

## PROJECT AT A GLANCE

### Project Acronym

SmartHG

### Project Title

Energy Demand Aware Open Services for  
Smart Grid Intelligent Automation

### Project Number

317761

### Starting date

October 1, 2012

### Duration in months

36

### Funding

€ 3,299,998.00

### Call (part) identifier

FP7-ICT-2011-8

### Funding scheme

Collaborative project

## PROJECT CONSORTIUM

**Sapienza University of Rome (Italy)**  
*Coordinator*

**Aarhus University (Denmark)**

**IMDEA Energía (Spain)**

**A. V. Luikov Heat and Mass Transfer  
Institute of the National Academy of  
Sciences of Belarus (Belarus)**

**ATANVO GmbH (Germany)**

**Panoramic Power (Israel)**

**Solintel (Spain)**

**SEAS-NVE (Denmark)**

**Kalundborg Municipality (Denmark)**

**Minskenergo (Belarus)**

**Develco Products A/S (Denmark)**



## CONTACTS

### Project coordinator:

**Prof. Enrico Tronci**

Università di Roma "La Sapienza"

Dipartimento di Informatica

Via Salaria 113, 00198 Roma, Italy

email: tronci@di.uniroma1.it

Tel: +39 06 4991 8361



# SmartHG

**Energy Demand Aware  
Open Services  
for Smart Grid  
Intelligent Automation**

<http://smarthg.di.uniroma1.it/>

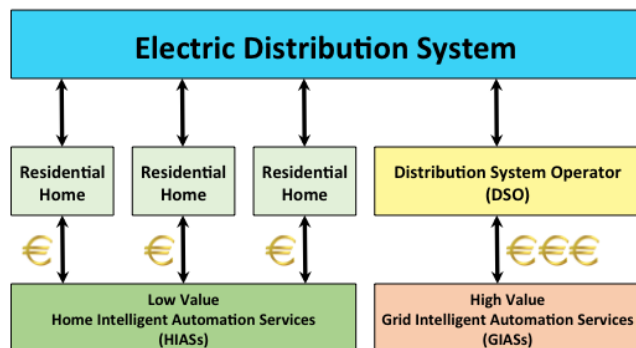


**EU FP7 Project  
Grant Agreement 317761**



## MOTIVATIONS

Currently the small prosumption of residential homes does not provide an interesting business opportunity for companies working on energy saving products or services. This prevents widespread uptake of intelligent Smart Grid automation services exploiting energy usage/generation data from residential homes.

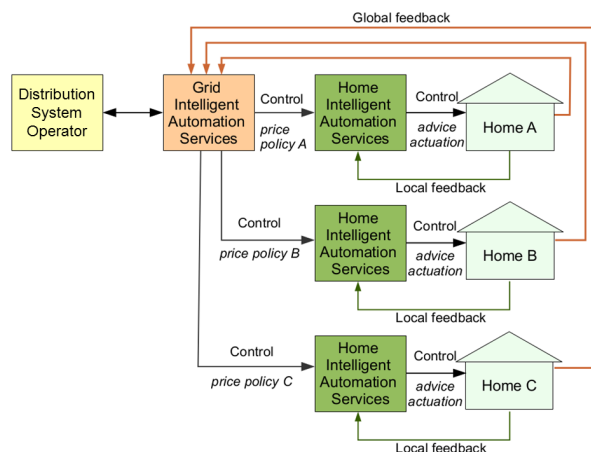


## OBJECTIVES

- Develop *Grid Intelligent Automation Services* providing economic value to Distribution System Operators (DSOs) by optimising electric network operation through secure and safe control of the aggregate energy prosumption from many residential homes. This is achieved by computing a suitable demand aware price policy for each home.
- Develop *Home Intelligent Automation Services* providing economic value to residential homes by enabling them to securely and safely control their home appliances in order to follow DSO provided price policy.

## APPROACH

SmartHG goals are achieved with a two-tiered control schema, whose security stems from the fact that home device data are only used locally:



- Upper tier (high value) consists of Grid Intelligent Automation Services computing a safe energy price policy for each home (global electric grid optimization).
- Lower tier (low value) consists of Home Intelligent Automation Services enabling homes to effectively follow DSO price policies (local home level optimization).
- Open communication services support data exchange between all entities involved.



## IMPACT

- Economic advantages for all stakeholders.
- Promote an energy service market supporting DSOs in optimising electric network operation.
- Promote an energy service market supporting residential homes in minimising energy bills.
- Improve overall energy efficiency and environment quality by supporting DSOs peak shaving and network load balancing goals.
- Overcome users discomfort for load shifting and account for home data security and privacy.



## PILOTS

Smart sensors, smart meters and *Home Energy Controlling Hub* devices are being deployed in residential homes in SmartHG test-beds in Kalundborg (Denmark), Central District (Israel) and Minsk (Belarus). We tested our devices on the Micro Grid in the Smart Energy Integration Lab at IMDEA Energia (Spain). This will enable thorough technical, environmental and economic evaluation of SmartHG services.

