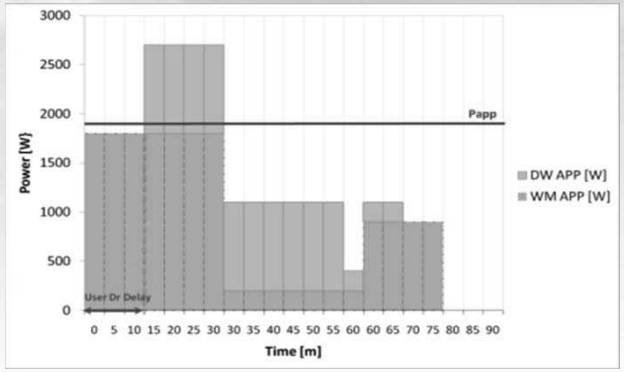
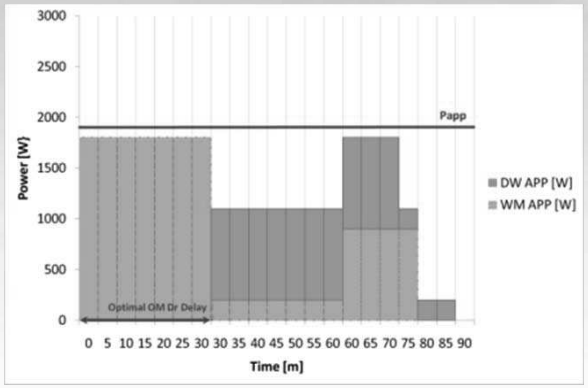
Functionalities (2) Overload control and warning

- Scheduling of the appliance to avoid the overload



Before scheduling



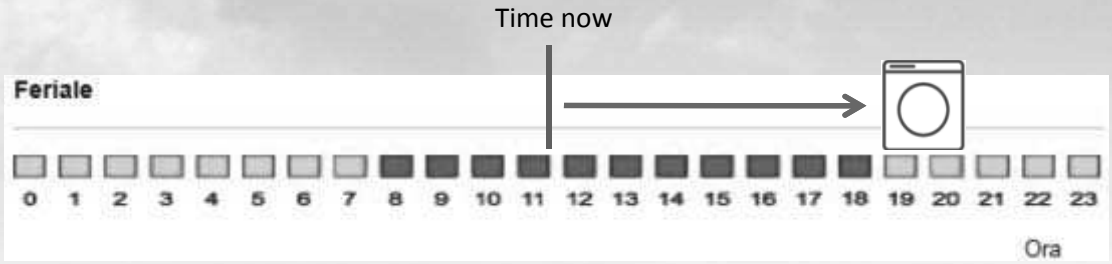
After scheduling

- Warning if available total power is not sufficient to run a cycle

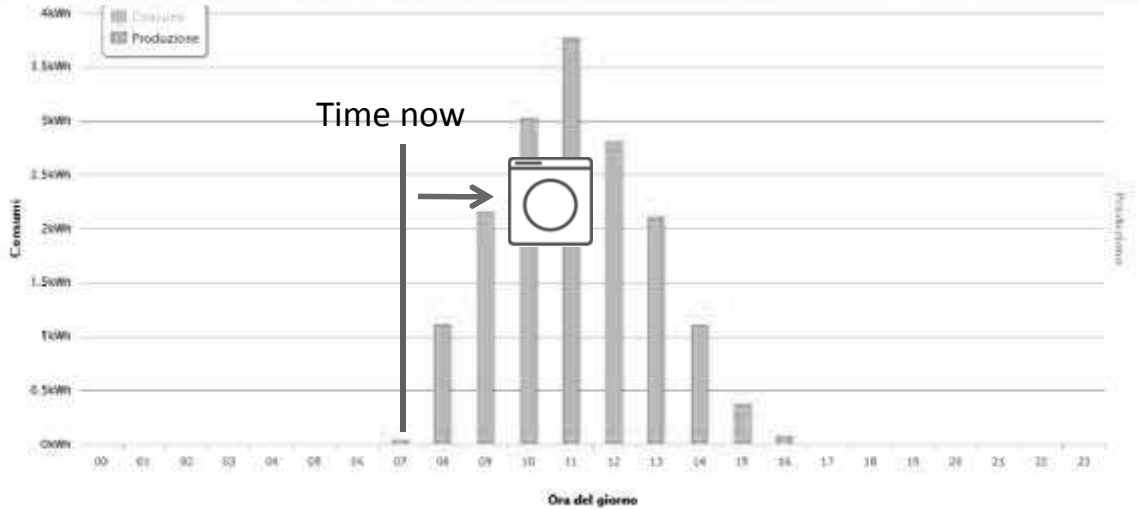
- Notification of Home Domain Overload

Functionalities (3) Scheduling for ToU Pricing

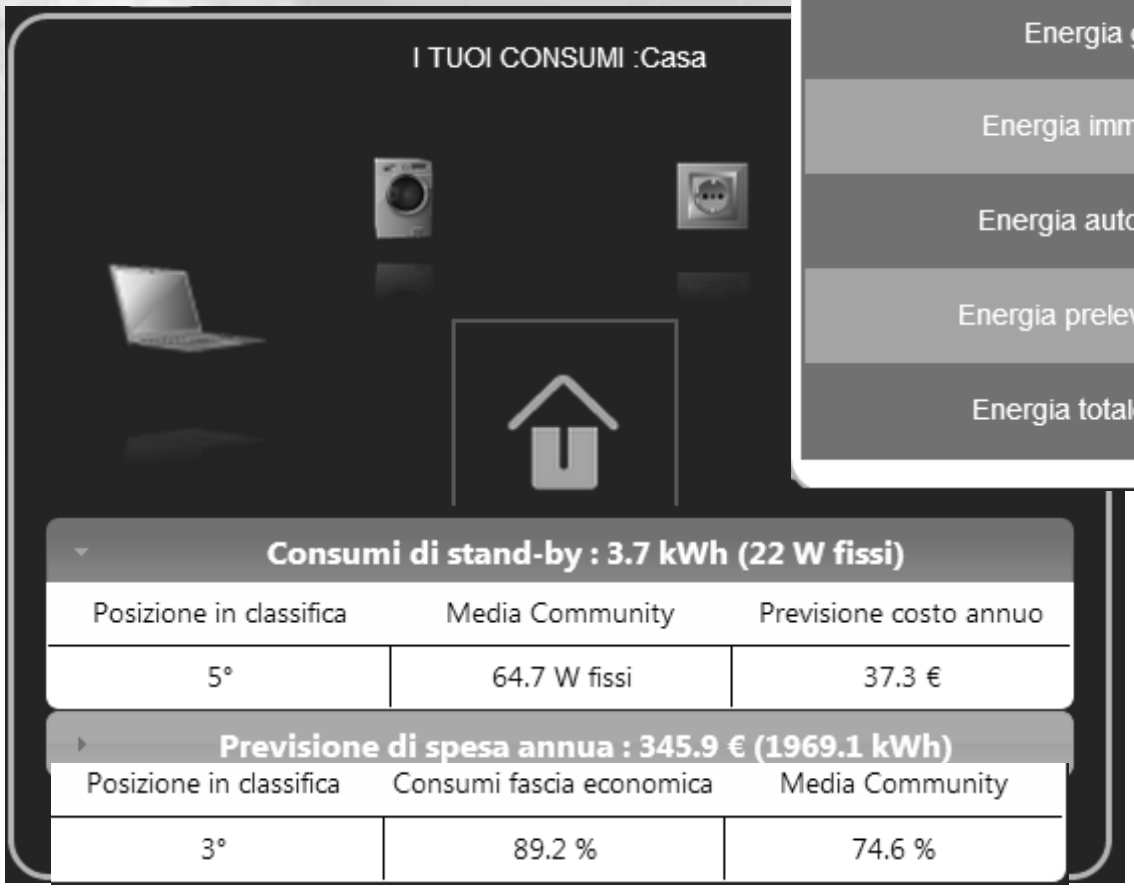
- Scheduling of the appliance when the energy is cheaper



- Scheduling of the appliance when the energy is greener



Functionalities (4) Reports, summary info, & comparisons



BILANCIO ENERGETICO SETTIMANALE

Energia generata	47 KWh
Energia immessa in rete	14.9 KWh
Energia auto-consumata	32.2 KWh
Energia prelevata dalla rete	202.2 KWh
Energia totale consumata	234.4 KWh

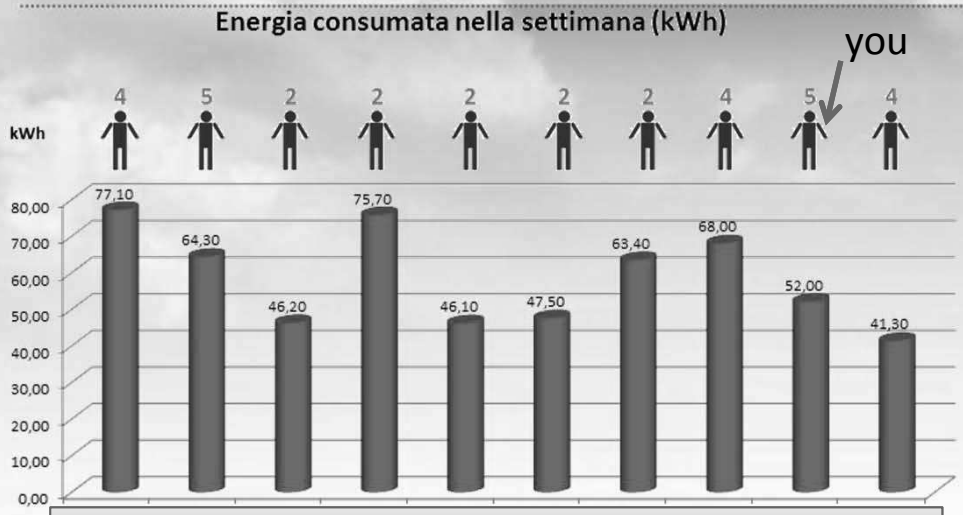
Consumi di stand-by : 3.7 kWh (22 W fissi)

Posizione in classifica	Media Community	Previsione costo annuo
5°	64.7 W fissi	37.3 €

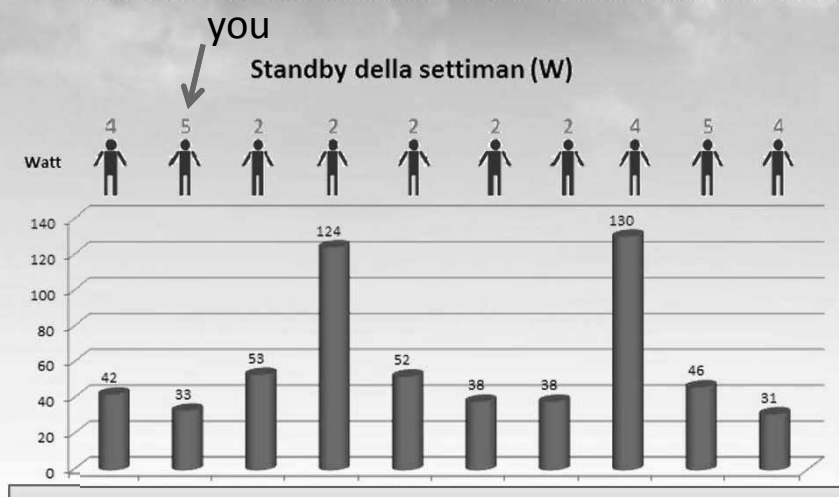
Previsione di spesa annua : 345.9 € (1969.1 kWh)

Posizione in classifica	Consumi fascia economica	Media Community
3°	89.2 %	74.6 %

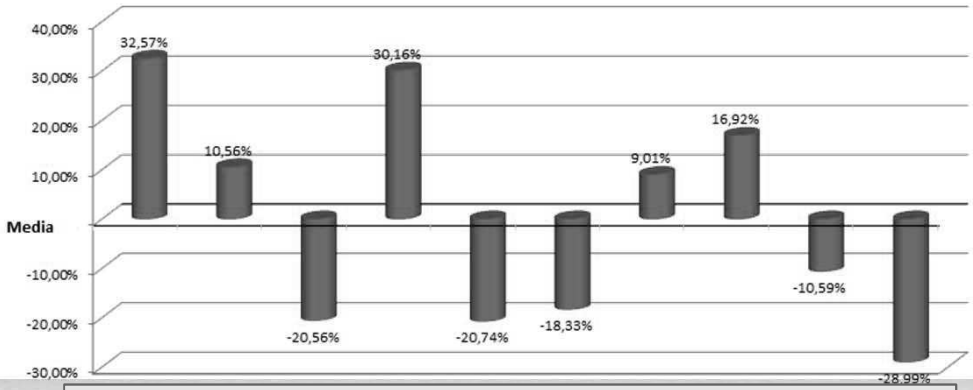
Functionalities (5): benchmark



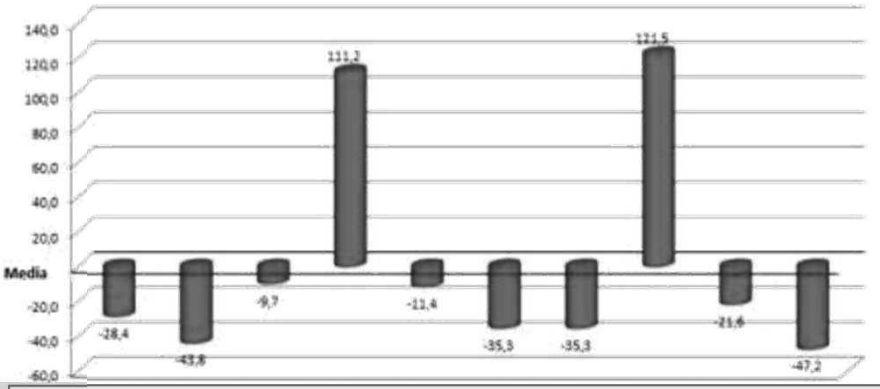
Weekly energy consumption [kWh]



Stand-by consumption this week [W]

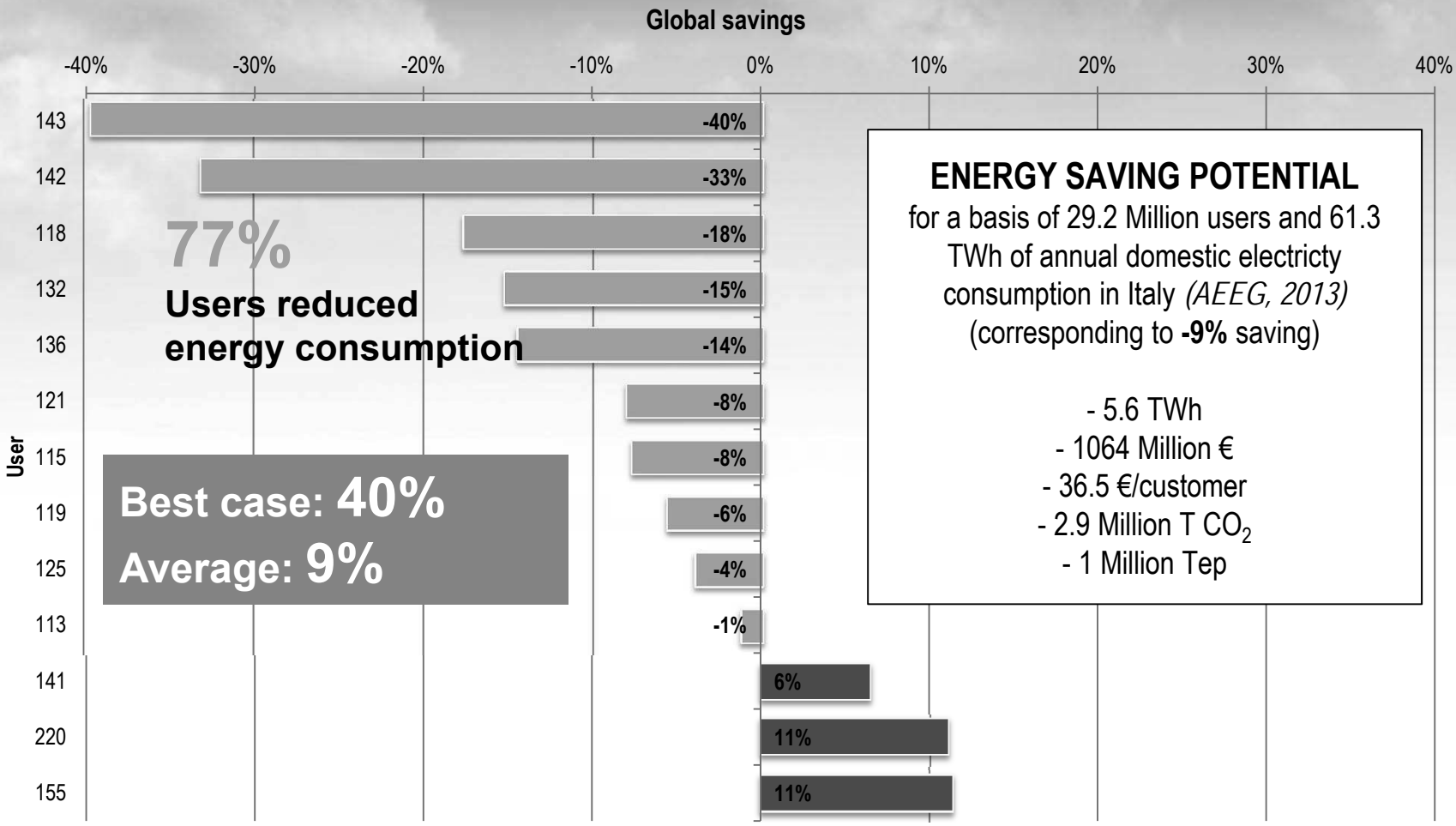


… in comparison to the average consumption



… in comparison with the average

Trial results: Energy Saving



Main quantitative results from the trial

- *Limited statistical value (sample size)*
- *Users with PV installation not included yet*

Consumption reduced by 9%	If extended to full country (Italy) – means reduction of 5.6 TWh, avoiding emission of ~ 3 M tons of CO2 with average saving of ~ 40 €/user/year
Opportunity to limit installed power to 3 kW	From 8 users with installed power above 3 kW, only one actually uses it
	With current prices, at same level of consumption, a 3kW contract saves more than 180 €/year (vs. 4.5 kW contract)
Moving ~5% of consumption to off-peak periods	Impact is bigger than the mere night/day tariff scheme
Reduction of stand-by consumption by ~15%	For many users, just a simple and free way to save on electricity Biggest saving: 80W reduction, i.e. 700 kWh/year = ~130 €/year

Main qualitative results from the trial (users' feedback)

- **Users like Energy@home!**
  - **Avg score > 7.5/10;** E@h is perceived as «**innovative**» and «**saving**»
  - It involves: 75% of users sent at least one feedback, some gave more than 10; 70% answered the questionnaire. Most users used it "every day"
  - Most users would suggest E@h to a friend and would like to keep the system even after the trial. After 2 months from the trial closure, **23 of 36 users is still using E@h!**
  - 95% users say it is easy to use/install and it is usefull («it helps me to save money»)

- **It is not an entertainment platform**
  - Major benefit for «analytical» users, eager to track data to understand and modify own consumption pattern in order to reduce electricity bill
- **The service fulfills the goal of increasing awareness on limiting consumption:**
  - Most interesting information: stand-by consumption and how to reduce it, comparison with other consumers and their consumption patterns
  - 'community effect': knowing others' consumption is an incentive to improve one's own
  - Actions to reduce consumption can be induced either directly (from service itself) or indirectly (through personalized suggestions)
  - Very few users would not pay anything for it

- Smart plugs
  - are cumbersome, space-consuming, hard to fit behind appliances, high number required to measure single usages
- Software is sometimes unstable

Energy@home

1. Vision
2. Achievements and trials
3. **Association and governance**
4. Next steps for 2014 and beyond

Energy@home Association

Energy@home is a no-profit association registered under the Italian laws with the purpose of developing & promoting technologies and services for home energy efficiency based upon device to device communication.

Founding Members

Electrolux

Enel Distribuzione

Indesit company

Telecom Italia

Ordinary Members

Edison

life.augmented

Whirlpool EMEA

vodafone

Aggregate Members

FlexGrid

MAC srl Developing the Unexpected

Gemino

intecs the Brainware company

ISMB Istituto Superiore Mario Boella

power-one Renewable Energy Solutions

i-EM Intelligence in Energy Management

RENESAS

eurotherm radiant comfort systems

freescale

ALTRAN

Types of Membership

- **Founding Members**
  - Voting right
  - Permanent member for the Board of Directors
  - Can influence the use of the budget
  - Fee: 10 k€/fiscal year

- **Ordinary Members**
  - Voting right
  - Active and passive electoral (right to vote and to be nominated as a candidate) for the Board of Directors
  - Can influence the use of the budget
  - Fee: 10 k€/fiscal year

- **Aggregate Members**
  - No voting right
  - Can participate to meetings, have access to technical material
  - Fee: 3 k€/fiscal year

Electrolux

Enel Distribuzione

Indesit company

Telecom Italia

Ordinary Members:

Edison

vodafone

ST life.augmented

Whirlpool EMEA

Ariston Thermo Group

Aggregate Members:

eurotherm

MAC srl

FlexGrid

i-EM

freescale

intecs

Gemino

SMB

power-one

Renesas

altran

Energy@home Association

- **Non-profit Association founded on July ‘12**
- **21 members**
- **Scope: demand side management & home energy efficiency, not limited to the italian market**
- **Goal: create a market for new Value Added Services based upon device-to-device communication and demand side management**
- **Approach: Open and International Standard, value networking through industries, trials**

Founding Members

Electrolux

Enel Distribuzione

INDESIT company

TELECOM ITALIA

Ordinary Members

EDISON

vodafone

Whirlpool EMEA

ARISTON THERMO GROUP

Aggregate Members

FlexGrid

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eurotherm

freescale

i-EM Intelligence in Energy Management

intecs

ISMB Istituto Superiore Mario Boella

Gemino

power-one Renewable Energy Solutions

ALTRAN

RENESAS

URMET GROUP

Organization of the activities

Board of Directors

- Fabio Bellifemine, Telecom Italia, Director
- Sergio Brambilla, Enel D, Secretary & Treasurer
- Stefano Frattesi, Indesit Company
- Nicolas David, Electrolux
- Lorenzo Montelatici, Edison
- Davide Cabri, Whirlpool

Paola Petroni, ENEL D.
Honorary Chairman

General Assembly
(all member companies)

Working Groups

Standard A. Ranalli, E. Arione	**Use Cases** S. Di Carlo	**Policies & Regulations** E. Molinari	**Reference Implementation** R. Tomasi

Energy@home is pursuing a pan-EU approach to the Smart Home

On Dec. 2012, Energy@home and EEBus E.V. Initative signed a **collaboration agreement** with the goal of converging on a **common (and standard) Data Model**

- Regular meetings are hold

2014 goal: extension to Agora

- common EU workshop
- common security solutions
- Under discussion the integration of devices and systems from the 3 organizations

Energy@home is an acknowledged stakeholder at DGConnect Project for a Unified Ontology for the Smart Home

Mr Rogelio Segovia
European Commission – DG Connect
H5 Smart Cities & Sustainability
Avenue Beaulieu 31 (BU31) 06/52
B-1049 Brussels
rogelio.segovia@ec.europa.eu

10 December 2013

Subject: Project for a Unified Ontology for the Smart Home

Dear Mr Segovia,

We, the undersigned, represent a number of industry fora/SDO working on aspects of the smart home and we are writing with regard to the *Study on the available semantics assets for the interoperability of Smart Appliances.* With this letter, we express our support to Commission's initiative for a unified ontology for the Smart Home. At the same time, we recommend harmonisation of this project with existing initiatives to avoid duplication of ongoing work, and we offer our consultation and collaboration towards this goal.

Goal:

- Agree upon common Data models
- Agree upon common security solutions

Status so far:

- Acknowledged stakeholder
- Submitted E@h Data model
- Will be contacted asap to review the 1° deliverable of DGConnect

JEMMA Open Source Project

JEMMA (**J**ava **E**nergy **M**anage**M**ent **A**pplication Framework)

Implements the Energy@home Technical Specifications and the Energy@home gateway application

Implements the ZigBee Home Automation 1.2 standard and the ZigBee Gateway Device standard

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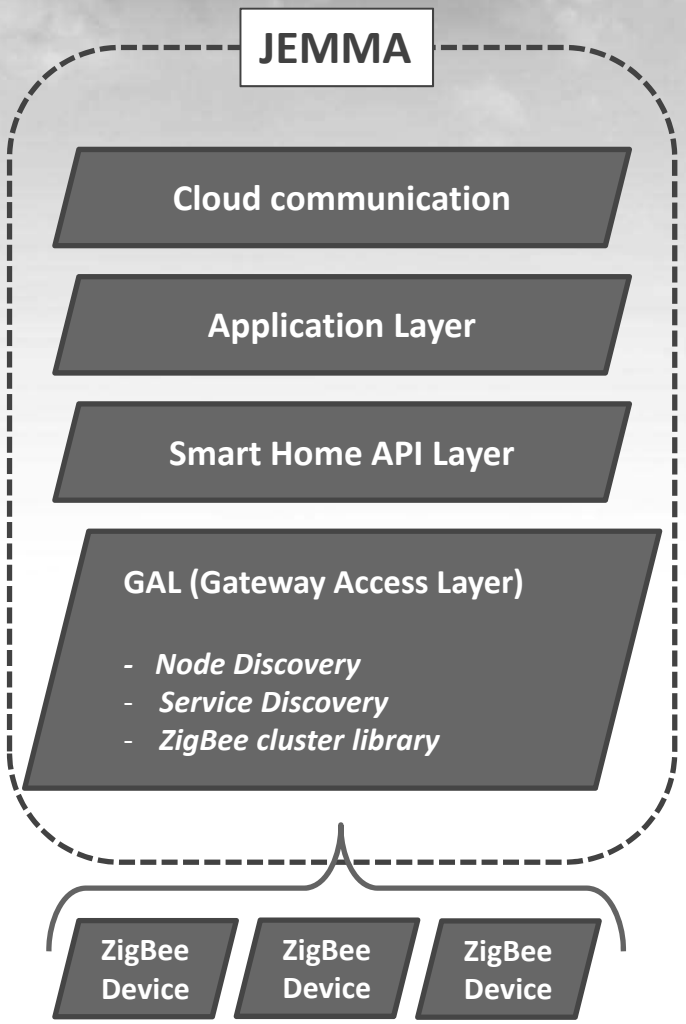
It is on Github at
http://jemma.energy-home.org



Energy@home

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2. Achievements and trials
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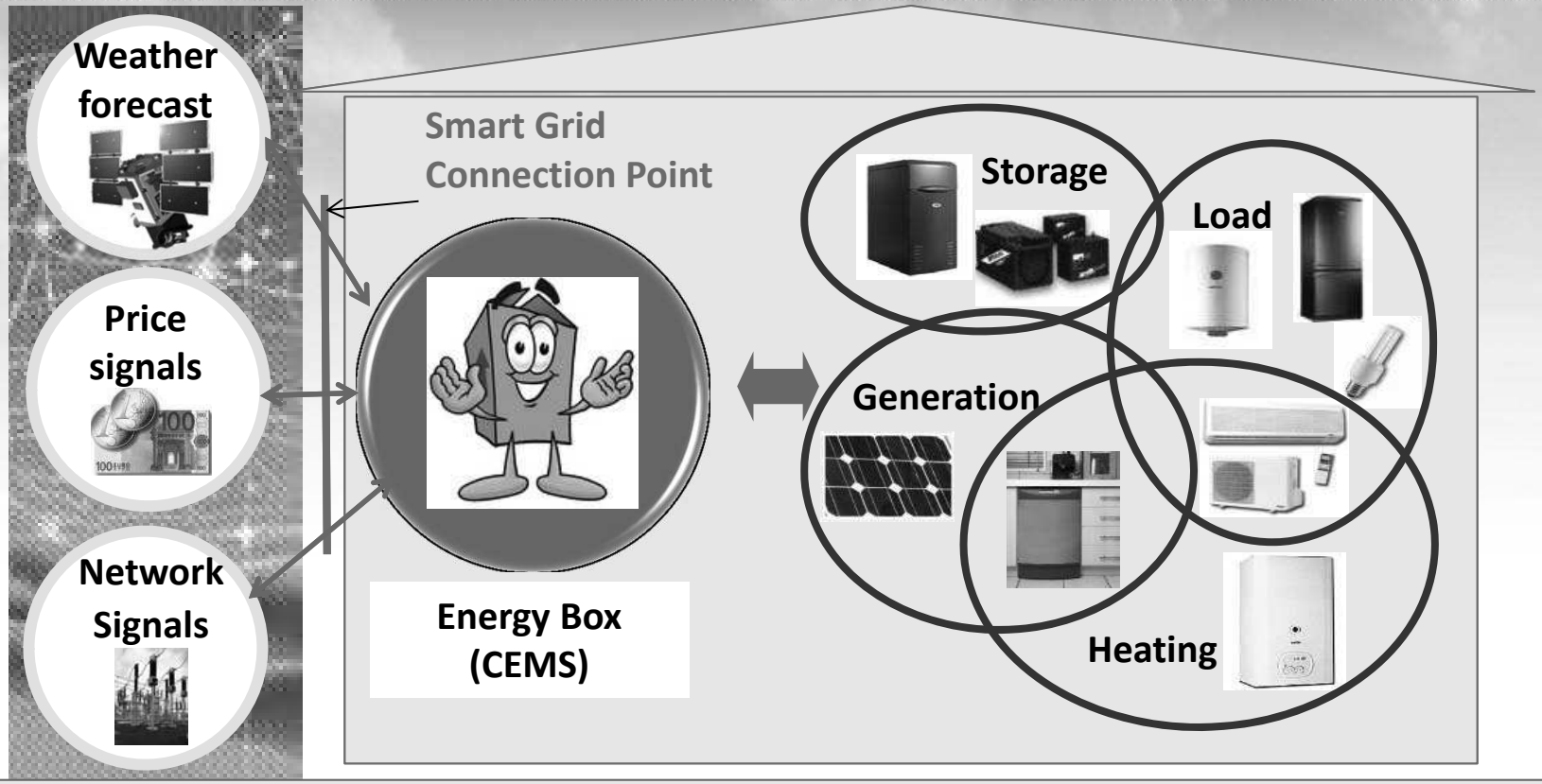
4. **Next steps for 2014 and beyond**

Energy@home vision: an Energy Box to increase efficiency and to provide Value Added Services



The Smart Grid requires a Smart Home able to increase efficiency through:

> making users aware of their consumptions

> driving users towards efficient behaviours

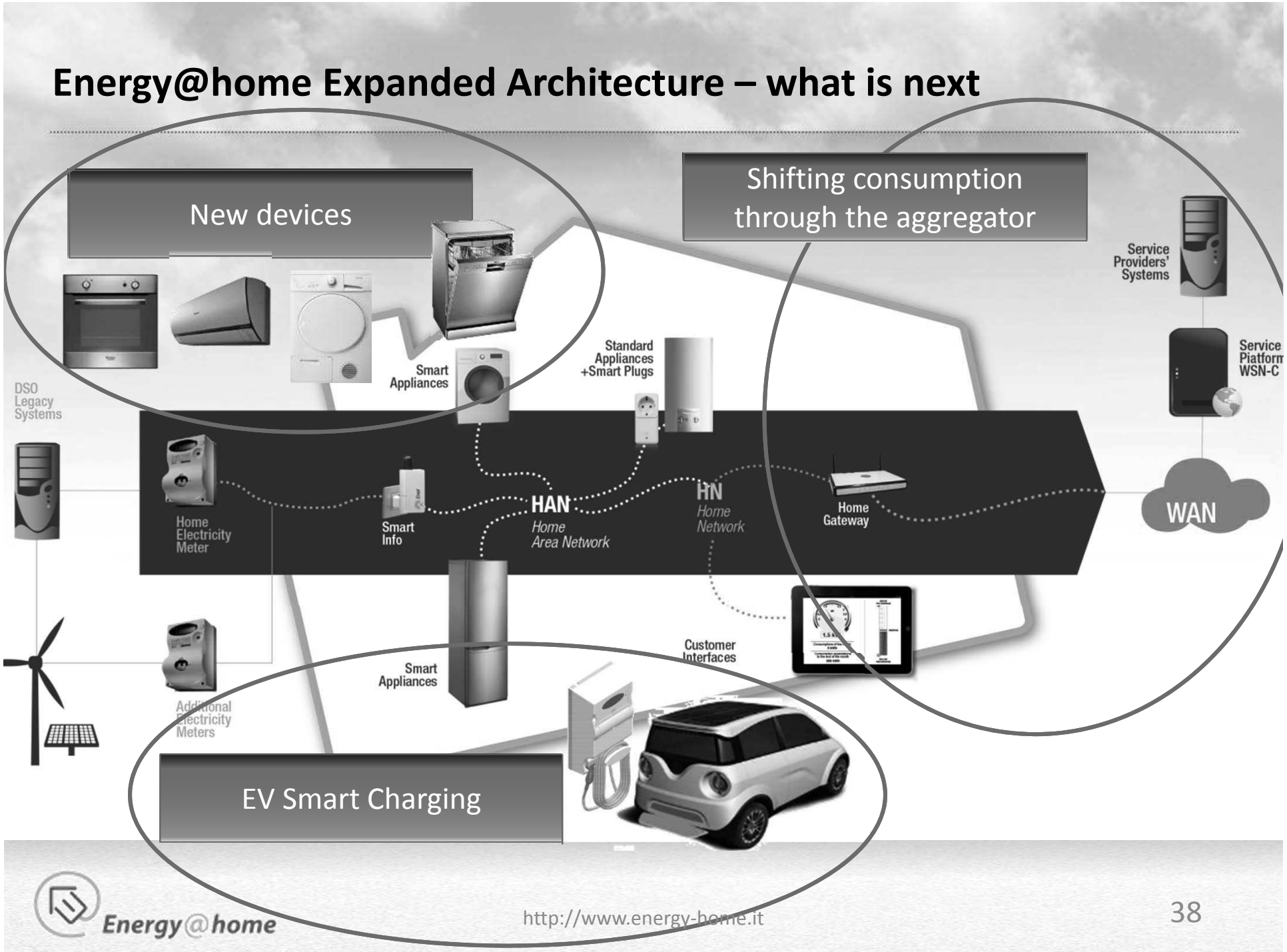
> supporting users to exploit ToU Pricing

> making flexibility a service from the house to the grid

Communication is the main enabler of these scenarios (Device2Device in the HAN, Grid2CEMS, …)

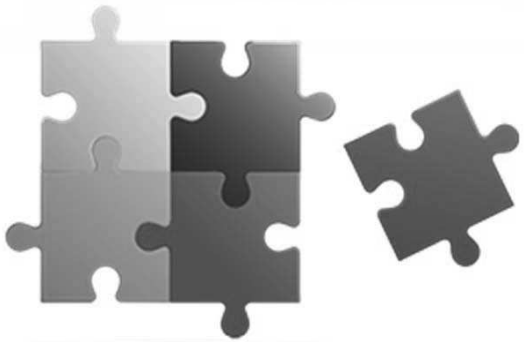
(elaboration of RSE architecture)

Energy@home Expanded Architecture – what is next



Summing up: Unique Value Proposition of Energy@home Association

- Integrated communication with the Smart Meter
- Integrated communication with Smart Appliances
- Seamless integration with other smart home services
- Consumer-centric
- Open and International Standard
- Bringing together key stakeholders from different industries
- Integration events, integrated demonstrators, trials



THANK YOU

Edi Fabbro

fabbroe@gmail.com