

NFDI4Agri Use Case: Nr. 17 | SENSORING

Use Case Nummer alt (2019): keinen

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Contact(s): Florian Hoedt (Thünen Institute)

Achtung: UC Text (Title, User story, challenge und Objectives) im Antrag übernommen. Wenn Änderungen, dann bitte Xenia informieren (specka@zalf.de), damit Änderungen nachgetragen werden können.

User perspective:

UC Title	Provide software components to enable sensor data ingestion
User story & current situation	Nowadays, the data surveyed on smart agricultural platforms are sent to cloud services, which are operated by large companies and stored in proprietary systems and in closed formats. This is true for scientific studies conducted by the FH SWF and TH OWL networks and even more relevant for economical data acquisition. If the platforms are from different vendors it is likely that the produced data are not compatible and cannot be merged and analysed together ("data fusion"). Therefore, farmers and scientists do not possess full data sovereignty. This may lead to ill-informed decisions of data users (i.e. farmers, scientists), possible vendor lock-in and hinders efficient scientific data acquisition and effective precision farming. Further, there will be missed opportunities to adapt to new IoT technologies due to the lack of interoperability between systems.

Resulting challenge for NFDI4Agri

Challenge	Data from the precision agriculture sensor systems of the TH OWL and FH SWF networks need to get exposed in a FAIR manner. The data streams must be made accessible through technologies like Sensor-Observation-Services and described with e.g. Sensor-ML to turn them into meaningful information. This information must flow into on-premise or open spatial data hubs to get stored in a FAIR way.
Objectives	1) An interoperable and well-known API will enable a wide range of sensor system data streams to get ingested into an NFDI4Agri compliant infrastructure. 2) Sensor data is described with fitting and standardised metadata (Sensor-ML)
User group / type	All farmers <i>and agriculture related scientists</i>
Keywords	sensor data, spatiotemporal, smart agriculture, precision farming, IoT, data fusion, data interoperability, data interface

Organisational information

Responsible & involved TA/Measure(s)	Verantwortliches und involvierte Measures <i>Data steward geodata</i> TA4 M4.1 TA 5: M5.3
Partners	Co-applicants: ZALF, Thünen Institute Participants: Technische Hochschule Ostwestfalen-Lippe (THOWL), Study Programme Precision Farming (Burkhard Wrenger) <i>Fachhochschule Südwestfalen (FH SWF), Fachbereich Agrarwirtschaft Soest, morgenstern.rolf@fh-swf.de, +49 2921 378 3232, mobil +49 163 2524101</i>
Deliverables/time	TBD
Planned funds for participants	Sachkosten: 220.000€ (laut Markterkundung 52°North) Hauptverantwortung für die Umsetzung der API und Entwicklung basierend auf den Vorgaben aus dem Konsortium (TA4 / 5). Diese als: 180k Sachmittel 2024 40k Sachmittel 2025 THOWL: 12 PM (month 28 - 40) 01.2024 / 12.2024 -- Ernte 2024 Entwicklungsaufwände (untergeordnet) und Ansprechperson für technische Fragen, Versuchsaufbauten und -fahrten, Datenakquise. Sachkosten: 2.500 EUR für Fahrten und Datenakquise SWUAS: 12PM FTE (PostDoc), 12PM (month 33 - 45) 06.2024 / 05.2025 -- Ernte 2024 + ggf. Ernte 2025, falls Zwischenfinanzierung an FHSWF für Stelle möglich Ansprechperson für technische Fragen, Versuchsaufbauten und -fahrten, Datenakquise, Ausrollen des Piloten im Netzwerk. Sachkosten: 1000 EUR für Fahrten und Datenakquise

Notes:

GeoNode based implementations of sensors into a farm hub:

- IBF Servizi [360° of Services](#)
- Sensor ingestion: [Get-IT](#)
- [Remote Sensing Applications](#)

Smart Farm Portal related:

- FarmMap4D (<https://www.farmmap4d.com.au/>)
- [IoF2020: Internet of Food and Farm 2020](#)

- [Needs Assessment Smart Agri Hubs](#) 2019

GeoNode project (<http://geonode.org/>) community:

- OSGeo (<https://www.osgeo.org/projects/geonode/>)
- European Commission's Joint Research Center (JRC)
- World Food Programme (WFP)
- GeoSolutions

Other:

<https://my-agrirouter.com/agrirouter/allgemeine-infos/>

Weitere Piloten finden, eg:

TU Braunschweig