Phenotyping calves at weaning through automatic 3D image collection and instantaneous processing

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1) Project goals and context

2) Tool specifications

3) Partnership & Consortium

4) Road map

5) Project progress

1.Beef performance monitoring in France

- **Weighing**

- By the farmer
- By the technician

- **Scoring**

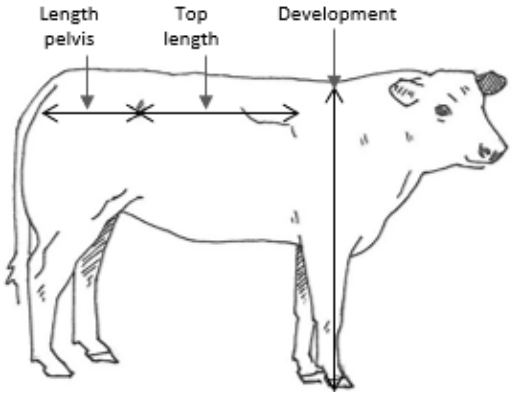
- 19 points of scoring common to all breeds
- No mensurations
- 380 000 scoring sessions per year on 10 breeds by 445 technicians
- Beetween 5 and 9 months

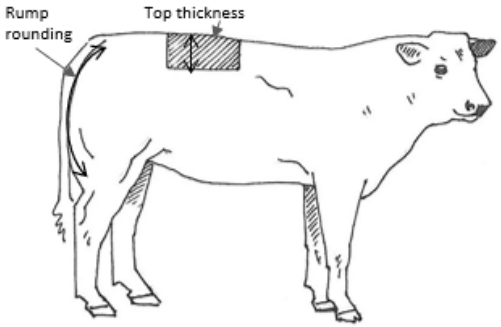
Why scoring ?

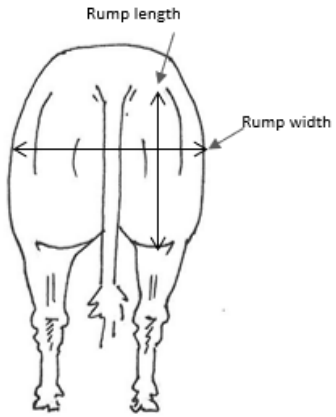
→To evaluate breeding male on morphology with economic impact ;

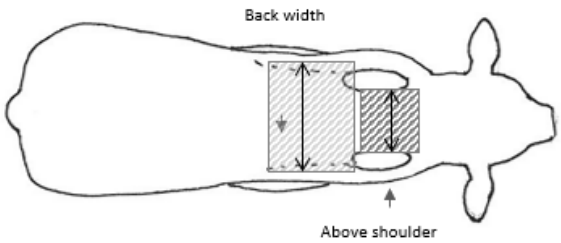
→Assess functional traits (movement abilities, mating skills, longevity indicator, etc.)

→This allows precise genetic evaluation of growth









1.Context of the project: Limits in performance monitoring

- **Onerous advisor training**
  - Initial training
  - Homogenization sessions
  - Approval by breed

- **High turnover of technicians in livestock companies**
- **Scorer effect**
  - Scoring difference between 2 scorers
  - Over/under evaluation of an animal compared to a previous one

- **Scores often contested by farmers**

1.Project goals

- **1. Define the specifications of the prototype**
- **2. Build the scanner**
- **3. Test it in the field from a logistical and technical point of view**
- **4. Validate its accuracy for the measurement of metric parameters**
- **5. Develop AI algos to score and weigh automatically**

2.Tool specifications

- The tool must provide the scores of the animal measured during the scoring
- Portable or transportable with quick and easy assembly
- Must work and produce results instantly without internet
- Not sensitive to light = must work indoors and outdoors
- The data must be able to be exported to another system
- The tool must also provide an estimate of the weight of the animal

3.Partnership & Consortium

- **Signing of the ANIMAL3D consortium agreement and its amendment for PHENO3D on 04/20**
  - **FCEL for its Beef Organizations**
  - **IDELE : French livestock institute**
  - **Races de France for its Beef's Organizations of Selection**
  - **Allice for its Beef's Organizations of Selection**

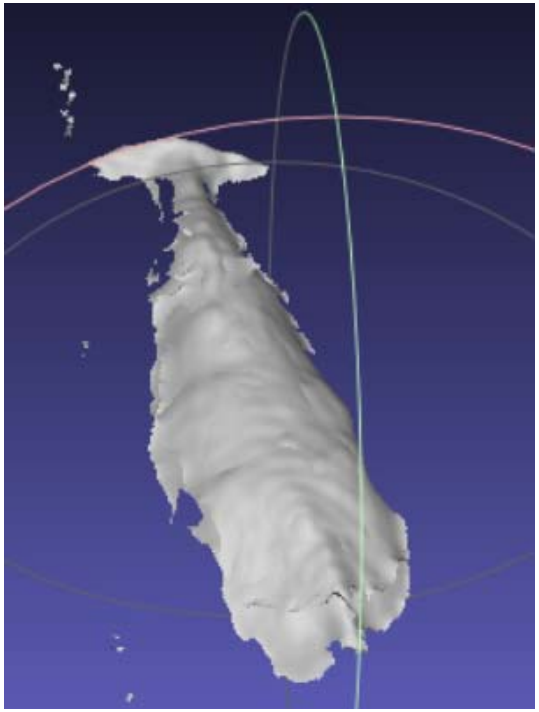
4.Road map

- **April to September: prototype testing phase**
- **September: validation of the prototype**
- **September to April 2023: data collection with several prototypes**
- **April 2023: validation of algorithms by OS**
- **During 2023: industrialization of the tool**
- **Current 2024: routine use on the field**

5.Project progress

Prototype

- 3m width
- 2.8m height
- 5 pairs of camera with curvature to obtain the rear of the animal



Field tests

- 2 tests in 2 different sites
- Goal → Animal's manipulation and contention

- Just on pair of camera (on the top)
- Encouraging results with the 3D images

5.Project progress

Thank you for your attention !

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