AVEIRO
CÂMARA MUNICIPAL

TECH CiTY

Aveiro Tech City Challenges

Urban Challenge #2

Water Consumption Management Systems in public gardens

URBAN CHALLENGES

URBAN CHALLENGE #2 – WATER CONSUMPTION MANAGEMENT SYSTEMS IN PUBLIC GARDENS

SCOPE OF THE CHALLENGE:

The Municipality of Aveiro (CMA) has under its responsibility the management of several parks and gardens, ensuring the maintenance of various equipment and the treatment and watering of all plants, trees and lawns. In this context, irrigation systems composed of sprinklers of various types, water pipes networks and some local irrigation controllers are implemented.

The control of irrigation systems is of particular concern in the management of the water consumed. On the other hand, it is recognized the enormous challenge posed to technicians and other municipal workers in ensuring the best quality of green spaces without the widespread adoption of intelligent irrigation systems, given the increased effort in the daily management of irrigation controls. It is therefore essential to move towards the automation and centralisation of the control of municipal garden irrigation systems.

DEVELOPMENT OF THE CHALLENGE:

It is intended the implementation of a technological solution composed of sensors, actuators and management platform, which ensures the optimization of water consumption in the scope of garden irrigation. The solution should consider the management of irrigation of a garden area already with infrastructure of pipes, sprinklers, valve boxes and manual controllers already existing, being necessary to replace by integrated controllers and valve control management and wiring system whenever necessary and also the installation of flow meters and humidity / radiation sensors.

The solution should ensure the complete automation of automatic irrigation processes and the adaptation of irrigation programmes to the conditions of humidity and solar radiation on site. It should allow monitoring of the water flow rates used in each controlled area, allowing an integrated view of the consumption.

Preference is given to solutions that present a degree of innovation in the energy autonomy of the various devices to be installed on the ground, favouring renewable energy sources (e.g. solar panel + battery) and without additional 220V network installations.

Preference is given to solutions that implement predictive algorithms / artificial intelligence aimed at forecasting local irrigation needs based on (1) short / medium term weather forecasts, (2) environmental data of the territory (environmental sensors of Aveiro, available via API in the urban data platform) and (3) on data from local sensors of relative humidity and solar radiation.

There should be a mobile-compatible application/solution for the garden manager that allows access to all data from actuators, sensors, irrigation programs, consumptions made, forecasting of additional irrigation needs, etc.

All equipment must communicate through the LoRa / LoraWan protocol being the responsibility of the Municipality of Aveiro and the Telecommunications Institute to provision and manage a compatible and dedicated LoraWan data network for these equipments.

The management platform should ensure the integration of irrigation data, programs implemented, consumption and alarms in the CMA's urban platform through API.

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