

D2.2 – SMART GRID INDUSTRY INITIATIVES DOCUMENTATION MAP



STARGRID EU



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GLOSSARY

Acronym	Explanation
CIM	Common Information Model (standards IEC 61970, 61968, 62325)
DER	Distributed Energy Resources
EC	European Commission
ICT	Information and Communication Technology
PLC	Powerline Communication
SGAM	Smart Grid Architecture Model
SG-CG	Smart Grid Coordination Group
SM-CG	Smart Metering Coordination Group
VPP	Virtual Power Plant

1 EXECUTIVE SUMMARY

This report by the STARGRID project consortium gives an overview on Smart Grid Industry Initiatives that develop open ICT standards and specifications. Although the aim is to be as extensive as possible, the focus is mostly European, and on the following three Smart Grid areas: DER integration and Grid Control, Demand Response, and Smart Metering. Notably, the current version does not cover standards related to electric vehicles, transmission, web services or cellular mobile communication, and does not aim at mapping the full spectrum of available home automation protocols.

The term industry initiatives is understood in a rather broad way, encompassing also some research institutes and regulatory bodies, but not the classical standardisation organisations, like IEC, CENELEC, etc., which are treated in a separate document (STARGRID deliverable D2.1). The report is a living document intended to be extended during the project life time, the current version can always be found on the STARGRID website www.stargrid.eu.

2 INTRODUCTION

2.1 PURPOSE OF WORK

This deliverable gives an overview of Smart Grid industry initiatives relevant to the STARGRID project, i.e. mostly those that develop open ICT standards and specifications. Field tests and demonstration projects are not generally included, unless they contribute explicitly to the development of standards, as for instance the ADDRESS and MIRABEL projects, who published their project-specific CIM extensions for demand side integration on their websites. The present document constitutes the second part of the Smart Grid standardisation overview prepared by STARGRID, with the first part D2.1 covering the classical standardisation bodies (SDOs). In fact, many of the standardisation activities driven by industry initiatives are sooner or later fed into the SDOs to become international standards, and this is also true for several of the activities dealt with in this document – hence, the separation is sometimes difficult, and the documents should preferably both be consulted in parallel. We believe, nevertheless, that the separation into two documents serves its purpose of reducing the complexity of the presentation. We have focused on ongoing activities instead of well established standards.

The two main objectives of the document are:

- 1) to spread the knowledge on the initiatives among Smart Grid stakeholders groups and to serve as a reference document
- 2) to document the set of standardisation activities addressed by STARGRID, which will be analysed in the following steps of the project.

In the following tasks, STARGRID will develop evaluation criteria for standards and specifications, and analyse the collected documents accordingly. The criteria will be based on a set of stakeholder requirements specific to the three current focus topics of the project:

- DER Integration and Grid Control,
- Demand Response,
- Smart Metering,

and will be subject to feedback from the affected industries. Prior work on the identification and prioritisation of standardisation gaps will be taken into account as well, such as the final report of the Joint Working Group of CEN-CENELEC-ETSI [1], and the prioritisation of the Smart Grid Coordination Group ([2] and ongoing work).

2.2 CONTRIBUTIONS OF PARTNERS

The report has been prepared by IWES, with input from Tecnalia and incorporating also some information collected by the other project partners, in particular RSE.

2.3 POINT OF DEPARTURE

We have taken into account previous work on the Smart Grid standardisation landscape, mainly:

- A report prepared by the SGEM project [3]
- A deliverable of the Seesgen-ICT project on demand side integration [4]
- The NIST Framework and Roadmap on Smart Grid Interoperability Standards 2.0 [5]

and on general Smart Grid projects in Europe:

- The JRC mapping [6]
- A deliverable of the FINSENY project [7]

2.4 RELATIONS TO OTHER ACTIVITIES

This report has been prepared in STARGRID WP2, the first technical work package. It will serve as a basis in particular for WP3 – *Analysis of existing standards and drafts*, and the deliverable D3.2 - *Standardisation document analysis*.

We expect that it will be useful for project external parties interested in current Smart Grid standardisation activities as well.

3 INDUSTRY INITIATIVES

The Deliverable is organised as a compilation of forms extracting the basic information, in order to support the following analysis process. There are two types of forms: forms associated to the different initiatives and forms linked to the different documents produced by each of the mentioned groups. The forms have been designed for being self-explicative. However the following notes can help understand some of the fields:

Relevance scale¹:

VH – Very high; H – High; M – Medium; L – Low; VL – Very low (normally, a very low relevance document is not considered in the map).

Document types:

Standard; Draft Standard; Technical Report; Technical Specification; Analysis Report; Guideline; Code; Recommendation; Roadmap; Work Programme; White Paper; Position Paper; Meeting agenda; Meeting minutes; Meeting presentation; Others.

Available in STARGRID (Y/N):

“N” means that the document has been identified as relevant but, for the moment, no STARGRID partner has access to it.
“Y” means that some partner has access to it.

Domain or System category:

Generation, Transmission, Distribution, DER, Customer (including smart metering, demand side management, smart loads, e-Mobility), Telecommunication, Security, EMC & Power Quality, Smart Grids (general, system approach).

Priority Topic or Use Case:

It refers to the STARGRID Areas of Interest: “Demand response”, “Smart metering” and “DER integration”

Furthermore, a list of **keywords** is provided for every initiative, mainly to facilitate the searching in the repository. In the upcoming analysis process, the classification in particular of specifications and standards will be extended to all three dimensions of the Smart Grid Architecture Model (SGAM) [8], and hence will be compatible with the classification of the Smart Grid Coordination Group (SG-CG, M/490) in the First Set of Standards document [9]. Besides domains, the additional categories of the SGAM are

Zones:

Process, Field, Station, Operation, Enterprise, Market

and

Interoperability Layers:

Component Layer, Communication Layer, Information Layer, Function Layer, Business Layer.

Figure 1 shows the graphic representation of the SGAM.

¹ Relevance to STARGRID project

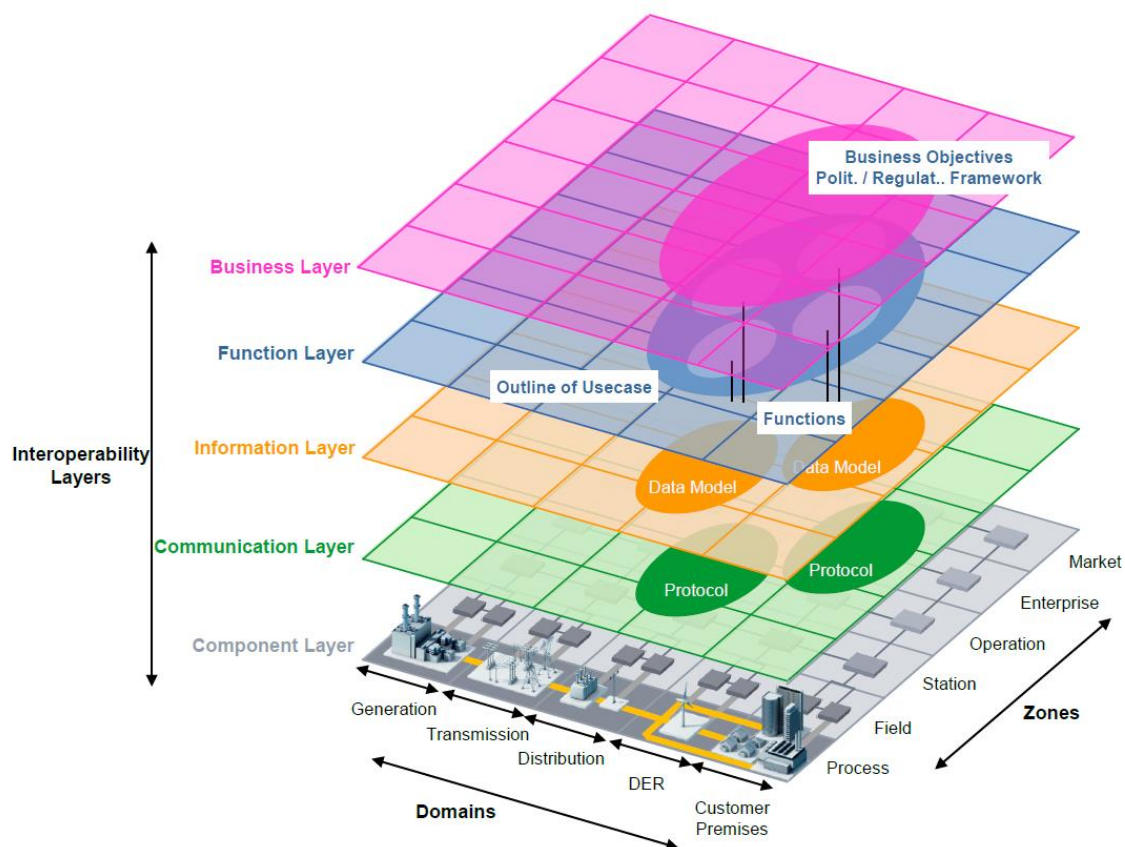


Figure 8: SGAM framework

Figure 1: The Smart Grid Architecture framework. Source: [8]

3.1 ADDRESS

INDUSTRY INITIATIVE	
Acronym	Name
ADDRESS	Active Distribution network with full integration of Demand and distributed energy RESourceS
Type	Project
Status	<input type="checkbox"/> Active <input type="checkbox"/> Inactive <input checked="" type="checkbox"/> Finished <input type="checkbox"/> Planned <input type="checkbox"/> Other
Establishment date	2008/06/01
Ending date	2012/05/31
Website	http://www.addressfp7.org/
Members	
25 partners: http://www.addressfp7.org/index.html?topic=partners_map . ABB, Alcatel, Current, TecNALIA (STARGRID partner), EDF, Electrolux, ENEL, Ericsson España, Iberdrola, KEMA, Landis+Gyr, Philips, RLtec UK Power, University of Manchester, Universidad Pontificia Comillas, Università di Siena, Università di Cassino, Vattenfall, VITO, VTT, ZIV	
Scope – Focus – Description of activities	

Scope:

Aims to to enable the Active Demand in the context of the smart grids of the future, or in other words, the active participation of small and commercial consumers in power system markets and provision of services to the different power system participants.

The data collected in the project will be evaluated further in the ADVANCED project (Active Demand Value AND Consumers Experience Discovery):

http://www.enel.com/en-GB/innovation/smart_grids/european_initiatives/advanced/

Activities:

Three test sites:

- Houat and Hoedic islands, Brittany, France [EDF]
- Carpinone, Molise Region, Italy [ENEL]
- Castellon, Valencia Region, Spain [Iberdrola]

In the project, a market design and technical architecture for usage of flexibility from controllable loads at customers' premises has been developed. For this purpose, Energy Boxes have been installed in the households, which communicate with external aggregators and smart devices.

- Use of CIM and IEC 61850. CIM extensions for Demand Response purposes have been defined (see deliverable D4.1).
- Many deliverables and other publications are available from the website:
http://www.addressfp7.org/index.html?topic=config/progress_deliverables

KEYWORDS: Demand Flexibility, Home Gateway, CIM, IEC61850, Markets

3.1.1 ASSOCIATED DOCUMENTS

INDUSTRY INITIATIVE DOCUMENT			
STARGRID ID		Relevance	L
Initiative to which the document is related	ADDRESS		
Document title	ADDRESS Technical and Commercial Conceptual Architectures		
Document reference and/or version	D1.1, v.1.0	Date	2009/10/21
Document type	Technical Specification	Available in STARGRID (Y/N)	Y
Domain or system category	Customer Distribution Market		
Priority Topic or Use Case	Demand Response		
Brief content description	Detailed Project Description, focussing on technical and commercial architecture.		
Comments	<ul style="list-style-type: none"> Detailed Appendices start p. 119, ToC p. 135. Appendix J: Relevant elements of standardisation and brief description of the UML approach, p. 265 		

INDUSTRY INITIATIVE DOCUMENT			
STARGRID ID		Relevance	M
Initiative to which the document is related	ADDRESS		
Document title	Documentation of Software Architecture and encoding in UML including compiled software with API description		
Document reference and/or version	D4.1, v1.0	Date	2011/05/31
Document type	Technical Specification	Available in STARGRID (Y/N)	Y
Domain or system category	Customer Distribution Telecommunication		
Priority Topic or Use Case	Demand Response		

Brief content description	CIM-ADDRESS Information Model. Defines new profile and extension of the Common Information Model (IEC 61968 and IEC 61970) for Demand Response.
Comments	

INDUSTRY INITIATIVE DOCUMENT			
STARGRID ID		Relevance	L
Initiative to which the document is related	ADDRESS		
Document title	Evaluation of Benefits of Active Demand		
Document reference and/or version	WP5-T5.1-IR-Comillas-EvaluationOfBenefits, v1.0	Date	2012/07/03
Document type	Report	Available in STARGRID (Y/N)	Y
Domain or system category	Customer Distribution Market		
Priority Topic or Use Case	Demand Response		
Brief content description	Evaluation of the benefits of Demand Response in general, and within the ADDRESS project in particular. A lot on methodology.		
Comments	Not of prime importance to STARGRID, but may be useful to identify requirements on standards and regulation.		

3.2 ASHRAE

INDUSTRY INITIATIVE	
Acronym	Name
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
Type	Industry Association
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Finished <input type="checkbox"/> Planned <input type="checkbox"/> Other
Establishment date	1894
Ending date	-
Website	https://www.ashrae.org/ http://www.bacnet.org/
Members	
> 50 000, mostly US	
Scope – Focus – Description of activities	
<p>Scope</p> <p>ASHRAE develops standards for both its members and others professionally concerned with refrigeration processes and the design and maintenance of indoor environments. ASHRAE is accredited by the American National Standards Institute (ANSI) and follows ANSI's requirements for due process and standards development.</p> <p>Activities</p> <p>In a joint activity with NEMA – National Electric Manufacturers Association ASHRAE (SPC 201) developed the Facility Smart Grid Information Model, an abstract, object-oriented information model for energy management purposes, providing a generic view on controllable devices. It has been particularly drafted for DR purposes, and can be mapped to different Home Automation protocols. Object models from various standards have been reused (CIM, Energy Interop, IEC 61850, etc). It is currently being considered by ISO TC 205.</p> <p>Furthermore, ASHRAE publishes the BACnet standard on building automation and control networks, also an ISO standard.</p>	

KEYWORDS: Home Gateway, Demand Flexibility, Home Automation

3.2.1 ASSOCIATED DOCUMENTS

INDUSTRY INITIATIVE DOCUMENT			
STARGRID ID		Relevance	H
Initiative to which the document is related	ASHRAE-NEMA		
Document title	Facility Smart Grid Information Model		
Document reference and/or version		Date	2012-07
Document type	Draft Standard	Available in STARGRID (Y/N)	Y (IWES)
Domain or system category	Customer		
Priority Topic or Use Case	Demand Response		
Brief content description	<p>This model provides the basis for common information exchange between control systems and end use devices found in single - and multi-family homes, commercial and institutional buildings, and industrial facilities that is independent of the communication protocol in use. It provides a common basis for electrical energy consumers to describe, manage, and communicate about electrical energy consumption and forecasts.</p> <p>The model defines a comprehensive set of data objects and actions that support a wide range of energy management applications and electrical service provider interactions including:</p> <ul style="list-style-type: none"> (a) on-site generation, (b) demand response, (c) electrical storage, (d) peak demand management, (e) forward power usage estimation, (f) load shedding capability estimation, (g) end load monitoring (sub metering), (h) power quality of service monitoring, (i) utilization of historical energy consumption data, and (j) direct load control. 		
Comments	Standard has been published.		

3.3 DLMS - COSEM

INDUSTRY INITIATIVE	
Acronym	Name
DLMS	DLMS User Association
Type	Industry Association
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Finished <input type="checkbox"/> Planned <input type="checkbox"/> Other
Establishment date	
Ending date	
Website	www.dlms.com
Members	
275 members (ABB, Accenture, EDP, HP, Huawei, Iberdrola, IBM, Indra, Itron, KEMA, Landis+Gyr, Maxim, TECNALIA, Siemens, Sogecam, ZIV, etc.). See full list at: http://www.dlms.com/organization/listofmembers/index.html	
Scope – Focus – Description of activities	
<p>Non-profit organization located in Geneva (around 300 members) that develops the DLMS/COSEM specification and acts as the registration authority/maintenance agency for the IEC 62056 series. The “Device Language Message Specification” (DLMS) is specified in EN 62056-53 and is an evolution of the “Distribution Line Message Specification” specified in EN 61334-4-41. It is a specification of the OSI Application Layer, independent of the communication lower layers, designed to support messaging to and from meters and other distribution devices. The DLMS messaging method provides an interface between the COSEM (“Companion Specification for Energy Metering”, EN 62056-62) objects and the communication protocols.</p> <p>The DLMS/COSEM specification specifies an interface model and communication protocols for data exchange with metering equipment. (1) The interface model provides a view of the functionality of the meter as it is available at its interface/s; it uses generic building blocks to model this functionality and does not cover internal implementation specific issues. (2) Communication protocols define how the data can accessed (mapping the interface model to data units and their encoding), and transported through the communication channel.</p> <p>The interaction with some of the lower layer protocols is the following:</p> <ul style="list-style-type: none"> - CLC prTS52056-8-4: Electricity metering data exchange – The DLMS/COSEM suite – Part 8-4: Communication profile for power line carrier neighbourhood networks using OFDM modulation Type 1 (PLC PRIME communication profile) - CLC prTS52056-8-5: Electricity metering data exchange – The DLMS/COSEM suite – Part 8-5: Communication profile for power line carrier neighbourhood networks using OFDM modulation Type 2 (PLC G3 communication profile) 	

KEYWORDS: Smart Metering, Energy Management, DLMS/COSEM

3.4 ECHONET

INDUSTRY INITIATIVE	
Acronym	Name
Echonet	Energy Conservation and Homecare Network
Type	Industry Initiative
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Finished <input type="checkbox"/> Planned <input type="checkbox"/> Other
Establishment date	1997
Ending date	
Website	http://www.echonet.gr.jp/english/index.htm
Members	
Japanes focus: http://www.echonet.gr.jp/english/membership/kigyo.htm	
Scope – Focus – Description of activities	
<p>Scope Development of an open home automation specification, covering a variety of domains, from health care and ambient assistant living to energy management, and allowing in particular the remote control of devices. Open industry consortium with broad participation of Japanese companies.</p> <p>Activities The Echonet Lite specification is available from the website. It has also entered international standards of IEC TC 100 and ISO/IEC JTC 1 SC 25 WG 1.</p>	

KEYWORDS: Home Automation, Home Gateway, Energy Management

3.4.1 ASSOCIATED DOCUMENTS

INDUSTRY INITIATIVE DOCUMENT			
STARGRID ID		Relevance	M
Initiative to which the document is related	Echonet Consortium		
Document title	ECHONET Specification		
Document reference and/or version	Version 2.11	Date	2002
Document type	specification	Available in STARGRID (Y/N)	Y (see comments)
Domain or system category	Customer		
Priority Topic or Use Case	Demand Response		

Brief content description	<p>ECHONET Overview</p> <p>ECHONET Communication Middleware Specifications</p> <p>Transmission Media And Lower-layer Communication Software Specification</p> <p>ECHONET Basic API Specification</p> <p>ECHONET Common Lower-layer Communication Interface</p> <p>ECHONET Discrete Lower-layer Communication Interface Specification</p> <p>ECHONET Communications Equipment Specification</p> <p>ECHONET Service Middleware Specification</p> <p>ECHONET Gateway Specification</p> <p>ECHONET System Design Guidelines</p> <p>Detailed Stipulations for ECHONET Device Objects</p>
Comments	http://www.echonet.gr.jp/english/spec/index.htm

INDUSTRY INITIATIVE DOCUMENT			
STARGRID ID		Relevance	L
Initiative to which the document is related	Echonet Consortium		
Document title	Whitepaper, ECHONET Energy Conservation and Homecare Network, ECHONET Consortium		
Document reference and/or version		Date	2012/10
Document type	white paper	Available in STARGRID (Y/N)	Y
Domain or system category	Customer		
Priority Topic or Use Case	Demand Response		
Brief content description	<p>Purpose and aims of Echonet</p> <p>Roadmap</p> <p>Overview of the Echonet specification</p> <p>Organization and activities</p>		
Comments			

3.5 EEBUS

INDUSTRY INITIATIVE	
Acronym	Name
EEBUS	Initiative EEBus e.V.
Type	Industry Association
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Finished <input type="checkbox"/> Planned <input type="checkbox"/> Other
Establishment date	2011
Ending date	-
Website	http://www.eebus.org/en/initiative-eebus-ev/
Members	
Kellendonk Elektronik (lead member), many German and some international companies active in home automation and energy management. List: http://www.eebus.org/en/initiative-eebus-ev/members/	
Scope – Focus – Description of activities	
Scope: <ul style="list-style-type: none"> Development of the EEBus specification for a Residential Gateway, connecting the mostly non-IP world of home automation with the IP world of smart distribution grids Planned communication standards to be supported (source: Whitepaper EEBus) <ul style="list-style-type: none"> ○ ZigBee ○ KNX ○ uPnP ○ 6LowPAN ○ CIM (via SOAP or http(s)) Activities: <ul style="list-style-type: none"> EEBus developed and tested in a field tests in the E-Energy program, Smart Watts (2009 - 2012). Further tests or showcases <ul style="list-style-type: none"> ○ MeRegio (2009 - 2012) ○ T-City Cooperation with KNX association in development of PL110+ powerline communication standard in CENELEC B-band. Cooperation with ZigBee and Energy@Home alliances Standardisation activities: <ol style="list-style-type: none"> Participation in the following standardisation committees <ol style="list-style-type: none"> CLC TC 205 WG 18: Home and Building Electronic Systems (HBES) – Smart Grids. Development of a Standard prEN 50491-12 “Smart Grid interface and framework for Customer Energy Management”; based partly on EEBus IEC TC 57 WG 21: Interfaces and protocol profiles relevant to systems connected to the electrical grid. Development of a Standard IEC 62746 “Systems Interface between Customer Energy Management System and the Power Management System” 	

- c. DKE 1911.2: Inhouse Automation
- d. DKE 716.0.1: Security Concept for Energy Management Systems

KEYWORDS: Home Gateway, Home Automation, Energy Management, Demand Flexibility

3.5.1 ASSOCIATED DOCUMENTS

INDUSTRY INITIATIVE DOCUMENT			
STARGRID ID		Relevance	H
Initiative to which the document is related	EEBus		
Document title	EEBus: Whitepaper		
Document reference and/or version		Date	2011-05
Document type	whitepaper	Available in STARGRID (Y/N)	Y
Domain or system category	Customer		
Priority Topic or Use Case	Demand Response		
Brief content description	<ul style="list-style-type: none"> • Application scenarios • EEBus architecture, supported protocols • Smart Metering 		
Comments			

INDUSTRY INITIATIVE DOCUMENT			
STARGRID ID		Relevance	H
Initiative to which the document is related	EEBus		
Document title	EEBus specification		

Document reference and/or version		Date	2013-01-31
Document type	Draft Standard	Available in STARGRID (Y/N)	Y (IWES)
Domain or system category	Customer		
Priority Topic or Use Case	Demand Response		
Brief content description	<ul style="list-style-type: none"> • Application scenarios • EEBus architecture, supported protocols • Smart Metering 		
Comments	Non-public		

INDUSTRY INITIATIVE DOCUMENT			
STARGRID ID		Relevance	M
Initiative to which the document is related	EEBus		
Document title	EEBus – and what it's all about!		
Document reference and/or version		Date	2011-05
Document type	Presentation	Available in STARGRID (Y/N)	Y
Domain or system category	Customer		
Priority Topic or Use Case	Demand Response		
Brief content description	<ul style="list-style-type: none"> • Architecture • supported protocols • Some details on KNX PL110+ powerline com. Std. 		
Comments			

3.6 EIS ALLIANCE

INDUSTRY INITIATIVE	
Acronym	Name
EISA	Energy Information Standards (EIS) Alliance
Type	Industry Association
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Finished <input type="checkbox"/> Planned <input type="checkbox"/> Other
Establishment date	2009
Ending date	-
Website	http://www.eisalliance.org/
Members	
Four board members, five associated members (US focus): http://www.eisalliance.org/eis-alliance-members	
Scope – Focus – Description of activities	
Scope Standardisation in the area of energy management systems and smart grid technologies.	
Activities EISA started the development of a Home Energy Management Standard, which will include an abstract data model that can be mapped to different home automation protocols. Will be based mostly on existing standards such as the Facility Smart Grid Information Model (FSGIM). https://eisa.memberclicks.net/home-energy-management-systems A second relevant project deals with the so-called Energy Services Interface (ESI), the interface between customer owned devices and utilities or other service providers.	

KEYWORDS: Home Gateway, Demand Flexibility, Energy Management

3.7 ENERGY@HOME

INDUSTRY INITIATIVE	
Acronym	Name
E@H	Energy@Home Association
Type	Industry Initiative
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Finished <input type="checkbox"/> Planned <input type="checkbox"/> Other
Establishment date	2012
Ending date	--
Website	http://www.energy-home.it
Members	
Founding members Electrolux, Enel, Indesit Company and Telecom Italia	
Scope – Focus – Description of activities	
<p>Scope</p> <p>The Energy@home Association has the mission of developing and promoting technologies and services for energy efficiency in smart homes, based upon the interaction between user devices and the energy infrastructure. It is a non-profit Association founded on July 2012 as a follow-up of a collaboration project among the four founding companies started in 2009.</p> <p>Activities</p> <p>As a main achievement, Energy@home released a set of technical specifications and an interoperable fully-integrated system comprising smart broadband gateway, smart meter, smart plugs, smart domestic appliances and a user interface application. The specifications are based on the ZigBee Home Automation profile, and the E@H association contributes their results back to this profile. A field trial has been started in 50 private premises in Italy.</p>	

KEYWORDS: Home Automation, Energy Management, Home Gateway, Smart Metering

3.7.1 ASSOCIATED DOCUMENTS

INDUSTRY INITIATIVE DOCUMENT			
STARGRID ID		Relevance	H
Initiative to which the document is related	E@H		
Document title	Presentation Energy@Home (Bellifemine)		

Document reference and/or version		Date	2012-12-11
Document type	Presentation	Available in STARGRID (Y/N)	Y
Domain or system category	Customer		
Priority Topic or Use Case	Demand Response		
Brief content description	Presents the association, its goals and the technical architecture.		
Comments			
STARGRID ID		Relevance	H
Initiative to which the document is related	E@H		
Document title	E@H specification		
Document reference and/or version	v0.95	Date	2012
Document type	Specification	Available in STARGRID (Y/N)	Y (see comments)
Domain or system category	Customer		
Priority Topic or Use Case	Demand Response		
Brief content description	The technical specification.		
Comments	http://www.energy-home.it/SitePages/Activities/Download.aspx-?RootFolder=Documents/Technical%20Specifications		
STARGRID ID		Relevance	H
Initiative to which the document is related	E@H		
Document title	E@H whitepaper		
Document reference and/or version		Date	2011-05-18
Document type	whitepaper	Available in STARGRID (Y/N)	Y
Domain or system category	Customer		
Priority Topic or Use Case	Demand Response		

Brief content description	Project presentation.
Comments	

3.8 ENTSO-E

INDUSTRY INITIATIVE	
Acronym	Name
ENTSO-E	European Network of Transmission System Operators for Electricity
Type	Industry Association
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Finished <input type="checkbox"/> Planned <input type="checkbox"/> Other
Establishment date	December 2008
Ending date	
Website	https://www.entsoe.eu/home/
Members	
41 TSOs from 34 countries	
Scope – Focus – Description of activities	
<p>Scope</p> <p>Being the body of transmission system operators of electricity at European level, ENTSO-E's mission is to promote important aspects of energy policy in the face of significant technical, market and policy issues related to TSOs, interfacing with the power system users, EU institutions, regulators and national governments. ENTSO-E's work products contribute to security of supply, a seamless, pan-European electricity market, a secure integration of renewable resources and a reliable future-oriented grid, adequate to energy policy goals.</p> <p>The European Regulation 714/2009 assigns the development of network codes to ENTSO-E, regarding all cross-border aspects of the electricity grid. Currently, the following codes are worked on/planned:</p> <ul style="list-style-type: none"> • RfG Requirement for Generators • DCC Demand Connection Code • BAL Electricity Balancing • FCA Forward Capacity Allocation • LFCR Load Frequency Control and Reserves • OPS Operational Planning and Scheduling • OS Operational Security • CACM Capacity Allocation and Congestion Management • HVDC High Voltage Direct Current <p>Finalised grid codes are submitted to ACER (European Agency for the Cooperation of Energy Regulators), which assesses the documents and provides recommendations towards the European Commission regarding the adoption. Then they go through the comitology process to become applicable legislation.</p> <p>Activities</p> <p>The status of the network codes as of June 2013 is as follows:</p> <ul style="list-style-type: none"> • RfG: Finished. ACER recommends adoption. • DCC: Finished. ACER recommends adoption. • BAL: Draft available. Now in public consultation phase. 	

- FCA: Preparation of final draft.
- LFCR: Preparation of final draft.
- OPS: Submitted.
- OS: Submitted. ACER requests modifications.
- CACM: Finished. ACER recommends adoption.
- HVDC: Drafting phase.

Up-to-date information on the codes can be found on ENTSO-E's website <https://www.entsoe.eu/major-projects/network-code-development>.

KEYWORDS: Transmission, Connection Rules, Generation, Security, Quality, Grid Code, Demand Flexibility, Markets

3.8.1 ASSOCIATED DOCUMENTS

INDUSTRY INITIATIVE DOCUMENT			
STARGRID ID		Relevance	H
Initiative to which the document is related	ENTSO-E		
Document title	ENTSO-E Network Code for Requirements for Grid Connection Applicable to all Generators		
Document reference and/or version		Date	2013-03-08
Document type	Code	Available in STARGRID (Y/N)	Y
Domain or system category	DER & Generation		
Priority Topic or Use Case	DER		
Brief content description	<p>"The Network Code on Requirements for Generators is seen as one of the main drivers for creating harmonized solutions and products necessary for an efficient pan-European (and global) market in generator technology. The purpose of this network code is to bring forward a set of coherent requirements in order to meet these challenges of the future." [From the ENTSO-E homepage].</p> <p>Groups generating units into four categories A-D, according to rated power, and defines a framework for regulatory provisions, such as frequency and voltage ranges, fault-ride-through capability, black start capability, system management, etc.</p>		

	ACER recommends the adoption of the RfG, with minor modifications.
Comments	<p>Further information available on the ENTSO-E website</p> <p>https://www.entsoe.eu/major-projects/network-code-development/requirements-for-generators/</p>

INDUSTRY INITIATIVE DOCUMENT			
STARGRID ID		Relevance	H
Initiative to which the document is related	ENTSO-E		
Document title	Demand Connection Code (DCC)		
Document reference and/or version	draft	Date	2012-12-21
Document type	Code	Available in STARGRID (Y/N)	Y
Domain or system category	Customer		
Priority Topic or Use Case	Demand Response		
Brief content description	<p>“The Network Code on Demand Connection will help to accomplish the tasks of facilitating the increase of RES, ensuring system security and implementing the internal electricity market, also by means of smart grid models, DCC has been initiated to define common functional requirements and will mainly focus on the connection of industrial loads and distribution networks.” [From the ENTSO-E homepage]</p> <p>Defines a framework for the implementation of Demand Response measures in Europe. Differentiates between</p> <ul style="list-style-type: none"> • Active Power Control • Reactive Power Control Remotely • Transmission Constraint Management • Very Fast Active Power Control • System Frequency Control <p>Only the latter shall be mandatorily implemented, and only by temperature controlled devices (to be specified in an Ecodesign process). A concise overview and justification for the provisions is given in the report “How can the Demand Connection Code facilitate Demand Side Response measures across Europe?”.</p> <p>ACER recommends the adoption of the DCC.</p>		

Comments	Further information available on the ENTSO-E website https://www.entsoe.eu/major-projects/network-code-development/demand-connection/
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Note: the STARGRID repository contains an extensive list of documents with background information and stakeholder feedback on the two grid codes from the ENTSO-E web pages. For clarity reasons they are not shown here, but only the links given.

3.9 FINSENY - FINESCE

INDUSTRY INITIATIVE	
Acronym	Name
FINSENY - FINESCE	Future Internet for Smart Energy
Type	FP7 Project
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Finished <input type="checkbox"/> Planned <input type="checkbox"/> Other
Establishment date	April 2011 (FINSENY) April 2013 (FINESCE)
Ending date	March 2013 (FINSENY)
Website	http://www.fi-ppp-finseny.eu/ http://www.finesce.eu/ http://www.fi-ppp.eu/projects/
Members	
Coordination: Nokia Siemens and Siemens (technical). List of members: http://www.fi-ppp-finseny.eu/consortium/	
Scope – Focus – Description of activities	
Scope ICT requirements for Smart Grids. Within the Future Internet Public Private Partnership (FI PPP), FINSENY covers the Smart Energy domain. The successor project within the 2 nd FI PPP phase is called FINESCE. FINSENY scope: <ol style="list-style-type: none"> 1. Specify smart energy use cases, with their associated ICT architecture and applications, in each of the five scenarios 2. Identify ICT requirements (both domain-specific and generic enablers) across all five scenarios 3. Define new solutions and standards (functional ICT architecture) 4. Test results in an experimentation facility as a preparation for a large scale trial Five Scenarios are considered: <ul style="list-style-type: none"> • Distribution Networks: Design a future ICT solution for Distribution System automation & control to increase energy quality, reliability, robustness and safety and to ease integration of Distributed Energy Resources • Microgrids: Design a reliable and cost-efficient Microgrid platform which ensures flexibility, scalability and robustness. The design will be modular and applications/ services will be loosely coupled. Devices in or at the edge of the grid (e.g. DERs) will be easily integrated and control/communication networks will be managed to ensure the right level of QoS • Smart Buildings: Design of future comprehensive Building Energy Management Systems as flexible edge of the Smart Energy system and as key element for shared Future Internet platforms • Electric Vehicles: Design Smart Energy solutions so that electric vehicles will be an integrated part of the energy infrastructure, maximising their benefits to the energy infrastructure • Electronic Marketplace for Energy: Design ICT systems to extend web based energy information, demand shaping and energy trading services for the emerging energy market players 	

The FINESCE project will perform field trials based on the FINSENY results, to enable improved energy balancing methods.

Activities

The FINSENY project has finished, all deliverables are available on the website.

Standardisation activities:

1. SG-CG: contribution of Use Cases , to the Reference Architecture, and Security
2. Contribution to ZigBee Home Automation Profile
3. ETSI- M2M contribution

More information: <http://www.fi-ppp-finseny.eu/standardisation/>

KEYWORDS: Communication, FP7, Microgrids, eMobility, Home Automation, Markets, SG Projects, Demand Flexibility

3.9.1 ASSOCIATED DOCUMENTS

INDUSTRY INITIATIVE DOCUMENT				
STARGRID ID			Relevance	M
Initiative to which the document is related		FINSENY		
Document title	FINSENY - Shaping Future Internet ICT Platforms for Smart Energy Systems			
Document reference and/or version			Date	
Document type	Flyer		Available in STARGRID (Y/N)	Y
Domain or system category		Distribution		
Priority Topic or Use Case				
Brief content description	Project Description			
Comments				
INDUSTRY INITIATIVE DOCUMENT				
STARGRID ID			Relevance	H

Initiative to which the document is related		FINSENY	
Document title	D1.3 Assessment Summary of Ongoing European Projects and Community Activities (Issue 2)		
Document reference and/or version		Date	2012-03-30
Document type	Report	Available in STARGRID (Y/N)	Y
Domain or system category		Smart Grids	
Priority Topic or Use Case			
Brief content description	Deliverable on European Smart Grid Projects (2)		
Comments			
INDUSTRY INITIATIVE DOCUMENT			
STARGRID ID		Relevance	H
Initiative to which the document is related		FINSENY	
Document title	D.7.2 Final ICT Requirements specifications		
Document reference and/or version		Date	2012-08-23
Document type	Report	Available in STARGRID (Y/N)	Y
Domain or system category		Distribution, Customer, eMobility, Markets	
Priority Topic or Use Case		Demand Response	
Brief content description	ICT requirements for the five Scenarios considered in the project, i.e. Distribution Networks, Microgrids, Smart Buildings, Electric Vehicles, Electronic Marketplace for Energy (part 2)		
Comments			
INDUSTRY INITIATIVE DOCUMENT			
STARGRID ID		Relevance	H
Initiative to which the document is related		FINSENY	

Document title	D3.3 Microgrid Functional Architecture Description		
Document reference and/or version		Date	2013-03-31
Document type	Report	Available in STARGRID (Y/N)	Y
Domain or system category	Distribution, Customer, DER		
Priority Topic or Use Case	Demand Response		
Brief content description	Microgrid architecture and mapping on existing standards and generic enablers of the FI-WARE project. A lot of information on Demand Response standardisation		
Comments			
INDUSTRY INITIATIVE DOCUMENT			
STARGRID ID		Relevance	M
Initiative to which the document is related	FINSENY		
Document title	D6.3 Electronic Marketplace for Energy Functional Architecture		
Document reference and/or version		Date	2013-03-31
Document type	Report	Available in STARGRID (Y/N)	Y
Domain or system category	Market, Customer		
Priority Topic or Use Case	Demand Response		
Brief content description	Electronic Marketplace for Demand Side Management Architecture, Use Cases and mapping on existing standards and generic enablers of the FI-WARE project.		
Comments			
INDUSTRY INITIATIVE DOCUMENT			
STARGRID ID		Relevance	H
Initiative to which the document is related	FINSENY		

Document title	D8.3 Selected domain specific enablers specification		
Document reference and/or version		Date	2013-03-31
Document type	Report	Available in STARGRID (Y/N)	Y
Domain or system category	Distribution, Customer, eMobility		
Priority Topic or Use Case	Demand Response		
Brief content description	<p>Presents the specification of five components (“enablers”) for the energy domain, which extend the list of generic enablers for the future internet, defined by the FI-WARE project. They are</p> <ul style="list-style-type: none">• Gateway for Secondary Substations using S3C GE• IEC 61850 Protocol Adapter• Supervisory Controller as Service• Electric Vehicle Supply Equipment• Demand Side Manager		
Comments			

INDUSTRY INITIATIVE DOCUMENT

STARGRID ID		Relevance	M
Initiative to which the document is related	FINSENY		
Document title	D2.3 Distribution Network Functional Architecture description		
Document reference and/or version		Date	2013-03-31
Document type	Report	Available in STARGRID (Y/N)	Y
Domain or system category	Distribution		
Priority Topic or Use Case			
Brief content description	<p>Presents the high-level architecture of Smart Distribution Grids as identified by the FINSENY project</p>		
Comments			

3.10 FI-WARE

INDUSTRY INITIATIVE	
Acronym	Name
FI-WARE	FI-WARE Future Internet Core Platform
Type	FP7 Project
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Finished <input type="checkbox"/> Planned <input type="checkbox"/> Other
Establishment date	?
Ending date	2014-04-30
Website	http://www.fi-ware.eu/
Members	
http://forge.fi-ware.eu/plugins/mediawiki/wiki/fiware/index.php/Partners	
Scope – Focus – Description of activities	
<p>Scope</p> <p>“FI-WARE will deliver a novel service infrastructure, building upon elements (called Generic Enablers) which offer reusable and commonly shared functions making it easier to develop Future Internet Applications in multiple sectors. This infrastructure will bring significant and quantifiable improvements in the performance, reliability and production costs linked to Internet Applications – building a true foundation for the Future Internet.</p> <p>The project will develop Open Specifications of these Generic Enablers, together with a reference implementation of them available for testing. This way, it is aimed to develop working specifications that influence Future Internet standards.</p> <p>FI-WARE is the cornerstone of the Future Internet PPP program, a joint action by the European Industry and the European Commission. Info about general aspects of this program and complimentary projects within the same program can be found here.” [From the FI-WARE homepage]</p> <p>The reference architecture covers the topics</p> <p>The Reference Architecture of the FI-WARE platform is structured along a number of technical chapters, namely:</p> <ul style="list-style-type: none"> • Cloud Hosting • Data/Context Management • Internet of Things (IoT) Services Enablement • Applications/Services Ecosystem and Delivery Framework • Security • Interface to Networks and Devices (I2ND) 	

which can be relevant to the Smart Grid ICT infrastructure.

Activities

Published the FI-WARE architecture:

https://forge.fi-ware.eu/plugins/mediawiki/wiki/fiware/index.php/FI-WARE_Architecture

and sets of open specifications

https://forge.fi-ware.eu/plugins/mediawiki/wiki/fiware/index.php/Summary_of_FI-WARE_Open_Specifications

and APIs

https://forge.fi-ware.eu/plugins/mediawiki/wiki/fiware/index.php/Summary_of_FI-WARE_API_Open_Specifications

The application of the FI-WARE architecture and Generic Enablers for the energy domain is described in more detail in the deliverables of the FINSENY project.

KEYWORDS: FP7, Communication

3.11 G3-PLC

INDUSTRY INITIATIVE	
Acronym	Name
G3-PLC	G3-PLC Alliance
Type	Industry Association
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Finished <input type="checkbox"/> Planned <input type="checkbox"/> Other
Establishment date	
Ending date	
Website	www.g3-plc.com
Members	
EDF, ENEXIS, ERDF, Maxim Integrated, ST, Texas Instruments, Itron, Landis+Gyr, Cisco, Nexans, Sagecom, Trialog, Accent, Accenture, Altis, Atmel, Atos Worldgrid, Elster, EON, MRSK, Ores, Raychem, Wasion, Webdyn, Yitran, Envery, Freescale, Renesas, Devolo, Iskraemeco, LAN, Panasonic	
Scope – Focus – Description of activities	
<p>EDF (ERDF) and MAXIM promoted an open PLC specification including PHY, MAC, adaption layer and meter profile. G3 is a Linky project (PLC S-FSK 2400 bps) evolution based on OFDM below 500 kHz, with an application layer compliant with ANSI C12.19 and C12.22, and with IEC 62056-61/62 (DLMS/COSEM).</p> <p>G3-PLC specification has been published as Recommendation ITU-T G.9903 “Narrowband orthogonal frequency division multiplexing power line communication transceivers for G3-PLC networks”, containing the physical layer and the data link layer. The Recommendation uses material from Recommendations ITU-T G.9955 “Narrowband OFDM power line communication transceivers – Physical layer specification”, ITU-T G.9956 “Narrowband OFDM power line communication transceivers – Data link layer specification”, and ITU-T G.9956 Amendment 1. Control parameters determining spectral content, power spectral density mask requirements and related tools has been also published in Recommendation ITU-T G.9901 “Narrowband orthogonal frequency division multiplexing power line communication transceivers – Power spectral density specification”.</p> <p>In addition, G3-PLC standard will be included in future CLC prTS 50567-2: Meter exchange over power lines – Part 2: Lower layer profile using OFDM modulation Type 2.</p>	

KEYWORDS: PLC, Smart Metering, Communication

3.12 GRID4EU

INDUSTRY INITIATIVE	
Acronym	Name
Grid4EU	Grid4EU
Type	FP7 project
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Finished <input type="checkbox"/> Planned <input type="checkbox"/> Other
Establishment date	November 2011
Ending date	January 2016
Website	http://www.grid4eu.eu/
Members	
Partners include six DSOs, which perform the demonstrations. http://www.grid4eu.eu/partners.aspx	
Scope – Focus – Description of activities	
Scope Six demonstration projects in Europe, covering almost all aspects of distribution automation, from Demand Side integration, EV and Storage, to DER integration and Microgrids.	
Activities Nice overview on the standards used in the different projects available in deliverable D4.1.	

KEYWORDS: Distribution Automation, FP7, CIM, IEC61850

3.12.1 ASSOCIATED DOCUMENTS

INDUSTRY INITIATIVE DOCUMENT			
STARGRID ID		Relevance	M
Initiative to which the document is related	Grid4EU		
Document title	Guidelines for standards implementation + Appendix A: Architectures of the demonstrators		
Document reference and/or version	gD4.1 & gD4.2	Date	2012-10-05

Document type	Report	Available in STARGRID (Y/N)	Y
Domain or system category			
Priority Topic or Use Case			
Brief content description	The purpose of the deliverable gD4.1 is to identify the standards that the six demonstrators of the Grid4EU project are using or plan to use to guarantee interoperable exchanges of information between their components, and to provide guidelines for the implementation of these standards. The deliverable gD4.2 identifies costs and benefits of the standards usage in the demonstrators.		
Comments			
INDUSTRY INITIATIVE DOCUMENT			
STARGRID ID		Relevance	M
Initiative to which the document is related	Grid4EU		
Document title	General Functional Requirements and specifications of joint activities in the Demonstrators		
Document reference and/or version	gD2.1	Date	
Document type	Report	Available in STARGRID (Y/N)	Y
Domain or system category			
Priority Topic or Use Case			
Brief content description	This deliverable details the 1 General Functional Requirements and specification of joint activities in the Demonstrators. Use Cases for the different demonstrators.		
Comments			

3.13 HGI

INDUSTRY INITIATIVE	
Acronym	Name
HGI	Home Gateway Initiative
Type	Initiative
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Finished <input type="checkbox"/> Planned <input type="checkbox"/> Other
Establishment date	2004
Ending date	-
Website	www.homegatewayinitiative.org
Members	
More than 50 members: http://www.homegatewayinitiative.org/membership/members.asp	
Scope – Focus – Description of activities	
<p>Scope</p> <p>HGI's scope is to cover the entire spectrum of requirements for devices and service support in the digital home.</p> <p>Connecting Homes covers the infrastructure requirements for delivering telecoms and internet services in the home. This work builds on the original HG 'Residential Profile' by defining extensions covering higher speeds and performance attributes, and updating the functionality to include such things as IPv6 support. HGI also publishes test plans for much of its defined functionality, and holds an annual Test Event where these tests can be independently carried out. Going beyond the Gateway itself, HGI now specifies requirements for home network 'infrastructure devices' (bridges, wireless Access Points etc.) and is also addressing real-world home network performance, end to end diagnostics, and energy efficiency. Enabling Services has now moved beyond triple-play to encompass a delivery framework for Smart Home services. This architecture includes support for a standard, general purpose software execution environment in the HG (for third party applications), API definitions, device abstraction, and interfacing with Cloud based platforms. HGI's published Use Cases for Home Energy Management are the first in a range of Smart Home services that the HGI architecture will support.</p> <p>Documents can be downloaded from http://www.homegatewayinitiative.org/documents/publications.asp</p>	

KEYWORDS: Home Gateway, Communication, Energy Management

3.13.1 ASSOCIATED DOCUMENTS

INDUSTRY INITIATIVE DOCUMENT			
STARGRID ID		Relevance	L
Initiative to which the document is related	Home Gateway Initiative		
Document title	Home Gateway Initiative - Vision		
Document reference and/or version	none	Date	2007
Document type	white paper	Available in STARGRID (Y/N)	Y
Domain or system category	Customer		
Priority Topic or Use Case			
Brief content description	Evolution of the broadband market to date New trends in the market Issues and future directions Requirements Role of the Home Gateway Initiative		
Comments			
INDUSTRY INITIATIVE DOCUMENT			
STARGRID ID		Relevance	L
Initiative to which the document is related	Home Gateway Initiative		
Document title	Home Gateway Technical Requirements: Release 1		
Document reference and/or version	Version 1.0	Date	2006/07/01
Document type	specification	Available in STARGRID (Y/N)	Y (see comments)
Domain or system category	Customer		
Priority Topic or Use Case			

Brief content description	HGI Network and Service requirements HGI Reference Architecture Home Gateway Requirements		
Comments	http://www.homegatewayinitiative.org/publis/RD-001-R1_HG-Techn-Req_R1.pdf		
INDUSTRY INITIATIVE DOCUMENT			
STARGRID ID		Relevance	M
Initiative to which the document is related	Home Gateway Initiative		
Document title	Use Cases and Architecture for a Home Energy Management 9 Service		
Document reference and/or version	HGI-GD017-R3	Date	2011-08-05
Document type	specification	Available in STARGRID (Y/N)	Y (see comments)
Domain or system category	Customer		
Priority Topic or Use Case	Demand Response		
Brief content description	Energy Management Architecture and Use Cases from the Energy@Home Association and the BeyWatch project.		
Comments	http://www.homegatewayinitiative.org/publis/GD-017-R3_use-cases-and-architecture-for-home-energy-Management-service.pdf		

3.14 INTELLIGATOR

INDUSTRY INITIATIVE	
Acronym	Name
Intelligator	Intelligator
Type	Research Project
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Finished <input type="checkbox"/> Planned <input type="checkbox"/> Other
Establishment date	
Ending date	
Website	n.a.
Members	
VITO project.	
Scope – Focus – Description of activities	
Scope Similar concept as the PowerMatcher: a software package that sets up a virtual electricity market between the various electricity producing and consuming components in an intelligent energy network. Agent-based concept.	
Activities Tested in field trials, such as e-hub (also PowerMatcher).	

KEYWORDS: Energy Management, DER, Demand Flexibility

3.14.1 ASSOCIATED DOCUMENTS

INDUSTRY INITIATIVE DOCUMENT			
STARGRID ID		Relevance	L
Initiative to which the document is related	Intelligator		
Document title	Intelligent Networks require intelligent appliances		
Document reference and/or version		Date	2011-09

Document type	Flyer	Available in STARGRID (Y/N)	Y
Domain or system category	Customer, DER, Market, Distribution		
Priority Topic or Use Case	Demand Response, DER		
Brief content description	VITO (kind of) flyer on the Intelligator and related research.		
Comments			

3.15 METERS & MORE

INDUSTRY INITIATIVE	
Acronym	Name
M&M	Meters and More Association
Type	Industry Association
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Finished <input type="checkbox"/> Planned <input type="checkbox"/> Other
Establishment date	
Ending date	
Website	www.metersandmore.com
Members	
Accenture (B.V.) , ADD Semiconductor , Ampla Energia , AP System Srl , Arteixo Telecom SA , CAM , CESI SpA , CHILECTRA SA , COELCE - Companhia Energetica do Ceara , Corinex Communications Corp. , Eletra Indústria e Comércio de Medidores Elétricos LTDA. , ELO SISTEMAS ELETRÔNICOS S.A. , Endesa Distribución SA , Enel Distribuzione SpA , E.On AG , GE Energy , IBM Corporation , Instituto Tecnológico de la Energia , Landys+Gyr Equipamentos De Medição LTDA. , Maingate , Neoris España S.L. , ProDTI Foundation , Renesas Electronics , SADIEL Tecnologias de la Informacion SA , Sagemcom SA , SC Electrica SA Bucuresti , SHENZEN KAIFA TECHNOLOGY CO. LTD , Siemens SpA , Sociedad Española de Montaje Industriales S.A , Sogecam Industrial SA , ST Microelectronics Srl , Tecnalia Research & Innovation , Xi'an Swip Co. Ltd	
Scope – Focus – Description of activities	
<p>METERS AND MORE (M&M) is an international non-profit association (around 30 members) governed by Belgian Law (Association Internationale sans but lucratif - AISBL) that maintains and promotes the communication protocol M&M. This standard enables bidirectional data transfer in an AMI system. It is built on the ENEL Telegestore protocol in operation worldwide over 32 million customers and powers the smart meters that ENDESA is installing up to 13 million customers in Spain.</p> <p>M&M technology follows system interfaces defined by the Smart Meters Co-ordination Group (SM-CG) and fulfils functionality, security and communication requirements defined by the OPEN Meter project, with the following characteristics: narrowband PLC and wireless communications, BPSK modulation, bit-rate of 4800 bps, 128 bits AES algorithm (encryption and authentication), automatic network configuration and management, retransmission management. M&M covers the entire protocol stack, from the Physical Layer to the Application layer, and is able to work on both Powerline networks and Public Communication networks.</p> <p>The Physical layer and Data link of M&M protocol is defined in prTS 50568-4 “Electricity metering data exchange – The Smart Metering Information Tables and Protocols (SMITP) suite – Part 4: Physical layer based on B-PSK modulation + Data Link Layer”. The Application layer of M&M protocol is defined in prTS 50568-5 (“Electricity metering data exchange – The Smart Metering Information Tables and Protocols</p>	

(SMITP) suite – Part 5: Application layer messages exchange on PLC and IP networks”), and works properly over several modulation processes, Frequency-Shift Keying and Phase-Shift Keying included. It provides authentication functionality to ensure a high level of security. Data and operation parameters are stored into Smart Meter's database according to M&M model, defined in **prTS 50568-6** (“Electricity metering data exchange – The Smart Metering Information Tables and Protocols (SMITP) suite – Part 6: Electricity meter database and data structures”).

KEYWORDS: PLC, Smart Metering, Communication

3.16 MIRABEL

INDUSTRY INITIATIVE	
Acronym	Name
MIRABEL	Micro-Request-Based Aggregation, Forecasting and Scheduling of Energy Demand, Supply and Distribution.
Type	Project
Status	<input type="checkbox"/> Active <input type="checkbox"/> Inactive <input checked="" type="checkbox"/> Finished <input type="checkbox"/> Planned <input type="checkbox"/> Other
Establishment date	2010
Ending date	2012
Website	http://www.mirabel-project.eu/
Members	
SAP AG (Germany) - Coordinator Aalborg Universitet (Denmark), Centre for Renewable Energy Sources (Greece), EnBW Energie Baden-Württemberg AG (Germany), INEA (Slovenia), Jožef Stefan Institute (Slovenia), Technische Universität Dresden (Germany), TNO (Netherlands)	
Scope – Focus – Description of activities	
<p>Scope: Develop an approach on a conceptual and an infrastructural level that allows energy distribution companies to balance the available supply of renewable energy sources and the current demand in ad-hoc fashion.</p> <p>“The main goal of the Miracle project is to design and develop an Energy data management system (EDMS) that allows to efficiently manage higher amounts of renewable energy and balance support and demand using flexibilities in supply and demand which have been specified by small and medium prosumers (<i>producers</i> and <i>consumers</i> or both) such as households or Small and medium enterprises (SMEs). With the use of the EDMS we will achieve the following goals:</p> <ol style="list-style-type: none"> 1. A higher rate of renewable energy in the production of electricity can be achieved in the European electricity system. 2. Prosumers are actively involved in the electricity management. 3. The use of the specified flexibilities by an actor within the electricity system will improve balancing of the supply and demand within its area of responsibility. 4. The stability of the electricity grid and electricity system will be maintained. 5. The affordability of electricity will be maintained as well.” <p>Activities: The project has finished, public deliverables are available on the website. Developed the concept of Flex offers; new market concept and data model (CIM based) for trading of flexibility. The deliverables of the project can be downloaded from the website.</p>	

KEYWORDS: Demand Flexibility, Markets

3.16.1 ASSOCIATED DOCUMENTS

STARGRID ID		Relevance	L
Document title	D1.1 State-of-the-art report and initial draft of the role model		
Document reference and/or version	V1	Date	2010/06
Document type	Technical Report	Available in STARGRID (Y/N)	Y
Domain or system category	Markets		
Priority Topic or Use Case			
Brief content description	Description of MIRABEL setup, market conditions in some European countries		
Comments	Low relevance for STARGRID, but markets description could be interesting.		
STARGRID ID		Relevance	M
Document title	D2.2 Data model, specification of request and negotiation messages and contracts		
Document reference and/or version	V1	Date	2010/12
Document type	Technical Specification	Available in STARGRID (Y/N)	Y
Domain or system category	Markets		
Priority Topic or Use Case	Demand Response		
Brief content description	First version of the MIRABEL data model (CIM based)		
Comments			

STARGRID ID		Relevance	H
Document title	D2.3 Final data model, specification of request and negotiation messages and contracts		
Document reference and/or version	V1	Date	2011/07
Document type	Technical Specification	Available in STARGRID (Y/N)	Y
Domain or system category	Markets		
Priority Topic or Use Case	Demand Response		
Brief content description	MIRABEL data model (CIM based)		
Comments			
STARGRID ID		Relevance	H
Document title	D7.5 MIRABEL-ONE: Initial draft of the MIRABEL Standard		
Document reference and/or version	V1	Date	2011/12/22
Document type	Draft Standard	Available in STARGRID (Y/N)	Y
Domain or system category	Markets		
Priority Topic or Use Case	Demand Response		
Brief content description	Specifies a generic data model for energy flexibility and messages for information exchange on flexibility offerings. The intention of this specification is to use it as input for formal European standardization and acceptance in the electricity market. More specifically, the document will be used as input to a CEN Workshop in 2012 that produces a CEN Workshop Agreement (CWA) in a relatively short and constructive time period.		
Comments			

3.17 OASIS EI

INDUSTRY INITIATIVE	
Acronym	Name
OASIS EI	OASIS Energy Interoperation TC
Type	Industry Association
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Finished <input type="checkbox"/> Planned <input type="checkbox"/> Other
Establishment date	1993 (OASIS)
Ending date	
Website	https://www.oasis-open.org/
Members	
US focus: https://www.oasis-open.org/member-roster	
Scope – Focus – Description of activities	
<p>Scope</p> <p>“The Energy Interoperation TC works to define interaction between Smart Grids and their end nodes, including Smart Buildings, Enterprises, Industry, Homes, and Vehicles. The TC develops data and communication models that enable the interoperable and standard exchange of signals for dynamic pricing, reliability, and emergencies. The TC’s agenda also extends to the communication of market participation data (such as bids), load predictability, and generation information.” [From the OASIS website]</p> <p>Activities</p> <p>Published the Energy Interoperation (EI) 1.0 standard in February 2012, which defines data models and messages for communication between energy service providers and customer. It is freely available from the OASIS website. The OpenADR 2.0 standard is a profile of EI 1.0. The EI 1.0 itself makes use of the OASIS Energy Market Information Exchange (EMIX) 1.0 specification, as well as WS-Calendar 1.0.</p>	

KEYWORDS: Demand Flexibility

3.17.1 ASSOCIATED DOCUMENTS

INDUSTRY INITIATIVE DOCUMENT			
STARGRID ID		Relevance	H
Initiative to which the document is related	OASIS EI		

Document title	Energy Interoperation 1.0		
Document reference and/or version		Date	2012
Document type	Standard	Available in STARGRID (Y/N)	Y (see comments)
Domain or system category	Customer, Markets		
Priority Topic or Use Case	Demand Response		
Brief content description	<p><u>Abstract:</u> This document incorporates minor editorial and typographic corrections. Energy interoperation describes an information model and a communication model to enable collaborative and transactive use of energy, service definitions consistent with the OASIS SOA Reference Model [SOA-RM], and XML vocabularies for the interoperable and standard exchange of:</p> <ul style="list-style-type: none"> • Dynamic price signals • Reliability signals • Emergency signals • Communication of market participation information such as bids • Load predictability and generation information <p>This work facilitates enterprise interaction with energy markets, which:</p> <ul style="list-style-type: none"> • Allows effective response to emergency and reliability events • Allows taking advantage of lower energy costs by deferring or accelerating usage • Enables trading of curtailment and generation • Supports symmetry of interaction between providers and consumers of energy • Provides for aggregation of provision, curtailment, and use <p>The definition of a price and of reliability information depends on the market context in which it exists. It is not in scope for this TC to define specifications for markets or for pricing models, but the TC has coordinated with others to ensure that commonly used market and pricing models are supported.</p> <p>While this specification uses Web Services to describe the services, no requirement or expectation of specific messaging implementation is assumed.</p>		
Comments	http://docs.oasis-open.org/energyinterop/ei/v1.0/energyinterop-v1.0.html		

3.18 OGEMA

INDUSTRY INITIATIVE	
Acronym	Name
OGEMA	Open Gateway Energy Management Alliance
Type	Industry Initiative/Research project
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Finished <input type="checkbox"/> Planned <input type="checkbox"/> Other
Establishment date	2009
Ending date	--
Website	www.ogema.org
Members	
Fraunhofer IWES, Fraunhofer IIS, Fraunhofer ISE, Pikkerton GmbH, Rebaze GmbH, EEBus Initiative e. V., enercast GmbH, MVV Energie AG, DERlab e. V., HES-SO, PSE GmbH	
Scope – Focus – Description of activities	
<p>Scope</p> <p>OGEMA is short for "Open Gateway Energy Management Alliance". The Alliance aims at developing a software standard and reference implementation.</p> <p>Participants of the OGEMA Alliance are manufacturers, utilities and users/operators of energy systems in the smart grid. All developers and involved parties can turn their ideas for more efficient energy usage by automation into software for the gateway platform. Fraunhofer moderates the advance of the OGEMA specification with the goal of a maximum wide usage for a sustainable energy supply.</p> <p>Activities</p> <p>The software has been used in several field tests, for instance in two of the E-Energy projects. A demokit of v1 is available from the website, currently v2.0 is under development.</p>	

KEYWORDS: Home Gateway, Energy Management

3.18.1 ASSOCIATED DOCUMENTS

INDUSTRY INITIATIVE DOCUMENT			
STARGRID ID		Relevance	H
Initiative to which the document is related	OGEMA		
Document title	OGEMA 2.0 – Framework and API Specification (draft)		
Document reference and/or version		Date	2013/03/25
Document type	technical specification	Available in STARGRID (Y/N)	Y (IWES)
Domain or system category	Customer		
Priority Topic or Use Case	Demand Response		
Brief content description	Introduction OGEMA Gateway Specification Testing and Certification Supplements		
Comments			

3.19 OPENADR

INDUSTRY INITIATIVE	
Acronym	Name
OpenADR	OpenADR Alliance
Type	Industry Initiative
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Finished <input type="checkbox"/> Planned <input type="checkbox"/> Other
Establishment date	2010
Ending date	-
Website	www.openadr.org
Members	
More than 50 members (sponsors, contributors and adopters), mostly US: http://www.openadr.org/members	
Scope – Focus – Description of activities	
<p>Scope</p> <p>Open Automated Demand Response (OpenADR) is an open and standardized way for electricity providers and system operators to communicate DR signals with each other and with their customers using a common language over any existing IP-based communications network, such as the Internet. As the most comprehensive standard for Automated Demand Response, OpenADR has achieved widespread support throughout the industry.</p> <p>The OpenADR Alliance was formed by industry stakeholders to foster the development, adoption and compliance of the Open Automated Demand Response (OpenADR) Smart Grid standard utilizing existing standards from OASIS, UCA and NAESB.</p> <p>Activities</p> <p>The recently published versions OpenADR 2.0a and 2.0b define profiles of the OASIS Energy Interoperation 1.0 standard, which in turn is based partly on OpenADR 1.0. The OpenADR 2.0b profile is being considered by the IEC PC118 committee for a PAS (publicly available standard), and is expected to play a major role on the future Demand Response market.</p> <p>A core concept of OpenADR is that of Virtual Top Nodes (VTN), or servers, that publish information, and Virtual End Nodes (VEN), or clients, who receive information from the VTNs. Since VENs can also serve as VTNs for other nodes, a cascading architecture is possible, enabling aggregation.</p>	

KEYWORDS: Demand Flexibility

3.19.1 ASSOCIATED DOCUMENTS

INDUSTRY INITIATIVE DOCUMENT			
STARGRID ID		Relevance	M
Initiative to which the document		OpenADR Alliance	

is related			
Document title	OpenADR 2.0, Profile Specification, A Profile		
Document reference and/or version	Revision Number: 1.0, Document Number: 20110712-1	Date	2011/07/12
Document type	specification	Available in STARGRID (Y/N)	Y (see comments)
Domain or system category		Customer, Distribution	
Priority Topic or Use Case		Demand Response	
Brief content description	Scope Normative References Non-Normative References Terms and Definitions Abbreviations Overview OpenADR 2.0 Feature Set Profiles OpenADR 2.0a Services and Data Models Extensions Transport Protocol OpenADR 2.0 Security		
Comments	http://www.openadr.org/specification		
INDUSTRY INITIATIVE DOCUMENT			
STARGRID ID		Relevance	H
Initiative to which the document is related		OpenADR Alliance	
Document title	OpenADR 2.0, Profile Specification, B Profile		
Document reference and/or version		Date	
Document type	specification	Available in STARGRID (Y/N)	Y (see comments)
Domain or system category		Customer, Distribution	
Priority Topic or Use Case		Demand Response	
Brief content description	Contains an overview on the differences between OpenADR 2.0a and 2.0b. The B profile supports the following services of Energy Interop 1.0: 1. Registration (EiRegisterParty): Register is used to identify entities such as VEN’s and		

	<p>parties. This is necessary in advance of an actor interacting with other parties in various roles such as VEN, VTN, tenderer, and so forth.</p> <p>2. Enrollment (EiEnroll): Used to enroll a Resource for participation in DR programs. This establishes a relationship between two actors as a basis for further interactions. (Planned for future releases)</p> <p>3. Market Contexts (EiMarketContext): Used to discover program rules, standard reports, etc. Market contexts are used to express market information that rarely changes, and thereafter need not be communicated with each message. (Planned for future releases)</p> <p>4. Event (EiEvent): The core DR event functions and information models for price responsive DR. This service is used to call for performance under a transaction. The service parameters and event information distinguish different types of events. Event types include reliability events, emergency events, and more – and events MAY be defined for other actions under a transaction.</p> <p>5. Quote or Dynamic Prices (EiQuote): EiDistributeQuote for distributing complex dynamic prices such as block and tier tariff communication. These are sometimes referred to as <i>price signals</i>; such signals are indications of a possible tender price – they are not themselves actionable.</p> <p>6. Reporting or Feedback (EiReport): The ability to set periodic or one-time information on the state of a Resource (response).</p> <p>7. Availability (EiAvail): Constraints on the availability of Resources. This information is set by the end node and indicates when an event may or may not be accepted and executed by the VEN with respect to a Market Context. Knowing the Availability and Opt information for its VENS improves the ability of the VTN to estimate response to an event or request. (Planned for future releases)</p> <p>8. Opt or Override (EiOpt): Overrides the EiAvail; addresses short-term changes in availability to create and communicate Opt-in and Opt-out schedules from the VEN to the VTN.</p>
Comments	http://www.openadr.org/specification

3.20 OPEN METER

INDUSTRY INITIATIVE	
Acronym	Name
OPEN meter	OPEN meter
Type	FP7 Project
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Finished <input type="checkbox"/> Planned <input type="checkbox"/> Other
Establishment date	2009
Ending date	2011
Website	http://www.openmeter.com/ (available at least until mid 2013)
Members	
http://www.openmeter.com/?q=node/12	
Scope – Focus – Description of activities	
Scope Assessment of Communication technologies for Smart Metering in Europe. Activities Were involved in the Smart Metering Coordination Group. The project deliverables are available at http://www.openmeter.com/?q=node/11	

KEYWORDS: Smart Metering, Markets, PLC, FP7

3.20.1 ASSOCIATED DOCUMENTS

INDUSTRY INITIATIVE DOCUMENT			
STARGRID ID		Relevance	H
Initiative to which the document is related	OPEN meter		
Document title	SMART METERING MARKET OVERVIEW: OPEN METER RELATED STANDARDS IN EUROPEAN SMART METER ROLL-OUTS PLANNED UNTIL 2020		

Document reference and/or version		Date	2012/01/31
Document type	Analysis Report	Available in STARGRID (Y/N)	Y
Domain or system category	Market, Customer		
Priority Topic or Use Case	Smart Metering		
Brief content description	Overview on technologies currently employed in European Smart Metering rollouts.		
Comments			

Additionally, the project deliverables have been downloaded to the STARGRID repository.

3.21 OPENNODE

INDUSTRY INITIATIVE	
Acronym	Name
OpenNode	Open Architecture for Secondary Nodes of the Electricity SmartGrid
Type	FP7 Project
Status	<input type="checkbox"/> Active <input type="checkbox"/> Inactive <input checked="" type="checkbox"/> Finished <input type="checkbox"/> Planned <input type="checkbox"/> Other
Establishment date	2010/01/01
Ending date	2012/09/30
Website	http://www.opennode.eu/
Members	
http://www.opennode.eu/index.php/project-partners.html	
Scope – Focus – Description of activities	
<p>Scope Smart Distribution Grid, substation automation:</p> <p>In the recent past the smart grid has often been a synonym for a smart meter infrastructure but which actually often provides only a smart edge of the grid. The OpenNode project will especially focus on inner parts of the distribution grid, namely the smart Secondary Substation Nodes (SSN) as substantial component to monitor and control the distribution grid status. Based on Information and Communication Technology (ICT) major energy industry challenges are addressed by a network of embedded devices – the SSNs – capable of communicate to each other and contribute to the efficient exploitation of the energy resources.</p> <p>Activities Analysed standards for their purposes: IEC 61850, IEC 60870-5-104, DLMS/COSEM Cooperation with OPEN meter and ADDRESS projects.</p>	

KEYWORDS: Distribution Automation, CIM, IEC61850, DLMS/COSEM, FP7

3.21.1 ASSOCIATED DOCUMENTS

INDUSTRY INITIATIVE DOCUMENT			
STARGRID ID		Relevance	M
Initiative to which the document is related	OpenNode		
Document title	D6.4 Final Standardization Results		
Document reference and/or version		Date	2012/06/30
Document type	Analysis Report	Available in STARGRID (Y/N)	Y
Domain or system category	Distribution		
Priority Topic or Use Case			
Brief content description	Assessment of standards IEC 61850, IEC 60870-5-104, DLMS/COSEM for project purposes, i.e. distribution automation.		
Comments			

3.22 POWERMATCHER

INDUSTRY INITIATIVE	
Acronym	Name
PowerMatcher	PowerMatcher
Type	Research Project
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Finished <input type="checkbox"/> Planned <input type="checkbox"/> Other
Establishment date	2004
Ending date	--
Website	http://www.powermatcher.net/
Members	
PowerMatcher is a TNO project.	
Scope – Focus – Description of activities	
<p>Scope</p> <p>“PowerMatcher technology is a distributed energy systems architecture and communication protocol, which facilitates implementation of standardized, scalable Smart Grids, that can include both conventional and renewable energy sources. Through intelligent clustering, numerous small electricity producing or consuming devices operate as a single highly-flexible generating unit, creating a significant degree of added-value in electricity markets. PowerMatcher Technology optimizes the potential for aggregated individual electricity producing and consuming devices to adjust their operation in order to increase the overall match between electricity production and consumption.</p> <ul style="list-style-type: none"> • The PowerMatcher is an information and communications technology (ICT) for coordination in a smart electricity grid. It is capable of optimizing over high numbers of small units: distributed generators, responsive demand and electricity storage. • The PowerMatcher is designed for scalability: in future power systems high numbers of smaller units, typically 100W to 5MW, will be involved in coordination tasks. • The technology is using available open industry standards in both the ICT and energy sectors. ” <p>[From the PowerMatcher website]</p> <p>It is an agent based software algorithm for balancing supply and demand; implementation of advanced market concepts with demand side integration.</p> <p>Activities</p> <p>“Since its incarnation in 2004, the PowerMatcher has been implemented in three major software versions. In a spiral approach, each software version was implemented from scratch with the first two versions being tested in simulations and field experiments. The third version is currently under development and is planned to be deployed in a number of field experiments and real-life demonstrations with a positive business case.” [From the PowerMatcher website]</p>	

KEYWORDS: Demand Flexibility, DER, Markets

3.22.1 ASSOCIATED DOCUMENTS

INDUSTRY INITIATIVE DOCUMENT			
STARGRID ID		Relevance	L
Initiative to which the document is related	PowerMatcher		
Document title	Intelligence in Electricity Networks for Embedding Renewables and Distributed Generation		
Document reference and/or version		Date	2009
Document type		Available in STARGRID (Y/N)	Y
Domain or system category	Customer, DER, Market, Distribution		
Priority Topic or Use Case	Demand Response, DER		
Brief content description	Overview and theoretical background for the PowerMatcher.		
Comments			
STARGRID ID		Relevance	H
Initiative to which the document is related	PowerMatcher		
Document title	Dynamic Pricing by Scalable Energy Management Systems - Field Experiences and Simulation Results using PowerMatcher		
Document reference and/or version		Date	
Document type	Report	Available in STARGRID (Y/N)	Y (see comments)
Domain or system category	Customer, DER, Market, Distribution		
Priority Topic or Use Case	Demand Response, DER		
Brief content description	Field test results involving the PowerMatcher, including a presentation of the algorithm.		
Comments	http://www.powermatcher.net/fileadmin/powermatcher/user/documents/Articles-/OverviewArticles/PES2012_Kok_et_al_PM_Achievements_Preprint.pdf		

3.23 PRIME

INDUSTRY INITIATIVE	
Acronym	Name
PRIME	Powerline Intelligent Metering Evolution Alliance
Type	Industry Association
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Finished <input type="checkbox"/> Planned <input type="checkbox"/> Other
Establishment date	2009
Ending date	
Website	www.prime-alliance.org
Members	
Principal members: Atmel, Current, Gas Natural Fenosa, Iberdrola, Itron, Landis+Gyr, Sagecom, ST, Texas Instruments, ZIV Regular members: Accent, Accenture, ADD, Apator, Aseme, Artech, Cahors, CEZ, Cide, Circutor, EDP, Elster, Energa, Envery, EON, Fideltronik, Fujitsu, GE Energy, Hexing, Huawei, Indra, Inhemeter, Iskraemeco, ITE, Janz, Kaifa, KEMA, Maxim, DF Nucleo, NXP, Orbis, Renesas, Riz, Semitech, Siemens, Sogecam, China State Grid Corporation of China, TECNALIA, Telecon, Telecontrol STM, VSE, Wasion Group	
Scope – Focus – Description of activities	
<p>The PRIME (Powerline Intelligent Metering Evolution) Alliance, created in 2009, develops an open, public and non-proprietary PLC solution which will support smart metering and other smart grid functionalities. PRIME initially defines lower OSI layers of a narrowband PLC data transmission system over the electricity grid. It uses Orthogonal Frequency Division Multiplexing (OFDM) in narrowband frequency ranges below 500 kHz allowing for maximum data rates of 1 Mbps.</p> <p>PRIME specification has been published as Recommendation ITU-T G.9904 “Narrowband orthogonal frequency division multiplexing power line communication transceivers for PRIME networks”, containing the specifications for the physical layer, data link layer and convergence layers for both IEC 61334-4-32 and IPv6 profiles. The Recommendation uses material from Recommendations ITU-T G.9955 “Narrowband OFDM power line communication transceivers – Physical layer specification”, ITU-T G.9956 “Narrowband OFDM power line communication transceivers – Data link layer specification”, and ITU-T G.9956 Amendment 1. Control parameters determining spectral content, power spectral density mask requirements and related tools has been also published in Recommendation ITU-T G.9901 “Narrowband orthogonal frequency division multiplexing power line communication transceivers – Power spectral density specification”.</p> <p>In addition, PRIME will be included in future CLC prTS 50567-1: Meter data exchange over power lines – Part 1: Lower layer profile using OFDM modulation Type 1.</p>	

KEYWORDS: PLC, Smart Metering, Communication

3.24 VHP-READY

INDUSTRY INITIATIVE	
Acronym	Name
VHP-ready	Vattenfall – VHP-ready
Type	Company
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Finished <input type="checkbox"/> Planned <input type="checkbox"/> Other
Establishment date	
Ending date	
Website	http://www.vattenfall.de/de/vhp-ready.htm
Members	
Vattenfall	
Scope – Focus – Description of activities	
Scope VHPREADY (Virtual Heat and Power Ready) represents Vattenfall's new industry standard for controlling decentralised power plants from a central control room. It is a simple and cost-efficient way to integrate heat pumps and BCHP plants into a Virtual Power Plant. Plants and systems which meet the demands and technical requirements of this VHPREADY standard can be connected to the Virtual Power Plant without additional installation work in relation to the plants.	

KEYWORDS: VPP, IEC61850, DER

3.24.1 ASSOCIATED DOCUMENTS

INDUSTRY INITIATIVE DOCUMENT			
STARGRID ID		Relevance	M
Initiative to which the document is related	VHP-ready		
Document title	Technical Requirements Specifications v3.0		
Document reference and/or version		Date	2012-10
Document type	Technical Specification	Available in STARGRID (Y/N)	Y
Domain or system category	DER		

Priority Topic or Use Case		DER
Brief content description	Defines profiles of IEC 60870-5-104 and IEC 61850-7-420 for the integration of heat pumps and CHP units in Vattenfall's virtual power plant.	
Comments		

3.25 WEB2ENERGY

INDUSTRY INITIATIVE	
Acronym	Name
Web2Energy	Web2Energy project
Type	FP7 Project
Status	<input type="checkbox"/> Active <input type="checkbox"/> Inactive <input checked="" type="checkbox"/> Finished <input type="checkbox"/> Planned <input type="checkbox"/> Other
Establishment date	2010
Ending date	2012-12
Website	https://www.web2energy.com/
Members	
https://www.web2energy.com/consortium/members-of-web2energy/	
Scope – Focus – Description of activities	
<p>Scope: “The project Web2Energy is directed to implement and approve all three pillars of "Smart Distribution".</p> <p>1. <u>Smart Metering – the consumer participates in the energy market</u> A few hundred electricity consumers in the supply area of HSE AG will be obtained with smart meters. These advanced meters provide many innovative functions:</p> <ul style="list-style-type: none"> Remote reading of metered values in short term intervals, Reception and visualization of price signals (variable rates) Disturbance signals and management of failures Estimation of manipulations and stolen energy Permanent meter data storage and monitoring of load profiles Supervision and control of distributed power producer, storage and controllable loads <p>Furthermore, they provide gateways to monitor the current demand with the related costs and to further functions of building automation and in-house energy management (smart home). Variable (up to hourly) rates are offered to the clients. Current rates, the rate forecasts and the current demand are monitored. The consumer gets the opportunity to control his demand regarding non time critical loads in accordance with the offered rates. The project Web2Energy is able to achieve experiences with such a practice. The advanced meter technology comes from Landis + Gyr Austria.</p> <p>2. <u>Smart Energy Management – Clustering of small power producers</u> A large number of small independent power producers are supervised and coordinated in such a way that at each moment a scheduled power feeds into the distribution network in accordance with the current demand or the request from the market. Consequently, the deviation of fluctuating wind or solar power from the predictions can be compensated in real-time through the aggregation with controllable generators, loads and storage in the framework of a virtual power plant (VPP). Inside the supply area of the HSE AG this coordination will be applied with benefits. Parallel with a number of volatile of wind power and photovoltaic plants a large number controllable hydro and thermo power plants with</p>	

cogeneration of heat and power (CHP), storage and controllable industrial loads are in operation. They are able to contribute to the generation and load management. The central operated VPP participates on the markets for energy and control power and optimizes the operations and the overall power in-feed. In this way all participants can achieve higher efficiency and higher compensation of their expenses in comparison with the single market access. To support the VPP operations advanced storage technologies will be established. The EUS GmbH Dortmund implements the VPP procedures. The Energy Research Centre of the Netherlands (ECN) contributes its experience of market access.

3. Smart Distribution Automation – higher reliability of supply

Today supply interruptions happen very rarely. When they do occur, they are caused by 96% in the medium (MV)-/low (LV) voltage distribution networks. In the case of a disturbance an inspection team has to drive along the MV/LV-terminals for disturbance allocation and supply recovery by switching operations. These procedures take on average 1 hour or more. The Web2Energy project implements an automated sequence to execute the former manual processes in a selected area of the HSE AG. This approach cuts the supply interruption down to minutes. Consequently, the very high reliability of supply in Germany will be significantly improved. The necessary control technology comes from iPLS (PL).

Linking the users: All three pillars of smart distribution require the information exchange between the users of the network like consumers, producers, terminals, control centre of the network operator, traders and VPP. Communication channels have to cover also the last meters to these participants.”
[From the Web2Energy website]

Activities

The project has finished. Publications can be downloaded from <https://www.web2energy.com/news-downloads/publications/>

KEYWORDS: Distribution Automation, IEC61850, CIM, VPP

3.25.1 ASSOCIATED DOCUMENTS

INDUSTRY INITIATIVE DOCUMENT			
STARGRID ID		Relevance	M
Initiative to which the document is related	Web2Energy		
Document title	Communication Infrastructure and Data Management for operating smart distribution systems		
Document reference and/or version		Date	2012-08-03
Document type	Report	Available in STARGRID (Y/N)	Y

Domain or system category	Distribution		
Priority Topic or Use Case			
Brief content description	Use of IEC 61850 and CIM in the Web2Energy project.		
Comments			
STARGRID ID		Relevance	M
Initiative to which the document is related	Web2Energy		
Document title	Information and Communication Technologies for operating of Smart Distribution Grids based on the German Standardization Roadmap		
Document reference and/or version		Date	2012-11-16
Document type	Report	Available in STARGRID (Y/N)	Y
Domain or system category	Distribution		
Priority Topic or Use Case			
Brief content description	Use of IEC 61850 and CIM in the Web2Energy project. Conversion IEC 61850 <-> CIM and required updates of the two standards.		
Comments	In German. English abstract.		
STARGRID ID		Relevance	M
Initiative to which the document is related	Web2Energy		
Document title	THE LINK BETWEEN IEC 61850 AND CIM / IEC 61968/61970		
Document reference and/or version		Date	2012-01-26
Document type	Presentation	Available in STARGRID (Y/N)	Y
Domain or system category	Distribution		
Priority Topic or Use Case			
Brief content description	Use of IEC 61850 and CIM in the Web2Energy project. Conversion IEC 61850 <-> CIM.		

Comments			
STARGRID ID		Relevance	L
Initiative to which the document is related	Web2Energy		
Document title	Anwendung der IEC 61850 im Verteilungsnetz		
Document reference and/or version		Date	2011-05-17
Document type	Presentation	Available in STARGRID (Y/N)	Y
Domain or system category	Distribution		
Priority Topic or Use Case			
Brief content description	Use of IEC 61850 and CIM in the Web2Energy project.		
Comments	In German.		

3.26 ZIGBEE

INDUSTRY INITIATIVE	
Acronym	Name
ZigBee	ZigBee Alliance
Type	Initiative
Status	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Inactive <input type="checkbox"/> Finished <input type="checkbox"/> Planned <input type="checkbox"/> Other
Establishment date	2002
Ending date	--
Website	www.zigbee.org
Members	
More than 400 members (promoters, participants and adopters): http://www.zigbee.org/About/OurMembers.aspx	
Scope – Focus – Description of activities	
Scope ZigBee is a standards-based wireless technology designed to address the unique needs of low-cost, low-power wireless sensor and control networks in any market, and is mostly used in the Home Automation area. ZigBee is an open, non-profit association of members that has created a thriving global ecosystem. Anyone can join their membership comprised of businesses, universities and government agencies from around the globe. Their activities and direction are determined by members as they act to meet evolving needs in a fast-paced world. The members come from organizations of all types from around the world. The members include multi-national, well known public companies, governmental regulatory groups, universities and entrepreneurial start-ups. In Japan and China, the members even created their own special interest group, ZigBee SIG-J, that's focused on creating greater understanding and adoption of ZigBee across those countries' powerful technology industries. ZigBee also has regional member groups for Europe and Australia, allowing members in those areas to collaborate and promote ZigBee standards adoption.	
Activities Profiles have been defined for, among others, Home Automation, Building Automation, Energy Management (Smart Energy Profile – SEP 2.0)	

KEYWORDS: Communication, Home Automation, Energy Management, Smart Metering

3.26.1 ASSOCIATED DOCUMENTS

INDUSTRY INITIATIVE DOCUMENT			
STARGRID ID		Relevance	H
Initiative to which the document is related	ZigBee Alliance		
Document title	Zigbee Smart Energy Profile Specification 2.0		
Document reference and/or version	V2.0	Date	
Document type	Technical Specification	Available in STARGRID (Y/N)	Y (see comments)
Domain or system category	Customer		
Priority Topic or Use Case			
Brief content description	This document describes the application protocol for the Smart Energy Profile 2.0 release. The aim is to enable the information flow between devices such as meters, smart appliances, plug-in electric vehicles, energy management systems, and distributed energy resources. The profile implements a RESTful architecture and is based on a TCP/IP stack. It does not restrict the lower layer protocols. The data model is a CIM profile (IEC 61968).		
Comments	http://www.zigbee.org/Standards/ZigBeeSmartEnergy/ZigBeeSmartEnergy20Standard.aspx		
INDUSTRY INITIATIVE DOCUMENT			
STARGRID ID		Relevance	M
Initiative to which the document is related	ZigBee Alliance		
Document title	Zigbee Home Automation Public Application Profile		
Document reference and/or version	Revision 26, Version 1.1, 053520r26	Date	2010/02/08
Document type	specification	Available in STARGRID (Y/N)	Y (see comments)
Domain or system category	Customer		
Priority Topic or Use Case			

Brief content description	Introduction References Definitions Acronyms and Abbreviations Profile Description Constants, Error Codes and General Alarms Device Specifications		
Comments	Link: http://www.zigbee.org/Standards/ZigBeeHomeAutomation/download.aspx		
INDUSTRY INITIATIVE DOCUMENT			
STARGRID ID		Relevance	M
Initiative to which the document is related	ZigBee Alliance		
Document title	Zigbee Smart Energy Profile Specification		
Document reference and/or version	Revision 16, Version 1.1, 075356r16ZB	Date	2011/03/23
Document type	specification	Available in STARGRID (Y/N)	Y (see comments)
Domain or system category	Customer		
Priority Topic or Use Case			
Brief content description	Introduction References Definitions Acronyms and Abbreviations Device Specifications		
Comments	Link: http://www.zigbee.org/Standards/ZigBeeSmartEnergy/download.aspx		

INDUSTRY INITIATIVE DOCUMENT			
STARGRID ID		Relevance	L

Initiative to which the document is related		ZigBee Alliance	
Document title	Zigbee Specification		
Document reference and/or version	ZigBee Document 053474r17	Date	2008/01/17
Document type	Technical Specification	Available in STARGRID (Y/N)	Y (see comments)
Domain or system category		Customer	
Priority Topic or Use Case			
Brief content description	ZigBee Protocol Overview Application Layer Specification Network Specification Security Services Specification		
Comments	Link: http://www.zigbee.org/Specifications/ZigBee/download.aspx		
INDUSTRY INITIATIVE DOCUMENT			
STARGRID ID		Relevance	L
Initiative to which the document is related		ZigBee Alliance	
Document title	Vision for the Home, ZigBee Wireless Home Automation		
Document reference and/or version	2006.09.14.a	Date	2006/09/14
Document type	white paper	Available in STARGRID (Y/N)	Y
Domain or system category		Customer	
Priority Topic or Use Case			
Brief content description	Introduction ZigBee’s Role in Emerging Wireless Technologies ZigBee’s Role in the Market About ZigBee		
Comments			
INDUSTRY INITIATIVE DOCUMENT			
STARGRID ID		Relevance	L

Initiative to which the document is related	ZigBee Alliance		
Document title	ZigBee-2007 Layer PICS and Stack Profiles		
Document reference and/or version	Revision 03, ZigBee Document 08006r03	Date	2008/06
Document type	specification	Available in STARGRID (Y/N)	Y (see comments)
Domain or system category	Customer		
Priority Topic or Use Case			
Brief content description	Introduction References Definitions General description Knob settings Functional description Protocol implementation conformance statement (PICS) proforma		
Comments	Link: http://www.zigbee.org/Specifications/ZigBee/download.aspx		

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