Service ID S00112

Location Italy, Spain

Execution of physical testing

Provider service

Politecnico di Milano (POLIMI), Università degli Studi di Milano (UMIL), University of Cordoba (UCO)

Link to content

https://agrifoodtef.eu/catalogue-of-services/execution-physical-testing

Type of Sector

Arable farming, Greenhouse, Horticulture, Tree Crops, Viticulture

Accepted type of products

Physical system

Type of service

Test execution

Description

Any physical test activity involves three main components: environment (where the tests take place), protocol (defining what tests are executed and how), and evaluation metrics (used to assess the results of the tests).The execution of physical testing, i.e., the object of this service, corresponds to supporting the customer in executing with the system(s) under test the procedures specified by the protocol in the specified environment and identifying and solving any issues that may negatively affect the tests. In most cases, support by agrifoodTEF involves assistance by both agronomists (for agricultural aspects) and engineers (for aspects related to the technological infrastructure supporting the tests).Beside the object of this service, i.e., test execution, agrifoodTEF can, if requested, support the customer along any other aspect and phase of the physical experimentation pipeline. For instance, for the design of the environment and protocol to be used for the test, the customer can either proceed autonomously or exploit services S00106 and S00107. Similarly, preparation of the test environment can be done either by the customer or by agrifoodTEF via service S00110; in both cases, assistance in interconnecting the system under test with agrifoodTEF's test infrastructure is available via service S00111. Finally, data collection during the test or data processing and performance evaluation after the conclusion of the test, if needed, can be provided by agrifoodTEF via services S00113 and S00114, respectively.

How can the service help you

Physical experimentation in real-world contexts with complex systems such as those including AI- and robotics-based components is a difficult task. There are many issues that can damage the experimentation or slow it down to the point where the cost becomes unsustainable. Many companies focus their expertise on system design and development: for them, the necessary experimental phases often prove uncertain in their effectiveness, duration and cost.This service provides support by personnel specifically trained in experimenting with AI and robotic systems, as well as with advanced agricultural equipment; for this reason, the service can help its users during test activities by dramatically reducing the number of issues to resolve and quickly and expertly managing those that inevitably arise.

As any experimenter with complex technological systems knows, unanticipated difficulties are a key feature of such activities: this service, by providing the know-how to best tackle them, optimises the results and maximises the cost-effectiveness of the tests.

How the service will be delivered

This service description is intentionally generic. Every instance of this service is, in fact, customised to adapt it to the needs and requirements of the specific customer.

The following is an example of a service instance.Example service: designing a test environment for a wedding robot. The designed environment comprises 2 groups of 3 10-metre-long cultivated rows; one group receiving full sunlight and the other receiving shaded sunlight through trees.The rows are part of fields located in the northern part of Italy. Each group of 3 rows includes bean plants and Matricaria weeds, with the density of Matricaria chamomilla increasing from one row to the next (3 levels).

The presence of weeds different from Matricaria in the test environment is kept at a negligible level via manual weeding immediately before the tests. The designed test environment includes a weatherproof 230 V AC network for powering test equipment and a wireless network for interconnection between them.

Service customisation

The first phase of execution of this service involves discussing with the customer the elements of the test activity to be executed, i.e., the environment and protocol. During this phase, the details of the experimentation to be done are defined, and agreements are made concerning activities and timing. The output of this initial phase (which may take 2-4 weeks and proceeds via meetings, either in person or remote) is a plan of activities.Subsequently, at a time and location specified by the plan, the customer's and agrifoodTEF's personnel and equipment are used to set up and execute the tests.

The location will often, but not necessarily, be one of agrifoodTEF's facilities: this becomes a requirement only when the customer requires that agrifoodTEF takes care of preparing the test environment (service S00110).