

# Smart Home Standardization – Towards a common data model

## Status

10. March 2015  
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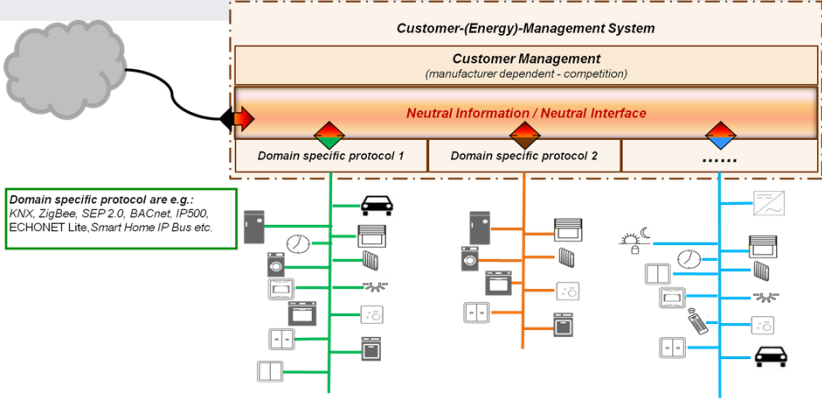
What a lucky time before Smart Home ....



**My device**  
**My area of responsibility**  
**My performance**

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New Smart Home world – Smart Appliance as a member of this world

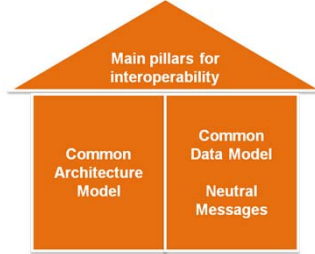


**Customer-(Energy)-Management System**  
Customer Management (manufacturer dependent - competition)  
Neutral Information / Neutral Interface  
Domain specific protocol 1    Domain specific protocol 2    .....

Domain specific protocol are e.g.:  
KNX, ZigBee, SEP 2.0, BACnet, IP500, ECHONET Lite, Smart Home IP Bus etc.

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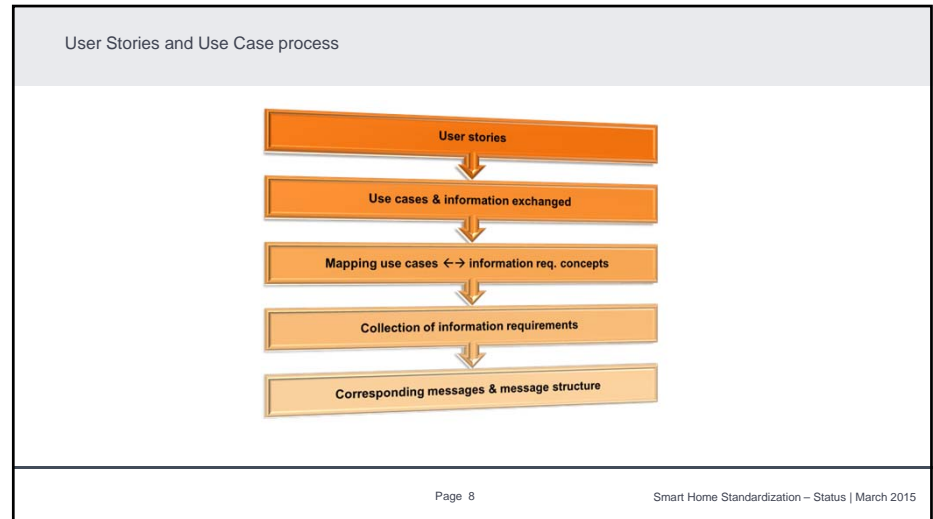
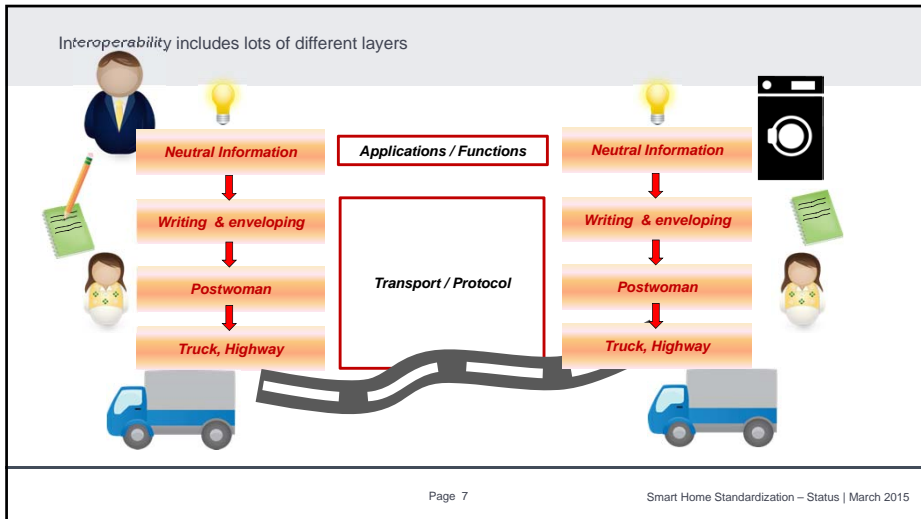
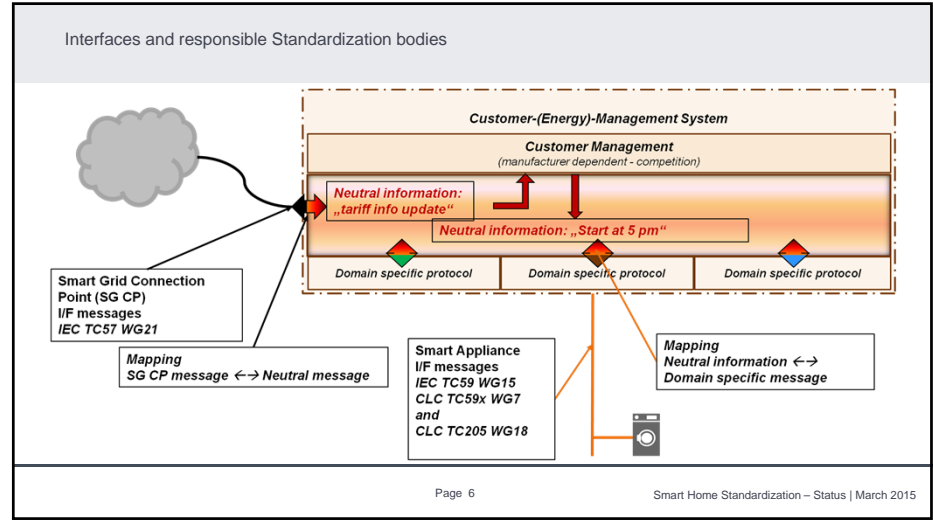
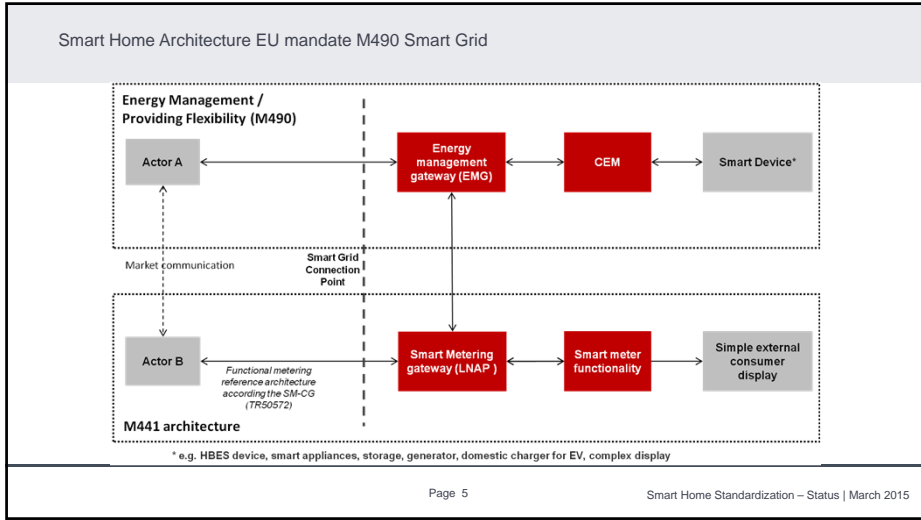
Main target of Smart Home & Smart Appliances: Interoperability



Interoperability means:

- Common functionalities manufacturer independent
- At least for main features
- Common agreement with all manufactureres

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User Stories – the promise to the customer.  
(referenced to TR 62746-2 Use Cases and Requirements)

**User wants to know when the washing machine has finished working.**

User wants to dim all lighting.

**User wants to do basic settings of his devices.**

User wants his electrical car charged by 3:00h p.m., ready to use.

User wants to get remote help if the washing machine works improperly.

**User wants his washing done by 5:00h p.m. with least electrical power costs.**

User allows the Customer Energy Manager to reduce the energy consumption of his freezer in a defined range for a specific time, if the grid recognizes (severe) stability issues.

User wants to consume the electrical power produced by his own.

**User likes to limit own energy consumption up to a defined limit**

User wants to feed PV energy into own battery pack if too much power is available

User wants to sell own decentralized energy (e.g. PV) to Smart Grid

**Grid related emergency situations (blackout prevention)**

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User Stories (e.g. flexible start of Smart Appliance)

The user likes to get the laundry ready until 8:00pm  
The user prepares the washing machine  
Fills clothes  
Selects washing program  
Pre-selects the end time (e.g. 8:00pm)  
May pre select the incentive program (e.g. cheapest tariff, greenest power etc.)  
Starts washing program

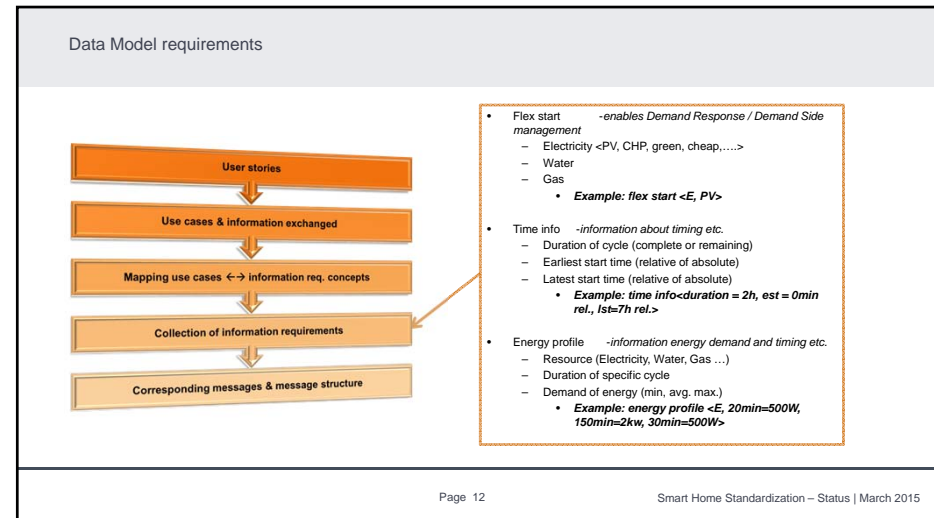
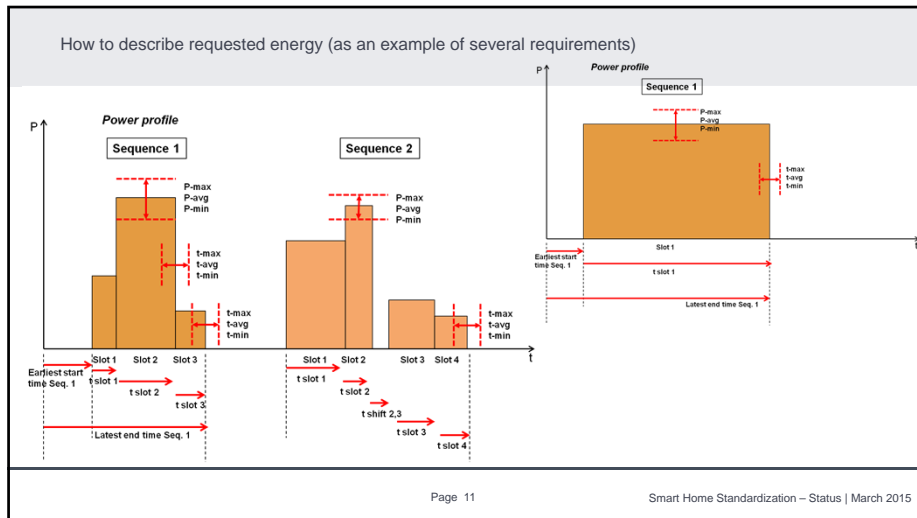
The washing machine now informs the CEM about  
The start of the new program  
The pre-selected end time  
The pre selected incentive program (if not already stored)  
The expected energy consumption profile with duration and (e.g. time related specific) power consumption

The CEM calculates the operation plan and takes into account  
The selected incentive program e.g.  
Tariff information  
PV forecast  
Expected energy consumption other Smart Devices  
Expected energy consumption of the requesting Smart Device

The CEM sends the calculated start time to the Smart Device

The Smart Device starts the cycle  
Based on the calculated start time  
Based on an updated start time

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Actual Status of activities

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Excerpt of relevant Standardization bodies

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Excerpt of relevant documents

<b>User Stories &amp; Use Cases</b> <i>Use Cases &amp; Requirements</i>	•IEC 62746-2
<b>Information to be exchanged</b> <i>Data Requirements</i>	•IEC 62746-2 •prEN 50491-12 •prEN50631
<b>Neutral set of messages</b> <i>XSDs</i>	•prEN 50491-12 •prEN50631 •Data Model description •Common Ontology
<b>Mapp Mapp Mappi Mapping</b> ..... KNX SEP 2 ZigBee HA 12	•prEN50631 •Applications / mappings e.g. Smart Energy Mgmt
<b>Protocol specif. Applications Services Applications</b>	•prEN50631 •EEBus SHIP Protocol •Echonet lite •Other (upcoming) protocols

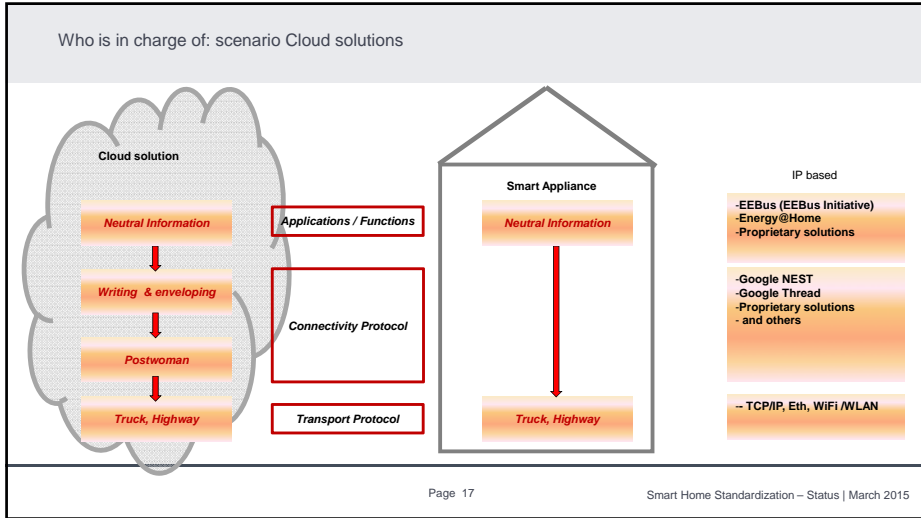
IEC 62746-2 → IEC TC57 WG21  
IEC 62950 → IEC TC59 WG15  
prEN 50491-12 → CLC TC205 WG18  
prEN50631 → CLC TC59x WG7

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Who is in charge of: scenario INHOME

IP based	non-IP based
- EEBus (EEBus Initiative) - Energy@Home - Proprietary solutions	- EEBus (EEBus Initiative) - Energy@Home - Proprietary solutions
- AllJoyn (Allseen Initiative) - OIC (OIC Initiative) - SHIP (EEBus Initiative) - Apple Homekit (Apple) - Proprietary solutions like - and others	- ZigBee HA (ZigBee Alliance) - KNX - BacNet - EnOcean - and others
- TCP/IP, Eth, WiFi/WLAN	- Wired and wireless

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### How to ensure Interoperability if lot's of different consortia are developing own solutions?

Slide shows only most important alliances

- EEBUS** (Kellendonk, BOSCH, B/S/H/, ABB, eon, EnBlu)
- Energy@home** (Electrolux, Whirlpool, Inesit, Enel)
- ALLSEEN ALLIANCE** (Haier, Panasonic, QIWI, verizon, htc, LG, SHARP)
- Thread Group** (ARM, Google, Freescale, Intel, Wind River, Atmel)
- Open Interconnect Consortium (OIC)** (SAMSUNG, Intel, Wind River, Atmel)
- Apple HomeKit**
- Red Elephant** (BOSCH, LG, ABB, EnBlu)
- QIVICON** (EnBlu, GIRA, ABB)
- Samsung Smart Home**
- HGI Home Gateway Initiative** (ARM, QIWI, LG, Intel, Wind River, Atmel)

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### Backup

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### Intention to achieve an overall EU-wide connectivity approach!

Together with the European Commission (DG-Connect and DG-Energy)

- Alignment of Data Models
- Common support of International Standards

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