



Aveiro Tech City Challenges

Urban Challenge #3

Monitoring the Energy Efficiency of Public Buildings

URBAN CHALLENGES

URBAN CHALLENGE #3 – MONITORING THE ENERGY EFFICIENCY OF PUBLIC BUILDINGS

SCOPE OF THE CHALLENGE:

The Municipality of Aveiro (CMA) has under its responsibility the management of buildings destined for the most varied uses in areas as diverse as education, culture, leisure, sport, etc. All publicly used buildings have supply of electricity, gas and water, intended for their normal operation.

With the objectives of reducing greenhouse gases, energy consumption and also the progressive increase in energy and water supply costs, it is important to gradually move towards monitoring energy consumption and establish energy efficiency policies according to the patterns and usage profile of each building.

DEVELOPMENT OF THE CHALLENGE:

It is intended the implementation of a technological solution composed of sensors and management platform and integration in the urban platform of Aveiro, aimed at quantifying and segmenting energy consumption in buildings by the various types of source and their identification of waste and savings opportunities.

The buildings where the installation of the solution can be considered may be from the school area, or in a equipment for use in the area of culture, both with typology of intense use by users and municipal workers. It is intended to obtain the best and most innovative solution that also allows the largest number of sensorization units to be installed.

The sensorization units to be considered shall be as follows (non-exhaustive list, serving only as a reference):

- Preferably non-intrusive and energy-independent units for recording electricity, gas and water consumption with the inlet meters of buildings and on the equipments with highest consumption of energy and water;
- Simple, energy-independent units, simplified installation in wall / ceiling, intended for the measurement of environmental parameters (temperature, humidity, concentration of monoxide / carbon dioxide) and anonymously quantify occupation of space by visitors. These

sensors will make it possible to fully characterize where, how and when the energy resulting from the public use of the spaces is being consumed;

- Mobile/portable units for the identification of energy loss areas in buildings (e.g. thermal bridges, windows, doors, roofs, etc.), where measurements will be recorded on the management platform and associated with the various spaces under monitoring.

The management platform should record all consumption data (public connection and inside main areas of the building) and allow the characterization of the efficiency of consumption.

Preference is given to open technology solutions that allow direct access of a third-party data platform to the sensor, through standard communication protocols. The CMA, in cooperation with the Telecommunications Institute, has a Lora / LoraWan network that can ensure the communication of data from these sensors to the central management system.

The management platform is preferred to implement predictive algorithms / artificial intelligence aimed at forecasting energy consumption needs based on (1) short/ medium term weather forecasts, (2) on the environmental data of the territory (environmental sensors of Aveiro, available via API in the urban data platform) and (3) on data from sensors installed in buildings under this challenge.

There should be a mobile-compatible application/solution for the CMA building manager that allows access to all sensor data, consumption, consumption forecasting, etc.

The management platform should ensure the integration of the energy and water consumption data referred to in this data sheet into the CMA's urban platform through API.

MENTORSHIP:

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