Smart Metering Mandate M/441
OPEN METER PROJECT
ETSI TC M2M

Brussels,
4th February 2010
M/441: ETSI Responsibilities and Contributions

ETSI TC M2M
ETSI TC PLT
ETSI TC ERM
ETSI TC TISPAN
ETSI TC ATTM
ETSI TC SCP
3GPP

Smart Metering System

Central Communication System

M2M Remote Gateway

Home Area Network / Local Area Network

M/441 Standardisation Area

ETSI-TC-M2M

Authorised Parties – Data Exchange

Gas Meter CEN/TC 237
Water Meter CEN/TC 92
Heat Meter CEN/TC 176
Power Systems Mgmt & associated Info exchange CLC/SR 57
Power Quality CLC/TC 210
Building Automation CEN/TC 247

ETSI TC M2M - OPEN METER PROJECT meeting Brussels February 4th 2010
ETSI in a nutshell

- ETSI is a legal European Standards Organization recognized by EU/EFTA
- Although ETSI was established as a European body and retains European responsibilities ... ETSI is also a Global Standards Provider
  - Over 20% of ETSI’s membership have no established operations in Europe.
  - Many of the other 80% members are HQ’d outside Europe
- Wide scope: Standards for ICT (Information and Communications Technologies), including fixed, mobile, radio, converged, broadcast and internet technologies.
  - Almost 800 ETSI member organizations drawn from 60 countries world-wide.
ETSI / TC M2M - OPEN METER PROJECT meeting Brussels February 4th 2010
3GPP : 3rd Generation Partnership Project

Scope

- **3G**: Production of globally applicable specifications on an evolved 3rd Generation (and beyond) Mobile System based on evolved 3GPP core networks and the radio access technologies that they support (i.e., UTRA with both FDD and TDD Modes).
- **2,5G**: Maintenance and development of the GSM Technical Specifications and Technical Reports including GPRS and Edge.
- **Evolution of the IMS specifications**: in an access independent manner (i.e. including fixed requirements).

Created in 1998 as a Partnership between standards organizations

3GPP specification are approved and published by all partners (e.g. a 3GPP specification is also published as an ETSI Technical Specification)
M2M in ETSI

- ETSI TC M2M:
  - New ETSI Technical Committee tasked to develop an end-to-end overall high level architecture for M2M
  - Participation from Europe also USA, China, and Korea.
M2M Main Objective: Inverting the pipes

existing proprietary vertical applications...

Smart Metering

applications share common infrastructure, environments and network elements

Business Application

Existing Mobile Infrastructure

SIM based dedicated devices

Business Application #1

Business Application #i

Business Application #N

Application Infrastructure

Network Infrastructure

Converged Network (IP + mobile infrastructure)

Gateways / Concentrators

Sensors #1

Sensors #i

Sensors #N
Smart Metering Mandate answer:
Challenges for the Telecoms

- Smart Metering is the first application that will integrate the Internet of Things World

- Expected Evolution from a Business Industrial oriented Market towards a Mass market oriented context
  - The use of global open standardized interfaces for the elements of the networks (access and infrastructure) will be preferred for cost effectiveness reasons.
  - The short life cycles due to quick evolution of the technologies in an immature market will need to be taken into account.
Smart Metering Mandate: Main Issues

- Numerous incompatible solutions already developed in "Vertical silos"
  - Complex set of solutions to be maintained (DLMS-UA)
- The Standardized Radio Access need to be revised (TC294) as to match with new functional requirements (command and control) and proprietary Radio access solutions have already been used to match non electric Meters hard constraints. No Compatibility in view!

- R&D Collaborative Work is leaded by Electric Utilities Needs (Open Meter)
Smart Metering Mandate: Tentative Work program: Between Evolution and Revolution!

- **Tentative Workprogram**
  - **TC M2M**:  
    - Mapping the SM Application onto M2M generic architecture.
  - Work with DLMS-UA/TC13: come back to functions,
  - Work with TC294: TC ERM (unified Radio Access Technology?)
  - Work with TC205: Include Home Networks in the story
  - Work with Gateways/Concentrators Manufacturers: Specifying a "generic gateway".
  - Work with ESMIG: Evolution of the Smart Meters communication Modules
Liaisons and Collaborations

- Mou ratified with ESMIG
- Mou under signature with DLMS_UA, collaboration agreement.
- LS Out sent to DLMS_UA, CEN TC294, CLC TC205, CLC TC13 (M2M#6)

Coordination inside ETSI

- TC M2M agreed by ETSI OCG to coordinate ETSI global answer to M/441:
- ETSI M441_list created end of décembre 2009
  - Coordinated technical answers to SMCG are built inside the ETSI partners.
- LS Out sent to ETSI TCs interested into the mandate PLT, TC ERM, TC TISPAN WG5, TC SCP, 3GPP.
Annexes : Work already been undertaken inside ETSI TCs
ETSI TC M2M Domain of responsibility

- **Communications through the global Network (WAN)**
  - ETSI will provide standardized Interfaces for a transparent access to the global telecom network (wireless and wireline)
  - A Global functional architecture will be provided

- **End to End Services capabilities, with three targets:** the end device (smart meter), the gateway, the service platform.
  - A "Smart Metering Profile" will be provided: ("Zigbee" like)
Current ongoing work in TC M2M applicable to M/441

- **TS 102 689**: M2M Service Requirements
- **TS 102 690**: M2M Functional Architecture
- **TR 102 691**: Smart Metering Use Cases
- **TR 102 692**: Use Cases for M2M applications of eHealth
- **TR 102 693**: Connected Consumers Use Case
- **TR 102 725**: M2M Definitions
- **TR 102 732**: Use Cases for M2M applications of eHealth
- **TR 102 857**: Connected Consumers Use Case

**New Work Item**: "Smart metering"
M2M standards landscape for Smart Metering

M2M Platform

Gateway Layer

6LoWPAN
TC M2M Collaborations

- **With TC 205**
  - First meeting 2\textsuperscript{nd} February 2010

- **With TC 294:**
  - Invitation to TC294 plenary meeting 6th November 2009, London
  - Expression of the following needs:
    - Generic specification of the "gateway" service layer
    - Taking into account the specificities of non-electric smart meters

- **With TC 13 – DLMS UA (links with Open Meter)**
  - Meeting in Frankfort the 18th of December 2010
  - Interest of TC13 for the following TS and TR developed into ETSI TC M2M: TS 102 689, TS 102 690, TR 102 691
  - Interest of TC M2M to having access to DLMS-UA standards documents.
  - End to End security
### Work undertaken by ETSI other TCs (1)

- **ETSI TC PLT**
  - new work item approved and created in the Plenary meeting #52 in September 2009: Specify the PHY, MAC and DLL layers for powerline networks using low voltage and possibly medium voltage lines for Smart Electricity Meters and in-home network.

- **ETSI TC SCP**
  - The M2M form factor SIM / M2M environmental conditions for M2M mobile modems
    - The use of the UICC in securing and managing capillary networks
    - The cross interest in the use of smartcards on the utility industry and the telecoms industry.

- **3GPP**
  - 3GPP SA1 : TR : M2M Service requirements
  - 3GPP SA3 : TR : M2M Security

- **ETSI TC ATTM** liaison statement with TC M2M

- **ETSI TC TISPAN WG5** (Home Gateway)
Work undertaken by ETSI other TCs (2)

- **ETSI TC ERM (Radio)**
  - ERM TG 28 (Short Range Devices and Radio Networks)
    - **EN 300 220** (a new version 2.3.1 being processed) “SRDs physical generic radio interface” that is already commonly used for sensor, actuators etc.
  - ERM TG11 and TG Ultra Wide Band (TGUWB)
    - **EN 300 328 v.1.7.1**: Wideband transmission systems; Data transmission equipment operating in the 2,4 GHz ISM band and using wide band modulation techniques.
    - **EN 302 065 v.1.1.1**: generic Harmonized Standard for devices based on Ultra Wide-Band technology (UWB) below 10.6 GHz (a new version 1.2.1 is in the TAP process). This technology can also be used for sensors, actuators and networks (communication is not data rate restricted / communication distance up to 30m depending on the environment).
  - Work undertaken inside TC ERM on PLC Coexistence
End