

OrbEEt in Asparrena



Initial Analysis & Baseline Definition



- 1 Selection of pilot offices, pilot audits & business process analysis as part of project foundations

Installation & Deployment



- 2 Installation of metering & sensors, software deployment and In-office Displays

Final Results & Significant Insights



- 3 A 12-month demonstration of OrbEEt framework, insights, impact assessment analysis and end users evaluation



Asparrena is a municipality located in the province of Álava, in the Basque Country, northern Spain. The municipality includes 10 different villages with 1.650 inhabitants, but most of the population lives in Araia, where the Town Hall (since 1850) is selected as the pilot site of the project.

The edifice is the Centre of the Government, the House of Major and the House of the Meeting Chamber; one of the most emblematic buildings in Araia, widely used by the inhabitants of Asparrena, being the connection between the Council and the citizens.

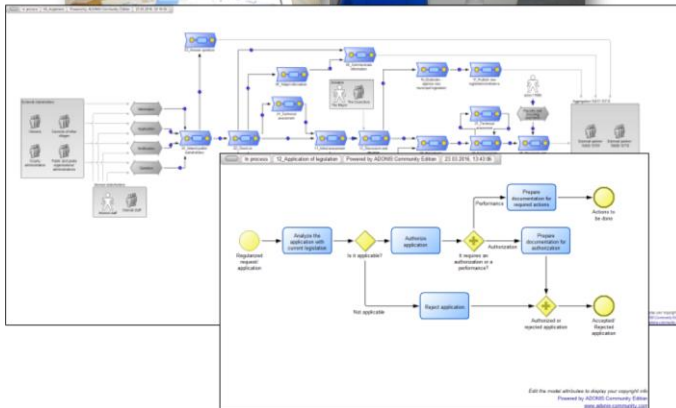
Initial Analysis & Baseline Definition



Asparrena Pilot Premises

Three pilot zones set the demo environment: Public Services Office, Administrative Office & Mayor's Office.

The first two zones set the area of the daily administrative activities; open to the wider public and external visitors. On the other hand, Mayor's office is the most representative zone of the Municipality Hall, the demonstration environment for the promotion of the energy efficiency framework in the municipality.



Business process & Organizational Activities

Along with the selection of the building for the demonstration activities, preliminary energy audits were performed to estimate the impact of the project.

Heat consumption is the main load in premises (64.21%) with lighting to be the 2nd most consuming load (26.69%). Other electrical devices in the selected offices (9.11%), computers & printers, were part of the test environment.

The business processes were also identified for the main personnel (10) and externals (15). Several micro activities (14) were identified to further count for the list of 5 core activities to set the business environment.

Installation & Deployment



Given the small size of the Asparrena' Town Hall, the number of hardware devices installed:

A Z-wave Gateway, 9 Smart plugs, 6 Smart switches, 5 Heat cost allocators, 5 Multi sensors & 3 tablets

The cost of equipment for the demonstration was 1,110€ with zero O&M costs as this task was performed by the facility manager of the building. The trend analysis indicates that the equipment cost may be reduced at 853.85€ for a large-scale demonstration.

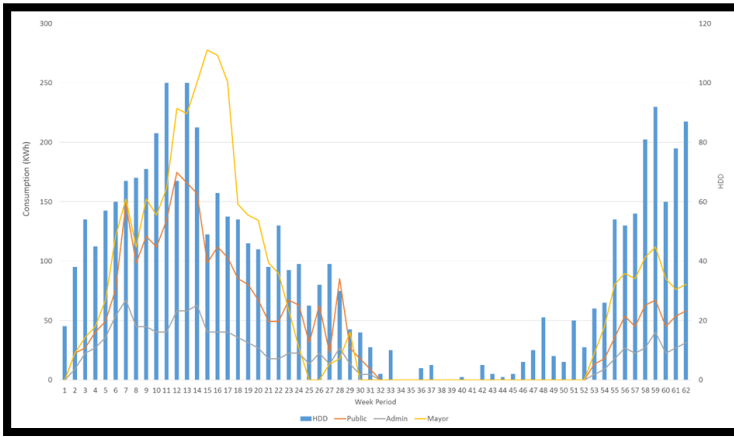
In the **first stage**, the local internet network was configured to ensure secure access to external parties.

In the **second stage**, the installation of hardware took place from M17 to M21. Smart switches were installed in switch-box while heat cost allocators were mounted at heating radiators.

The **third stage** of installation was the configuration of sensors & metering units in OrBEET cloud platform and further demonstration of In-Office Displays. The configuration of the software was also performed with 25 active user accounts.

Following the installation & deployment, the **maintenance of OrBEET solution** was the main task, to eliminate the faults in the prompt system operation.

In Asparrena, the wireless sensor network has worked normally with very occasional black outs, mainly due to the severe weather conditions in the region. A high reliability level is reported for the whole demonstration period.



Final Results & Significant Insights

Following a 12-month demonstration of OrbEEt framework, active engagement of end users in all applications is reported in the pilot, leading to significant energy savings (21.28%).

Asparrena is a small pilot and the size of the demonstration is affecting the level of engagement of users in the project: starting from **early engagement** at the 1st demonstration phase and maintaining the energy efficient behaviour during the “persistence of effects” phase

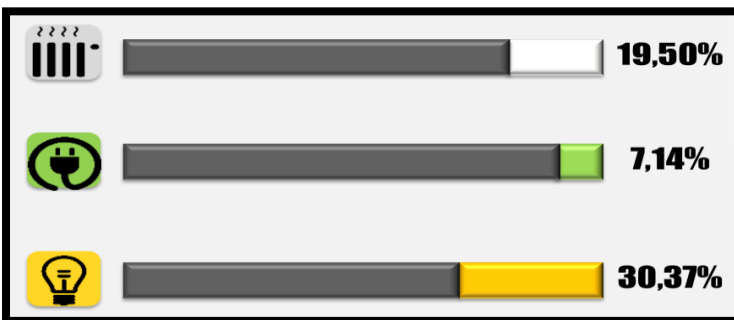
We highlight the significant savings on **lights consumption**; showcasing the direct impact of (near) real time and personalized (comfort preserving) notifications as the preferred means of users interaction with OrbEEt platform.

The interest of end users to reduce also **heat consumption** was high; main boundary was the lack of individual thermostats in each building zone.

By comparing the different pilot zones **Mayor’s office** was awarded, highlighting the interest of the municipality to promote the concept of energy efficiency to the citizens.

The promotion of the OrbEEt framework through the dissemination of activities performed during the project period, most significant the presentation of results in Basque Eco-Design meeting (international event) & Basque Parliament and the organization of open

Demo Events during E.U. Sustainable Energy Week



The reduction of CO2 emissions & peak demand was one of the main targets for Asparrena. The % reduction of peak demand 22.3% & CO2 emissions is close to 30.0%.

Comparison between periods Nov 2015 - Dec 2017 shows an economic saving of more than 30% in the electricity bill. By taking into account the cost benefit analysis and the viability of the OrbEEt demonstration (IRR > 10.0%), Asparrena is looking forward to continue to invest in the OrbEEt framework

<http://orbeet.eu/>

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