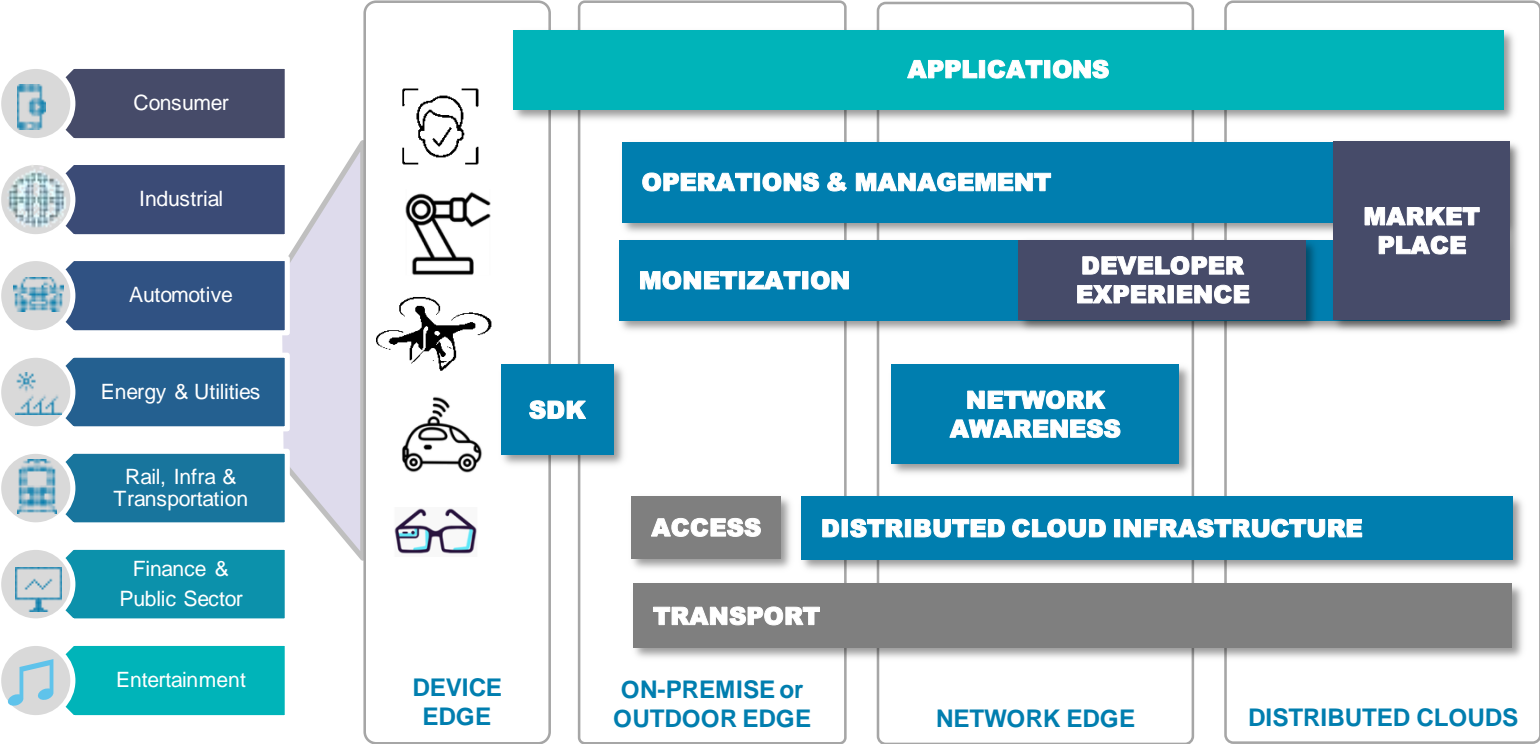




EDGE COMPUTING

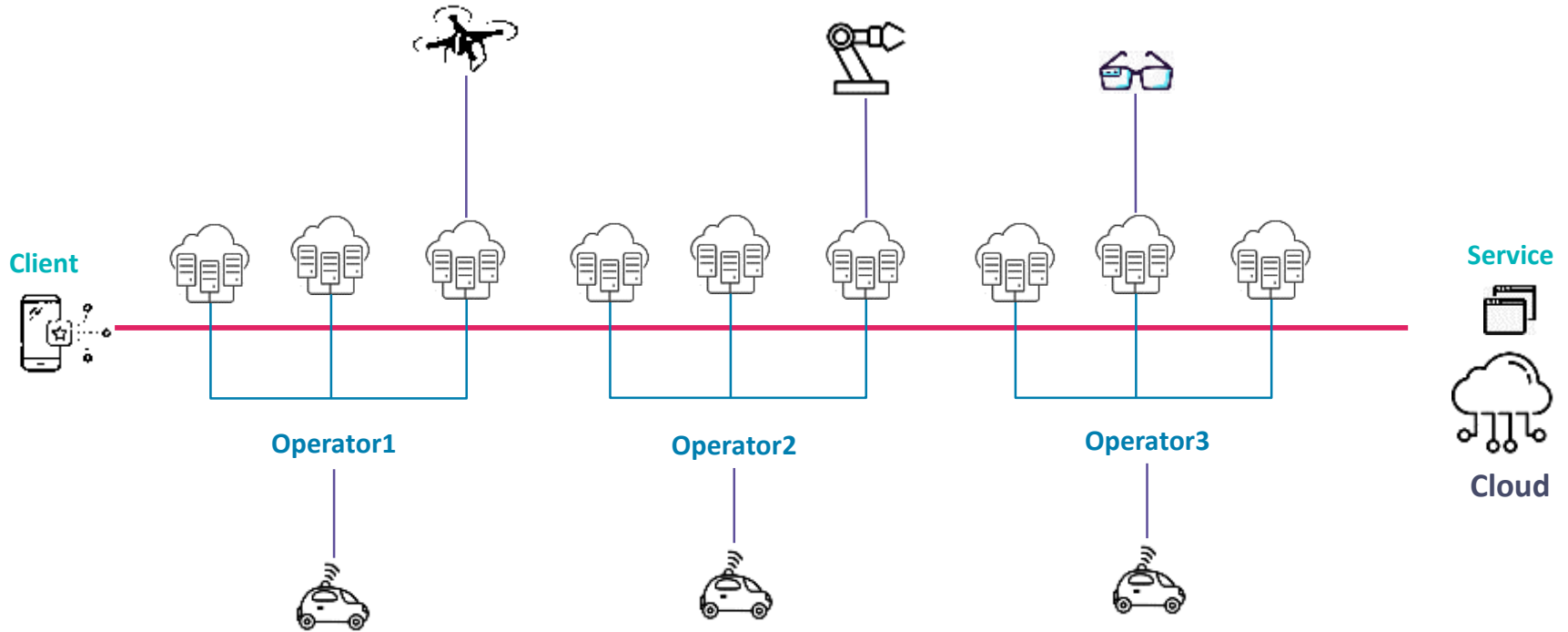
A POV ON MULTI-MNO FEDERATION AND RELATED MEC TOPICS

EDGE COMPUTING – The Many Edges



EDGE COMPUTE: DISTRIBUTING CLOUD?

Distributing Smaller Clouds throughout the distance

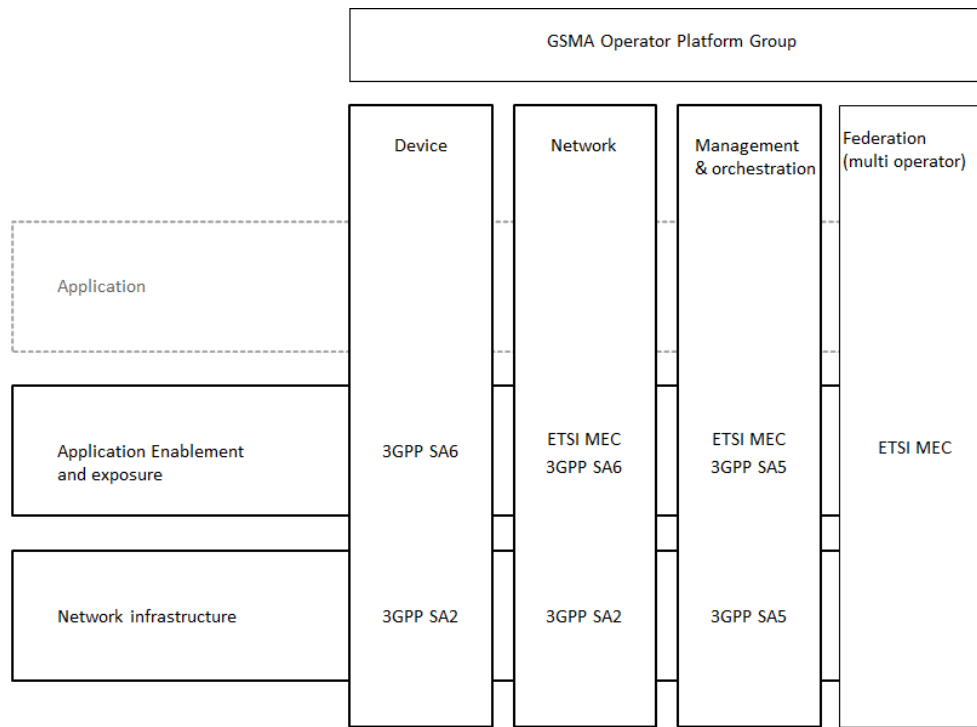


Telecom Operators can collaborate on Network (Roaming), they can also collaborate on “compute” (edge clouds)

ALTRAN POINT OF VIEW ON STANDARDS

3GPP SA6 introduces edge-aware applications with UE and Edge APIs. APIs under development. Altran APIs on this interface is bundled as SDK and will comply to 3GPP SA6 or GSMA OPG UNI APIs

3GPP SA2 introduces edge-aware applications on the MEC with interactions with Mobile Core over network exposure functions. Altran will comply to this in future



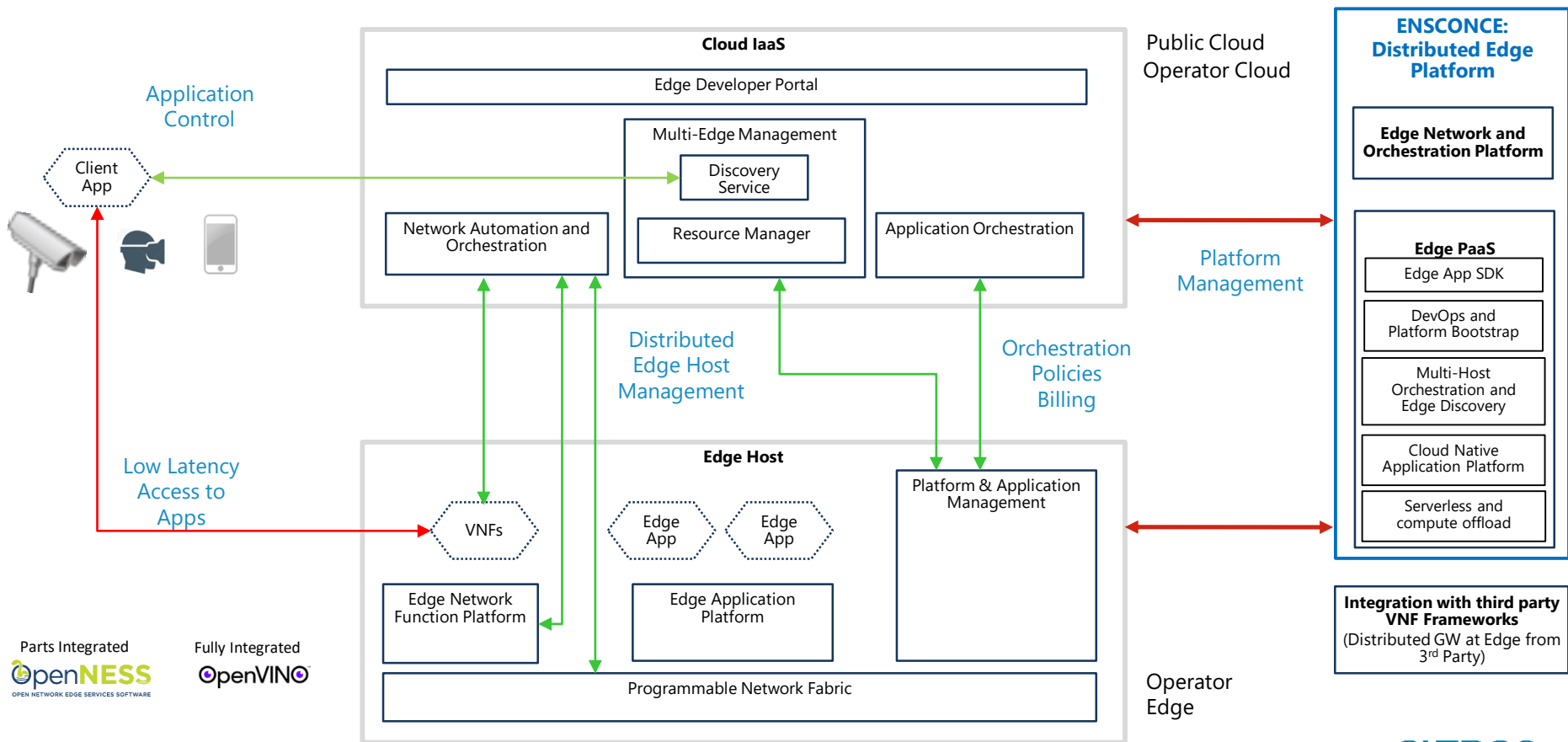
GSMA OPG defining the functionality of the Edge Operator platform including Inter-operator Federation.

ETSI MEC defines MEC architectures from infrastructure pov. GSMA OPG plans to collaborate with ETSI to contribute APIs to ETSI MEC

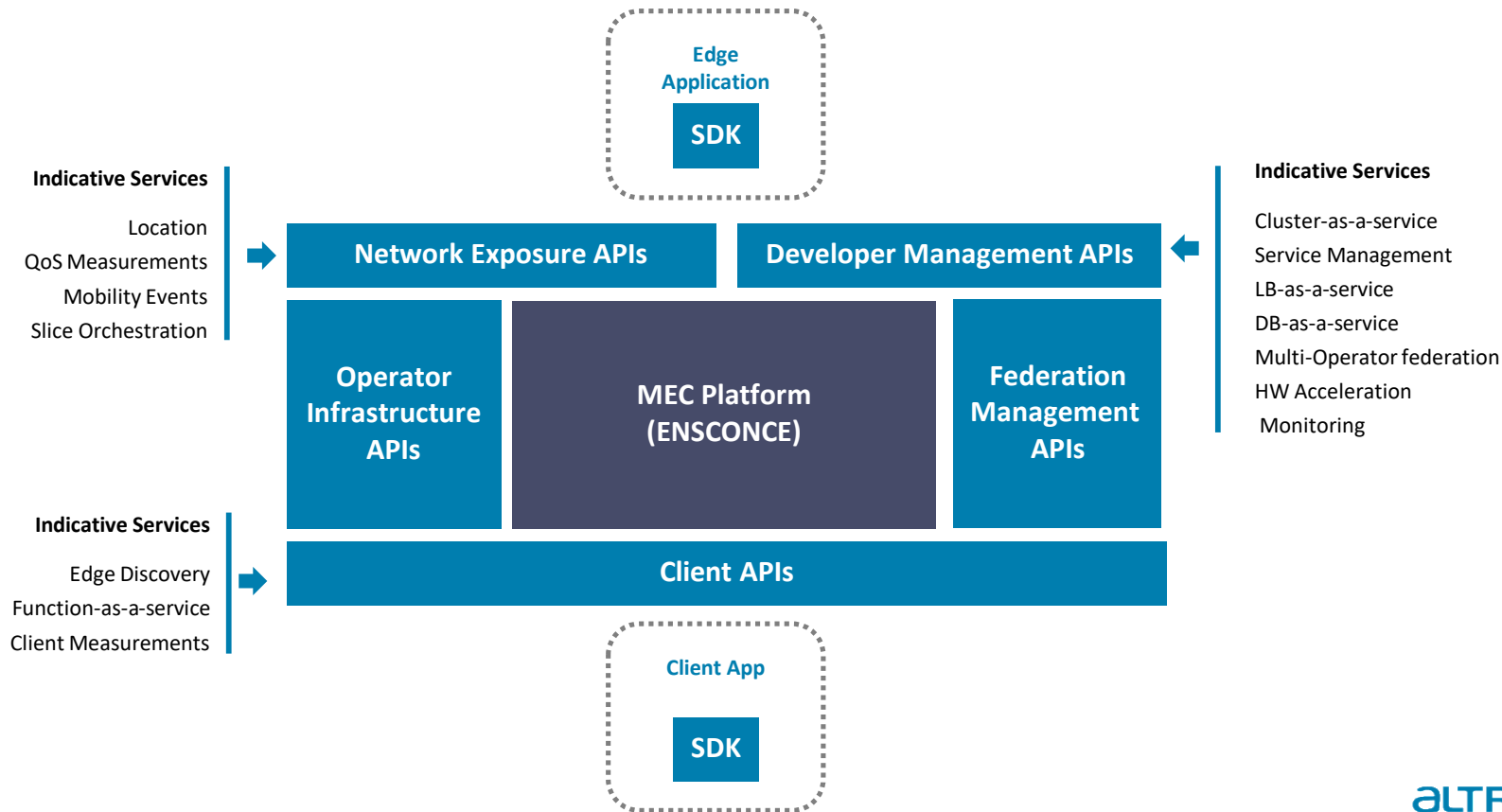
3GPP SA5 introduces Lifecycle management of edge apps. As of now Altran does not plan to adopt SA5 and instead go for cloud native LCM

Diagram Source: Altran co-authored Industry [whitepaper](#): Harmonizing Standards For Edge Computing, A Synergized Architecture Leveraging ETSI ISG MEC And 3GPP Specifications

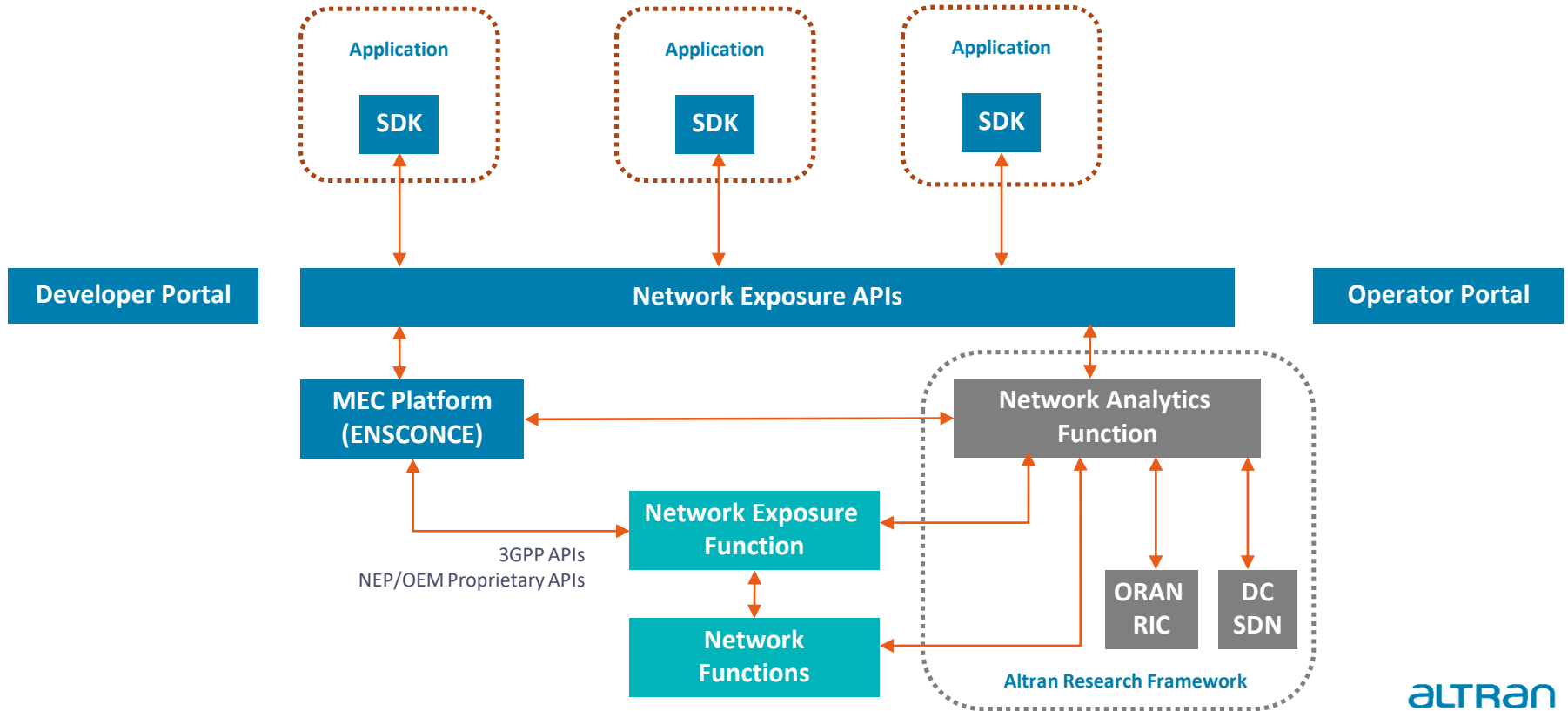
ALTRAN EDGE COMPUTE FRAMEWORK: REFERENCE ARCHITECTURE



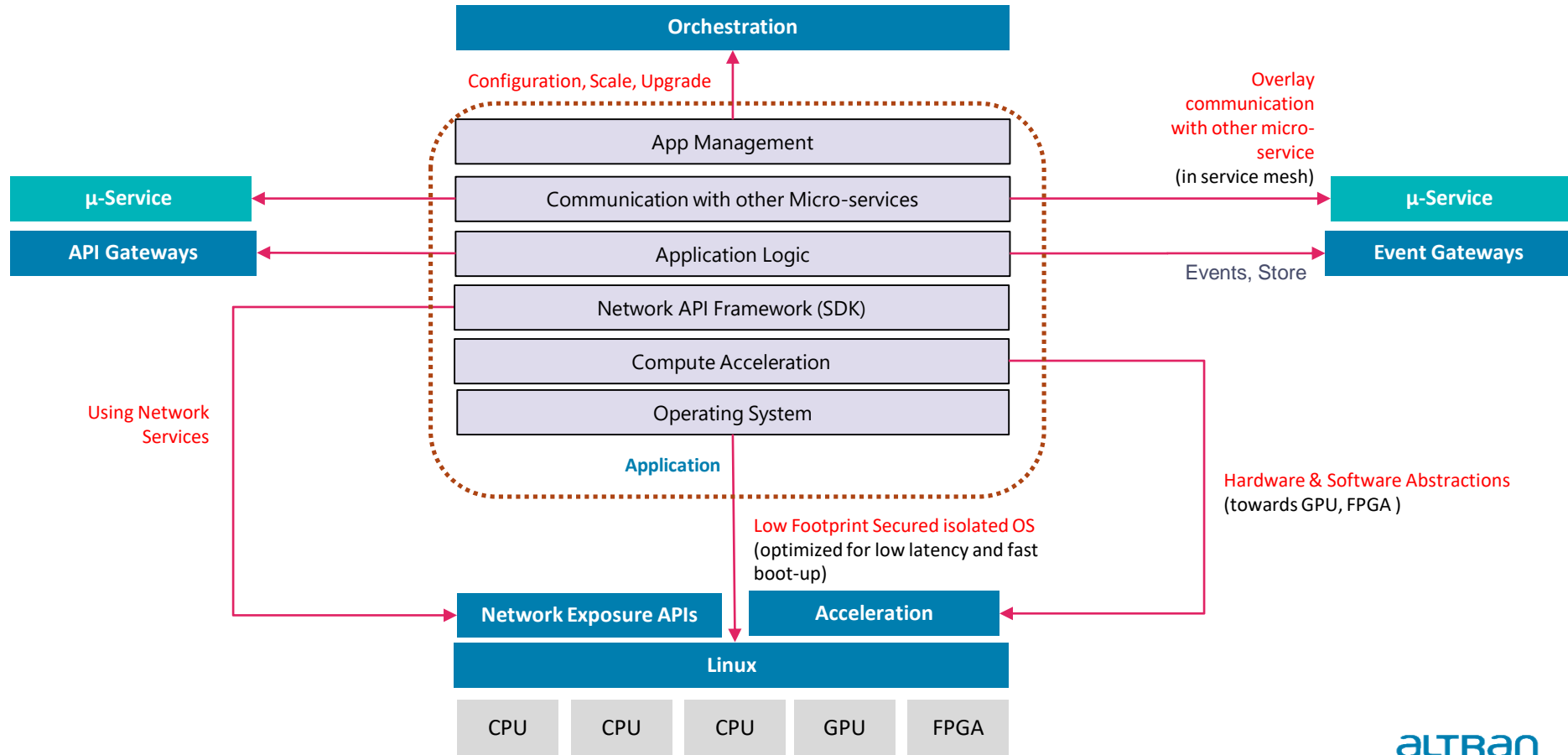
ENSCONCE: SERVICE MODEL



CONSUMPTION OF NETWORK SERVICES: NETWORK API MODEL



ANATOMY OF AN NETWORK MEC APPLICATION



WHAT WE ARE DOING

ALTRAN IN GSMA OPG

Altran is contributing to some of the key architectural models of the GSMA Operator Platform

- Operator Inter-connect and Federation Architectures
- Interfaces specifications (UNI, NBI, EWBI, SBI)
- Mobility Architectures including integrating cloud native architectures and 3GPP recommendations
- Roaming architectures and authentication models
- Resource Management of the Operator Platform

CLIENTS & PARTNERS

Telefonica

Telstra

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<https://www.gsma.com/futurenetworks/resources/5g-video-series-operator-platform-altran/>

5G Video Series: Operator Platform (Altran)

Tuesday 7 Apr 2020 | 5G | 5G Video Series | Operator Platform | Resources |

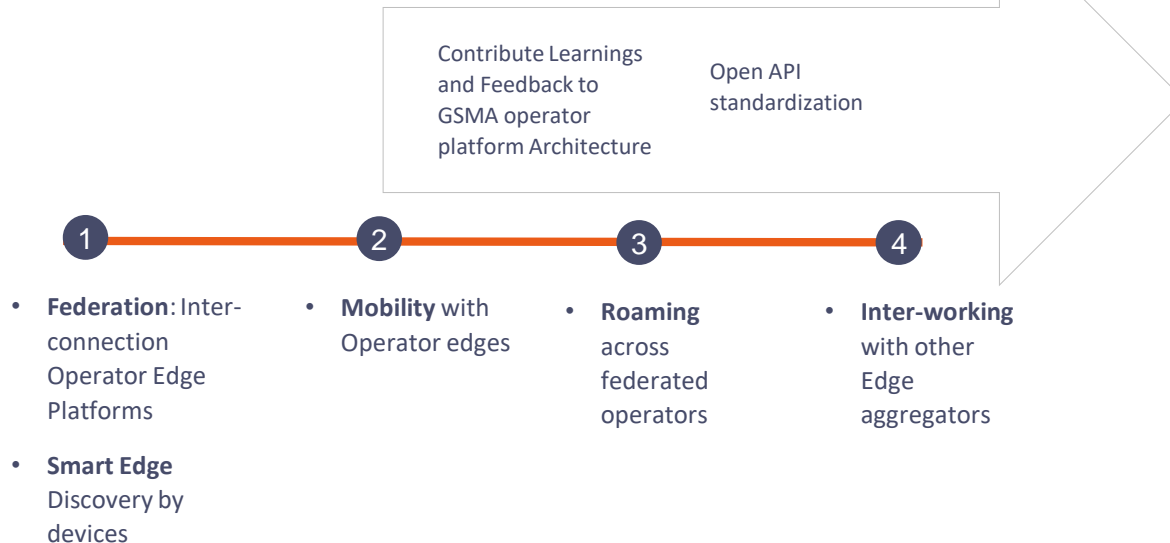


Edge Compute – In collaboration with Altran R&I

WHAT WE ARE DOING

GLOBAL FEDERATION OF MEC PLATFORMS BY OPERATORS

Altran Roadmap for the global Multi-Operator MEC Experience Project

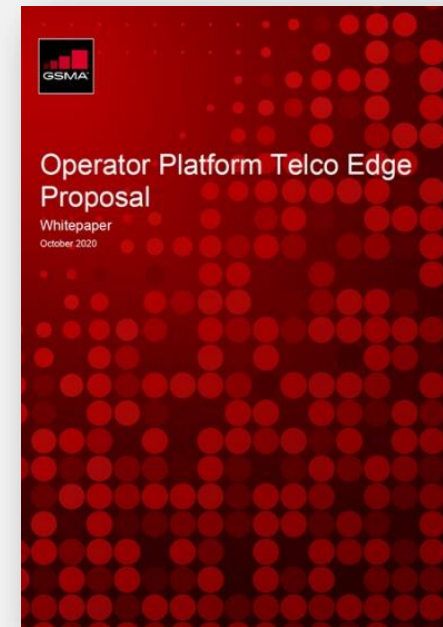


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GSMA and several Operators in collaboration with Edge Compute vendors have developed the Operator Platform Telco Edge Proposal containing Technical requirements, Functional Blocks and Interfaces

WHAT WE ARE DOING

WE ARE CREATING APPLIED EDGE FOR 5G ROAD SIDE UNITS

- Ruggedized complete 5G Enabled - Road Side Units for Smart Cities to monitor and manage traffic and connected vehicle use cases
- Solution with 5G Radio Connectivity, 5G Local Internet Offload with Multi-Camera Input
- Visual Compute applications i.e. Detectors for vehicle/pedestrian detection, Road segmentation, Vehicle Path Detection & extrapolation, C-V2X Collision Alerting to Vehicles / Pedestrian, Traffic Congestion Alerting
- The RSU Software Platform contains **ALTRAN ENSCONCE**, Intel OpenVINO, Intel Hardware accelerators (for visual processing)
- The RSU provides 5G Connectivity powered by **ALTRAN 5G gNodeB L2/3**, Altran **V2X stack** and Intel FlexRAN 5G L1/FPGA

PARTNERS



