



**DG CONNECT's initiative on Smart M2M Appliances**

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 Sustainable and Secure Society  
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Stakeholder meeting of Ecodesign Preparatory study on Smart Appliances  
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## Agenda

- DG CONNECT Unit H5 priorities
  - Smart Cities
  - Resource Efficient Infrastructure
- Interoperability of Energy Data in Buildings
- The market/Costs of the connectivity
- Scope of the interoperability use cases
- Scope of the initiative
- Collection and translation of semantic assets

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## DG CONNECT Unit H5 priorities

- City living (Smart Cities)
- Resource Efficient Infrastructures

The two priorities are closely linked.

Using ICT as a tool in meeting the EU's climate and energy targets.

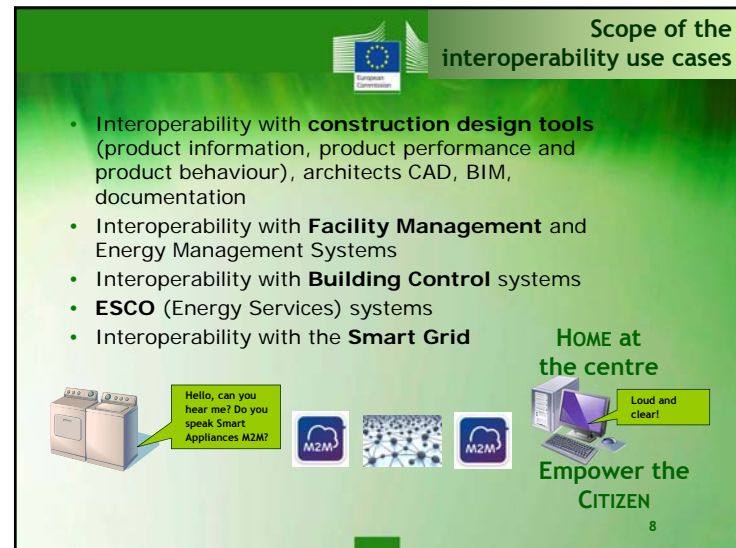
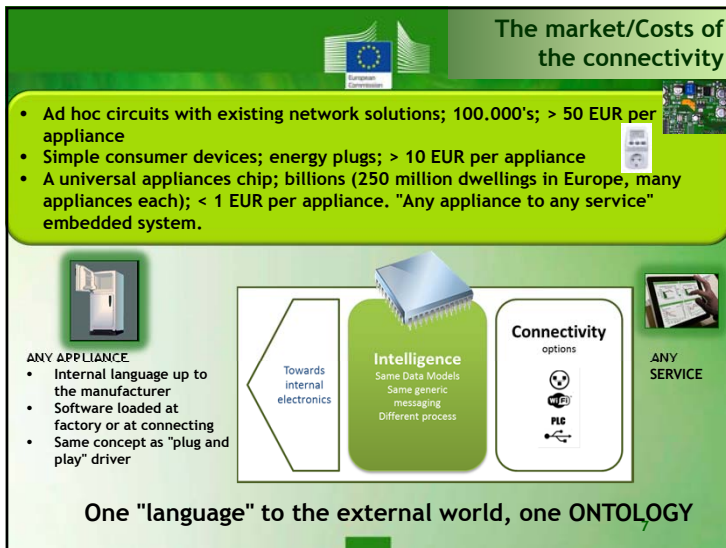
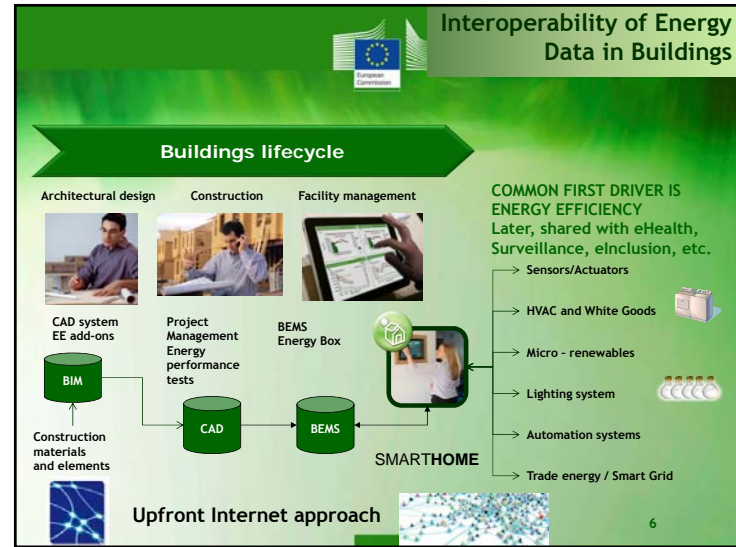
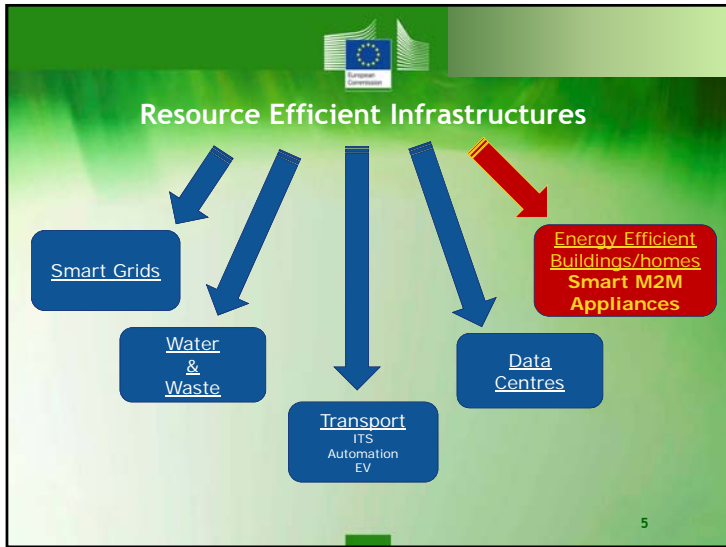
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## Smart Cities

- European Innovation Partnership
  - 2012: Launch – EC Communication
  - 2013: Strategic Implementation Plan
  - 2014: Call for Commitments - 360 eligible commitments (>3000 partners) received with good sectorial and geographic mix
  - Six active action clusters with several sub-clusters
  - Ongoing - Online marketplace; Matchmaking; Easing access to public and private funding; Exchange of best practices and aggregate demand
  - More info: <http://eu-smartcities.eu/>
- Smart Cities in Horizon 2020 (WP 2014-2015)
  - Lighthouse projects & Support actions (200ME)

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### Scope of initiative Two related loops

**Study**  
What do you want to say?  
Commissioned by EC DG CNECT

**Standardisation**  
Say it properly  
one M2M  
ETSI

To make sure that the requirements of the Energy Efficiency "vertical market" are collected in a structured way, in a near M2M "Service Capability Layer" (SCL) format

To make sure it is made fully M2M conformant and integrated as an asset of the M2M community

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### Collection of semantic assets and use case assets

#### Inventory of semantic assets

Research Projects

Application semantics

Connectivity semantics

Use cases

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### Translation to formal language, matching

#### Inventory

Switch off

Calienta mas

Enemmän valoa

Wat de temperatuur

fermer la fenêtre

ποια είναι η υγρασία

translate

Device.A  
e.supply status boolean = "false"

Device.B  
heats intensity change.rate positive

Device.C  
lights intensity change.rate positive

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### Thank you for your attention!

### Any questions?

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**BACK UP SLIDES**

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### Scope of appliances to be covered




- Home and buildings **sensors** (temperature, humidity, energy-plugs, energy clams, energy meters, water-flow, water quality, presence, occupancy, air monitors, environmental sensors, CO2 sensors, weather stations, etc.) and **actuators** (windows, doors, stores). Sensors belonging to appliances treated individually.
- White goods**, as classified by CECEC,
  - Rinsing and Cleaning
  - Cooking and Baking
  - Refrigerating and Freezing
  - Vacuum Cleaning
  - Washing and Drying
- HVAC**; heating, ventilation, and air conditioning, plumbing, security and electrical systems
- Lighting**, with use cases as defined by ELC
- Micro renewable** home solutions (solar panels, solar heaters, wind, etc.)

• **COMMON FIRST DRIVER IS ENERGY EFFICIENCY**

• Later, shared with eHealth, Surveillance, eInclusion, etc.

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### Costs of the connectivity

- Ad hoc circuits** connecting to existing Network solutions; 100.000's; > 50 EUR per appliance 
- Simple **consumer devices**; energy plugs; > 10 EUR per appliance 
- A **universal appliances chip**; billions; < 1 EUR per appliance 

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### The unified ontology

Sub-products

- XML data models
- Web services
- Etc.

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## "vertical" industrial stakeholders

- AMA - Association for Sensor Technology
- buildingSmart Alliance (IFC)
- CABA - Continental Automated Buildings Association
- CECEC - European Committee for Domestic Equipment Manufacturers
- CENELEC TC59x WG7
- EHI AISBL - Association of the European Heating Industry
- Energy Efficient Buildings Association (E2BA)
- EPoSS - The European Technology Platform on Smart Systems Integration
- ESMIG - European Smart Metering Industry Group
- eu.bac - European building automation controls association
- European Lamp Companies Federation (ELC)
- EVIA – European Ventilation Industry Association
- Smart Grid Task Force - SGCG 490 - SMCG 441
- SHBA - Smart Homes and Building Association
- Representation of FP Research Projects
- HGI Home Gateway Initiative
- oBIX - OASIS Open Building Information Exchange
- OSGi - Open Services Gateway initiative
- ETSI M2M, CTI (European Telecommunications Standards Institute)

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## Recommendations

1. **Backwards interoperability:** The ontology has to aim, whenever possible, at providing "backwards" compatibility to the semantic layers of the most popular connectivity solutions (KNX, BACnet, ZigBee, SensorXML), ensuring the highest degree of matching. However, this is not an absolute condition.
2. **Expanded ontology:** The ontology should not be restricted to the existing vocabularies in these solutions. It has to be expanded to cover all semantic requirements as discovered in the study.
3. **New structure:** In particular with respect to the basic structure, not to be constrained by any heritage from the past.
4. **Balanced solution:** Too strict backwards compatibility may eventually turn into low efficiency solutions or bring down the new thinking that we need for defining the correct semantics. Propose a balanced solution and document the options taken.
5. **Energy efficient solution:** The home environment may require not wired low power sensors based on batteries or ambient energy harvesting sensors. The ontology has to be optimised to be synthetic, compact and with the minimum redundancy.
6. **Smart messaging:** The ontology has to propose classes to cover a broader scope of information exchange, messages with information relevant for the intelligent behaviour in relation to energy and beyond. As said above, the vision is autonomous smart appliances that mainly negotiate their flexibility at consuming energy, but will expand in the future to broader application areas (eHealth, Ambient Assisted Living, surveillance, etc).
7. **Optimal balance open/prescriptive:** propose an optimal balance between fixed and full definitions for some classes (i.e. including enumerations), those with chances to be relevant to most use cases (i.e. energy consumption, limits, goals), and classes that should remain open for a definition of the meaning by the context (i.e. appliance specific, or system specific) or case by case (<otherClass>) or live at connecting. Fully defined classes offer the highest chances for **compact coding** at transmission, and are therefore more important at not cabled devices, like battery powered sensors. At appliances connected to the electricity network this factor is less critical.
8. **Growth** of the ontology: logic for the growth of the ontology to cover future, more intelligent behaviour and message exchange.

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