



Expectations, needs, and welfare requirements from sensors at the dairy farm

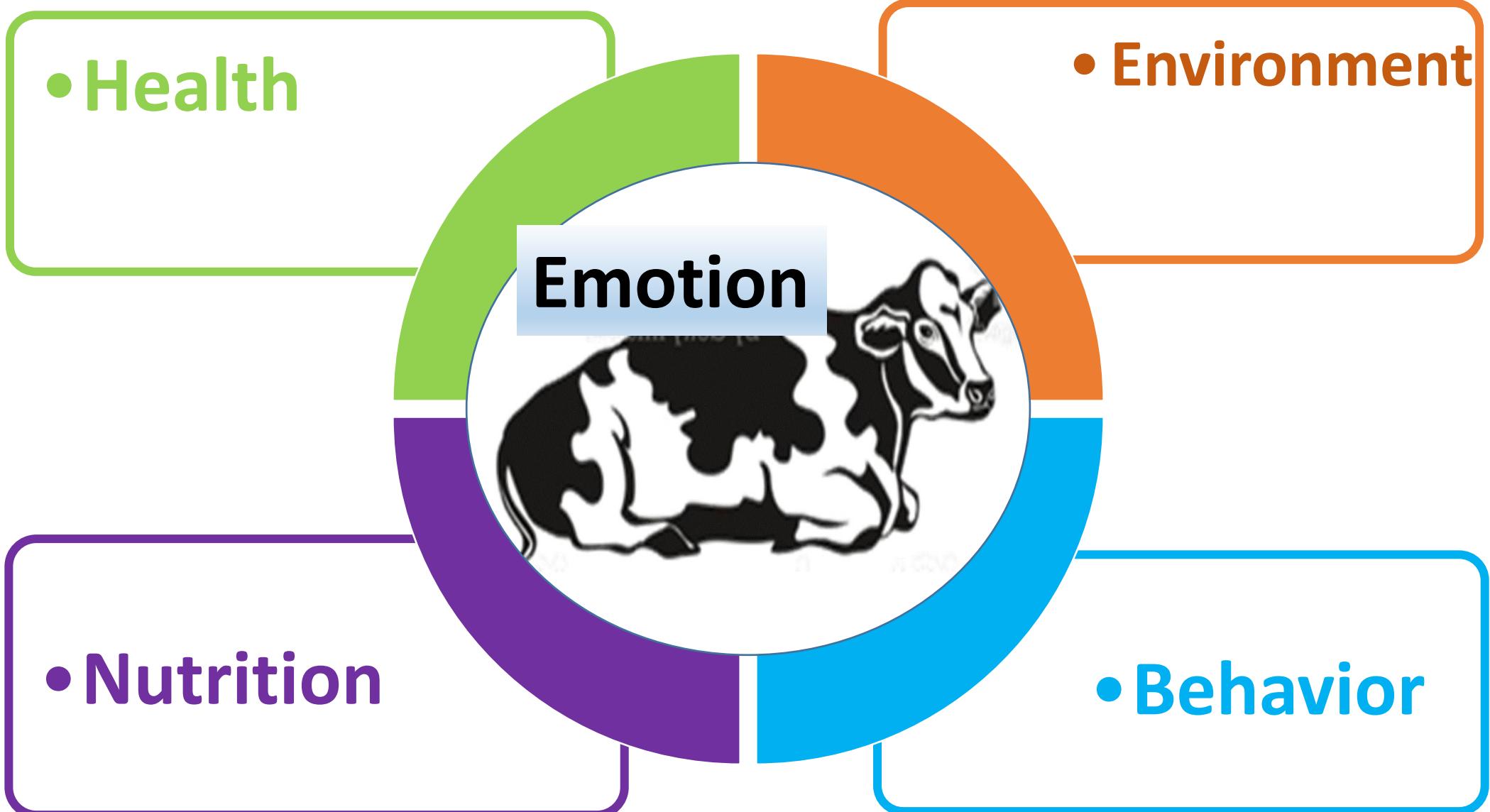
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*Good
welfare*

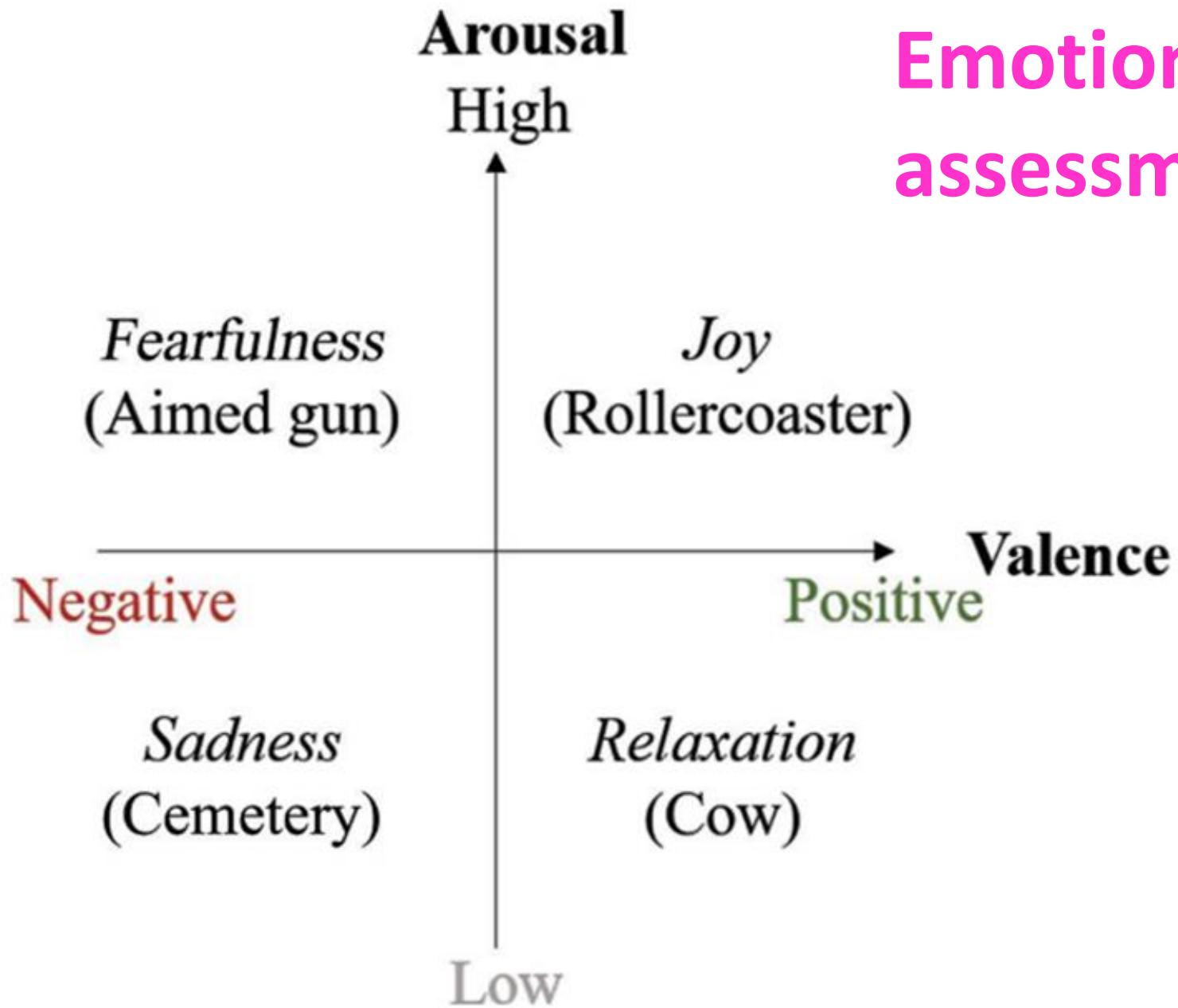


*Happy
cow*





Emotion assessment



Boissy et al. 2007



- PLF
precision
livestock
Farming
- KPIs
Key
Performance
Indicators





- What kind of sensors do we have?
129 different technology
- How does the current sensor answer the 5 domains?

Stygar et al. 2021
Hogeweegen et al. 2021

Leg tag

- Health
- Health status
- Rumination

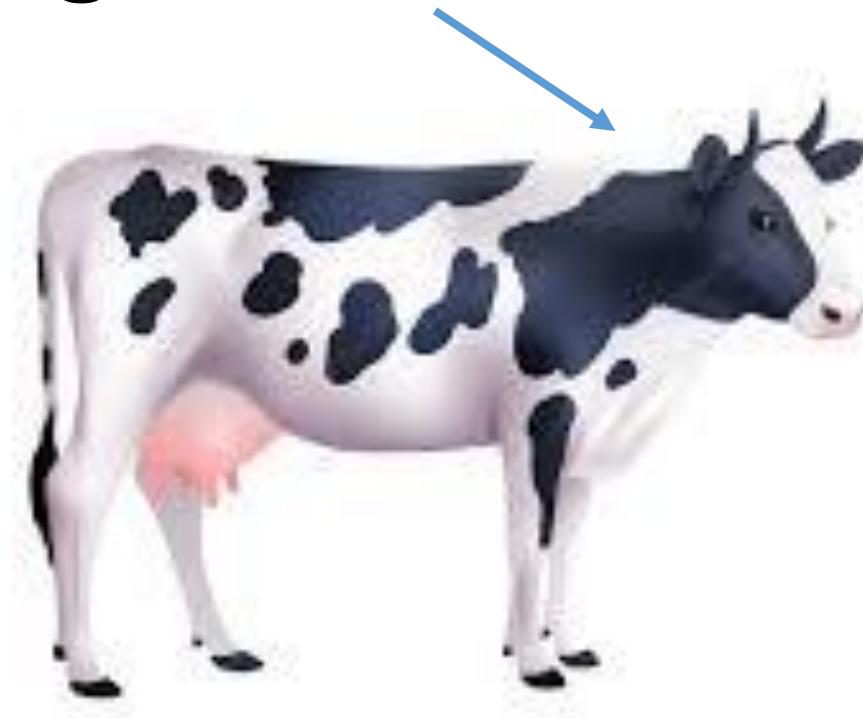


- Heat detection
- Activity



Collar tag

- Health
 - Health status
 - Disease detection
 - Pregnancy validation
 - Calving indication
 - Rummaging
 - Nutrition
 - Feeding time



- Heat detection
 - Activity
 - GPS position/tracking

Ear / microphone

- Health status
- Body temperature



- Rummation
- Nutrition
- Feeding time
- Heat detection
- Activity
- position

Ear / microphone

- Health status
- Body temperature
- Rummation
- Nutrition
- Acidosis
- PH
- Activity
- Feed monitoring



- ID

Milk sensors

- Health monitoring
- Composition
- SCC
- SARA
- Ketosis
- Progesterone
- LDH
- BHB



- production

Camera



- Udder health
 - Inflammation
 - fever
-
- BCS
 - Feed event





Load cell

Health -lameness

- Rummation
- Feeding time
- Feeding monitor/analysis
- Water intake



- Body weight in motion

Environmental sensor



- Environment temperature
- Location on the farm

A hand emerges from the water, holding a glowing golden grail. The grail has a textured surface with a gradient from yellow to orange. The background is a deep blue, suggesting water or a sky at dusk.

**Holly grail of
sensors**



Certification bodies





Thank you
question?