

oneM2M - A Common Service Layer for IoT

Basic principles and architecture overview

Presented by: **Xavier Piednoir**

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✓ What is oneM2M

✓ Basic Principles

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About oneM2M



A global partnership among SDOs and Industry Associations/Fora

Main goal: create consistency in how devices, servers and applications communicate through a standardized M2M Service Layer

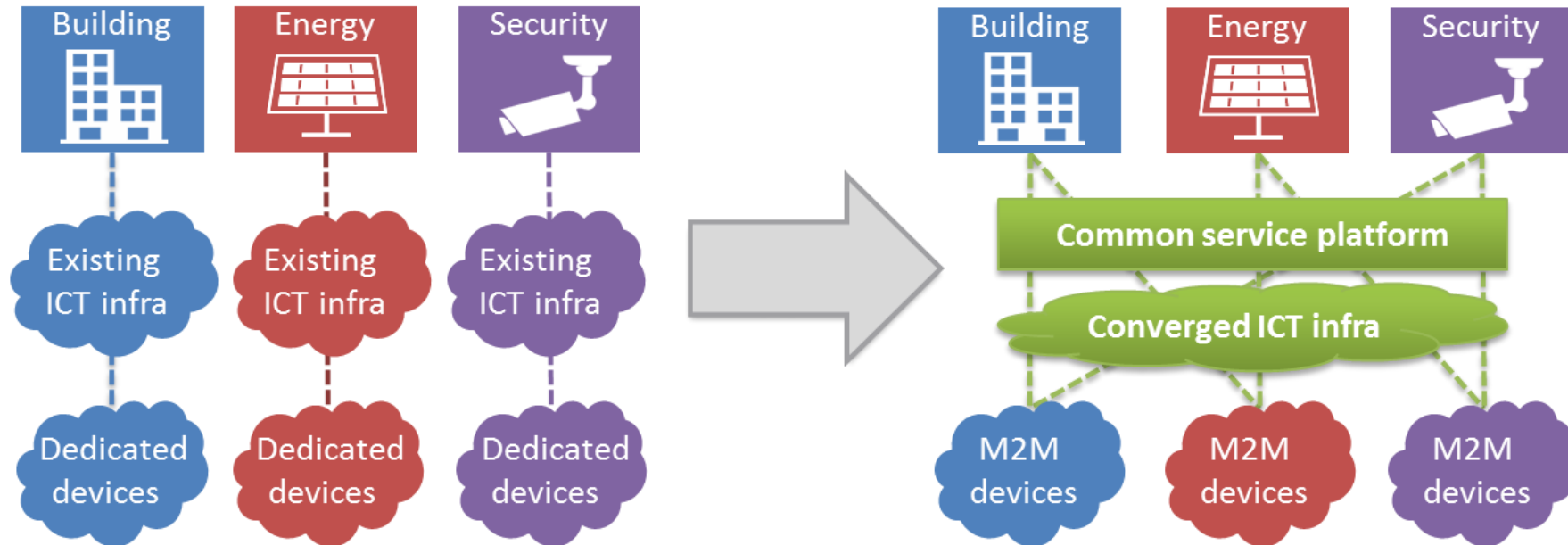
- Interoperability
- Cost-effectiveness / economies of scale
- Reduced fragmentation
- Larger market

Open and transparent: all working documents are public.
All deliverables available free of charge.

Detailed scope at <http://www.onem2m.org/>
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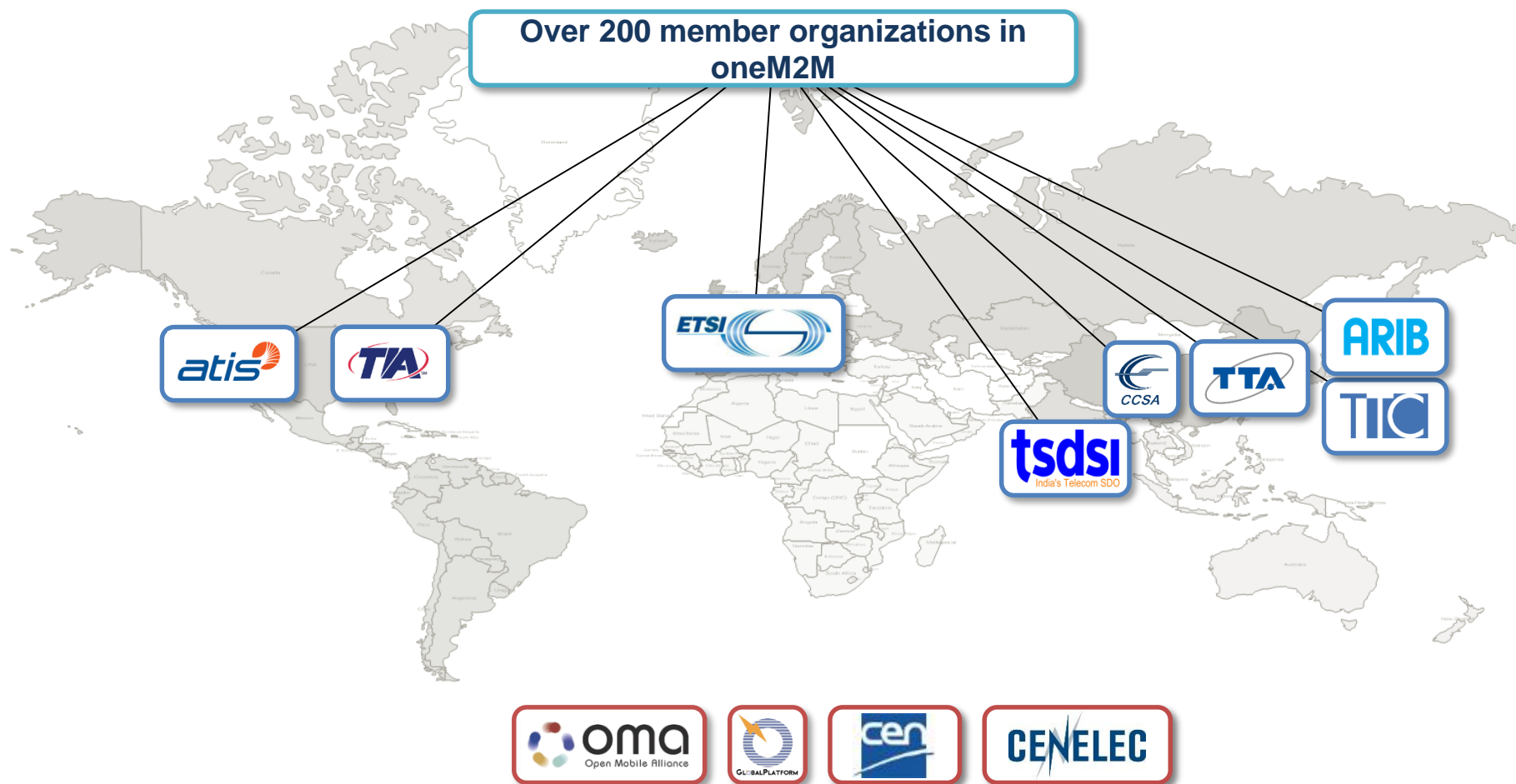
Breaking barriers: cross-domain interoperability



- ❖ Highly fragmented market with small vendor-specific applications.
- ❖ Reinventing the wheel: Same services developed again and again.
- ❖ Each silo with its own technologies without interoperability.

- ❖ End-to-end platform: common service capabilities layer.
- ❖ Interoperability at the level of communications and data.
- ❖ Seamless interaction between heterogeneous applications and devices.

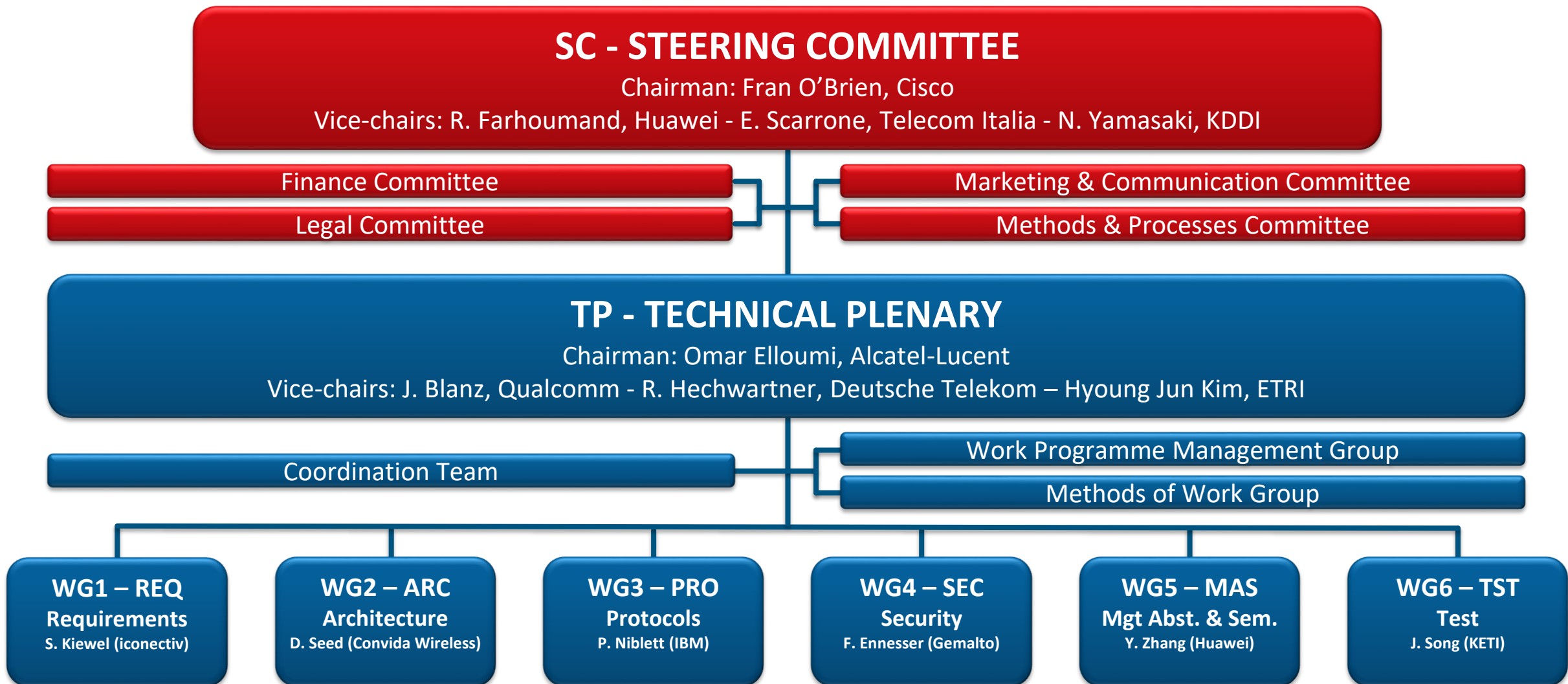
Global Participants, Global Footprint



Membership: where the IoT industry meets. Get involved!

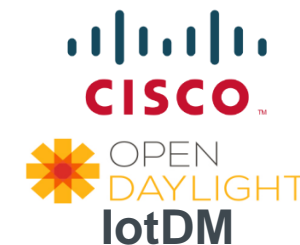


Structure



Choice and interoperability

Industry-driven Open source implementations



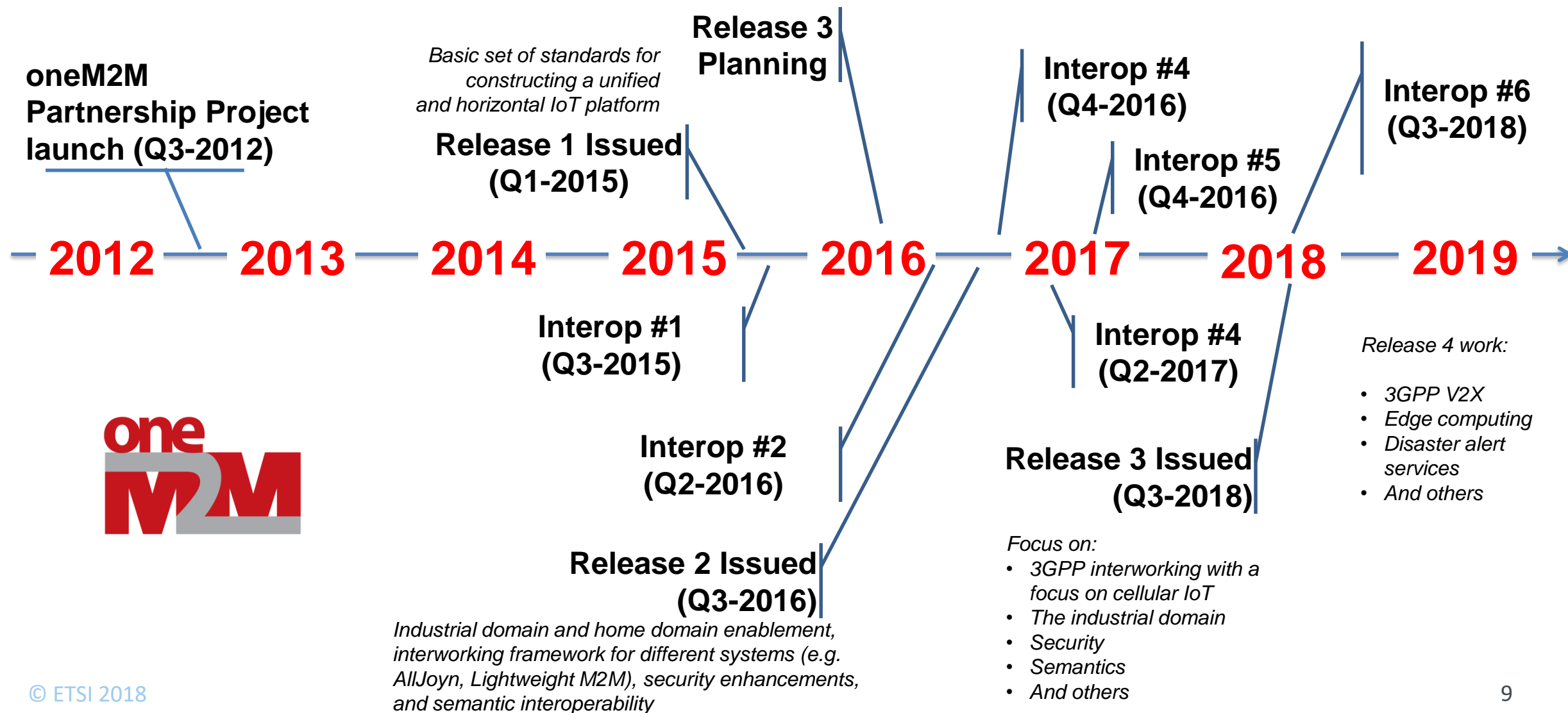
Examples of Commercial implementations /demos



An ongoing series of successful interop events held since 2015

With 30 participating organizations and 130+ engineers
Next interop event: Washington DC, 9 -13 July 2018

oneM2M timeline



Basic Principles

Role of the M2M Service Layer

Application Layer

Service Layer

Network Layer

- ✔ Software/Middleware
- ✔ Sits between applications and data processing & communication HW
- ✔ Integrated into devices/gateways/servers e.g. sensors, actors, things, routers, cloud
- ✔ Connects data producers and consumers in secure manner
- ✔ Hides complexity of NW usage from apps
- ✔ Controls when communication happens
- ✔ Increases efficiency of data transport
- ✔ Stores and shares data
- ✔ Supports access control
- ✔ Notifies about events
- ✔ Talks to groups of things
- ✔ Manages devices on large scale

Principles

- ✓ Distributed architecture
- ✓ Request / Response model
A request-message triggers a response message
- ✓ Resource oriented approach
RESTful approach
simple and uniform interfaces is used to access resources
Create, Retrieve, Update, Delete (+ notifications)
- ✓ All services offered accessed via addressable resources
URI to identify each resource
- ✓ Base ontology and semantic interoperability



Common Service Functions

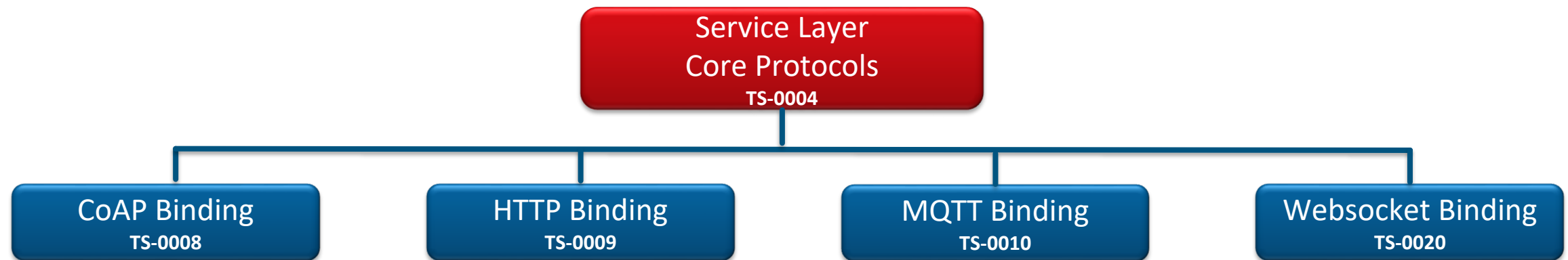
Functions provided by a Common Service Entity (CSE)



Transport layer abstraction

Transport layer agnostic

- Currently using IP-based protocols



- Modular approach
- Further bindings under consideration/specification

Security

In today's Internet age

- ✓ Data acquired about *our environment*
- ✓ help us adapt *our behaviour*
 - *Indirect privacy threat*
 - *Security does not directly affect our safety*

In tomorrow's IoT age

- ✓ Data acquired about *our behaviour*
- ✓ are used to adapt *our environment*
 - *Privacy directly impacted!*
 - *Security breaches directly impact our safety*

Strong focus on security in oneM2M
Dedicated group of experts
Security in focus from Day #1

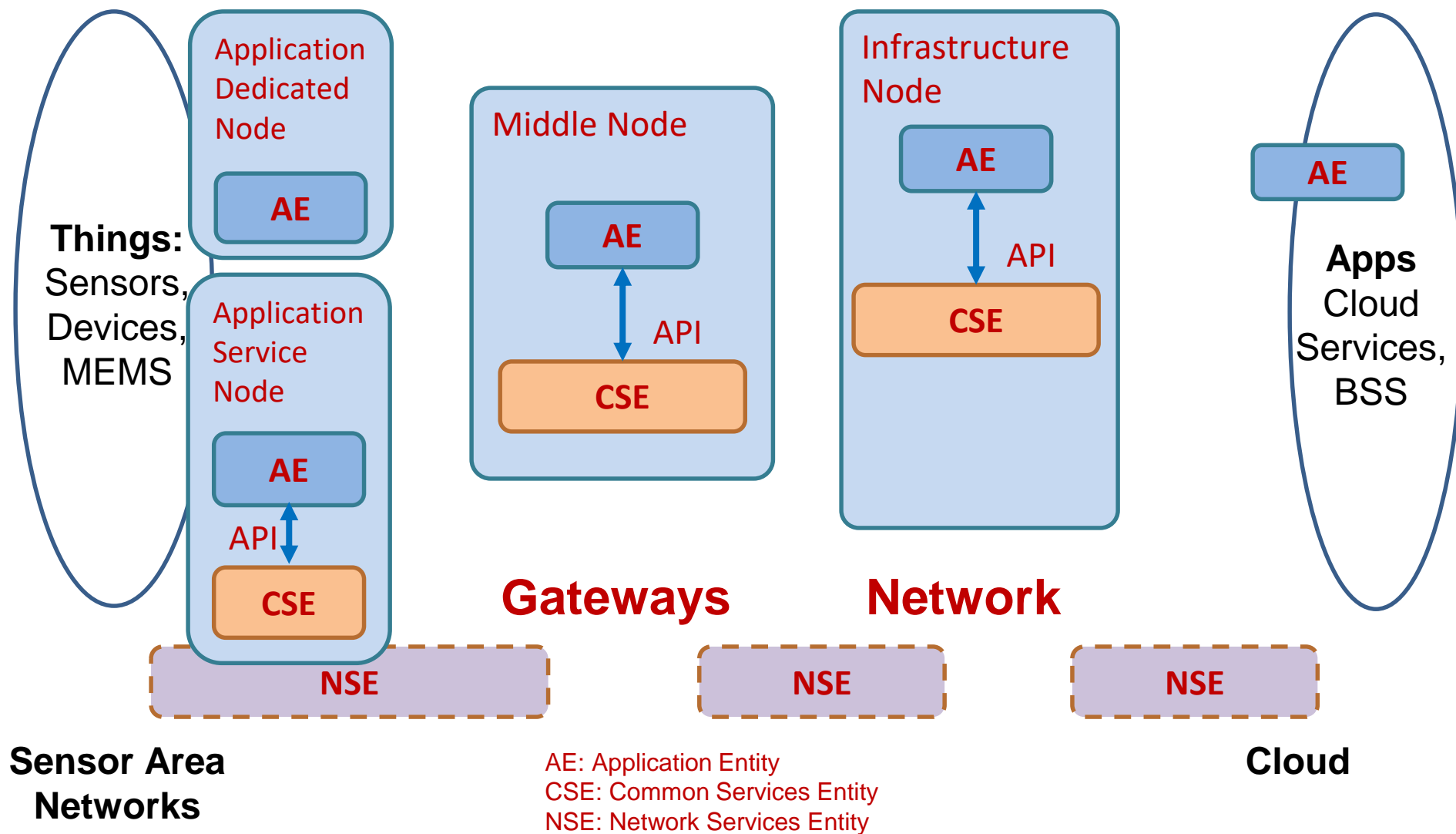
Security (cont.)

Protecting critical infrastructures

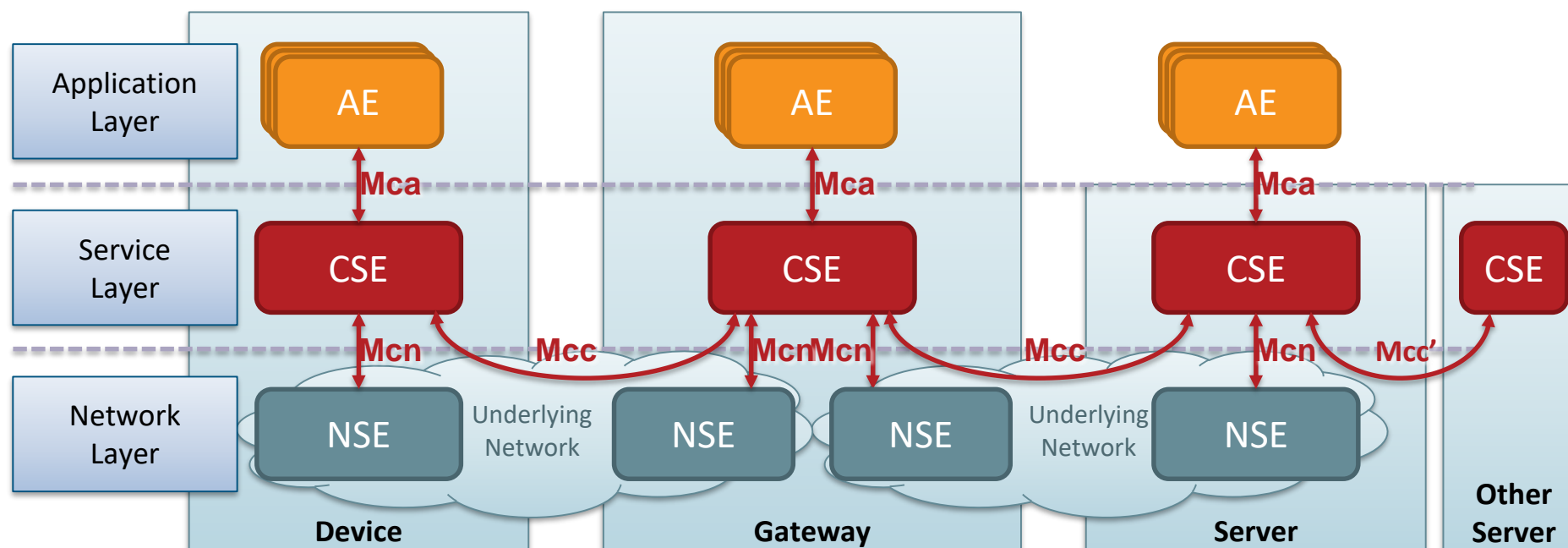
- ✔ Connected healthcare environments (with wearable devices)
- ✔ Intelligent transport, roadways, smart connected cars
- ✔ Smart utilities: Metering, Power production and distribution, water, food, waste
- ✔ Critical infrastructures cannot afford weak security
- ✔ Furthermore, many critical infrastructure equipments are physically accessible to potential attackers
- ✔ oneM2M provides mechanisms for authentication, authorization (through access control mechanism), secure communications and more.

Architecture

Conceptual Architecture View



Harmonised interfaces



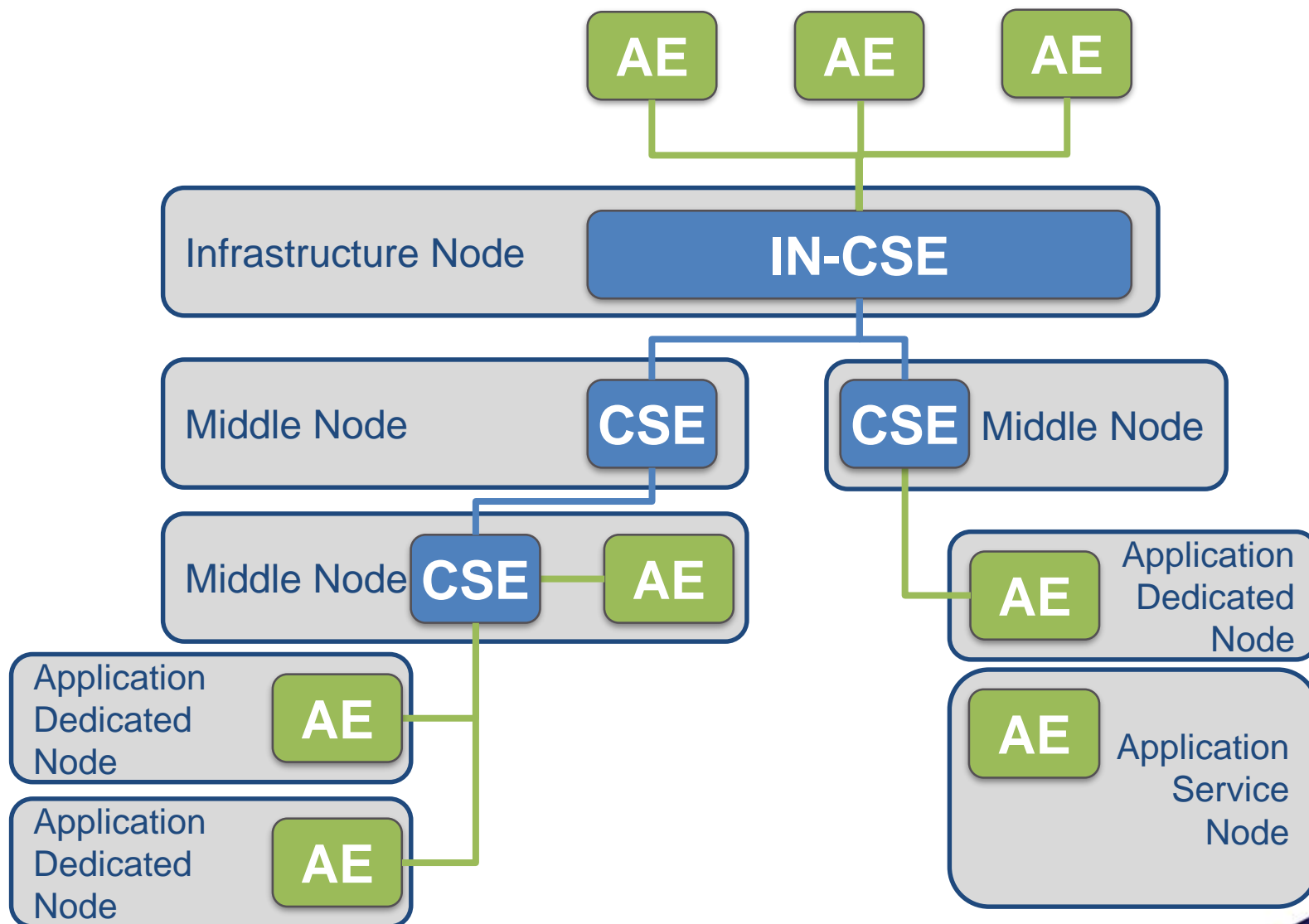
Entities

AE (Application Entity), CSE (Common Services Entity) and NSE (Network Services Entity)

Reference Point

One or more interfaces - Mca, Mcn, Mcc and Mcc'

Topology



Know more about oneM2M

oneM2M webinars:

- ✔ [Taking a look inside oneM2M](#)
- ✔ [Future proof IoT based smart cities using oneM2M](#)
- ✔ [oneM2M Release 2 overview](#)

oneM2M presentations on [SlideShare](#)

White papers:

- ✔ [Smart Cities Done Smarter](#)
- ✔ [The Interoperability Enabler](#)

Developers guides



Upcoming events

Technical Plenary 36 – Washington DC, USA , 16 – 20 July 2018

Technical Plenary 37 – Seoul, Korea, 17 – 21 September 2018

- ✓ Expected to ratify Rel-3
- ✓ *Industry Day* held on Friday 14 September
- ✓ Korea IoT week held 9-12 September in Seoul. oneM2M members invited to attend

Technical Plenary 38 – Japan, 3 – 7 December 2018

Interop #6 – Washington DC, USA , 9 – 13 July 2018

- ✓ Organised by ETSI and TTA, supported by EC

Meetings and events in Europe in 2019 and 2020



A large, circular inset image on the left side of the slide shows an aerial view of a city at night, likely Hong Kong, with many skyscrapers and lights. Overlaid on this image are several white, glowing wireless signal icons (three concentric arcs) emanating from various buildings, suggesting a smart city or IoT theme.

Thank you!

Contact Details:

[Xavier Piednoir](#) - ETSI External Relations

[Ultan Mulligan](#) - oneM2M Marketing/Communications

[General oneM2M enquiries](#)