ESMIG
EUROPEAN SMART METERING
INDUSTRY GROUP

WE MAKE
METERING SMART

ESMIG organisation and activities

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April 2013

Contents

- ESMIG organisation & market overview

- Privacy/Security

- Architectures

- Communication requirements

Our members

Smart Meters CBAs: On Target in Electricity?
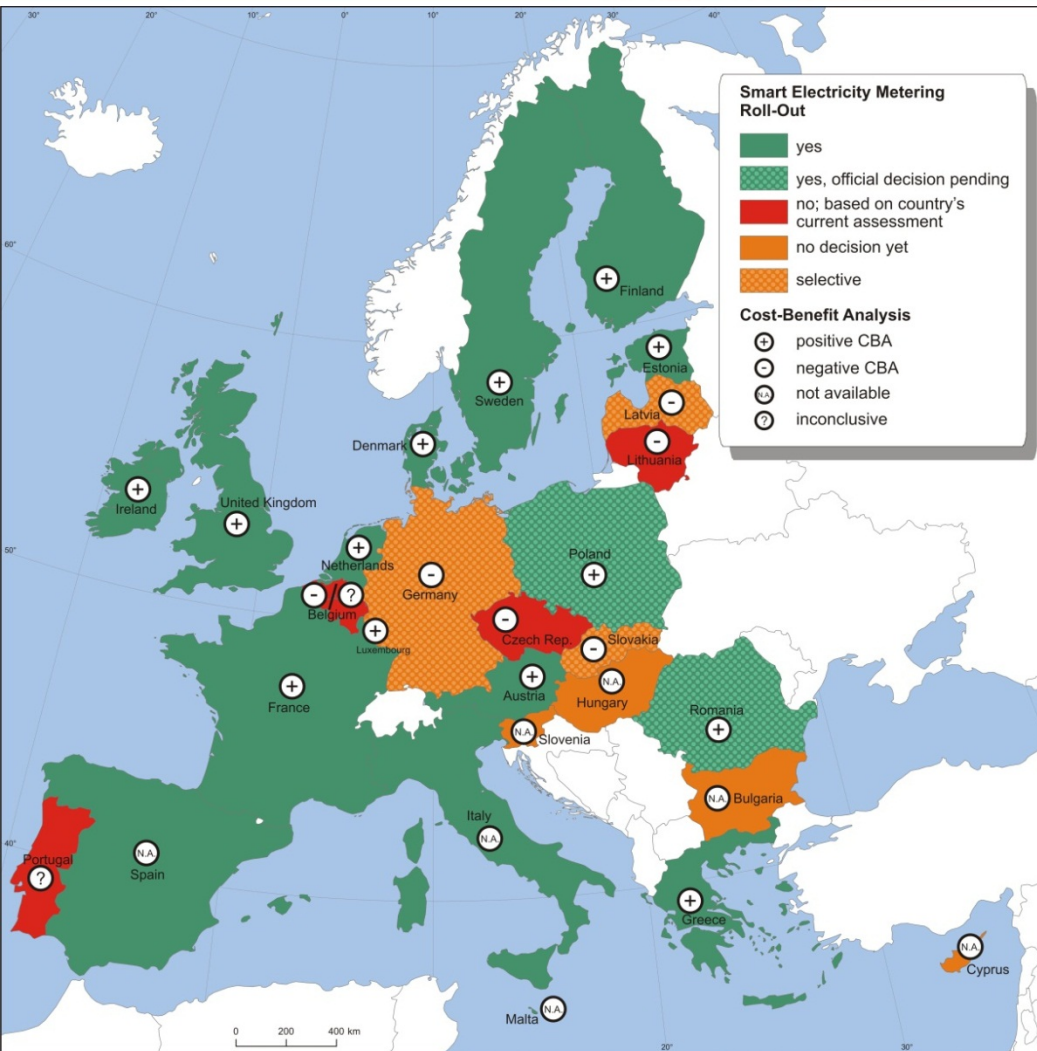
Roll out of ELECTRICITY smart metering by 2020

❖ **20/21 CBAs, 16 MS: wide roll-out**

❖ **~ 72% EU consumers**

❖ **195 million meters**

❖ **€35 billion**

The market for Smart Metering

Smart Meter Penetration (of All Electric
Meters) by Region, World Markets: 2010-2020
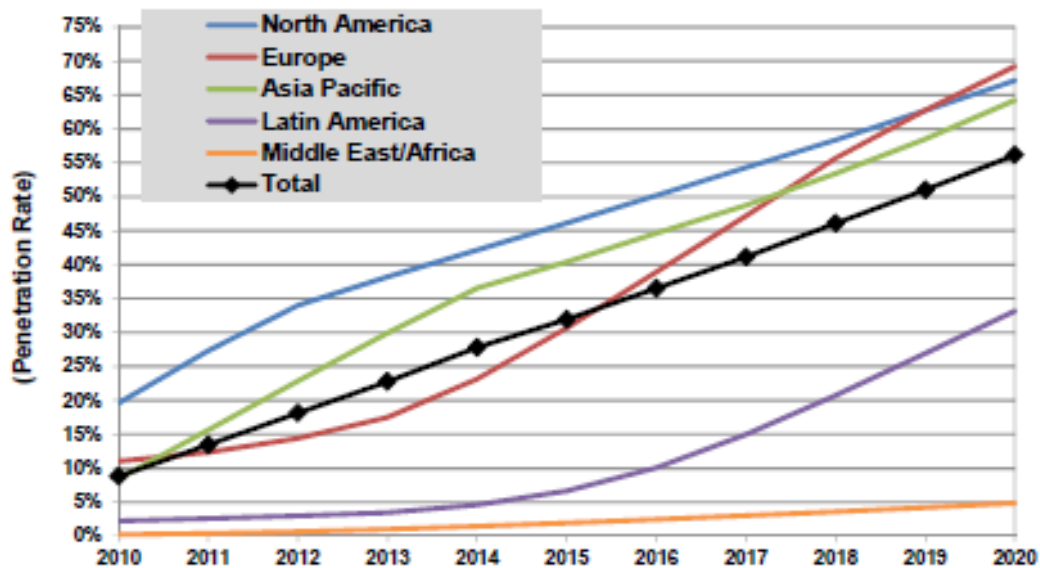
Source: Pike Research

Worldwide growth will resume in
the second half of the forecast
period as European deployments
continue and smart meters make
significant inroads in Latin
America and the rest of Asia
Pacific. *Overall, the global smart
meter market is expected to
grow at a compound annual
growth rate (CAGR) of just
under 5% between 2010 and
2020.*

Challenges for Smart Meter roll-out

- Realising 80%
  - Evaluate CBA's
  - Discuss national issues

- Realising consumer benefits
  - Accurate and faster processes → cooperation
  - Feedback → cooperation, standardisation
  - Additional services → level playing field

- Privacy/Security
  - Identify data flows and select solutions per flow
  - Common approach for Risk Analysis and selecting requirements
  - Common approach for certification

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The privacy approach: consider different data flows and data types
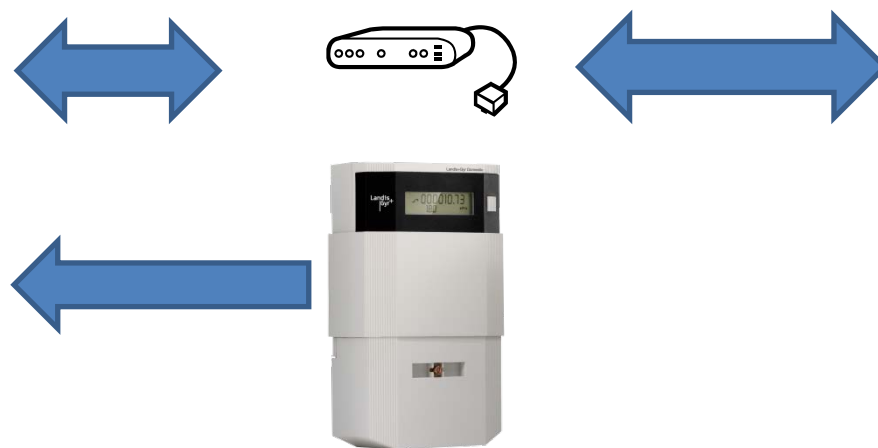
The Consumer domain

Commercial services

-   Detailed consumption information (3-10 seconds resolution)

The "utility" domain

Regulated services

-   Billing information (EED: 6 times per year)
-   Other information to perform regulated task
-   Information desired by consumer

Data Protection Impact Analysis

Determine necessity for DPIA

Examples:

Define assets, architecture, Use Cases

SM-CG reference architecture

Risk Analysis

SG-CG SGIS toolbox

Define requirements / controls

SM-CG repository
GB: Security characteristics
NL: P&S requirements
Germany: PP

Evaluation

Steps taken with or by ESMIG

- **M441: SM-CG**
  - Architecture for Smart Metering (AMI)
  - Definition of functional AMI elements
  - Identification of interoperability standards
  - Definition of Use Cases
  - Definition of Technical Requirements
- **M490: SG-CG**
  - Architecture for Smart Grids
  - Identification of security standards
  - Toolbox for Risk Analysis
- **ESMIG specific**
  - Application of the RA toolbox on SM Use Cases
  - Development of an approach towards a European set of P&S requirements and related certification

Current activities

- SMCG
  - Extending P&S requirements repository
  - Linking requirements to threats
  - Investigate European approach for certification in cooperation with ENISA
- SGCG
 - Improvement of the RA toolbox
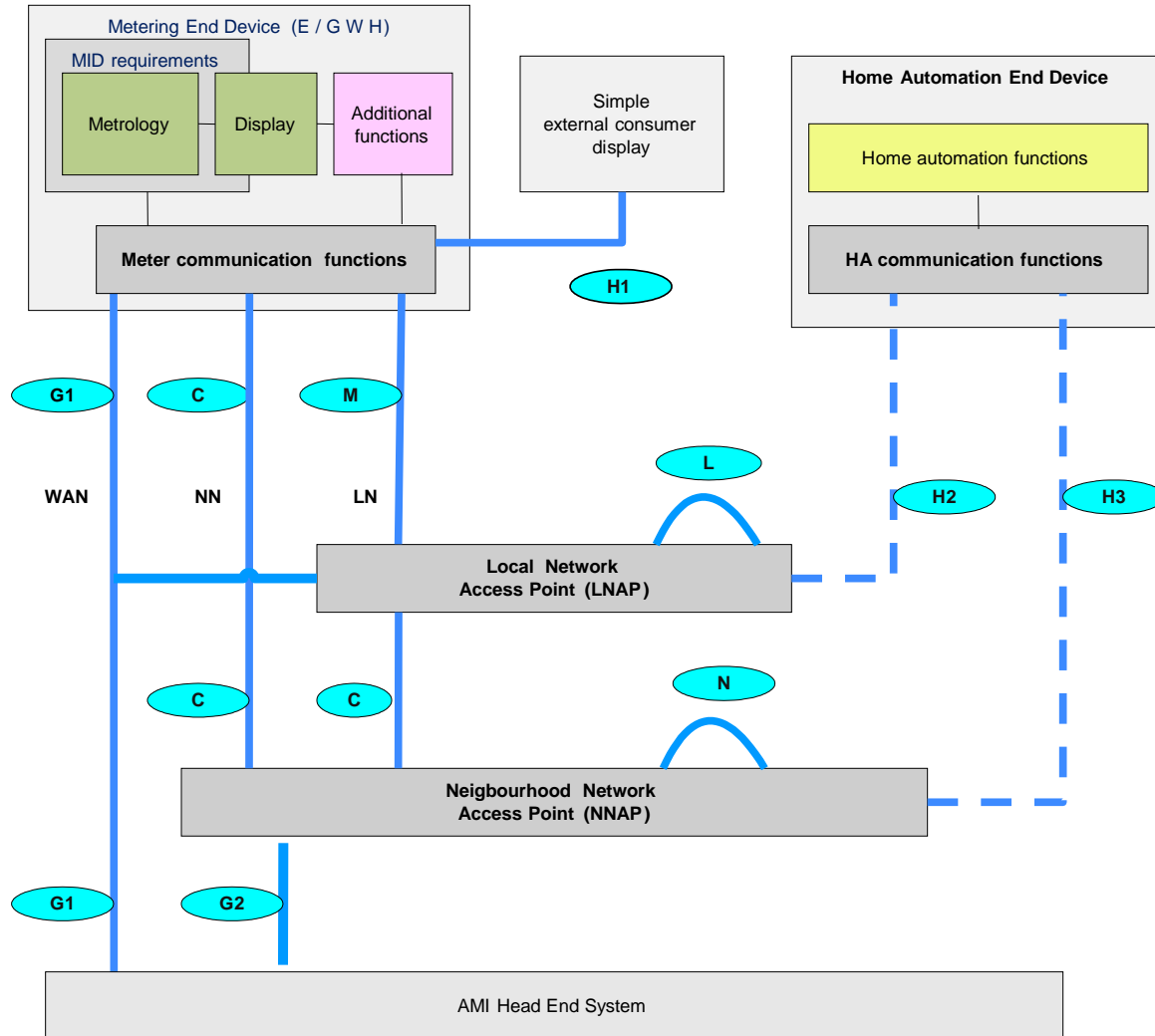 - New workshops to apply the toolbox to SM Use Cases
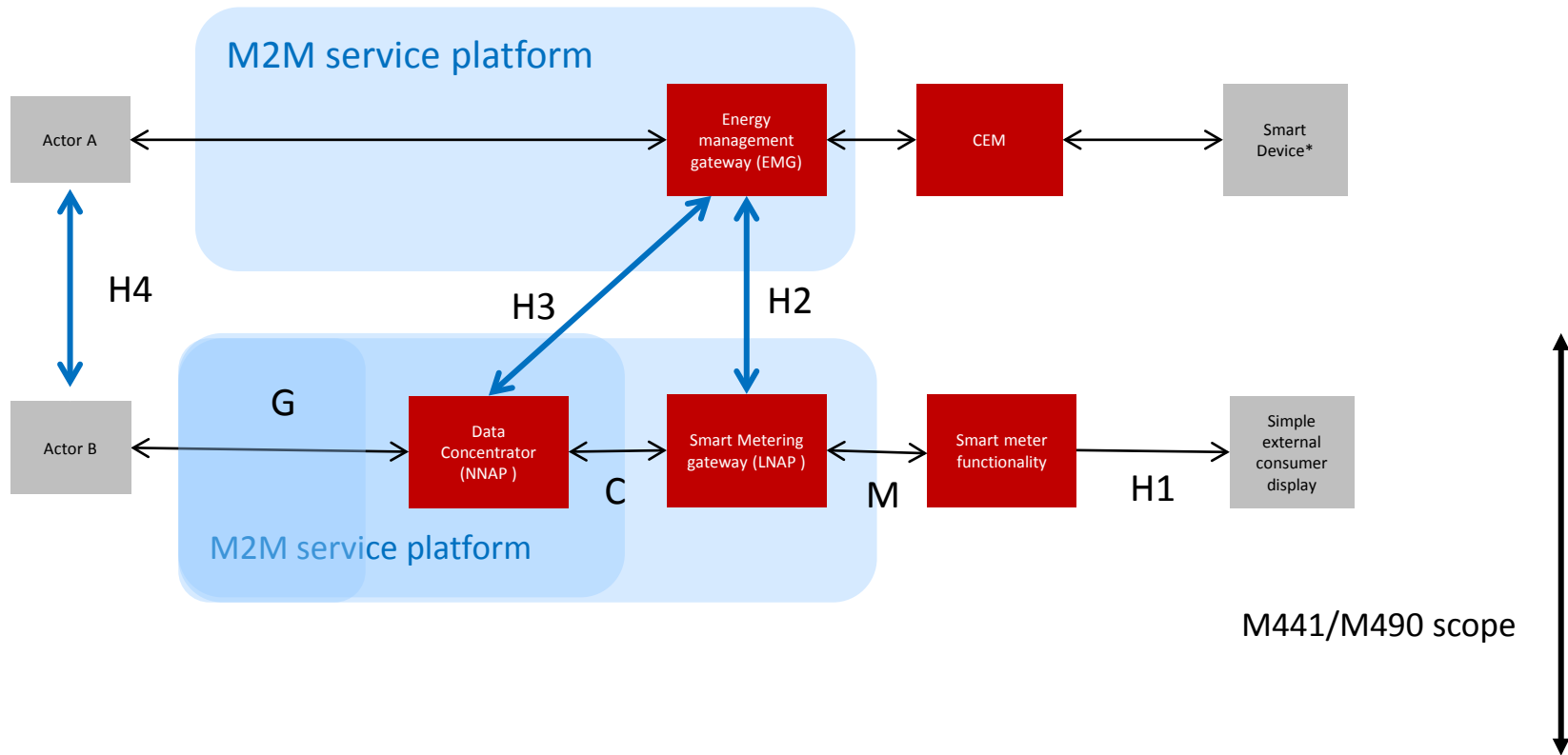
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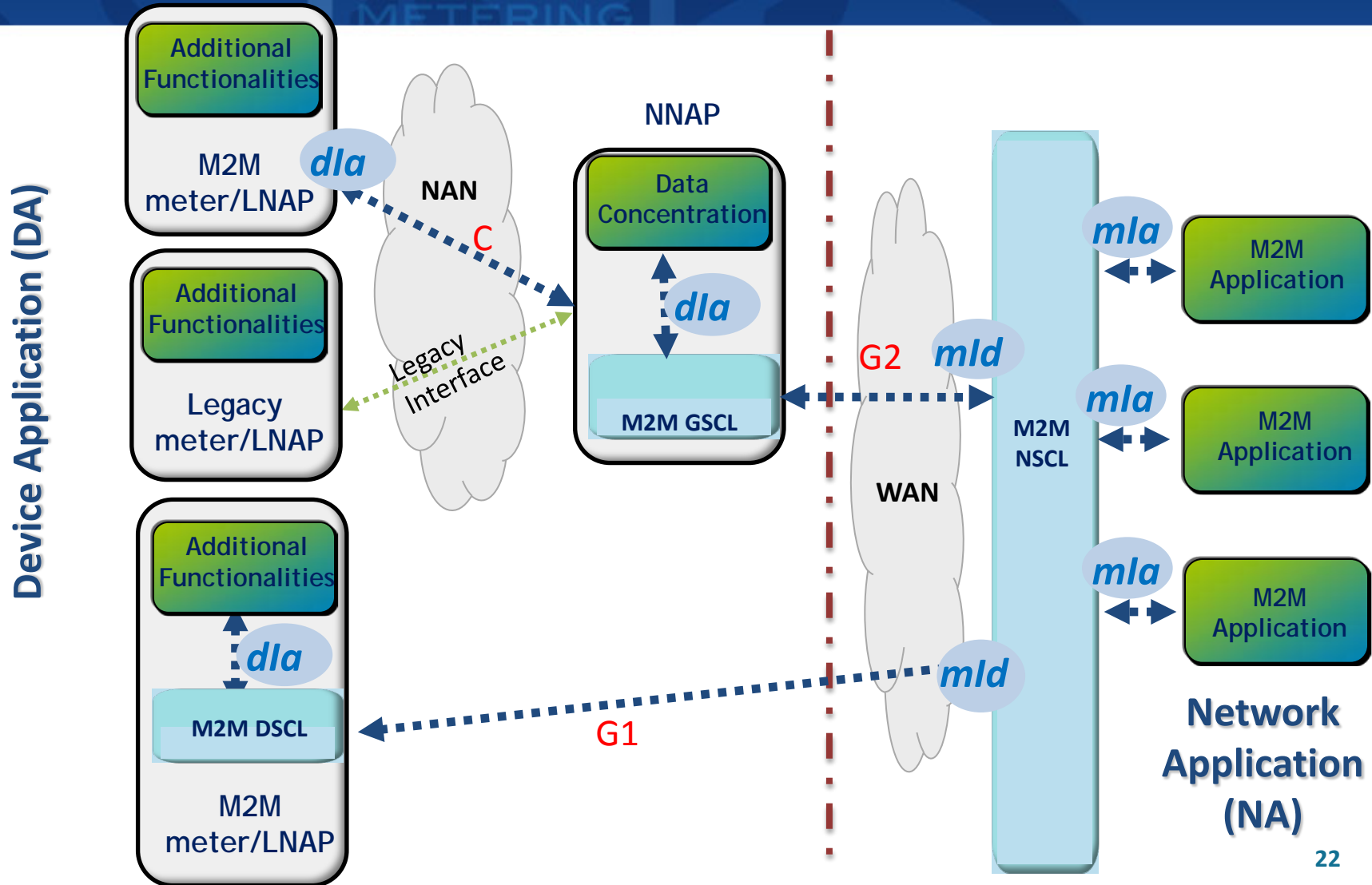- Communication requirements

Smart Metering Reference Architecture

ESMIG's design for M441/M490

Combined M2M – SMCG Architecture

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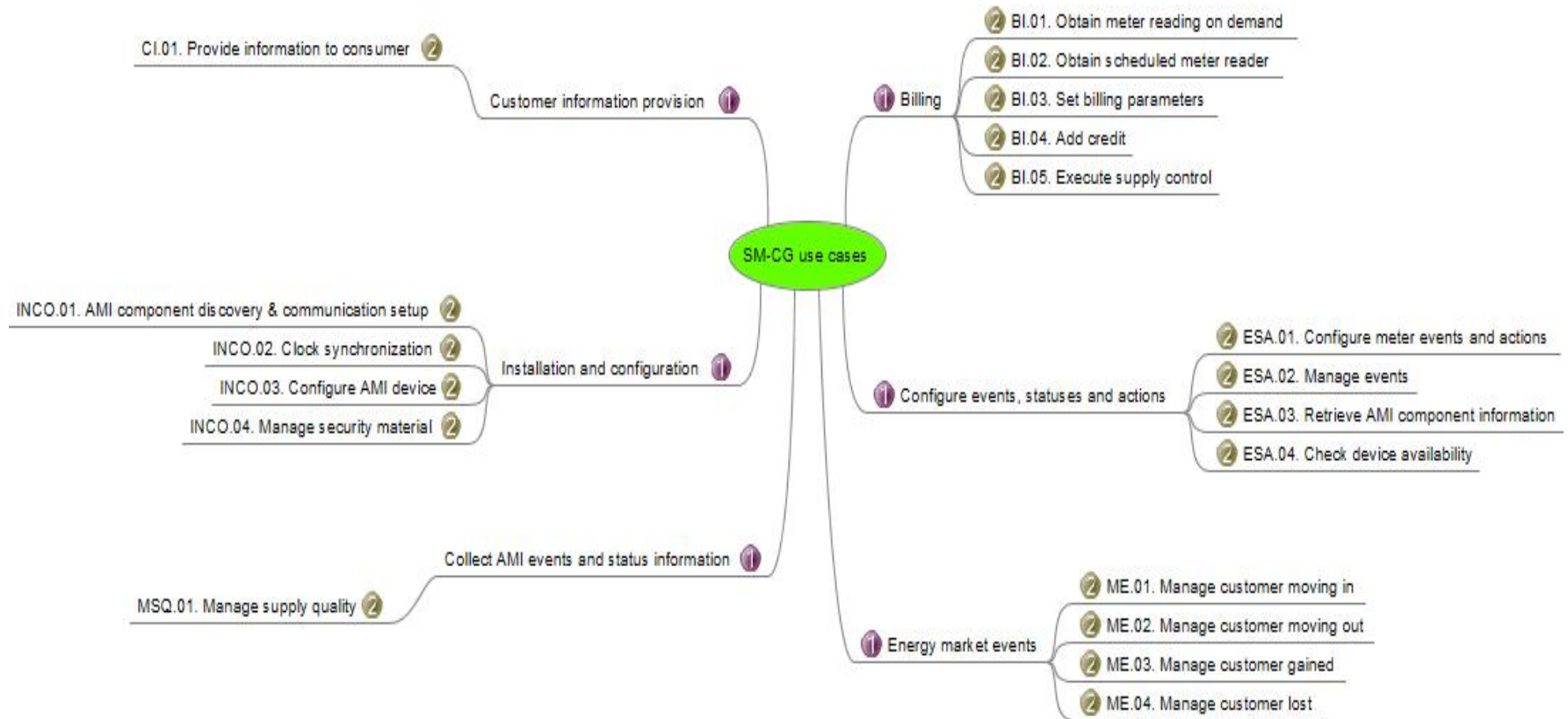
Minimum functionalities

We can distinguish between minimum functionalities that are essential in any market model and additional functionalities that might be used in specific market models.

Essential minimum functionalities are[*]:

- Registration of power consumption or generation on legal basis according the MID and provision of this data to the consumer on a timely manner (ranging from 3 seconds to 1 month depending on the channel used)

- A "Consumer Interface" for direct feedback of consumption/generation data to the consumer

- Multiple registers to handle multiple daily tariffs and indication of the active tariff

- Actual consumption limit(s)

- Connect/disconnect supply

- Time synchronization with in-home smart devices

[*]: by CECED

List of Use Cases

On Demand Read (BI.01)

Scenario Name :		Basic Flow				
Step No.	Event	Description of Process/Activity	Information Producer	Information Receiver	Information Exchanged	Technical Require- ments ID
1	Actor A decides he wants a particular meter read or meter reads.	The request is sent to the HES.	Actor A	HES	Request for a read or reads	
2	HES receives the request	The HES triggers a meter read by **invoking secondary UC SU3.**				
3	The HES receives the requested data	The HES creates and sends a response message.	HES	Actor A	The requested reading and time of reading	

Poll Meter data (SU3)

Step No.	Event	Description	Information Producer	Information receiver	Information exchanged	Technical Requirements
1	The Meter read is triggered at HES level	HES sends Meter Data Request to the Smart Meter	HES	Smart Meter optionally through LNAP and/ or NNAP	Meter Data Request	
2	Smart Meter receives the Meter Data Request	Smart Meter sends the required Metering data to the HES	Smart Meter	HES and optionally LNAP and/ or NNAP	Metering data	

Technical Requirements

70 **1.2 Requirement related to Configuration**

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72 **Table 1: Configuration requirements**

Requirement TR-Conf	Owner	Relevant to use case	Description
1.	TC294	ALL	Interactions with the metrological functions of the Smart Meter are not permitted at all
2.	TC13	ALL	Components of the smart metering system maintain an audit trail of configuration parameters. The access to parameters have to be restricted in accordance to the legal relevance (some parameters need to be protected by a hardware seal of the manufacturer, some shall be changeable only by authorized bodies).
3.	OM-FR120	ALL	The NNAP records all relevant interactions with a list of named device. It also records abnormal conditions of the device.
4.	OM-FR146	ALL	The AMI equipment supports a uniform description for errors exchanged through all interfaces.
5.	TC13	ALL	The smart meter issues appropriate diagnostic information if the requested operation cannot be performed. However, erroneously ciphered requests shall be silently discarded.
6.	TC13	BI.01 / BI.02 / BI.03 / SU3	The smart meter provides load profiles. The quantities collected, the capture period and the number of periods retained are configurable. Selective access to load profiles is provided. With each value, a time stamp and a status indicating events / statuses that may affect the validity of the value are provided. *This requirement applies only to electricity metering.*
7.	TC13	BI.01 / BI.02 / BI.03 / SU3	Smart meters store pre-defined sets of data at pre-defined regular intervals and times. Intervals may be days, weeks, months, years. The number of data sets to be stored shall be configurable
8.	OM-FR9	BI.01	The smart meter is able to provide the current values of the registers, without affecting the periodic meter reading process.
9.	TC294	BI.01 / BI.02 / SU3	The smart meter keeps a log of selected data collection events *<<which data collection events must be logged is configurable>>*
10.	OM-FR34	BI.03	The smart meter logs the event that a threshold is set or cleared.
11.	TF use cases	BI.03.	The smart meter keeps a log of all changes in billing parameters
12.	OM-FR47	BI.03	The smart meter provides functionality to set the tariff shift times at a designated date/time.