



OPEN meter

Open Public Extended Network metering



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7TH FRAMEWORK PROGRAMME

OPEN meter Project

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ENERGY 2008.7.1.1

Official Journal
of the European Union



**The OPEN meter project is an official
initiative by the European Commission**

OJ Reference: OJ C288 of 30 November 2007

Identifier: FP7-ENERGY-2008-1

Topic called: Open Access Standard for Smart Multi-Metering Services



The driver, as seen by the European Commission:

The large scale adoption of **smart metering** is today hampered by the lack of widely accepted open standards capable of guaranteeing interoperability of **systems and devices** produced by different manufacturers

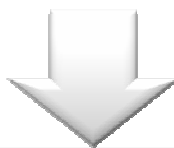


Expected impact by the Commission

after pre-normative research, adoption of these standards will **open up the metering market, enabling active customer participation** to energy markets, and at the same time **allowing EU-industry to take world leadership**

Other information facilitated by the Commission

the typical consortium should be a **well balanced partnership** between network industries, equipment suppliers, research centres and regulatory and standardisation bodies. **A maximum of one project will be funded under this topic**



The OPEN meter project proposal was defined and selected by the Commission, among all other applicants, to meet these ambitious objectives



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Consortium



- Smart Meter Manufacturers
- Telecommunications industry
- Silicon design & manufacturing

- Meter operators
- Network operators
- DNO associations



- R&D labs
- Testing & quality assurance
- Academia

- Normalization
- Standardization

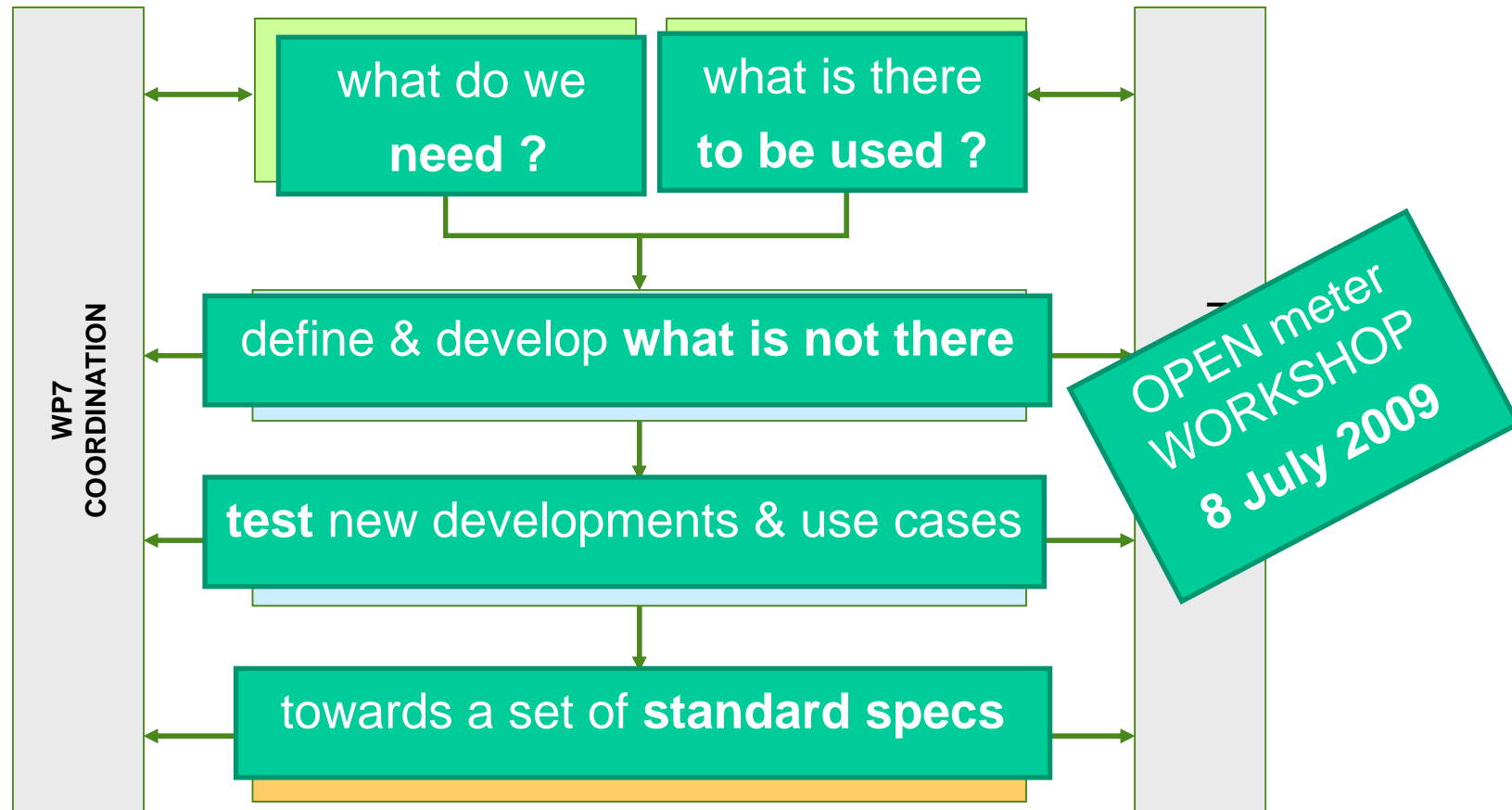


A well balanced consortium of 19 partners



- European collaborative project
- 7th Framework Programme
 - Topic Energy.2008.7.1.1
 - Project Number 226369
- Estimated project duration 30 months: Jan 2009 - June 2011
- Project budget: € 4,2 MM, EC funding: € 2,4 MM
- Consortium with 19 participants
- Total effort committed: 339 person-months
- Project co-ordinator: 
- Project Technical co-ordinator: 
- Official website is <http://www.openmeter.com>

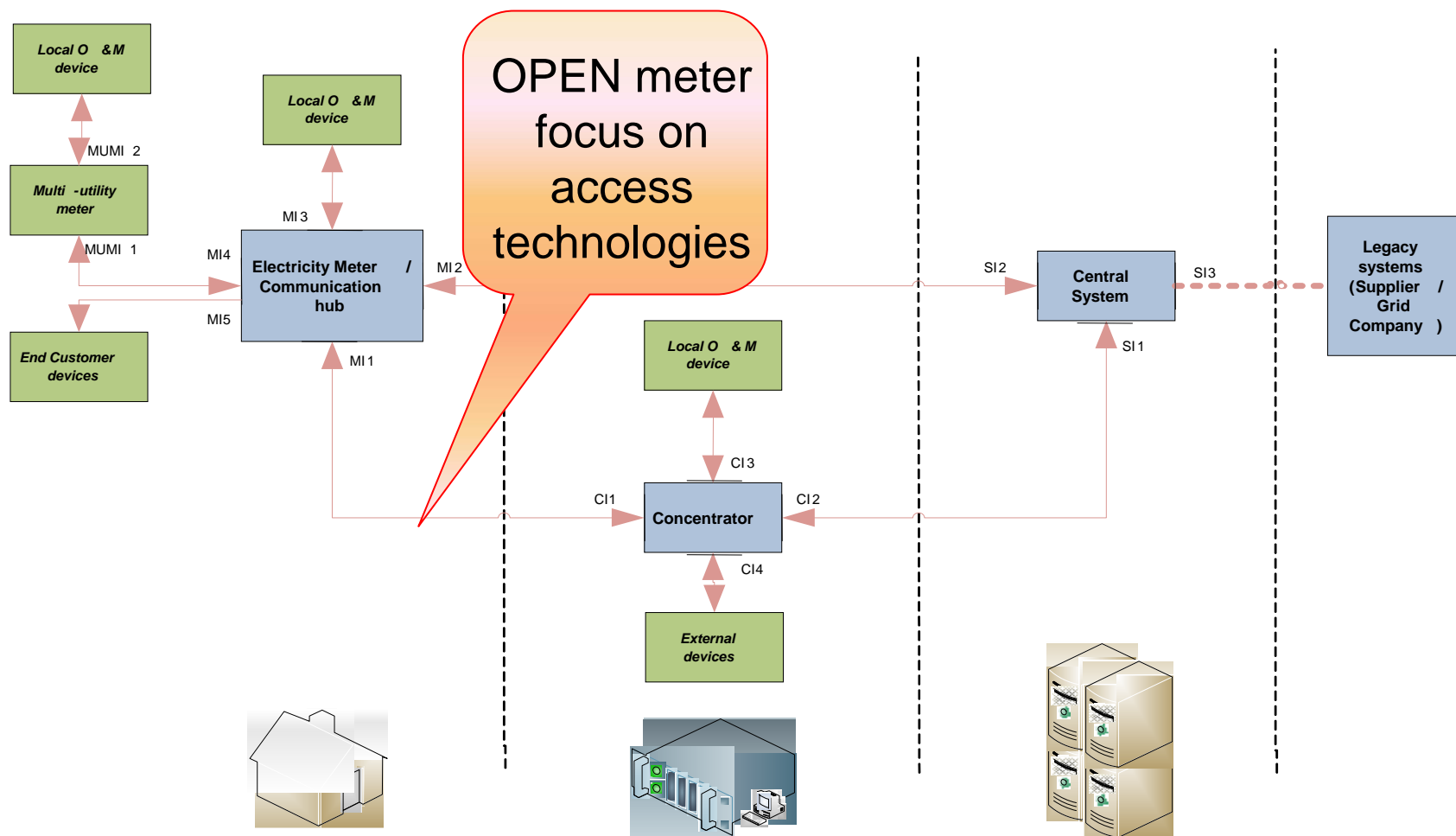


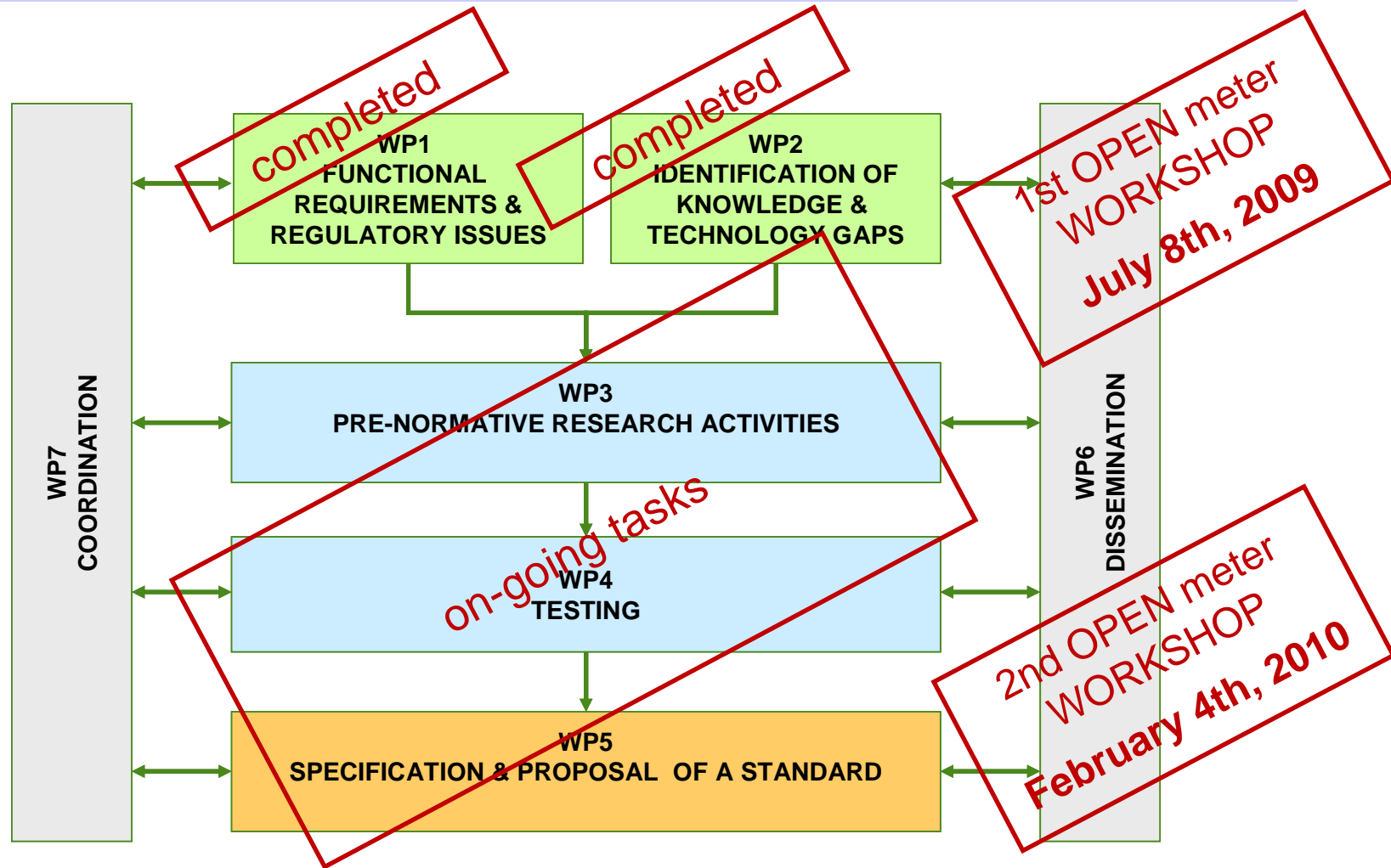


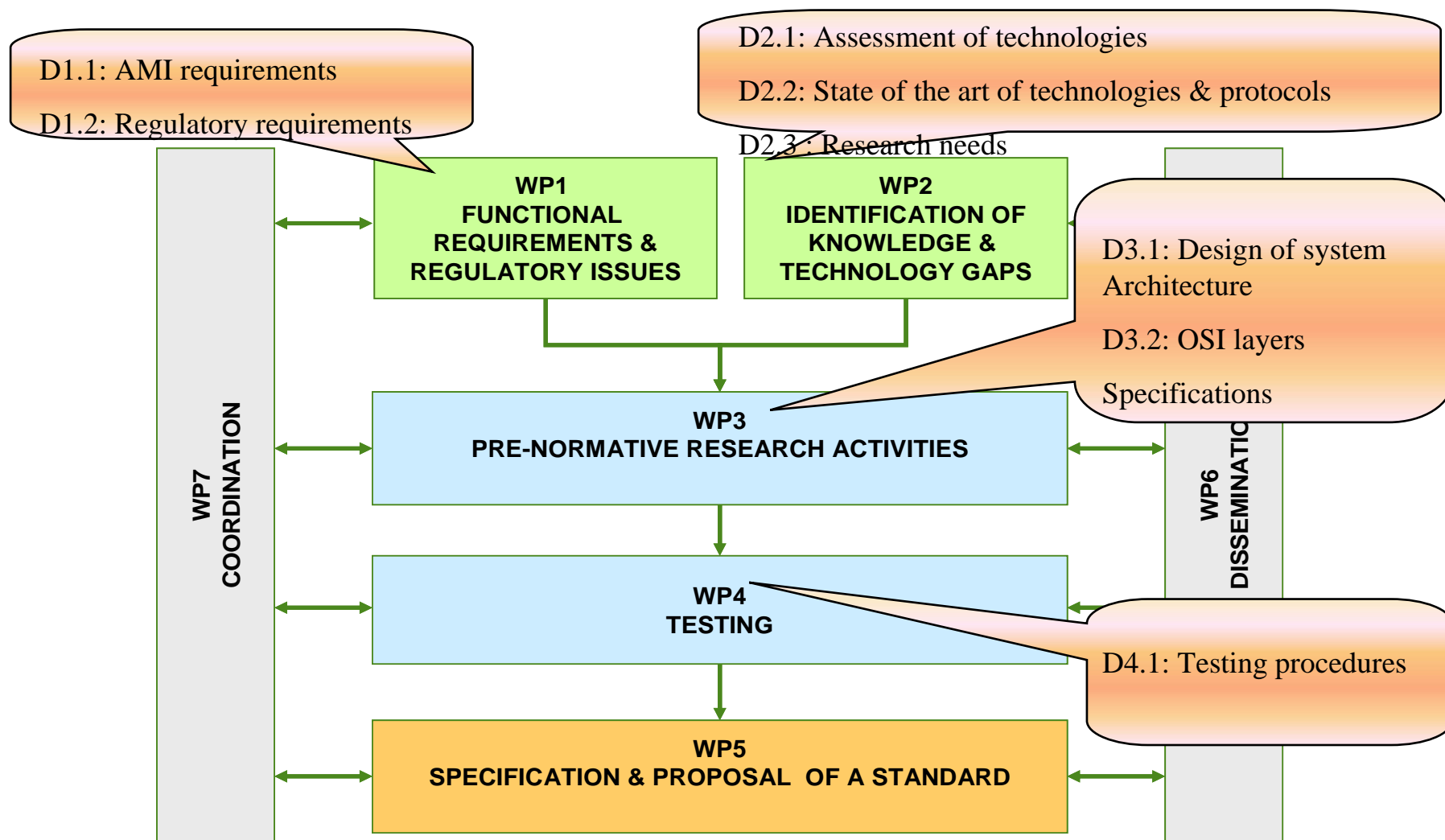
A holistic approach from requirements to standardisation



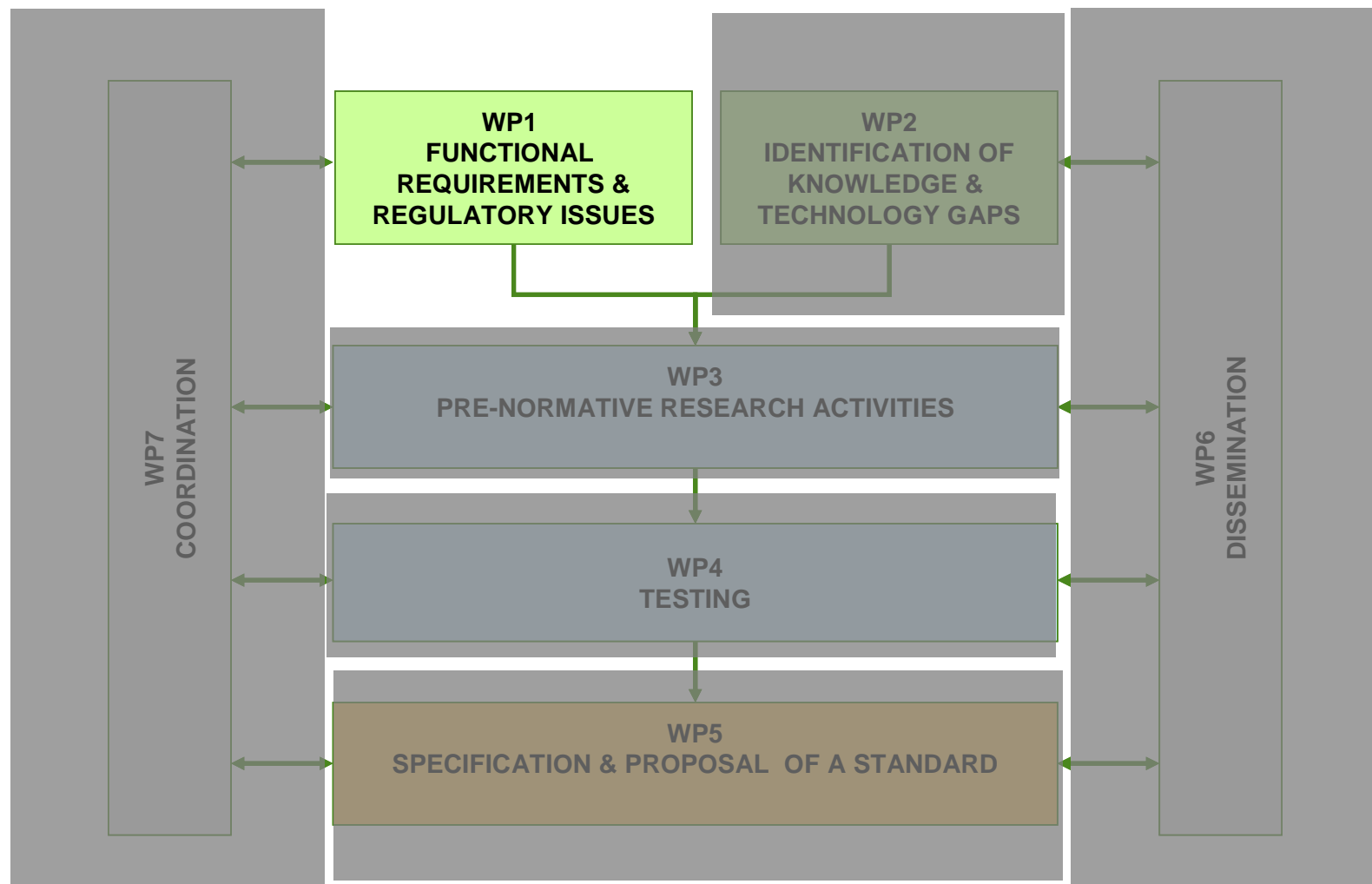
System components and interfaces







All deliverables can be downloaded at official project website www.openmeter.com





Examples of overall system functions and communication requirements

- Meter Registration
- Remote Tariff Programming
- Meter reading (On demand)
- Meter reading (for billing)
- Remote Disconnection and Reconnection
- Power Control
- Clock Synchronization
- Remote Firmware Update
- Alarm and event Management
- Interruption information
- Fraud Detection
- Remote Concentrator access
- Load Profile Management

MINIMUM

- PLC or Wireless Interface
- At least 3.000 end point addresses per concentrator
- The minimum speed for PLC: 2.4 kbps
- Automatic meter detection and adaptation to topology changes
- Phase-detection
- Repeater functionality
- Coexistence

MINIMUM

- Bidirectional connection to other multi-utility meters

ADVANCED

- Automatic adaptation to grid changes
- Meter Availability Control

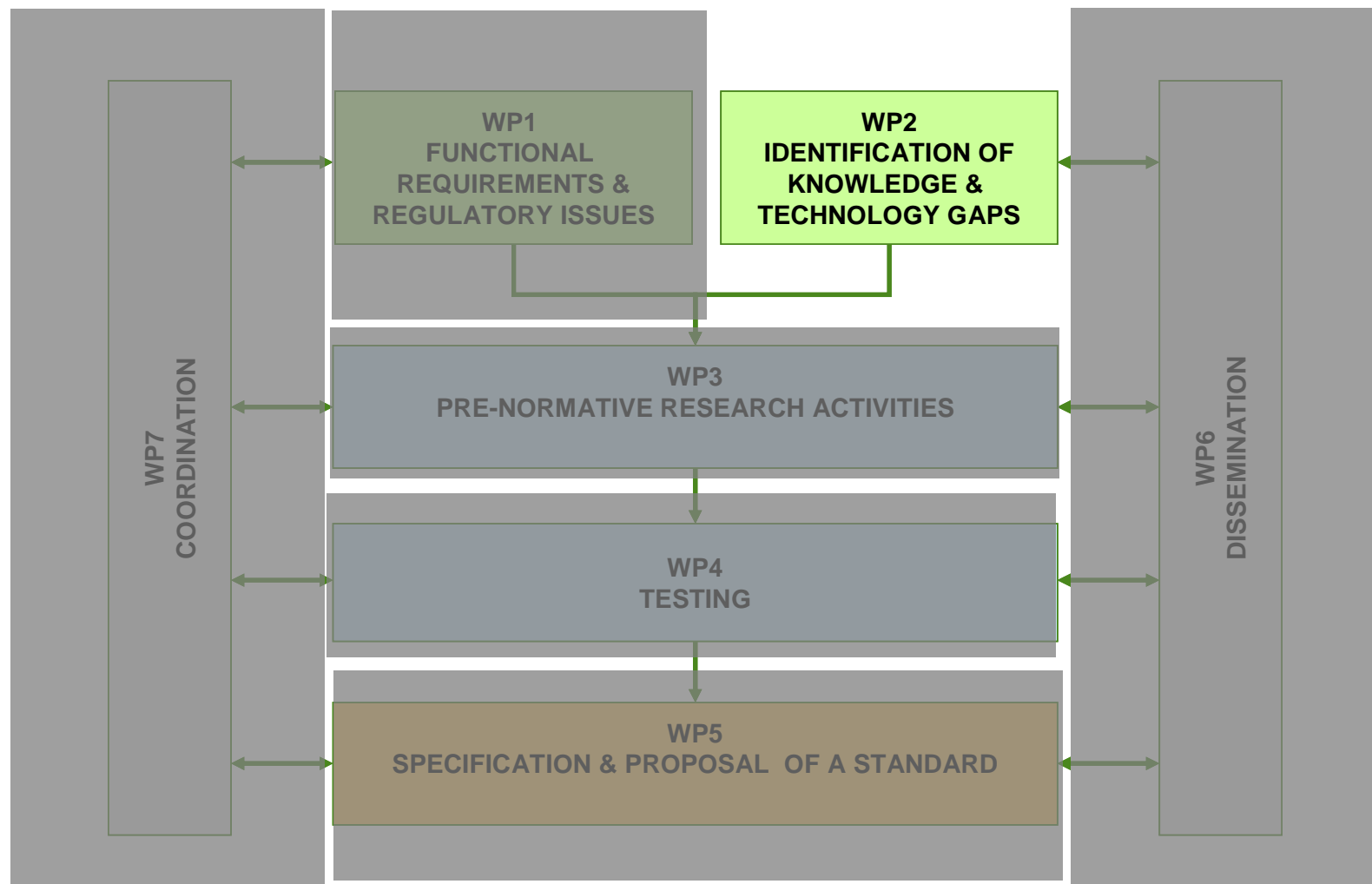
ADVANCED

- Energy Balances
- Load Shedding Management
- Costumer device management
- Power Quality Management
- Prepayment

OPTIONAL

- Possibility of a faster PLC interface
- Use of PLC modem of a meter device to communicate with other nearby meters
- Self-healing and auto-configured repeating mechanism for wireless
- One-directional interface to the end customer

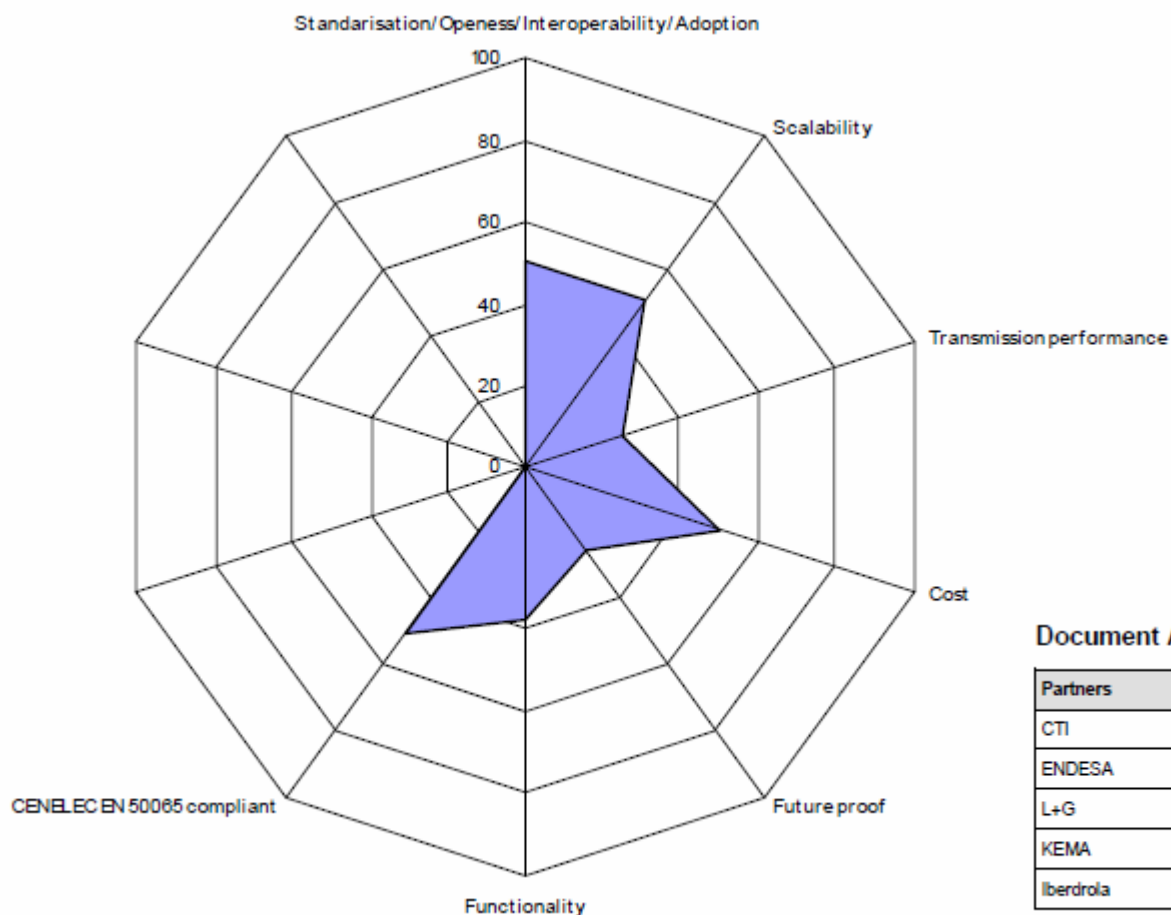
OPTIONAL





Example of technology assessment

■ MI1-CI1 IEC 61334-5-1 (standard)

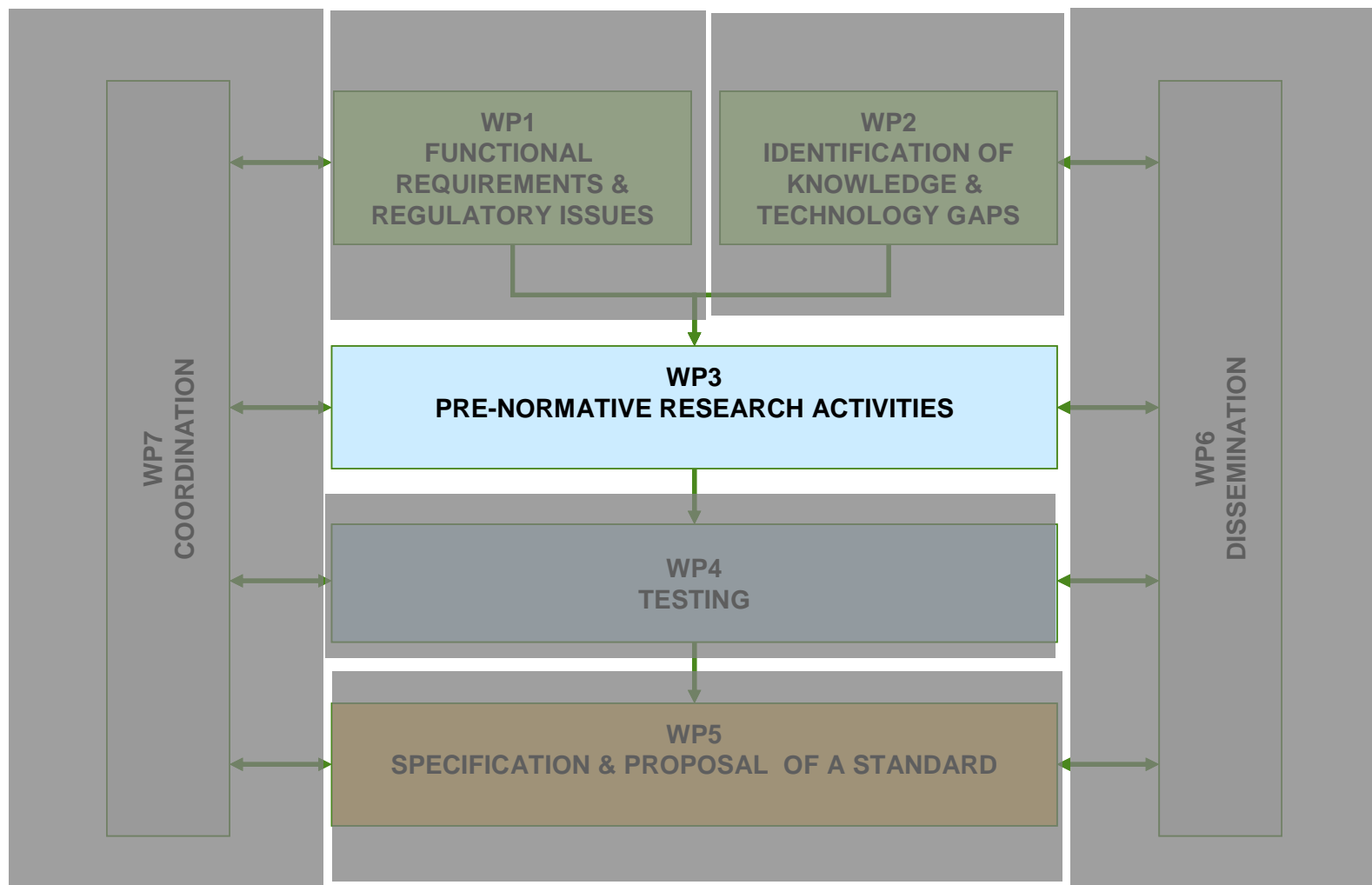


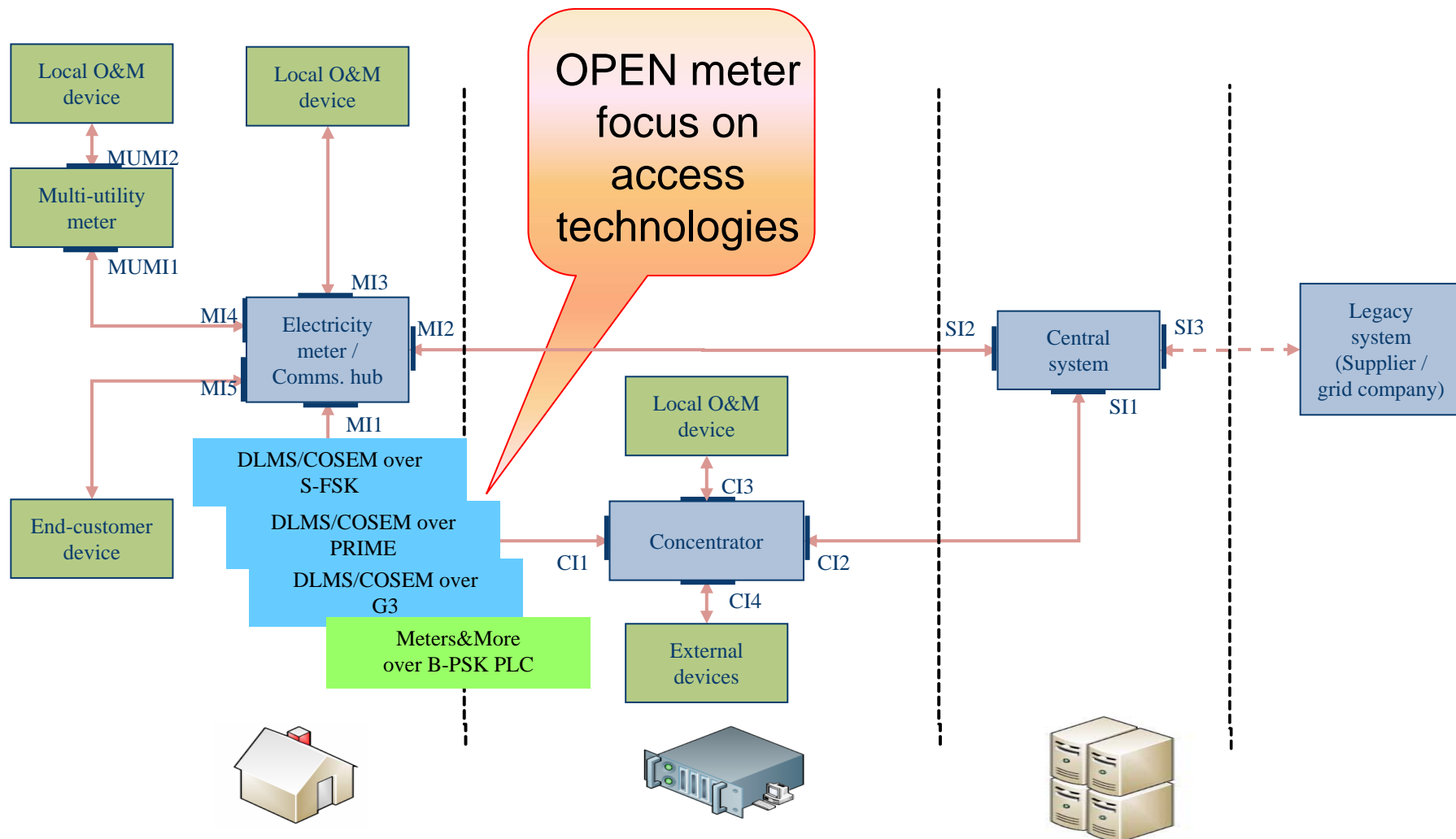
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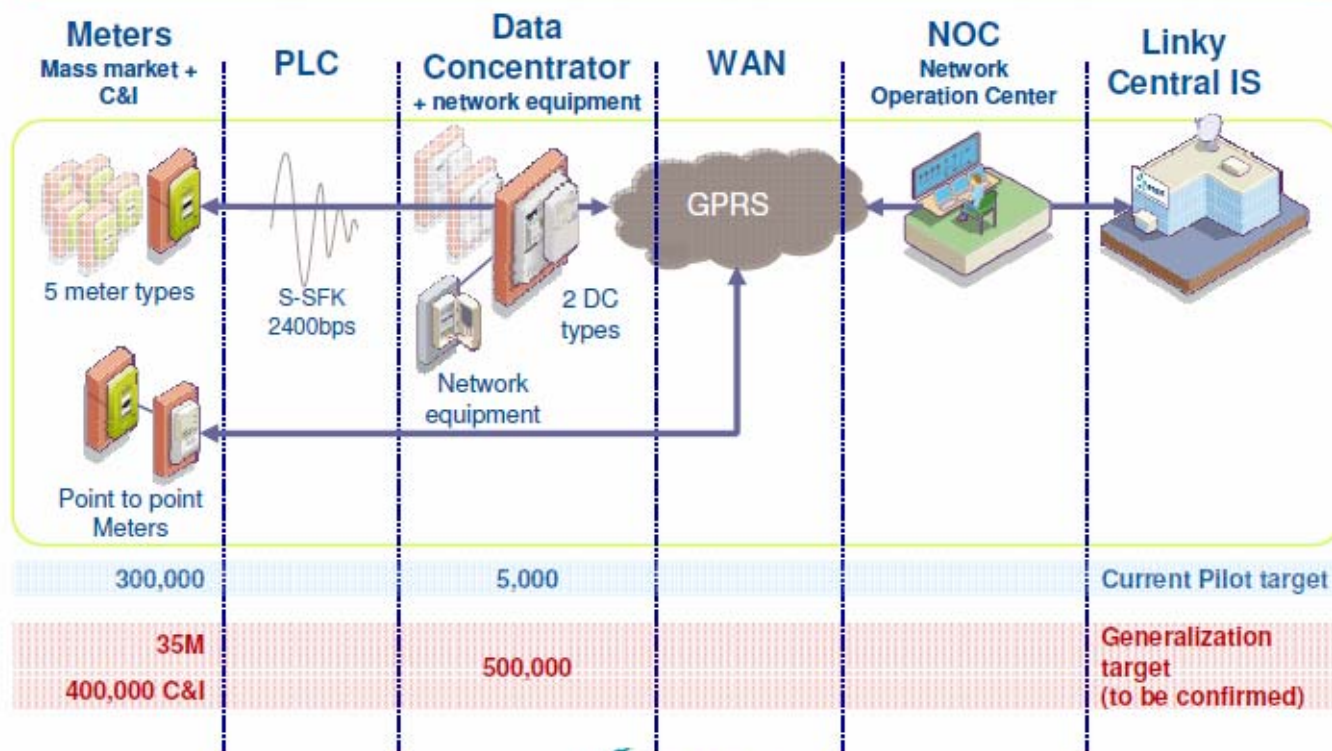
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Linky architecture





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DLMS / COSEM over PRIME

PRIME
ALLIANCE

PRIME standard: some unique characteristics



Meter
manufacturers

 **CIRCUTOR**

 **Itron**

Landis
Gyr+
manage energy better

 **ORBIS**
energía inteligente

 **SAGEMCOM**

 **SOGECAN INDUSTRIAL, S.A.**

 **ZW**

PRIME
providers

 **ST**

 **TEXAS
INSTRUMENTS**

 **ST**

 **ADD**
semiconductor

 **ST**

 **TEXAS
INSTRUMENTS**

 **ADD**
semiconductor

 **uSysCom**



3.2. Future developments

We used this methodology for our
300,000 G1+ meters pilot roll-out.



We will use the same methodology during our
2,000 G3 meters experiment.

This will be the methodology used for our
35,000,000 meters generalized roll-out.





Endesa's Smart Metering System

PLC Communications

Meters and More: Belgium non-profit organization to adapt, maintain and further develop an open communication protocol for automatic metering solutions.

World leading companies from different business sectors have already joined the Association:



SAGEMCOM

CESI

SIEMENS

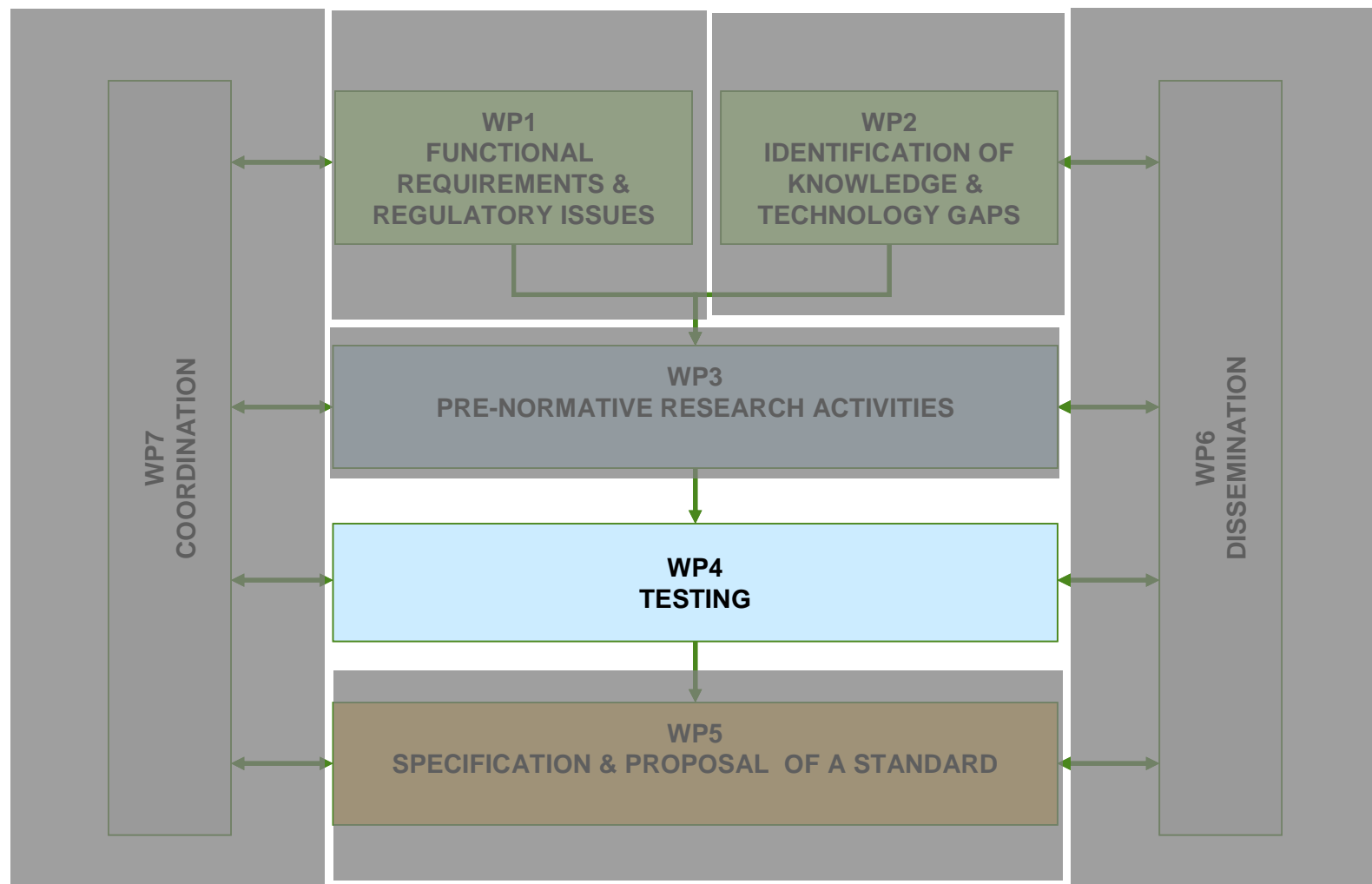
Main characteristics:

- ☐ Built on the specifications of the Enel Telegestore protocol, which is operating successfully in millions of meters using different modulation schemes.
- ☐ Efficiency and robustness: very short messages optimized for PLC and wireless communication.
- ☐ Strong data security: encryption and authentication (128 bit AES).
- ☐ Flexibility through custom tables.
- ☐ Lower cost and consumption than the main alternatives.
- ☐ ST7581 microchip implementation, used by Endesa:

Maximum transmission rate: 28,800 bps, operated at 4,800 bps, BPSK modulation



www.metersandmore.eu





Objective

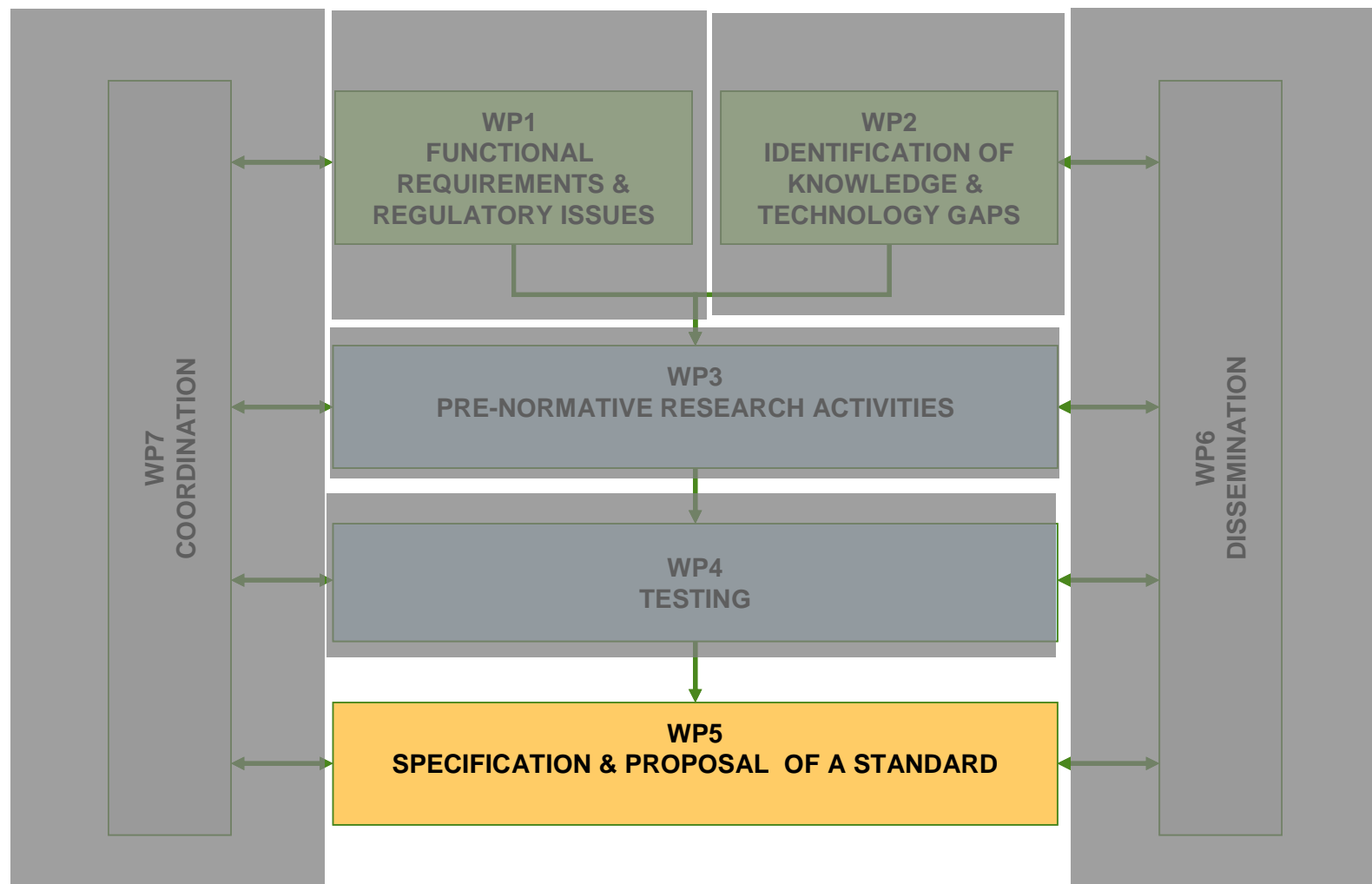
- To be able to test prototypes of the implementations of proposed **OPEN meter** system in an early phase.
- To get insight in the compliance of products to the WP1 requirements and specifications/standards that are defined/selected in WP3.
- To get insight in the interoperability of modules of the **OPEN meter** Advanced Metering Infrastructure.

Deliverables

- WP4 will be delivering the following:
 - D4.1: Report on test approach and test procedures (what will be tested and how the tests should be done).
 - D4.2: delivering a set of prototypes of different meters & modules.
 - D4.3: setting-up physical test facilities and providing a detailed report on those facilities.
 - D4.4: providing recommendations for improvement of standards and test procedures (input for WP5)

WP Status

- D4.1 is already published. Tasks are progressing well





Objective

- To Create a formal OPEN meter system specification
- Prepare and promote the specification for standardisation
- Initiate and support the standardisation process with European and International standardisation organisations

Deliverables




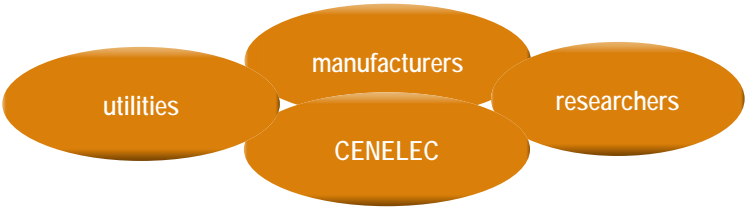
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Work plan

Y	5(6)2056-1y Framework All TRs in this column	5(6)2056-2y Local Interface OM: MI3	5(6)2056-3y Lower layers Twisted Pair	5(6)2056-4y Lower layers	5(6)2056-5y Application L	5(6)2056-6y Data models	5(6)2056-7y Profiles HAN OM: MI5 MUM11-MI4	5(6)2056-8y Profiles NAN/LAN OM: MI1-CI1	5(6)2056-9y Profiles WAN OM: MI2-SI2 CI2-SI2
0	Standardization framework, architecture								
1	Use Cases + Services	Direct local data exchange	Use of LAN on twisted pair with carrier signalling "Euridis"	PSTN with Link+ protocol	Euridis AL (with DLMS)	Object Identification system (OBIS)	DLMS/COSEM on Euridis		
2	Mapping the COSEM model to services			PL for CO async data exchange	Euridis DLMS Mgt. Server	COSEM Interface classes	DLMS/COSEM on M-Bus wired		
3					COSEM AL (with xDLMS)		DLMS/COSEM on M-Bus w-less	DLMS/COSEM on PLC S-FSK	
4				PLC PRIME PHY + MAC				DLMS/COSEM on PLC PRIME	
5		Local Interface one way "TIC"		PLC G3 PHY + MAC			DLMS/COSEM w-less (also for NAN)	DLMS/COSEM on PLC G3	
6				DL using HDLC protocol			DLMS/COSEM on 3-layer HDLC (local IF)		DLMS/COSEM on 3-layer HDLC (PSTN, GSM)
7				COSEM TL for IPv4 + IPv6					DLMS/COSEM on IP
8					SML container services				COSEM on SML services
OM	Mapping the MORE model to services	MORE local IF		PLC MORE PHY + MAC	MORE AL	MORE data model	MORE on PLC (in home)	MORE on PLC	MORE on IP

PL: Physical layer – MAC: Medium Access Control sublayer – DL: Data link layer – TL: Transport layer – AL: Application layer – CO: Connection oriented
Existing standards – Contributions from OPEN meter OM: D5.1/2



- The OPEN meter project is an **official initiative** by the European Commission
- **Objectives and timelines** are very much aligned with those established in M/441   
- Partners have the technical expertise needed for success 
- The Panel of Users & Stakeholders will provide the project with **valuable input and feedback**
- The OPEN meter project is committed to offer an **active participation** in the M/441 coordination group and other international initiatives by 