

Service ID S00052



Location At user's premises, Poland

Validation and optimisation of robotic systems in testing environments

Provider service

Lukasiewicz Poznanski Instytut Technologiczny (L-PIT)

Link to content

<https://agrifoodtef.eu/catalogue-of-services/validation-and-optimisation-robotic-systems-testing-environments>

Type of Sector

Arable farming, Greenhouse, Horticulture, Tree Crops, Viticulture

Accepted type of products

Design / Documentation, Physical system

Type of service

Collection of test data, People training, Performance evaluation, Test design, Test execution, Test setup

Description

The service is designed to provide support for validating the design and functionality of robotic systems in specific testing environments. The scope of the service includes peer feedback on the robot's design to identify ways to improve its design to maximise the benefits of robotic work in high-value crops or high-risk testing environments. This may include suggestions for changes to parts of the robot, its control systems, sensors, or general recommendations to ensure safe and efficient work with high-value crops. (plants).

How can the service help you

Our service offers expert assistance in evaluating the current capabilities of a robot or robotic subassemblies (such as working arms) and the interoperability of individual components. Field testing will result in information that will allow the contractor to guide future design work, including enhancing the selection of electronic and mechatronic hardware for the robot or robotic subassemblies.

Conducting field tests will provide valuable feedback on the behaviour of the robot's components, its movement, course of action, and quality of execution of activities resulting from the assumed scope of work and work movements.

These activities help identify the necessary improvements for the effective implementation of the device. The insights gained can positively influence the operational life of the robot and refine its working movements, potentially reducing downtime. Ultimately, this will lead to improvements in the overall reliability and functionality of the machine and increase its operational efficiency.

How the service will be delivered

Our service offers customised performance, quality of work, and reliability testing for robots and AI-based systems. In addition to physical testing, we offer the possibility of performing advanced analyses on virtual models. These analyses help to identify critical points in the structure that may affect the durability and reliability of deployed robotic or AI-based solutions. The test will help validate the robot's electronic and mechatronic equipment. They will indicate the directions of action to improve the efficiency and quality of work. They will allow the identification of areas and elements that need to be changed in the tooling or the addition of further elements to the mechatronic systems that need to be changed. We can simulate specific environmental conditions, such as temperature, humidity, or vibration, and carry out tests in actual locations specified by the customer. We offer long-term testing focused on specific components or AI integration, with the ability to expand measurement equipment and apply advanced data analysis techniques. Test reports are personalised and can be complemented with workshops and training for your team. We require a fully functional prototype and complete technical documentation. There are limitations regarding the dimensions and weight of the devices, and some tests may require prior resource reservations. All information is treated confidentially, with the option to sign a Non-Disclosure Agreement (NDA). Please be aware of the risk of prototype damage during endurance tests. If the tests need to comply with specific industry standards or regulations, kindly inform us in advance. The timeframe and costs are determined individually based on the scope and complexity of the tests. We ensure flexibility and professional support at every stage of the testing process, including both physical and virtual analyses. Please feel free to contact us to discuss the details and tailor the service to your unique needs.

Service customisation

Our service is based on a structured process for a thorough evaluation of a robotic or AI-integrated system:- Initial consultation: You provide a functional prototype of your solution, along with any previous analysis of its performance, to help identify critical design points.

- System analysis: A comprehensive system analysis is carried out, considering specific guidelines and expectations. This allows us to identify the necessary materials and testing methods, focusing on the robotic components and artificial intelligence algorithms used in the product.

- Test plan development: A detailed test plan is developed, defining the scope, methodology, and schedule of activities. This plan is discussed with and approved by the client before testing begins.

- Testing: Tests are carried out using professional measurement equipment under laboratory or operational conditions, as required. Measurements include measurements of the range of working movements, gripping force, and duration of working movements.