



LOCATION



Spain

PARTNERS



1.1 & 1.2

Water and Energy Savings in Irrigated Crops

CHALLENGE

With the impact of climate change being felt by farmers across the EU, the need for irrigation has become an increasing issue. Water saving and energy saving are also key challenges for farmers. Many of the national modernised irrigation systems are closed solutions, limiting their interoperability and extension mechanisms.

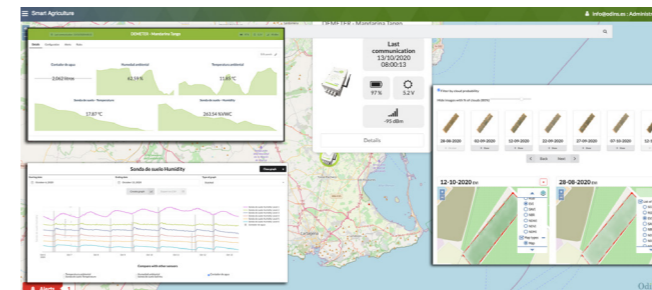
AIM

This pilot aims to optimise the irrigation of arable crops by improving the automation of irrigation zones. By using open and standards-based technologies, it will allow irrigation communities to choose and combine hardware and software from different providers ensuring interoperability.



HOW

Using interoperable remote-control systems and robust management systems, inputs from both soil sensors and meteorological stations, as well as satellite images, will optimise the irrigation system. The use of real-time monitoring and control of water supply, in combination with energy efficiency improvements, is based on informed decisions from farm to fork. The adoption of standards and open protocols makes it easy to integrate IoT devices which are standard compliant.



BENEFIT

The implementation of standards-based and interoperable elements will facilitate the exploitation and maintenance of irrigation systems achieving greater efficiencies in water and energy savings. This adds a level of long-term investment security.





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DEMETER Integration

The Pilot's DEMETER components, once virtualized using Docker technology, are registered in DEMETER by means of the ACS, DEH, and BSE/FIE core enablers using available REST APIs and user interfaces. The pilot has a proprietary service to register agronomic, sensor, weather, and satellite imagery data in the cloud. All of the pilot's DEMETER components are integrated using the DEMETER AIM for interoperability. Some are integrated with the proprietary service to expose registered data using the AIM data model to be used by others to compute their results orchestrated by the main DSS for Irrigation Management component. This DSS component is also integrated with DEMETER Adaptive Visualization Framework (Knowage) to show the results to end-users, who are registered in advance in the DEMETER identification system (ACS).



Feedback From Farmers

Their main motivation has been to try to improve the management of the plots with the aim of being able to reduce water consumption to some extent, and therefore energy consumption, by means of automatic irrigation hydrants and the use of software that allows better irrigation decisions to be made, that is extensible and interoperable in deployments in new plots.



Outcomes

This pilot offers valuable information about irrigation recommendations for crops to optimise irrigation, and improving the automation of the irrigation zones. Using interoperable remote-control systems and robust management systems, inputs from water counters, soil moisture sensors, weather stations, and satellite multispectral imagery, the pilot offers valuable information by means of a Decision Support System dashboard to optimize the irrigation tasks. The adoption of standards and open protocols, not only has made it easier for farmers in irrigation communities to choose and integrate IoT devices and software from different vendors which are standard compliant, and combining them ensuring interoperability by means of DEMETER Agriculture Information Model (AIM), but it has also facilitated the exploitation and maintenance of the irrigation systems achieving better efficiencies in water and energy savings and adding a level of long-term investment security.