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Abstract:

This document outlines the results achieved by the Consortium in the following main tasks:

- organisation and management of the project workshop at the Global IoT Summit, which was held the 8th of June 2017 in Geneva (Switzerland) and involved other projects focused on same Entropy topic
- set up and contribution to motivate the creation of interested User Group for ENTROPY especially involving partners of the project Pilot sites, namely UMU (Spain), POLO and Hyperborea (Italy), HES-SO (Switzerland).

Keywords:
Communication, social media, marketing, dissemination, energy-efficient technologies.

Revision History

The following table describes the main changes done in the document since created.

Revision	Date	Description	Author (Organization)
v0.1	03/04/2017	Toc of the Document	Norma Zanetti (Hyper)
v0.2	29/05/2017	UMU delivered their material	Antonio Skarmeta (UMU)
v0.3	29/05/2017	Polo and Hyper delivered their material	S. Salvadori (Hyper) - G.Gori (Polo)
v0.4	29/05/2017	HES-SO delivered their material	Aristotelis Agianniotis (HES-SO)
v0.5	15/06/2017	EESIoT 2017 event material delivered	A. Skarmeta (UMU) A. Zafeiropoulos (Ubitech)
v1.0	20/06/2017	First document draft circulated	Norma Zanetti (Hyper)
v1.1	23/06/2017	Final document draft circulated	Norma Zanetti (Hyper)
v.1.2	23/06/2017	Peer review	Giulia Gori (POLO)
v1.3	26/06/2017	Review from HES-SO	Aristotelis Agianniotis (HES-SO)
v2.0	29/06/2017	Final version	Norma Zanetti (Hyper)

Executive Summary

The document outlines the activities performed by ENTROPY Consortium in preparing and holding the project Initial Workshop and in setting-up and maintaining active groups interested in the energy efficiency topic and related enabling new technologies.

In particular, the project partners followed the strategy outlined in the D6.1 "Communication Roadmap" (submitted on M3, namely end of December 2015) to:

- organise, hold and manage the project workshop at the Global IoT Summit, gathering contributions from ENTROPY partners and the set of projects active in the area of innovative ICT technologies applications for designing and developing energy efficient technologies in the buildings sector.
  The Workshop was held on 8 June 2017 in Geneva (Switzerland).

- set up and contribute to the creation of interested User Groups for ENTROPY especially involving partners of the project Pilot sites, namely Murcia (Spain), POLO and Hyperborea (Italy), HES-SO (Switzerland).
  At least two main events were organised in each country to effectively start establishing the creation of communities interested in the energy efficiency topic and in the project goals.

Disclaimer

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1. INTRODUCTION

This document provides the ENTROPY Project outcomes related to the activities performed in organising and managing the Project Workshop and in setting up and maintaining groups interested in the energy efficiency topic and in the project main aims.

Section 2 describes and provides details on the procedure adopted to organise the Project workshop. In particular, Antonio Skarmeta and Anastasios Zafeiropoulos on behalf of ENTROPY were in the organizing committee of the workshop, contributing and realising the final editing of the call for papers and the set of papers collection, evaluation and program preparation activities.

Section 3 describes the activities performed in each country of the project hosting the related pilots: description of events and related documents (e.g. agenda, web sites description, photos) to set up initial communities interested in the project aims are reported for each test-bed.

Finally, the conclusions section complete this deliverable.

2. GLOBAL IOT SUMMIT WORKSHOP ON ENERGY EFFICIENT SOLUTIONS BASED ON IOT - EESIOT 2017

ENTROPY has been actively involved in the organization of a workshop at the Global IoT Summit, gathering contributions from the set of projects being active in the area of usage of innovative ICT technologies for designing and developing energy efficient technologies in the buildings sector. Antonio Skarmeta and Anastasios Zafeiropoulos on behalf of ENTROPY were in the organizing committee of the workshop, contributing and realising the final editing of the call for papers and the set of papers collection, evaluation and program preparation activities.

The overall philosophy of the workshop was defined as follows (also made available in the workshop website - http://globaliotsummit.org/workshop-on-energy-efficient-solutions-based-on-ioteesiot-2017):
"Energy saving is based heavily on the design and development of novel energy efficient solutions. Information and Communication Technologies (ICT) and Internet of Things (IoT) could be instrumental in the use of abatement technologies that address energy consumption inefficiencies. On the one hand, integration with ICT technologies is one of the main drivers for the buildings' industry to meet the 2050 long term goals for achieving the decarbonisation goal for the European economy. On the other hand, Internet of Things (IoT) can bring direct efficiency gains and can enable behavioural change based on measuring, monitoring, intelligent management and control of energy consumption data, as well as through providing reliable data to citizens, industries and governments about energy consumption / carbon emissions.
In order to exploit this potential, innovative solutions have to be implemented upon properly understanding the main energy consuming factors, as well as energy consuming trends, including the citizens' behaviour with regards to energy efficiency. However, it should be noted that even with full-scale deployment of novel and energy efficient ICT solutions, without the right incentives or motivation to change, behaviour can be a major barrier to adoption. Thus, the deployment of energy efficient ICT solutions has to be accompanied with active engagement of the buildings' occupants towards the goal to increase the overall environmental friendliness of the buildings. This can be achieved by increasing the overall awareness of consumers regarding the main causes of energy consumption, the impact on the environment, the potential for energy and cost savings, as well as providing the proper motives for changing their daily lifestyle in order to achieve better life quality.

This workshop aspires to be a forum of discussion between different stakeholders, researchers, industries etc., in order to present the most recent advances in the area of ICT- and IoT-based Energy Efficiency solutions. It will also promote the collaboration and mutual exchange of experiences between researchers. The presence of researchers from EU funded projects will be promoted although it is open to all kind of contributions.

The technical topics of interest include, but are not limited to:

- Data management, fusion and knowledge extraction, including semantic models
- Open/Linked Data Production and Consumption for energy efficient ICT services

- Behavioural and Energy Consumption Analytics
- Novel network infrastructures
- Smart metering infrastructures
- Wide area management and monitoring systems
- Networking protocols for low-power devices
- Methodologies for studying and analyzing smart buildings' performance
- Pilot applications and experiences in both public and private buildings
- IoT-based gamification services for behavioral change towards energy efficiency
- Design guidelines for IoT-based energy efficient services
- IoT-based personalized services towards energy efficient lifestyle
- IoT for Energy-related issues in Education
- Mobile CrowdSensing Mechanisms for energy efficiency
- IoT and Smart Data-based intervention services for energy-efficient lifestyle and behavioural change
- Energy efficient electrical appliances: data exchange standards, interoperability, security
- Societal impact of Big Data on energy efficiency, sustainability and environment"

Following the aforementioned philosophy and call for papers, and based on a peer review process, the following papers[1] were accepted for presentation during the workshop:

- Integration of Serious Games and IoT Data Management Platforms to Motivate Behavioural Change for Energy Efficient Lifestyles, Speaker : Antonio Skarmeta Gómez
- enCOMPASS - an Integrative Approach to Behavioural Change for Energy Saving, Speaker: Cristina E.M. Rottondi
- A serious game enhancing social tenants' behavioral change towards energy efficiency
- Addressing Behavioral Change towards Energy Efficiency in European Educational Buildings, Speaker: Giorgios Mylonas
- Human Mobility Analysis based on Social Media and Fuzzy Clustering, Speaker Antonio Skarmenta Gómez
- Energy efficiency in smart building: a comfort aware approach based on Social Internet of Things, Speaker: Virgina Pilloni
- Enhanced Human-Centric Building Energy Performance Rating - Operational Rating and Behavioral Change in the scope of OrbEEt project, Speaker: Christos Malavazos
- A European research roadmap for optimizing societal impact of big data on environment and energy efficiency, Speaker: Anna Fensel
- A Resource-based Rule Engine for energy savings recommendations in Educational Buildings
- Data Aggregation, Fusion and Recommendations for Strengthening Citizens Energy-aware Behavioural Profiles, Speaker: Anastasios Zafeiropoulos

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[1] in Proceedings of the 2017 IEEE Global Internet of Things Summit (GIoTS), Copyright ©2017 by IEEE
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A set of projects were represented at the workshop (around 30 people in total), including enCOMPASS, energAware, GAIA, OrbEEt and ENTROPY. Following the presentations, discussions were realised related to the presented approaches for data aggregation and management, mechanisms for providing personalised recommendations, data mining and analysis mechanisms, pilots setup and running as well as set of evaluation methodologies followed.

On behalf of ENTROPY, three presentations were provided regarding the overall ENTROPY architecture and the current version of the platform, the implementation and integration of a set of serious games and a study regarding human mobility analysis. Based on the discussion, one of the most significant outcomes of the workshop was the decision to move towards the finalisation of the documentation of the two ENTROPY semantic models and their provision to the set of projects for considering potential use and extension. Furthermore, planning a similar workshop next year was considered meaningful for exchanging further views, as well as parts of the achieved pilots' execution and evaluation results per project.

It should be also noted that in the morning session an "IoT Workshop on Energy and Home Comfort" was organized, focusing on IoT-enabled infrastructure to forge innovative partnerships to take advantage of the opportunity of the Smart Home and Energy management. In the workshop, set of presentations and discussions were provided by Rolf Riemenschneider (Head of Sector, "Internet of Things" Unit, DG CONNECT), Margot Pinault (Policy Officer in charge of Horizon 2020 funding for Energy Efficiency) and Florent Pellarin from Somfy. ENTROPY project representatives participated to the workshop and the set of discussions, focusing mainly on the specification of mechanisms for increasing engagement of end users on the usage of the provided applications and ICT tools.

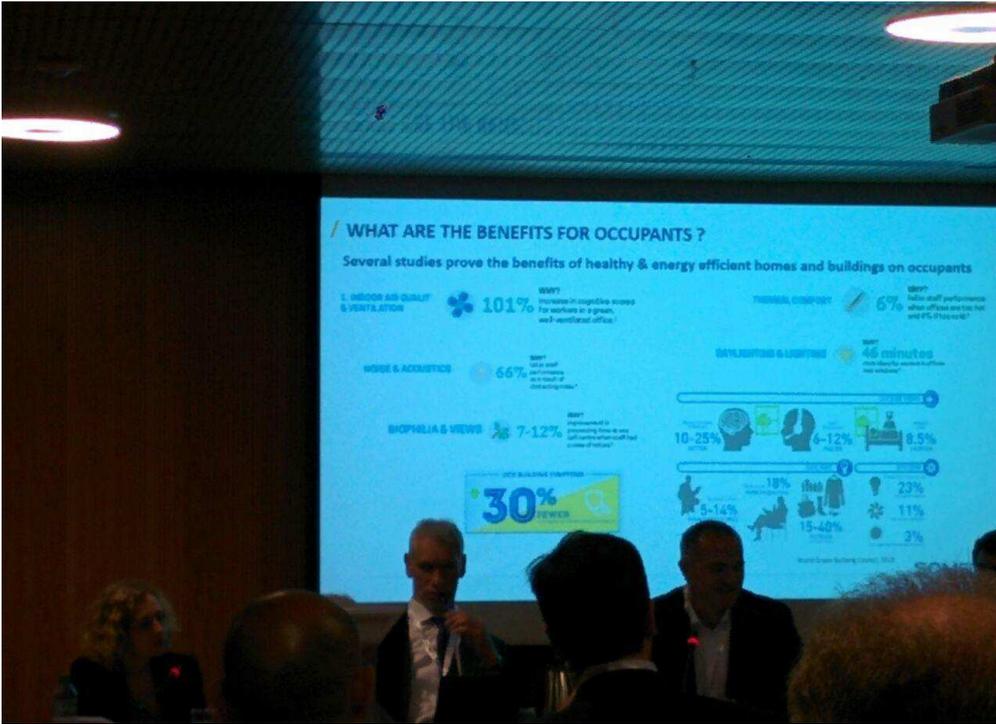Following, we provide some pictures from the workshop:

Figure 1 - IoT Workshop on Energy and Home Comfort

Figure 2 - IoT Workshop on Energy and Home Comfort

Figure 3 - Project ENTROPY Presentation

3. INTEREST GROUP SET UP & ACTIVITIES

3.1 UMU Pilot

To motivate the creation of a User Group for ENTROPY we have been involved in two events that have gathered professionals across several disciplines and sectors.

One of them was the 3rd workshop organised within the European project "Road maps for energy" (http://roadmapsforenergy.eu/) organised by the Murcia city council on 11 January 2017 in which members of industry and academia gave their opinion about the vision that the city of Murcia should have to achieve its sustainability targets. We had a substantial contribution to the event as one of the sessions focused on "smart citizens" and "urban interconnection" where we communicated the objectives of ENTROPY and how our results can fit perfectly with the broader vision of a sustainable city.

In addition to that workshop we participated in a consultation panel of experts for climate change adaptation (http://www.energiamurcia.es/comunicacion/noticias/2134) organised by the local agency of energy of Murcia (ALEM for its acronym in Spanish). This was done on 26 May in the city of Murcia. Dr Alfonso Ramallo, research fellow annexed to the project ENTROPY got involved in this initiative and he is currently one of the reviewers of the adaption plan for the city.

Several professionals from the universities of the region of Murcia and from companies have been informed about the project ENTROPY and many of them have established a deeper relationship with the members of the project, started conversations about collaborations and knowledge transfer.

Figure 4 - "Road maps for energy" event - Agenda

3.2 Polo Pilot

3.2.1 Energy Efficiency community with ENVI Park Turin

POLO and Hyperborea cooperated to establish contacts with Energy Efficiency Community based in the ENVI Park of Turin.

In particular, on 7 September 2016 the event "Innovation, Energy, Cleantech Pole" was hosted at the ENVI Park.
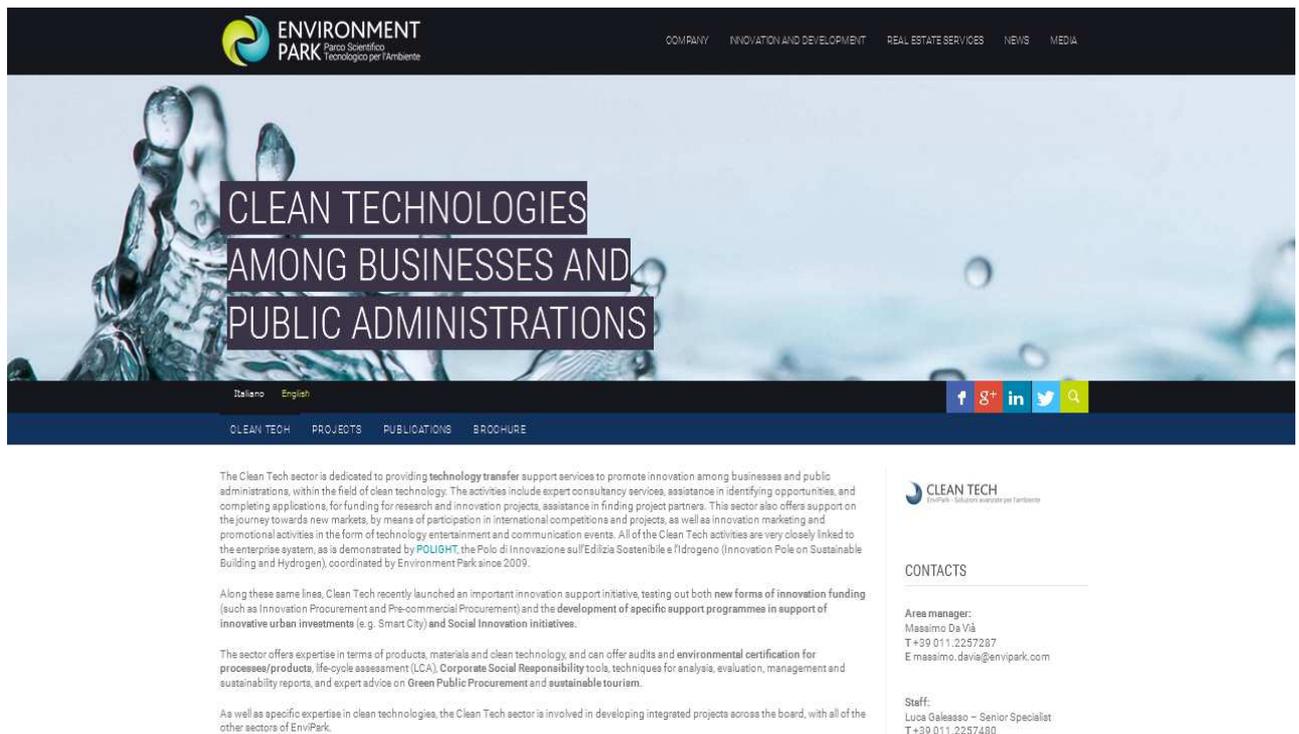

Figure 5 - Web Site page of the event

The event involved 200 companies (80% SME), and many projects, ideas on clean solutions, energy efficiency, water sources and circular economy were shown.
Following, we provide some pictures from the event:

Figure 6 - ENVI Park Community Event - Audience

Figure 7 - ENVI Park Community Event - Presentations section

3.2.2 SMART Home NOW event at Polo Navacchio

POLO and Hyperborea hosted the SMART HOME NOW community focusing on energy efficiency main topics at Polo Navacchio premises for a joint event.

In particular, the event was held on 6 October 2016, POLO and Hyperborea presented ENTROPY project main aims to gather interest and to share the project results (http://www.polotecnologico.it/en/smart-home-now-polo-tecnologico-navacchio-thursday-6-october-2016/).
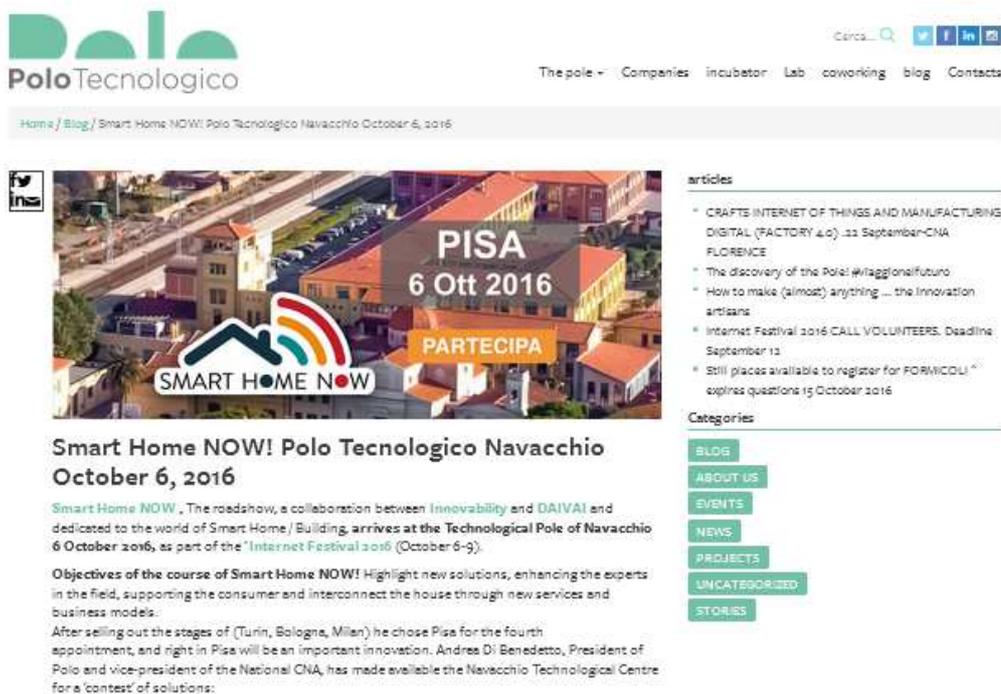
Figure 8 - POLO Web Site page of SMART HOME NOW event

Below, the companies and associations that participated in the event are reported.

Figure 9 - Companies and Association participating in SMART HOME NOW event

Below the augmented reality application created for the event is presented along with the dissemination panel that was prepared for the event.

Figure 10 - Companies and Association participating to SMART HOME NOW event

3.3 HESSO Pilot

In order to increase the energy awareness of the population we have presented the ENTROPY project through a communication campaign. The campaign resulted in an article appeared in the journal "Nouvelliste" on 27 January 2016 with targeted audience of more than 300000 people. The article entitled, "Sierre: réduire sa facture d'électricité avec son smartphone sera bientôt possible" included interviews of ENTROPY Technopole pilot stakeholders. A short version of the article can be found at the following website address https://www.hevs.ch/fr/hes-so-valais-wallis/actualites/projet-europeen-dans-le-domaine-de-l-eenergy-10848 and the full article in the printed and e-paper versions.

Furthermore, in order to promote the ENTROPY project and present its mission to the occupants of the Technopole site, we organized a meeting preceded by an email communication on December 2016. During this event, more than 80 people got informed about the project agenda, the sensors deployment planned to take place in the HES-SO pilot, and the serious gaming development. During these communications, the ENTROPY possible users of the HES-SO pilot were invited.

Several professionals from the HES-SO university, companies hosted in the Technopole site and around Switzerland have been informed about the ENTROPY project. The increased visibility and recognition that our institute gains as an institute performing applied research in the energy field, boosted by the project ENTROPY, gave us the opportunity to participate in the SwissEnergyTour project, whose goal was to develop a mobile application used as a tool by the visitors of the SwissEnergyTour booth during selected events around Switzerland. We participated in the development of the tool with which the users explore, learn about and identify various energy-saving solutions in their home and work environment. Each user is able to measure the global and cumulative impact of her or his commitments. The project was presented during the SwissEnergyTour stand in Lausanne, during the exposition days of "Habitat et Jardin" 2017 edition (04-12 March 2017).

4. CONCLUSIONS

This report documents the activities performed by ENTROPY Consortium in disseminating the project aims and in establishing initial communities of interest about energy efficiency aspects.

Scientific and technical committee of the project was deeply involved in organising and managing the ENTROPY Workshop which was held at the Global IOT Summit on 8 June 2017 in Geneva. A strong cooperation was set up with stakeholders involved in projects which are particularly active in the adoption of ICT technologies to design and implement energy efficient solutions in the building sectors.

Furthermore, the three project pilots were deeply involved in their own countries (Spain, Italy and Switzerland) in creating and maintaining group of interest about these main topics.

All these actions were planned and carried out following the strategy outlined and documented in the D6.1 "Communication Roadmap" report led by DNET and delivered at month 3 of the project (end of December 2015).

BIBLIOGRAPHY

[1] D6.1 "Communication Roadmap" - DNET - Entropy Consortium