

# FOODIE



FARM-ORIENTED OPEN DATA IN EUROPE

## INSPIRE AND COPERNICUS IN PRECISION FARMING

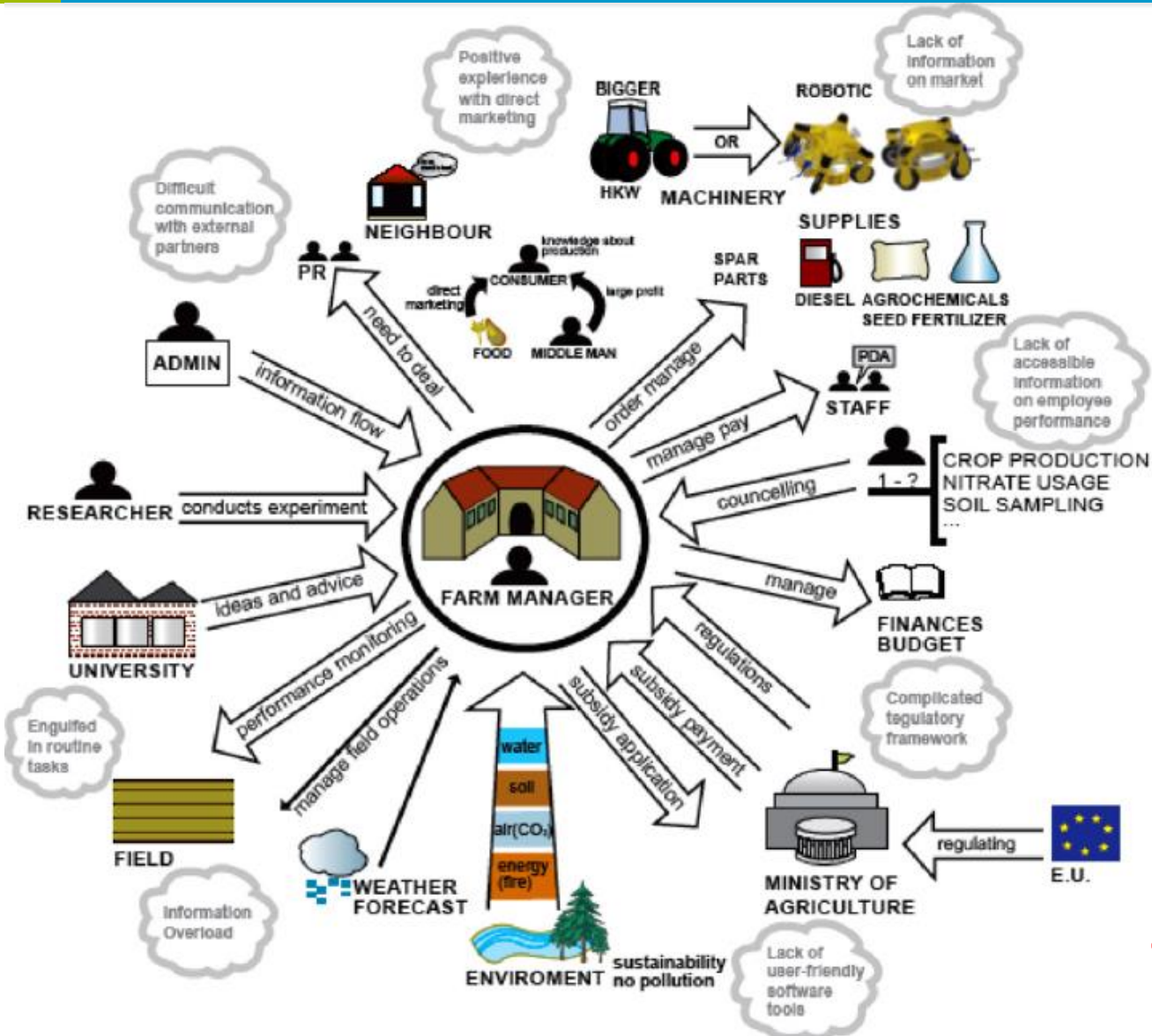
### Ecological and economical synergies

Tomáš ŘEZNÍK, Masaryk University/WIRELESSINFO  
Karel CHARVÁT, WIRELESSINFO  
Karel CHARVÁT jr., WIRELESSINFO  
Šárka HORÁKOVÁ, WIRELESSINFO  
Zbyněk KŘIVÁNEK, WIRELESSINFO  
Michal KEPKA, Czech Centre for Science and Society

[www.foodie-project.eu](http://www.foodie-project.eu)

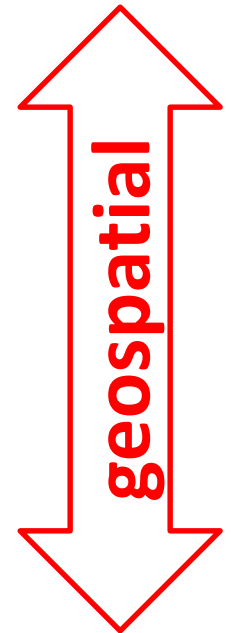


CIP-ICT-PSP-2013-7 Pilot Type B  
Grant agreement no: 621074



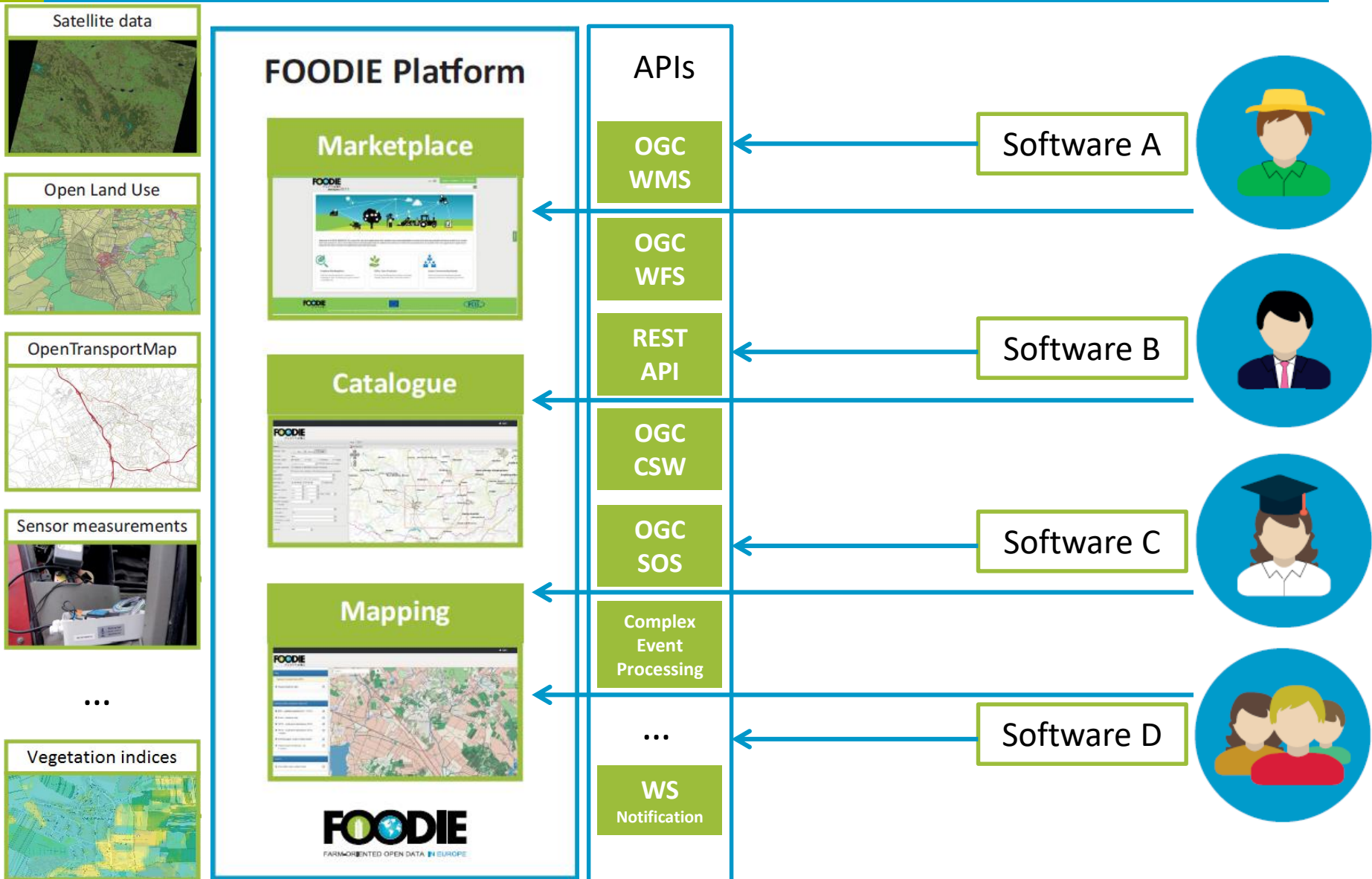
**Dimensions:**

**- economic**



**- environmental**

# Progress and Status – Interoperability





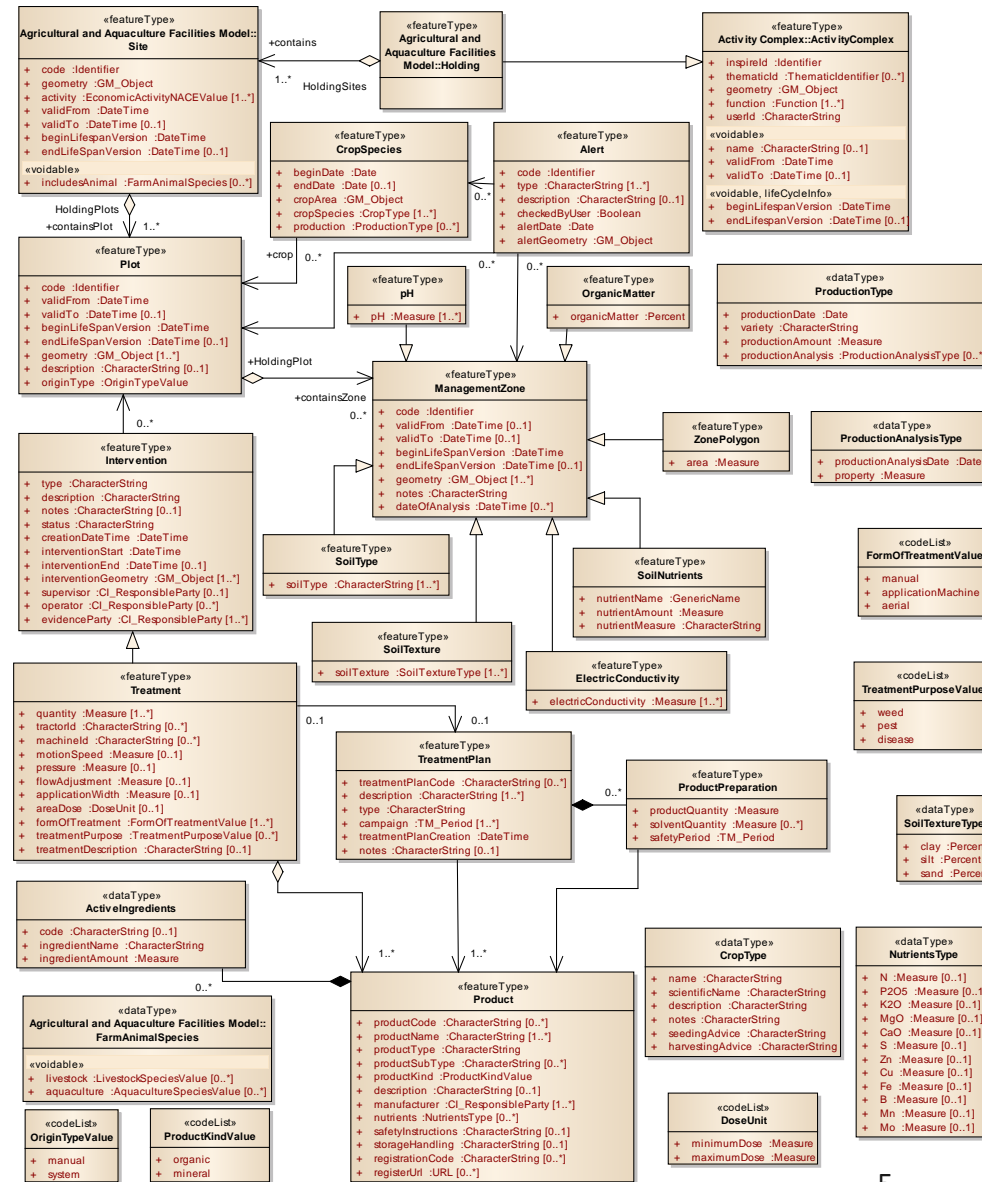
## Agriculture and aquaculture facilities theme

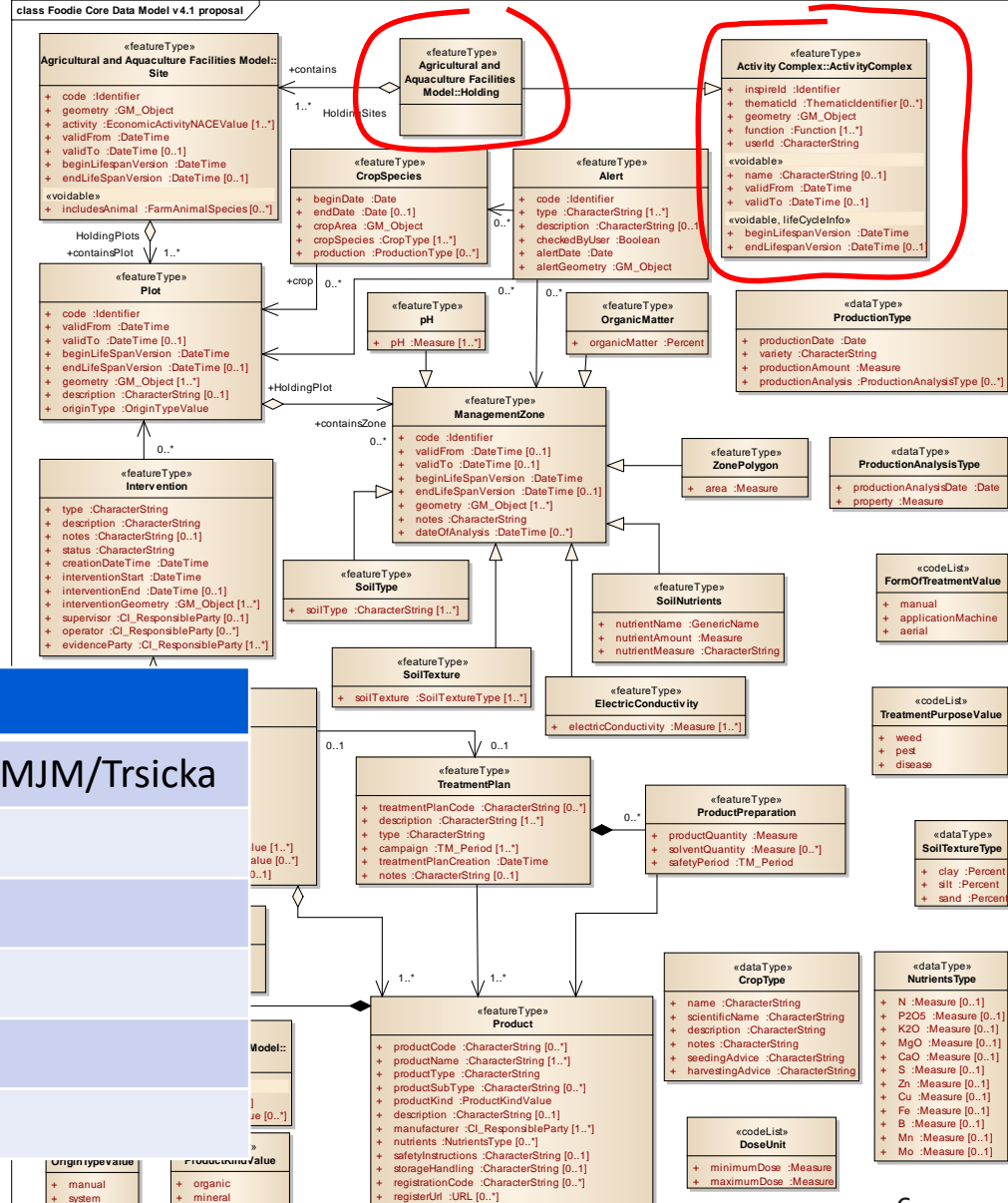
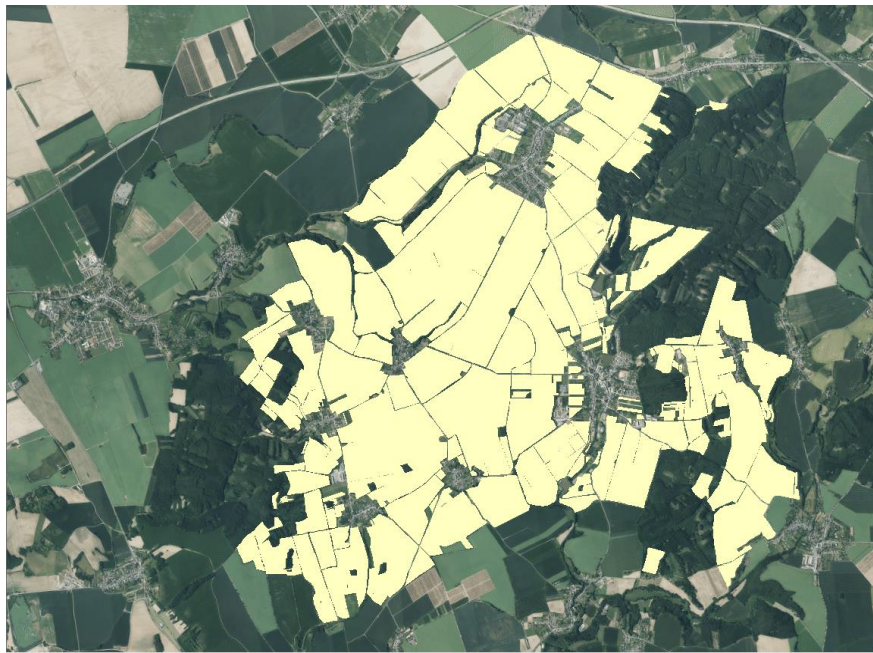


- Data Model compliant to:
  - Directive 2007/2/EC (INSPIRE) AF theme as well as data specification
  - ISO standards 19100 series

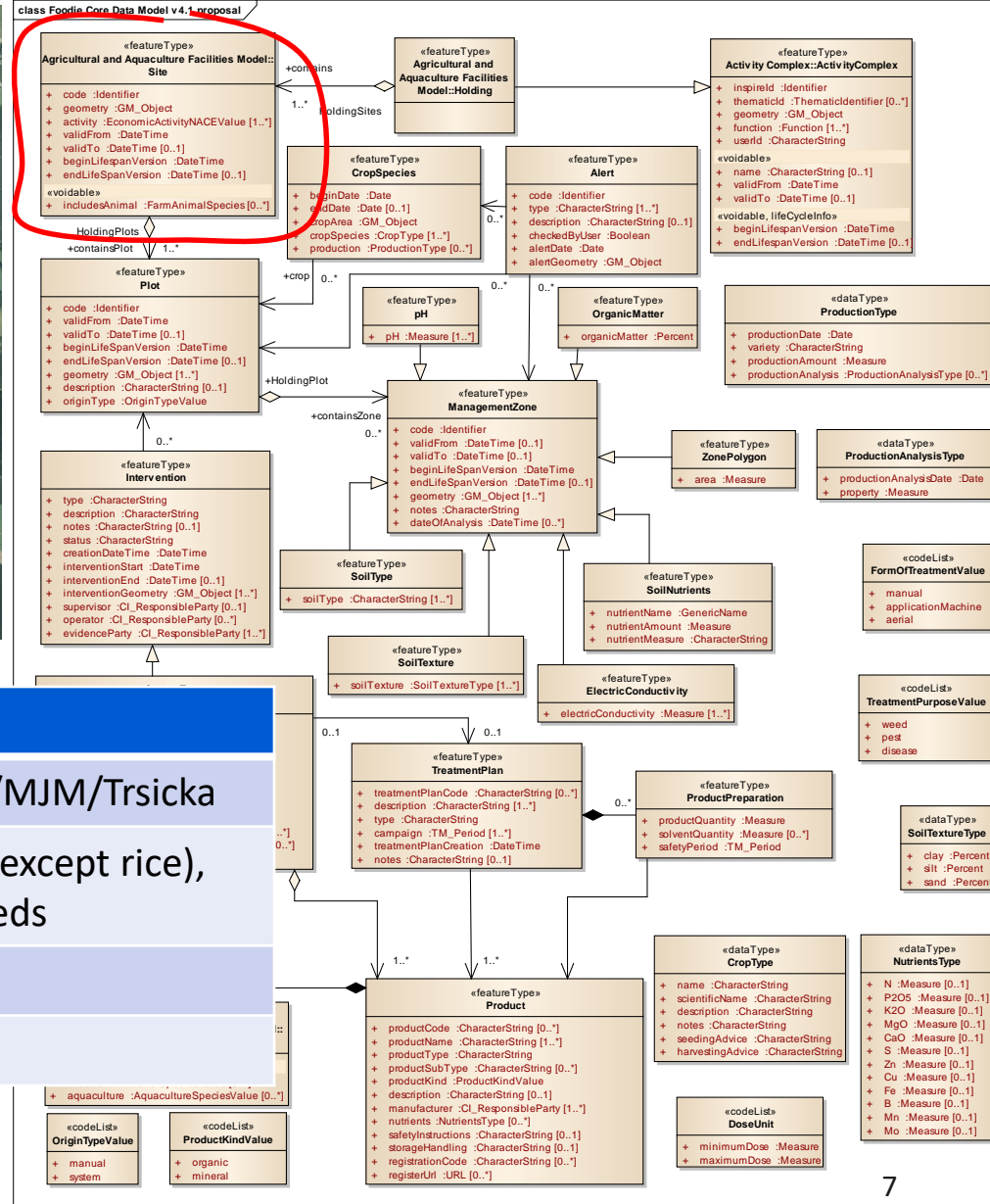
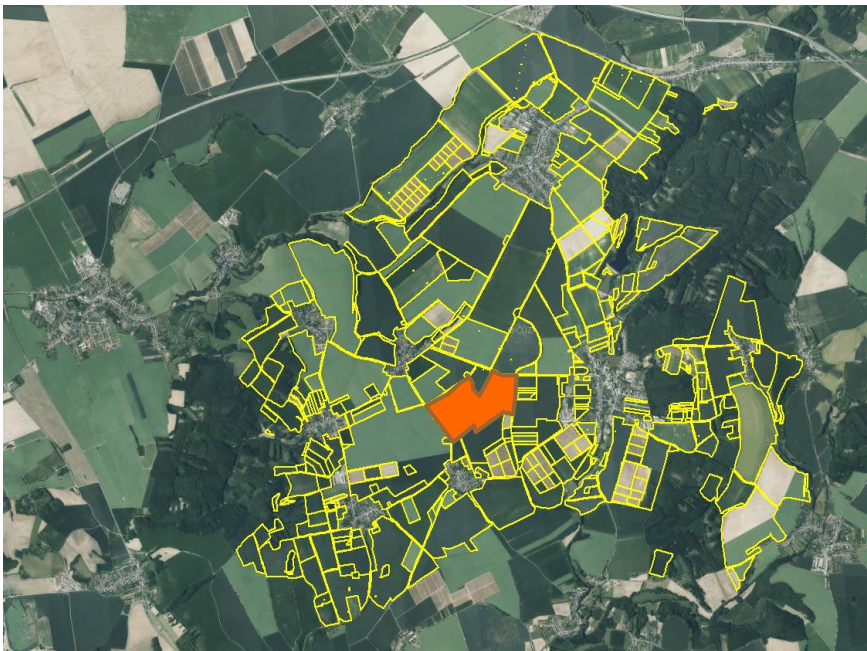
- Open and scalable

class Foodie Core Data Model v4.1 proposal

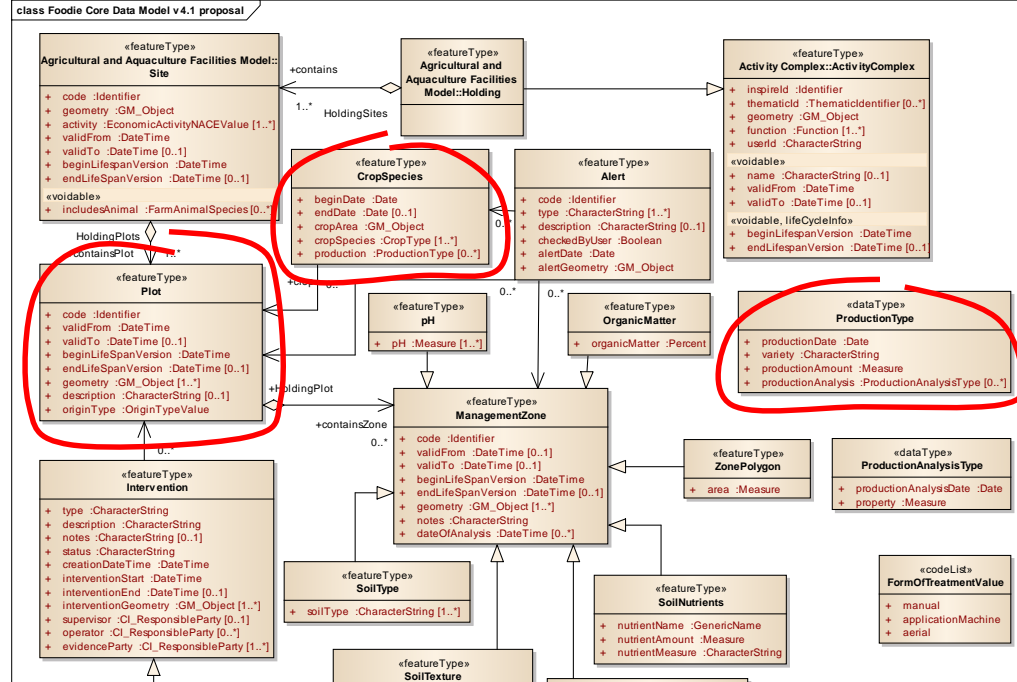
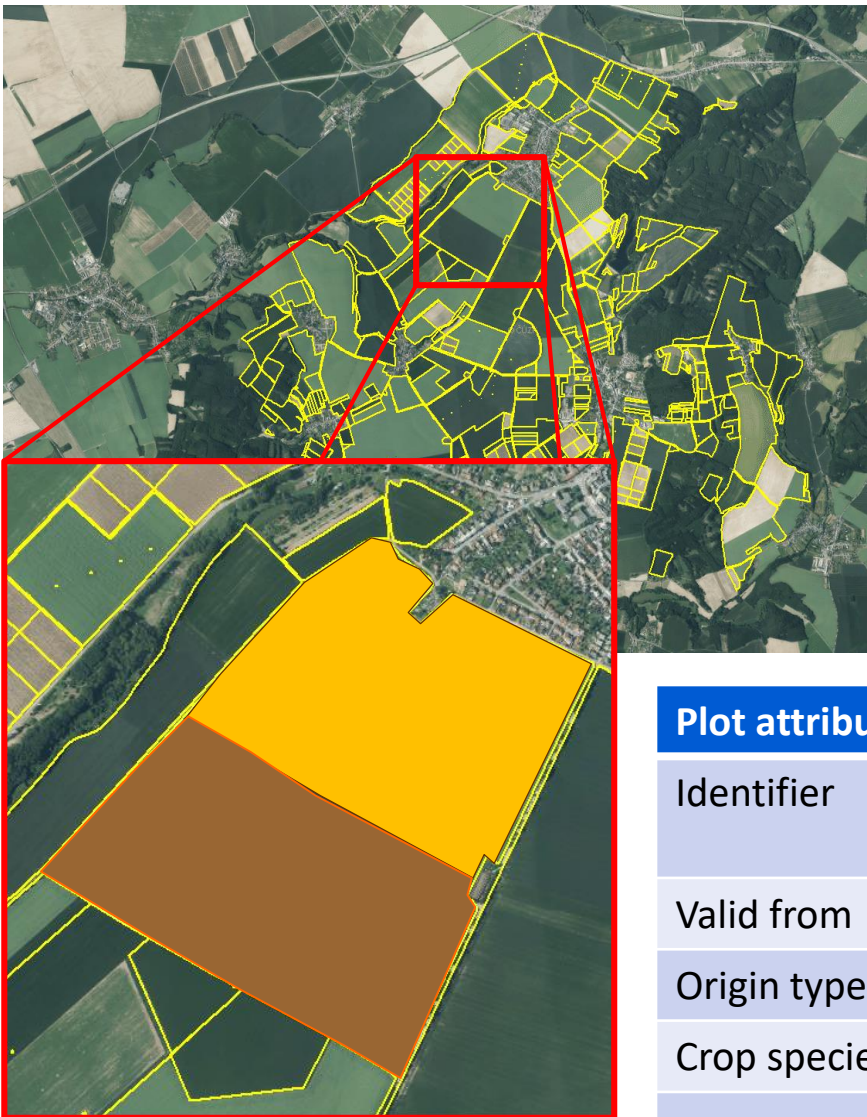




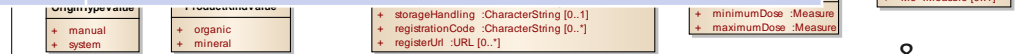
Holding attribute	Value
Identifier	<a href="http://foodie-project.eu/CZ/MJM/Trsicka">http://foodie-project.eu/CZ/MJM/Trsicka</a>
Function	agriculture
User identifier	47674814
Name	Tršická zemědělská, a.s.
Valid From	1993-12-13
Begin Lifespan	2015-03-11



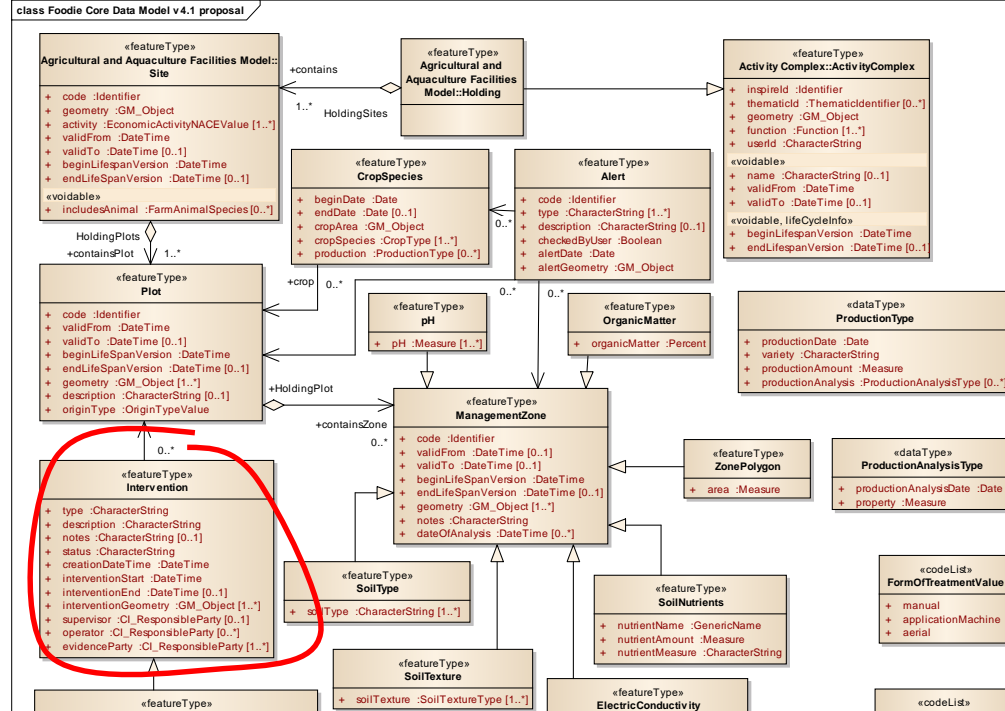
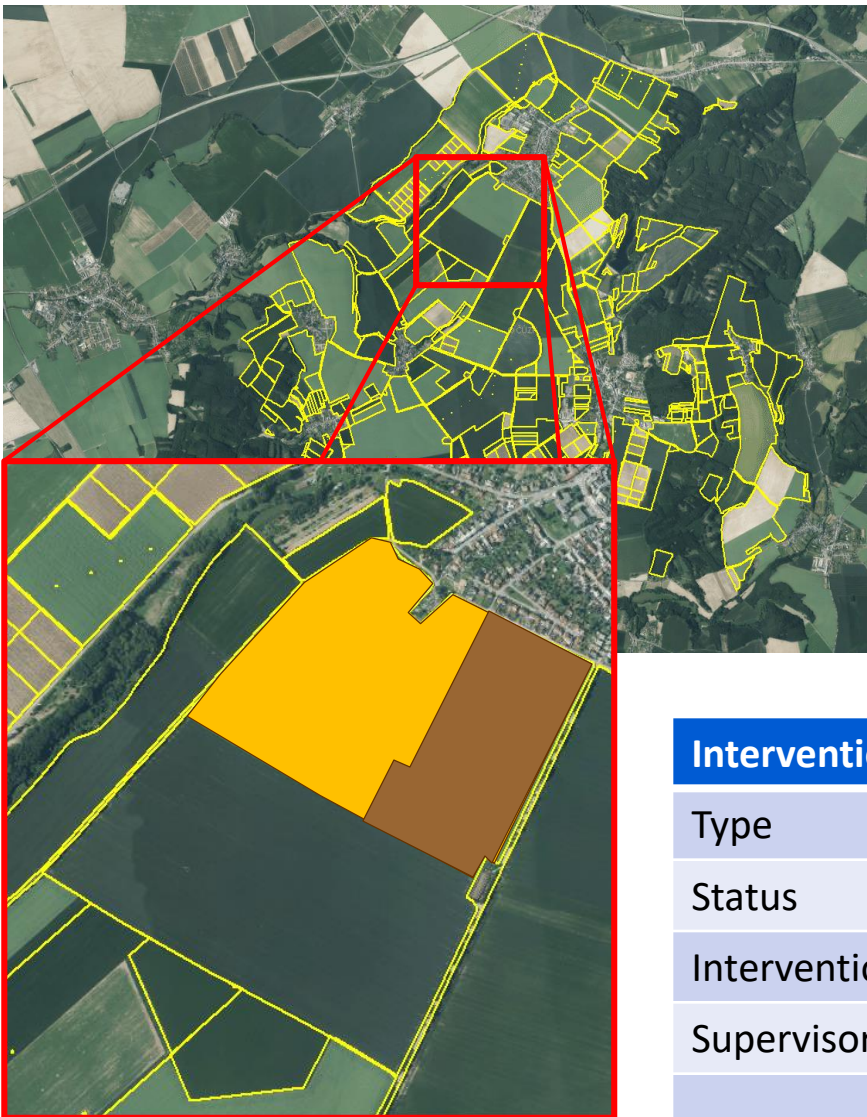
Site attribute	Value
Identifier	<a href="http://foodie-project.eu/CZ/MJM/Trsicka">http://foodie-project.eu/CZ/MJM/Trsicka</a>
Activity (NACE code)	A1.1.1 - Growing of cereals (except rice), leguminous crops and oil seeds
Valid From	2014-03-15
Begin Lifespan	2015-04-07



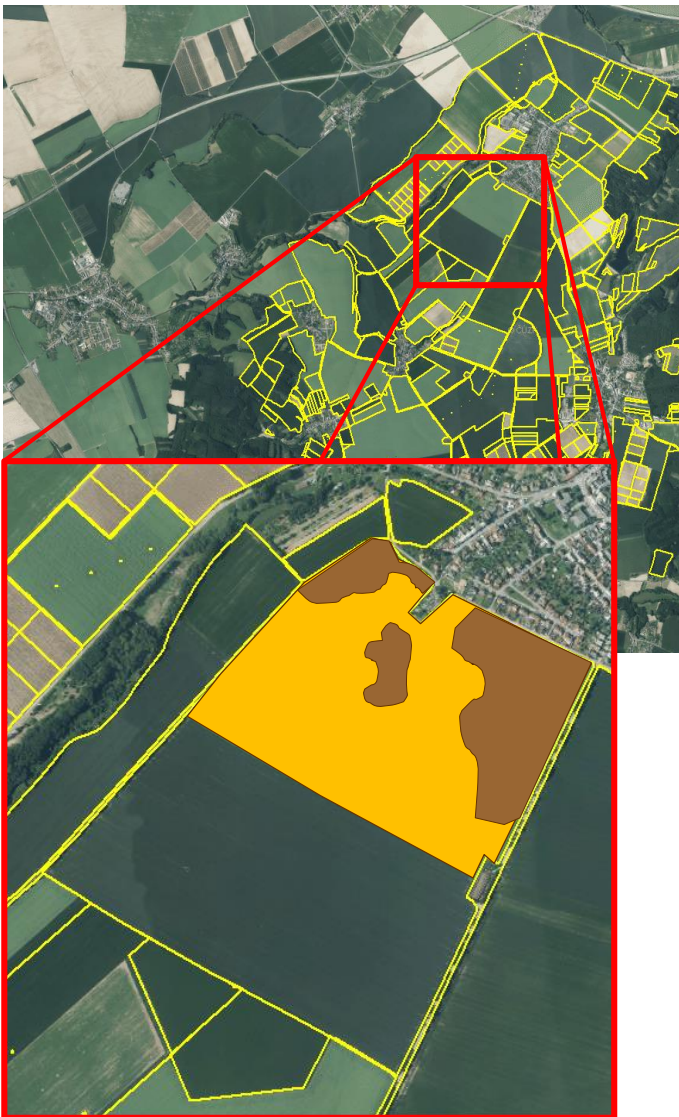
Plot attribute	Value
Identifier	<a href="http://foodie-project.eu/CZ/MJM/Trsicka/Plot/001">http://foodie-project.eu/CZ/MJM/Trsicka/Plot/001</a>
Valid from	2015-04-09
Origin type	manual
Crop species	wheat
...	...



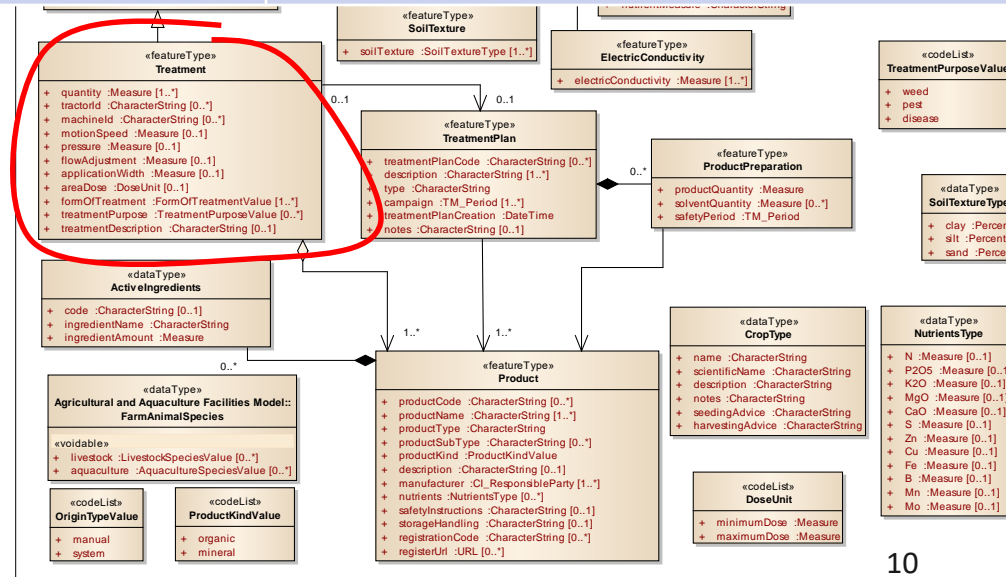


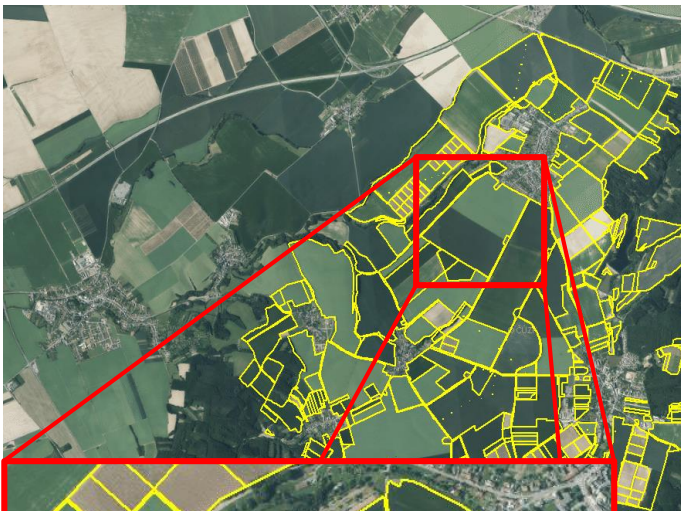


Intervention attribute	Value
Type	tillage
Status	ongoing
Intervention start	2015-04-22
Supervisor	John First, senior manager, phone 7435
...	...



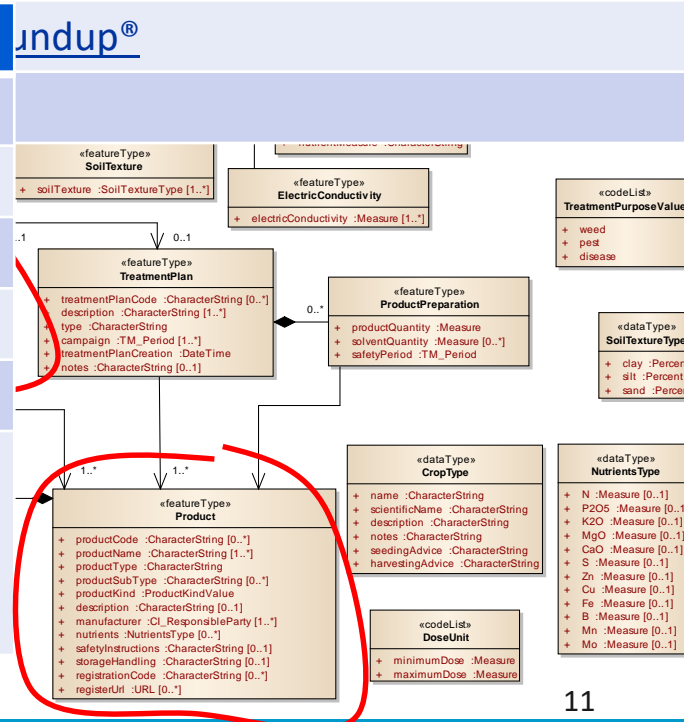
Treatment attribute	Value
Intervention type	herbicide application
Status	ongoing
Intervention start	2015-04-22
Supervisor	John First, senior manager, phone 7435
Treatment quantity	70 litres
Application width	25 meters
Form of treatment	Application machine
Product	<a href="#">Roundup®</a>
...	...

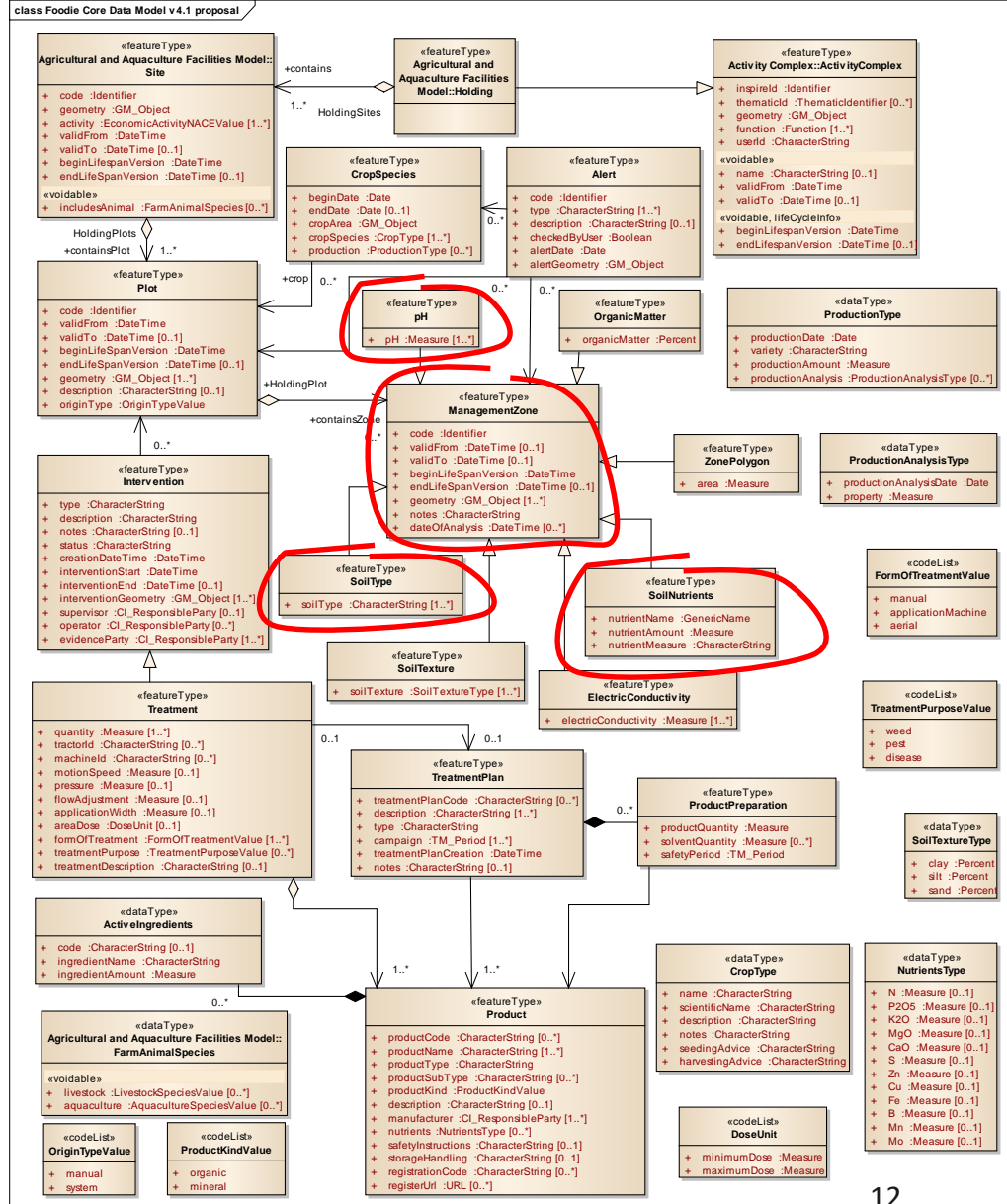
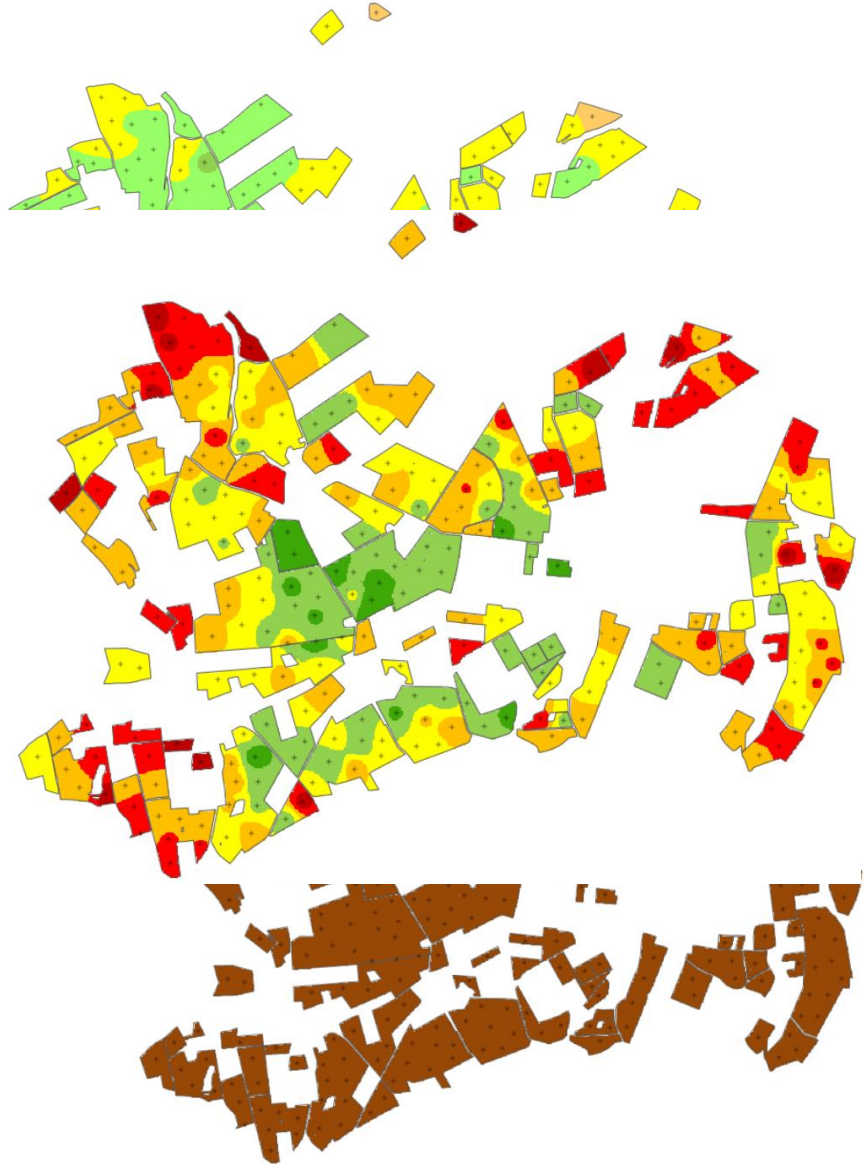




Treatment attribute	Value
Intervention type	herbicide application
Status	ongoing
Intervention start	2015-04-22
Supervisor	John First, senior manager, phone 7435
Treatment quantity	70 litres
Application width	25 meters
Form of treatment	Application machine

Product attribute	Value
Product code	01475200
Product name	Roundup®
Product type	herbicide
Manufacturer	MONSANTO®
Register URL	<a href="http://agro-register.cz/?1475">http://agro-register.cz/?1475</a>
Safety instructions	Eye contact: may cause may cause pain, redness and tearing based on toxicity studies.
	...



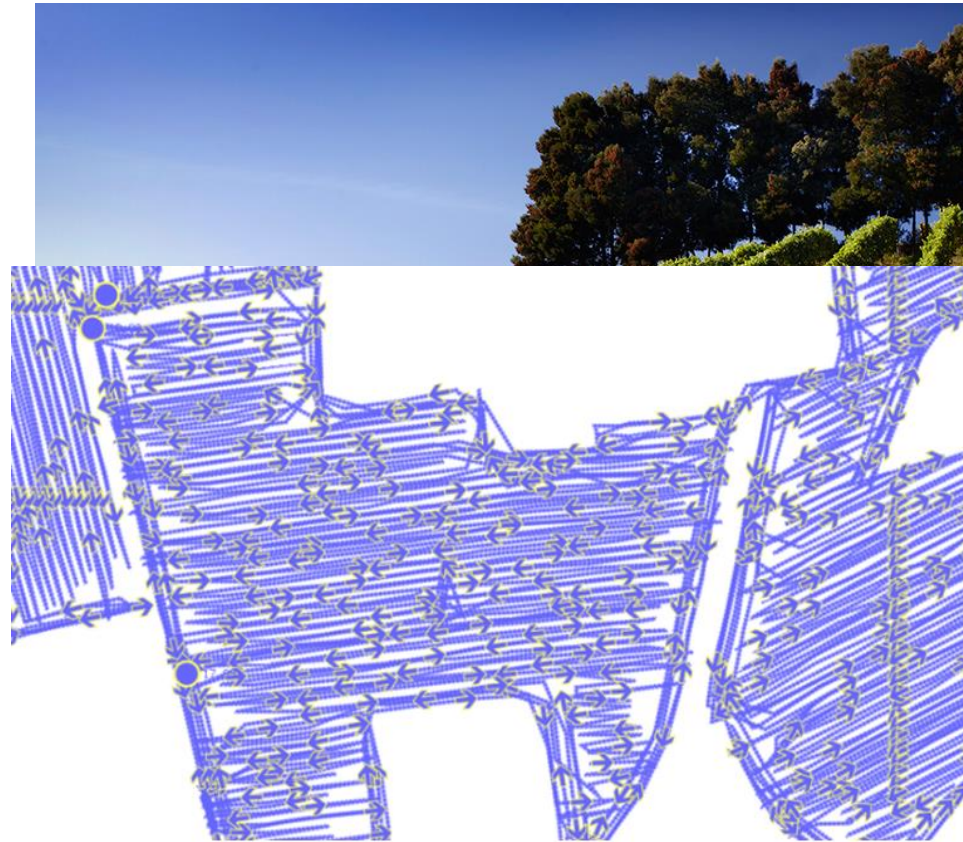




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## Environmental Monitoring Facilities theme

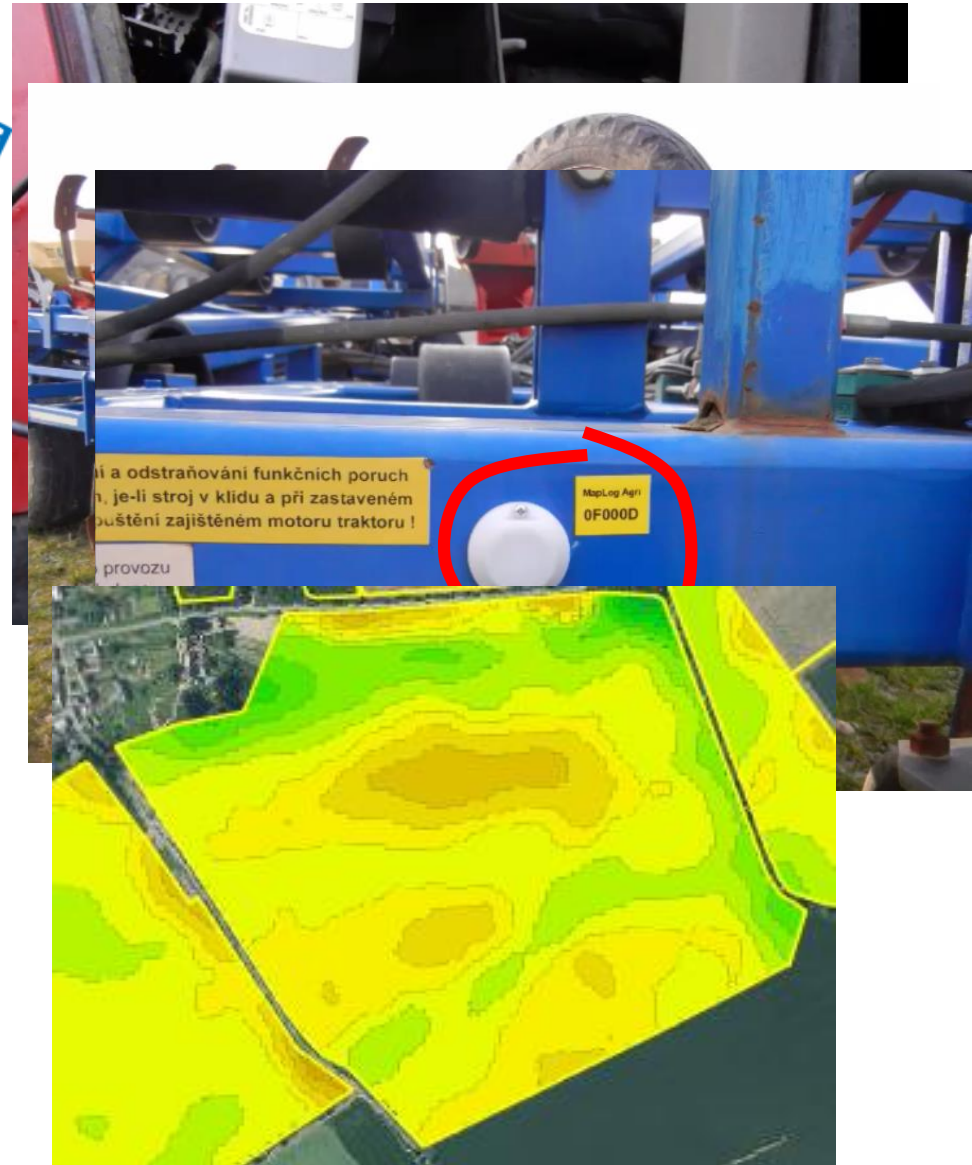
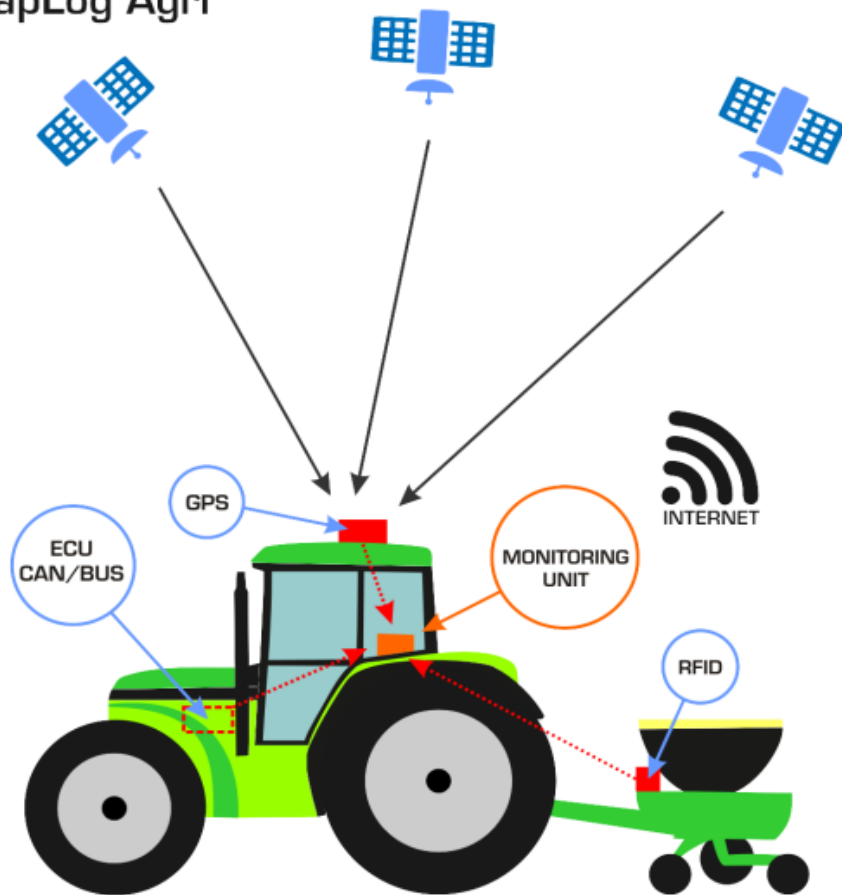
- Sensor measurements
  - temperature
  - humidity
  - machinery fleet monitoring
  - ...
- O&M (ISO 19156:2011)
- OGC SOS
  - modified
  - GeoJSON instead of XML for measurements

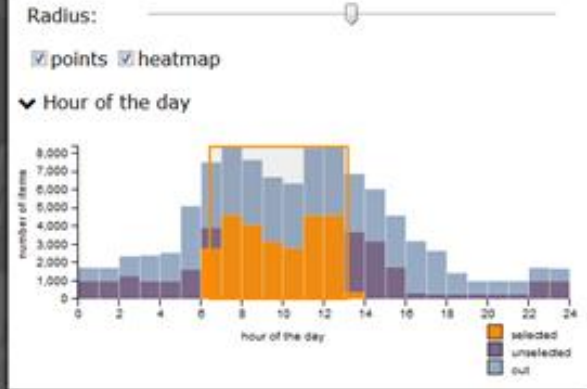
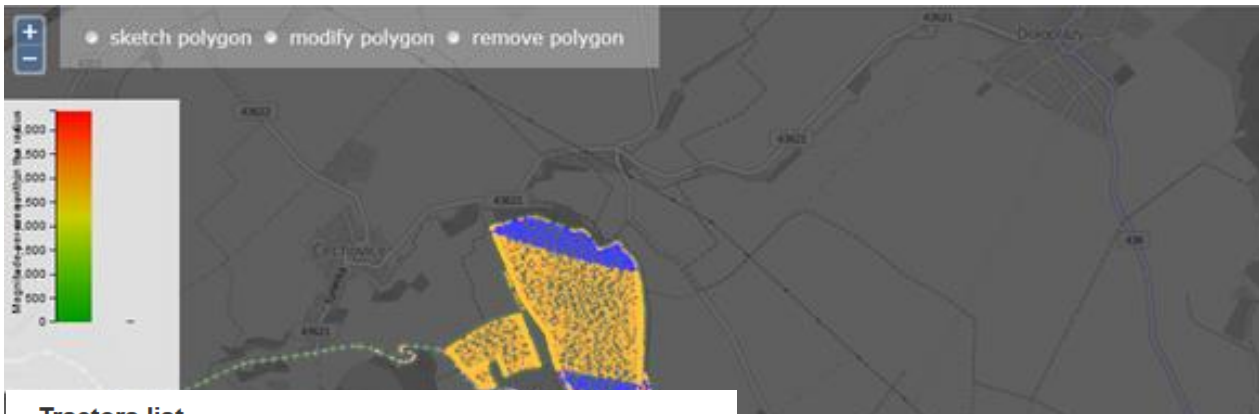


Images adopted from: <http://cdn2.newsok.biz>, <http://www.terrasgauda.com>.

# Machinery monitoring

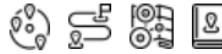
## MapLog Agri



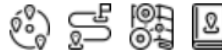


## Tractors list

● CASE 140 M01-0110 MA7



● CASE 140 MA8



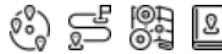
● CASE 140 MA9



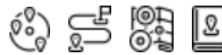
● CASE 165 M01-0058 MA4



● CASE 165 M01-0059 MA3



● CASE 180 M01-1017 MA5



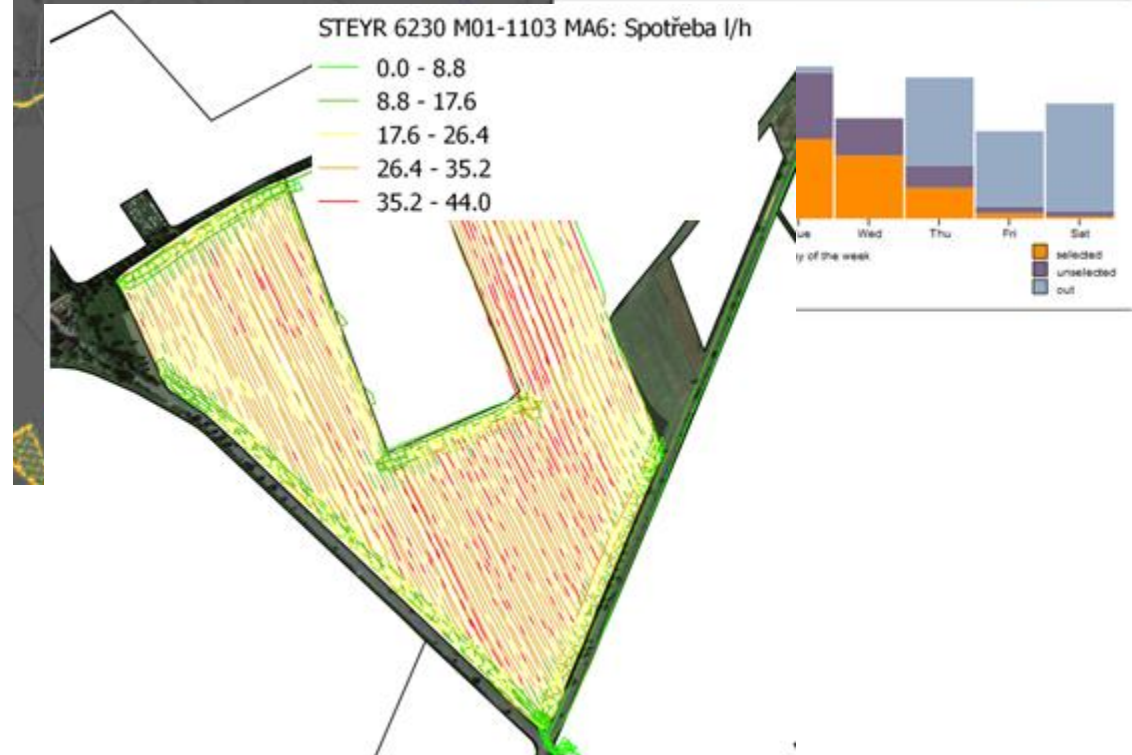
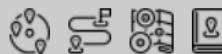
● CASE 285 M00-0474 MA2



● CASE 340 M01-1049 MA1



● STEYR 6230 M01-1103 MA6







# Minimizing and Reporting Environmental Burden

Satellite images for last 8 years  
(Sentinel, Landsat)

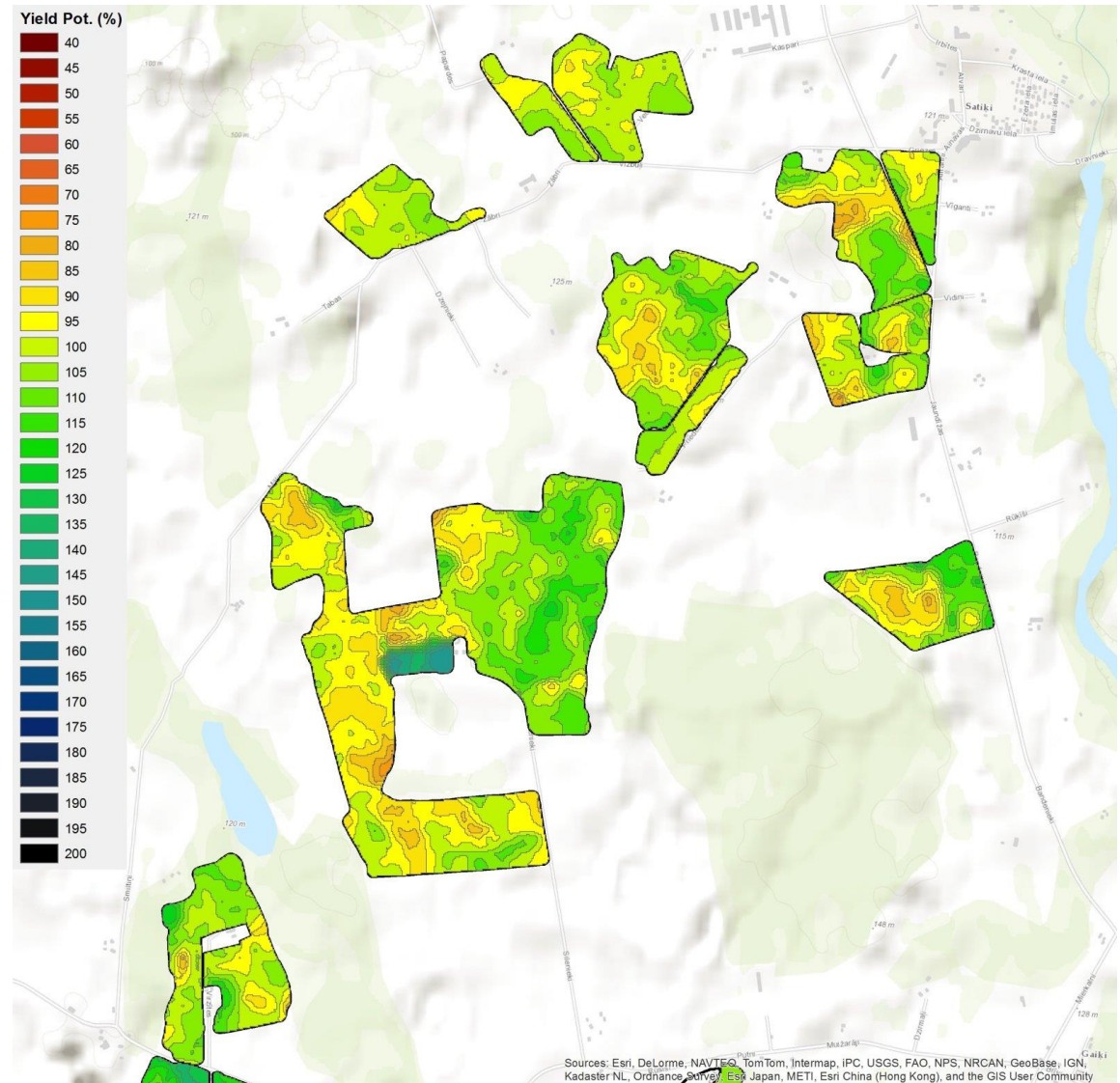
Images filtering only for the second  
half of vegetation period

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

- Successful rate about 80%...and increasing
- Validated in the Czech Republic and Latvia
  - two farms with acreage more than 1'000 ha
- Ongoing OGC Web Processing Service (WPS) implementation



- Relationship to many others INSPIRE themes (LC, LU, OI, AM etc.)
  - feel free to ask
- INSPIRE-based data models together with Copernicus data
  - save money of farmers,
  - lower the environmental burden,
  - are more complicated than development tailored for one farmer,
  - enable real data interoperability.
- Cloud-based solutions working only in one country
  - Farmers are not supporters when they are in country A and their data on a cloud in country B (even if it is still Europe)
- Distrust of farmers when aggregating (big) data

# FOODIE

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## Partners



## Coordinator's Contact

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# THANK YOU FOR YOUR INTEREST!



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