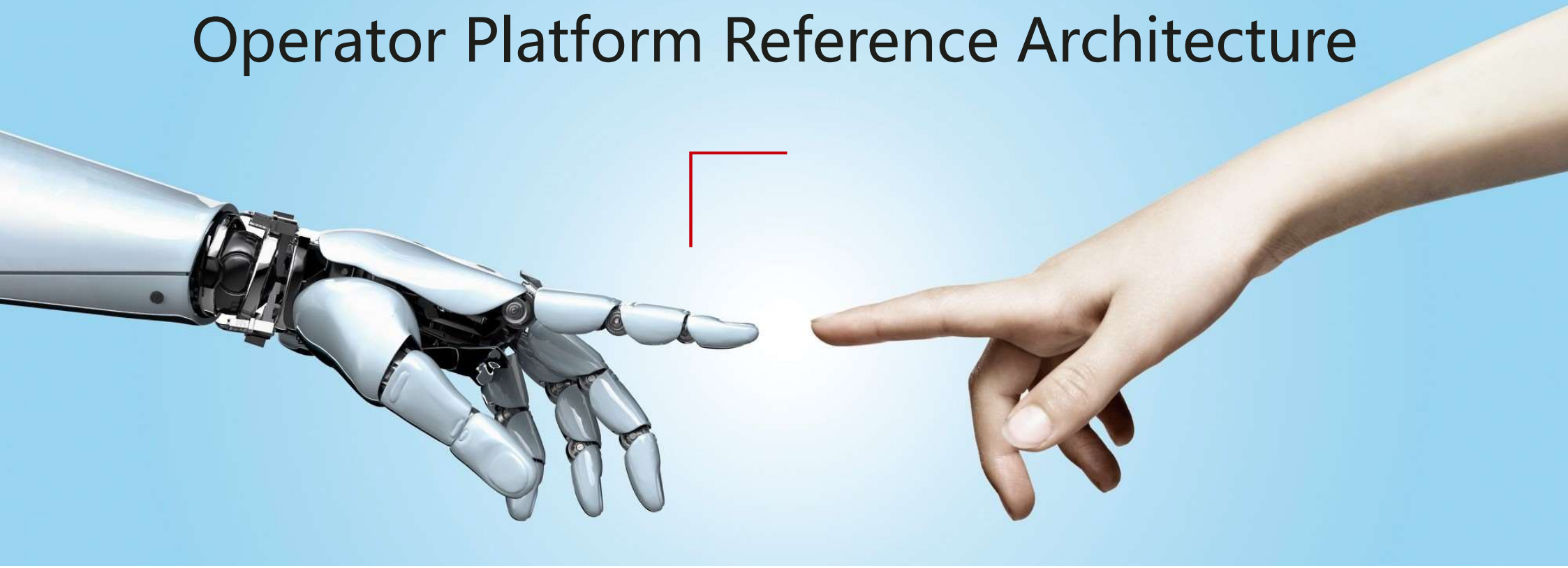
Operator Platform Reference Architecture



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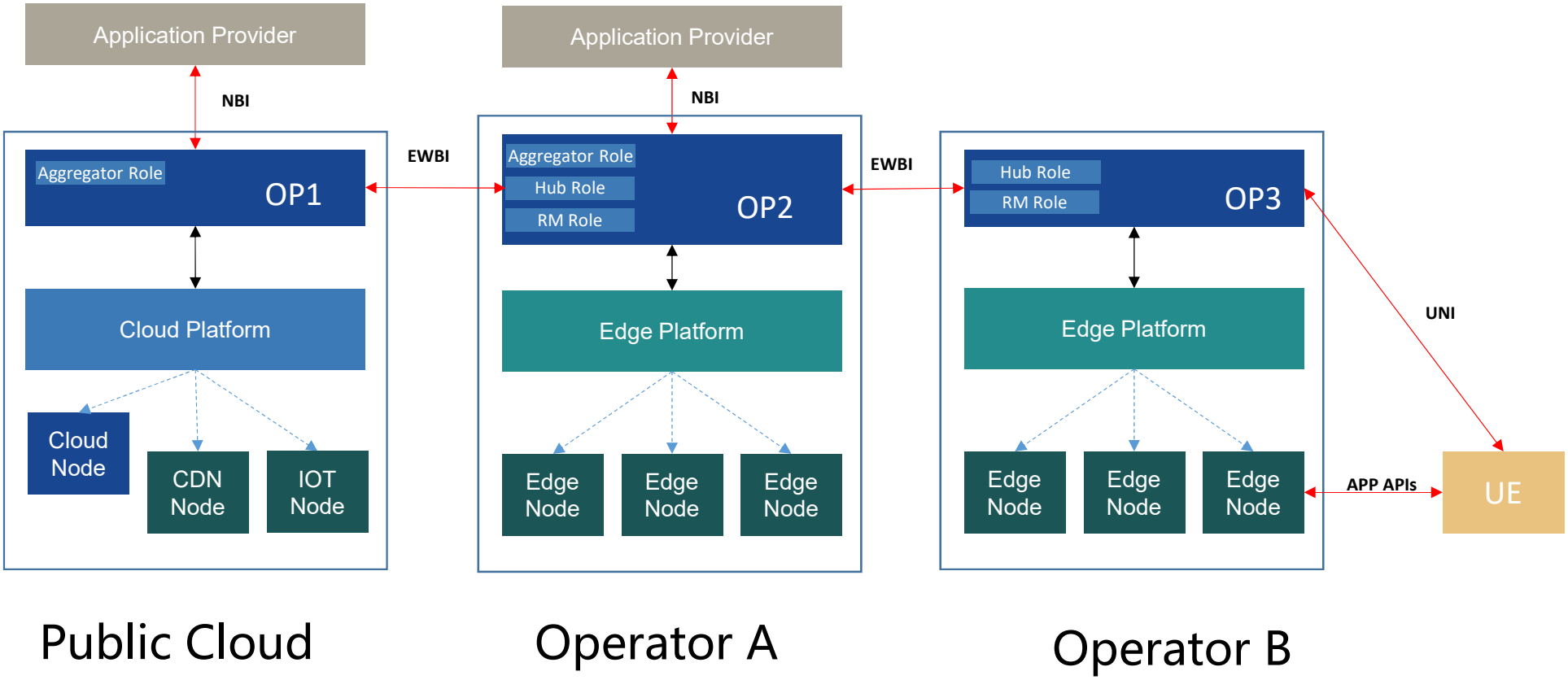
Overview



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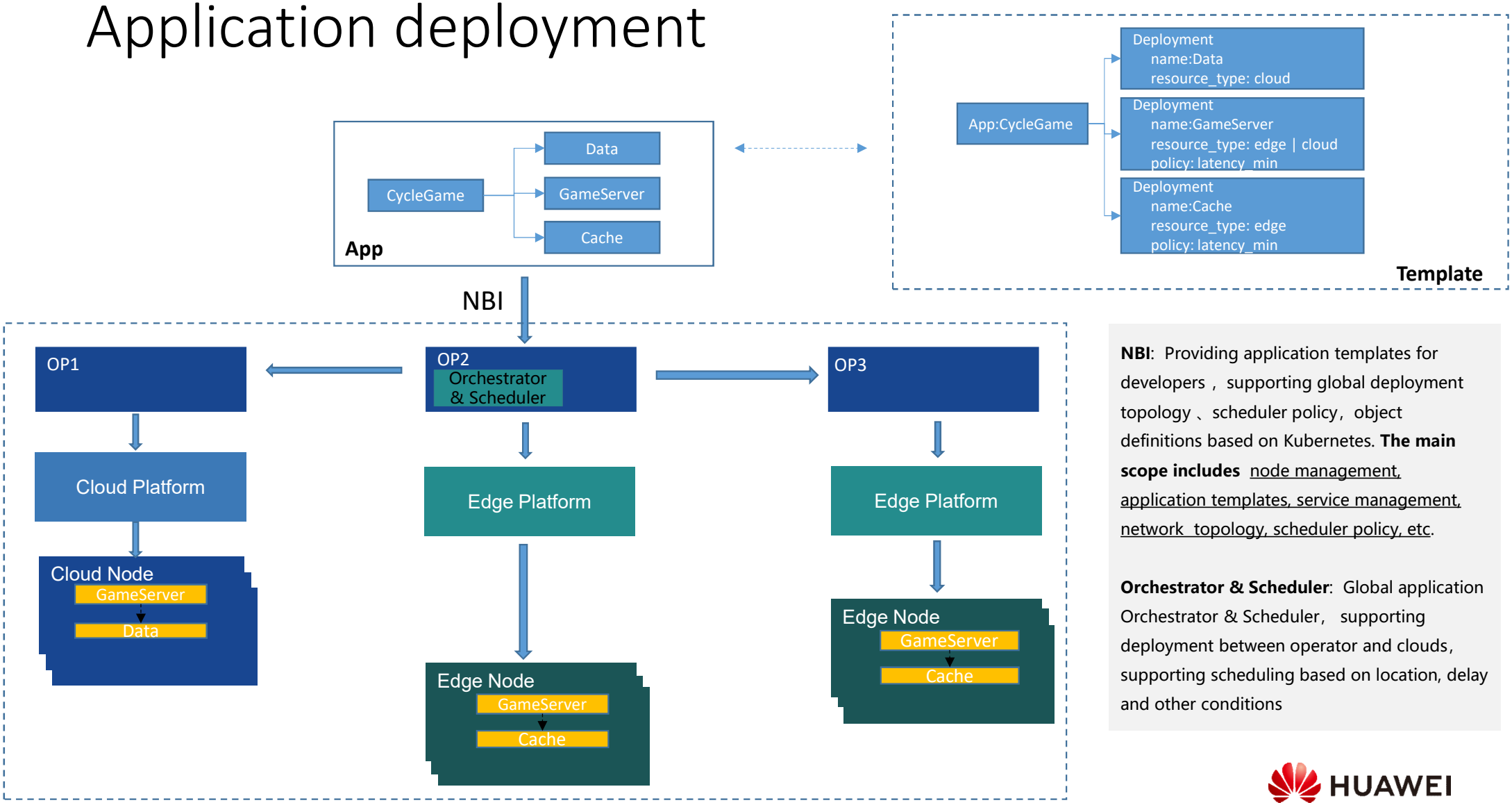
Application deployment



NBI: Providing application templates for developers， supporting global deployment topology、scheduler policy，object definitions based on Kubernetes. **The main scope includes** node management, application templates, service management, network topology, scheduler policy, etc.

Orchestrator & Scheduler: Global application Orchestrator & Scheduler， supporting deployment between operator and clouds，supporting scheduling based on location, delay and other conditions

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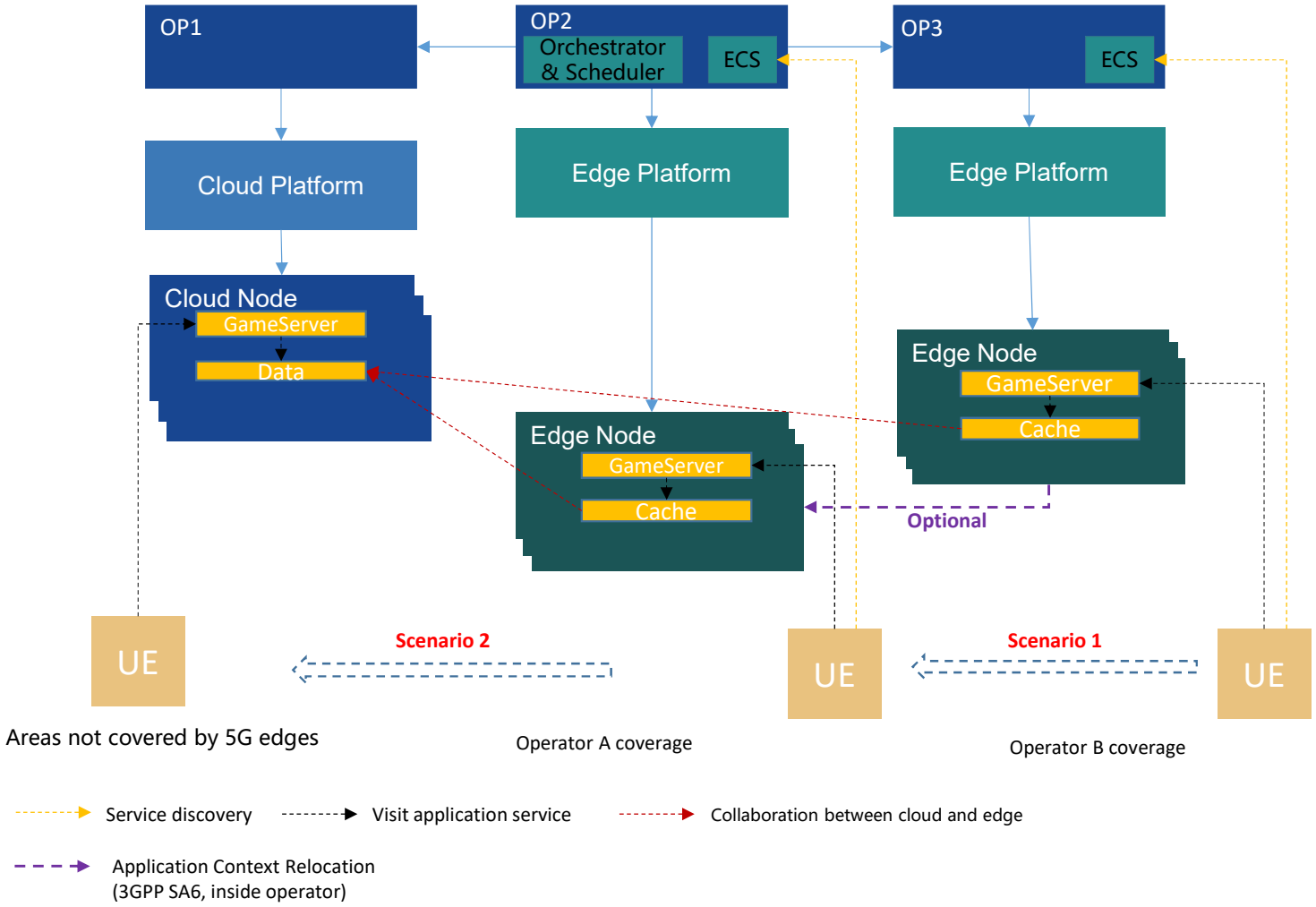
Mobility management



Application components

GameServer: Stateless game service

Cache: Local data copy

Data: Global data storage

Mobility management

Orchestrator & Scheduler: Managing application roaming across operators，supporting scheduling based on location, delay and other conditions

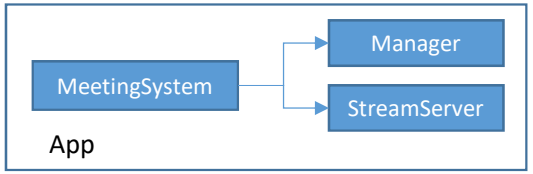
ECS: Manage service lists for all edges，assigning an edge access point to the UE，providing service discovery and nearest access

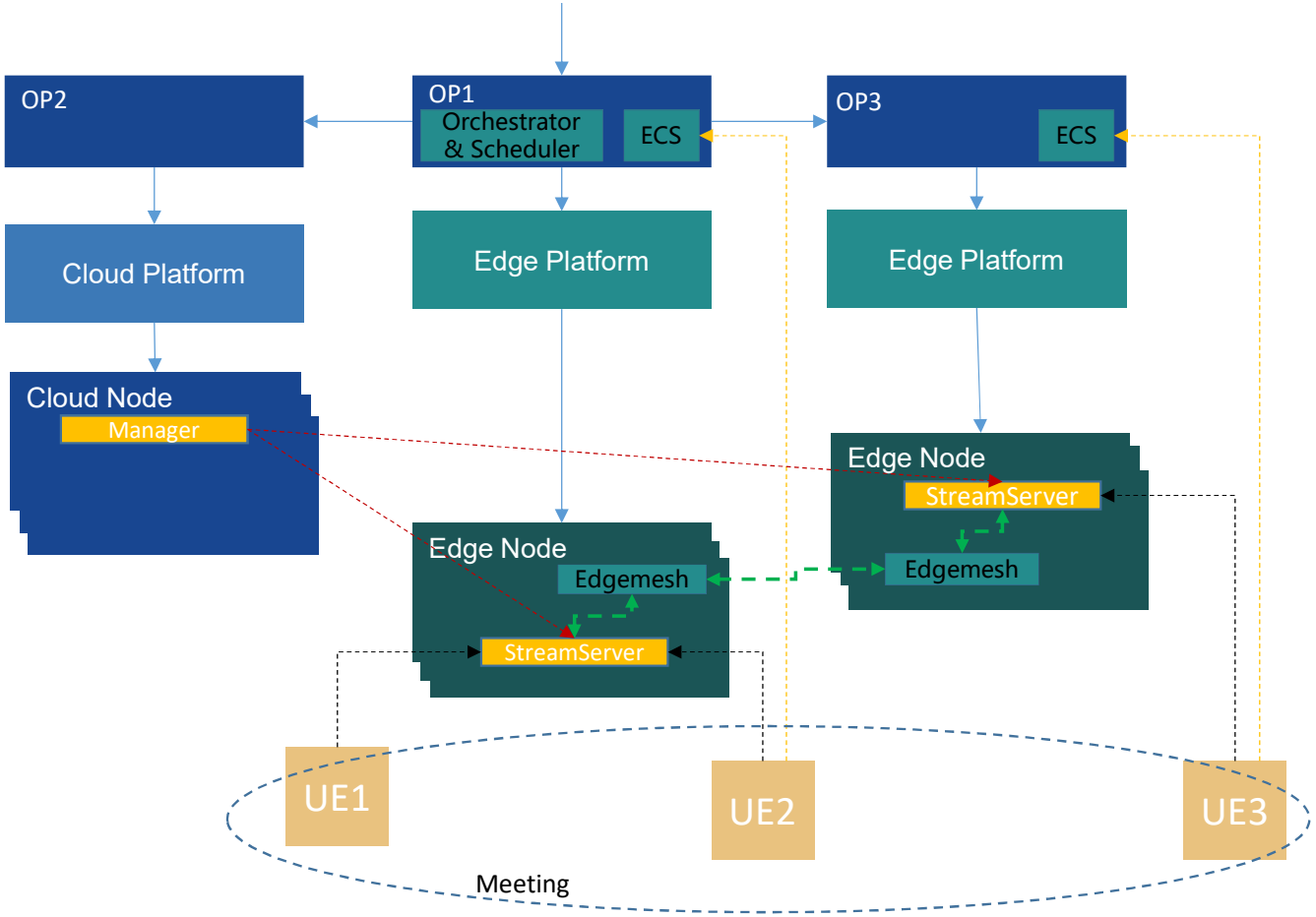
Collaboration between cloud and edge

Applications Maintain a copy of cached data at each edge site，synced to the cloud finally，ensuring final consistency。

In areas not covered by 5G edges，UE can access the nearest cloud application instance

Collaboration between edges





Application components

Manager: Global application session management

StreamServer: Audio and video coding 、 Mixing flows 、 Forwarding

Collaboration between edges

Through the service invocation mechanism across the edge， finding the best network path， transmitting audio and video streams across edge sites

Edgemesh: Supporting service mesh capabilities on edge to support microservice communication cross cloud and edges, such as service discovery and communication.

Service discovery　Visit application service　Collaboration between cloud and edge　Collaboration between edges

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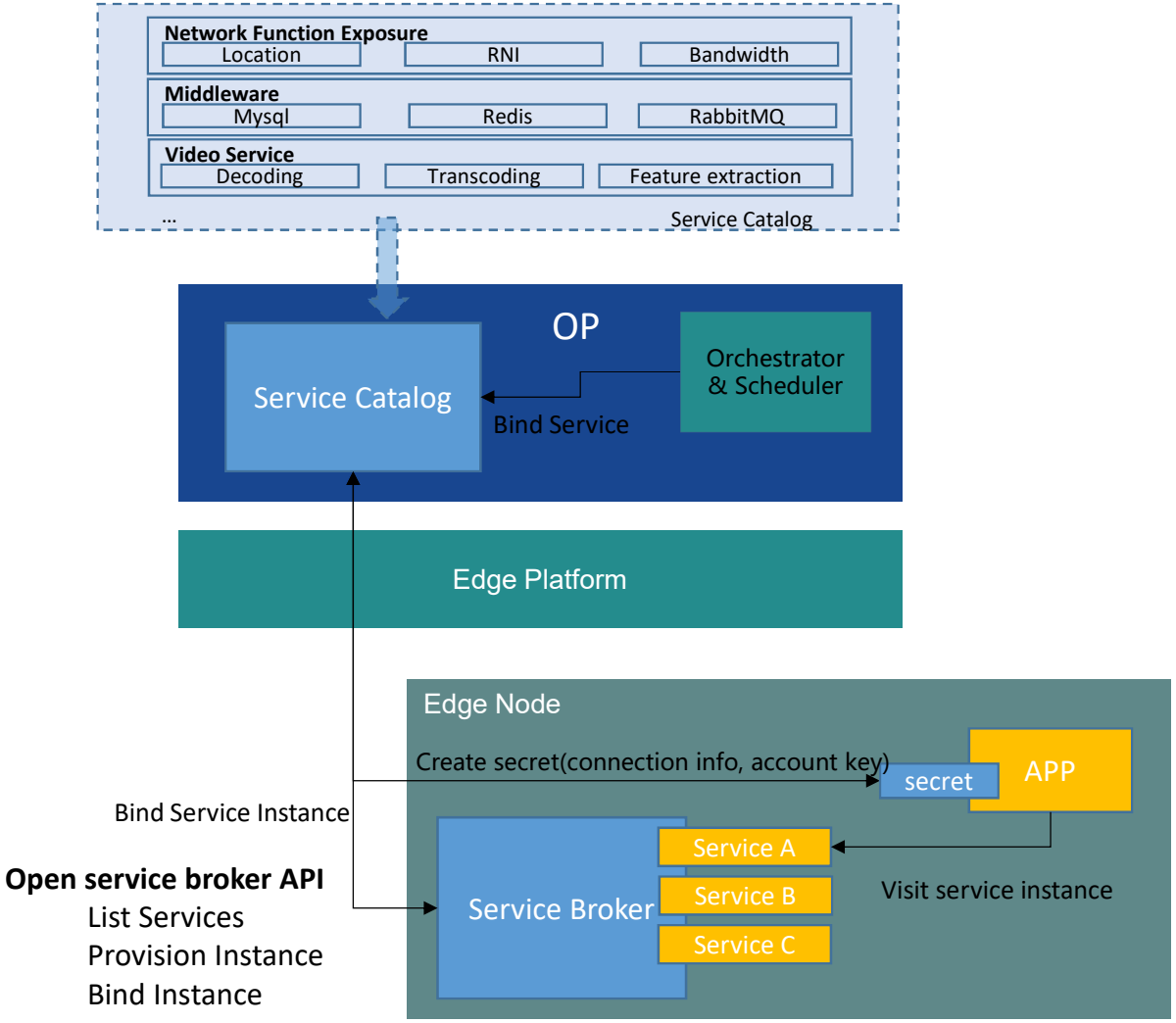
Service Catalog



- Manage all components and functions through services, including internal and external systems
- Developers or applications use components and functions on demand as a service, without the need to understand implementation details
- Managing various components and functions by category
- Managing the life cycle of all services
- Base on open service broker

- **Open service broker**

The Open Service Broker API project allows independent software vendors, SaaS providers and developers to easily provide backing services to workloads running on cloud native platforms

- https://www.openservicebrokerapi.org/

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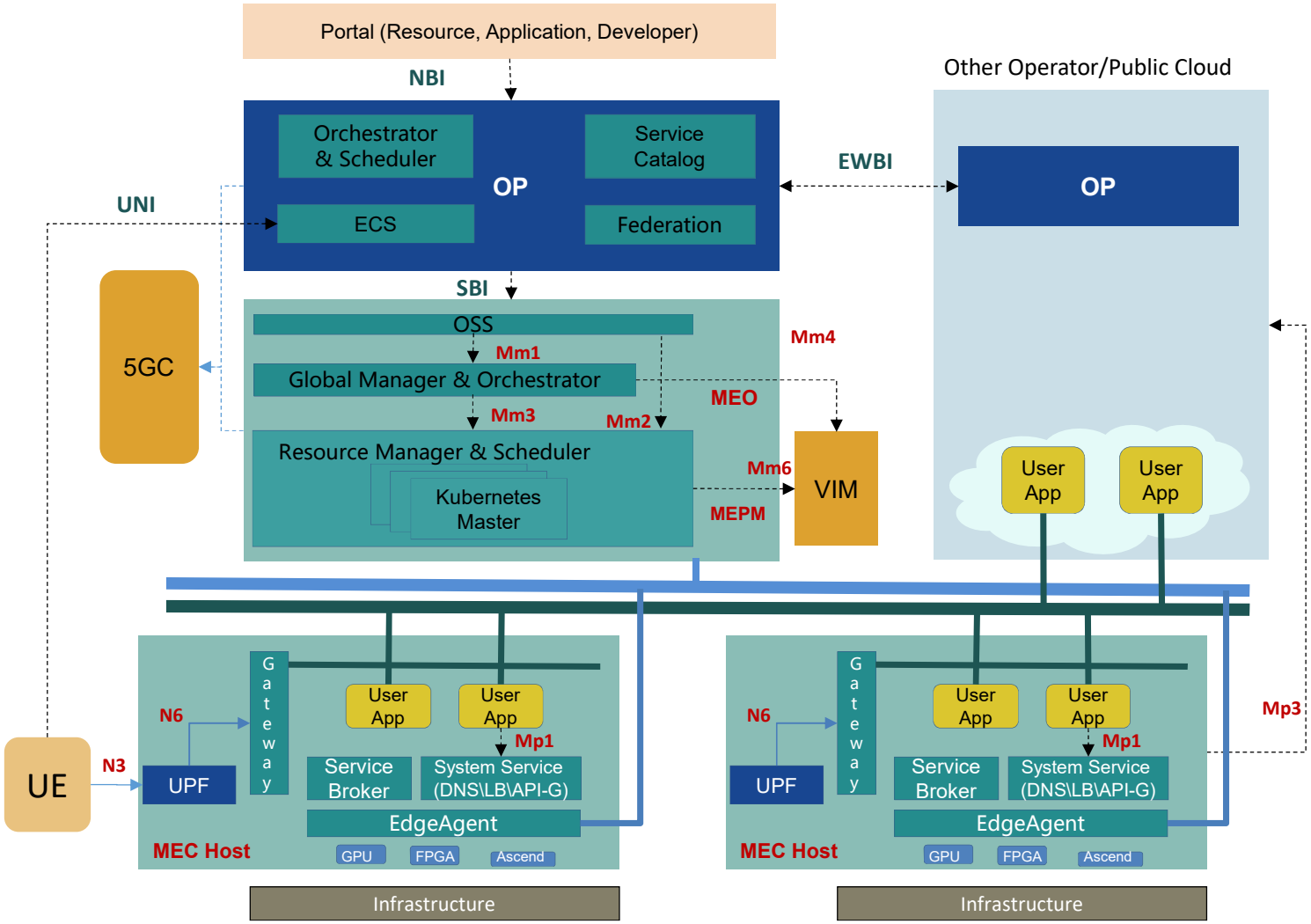
Reference Architecture



Operator Platform

Providing application templates for developers，supporting global deployment topology、scheduler policy，object definitions based on kubernetes Global application Orchestrator & Scheduler，supporting deployment between operator and clouds， supporting scheduling based on location, delay and other conditions

ETSI MEC

Managing all components and functions through services， Including system functions, network open capabilities, edge applications, cloud applications, etc.

Smart collaboration between edges, including application orchestration, scheduling, and application collaboration

Smart collaboration between cloud and edge, including application orchestration, scheduling, and application collaboration

Supporting wireless and fixed network access

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KubeEdge Opensource Community

- **March 2019 project entered CNCF sandbox**
- **February 2020 Release 1.2.1**
- **Continous momentum**
  - ✓ Contributing member companies: 20+
  - ✓ Num of Contributors: 300+
  - ✓ Github Stars: 2400+
  - ✓ Github Forks: 600+
- **Contributing organizations**
  - ✓ Cloud：Huawei Cloud, DaoCloud, TenxCloud, EasyStack
  - ✓ Carriers/Telco：China Unicom Cloud Data, China Telecom, China Mobile
  - ✓ IT：inovex, Infoblox, SpanIdea
  - ✓ IOT & Hardware：ARM, Samsung, Midokura
  - ✓ Acadamic：Zhijiang Lab, USTC, UESTC
- **5G MEC SIG**
  - ✓ 5G proposal offered
  - ✓ https://docs.google.com/document/d/13-Fmr4w5IA4ylLH3XMWWaaG2ghHwoSFjZCGcTSAT3ew/edit#heading=h.amqhkq6c83ap

Already provided： Edge node management, application scheduler, application lifecycle management, edge mesh

Roadmap

2020 Q2：Edge service discovery, service catalog

2020 Q3：Global Orchestrator& Scheduler, Mobility management , collaboration between cloud and edge

2020 Q4： collaboration between edges, supporting hardware acceleration, network function exposure