1st EAAP Conference on Artificial Intelligence 4 Animal Science

Use of sensors, vision technology and AI to assess animal welfare, carcass and meat quality in a pig production chain and processing plant

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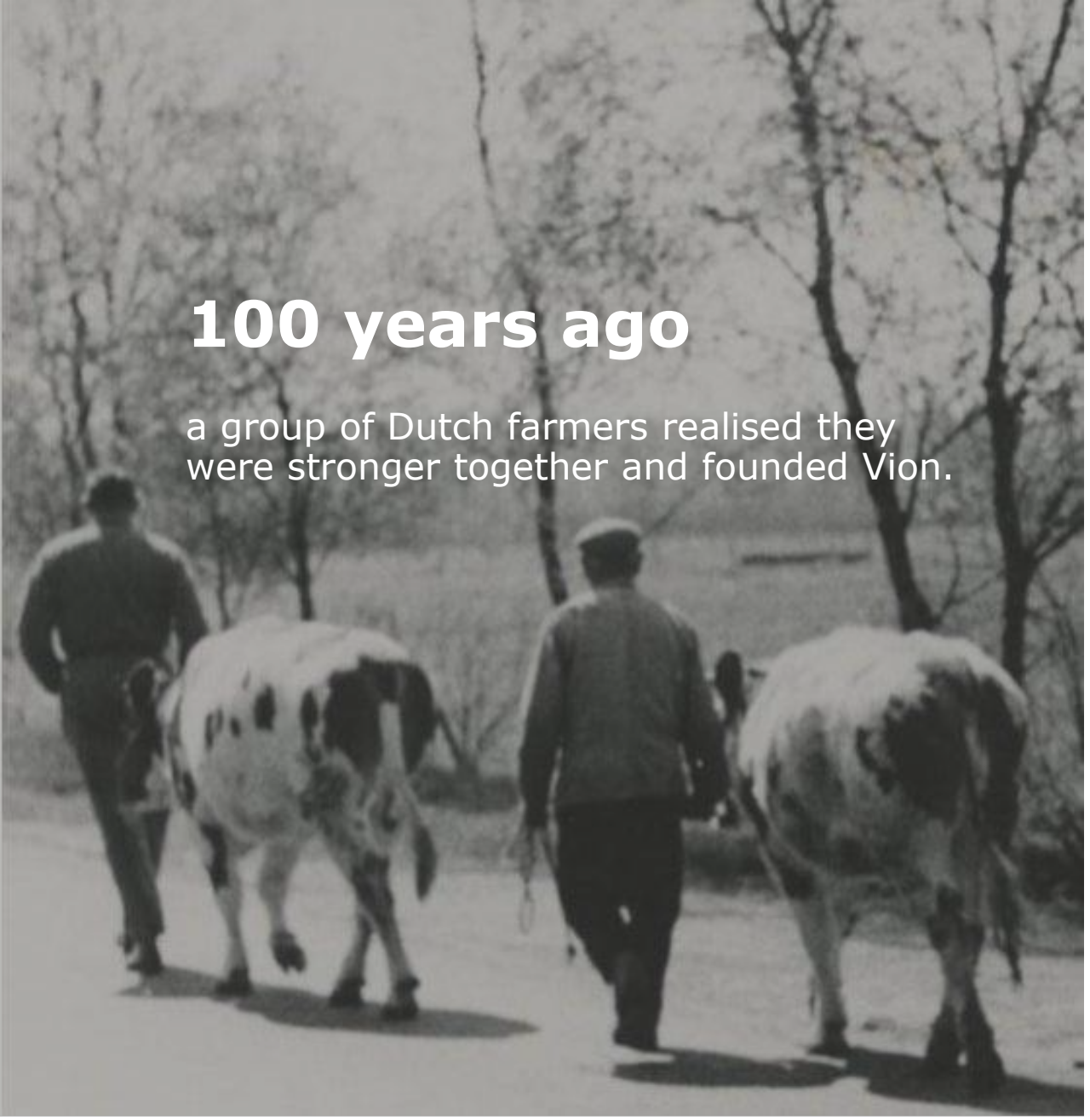
4th June 2025

Vion FOOD GROUP

Food that Matters



100 years ago

a group of Dutch farmers realised they were stronger together and founded Vion.

Today:

We work with over
11,000 employees

engage over
55,000 farmers

feed over
100 mln. people

and have a revenue of
5.3 billion euros

Our ambition is to become the most sustainable meat & plant-based company in the industry by 2030

Vion focuses on entire animal production chain

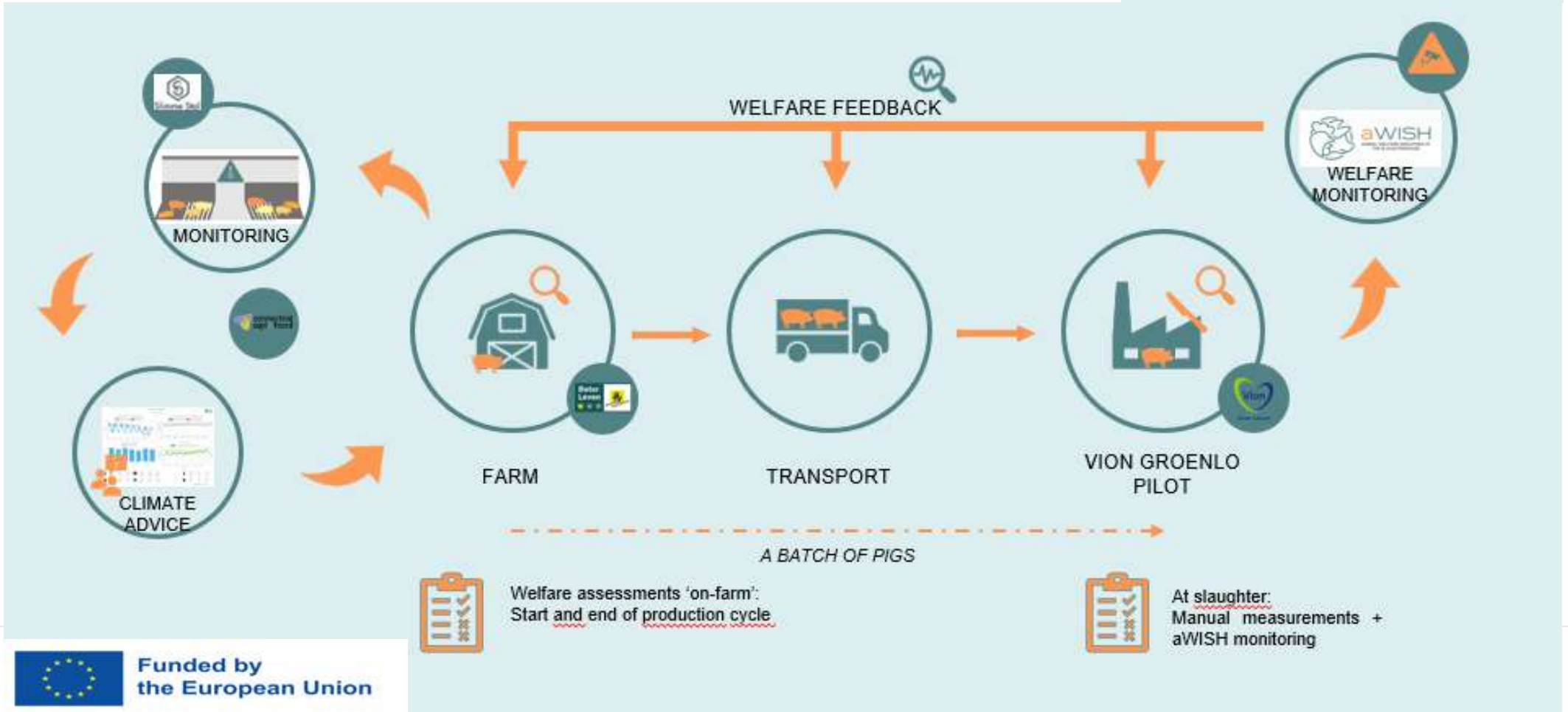
Improving sustainability requires collaboration across the chain

Improving animal welfare requires collaboration across the chain

Improving efficiency and valorisation requires collaboration across the chain

Snapshot of vision, sensor and AI technology use across Vion's production chain

Multiple national and EU funded research projects: aWISH EU project, Tailscan EU project, Smart Barn, Resilient Pig, Smart Pig Production Chain, etc.



Funded by the European Union

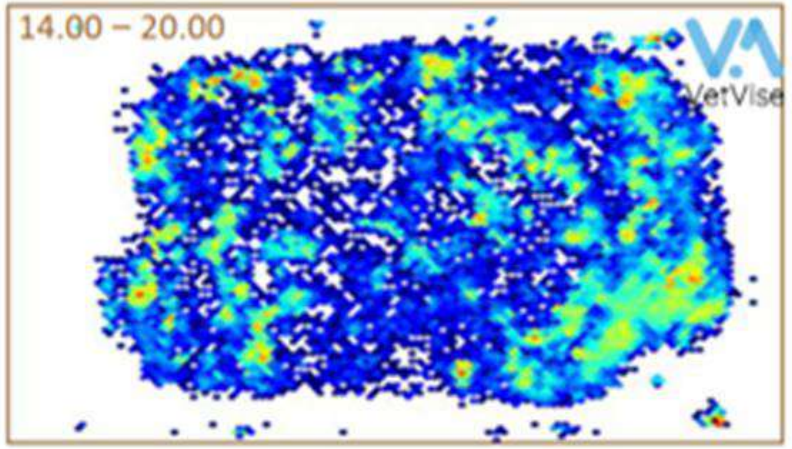
Pig behaviour and health analysis by cameras on farm

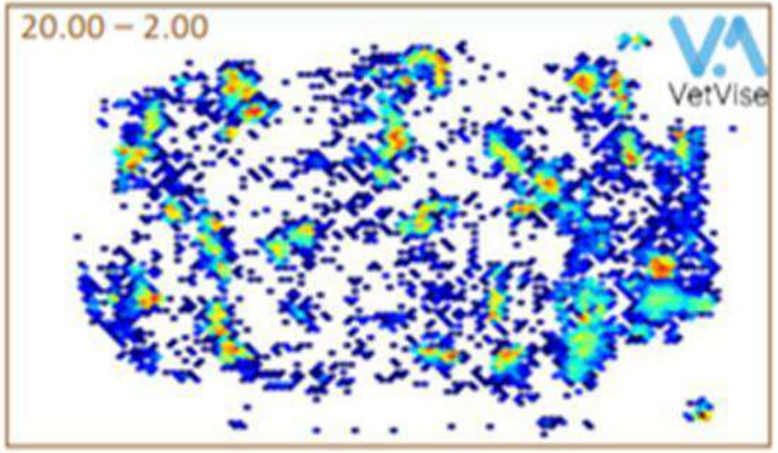
Af en toe varken aanwezig

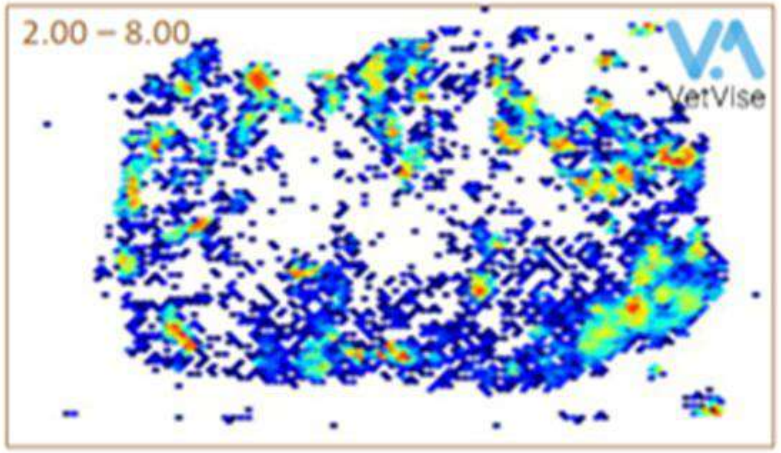
Continu varken aanwezig

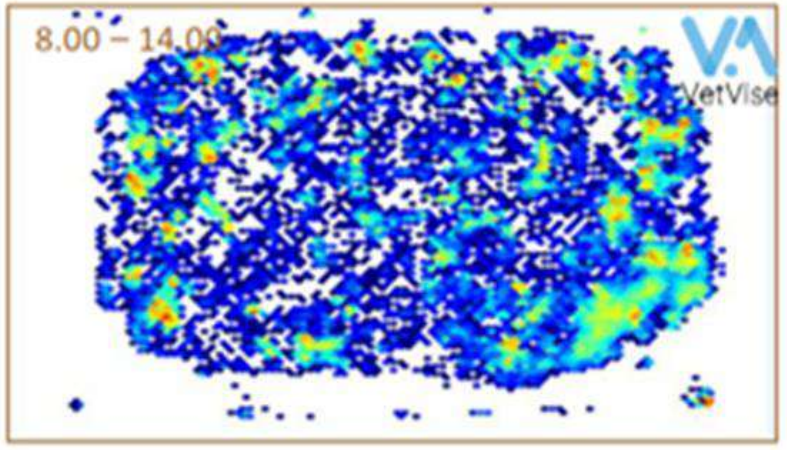
De meeste dieren zijn rond de voerbak (rechtsonder in het hok).

In het midden van het hok minder frequent dieren aanwezig.







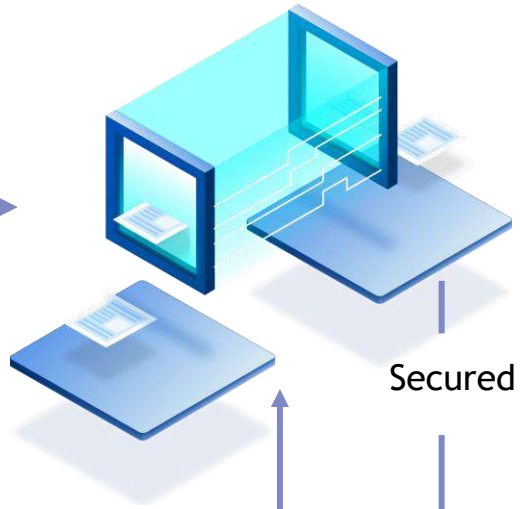


Climate sensor to monitor environment - Intelligent Barn

Intelligent Barn
Your insight

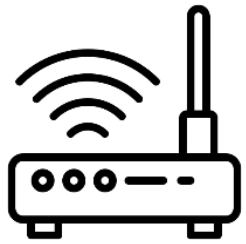
Real time data collection:

- Weather data
- Ventilation
- Vision camera
- Coughing monitor



Secured Data-analysis

Secured Data



LoRa Gateway

Dashboard for users

AGRIFOOD INNOVATION
connecting agri&food
Vion FOOD GROUP
Regio Deal Noordoost Brabant
Vion FOOD GROUP

Technologies Overview - Vion

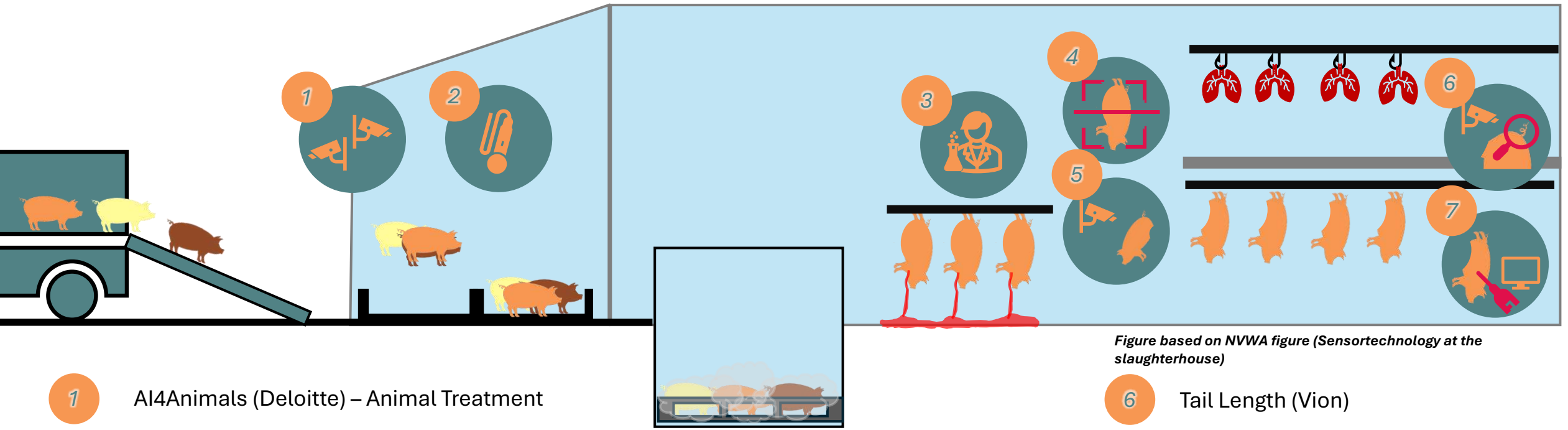


Figure based on NVWA figure (Sensortechnology at the slaughterhouse)

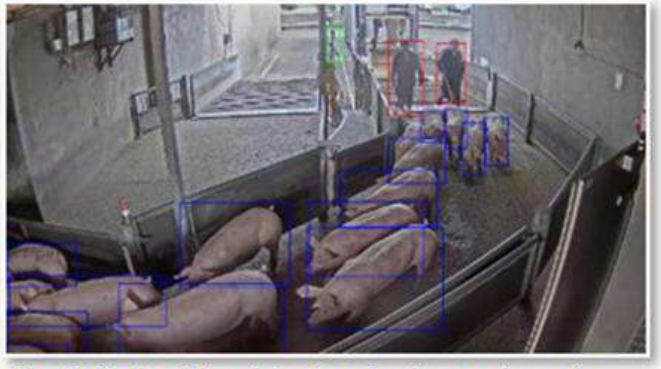
1. AI4Animals (Deloitte) – Animal Treatment
2. STREMODO (FBN) – Stress Vocalizations
3. IGFBPs (FBN) – Stress level in exsanguination blood
4. AUTOFOM3 (Carometec) – Backfat and Muscle Depth Across Carcass
5. PigInspector (CLK) – Ear, Tail and Skin Lesions
6. Tail Length (Vion)
7. CGM Insertion Probe – Backfat and Muscle Depth

Funded by the European Union

At unloading: Vision system in the lairage (AI4Animals – Deloitte)

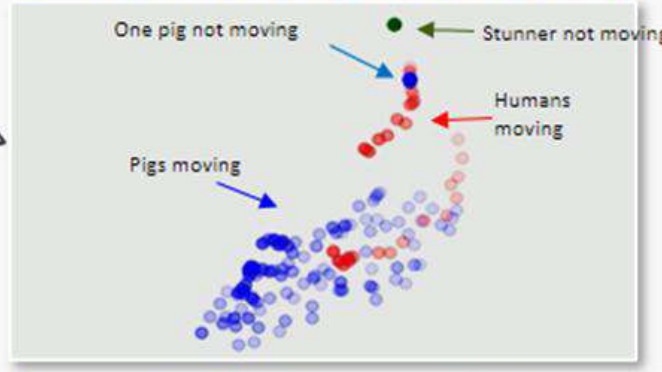
How it works

1 AI solution - detections



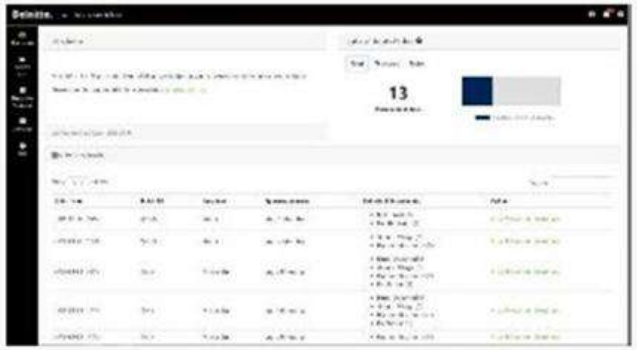
The AI4A algorithm detects animals, people, and objects and how they interact

2 AI solution – movement heatmaps



Images are translated into movement heatmaps to detect potential handling issues

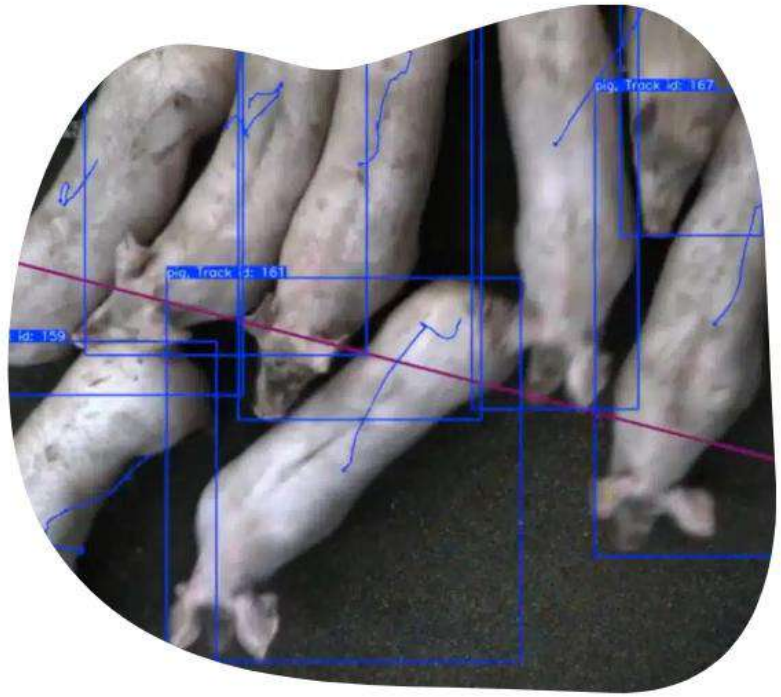
3 Dashboard - deviations list review



AI4A selects and aggregates all video recordings containing potential deviations to be reviewed

4 Dashboard - trend reports

AI4A includes trends reports outlining deviations over time and per slaughterhouse

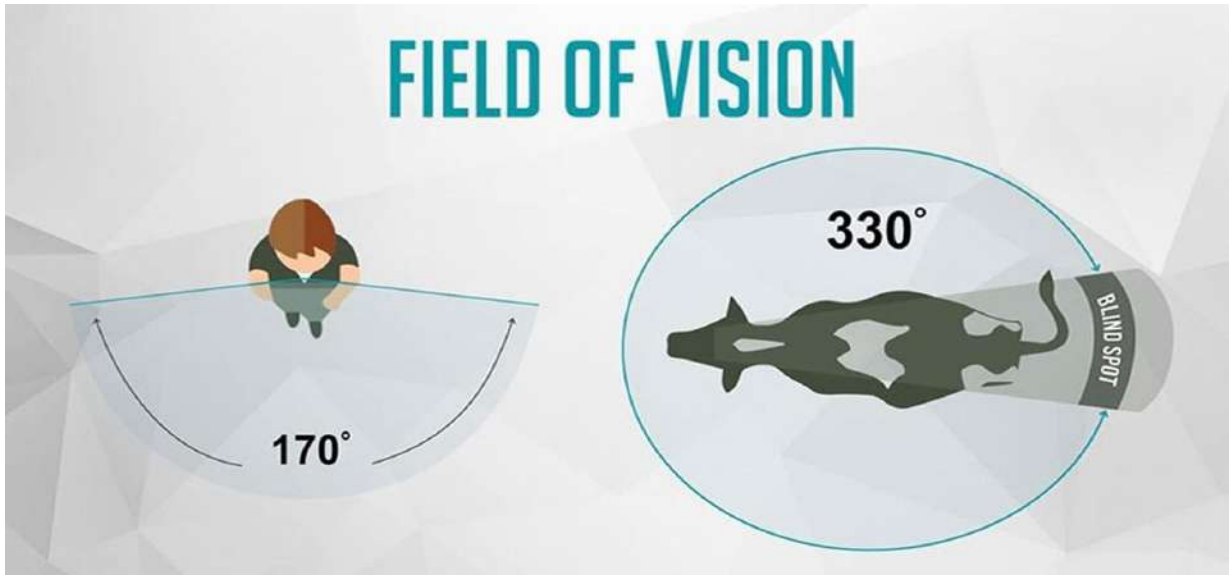


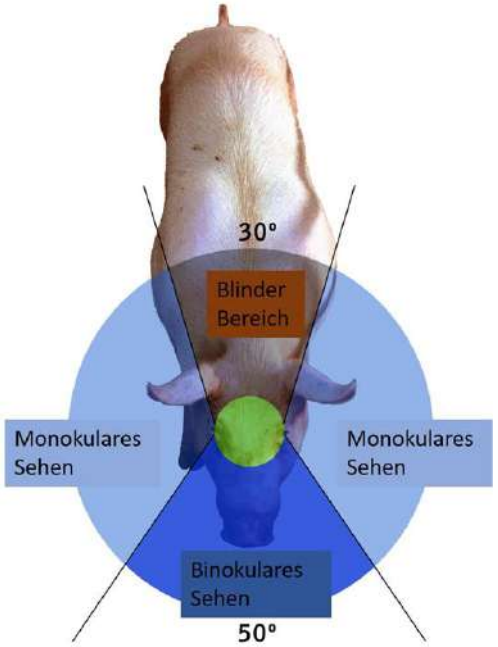
New: counting pigs from truck

Schuttert
Gouden
www.schuttert.nl

Virtual Reality - Animal Eye Simulator

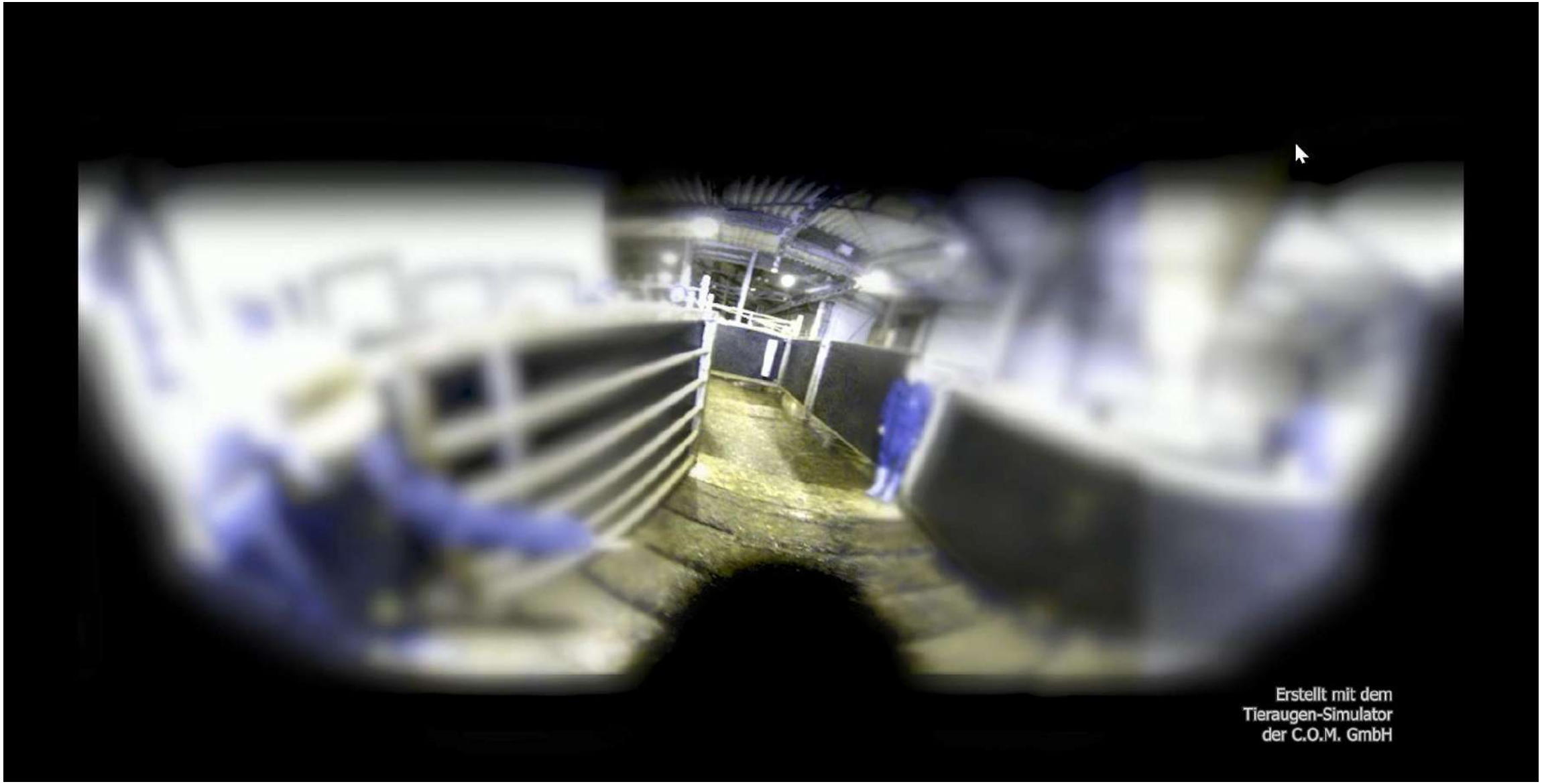
Visualise how cows and pigs are likely to perceive their environment





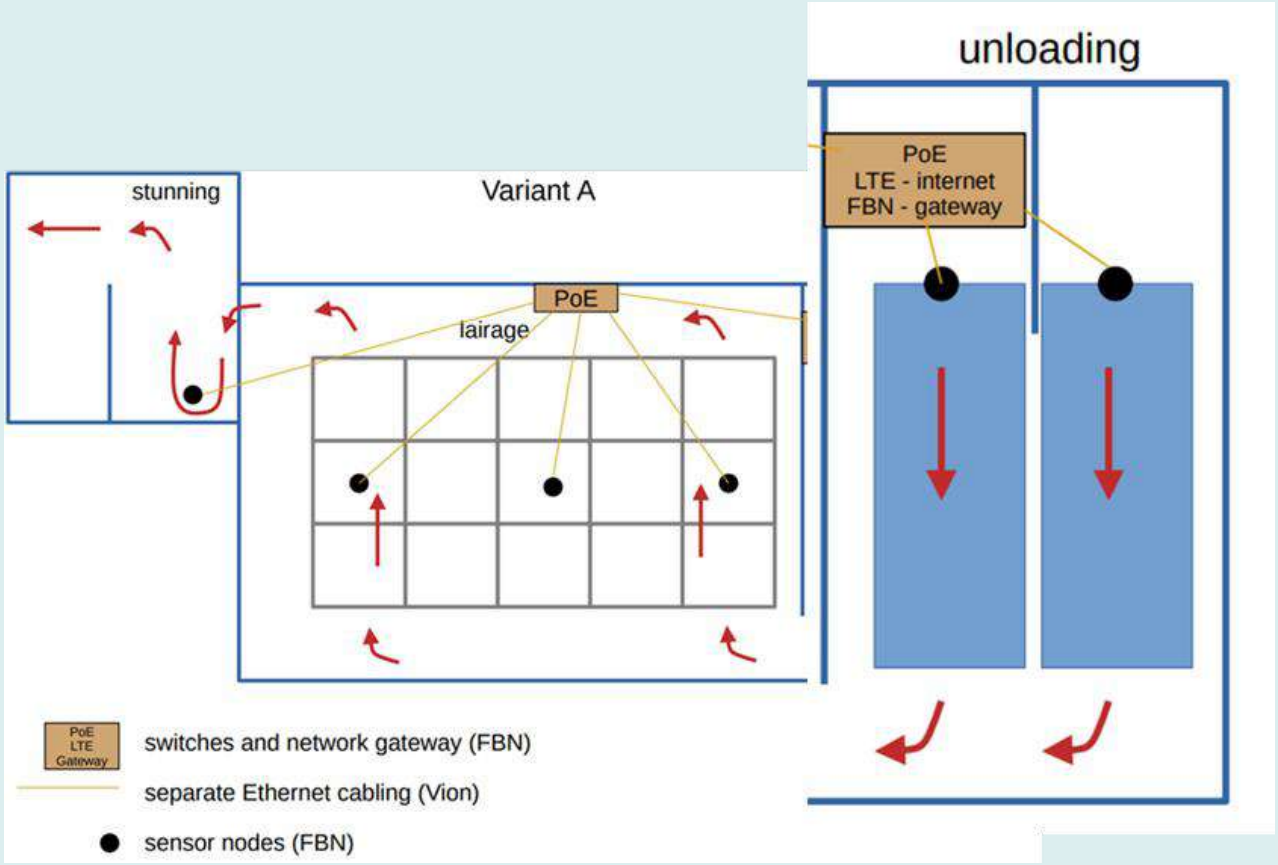
Optimizing lairage and driveways

- Sensitization employees in their way of working
- Adapt light to limit contrasts or improve light/ dark transitions
- Adapt infrastructure, e.g. change colour of walls, paddels, etc. to encouraging independent forward movement


Erstellt mit dem
Tieraugen-Simulator
der C.O.M. GmbH

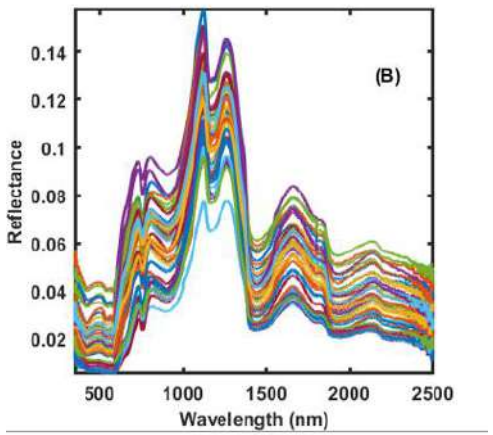
Pilots • Pilot 1

Stremodo Sound / Motion Sensor in cooperation with FBN Dummerstorf

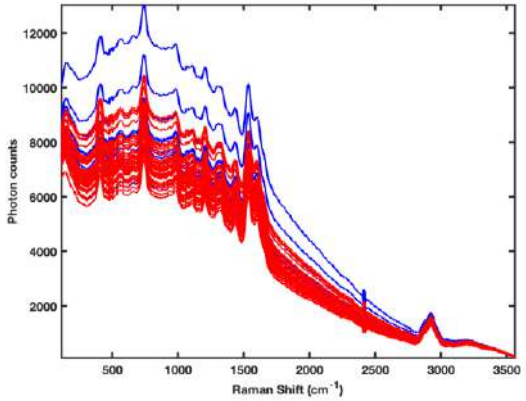


Lactate and stress protein measurements in blood after stunning

Reference lactate analysis



NIR signal reflection

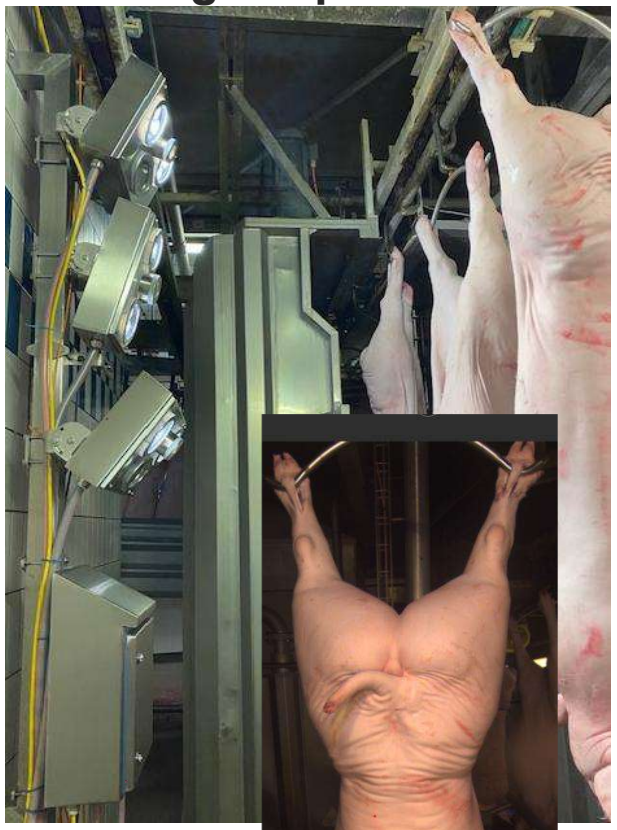


Raman signal

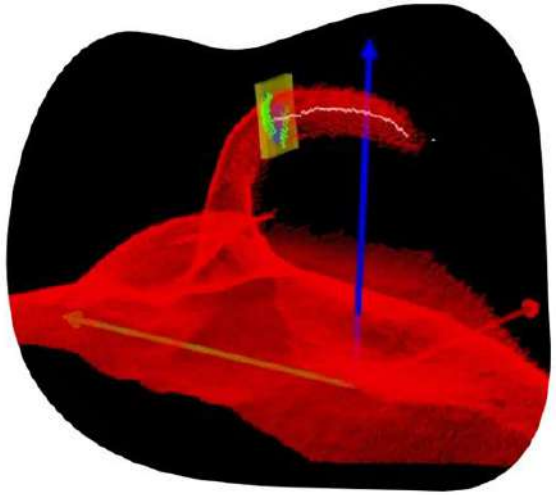
Tail length and lesion measurements

CLK GmbH
Bildverarbeitung & Robotik

Pig Inspector



VISION PARTNERS



Farm4trade

TAILSCAN

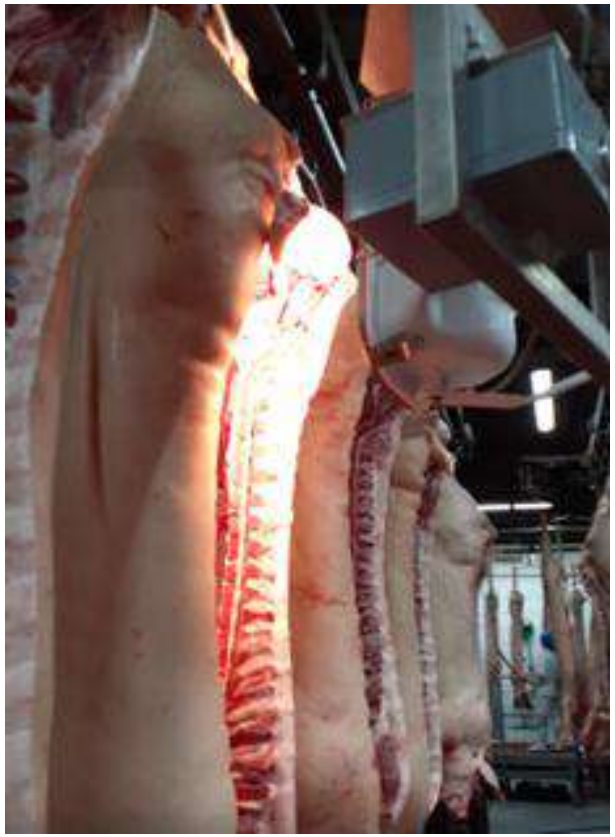
Funded by the European Union

aWISH
ANIMAL WELFARE INDICATORS AT THE SLAUGHTERHOUSE

Funded by the European Union

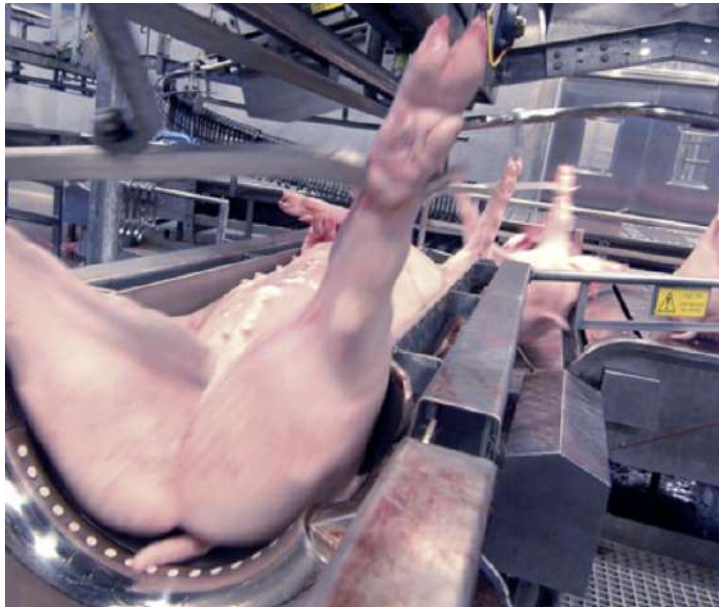
Vion
FOOD GROUP

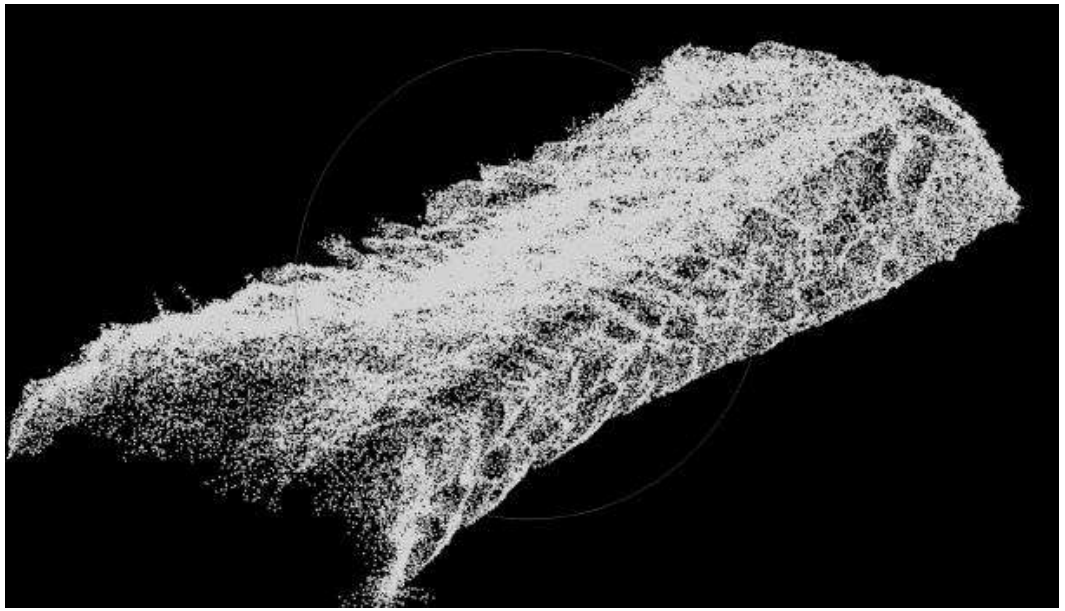
In line hyper spectral camera fat quality measurements

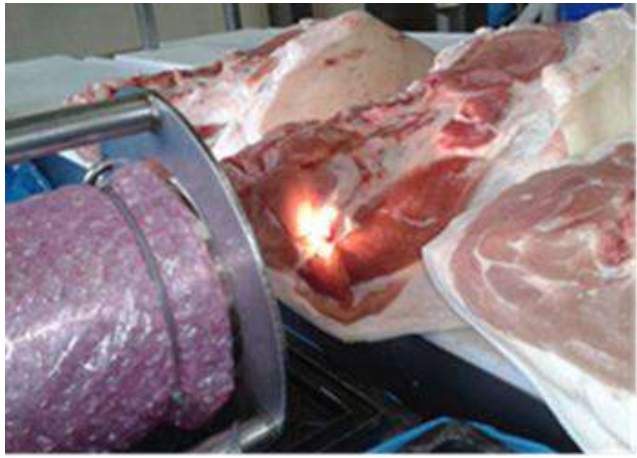


Yield and meat quality measurements

Combining data from the production chain and further processing stage to predict yield, meat quality and optimal carcass valorization







Conclusions

- Sensor technology and AI deep learning developments are rapidly leading to new applications across our animal production chains

- Animal welfare, waste reduction, product quality and yield are greatly supported via these innovative technologies