

## Energy Efficiency – Domotics; Energy Efficiency in Homes/Buildings – The TEAHA experience

### Introduction

Global energy management and saving in Europe are definitely key and clear points in the agenda of EU parliament. The need for energy is continuously increasing and its use is somewhat unbalanced.

The energy management could be considered as an additional, although important, service integrated in the portfolio of services of the digital home. In the near future, the user could enjoy a plethora of services at home ranging from entertainment, surveillance, communications, and home control. Once the user possesses the infrastructure (residential gateway, indoor networks, devices, sensors, white goods, smart meter etc.) at home ready for the provision of the bunch of different services, it will be very easy to provide additional ones with minor software and hardware updates. That will also bring economy of scale in the service provision for the operators, device manufacturers, appliance manufacturers etc.

Furthermore, main european power utilities have to cope with undesirable peak demands that could jeopardize supply both for regionally and critical time periods. While one costly solution is to increase energy production, a more affordable one could be to level energy consumption for residential users. That peak shaving could be done by both using Demand Side Management (DSM) systems and by educating user to take more care of home energy consumptions. Meanwhile, White Appliance manufacturers are thinking about new services to be offered within the frame of the "Connected Home".

The purpose of this short document is to stress the relevance of the Energy Management services within the more generic field of the digital home or smart homes in guaranteeing environmental sustainability and growth.

### The TEAHA project experience



The TEAHA project (an FP6 IST co-funded project- - IST 507029) aims at perform an specification, design and development of an open, interoperable and seamless global home platform which integrates Networked Home Control and Multimedia Applications. The TEAHA consortium is composed of the following partners: WRAP-Indesit Company, Telefónica, Electricite de France, Fagor Electrodomésticos, Ikerlan, Homega Research, University of Leuven, University of Twente, Advantica plc, Trialog, Sharp.

Within the generic field of home controls (domotics), the project is going to make a step forward in managing appliances with different behaviours and in developing applications for energy management.

The following ideas come from the work carried out during the project development.

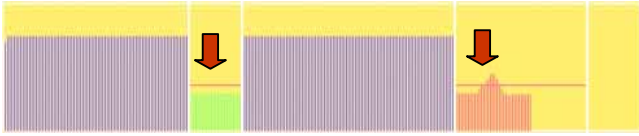
### Description of the area

Residential energy users perceive Demand Side Management through two types of user-applications: Energy Cost Management and Load Management. Energy cost Management could consists of programmes in the appliances choosing preferably the right moment when energy tariff is cheap for activation.



For instance a dishwasher or washing machine moving their start of operation in the low tariff zones.

Load Management could consists of systems in the appliances managing variable load constraints for the “peak hours”, as incentives for global energy demand levelling that yield “social” savings in the production and distribution costs.



It could also be applied to avoid power cuts, if the set or given power limit is overtaken. For instance appliances can adopt to level their power consumption to a lower than defined threshold as long as the operation and quality of service are not compromised.

## Trends

The following trends in regard to the connected home market together with the energy management area could be mentioned:

- Telecom operators and service provider aiming at giving a complete set of services of the digital home
- Utilities willing to promote the energy management systems within the homes
- The necessary equipment for the provision is increasingly present at home (devices, sensors, gateways, smart meters, network-ready appliances etc.)
- Economies of scale are soaring as the provision can be done for a larger number of services and users
- People much more aware on problems derived from the lack of energy efficiency
- Converge of applications (entertainment, comfort, safety, communications). Converge of terminal and equipment
- Technological progress that made the emergence of the Connected Home field possible.
- It is a multi-sector domain, where the search for consensus solutions among players is coming although very slowly

## Barriers

- Utilities do not have flexibility in tariff allocation
- People still see the smart home devices as complex to operate and expensive
- Interoperability is not always guaranteed

## Remedial actions.

- To develop and disseminate best practice of energy management and smart meter reading
- To provide a forum for stakeholders to come together and resolve issues, specially in regard to interoperability, standards etc.
- Make public aware of advantages of digital home, and show the progress made in ease of use
- Promote the adoption of flexible tariff schemes from the European Utilities in an european base
- Foster the agreement among the different actors of the Smart Home value chain for the provision of services (utilities, white good manufacturers, telecom operators, equipment providers, content providers etc.).
- Encouraging the appliance manufactures to incorporate as much as possible “ready networked” appliances (tagged depending of their behaviour) in order to build upon those features more complex services for energy efficiency.
- Promote European Code of Conduct on Energy Efficiency in Appliances
- Support the R&D efforts in the smart meter reading and smart home areas