



ETSI MEC and oneM2M – Enabling Multi-access Edge Computing in IoT: Deploying ETSI MEC and oneM2M



Bob Flynn
Principal Consultant, Exacta GSS
oneM2M TDE WG Vice chair



Robert (Bob) Gazda
Senior Director, R&I InterDigital
ISG MEC Technical Expert

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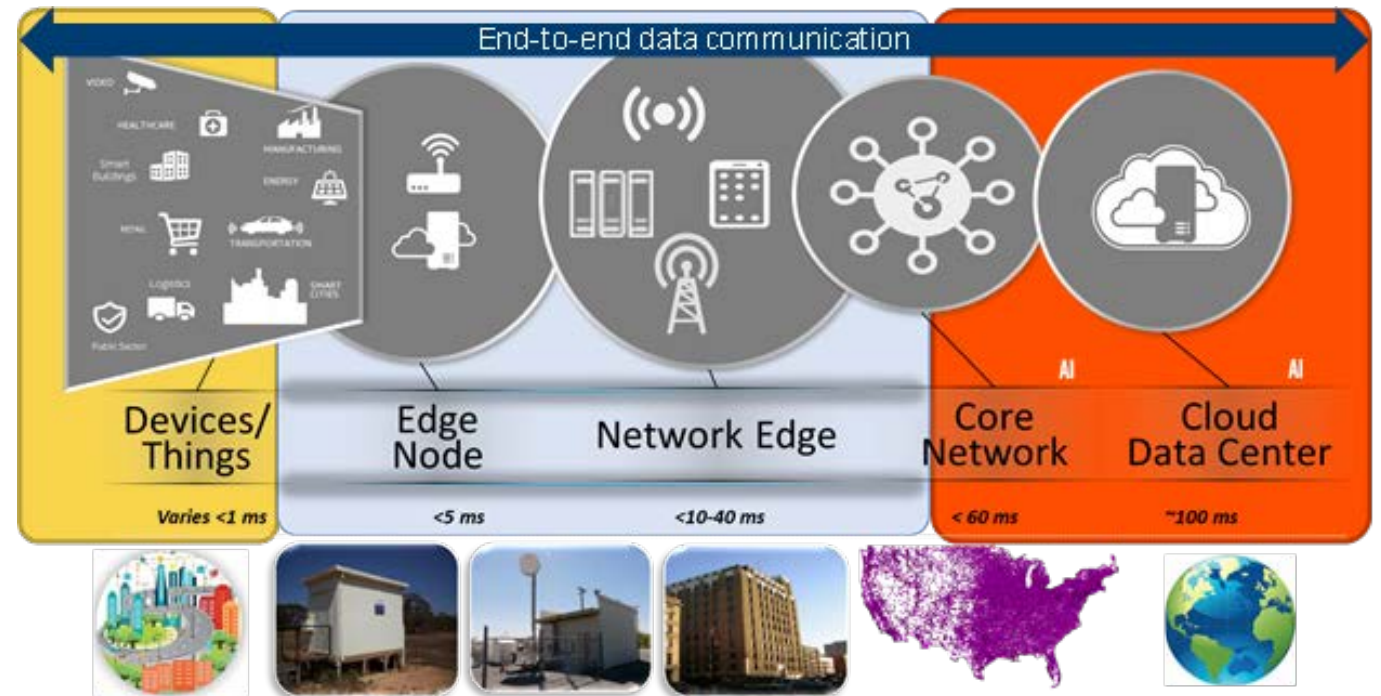
Introduction – Edge and IoT

Edge Computing:

- Evolution of the cloud, bringing application and data closer to end-users and devices
- Key technology for 5G and beyond to realize demanding KPIs (low-latency, network efficiency)

IoT Technology:

- Enables devices & things to communicate with each other and with network & application functions in the network and cloud
- Key in many fields such as Smart Cities, Factories, Agriculture, and Homes

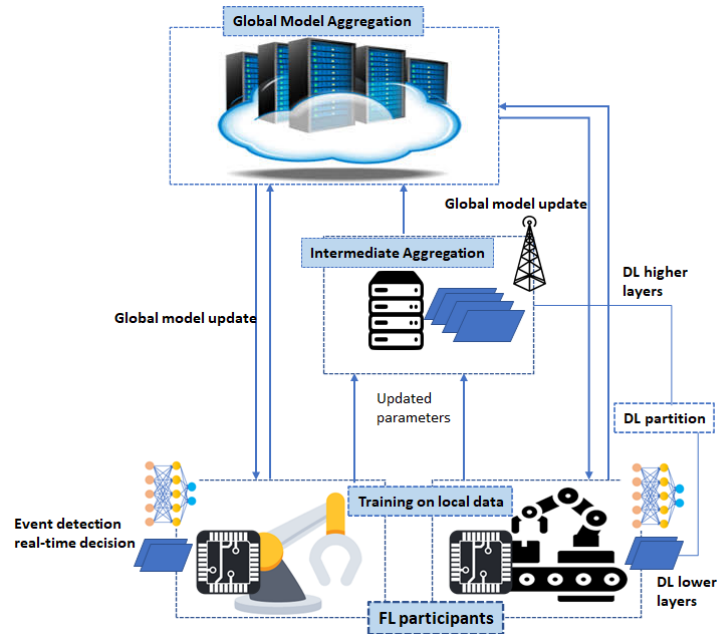


This presentation shares insights from the recently published ETSI MEC and oneM2M White Paper:

Enabling Multi-access Edge Computing in Internet-of-Things: how to deploy ETSI MEC and oneM2M

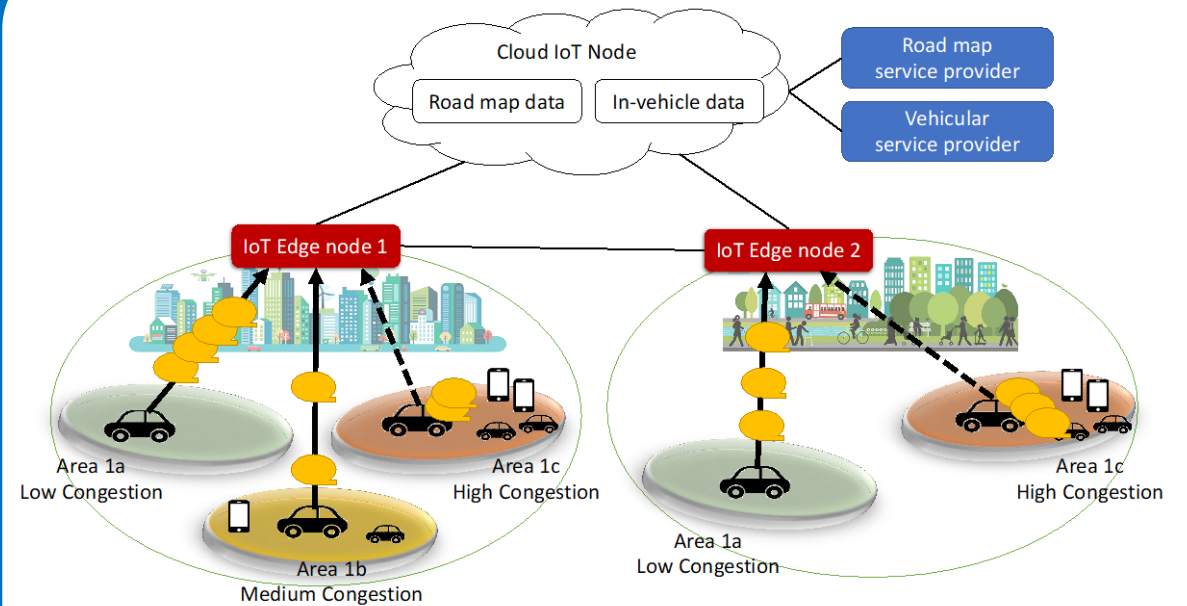
Edge IoT Use-Case Scenarios

Smart Factories



- Many devices generating massive amounts of multi-modal data
- Increasing use of AI/ML techniques, e.g., production line monitoring
- Digital twins and low-latency machine controls

Automotive & Smart Transportation



- High-precision road mapping and monitoring – collection and processing of data from vehicle and road-side sensors, including V2X information from mobile network
- Vulnerable Road User Discovery – accurate positioning and vehicle data to mitigate risks to pedestrians and cyclists

ETSI MEC

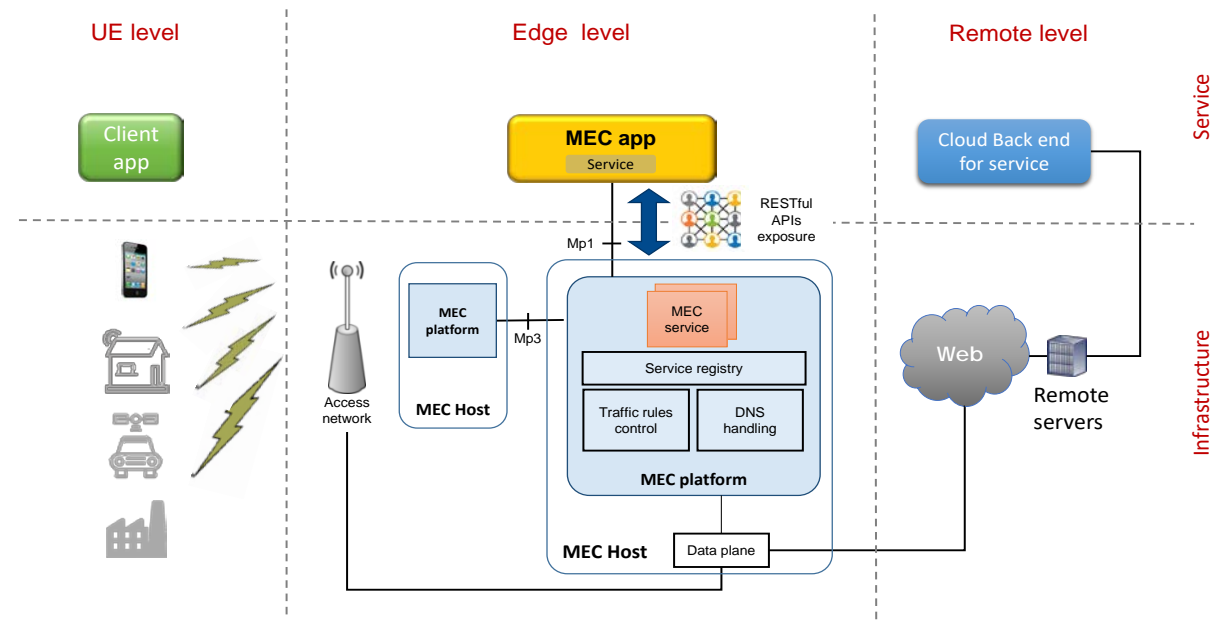
– Foundation for Edge Computing



MEC offers to application developers and content providers cloud-computing capabilities and an IT service environment at the edge of the network

MEC Principles:

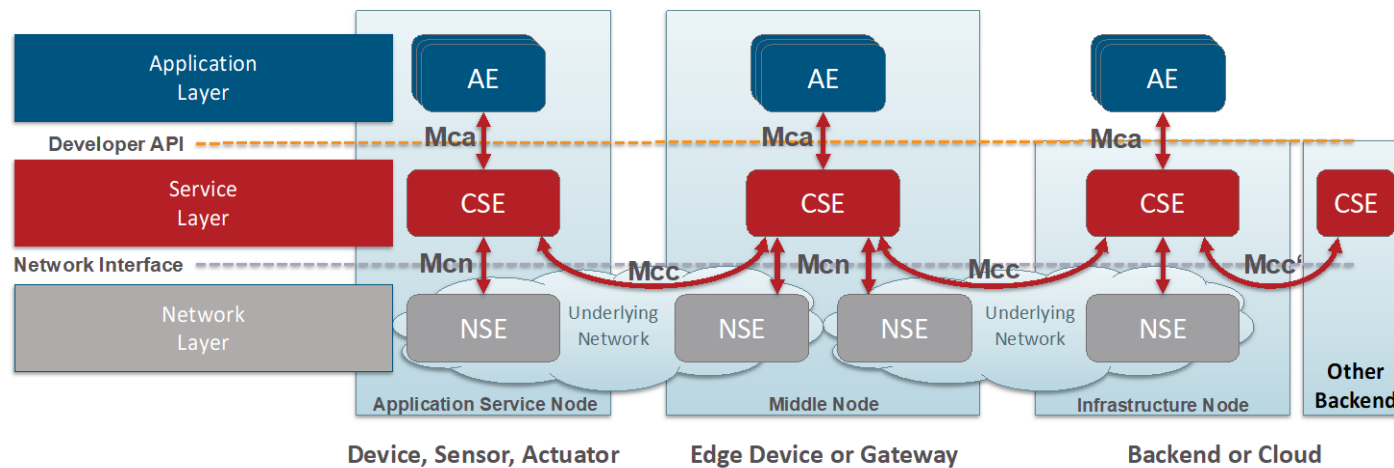
- **Open standard** → allowing multiple implementations and ensuring interoperability
- MEC exploiting ETSI **NFV framework** and definitions → enabling MEC in NFV deployments
- Alignment with **3GPP** based on fruitful collaboration of common member companies → enabling MEC in 5G
- **Access-agnostic** nature (as per MEC acronym - Multi-access Edge Computing) → enabling other accesses
- Addressing the needs of a **wide ecosystem** → enable multiple verticals (e.g., automotive, factories), federations



MEC is focused on *existential* questions of applications “on the edge”

oneM2M Overview

oneM2M Simplified Architecture

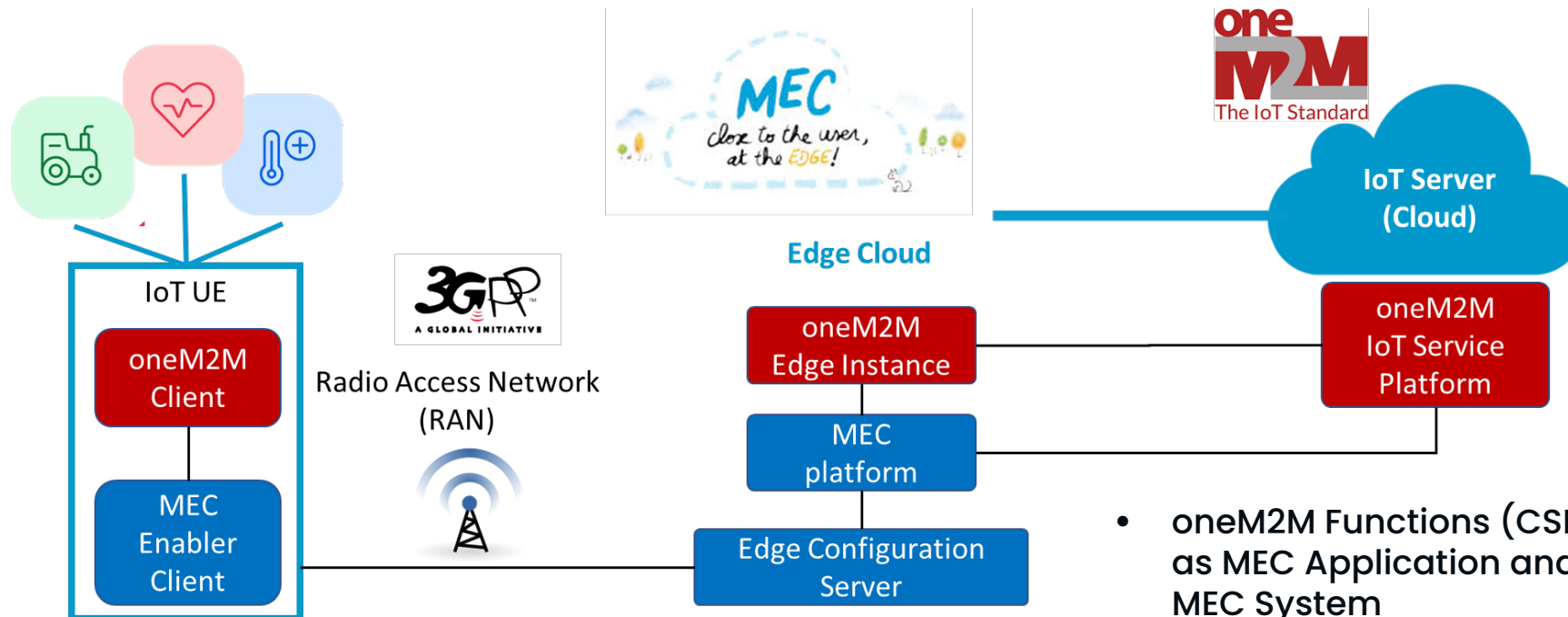


- specifies a common set of horizontal IoT services
- enables data interoperability
- interworks with existing IoT technologies

- is a **global open standard**
- **interoperability testing and a certification program**
- standardized APIs simplify the life for the IoT ecosystem
- minimize development, deployment & maintenance costs
- is a **mature and a commercially deployed** technology

Synergized MEC & oneM2M Architecture

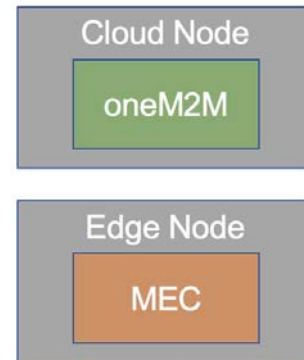
oneM2M and MEC Architectures are compatible, enabling the joint deployment of oneM2M nodes in MEC Systems



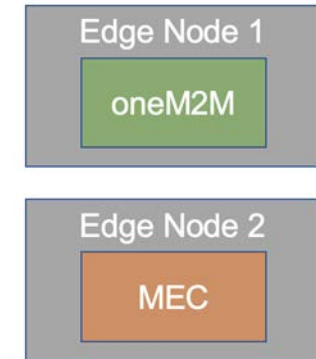
- oneM2M Functions (CSE & AE) are realized as MEC Application and/or Services in the MEC System
- Tighter integration is envisioned with specific “hooks” between the system to increase joint benefits

Synergized MEC & oneM2M Deployment Considerations

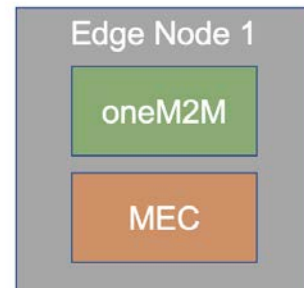
Option A: deploy the oneM2M as a cloud, MEC as an edge



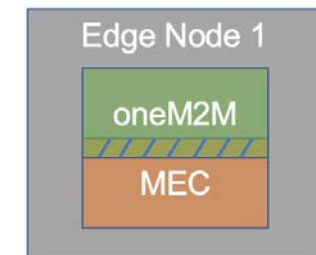
Option B: oneM2M and MEC as an edge with the different physical node



Option C: oneM2M and MEC in the same physical edge node



Option D: oneM2M and MEC are tightly coupled in the same edge node



Deployment of MEC and oneM2M

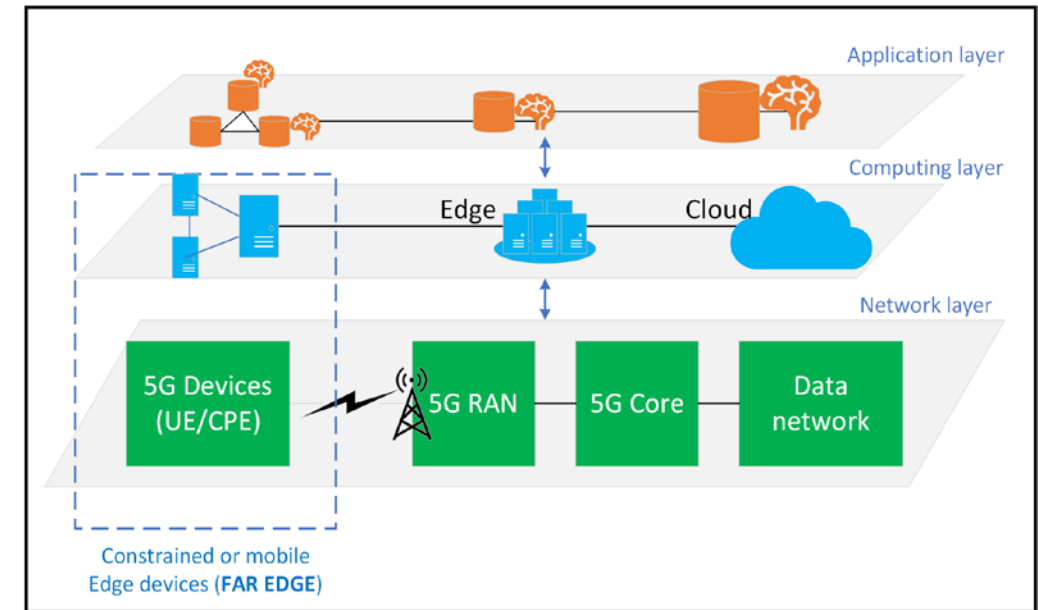
An emerging use-case for Edge IoT is the deployment of constrained edge devices in a MEC system

Extending the availability of compute and application resources beyond the fixed edge cloud to the “Far Edge” in wireless & mobile devices

Realizing MEC on constrained devices, enables deploying the oneM2M edge platform in these same devices (Option D).

Technical aspects are under study. However, it is envisioned that applications and functions may be hosted anywhere from along the compute stratum (cloud, edge, or far edge devices)

Deploying MEC with Constrained Devices



Conclusions and Future Work



Confirmed synergies between ETSI MEC and oneM2M IoT platforms

Further collaborations are expected

- 1) Investigate option D (a formal interworking)
- 2) Further study on the deployment of oneM2M edge platform to ETSI MEC platform as MEC applications
- 3) Collaborations between open-source communities
 - a) oneM2M: OCEAN, OM2M, ACME, tinyIoT, etc
 - b) ETSI MEC: LF Edge, CAMARA, etc.
- 4) Co-host international hackathons that uses MEC and oneM2M
- 5) Co-host interoperability events

ETSI / LF Edge / OCP –
Edge-Native AI
Hackathon 2023
Learn more [here](#)

Thank you!!
Any further questions?

Contact us:

bob.flynn@exactagss.com
robert.gazda@interdigital.com

