

# How to collaborate with GSMA OPG & ETSI MEC with the usage of PCEI

--- The analysis from China Unicom

Gao Chen @ China Unicom

April 14, 2022



# Agenda

- **GSMA OP & ETSI MEC & 3GPP**
  - ✓ Clarify MEC Federation and the related architecture mapping
  - ✓ How to implement OP with Open Source Project
- **What does PCEI need to do?**

# GSMA Operator Platform and Telco Edge Cloud

- The goal of the GSMA Operator Platform (OP) initiative is to make edge computing an Operator service. We can refer to this goal as **Federated Edge Cloud** or **MEC Federation**, as a solution for achieving it as Operator Platform (OP).

Customers using an edge application should have seamless access to “Federated Edge Cloud” with edge Quality of Experience, without regard to whether this application is running on their Operator’s own edge cloud, or on the edge cloud of a different Operator (of course, they are federated).

- › The OP Working Group (OPG) has collaborated with SDOs to align OP requirements with edge computing standards, and with OSCs to create an ecosystem of operators, system software/application vendors, and system integrators
  - › E.g. OPG has already liaised with 3GPP and ETSI MEC to harmonize their own edge architectures
  - › The proposed collaboration model is shown in the right figure



Figure: Collaboration model between GSMA OPG, SDOs and OSCs

# GSMA Operator Platform and Telco Edge Cloud

- 3GPP and ETSI MEC have proposed reference architectures to enable edge application deployments. Efforts are ongoing both at 3GPP and ETSI MEC to align these two architectures and make the application developers agnostic to the underlying architecture.
- The subsequent work from SDOs, complemented by an implementation from OSCs, will produce a set of specifications that can be used by GSMA to verify the products compliance with said OP requirements

## › ETSI MEC

- › Group Report MEC 0035 → a further work item, MEC GS 040 on the MEC Federation APIs

## › 3GPP SA6

- › eEDGEAPP study item for Release 18 → a new dedicated WID

Samar@Intel invite China Unicom to cosign this proposal last week

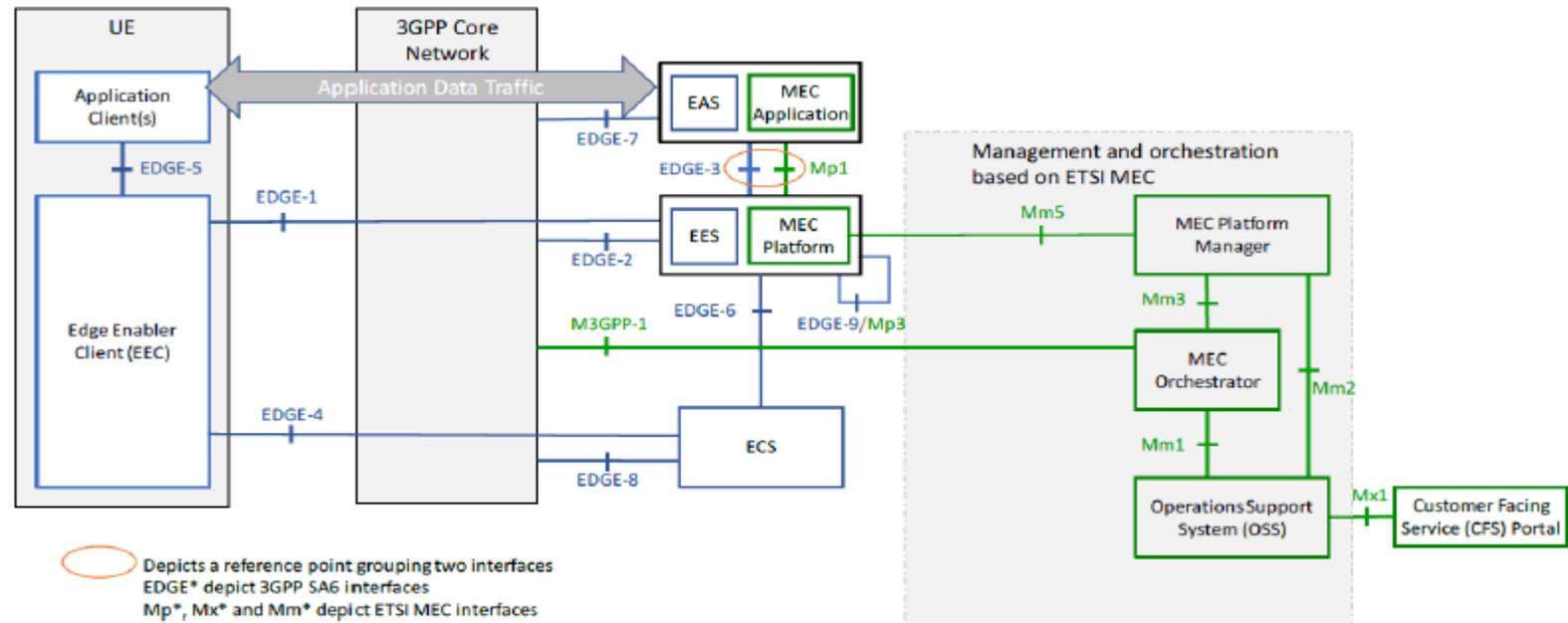


Figure: Synergized Mobile Edge Cloud architecture supported by ETSI MEC and 3GPP

# 3GPP

## Alignment of EDGEAPP and ETSI MEC - EDGEAPP external TR

Presented by: Samar Shailendra (Intel)

Supporters: Nokia, SK Telecom, Qualcomm ...

intel®

- › After clarifying the motivation for an external TR in 3GPP, we suggest the possible approaches to go:
  - › SA6 to agree for external TR as part of eEDGEAPP study
  - › A collaborative external TR jointly from SA6/SA5/SA2, SA6 can lead the effort !
- › China Unicom has agreed to cosign this proposal.

# Agenda

- **GSMA OP & ETSI MEC & 3GPP**
- **What does PCEI need to do?**

# Which topic is suitable for us to take participate in?

- There are **11 topics** that are being considered for the on going works in GSMA OPG
  - Topics are listed as the prioritizes according to the survey results
  - China Unicom has not decided to joint which of the 11 topics, but are interested in **Topic J, H, A and O**
- Maybe **Topic J & O** can be merged together
- Topic H**, Edge Interconnection Network, is the foundation of MEC Federation
- Topic A**, Alignment with Cloud Infrastructure Reference Model, is kind of topic we can study it from the perspective of how infrastructure owners (e.g. operators) will be able to address the deployment of edge applications.

## Topic Prioritisation: Input from Survey

ID	Prio	Topic Title	MOSCOW	Candidate owner(s)	Contributors	Concept Note
J	1	Enhanced Network capabilities exposure	MUST	Optare? (can only start after Easter)	BT, CK Hutchison, Ericsson, GS Lab, Huawei, KDDI, MobiledgeX, NTT Docomo, Optare, Telefonica	
M	2	Network Slicing as a Service	MUST	CK Hutchison	BT, Ericsson, GS Lab, Huawei, KDDI, NTT Docomo, Optare, ZTE	CN0001 (initial version available)
H	3	Edge Interconnection Network	MUST		BT, CK Hutchison, Ericsson, GS Lab, Huawei, KDDI, NTT Docomo, Optare, ZTE	
E	4	Cellular Service continuity	SHOULD	CapGemini	BT, Huawei, KDDI, Telefonica, Telus, ZTE	
A	5	Alignment with Cloud Infrastructure Reference Model	SHOULD		BT, NTT Docomo, Optare, Telus, ZTE	
C	6	Application interaction and interconnect	SHOULD		Ericsson, GS Lab, KDDI, Optare, Telus	
I	7	Enhanced Charging	SHOULD		BT, CK Hutchison, GS Lab, KDDI, Telefonica	
O	8	Platform as a service	SHOULD		CK Hutchison, GS Lab, KDDI, Optare, ZTE	
P	9	Roaming Architecture	SHOULD		BT, CK Hutchison, KDDI, Optare, Telefonica, ZTE	
T	10	User Client Requirements	SHOULD	CapGemini	BT, CK Hutchison, GS Lab, KDDI, Telefonica	
S	11	SIM UE access over Wi-Fi	SHOULD	GS Lab	BT	



Likely Cut-off point

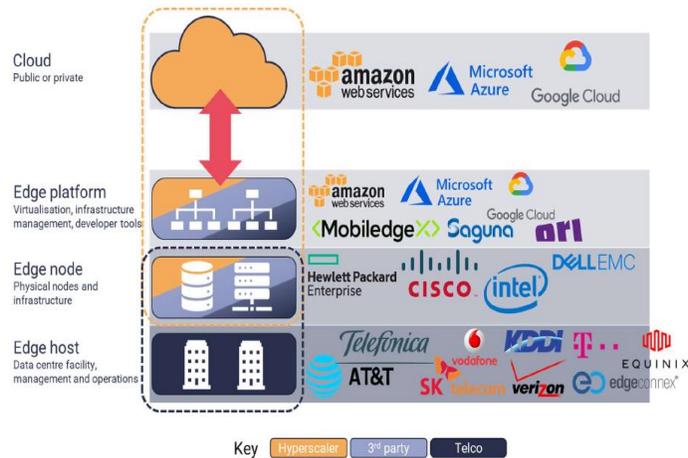


# Requirement for PaaS: supporting NaaS

## What is the difference between the edge cloud of Hyperscalers and the one of Operators?

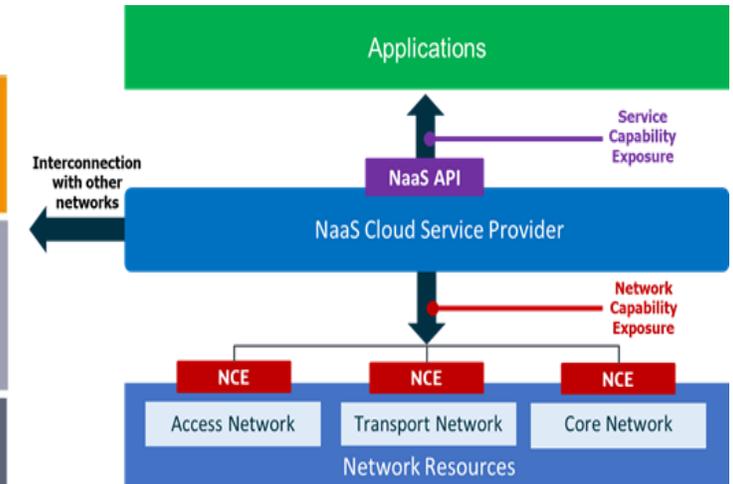
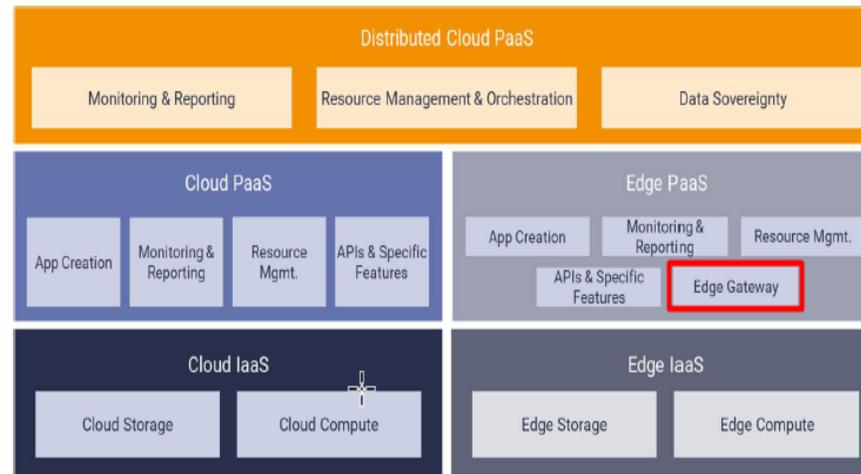
- ✓ **Hyperscaler cloud providers**, such as AWS and Microsoft Azure, which have extended their IaaS and PaaS offering to the edge, providing infrastructure resources in an as a service structure
- ✓ **NaaS is an operator specific service functionality**
  - K8s Clusters are not meant for Network functions, need for comprehensive converged Edge platforms --- cited from Srinu Addempali @Intel EMCO(Edge Multi-Cluster Orchestrator) Overview & Roadmap, 28<sup>th</sup> Oct 2020 PCEI weekly meeting
  - Running on top of the IaaS is the MEC application platform, or Edge PaaS, which enables services such as traffic routing and API gateway function.

Figure 2: Edge computing stack and stakeholder examples



Source: STL Partners

Figure 3: Edge computing platform architecture



NaaS, an operator specific service  
TEC will mainly focus on IaaS and PaaS, offering NaaS as it becomes developed and standardised --- source from TEC whitepaper P8

# How to implement GSMA OP?

- › China Unicom had proposed a new topic in GSMA OPG during last phase 2 period in the beginning of 2020, as shown in below table:
  - › Building OP as a PaaS supporting multi-cloud and hybrid cloud with Cloud Native technologies, that is **Cloud Native PaaS**

Rank	Topic	Concept impacts the following areas (x)	Comments
1	API gap analysis with SDO & Associations, specifying API gaps	X	The details of the external exposure of the capabilities, such as support for RNIS(Radio Network Information Service) and OP interactions with 5GS
2	Use case and capabilities		
3	Service access by devices that are attached to networks other than their home network (e.g. roaming, Wi-Fi, service discovery etc.)		
4	Access to OP services in a network different from the one to which the device is attached (e.g. those provided on another operator's network)		
5	Device mobility		
6	Changes resulting from the commercial principles whitepaper		
7	Security considerations		
8	Call flows		
9	NEW TOPIC: Edge features landscaping (proposed by Intel)		
10	Low latency interaction between OP applications in different networks		
11	Serverless models	X	Serverless vs. PaaS, which is more suitable to OP? Need to deep dive on this concern.
12	Management plane	X	PaaS also includes some extended functionalities, like the <b>identification of the optimal edge node</b> to deliver an application to a certain end user. Does it mean that management plane include some PaaS functionalities?
13	Local interfaces on an end-user device		
14	NEW TOPIC: Building OP as a PaaS supporting multi-cloud and hybrid cloud with Cloud Native Technologies (proposed by China Unicom)		
15	Resource reservation		

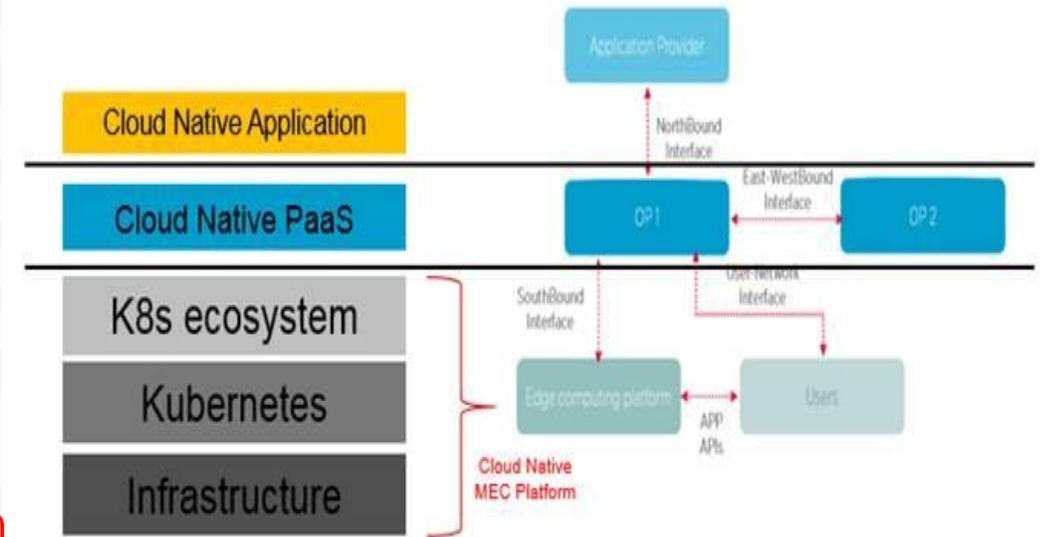


Figure: mapping of Cloud Native PaaS and GSMA OP

# What does PCEI need to do?

## ➤ GSMA OP

- › Which topic can we choose to join in?
- › What kind of role we want to play in this topic? Owner or contributor?
- › Is it possible for us to introduce PCEI into GSMA OPG as a common framework or a implementation solution?
- › Do we need to joint Carmara at the same time?
- › .....

## ➤ ETSI MEC & 3GPP

- › A proposal to ETSI MEC , hope it can be cosign by Equinix and Intel
  - introduce this particular scenario of co-building & sharing 5G MEC system between China Unicom and China Telecom
  - Using PCEI to help China Unicom to accomplish the sharing of MEC
  - The upcoming plan to deploy PCEI test platform in ECC & GCC in China

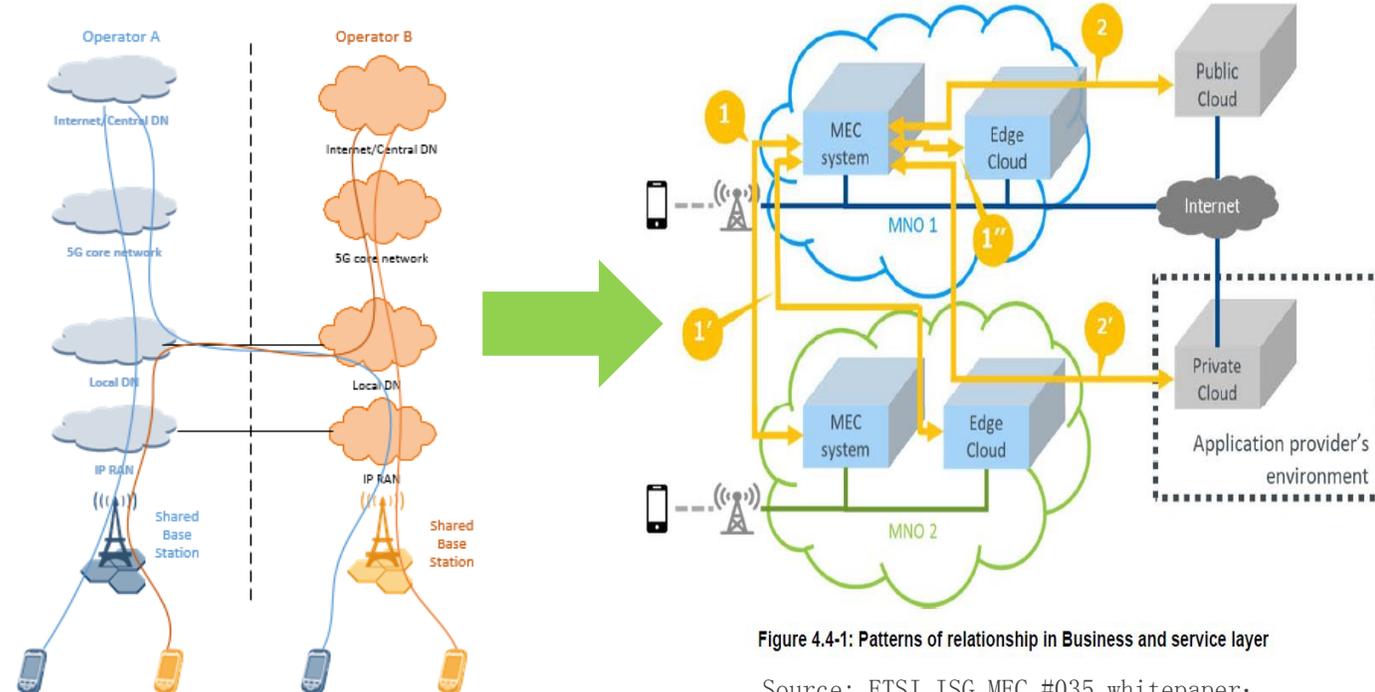


Figure 4.4-1: Patterns of relationship in Business and service layer

Source: ETSI ISG MEC #035 whitepaper: Study on Inter-MEC systems and MEC-Cloud systems coordination (2021)

Figure: co-building & sharing 5G MEC based on shared 5G network

# Roles and responsibilities

## Topic owner

- Leads the topic development
- Prepares and presents Concept Notes (CNs) and Change Requests (CRs)
  - Aggregates input from Contributors
  - Responds to review comments from OPG members
- Organises work as needed with the contributors, for example:
  - Splits topic in sub-topics
  - Organises ad-hoc calls, email discussions, MS Teams chats for the “topic group”
  - Collaborative editing on SharePoint
  - Allocates sections to the contributors
- Expected to be one of the main contributors (not the only one)

## Contributor

- Actively contributes to the topic development
- Provides content (actively or if requested)
  - For both CNs and CRs associated to the topic
- Provides feedback if requested
- Helps answering review comments if comments are related to the content provided

# Which topic is suitable for us to take participate in?

## OPAG – APIs Classifications (Grouping)

### Block A

- Application Onboarding
- Application Instance Management (Resource Life-Cycle Management)
- East/West Bound Interface Management
- Availability Zone Information Synchronisation Service
- LBO Roaming (Monitoring)
- LBO Roaming (Authentication)
- Edge Node Sharing (resource onboarding & Management)

**Federation Definition Support**

### Block B

- QoS Management
- Charging
- Billing
- Traffic Influence
- Collecting Network Status / Network Events
- Confirm User Location
- Mobility Triggers
- Mobility Control
- Location Privacy Indicator
- Managing Service availability in LADN
- Application relocation

**Network Integration Support**

### Block C

- Application Resource Catalogue
- Orchestration
- Virtualised Infrastructure Manager
- Container Infrastructure Manager

**Orchestration / Cloud Management**

### Block D

- Telemetry
- Notifications
- Trouble Ticketing
- Ordering
- User Authentication and Authorisation
- Registration
- Discovery
- Mobility/QoE

**Management & Others**

# Thank you!

Gao Chen

Senior Engineer

Future network research Center, Research institute of China Unicom

Email: cheng96@chinaunicom.cn

