This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 732064.

Open Farm Management Information System Supporting Ecological and Economical Tasks

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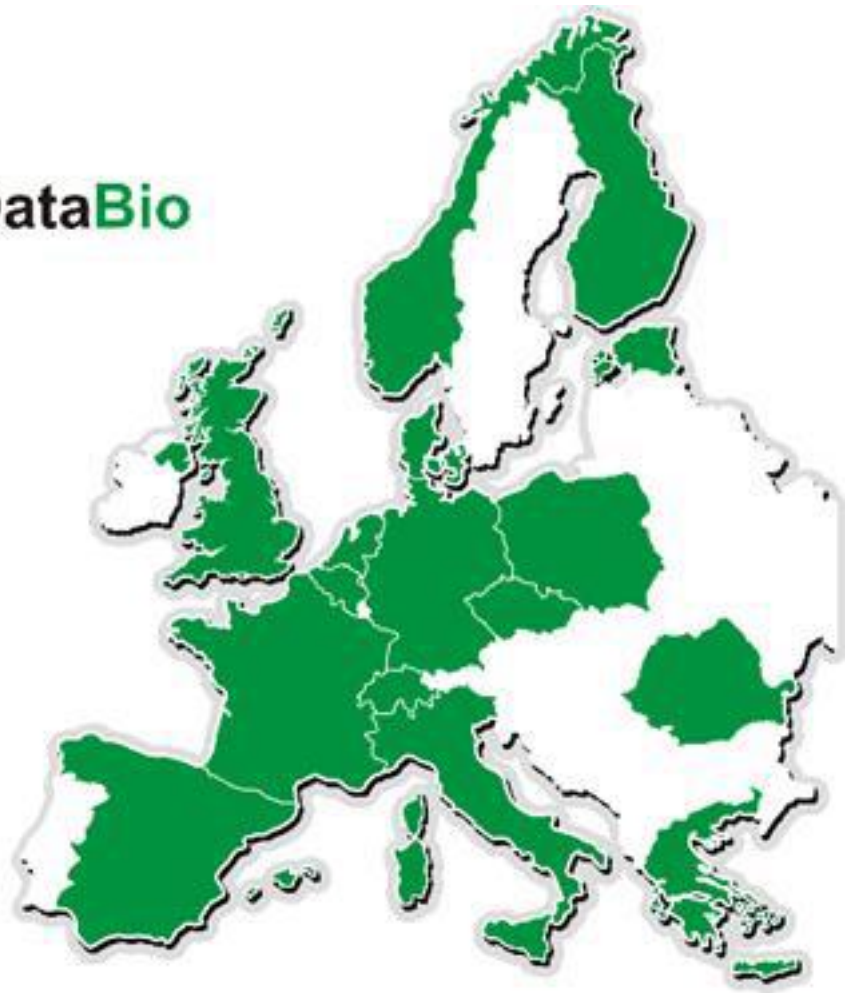
Project introduction

- Horizon 2020 (ICT call, Big Data)
  - FOODIE (FP7) follow-up
- 48 partners from 16 countries
- Funded between 2017 and 2020
- Overall budget 16 mil. € (EU contribution 13 mil. €)



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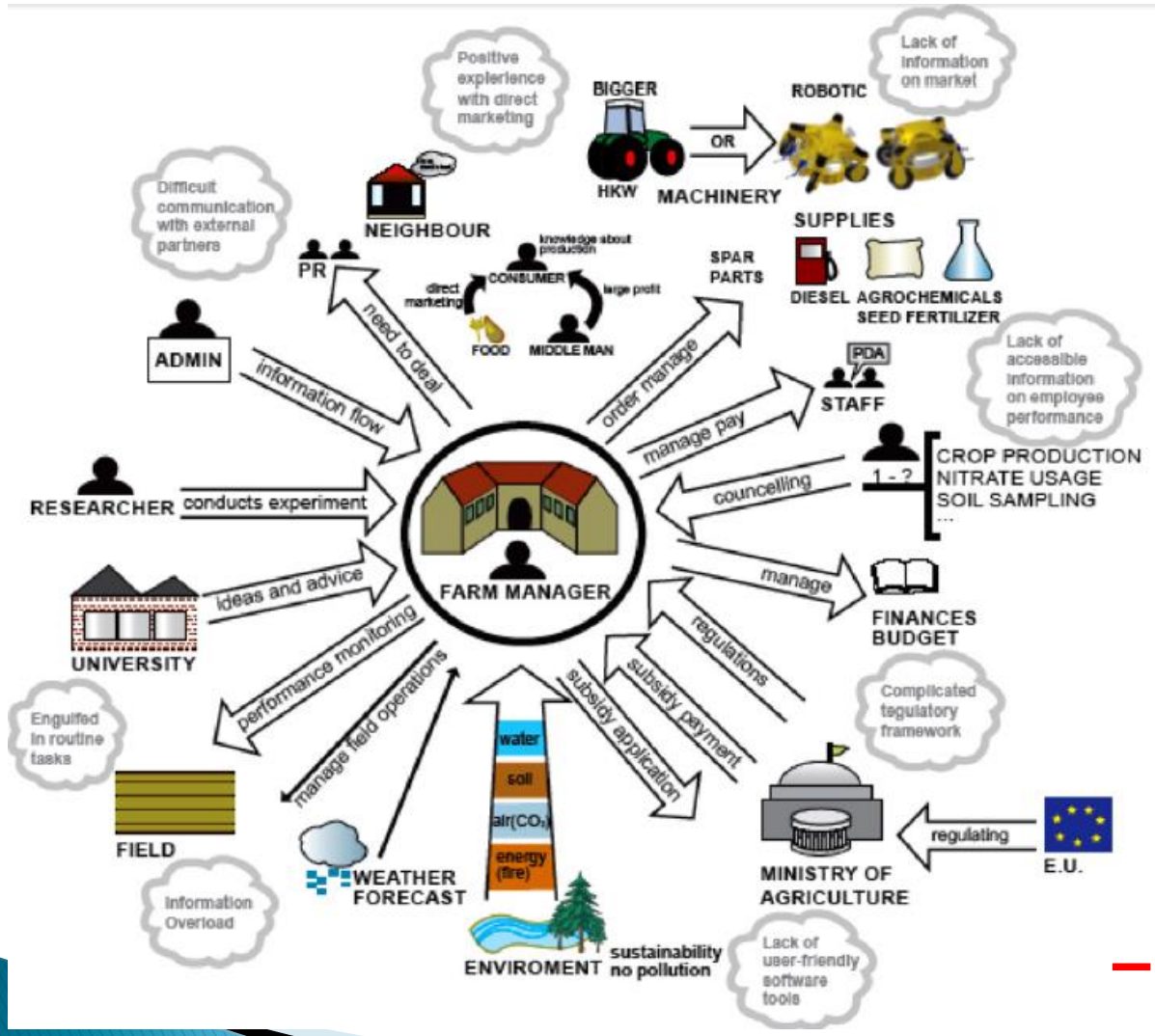
Motivations



Dimensions:

- economic

geospatial

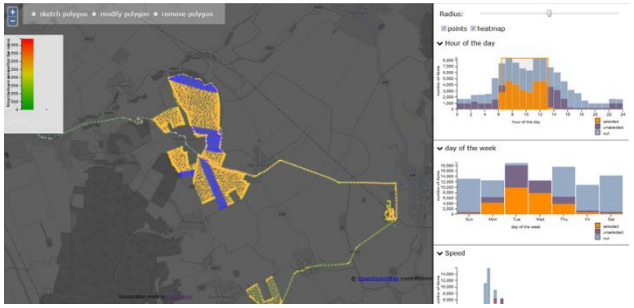
- environmental

Image adopted from: http://ifro.ku.dk/english/staff/?pure=files%2F21514055%2Fconceptual_model.pdf

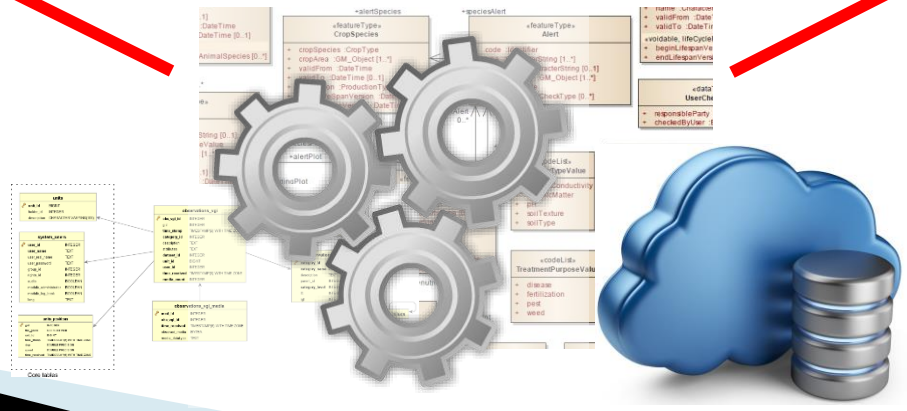
Three pillars for ecological and economical sound decisions

Yield potential computing

Sensor monitoring



Machinery fleet monitoring



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Yield potential

- Convential farming expects that fields are homogenous
- Precision farming expects spatial variations on a field
- DataBio- based precision farming, among others, also provides information on areas below/within/above average of the yield potential

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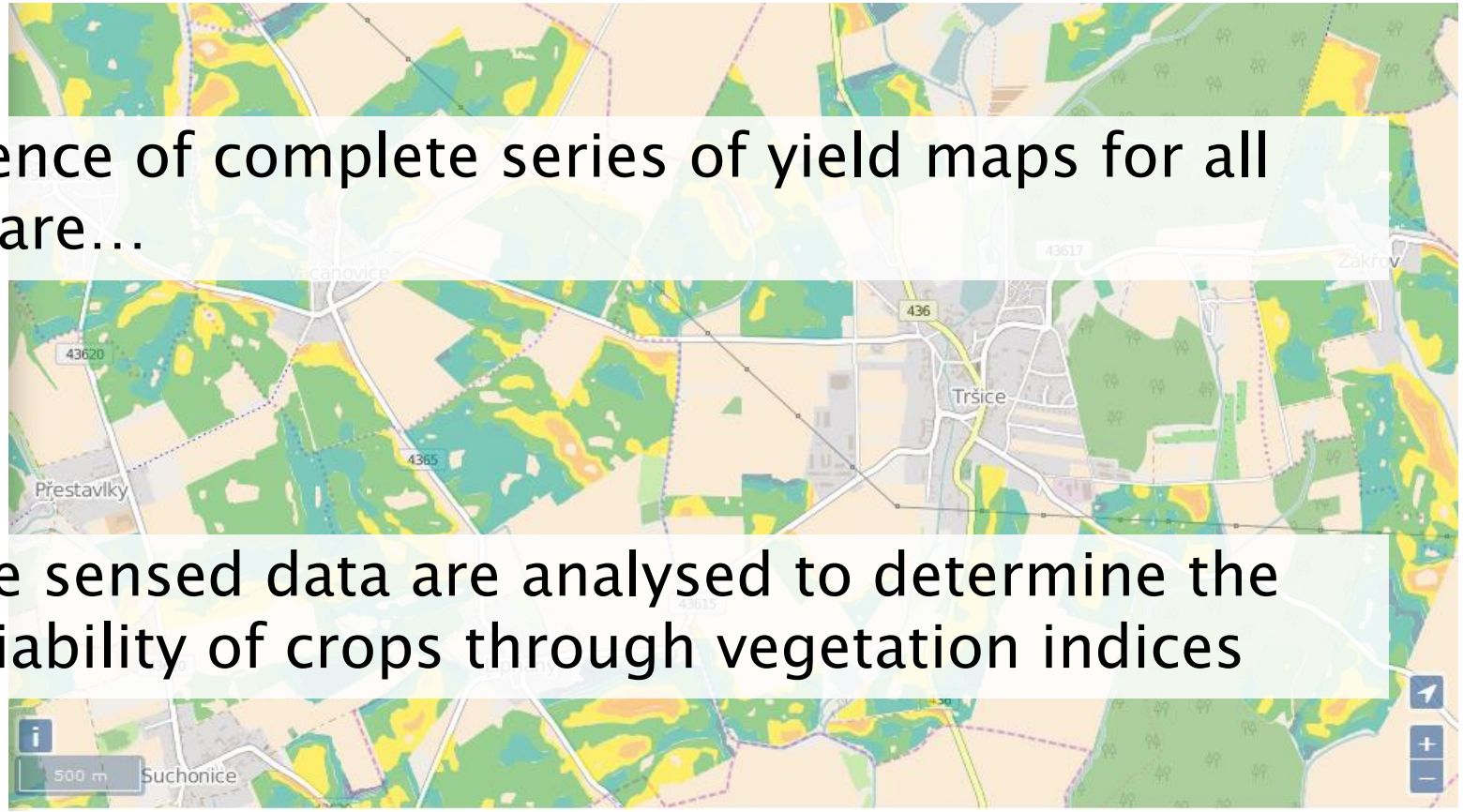
Yield potential

The presence of complete series of yield maps for all fields is rare…



…remote sensed data are analysed to determine the field variability of crops through vegetation indices

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Yield potential processing logic

Satellite images for last 8 years (Sentinel, Landsat)

Images filtering only for the second half of vegetation period

Derivation of vegetation indices (NDVI, EVI) applied together with clouds identification (CF Mask algorithm)

Yield potential index computing

Scenes combination and median value computation for yield potential

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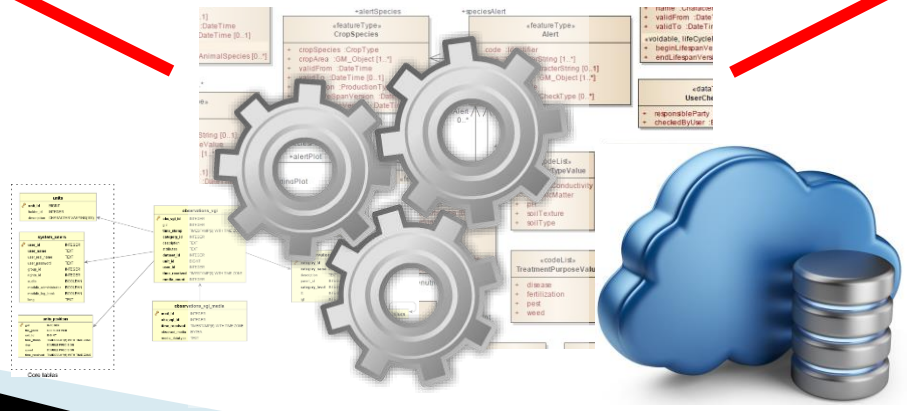
Three pillars for ecological and economical sound decisions

Yield potential computing

Sensor monitoring

Machinery fleet monitoring



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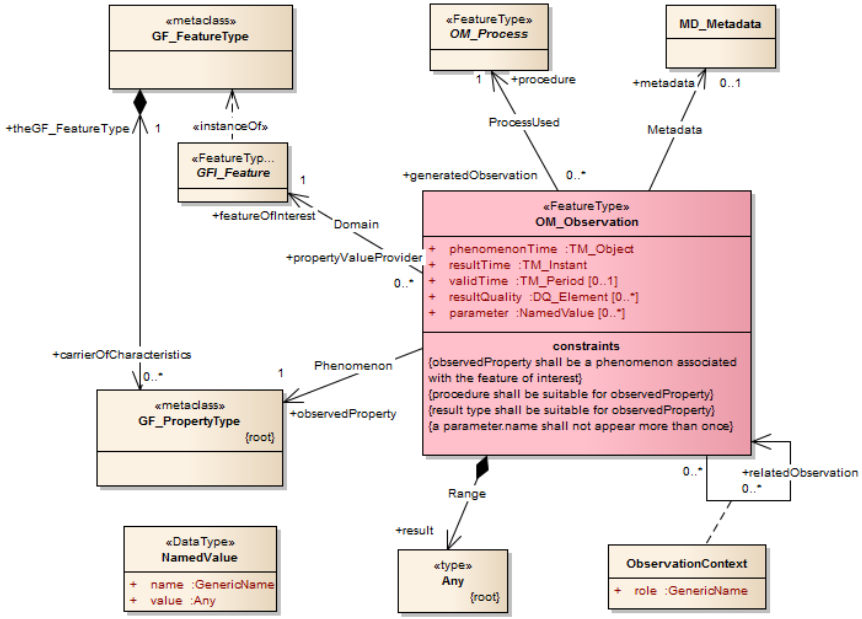
Sensor monitoring

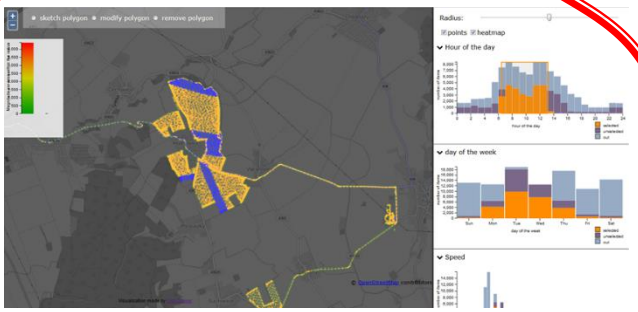
- Adopted from ISO 19156 Observations and Measurements, specialized according to INSPIRE
- Used for meteorological and pedological sensor measurements



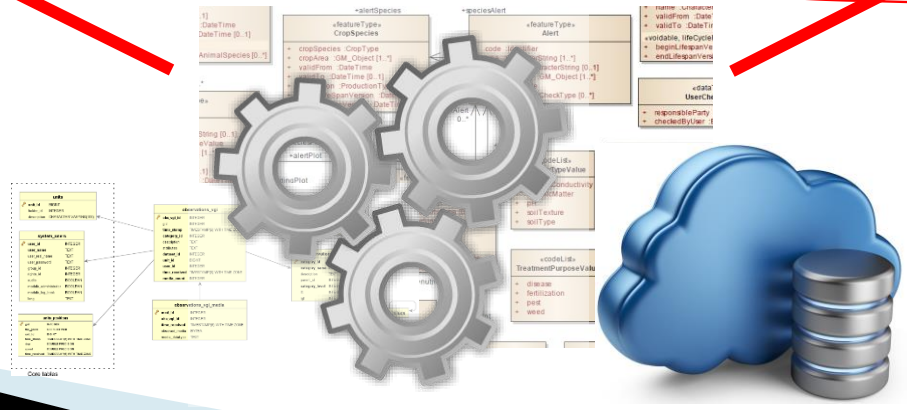
Three pillars for ecological and economical sound decisions

Yield potential computing

Sensor monitoring



Machinery fleet monitoring



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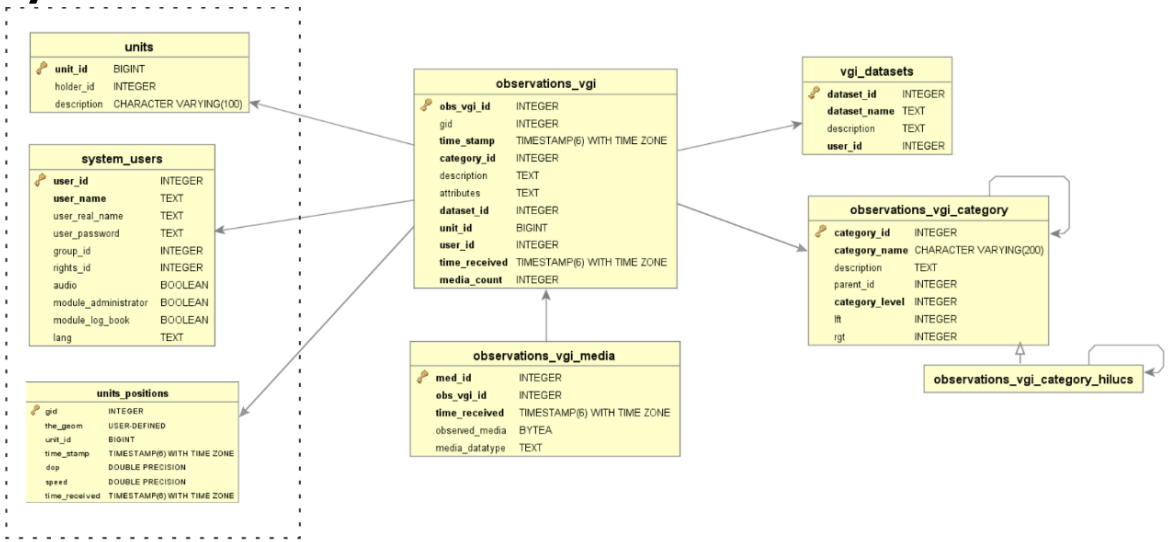
Machinery fleet monitoring

- Enhancing the ISO 19156 Observations and Measurements concept for multimedia support, measurement classifications,…
- Machinery fleet monitoring as well as cow monitoring/analyses



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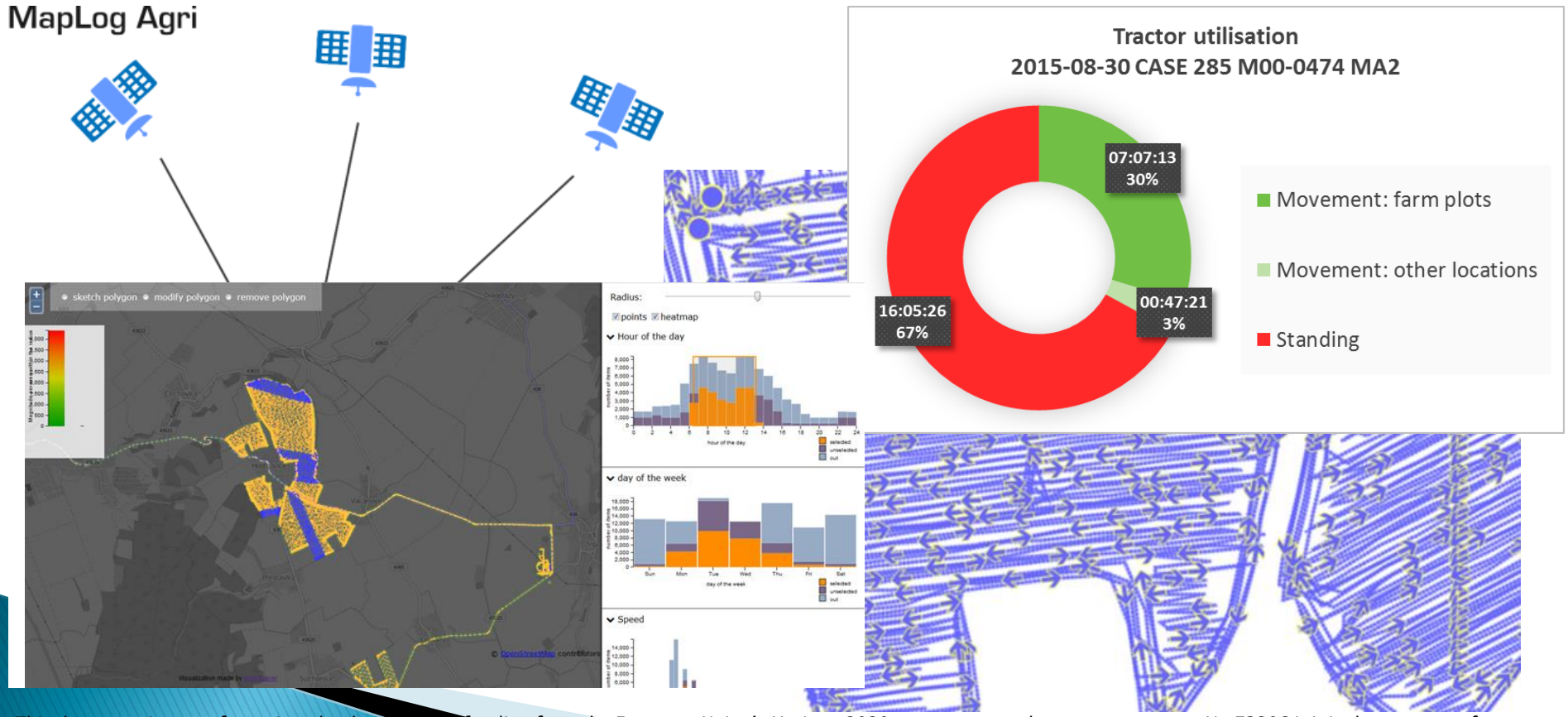
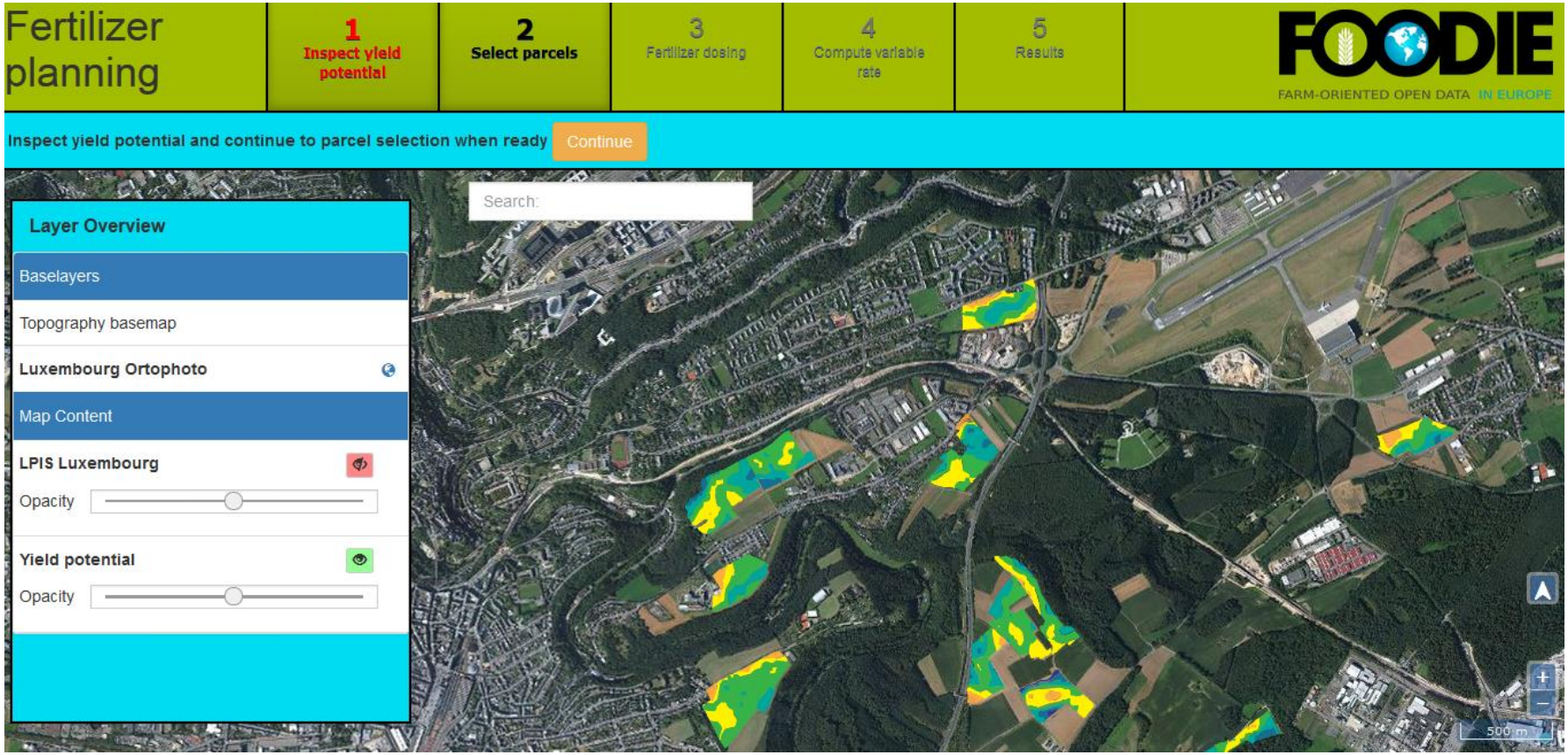
Machinery fleet monitoring

- 9 tractors and 23 application machines continuously monitored since March 2015



Integration



Integration

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Conclusions

- The main outcomes are already a subject of research and commercial interests
  - Global Earth Observation System of Systems, DG Joint Research Centre of the European Commission, Open Geospatial Consortium, Research Data Alliance, Czech Ministry of Agriculture,…
  - Farmers, advisor companies, tractor manufacturer (Zetor), sensor and machinery devices manufacturers (Agrio, Farmet), public audience through public administration

- Need of manual pre-/post- processing
  - Big Data approaches needed to be tested

Thank you for your interest in DataBio!

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