Case Study Pilot 1.1
DEMETER Enabler Hub(DEH)

DEMETER's goal is to lead the digital transformation of Europe's agri-food sector through the rapid adoption of advanced IoT technologies, data science and smart farming, ensuring its long-term viability and sustainability. Twenty real-world pilot projects, grouped into five pilot clusters, are running within DEMETER to demonstrate and evaluate how agricultural innovations and extended capabilities benefit from the interoperability mechanisms.

DEMTETER focuses on interoperability as the main digital enabler, extending the coverage of interoperability across data, services, platforms, M2M (machine to machine) communication, and online intelligence but also human knowledge, and the implementation of interoperability by connecting farmers, advisors and providers of ICT solutions and machinery. As part of this DEMETER has developed the DEMETER Enabler Hub (DEH) to make resources available to developers to guide the deployment of adopted technologies as well as ownership of resource factors.

What is the DEH?

As a core module of DEMETER architecture, the DEMETER Enabler Hub centralises the full description of all the components, devices, services, data sources, platforms, etc. that are accessible for exploitation and ultimately for deployment.

How does the DEH work?

The DEH provides the registration of resources, their maintenance and discovery and allows DEMETER providers to promote their resources making them reusable by different DEH users. Users have two roles - DEMETER provider and/or DEMETER consumer.

A DEMETER provider is able to offer his/her resources, while DEMETER consumers are able to browse the catalogue and find suitable resources matching their requirements.

The resources hosted in the registry can be discovered and made accessible via the web interface, but also via API's.

What are the benefits of the DEH for the end-users?

DEMETER providers, through the DEH, can promote their resources that thus can be validated by different DEMETER consumers. On the other side, DEMETER consumers are able to browse the collection of registered digital tools and services, and find suitable resources matching their requirements.

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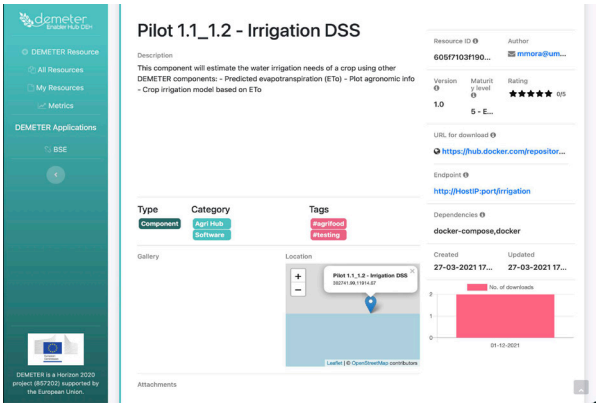

Pilot 1.1: Water and energy savings in irrigated crops

Pilot Overview

This pilot aims to optimise the irrigation of arable and woody crops by saving water and the amount of energy required by means of recommendations and improving the automation of irrigation zones. By using open and standards-based technologies (i.e.EU FIWARE, IETF of IoT etc.) it allows irrigation communities and farmers to choose and combine IoT devices and software from different providers ensuring interoperability. Using robust management and interoperable remote-control systems, real-time monitoring, control of water supplies and using heterogeneous data sources (i.e. IoT devices, weather stations, satellite imagery, agronomic data, etc.) managed by FIWARE IoT agents, it provides irrigation recommendations to the final user by a Decision Support System (DSS).

Using the DEH

The DEH is one of the most important DEMETER platforms used for publishing and sharing developed components, making them available for the DEMETER community. We are a DEH provider, both to provide our developed enablers and also discover enablers from others pilots and technical work packages that could be of interest to improve or extend our pilot functionalities.

The DEH can be accessed via the Internet, both by a user web dashboard and by a REST API. We have used the first way to register and provide our developed components and to navigate and access those provided by others. This allows us to read about their functionalities and see if their features can be integrated in our pilot thanks to DEMETER AIM interoperability.

Registering components in the DEH via the dashboard is easy. First you must register in the ACS (Access Control System) where you are given your credentials. In both cases using the dashboard or the REST API to access the DEH, the components must be virtualized using Docker and uploaded into a public repository. Then, getting the access links to the virtualized components, you can register them in the DEH providing other needed information like descriptions, locations, etc. In the case of the DEMETER components of our pilot, Pilot Device Bridge and Pilot Plot Bridge both developed in the frame of Work Package 2 are used to expose data in DEMETER for exploitation (i.e., soil moisture, temperature, water consumption, etc.). Data is registered from different sources managed by the FIWARE IoT Agents, that then convert it into the FIWARE NGSI-LD data model to be stored in a Context Broker to be exploited by services. Finally, those components retrieve the needed information and wrap it using the DEMETER AIM.

Benefits for the end user

Mainly, using the DEH helps us to look for new available developments or datasets in the DEMETER ecosystem in an easy way, as well as publishing ours for others to be accessed.

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