Integrating innovative TECHnologies along the value Chain
to improve small ruminant welfARE management

TechCare final conference

Experience from other projects

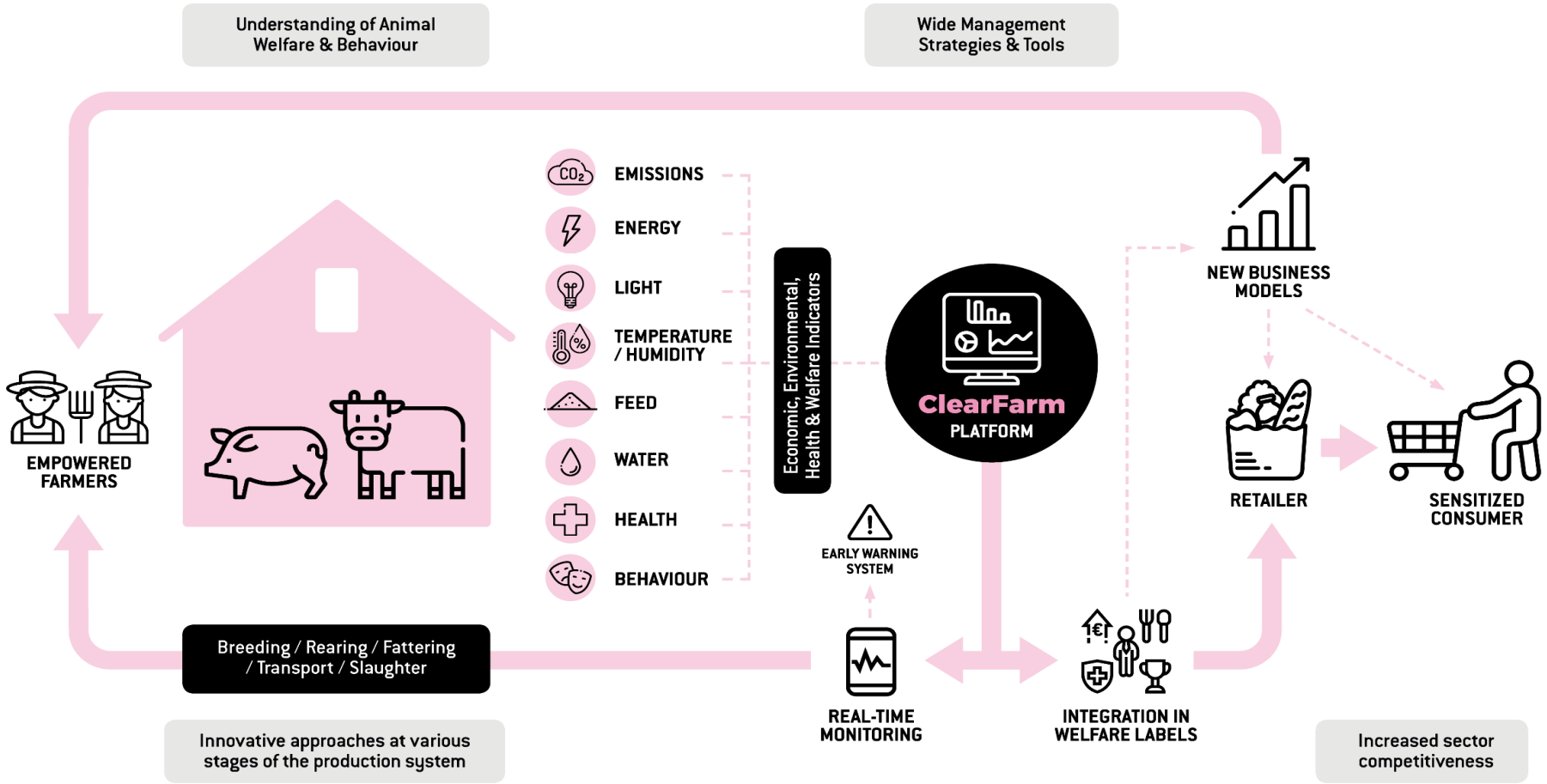
ClearFarm

Pol Llonch

17 - 18 June 2025

University Foundation - Brussels

ClearFarm


Understanding of Animal Welfare & Behaviour
Wide Management Strategies & Tools
EMPOWERED FARMERS
EMISSIONS
ENERGY
LIGHT
TEMPERATURE / HUMIDITY
FEED
WATER
HEALTH
BEHAVIOUR
Economic, Environmental, Health & Welfare Indicators
ClearFarm PLATFORM
NEW BUSINESS MODELS
RETAILER
SENSITIZED CONSUMER
EARLY WARNING SYSTEM
REAL-TIME MONITORING
INTEGRATION IN WELFARE LABELS
Breeding / Rearing / Fattering / Transport / Slaughter
Innovative approaches at various stages of the production system
Increased sector competitiveness

ClearFarm

INPUT DATA

Sensor data / PLF

Collars (Connecterra)	**5**
Rumen bolus (Smaxtec)	**20**
GPS (Herd-itt)	**1**
Cooperatives (Covap)	**11**

Other sources

Vet records	**15**
Milking robots	**2**
Cortisol data	**2**
Environment	**8**

AGGREGATED DATA

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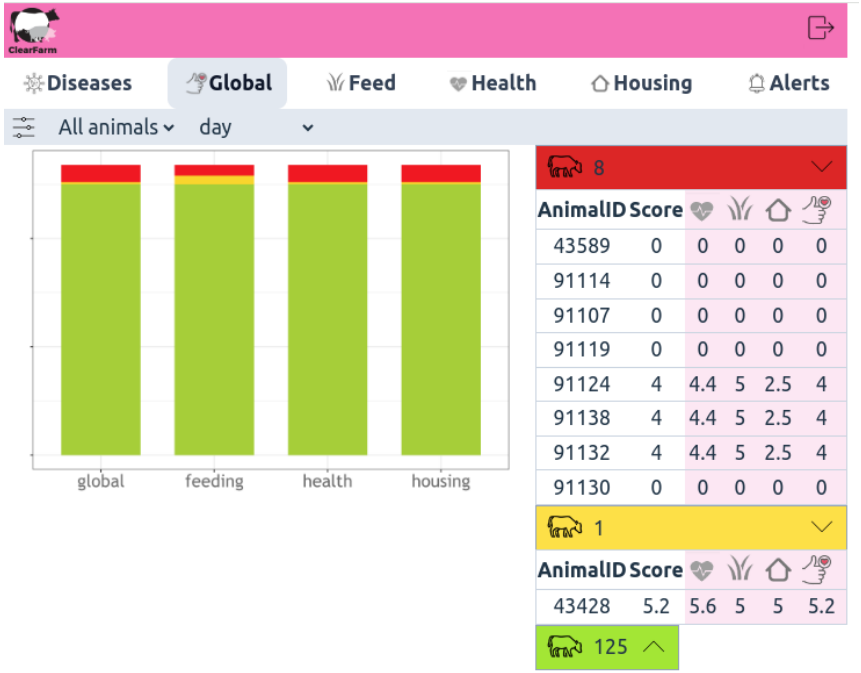
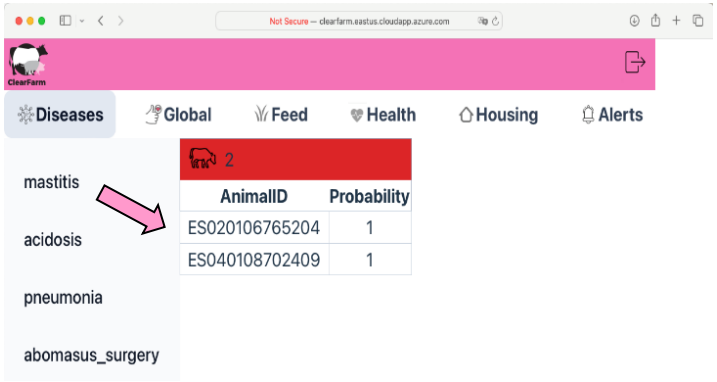
Global Welfare Score



Diseases Alert



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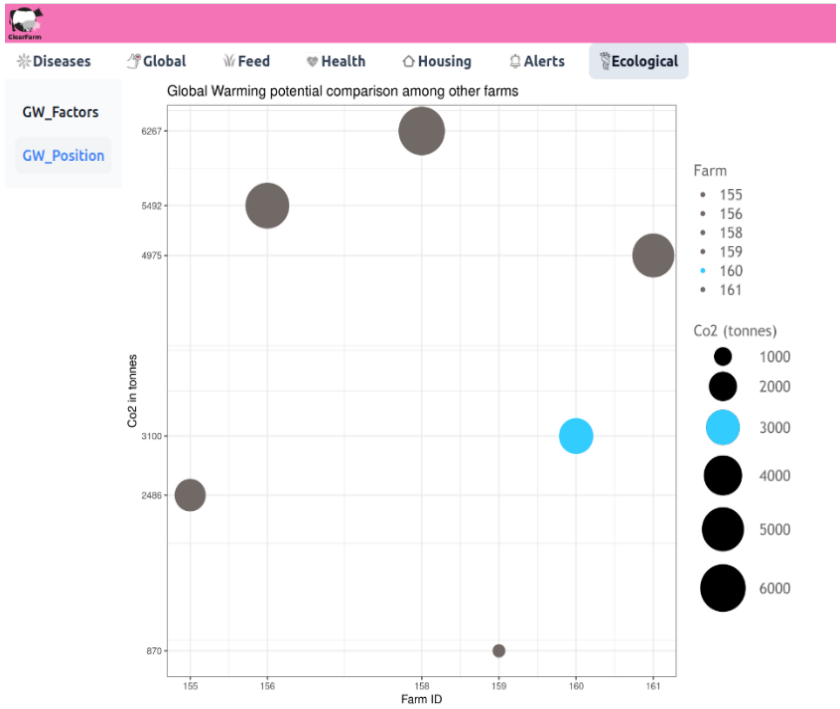
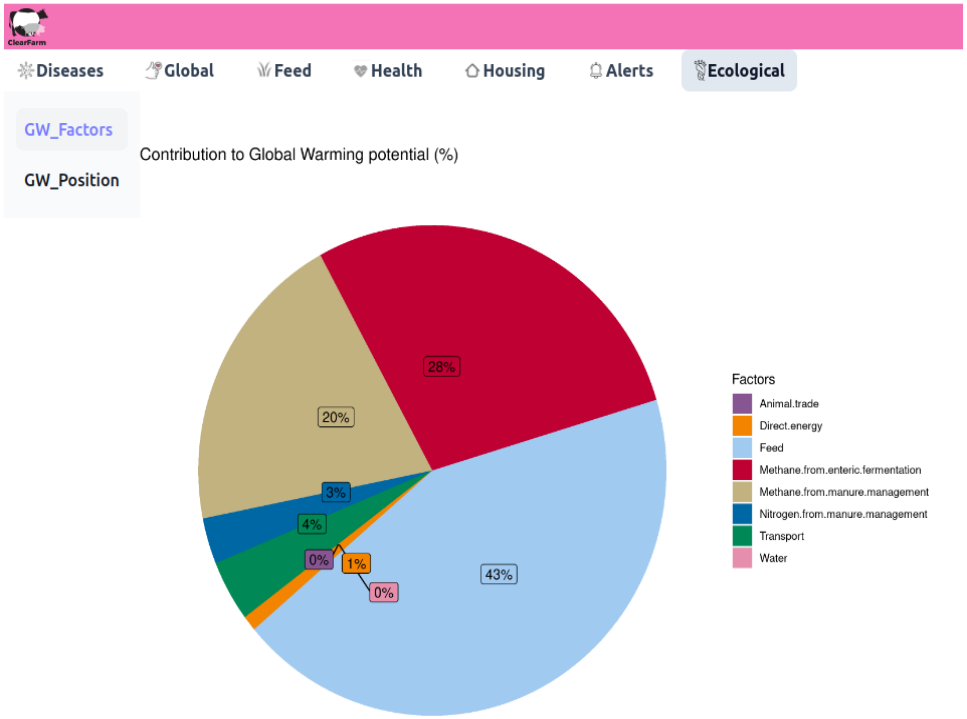
Environmental Impact & Sustainability





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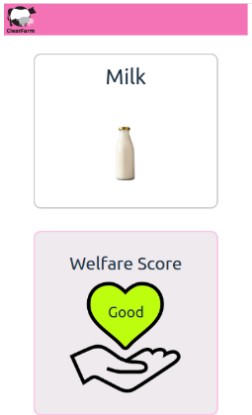

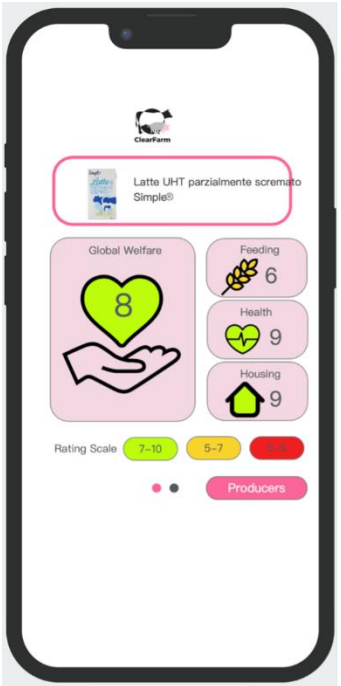

Beter Leven
★★★
Dieren bescherming

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Lessons learned

- An integrated assessment of farm animal welfare using sensor technologies is possible (but still few challenges!)
  - × Need for more **validated** technologies
  - × Attention towards **all domains** of animal welfare (not only health)
- It may benefit farmers (refined management) but also be used for other purposes, such as labelling.
- We should be creative in developing new (or adapted) business models ⟶ farmers don't necessarily have to pay for technology
- Future developments should be made combining all stakeholders' perspectives: farmers needs, technology availability and consumers' expectations.

TECH CARE

Integrating innovative TECHnologies along the value Chain to improve small ruminant welfARE management

Experience from other EU projects Part 2

17 - 18 June 2025
University Foundation - Brussels

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 862050

- Digi4Live (Jarkko Niemi – LUKE Finland)

- aWISH (Bas Rodenburg - Utrecht University, NL)

TECH CARE
Integrating innovative TECHnologies along the value Chain to improve small ruminant welfARE management

TechCare final conference
17 June 2025

Luke
NATURAL RESOURCES INSTITUTE FINLAND

Experience from Digi4Live project

Digi4Live - Supporting the potentials of digital, data-driven solutions for livestock tracking

Jarkko Niemi & Digi4Live consortium
Research Professor
Natural Resources Institute Finland (Luke)
jarkko.niemi@luke.fi

Funded by the European Union

Digi4Live

Digi4Live in a nutshell

- Horizon Europe Coordination and Support Action
- Empowers the European livestock sector to benefit from digital and data-generating technologies
- 11 work packages and 15 partners ➔➔
- Coordinated by Natural Resources Institute Finland (Luke)
- Duration: January 2024 – June 2028

Funded by the European Union

Why Digi4Live?

- Inadequate data harmonisation, standardisation & interoperability.
- Limited technology use and indeficiency of solutions for animal tracking, health and policy monitoring
  ➔Evidence about data-driven solutions.
- Digital technologies can benefit administrative & policy processes.
- Boosting collaboration between actors.

Funded by
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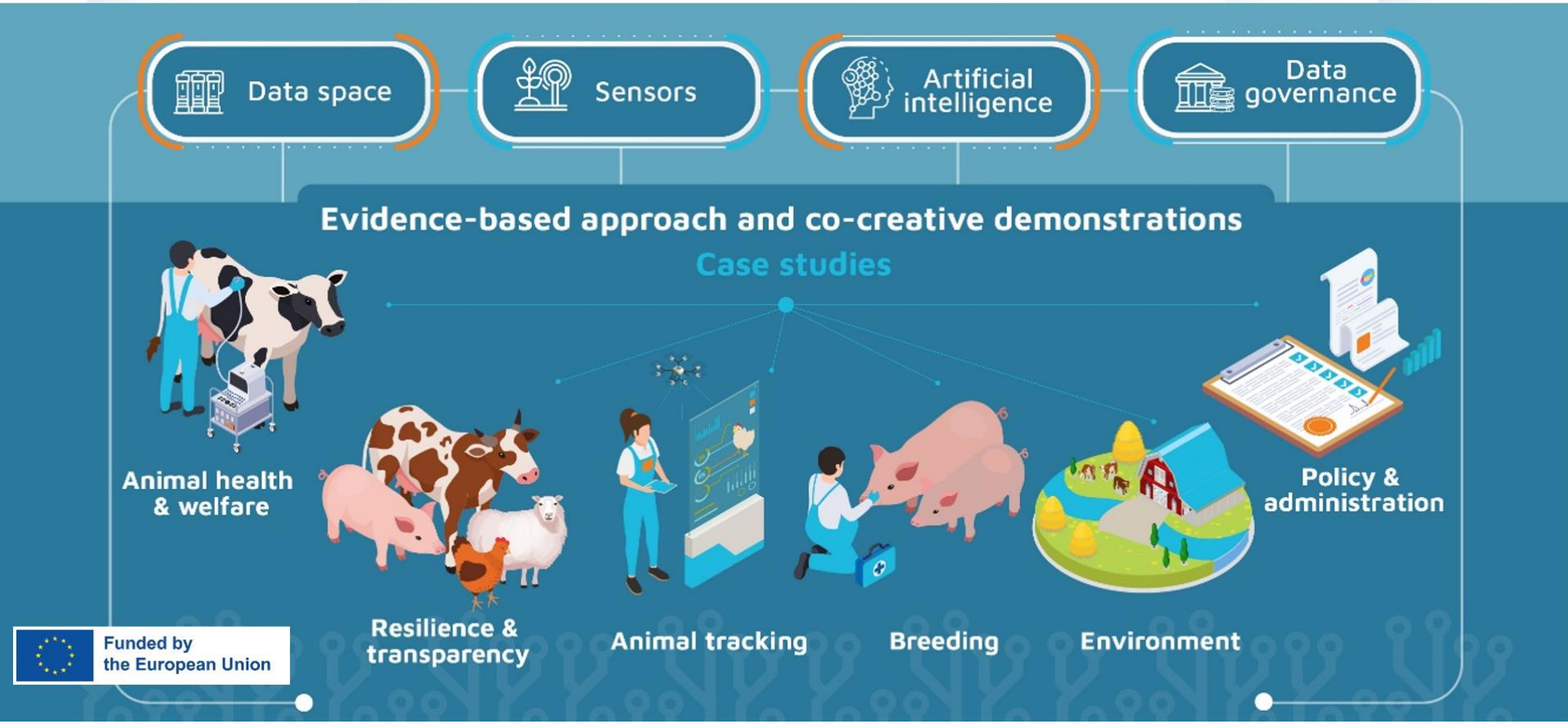
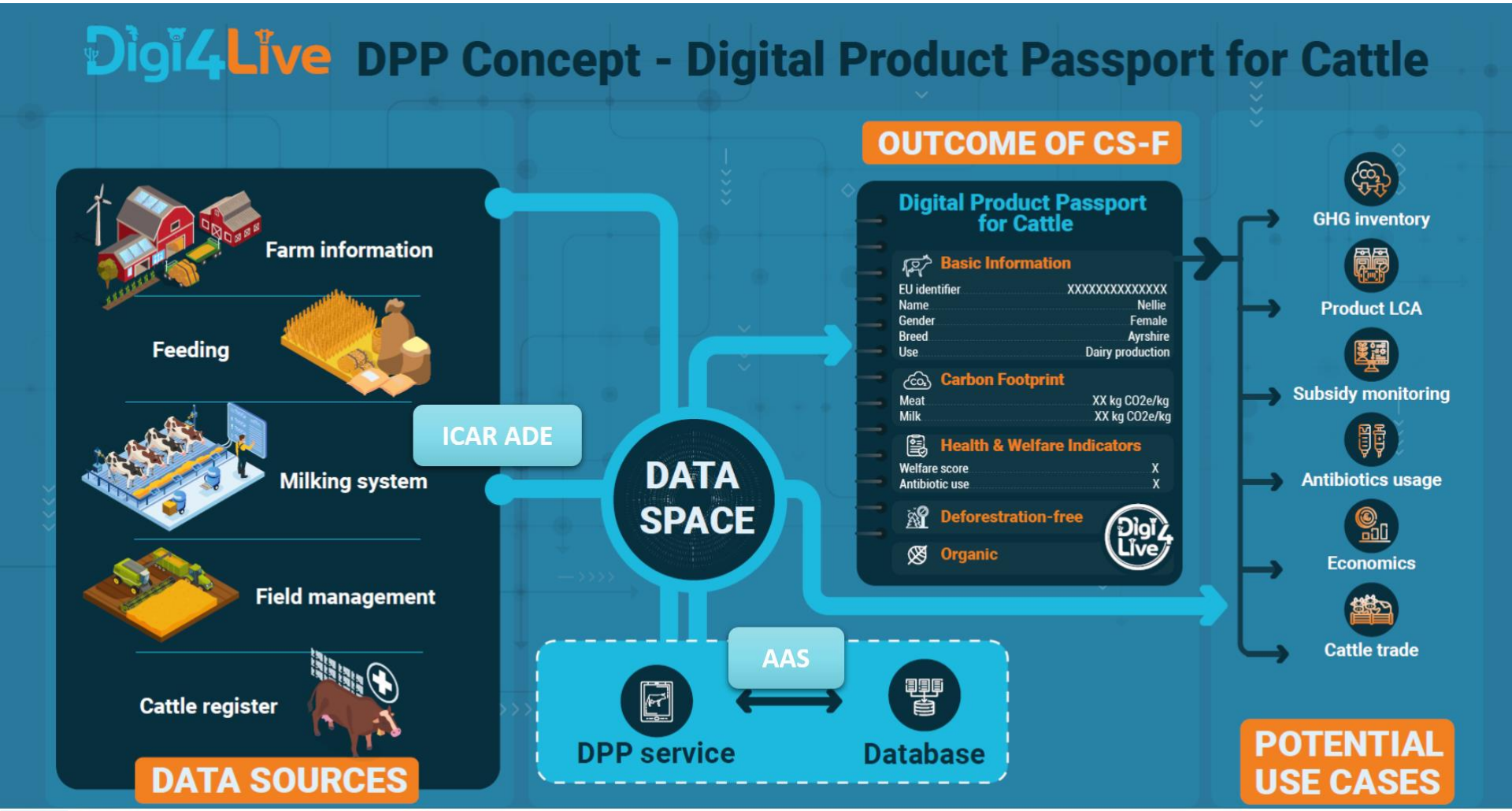
Six co-created case studies showing the benefits of digitalisation and wider data use



Data collection

- Case studies address various aspects of using **existing data** already collected on farms/by sensors
- We first develop a concept, which is then tested with a dataset, and finally upscaling is examined.
- Approaches to obtain and utilise data vary, as these examples show:
  - Joins forces with private companies and farms to obtain and connect animal welfare data from farms, sensors, slaughterhouse and production monitoring, links with an exiting project.
  - Ues machine vision (i.e. AI) and an existing farm network: The predictive models of these technologies are sensitive to environmental conditions, so various conditions are included
  - Utilises Walk-over-Weighing project for sheep as an illustrative example on how data can be utilised in animal breeding: Focus on data quality and data filtering.
  - For digital product passport, use data from milking systems, feeding devices, various sensors measuring health and welfare, farm management information systems & registries

Funded by the European Union



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An example: CS-C: Robust AI for sensor-based animal tracking

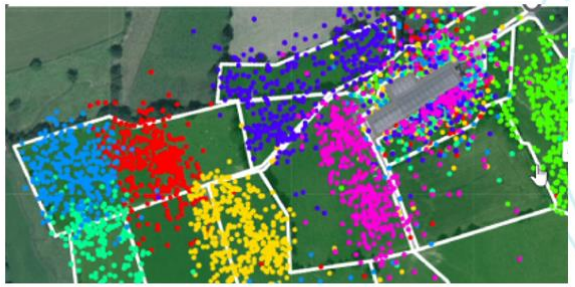
Dong Liu, Cui Gao, Tomas Norton, **KU Leuven** & Clément Allain, Adrien Lebreton, Laurence Depuille, **Idele**

Computer vision tracking of pigs to generate animal welfare KPIs

- Long-term pig tracking, an existing dataset (30+ farms)
- Behaviorial data (e.g., tail biting, fighting)
- Camera setup in 3 stakeholders
- Smart labelling tool development
- Explore the transferability and scalability of AI algorithm

Sensor-based grazing traceability of dairy cows

- Track dairy cow with GPS sensors and AI models to ensure grazing traceability
- 6 farms currently involved + historical GPS data from 20+ farms available.
- Various on-farm conditions are considered
- GPS data + reference data



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Join our thematic expert panels (TEPs)

https://digi4live.eu/tep/

Data interoperability & standardisation (TEP-I)

State-of-the-art digital tools & technologies (TEP-T)

Societal, regulatory & legal issues (TEP-R)

Data sharing & exploitation (TEP-S)

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Thank you!

digi4live.eu

Project coordinator: Research professor Jarkko Niemi
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Digi4Live
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aWISH
ANIMAL WELFARE INDICATORS AT THE SLAUGHTERHOUSE

The aWISH project: Animal Welfare Indicators at the SlaughterHouse

OVERVIEW PROJECT

Prof. Bas Rodenburg

Funded by the European Union

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General

aWISH
ANIMAL WELFARE INDICATORS AT THE SLAUGHTERHOUSE

aWISH

Horizon Europe project
Research and Innovation Action

8 000 000 € budget

28 partners | **11** countries | **6** pilots

01 Nov 2022 - 31 Oct 2026

Partners

aWISH
ANIMAL WELFARE INDICATORS AT THE SLAUGHTERHOUSE

Utrecht University
fbn
ILVO
consulai
THÜNEN
UBITECH
Innotech
BioSense
BATALLÉ
ITAVI
WHITE RESEARCH
CLK GmbH
Bildverarbeitung & Robotik
UNIVERSITY OF COPENHAGEN
Vion FOOD GROUP
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INSTITUTE OF GENETICS AND ANIMAL BIOTECHNOLOGY of the Polish Academy of Sciences
UAB Universitat Autònoma de Barcelona
vetmeduni
EUROGROUP FOR ANIMALS
GROSSFURTNER
PLUKON food group
carnex
INNOVACC
nunasolutions

General aim

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ANIMAL WELFARE INDICATORS AT THE SLAUGHTERHOUSE

aWISH

Large-scale automated **welfare monitoring** of **animal-based indicators** at the **slaughterhouse**

Objectives

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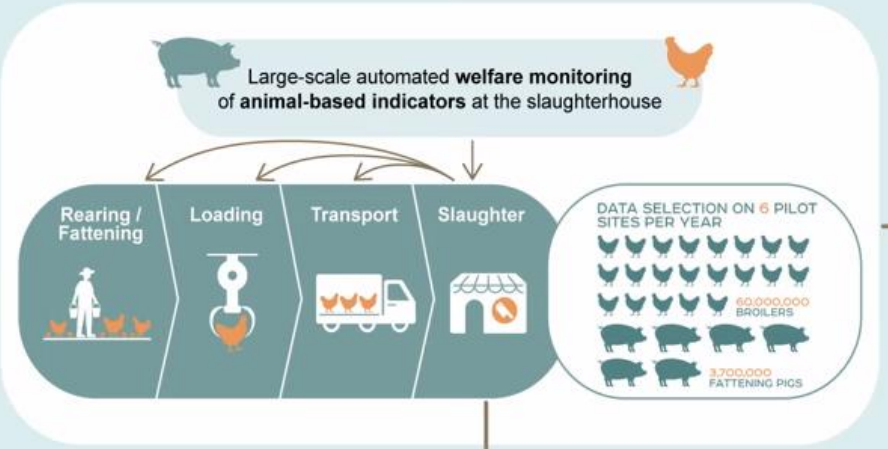

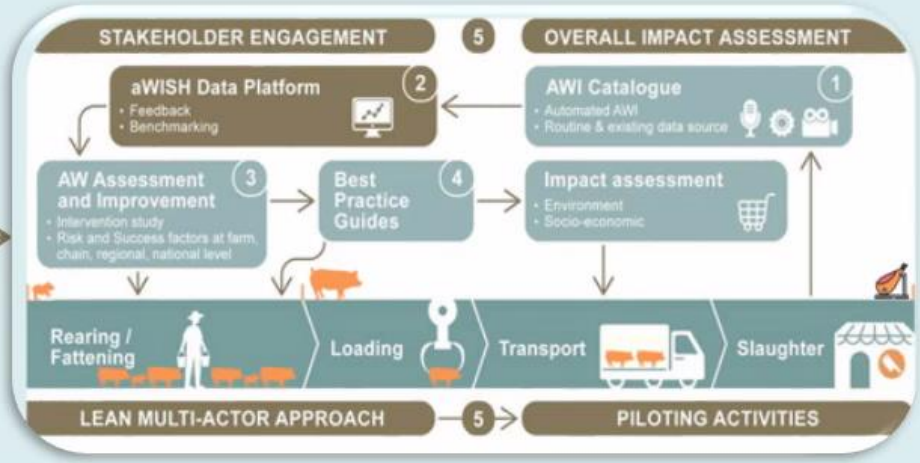

70 novel animal welfare indicators, mainly at slaughter, inclusive routine data

stress vocalization / pain; bruises / skin lesions; liver / lungs; wing fractures; foodpad dermatitis; tail biting; DOA / condemnations

Specific objectives

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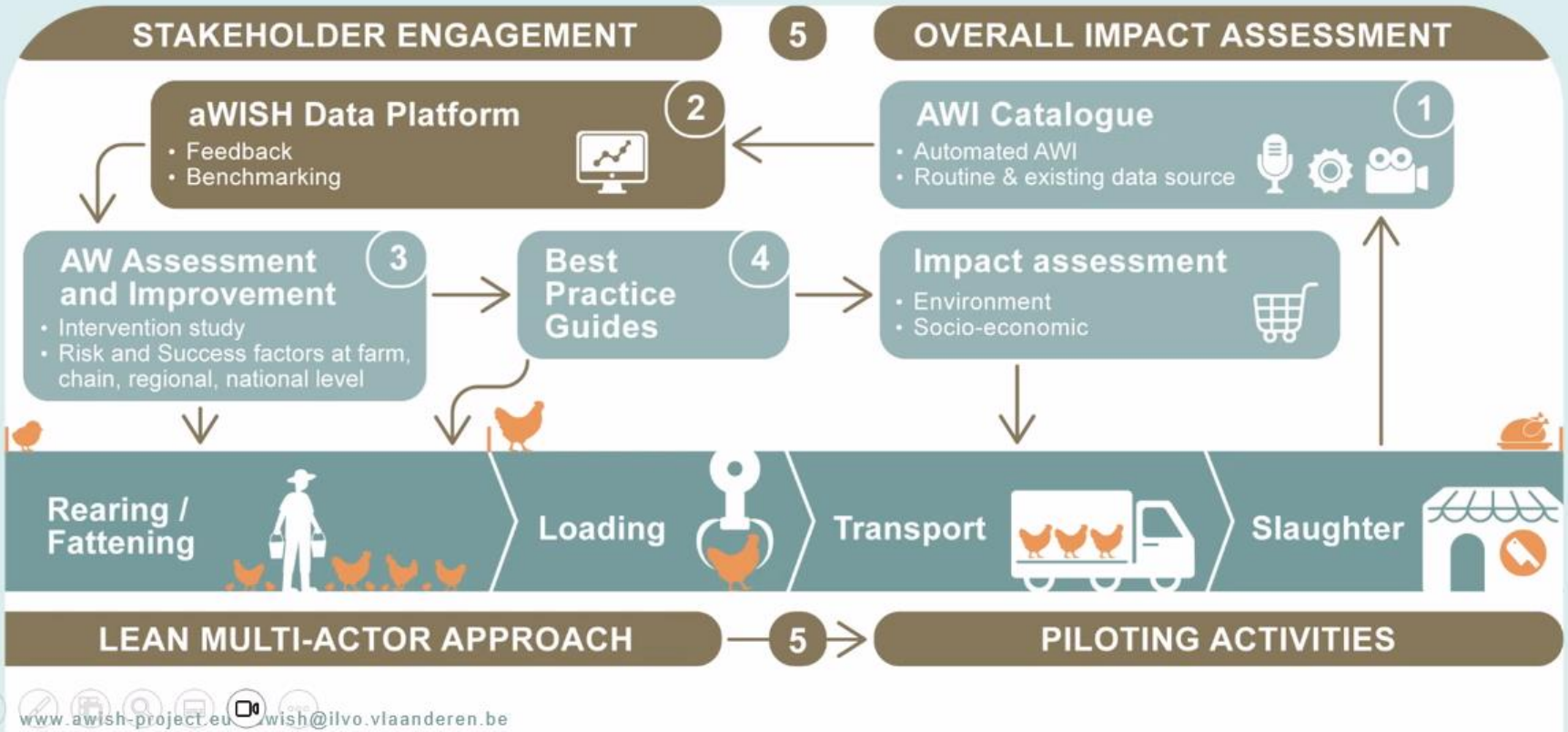

Pilots

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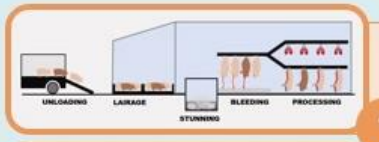
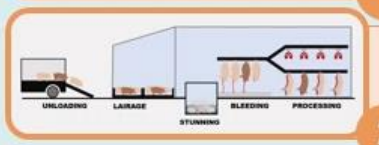


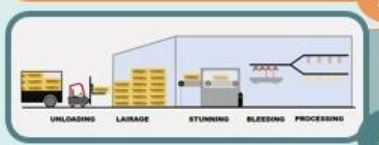
1

Pilot lead: Vion
Sci. lead: UU
1st phase pilot



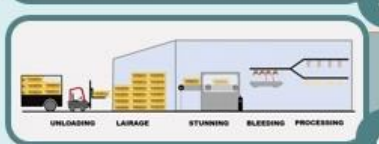
2

Pilot lead: Batallé
Sci. lead: UAB
1st phase pilot



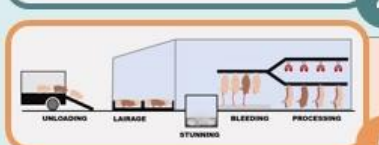
3

Pilot lead: Plukon – Duc
Sci. lead: ITAVI
1st phase pilot



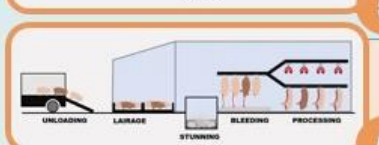
4

Pilot lead: Plukon – Sieradz
Sci. lead: IGBZ PAN
1st phase pilot



5

Pilot lead: Großfurtner-Higelsberger
Sci. lead: Vetmeduni
2nd phase pilot

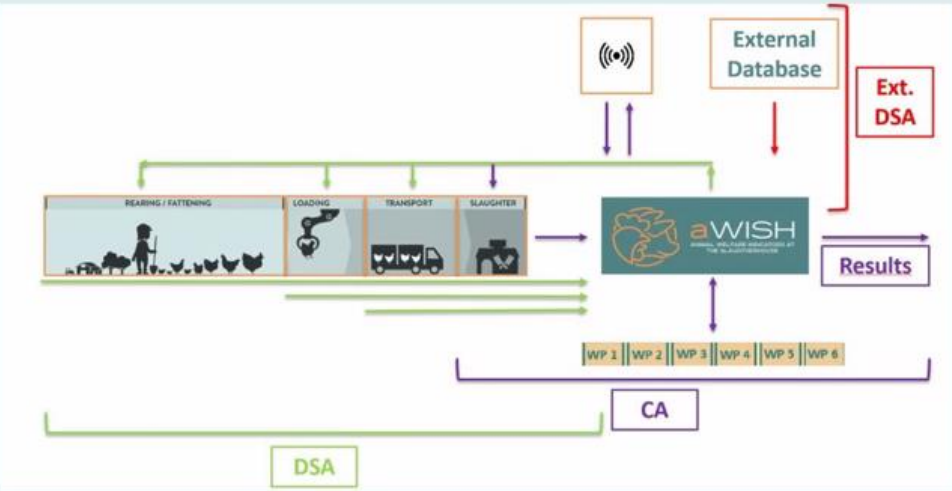


6

Pilot lead: Carnex
Sci. lead: Biosense
2nd phase pilot

Welfare data & alerts

- Central aWISH data platform to share and visualize welfare data
  - Farmers
  - Catchers (broilers)
  - Transporters
  - Slaughterhouses
  - Researchers



- Access to own data
- Researchers / pilot managers: access to aggregated anonimized data

Example: tail length

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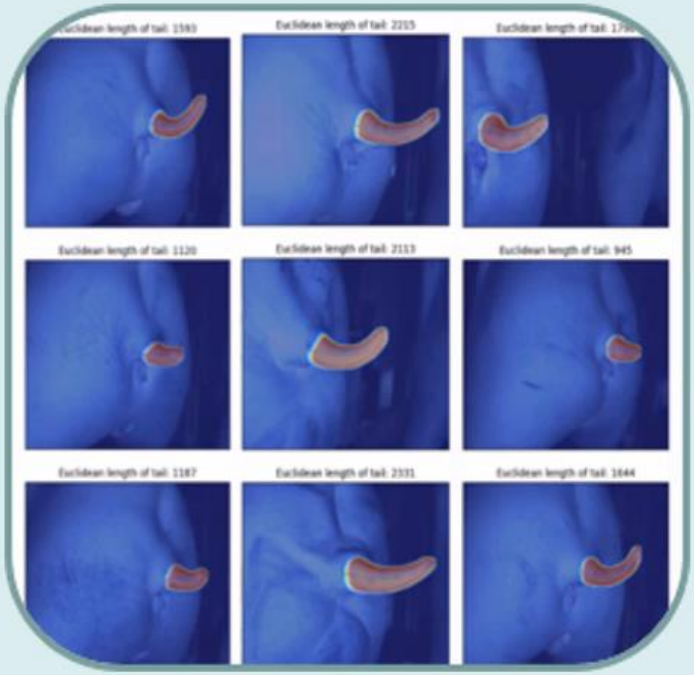
- Tail length data pilot 1(NL)
  - 3.261 records
- Two 3D Camera's after the first flame oven
- Data uploaded to the aWISH data platform



Example: tail length

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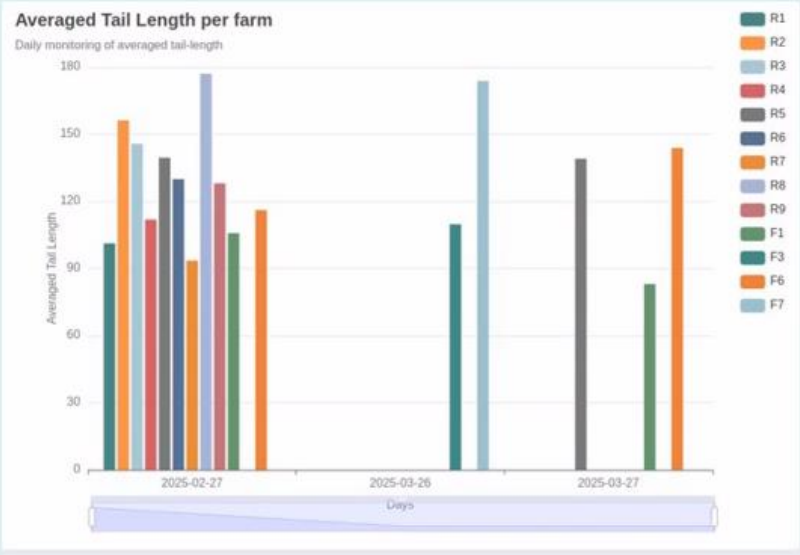
ANIMAL WELFARE INDICATORS AT THE SLAUGHTERHOUSE

- Tail length data pilot 1(NL)
  - 3.261 records
- At farm and batch level
- Monitor development towards pigs with intact tails: measure tail damage as well



Feedback loop: improve

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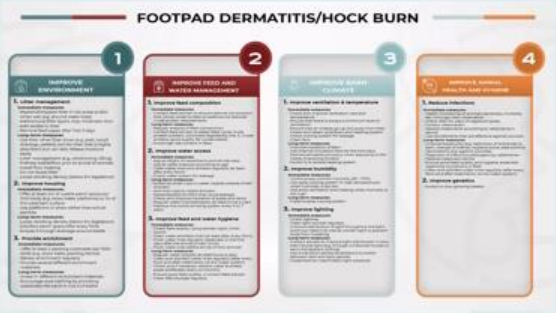
- Pilots and stakeholders can monitor progress over time and set goals (could also create alerts)

- Best Practice Guides available to improve performance



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Stay up to date?
Join the expert panel?

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This project has received funding from the European Union's Horizpn Europe Research and Innovation Program under Grant Agreement No. 101060818

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