

# STANDARDISATION & INITIATIVES







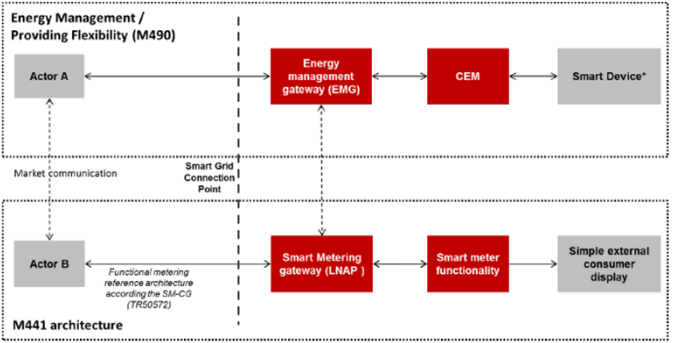
**Wuppertal Institut**  
für Klima, Umwelt, Energie GmbH

Dominic Ectors, VITO



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## Functional flexibility smart grid architecture



**Energy Management / Providing Flexibility (M490)**


Actor A ↔ Energy management gateway (EMG) ↔ CEM ↔ Smart Device\*

**M441 architecture**

Actor B ↔ Smart Metering gateway (LNAP) ↔ Smart meter functionality ↔ Simple external consumer display

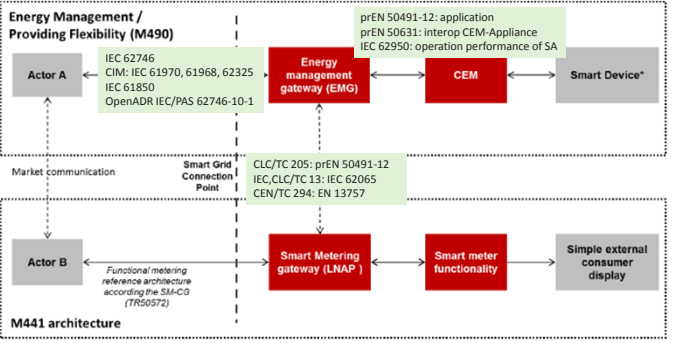
\* e.g. HBES device, smart appliances, storage, generator, domestic charger for EV, complex display

Source: SG-CG/M490/L\_Flexibility Management



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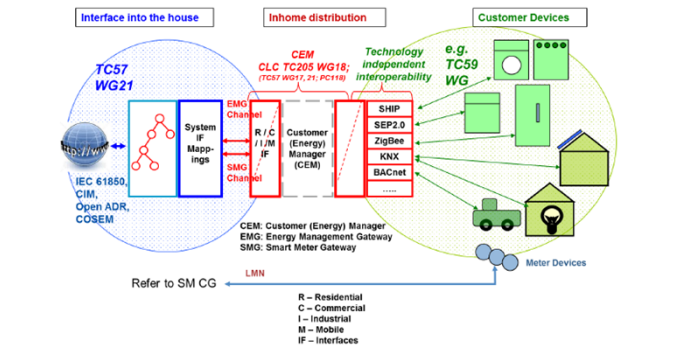
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## Customer Energy Manager



**Interface into the house**


**Inhome distribution**

**Customer Devices**

**Refer to SM CG**

**Legend:**  
R – Residential  
C – Commercial  
I – Industrial  
M – Mobile  
IF – Interfaces

Source: EEBus white paper 2.0



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## ETSI

- » European Telecommunications Standards Institute
- » Machine to Machine Communications, ETSI M2M
- » Not only architecture-level standards, but also test specifications
- » Smart Machine-to-Machine Communications Technical Committee (TC SmartM2M)
  - » Focus on IoT, smart cities, smart appliances
  - » Specifications (work in progress)
    - » Framework for Smart Appliances communication based on ETSI M2M and (potentially) oneM2M specifications
    - » Common Ontology and SmartM2M/oneM2M mapping



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## Gaps

- » Being addressed by ongoing standardization work
- » A standardised energy management framework has to take into account different application frameworks.(use cases beyond energy management)
  - » Application runtime environment specification



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## Initiatives

- » EEBus e.V. – Agora – Energy@home
- » Allseen Alliance
  - » **Alljoyn**: software connectivity and services framework
  - » Electrolux, Hayer, LG Electronics, Microsoft, Panasonic, **Qualcomm**, Sharp, Silicon Image, Sony, Technicolor and TP-Link
- » Open Interconnect Consortium (OIC)
  - » **IoTivity**: open source framework
  - » **Intel**, Cisco, Mediatek, Samsung, ADT, Atmel, Dell, Eyeball networks, HP
- » HomeKit - Apple
- » ThreadGroup
  - » **Thread** is an IP-based wireless networking protocol
  - » Yale Security, Silicon Labs, Samsung Electronics, **Google/Nest Labs**, Freescale® Semiconductor, Big Ass Fans and ARM.



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## Initiatives

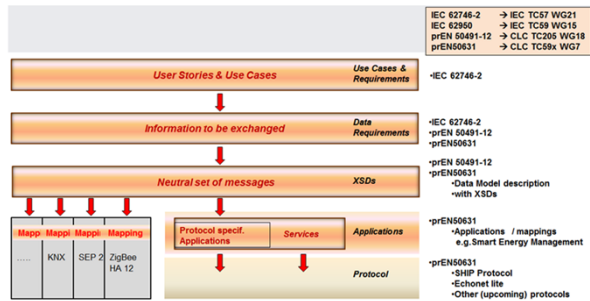
- » ZigBee Alliance
- » OpenADR Alliance
- » ABB, Bosch, Cisco cooperate on smart-home platform
- » Open Mobile Alliance (OMA)
- » Australia: AS/NZS 4755
  - » communicating DR commands to residential appliances (airco, water heaters, pool pumps, EV,...).
  - » Considering to make this standard mandatory (to manufacturers, not to consumers)
- » FAN, OGEMA, JEMMA,...
- » ...



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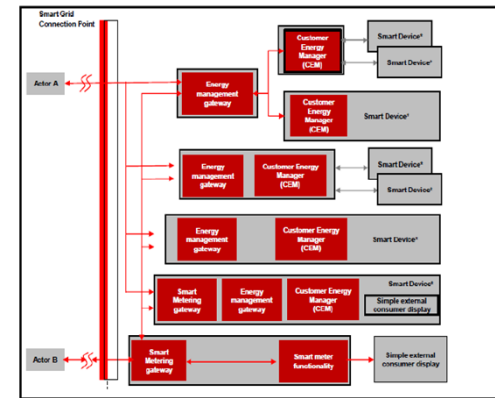
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### Standardisation: work in progress



Source: Josef Baumeister, IEC & CLC Smart Home Standardization – status September 2014

### Physical combinations



All gray boxes in the diagrams represent physical boxes. Combinations may not be complete



Source: IEC 62746-2:2014 draft version