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Abstract:

The aim of this document is to provide a short overview of the demonstration activities carried out involving the two main pilot sites of BESOS i.e. the city of Barcelona in Spain, and the city of Lisbon in Portugal. This document should be seen as complementary to more detailed efforts listed in the publicly available documents D1.1 D6.1.1, D6.1.2, D7.2 and D8.3.

Keywords:

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1. Introduction

1.1. PURPOSE OF THE DOCUMENT

The document describes the demonstration activities at the pilots. It focuses in the main workshops organised by the project and the specific demo activities hosted by the project. It also includes some reference to the main general public demonstration activities.

1.2. SCOPE OF THE DOCUMENT

This document is a report on the main demonstration activities organised by the project to maximise the impact of its results. The document has been produced at the end of the project, including the very last activities planned during the last days of the life time of BESOS. Deliverable D6.2 is the demonstration effort itself – conferences, workshops and presentations – and not the report. However, for the better management and closure of such activities, this document was planned for the very last month of the project, in order to act as a final summary of the demo activities performed by the BESOS consortium. Most of the activities reported at this document – all except the ones related to the gathering of feedback form end-users – have been already reported at the project web site.

1.3. STRUCTURE OF THE DOCUMENT

The document is structured in three main sections: chapter 2 presents the summary of the public workshops organised by the project in the context of the European Sustainable Energy Weeks, from 2014 to 2016 – plus an additional workshop organised in Portugal with the support of Portugal Telecom; section 3 provides some insights on the most relevant general public dissemination/demonstration activities, as well as the most interesting networking activities with other projects; finally section 4 introduces the demonstration activities at each of the pilot sites in order to support the gathering of feedback to feed WP7.

2. BESOS Project Public Workshops

BESOS public workshops have been organised in the context of the European Sustainable Energy Weeks [1] (EUSEW), from 2014, when the project started, to 2016.

The workshops were structured as an Energy Day, as defined by EUSEW: an Energy Day is a not-for-profit event, activity, project, exhibition or display that promotes energy efficiency or renewable energy. Activities such as exhibitions, conferences, online events, performances, guided tours, open door days, workshops, media campaigns and concerts are all eligible.

Therefore, since the project activities fully match the areas of interest of an Energy Day, it was decided to organise three main activities, looking always for the collaboration of local partners, potential users and other EU projects.

In addition to the three EUSEW events organised, a fourth meeting was hosted in Portugal, promoted by Portugal Telecom in the context of the Lisbon Smart City initiative.

2.1. EUSEW 2014

BESOS and BEAMS [2] projects, in collaboration with the Technical University of Catalonia, organised an Energy Day on energy efficiency in Smart Cities at the first year of the project in order to show the first results of BESOS.

In the context of the EU Sustainable Energy week 2014, a complete session on Innovative tools to enhance energy management in EU cities was organised to introduce the achievements of some of the EU funded projects being demonstrated in the city of Barcelona. The conference was presenting the latest tools for the improvement of energy efficiency in the cities of the future, presenting a comprehensive vision that addressed energy optimization in large infrastructure of public use, residential neighbourhoods, buildings of public services and mobility based on electric vehicles.



Figure 1: Venue of the first demonstration activity in Barcelona

More than 50 stakeholders were registered to the event – with a final attendance of nearly 40. This group included public authorities – local and regional – potential customers – facility managers – and even technology providers that could establish marketing alliances to incorporate some of the BESOS results.

Several speakers were invited to participate, from other projects that had collaborated with BESOS in the previous years or from other activities initiated by UPC to enhance energy use at their facilities. The agenda also included a final round table for open discussion and even an introduction from a political perspective by a local politician.

After a lunch offered to the attendants to trigger and motivate networking and identify potential collaborations for the next steps leading to the exploitation of the project results, a technical visit was organised to a selected group of them.



Figure 2: First BESOS public workshop, presentation in Barcelona

The visit was promoted by the BEAMS project, and it was relevant to BESOS as it included the analysis of one main facilities managed by SODEXO – which finally was not incorporated in the portfolio of assets managed by BESOS as the contract with the facility owner concluded before BESOS deployment activities started.

After checking some of the equipment installed for the monitoring and control of the facility, and in particular for the management of the few electric vehicles available, the visit concluded at the control room managed by SODEXO at the facility, where it was possible to exchange ideas on how BESOS should incorporate specific requirements on multi-vendor HW support, trying to avoid any vendor-lock situation usually suffered by Facility Managers. The visit served as great starting point to better understand the needs and requirements previously identified in paper by the end-users participating in BESOS. It helped understand the difficulties on aspects as deployment, communications, and how to organise the validation activities without affecting the normal operations of the infrastructure participating at the trials.



Figure 3: Barcelona control room ant one of SODEXO facilities

2.2. EUSEW 2015

The BESOS, project, with the support of the e-Balance [3] and URB-Grade projects [4], organised a second Energy Day on energy efficiency in Smart Cities in Barcelona.

In the context of the EU Sustainable Energy week 2015, a second session on Innovative tools to enhance energy management in EU cities served to introduce the achievements in the Energy Efficient Management arena of some of the EU funded projects being demonstrated in the city of Barcelona.



The e-balance Project aims at integrating the energy customers into the future smart-grids in order to address future environmental problems with holistic technical solutions based on ICT, new business models and citizens' behaviour under real world conditions



The URBGrade project designs, develops and validates a Platform for Decision Support that will allow the city authorities and utilities to promote and choose the correct actions to upgrade a district to become more energy efficient, cost effective and to increase comfort for its citizens in a District as a Service Platform approach.

Figure 4: Projects co-hosting the EUSEW 2015 conference

The conference extended the workshop of 2014, with latest tools for the improvement of energy efficiency in the cities of the future being applied to the city of Barcelona, presenting a comprehensive vision that addresses energy optimization in large infrastructure of public

use, buildings of public services and mobility. It was importance the support and attendance of Barcelona technicians to validate the approach adopted by all three projects with regards to the integration on the Barcelona Smart City .Platform.



Figure 5: Venue of the EUSEW 2015 conference

It is important to highlight also the participation of the DoF project [5]. The four projects committed to organise a common session in Sustainable Places 2015 [6] in Savona and to attend together with a common stand at the Smart City World Congress 2015 [7] – see section 3.

2.3. 3RD CONFERENCE SMART CITIES – CITIES OF THE FUTURE

With the support of Portugal Telecom and organised by LISBOA e-NOVA, a conference on Smart Cities was organised in Lisbon between the EUSEW 2015 workshop and the EUSEW 2016 event. The conference was promoted in the context of BESOS, and followed the structure of previous similar conferences organised by LISBOA e-NOVA – actually, this event was the third edition of the conference, and despite the fact that BESOS already participated in the second edition, it was only during the 2015 edition that BESOS took a leading role.



Figure 6: Smart Cities – Cities of the future promotional banner

Not only different local stakeholders were invited to participate and share the Lisbon Smart City roadmap, but also the European Commission was represented by means of the BESOS project officer.

The audience – with more than 80 attendants – was composed of different ICT providers, public authorities, decision makers and energy companies – both retailers and distributors.

The conference was organised around three main blocks followed always by a round table and open debate among participants. In the first block the political vision on smart Cities

was tackled by representatives of the Lisbon municipality, with special focus to the Lisbon smart City strategy.

In the second block of presentations, different business opportunities promoted by local companies – most of them SMEs – were presented. Finally, in the third block, the EC vision was presented, jointly with the experiences of some of the EU smart City projects being run in Lisbon.

2.4. EUSEW 2016

With the support of Partenalía [8] – located in Brussels – BESOS and other two European projects (BRICKER [9] and NOBELGRID [10]) organised an event under the frame of the EU Sustainable Energy Week 2016, aimed to present and share success stories of ongoing Efficient Energy Projects under the Horizon 2020 Programme and the FP7 Programme in different regions of Europe (members of Partenalía).

The projects focused their goals in empowering people and municipalities as key factor in the energy transition. Members of Parentalia, stakeholders, experts on energy and citizens were welcome to find out those best practices on energy efficiency.

The projects presented together with BESOS were “ BRICKER: Total Renovation Strategies for Energy Reduction in Public Building Stock” of the Province of Liege (Belgium) and “NOBELGRID:

The audience included representatives from public authorities – regions – and also from renewable energy cooperatives. In addition to the presentation of projects, it was presented the Start-up Europe Awards, an initiative promoted by the European Commission and implemented with the support of the Start-up Europe. This action, which is currently in phase of development, aims at rewarding the start-ups in different areas, such energy, across Europe and also gathering all the start-ups awards organisers held in Europe under the umbrella of the Start-up Europe Awards Alliance. Some of the BESOS partners have shown interest on this new initiative.

The event was streamed live on Facebook and recorded [11] [12].



Figure 7: EUSEW 2016 speakers



3. Other presentations, workshops and interactions

In addition to the main workshops organised by the project, there are some additional relevant events addressed to end-users with the objective of promoting networking and providing feedback to the project that are worthy to mention.

3.1. SMART CITY WORLD CONGRESS 2013

BESOS was present at the first edition of the Smart City Expo World Congress after the start date of the project through a position paper preparing the continuation of BEAMS activities within BESOS.. .

The Smart City Expo World Congress is the most important event that gathers in one place city representatives, institutions, academic and thought leaders, research centres, industry and entrepreneurs with major decision-making power. In the 2013 edition counted with 213 cities and nearly 10.000 visitors.

The project partners ETRA and SODEXO presented a paper on how to deploy and Energy Efficiency platform for the city of Barcelona.

The paper presented a proposal for a common framework where existing infrastructure operators and public bodies could cooperate in order to exploit synergies and achieve higher levels of energy efficiency.

It was presented by Antonio Marqués, director of Technology at ETRA within the main panel of the Conference.

3.2. LAUNCH CONFERENCE OF EUROPEAN INNOVATION PARTNERSHIP ON SMART CITIES

On November 2013 – just after the kick off BESOS activities - ETRA was invited to present, together with other 5 organizations, in the exhibition area of the launch conference of the **European Innovation Partnership on Smart Cities and communities** [13] in Brussels, the main developments done in energy efficiency for Smart cities during the last years.

Specifically, during this event, ETRA I+D showed to dozens of experts in the area of Smart Cities the three successful coordinated FP7 European projects NOBEL, SMARTKYE and **BESOS**.

The European Commission organized the launch conference of the European Innovation Partnership on Smart cities and communities in order to share and discuss the actions outlined in the "Strategic Implementation Plan" of the Smart Cities and Communities Partnership and how to put them into practice. At the conference, the Strategic Implementation Plan and future actions by the Partnership was presented to a large audience.

ETRA had its own stand with posters of all three projects and a mock-up of the smart lighting approach to be further explore in BESOS: adapting street light conditions to traffic conditions. The venue was a great opportunity to present at the beginning of the project, the main ideas and objective to relevant stakeholders in the area of Smart Cities. Especially relevant was the visit of the deputy-major of Barcelona at that time – Mr. Antoni Vives- to the stand, where he was able to know directly the plans of BESOS for the deployment of an Energy Efficiency Support System in Barcelona.



Figure 8: BESOS poster and smart lighting mock-up

3.3. MEETING WITH REGIONAL GOVERNMENT OF CATALONIA

During the first year of the project SODEXO and ETRA made several visits to “Infraestructures de Catalaunya”, the public body of the regional government responsible for the maintenance and operation of some of the most relevant public services in Catalonia – education, health, security, etc.

The objective was, on the one hand to present the approach to be followed in in BESOS, and, on the other hand, and most important, the second objective was to incorporate the requirements of a potential customer for the wide acceptance of the project prototypes.

It is plan to have a closure meeting with this potential end-user after the end of the project, presenting the final prototypes in the context of a commercial relationship.

3.4. EUSEW 2014 LISBON ENERGY-DAY

In parallel to the BESOS organised workshop in Barcelona, LISBOA e-NOVA participated in a second energy day with local partners in the city of Lisbon. The session focused on the potential use of renewables, and special solar energy, in the city.

The event counted with the participation of representatives of the Lisbon municipality and some of the main consumptions loads in Lisbon were identified as potential elements to be monitored by BESOS – i.e. street lights, traffic lights, buildings, tunnels, etc.

Being hosted by the Lisbon municipality, the event attracted the attention of local decision makers in the area of energy efficiency.



Figure 9: BESOS being presented at Lisbon EUSEW2014 Energy Day

3.5. SMARTKYE FINAL WORKSHOP

In the context of the SmartKye project – predecessor of BESOS – it was possible to present to the Barcelona stakeholders how BESOS was going to continue the work done in Barcelona.

A half-day session about Innovative tools and research activities to enhance energy efficiency in European Smart cities and Smart grids, was organised. The conference presented the latest tools for the improvement of energy efficiency in the cities and grids of the future, presenting a comprehensive vision that addresses energy optimization in large infrastructure of public use, residential neighbourhoods and industrial facilities.



Figure 10: BESOS at the Smartkye Final workshop

3.6. SMARTGREENS CONFERENCE 2015

The purpose of the 4th International Conference on Smart Cities and Green ICT Systems (SMARTGREENS) held in Lisbon was to bring together researchers, designers, developers and practitioners interested in the advances and applications in the field of Smart Cities, Green Information and Communication Technologies, Sustainability, Energy Aware Systems and Technologies.

The participation in the SmartGreens conference consisted on the preparation of a paper describing the main concepts of BESOS project focusing on the Common Information Model of the project.

The paper was presented by HYPERTECH in the Smart Cities technical session. The presentation described BESOS Common Information Model, focusing on the way we have adopted IEC CIM aspects and further extended it towards the delivery of a semantic model that fits to the provision of energy management solutions in smart cities environment.

3.7. NOBEL GRID WORKSHOP OPEN SESSION

The purpose of the Workshop "Nobel Grid Workshop OPEN SESSION" was bringing together researchers, designers, developers and practitioners interested in the advances and applications in the field of Smart Cities, Green Information and Communication Technologies, Sustainability, Energy Aware Systems and Technologies. In this workshop three projects collaborated: NOBELGRID, BESOS and SmarterEMC2 [14] project.

BESOS project presented "BESOS project. Smart Energy Efficiency Service Platform for Smart cities" where ETRA shared main results and the latest tools for the improvement of energy efficiency in the cities of the future, in order to present the activities for energy optimization in large infrastructure of public use and residential neighbourhoods. Specific demonstration activities with the pilot sites end-users.



Figure 11: BESOS project and NOBEL GRID open session in Brussels.

The Open session was a side event of the EU sustainable energy week (EUSEW2015). The session counted with the presence of Manuel Sánchez Jiménez, Leader of the Smart Grids Team of the Directorate General for Energy of the European Commission. Sánchez Jiménez, prominent expert on the field, explained the EC strategy on Smart

Multiple experts on green energies participated actively on the Workshop together many end-users followed it through HD live streaming.

3.8. IOT WEEK LISBON 2015

Portugal Telecom participated at IOT Week Lisbon 2015 presenting BESOS Project. In IoT Week Lisbon BESOS presented a demonstrator in order to show the integration done with Lisboa Enova EMS, in particular the Campo Grande 25 Building, the Olivais School and the Mechanical and Electrical Department from the Municipality.



Figure 12: BESOS demo at IoT week in Lisbon.

3.9. SMART CITY WORLD CONGRESS 2015

As a result of the EUSEW 2015 workshop organised by BESOS, three of the projects participating there (URB-GRADE, DoF and BESOS) decided to join forces and attend the Smart City World Congress edition of 2015 with a medium-size stand.



Figure 13: BESOS at Smart City World Congress 2015.

The 2015 edition counted with a total of 14,288 attendees, 485 exhibitors and 421 speakers from 568 Cities around the globe.

3.10. EUROPEAN BUSINESS NETWORK FOR CORPORATE SOCIAL RESPONSIBILITY

BESOS participated at the European Business Network for Corporate Social Responsibility (CSR Europe), under the framework: Cities and Sustainability.

This workshop is part of the Sustainable Living in Cities Campaign launched under CSR Europe's Enterprise 2020 initiative.

It aims to encourage new local partnership between companies, public administration and other urban stakeholder in order to develop innovative and efficient solutions for urban sustainable development.



Figure 14: BESOS representatives from PT and LISBOA e-NOVA.

3.11. TECH DAYS IN AVEIRO 2016

With the last prototypes of the project ready to be shown to all kinds of public, PORTUGAL TELECOM participated in the TechDays in Aveiro.

The TechDays Aveiro is a national reference event, giving visibility to the importance of technology and innovation accelerator for economic development and improved quality of life. It is an event that for three days, joint companies, entrepreneurs, creative and the general public on the same stage - the city of Aveiro - to discuss and experience the future in four thematic areas: ICT, Energy, Sea, and Materials and Habitat.

In this edition, more than 10.000 visitors participated, with more than 100 exhibitors in the expo area.

The BESOS results were part of the solutions being exposed to public at the PORTUGAL TELECOM stand.

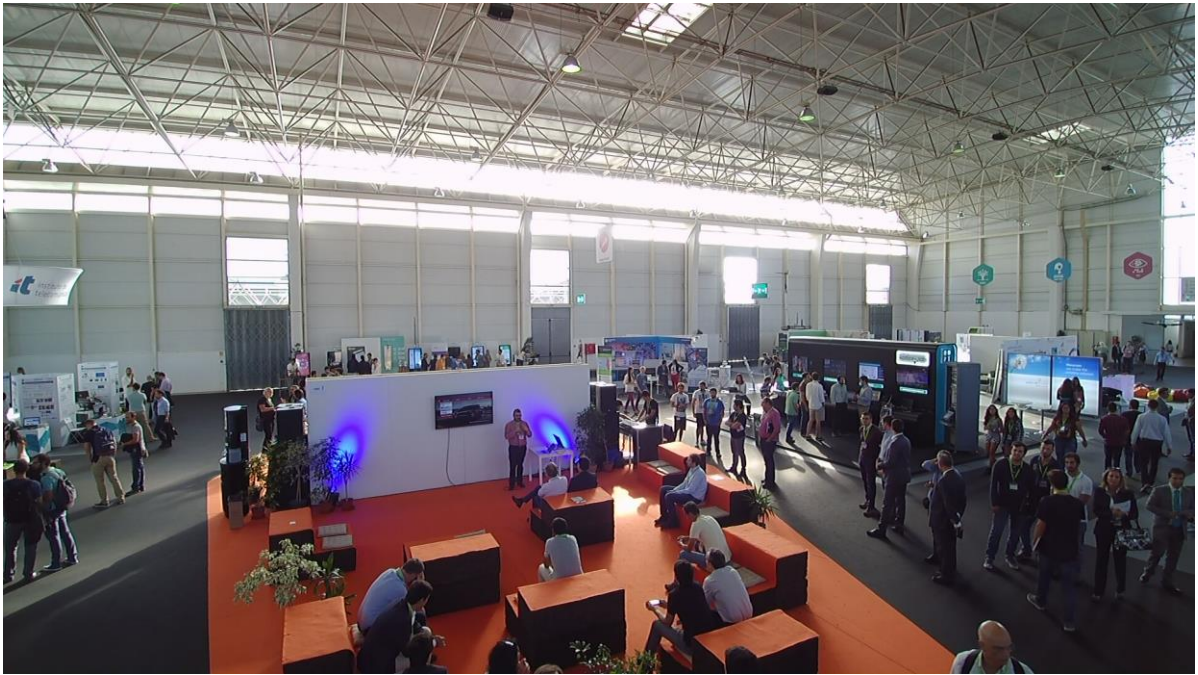


Figure 15: TechDays in Aveiro.



4. Specific demonstration activities with the pilot sites end-users

In addition to the public demonstration activities described in this document, the project has also run some specific private demonstration sessions with the end-users participating in the project.

Dedicated access to the project applications – through a specific VPN accessible only under invitation – was provided to all end-users in the project. They were able to evaluate freely the applications – especially its usability and invite other experts external to the project to experience the project final results.

The analysis on the feedback received, as well as the questionnaires used can be found in D7.2 Evaluation and Assessment [15].

In summary, the application was evaluated by more than 150 experts and citizens (Public Authorities: 43; ESCOs: 47; EV users: 23; Mobile UI users: 36).



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ACRONYMS

Acronyms List

HW	Hardware
UPC	Technical Univeristy of Catalonia (Universidad Politécnica de Cataluña)