CAMARA

THE TELCO GLOBAL API ALLIANCE

Presentation

21.12.2023

APIs enabling seamless access to Telco network capabilitites

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Telco network capabilities exposed through APIs provide a large benefit for customers. By simplifying telco network complexity with APIs and making the APIs available across telco networks and countries, CAMARA enables easy and seamless access.

5G network capabilities
Introduction

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Telco network capabilities are functions partly available already in 4G but new and much more powerful in the 5G network. These functions enable to get information out of the network but also to configure the network.

The on-demand, secure and controlled exposure of these capabilities pave the way for transforming operator networks into service enablement platforms, facilitating the application-to-network integration, which will be key to deliver enhanced and service-tailored customer experience in the 5G era.

5G network capabilities Introduction

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Reachability and Location of UEs
Identify (last known) location of drone

# of UEs in geographic region
Traffic jam or Corona warning

# of UEs in slice, network congestion
Adapt resolution for video transmission

Quality on Demand / Traffic influence
Enable augmented reality

Wake up UEs
Support low energy IoT devices

Block UEs in geographic region
Crisis management

What is the CAMARA Project?
Key problems we try to solve

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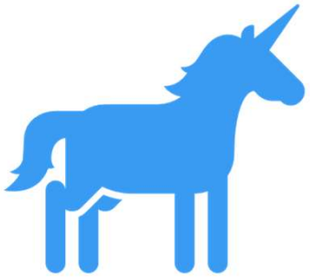

Scale

Developers dream of being the next unicorn… If apps, products, or services are built on our APIs they want them in all relevant markets and networks globally.

Consistency

Multi-nationals want consistency across all markets they operate in… they do not want APIs that only work in a single network in a single country. They do not want to try and build for the differences of each network.

Simplicity

Telco networks are complex, and every network is different…. Developers want simple, intent-based APIs.

Accessibility

We go to the developers where they are so the project is open sourced in the Linux Foundation. Allowing API users to work directly with CSPs creating the service.

Demand driven

We develop the APIs and design it in the way our customers need it. The demand is collected from organizations like GSMA OPAG but also from customers directly.

Abstraction API Architecture

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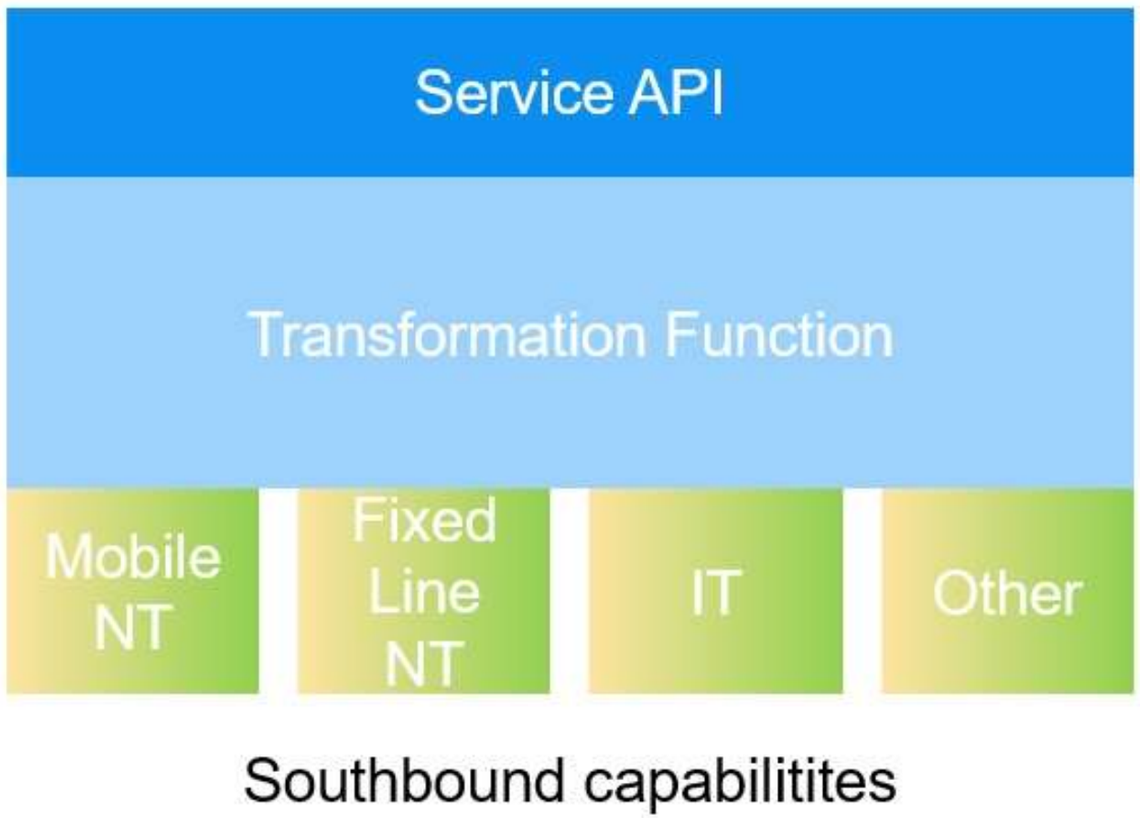
Abstraction from Network APIs to Service APIs is necessary:

- To simplify telco complexity making APIs easy to consume for customers with no telco expertise (user-friendly APIs)
- To satisfy data privacy and regulatory requirements
- To facilitate application to network integration



Abstraction API Distribution Options

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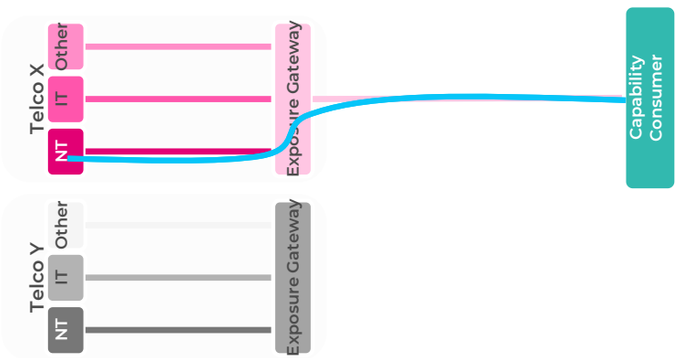
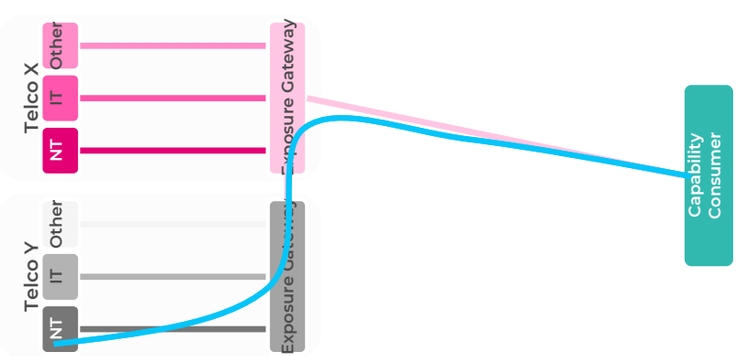
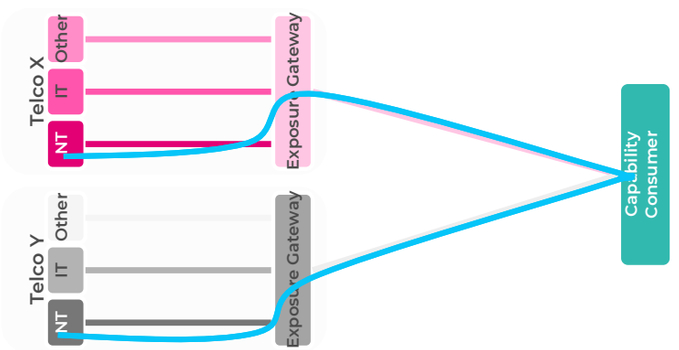
A. Single-Operator Relationship



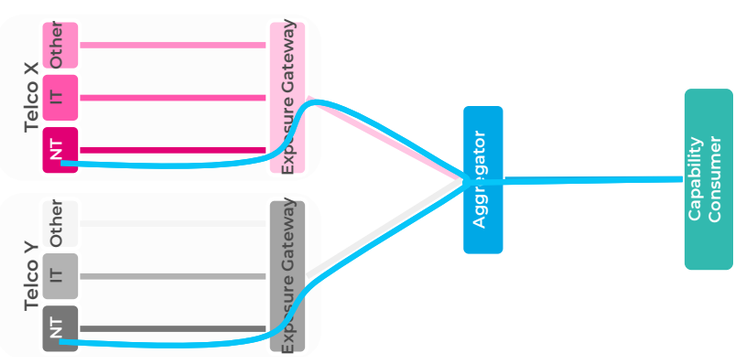
B. Single-Operator "API Roaming"



C. Multi-Operator Relationship



D. Operator Aggregation



Availability Benefit

Availability across telco networks and countries is necessary:

- To ensure seamless customer experience
- To accelerate technology development and commercial adoption (minimize implementation effort)
- To accelerate education and promotion
- To support application portability

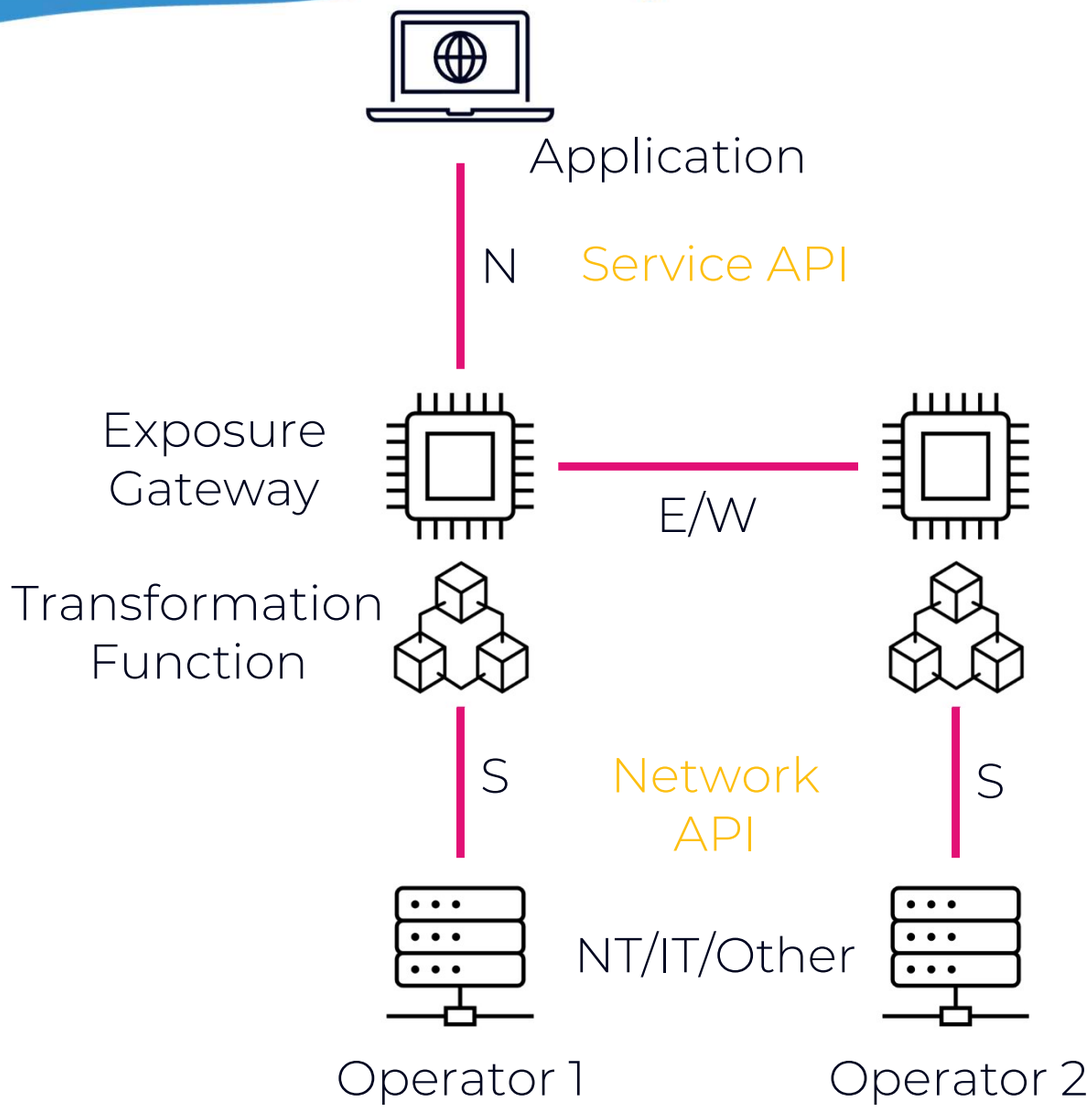
CAMARA Mission

CAMARA is an open source project within Linux Foundation to define, develop and test the APIs. CAMARA works in close collaboration with the GSMA Operator Platform Group to align API requirements and publish API definitions and APIs. Harmonization of APIs is achieved through fast and agile created working code with developer-friendly documentation. API definitions and reference implementations are free to use (Apache2.0 license).

CAMARA Scope

From functional perspective the scope is limited to **telco APIs**, that means APIs in the domain of telco mobile networks, telco fixed line networks, telco edge cloud, etc. or supporting these.

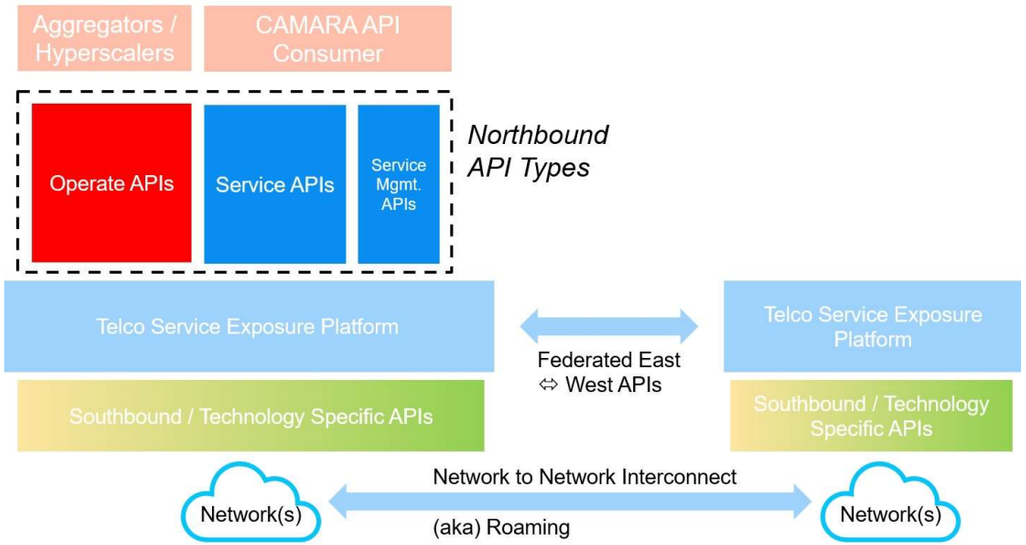
Thereby the focus is on the **northbound interface** (between telco operator and aggregator or capability consumer). East-/westbound interface APIs are out of scope for CAMARA.



CAMARA Scope

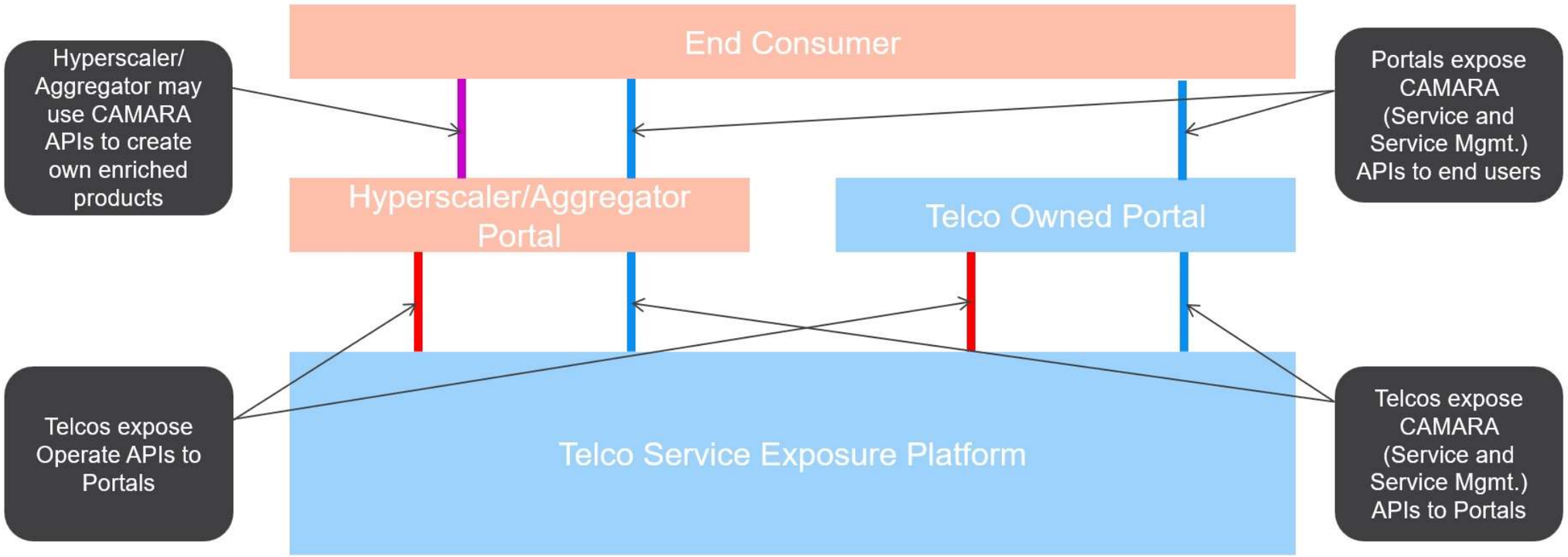
We differentiate between 3 types of Northbound APIs:

- **Service APIs:** APIs intended for end consumers and integrated by developers to invoke a certain telco capability.
- **Service Management APIs:** APIs intended for end consumers to manage or get data about offered Service APIs in application runtime, e.g., check service availability or performance information.
- Operate APIs: Operational and maintenance APIs provided by a telco to channel partners for the purpose of service fulfillment and assurance to their [channel partner] customers. This may include service provisioning for a mobile user, technical API performance monitoring, fault ticketing, information exchange such as product catalog, pricing, settlement, etc.



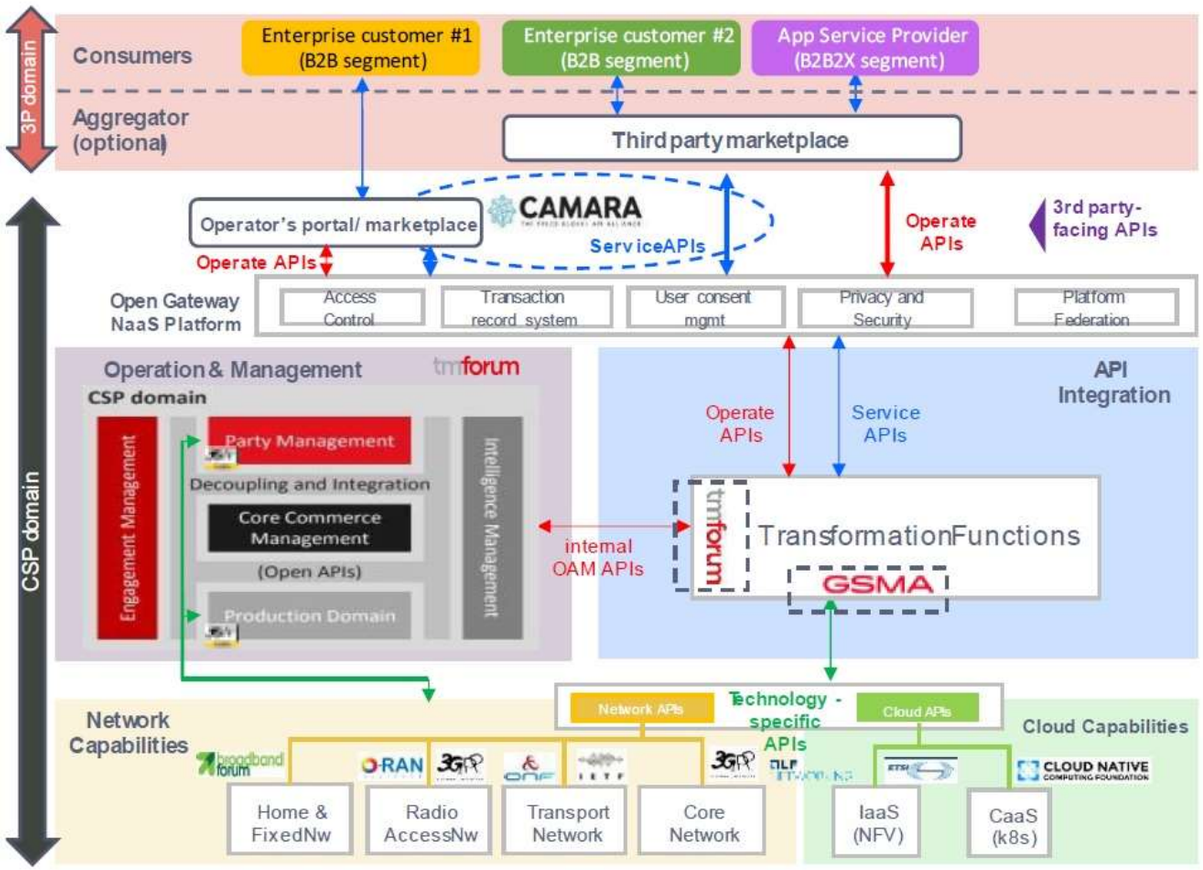
Service APIs and Service Management APIs are in scope of CAMARA. Operate APIs are out of scope of CAMARA (these are already covered by other SDOs = Standards Development Organizations like TM Forum).

CAMARA Scope



Hyperscalers and aggregators have the possibility to create own enriched products based on the CAMARA APIs and expose that in addition to the CAMARA APIs.

CAMARA Scope



CAMARA project defines CAMARA APIs.

TMForum develops the Operate APIs.

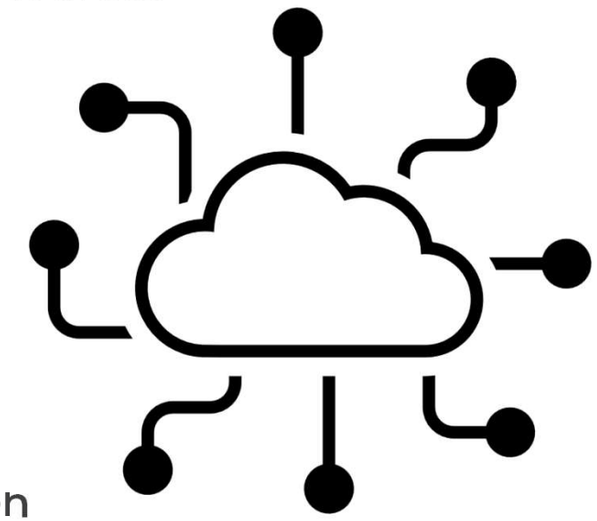
Several SDOs cover the different technology domains that provide the telco capabilities.

More details can be found in the whitepaper "The Ecosystem for Open Gateway NaaS API Development" (jointly published by GSMA, CAMARA, Linux Foundation and TMForum) available here.

CAMARA Scope

The scope of the CAMARA Project is:

- **Collect API requirements** from GSMA Operator Platform Group and other sources
- **Define Service APIs and Service Management APIs**
- Create test plans / cases / tools from an API consumer perspective
- **Develop and test Service APIs and Service Management APIs**
- Create developer friendly **documentation**



The following deliverables are provided by the CAMARA Project:

- **Service API and Service Management API definitions and documentation**
- Optionally Service API and Service Management API code and
- Test plans, cases and tools for the APIs all contained in deployment packages.

Project resources can be found in the **GitHub repository**: https://github.com/camaraproject.

CAMARA
Where we started...

CAMARA
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Launched at MWC Barcelona 2022

22 Launch Partners

Supported by GSMA and Linux Foundation

Simple idea to “standardize” developer facing APIs

CAMARA
… and where we are now

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- 87 Named Partners
- 267 (+172) companies participating in CAMARA
- 22 Active API development repos
- 130+ regular participants in Open Steering Calls
- 903 (+868) people joined CAMARA
- Development ”home” for GSMA Open Gateway

CAMARA Logos

CAMARA
API Showcases

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https://camaraproject.org/resources/











CAMARA - Collaboration with GSMA Open Gateway

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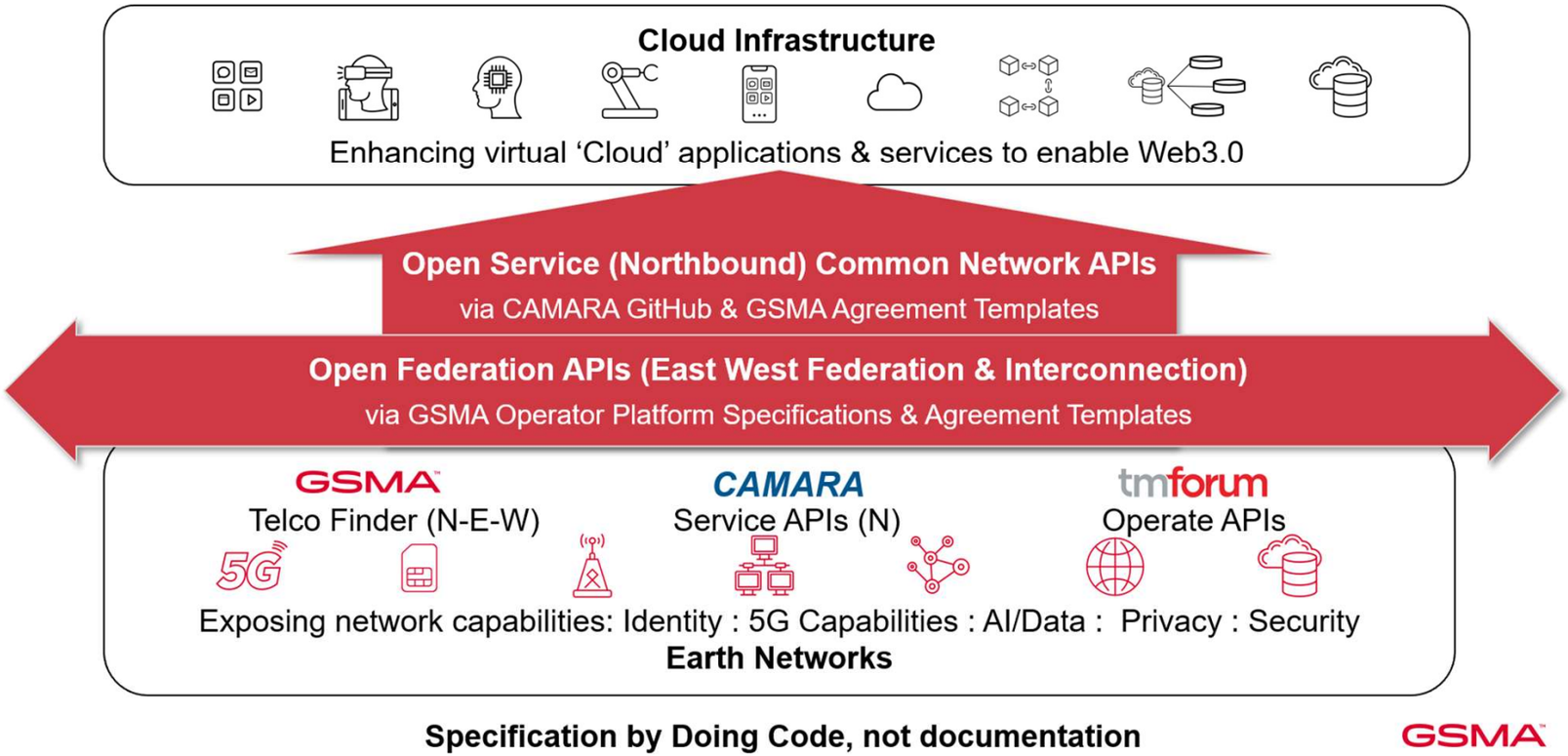
A common glue between Cloud Infrastructure and Earth Networks [1]



Specification by Doing Code, not documentation

GSMA

Current CAMARA API Families (1)

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Blockchain Public Address
Manage a blockchain public address associated to a phone number

Carrier Billing CheckOut
Purchase, pay, and follow up on fulfilment of products

Click to Dial
Establish web-based communication by clicking an object

Common-alities
Guidelines and assets mandatory for all CAMARA Sub Projects

Connectivity Insights
Alerts the consumers if and when the QoS threshold has breached

Device Identifier
Check the identity of the subscribers' device

Device Location
Check the location of a device

Device Status
Check the network connection and roaming status of a device

Device Swap
Check if the MSISDN has had a change of device in the last 30 days

Edge Cloud
Provide and manage network and compute resources for an application

Home Devices QoD
Request prioritization of traffic on a specific device on the home network

Identity and Consent Mgmt
Provides solutions to capture, store and manage user consent

Know Your Customer
Allows service providers to validate user information with operators

Number Verification
Allows users to verify the phone number of the connected device

OTP Validation
To offer secure user authentication to service providers

Population Density Data
Get dynamic population density data in a specific area for a future date & time

Quality on Demand
Allows users to set mobile connection quality and get notifications

Region User Count
Query the number of active users in the specified area

Current CAMARA API Families (2)

Short Message Service

Send SMS to the destination address(es)

Site to Cloud VPN

Create and configure site to cloud network service by one click

SIM Swap

Allows users to get information on SIM pairing changes

Web RTC

Add real-time communication capabilities to applications

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Where are we going next...

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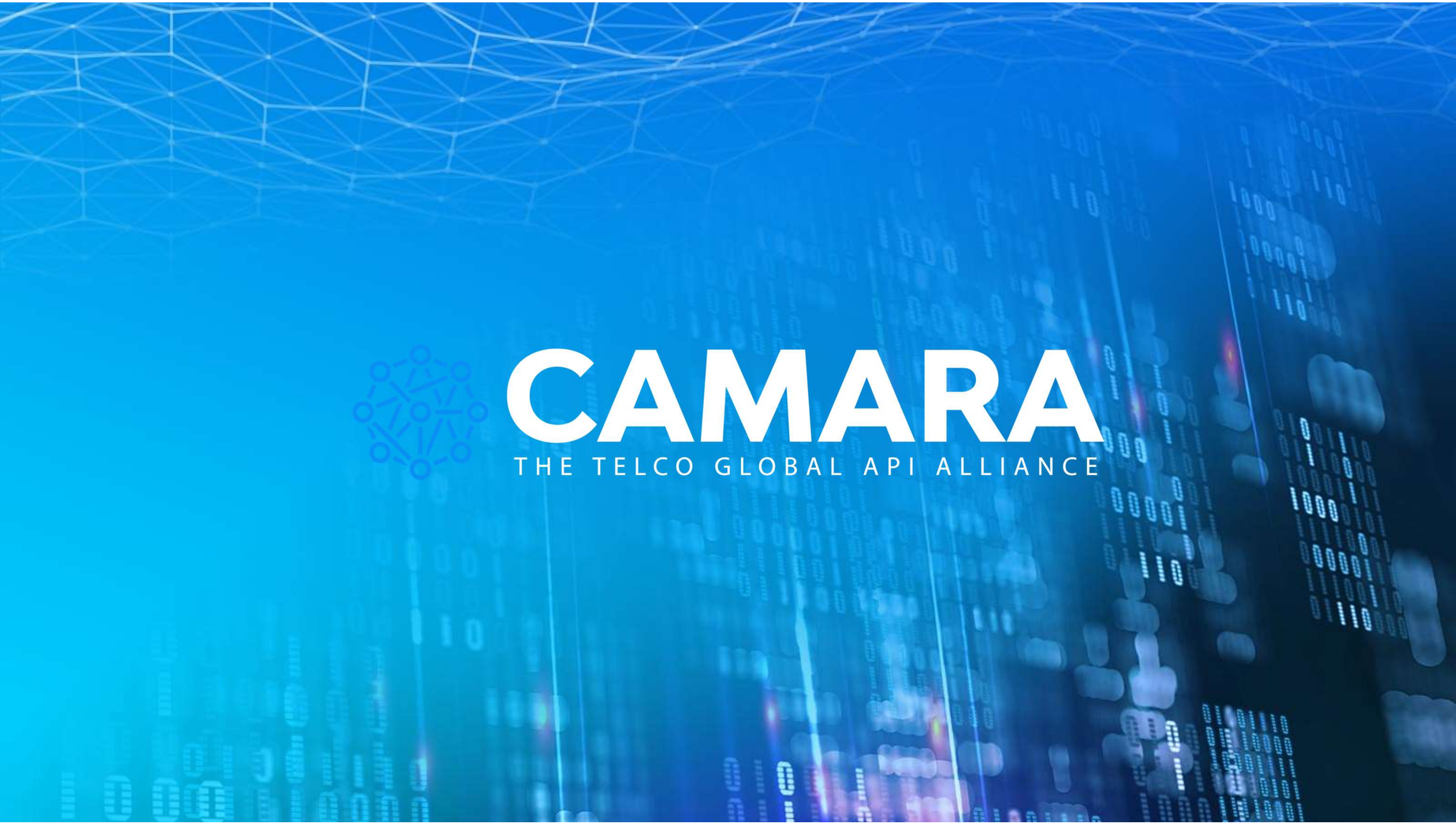
1	Additional APIs and roadmap sync across CSPs and Hyperscalers
2	Creation of Technical Steering Committee (TSC) and strengthening of project governance
3	API lifecycle management consistency Documentation of API versioning and availability globally
4	Ensuring federation through GSMA and OAM through TM Forum

CAMARA Contacts

Customers (enterprises and startups), aggregators, cloud operators, telco operators, and network equipment vendors are welcome to join CAMARA. Participation is free, without any fees or obligation to work.

If you are interested in joining CAMARA, please subscribe to all+subscribe@lists.camaraproject.org. You may unsubscribe from CAMARA and these communications at any time.

In case of further questions please don't hesitate to use our contact page at https://camaraproject.org/contact/.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