RESPOND

D5.4 - Desktop dashboard and smart mobile client Demonstrator

DEXMA
TEKNIKER

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D5.4 - DESKTOP DASHBOARD AND SMART MOBILE CLIENT

INTRODUCTION

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INTRODUCTION

The present document aims to show and explain the results from Task 5.4 carried out by DEXMA and TEKINKER. This task delivers an easy to use, yet powerful web-based desktop dashboard and smart multifunctional mobile application that will serve as RESPOND cloud platform clients.

The deliverable is divided into three parts: a) requirements definition, b) web-based desktop dashboard explanation, and c) smart multifunctional mobile application explanation.

D5.4 - DESKTOP DASHBOARD AND SMART MOBILE CLIENT

REQUIREMENTS DASHBOARD & MOBILE APP

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REQUIREMENTS DASHBOARD & MOBILE APP |

User types

First step was to define the roles each of the users have and which will be their interaction with the platform. For the RESPOND project, there are three main roles to take into account.

Platform user	Description	Expected interaction with the platform
Residents	People who are homeowners or tenants.	Smart mobile: • Energy/water consumption display for its own dwelling • Energy conservation opportunities • Energy feedback and comparison with neighbours
Energy Manager	People in charge of managing energy services for a community.	Web-based desktop dashboard • Energy/water consumption display for specific community • Demand response events monitoring • Homeowners data management • Platform management
System Operator (simulated)	In the RESPOND project framework, entity in charge of defining demand conditions.	• Demand response energy offerd

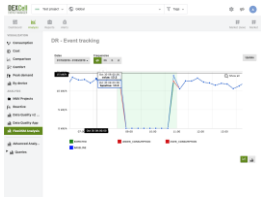
REQUIREMENTS DASHBOARD & MOBILE APP |

Information to be displayed – ENERGY MANAGER

Real time analytics

Benchmarking for support decision

Customizable dashboards



Event tracking

EVO's IPMVP protocol

Basic and custom reports

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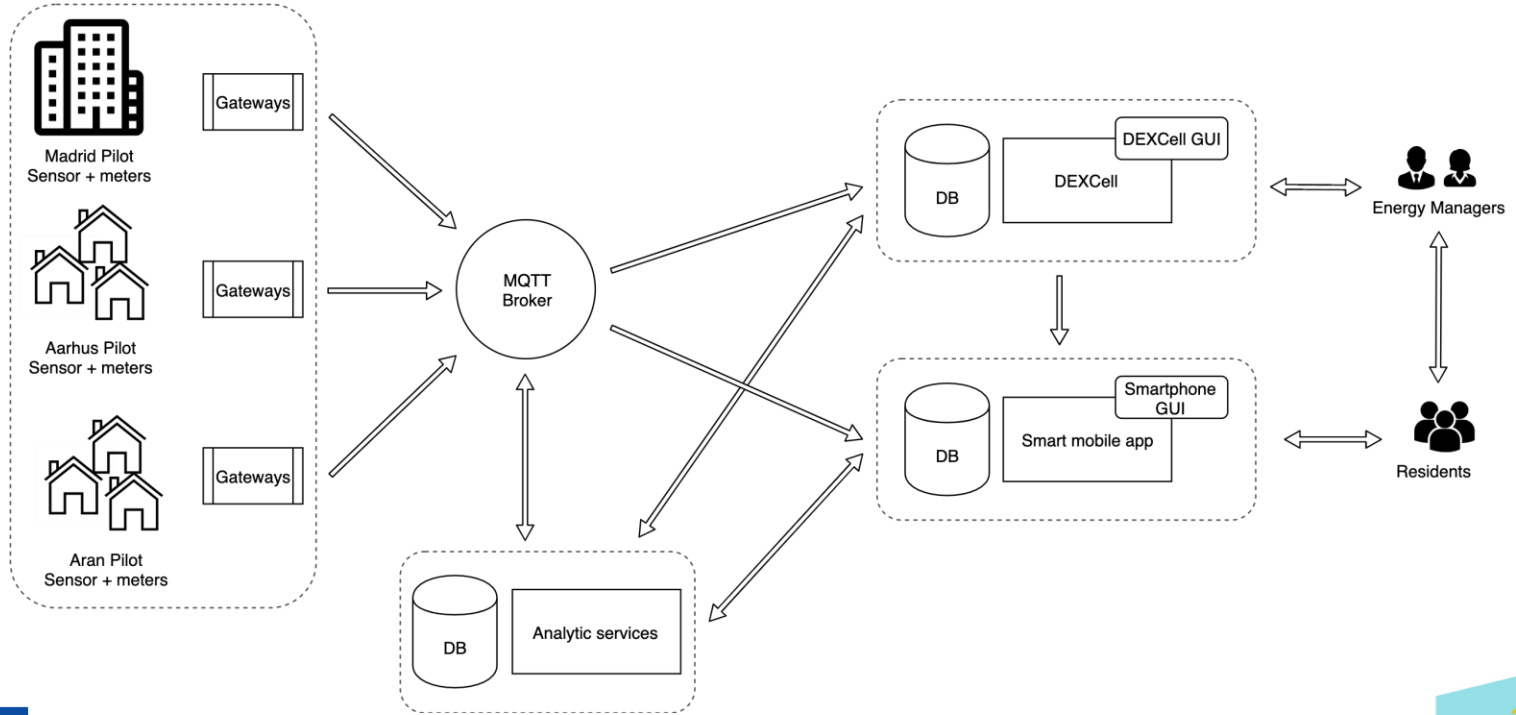
Project data and communications flow chart



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VISUALIZATION PLATFORM

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VISUALIZATION PLATFORM |

Introduction

In this section, the web-based desktop dashboard is described. First, a brief explanation of the platform configuration is done; Second, it is explained how the installed and developed features meet the user requirements. Visualization platform build upon RESPOND DEXCell Software account.

Apart from its use as a visualization platform, DEXCell will also play the key role of metadata database and the tool used to analyse the project results through KPIs and analysis.

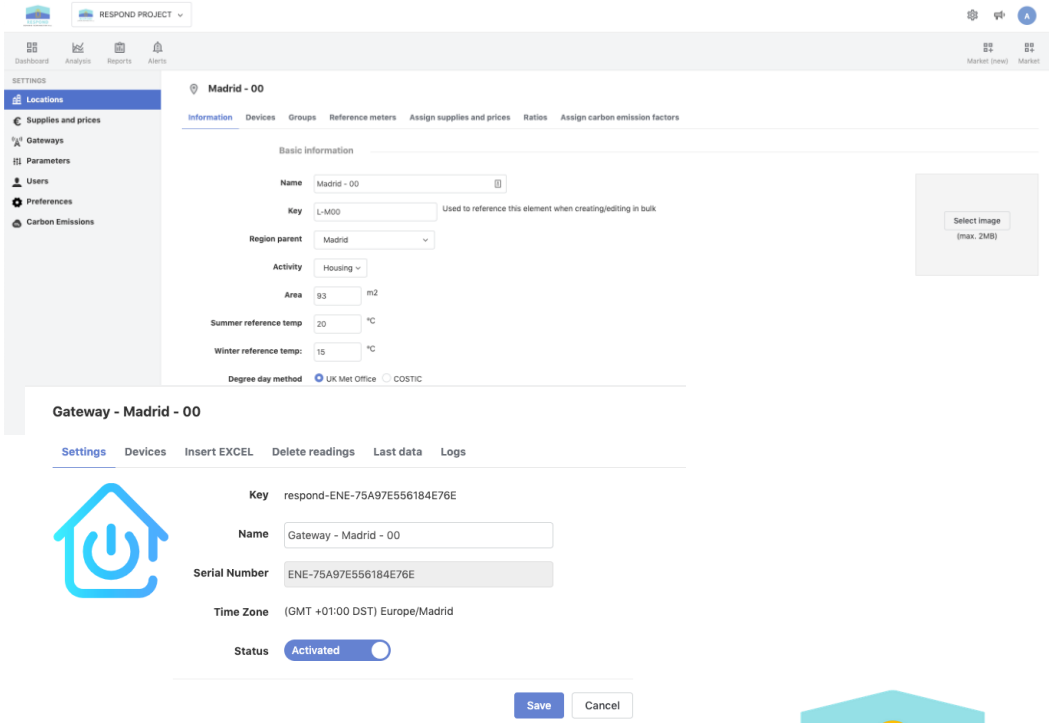
VISUALIZATION PLATFORM |

DEXCell platform configuration

Platform configuration is carried out by the energy managers. They first configure the locations with metadata and then assign devices to it.

Configured metadata:

- Surface
- Facility type
- Summer/Winter ref. temp
- Location address
- Energy cost
- Others



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VISUALIZATION PLATFORM |

DEXCell platform configuration

Energy managers will configure the users' account in the RESPOND platform in order to keep the permissions meeting their role, and follow the Dexma data security standards.

Functionalities	SuperAdmin	SuperUser	Manager	Client	Dashboard	Demo
Account management	✓	✗	✗	✗	✗	✗
Dashboard Configuration	✓	✓	✓	✓	✓	🔍
Share Dashboards	✓	✓	✗	✗	✗	🔍
Widgets Configuration	✓	✓	✓	✓	✓	✓
Data Visualization	✓	✓	✓	✓	✗	✓
MVP Configuration	✓	✓	✓	✗	✗	🔍
Billing Configuration	✓	✓	✓	✗	✗	🔍
Queries	✓	✓	✓	✓	✗	🔍
Add comments	✓	✓	✓	✓	✗	🔍
Reports Configuration	✓	✓	✓	✗	✗	🔍
Reports Visualization	✓	✓	✓	✓	✗	✓
Alerts Definition	✓	✓	✓	✗	✗	🔍
Locations Configuration	✓	✓	✗	✗	✗	🔍
Assign Supplies and Tariffs	✓	✓	✗	✗	✗	🔍
Supplies and Tariffs Configuration	✓	✓	✗	✗	✗	🔍
Gateways Configuration	✓	✓	✗	✗	✗	🔍
Create and edit Parameters	✓	✓	✗	✗	✗	🔍
Create and Delete Users	✓	✓	✗	✗	✗	✗
Assign Profiles	✓	✓	✗	✗	✗	✗
Settings Configuration	✓	✓	✗	✗	✗	🔍
Apps Market Visualization	✓	✓	✓	✗	✗	✗

✓ Available ✗ Not available 🔍 Read only

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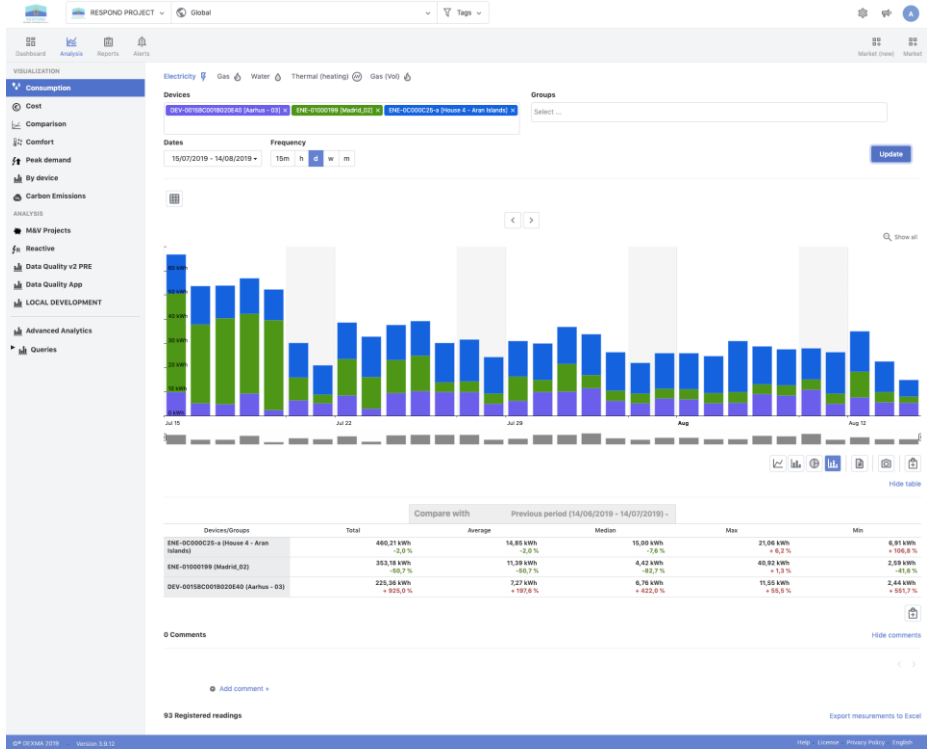
Feature/parts description

Energy monitoring

- **Consumption analysis**: data displayed in graphs and tables so the EM can brake down the information into useful tips for the owners. The feature allows to select between consumption types: Electricity, Gas, Water and Thermal. Allows the EM to compare different devices from the same account and even group them. The historical period can be selected to display all the available data. Frequency range goes from 5 minutes to monthly resolution. The graph display can be changed for better data analysis and also downloaded as a .csv file.



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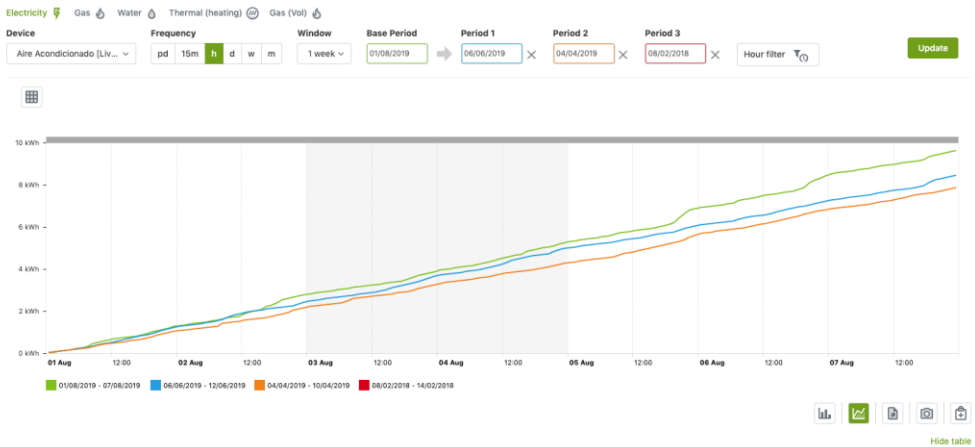
VISUALIZATION PLATFORM |

Feature/parts description

Cost monitoring

- **Cost analysis**: one of the main inducements for a customer to use the platform is cost control. To help the EM having costs under control this feature displays costs vs. time for an specific device. In case the location has more than one tariff period, the display will show both of them.
- **Comparison**: in case direct comparison is required between different periods (up to 3) this feature allows the EM to compare them easily. Even more complex features are used in order to decide if a project is producing savings, this functionality is useful for simpler device comparisons..



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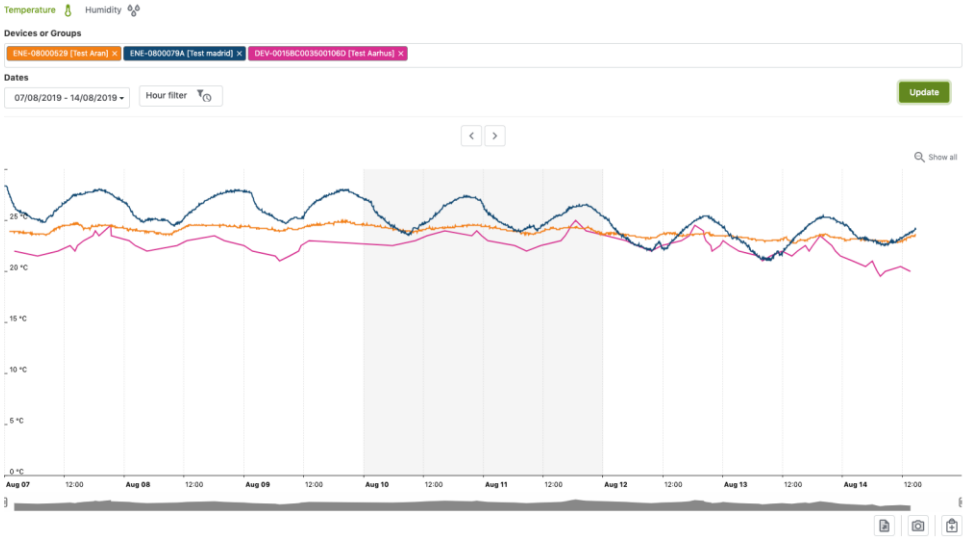
VISUALIZATION PLATFORM |

Feature/parts description

Comfort and CO2 monitoring

- **Comfort**: in order to properly analyse the energy consumption, it is necessary to also be aware of environmental conditions, because sometimes consumption anomalies can be caused by unusual conditions.
- **Carbon emissions**: to be able to shrink the CO2 footprint, it is useful to compare emissions of different periods or analyse the CO2 footprint of a specific device. DEXCell has developed a feature that according to a multiplying factor converts consumption into emissions. The multiplying factor varies depending on the facility conditions. Moreover, other gas emissions can be calculated.



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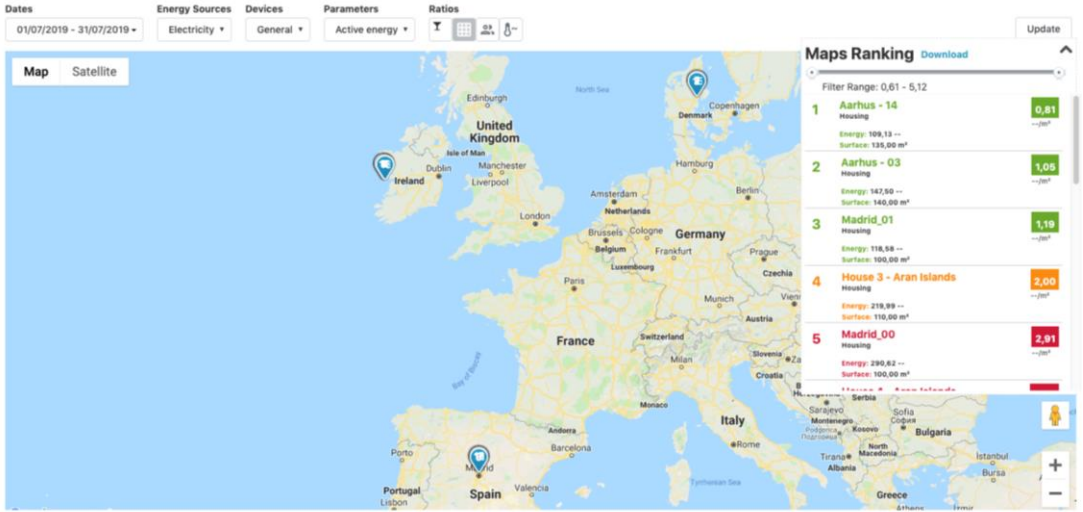
VISUALIZATION PLATFORM |

Feature/parts description

Rankings

- **Maps ranking**: as it was described in the DoW, comparing the different dwellings between pilot sites and neighbourhoods will help to analyse project results and also it can be used as a motivator for the less engaged users. The rankings can be related to many KPIs defined by the project. Most common is energy vs. dwelling surface.

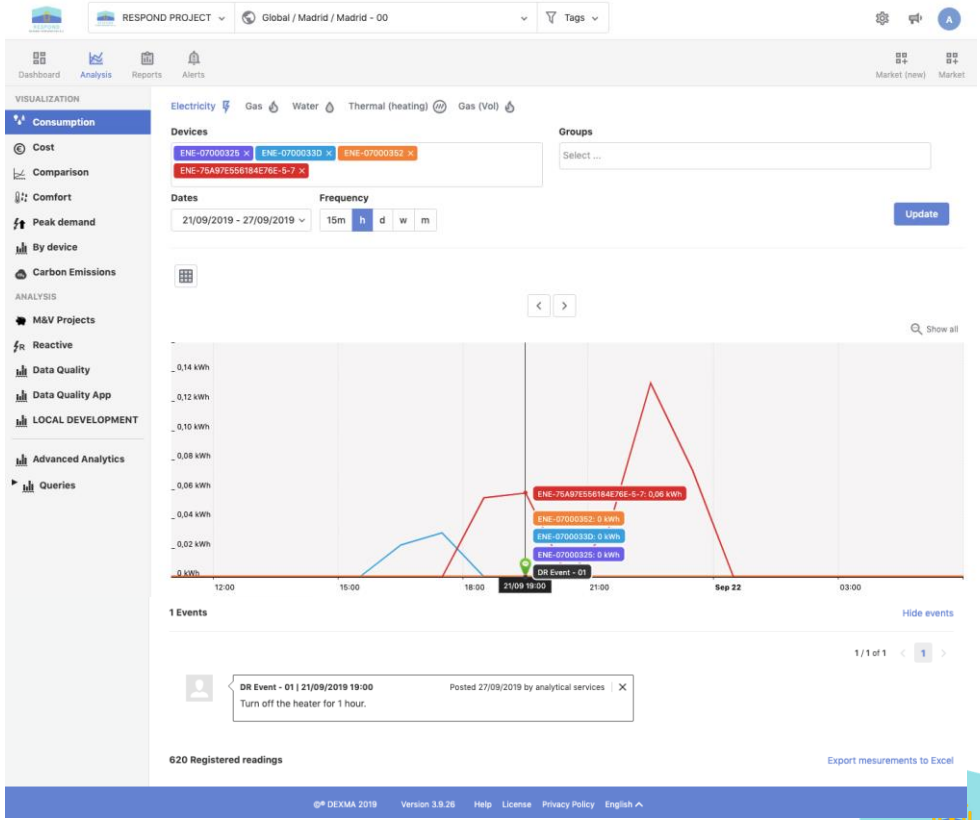


VISUALIZATION PLATFORM I

Feature/parts description

DR events

- **Event tracking**: it will be very important during the results analysis phase and the exploitation stage to track when a DR event happens. To do so, DEXCell platform will read the events shared with the end users through the MQTT broker and mark them on the consumption display.



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SMART MOBILE CLIENT

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SMART MOBILE CLIENT |

Introduction

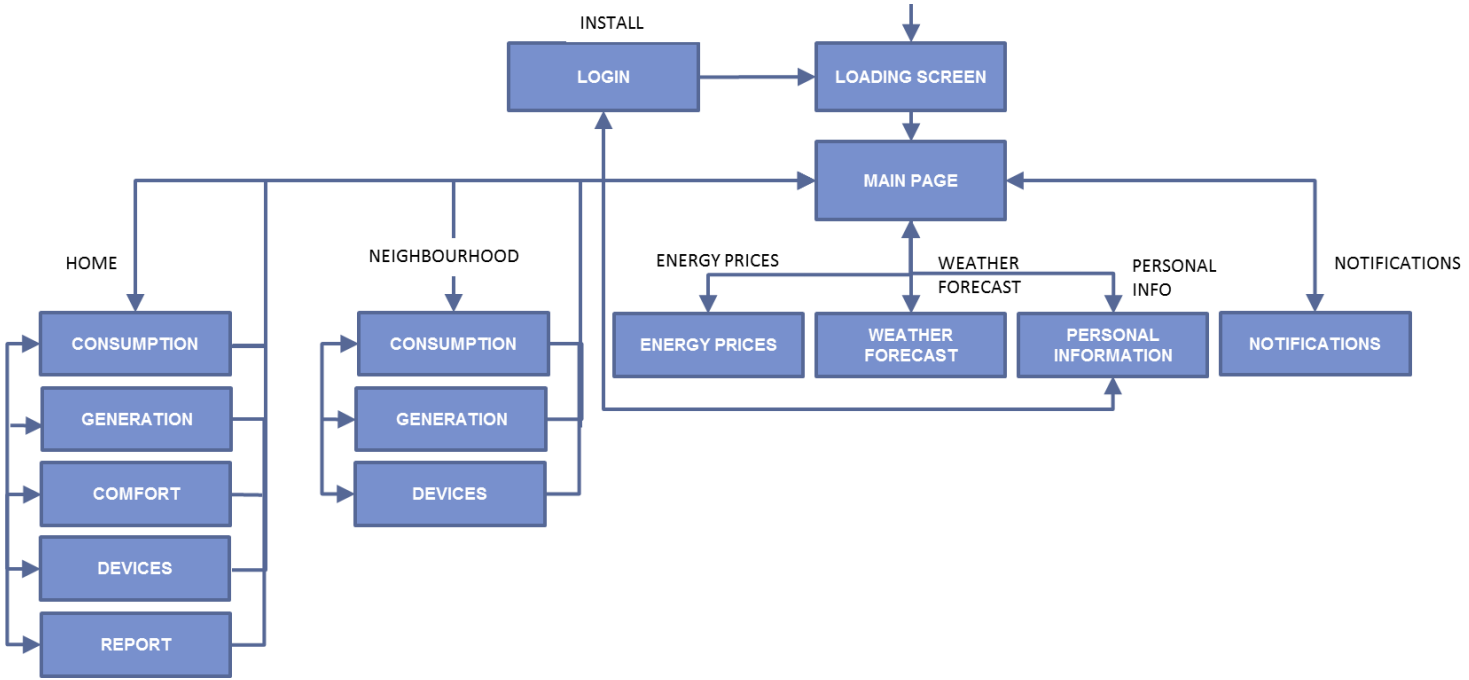
In this section the RESPOND mobile app is presented. First of all, the app's navigation diagram is shown and afterwards, a set of functionalities provided by the app are described.

The mobile app not only enables users to visualize energy-related consumption and generation, but also enables the actuation over the different devices to implement the optimal DR strategies proposed by the optimizer.

Last but not least, it is worth mentioning that this multilingual and multiplatform app is aimed at engaging users with an active participation in the project.

SMART MOBILE CLIENT |

Navigation Diagram



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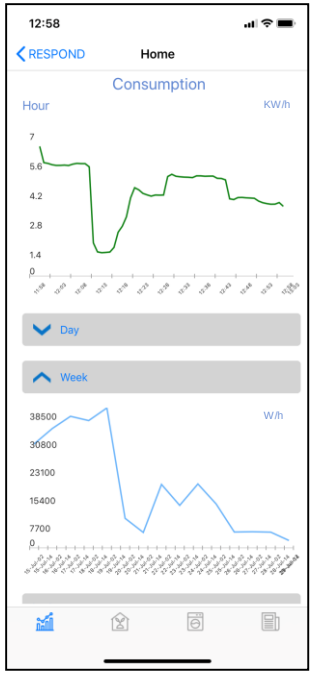
SMART MOBILE CLIENT |

Screenshots – Main Page

The Main Page screen is shown once the RESPOND mobile app is loaded. This is the main screen where users can select the screens that contain the different information available.

SMART MOBILE CLIENT |

Screenshots – Energy Consumption



The Energy Consumption screen is aimed at showing users the recent and historic energy consumption both at a dwelling and neighborhood levels. Furthermore, dwellers can visualize hourly, daily, weekly or monthly energy consumption information. This information may help them to realize which is their actual energy consumption, and consequently, contribute to raising awareness in this regard.

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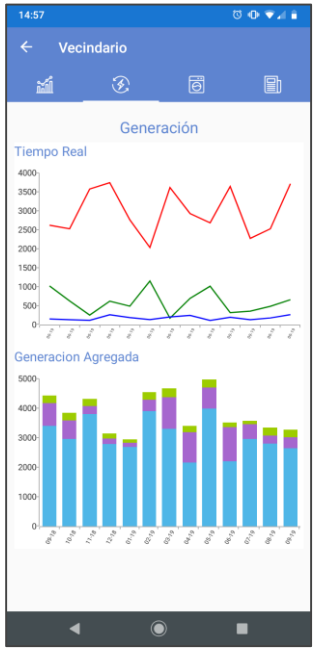
Screenshots – Energy Generation



The Energy Generation screen is aimed at showing users the recent and historic values of energy coming from Renewable Energy Sources (RES). Depending on the pilot site in which the user lives, this RES may be PV panels (for Aarhus and Aran Islands) or Thermosolar collectors (for Madrid). Furthermore, dwellers can visualize hourly, daily, weekly or monthly energy generation information. This information may help users to realize the levels of RES available, and combined with their energy consumption, to raise awareness in the potential reduction of energy coming from conventional non-renewable sources.

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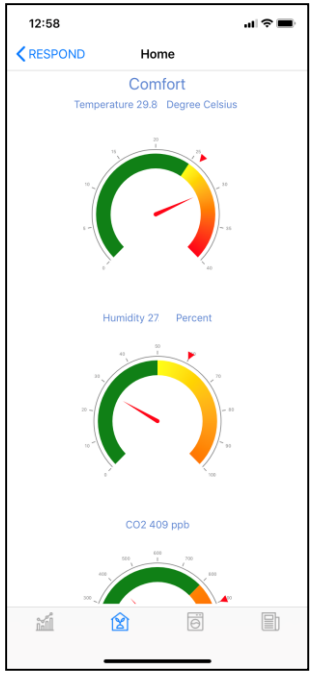
Screenshots – Comfort Indicators



The Comfort screen is aimed at showing users the indoor environment quality. It provides the mean temperature, humidity and CO2 levels, which are considered the basic indicators of comfort. Furthermore, each of these measurements are depicted in a color chart to ease dwellers interpreting the degree of adequacy of their current indoor situation.

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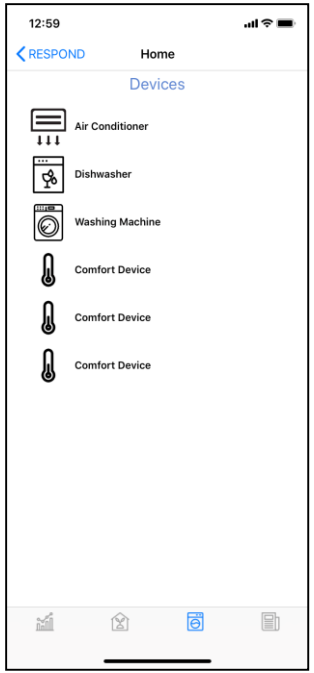
Screenshots – Device List



The Device List screen is aimed at showing users the monitoring and controllable devices within their houses. Mobile app users can then select each of these devices and take different actions. For example, for comfort devices, a user can check the temperature, humidity and/or measurements. For appliances, users can check their current and historical energy consumption, as well as activating or deactivating them.

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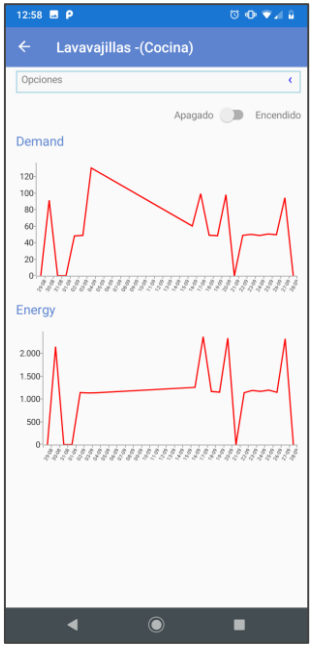
Screenshots – Device Data



The Device Data screen is aimed at showing users the measurements made by the devices shown in the previous screen. Furthermore, depending on the selected device, users can also perform certain actions on them(e.g. activate or deactivate them). The measurements shown in the screen will depend on the selected device. For example, some devices will show temperature and humidity measurements, while others will show the energy consumption.

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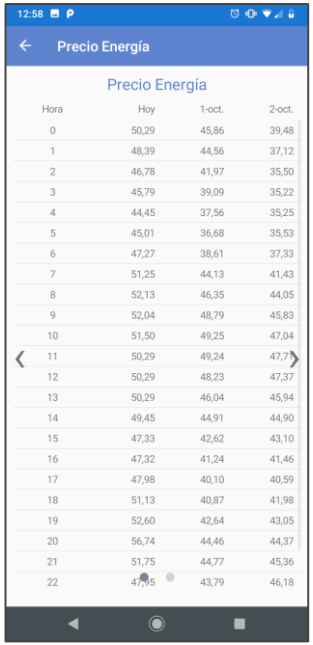
Screenshots – Energy Prices



The Energy Prices screen is aimed at showing users the hourly tariffs of the energy for the current and upcoming hours and days. This information may help users to have a more money saving behaviour, and consequently, contribute to achieving bigger energy savings at a dwelling and neighbourhood level.

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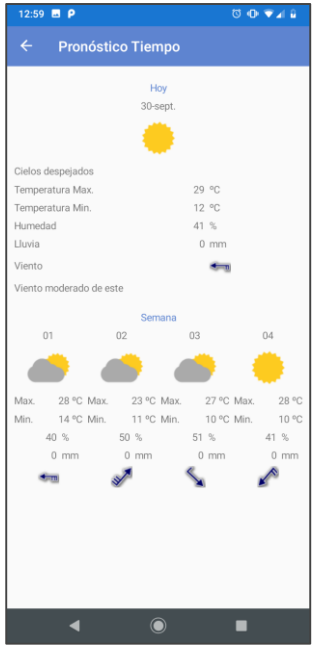
Screenshots – Weather Forecast



The Weather Forecast screen is aimed at showing users the expected weather for the upcoming hours and days. This information, combined with other features such as the energy price, enables users to achieve more environmentally-friendly and energy-saving behaviours. For example, knowing that the next day is going to be hot and sunny, a user can decide to hang their clothes instead of using the tumble dryer.

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Screenshots – Personal Information

The Personal Information screen is where users can see their personal data. Each user can only access to their own personal information, thus following the data privacy policies and making the RESPOND mobile app EU's GDRP (General Data Protection Regulation) compliant. Furthermore, this is the screen where users can set their preferences with regards to different aspects including DR event notifications.

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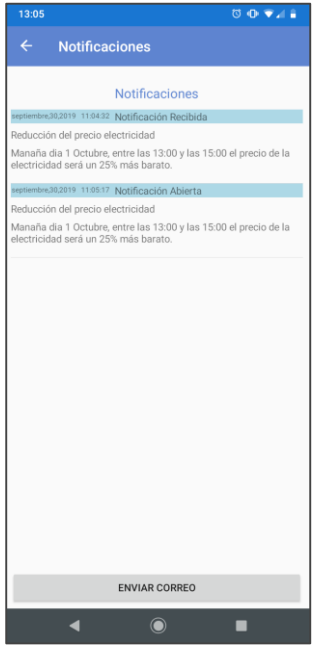
Screenshots – Notifications



The Notifications screen is aimed at showing users the notifications received. Users will receive different types of notifications such as recommendations or even alarms or warnings. These notifications will be received in the mobile app in the form of push messages instantly, but once they are reviewed, all the notifications will be available in the Notifications screen.

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