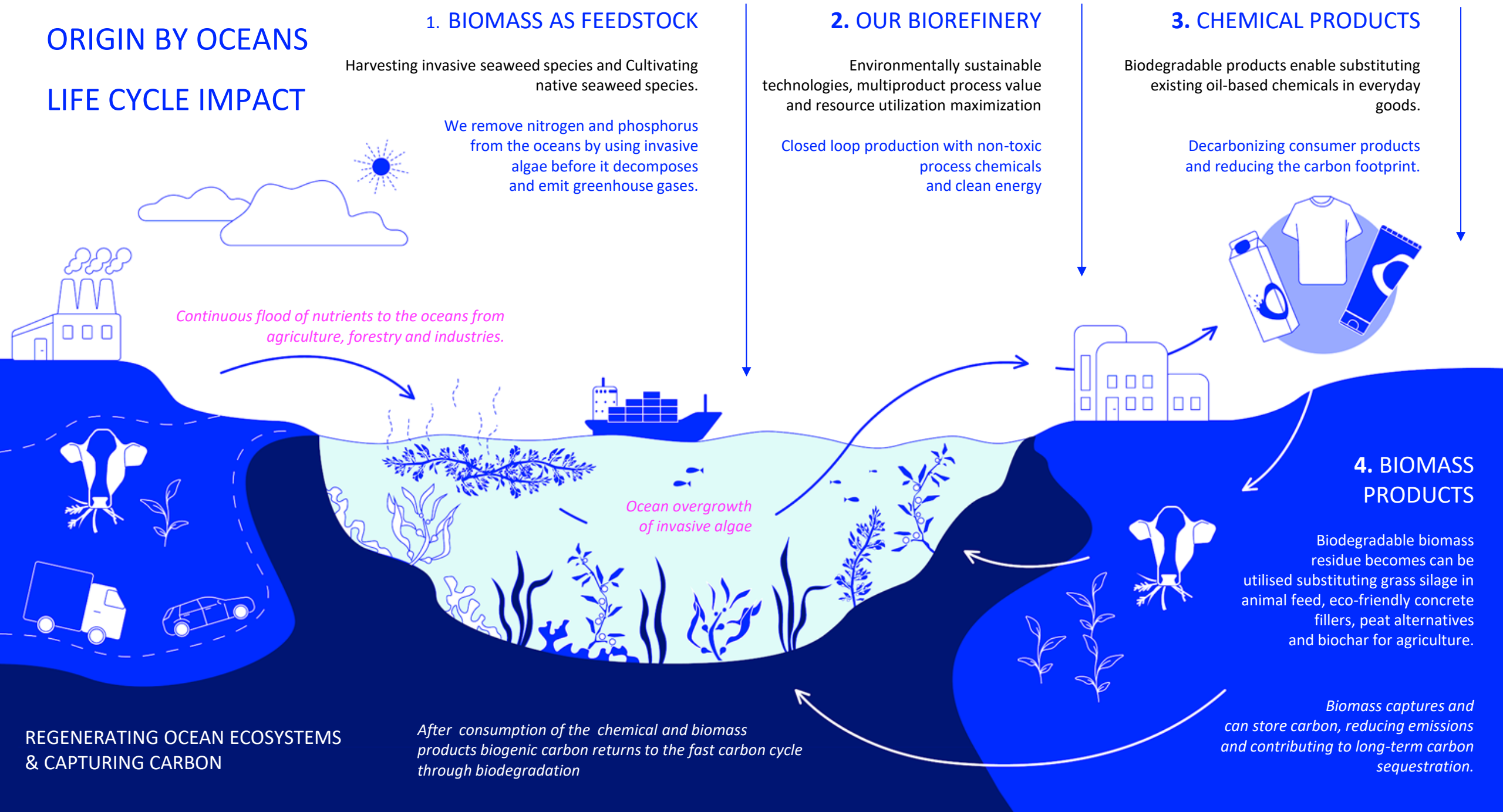
Biomass captures and can store carbon, reducing emissions and contributing to long-term carbon sequestration.

Continuous flood of nutrients to the oceans from agriculture, forestry and industries.

Ocean overgrowth of invasive algae

REGENERATING OCEAN ECOSYSTEMS
& CAPTURING CARBON

After consumption of the chemical and biomass products biogenic carbon returns to the fast carbon cycle through biodegradation



Our patented biorefining process produces materials traditionally sourced from fossil fuels, climate-sensitive plants and land/ water intensive renewable crops.



We remove nutrients from the oceans by harvesting invasive algae, reducing harmful emissions and unlocking the value of this unused resource. Our operations support local economies.



Transforming nearly 100% of the biomass into bio-based ingredients.

Alginate: Multi-functional biopolymer for cosmetics, food, and industrial applications.

Fucoidan: High-value compound for cosmetics and nutraceuticals.



Sustainable 100% bio-based & biodegradable ingredients reduce the carbon footprint of consumer goods.



Residuals are being repurposed into products and materials, capturing carbon.

OCEANTHIX™ *alginate*
OCEANBOOST™ *fucoidan*



water-based
biorefinery
(non-toxic)

maximizing value
from feedstock

can be used for
animal feed

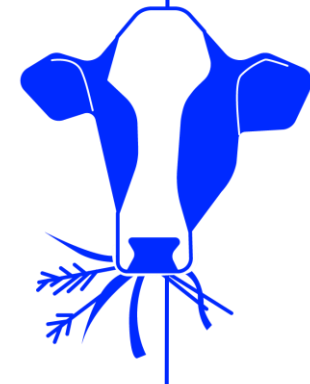
VALUE
PRODUCTS



RESIDUE



OCEANRESIDUE™
Seaweed residue



THE SOLUTION: REACHING COMMERCIAL VIABILITY WITH ALGinate AND FUCOIDAN

FOAK production launch with high-performance *alginate* and *fucoidan* for cosmetics, food, and textile applications and seaweed residue repurposed into products and materials to support a circular economy approach.

OCEANTHIX™ Alginate

A multifunctional rheology modifier with optimized viscosity, texture enhancement, and hydration benefits.

TEXTILES

COSMETICS

NUTRITION

MATERIAL SCIENCE

DETERGENTS

OCEANBOOST™ Fucoidan

A bioactive marine ingredient with antioxidant and anti-inflammatory properties for skincare and nutraceutical applications.

COSMETICS

NUTRITION

OCEANRESIDUE™ Seaweed residue

An untapped resource of fatty acids, fibres and seaweed proteins with diverse applications across industries.

AGRICULTURE/FEED

NUTRITION

COSMETICS

MATERIAL SCIENCE



SOURCING

Harvested invasive algae (supporting ocean restoration).



BIOREFINING

Patented, green chemistry -based process.



FOAK

First-of-a-kind industrial-scale production for biopolymers sourced from invasive algae. Scalable production through strategic partnership.



COST EFFICIENCY FOR SCALE

Designed for a broad-market penetration beyond niche segments.



PREMIUM MARKET ADOPTION

Aligns with sustainability standards for high-value applications.

OCEANTHIX™ ALGINATE

Gelation

Thickening

Water binding

Stabilizing

Film forming



RESTRUCTURED FOODS
PUDDINGS AND DESSERTS
JELLY CANDY
FRUIT PREPARATIONS, FILLINGS
ENCAPSULATION, BEAD FORMATION

SAUCES
DRESSINGS
CREAM
MARMALADE'S
JAMS

ICE CREAM
MAYONNAISE
LOW FAT SPREAD
WHIPPED CREAM

GLAZES FOR FROZEN PRODUCTS
FILM COATINGS FOR DAIRY AND MEATS
COATINGS FOR CAKES AND COOKIES



Come and *taste* the
impact!



CLOSING REMARKS



VEERA VIRTANEN
Ecosystem lead, Valio
veera.virtanen@valio.fi

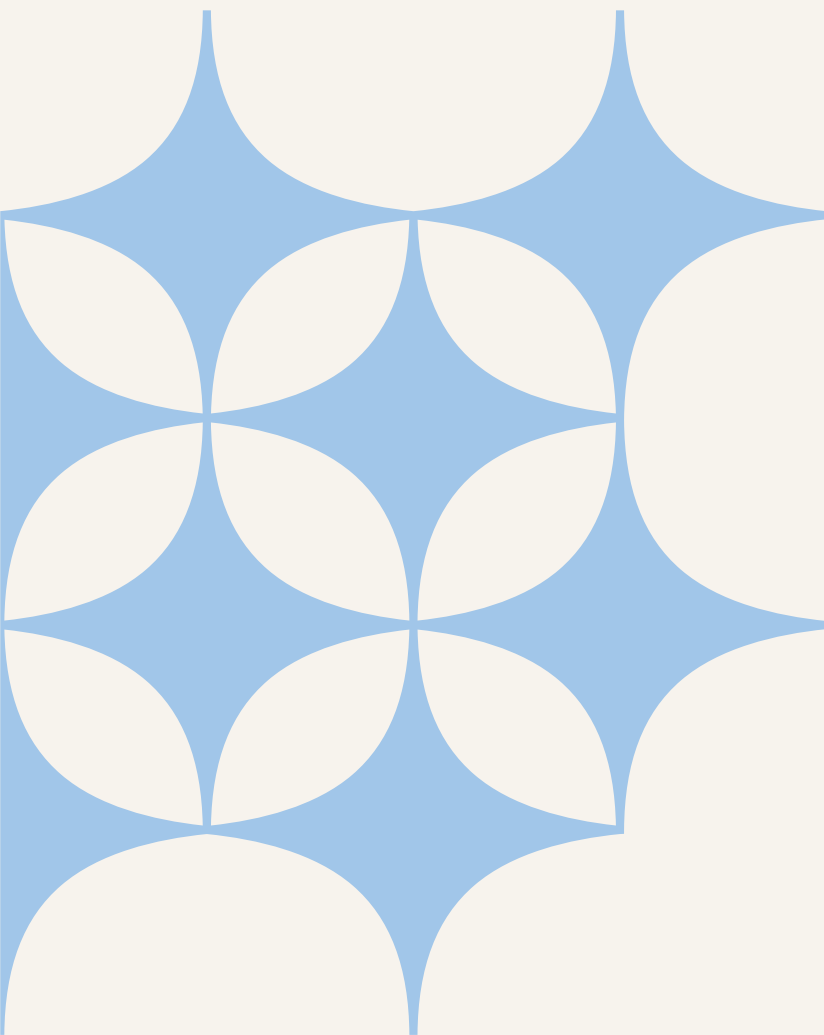
FOOD2.0



WHAT DO THOSE WHO HAVE SUCCEEDED HAVE IN COMMON?

Innovation survey where 1355 Swedish food chain companies were interviewed

Sweden Food Arena



- ✦ A plan and strategy to be innovative
- ✦ Bringing external actors into the innovation process
- ✦ Collaborating with academia and institutes – more innovative products and processes
- ✦ Strong focus on market and growth
- ✦ A culture in the company that promotes creativity, diversity, modernization, sustainability and development of its brand

A picnic scene is set on a blue and white checkered tablecloth. In the center, a white ceramic vase holds a bouquet of wildflowers, including yellow daisies, purple thistles, and pink blossoms. To the right of the vase is a red glass bottle with a white cap, likely containing a beverage. In the foreground, a white bowl is filled with a golden-brown baked dish, possibly a quiche or a pie, topped with various ingredients. A single red apple sits next to the bowl. The background shows a body of water and a line of green trees under a soft, hazy sky.

THANK YOU!
Have a great spring!

JOIN THE JOURNEY WITH US!



1st ANNUAL SEMINAR

FOOD2.0

