ETSI MEC Overview

Standardisation update on Multi-access Edge Computing

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October 2025

ETSI MEC: Enabling Edge through Standardisation

Foundation for Edge Computing – Fully standardised solution to enable applications in distributed cloud created by ETSI MEC + 3GPP

ETSI

The Standards People

Producing globally applicable standards for ICT-enabled systems

ISG

Industry Specification Group

Open to all of industry, regardless of ETSI membership and focused on all industry needs

MEC

Multi-access Edge Computing

Cloud Computing at the Edge of the network.

ETSI MEC The Standards People

ETSI NFV The Standards People

MEC Application Development Community

Interaction & Information Exposure

Application Life Cycle Management

RESTful based APIs for Runtime Application Services

3GPP A GLOBAL INITIATIVE · Wi Fi · broadband forum

- **Diverse ecosystem:** Operators - Technology Providers - IT players - Application developers – Startups…

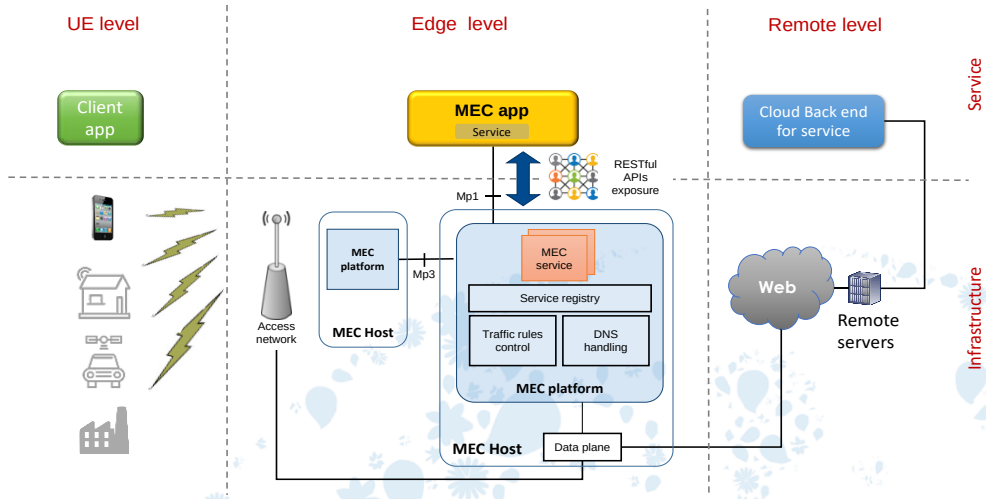
Watch the new video on MEC

Discover the members

- **Continuously growing MEC membership:** 124 (updated Dec 2022); e.g. in June 2021 it was 114.

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



BASIC PRINCIPLES

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

MEC is focused on *existential* questions of **applications "on the edge"**

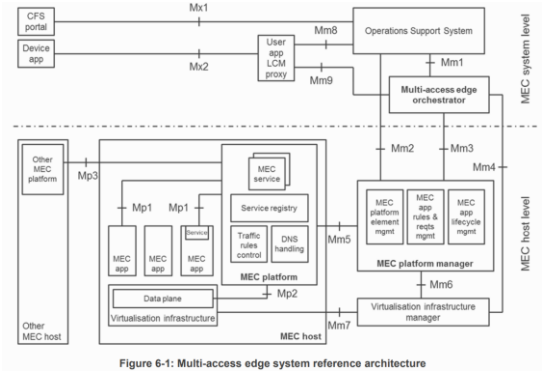
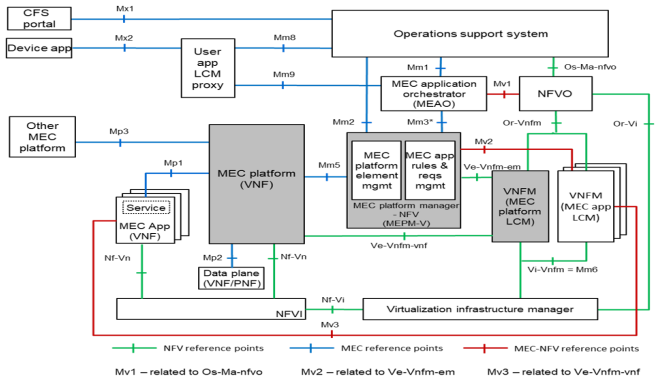
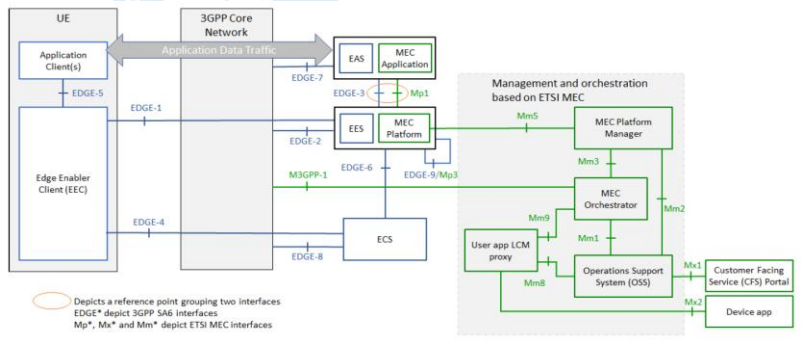
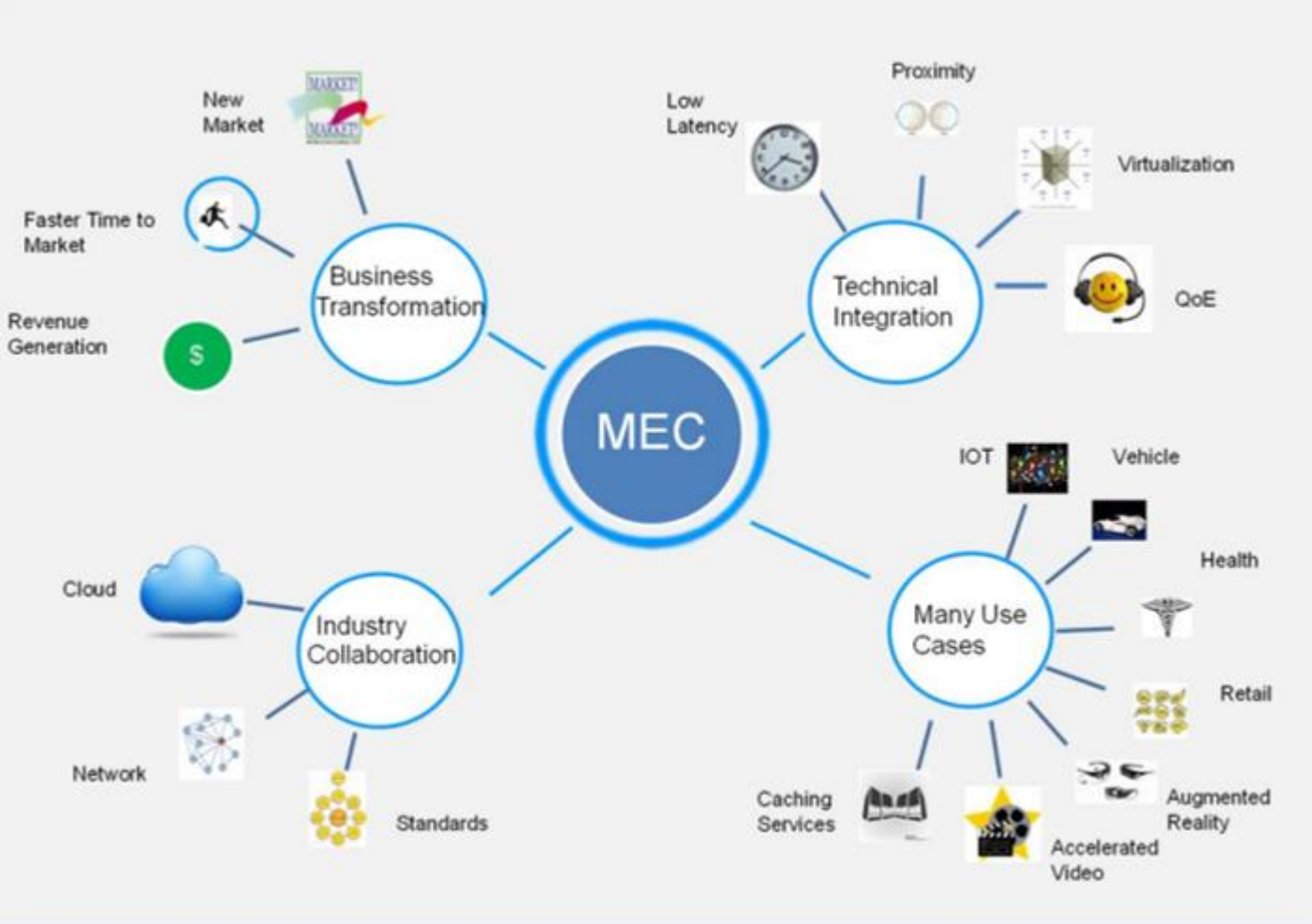


Figure 6-1: Multi-access edge system reference architecture





MEC supports many 5G use cases and market segments



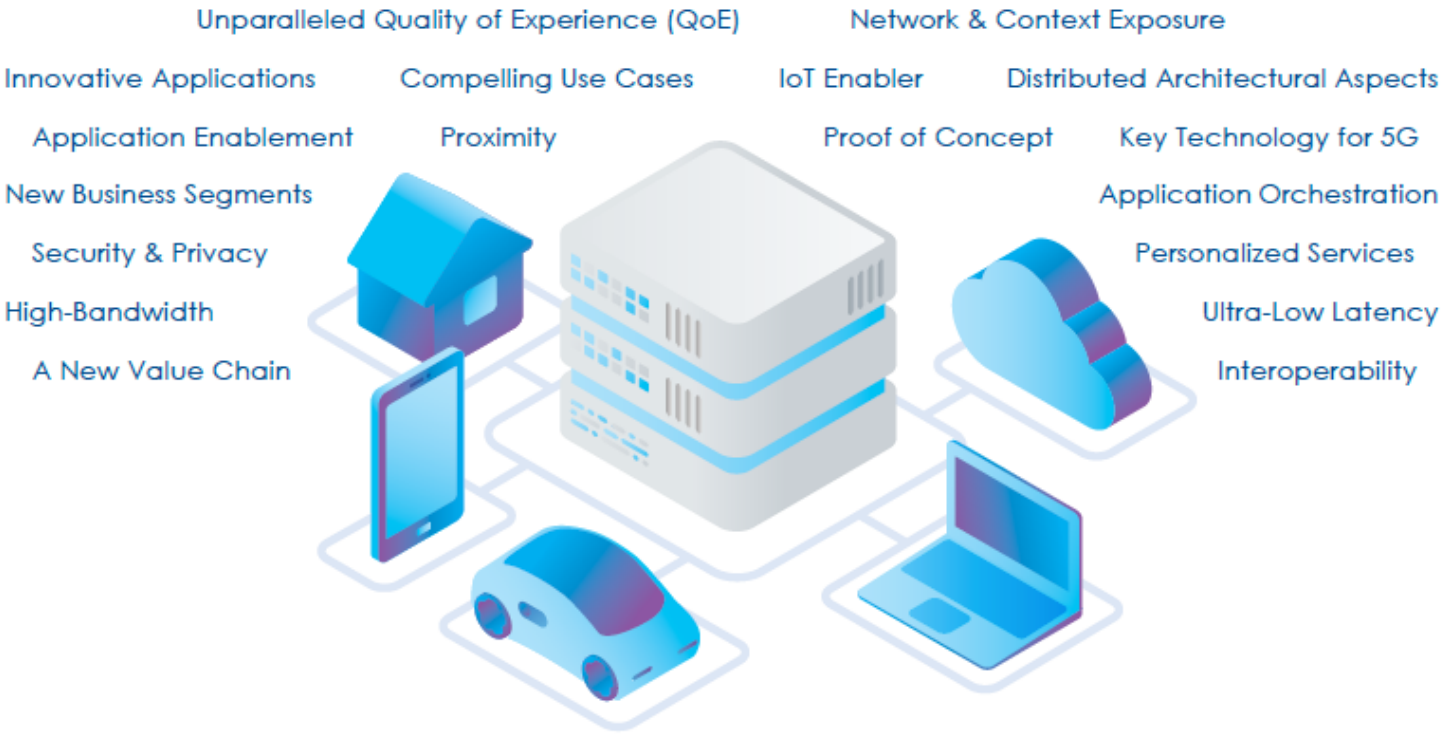
More info at this ETSI White Paper on MEC

MEC and vertical market segments

MEC is a key enabler for **many vertical market segments**.

Several (specialized) use cases driven by different verticals:

1) Automotive,
2) Industrial automation,
3) VR/AR,
4) Videostreaming,
5) Gaming,
6) E-health,
7) Smart cities,
8) Etc …



MEC and vertical market segments

A series of live panels with relevant experts from the various vertical market segments.
Learn more here

MEC meets Spatial Computing and Gaming

C-level keynotes and moderated panel

Remote: online event (bridge and material online!)

Participation free of charge

First event on Drones vertical

70+ people registered

6 keynotes and 1 demo

Final panel discussion

Edge Exposure Day

Create value at the edge of the 5G network

Discussion and brainstorming session

Attendance from diverse people

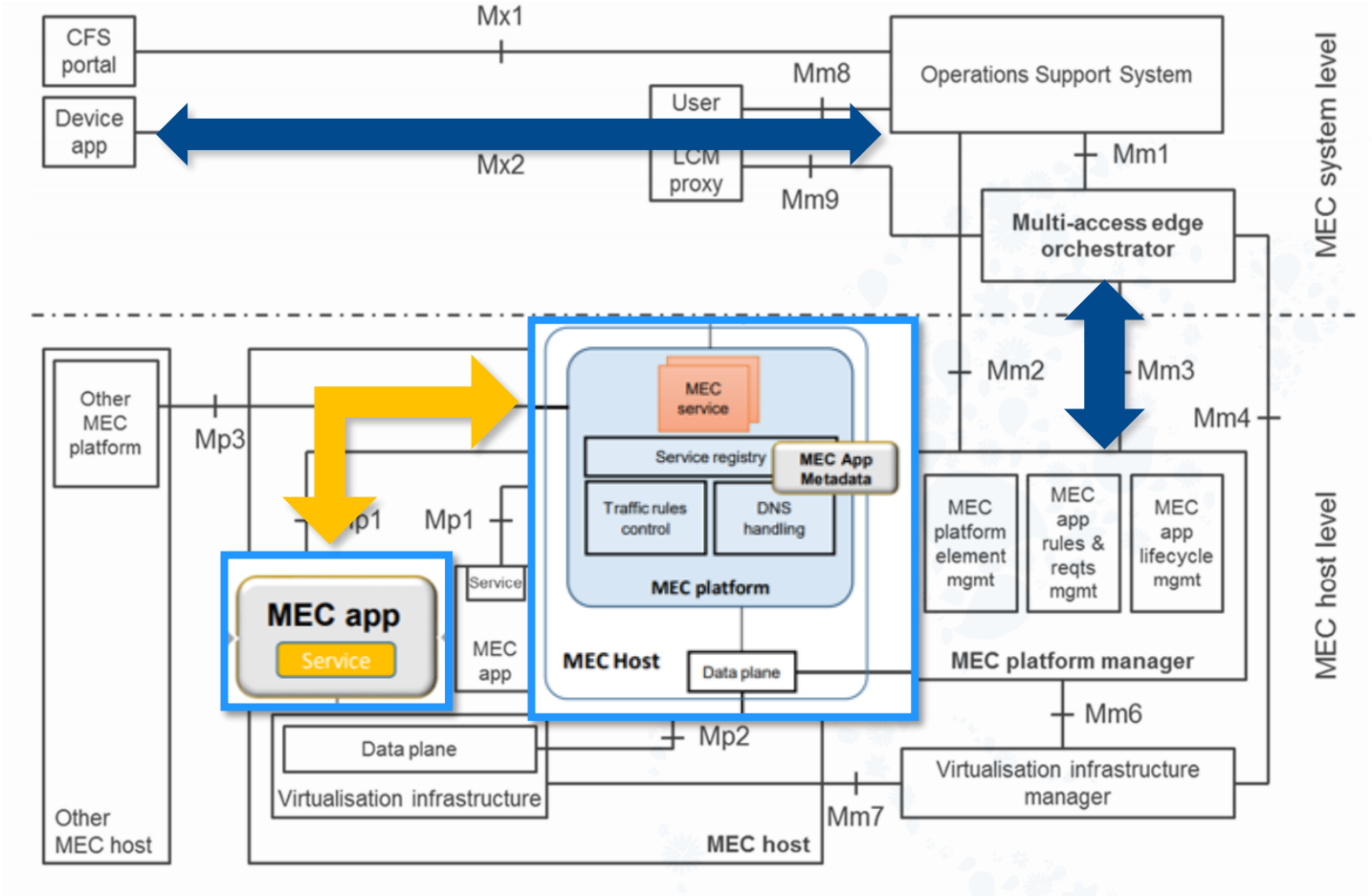
MEC Reference Architecture

API's (Application Programming Interface)

1) Application Support
2) Service Management
3) Radio Network Information
4) Location
5) UE Identity
6) Bandwidth Management
7) Fixed Access Information
8) WLAN Information
9) V2X Information Service

Application Package lifecycle and operation granting

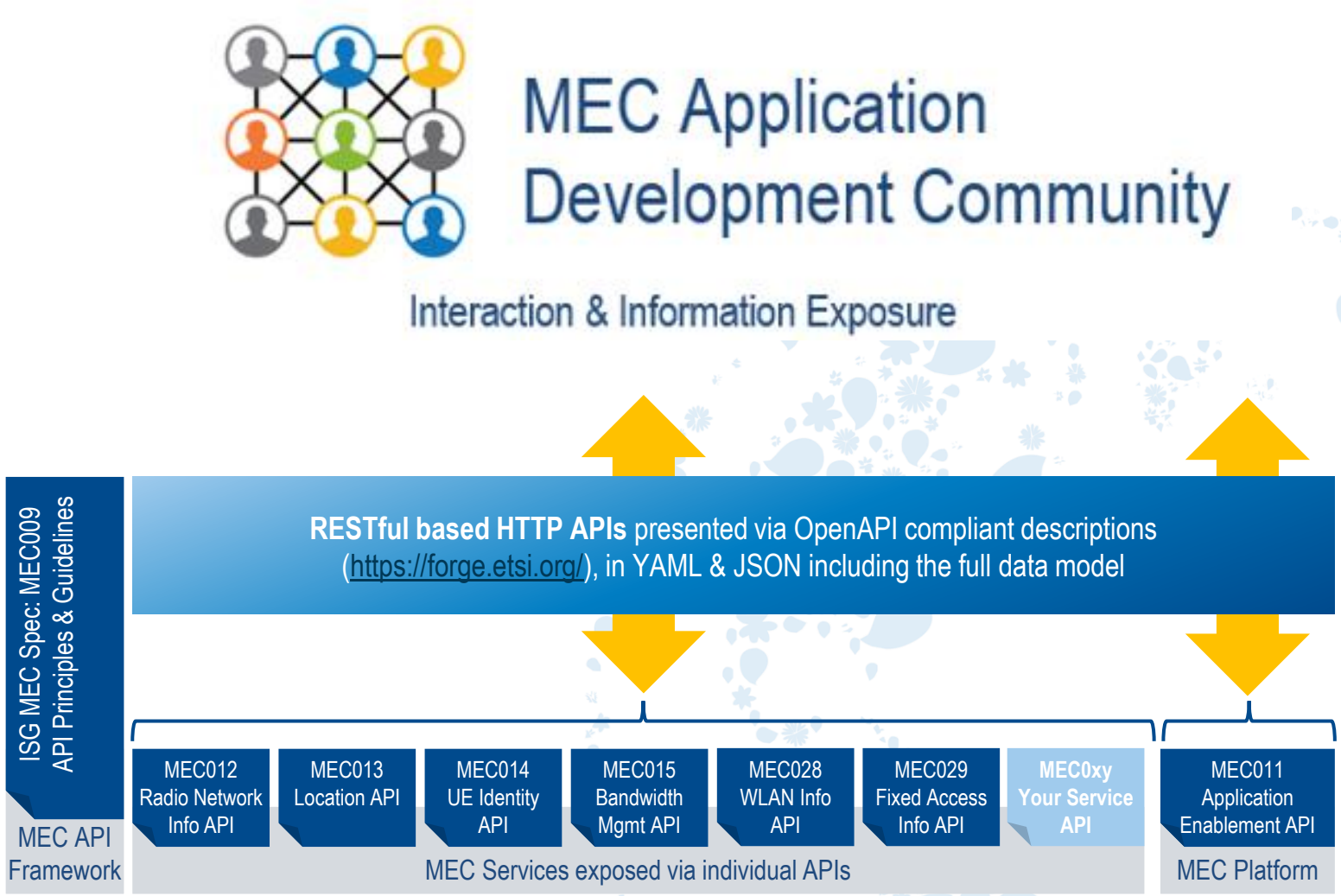
Device application interface



Enabling Global Application Portability

WHY THIS SYSTEM ?

1) Simple to use, well documented APIs, published with OpenAPI Framework.
2) Create innovative applications quickly and easily, reducing time-to-revenue.
3) **New APIs (compliant with the MEC API principles) can be added.**
4) Increase the Total Addressable Market (TAM).



Standard work: from Phase 1 to Phase 4

- Key overall specification
  - Technical Requirements (MEC 002)
  - Framework and Ref. Archit. (MEC 003)
  - MEC PoC Process (MEC-IEG 005)
  - API Framework (MEC 009)
- IaaS Management APIs
  - Platform mgmt. (MEC 010-1)
  - Application mgmt. (MEC 010-2)
  - Device-triggered LCM operations (MEC 016)
- PaaS Service Exposure
  - Required Platform Svcs / App. Enablement (MEC 011)
  - Service APIs (MEC 012, 013, 014, 015)
- Key Studies for Future Work
  - Study on MEC in NFV (MEC 017)
  - Study on Mobility Support (MEC 018)

2015 ETSI MEC phase 1 (Completed)

- Evolution of Phase 1 and closing open items
  - Application Mobility (MEC 021)
  - Lawful Intercept (MEC 026)
- Addressing key Industry Segments
  - V2X (MEC 022 – published; MEC 030)
  - Industrial Automation, VR/AR
- Key use-cases and new requirement
  - Network Slicing (MEC 024)
  - Container Support (MEC 027)
- Normative work for integration with NFV
  - Incorporate in v2 of existing specifications as needed
- From “Mobile” to “Multi-Access”
  - Wi-Fi (MEC 028)
  - Fixed Access (MEC 029)
- MEC integration in 5G networks (MEC 031)
- Developer community engagement
  - API publication through ETSI Forge (overleaf)
  - Hackathons, MEC Delpoyment Trials
- Testing and Compliance (MEC-DEC 025; multipart spec MEC-DEC 032-x)

2018 ETSI MEC phase 2 (Completed)

- Full Phase 3 work (with some pre-Phase 4).
- MEC as heterogeneous clouds
  - Expanding traditional cloud and NFV LCM approaches
  - Inter-MEC systems and MEC-Cloud systems coordination: “MEC Federation” (MEC 035, MEC040)
  - Mobile/intermittently connected and resource constrained devices (MEC 036), MEC IoT API (MEC 033)
- MEC Security (GR MEC 041)
- MEC deployments, e.g. in Park enterprises (MEC 038)
- MEC Application Slices (MEC 044)
- Continuing emphasis on enabling developers
  - App Package Format and Descriptor (MEC 037)
  - API Serialization
  - MEC Sandbox development
  - Testing and compliance
- Continue to define services that meet industry demand (e.g., Abstracted Network Info Exposure, MEC 043)
- Maintain and enhance existing APIs (MEC 013)

2021 ETSI MEC phase 3 (Completed)

- Evolution of Phase 3 and closing open items, including maintenance and enhance existing APIs
- Addressing key Industry Segments
  - Listen to verticals via Edge Discovery Days
  - Abstracted Network Info Exposure MEC 043
  - Distributed Edge Network MEC 047
  - Exploiting Edge Computing Resources MEC 059
- Key use-cases, requirements & arch
  - MEC 002, MEC 003
- Normative work on MEC Security
  - MEC architecture (MEC 003), (API GW for Client Apps (MEC 060), Support for Security Monitoring and Management (MEC 062)
- Continuing emphasis on enabling developers
  - Testing and compliance
  - API-driven MEC Sandbox and Edge Native Connector activities (STF678)
- Collaboration with open-source communities (e.g., TeraFlowSDN, OpenCAPIF, CAMARA)
- STF 685 ESTIMED: Enabling Standardised IoT deployments in MEC Environments for advanced systems (OneM2M & SmartM2M)
  - 9 GR/GS, 4 PoC, Testing
- AI/ML in MEC (MEC 061)

2024 ETSI MEC phase 4 (Started)

MEC toward 6G

CAVEAT: nobody knows yet *what 6G will be*! So, we cannot claim (still) what MEC in 6G will be, of course.

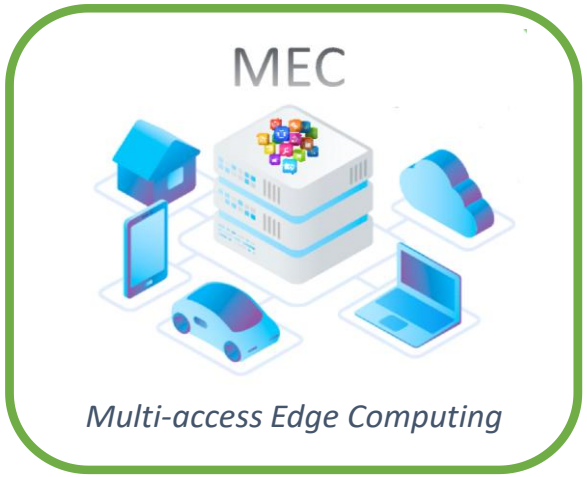
On the other hand, MEC evolution and vision can be shaped (in a pragmatic way).

The newly approved ToR#5 of MEC (available here) is related to the period 2023-2024.
Thus, it will include also the beginning of MEC Phase 4 (2024-2026).

So, at least, we could draw (from the ToR#5) some differences between Phase 3 (20212-2023) and **Phase 4** (2024-2026).

MEC toward 6G: planning MEC Phase 4

IN A NUTSHELL, A TRANSITION FROM MEC PHASE 3 TO MEC PHASE 4 CAN LEAD TO:



Multi-access Edge Computing

1) More consolidated work on MEC Federation, including exposure of resources managed by multiple operators, e.g. addressing multi-domain and **multi-tenancy slicing and MEC support for application slicing.**

2) Further promotion of MEC as an attractive development environment for the industry by creating **"developer-friendly environments"** (e.g. portals, **SDK**) that enable convergence of key industry ecosystem, e.g. app developers and operators.

3) MEC architectural/service updates needed to **support cloud native communication systems and edge native design for app developers** (also with container support).

4) Introduction of proper normative work to improve **security and privacy** in MEC systems.

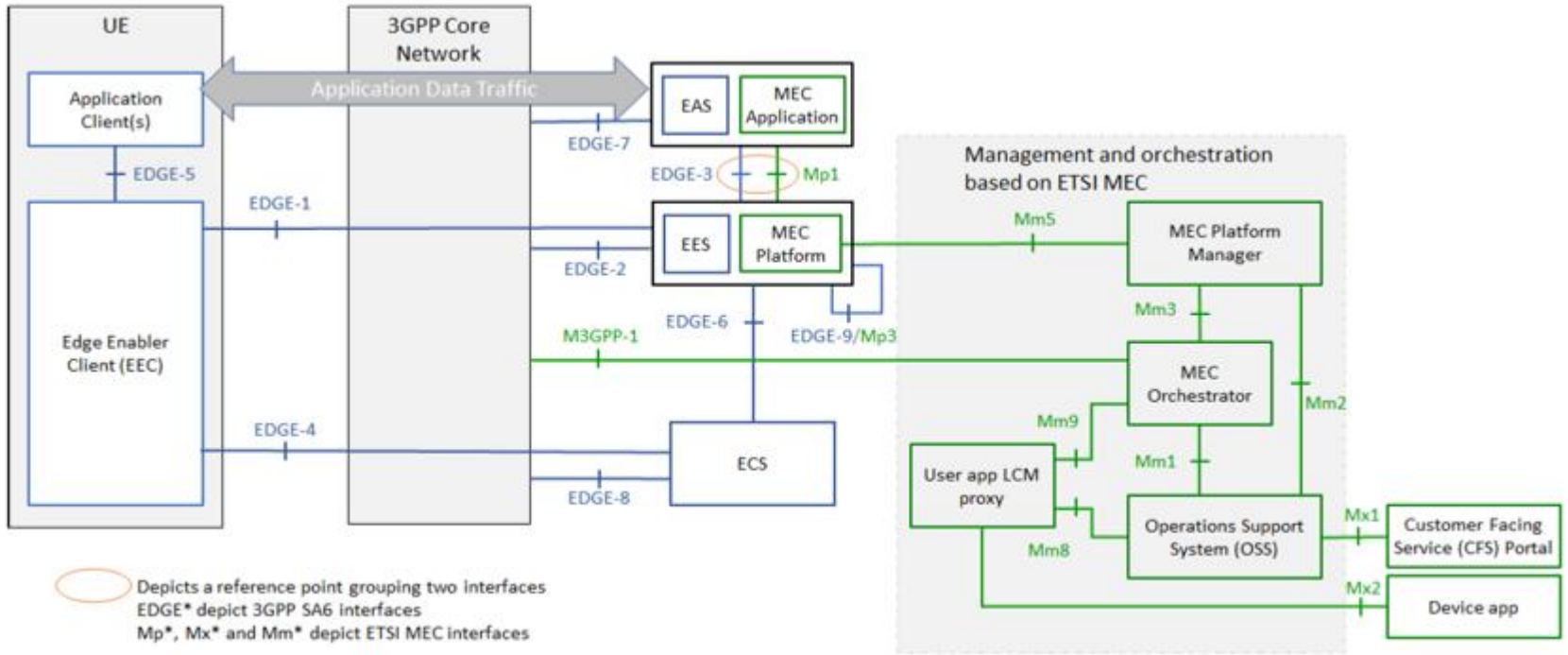
5) Further **outreach efforts**, e.g. Hackathons/trials in collab with **open source** communities, industry groups (e.g. 5GAA, etc..).

MEC harmonized architecture with SA6 EDGEAPP

1) Joint **white paper** (*) from both ETSI and 3GPP officials

2) 3GPP TS **23.558** "Architecture for enabling Edge Applications; (Release 17)" v1.1.0, Oct. 2021 (informative Annex C)

3) Alignment between 3GPP and ETSI MEC was in scope of eEDGEAPP in 3GPP SA6 (ref. S6-211858).

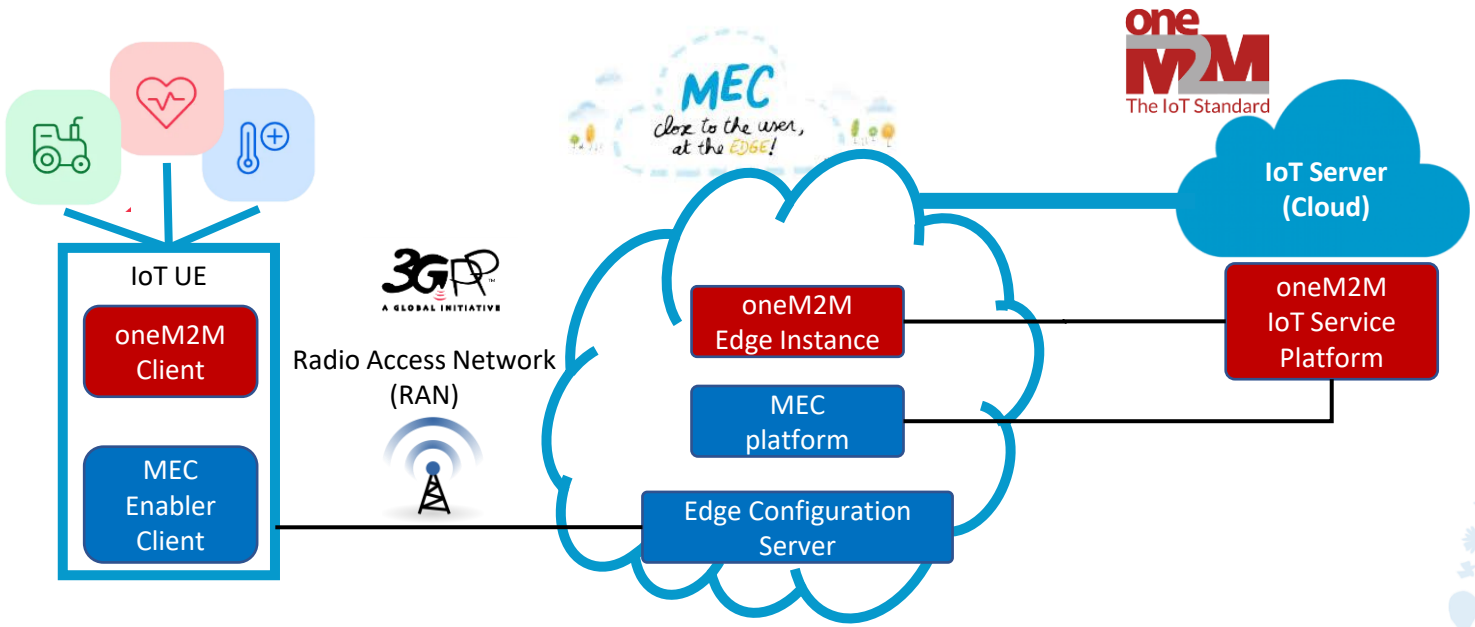


(*) Ref. ETSI White paper: "Harmonizing standards for edge computing - A synergized architecture leveraging ETSI ISG MEC and 3GPP specifications", July 2021, link here

STF: Edge Native Connector

1) Special Task Force (STF) under ETSI (https://portal.etsi.org/xtfs/#/xTF/678/).
2) Edge Native applications are designed to leverage the full potential of edge computing.
3) Edge service discovery is a core function of the MEC Platform, enabled via the Mp1 reference point for MEC applications, as per ETSI MEC Architecture.
4) The **Edge Native Connector** STF ***will extend the MEC Sandbox*** by enabling the integration of APIs from various sources (e.g., CAMARA APIs, 6G-SANDBOX (SNS JU)).
    a) *Provides an API-driven Sandbox for Application developers.*
    b) *Supports CAPIF APIs for platform interoperability.*
    c) *Supports MEC Federation APIs to enable multi-platform and multi-host interoperability*

Enabling Multi-access Edge Computing in IoT: how to deploy ETSI MEC and oneM2M



1) MEC interworking with oneM2M is possible (*)
2) Further standardisation work might be needed
3) Future activities planned (e.g. EISMEA project in 2025)

NOTE: *architectural interworking between ETSI MEC and oneM2M is made possible by seeing the CSE and AE functional elements of oneM2M as particular instances of MEC services and applications from the point of ETSI MEC system*

(*) https://www.etsi.org/images/files/ETSIWhitePapers/ETSI-WP59-Enabling-Multi-access-Edge-Computing-in-iot.pdf

oneM2M architecture and MEC deployment options

POSSIBLE MAPPING

1) **CSE** in oneM2M architecture can be represented as a **MEC Service** and/or as a service-producing MEC App instance. This service would be exposed by the MEC platform to be connected to (authorized) consumer Application Entities (AE).
2) Similarly, **AE** in oneM2M architecture can be seen as a **MEC App instance** by ETSI MEC system.

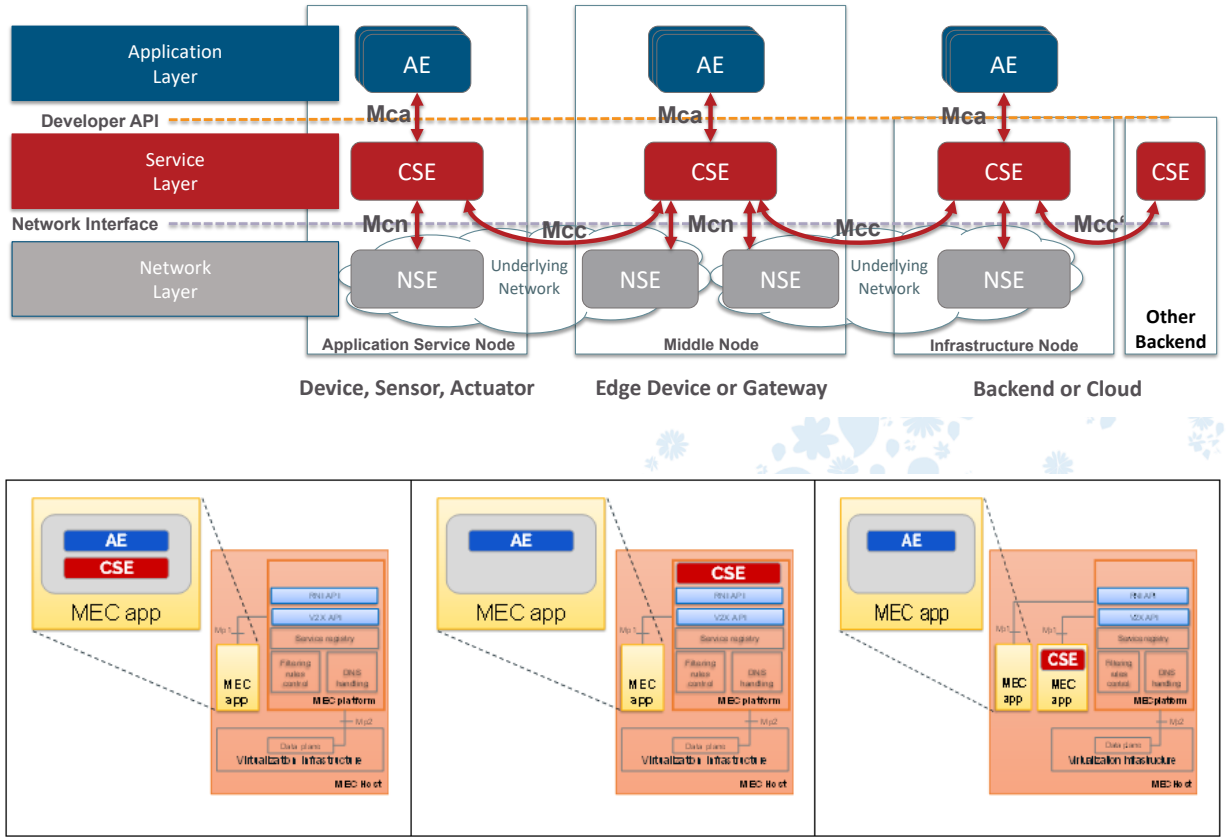
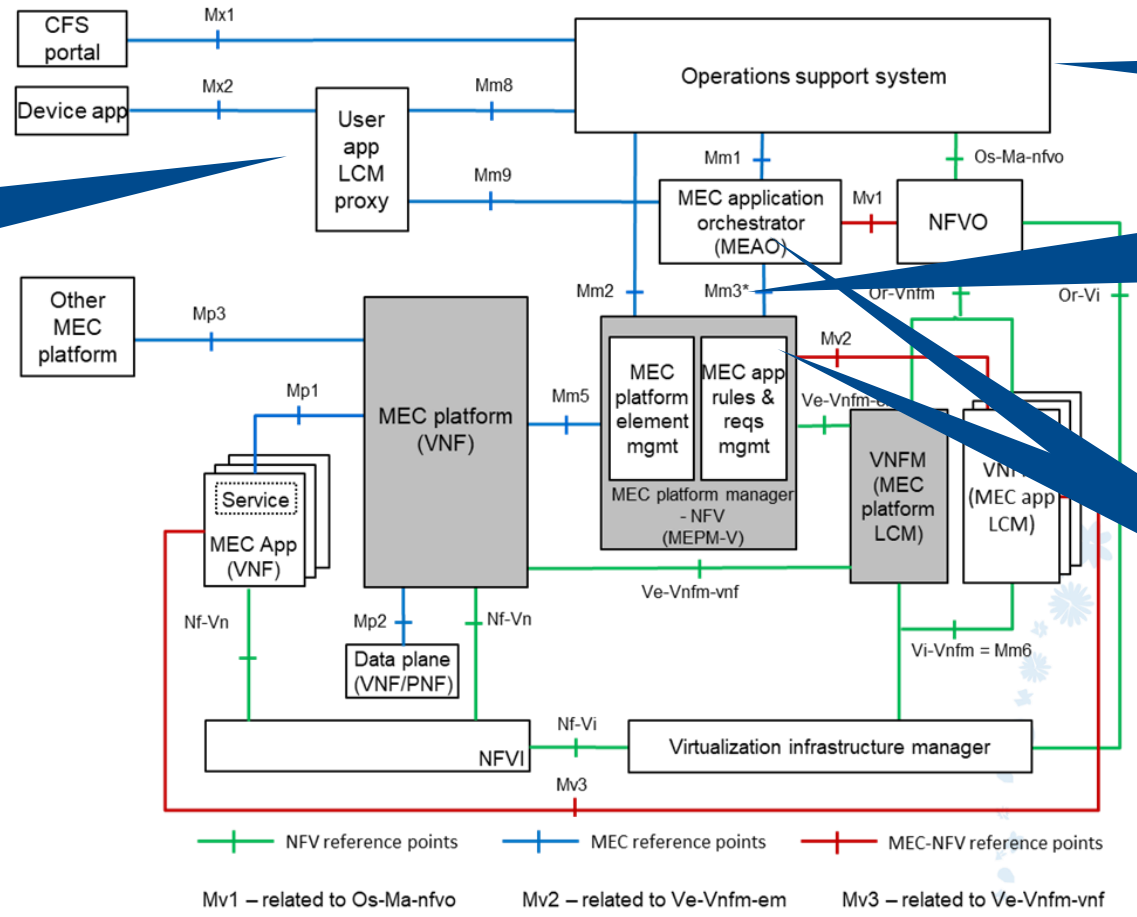


Figure 4-2: deployment options of CSE and AE in MEC systems:
(left) both AE and CSE as a single MEC App instance; (center) CSE as a service in the MEC platform;
(right) CSE implemented as a service-producing MEC App instance (CSFs)

A key part of ETSI Network Automation Standards



Inter-MEC & MEC-Cloud (MEC 035 Study)

Device-triggered LCM Enablement (MEC 16)

Management of MEP as a VNF (MEC 10-1)

LCM Mgmt of 3rd party Apps (MEC 10-2)

ZSM: overall approach | **NFV, OSM:** managing telco clouds | **MEC:** managing edge telco clouds

MEC White Papers: A view of a whole picture

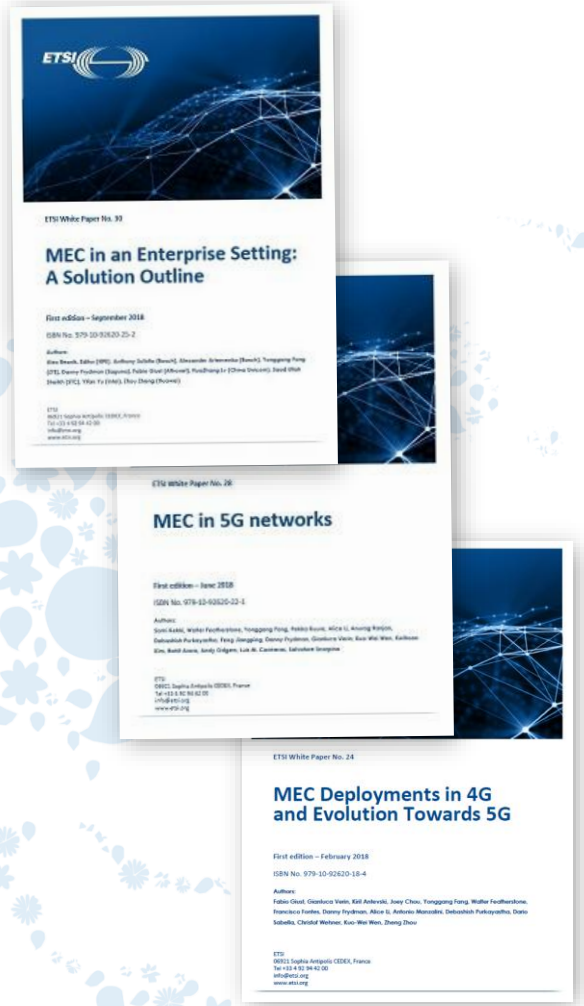
Standards are necessarily tools, not solutions

- Enable interoperability
- Support a broad range of use cases and system architecture
- Address only a specific part of the whole picture

MEC White Papers: how we help industry see the whole picture

- Harmonizing Standards for Edge Computing: a synergized architecture leveraging ETSI MEC and 3GPP (2021)
- Developing Software for Multi-access Edge Computing, 2nd edition
- MEC Federation: deployment considerations, 1st edition (June 2022)
- Enabling Multi-access Edge Computing in Internet-of- Things: how to deploy ETSI MEC and oneM2M (June 2023)
- Unlocking Digital Transformation with Autonomous Networks: ETSI perspectives and major achievements (March 2023)
- MEC Support for Edge Native Design: an application developer perspective (June 2023),
- MEC application developer guidelines for universal access to service APIs across the industry (June 2025)

NEW



ETSI White paper on MEC Federation: deployment considerations

1) This White Paper focuses on the deployment options related to **MEC federation**, especially from an architectural point of view, and with a key focus on ETSI MEC implementations, but also with the aim to provide an open approach considering other standards and technologies.

2) For this purpose, the White Paper firstly analyses the recent publications of GSMA OPG and recent updates in ETSI MEC and 3GPP specifications, then introduces the synergized architecture supported by both standards organisations, which indicates the background information for the deployment of MEC federation.

KEY CONSIDERATIONS IN THE PAPER :

Introduces the business stories that enable readers to understand how MEC federation is beneficial for MEC system providers.

Based on these business stories, corresponding deployment options are introduced.

Provide insights for edge stakeholders, and all readers in general, to better understand how to choose the appropriate deployment options.

MEC application developer guidelines for universal access to service APIs across the industry

1) As the industry moving towards edge deployment, an increasing attention is given to recent activities from open source (CAMARA) and standards (ETSI MEC, 3GPP SA6, TMF, …), to support the concept of Telco Edge Cloud developed by GSMA. In this perspective, representatives from industry stakeholders contributed to **CAMARA** project, by developing APIs for Multi-access Edge Computing developers. In this perspective, developers need to understand how these many initiatives can fit together. Also, **TM Forum** is playing a key role in the ecosystem, defining Operate APIs and offering several tools for service providers. Finally, also by considering the recent GSMA Open Gateway, it is important to clarify how North-Bound Interface is defined, from a developer perspective.

2) Hence, the white paper intends to provide a guidance on how a MEC developer can consume APIs from standards, open source and industry fora. It aims to clarify the complementarity of the work from standards (with related definitions e.g., of ETSI MEC service APIs) and open-source implementations / definitions from open source (CAMARA Service APIs). The goal is mainly to clarify the definition of APIs from a developer perspective, then analyse the API Commonalities (from CAMARA) and General Principles for API design (from ETSI MEC) and finally provide guidelines on API exposure and interwork for developers.

3) The white paper also includes descriptions about ETSI MEC support for application development, e.g., MEC sandbox and its evolutions (e.g., toward Edge Native Connector: STF678) and related work in the industry, e.g., open-source activities, etc.

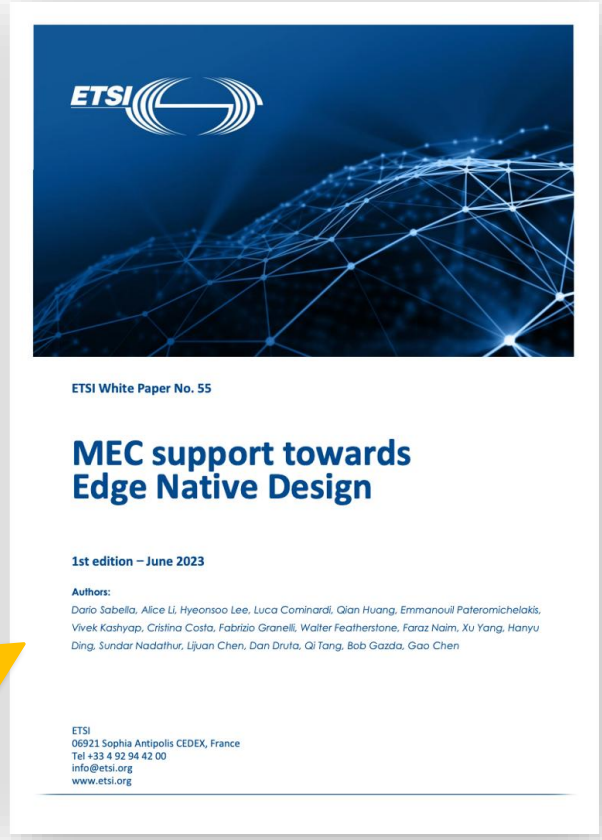
MEC security: status of standards support and future evolutions

1) **MEC scenarios** are characterized by a complex multi-vendor, multi-supplier, multi-set of equipment including both HW and SW devices. Given this overall level of **system heterogeneity**, areas of security, trust, and privacy are key topics for the edge environments.

2) In that perspective, MEC stakeholders should pay attention to the vulnerability and integrity of any third-party elements, and a truly **end-to-end approach to MEC security** needs to consider not only the current standards in ETSI ISG MEC, but also the other available standards that can be applicable to the MEC environment.

3) **ETSI white paper**, authored by many experts (in the domain of edge computing, security and involved in various standard bodies), provides an overview of **ETSI MEC standards** and current support for security, which is also complemented by a description of other relevant standards in the domain (e.g. **ETSI TC CYBER, ETSI ISG NFV, 3GPP SA3**) and **cybersecurity regulation** potentially applicable to edge computing.

MEC Support for Edge Native Design: an application developer perspective



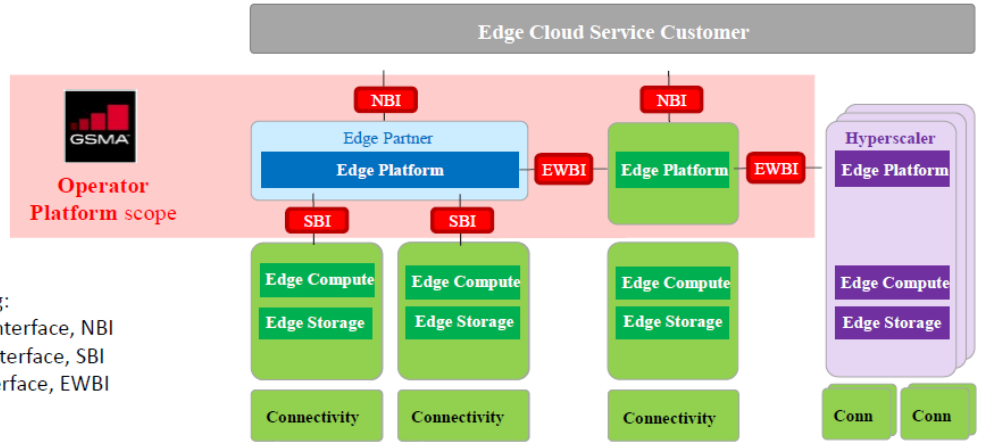
1) This White Paper provides an overview and vision about the Edge Native approach, as a natural evolution of Cloud Native. Edge Native was first introduced in 2020 by the Linux Foundation's Open Glossary of Edge Computing.

2) It explains in detail the concept of “Edge Native”, describes what Edge Native means for edge developers to build their applications and introduces how ETSI ISG MEC and other organisations support this Edge Native design paradigm. In particular, the White Paper guides developers in the principles and specific requirements of edge computing and how they can combine them with the modern architectural approach introduced by Cloud Native. It also gives insight into the general technical community interested in ETSI MEC solutions or Edge Native application design concepts.

3) The authors of the White Paper conclude that the ETSI MEC standard (synergized with 3GPP specifications) can offer a footprint for interoperability, API basic design principles to ensure universal adoption, and possibly also some guidelines for API abstraction, complementing the work of open-source projects. Therefore, to fully exploit edge capabilities and for the adoption of edge native design principles from application development communities, joint efforts from open source and standards will be needed.

MEC Phase 3 expanded the scope to MEC Federation

Starting from Industry requirements …



Aims at normalizing:
- Customer-facing interface, NBI
- Resource-facing interface, SBI
- Inter-platform interface, EWBI
- Device-facing, UNI

Operator's assets
Partner's assets
Hyperscaler's assets

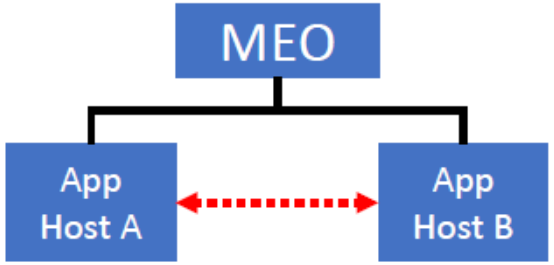
Ref: GSMA White paper: "Telco Edge Cloud: Edge Service Description and Commercial Principles", Oct 2020

… ETSI MEC published a very first work on **MEC federation**

MEC Federation: "*federated model of MEC systems enabling shared usage of MEC services and applications*"

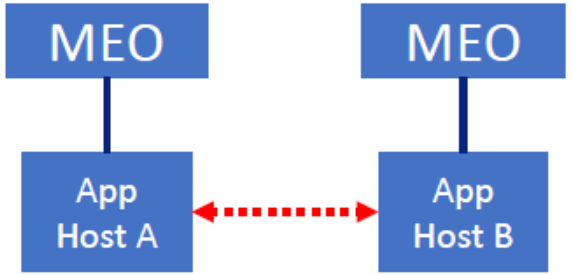
Phase 3 expanded the scope to MEC Federation

Intra MEC

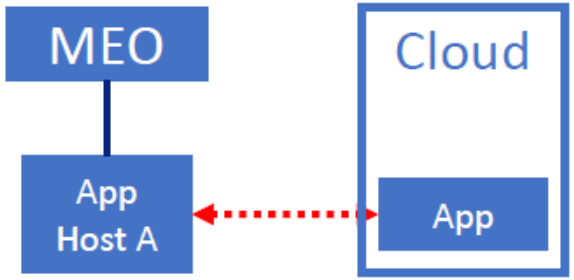


Inter MEC host (Intra MEC system) management already supported by ETSI MEC

Inter MEC



MEC - Cloud



Main scope for MEC 035

Ongoing normative work (e.g. **GS MEC 040**), in alignment with GSMA OPG requirements

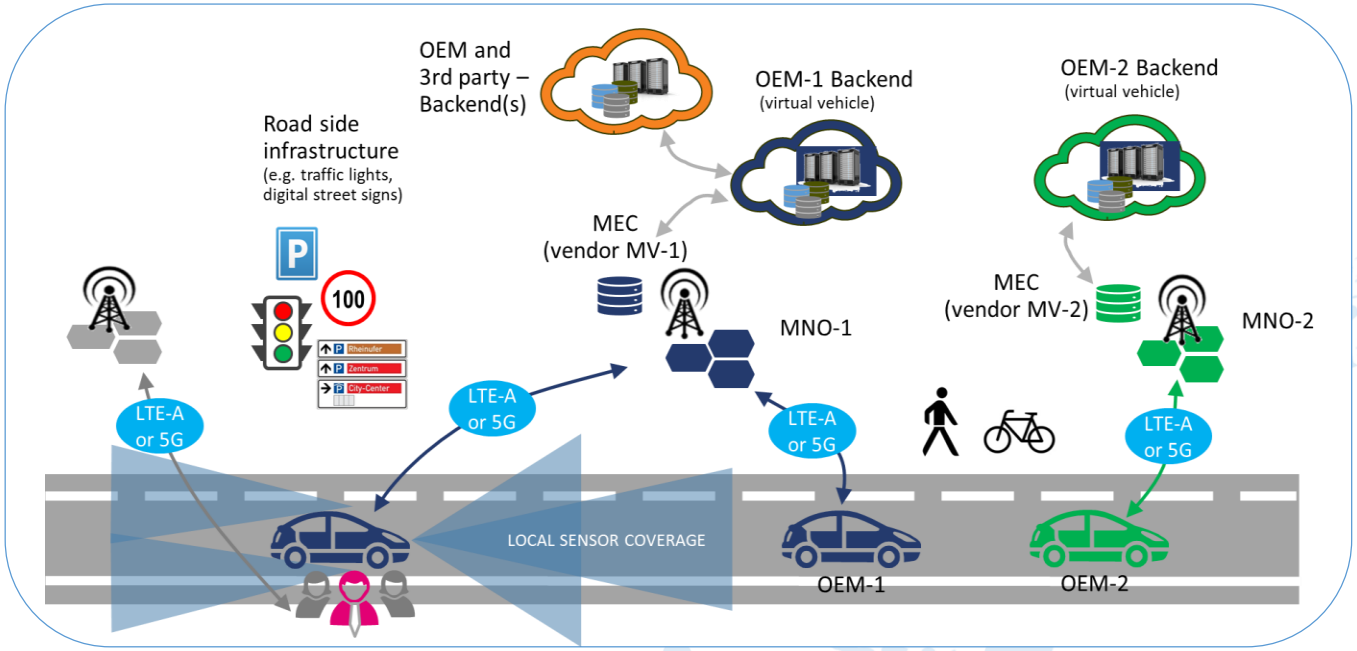
Published: See ETSI PR here

MEC Study on Inter-MEC systems and MEC-Cloud systems coordination (MEC 035)

MANY USE CASES

#1: MEC federation scenario of V2X services

1) Interop. between MNOs
2) Interop. between MEC vendors/suppliers
3) Interop between OEMs (applications)



Ref: ETSI GR MEC 035 v3.1.1, June 2021, https://www.etsi.org/deliver/etsi_gr/MEC/001_099/035/03.01.01_60/gr_mec035v030101p.pdf

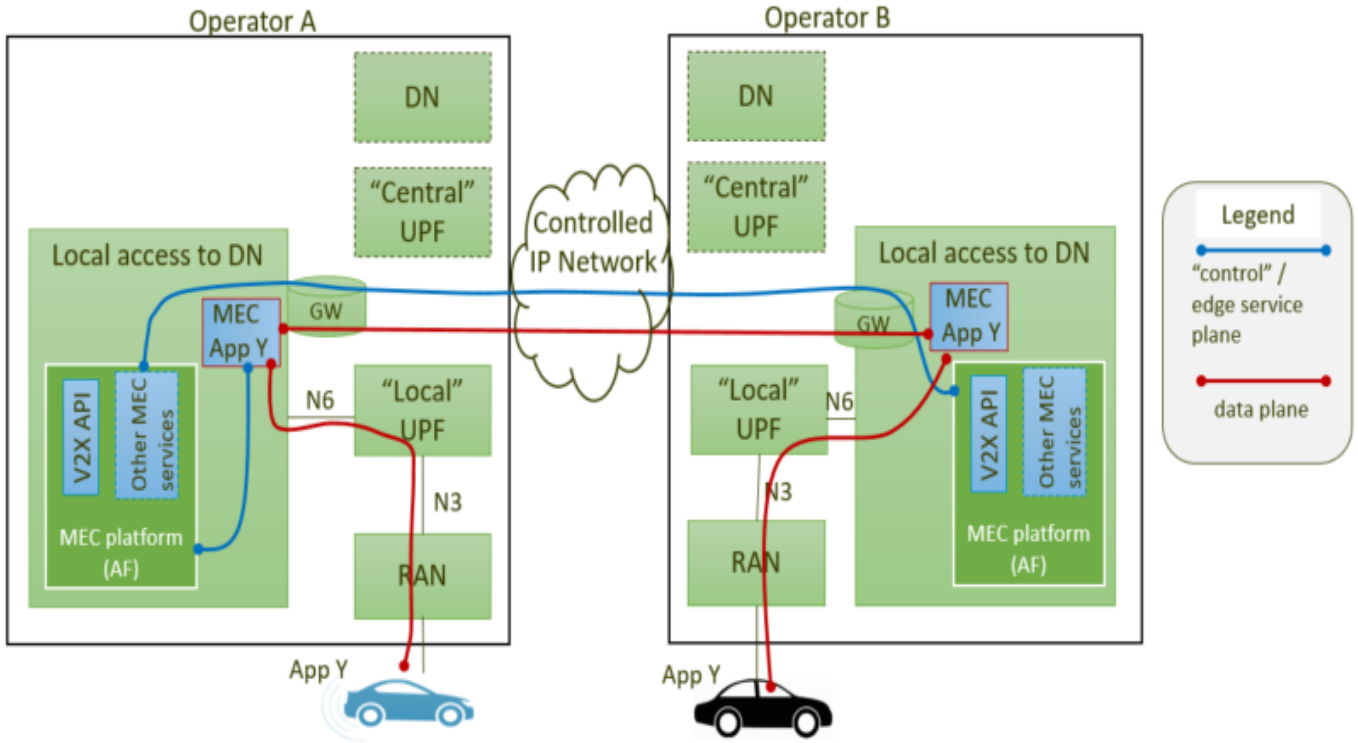
Inspired by 5GAA use cases including multi-MNO, multi-OEM, multi-MEC Requirements for MEC:

1) MEC system discovery
2) MEC platform discovery
3) MEC platform level information exchange

Study (MEC 035) on inter-MEC system and Cloud-MEC system coordination

Multi-operator agreements enabling MEC Federation for V2X services

1) **Type-1 use case:** national roaming like scenario: customers of operator A could access the edge infrastructure of operator B to ensure the best possible service.
2) **Type-2 use case:** An app developer has a commercial relationship with operator A. Federation agreements could allow the app developer to deploy its App in operator B's MEC system.
3) **Type-3 use case:** federation broker: a federation broker has a set of agreements with several MNOs.



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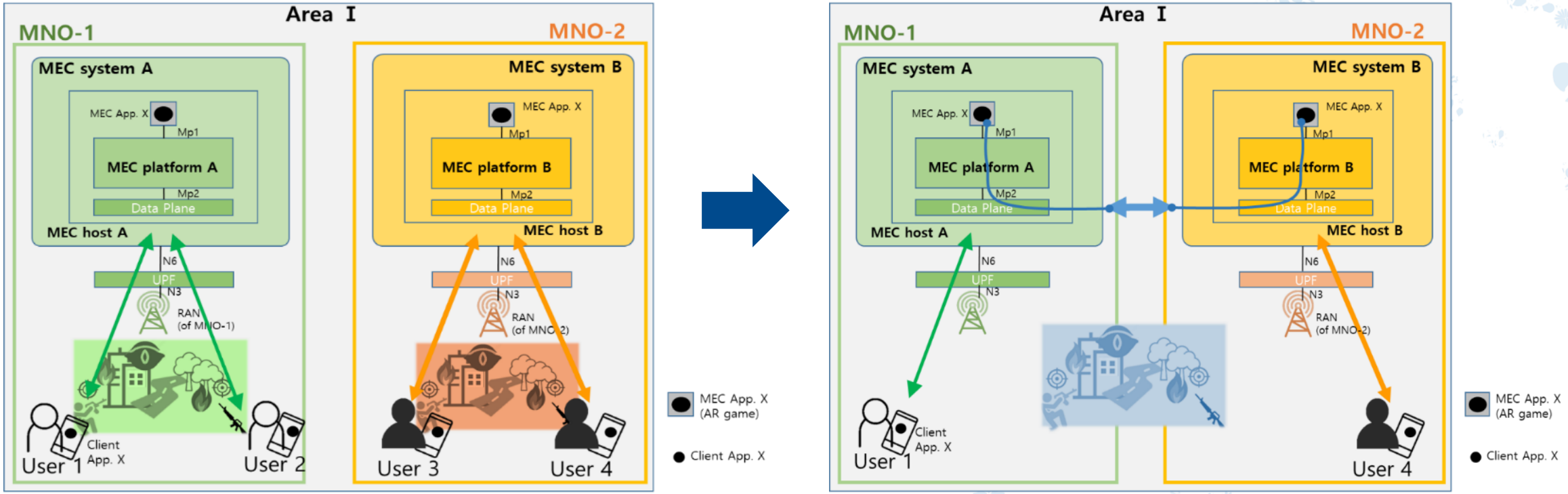
MEC Study on Inter-MEC systems and MEC-Cloud systems coordination (MEC 035)

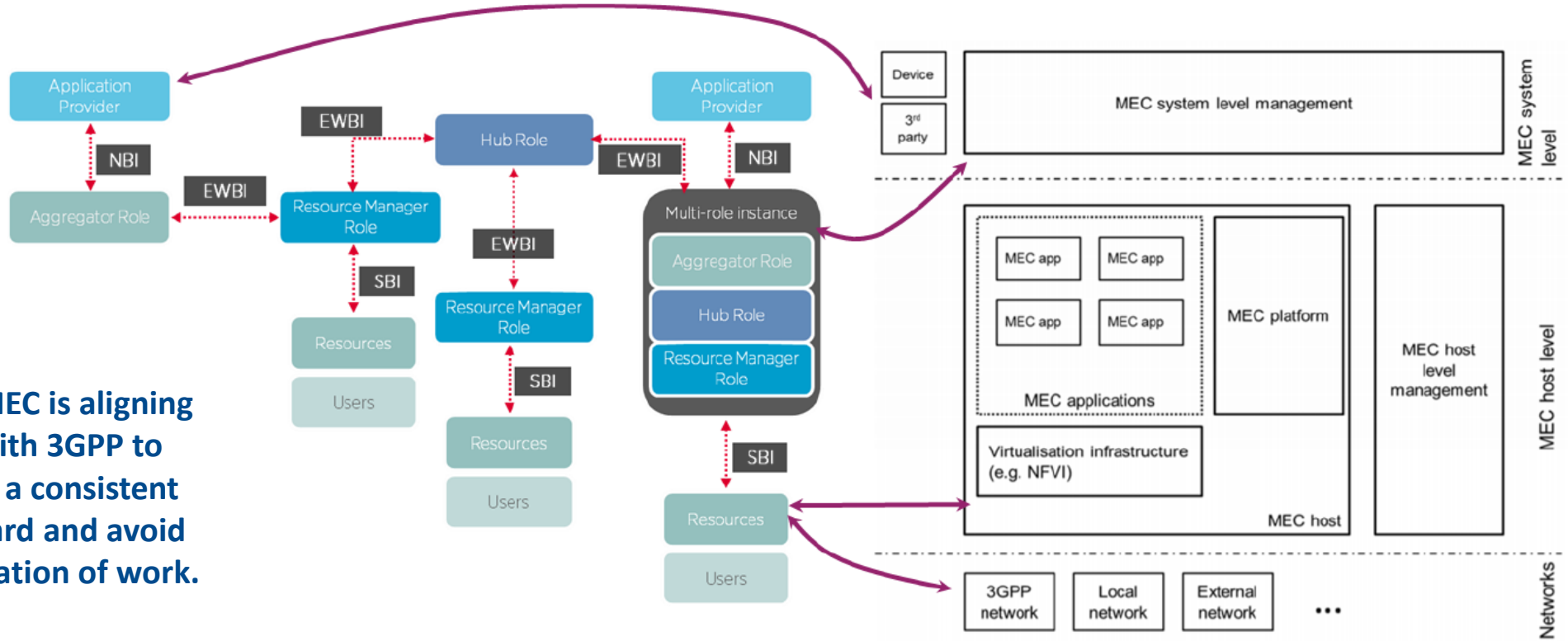
MANY USE CASES

#6: MEC federation scenario for immersive AR game



Ref: ETSI GR MEC 035 v3.1.1, June 2021, https://www.etsi.org/deliver/etsi_gr/MEC/001_099/035/03.01.01_60/gr_mec035v030101p.pdf

GSMA OPG (Operator Platform Group) mapping with ETSI MEC



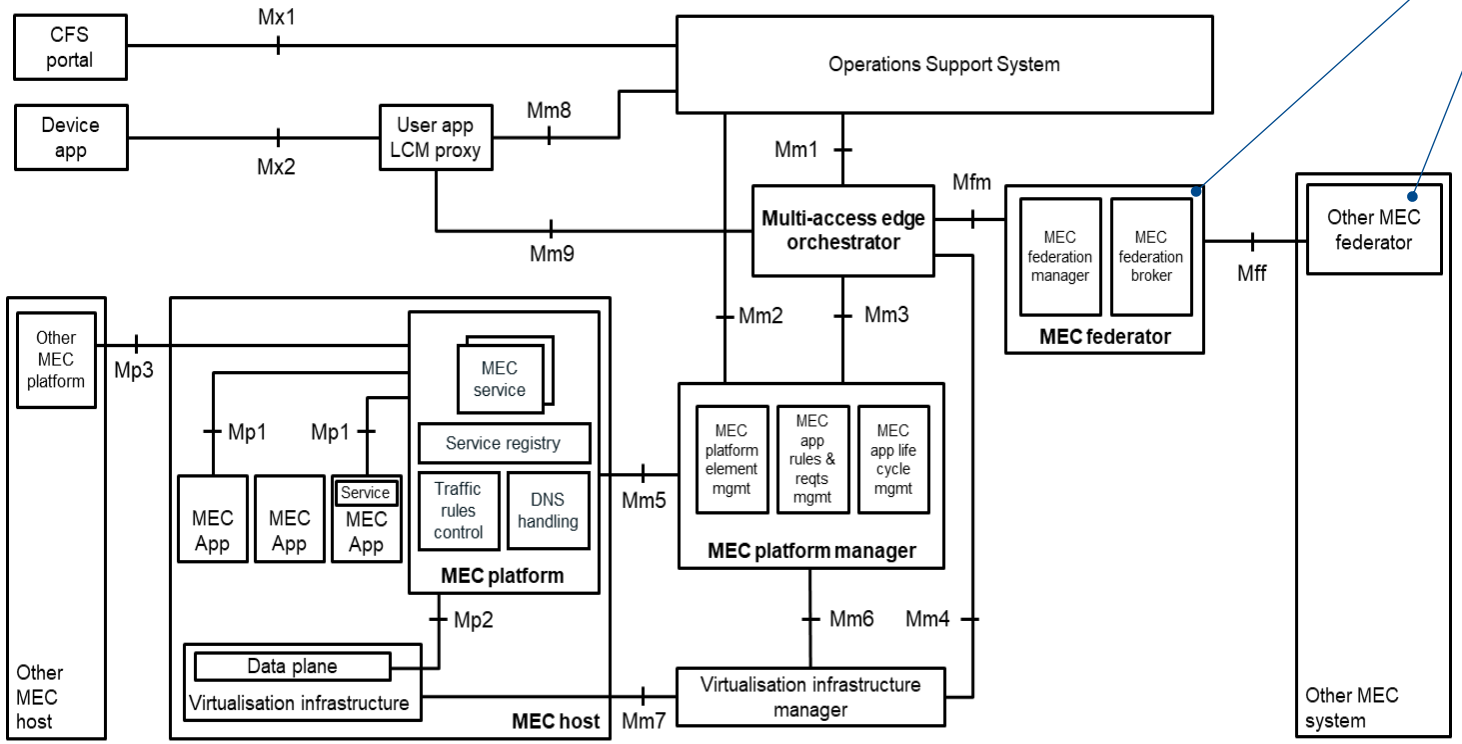
ETSI MEC is aligning also with 3GPP to create a consistent standard and avoid duplication of work.

***NOTE**: GSMA is listed as a MEC Participant, can submit contributions to ISG MEC for Discussion or Decision, and not only for Information. Dually, ETSI MEC nominated 2 observers, to represent the ISG in GSMA OPG.*

Ref: GSMA Permanent Reference Document, "Operator Platform Telco Edge Requirements", v2.0, April 2022.
https://www.gsma.com/futurenetworks/wp-content/uploads/2022/04/GSMA-Operator-Platform-Telco-Edge-Requirements-2022-v2.0.pdf

MEC 003 – introducing Architecture variant for MEC federation

Phase 3 deliverable published in March 2022



Reference: https://www.etsi.org/deliver/etsi_gs/MEC/001_099/003/03.01.01_60/gs_MEC003v030101p.pdf

MEC federator *(MEF): enables a MEC federation between MEC systems*

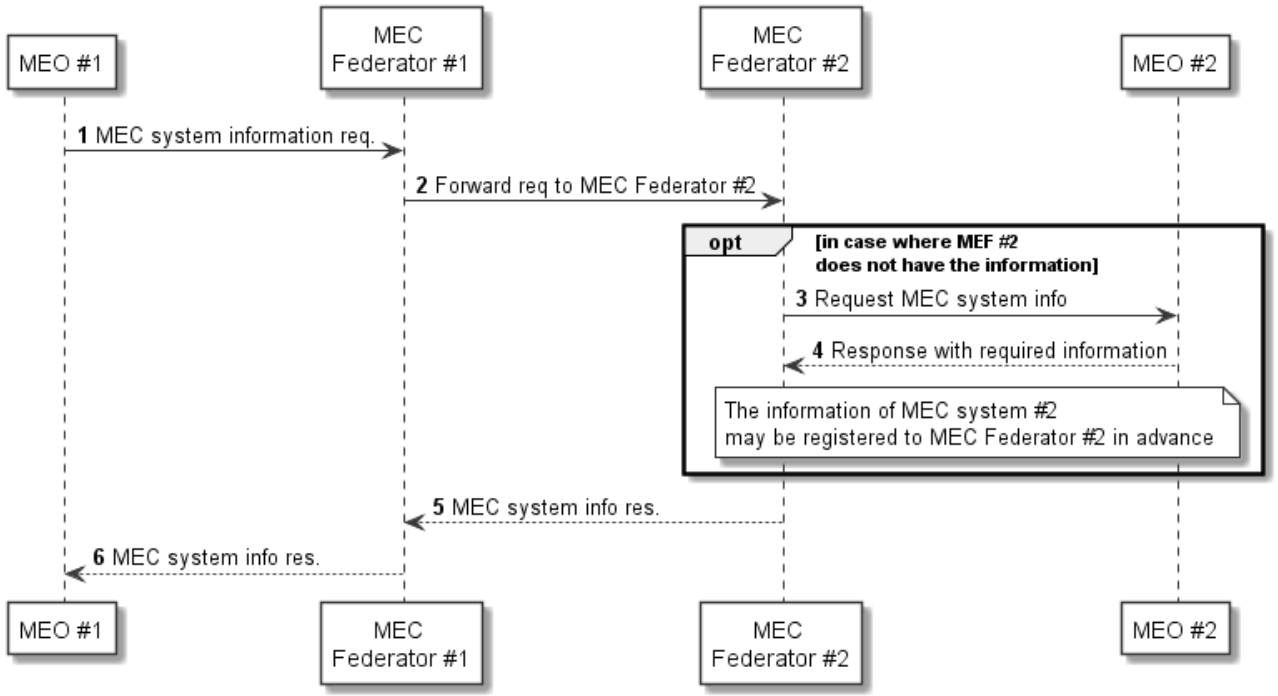
1) A MEF interfaces to at least one MEO
2) Each MEF enables information exchange with at least one other MEF
3) A MEF may serve as a single point of contact for multiple MEFs in the MEC federation

MEF may support the following functionality:

1) Registration of MEC system information by a MEO;
2) MEC system discovery;
3) Broker capability acting as a one to many intermediary between MEFs;
4) Information (e.g. MEC system information) exchange;
5) Application lifecycle management (e.g. on-boarding/instantiation/termination) across different MEC systems;
6) Application monitoring across different MEC systems.

MEC 003 – introducing Architecture variant for MEC federation

Phase 3 deliverable v311 ongoing (stable draft @Oct 2022)



Reference: https://www.etsi.org/deliver/etsi_gs/MEC/001_099/003/03.01.01_60/gs_MEC003v030101p.pdf

Federation Enablement APIs offer services such as discovery, information exchange and application life cycle management to enable the inter-work of one MEC system with another MEC system:

1) Registration/Update/Deregistration of MEC system(s) to the federation
2) MEC system discovery
3) MEC application instance discovery
4) MEC service discovery
5) Application package mgmt and App instance LCM
6) Providing/updating MEC system-wide MEC App instance information updates to MEF

Example (MEC System Discovery) :

1) Information flow used for enabling MEO to be aware of another MEC system
2) The MEC system discovery is the primitive and essential procedure for enabling the other functionalities relating to the Feature MEC Federation

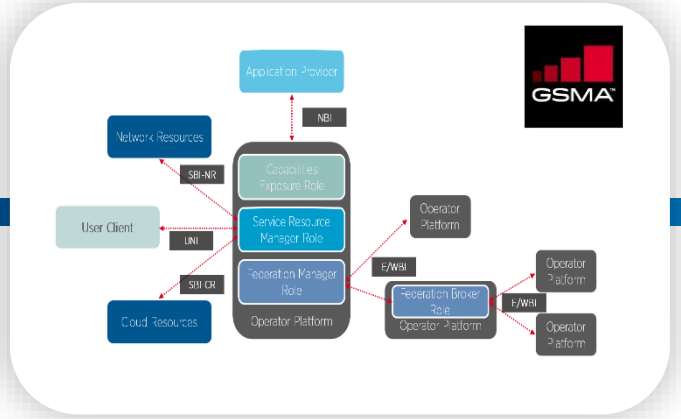
Alignment between GSMA OPG, ETSI MEC and 3GPP SA6

A possible relationship could consist in the following high-level steps:

1) **GSMA asks SDOs** to cover standards for the OP architecture (and OSCs to complement with open source)

2) **Worksplit** (ETSI, 3GPP, OSCs,..) and consequent std work, publication of standards etc..

3) Finally, **GSMA** will certify OP compliance



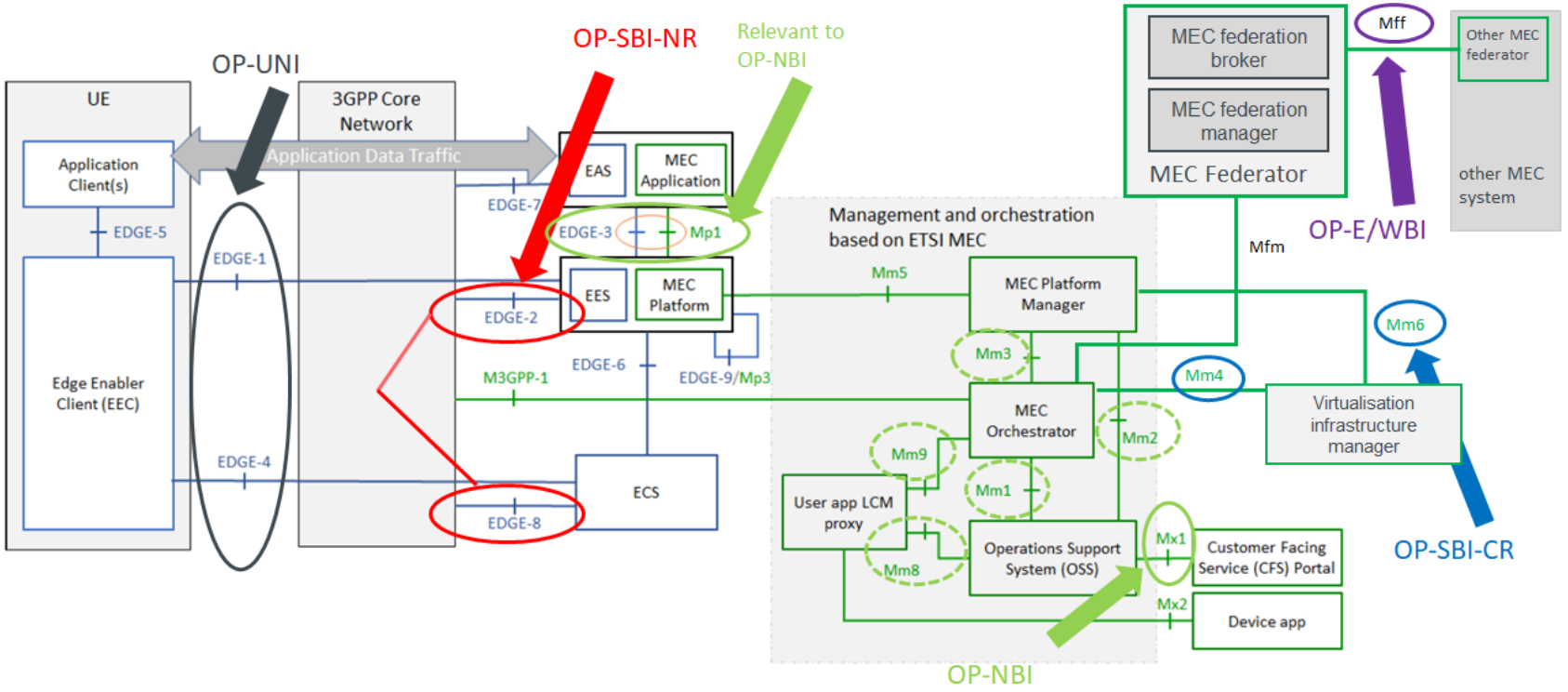
GSMA PRD document (requirements)

Work from SDOs and OSCs (under the GSMA guidance)

GSMA compliance & OP certification

MEC Federation: the ETSI MEC view

1) Tentative standards mapping presented at the joint GSMA OPG workshop, on 21/01/2021(*)
2) A common view on SDO mapping and worksplit is the first step for the collaboration
   a) Alignment with 3GPP is also needed to create consistent standards and avoid duplication of work



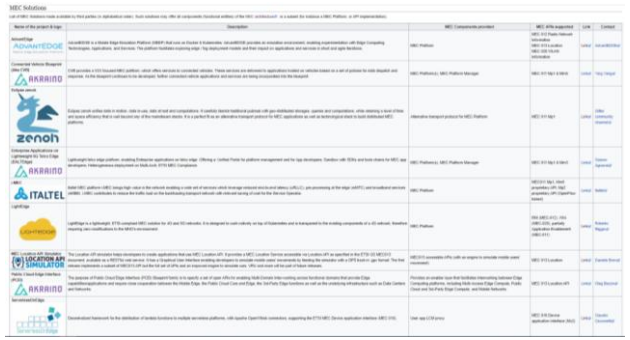
***NOTE**: finalization of this mapping is currently WIP*

(*) Recording of the workshop is here; 3GPP slides are here; ETSI MEC slides can be found also here

ETSI ISG MEC DECODE Working Group:
MEC Deployment and Ecosystem engagement activities

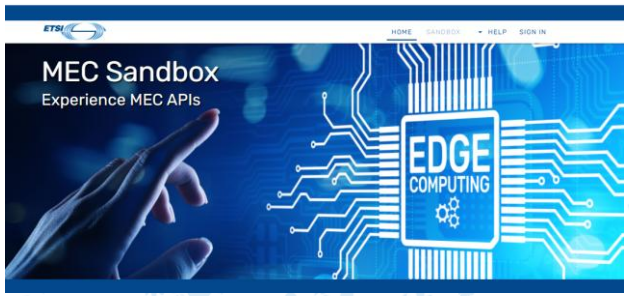
WHAT DO WE USE ?

1) OpenAPI representations: ETSI Forge
2) Testing and Conformance
3) MEC Ecosystem wiki
4) PoCs (proof-of-concepts)
5) MDTs (MEC Deployment Trials)
6) MEC Sandbox
7) Collaborations: CAMARA, STF
8) Hackathons
9) Plugtests
10) MEC Tech Series



https://mecwiki.etsi.org/index.php?title=MEC_Ecosystem

https://try-mec.etsi.org/

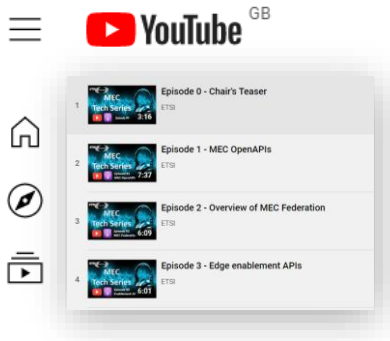


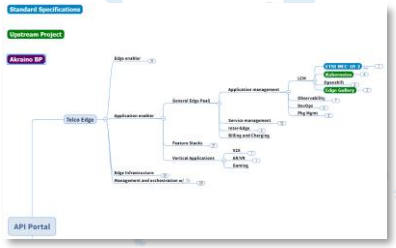
ETSI/LF Edge/OCP Edge AI Hackathon 2023

18 Oct 2023, San Jose, California

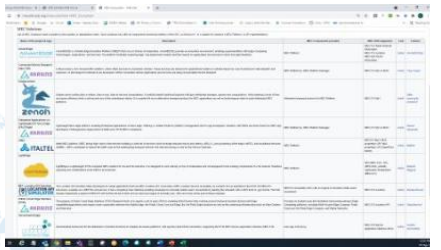
NFV&MEC IOP Plugtests 2021

1-15 Oct 2021

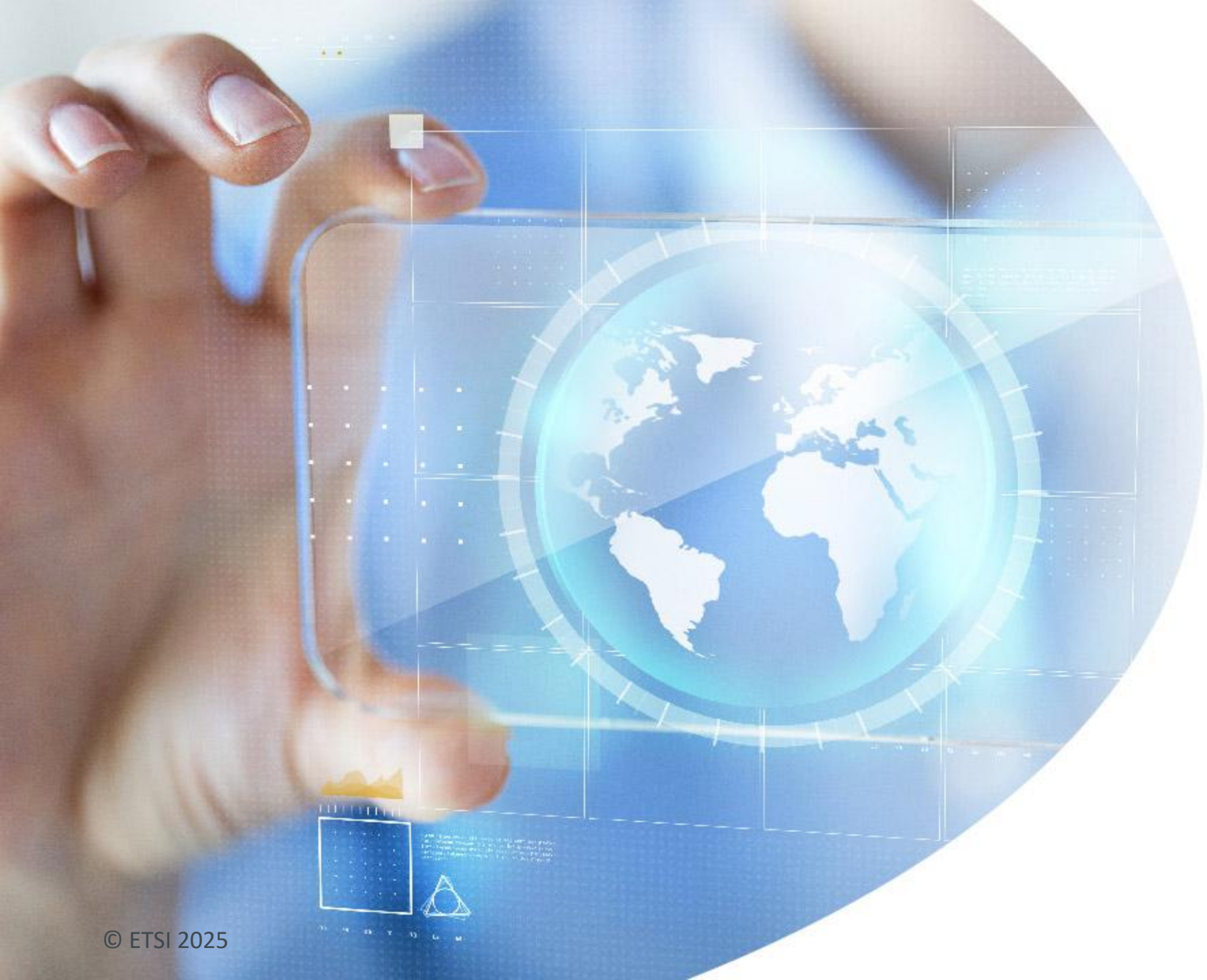




https://apiportal.akraino.org/apimap.html



https://mecwiki.etsi.org/index.php?title=MEC_Ecosystem



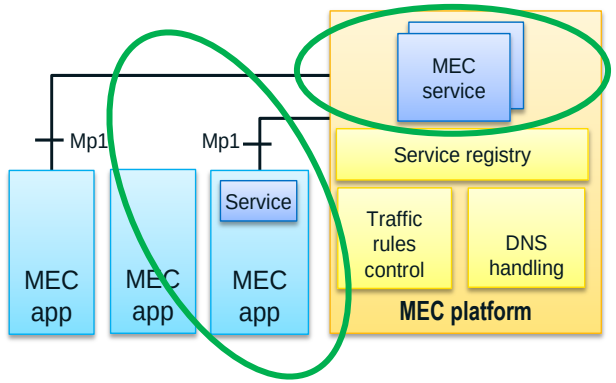
From MEC(23)000389

ETSI MEC APIs, external APIs and API exposure

Extending MEC with new MEC Service APIs

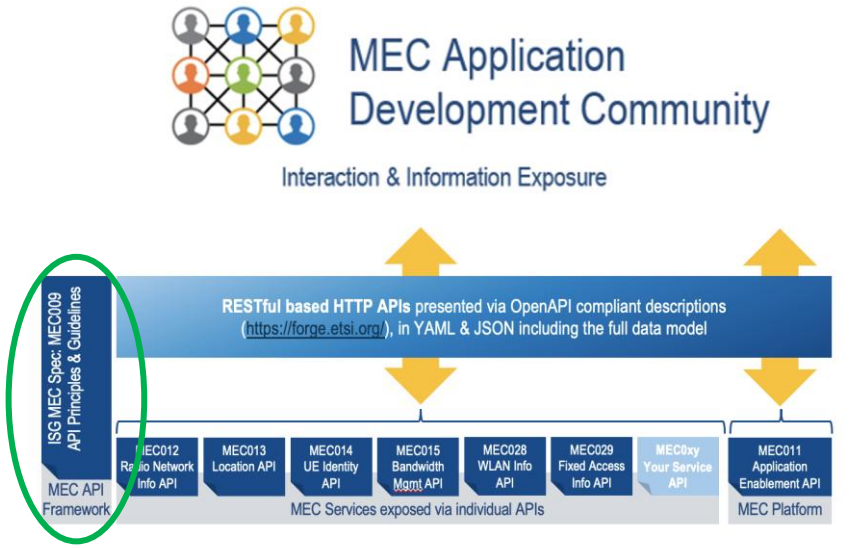
MEC Services: *value-added capabilities to enable MEC applications*

1) "Built-in" MEC standardized services provided via the MEC Platform.
2) **MEC applications can offer new MEC Services APIs, extending the MEC system**



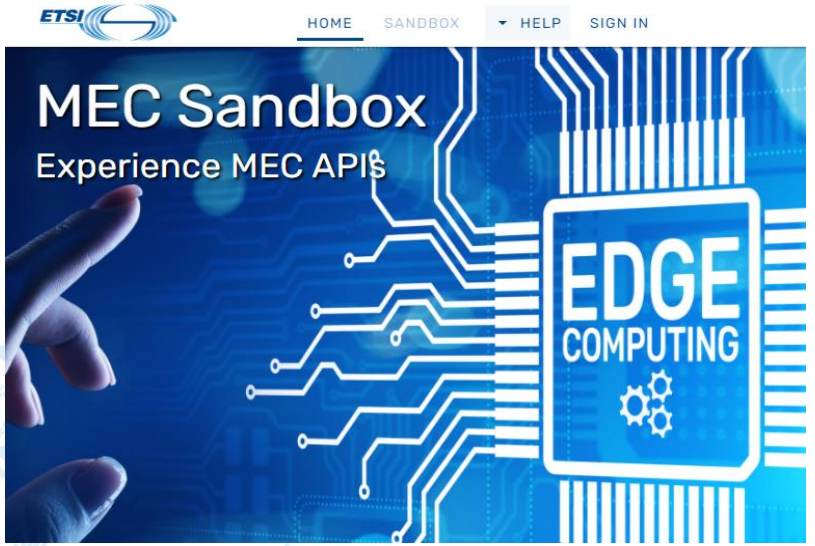
WHY THIS SYSTEM ?

1) Simple to use, well documented APIs, published with OpenAPI Framework.
2) Create innovative applications quickly and easily, reducing time-to-revenue.
3) **New APIs (compliant with the MEC API principles) can be added.**
4) Increase the Total Addressable Market (TAM).



***NOTE**: ETSI GS MEC 009 is defining General principles, patterns and common aspects of MEC Service APIs*

www.etsi.org/deliver/etsi_gs/MEC/001_099/009/03.01.01_60/gs_MEC009v030101p.pdf



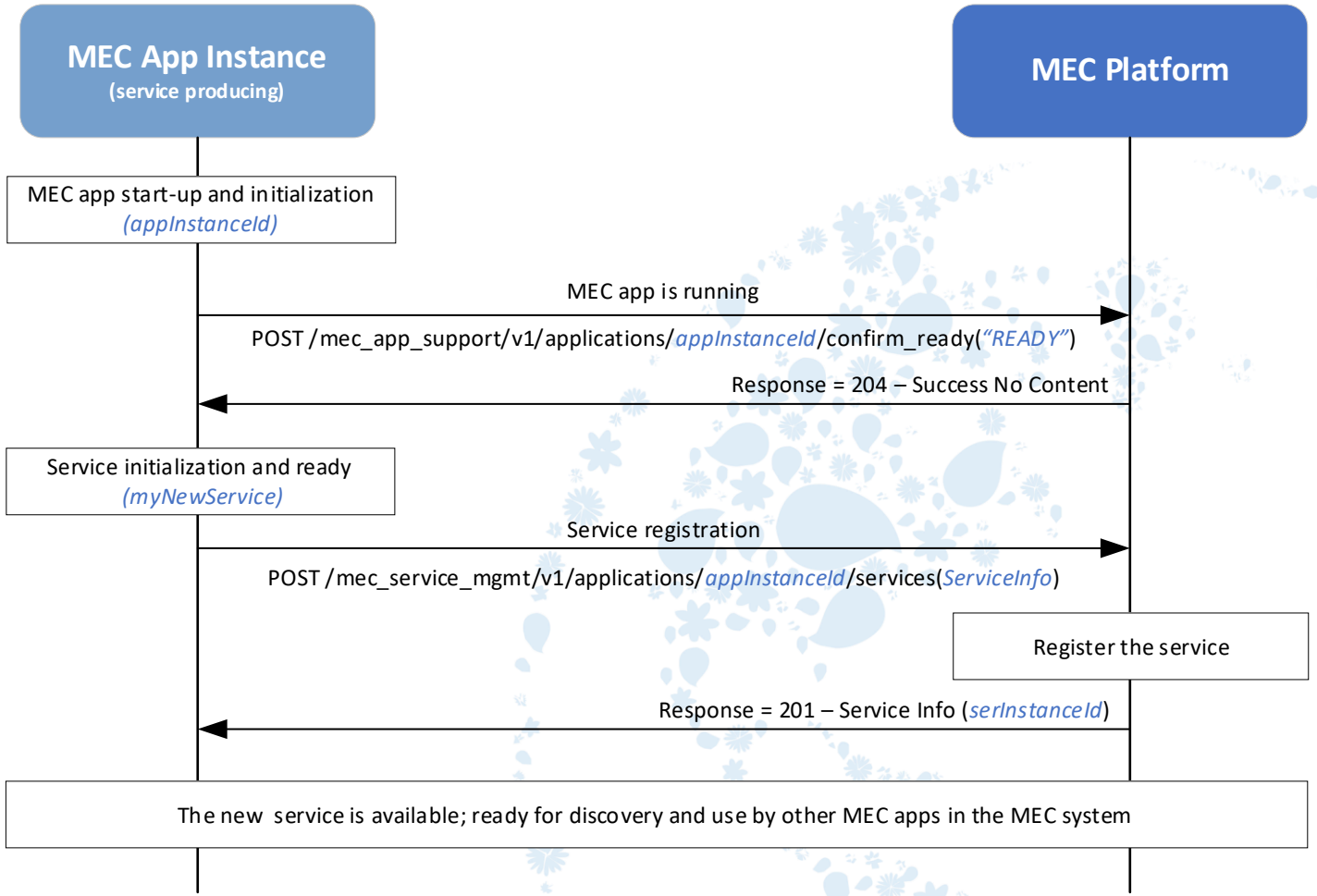
***NOTE**: also the MEC Sandbox includes capabilities to advertise, discover, and consume New MEC Services*

try-mec.etsi.org

2 – MEC App exposing a New MEC Service

NEW SERVICE REGISTRATION:

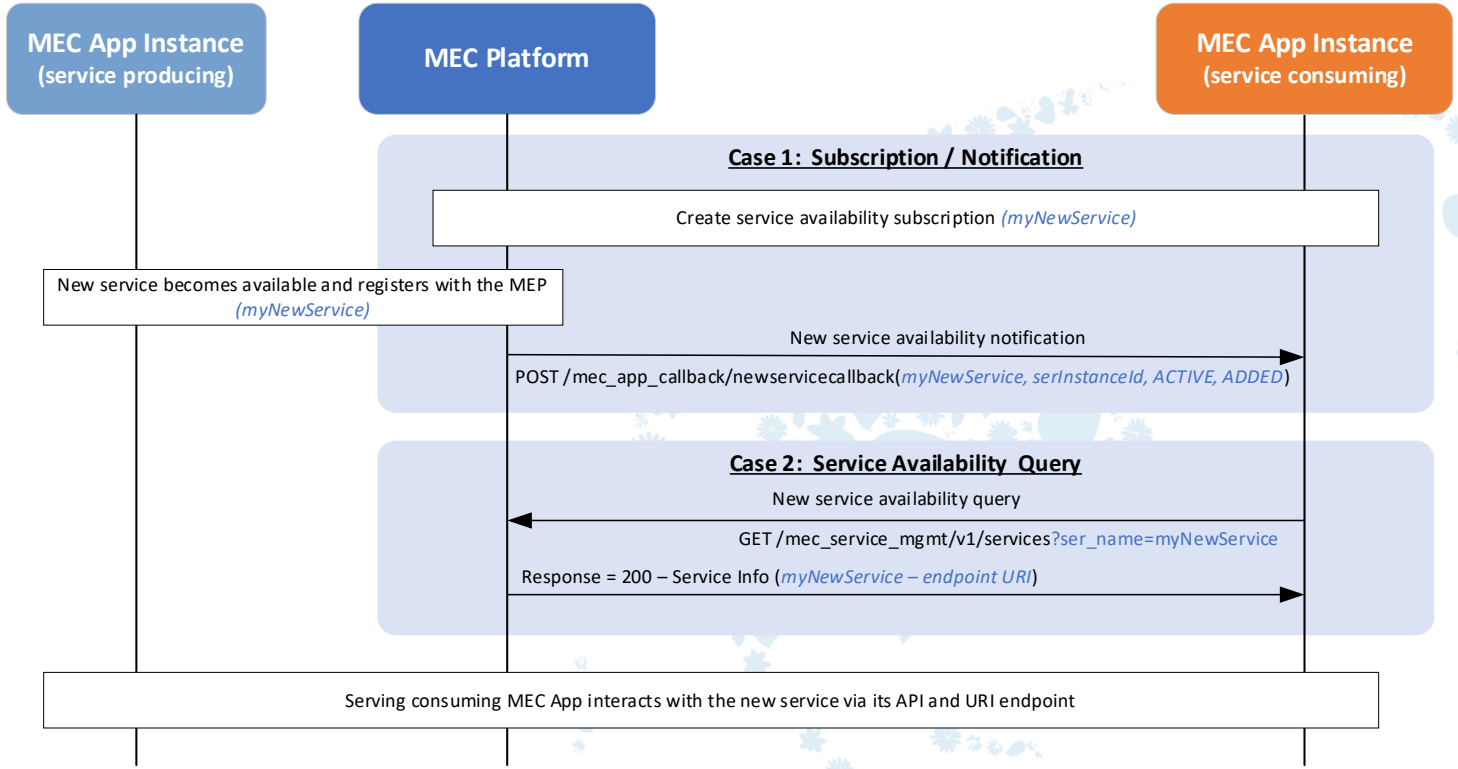
1) MEC application initializes and confirms it is ready to the MEC Platform (MEP)
2) MEC app prepares its new service API
3) MEC app registers the new service with the MEP, providing Service Information
4) MEP registers the service and allocates a service instance
5) The New MEC Service is now available for other MEC Apps in the MEC system



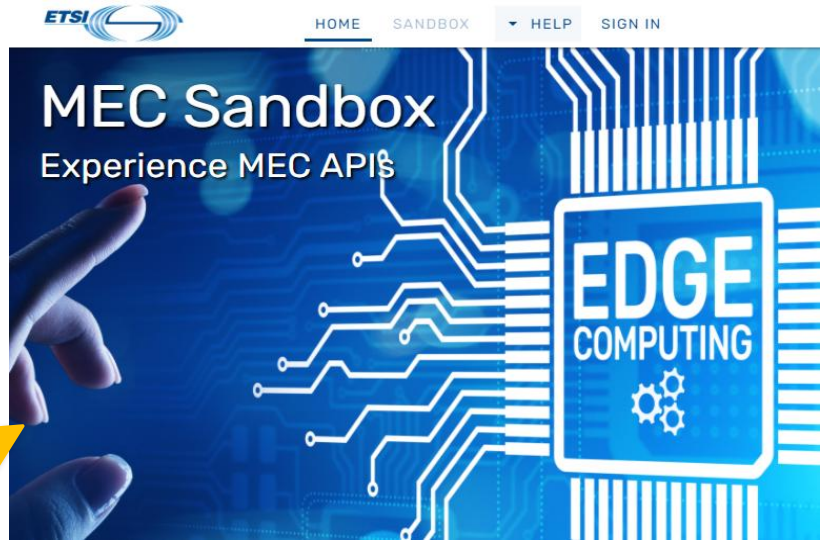
3 – MEC App discovering a new MEC Service

NEW MEC SERVICE DISCOVERY:

1) **Case 1: Subscription / Notification**
   a) Service consuming MEC App creates a Service Availability Subscription
   b) When the new service registers and becomes available, the MEP issues a Service Availability Notification, indicating the New Service is available
2) **Case 2: Service Availability Query**
   a) Service consuming MEC App issues a service availability query to the MEP
   b) MEP responds with the new service's information, including it's URI endpoint.
3) MEC app utilises the New MEC Service via it's API and endpoint

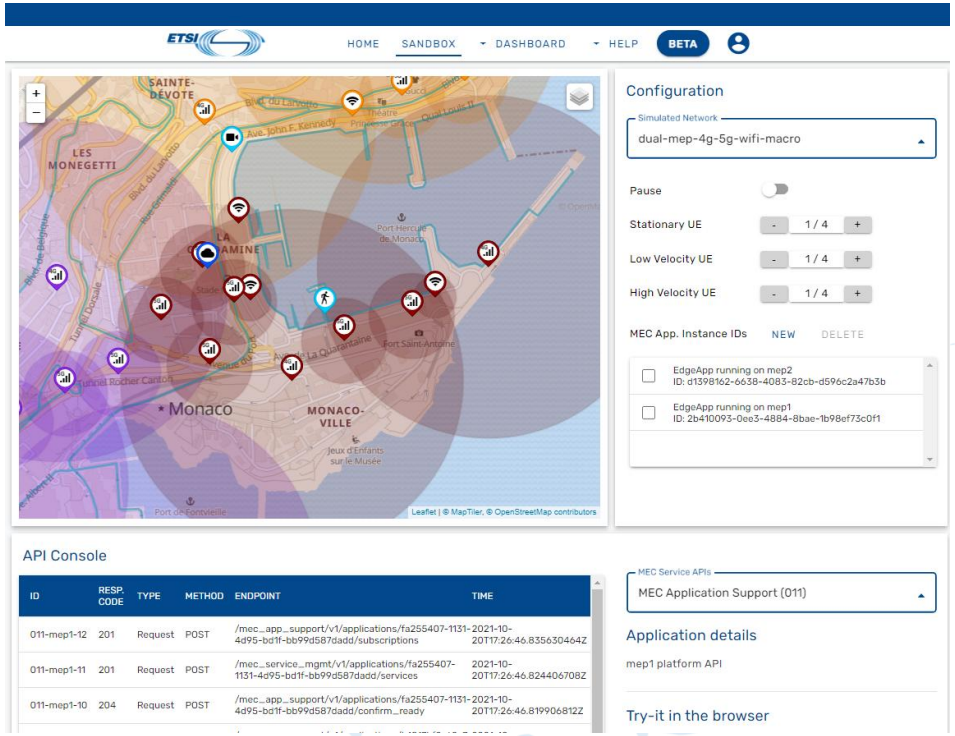


MEC Sandbox – try new MEC Service APIs



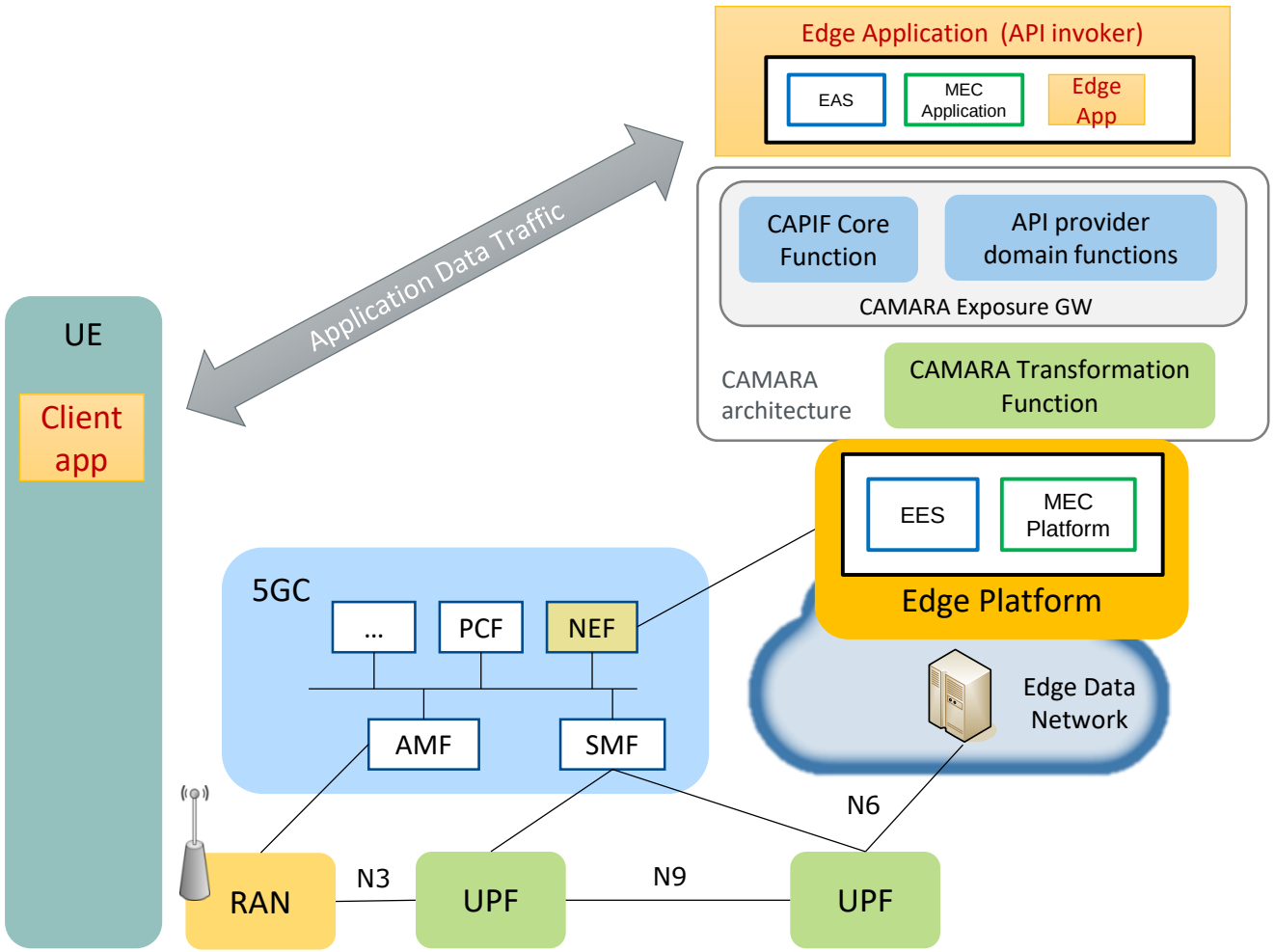
Available MEC Services:

1) MEC Platform Application Enablement & Service Management APIs (MEC 011)
2) Radio Network Information (MEC 012)
3) Location Service (MEC 013)
4) ***New*** Bandwidth Management and Traffic Steering (MEC 015)
5) ***New*** Device Application Interface (MEC 016)
6) Application Mobility Service (MEC 021)
7) WLAN Access Information (MEC 028)
8) V2X Information Service (MEC 030)



The ETSI MEC Sandbox is an **interactive environment** that enables developers to learn & experiment with "live" ETSI MEC Service APIs from **anywhere in the world**

API Exposure and cross-consumption in a MEC Federation



Option for Edge Native applications to consume MEC services in a MEC federation (via CAPIF framework and the CAMARA architecture)

***NOTE**: this option also facilitates the synergies with ETSI MEC and GSMA OPG architecture, as API exposure can be exploited also in the MEC federation for edge native application development.*

(*) ETSI White Paper "MEC Support for Edge Native Design", https://www.etsi.org/images/files/ETSIWhitePapers/ETSI-WP55-MEC_support_towards_Edge_native.pdf

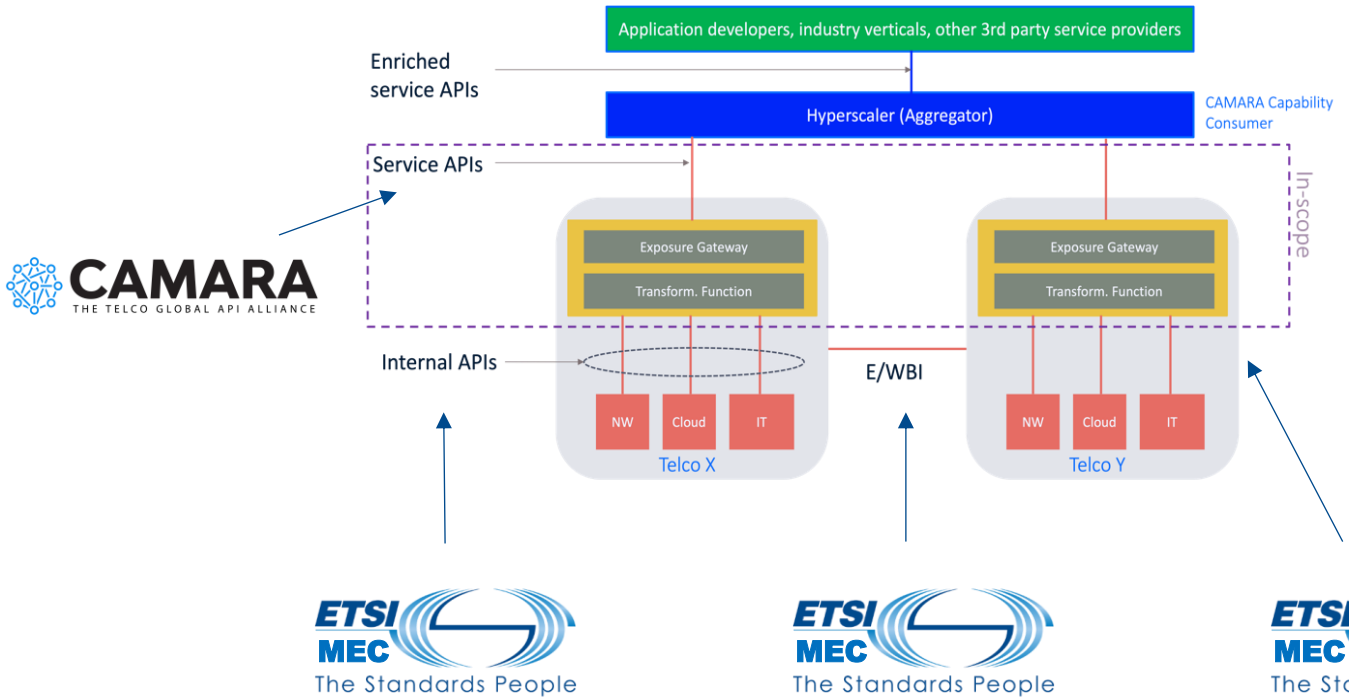
ETSI MEC & CAMARA: topics for collaboration

Technical highlights

CAMARA is focused on NBI "Service APIs", as abstractions from "Internal APIs"

1) Since CAMARA's focus is "application developers" interface APIs, the assumption is for them to have limited or zero knowledge of the network and edge infrastructure.

According to the figure below, ETSI MEC is standardizing some "Internal APIs"



ETSI MEC The Standards People

e.g. MEC 012, MEC 013, …

ETSI MEC The Standards People

e.g. MEC 003, MEC 040, …

ETSI MEC The Standards People

MEC 043 report on Abstracted API for Industries

REMARKS:

1) ETSI MEC standardized APIs are "relevant for NBI", i.e. can be abstracted in CAMARA, for the actual NBI exposure to app devs

2) Also new APIs (i.e. not in need to be standardized in ETSI MEC) can be added, recognized by the MEC Platform, and exposed to authorized Applications

3) CAPIF is a well recognized (and standard) reference for universal API exposure

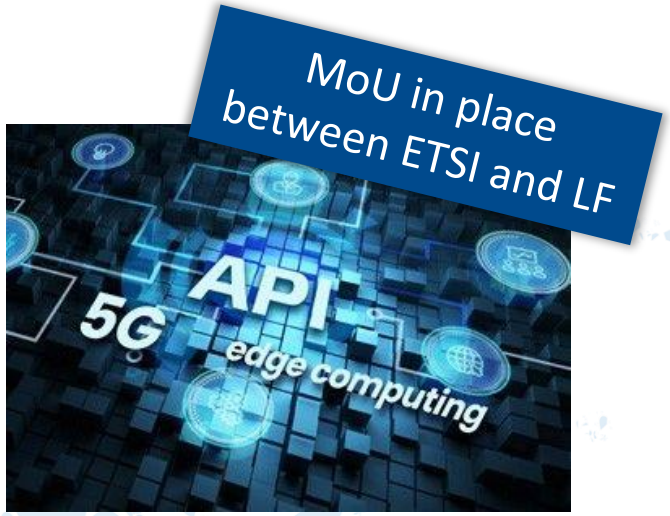
ETSI MEC & CAMARA: collaboration establishment

TOPICS OF THE COLLABORATION:

1) Technical work northbound interface and support for ubiquitous API exposure
    a) ensuring complementary work on standards / API definitions (CAMARA NBI, SBI by ETSI MEC and cloud federation) and open-source implementations / tests
    b) guidelines for API exposure and interwork (e.g., joint white papers)
    c) Join forces to engage application development communities (e.g., to better attract application developers, increase the awareness on edge application and help creating API market demand
2) Other areas of collaboration (to be further elaborated) may include the work item MEC 043 on Abstracted API for Industries

The identified MEC observers are volunteering delegates that can practically facilitate the joint work and collaboration with CAMARA.

Link to the ETSI/LF MoU: https://docbox.etsi.org/Partners/Agreements/Linux_Foundation_MoU_2022.pdf



Thank you for your attention

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