

## The WeLASER Cloud Platform

### Problem statement

The WeLASER Cloud Platform enables the aggregation of data from robot and sensor sources. The data stream into the platform to fuel *near-real-time* monitoring and supervision of robot missions. The challenge is to have low-latency data ingestion and processing to control the robot with a user interface through the internet.

### Solution

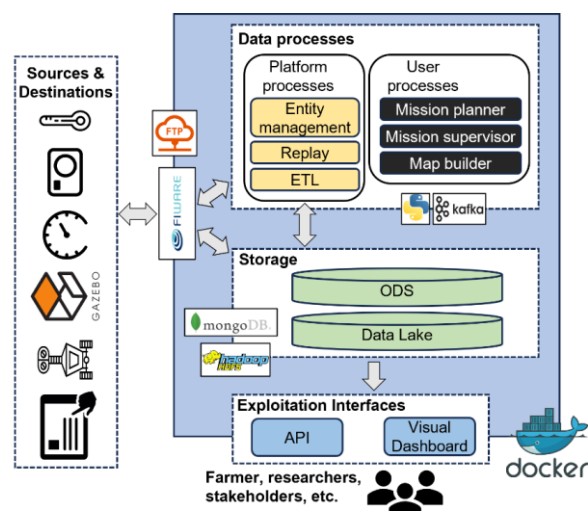
The platform is orchestrated through Docker containers, enabling easy composition of heterogeneous services:

**Collection:** data flow into the platform through FIWARE (<https://www.fiware.org/>). Raw files can be uploaded through the File Transfer Protocol (FTP).

**Data processes:** the platform supports both *platform processes* that enable generic functionalities (such as data transformation and integration, data replay, and management of FIWARE entities), and *user processes* that have been implemented by the partners (such as mission planning and supervising) and run on the platform.

**Storage:** data lake and Operational Data Storage store raw & integrated data, respectively.

**Exploitation interfaces:** stakeholders can access data through a graphical interface or Hypertext Transfer Protocol (HTTP) requests.



### Outcomes

During the 4 Field Days (Madrid, Taastrup, Reusel, and Madrid), the platform effectively collected data to monitor and control robot missions. Overall, 290000 messages were collected with an average speed of 28 messages/second, 764 milliseconds of collection delay through the internet, and 2.75 milliseconds of processing delay internal to the platform.

### Practical recommendation

The WeLASER Cloud Platform is a unifying component where farmers can collect and access all data related to robots, sensors, and weeding missions. The cloud platform hosts the graphical user interface that monitors and controls the status of the robot through the internet. Finally, using the cloud platform and all its functionalities does not require any additional hardware in the farmer facilities.

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