State of the art

Lecture 1-

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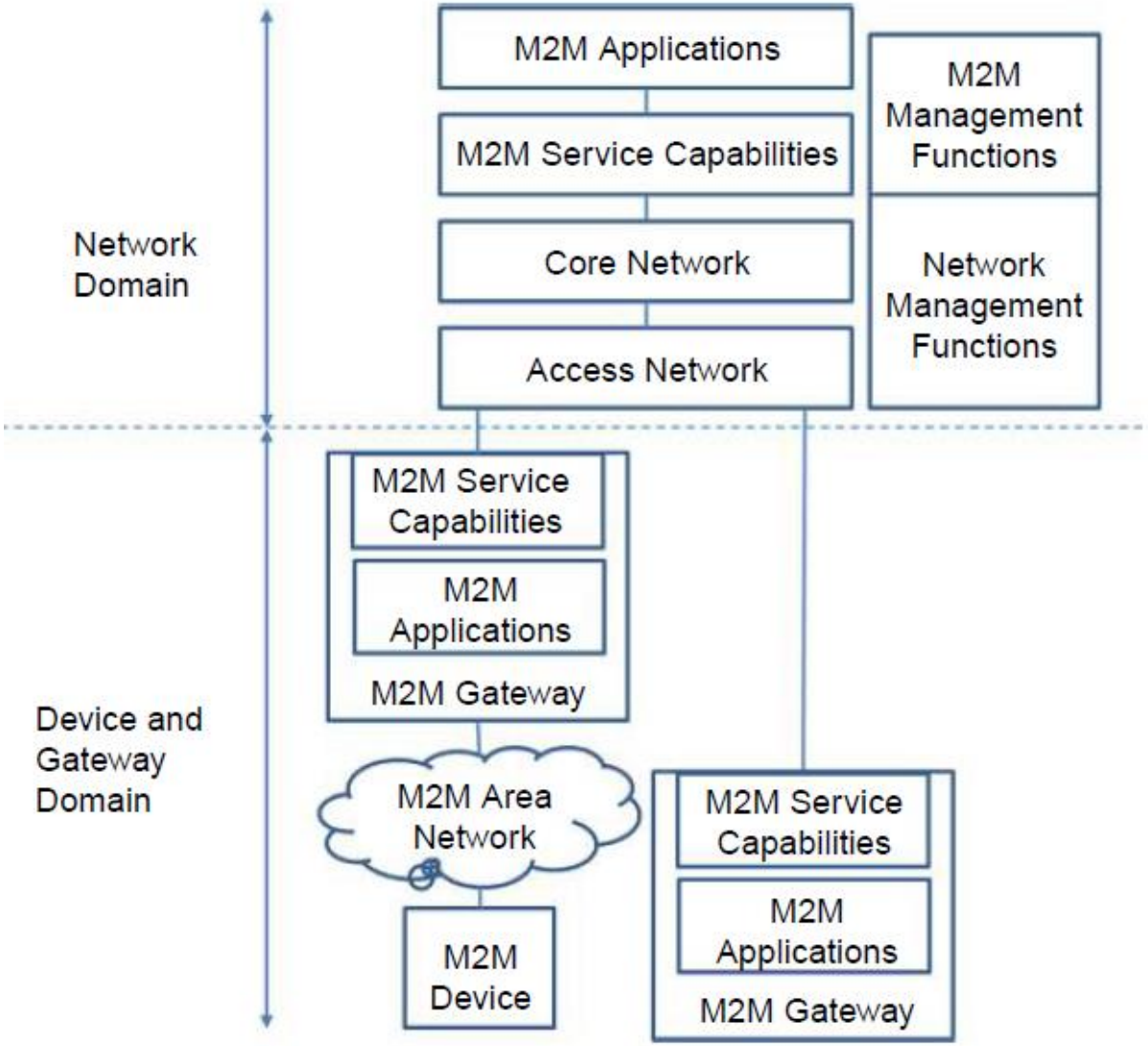
ETSI M2M high level architecture



Device and gateway domin

- Direct connection: The M2M Device is capable of performing registration, authentication, authorization, arrangement, and provisioning to the Network Domain.

- M2M Area Network: This is typically a local area network (LAN) or a Personal Area Network (PAN) and provides connectivity between M2M Devices and M2M Gateways

- M2M Gateway: The device that provides connectivity for M2M Devices in an M2M Area Network towards the Network Domain. The M2M Gateway contains M2M Applications and M2M Service Capabilities. The M2M Gateway may also provide services to other legacy devices that are not visible to the Network Domain.

Network domain

- Access Network: this is the network that allows the devices in the Device and Gateway Domain to communicate with the Core Network. Example Access Network Technologies are fixed (xDSL, HFC) and wireless (Satellite, GERAN, UTRAN, E-UTRAN W-LAN, WiMAX).
- Core Network: Examples of Core Networks are 3GPP Core Network and ETSI TISPAN Core Network. It provides the following functions:
  - • IP connectivity.
  - • Service and Network control.
  - • Interconnection with other networks.
  - • Roaming.

Network domain Cont.

- M2M Service Capabilities: These are functions exposed to different M2M Applications through a set of open interfaces. These functions use underlying Core Network functions, and their objective is to abstract the network functions for the sake of simpler applications.

- M2M Applications: These are the specific M2M applications (e.g. smart metering) that utilize the M2M Service Capabilities through the open interfaces.

Network domain Cont.

- Network Management Functions: These are all the necessary functions to manage the Access and Core Network (e.g. Provisioning, Fault Management, etc.).

- M2M Management Functions: These are the necessary functions required to manage the M2M Service Capabilities on the Network Domain while the management of an M2M Device or Gateway is performed by specific M2M Service Capabilities. There are two M2M Management functions:

M2M Service capabilities

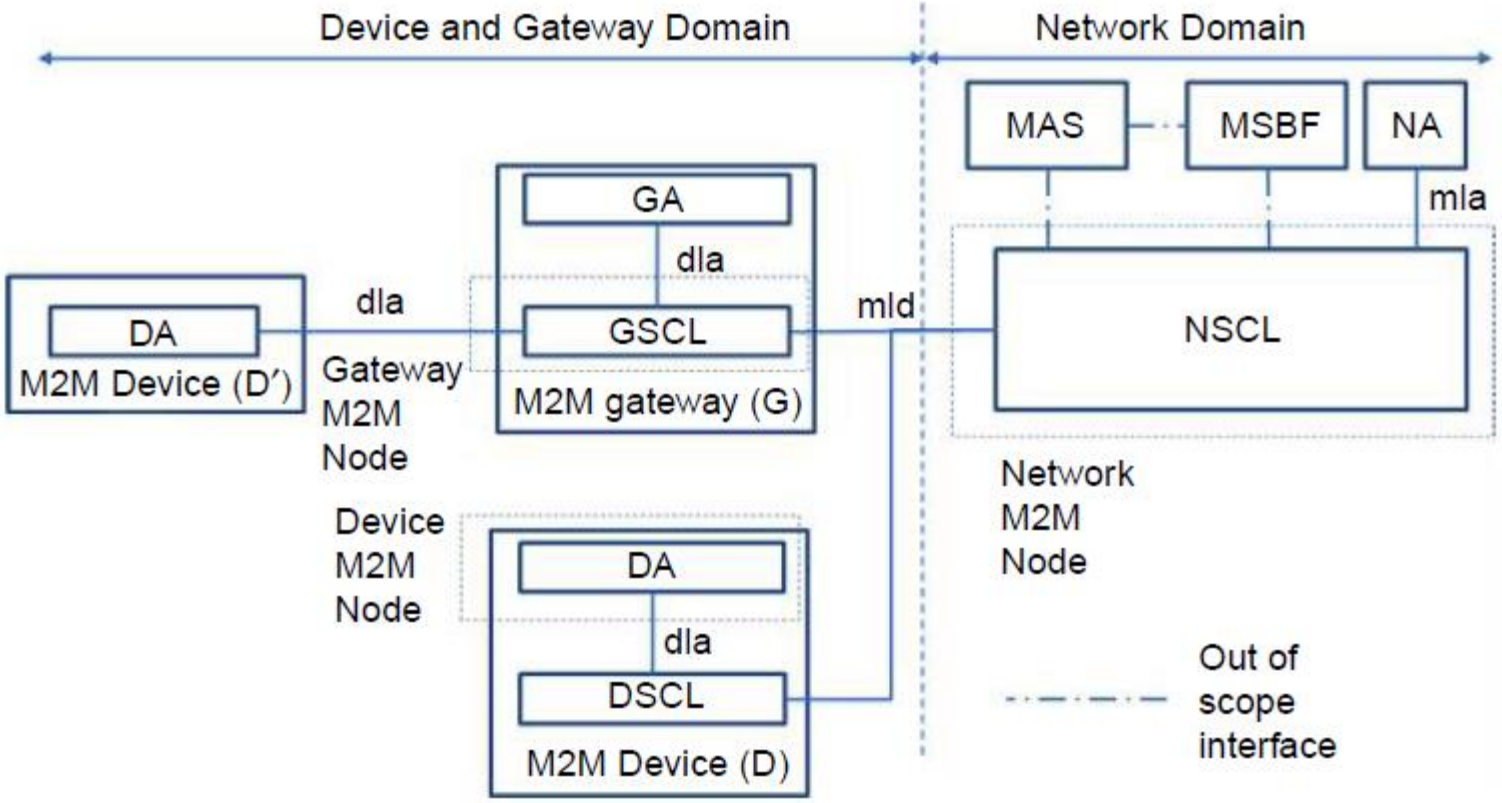
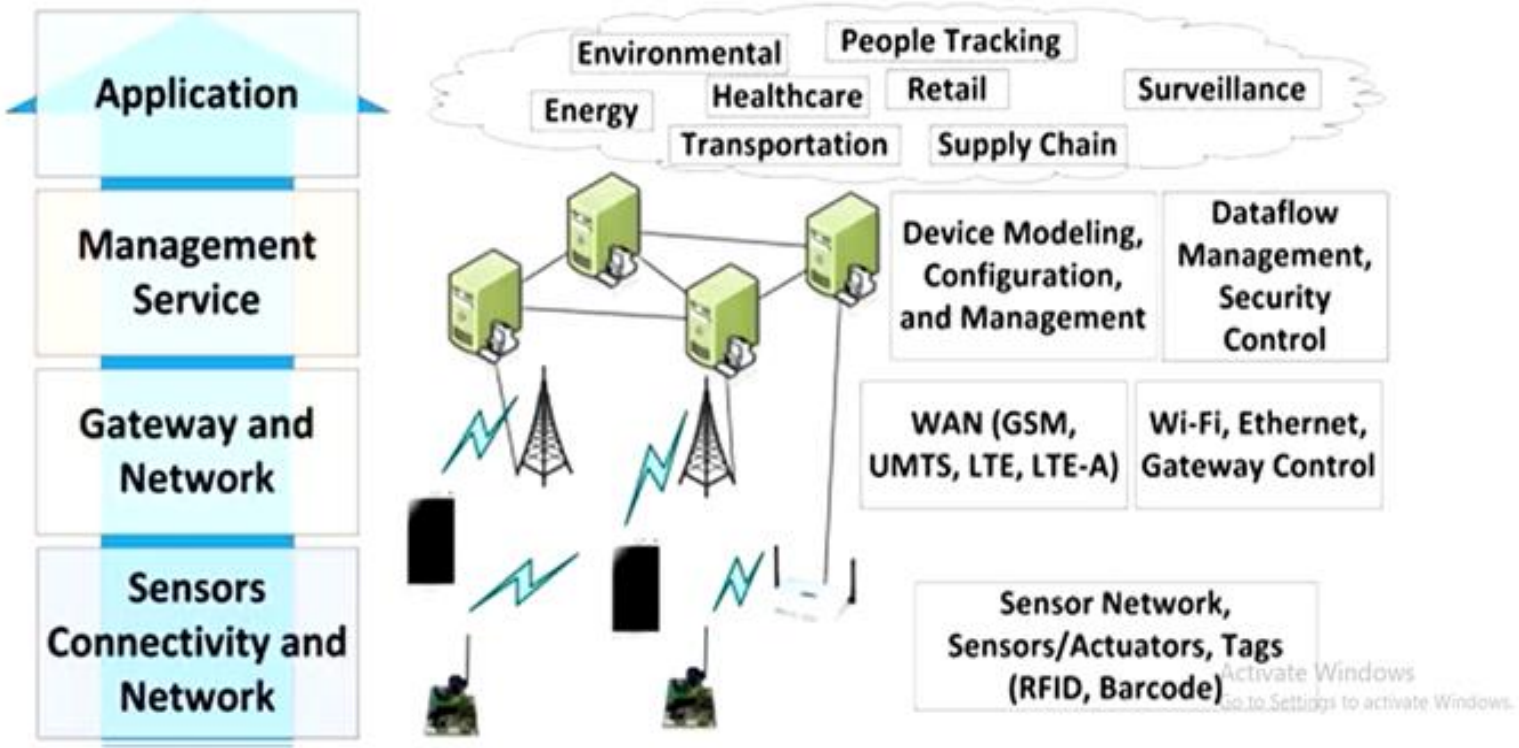


FIGURE 6.2

M2M Service Capabilities, M2M Nodes and Open Interfaces.

DA-Device Application, GSCL -Gateway Service Capabilities Layer, NSCL-Network Service Capabilities Layer, GA-Gateway Application, NA-Network Application, MAS -M2M Authentication Server, MSBF-M2M Service Bootstrap Function

IoT Architecture Layers



ETSI M2M Service Capabilities

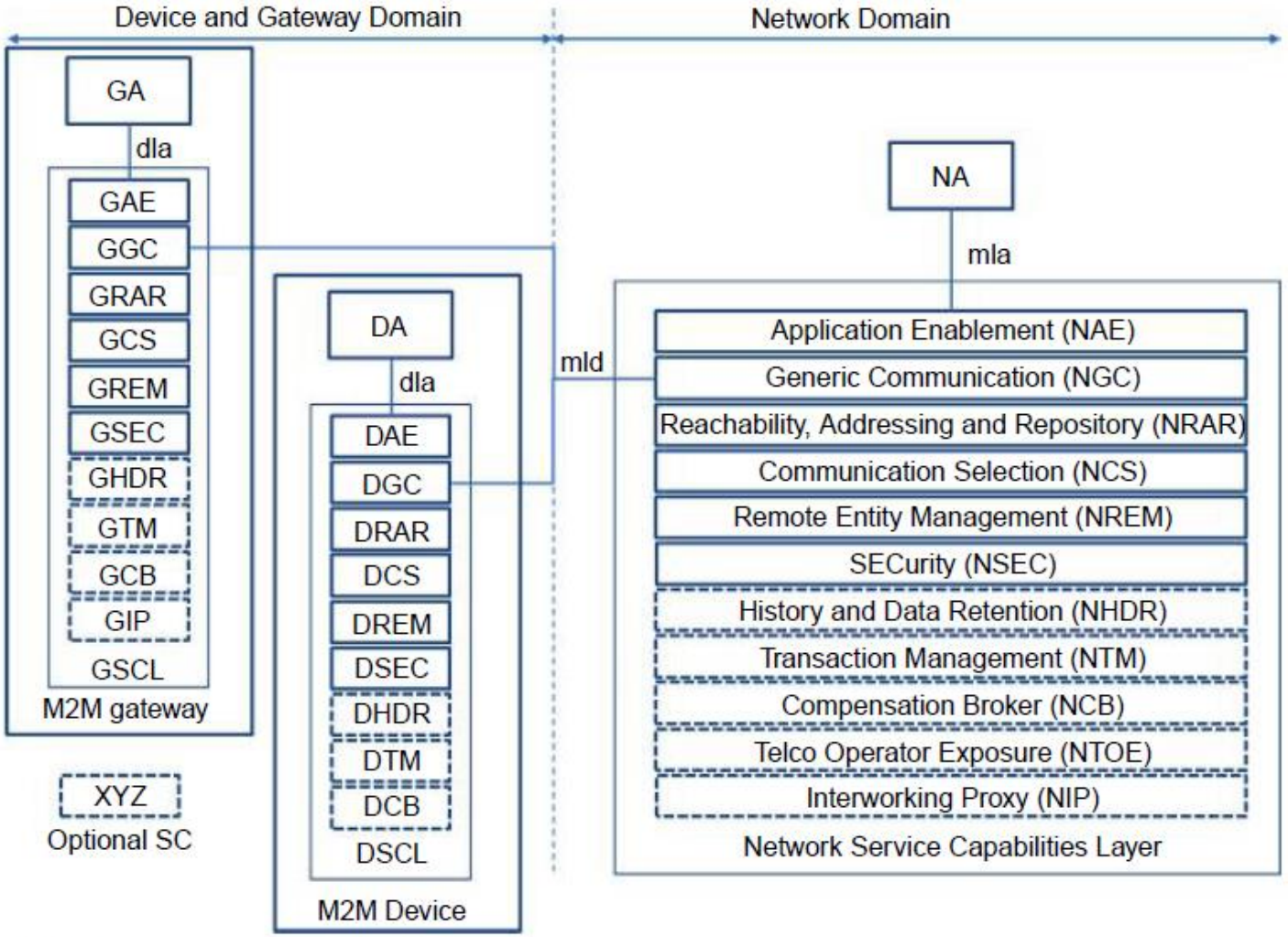


FIGURE 6.3

M2M Capabilities for different M2M Nodes.

- 1. Application Enablement (xAE). The xAE service capability is an application facing functionality and typically provides the

  implementation of the respective interface: NAE implements the mIa. interface and the GAE and DAE implement the dIa interface.

  The xAE includes registration of applications (xA) to the respective xSCL; for example, a Network Application towards the NSCL.