

Meters and More

Dr. Robert Denda – Chairman of the Technical Committee
for Protocol Specifications

Agenda

1. The association
2. Technology
3. Towards a European standard
4. Meters and More in the field
5. Conclusions

Meters and More AISBL: The Association

A non-profit organization created in 2010 in Brussels:

- Adopt, maintain and evolve an **open communication protocol** for **smart metering solutions**
- Promote **smart metering standardization**
- Promote the existence of a range of **interoperable devices, applications and services**
- **Provide a certification process**
- **Drive protocol evolutions**
- Technical committees for **Certification and Protocol Specification**

**Adopt, maintain and evolve an
open communication protocol**

Meters and More AISBL: The Association



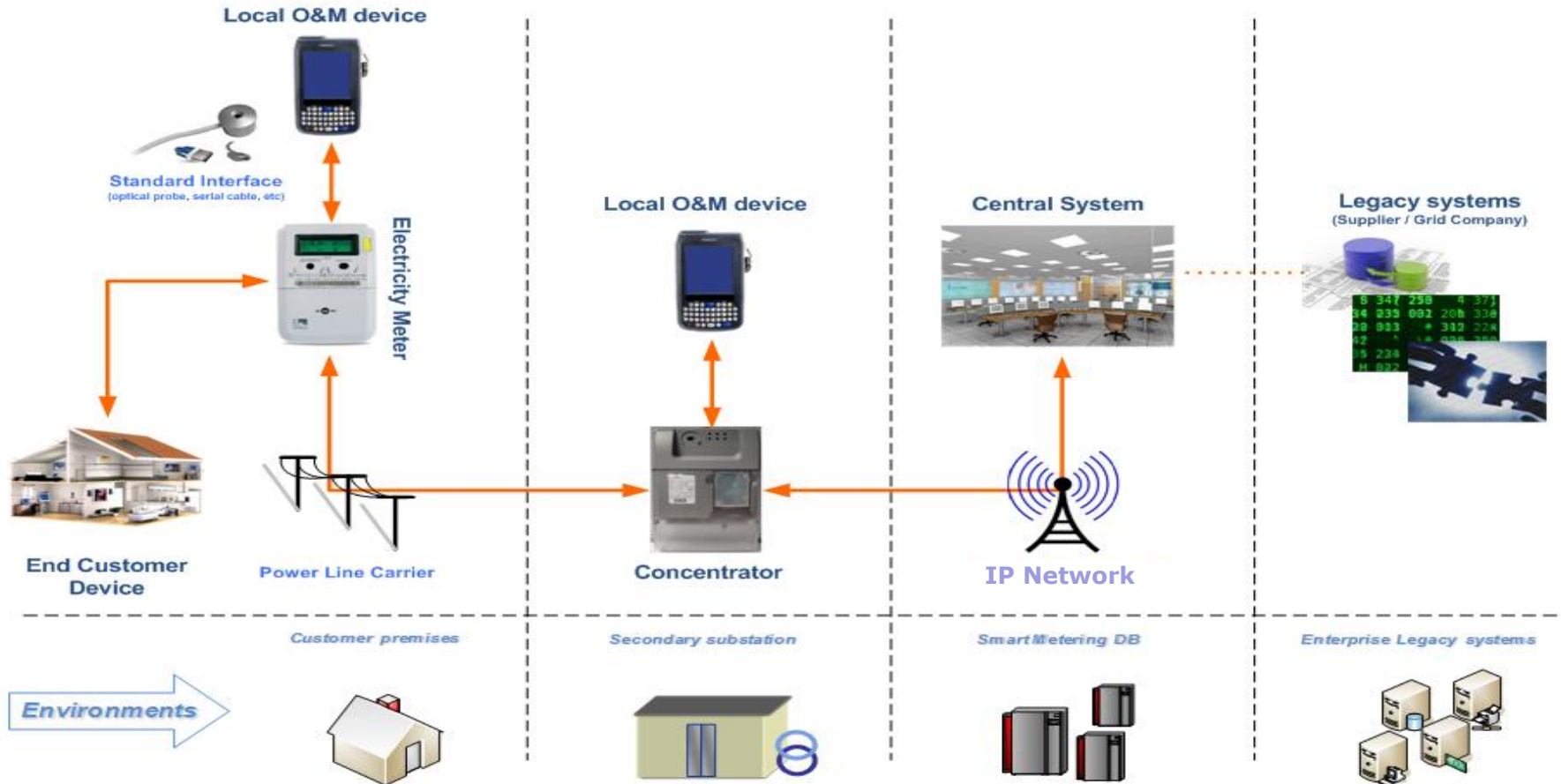
**Strong representation of all types of stakeholders
involved in Smart Metering and Smart Grids**

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Meters and More Technology

AMI System components and interfaces



End-to-end communication Technology

Meters and More Technology

1) Optimization for low-bit rate and noisy channels (BPSK PHY)

- Intrinsic robustness of BPSK + Convolutional Coding
- Strong noise immunity
- Minimum message length
- No meta-information
- Minimum number of exchange messages
- Pre-established contexts: associations, security, etc.
- Avoid cross-talking: optimized routes using same mains phase

2) Optimized power consumption

3) Phase-detection

Efficiency and robustness by design

Meters and More Technology

4) Master-slave: meters never initiate communication

5) Security

- AES encryption
- AES CMAC Authentication
- Play-back attack protection
- Message integrity check
- Individual keys for each meter with access control (reading /writing)
- End-to-end: no translation barriers/frontiers

6) Plug & Play

- Automatic network configuration and management
- Adaptation to topology changes

Strong security and plug&play

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Towards a European Standard

Within the OPEN meter project: Analyzed, studied and tested in depth by over 30 international experts of 18 organizations



OPEN meter

Open Public Extended Network metering



WP: W4
Type of document: Deliverable
Date: 15/06/2011

Energy Theme; Grant Agreement No 226369

Title: Report on Final Test Results and Recommendations

Version: 1.0

Page: 92 / 255

1.4 Conclusion & Recommendation

Furthermore, the executed interoperability tests have been successful.

The positive results of the detailed technical, functional and interoperability tests, show that the specifications of METERS and MORE technology are mature, implementable and ready for the standardization process. No further recommendations are necessary.

Fulfills all EU regulatory and market requirements

Recommended for standardization by OPEN meter

Towards a European Standard

European Standardization at CENELEC under the name SMITP (Smart Metering Information Telecommunications Protocol): CLC TS50568

Currently being extended to also support DLMS/COSEM

SGCG/M490/B_Smart Grid Report First set of standards; v2.0; Nov 16th 2012

AVAILABLE STANDARDS	M	H1	H2/H3	C	G1	G2	L	N
IEEE 1377	x			x	x	x	x	x

2043 The tables do not include the many ETSI standards identified under the M441 mandate [3] as relevant to smart metering and which therefore apply to the AMI in a smart grid context. While some of these standards may appear in section 9 of this report, the approaches used in the two mandates are different, which would complicate alignment in this FSS report.

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2048 **8.5.1.4.3 Coming standards**

2049 In compliance with section 6, a standard that has successfully passed the NWIP process (or any formal equivalent voting gates if NWIP is not within the standard process for issuing the considered standard) by June 30th 2012 is considered as "Coming".

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2052 The following list should be read in conjunction with the standards mentioned in TR 50572 [4]. A further list of standards related to smart metering will be available at the end of 2012 and will be published as a deliverable under the M441 mandate [3]. Other standards may be developed in due course.

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2055 The principal 'coming' standards are:

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2058 **Table 48 – AMI system – Coming standards (outside M441 scope)**

Layer	Standard	Comments
Information	EN 61968-3	Application integration at electric utilities - System interfaces for distribution management - Part 3: Interface for meter reading and control

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2060 **Table 49 – AMI system – Coming standards (within M441 scope)**

COMING STANDARDS	M	H1	H2/H3	C	G1	G2	L	N
prEN 13757-1	x	x	x	x				
prEN 13757-3	x	x	x	x				
prEN 13757-4	x	x	x	x				
prEN 13757-5	x	x	x	x				
prTR 50491-10	x	x						
prEN 50491-11	x	x						
prEN 50491-12	x	x						
prTS 50567-1				x				
prTS 50568-2				x				
prTS 50568-4		x	x	x				
prTS 50568-5		x	x	x				
prTS 50568-6		x	x	x				
prTS 50568-8		x	x	x				
prTS 50568-9		x	x	x				
prTS 50XXX (mCX1)					x			
prTS 52056-4					x			
prTS 52056-6-6					x			
EN 62056-1-0	x	x	x	x	x	x	x	x
EN 62056-3-1	x							
EN 62056-3-2 ^a								
EN 62056-4-7					x	x	x	
EN 62056-5-3	x	x			x	x	x	
EN 62056-5-8							x	x
IEC/TS 62056-6-9	x				x	x	x	

^aThe planned EN 62056-3-2 standard will be renamed as 62056-7-2.

SGCG/Sec/0042/DC (v2.0)

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Smart Grid Report First set of standards, Nov. 2012

**In process of European
Standardization**

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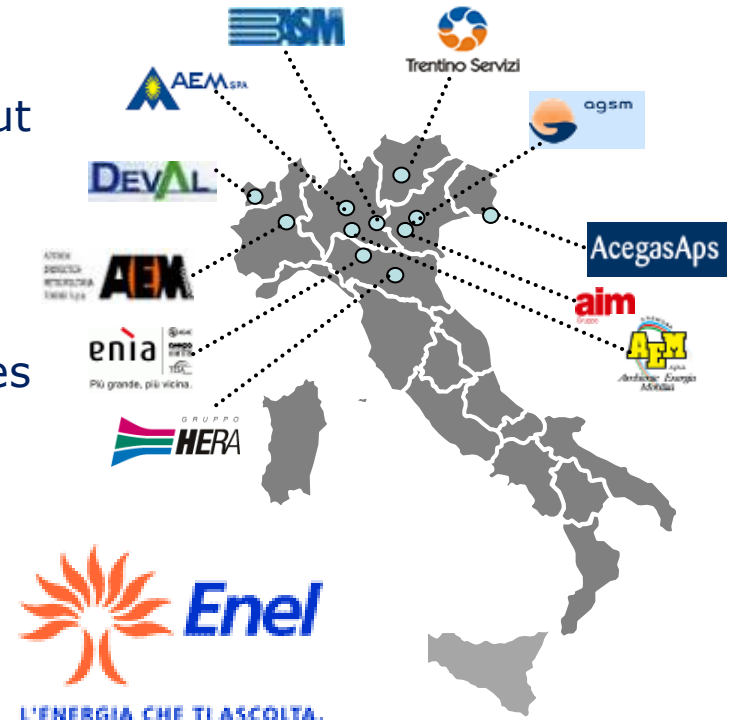
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Meters and More in the field:

Example *Enel Distribuzione*

Enel Telegestore: A proven solution

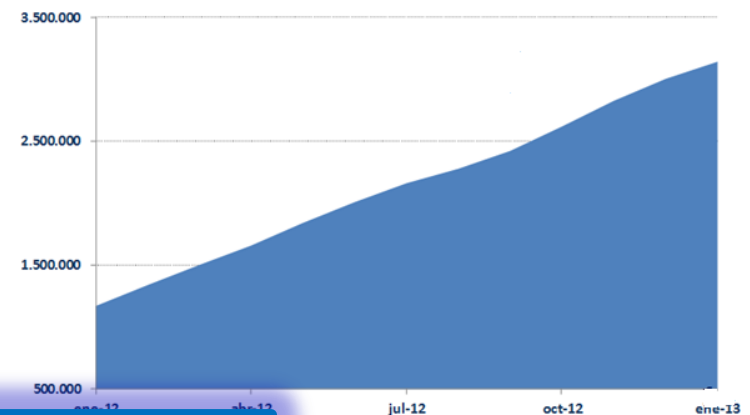
- ❑ The largest Smart Metering roll-out in Europe
- ❑ Proven and reliable solution
- ❑ 30 Italian distribution companies have chosen Enel's solution



35 million meters in operation in Italy

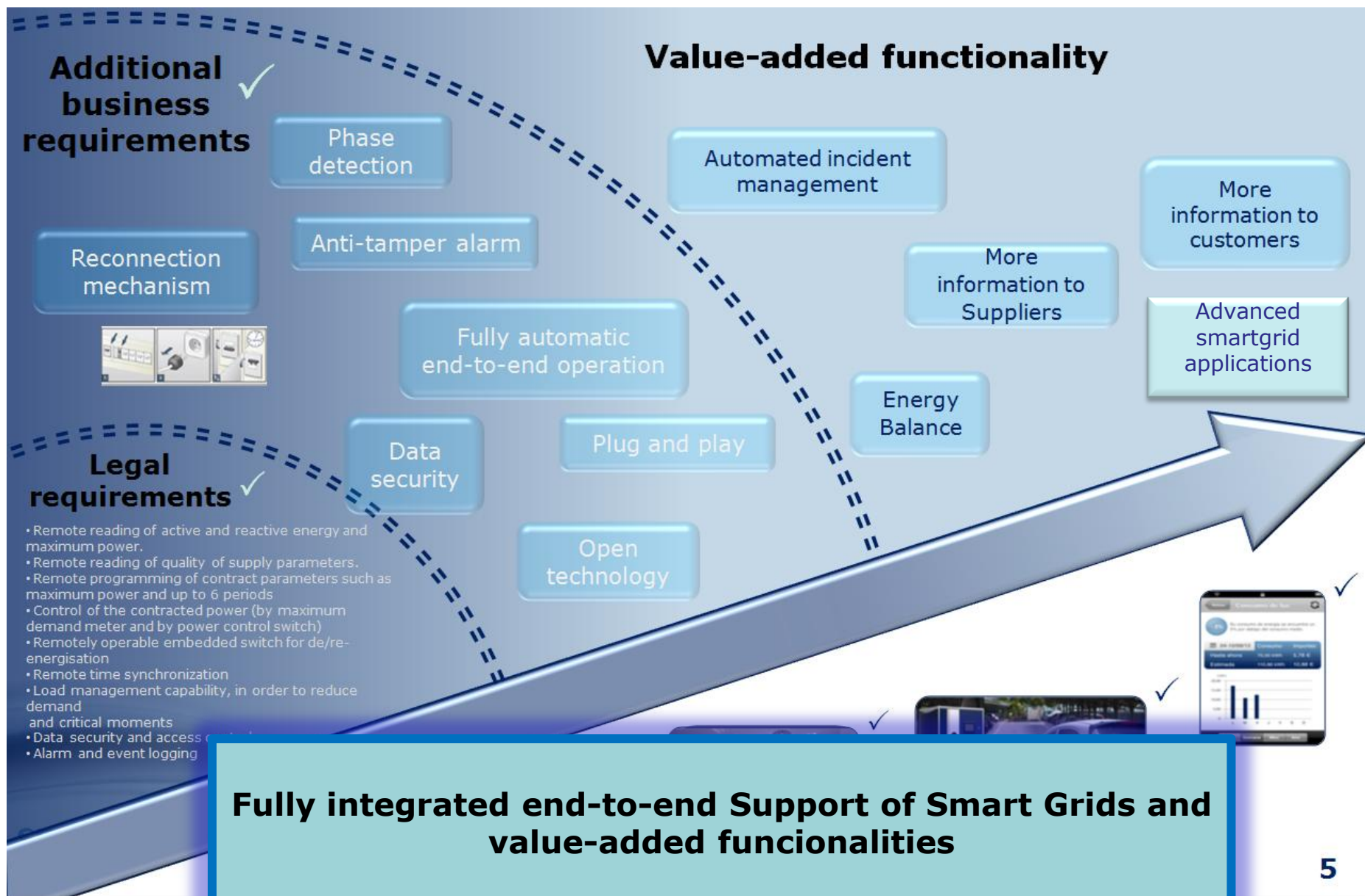
Meters and More in the field: Example *Endesa*

- Largest smart metering project in Spain
- Ongoing mass roll-out
- Project scope: 13 million meters



**Largest ongoing roll-out project in
Europe**

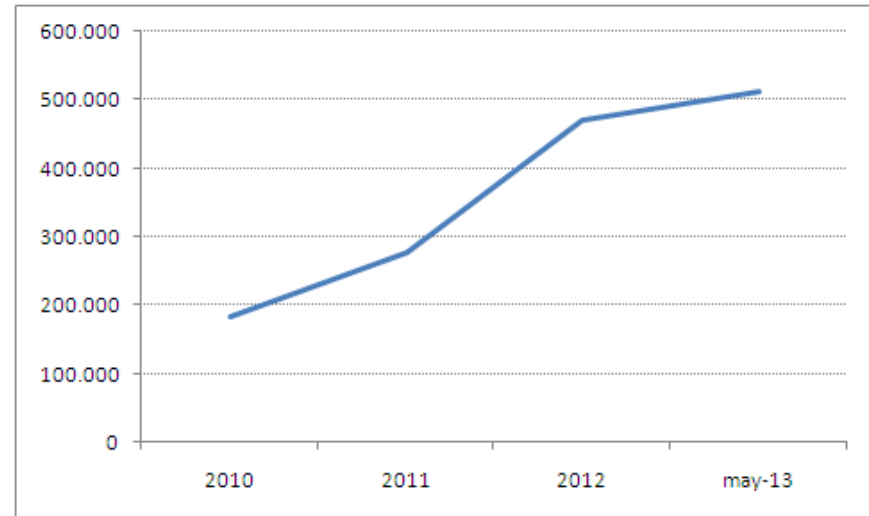
Meters and More in the field: Example *Endesa*



Meters and More in the field:

Example *E.ON in Spain*

- Project Scope: 700.000 meters installed and integrated by 2014
- Smart meters installation started in 2006
- Communications and AMM system fully working
- Remote reading and operation



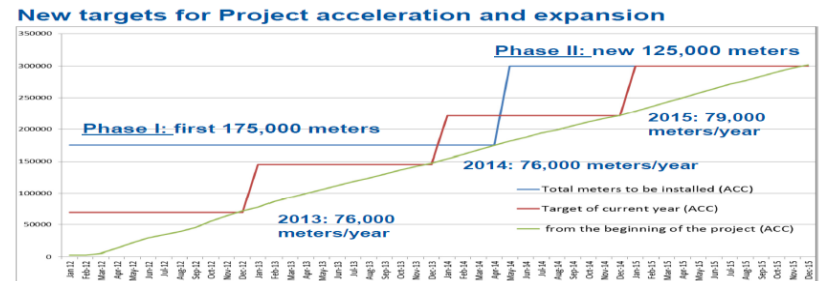
SM installed

Meters and More in the field:

Example *Montenegro*

EPCG installation activities

- 175,000 smart meters to be installed within May 2014 (70,000 already installed)
- Delivery and installation plan in line with the schedule
- High reduction of network losses and increased billing revenues



The largest Smart Meter deployment in the Balkans

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- Open technology
- Fulfills all EU regulatory and market requirements for Smart Metering
- In process of European Standardization
- Widely deployed technology in Europe

- Mass-deployed
- Mature
- Field-proven

- Optimized
- Robust
- Efficient
- Secure



- Multi-scope
- Open
- Flexible

- Interoperable
- Upcoming standard
- EU smart metering requirements

Thank you!

www.metersandmore.eu