EUROPEAN STANDARDS ORGANISATIONS

Smart Grid Coordination Group

First Set of Standards for the grid

Where are we today?

Ralph SPORER

CEN-CENELEC-ETSI Smart Grid Coordination Group

Mandate M/490

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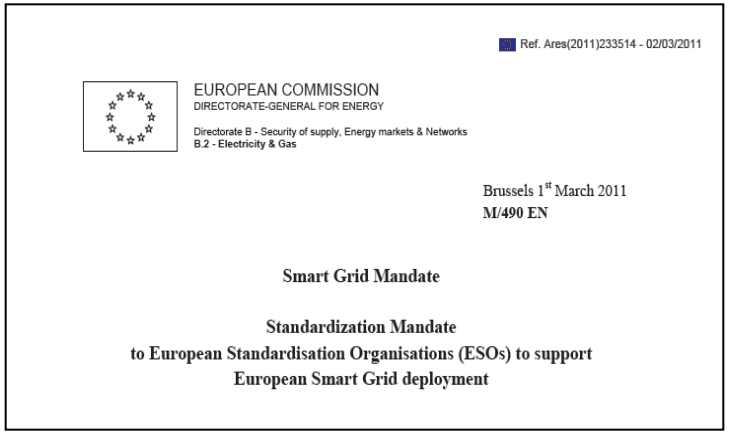

Ref. Ares(2011)233514 - 02/03/2011

EUROPEAN COMMISSION
DIRECTORATE-GENERAL FOR ENERGY

Directorate B - Security of supply, Energy markets & Networks
B.2 - Electricity & Gas

Brussels 1st March 2011
M/490 EN

Smart Grid Mandate

Standardization Mandate
to European Standardisation Organisations (ESOs) to support
European Smart Grid deployment

Reference architecture

A technical reference architecture, which will represent the **functional information data flows** between the main domains and integrate many systems and subsystems architectures.

Sustainable processes

Sustainable standardization processes and collaborative tools to enable stakeholder interactions, to improve the two above and adapt them to new requirements based on gap analysis, while ensuring the fit to high level system constraints such as **interoperability, security, and privacy**, etc.

Set of consistent standards

A set of consistent standards, which will **support** the information exchange (communication protocols and data models) and **the integration of all users** into the electric system operation.

SG-CG – Who are we?

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Associations

SM-CG
TC ATTM
TC ITS
TC ERM
TC BRAN
TC M2M
Board
TC PLT
TC TISPAN
TC SCP

TC 205
TC 13
TC 57
SM-CG
TC 8X

SMART GRID Coordination Group

(established June 2011)

TC 287
TC 247

ENER
ENTR
RTD
JUST
INFSO
European Commission
FP7
JRC

CO
JTC 1 SC 27

National Committees

Organization

CEN CENELEC ETSI
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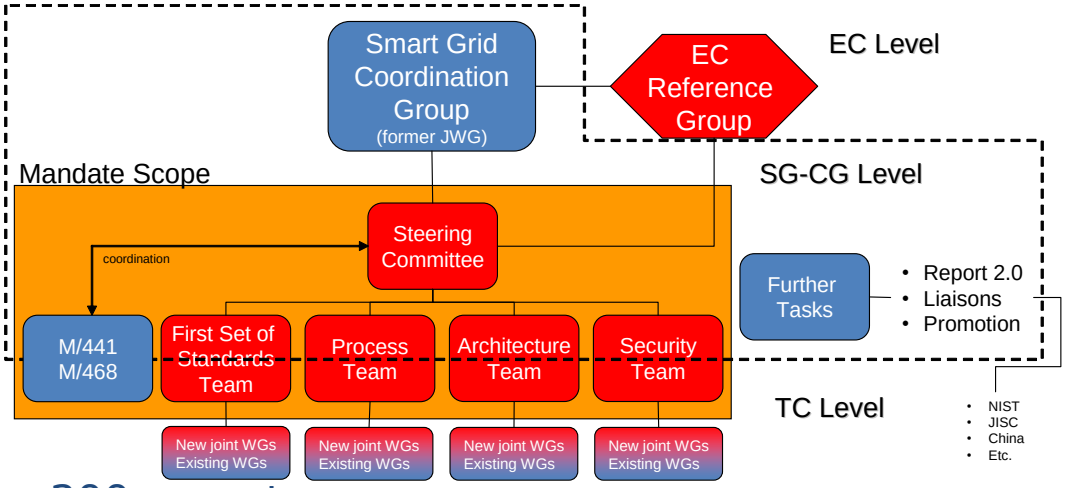
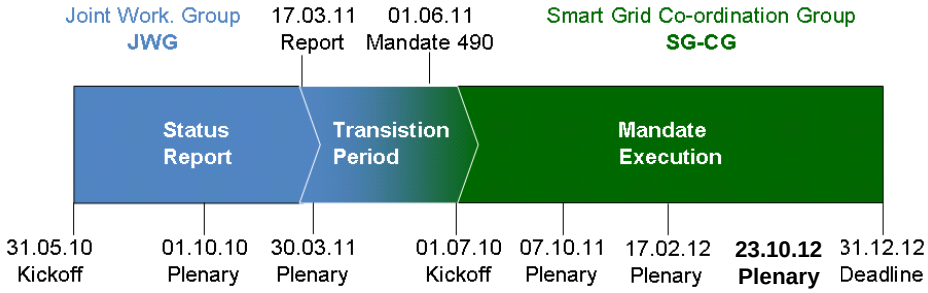
Setup

- Successor of Joint Working Group (JWG) on standards for Smart Grids
  (Mai 2010-June 2011)



- 4 Working Groups with more than 300 experts
  (First Set of Standards, Reference Architecture, Sustainable Processes and SG Information Security)



Main tasks

- Coordinate and manage the whole work process concerning the smart grid mandate M/490
- Keep and drive contact to other regional and international activities

Expectations

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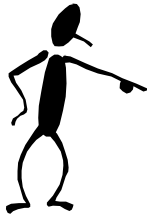


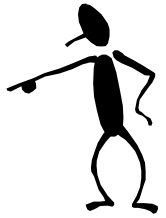
Distribution system operators

Easy to use

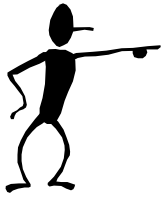
Give guidance - Support implementation

Inclusive

Include all stakeholders



Transmission system operators
Energy suppliers



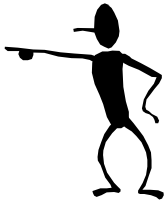
European Commission and Politics - Regulators

Comprehensive

Show available and coming standards

Future proof

Open to include new developments

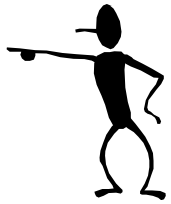


Technology supplier manufacturers system integrators

Standardization Organization

International outreach

Promote European Approach



ICT / Telcos

Systematic approach

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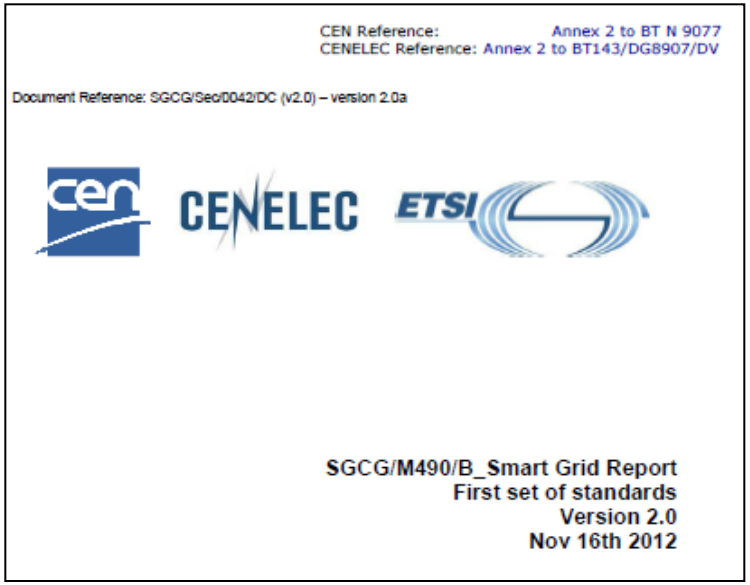
CEN Reference: Annex 2 to BT N 9077
CENELEC Reference: Annex 2 to BT143/DG8907/DV

Document Reference: SGCG/Sec0042/DC (v2.0) – version 2.0a

SGCG/M490/B_Smart Grid Report
First set of standards
Version 2.0
Nov 16th 2012

SG-CG process for First set of standards

1. Start with typical industry arrangements

- Entry point:
  "Systems = typical industry arrangements"

2. Identify related functions

- List of use cases supported and implemented by "system"

3. Map to architecture model

- Identification of interfaces on component, communication and information layer

4. Identification of standards

- Identification of list of standards ready for implementation

Entry Point

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Domain or Function	Systems
Generation	Generation management system
Transmission management system	Substation automation system
	WAMS Wide Area Measurement System
	EMS SCADA system
	Flexible AC Transmission Systems FACTS
Distribution management systems	Substation automation system
	Feeder automation/smart reclosers system
	Distributed power quality control system
	DMS SCADA system & GIS system
	FACTS system
DER management systems	DER operation system
	DER EMS and VPP system
Smart Metering systems	AMI system
	Metering back office system
Demand and production (generation) flexibility systems	Aggregated prosumers management system
Marketplace system	Marketplace system
	Trading system
E-mobility (connection to grid)	E-mobility systems
Administration systems	Asset and maintenance mgt system
	Communication network management system
	Clock reference system
	Authentication authorization accounting system
	Device remote configuration system
	Weather observation and forecast system

List of covered systems

First set of standards systems…

- cover all domains of the Smart Grid plane
- cover all actors of the Smart Grid
- support the high level services and functions as defined by the EC

Smart Grid Architecture Model

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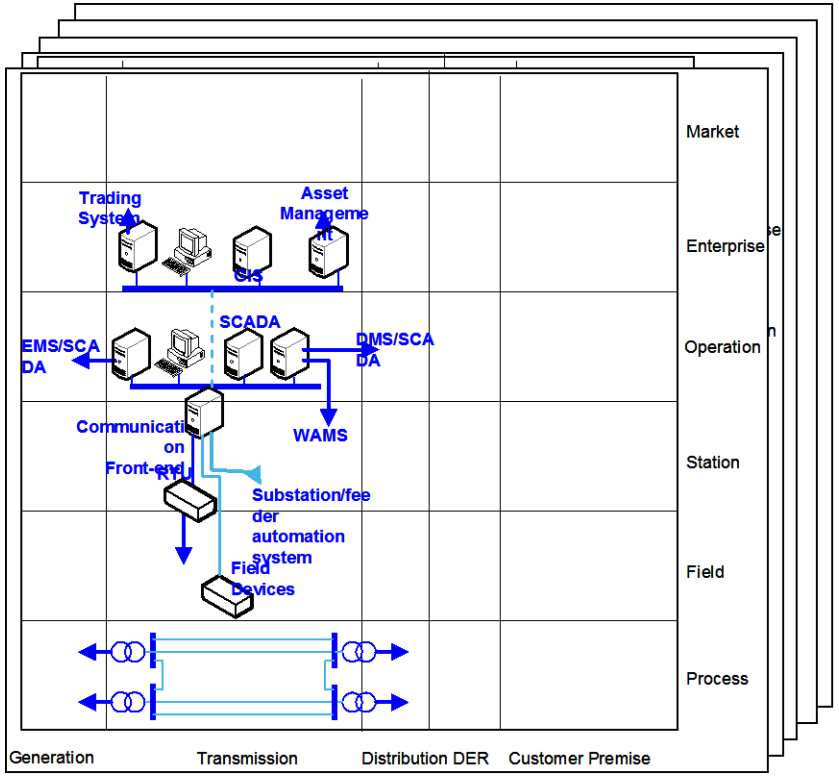
Mapping to SGAM

(**S**mart **G**rid **A**rchitecture **M**odel)

- SGAM provides common base for all stakeholders
- Description of interoperability layers business, function, information, communication and component
- Typical representation of the system on SGAM
- Identification of interfaces on component, communication and information layer



Mapping to interoperability layers

Output

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List of standards

- Description of available and coming standards for the specific system
- Average of 10-20 standards per system
- Available standards: published by July 2012
- Coming standards: currently in work at standards organizations

Layer	Standard	Comments
Information	EN 61970-1 EN 61970-2 EN 61970-301 EN 61970-401 EN 61970-453 EN 61970-501	Energy management system Application Program Interface
Communication	IEC/TR 62325	Framework market communication
Communication	EN 60870-5-101 EN 60870-5-104 EN 60870-6	Telecontrol protocols
Information	IEC/EN 61850 (all parts)	See substation automation system in 8.3.1
Information	IEC 62351	Security - all parts
Information (guidelines)	IEC 62357	Reference architecture power system information exchange
Information	IEC 62361	Harmonization of quality codes

Example list of standards

First Set of Standards in brief

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Focus on existing industry arrangements

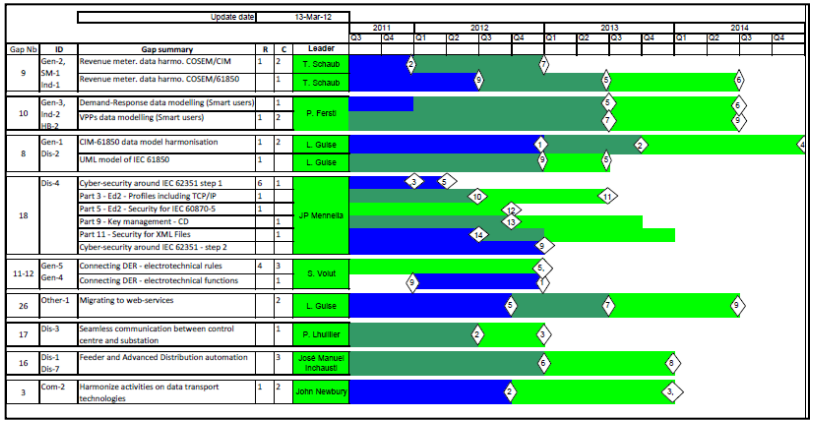
- Relevant, current systems are covered
- 24 systems described in detail with functions, use cases, architectures and relevant standards (More than 80 tables and figures)

Selection guide for all market players

- Guidance for use of standards in implementation and offers

plus

- 5 horizontal issues, including security etc.
- Preview of coming standards
- Work programme for new standards



Work programme for 17 topics

Quick User Guide to SG-CG

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Set of Standards – Selection Guide

- First Set of Standards *(SGCG/M490/B_Smart Grid Set of Standards)*

Conceptual Model, SGAM, Functional&Comm. Arch.

- Reference Architecture *(SGCG/M490/C_Smart Grid Reference Architecture)*

Use Cases Management, Examples: Flexibility

- Use Case Management *(SGCG/M490/E_Smart Grid Use Cases Management Process)*

Information Security, Privacy, Toolbox

- SGIS *(SGCG/M490/D_Smart Grid Information Security)*

Overall Process

- Framework document *(SGCG/M490/A_Framework for Smart Grid Standardization)*

Weblink

- http://www.cencenelec.eu/STANDARDS/HOTTOPICS/SMARTGRIDS/Pages/default.aspx

Outlook

Mandate iteration

- Extension is planned for 2013-14
- Focus of the work on interoperability and conformance testing
  Improve interoperability by offering approaches for testing and implementation of standards

Next plenary

- Planned for 21.02.2013
- Approval of new structure, working groups and officers

Summary

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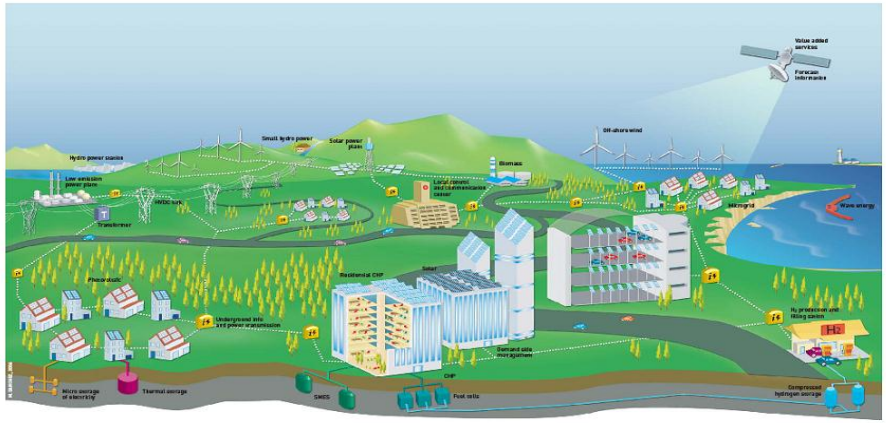
Achievements

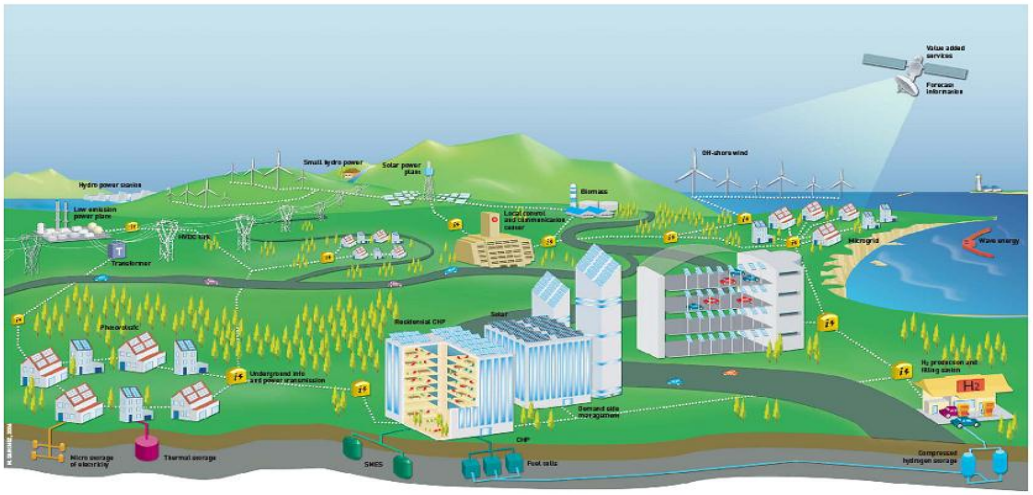
- Consensus
- On time
- International acknowledgement



Standardization is ready

- Systematic process in place
- Current industry applications are supported by standards
- Selection guide available - easy entry for all stakeholders
- Overview on available and coming standards
- Work programme describes time table for new standards
- Future requirements can be easily included in systematic framework

THANK YOU FOR YOUR ATTENTION



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