

Smart Grid Standardization

- history, current status and future trends -



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Maintenance Portals

with a strategical, tactical and operational maintenance plan as well as a mobile disposition

Customer-related mobile services

for the SLP-consumer with easy maintenance of personal master data, selection of different tariffs and an online catalogue for energy-related products and services

Customer Service Portal

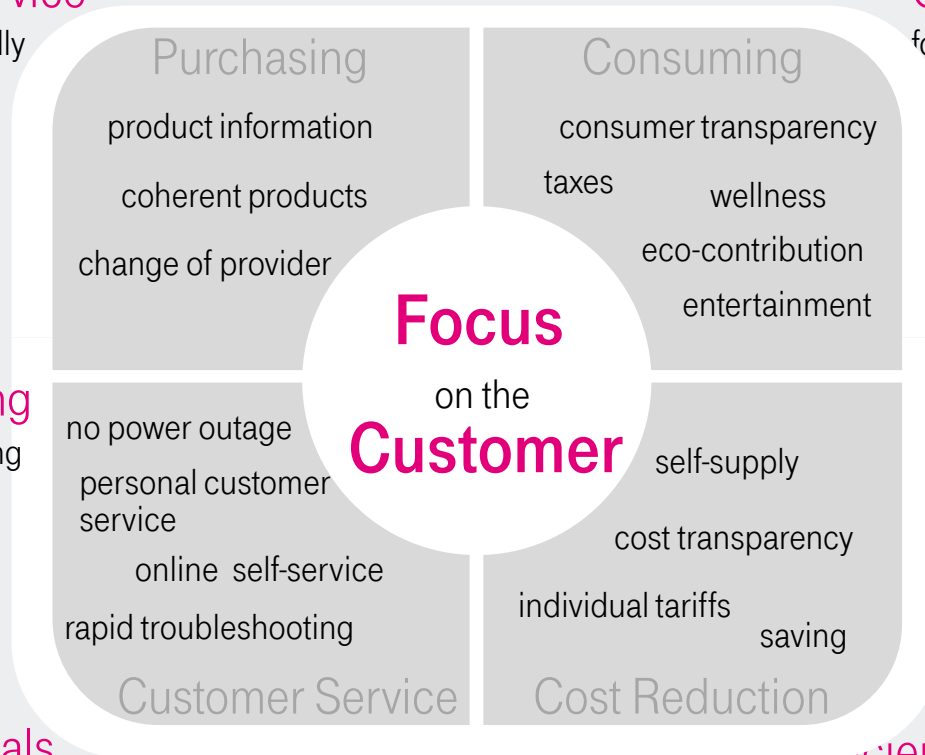
for an integrated access to all relevant systems and a fast handling of customer inquiries

Smart Metering Portals

for consumption visualization, cost transparency and value-added services

Energy Efficiency Portals

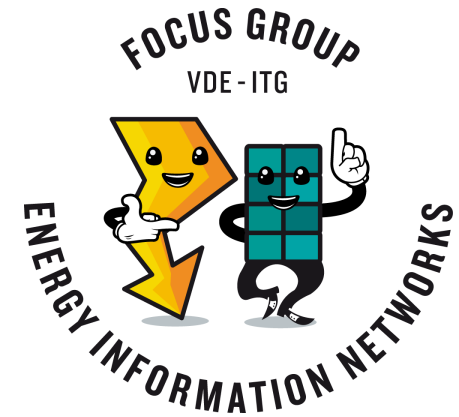
for heating control and energy saving



Memberships

VDE

- Coordinator of the VDE/ITG Focus Group
"Energy Information Networks and -Systems"
- Member of the Program Committee for the VDE Congress 2012



DKE

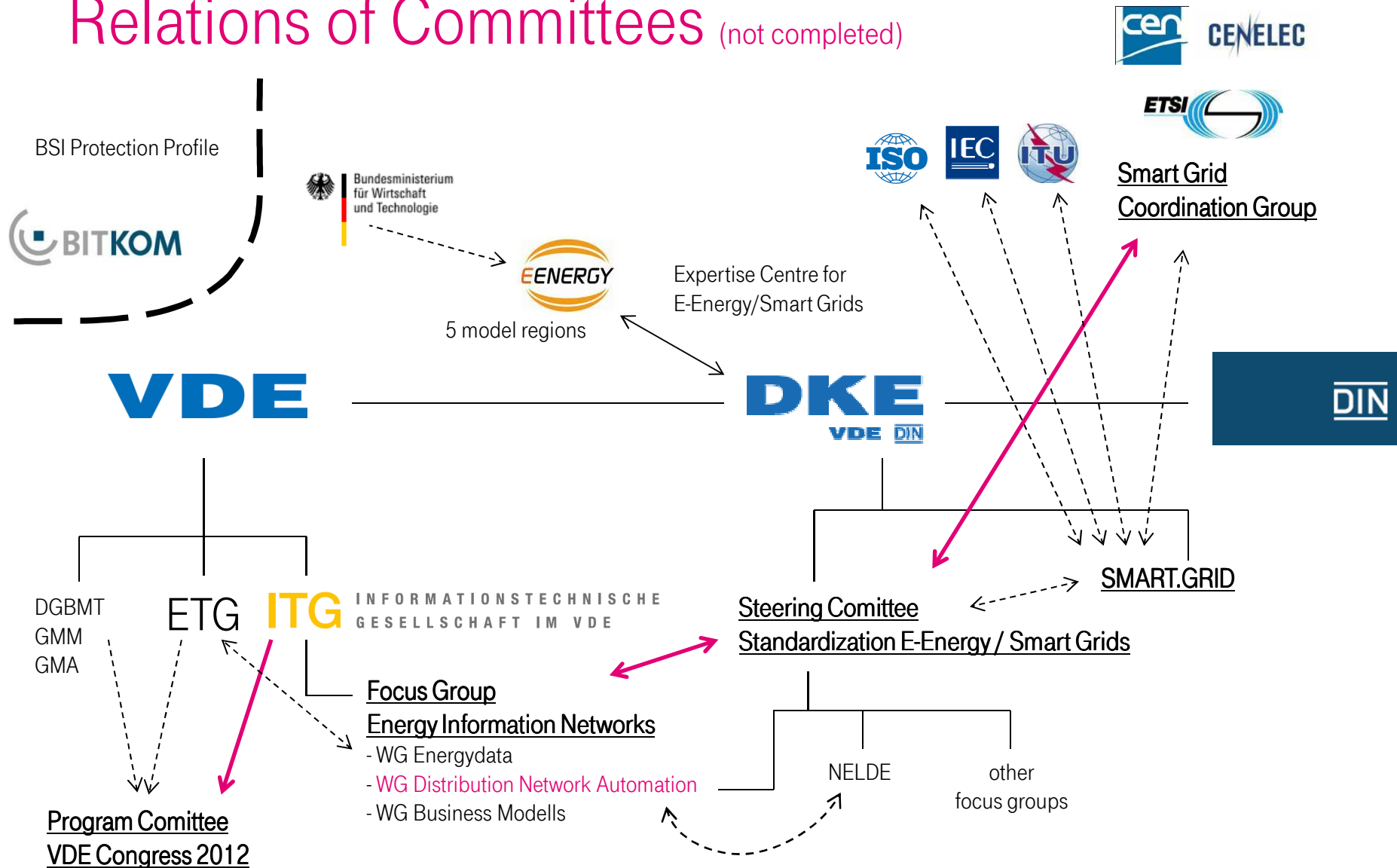
- Steering Committee "Standardization E-Energy / Smart Grids", DKE
German Commission for Electrical, Electronic & Information Technologies of DIN and VDE
- SMART.GRID, DKE
National Mirror Committee of the Smart Grid Committees at IEC, ISO/IEC JTC1 & CEN/CENELEC/ETSI (Joint Working Group Smart Grid)



- Smart Grid Coordination Group, CEN/CENELEC/ETSI
Reference Architecture Working Group
Work on EU-Mandate 490 (Standardization of Smart Grid)

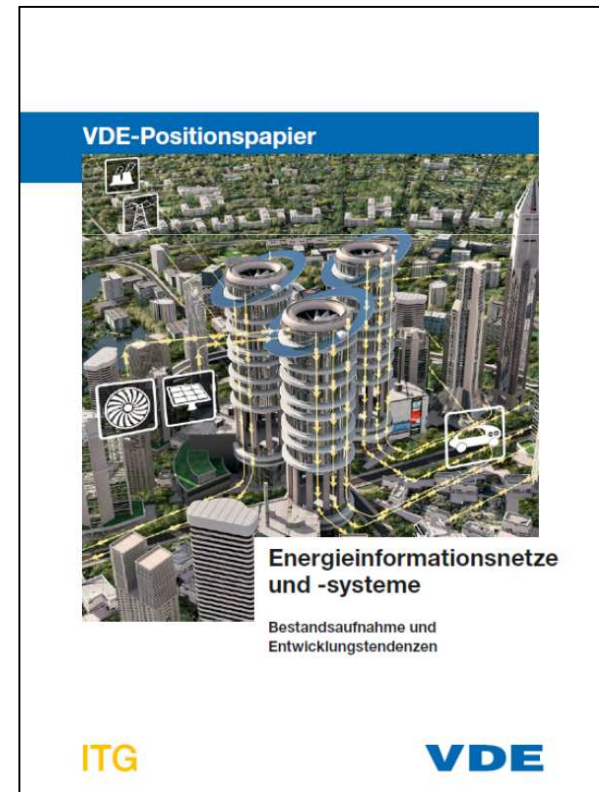
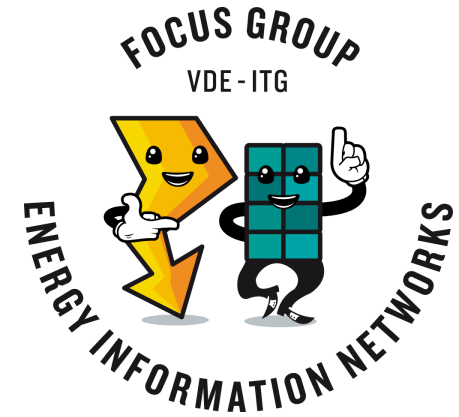


Relations of Committees (not completed)



VDE/ITG Fokus Group Energy Information Networks

- VDE/ITG focus group „Energy Information Networks and -Systems“ was founded in 11/2009 as an interdisciplinary group of electrical engineering (EE), automation technology (AT) and information and communication technology (ICT) experts.
 - Main task is to work on the question, how the energy information networks and -systems will be designed in the future.
 - The first position paper was published in 12/2010 (the next position paper is scheduled for midyear 2012)
 - one of the main results was the development of a **Generic Modell of an Energy Information Network**
 - This was done as preliminary work for the smart grid standardization, especially for the reference architecture of a smart grid.
- => [Link to the homepage of the focus group](#)



DKE Steering Committee

Standardization E-Energy / Smart Grids

- The German Commission for Electrical, Electronic & Information Technologies of DIN and VDE (DKE) is the German organization responsible for the elaboration of standards and safety specifications covering the areas of electrical engineering, electronics and information technology.
(Reference: DKE-Website)
- Aim of the DKE Steering Committee is the strategic realization of the German standardization roadmap and the conceptual and strategic advancement of the topic Smart Grid referring to standardization aspects;
- furthermore the coordination of the German position respective the German representation in European and international committees.



Situation in Europe

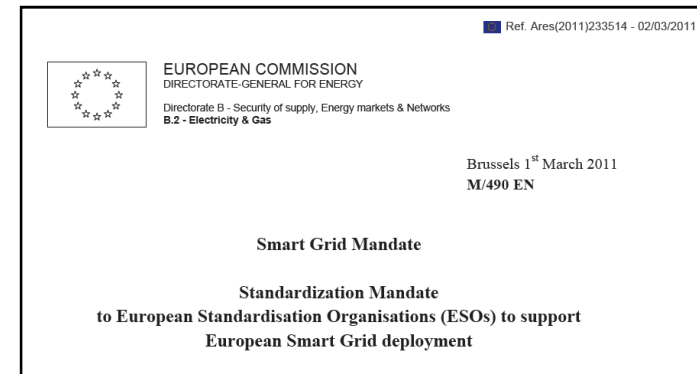
- Mandate M/441 => Smart Metering
- Mandate M/468 => Charging of Electric Vehicle
- **Mandate M/490 => Standardization "Smart Grid"**
 - => start of work inside the expert groups
 - => first draft results estimated for midyear 2012
 - > first set of standards
 - > conceptual model and reference architecture of the (European) smart grid



CEN/CENELEC/ETSI

Scope and Objective of the Mandate M/490

- The objective of this mandate is to **develop or update a set of consistent standards** within a common European framework **that integrates a variety of digital computing and communication technologies and electrical architectures**, and associated processes and services, that will achieve interoperability and will enable or facilitate the implementation in Europe of the different high level Smart Grid services and functionalities as defined by the Smart Grid Task Force that will be flexible enough to accommodate future developments.



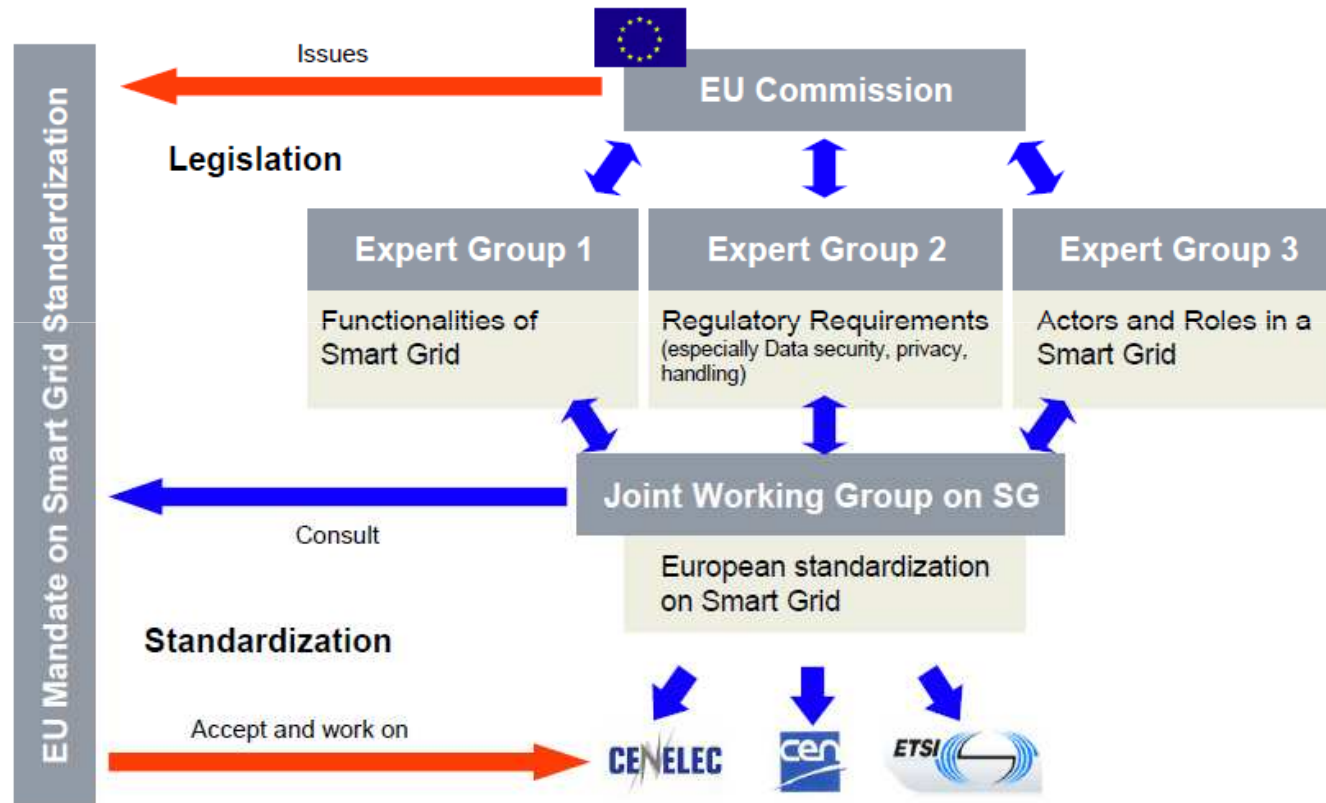
- Building, Industry, Appliances and Home automation are out of the scope of this mandate; however, their interfaces with the Smart Grid and related services have to be treated under this mandate.



Work on Mandate M/490



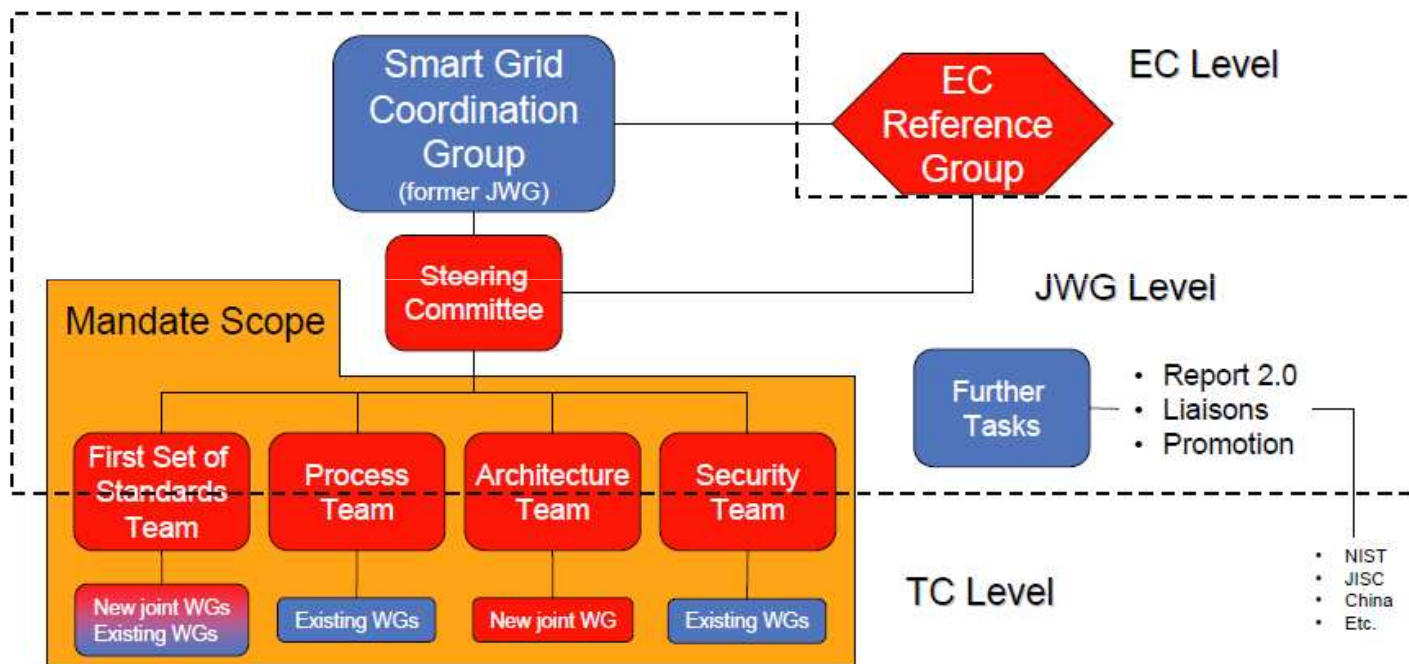
Setup of standardization in Europe



Work on Mandate M/490



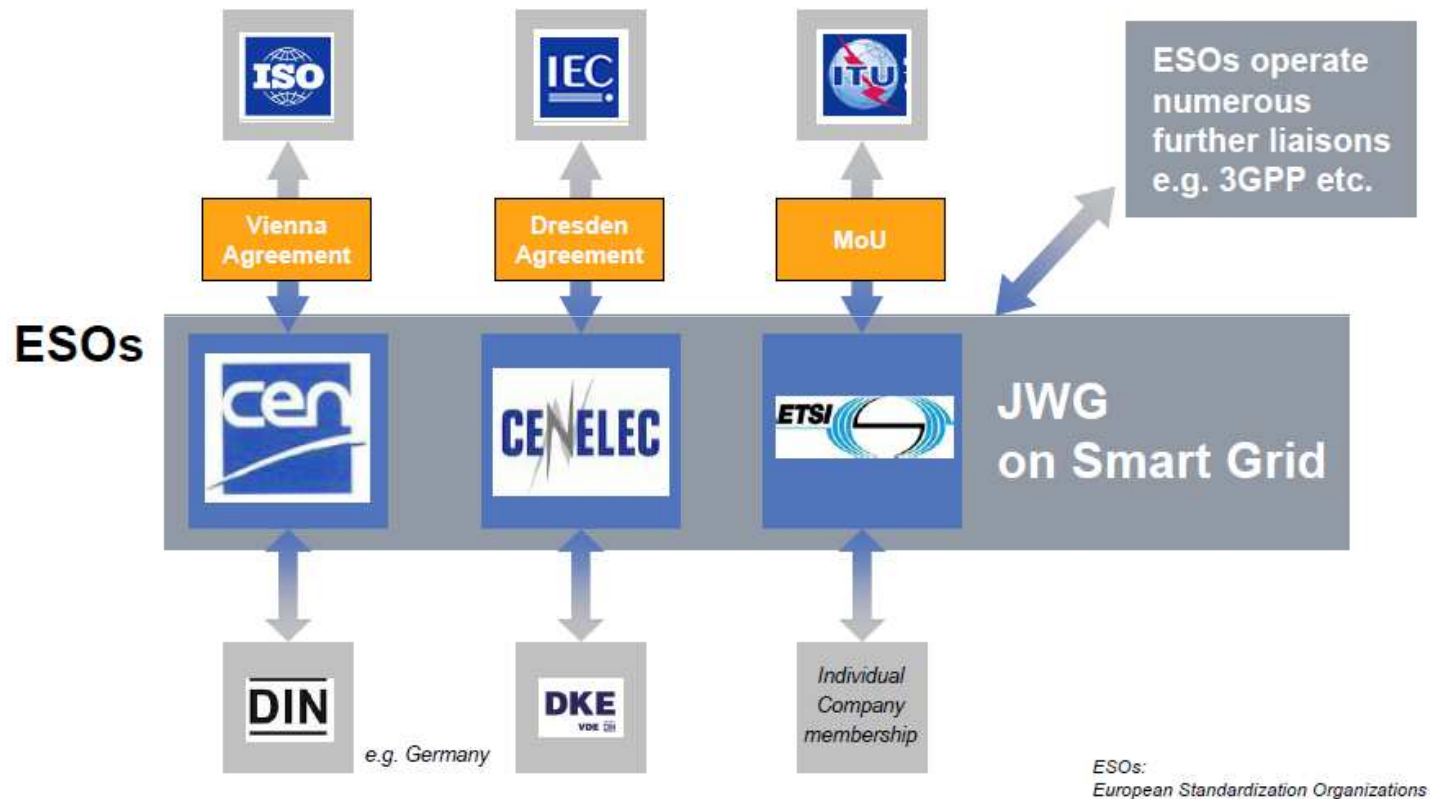
Proposed new structure



Work on Mandate M/490



International integration



International Activities



International Activities



- JWG Smart Grid
- European Technology platform
FutuRed – Spanish Electrical Grid Platform;
Smart Grids-Roadmap Austria; Electricity
Networks Strategy Group (UK) etc.
- Smart Metering EU-Mandate M/441
- Electrical vehicle Mandate – M/461



- DKE, VDE „German
standardization roadmap E-
Energy“
BMWi Uslar et al „Investigation of
standardization for BMWi-project E-Energy“
- BDI „Internet of Energy“



- METI, JISC
Roadmap to
international
standardization Smart Grid



- SGCC
The State Grid
Corporation of China –
Smart Grid Framework



- IEEE SCC21 Standards
Coordinating Committee on Fuel
Cells, Photovoltaics, Dispersed
Generation, and Energy Storage
- IEEE P2030 Standard
Interoperability Smart Grid
Concepts



- IEC/SMB Strategy Group 3 (SG3)
„Smart Grid“ - Roadmap
- UCAiug - Open Smart Grid
Subkomitee
- ITU Smart Grid
- CIGRE D2.24



- NIST Framework and Roadmap for
Smart Grid Interoperability
Standards
- SGIP
- Intelligrid
- Gridwise Alliance

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CEN/CENELEC/ETSI Joint Working Group on standards for Smart Grids - ENTWURF

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Reference: ETSI-Workshop "Standards: An Architecture for the Smart Grid",
Presentation of Ralph Sporer (Siemens), Status of activities
Joint Working Group on standards for Smart Grids in Europe

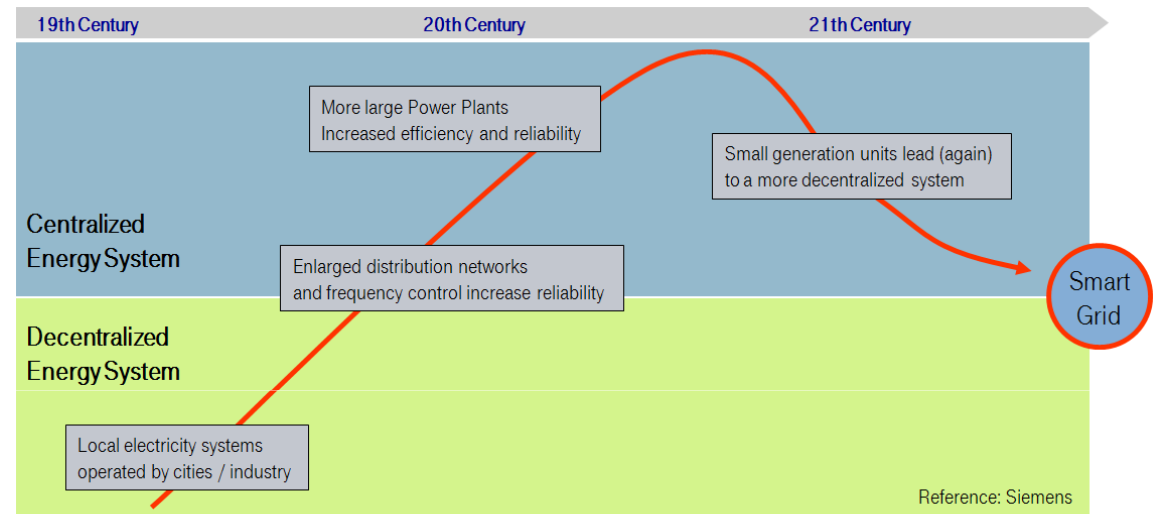
Trends

- M/490 Reference Architecture
 - the actual trend inside the developing process of the european reference architecture focusses more on classical electrical power supply topics (e.g. electrical control technology for substation automation based on the IEC 61850 protocol family and related protocols)
 - from the telecommunication site (via VDE/ITG FG Energy Information Networks) we have brought in the principle of independency of logical functions/services from the underlying physical infrastructure in the reference architecture
- the relevance of the subject area "Security" (for Smart Grid) growth
 - a smart grid can be seen roughly as a merge between electrical engineering and ICT
 - the (old) electrical engineering part is actually seen as adequate save enough
 - the (new) ICT part opens apparently a flank, which can start a market demand for smart grid ICT security solutions.



Trends

- Paradigm shift in the energy supply; the change from an decentralized to a more centralized (microgrid) architecture



- the (in a long term) upcoming microbased distribution networks, can start a market for a new kind of enabling service for energy providers, e. g.
 - a software bus system for enabling the M2M communication for the microgrid participants (machines) in the distribution network (DN)
 - swam control systems, that balancing DER feed-in with a controlled consumption by demand side management on DN level



Questions?

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