

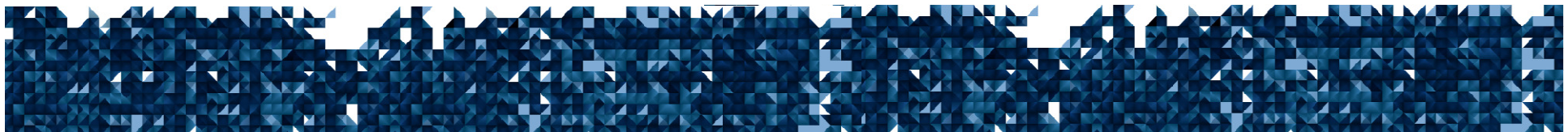


Workshop Smart Grid
Standardisation
May 16th 2013



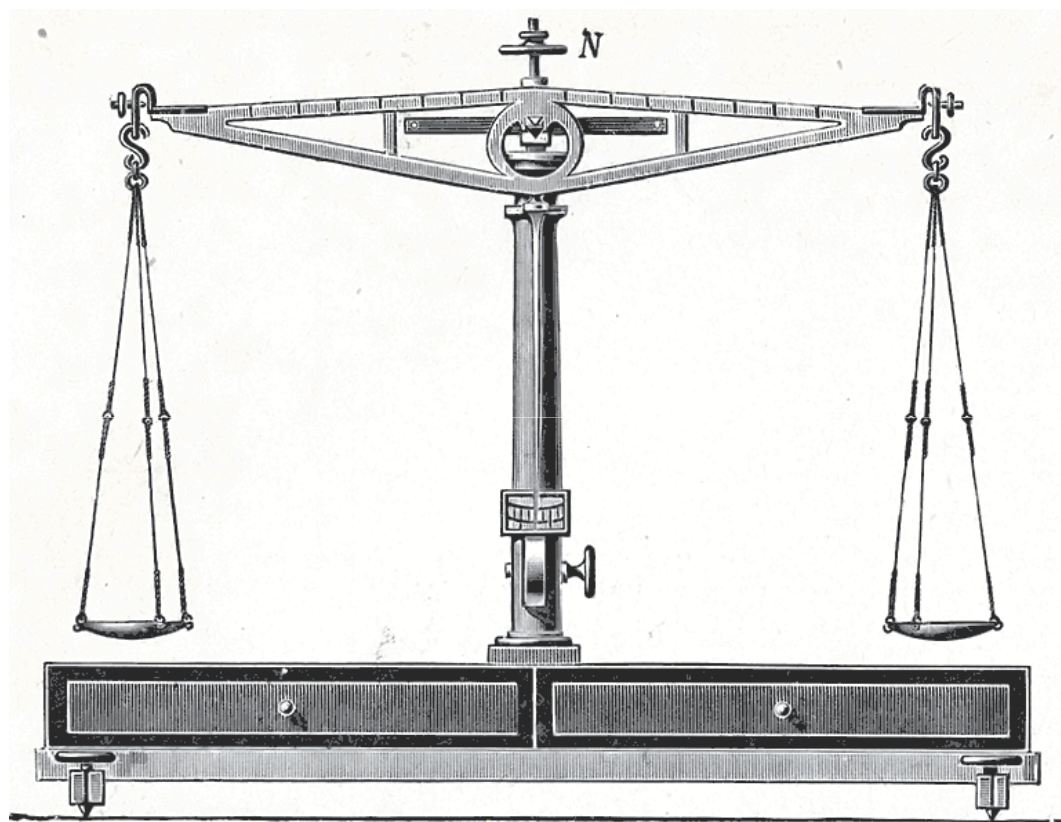
Session 3: Demand Response

Christoph Nölle



The grid balance

Supply

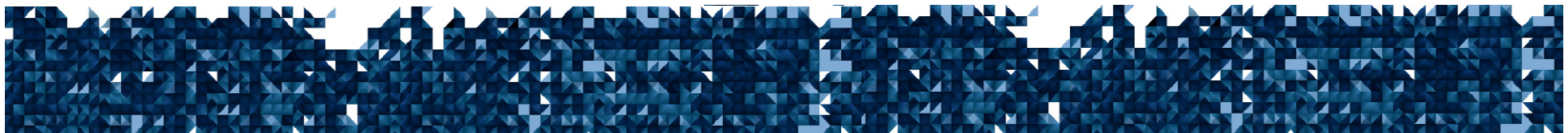


Demand



Why DR?

- Reduce expensive peak load
- Adapt demand to increasing supply inflexibility due to wind and solar power
- Grid stabilisation in case of supply shortage or faults

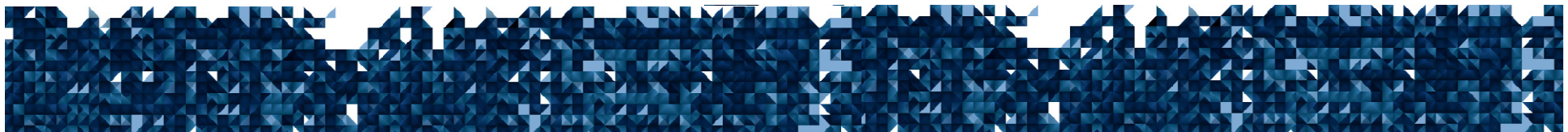


Why DR?

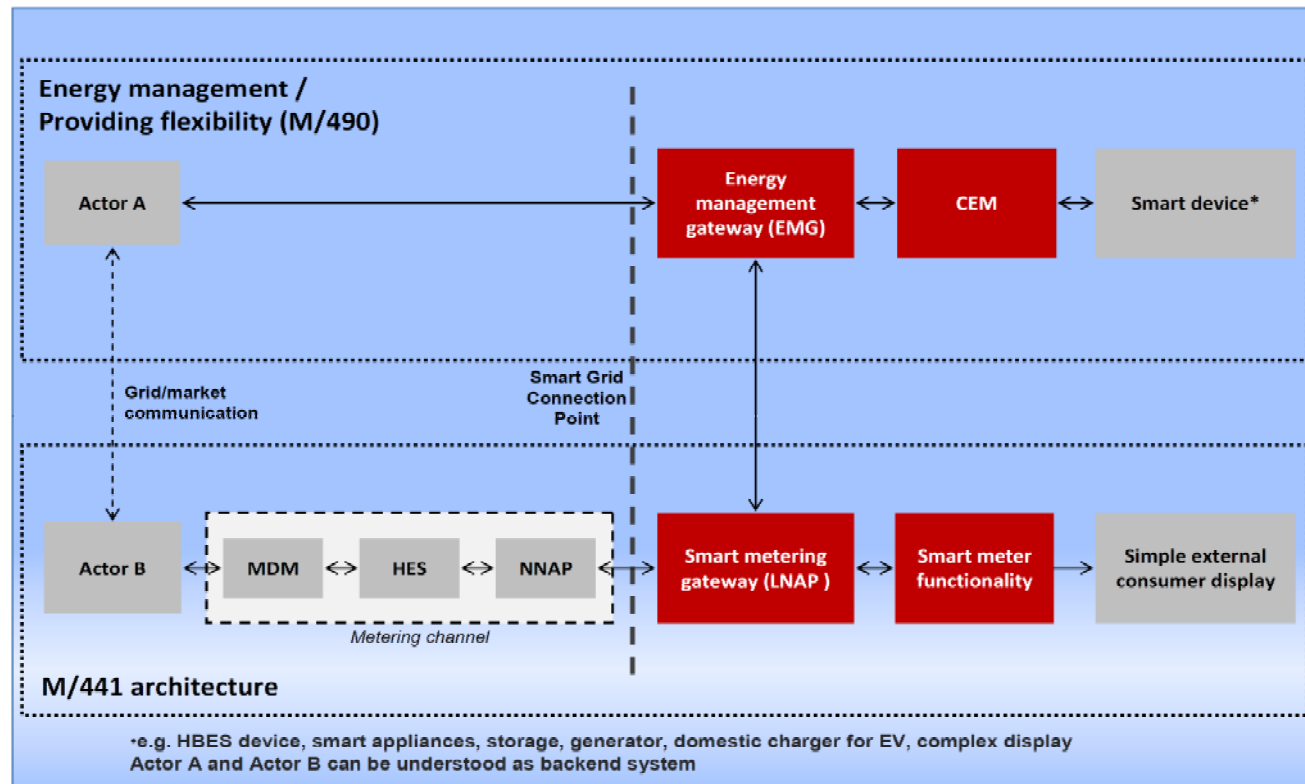
- Reduce expensive peak load
- Adapt demand to increasing supply inflexibility due to wind and solar power
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But...

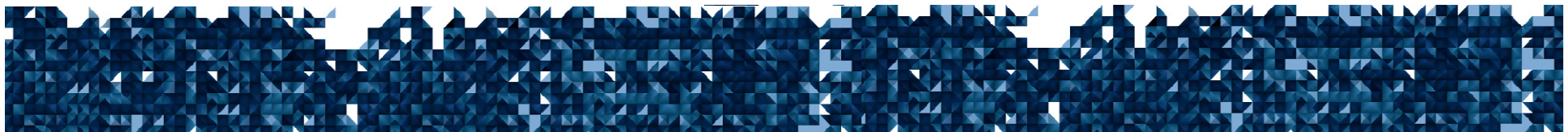
- Communication infrastructure required



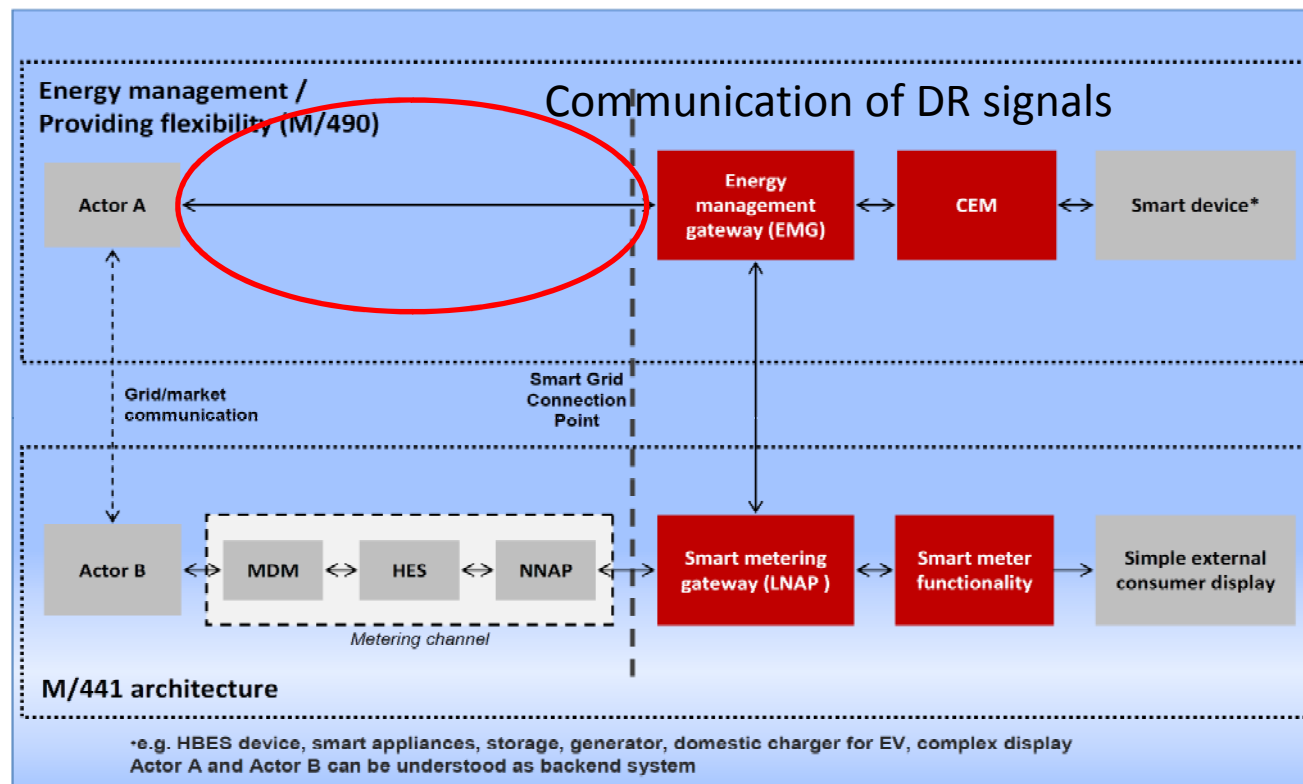
Communication Architecture



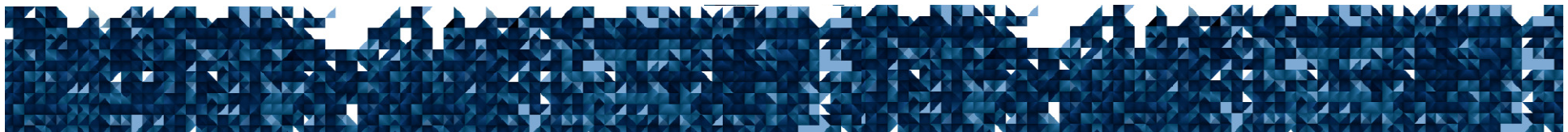
according to the SG-CG



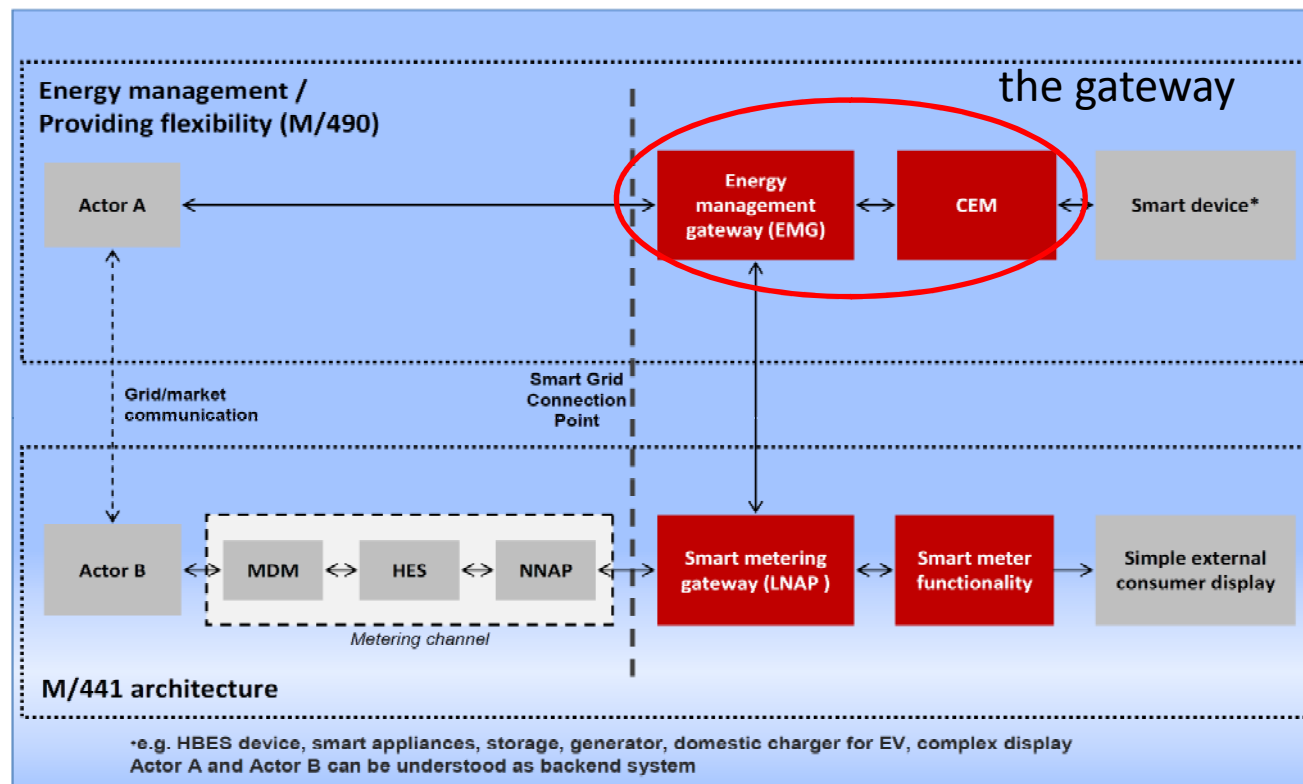
Communication Architecture



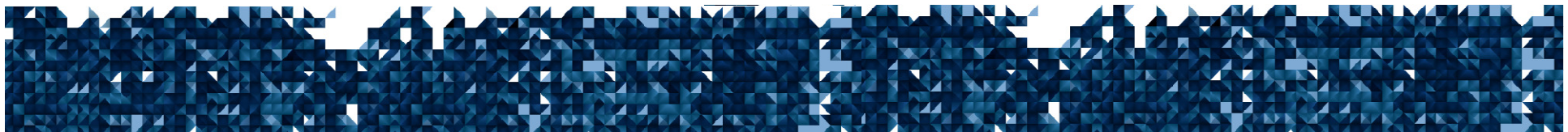
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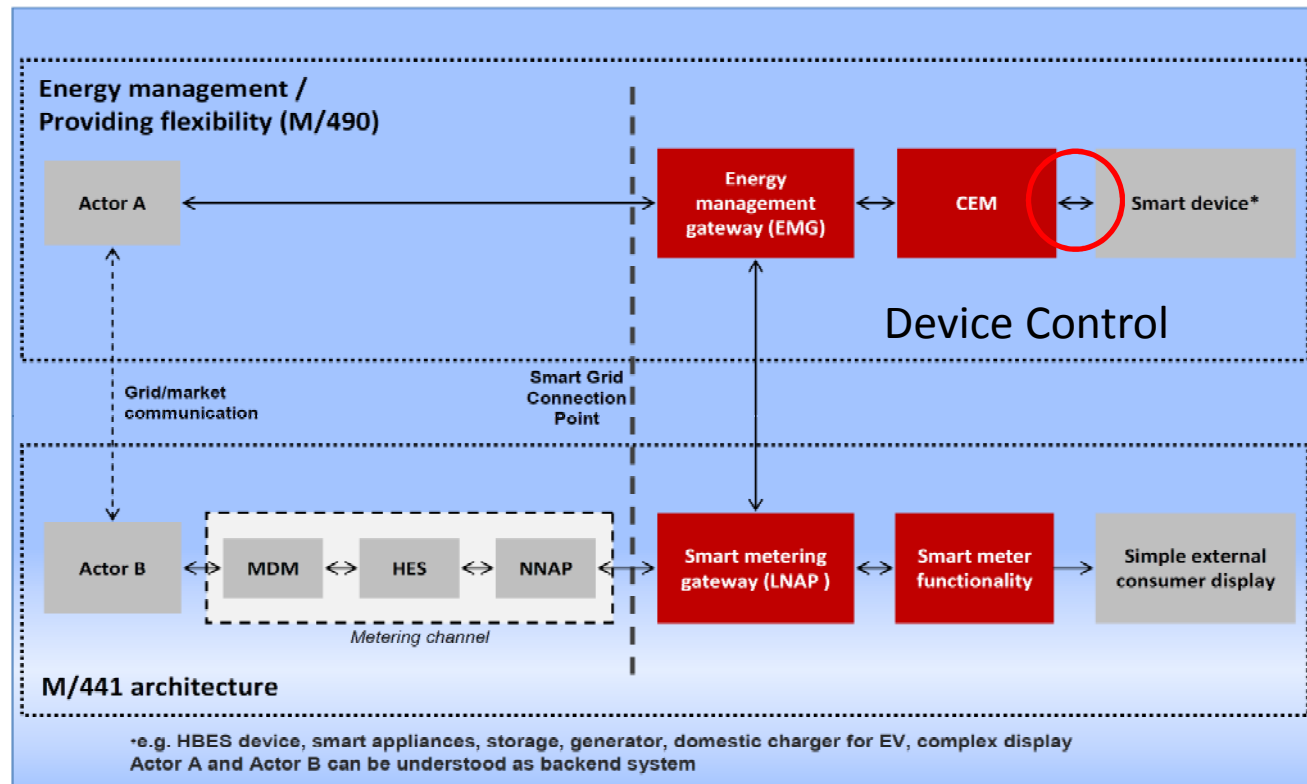
Communication Architecture



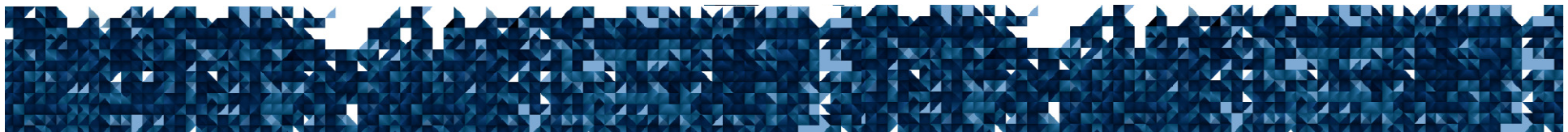
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Communication Architecture

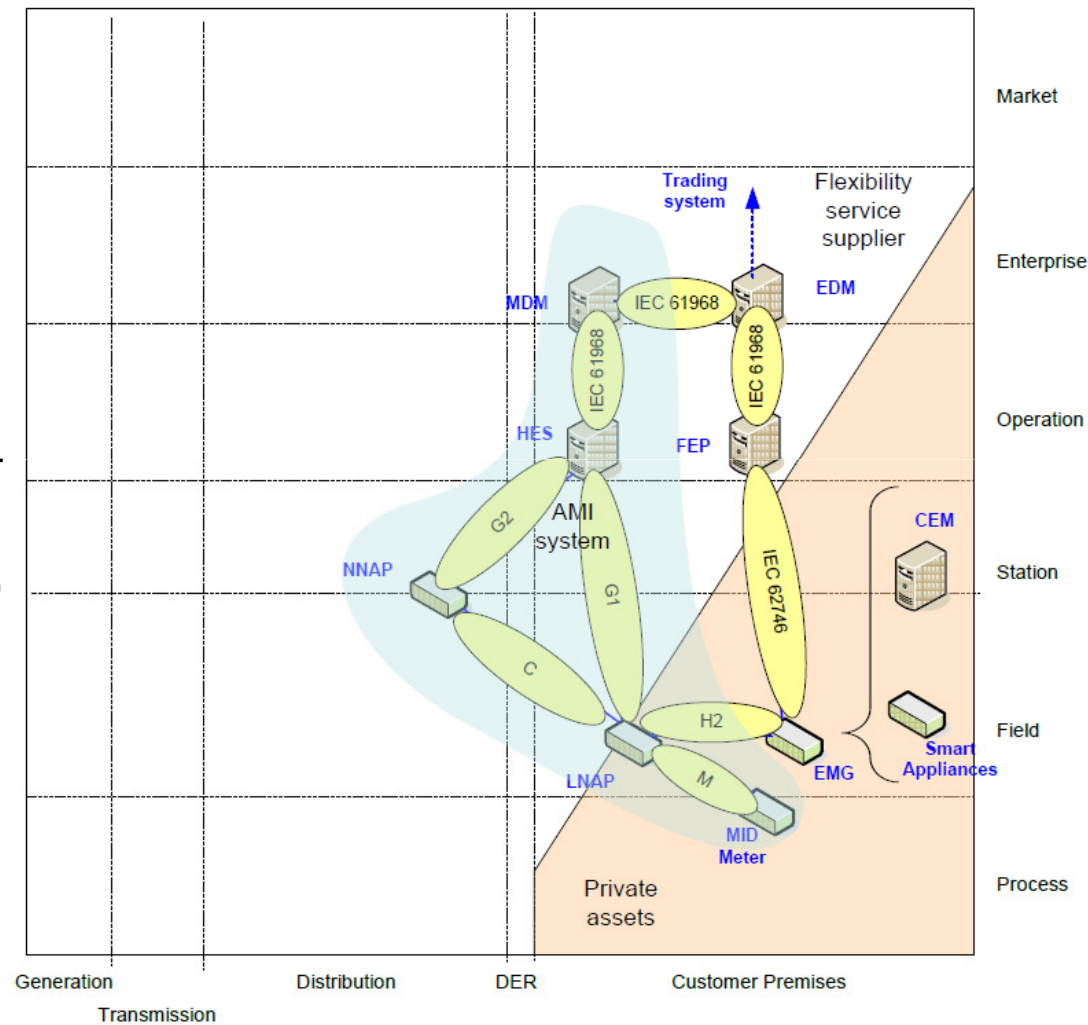


according to the SG-CG



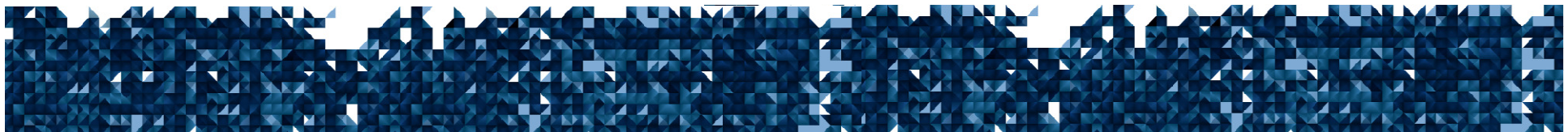
Information Layer (SG-CG)

(not covering in-house communication)



Standards – external communication

- OpenADR 2.0a, 2.0b
 - based on OASIS Energy Interoperation 1.0
 - developed and used mainly in the US, but promotion to IEC PAS through PC118 planned
 - WAN communication. Http & XMPP supported

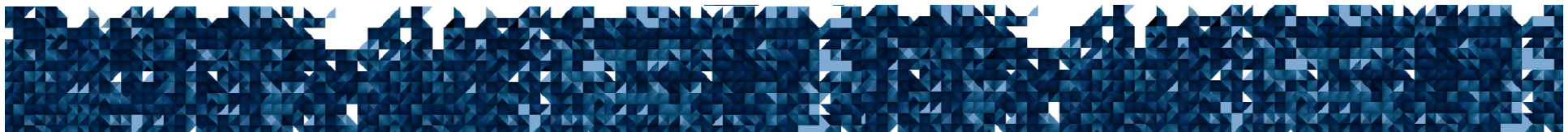


Gap Analysis SG-CG

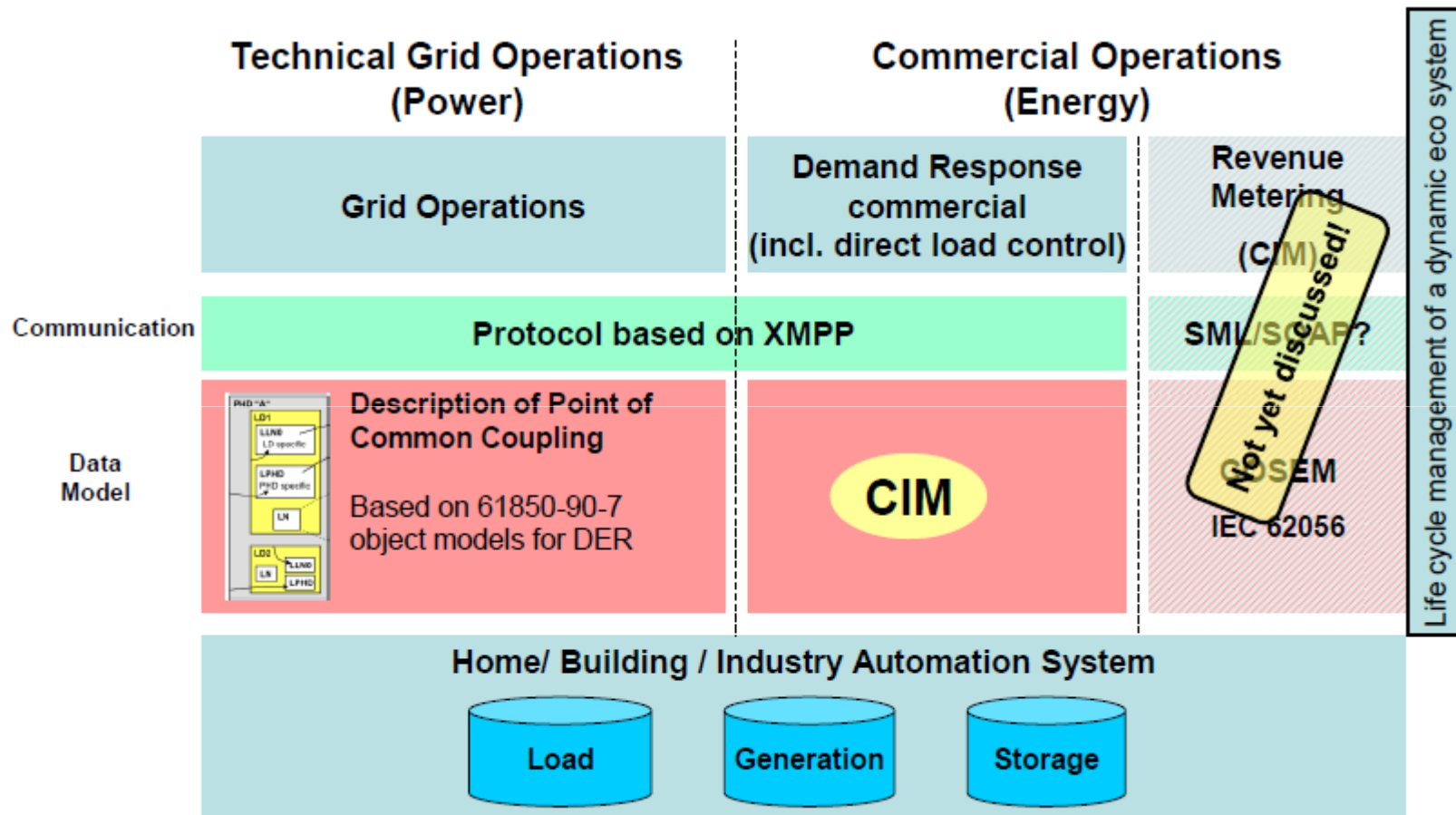
Gap title	Data modeling for demand-response - supply/demand sides	Involved bodies	CENELEC	TC57
Gap details			CEN- CENELEC- ETSI	SMCG
	IEC		TC13	
	IEC		TC57 WG21	
	CEN		TC247	
	CENELEC		TC205	
	ETSI		M2M	
	CEN- CENELEC- ETSI		M468	

Work plan:

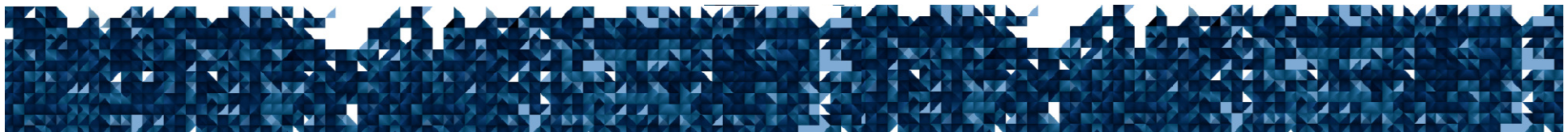
- IEC TC 57 WG 17: future IEC 61850-7-420 Ed.2
- IEC TC 57 WG 21: future IEC 62746



IEC 62746

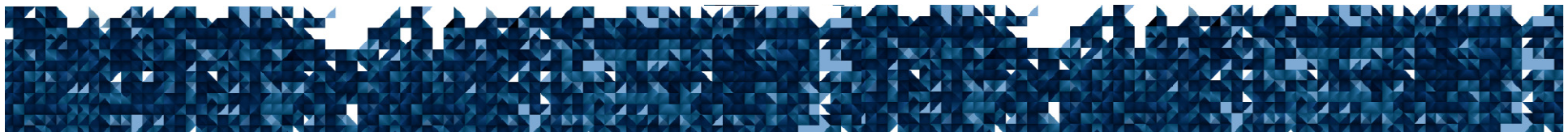


TC 57 WG 21



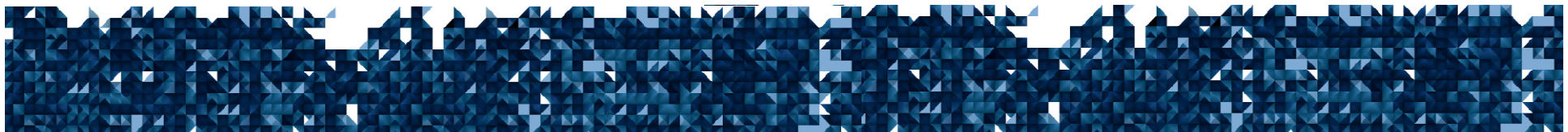
Standards – Device Abstraction

- Facility Smart Grid Information Model - ASHRAE/NEMA 201P
 - abstract data model for energy management, in particular controllable devices
 - to be mapped to the various home automation protocols
 - based on OASIS Energy Interoperation, EMIX, IEC 61850, CIM, ...
 - considered by ISO TC 205
- prEN 50491-12 - CLC TC 205 WG 18
 - Neutral device abstraction layer
 - input from EEBus



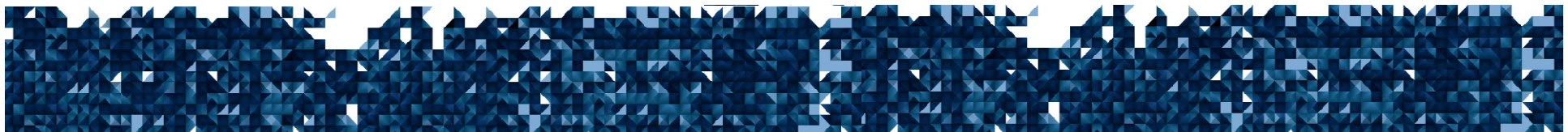
Gateway – EM functionality

- ETSI M2M
- ISO/IEC JTC 1 SC 25
- Home Gateway Initiative
- Energy@Home association
- EEBus initiative
- OGEMA – Open Gateway Energy Management Alliance
- ...



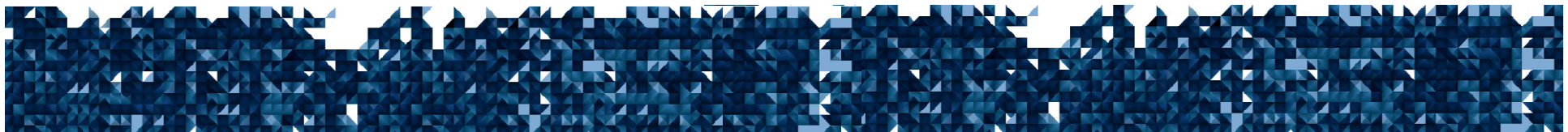
Standards – Home automation & DR

- Modular Communication Interface Specification for Energy Management - ANSI/CEA-2045
 - defines a physical interface for smart devices, that is capable of handling standard DR signals (OpenADR, SEP)
 - modular and protocol independent – communication modules for different wired and wireless technologies
- Demand response capabilities and supporting technologies for electrical products - AS/NZS 4755
 - originally targeted at air conditioners -> peak reduction
 - direct load control or price signals



Standards – Home automation & DR II

- Echonet & Echonet Lite (Japan)
 - Home automation standard
 - Motivation: Home health care & AAL
 - Enables access to devices for external service providers
- ZigBee Smart Energy Profile 2.0
 - IP stack (ZigBee, HomePlug, Wi-Fi, ...)
 - RESTful HTTP architecture
 - data models based on CIM (IEC 61968)



Presentations

- Energy@Home Association – *Emilio Simeone (Flyby)*
- EEBus initiative – *Andreas Westermann (Kellendonk Elektronik)*
- OGEMA Alliance – *David Nestle (Fraunhofer IWES) & Andreas Kießling (MVV)*

