



*Animal welfare for a better world*

# **Animal welfare assessment through smartphone applications. Challenges and opportunities**

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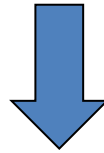
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4TH OIE GLOBAL CONFERENCE ON ANIMAL WELFARE  
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# Animal welfare

...an animal as being in good animal welfare if it is healthy, comfortable, well nourished, safe, able to express innate behaviour, and . . . is not suffering from unpleasant states such as pain, fear, and distress (OIE, 2008).

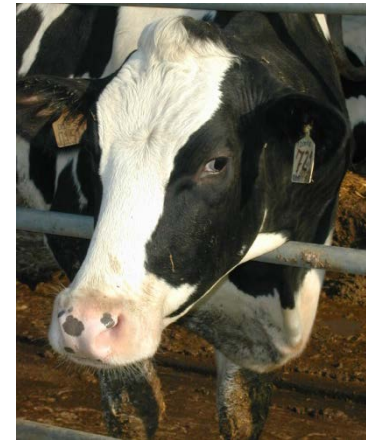


The welfare of an animal is linked to :

the emotional state

the biological functioning

the environment



# Animal welfare

Welfare analysis is multidimensional including health, physiology and behaviour and involves the assessment of many welfare indicators.

Develop a toolbox of animal based measures



# Animal welfare assessment

From resources indicators

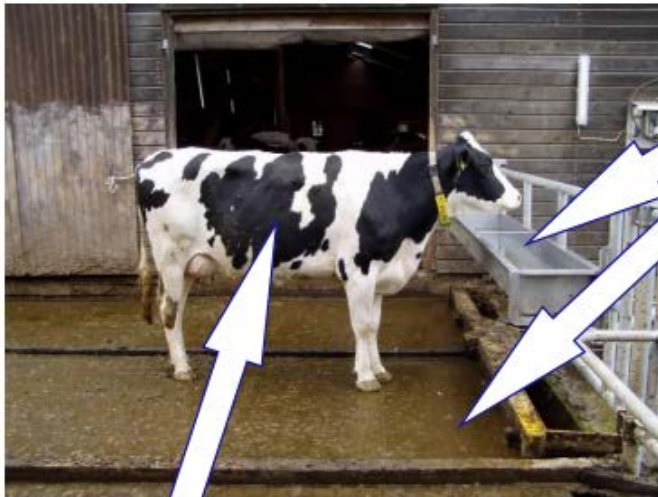


to animal-based measures



# Animal welfare assessment

Input-based vs outcome-based



Courtesy L. Keeling

Input-based standards describe the housing and management

Essential to have both. Resource and management based measures to identify presence of hazards or safeguards. Animal-based measures to determine actual presence of good or poor welfare.

Outcome-based standards describe the actual welfare state of the animals



**FP7-KBBE-2010-4 program:**



## **2011-2015: Animal Welfare Indicators (AWIN)**

**Development, integration and dissemination of animal-based welfare indicators, including pain, in commercially important husbandry species, with special emphasis on small ruminants, equidae and turkeys**

**Duration: 4 years (started in May 2011)**

**11 partners**

**5 complementary Work Packages (WP)**

**Coordinator Professor Adroaldo Zanella**



UNIVERSITÀ DEGLI STUDI DI MILANO



# Specific aims of WP1



- To develop and test animal-based welfare, including pain, indicators and protocols in:  
sheep, goats, horses, donkeys and turkeys
- To assess the practical on-farm feasibility of the welfare assessment protocols
- To present welfare assessment protocols to stakeholders

**Coordinator Professor Elisabetta Canali**



# Animal welfare assessment



challenges due to:

- new indicators
- new technologies and instruments



sound and feasible protocols





# Animal welfare assessment



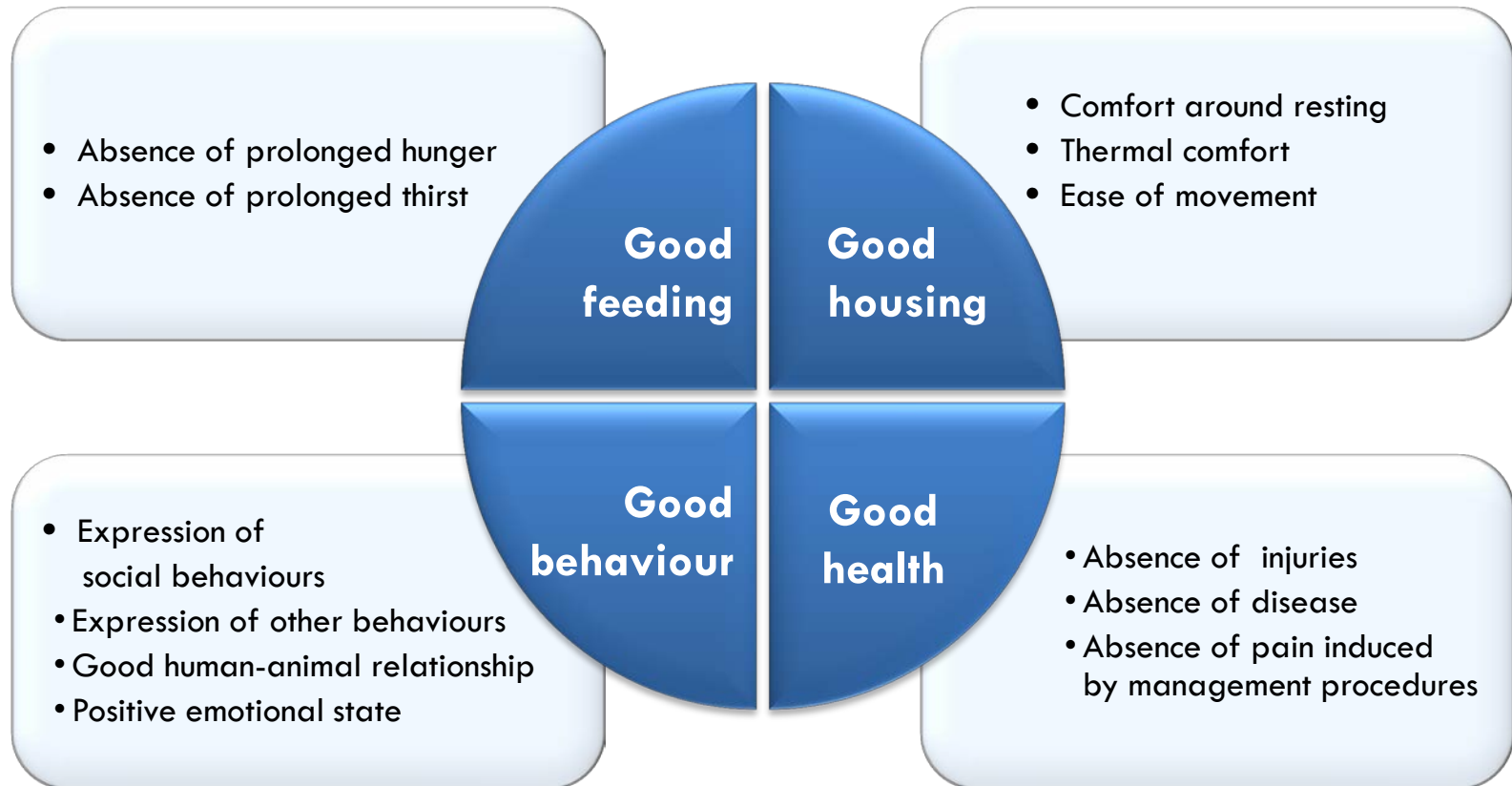
- differences in species attitudes and husbandry



# Identification of suitable indicators



- Following the 4 principles and 12 criteria set up in WQ®



# AWIN new approach: stepwise strategy assessment



## First level of welfare assessment

- Group assessment for sheep and goats
- Sample size for horses and donkey



# AWIN new approach: stepwise strategy assessment



## Second levels of welfare assessment : in-depth assessment

- Valid and reliable indicators
- More comprehensive assessment
- Feasible in a given time
  
- Detailed individual assessment

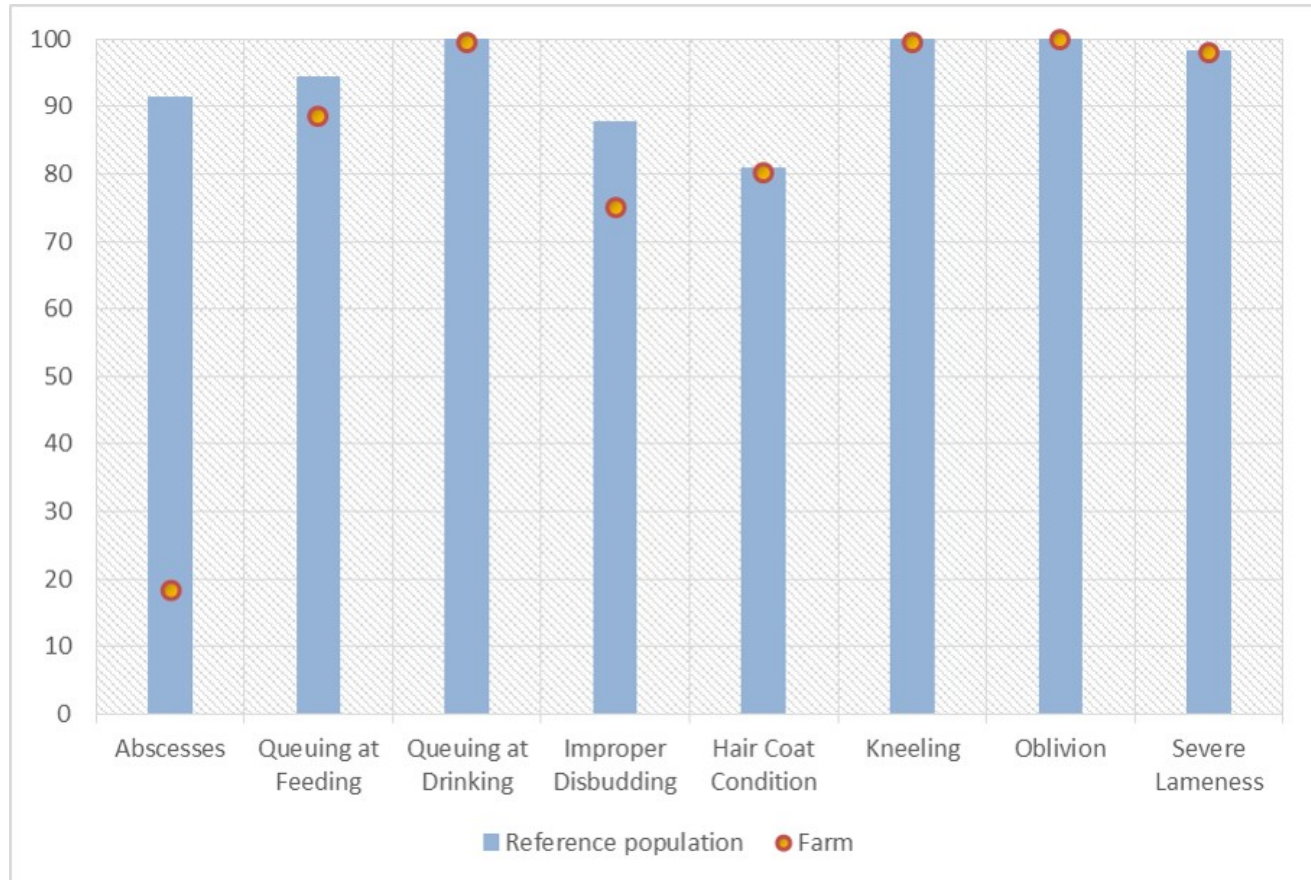


# AWIN new approach: immediate outcome



The aim of the output is:

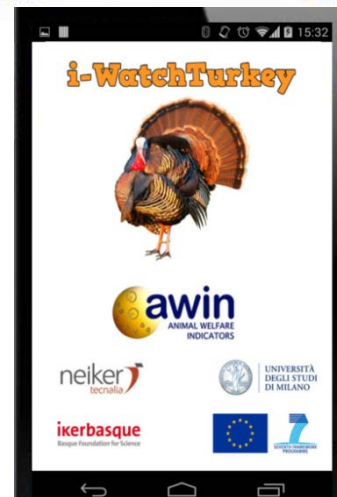
- ✓ to give a visual feedback on the welfare of the animals on the farm;
- ✓ to highlight positive conditions;
- ✓ to enable comparison with a reference population.



# From the AWIN protocols to applications

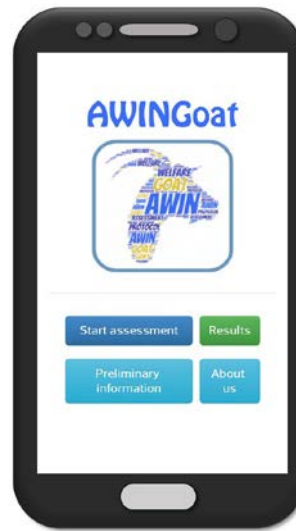


AWINHorse



# Why develop an application?

- permit to collect , aggregate and analyse data faster and error-free
- avoid problems linked with data collection using paper sheets



AWINHorse



# Why develop an application?

- creation of a virtual server to collect and aggregate data
- automatic dispatch to the server





# Why an app to assess animal welfare at farm level?

Create an immediate visual output



dialogue with farmers on the welfare of their animals and the actions needed to improve it.



# How does it work?

Data collection  
of animal-based indicators

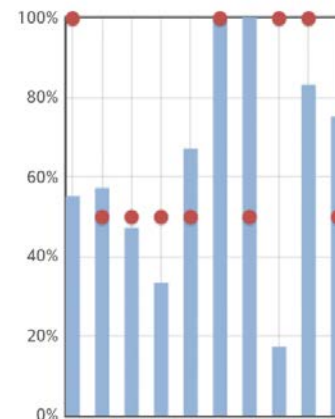


AWINHorse



## Animal-Based indicators

- Signs of hoof neglect  Absent
- Consistency of manure  Normal
- Social interaction  Visual contact



visual output, bar chart



■ Reference Population  
■ Farm

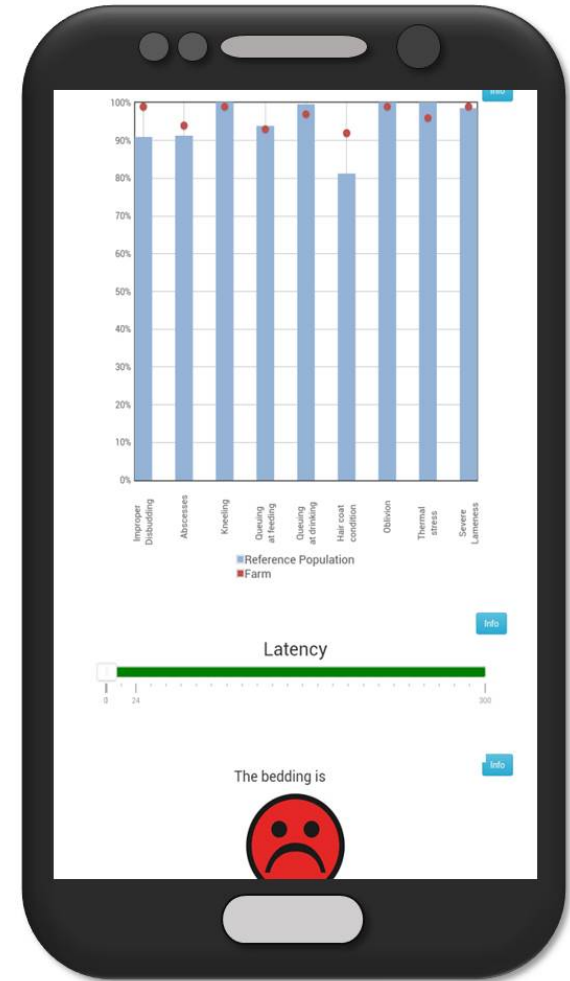
**AN:** Appropriate Nutrition  
**APT:** Absence of Prolonged Thirst  
**CaR:** Comfort around Resting  
**EoM:** Ease of ...



# Future challenges



- reference population more geographically representative
- data collection must be undertaken on a larger scale and be more widely distributed



# Future challenges



Specific training on how to assess and score the welfare indicators

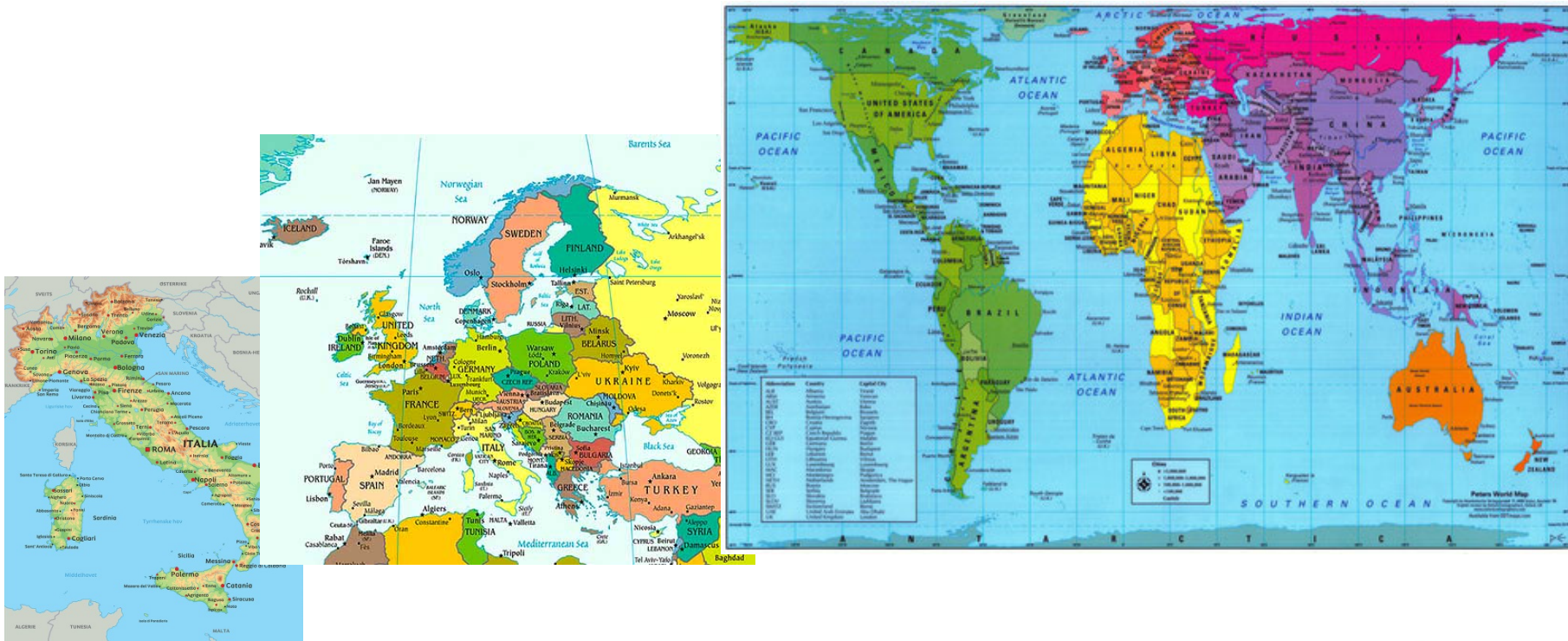
Digital education



# Future challenges



Server to store and analyze the welfare data in a harmonized way



# Future challenges



- On line training
- Harmonize the collection of data in different countries
- Store and analyze welfare data



enforce animal welfare policies



## Thanks to: AWIN WP1 members

Minero M.<sup>1</sup>, Mattiello S.<sup>1</sup>, Barbieri S.<sup>1</sup>, Ferrante V.<sup>1</sup>, Estevez I.<sup>2</sup>, Ruiz R.<sup>2</sup>, Dwyer C.<sup>3</sup>, Stilwell G.<sup>4</sup>, Dalla Costa E.<sup>1</sup>, Battini M.<sup>1</sup>, Dai F.<sup>1</sup>, Zanella A.<sup>5</sup>

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2 Neiker-Tecnalia, Arkaute Agrifood Campus, Animal Production, Vitoria-Gasteiz, Spain

3 SRUC, Scotland's Rural College, Edinburgh, UK

4 Faculdade de Medicina Veterinária, Universidade de Lisboa, Portugal

5 Department of Preventive Veterinary Medicine and Animal Health School of Veterinary Medicine and Animal Science, University of São Paulo Pirassununga, Brasil





**Thank you**

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