



SWAMP

Smart Water Management Platform

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DESCRIPTION

Irrigation for agriculture is the biggest consumer of freshwater in the world, which makes a case for the intensive use of technology to optimize the use of water, reduce the consumption of energy and improve the quality of crops. While the Internet of Things (IoT) and other associated technologies are the natural choice for smart water management applications, their appropriateness is still to be proven in real settings with the deployment of on-site pilots. Also, IoT-based application development platforms should be generic enough to be easily adapted to different crops, climates, and countries. The SWAMP project develops IoT based methods and approaches for smart water management in precision irrigation domain and pilots them in Italy, Spain, and Brazil.

Water is vital for ensuring food security to the world's population, and agriculture is by far the biggest consumer amounting to 70% of freshwater. The leading causes of water wastage are leakages in distribution and irrigation systems, as well as, the field application methods, which result in wastage and the cultivation of crops. The most common irrigation technique, surface irrigation, is also the least precise one, which wastes a high percentage of the water by wetting areas where no plants can benefit from it. On the other hand, localized irrigation can use water more efficiently and effectively, avoiding both under-irrigation and over-irrigation. However, in an attempt to avoid loss of productivity by under-irrigation, farmers feed more water than is needed and as a result not only productivity is challenged but also water is wasted. Therefore, technology should be developed and deployed for sensing the level of water needed by the plantation and for flowing the water in the proper amount to places where and when it is needed.

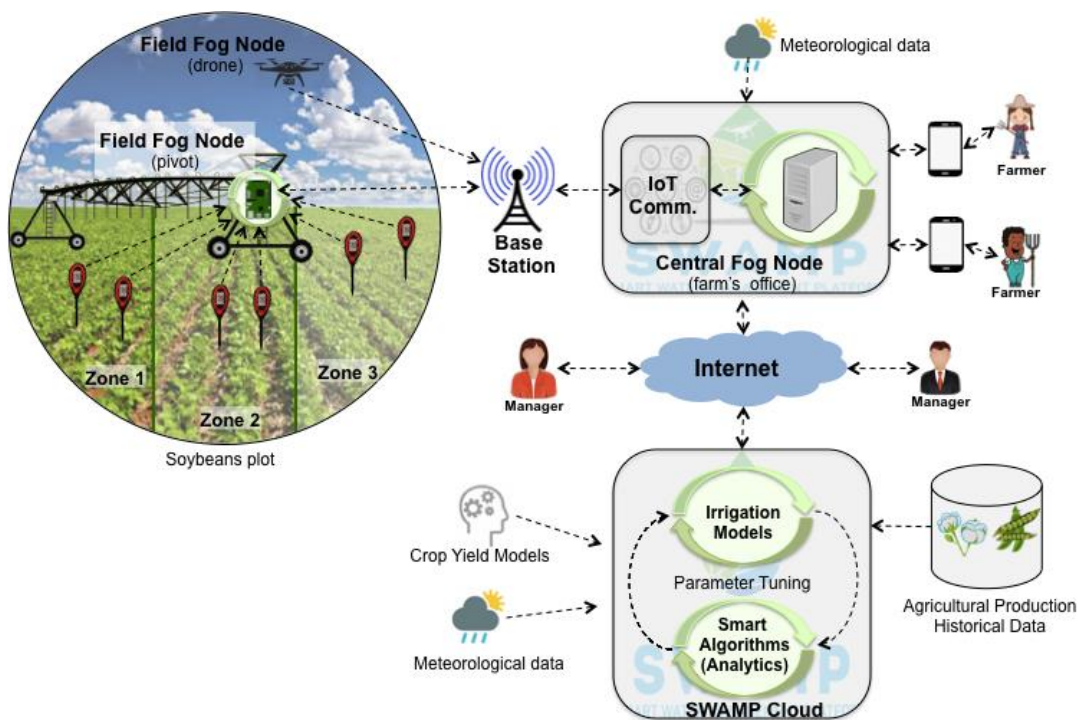
The Internet of Things (IoT) and other related technologies can be used for that purpose, but it faces several challenges. Firstly, Software Development for IoT-based smart applications is today not automatized and demands much effort. Secondly, advanced platforms are needed, that can automate part of the process and integrate different technologies and components for dealing with a multitude of requirements. Thirdly, the integration of heterogeneous and advanced sensors, particularly flying sensors (i.e., drones), may provide precision in the water supply for irrigation in agriculture. Fourthly, the use of a Software Platform together with different technologies such as IoT, big data analytics, cloud computing, fog computing and drones, for the deployment of pilot applications for smart water management. Fifthly, new business models for using IoT in smart water management settings are necessary. Finally, components must be interoperable, flexible and adaptable to be replicable to different locations, crops, and contexts.

SWAMP – Smart Water Management Platform

The SWAMP project develops a high-precision smart irrigation system concept for agriculture. The main idea is to enable the optimizations of irrigation, water distribution and consumption based on a holistic analysis that collects information from all aspects of the system.

The key goals of the SWAMP project are:

- To develop IoT based methods and approaches for smart water management in precision irrigation
- To address to the climate change challenges by using water and energy more efficiently
- To maximize the yield and quality of crop with given water
- To pilot the approaches: two pilots in Europe and two pilots in Brazil



SWAMP Pilot Scenario

Consortium:



Website:

