WeLASER
Eco-innovative weeding with laser

# Practice Abstract N. 39

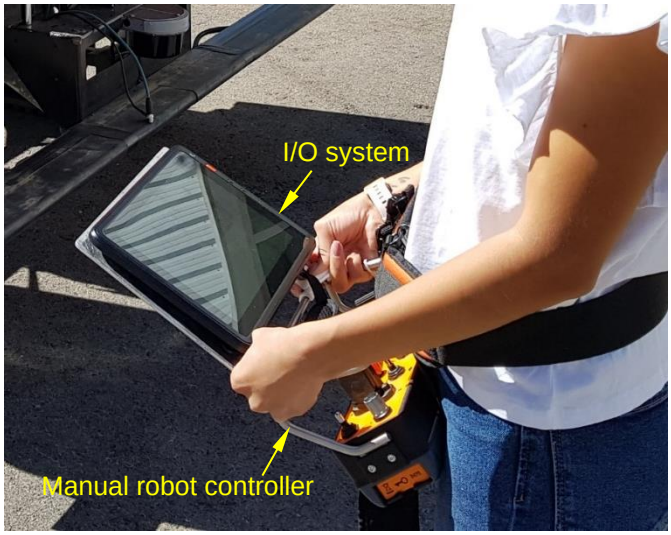
## Human-Machine interfaces for controlling autonomous robots easily

### Problem statement

As indicated in Practice Abstract PA-35, the participants in the WeLASER stakeholder events raised many concerns related to the use of high-tech equipment in agriculture. This equipment requires new knowledge and technological concepts (communications, robotics, IT systems, etc.) to be managed and configured, and strongly depends on Internet availability. These concepts and resources can be harmonised through an input/output (I/O) system that integrates an easy but efficient application to manage them. However, there are also some mandatory controls that the operators need close to them for safety reasons such as an emergency button. So, a Human Machine Interface (HMI) design is complex, especially when merging equipment from different manufacturers.

### Prospective solution

A solution envisaged for the WeLASER project consists of extending the I/O system (tablet/smartphone) defined in PA-35 with the remote/manual controller, provided by the robot manufacturer. Designing a simple frame to attach the I/O system to the remote robot controller offers a practical and ergonomic solution allowing many characteristics to be added to the system.




### Practical conclusions

The integration of the robot remote/manual controller with an I/O system based on an interactive touch screen provides the following advantages

- The emergency button is always close to the operator
- The operator can get manual control at any time
- The operator is continuously informed of the progress of the mission (robot status, treatment performance, live-streaming on-board cameras, warnings, etc.)
- The operator interacts with the mission manager via the I/O system (the remote/manual controller has no display).

Authors: CSIC
Date: November 2022