ETSI MEC: An Introduction

Dario Sabella (Intel, ETSI ISG MEC Chairman)

MEC Panel: "ETSI MEC meets vertical markets: APIs exposure helping the Drones Business"

mecwiki.etsi.org/index.php?title=Panel_drones

June 26th, 2023

ETSI MEC: Enabling *Edge* through *Standardization*

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

Watch the new video on MEC

https://www.youtube.com/watch?v=crnPWql-0oo

Application Life Cycle Management

RESTful based APIs for Runtime Application Services

3GPP A GLOBAL INITIATIVE · WiFi · broadband forum

ETSI: The Standards People
producing globally applicable standards for ICT-enabled systems

ETSI ISG MEC

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

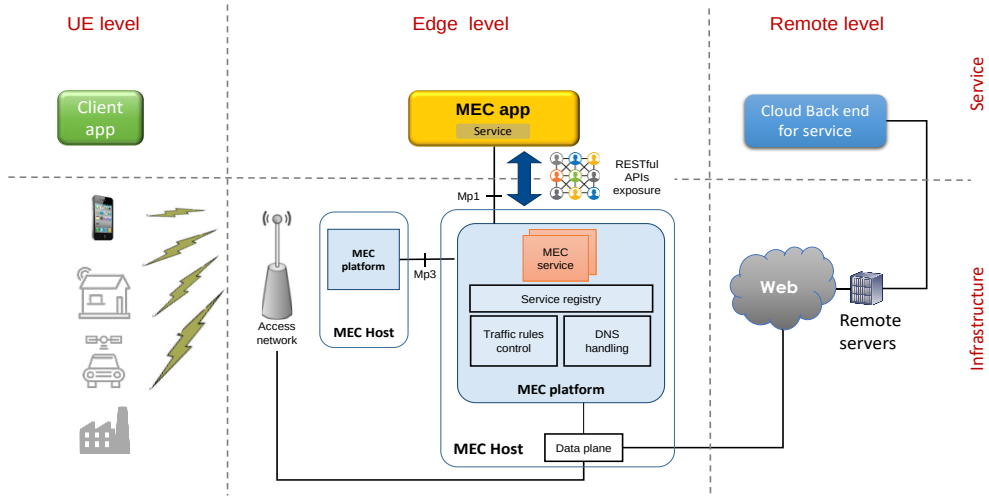
Interaction & Information Exposure

- **Continuously growing MEC membership:** 127 (in April 2023); e.g. in June 2021 it was 114
- **Diverse ecosystem:** Operators - Technology Providers - IT players - Application developers - Startups - …

Renewed webpage: **ISG MEC Leadership Team, LS officers for Vertical Industries** and **MEC Support Team:** https://portal.etsi.org/TB-SiteMap/MEC/MEC-Leaders-and-Support-Team

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:

- *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), federations

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

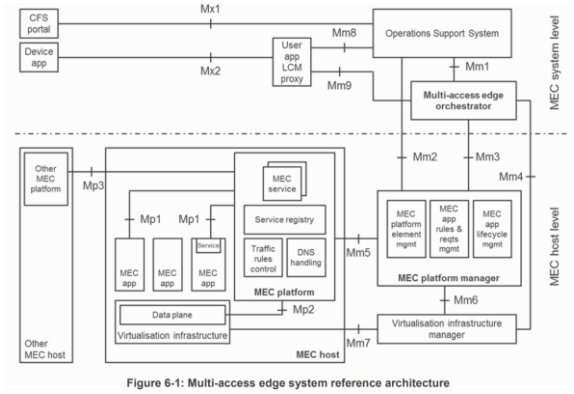
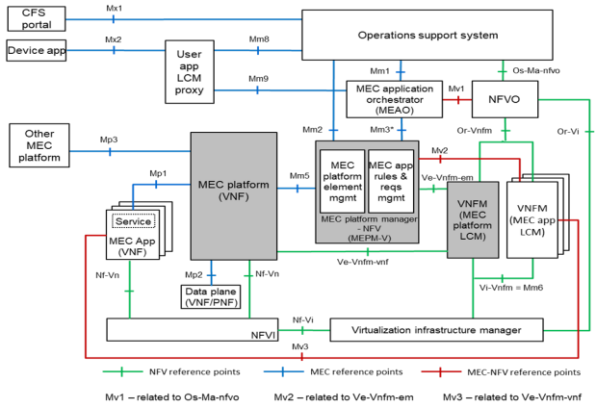
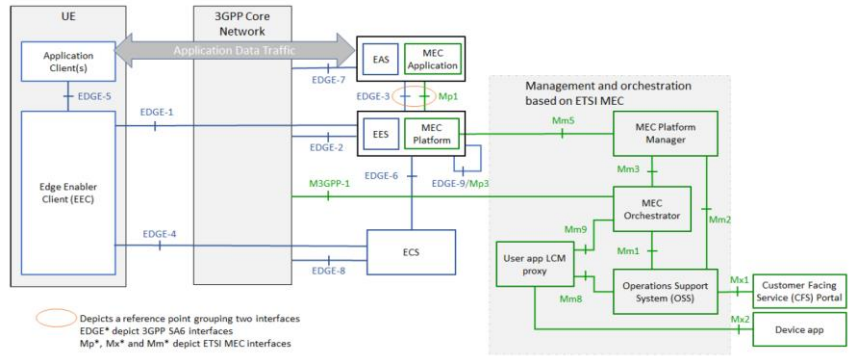
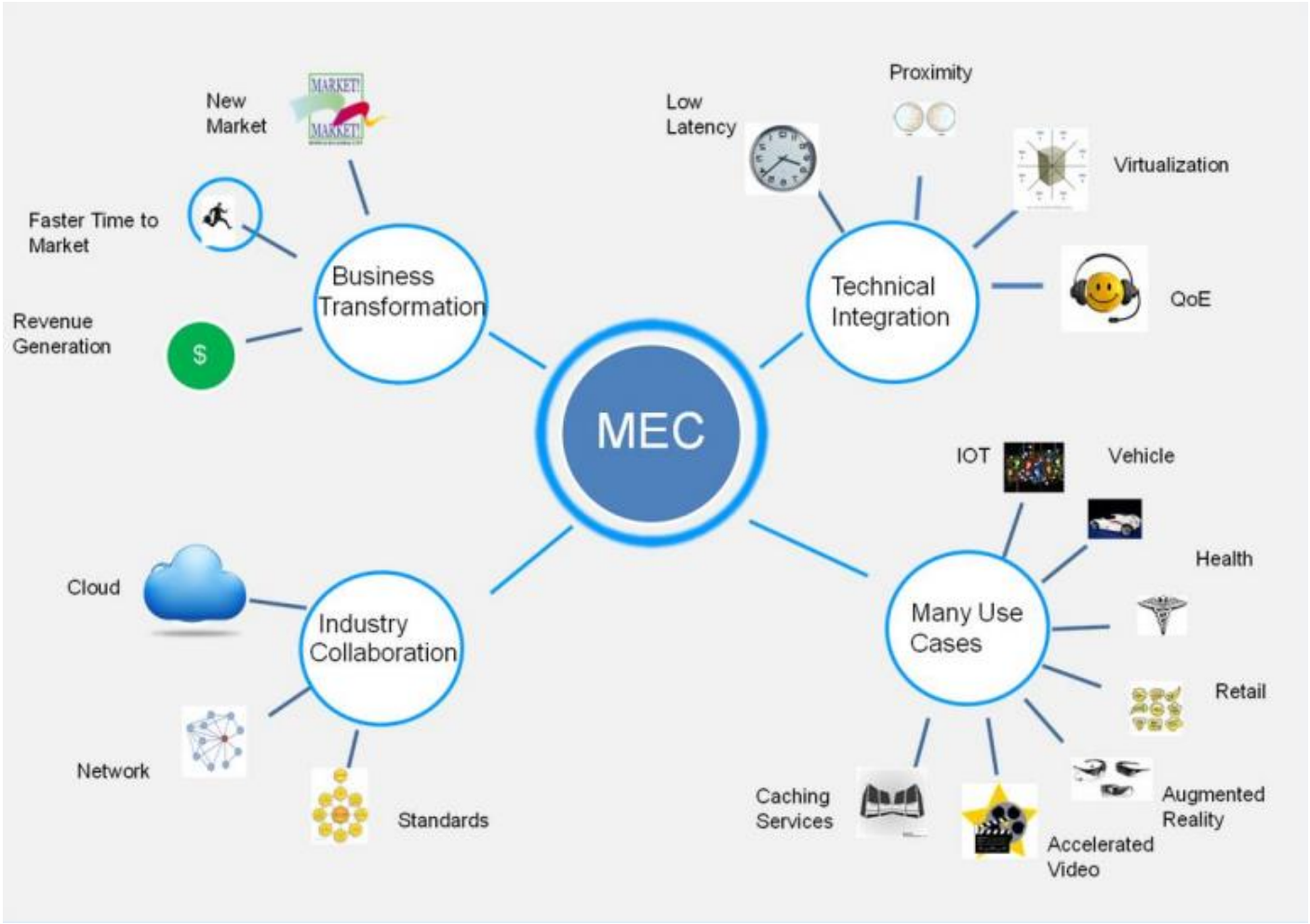


Figure 6-1: Multi-access edge system reference architecture





MEC supports many 5G use cases and market segments



More info at this ETSI White Paper on MEC https://www.etsi.org/images/files/ETSIWhitePapers/etsi_wp11_mec_a_key_technology_towards_5g.pdf

MEC and vertical industries

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

Several (specialized) use cases driven by different verticals:

- automotive,
- industrial automation,
- VR/AR,
- Videostreaming,
- Gaming,
- e-health,
- Smart Cities,
- Etc …

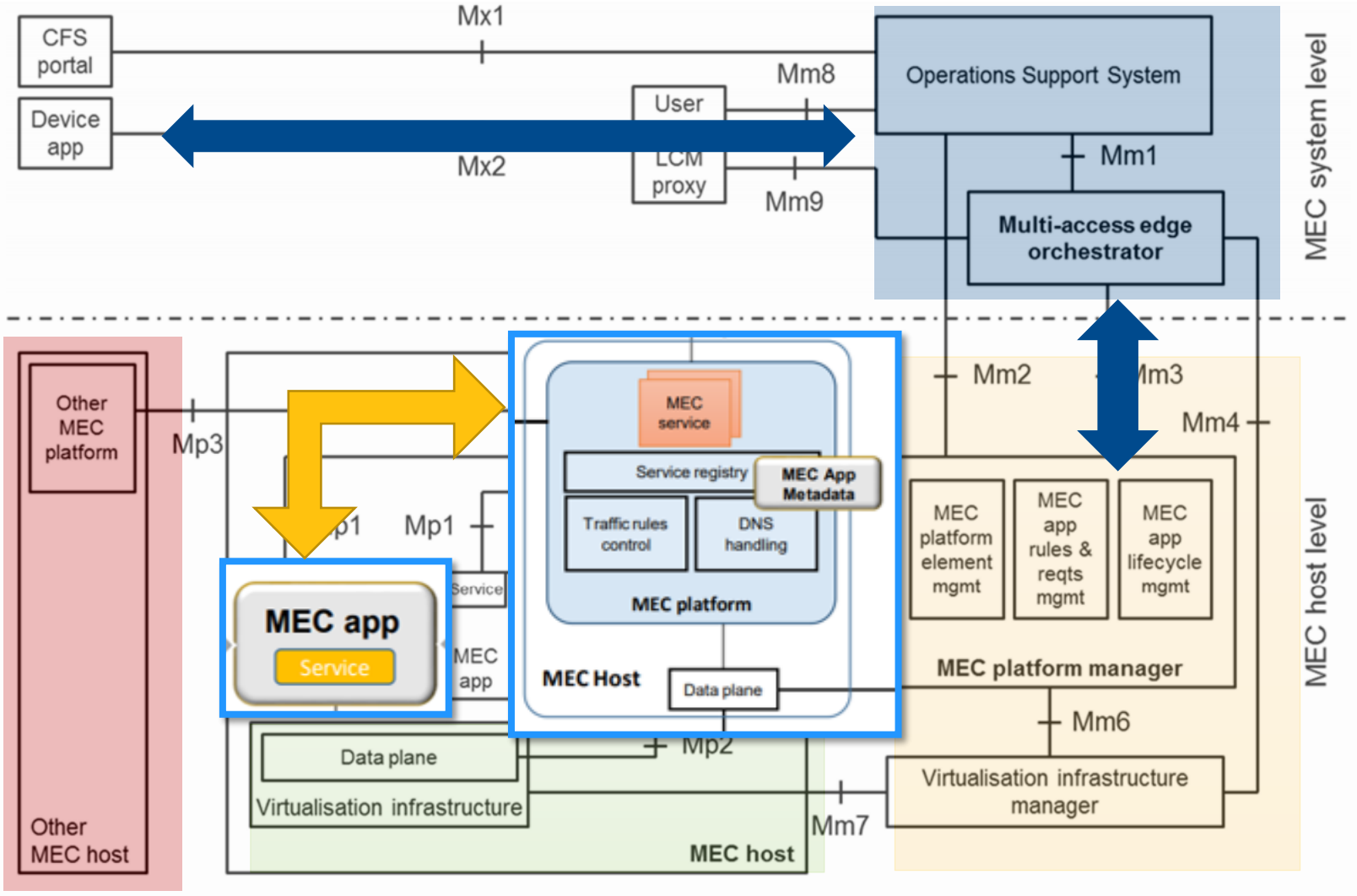
Edge Exposure Day (Sept 18th, 2022, Kfar Saba, Israel) supported by ETSI

Attendance from diverse people, e.g., local companies, MEC participants, representatives from 5GAA and AECC, …

MEC reference architecture

APIs
- Application Support
- Service Management
- Radio Network Information
- Location
- UE Identity
- Bandwidth Management
- Fixed Access Information
- WLAN Information
- V2X Information Service

- Application Package lifecycle and operation granting
- Device application interface



MEC Standard work: from Phase 1 to Phase 3

- Key overall specification
  - Technical Requirements (MEC 002)
  - Framework and Ref. Arch. (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)

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

- Full Phase 3 work ongoing (just completing some outstanding Phase 2 work).
- MEC as heterogeneous clouds
  - Expanding traditional cloud and NFV LCM approaches
  - Inter-MEC systems and MEC-Cloud systems coordination: "MEC Federation" (MEC 035 – published / MEC040 -- ongoing)
  - Mobile/intermittently connected and resource constrained devices (MEC 036), MEC IoT API (MEC 033)
- MEC Security (GR MEC 041)
- MEC deployments (MEC in Park enterprises: MEC 038)
- MEC Application Slices (MEC 044)
- Continuing emphasis on enabling developers
  - Application Package Format and Descriptor Specification (MEC 037)
  - API Serialization
  - MEC Sandbox development
  - Testing and compliance
- Continue to define services that meet industry demand (e.g. Abstracted Radio Network Info for Industries, GR MEC 043)
- Maintain and enhance existing APIs (e.g. MEC 013)

2015 ETSI MEC phase 1 (Completed)

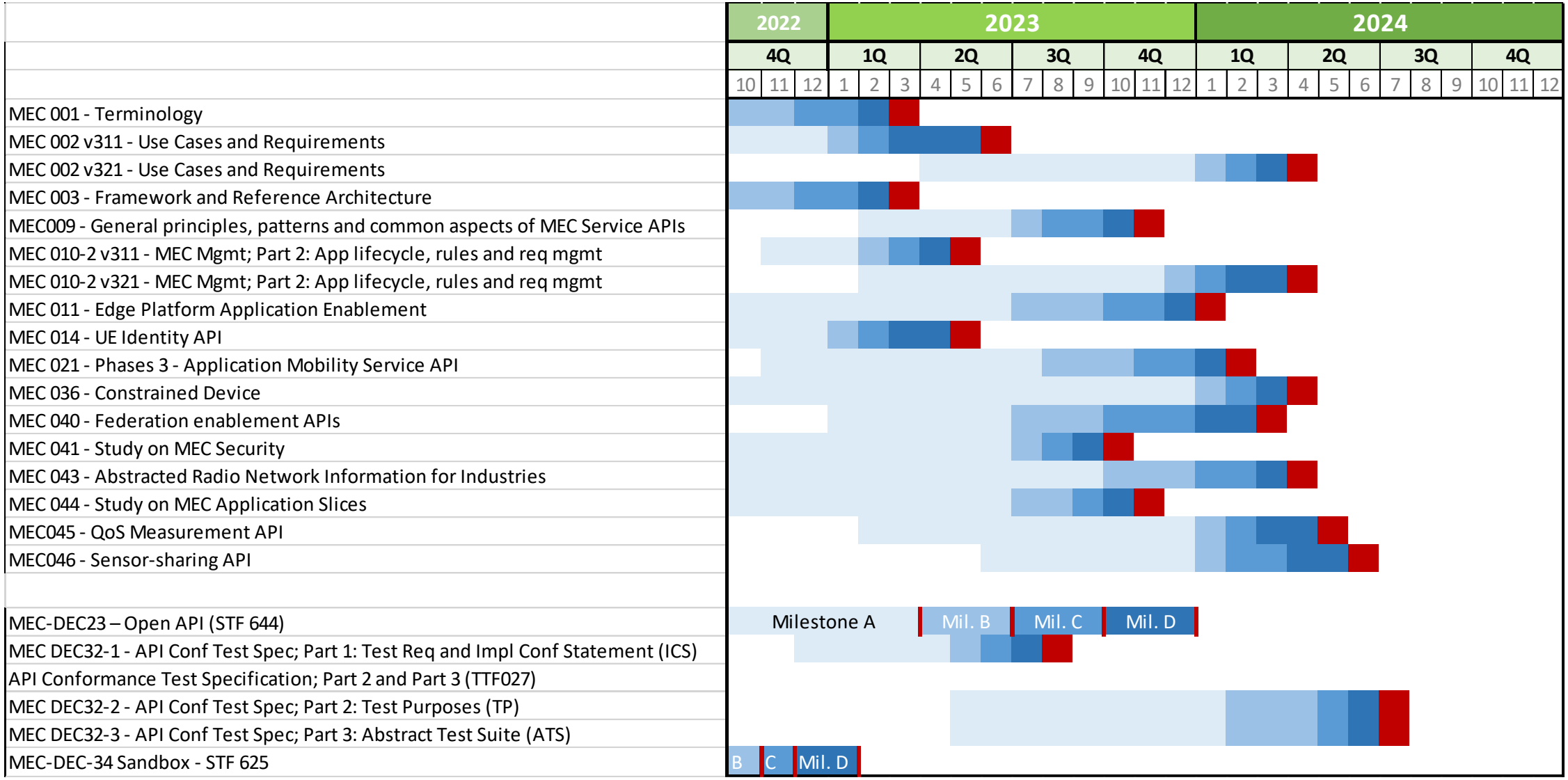
2018 ETSI MEC phase 2 (Completed)

2021 ETSI MEC phase 3 (ongoing)

MEC Phase 3 Work Items

Legenda

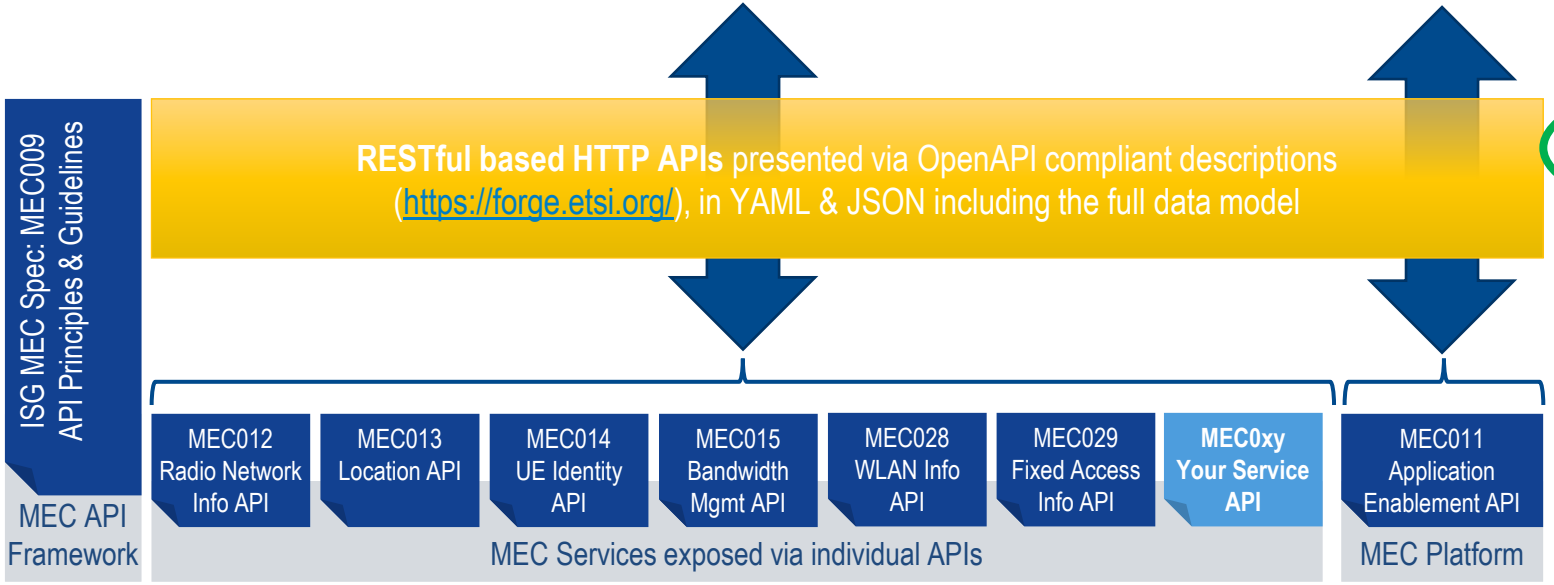
early draft	stable draft	final draft	TB approval	publication/ completion



Enabling Global Application Portability

MEC Application Development Community

Interaction & Information Exposure

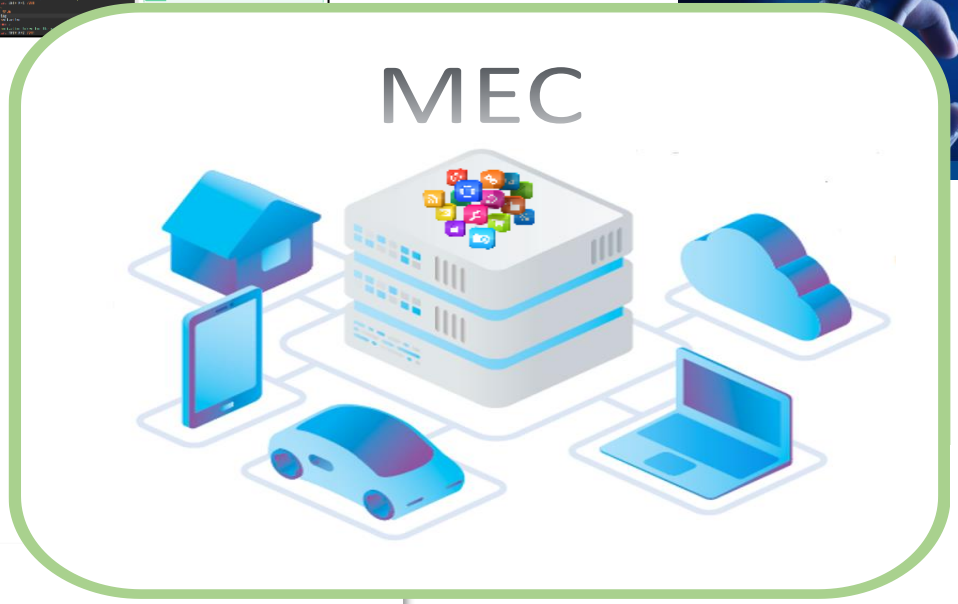


- ✓ Simple to use, well documented APIs, published with OpenAPI Framework
- ✓ Create innovative applications quickly and easily, reducing time-to-revenue
- ✓ New APIs (compliant with the MEC API principles) can be added
- ✓ Increase the Total Addressable Market (TAM)

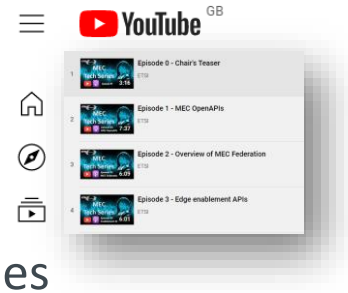
WG DECODE: Enabling MEC Deployment and Ecosystem Development

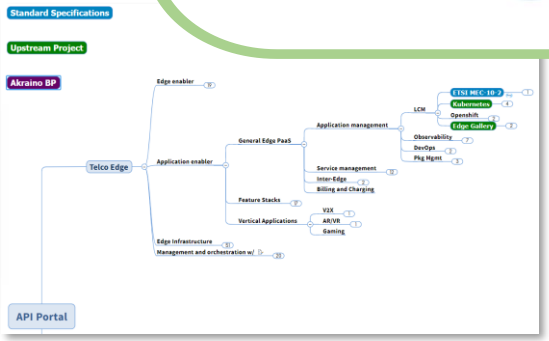
ETSI ISG MEC DECODE Working Group: MEC Deployment and Ecosystem engagement activities

- OpenAPI representations: ETSI Forge
- Testing and Conformance
- MEC Ecosystem wiki
- PoCs (proof-of-concepts)
- MDTs (MEC Deployment Trials)
- MEC Sandbox
- Collaborations: Akraino
- Hackathons
- Plugtests
- MEC Tech Series



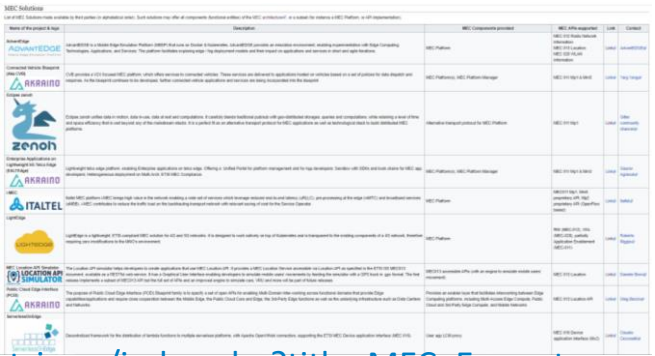
EDGE COMPUTING WORLD
11-12 Oct 2022,
https://www.edgecomputingworld.com/edge-hackathon-2022/





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

1 - 15 Oct 2021
NFV&MEC IOP Plugtests 2021



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

Thank you for your attention

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