



MACHINE TO MACHINE COMMUNICATIONS

ETSI TC M2M Overview

June 2011



● ETSI: the European Telecommunication Standards Institute

- One of the 3 European SDOs (CEN, CENELEC, ETSI).
ETSI is creating European standards for Telecommunications

● What is ETSI's Technical Committee M2M:

- ETSI TC M2M focuses on M2M system
- Established in 2009, after 8 months preparation
- Monthly plenary- and rapporteurs meetings, conference calls..
- Liaisons and cooperation with other SDOs, consortia ..
- Constantly increasing participation (group of 50 +)
- Europe, N. America, China, Korea, and Japan companies (currently about 30% operators and 60% Manufacturers)
- Open approach, published and draft TR/TS are public on the ETSI server <http://docbox.etsi.org/M2M/Open/>



- Home for Future Internet activities in ETSI

- “M2M is the key”

- eHealth (*domain*)
- CLOUD (*enabler*)
- Wireless Factory (*application*)
- RFID (*identification*)
- All things SMART (*domain*)

Machine-to-Machine
(TC M2M)

eHealth
(EP eHealth,
TC ERM TG 30, TC M2M)

Wireless Factory
(TC ERM TG 28,
TC ERM TG UWB)

Cloud Computing
(TC CLOUD)

Connecting Things

RFID
(TC TISPAN WG7,
TC ERM 34, TC M2M)

ConnectedConsumer
(TC M2M)

Smart Metering
(TC M2M, TC TISPAN,
TC ERM)

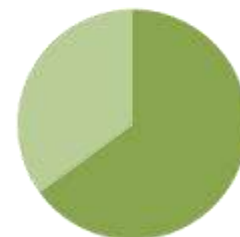
Smart City
(TC M2M)



Mobile market becomes saturated

★ 4,9 Billion people already connected (7,08 Billion population)

- Market is highly competitive
- High investments, and high churn,
- ARPU erosion



65%

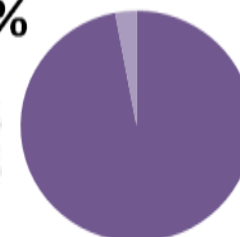


Connected machine market (green field)

★ 50* Billion connectable machines

- Market is open to develop
- Low investment, high return
- Very little churn

1%





The ETSI M2M Vision



Connecting Things

**M2M Horizontal
Service Platform**

**Standards
re-use**

**Multi –
Application**

End to End

**Technology
Agnostic**

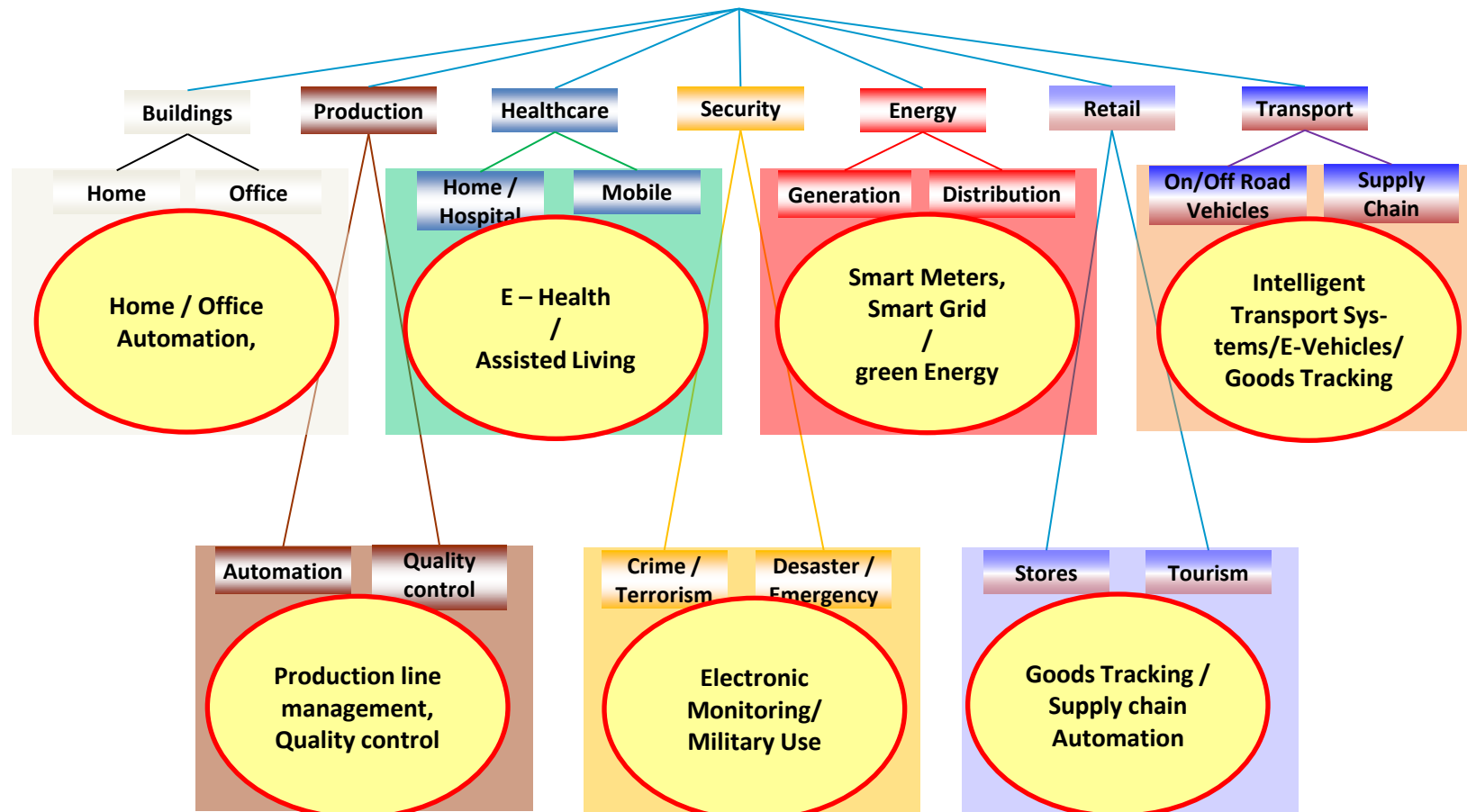
**M2M Service
Capabilities**





- Machine-to-Machine (M2M) is about communication among Machines without (or only limited) human intervention

M2M





The ETSI M2M Challenge



Connecting Things

- Existing M2M solutions are highly fragmented and technology is typically dedicated to a single application (e.g. fleet management, meter reading, vending machines).
- Multitude of technical solutions and dispersed standardization activities result in the slow development of the global M2M market.
- Standardization is a key enabler to remove the technical barriers and ensure interoperable M2M services and networks, that may deployed worldwide.

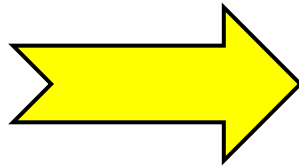
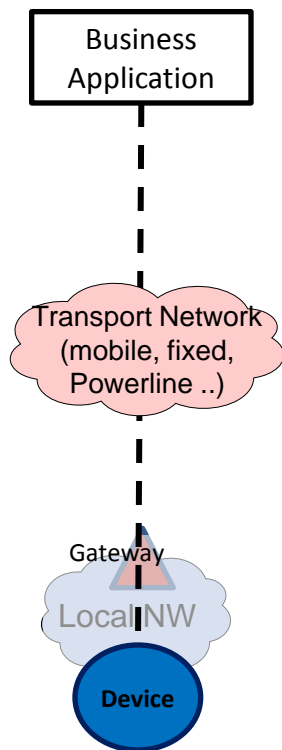


M2M is inverting the pipes

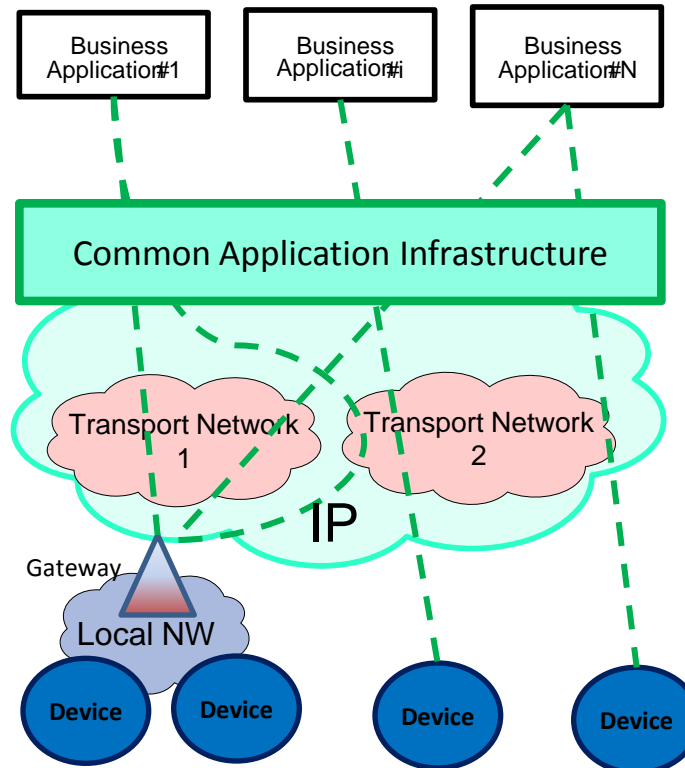


Connecting Things

Pipe (vertical):
1 Application, 1 NW,
1 (or few) type of Device



Horizontal (based on common Layer)
Applications share common infrastructure, environments
and network elements



• M2M Applications providers run individual M2M services. Customer is Device owner

• M2M Service provider hosts several M2M Applications on his Platform.

• Transport Network operator(s) Customer is the M2M service provider

• End user owns / operates the Device or Gateway



EU driven Smart Metering mandate

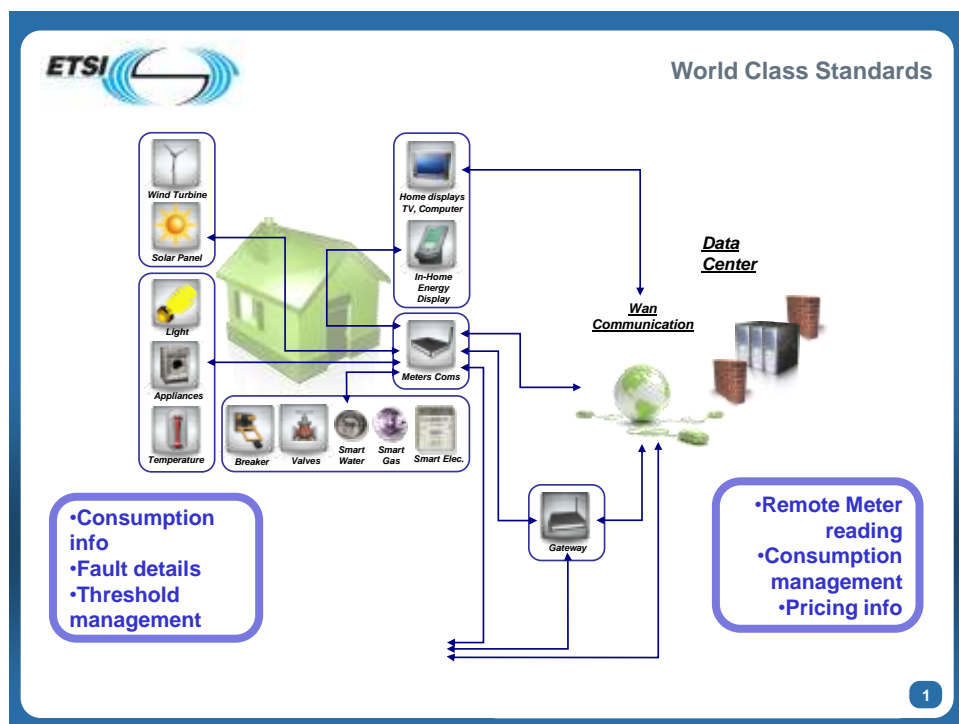


Connecting Things



EC's M/411 Smart Metering Mandate:

- EC Mandate issued in March 2009 by DG TREN and sent to the 3 ESO's : CEN, CENELEC and ETSI
- Objective: to build standards for European smart meters, allowing interoperability and Consumer actual consumption awareness
- *ETSI TC M2M is coordinating work inside ETSI and contributing to the mandate M411.*





- EC Mandate issued in March 2011 by DG TREN and sent to the 3 ESO's : CEN, CENELEC and ETSI
- Objective: to build standards for European Smart Grids.
- *ETSI TC M2M is coordinating work inside ETSI and contributing to the mandate M490.*

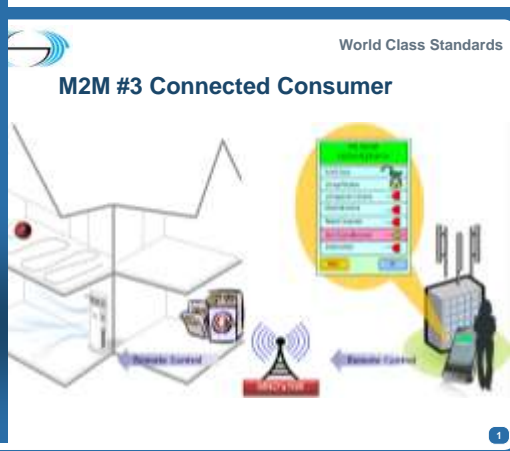




ETSI M2M use cases



Connecting Things



...

DTR/M2M-00003	TR 102 691	Smart Metering Use Cases
DTR/M2M-00005	TR 102 732	Use cases of eHealth
DTR/M2M-00006	TR 102 857	Use cases of connected consumer
DTR/M2M-00007	TR 102 897	City Automation Use Cases
DTR/M2M-00008	TR 102 898	Automotive Use Cases
DTR/M2M-00011	TR 102 935	Smart Grid Impacts on M2M



M2M Device

- Device capable of replying to request for data contained within those devices or capable of transmitting data autonomously.

M2M Area Network (Device Domain)

- Provide connectivity between M2M Devices and M2M Gateways, e.g. personal area network.

M2M Gateway

- Uses M2M capabilities to ensure M2M Devices inter-working and interconnection to the communication network.

M2M Communication Networks (Network Domain)

- Communications between the M2M Gateway(s) and M2M application(s), e.g. xDSL, LTE, WiMAX, and WLAN.

M2M Applications

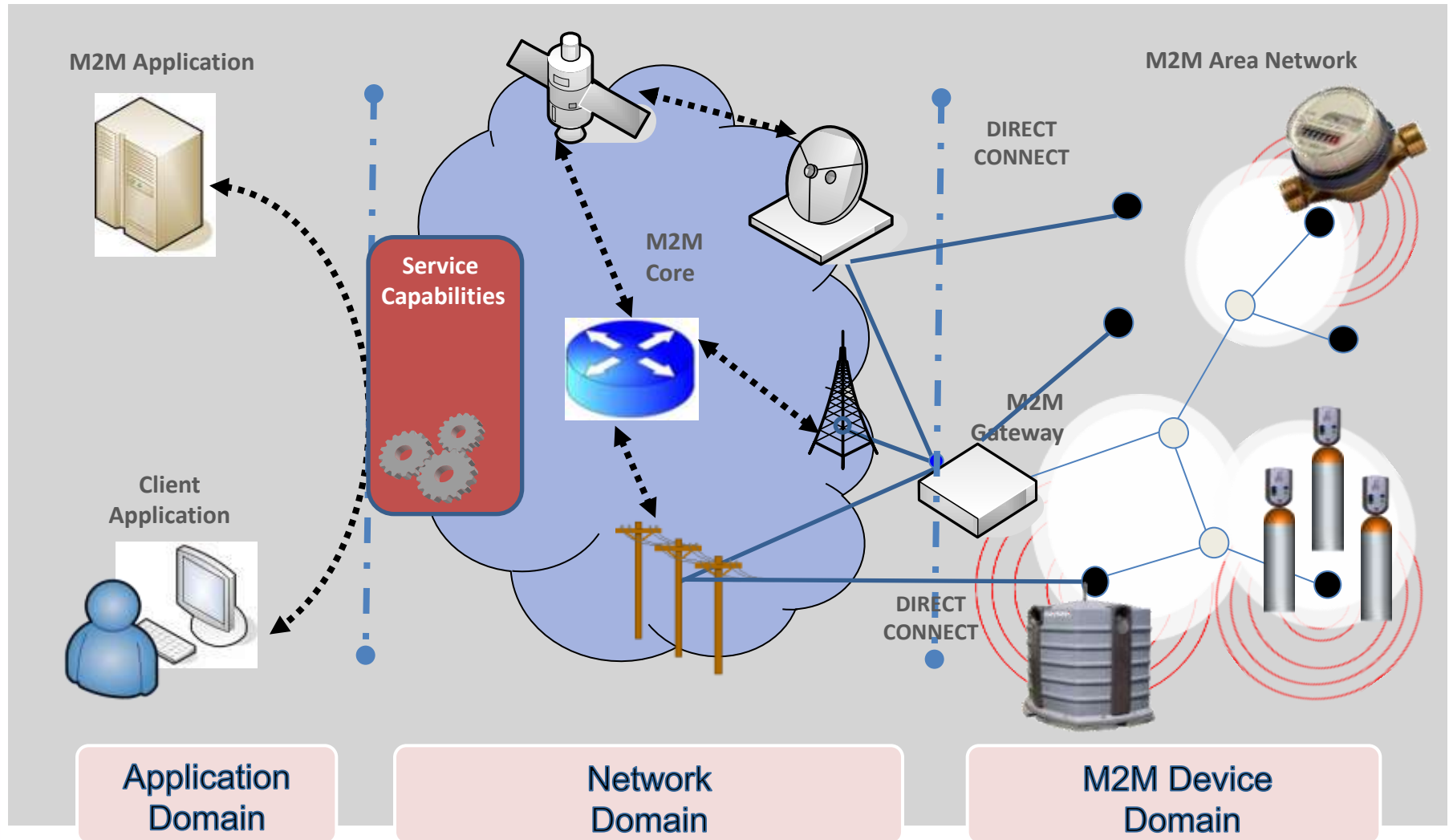
- Contains the middleware layer where data goes through various application services and is used by the specific business-processing engines.



Simple M2M Architecture



Connecting Things

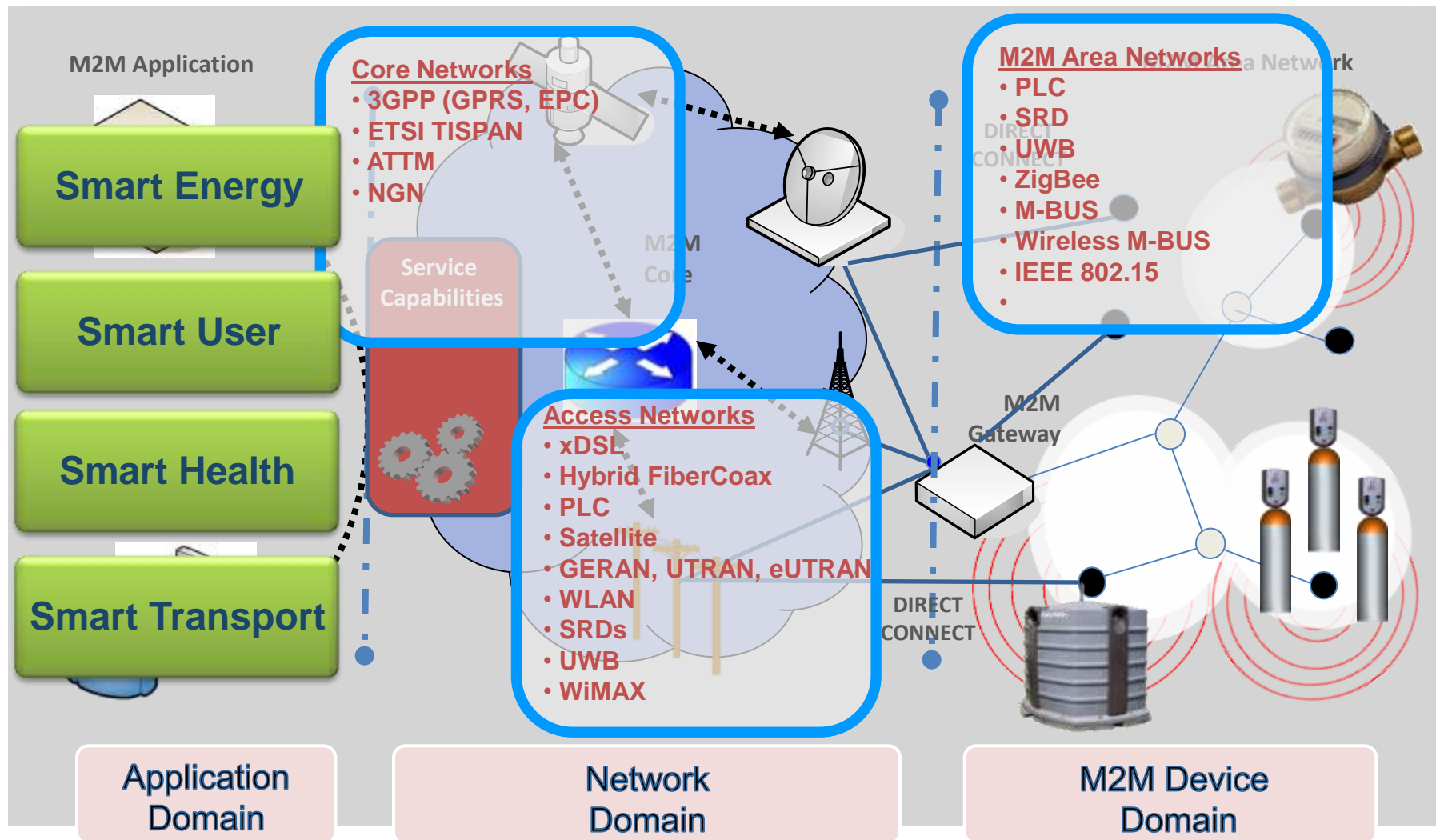




... based on existing Technologies



Connecting Things

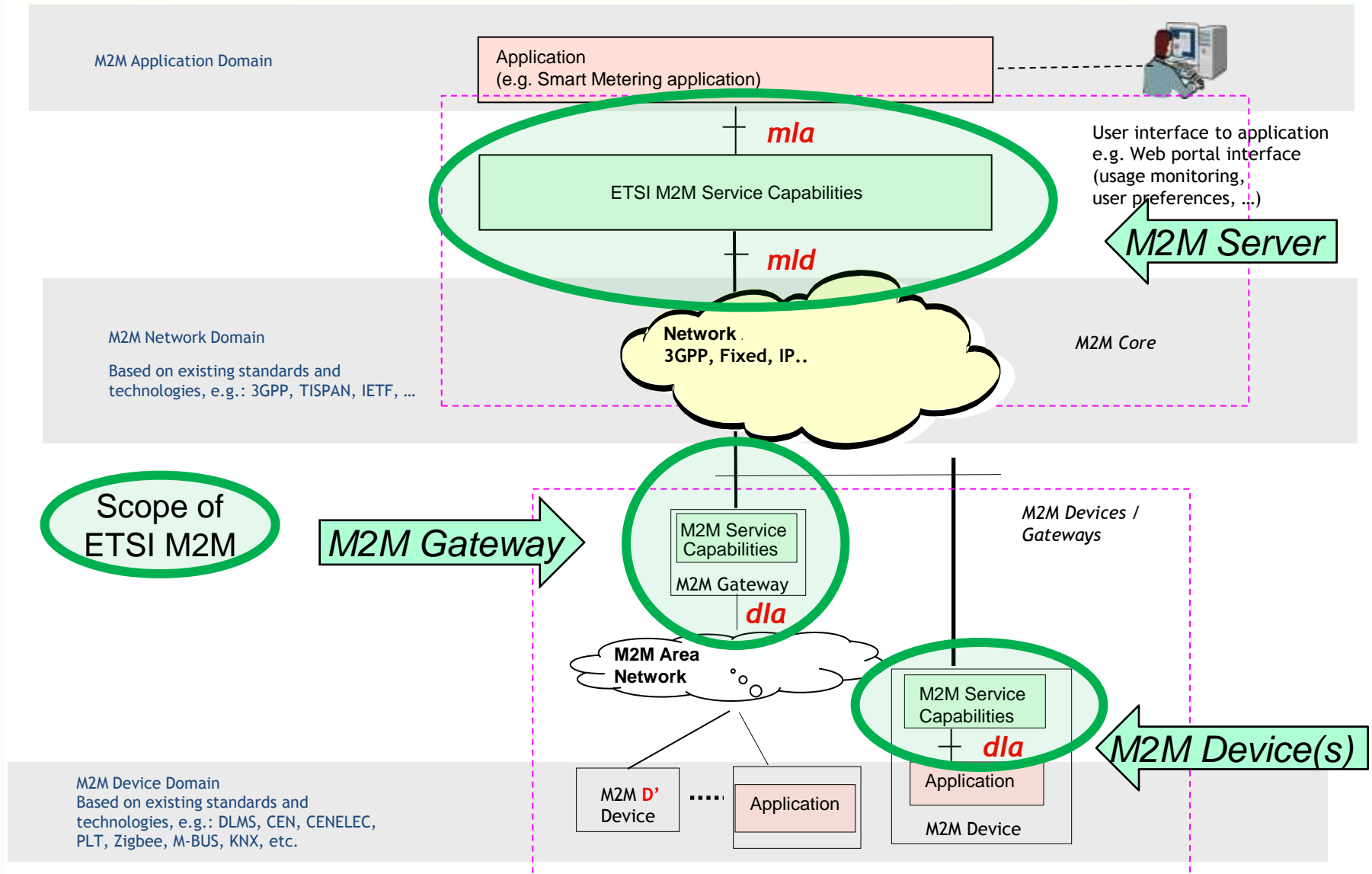


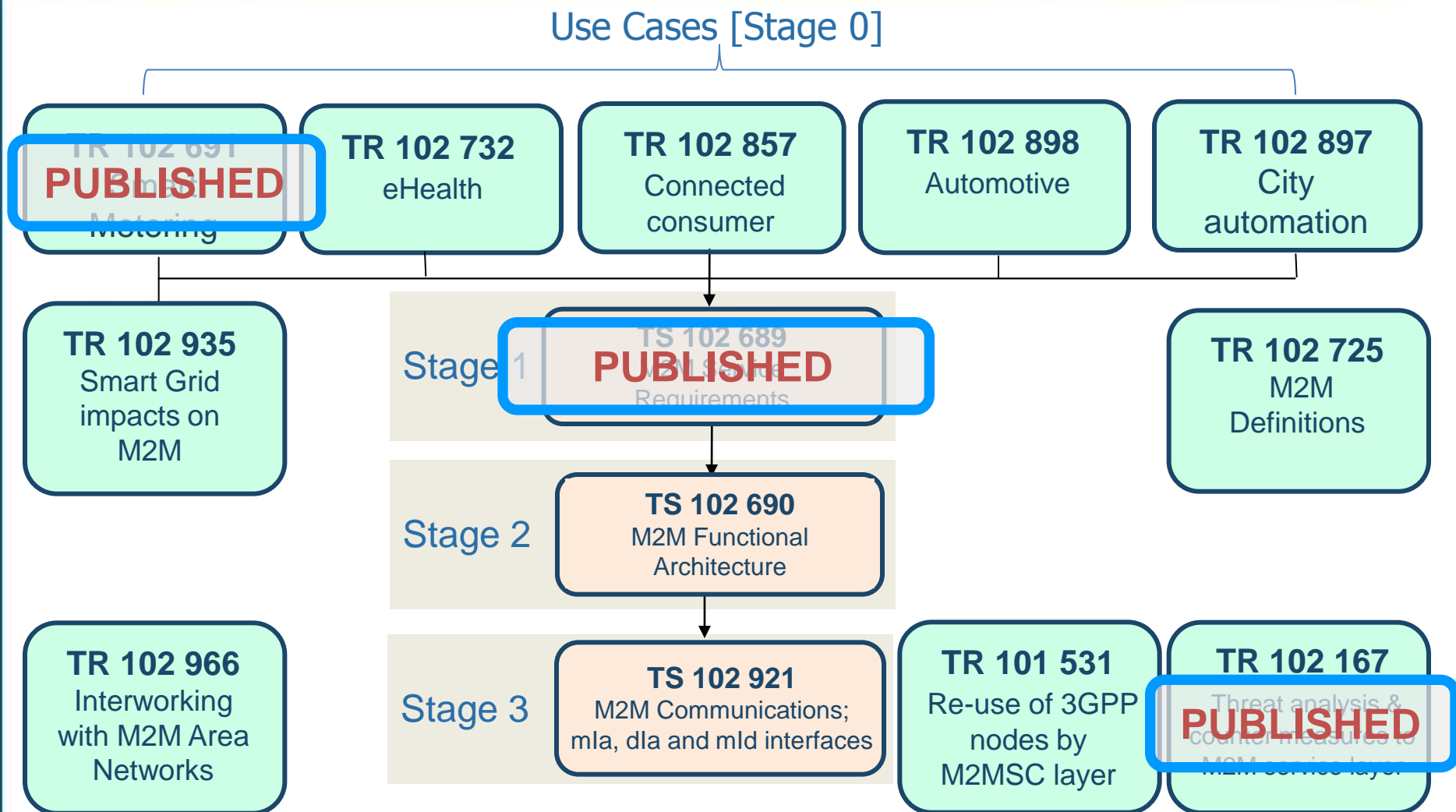


M2M high level system overview



Connecting Things







M2M standards landscape



Connecting Things

M2M Applications



API

M2M Platform



SP networks
(access, core)



Gateway Layer

M2M area Network



M2M Device



Example for metering applications



ETSI M2M: Key Events



Connecting Things

- **October 2010 : 1st ETSI M2M Workshop. Agora, Sophia.**
 - More than **220** participants,
 - Collected output fed into ETSI M2M requirements.

- **April 2011 : 1st ETSI Smart Grid Workshop. Agora, Sophia.**
 - More than **250** participants,
 - Examining the architecture for Smart Grids,
 - Presentations from EU (Commission), US (NIST), China (State Grid) and Japan .

- **26 – 27 Oct 2011 : 2nd ETSI M2M Workshop. Agora, Sophia.**
 - Presenting the M2M Release 1 package,
 - Examining future requirements of M2M standardization,
 - Feedback from early implementations of M2M solutions,
 - Interoperability DEMO.



Conclusions



Connecting Things

- **M2M related technologies are already in place and the market has massive potential for growth, Integration is key.**
- **Operators, integrators and vendors have expressed the strong desire to standardize the end to end M2M service platform.**
- **Regulation in Europe, USA and Asia is pushing for standards based solutions for the Smart Meter / Grid, Internet of things.**
- **Global standards are essential for the long term development of M2M communications and for full interoperability of networks and services.**



QUESTIONS?