

# WELCOME

Multistakeholder Conference

## **From Innovation to Investment: ZeroW Systemic Innovation Living Labs Pitching Session**

September 16, 2025

# Session Moderators



**Danijel Pavlica**  
*Project Manager*  
*F6S*



**Mirana Khanom**  
*Project Manager*  
*F6S*

# Meet the Investor



ASTANOR  
VENTURES

## Arne Hautekiet

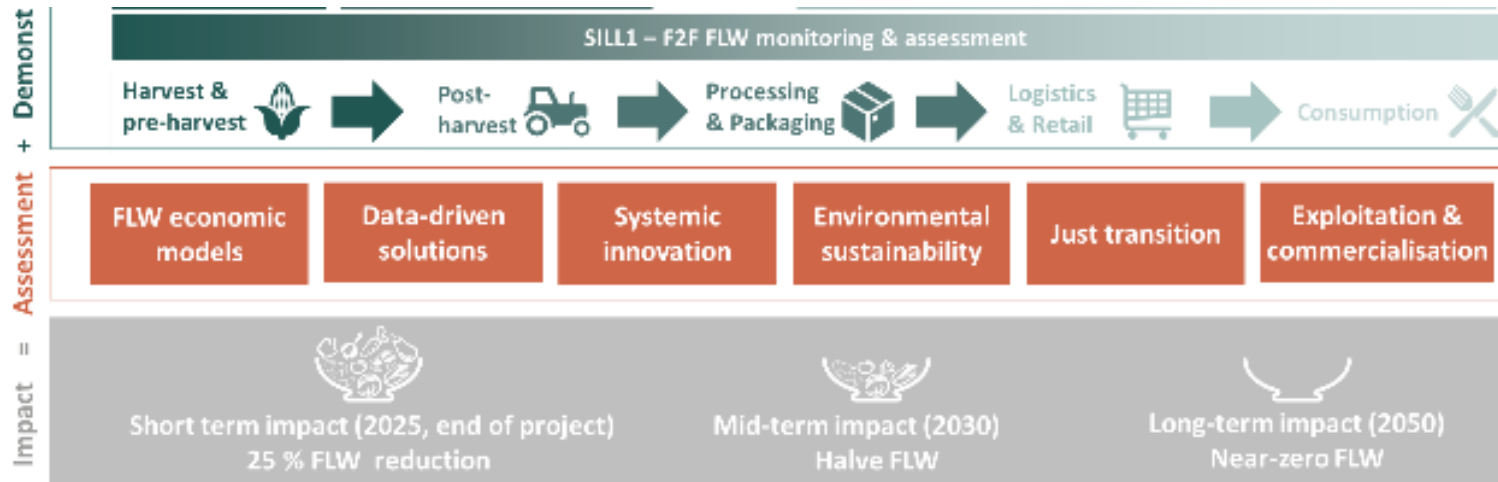
- **Investment Associate** at Astanor Ventures (since April 2024).
- Brings experience in **impact-driven venture investment**.
- Actively involved in sourcing and supporting **innovative, scalable food & agri-tech solutions**.
- Passionate about **connecting capital with transformative sustainability projects**.



# SILL1: FLW Platform



# Challenges/Problem Addressed



- Missing/fragmented FLW data, inaccurate data collection processes/methods based primarily on subjective assessments.
- Lack of FLW reduction, modelling capabilities based on data from food actors and 3-rd party sources
- Use of varied FLW definitions, focusing on volumes and neglecting other aspects (nutritional value, GHG impact), important in designing effective reduction strategies



# SILL 1: Solution

## Data-driven platform for FLW monitoring (data collection, analysis, and reporting)

- Raises awareness on FLW data, impacts and reduction options
- Brings stakeholder together via a multi-actor approach
- Supports smarter, more sustainable decisions across the food value chain
- Ensure EU regulation compliance (Delegated Decision (EU) 2019/1597 and the Implementing Decision (EU) 2019/2000) and harmonized reporting
- Optimised supply chains through data-driven services
- Designed for replication in diverse environments

### How data is entered

The platform gathers data from two entry points:

- ✂ [Manual entry via the Romanian Zero Waste Platform](#)
- ⚙ [Automated data flows through the DIH AGRIFOOD Data Space](#)

Once processed, all data is integrated and visualised through a single dashboard.

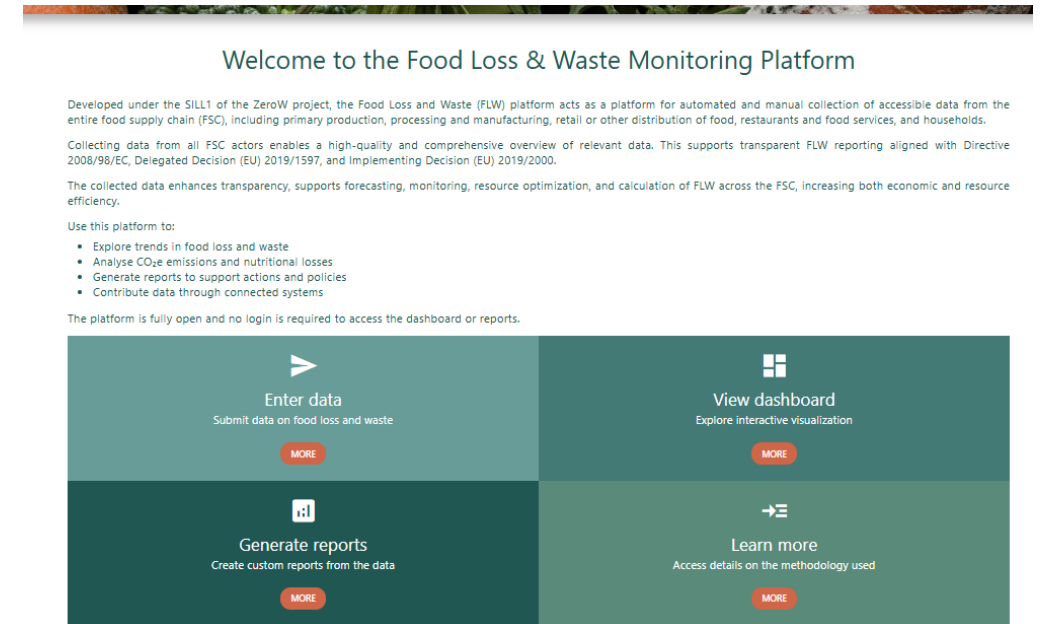
No data entry happens here directly – this page explains where to go and how to contribute.



**ZERO**W



Funded by  
the European Union



AVERAGE QUANTITY PER CATEGORY IN LAST YEAR

Vegetables

678 kg | 171 | 78 pcs

Fruits

618 kg | 181 | 32 pcs

Meat

456 kg | 01 | 17 pcs

Dairy

12 kg | 234 | 23 pcs

Grains

234 kg | 21 | 12 pcs

FOOD WASTE PER REGION IN THE PAST YEAR

Cluj

678 kg | 171 | 78 pcs

Bucharest

678 kg | 171 | 78 pcs

Timis

678 kg | 171 | 78 pcs

Alba

678 kg | 171 | 78 pcs

Constanta

678 kg | 171 | 78 pcs

TOTAL EMISSIONS DUE TO FLW

CO2

1,235 kg

User Type

Category

Search name, category or item

EXPORT CSV

Name

Type

Date submitted

Time period

Quantity

Category

Item

Nghiêm Thế Quyền

Producer

01 Jan 2023

23 Jan-24 Feb 2023

2kg

Fruits

Coconut



# SILL 1: Pathways and Results

- Stage: early adopters phase – tested with supply chain actors
- Milestones: working REST API, front-end mock-up, data sharing in two countries
- Partnerships: active collaboration with local stakeholders, advisory bodies, and digital innovation hubs
- Use cases: FLW tracking by actors, retail food surplus monitoring, community-level awareness campaigns
- Replication potential across EU and beyond



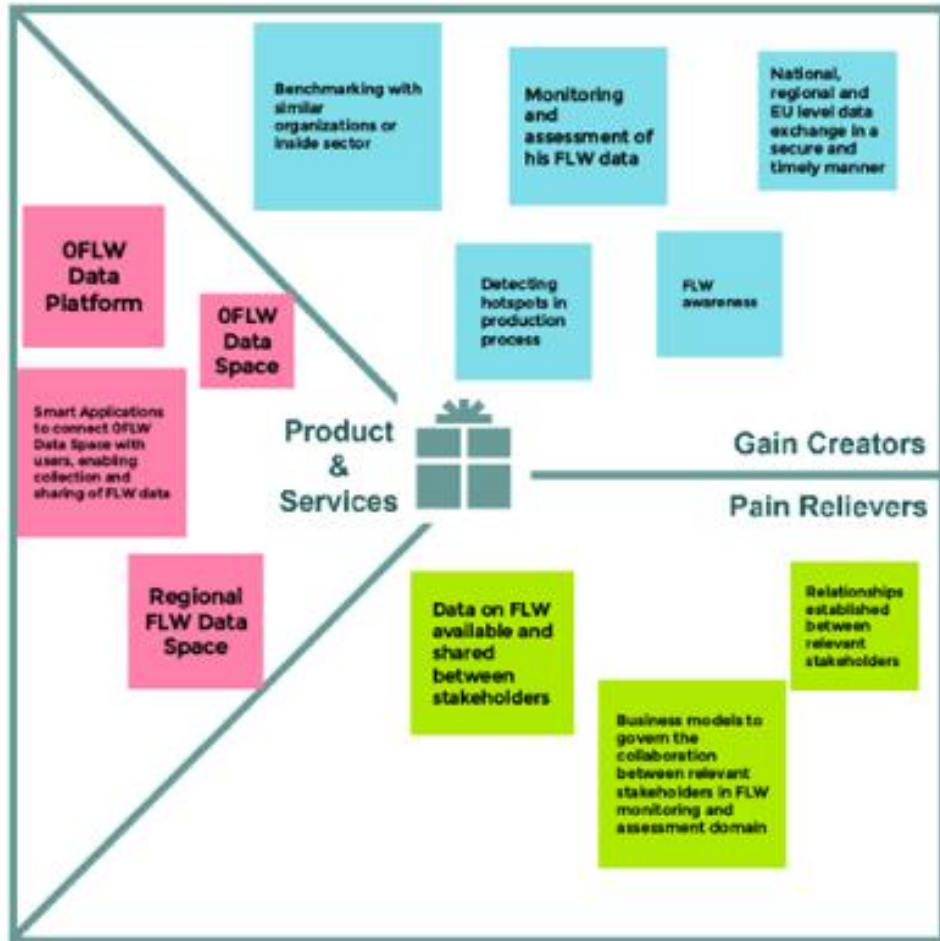
# Value proposition



The Value Proposition Canvas Designed for: SILL 1

Solution: IT Platform for F2F FLW Monitoring & Assessment

Persona: Operational manager (FSC actor)



Designed by: KT (ICP)  
Reviewed by: SS (ITC)



# Value proposition

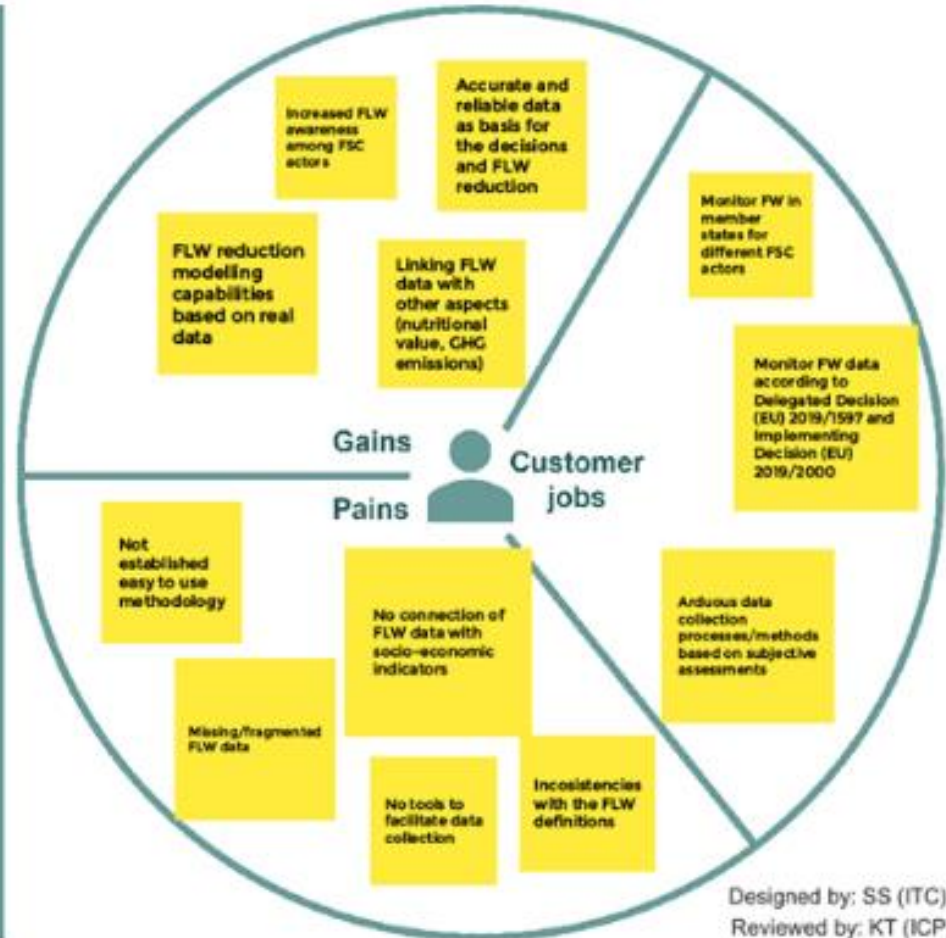
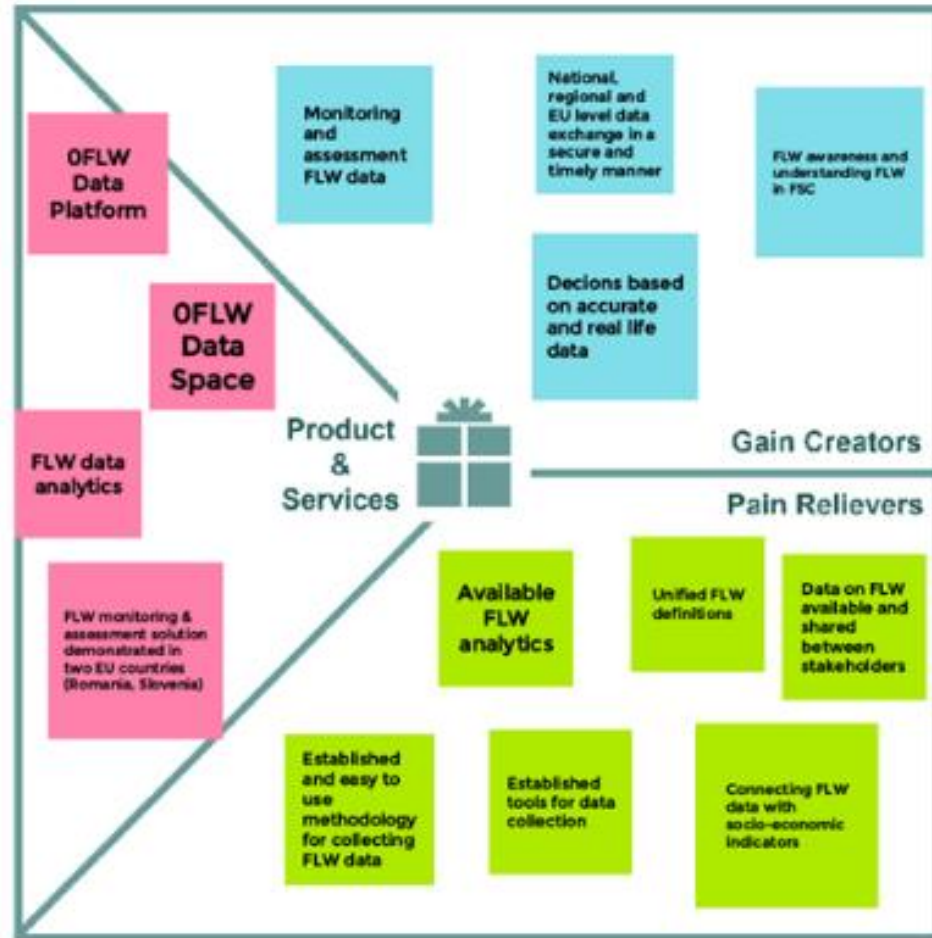


The Value Proposition Canvas

Designed for: SILL 1

Solution: IT Platform for F2F FLW Monitoring & Assessment

Persona: Policy Officer (EC)



Designed by: SS (ITC)  
Reviewed by: KT (ICP)

# Business Model Canvas



## Key Partnership

- DIHs (Agri-food)
- Municipalities
- Retailers & processors
- NGOs & redistributors
- EU bodies
- Tech partners



## For Channels

- DIHs as intermediaries
- Direct sales
- Industry events & EU projects
- Online platform & APIs



## Key Resources

- FLW platform (API + Dashboard)
- Tech team
- Food expertise
- Retail & municipal partners
- EU branding



## Value Propositions

- Reliable FLW data
- EU compliance reporting
- Supply chain optimization
- Lower costs & GHG
- Awareness & collaboration
- EU replication potential

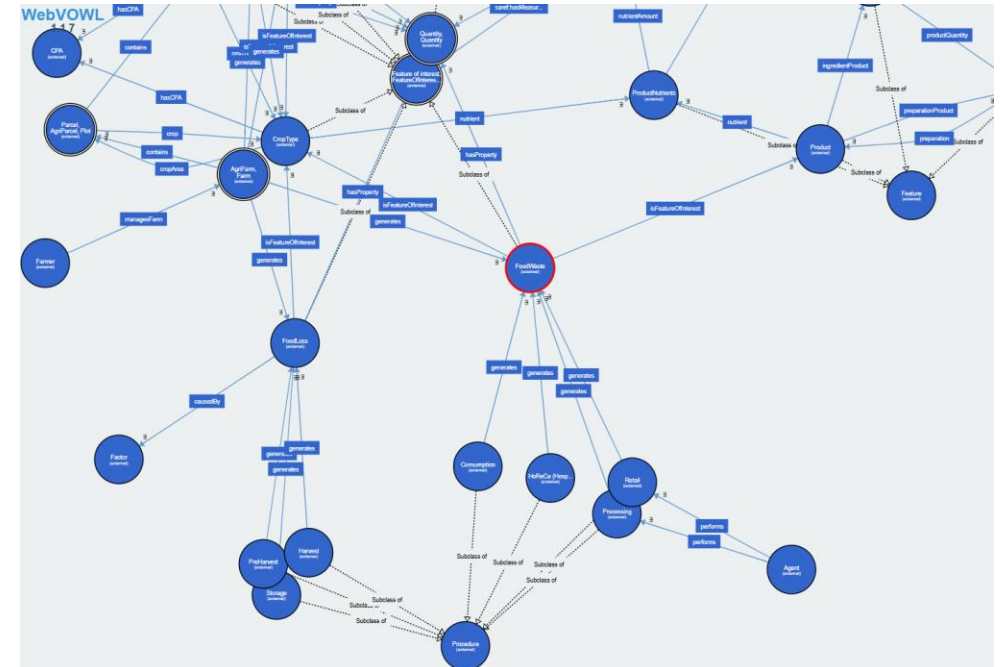
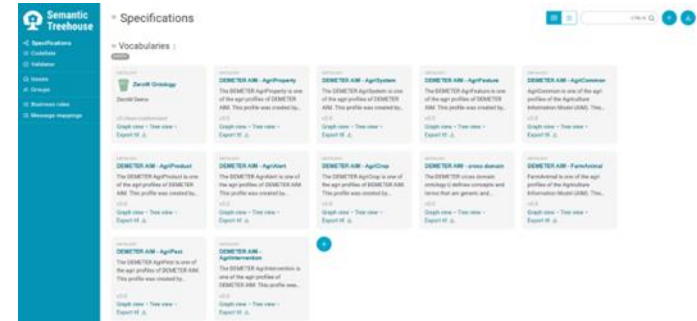


## Key Activities

- Data collection
- Platform development and maintenance
- Analytics & reporting
- Stakeholder engagement
- Pilots & replication
- Regulatory alignment

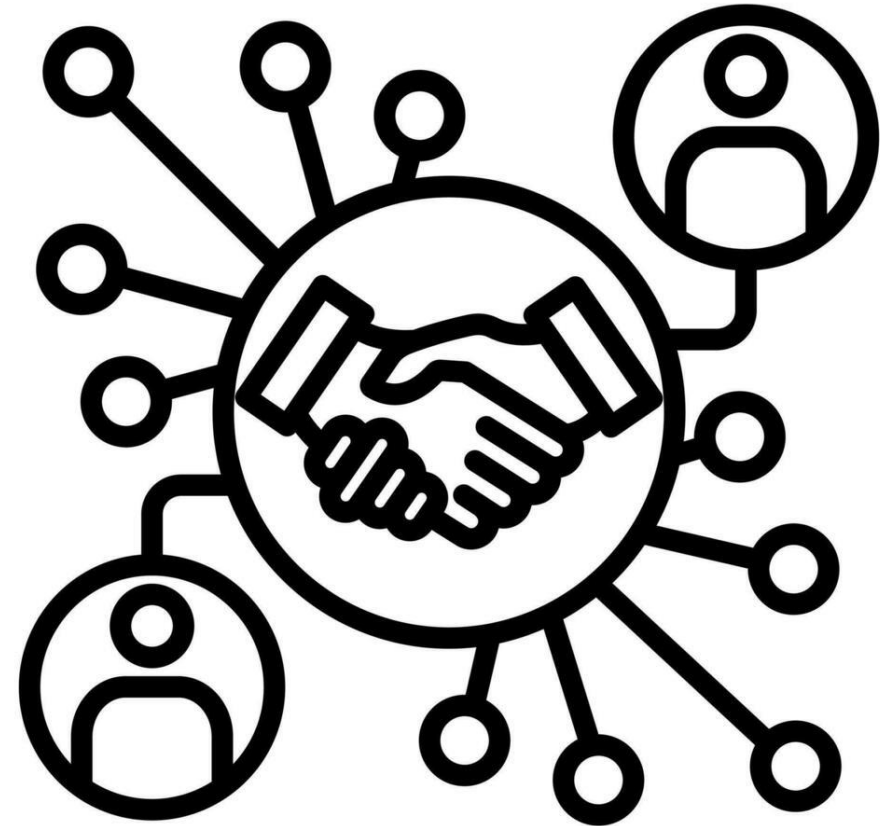
# Key challenges

- Harmonizing methodologies and definitions across actors
- Building trust and incentives for data sharing
- Ensuring interoperability within the DIH AGRIFOOD Data Space and ZeroW Data Space
- Bridging manual vs. automated data collection approaches



# Our Ask

- Feedback: tailoring for real-world uptake
- Support in wider adoption
- Opportunities for collaboration and replication



Together  
towards a Zero  
Food Waste  
future!



Faculty of Electrical Engineering  
and Computer Science



Thank you!



Andra & Saša



# ZeroWaste

## Systemic Innovations Towards a Zero Food Waste Supply Chain

Jesús Palenzuela, SILL 2

ITENE

02/09/2025



# SILL 2

Innovation in FLW:  
Innovative, sustainable and smart  
packaging for fresh food products

# Do you know that ...

- Every year, 1.3 billion tons of food go to waste (enough to feed 2 billion people).
- 10% of Europe's food waste is linked to date labelling confusion.
- Almost 32 million tones of plastic waste is generated in Europe every year.
- Around 80% of marine litter is plastic.
- Huge concern among European citizens about the impact of plastics on the environment.



# ZeroW Solution

- Packaging solution to reduce food waste.
- The tray and lid are made from bio-based, compostable materials.
- The tray's improved geometry eliminates the need for absorbent pads and prevents fish from sitting in liquid.
- A transparent coating that improves the barrier properties.
- A smart freshness label that changes colour to indicate product quality.
- A mobile app providing real-time freshness information.

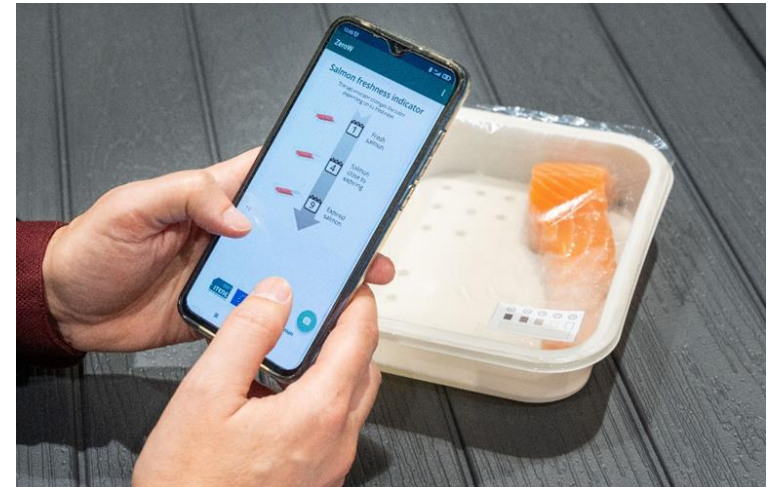


# Current Scaling and Commercialisation pathways

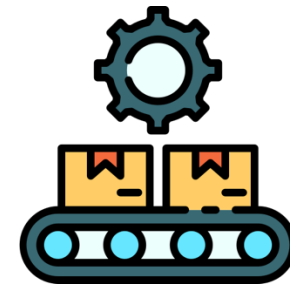
- The smart tray is developed at lab scale, being the performance already tested and studied.
- Consumer focus groups tests showed high acceptance of both the packaging, and the smart label.
- Full-scale testing with retailers and consumers is not within the scope of the project and a next step to enable commercial uptake would be needed.



**SUPPORT NEEDED**







# Solution and Support needed

## Path to Market & Partnerships

- The smart tray is aimed to packaging **manufacturers / packers / retailers**.
- The development of all the associated technologies covers the whole value chain, however companies covering the **industrial production** and **commercialisation** of the tray are **needed to be implemented in the market**.
- Each technology in the smart tray could be **transferred separately** and implemented in **other markets** and sectors: **sustainable materials** for packaging (tray and lid), **barrier coating**, **designing**, **smart freshness ink & label** and **software**.
- The technology behind the smart label is **currently patented**.

# Your feedback is needed

- Do you find it appealing?
- Are you interested in the whole tray solution or in one of the technologies involved?

**WE ARE HAPPY TO COLLABORATE!**





# Contact

☎ +34 672 387 661

✉ [Jesus.palenzuela@itene.com](mailto:Jesus.palenzuela@itene.com)

💻 [www.itene.com](http://www.itene.com)

🌐 [www.linkedin.com/jesús-palenzuela](https://www.linkedin.com/jesús-palenzuela)

# ZeroWaste

Systemic Innovations Towards a Zero Food  
Waste Supply Chain

## Greenhouse Vision Reducing Food Waste with AI

Simonas Audickas, Beta via

*16th September 2025*





# The Problem: Food Loss & Manual Decisions

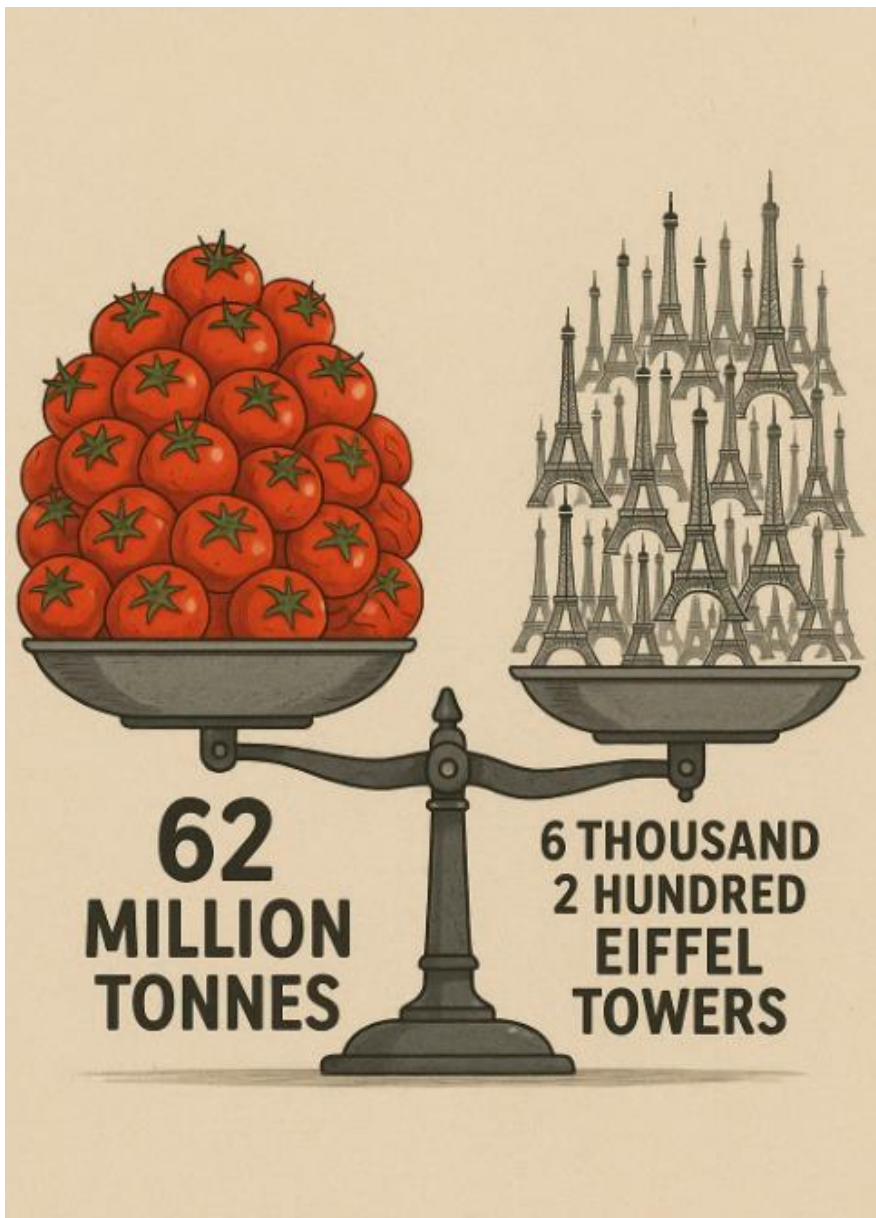
- Perishable crops (e.g., tomatoes) face high write-offs (62.5 Million tones globally) due to demand mismatch, late detection of issues, cosmetic standards and logistics.
- Manual counting and estimation lead to inaccurate yield forecasts and wrong supply decisions.
- Fragmented data and reactive processes cause waste and lost margin across the greenhouse value chain.





# To AI or not to AI

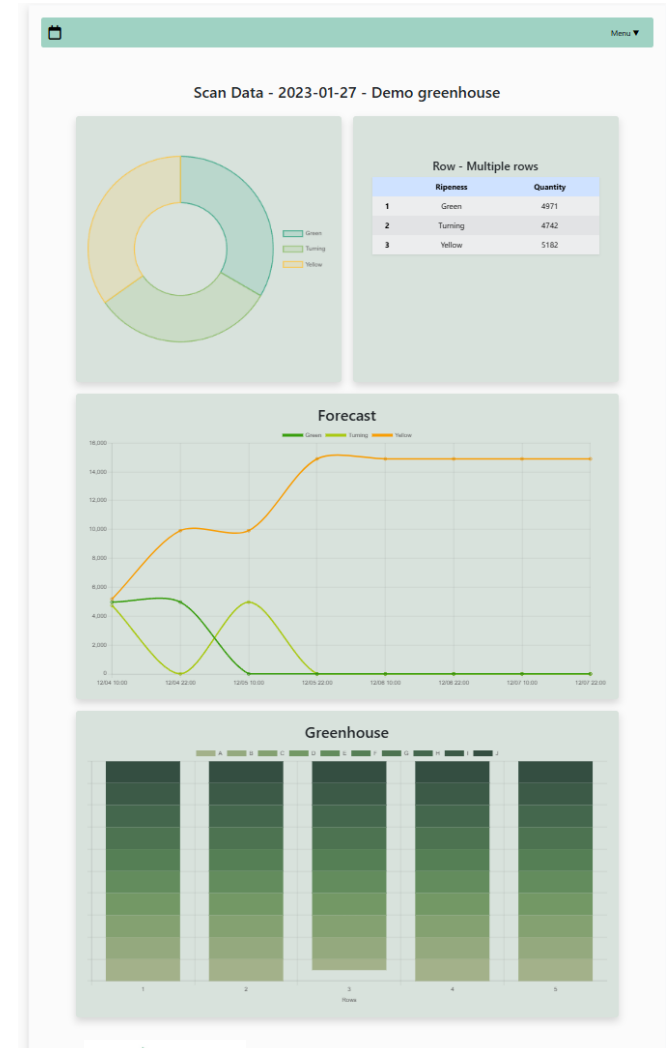
Would you be willing to lose at least 1?



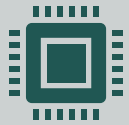
# Our Solution: Computer Vision for Real-Time Yield & Quality monitoring



- Trolley-mounted dual cameras + edge compute capture tomato counts and ripeness on the fly.
- Dashboard shows per-aisle counts, weight estimates, and 7-day ripening forecasts.
- Integrates with operations to optimize harvest timing, routing, and secondary markets.



# Technology & Moat



Retrainable ML models (ripeness, count, defect) with continuous improvement from data.



Edge+cloud architecture ensures low latency on site and secure remote access.



Data network effects from anonymized model improvements across clients.



# Evidence & Validation



Developed and demonstrated in a working greenhouse (Anykščiai, Lithuania).

Validated with growers, agronomists, and stakeholders (incl. Foodbank representative & Vice-Minister of Agriculture/farmer).

Stakeholder requested additional features such as **leaf infestation detection, branch damage** which are already under development.





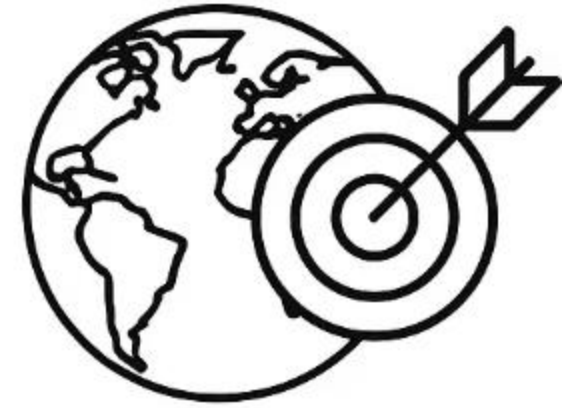
# Business Model: HaaS + Data Services

Hardware-as-a-Service subscription: cameras + edge device + updates + remote diagnostics.

Data & analytics subscriptions: dashboards, alerts, historical trends, and API access.

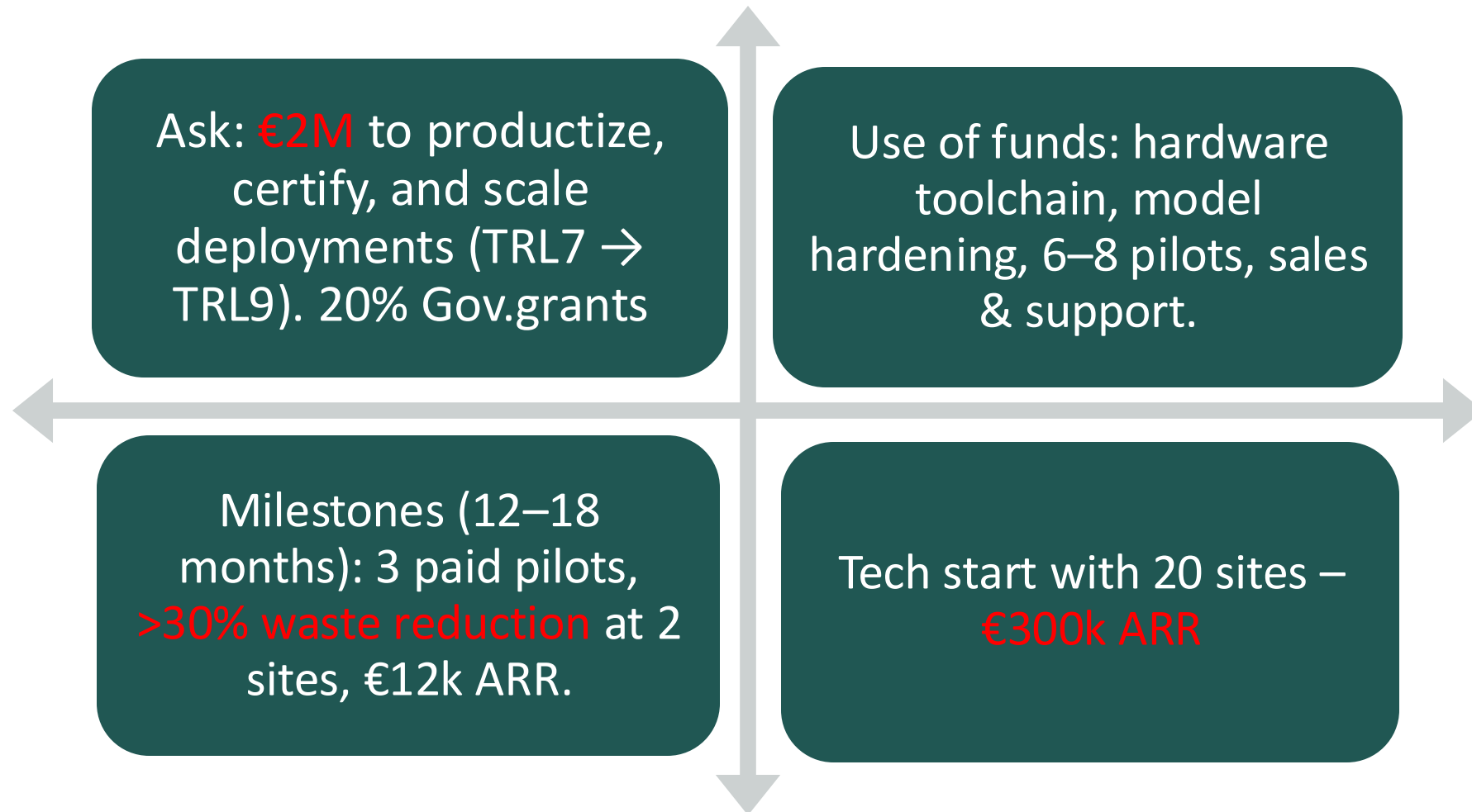
Optional performance-linked pricing; services for retraining across crops & sites.

# Market & Go-to-Market



- Initial focus: greenhouse vegetables; modular other crops (cucumbers, peppers).
- Pilot expansion planned with growers in Southern Europe (Serbia, Spain, Netherlands), Americas.
- Channels: growers' associations, agritech integrators, and targeted demos/workshops.

# Funding Ask & Milestones



# Contact

**Simonas Audickas**

☎ +370 671 63372

✉ simonas@betavia.lt

💻 www.betavia.lt

🌐 <https://www.linkedin.com/in/simonas-audickas-15a2a34a/>



# ZeroWaste

Systemic Innovations Towards a  
Zero Food Waste Supply Chain

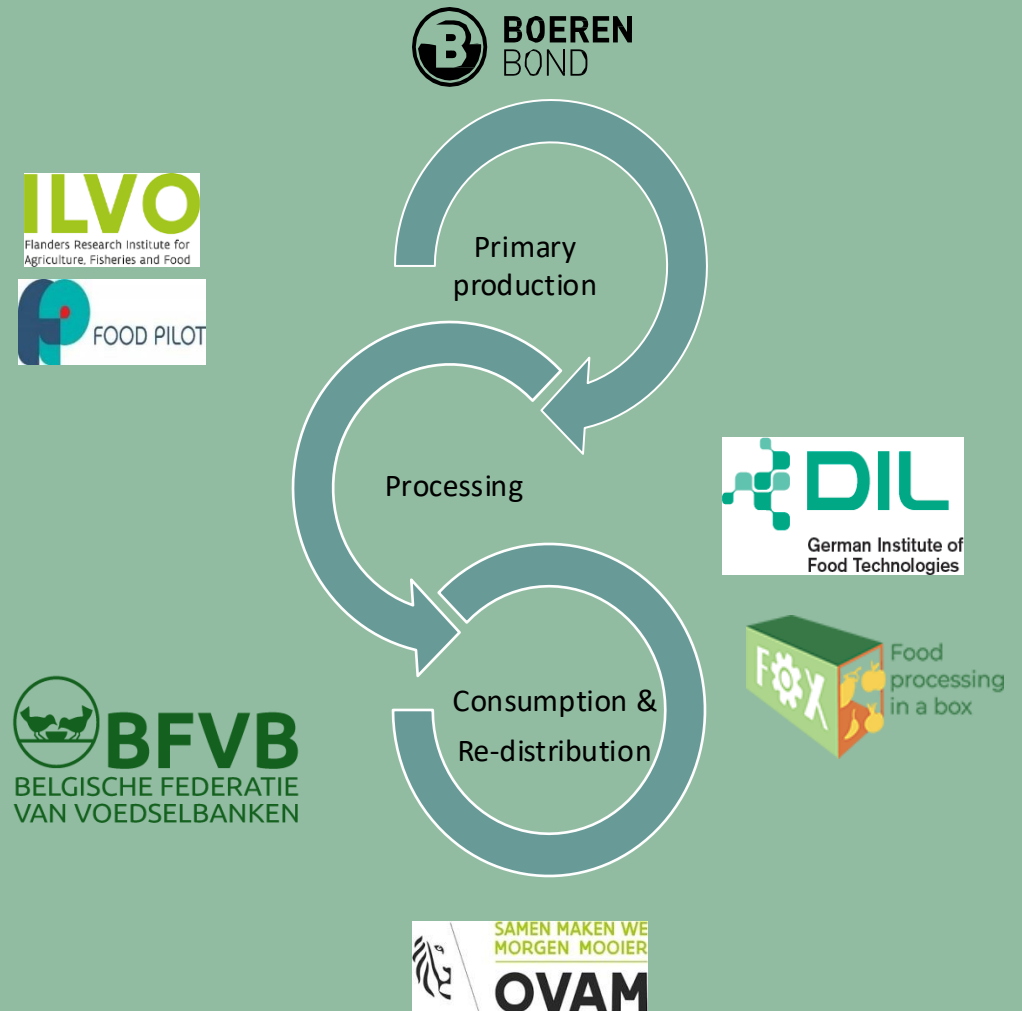
## *Valorization as a Service – From Surplus to Value*

ZeroW SILL 4

Anna Twarogowska

Postdoctoral Researcher, ILVO

16/09/2025



# Valorisation as a Service – Local Hub



**Turning surplus & wasted produce into market-ready products**

# Problem

- **Farmer** —————> Lose up to 30% of harvest
- **Auctions & Coops** —————> Seasonal gluts, discarded produce
- **Retailers** —————> Unsold pallets wasted
- **Local Businesses** —————> No small-batch facilities

**The system has no mid-scale solution.**

# Solution - The Local Hub

- Clients keep ownership
- No upfront investments for clients
- Consulting, recipe development, trial runs





# Business Model



**Processing fees** → *per kilo processed*




**Consulting services** → *recipes, product development, trial/test productions*



**Clients keep ownership** → *we provide the service*

We are **enablers, not competitors.**

# Market

- **10M tonnes wasted** (farm, auction, retail)
-  **≈ €3 billion lost value annually**
- Not counted: **surplus sold to industry, animal feed, unharvested crops.**



# Go to Market Plan

## 1. Proof of concept

Surplus tomatoes → juice & soup

600+ units donated to food banks

## 2. First hub in Flanders

Strategic location, close to surplus & clients

Focus: year-round production across crops

## 3. Expansion in Belgium

Second hub in surplus-heavy region

Builds scale & demonstrates replicability

## 4. European replication

Clear blueprint for local hubs

Adapted to regional crops & needs



# Competitor Analysis

Competitors	What they offer	What they lack	Our Advantage
<b>Large processors</b> (e.g., Ardo, Greenyard, Koning, SVZ)	Huge scale, efficient, export capacity	Don't accept small batches, long contracts, no flexibility	<b>Mid-scale, flexible, accessible</b>
<b>Small social kitchens &amp; initiatives</b>	Community-driven, low entry cost	No certification, can't sell to retail, not financially sustainable	<b>Certified, professional, scalable</b>
<b>Our Local Hub</b>	Valorisation as a Service	–	<b>Year-round use, affordable, designed for farmers &amp; local businesses, startups</b>



# Financials



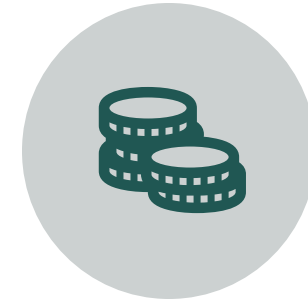
CAPEX

**€450K–€570K**



OPEX

**~€350K/YEAR**



BREAKEVEN

**400,000L PROCESSED  
PER YEAR**

**2–3 YEARS**

# Team



**Researchers** → *Processing knowledge & certification expertise*



**Farmers & Auctions** → *Supply of surpluses*



**Local Businesses** → *Product innovation & demand, marketing*



**Food Banks** → *Social impact & outreach*

# The Ask



**Investment required:** €750k–€1M



**Use of funds:** First operational hub in Flanders



**Next step:** Prepare blueprint for European replication



**Interest shown:** Auctions, municipalities, local buisnesses, food banks

# THANK YOU !



# Q&A

# Systemic Innovations Towards a Zero Food Waste Supply Chain

# Systemic Innovations Towards a Zero Food Waste Supply Chain

# SILL5: UGLY FOOD IDENTIFICATION

# Pitch Session

## SILL 5 PITCH DECK

Presenter : José Luis Gallego Álvarez (CTA)

16<sup>th</sup> September 2025



**Ugly is a strong word for a fruit to take! Did you know that early identification and a good management is key to recover them???**





# The Problem: quality standards

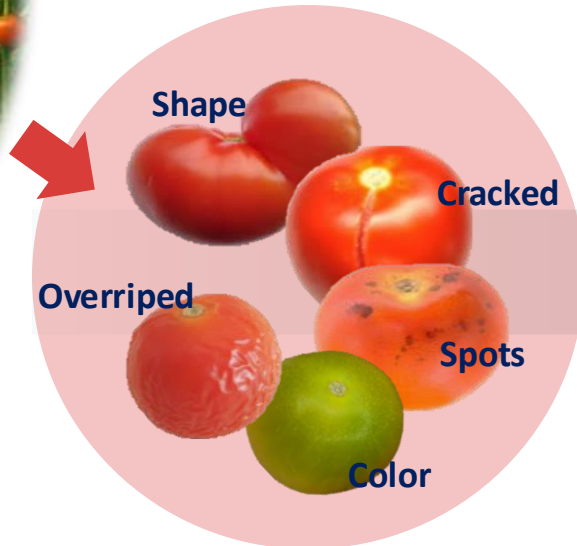
FARMS

*In an ideal world..*

RETAIL



*..but nobody is perfect!*



**The end**

Complaints

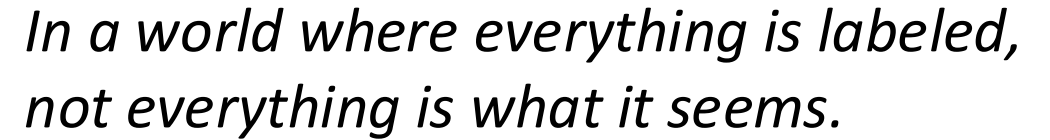
Claims

FLW



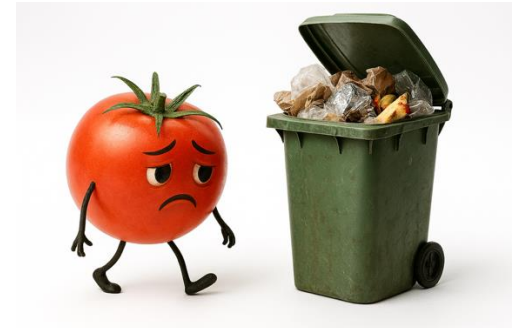


## A tomato character dressed as a pirate. It has a round red body with a green stem on top. It wears a black pirate hat with a white skull and crossbones. It has a black eye patch over its left eye. It wears a black vest with a red bow at the neck, a brown belt with a gold buckle, and black boots. It has a single black hook for a hand.

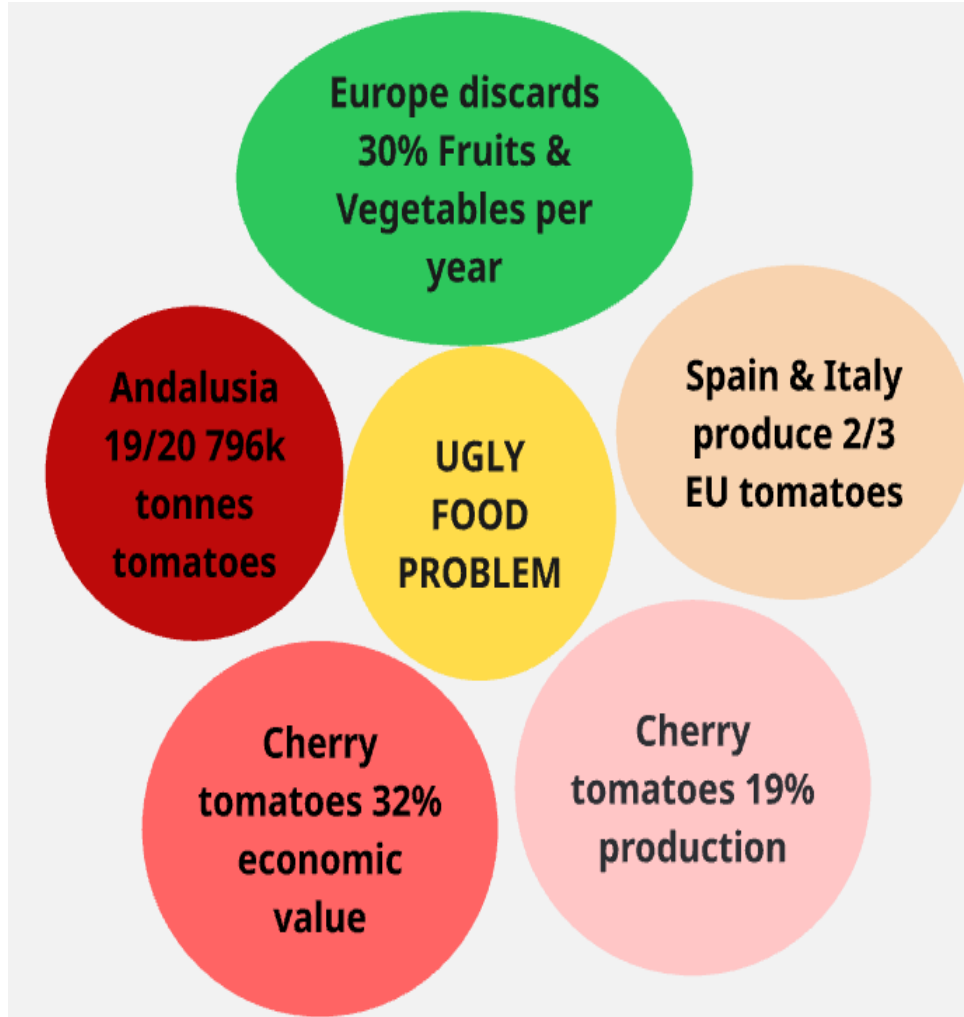


Slow procedures  
Low representativity  
Expensives

*Sometimes is too late!*



# Ugly Food Problem in numbers



# SOLUTIONS' INNOVATIONS

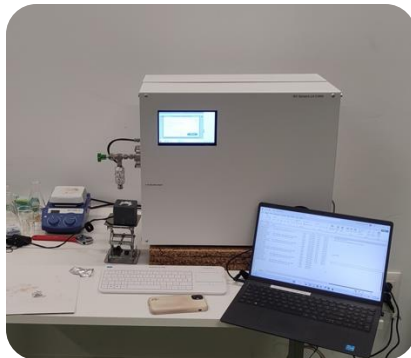
## MST Multispectral Platform



Tomato classification  
based on internal  
and external quality  
parameters

Pre-grading platform  
Processing capacity more than 300.000 fruits/h  
360° inspection (roller system)  
Fruit-by-fruit inspection  
Incorporating new multispectral lighting system

## NG-Sensors Technology validation

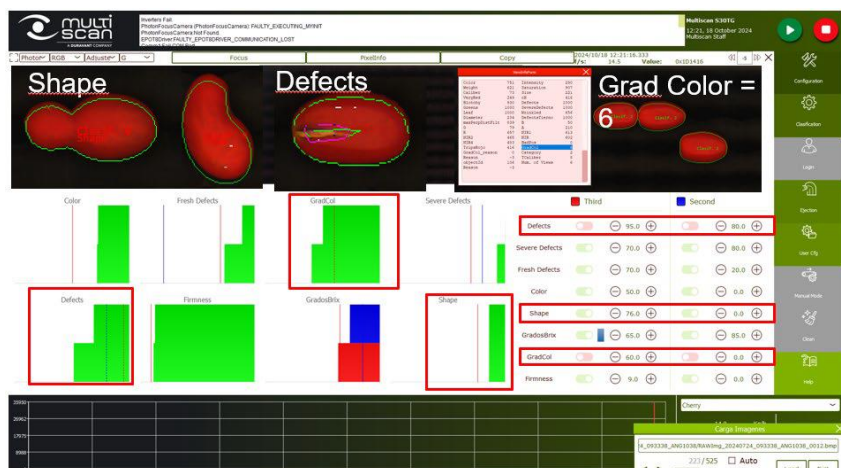


Differentiation  
between organically  
and conventionally  
grown tomatoes

Novel application  
Mass Spectrometry based on technology  
Rapid diagnosis  
Easy configuration (non-expert use)  
Smart Lab device



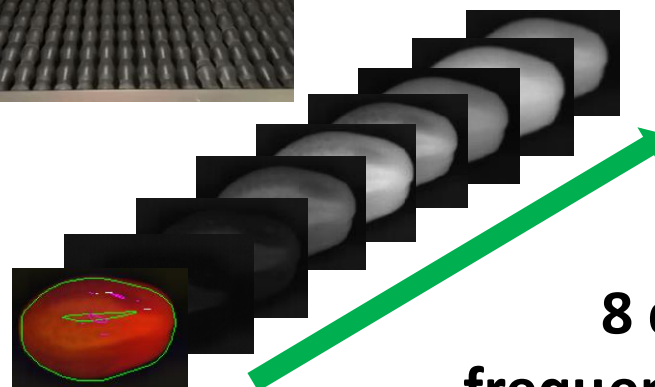
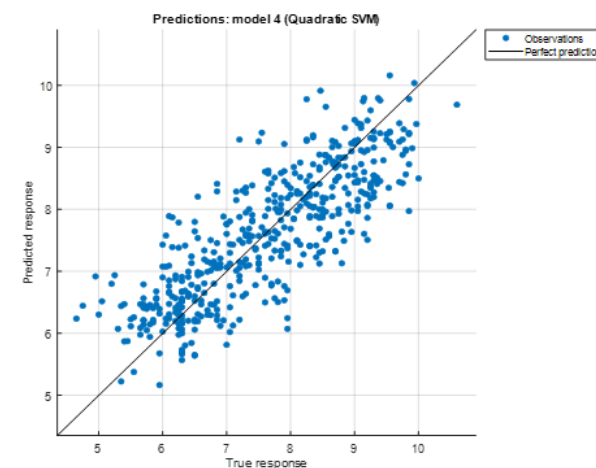
# MST Platform: Increasing the quality sorting



New algorithms to classify by external quality parameters (shape, color, defects, etc.)

Prediction models based in AI included to classify by internal quality parameters (firmness, brix)

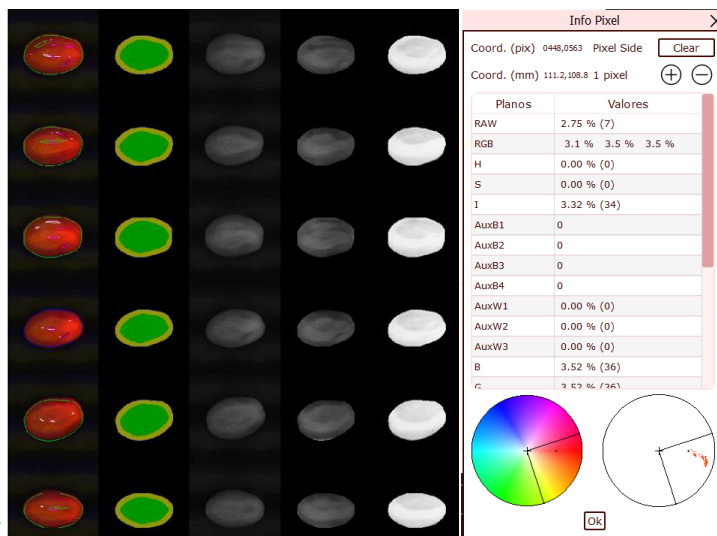
## Generation of multispectral images dataset



8 different frequencies per view

6 views per tomato

(rotation 360°)





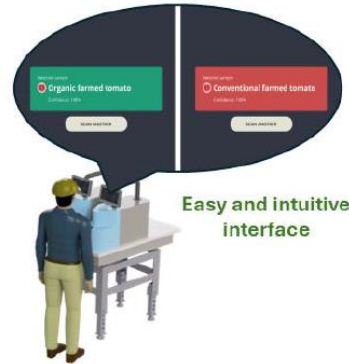
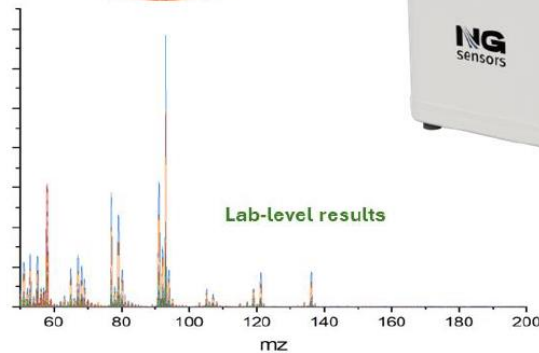
# NG Sensors Technology validation

Validation technology to identify mislabeled batches (organic/non-organic)

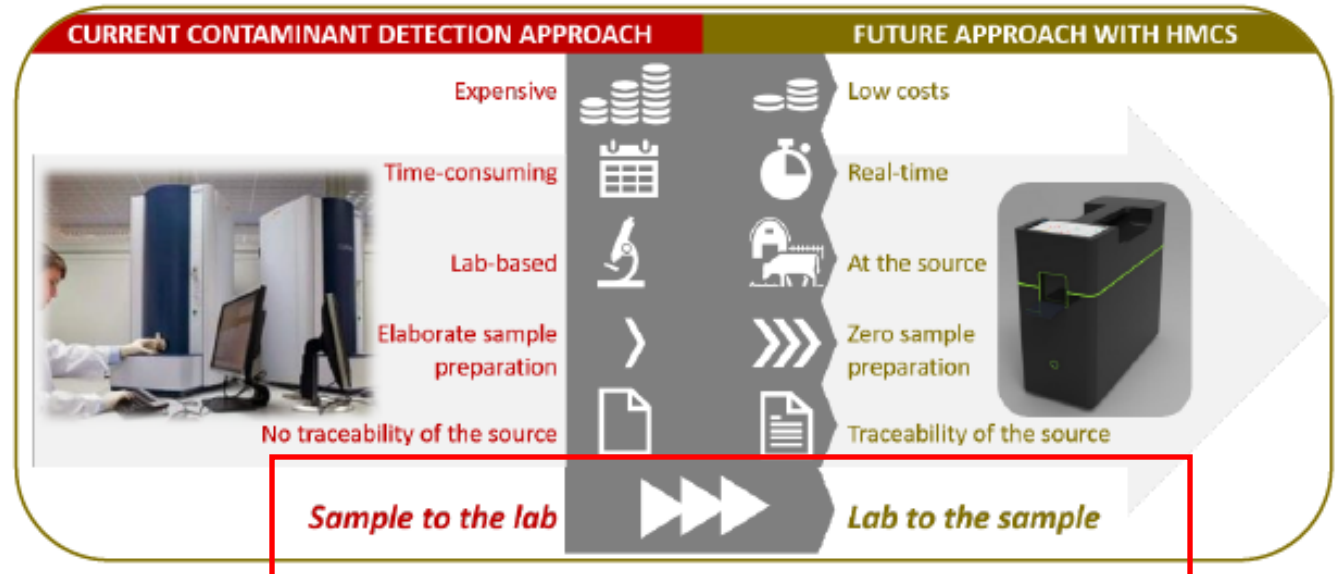
Model developed and validated model developed to quickly, easily and accurately identify the origin of tomato batches

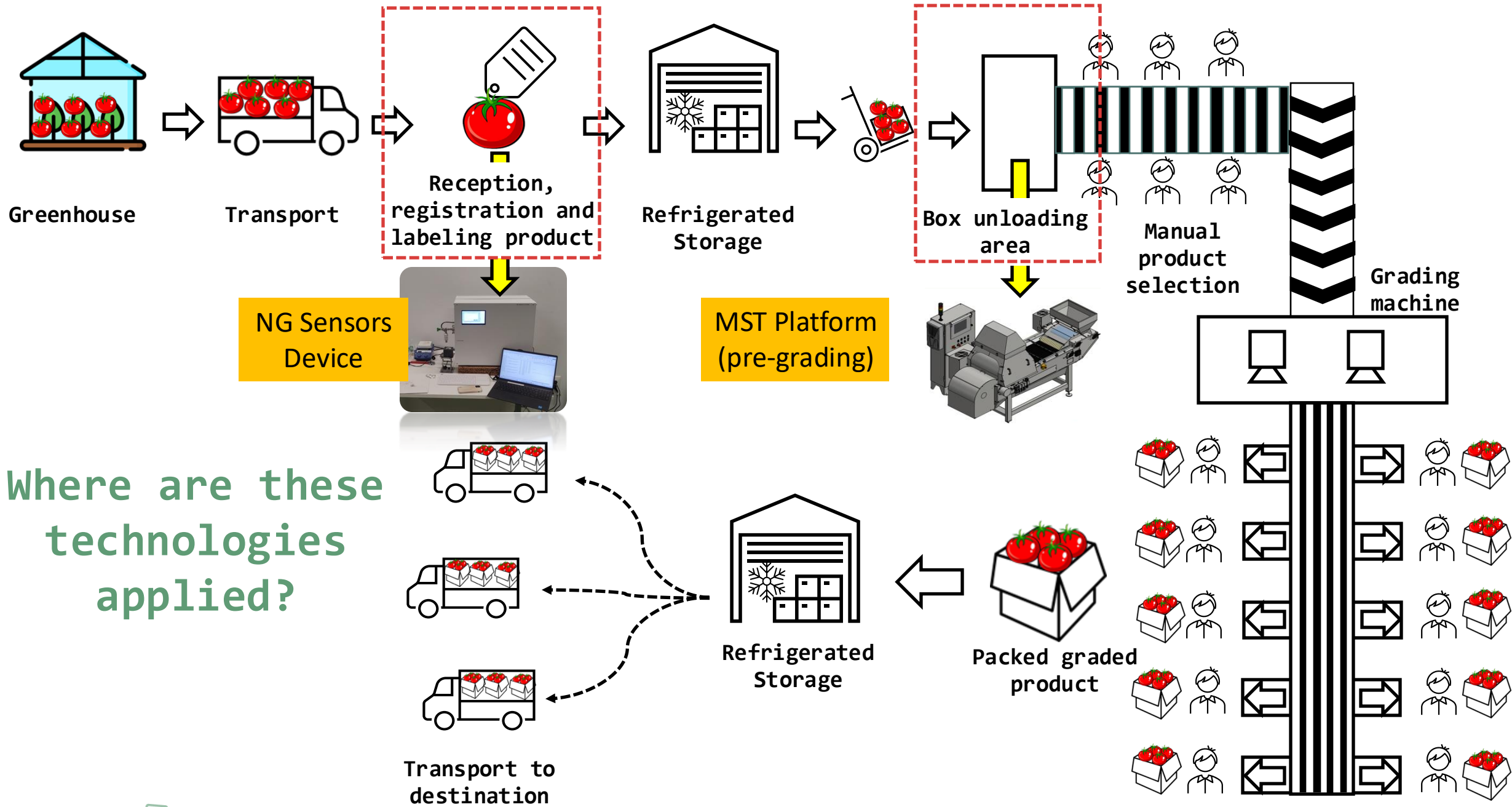


SpotDetect



Cloud





# Bussiness model



**Pre-grading**  
360 ° inspection  
Compact solution  
Low cost

**Processors**  
Packaging&repackaging  
Cooperatives  
Retailers

**Current customers**  
Distributors  
Commercial network  
Social media

**Direct Sales**  
Equipment support and maintenance  
Models  
Spare parts  
Training

**R&D**  
Production  
Production  
Marketing  
Post-Sales

**Distributors**  
Other companies of the Duravant group  
Suppliers  
Labs/Research centers

Value proposition

Customer segment

Distribution and communication channels

Revenue Streams

Key resources

Key partners

**Lab device**  
Fast analysis on-site  
Low cost  
Greater analysis capacity

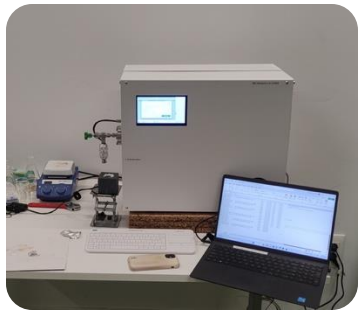
**Packaging&repackaging**  
Cooperatives  
Retailers

**Commercial network**  
MST  
Events and fairs  
Social network

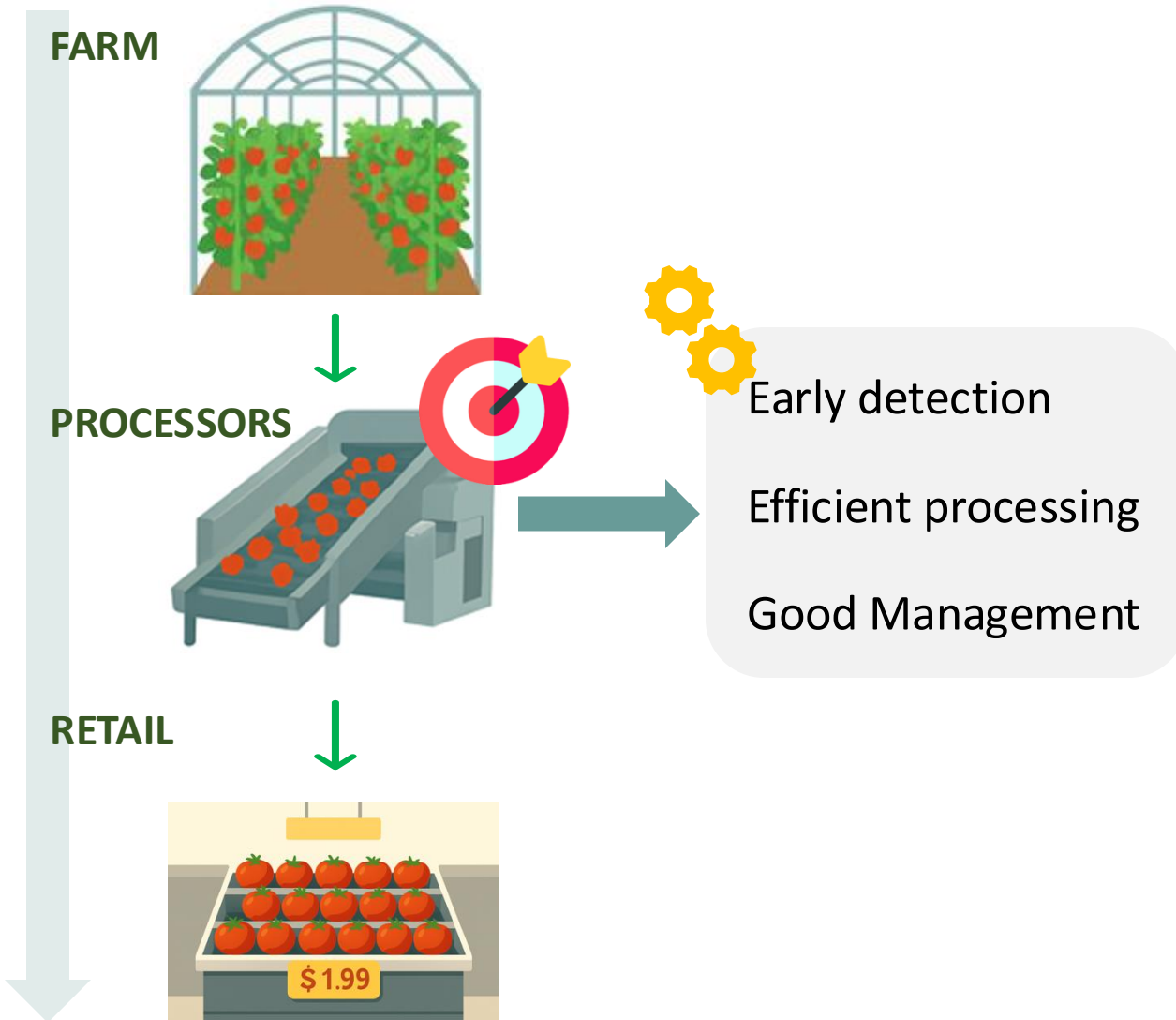
**Direct Sales**  
Equipment support and maintenance  
Models  
Spare parts  
Training

**R&D**  
Patent  
Marketing  
Post-Sales

**Suppliers**  
Universities  
Labs/Research centers



# INNOVATIVE SOLUTIONS MARKET



Because everyone  
deserves a  
second chance!



Reference: Grupo La caña/IFAPA



# Market and Market Strategy

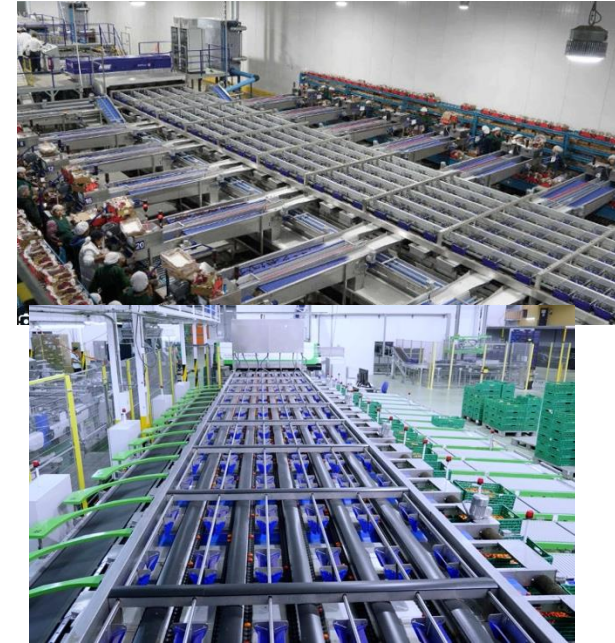
**CAN target ALSO existing production lines** + investment and updates required.

**Cooperatives KEY** especially in Southern Europe. **Activators of farmers** offering :

- Scale
- Funding
- Technical capacity.

Both solutions can potentially have a **hybrid business model: hardware + SaaS (software as a service) for continuous support.**

**Ideal final user:** individual or entity sensitive to FLW and ugly food potential.









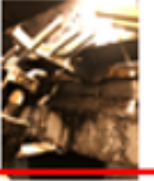




Others  
(grading)

MST (pre-grading)





# Competitors analysis: MST technology

	MULTISCAN	MAF-RODA		UNITEC	AWETA		TOMRA COMPAC
							
SYSTEM IMAGE							
Solution	Pre-grading	Grading	Grading	Grading	Grading	Grading	Grading
Processing Capacity	≈300.000 fruits/h	≈300.000 fruits/h	≈300.000 fruits/h	≈300.000 fruits/h	≈300.000 fruits/h	≈300.000 fruits/h	≈300.000 fruits/h
System dimensions	Compact system (3x1x2 m)	Large systems with several lines	Large systems with several lines	Large systems with several lines	Large systems with several lines	Large systems with several lines	Large systems with several lines
N° classification categories	3	Multiple	Multiple	Multiple	Multiple	Multiple	Multiple
Cost	Low	High	High	High	High	High	High
Fruits	Cherry tomato	Kiwis, oranges, tangerines, avocado	Tomato, apples	Kiwis, apples, plums, melon, peaches	Apples, pears, avocado, tomato, kiwi, peaches, plums	Apples, pears, avocado, tomato, kiwi, peaches, plums	Apples, kiwis, avocado, citrus
Fruit size	Cherry fruits	Large fruits	Large fruits	Large fruits	Large fruits	Large fruits	Large fruits
Sorting external parameters	Colour, size, shape, defects	Colour, size, shape, defects	Colour, size, shape, defects	Colour, size, shape, defects	Colour, size, shape, defects	Colour, size, shape, defects	Colour, size, shape, defects
Internal quality analysis system	Yes (all-in-one)	Yes (coupled system)	Yes (coupled system)	Yes (coupled system)	Yes (coupled system)	Yes (coupled system)	Yes (coupled system)
Internal quality system name	PLATFORM ZERO W	INSIGHT-2T	INSIGHT-2RH	UNIQ	InScan	InScan Pulse	Inspectra 2 COMPAC
System based on	Image (Multispectral system)	Spectroscopy	Spectroscopy	Spectroscopy	Spectroscopy	Spectroscopy	Spectroscopy
Illumination	Led multispectral system	Halogen	Halogen	Halogen	Halogen	Led	Halogen
SORTING SPECIFIC PARAMETERS	Ugly, maturity index, Firmness brix	Brix and "other attributes"	Brix and "other attributes"	Internal quality	Internal quality (%brix, maturity, firmness)	%brix, dry matter, chlorophyll, colour, maturity	Internal defects, dry matter, %brix

# NG Sensor specific competitors

## Competitors

TECHNIQUES	ACCURACY & SENSITIVITY	PROCESSING TIME (in hours)	NON-EXPERT USE	LOGISTICS	PURCHASE COSTS
Near-Infrared Spectroscopy	Medium	24 Hours	No	Lab-based	€35K
High-performance liquid chromatography	Good	60 Hours	No	Lab-based	€55K
Gas Chromatography	Good	60 Hours	No	Lab-based	€50K
Laboratory-based Mass Spectrometry	Excellent	60 Hours	No	Lab-based	€175K - €1,500K
PCR	Excellent	24 Hours	no	Lab-based	€50K
Strip test (dairy-specific)	Low	0.75 Hours	Yes	On-site	€4000 incubator Pay per strip
Delvo test (dairy-specific)	Good	6	No	Lab-based	€250 start-up kit + pay per Ampoules
Portable Mass Spectrometry	Low	1-2	No	On-site	€50K
HMCS	Excellent	0.001 Hours	Yes	On-site	€50K

Agro-food analysis Labs  
Universities  
Research centers

SUPPLIER MODEL	SALES PRICE in € K	ACCURACY <sup>1</sup>	SENSITIVITY <sup>2</sup>	LIGHT-WEIGHT	ON-SITE ANALYSIS	NON-EXPERT USE	DATA TRACEABILITY
Torion Technology TRIDON-9 GC	91	500	100 ppb	✓	✗	✓	✗
Torion Technology GUARDION 7	77	500	1 ppm - high ppb	✓	✗	✓	✗
Purdue University Mini 10	RUO	700	50 ppb	✓	✗	✗	✗
Purdue University Mini 11	RUO	700	50 ppb	✓	✓	✗	✗
Purdue University Mini 12	RUO	700	50 ppb	✗	✓	✗	✗
1 <sup>st</sup> Detect MMS-1000	36	1000	500 ppb	✓	✗	✗	✗
Samyang Chemical Palm portable	14	150	6 ppm	✓	✗	✗	✗
Inficon Hapsite	100	300	1 ppm	✗	✗	✗	✗
Griffin Analytical ChemSense 600	91	400	Ppt	✗	✗	✗	✗
Q-tech Vaporsense	41	500	1 ppm	✓	✗	✗	✗
NG Sensors HMCS	50	1000	Ppt	✓	✓	✓	✓



Based on an existing technology but innovative. Why?

- Incorporated in a portable device
- High precision results
- Non-expert use
- Low cost
- Results organic/non-organic in minutes

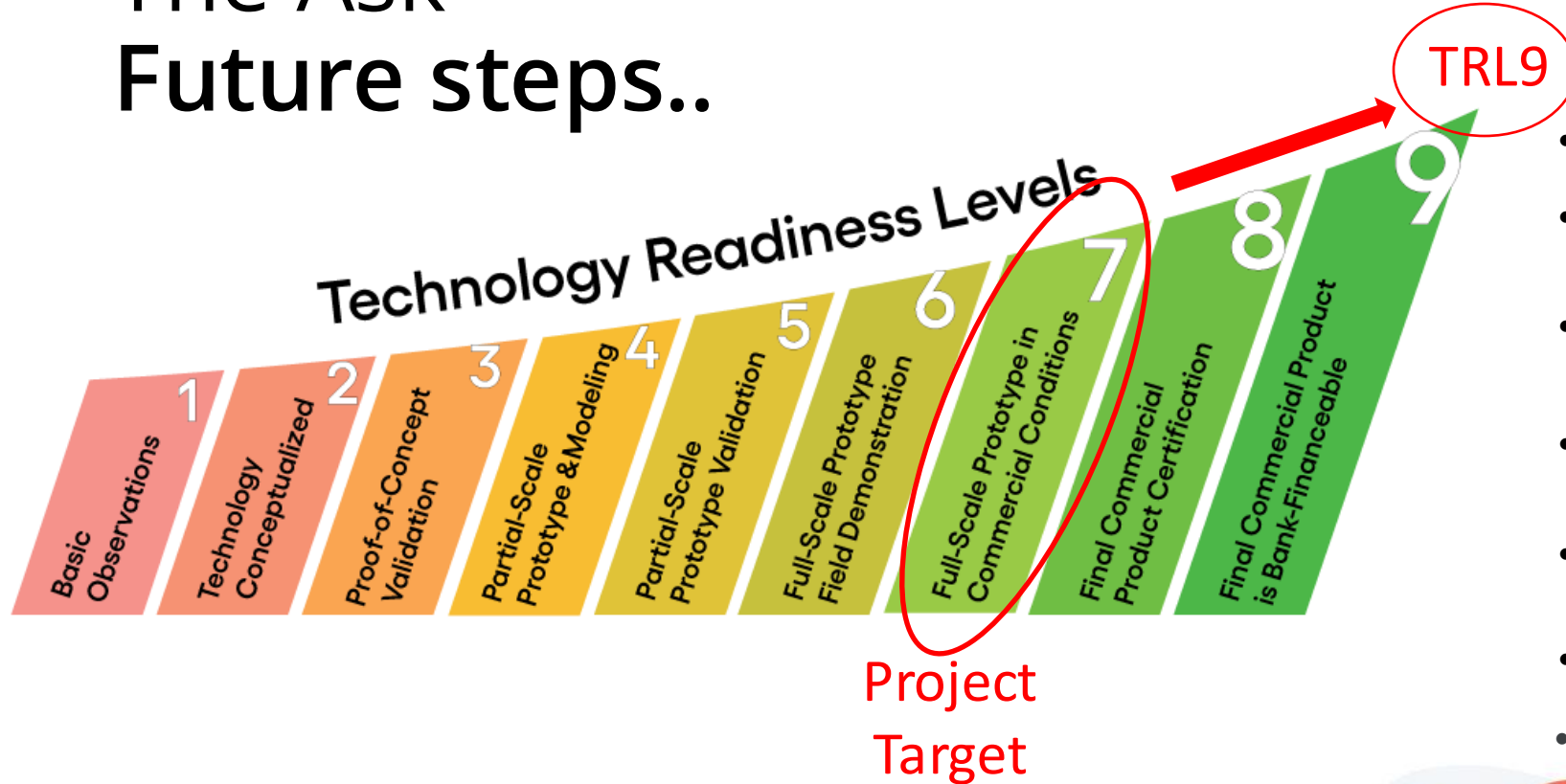
Reference: NG sensors

# Financials: CAPEX & OPEX ESTIMATION

CAPEX	
Description	Cost (€)
Purchase Price MST multispectral Sorting Platform	135.000€
Installation costs (adaptation to line)	10.000 – 15.000€
Workers' Training	2.000 – 3.000€
Purchase Price NG Sensors device	75.000€
Workers' Training	2.000 – 3.000€
OPEX	
Description	Cost (€)
Support/Maintenance MST platform	1.500€/year
Basic subscription (re-calibration of the model)	700 – 800€/year
Premium subscription(re-calibration of the model)	3.000€/year
Support/Maintenance NG sensors device	500€/year
Personnel cost MST Platform	43.200€/year
Personnel cost NG sensors device	36.000€/year
Power consumption MST Platform	4,5 kW
Power consumption NG sensors device	70-120 kWh

# The Ask

## Future steps..



## INCREASE THE TRL

- Finish validation of solutions
- Potential applications in other products/varieties
- Product engineering to achieve the commercial machine
- Evaluation of final manufacturing costs
- Obtain the necessary certifications and licenses
- Develop a marketing and sales plan
- Protect intellectual property (patents)

- Continue with the Project partners collaborations
- Involve new partners dedicated to developing business plans





# Contact

+00 34954461352

Negocio@corporaciontecnologica.com

www.corporaciontecnologica.com





# ZeroWaste

Systemic Innovations Towards a  
Zero Food Waste Supply Chain

SILL 6 - Data-driven decisions in the poultry  
industry

---

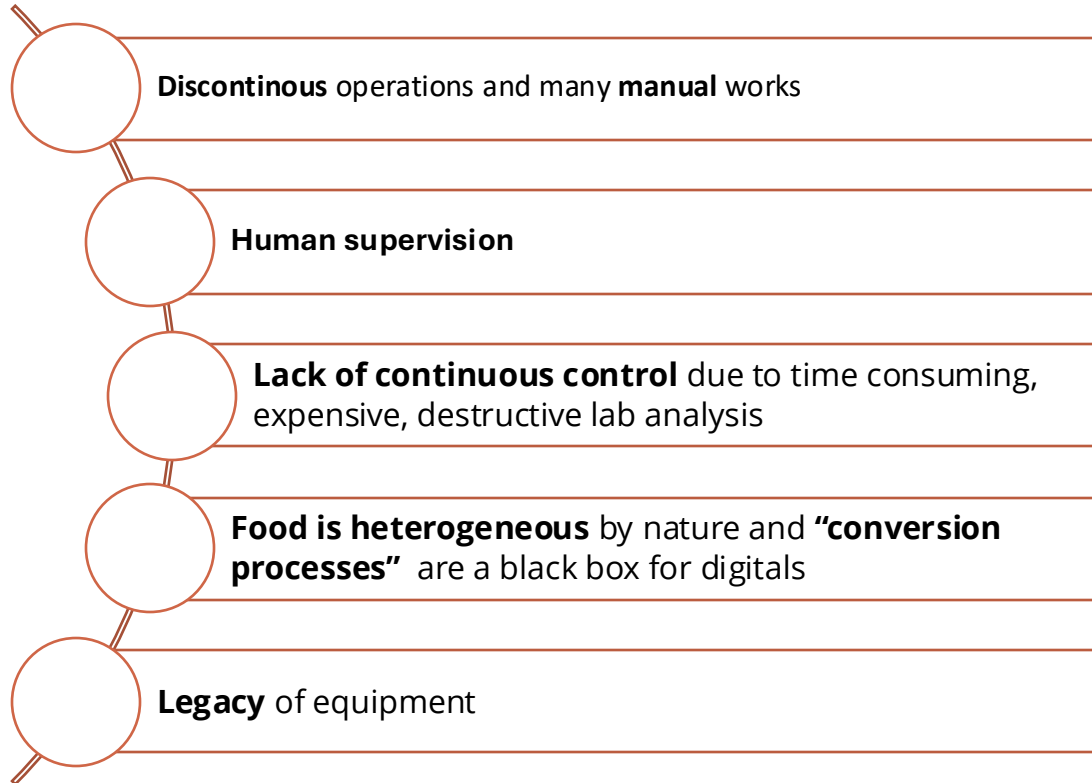
Inés Vázquez Iglesias

Project Manager, ASINCAR

16/09/2025



# SILL 6: Problem



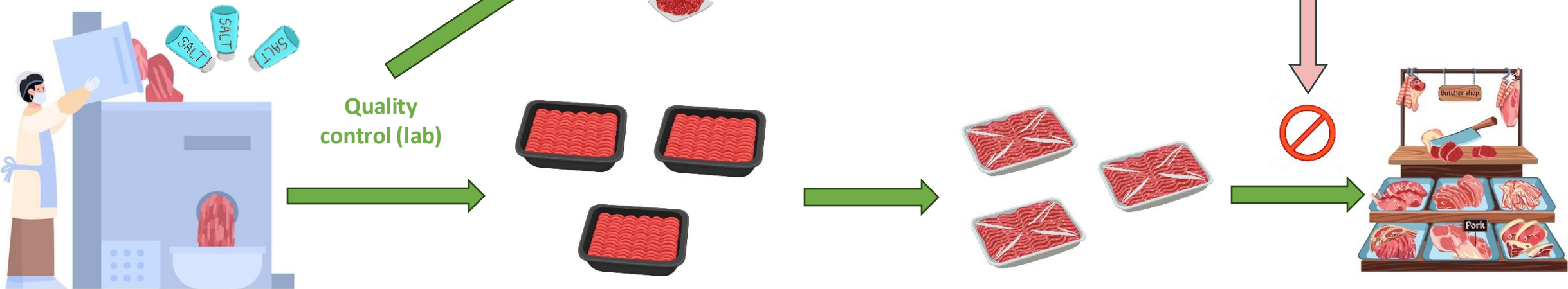
- Reactive and delay interventions
- Rely on subjective, experience-based decisions.

**A more data-driven evidence-based decision system is needed to combat FLW**

# SILL 6: Solution

## Poultry production lines

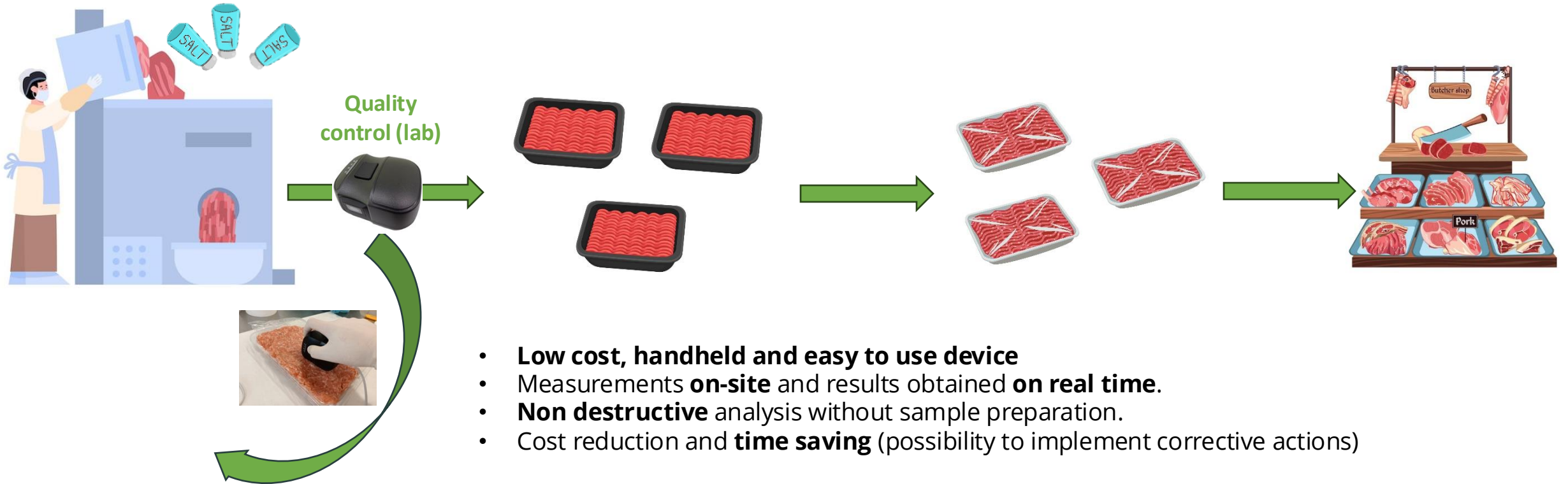
- Destructive method (FL generated)
- Sample preparation requirements.



- Time consuming procedure
- Not all batches analysed
- No time for corrective actions

# SILL 6: Solution

## Poultry production lines

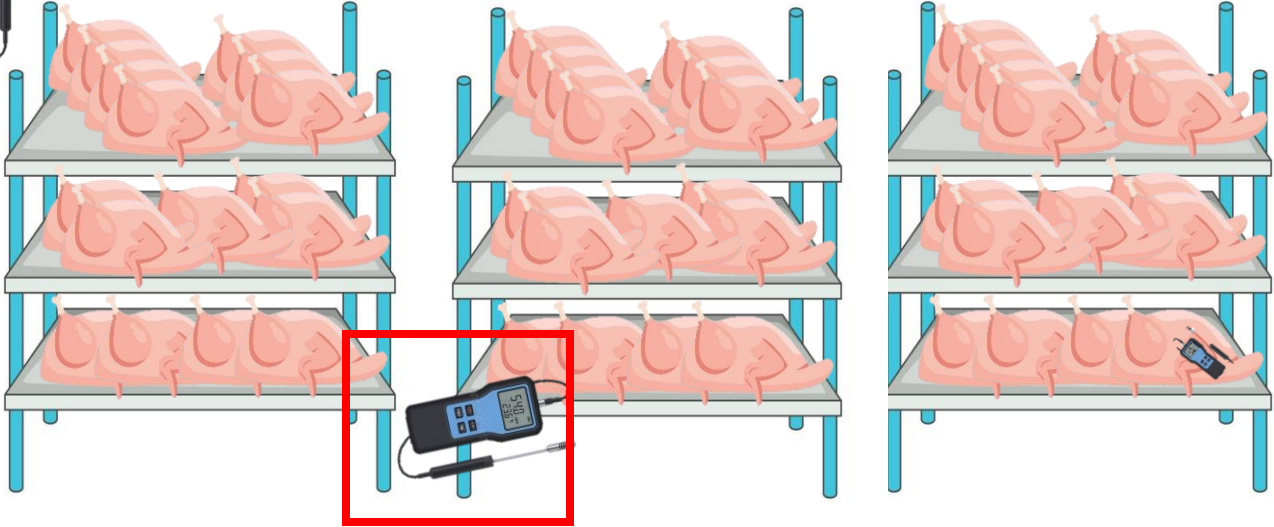




# SILL 6: Problem



Defrosting process



Phase 1

Temp 1  
Temp 2  
Temp 3

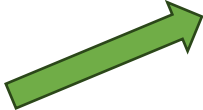


Phase 2



Phase 3

Temp 1  
Temp 2  
Temp 3



Quality problems

FLW

# SILL 6: Solution

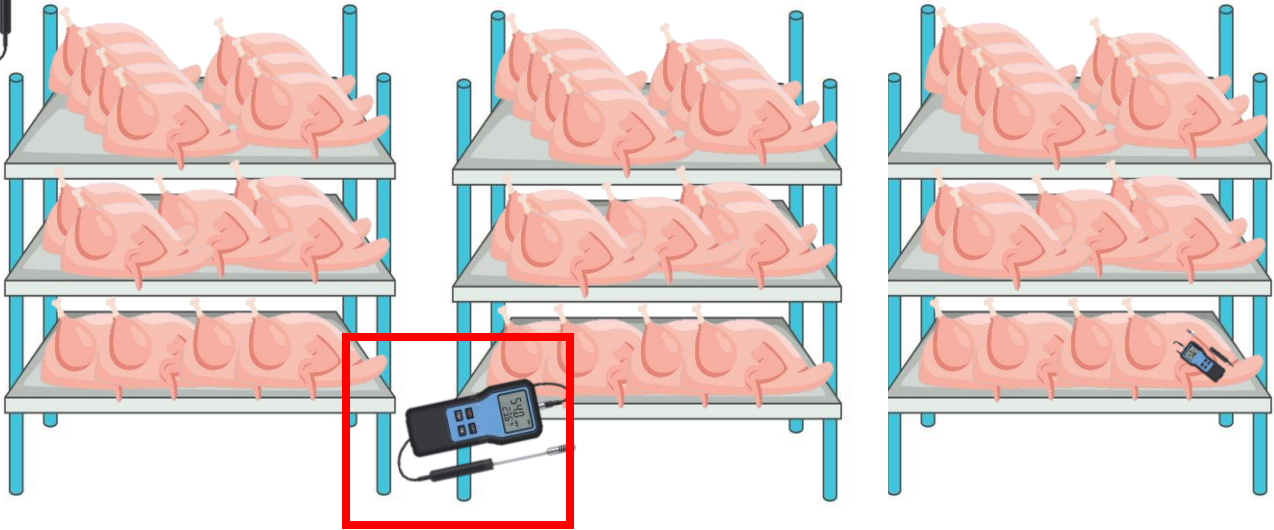


Defrosting process

ASINCAR

Aldelis

Orta



Phase 1

Temp 1  
Temp 2  
Temp 3



Phase 2



Phase 3

Temp 1  
Temp 2  
Temp 3



Phase identification



Anomalies detection



Alert system

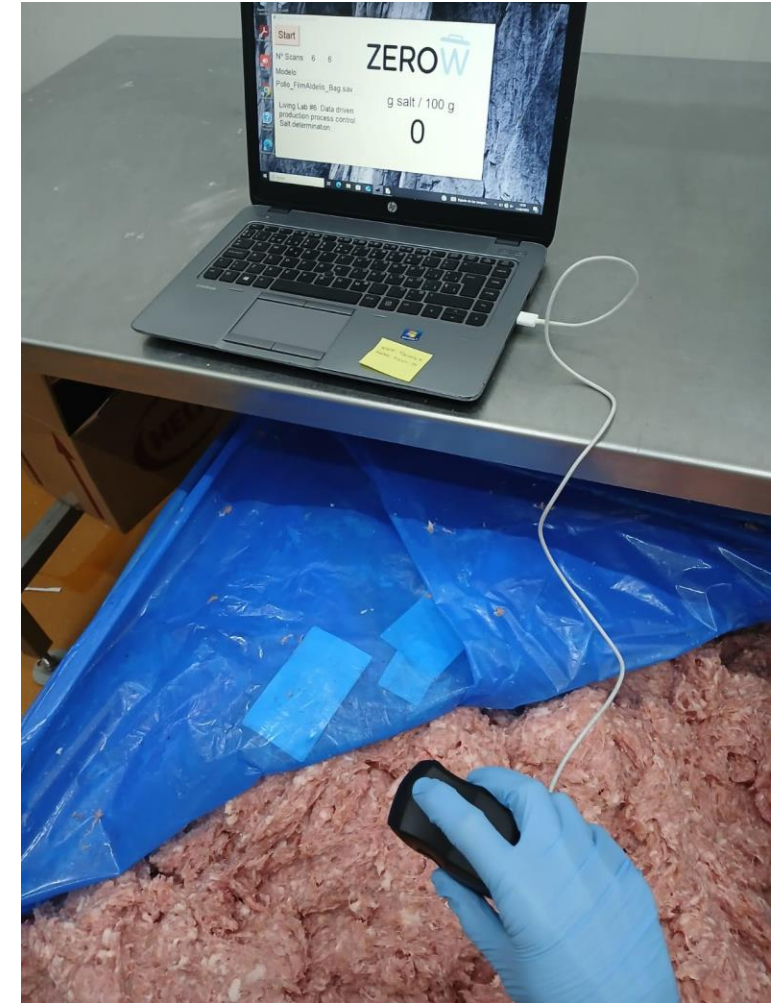
ZEROW



Funded by  
the European Union

# SILL 6: Progress and next steps

- Digital tools addressed to determine salt content on chicken and turkey production lines validated industrial level (TRL7).
  - Patent protection submitted Nov 2024 for chicken production line.
- Digital tool addressed to optimize defrosting process validated at relevant environment (TRL6).



# SILL 6: The ask

## CAPEX

- NIR sensor – 2500 €
- Installation (defrosting) – 1500 €
- Purchase algorithm license production line – 15000 €
- Purchase algorithm license defrosting – 15000 €
- Training and onboarding cost – 300 €

## OPEX

- Basic subscription: 1000 – 2500 € / year
- Premium subscription: 5000 – 10000 € / year
- Support/maintenance of the hardware: 50-300 € / year





# THANK YOU!

## Contact

☎ +34 985 744 518

✉ [armandome@asincar.com](mailto:armandome@asincar.com), [inesvi@asincar.com](mailto:inesvi@asincar.com)

💻 [www.asincar.com/en/](http://www.asincar.com/en/)

🌐 <https://www.linkedin.com/company/asincar/mycompany/>

ASINCAR

Aldelis

ita

# ZeroWaste

Systemic Innovations Towards a  
Zero Food Waste Supply Chain

## *Algae Solutions for Zero Food Waste*

ZeroW SILL 8

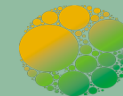
Helena Cardoso

R&D, Allmicroalgae

16/09/2025



SONAE MC



Allmicroalgae  
natural products

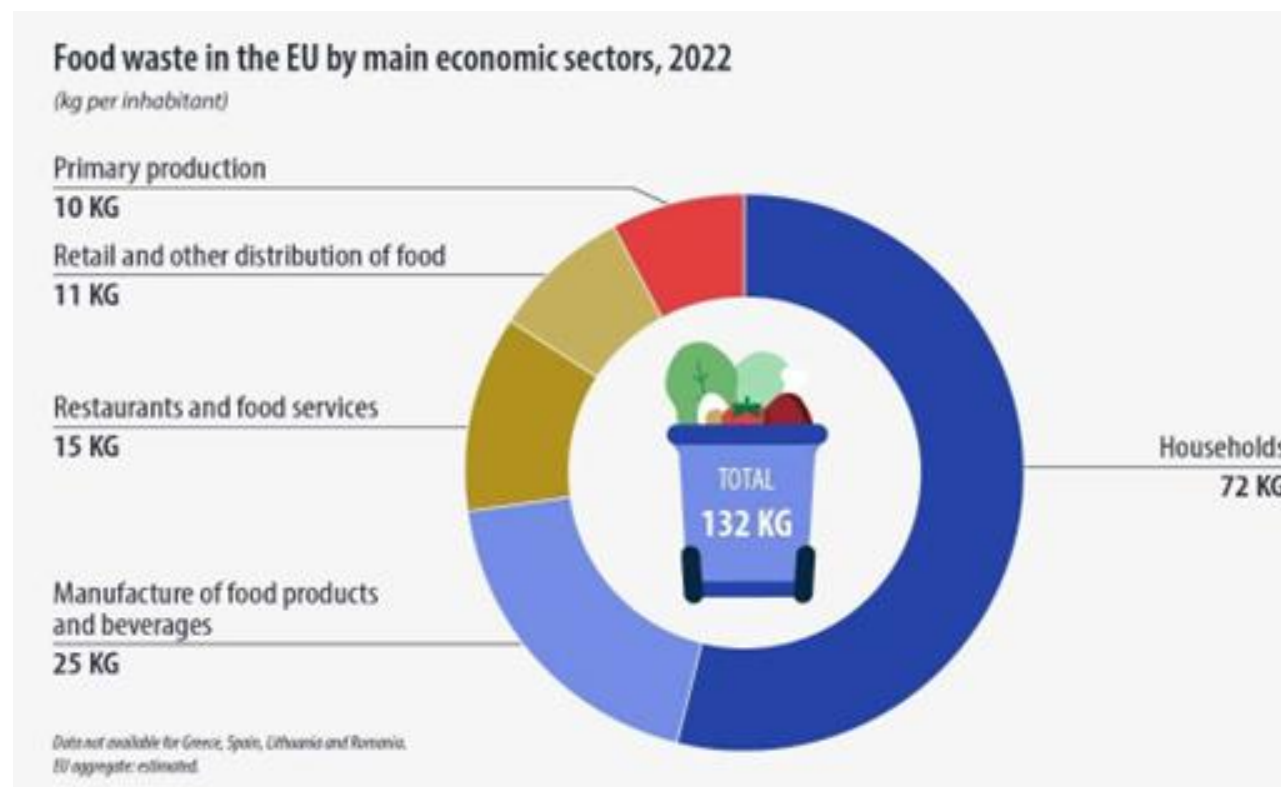


Universidade do Minho



# The Challenge

!! 59 M tons of waste generated in the EU every year!



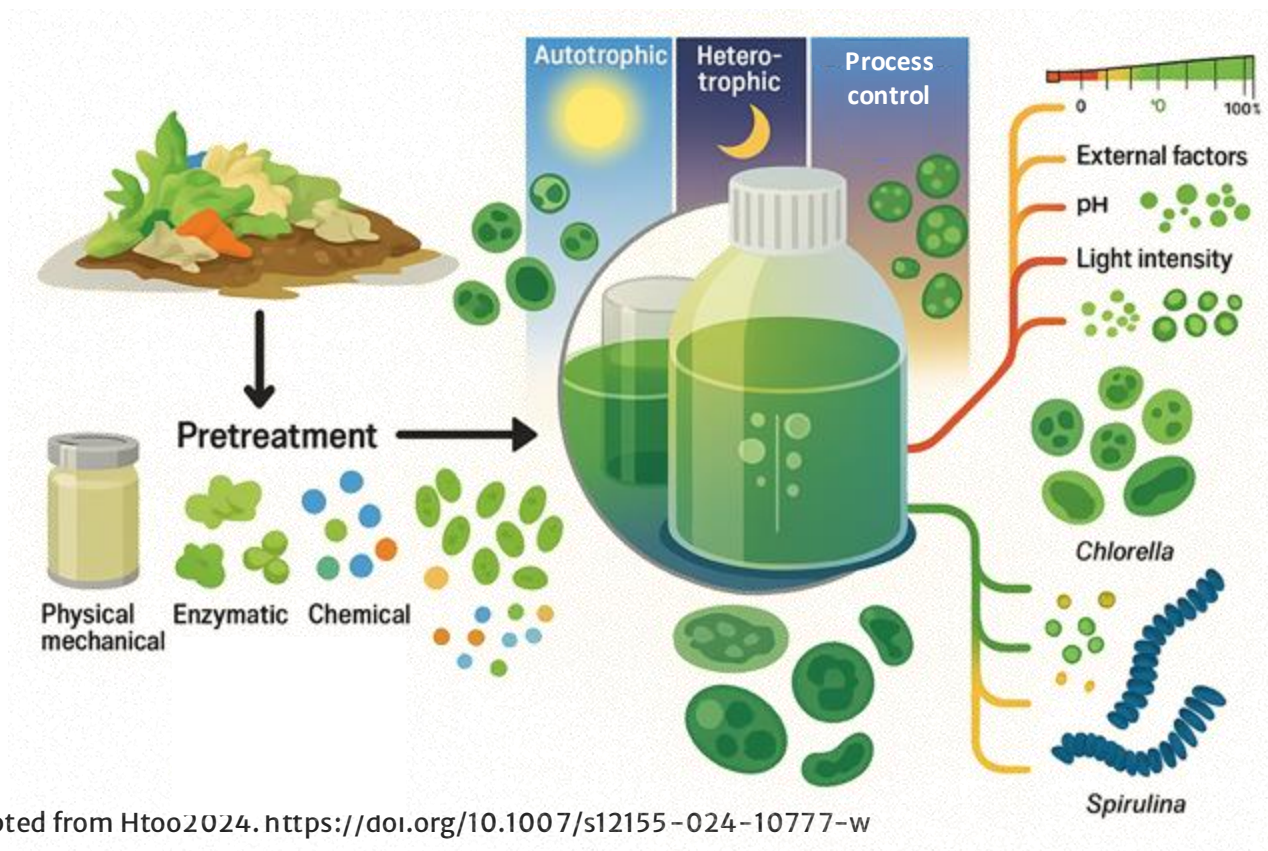
eurostat

... What if we can turn this waste into value instead of a burden?



# The Opportunity: Microalgae

- ✓ Reduce FW & cut microalgae production costs by recovering nutrients



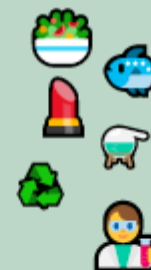
Adapted from Htoo2024. <https://doi.org/10.1007/s12155-024-10777-w>



**Rich in protein, lipids, carbohydrates, pigments**



**Alternative feedstock**



**Multiple applications:  
Food, Feed, Cosmetics,  
Biopolymers, Agriculture,  
etc**

- ✓ Reduce waste, cut production costs, get valuable biomass!



# How It Works: Waste → Resource → Revenue



✓ 34% weight reduction via dehydration = scalable logistics.

# Scaling-up the solution



✓ *Different microalgae species*



✓ *Different modes of production  
(auto- and heterotrophic)*

- ✓ *Pilot validated: nutrient recovery (N and P)*
- ✓ *Same growth performance as with synthetic media*
- ✓ *Cost reduction only considering economy of scale*
- ✓ *Reverse logistics support App was developed*

# Today's Solution, Tomorrow's Potential

## Today: Food Waste for Microalgae



### Time

Algae grow 10x faster than terrestrial crops



### Light and CO<sub>2</sub>

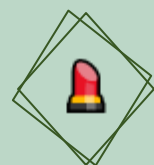
Algae use renewables and convert CO<sub>2</sub> into O<sub>2</sub>



### Resource efficiency

Requires less land, water, and electricity

## Future: Applications Pipeline



### Cosmetics

Validate bioactivity for skincare (ex. antioxidant)



### Biopolymers

Carbon nanodots for fluorescent bioimaging



### Regulatory Gate

Need to clarify “end-of-waste” and standard alignment

✓ *Scaling requires: Standards alignment + Cross-sector partnerships.*



# Who stands to win?

## ▼ Costs:

- Dehydrator operation
- Microalgae production (CAPEX/OPEX)
- Logistics & transport
- R&D (scaling, safety, optimisation)
- Marketing & awareness

## ▲ Revenues:

- Bioremediation services
- Sales of dehydrated food waste
- Sales of microalgae biomass and derived products



## EU Food Waste Reduction Targets (by 2030):

- -10% in processing & manufacturing
- -30% per capita in retail, food services & households
- Legally binding for all EU Member States

**SILL 8 helps deliver EU food waste reduction targets through circular algae valorisation.**



# Get in contact with SILL8

## Let's turn waste **into value**



✉ AMSILVA@mc.pt  
✉ pedrogeada@ceb.uminho.pt  
✉ helenacardoso@allmicroalgae.com



Allmicroalgae  
natural products

✉ info@allmicroalgae.com  
💻 www.allmicroalgae.com  
www.linkedin.com/company/allmicroalgae/

# ZeroWaste

Systemic Innovations Towards a  
Zero Food Waste Supply Chain

## Pitch SILL 9

Joris Wagenaar/ Maïke van Rooijen

Tilburg University, Wageningen University &  
Research



# SILL 9 Objectives

- Reducing FLW at consumer level → 9% of all bought food in The Netherlands
  - Approximately 150 euros per person per year → 2.700.000.000 euro per year
  - Consumers might be unaware of the FLW consequences
  - Poor planning

# SILL 9 Objectives

- Reducing FLW at consumer level → 9% of all bought food in The Netherlands
- Consumers might be still unaware of the FLW consequences
  - *Create a Food Label to inform consumers*
- Provide consumers with weekly recipes that reduce their food waste and impact
  - *From approximately 38 grams food waste per person per day (dinner) to significantly less grams food waste*



# TEAM

- Joris Wagenaar, Liana van der Hagen
  - Zero Hunger Lab, Tilburg University
- Maïke van Rooijen, Joke van Lemmen, Sander de Leeuw
  - Wageningen University

# Unawareness

- Food label containing several sources of information
  - Currently too many labels on products
  - 82% find it important to have information on food waste in a food label
- One food label combining:
  - Nutritional values (Open Food Facts Dataset)
  - Greenhouse gas emissions (National Institute of Public Health and Environment)
  - Food waste at consumer level (Netherlands Nutrition Centre)

# Labels

- Food score
  - Strict
  - Relative
  - Balance



Strict:



Relative:



Balance:



Strict:



Relative:



Balance:



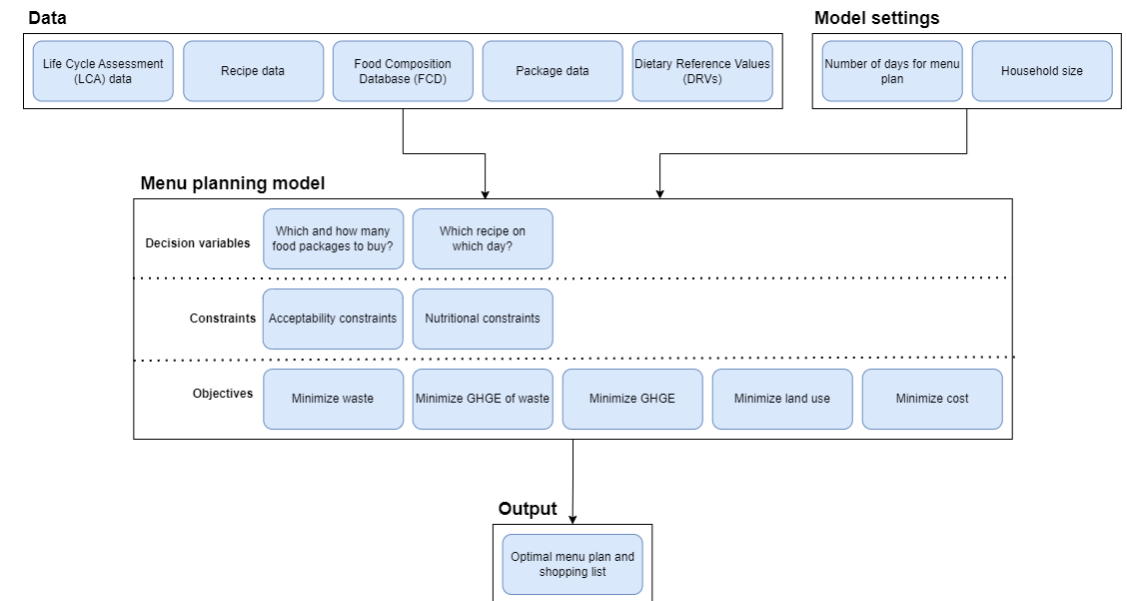
# Survey results

- Questionnaire:
  - 52% found relative label most understandable, followed by 30% balanced and 18% strict
  - 75% think they would reduce their food waste due to the label
  - 84% would more likely buy food in case our label indicates the product to be good



# Meal planning approach

- Poor planning is a reason of household food waste
- Formulate menu plans and shopping lists by selecting combinations of recipes based on retail package sizes to minimize:
- Food waste, Greenhouse gas emissions, costs



# Example

- Menu plan

Meal plan A	
Day 1	Kruidige rijst met tofu en abrikozen
Day 2	Linzensalade met walnoten en rucola
Day 3	Bulgur met groente, tofu en noten
Day 4	Notenrijst met aubergine

Estimated impact – meal plan A	
Greenhouse gas emissions	1412.64 grams CO2 eq
Waste	2 grams
Cost	2.47 euro

Shopping list - meal plan A			
Package name	pack_br_gr	price_unit	buy
AH Aubergine	400	1.39	4
AH Chinese kool	780	1.69	2
AH Linzen	400	1.35	2
AH Cherrytomaten	250	1.09	2
AH Radijs	100	0.99	2
AH Rucola	85	1.09	2
Vivera Gerookte tofu	200	2.09	2
AH Gedroogde abrikozen	250	2.99	1
AH Basis vloeibaar	750	1.99	1
AH Tomatenblokjes gesneden	400	0.69	1
AH Biologisch Volkoren bulgur	400	1.39	1
AH Zilvervliesrijst	1000	1.85	1
AH Walnoten ongebrand	500	7.39	1
AH Rozijnen zongedroogd	750	1.95	1
AH Wokgroente Chinees	400	2.39	1
AH Wokgroente Japans champignons peultjes	400	2.49	1
AH Ongebrande cashewnoten	500	6.19	1
AH Natuurazijn wit	1250	0.45	1
AH Pijnboompitten	150	7.48	1
AH Olijfolie mild	1000	6.59	1
Coppelia Zonnebloemolie	2000	7.49	1
AH Uien	2000	1.79	1
AH Verse geitenkaas naturel 45+	125	1.99	1
AH Biologisch Vegan tofu naturel	375	1.49	1

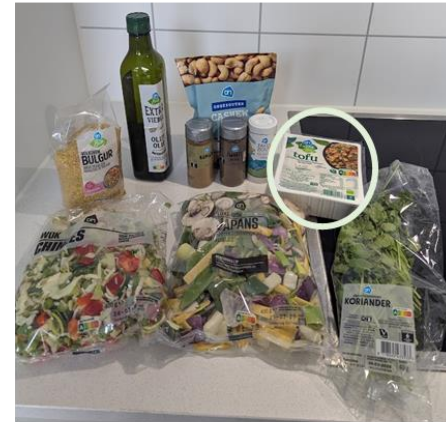
# Example



Day 1



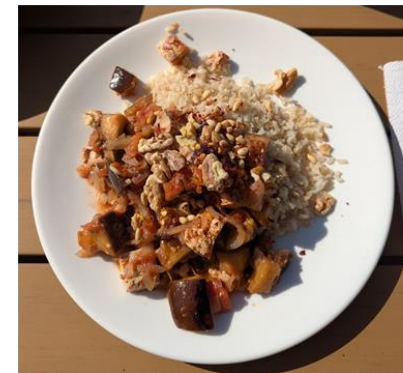
Day 2



Day 3



Day 4



## About

Informing and nudging consumers to make better choices through reverse (dietetics) and forward (FLW, sustainability, affordability) optimization. [Read more](#)

Meal plan

Products


Recipes



# What is needed?

- Funding needed for:
  - Technical team for creating application for the meal planning model
    - Development
    - Maintaining
  - Test in real-life with supermarkets
    - Labels
    - Meal planning model

# Contact

 +31651003202

 j.c.wagenaar\_1@tilburguniversity.edu



# ZeroWaste

Systemic Innovations Towards a Zero Food  
Waste Supply Chain

## From Innovation to Investment



Danijel Pavlica (F6S)

Mirana Khanom (F6S)

*16 September 2025*

[danijel@f6s.com](mailto:danijel@f6s.com)

[mirana@f6s.com](mailto:mirana@f6s.com)





# THANK YOU!

## From Innovation to Investment