

IEC 62056 DLMS/COSEM

Overview

Ofgem WS, 20.12.2010

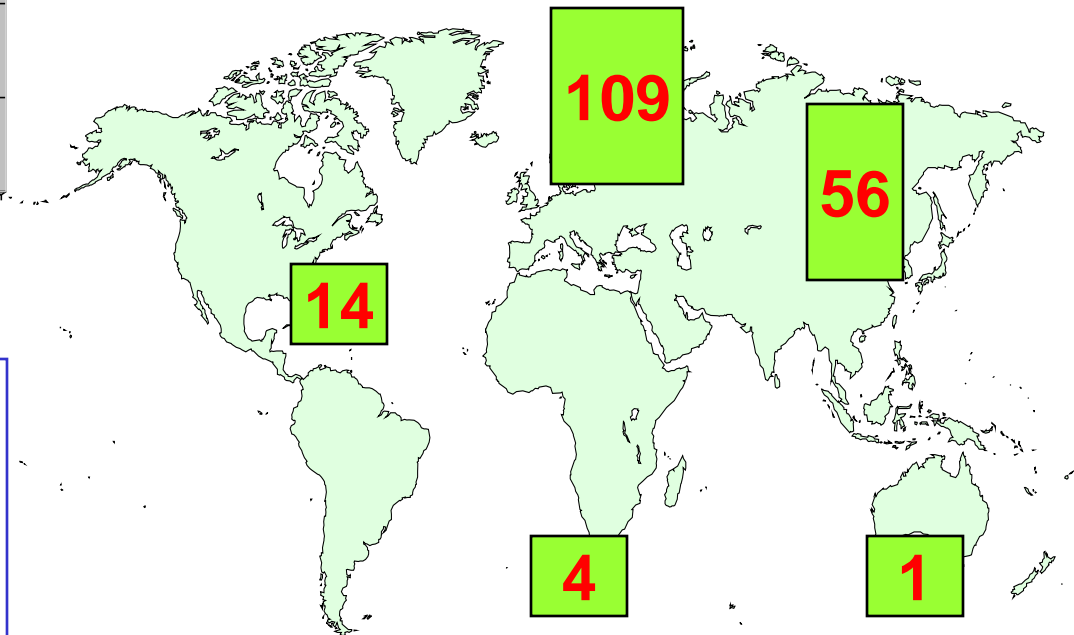
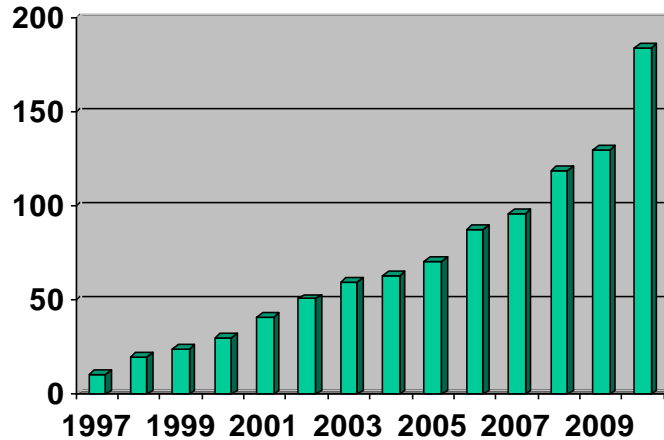
Thomas Schaub, DLMS UA, Mgt. Committee

DLMS UA Mission, objectives, services



- Mission:
To develop open standards for meter data exchange, ensuring interoperability, in order to optimize business processes, increase efficiency and secure investment
- Objectives
 - pre-standardization for meter data exchange, market relevance
 - identify possible applications
 - lobby with potential users
 - provide networking opportunities for experts, share best practices
 - represent members in international standard organizations
- Services
 - specification maintenance and development
 - registration authority for IEC 62056
 - technical support and training
 - operate conformance certification scheme

DLMS UA factsheet



- Formed in 1997
- 180+ members (Sept 2010)
- 5 continents - 40 countries
- from all branches of the industry
- 150+ Product Certificates

DLMS UA membership



Regular members

- Joining fee: € 1,000
- Annual fee: € 1,000
- Mgmt. Committee: 7 seats
- Voting rights

Associated members:

- Organizations with mutual interest



Benefits:

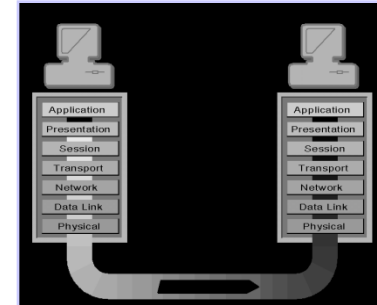
- Access to the specification „Coloured books”
- Access to conformance test tool and certification (Regulars)
- Participation in the management and technical work
- Technical support

DLMS UA Milestones

- 1997: DLMS UA established
- 1999: First implementations hit the market
- 2002:
 - International standards published: IEC & CEN
 - Conformance testing in place
 - Training seminars launched
- 2003 - 2005: Global spread
 - Solidly established in the C & I sector
- 2006 - 2010:
 - IEC 62056 Ed. 2.0 2006
 - Specification enhanced for smart metering and gas metering
 - Selected by M/441 and OPEN meter as core standard for smart metering
 - IEC 62056 Ed. 3.0 in preparation

DLMS UA Working groups

- WG Maintenance and development
 - registration of standard elements
 - development of new elements
 - development and validation of the CTT
 - project Teams PLC and Gas



- WG Final End users and Developers
 - feedback from the field and from developers
 - identification of new requirements

The DLMS/COSEM standards



COSEM interface object model OBIS identification system

| Class name | Cardinality | Data Type |
|---|-------------|--------------|
| Attribute(s) | | |
| 1. logical_name | (static) | octet-string |
| 2. | (..) | |
| 3. | (..) | |
| Specific Method(s) (if required) | | |
| 1. | | |
| 2. | | |

- Data
- Tariff functions
- Access control
- Comm. setup

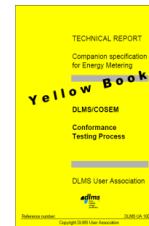
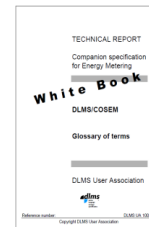
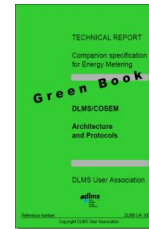
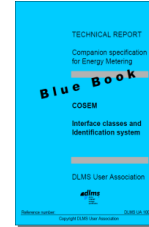


COSEM application layer

Connection

DLMS
Messaging

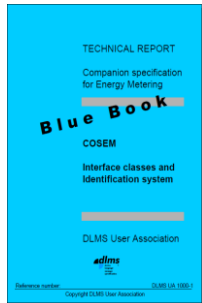
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| | |
|--|---|
| <p>IEC 62056 -61 -62</p> | <p>EN 13757 Part 1</p> |
| <p>-42 -46 -47 -53</p> | |
| <p>IEC 62051-1</p> | |

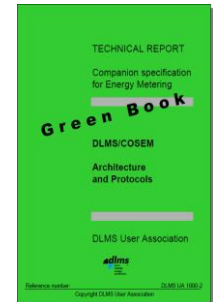


The „Coloured books”

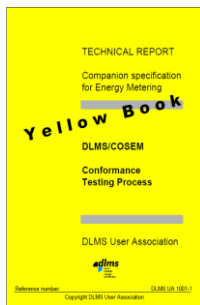


Specifies the **DATA MODEL** comprising the COSEM interface classes and OBIS codes for the various energy types. Internationally standardized by the IEC and CEN.

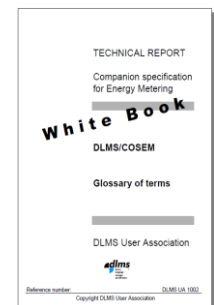
Specifies the **PROTOCOLS** with DLMS on top, for the various media-specific communication profiles, based on widely used ISO/IEC, Internet, NIST and FIPS standards. Internationally standardized by the IEC and CEN.



Specifies **CONFORMANCE TEST** plans for the COSEM object model and the communication layers, and describes the testing and certification process.

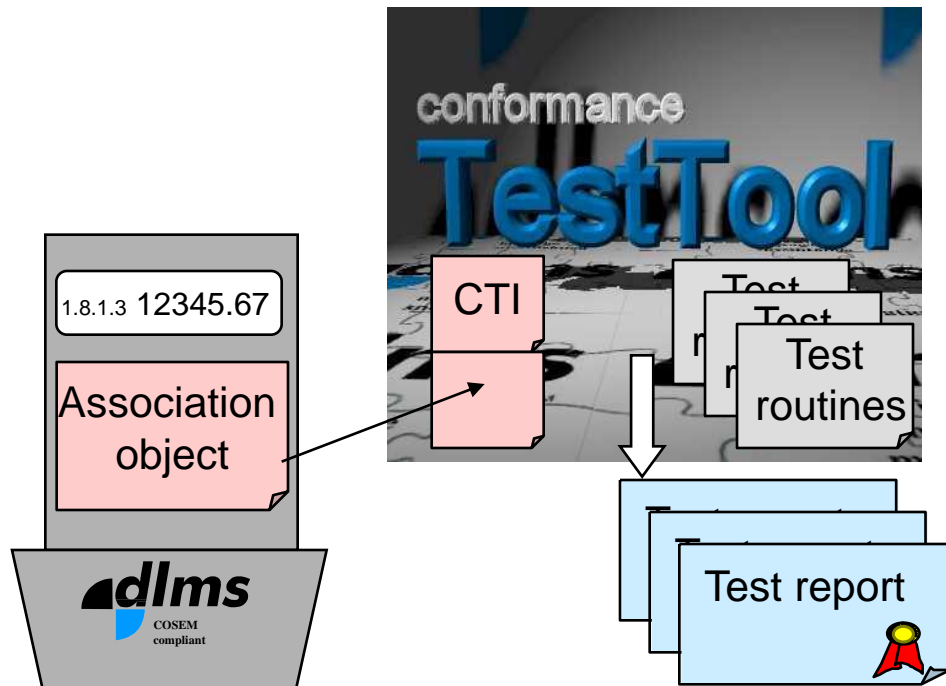
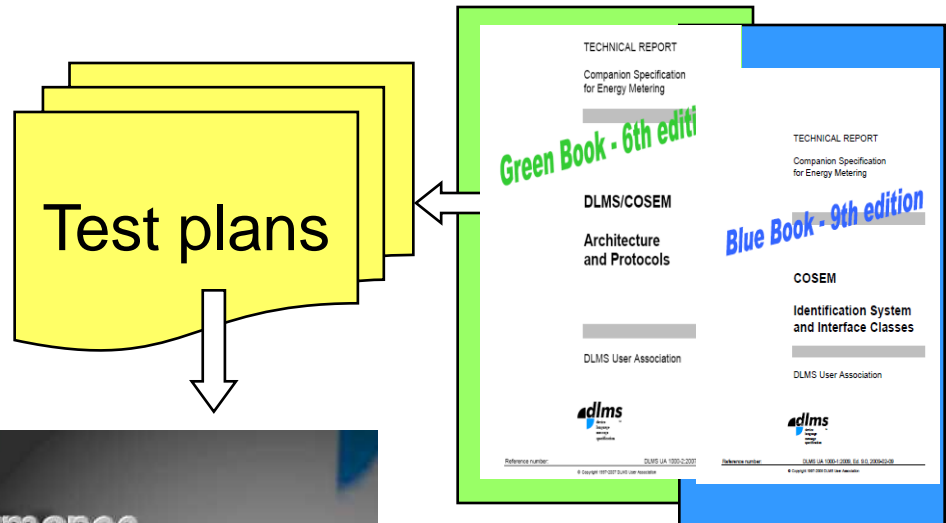


GLOSSARY OF TERMS helps to understand the specification. Internationally standardized by the IEC.



DLMS Conformance Tester

- Automatic test execution by the manufacturer or third party tester
- Verification / certification: DLMS UA



Electricity metering standards



International Electrotechnical Commission

TC 13 - Electrical energy measurement and load control

WG 14 - Data exchange for meter reading, tariff and load control

- IEC 62051-1:2004: *Terms related to data exchange using DLMS/COSEM*
- IEC 62056-21:2002, *Direct Local Data Exchange (3rd ed. of IEC 61107)*
- IEC 62056-42:2002, *Physical layer services and procedures for connection oriented asynchronous data exchange*
- IEC 62056-46:2007, *Data Link Layer using HDLC protocol*
- IEC 62056-53:2006, *COSEM Application Layer*
- IEC 62056-61:2006, *OBIS Object Identification System*
- IEC 62056-62:2006, *Interface Objects*
- IEC 61334-6:2000, *A-XDR encoding rules*

Water, gas, heat metering standards



European Committee for Standardization

TC 294 - Communication systems for and remote reading of meters
WG 2 - Application Layer

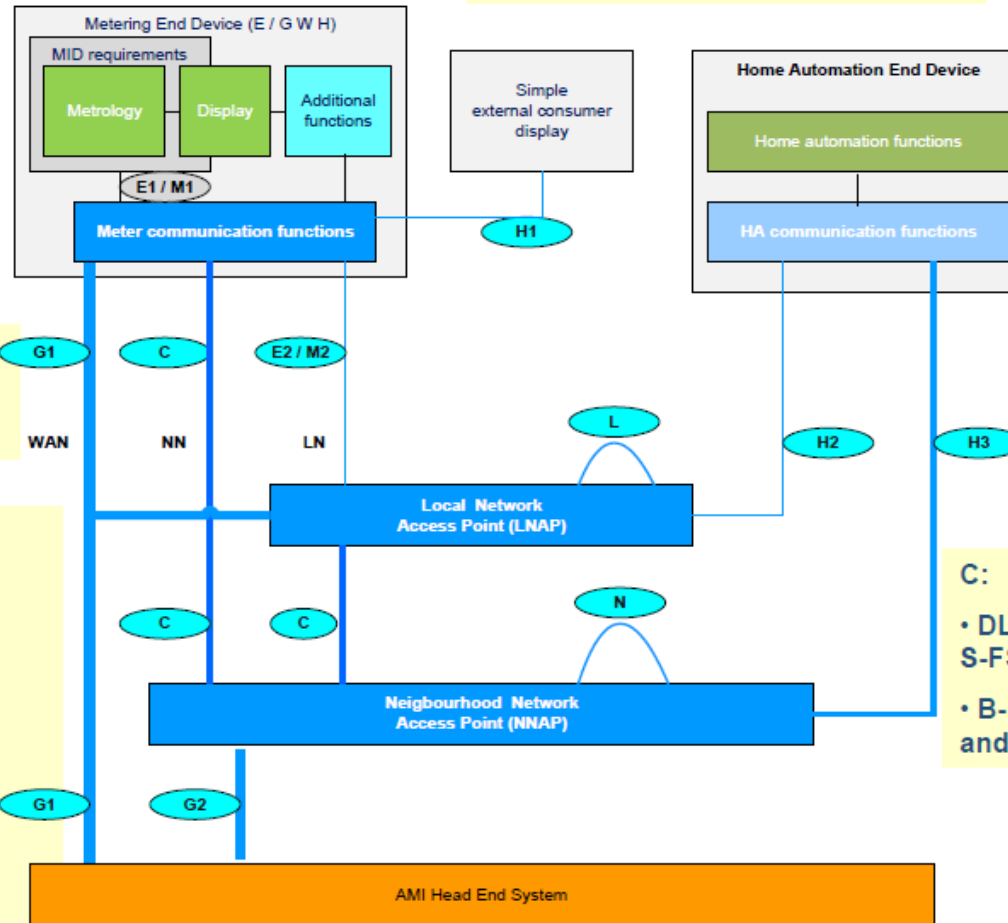
EN 13757-1: Communication system for and remote reading of meters - Part 1: Data exchange

- General description - Network Architecture
- Data exchange using local connections (from IEC TC 13)
- Data exchange using local area network (M-Bus, Euridis from TC 13)
- Data exchange using wide area network (from IEC TC 13)
- Data exchange using radio communication (TC 294 WG 5)
- Object Identification System for HCA, cooling, heat, gas, water

The EU smart metering mandate M441

Interface standards

- H1:**
- DLMS/COSEM on local port
 - B-PSK PLC (METERS and MORE)

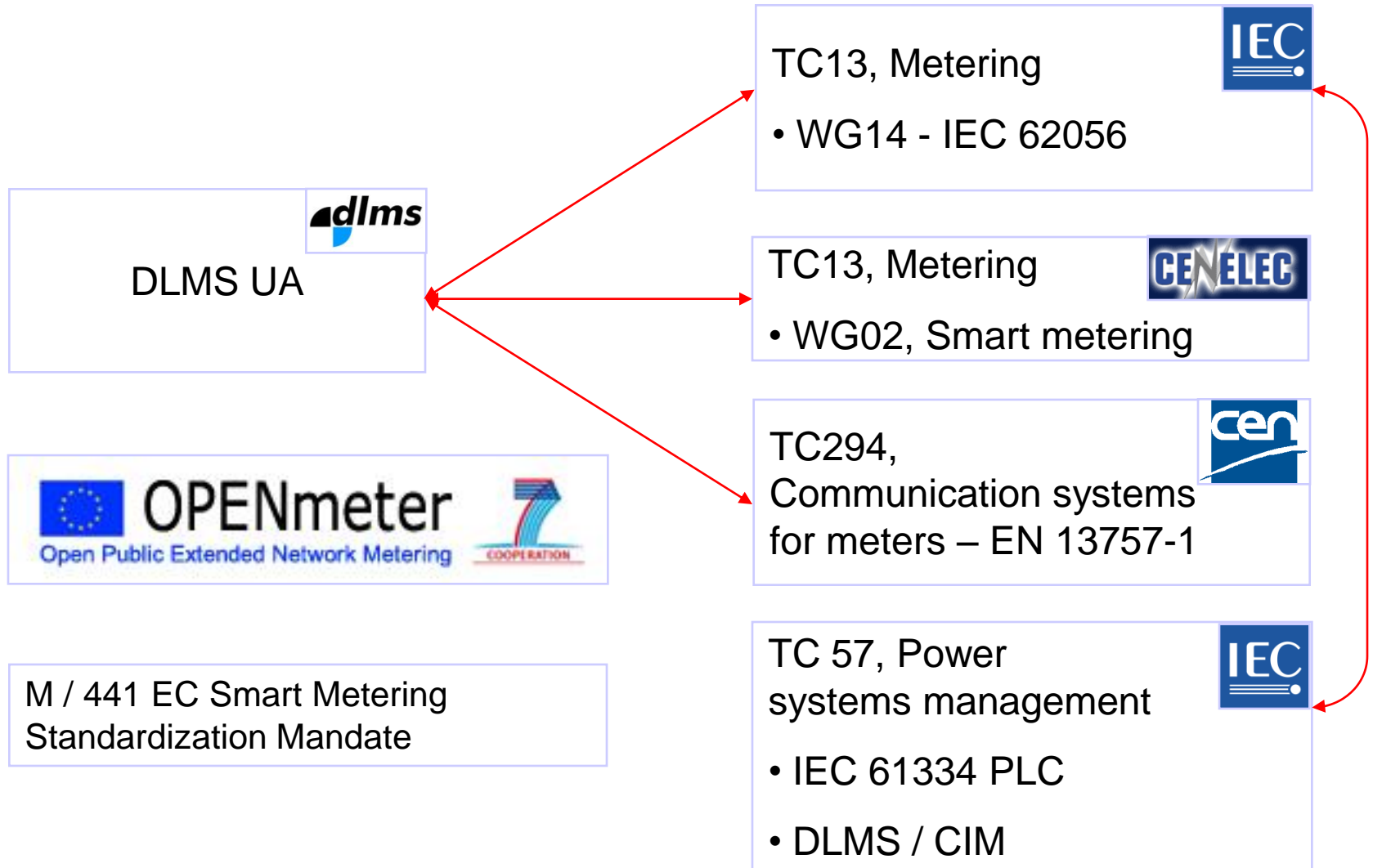


- E2 / M2:**
- DLMS/COSEM on M-Bus, Euridis

- G1:**
- DLMS/COSEM on GPRS / Ethernet
- G2:**
- DLMS/COSEM with web services (under consideration)
 - METERS and MORE GPRS

- C:**
- DLMS/COSEM on PLC: S-FSK, PRIME, G3
 - B-PSK PLC (METERS and MORE)

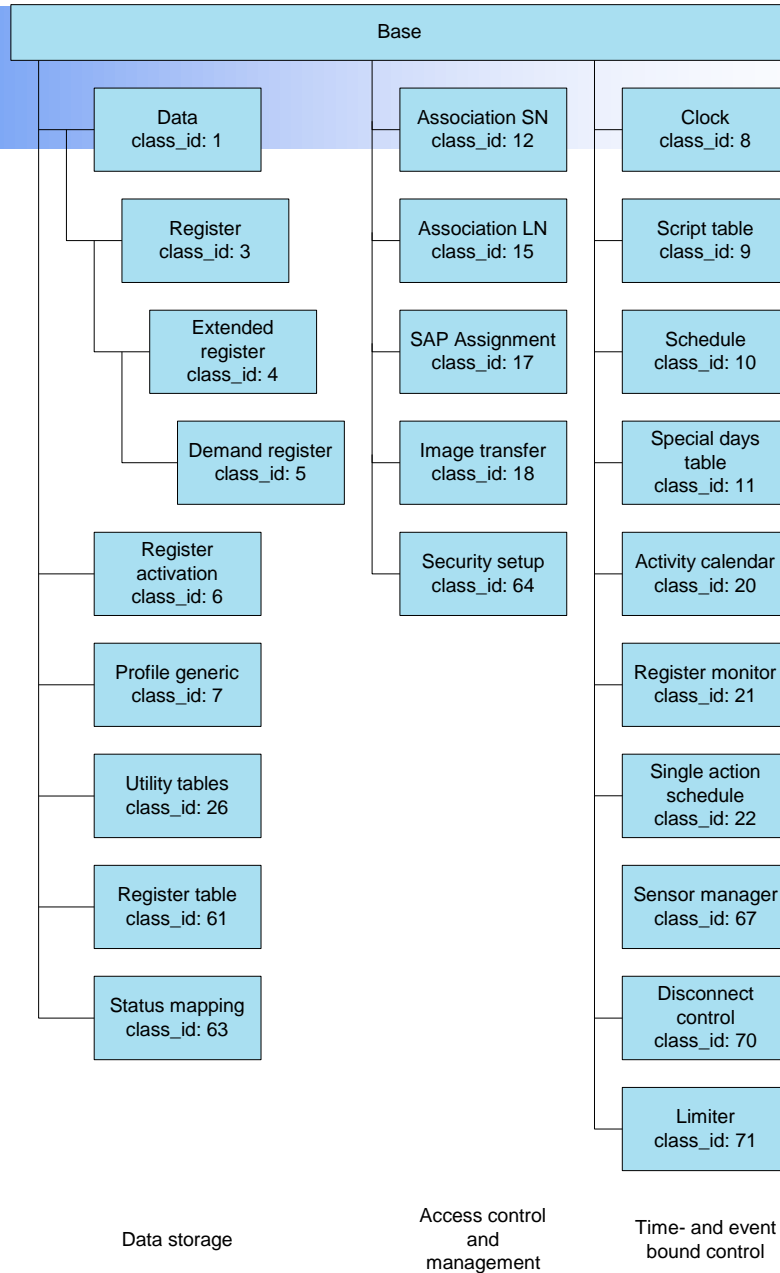
DLMS UA in international standardization



DLMS/COSEM Technology

device
language
message
specification

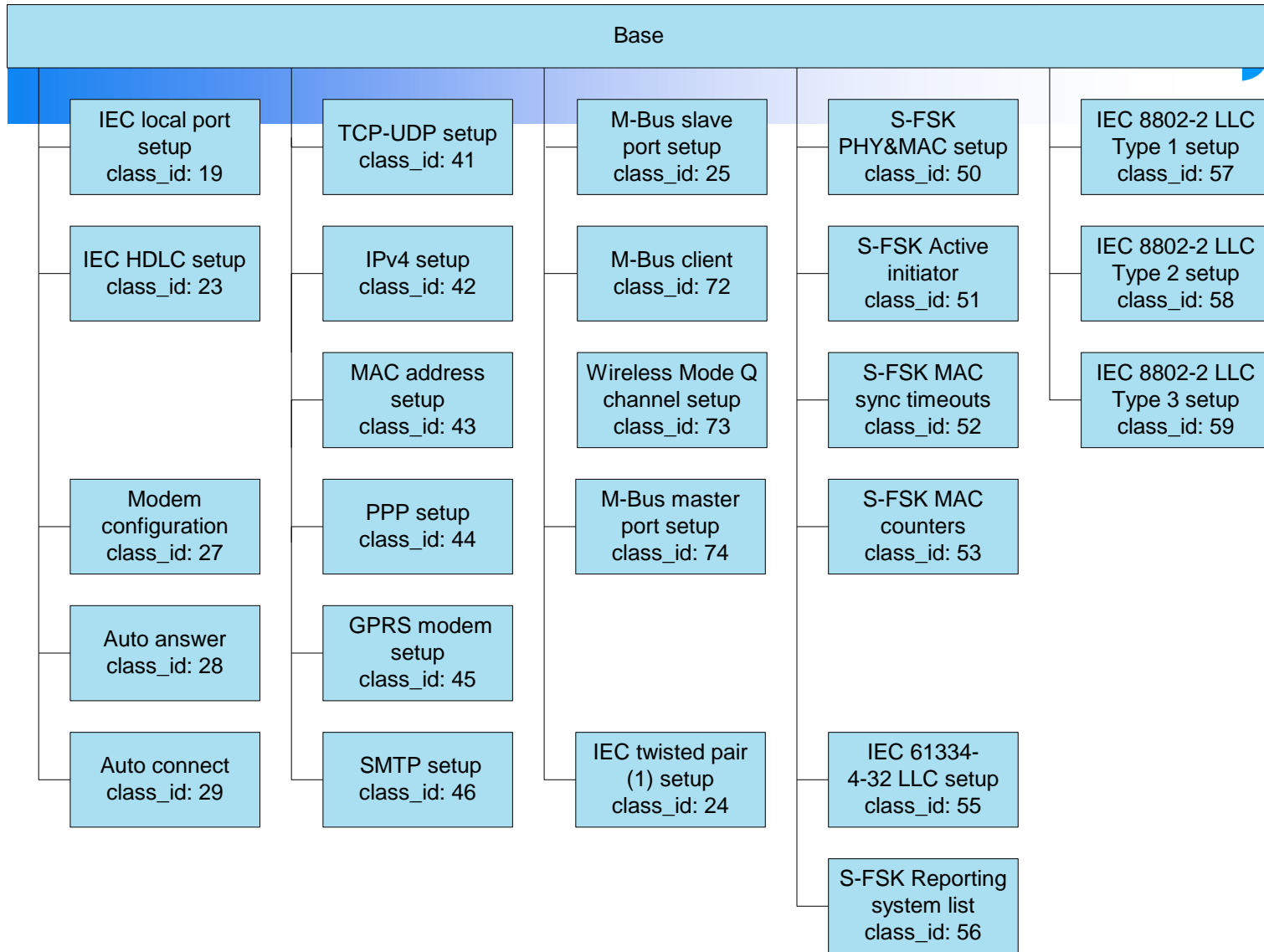
The following two slides show the interface classes



Data storage

Access control
and
management

Time- and event
bound control



Communication channel setup