

**Service ID** S00212



**Location** At user's premises, France

## Testing and evaluation of mobility algorithms with ground robots

### Provider service

National Institute for Research in Digital Science and Technology (INRIA)

### Link to content

<https://agrifoodtef.eu/catalogue-of-services/testing-and-evaluation-mobility-algorithms-ground-robots>

### Type of Sector

Arable farming, Food processing, Greenhouse, Horticulture, Tree Crops, Viticulture

### Accepted type of products

Physical system, Other

### Type of service

Collection of test data, Data analysis, Desk assessment, Performance evaluation, Test design, Test execution, Test setup

### Description

The SOPHIA infrastructure provides the ability to test and evaluate mobility algorithms embedded on a ground robot. Mobility algorithms concern the classical robotics functionalities of mapping, localisation, SLAM, and navigation. The ground robot is equipped with an array of sensors, including a camera, LiDAR, IMU, and RTK-GPS for ground truth evaluation. The service proceeds in three stages. Firstly, we evaluate the algorithm using representative datasets. After that, the algorithm is integrated into a ROS2 architecture and evaluated with the local agrifoodTEF test infrastructure (various areas are possible). The performance of different attributes of the algorithm is assessed using quantitative and qualitative metrics. Benchmarking could be proposed as a complementary option to position the performance of the proposed algorithm in relation to the current state of the art. The final step involves field testing under real conditions at a specific end-user or customer site using the mobile living lab, which consists of a mobile laboratory deployed in the field and connected to the real robot for monitoring and evaluation purposes.

## **How can the service help you**

Through this service, you can test and evaluate your AI and robotic solutions for mobility in agricultural and agrifood applications. This allows you to assess how your solution compares to state-of-the-art technologies.

The results will help you determine the reliability of your system and pinpoint its limitations. By identifying these gaps, you can refine and improve your solution, ensuring better performance and higher efficiency in real-world agricultural settings.

## **How the service will be delivered**

Our service offers fully customisable equipment, sensors, and environments tailored to the customer's needs. However, there may be technical limitations related to sensor compatibility or system performance, which will be addressed during planning. Additionally, customers should be aware of any legal or regulatory requirements that may impact the solution, and we will ensure compliance throughout the process.

## **Service customisation**

Our service provides a detailed analysis report on mobility algorithm testing, with potential comparisons to state-of-the-art solutions. The service may require repetitions based on customer needs or anomalies, and it typically takes from a few weeks to 2-3 months, depending on customisation, location, and seasonal constraints.

To ensure timely delivery, customers should contact us at least two months in advance. Feasibility may be affected by terrain, weather, and permissions. Customers need to provide clear evaluation criteria and necessary access to ensure smooth execution.