



Network. Guidelines. Certification.

ICAR/IDF Sensor Initiative: Use of sensor data for health and welfare – achievements, challenges and perspectives

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ICAR Functional Traits Working Group, IDF Standing Committee of Animal Health and Welfare, international experts, manufacturers



ICAR IDF Sensor Initiative - Background



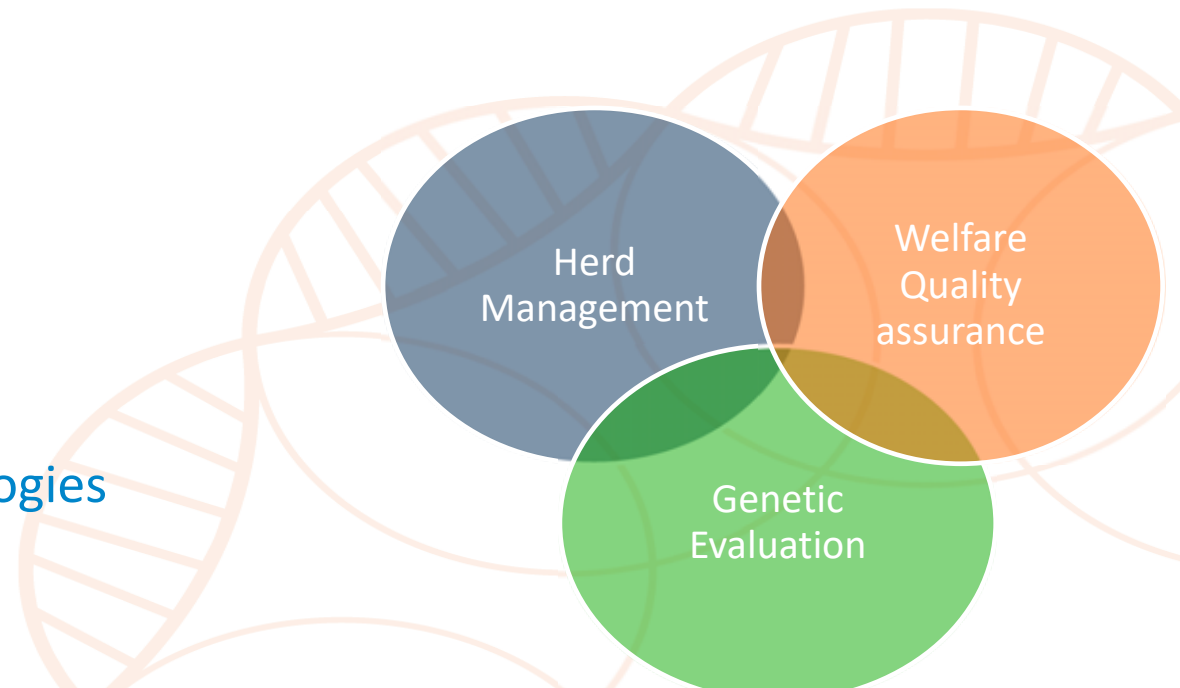
- Collaboration between ICAR Functional Traits Working Group (ICAR FTWG) and IDF Standing Committee of Health and Welfare (IDF SCAHW)
- **work on animal-based indicators to promote welfare in dairy cows!**
 - ICAR: develop, provide and promote a system and standards for functional traits (services) (WIKI)
 - ICAR Central Health Key
<https://www.icar.org/guidelines/icar-central-health-key/>
 - IDF : have dialogue on, and form consensus about new developments in the dairy sector field of animal health and welfare



Why this joint ICAR FTWG / IDF SCAHW initiative?



- On-farm sensor systems collect large amounts of data, but just a **small fraction** is currently **used**
 - Veterinary & advisory services
 - Dairy processors
 - Milk recording organizations
 - Breeding organizations
 - ...
- **Huge potential for use**
 - Across farms and sensor technologies
 - Along the dairy value chain



Promote further and extended use of sensor systems along the value chain to increase sustainability, animal well-being and efficiency in cattle production.

Specific objectives of ICAR FTWG / IDF SCAHW



- Address **sensor-based health and welfare traits** for improvement of **genetics, herd management and welfare quality assurance**
- Bring together **different stakeholders**, technology providers, users of information and scientists: common understanding and knowledge exchange towards our goals
- **Explore opportunities and challenges** for recording, standardization, validation, trait definition and use of this information
- **Develop agreed upon, evidence-based, definitions and standards that support innovation along** the dairy value chain

Promotion and use of sensor data along the value chain to increase sustainability, animal well-being and efficiency in cattle production.

Achievements of collaboration



Webinars / Workshops (www.icar.org)

- Multiple workshops, webinars and conference contributions related to animal welfare
- Publication of scientific background paper
 - Sensor data cleaning (Schodl et al. 2024)
 - Sensor and use for genetics (Brito et al. 2025)
- Webinar – Use of sensors for genetics (2026)

Guidelines: (www.icar.org) – approved and published

- WIKI - BCS
- WIKI - Sensor based behaviour information for functional traits with focus on rumination

ICAR IDF Guideline



“Sensor based behaviour information for functional traits with focus on rumination”

- Part 1 – General introduction
- Part 2 – Definitions and terminology
- Part 3 – Sensor data cleaning
- Part 4 – Use of sensor data (focus on time series data) for genetic improvement

Status: approved by ICAR and IDF

Published in WIKI: www.icar.org

Continuous further development and updates

NEW WIKI GUIDELINES!!!!
Elaborated and agreed with stakeholders
from science, manufacturers,...



Key Messages

- Validation of sensor systems increases trust and transparency from farm to fork
- Foundation for exploring application of indicator in herdmanagement, welfare assurance systems and genetics and breeding

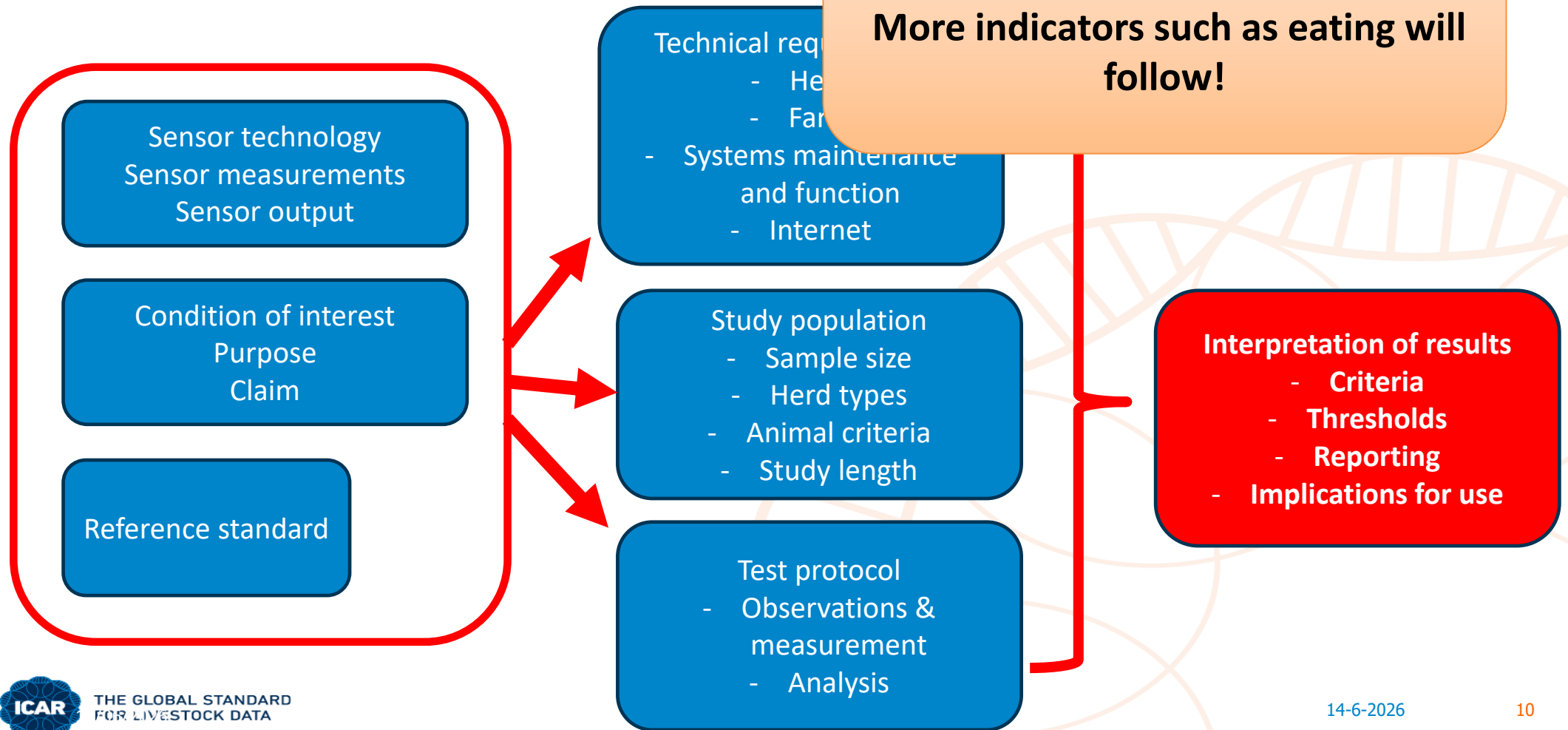
Knowledge exchange – Stakeholder perspectives -Discussion – Next steps

Farmer – Veterinarian – Student – Researcher – Dairy processor – Retailer - Technology provider - Authority



Thanks to all
speakers and the
audience for their
contributions!

Elements of a validation protocol



Challenges and Solutions

- Many different technologies, systems and parameters
- Behavioural indicators require development of suitable reference standard and validation protocols. A gold standard may not exist.
- Sensor-based indicators measure 24/7: which conditions can be identified and what do they tell us about welfare?
- What applications and cases are most important to drive innovation and development in our industry?

Solution:

Bring experts and stakeholders from diverse areas together.
Use networks for discussion, prioritisation and agreement.
Manufacturer forum to discuss guidelines and create consensus.

Our next steps

- Invited review to Journal of Dairy Science
Using sensor technologies to quantify rumination: development of a reference standard and guidelines for animal welfare and health recording.
- Dedicated core group from ICAR and IDF drafts protocol for discussion in Manufacturer forum
Balancing best scientific scenario with real-life situation
- Approval process ICAR/IDF – communication and publication
- Plan next goals with input from Animal Welfare workshop & Survey
- **Kick-off Use case for herd management and welfare quality assurance**

Take Home Message



Successful collaboration of ICAR/ IDF initiative facilitates development and adoption of guidelines and standards

Manufacturer forum – valuable to achieve agreement on guidelines, reference standards and definitions.

The new guidelines will improve animal health and welfare, transparency and sustainability to the benefit of the dairy value chain.



ICAR IDF Sensor Initiative: Thank you for your attention!