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The MONALISA project: monitoring Key environmental parameters

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Geospatial Sensor Webs - from data to information in the Sensor Web
August 28 – 30, 2017

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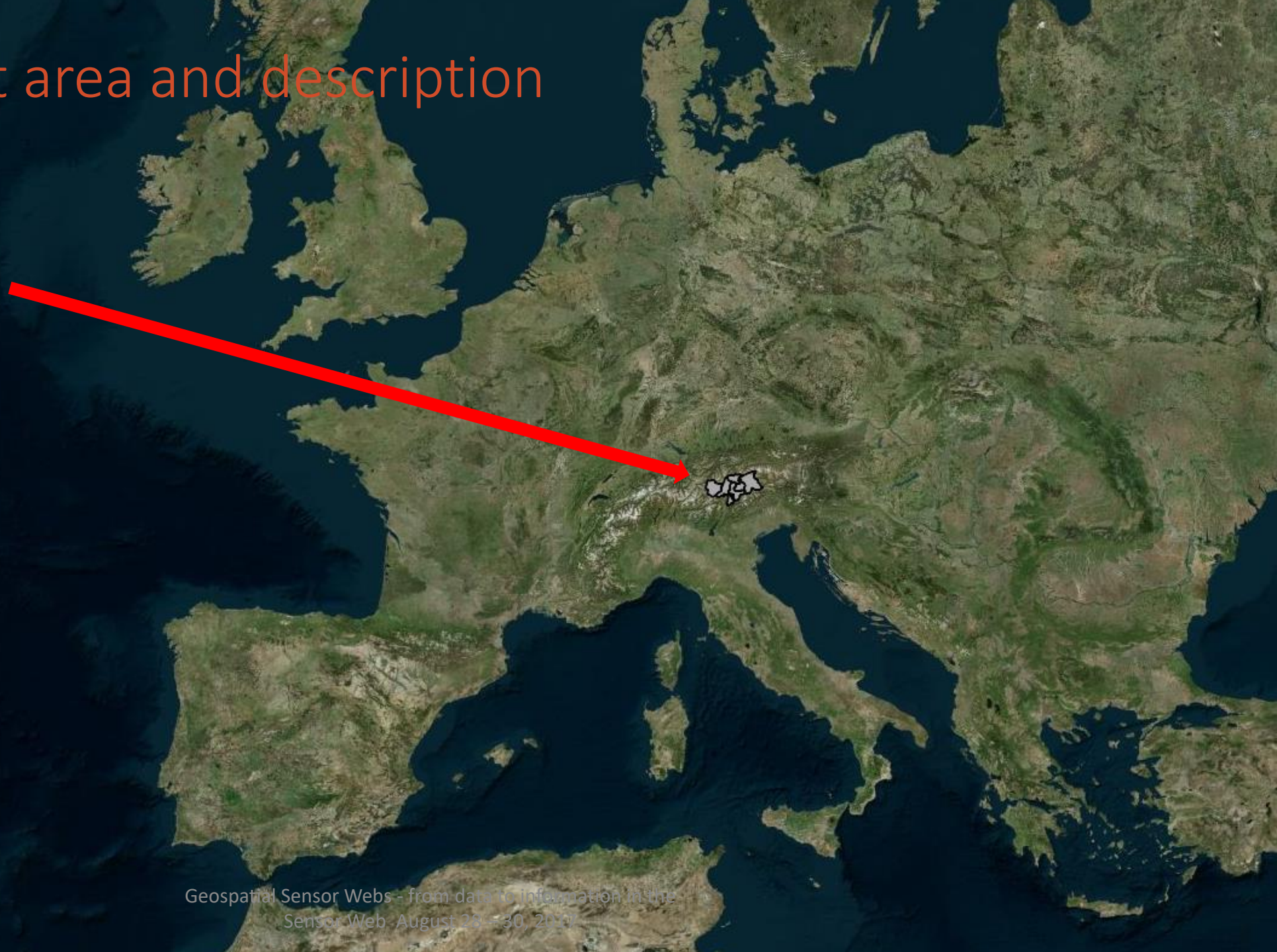
Project area and description



Project area and description

MONALISA project

August 2013 - December 2016

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universität innsbruck

LAIMBURG Land- und Forstwirtschaftliches Versuchszentrum Centro di Sperimentazione Agraria e Forestale Research Centre for Agriculture and Forestry

Freie Universität Bozen
Libera Università di Bolzano
Free University of Bozen - Bolzano

IDM Südtirol Alto Adige

Università degli Studi di Trento

MOUNTAIN-EERING Società di Ingegneria

gecosistema Geographic Environmental COnsulting

CISMA

BIOMETIC advanced technology

territoriumonline mapping your world

AUTONOME PROVINZ BOZEN SÜDTIROL

PROVINCIA AUTONOMA DI BOLZANO ALTO ADIGE

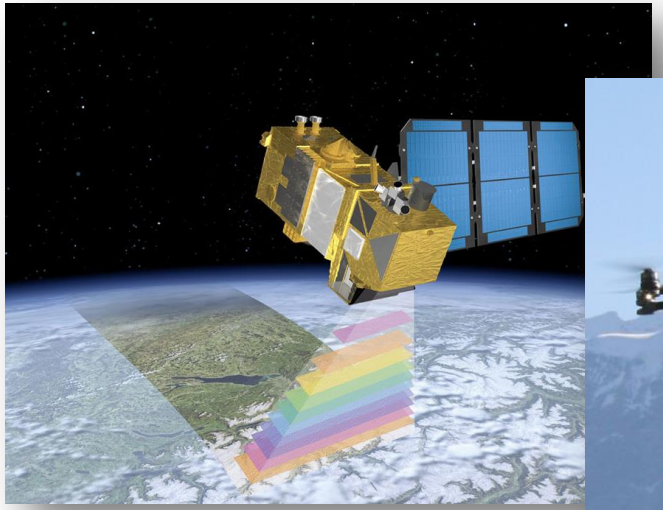
Protezione Civile Zivilschutz Prutezion Zivila

VOG Vicino alle mele. Vicino ai clienti.

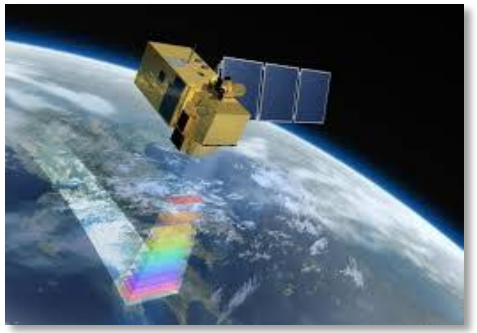
beratungsring.org

Project main purpose

Environmental monitoring by different technologies: Satellite, UAV, in-situ



Project main purpose



Remote Sensing

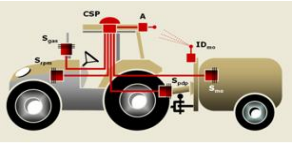
Proximal Sensing

Ground Sensing

Field Data Logger

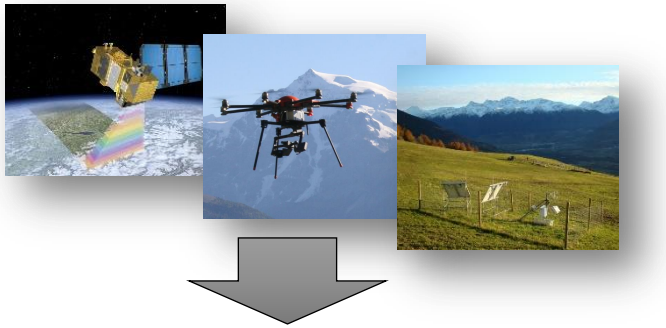
Non-destructive Technologies

Data Life Cycle (acquisition, quality check, management, dissemination, etc.)



Project main purpose

Monitoring Key environmental parameters



Pastures - Grassland

Orchards (apple)

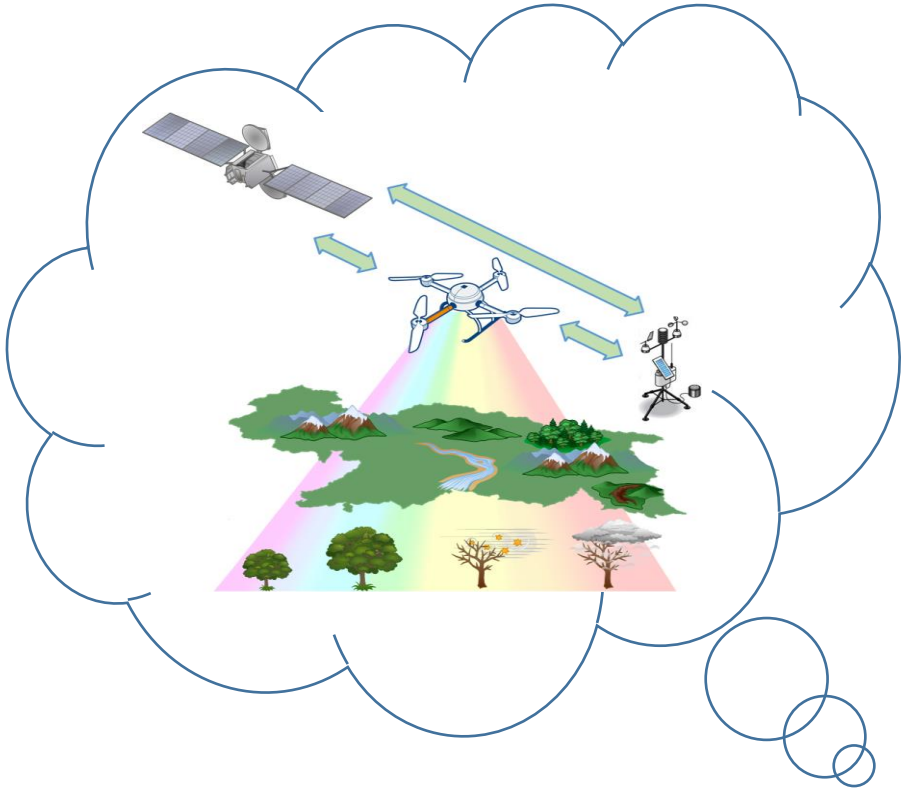
Forests

Vegetation: Leaf Area Index, NDVI, Phenology, Tree height and structure

Water: Soil moisture, Evapotranspiration, Snow

Weather: Air temperature, Wind

Technical issues and needs



What we need

Tools to view, compare and analyze different data sources

Remote Sensing, UAV, ground stations, Laboratory

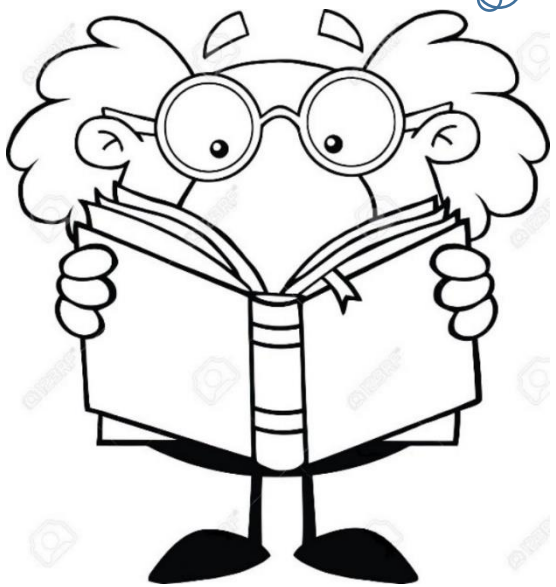
Data organization

To Collect all datasets coming from different platform and from laboratory

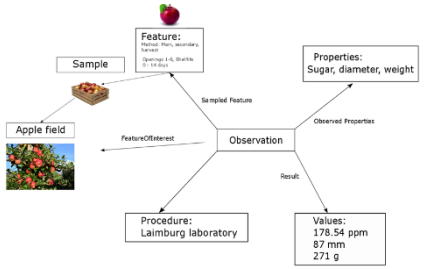
Acquire skills in observation organization

Technical issues and needs

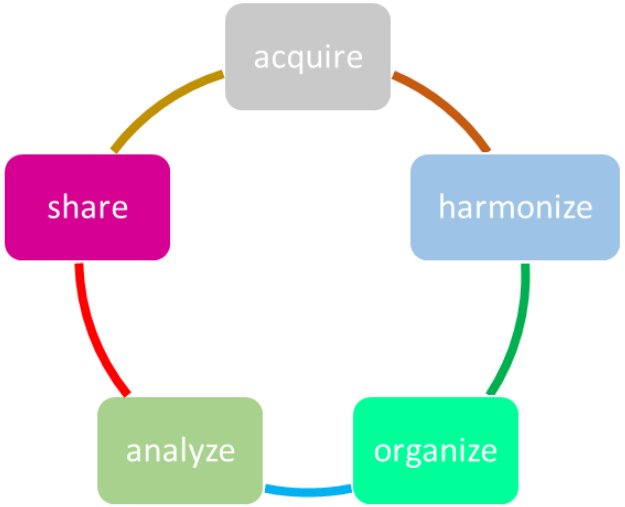
How to handle millions of records from different sensors of different formats?



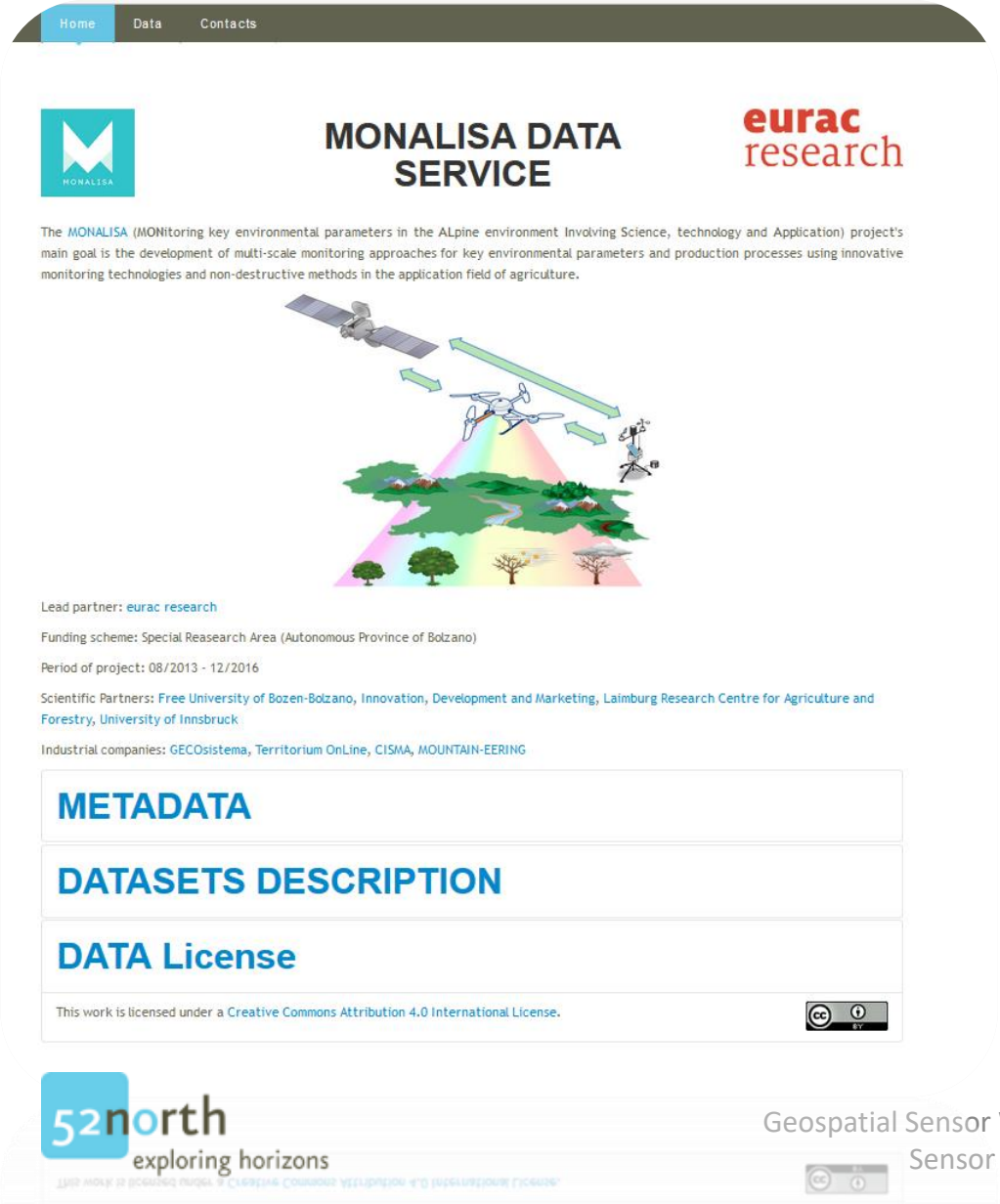
Common data model



Automation of the Data Life Cycle



Project results

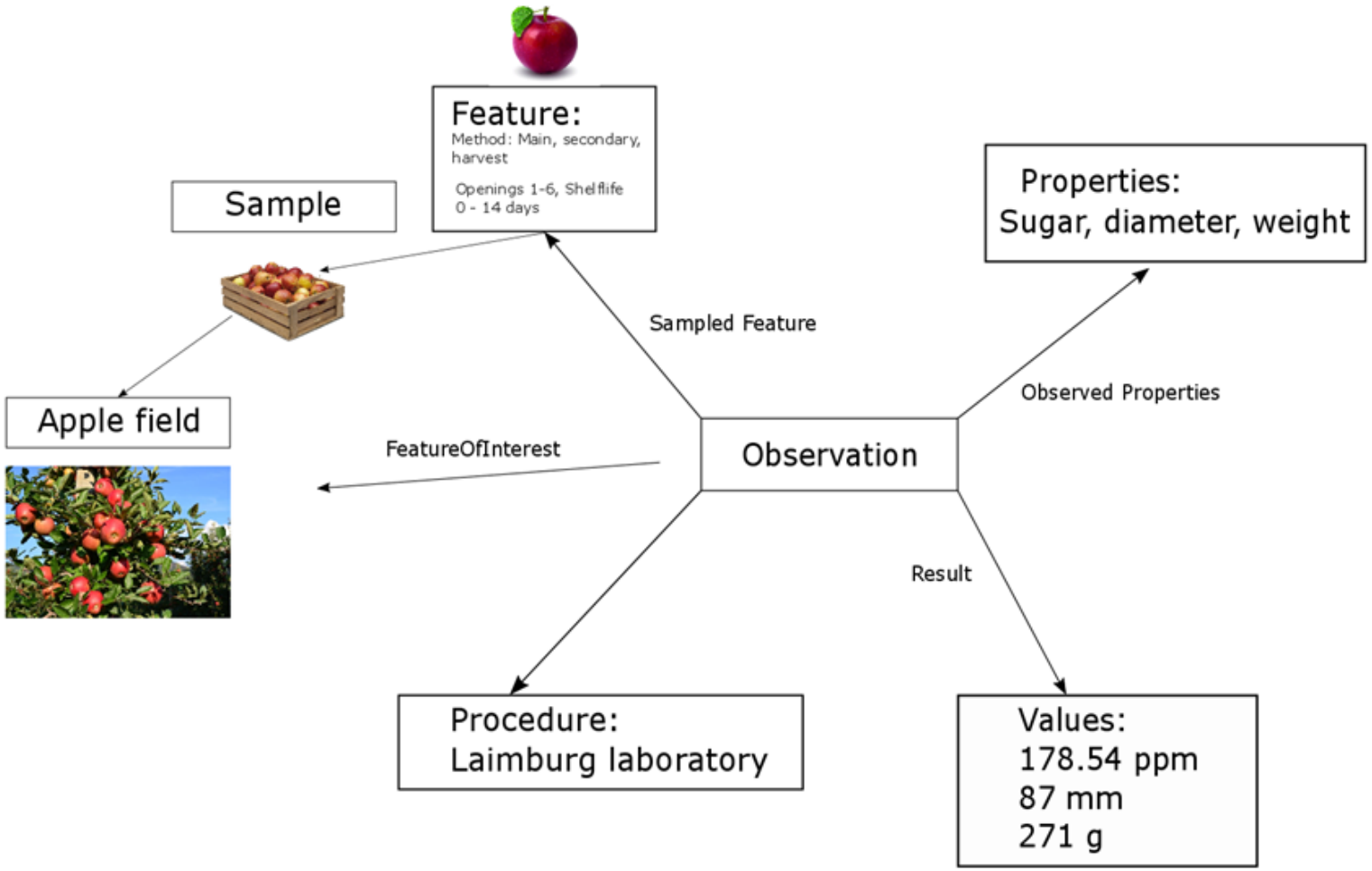


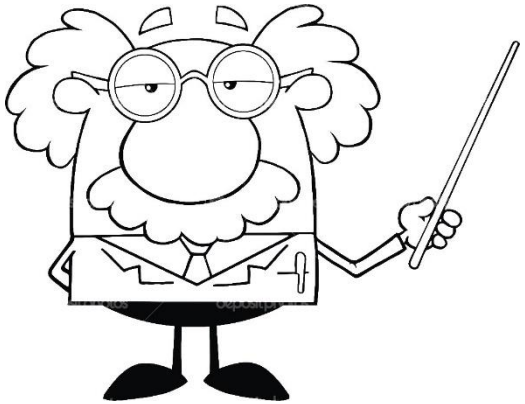
http://monalisasos.eurac.edu/sos/

- + 30.000.000 record collected
- 31 monitoring stations (feature of interest)
- 80 sensors
- *75 environmental parameters + 10 laboratory measurements*

Project results

SOS permits to organize environmental data as well as laboratory quality analysis following OGC standards

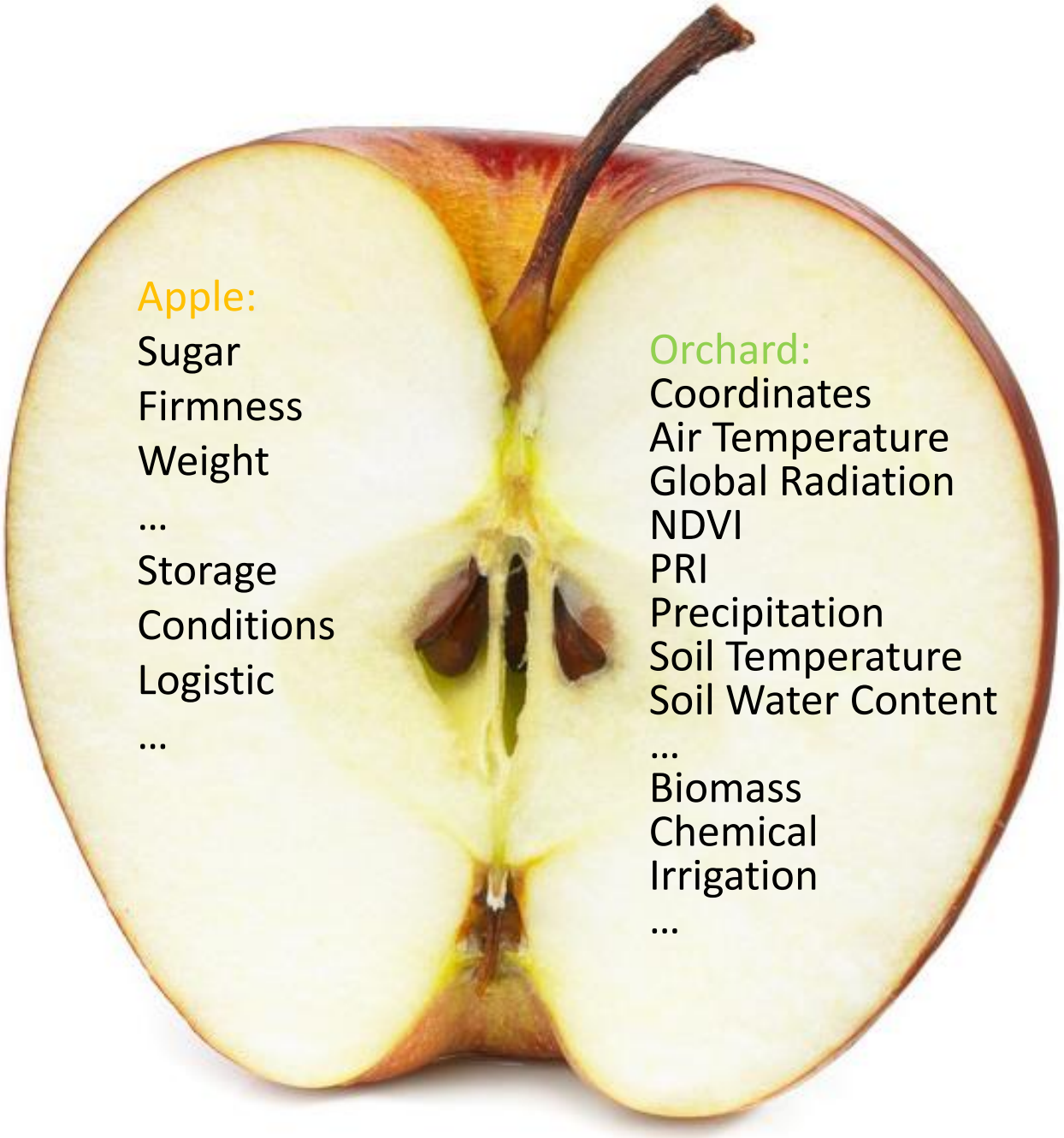




Project results

The apple story:

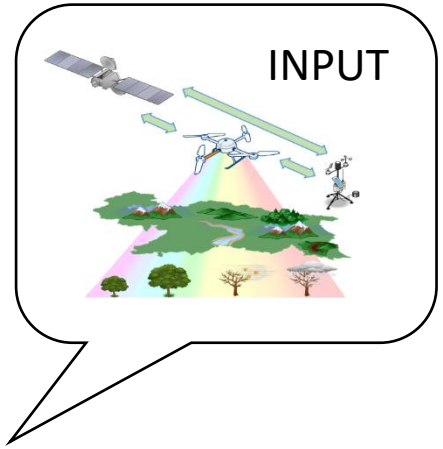
- Quality at the harvest
- Quality after archive (in different conditions)
- Growing conditions

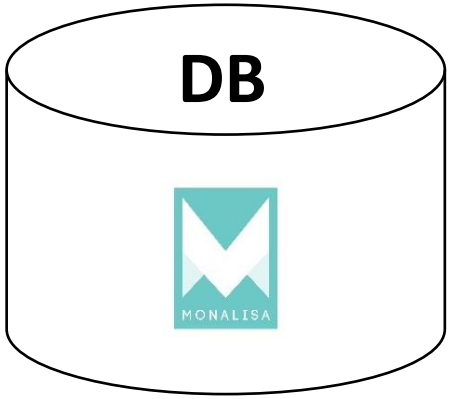


Project results

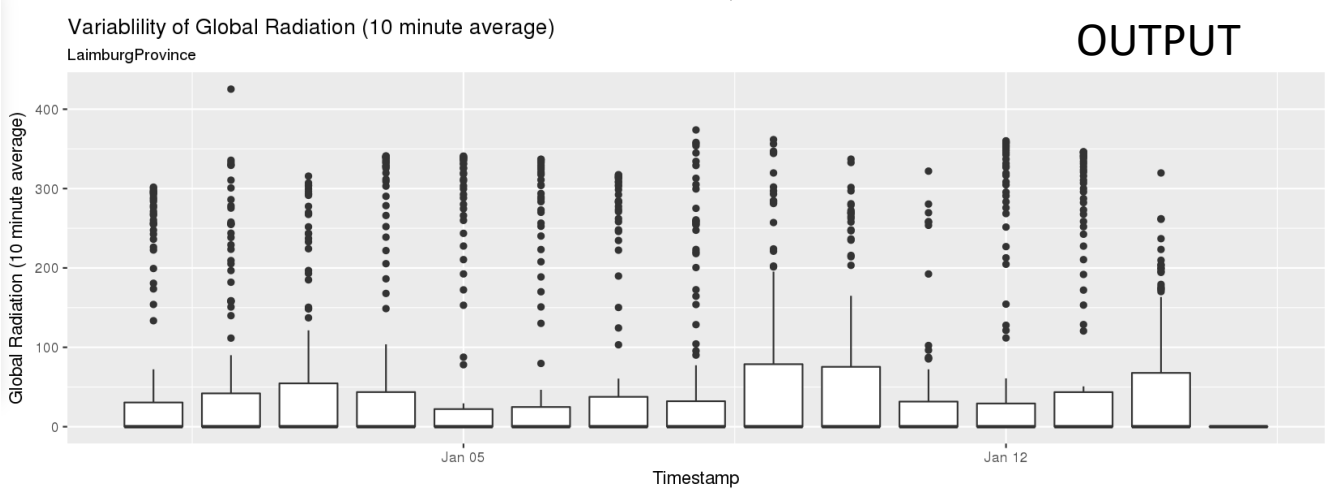
Project results

REST-API





OUTPUT



Project results

MONALISA DB ACCESS:

52N° SOS web interface and Helgoland client

R code using SOS api

Shiny web interface to run R code

Future work

MONALISA

LTER Italia
Italian Long-Term Ecological Research Network

- 500 sensors
- 30 stations

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Future work

- **We need to improve our modelling data skills to acquire laboratory data(SF Specimen)**
- **More Tutorials and Examples from OGC or 52° North - Sensor Web Community (nice to have)**
- **To simplify and speed up sensors registration and observations uploading**
- **SensorThings API testing**
- **To develop a WEB-APP to view and query both Raster Time-Series, UAV based acquisitions and O&M datasets**

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Thank you for your attention

http://monalisasos.eurac.edu/sos/

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