CELTIC-NEXT
eureka Cluster

instituto de telecomunicações

11 SEPTEMBER 2025 PROPOSERS' BROKERAGE DAY

Animal-Driven Plant Phenotype Mapping

Teaser

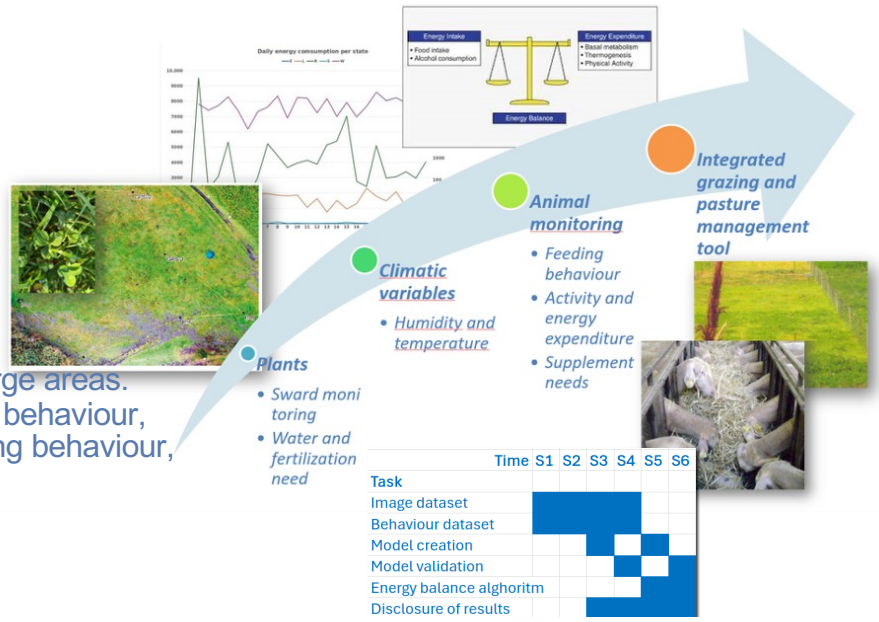
- Grassland management requires plant monitoring, irrigation, and fertilization
- Satellite and drone monitoring is expensive and limited.
- Using animals for monitoring is cheaper and more effective.

Objective

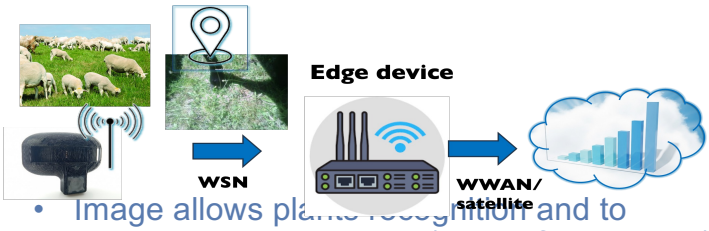
Development of an innovative and environmentally friendly integrated pasture management solution for grazing ruminants in Mediterranean (PT), humid subtropical (BR), and subarctic / continental (NO) climates.

Introduction

- Grazing animals perfect vehicles for sampling grassland conditions:
  - Satellite images does not allow plant identification, and drones are expensive, and have difficulty in covering large areas.
  - Grazing animals exhibit roaming behaviour, wearable devices allow monitoring behaviour, location, and to collect images.

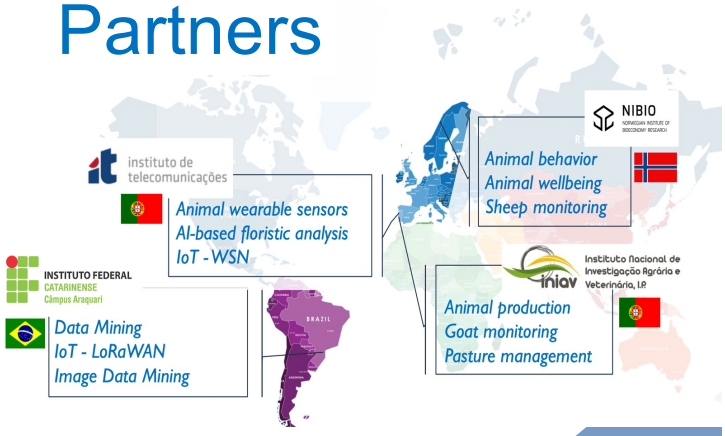


Task	Time	S1	S2	S3	S4	S5	S6
Image dataset							
Behaviour dataset							
Model creation							
Model validation							
Energy balance alghoritm							
Disclosure of results							



- Image allows plants recognition and to determine plants' needs (water, fertilizers,...):
  - Plant recognition enables species identification and nutritive value estimation
  - Animal behaviour identification allows to calculate ingestion time, energy expenditure, and to estimate dry mater intake.
    - Communications challenges:
      - Image transfer from a device with energy constraints
      - Very poor coverage of WWAN technologies in rural areas

Partners



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