HEART D10.19 – Knowledge Transfer Conferences I

November 2018

HEART

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Reviewers	**Claudio Del Pero (POLIMI), Andrea Vallan (FPM)**

HISTORY OF CHANGES

Version	Date	Comments	Main Authors
0.1	7/11/2018	First draft, establishing document structure	Petra Scudo (EURAC)
0.2	15/11/2018	First version, incorporating input from participants	Petra Scudo (EURAC), Savina Cenuse (REV)
0.3	29/11/2018	Revision of first version	Petra Scudo (EURAC)
0.4	30/11/2018	Quality review	Claudio Del Pero, Andrea Vallan (POLIMI)
1.0	30/11/2018	Final version addressing all further comments	Petra Scudo (EURAC)

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EXECUTIVE SUMMARY

The material exposed and collected in the present Deliverable summarizes HEART's First Knowledge Transfer Conference, held in Bolzano on November 28-29, 2018, hosted and organized by EURAC.
The conference aim was twofold:

- on one hand, to disseminate the project beyond its partnership;
- on the other, to gather inspirations and suggestions from key stakeholders on a few of the project's key topics.

In particular, participants addressed: - financial tools and investment strategies in the real estate market; - innovative energy contracts and incentive schemes operated by ESCos; cybersecurity, remote control, monitoring and managing of energy data and fluxes; - interfaces with system's users; involvement of end users, community creation and improvement of the social housing landscape; - innovation, patenting, and launching of the product on the market. HEART's multifunctional toolkit is a design, processing and management toolkit aimed at optimizing the use of energy in retrofitted residential buildings. The toolkit includes different subcomponents – ICT, BEMS, HVAC, BIPV and Envelope Technologies – and a cloud-based computing platform concentrating managing and operational logic to support decision-making in planning and energy performance during operation. The toolkit is applied in two case-studies, in Italy and France, both of which are representatives of multi-storeys, social housing buildings of the second half of the '900. The conference well summarized and brought up both technical and financial aspects relevant to this type of dwellings as well as problems related to the importance of increasing well-being in the context of social housing, in an age of increasing poverty and social disaggregation.
The conference enjoyed the participation of a large group of HEART partners and of influential external stakeholders, both among the speakers and in the audience.
An overview of the conference talks is made available also through the project's media, **https://heartproject.eu/**; **https://twitter.com/HEARTProjectEU/**.

1 DELIVERABLE OBJECTIVE

As mentioned above, the conference aim was twofold: to disseminate the project beyond its partnership and advertise its content; to gather suggestions from key stakeholders on the project's next steps. In particular, participants addressed the topics of: - investment strategies in the real estate market; - innovative energy contracts and incentive in energy retrofit; cybersecurity, remote control, sensing and monitoring; data management and dashboards for data telling; interface with system's users; end user involvement and interaction; community creation and improvement of life quality in social housing; patenting innovation.
The presence of speakers from outside the partnership was useful in triggering new discussions and inducing to explore new research challenges related to the project realization and exploitation:

- financial opportunities implemented by ESCOs; the use of incentives and tax facilitation schemes to access credit for energy retrofit works;
- experimenting new Information and Communication Technology to increase data flow and security within the home Internet of Things;
- financial aids and opportunities in patenting smart home innovation;
- man-machine interaction, digitalization, technology acceptance; the need to create a social network and community based tool.

The conference was attended by the following project partners:
EURAC, organizer and host of the event; **POLIMI**; **UL**; **ENTPE**; **HE**; **REV**; **STI**; **ZH**; **HE**; **HELIO**; **VYZ**; **ACER RE**.

External speakers included:
Jago Cocco, University of Cagliari;
Elena Ardizzi, Alperia-Bartucci;
Francesca Orlandi, Orma-Solutions;
Claudio Lucchin, CL&AA;
Ulrich Santa, Agenzia CasaClima;
Andrea Gasparella, Free University of Bolzano.

Audience:
Municipality of Bolzano;
Dolomiti Energia Rinnovabili;
Kofler Energies;
Banca d'Italia.

2 OUTLINE OF THE PRESENTATIONS' CONTENTS

The contents of the different presentations of the conference are described hereafter.

1. **Politecnico di Milano,** Niccolò Aste, opened the works by introducing the HEART project. The presentation summarized the project's objectives: - development of a systemic, cost-optimal solution for energy retrofit; develop, update and adapt innovative technologies for their systemic integration; foster the building's smart upgrade; support and improve decision-making and promote energy financing. Among these, particularly stressed were the intent of making HEART a feasible project, both from an implementation and from a cost-optimal point of view and the ambition of promoting new business models and energy financing schemes.

The presentation then unfolded detailing the HEART toolkit technical components and the HEART system as a whole – describing the role of the cloud computing platform and the interactions between system and its users. Particular space was dedicated to the operational phase and the adaptive-predictive energy management algorithm and the

importance of both predicting and adapting through a pattern-recognition component which integrates building architecture and use.

2. **EURAC**, Federica Canu, presented an overview and IPC analysis of the patents filed in the last three years in the smart home/smart building domain, analyzing topics in relation to number of patents filed. The overview gave an insight on patents filed and corresponding investments in the different countries and highlighted how China became quickly the leader in smart home patent deposits and exploitation. The talk concluded with suggestions on National funding available for patenting in the domain of interest of the project.

3. **University of Cagliari**, Jago Cocco, currently collaborating on the HEART project as a EURAC trainee, gave an overview on security related issues. The talk opened by providing the history of the Internet of Things, enlisting the major threats and attacks recently addressed at IoT devices and underlining the possible hazards for the HEART system. In particular, focus was put on the challenge of making secure constrained devices in an economically advantageous way.
   Points discussed: "To make secure constrained devices. Low computational power and low memory capacity the implementation of classic mitigation techniques can be from hard to impossible; To make secure constrained devices work with low power consumption; To make constrained devices secure without making it economically disadvantageous; To make possible the isolation of a compromised network: an attack on your local network cannot be an issue for all the Internet."

4. **Alperia-Bartucci,** Elena Ardizzi – leader of the company's Building Efficiency Solutions - described the business solutions put in action by the company to exploit tax credit transfer in order to make energy retrofit operations accessible not only to companies, but also to private clients. Interesting to learn how the company addresses, besides technical solutions, also monitoring and behavioural efficiency.

5. **Orma-Solutions** (http://www.orma-solutions.it/) introduced its innovation in the field of sensing, monitoring and remote controller, micro-controller devices and integrated solutions for out-door and indoor smart communication, including research on standards and protocols.

6. **VyzVoice**, Gaëtan Holderbeke and Salih Onur Köksal, presented the VyzVoice platform and Chorus application for data-telling and data driven decision-making. The company outlined the steps of data acquisition, elaboration and insight in relation to the HEART toolkit, and specifically to the system's Decision Support System and Building Energy Management System. The presentation included a description of the toolkit's security at platform level and of the encryption measures in place.

7. Architect Claudio Lucchin, **CL&AA** (**https://www.cleaa.it/**), opened the second day of activities with a talk on "Cities in an Age Dominated by Technology". "Without towns, which are the symbol of civilization, we wouldn't be humans — towns play an important role in our history and development"- explains Lucchin. "Our species, Homo Sapiens, has a biological Nature, but a Cultural destiny", he continues, asserting that our cultural evolution led us far beyond our starting point into the realm of machines. Until we delegated to machines themselves and to technology both the constant exploitation of our natural resources and the capacity to replace them by generating new endless resources. This accelerated development is bringing us towards cities created by man

but dominated by technology – where networks, algorithms and AI, dictate the pace of our life and in which eventually humans will feel alienated.

8. In the mind stream open by Lucchin, Marco Corradi – **ACER RE**, stressed the view that technology has to be a tool, but only a tool, in the hand of humans, without subtracting space to face-to-face meetings, interaction, community building and cooperation, towards a better life for the population of social housing. Corradi underlined how especially in the social housing context the human element – as opposed to networks and algorithms – must be present in increasing social, economic welfare and in creating cohesion. He also stressed the necessity of enabling proximity services and a smart management of condominium related needs, such as waste collection or the establishment of shared transport facilities and social assistance. In relation to HEART, these actions translate in the organization of workshops with the inhabitants, joint participatory planning activities aimed at adapting the HEART toolkit interface to their needs and at transforming the toolkit into a tool for community creation.

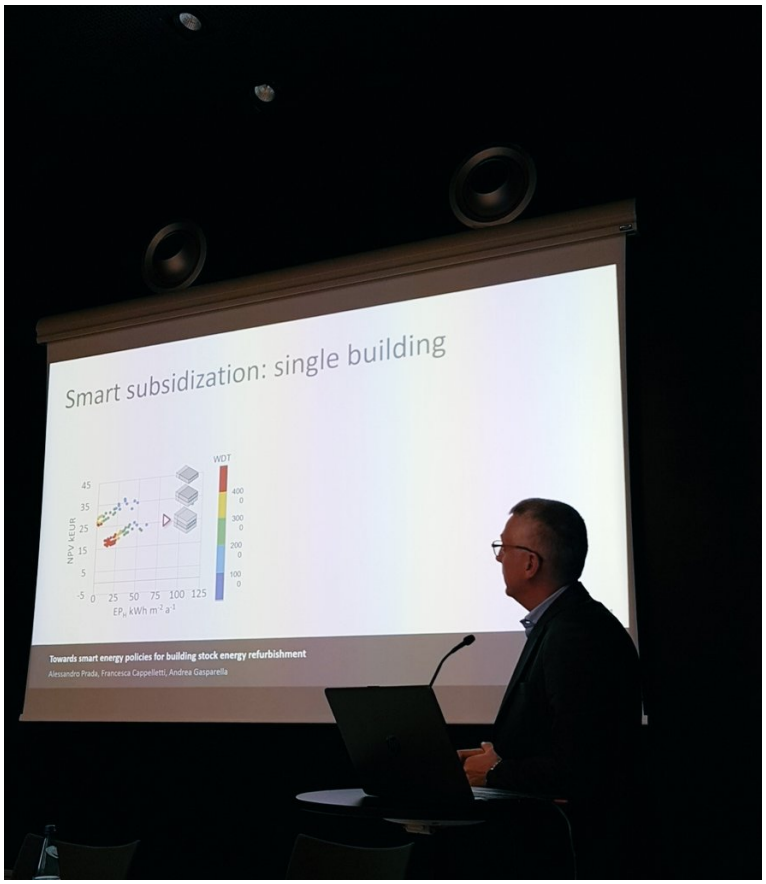
9. Along these lines, Sébastien Garnier, **Housing Europe**, analyzed the role of "acceptance and satisfaction of residents" in projects of energy refurbishment. Garnier exposed and commented the results of the questionnaire elaborated for the residents of the Italian case study, in Bagnolo del Piano. Residents are quite elderly and have a limited knowledge in technology and in energy. However, they are surprisingly trustworthy in technological applications and highly motivated by environmental concerns, such as lowering their

energy spending and carbon footprint. Garnier brought the example of another EU funded project Housing Europe is involved in – Triple-A-reno, https://triplea-reno.eu/ - focused on making energy retrofit attractive, acceptable and affordable. Suggestions for HEART: working on tenants' involvement, acceptance, participation – perhaps introducing gamification through off- and on-line tools.

10. Ulrich Santa, Director of **Agenzia CasaClima**, described the methods and protocols upon which the agency builds its energy certification tools. The process involves a careful selection of materials, processes, methods, construction and installation supervision, all the way up to control and management of the final building performance. Optimization of materials and methods follows Life Cycle Assessment and Life Cycle Cost analyses.
    Santa described several applications of the certification process in private and public buildings and highlighted the problems caused by prebound and rebound effects in the retrofit forecast and implementation.

11. The works were concluded by Andrea Gasparella, **Free University of Bolzano**, who discussed the energy/carbon footprint reduction goals set by the EU through the lens of Italian incentive schemes. Specific examples were given comparing single house retrofitting and multi-apartment buildings showing how multi-apartment building reaches cost-optimal solutions compared to single home ones. The analysis led to establish the

necessity of improving cost-effectiveness by encouraging towards schemes of “smart subsidization”.



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