Data Collection using UGVs and modular sensor payloads

Provider service

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Link to content

https://www.agrifoodtef.eu/services/data-collection-using-ugvs-and-modular-sensor-payloads

Type of Sector

Arable farming, Greenhouse, Horticulture, Tree Crops, Viticulture

Accepted type of products

Physical system, Software or AI model

Type of service

Collection of test data

Description

This service consists of deploying a modular sensor payload (equipped with Lidar, inertial motion units, GNSS, Radar, stereo cameras, and ultra-wideband technology) to agricultural environments such as vineyards and orchards to collect and annotate high-fidelity datasets tailored to customer needs. Data are systematically labelled and can be delivered to agrifoodTEF customers as structured datasets for AI-driven agricultural solutions.

How can the service help you

Problem (Before):

AgrifoodTEF customers (e.g., agricultural robotics/AI developers, precision farming companies, or researchers) often lack access to high-quality, annotated, real-world datasets from dynamic agricultural environments (e.g., vineyards, orchards).

Without this, they struggle to:

- Build robust AI systems and use cases (e.g., for crop monitoring, robotic harvesting, or autonomous navigation).

- Validate system performance under realistic, variable conditions (e.g., uneven terrain, changing light/weather).

- Benchmark their solutions against industry standards or competitors.

Solution (After): By deploying the sensor payload to collect and label data in real-world settings, the service enables customers to:

1. Build AI models effectively with diverse, context-rich datasets (e.g., labelled images of fruit clusters, 3D terrain maps).

How the service will be delivered

Sensor Configuration:

- Customers can select specific sensors from a predefined list of candidate sensors for the payload (e.g., prioritise Lidar + stereo cameras for 3D mapping, disable GNSS for indoor testing).

Data Annotation:

- Choose annotation formats from a predefined list (e.g., bounding boxes, semantic segmentation masks) compatible with their AI pipelines.

Temporal/Seasonal Flexibility:

- Schedule recurring campaigns (e.g., weekly data collection during harvest season, multi-year phenological studies).

Seasonal restrictions:

- Aligns with vegetation periods (e.g., no frost/rain for certain sensors; optimal timing for crop-specific data like fruit maturity

Service customisation

Service Delivery & Logistics

1. How is the service delivered?

Deployment Model:- On-site execution:

A sensor-equipped payload (modular, vehicle/robot-mounted) is deployed to the customer's agricultural site (e.g., vineyard, orchard) or partner test farms.

- Repetitions: Data collection can be performed as a single campaign or recurring sessions (e.g., seasonal cycles, growth stages) to capture variability (e.g., flowering vs. harvest periods).

2. When can the service be delivered?

- Scheduling: Requires advance booking (e.g., 4–8 weeks) for payload deployment and site preparation.