

Farm4trade: nuove tecnologie al servizio della zootecnia

A cura del GTI Agricoltura di precisione

2023 OPEN DISTAL

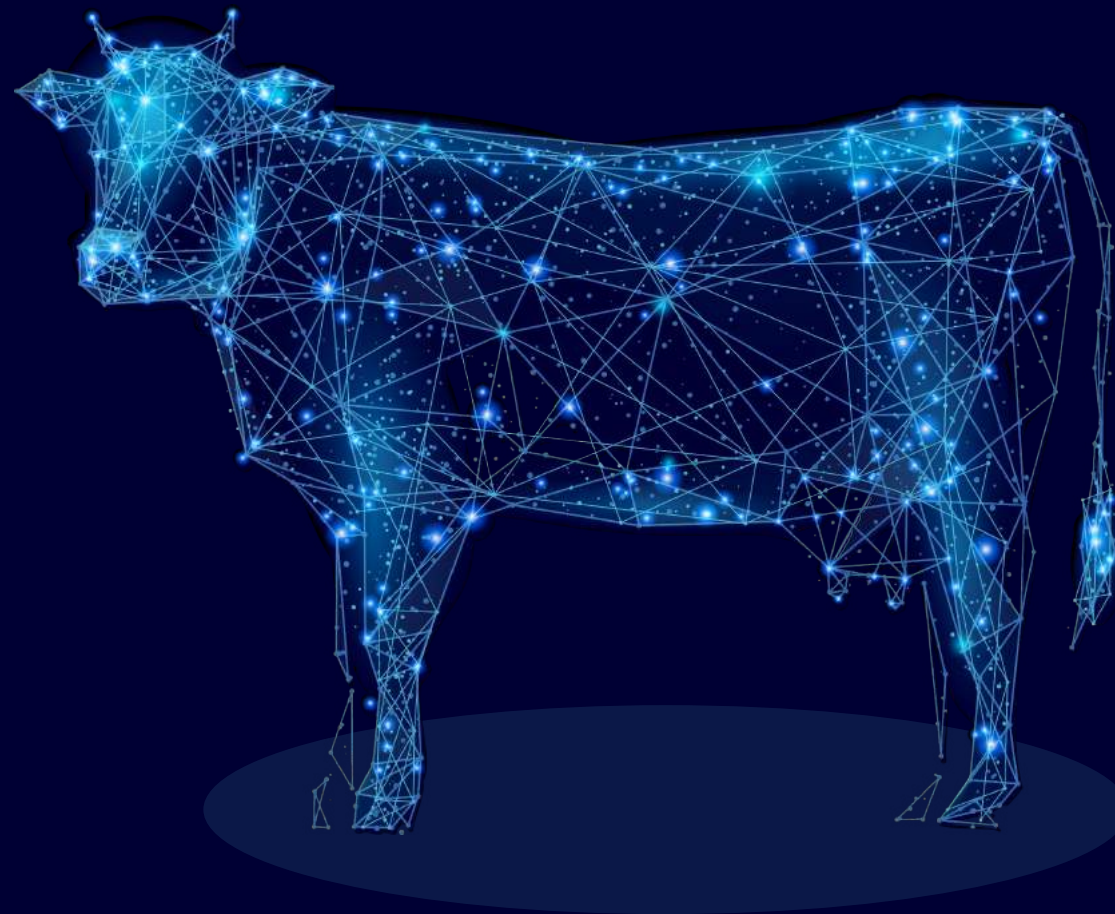


ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA
DIPARTIMENTO DI
SCIENZE E TECNOLOGIE AGRO-ALIMENTARI

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New technologies in

Livestock Farming



ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA

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Scalable and replicable

Technologies



F4T creates AI-based tech solutions for sustainable livestock sector growth in collaboration with academia and industry leaders.

1

Optimizing production processes

Data-driven automation

2

Reducing environmental impact

zero impact technology

3

Enhancing food quality

less antibiotics, better welfare

4

Optimising disposal operation

Waste reduction



Traceability



Productivity



Sustainability

Livestock Supply Chain Problems

Current farming practices are paper based and data is not valorized. Only 6% of EU farmers are using digital platform



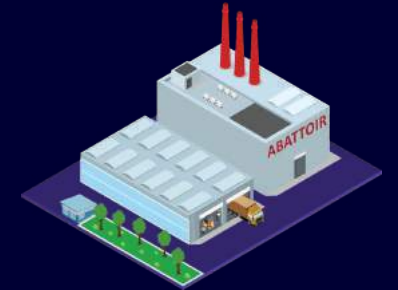
FARM HOLDINGS

- ❌ Animal identification
- ❌ Production performances
- ❌ Cost containment



GOVERNMENTS

- ❌ Measurable tools
- ❌ Two-way data exchange
- ❌ Ensure traceability



SLAUGHTERHOUSE

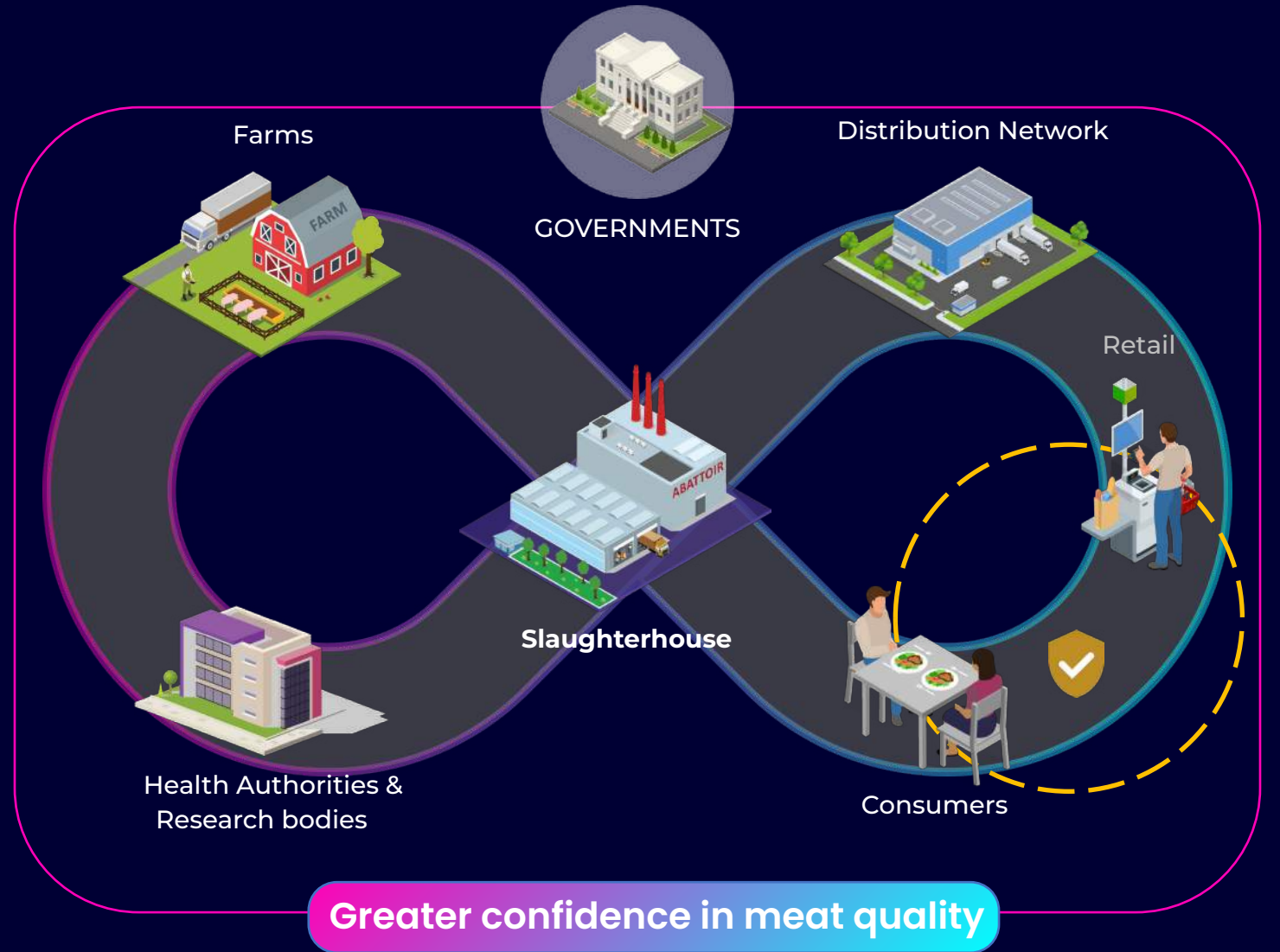
- ❌ Partial inspection of lesions
- ❌ Little mass data for analysis
- ❌ Expensive and error-prone inspections

Challenges



Our Vision

Farm4trade wants to connect all the players in the Supply Chain and lay the foundations for a REAL control over the traceability of food products





Products

AI applied to precision livestock farming to improve animal health and welfare, business productivity and supply chain traceability

PHAiD

PHoto Animal Identification

f4tlab.com/phaid

Contactless biometric recognition system for livestock identification.



#Animalidentification

ReaDOP

Read DOP

f4tlab.com/readop

Automated vision system for the acquisition, verification and annotation of tattoos on stocks.



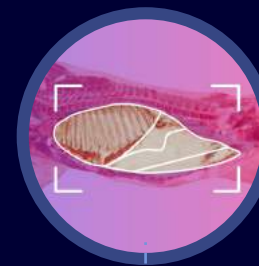
#Animalidentification

ADAL

Automatic Detection of Abattoir Lesions

f4tlab.com/adal

Automatic lesions assessment and carcass classification system at the slaughterhouse.



#AnimalWelfare

Farm4trade SUITE



F4t SUITE

farm4tradesuite.com

Integrated in-cloud system, for breeders and livestock companies



#BigData

Farm4trade **SUITE**

ALL-IN-ONE PLATFORM: Technologies for the management of the entire livestock value chain



**MULTI DEVICE
OFFLINE MODE**



**COMPATIBLE WITH
THIRD-PARTY
APPS**



**LONG-TERM DATA
COLLECTION**



**MULTI-SPECIES
MULTI-USER**



Farm Management App

Livestock management and record keeping tool to keep track of all information



Feed Formula App

Valuable tool that aids in creating safe, well balanced and cost effective ration



Business Intelligence App

Integrated dashboard capable of automatically processing all SUITE data, generating statistics and reports useful for all users



Snap Animal App

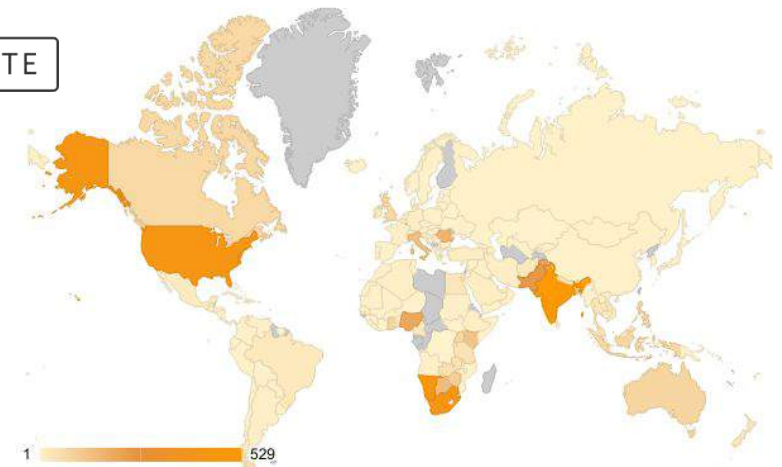
Contactless photo and video animal identification tool

Farm4trade **SUITE**

6K USERS

Top Countries

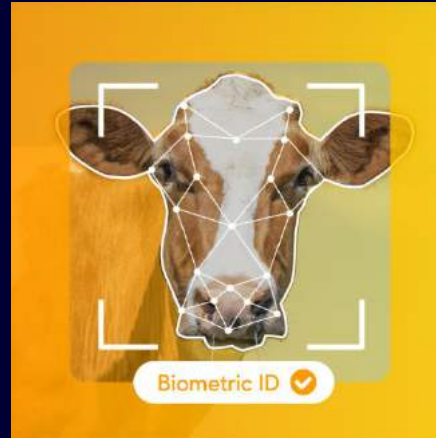
- USA
- South Africa/Namibia
- India



PHAID

The new frontier in Livestock Identification

The PHAID system solves the issues of traditional animal ID tagging methods, and surpasses them in a number of groundbreaking ways.



Pilot Project



SAFETY

Prevents theft, fraud and identity exchanges thanks to the reliability of the AI biometric system

COSTS

It allows to reduce the production costs of traditional systems actually in use

USE

Usable through a simple app running on Smartphone

WELFARE

The animals must no longer undergo marking activities with repercussions on well-being

SUSTAINABILITY

Reduction of pollution deriving from the manufacture, distribution and disposal of traditional systems

The system is able to identify and re-identify cattle instantly in a few simple steps



IDENTIFICATION

the app allows to scan or upload one or more photos of the animal and register or associate the animal with an ID number



Usable through a mobile application named Snap Animal App



Registered data can be integrated with third parties application for the management of identification data associated with health, production etc.



RE-IDENTIFICATION

The app scans the animal's head, the AI system processes the images and automatically matches them with the animal ID

- ★ **VERIFIED RESULTS:** IZSAM Official Tests Show 100% Accuracy with PhAID Technology on Independent Dataset.
- ★ **ROBUST SYSTEM:** significant efforts have been made to create neural networks that effectively and reliably perform animal re-identification tasks.
- ★ **FUTURE IMPROVEMENTS:** refining the automation of image acquisition in the field will streamline data collection, facilitate dataset expansion, and reduce difficulties in obtaining images.
- ★ **IMMEDIATE APPLICATIONS:** PhAID Technology Revolutionizes Livestock Decision-making with Easy Access to Health and Production Data.



**IN MAY 2022, WE
INTEGRATED PHAID
TECHNOLOGY INTO
THE ITALIAN BDN**



ReaDOP

ReaDOP is an automated animal tattoo code verification system supporting real-time traceability of hams in the supply chain. It can digitally read the producer's code on each pig.



1. Robot
For image acquisition



2. Software AI
For local image processing



3. Readop web Platform
For remote cloud access and storage



ReaDOP

Technology performance



DATASET

Total images collected: **6655**

Not readable images: **1724**

Total Images used: **4931**

Total Images for the **training set: 3944**

Total images for **test set: 987**

Unique Code: 119



TEST RESULTS

FULL TATTOO ACCURACY: **96,8%**

SINGLE CHARACTER ACCURACY: **99,2%**



CUSTOMER



FURUSETH

Norway Slaughterhouse

Thanks to the brilliant results obtained by the technology Furusetth slaughterhouse invested on ReaDOP



ADAL

Greater confidence in meat food quality for all

We have developed an automatic imaging acquisition system capable of recognizing and evaluating lesions on slaughtered animals. The data acquired by a Robot and processed by the IA Software are made available locally and remotely through the ADAL Web platform.



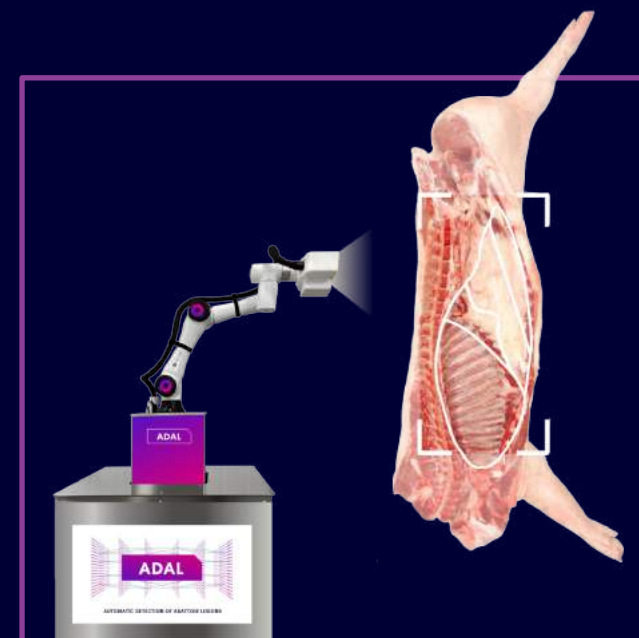
1. Robot
For image acquisition



2. AI Software
For local image processing



3. Web Platform
For remote cloud access and storage



ADAL Prototype

It is a workstation designed for different use, capable of acquiring images at any point in the slaughtering chain.

Technology Performance



Fatland Slaughterhouse

The robot is acquiring and analyzing images from 12th September 2022. Below a summary of the data acquired until 02 December 2022.

Dataset					
N. of working days	N° Images acquired	Average image per day	Good quality images*	Healthy carcasses	Pathologic carcasses
50	37.798	756	19.029	~17.080	1.948
			~50%	89,76%	10,24%

Pleurisy Score	No. of Pigs	Percentage
0	17,081	89.76%
1	323	1.7%
2	894	4.7%
3	731	3.84%

Publications of results

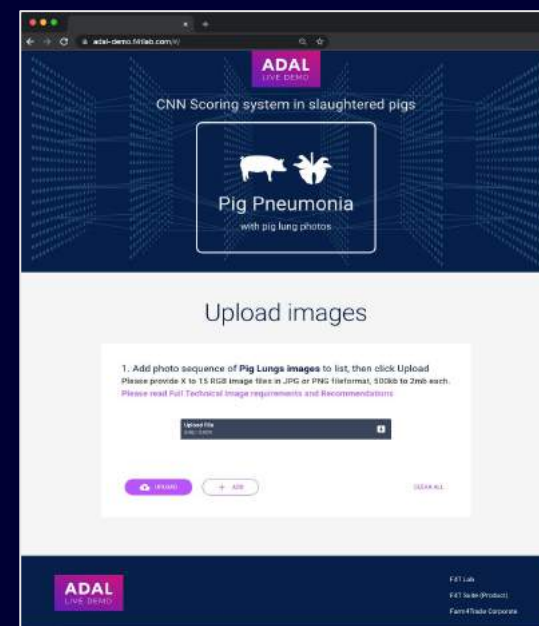
[SafePork Conference 2023](#)

[Louisiana](#)



Nortura Slaughterhouse

In June 2023 we will test the technology on lungs to detect and assess pneumonia for which an automated scoring system has been already developed (see DEMO).



[GO to the DEMO](#)



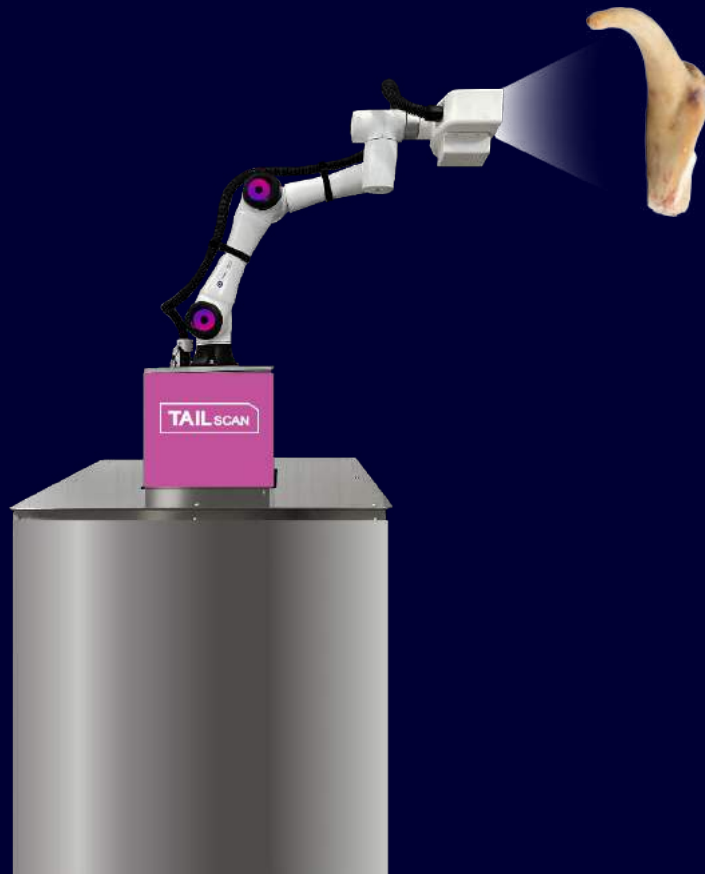
Next Steps

We aim to expand the fields of application of the technology developed to other pathologies both of health interest and related to animal welfare.

Tail lesions

Image acquisition

Tail length and lesions



SKIN LESIONS

Evaluating skin lesions indicates animal welfare across the supply chain, from farm to slaughter, impacting product quality, processing, and overall supply chain productivity and profitability.

LIVER LESIONS

Evaluating and assigning a score to parasitic hepatitis which is the main parasitic pathology found in intensive pig breeding is one of the best indicators of the health status within livestock farms.

TAILSCAN

Programme

Pilot Projects & Preparation Actions (PPPA)



WORK PROGRAMME PART PPPA-2022

Develop a system for the **automated measuring of tail length and tail lesions** of pigs at the slaughter line (at a large scale)



[EU Call on PigTail link](#)

Partners



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DEGLI STUDI
DI TERAMO



universidad
de león





We invite to learn more on us

Corporate ▶ farm4trade.com

Lab ▶ f4tlab.com

Suite ▶ farm4tradesuite.com

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