



CAMARA
THE TELCO GLOBAL API ALLIANCE

Presentation

22.02.2025

Content of the CAMARA presentation



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APIs enabling seamless access to
Telco network capabilities



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.

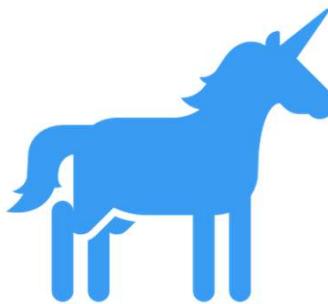


CAMARA Mission

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



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Scale

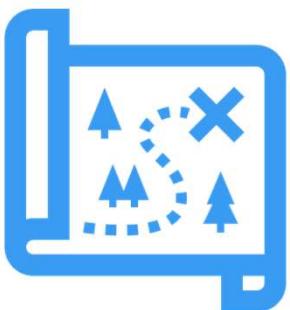
Developers dream of being the next unicorn...

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.

Key problems we try to solve

Consistency Benefit



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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

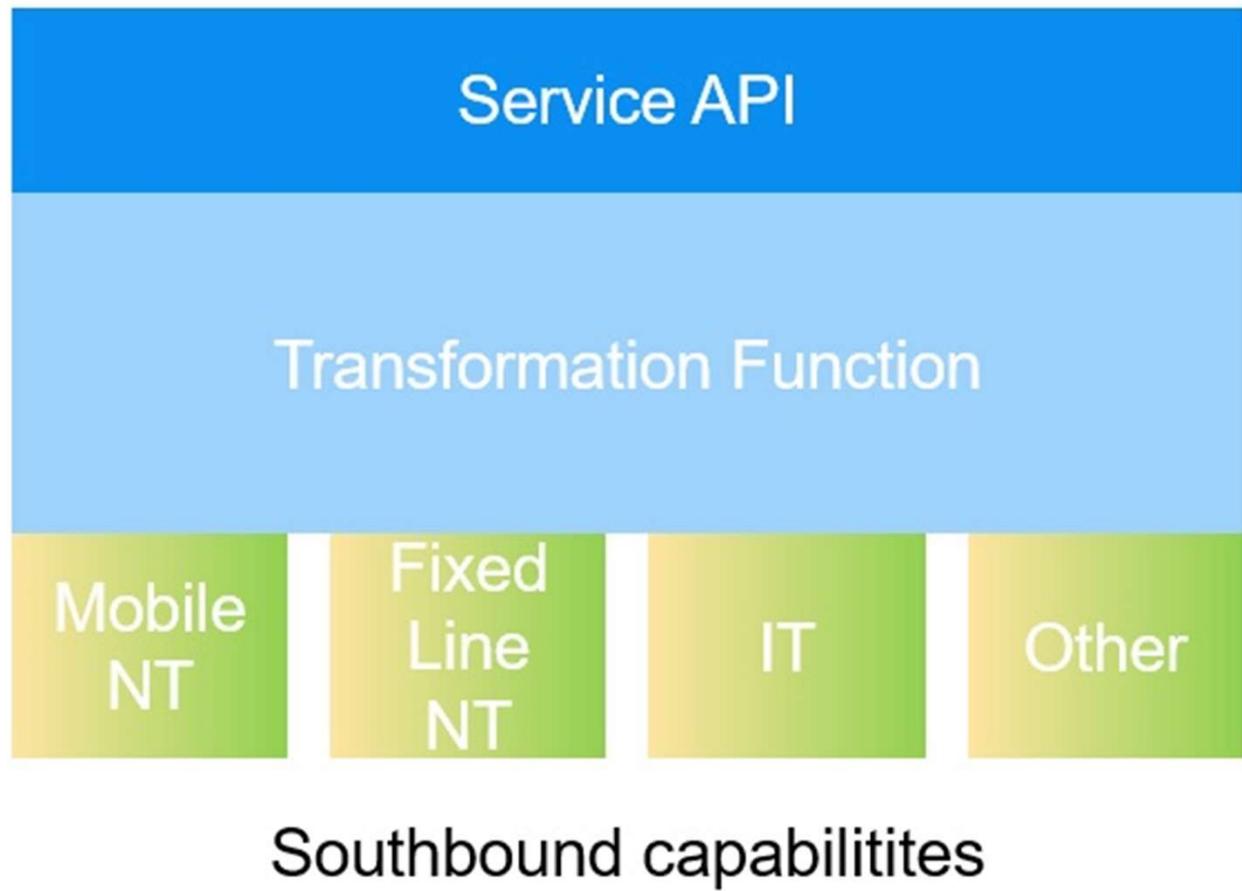
Key problems we try to solve

Simplicity Benefit



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



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).

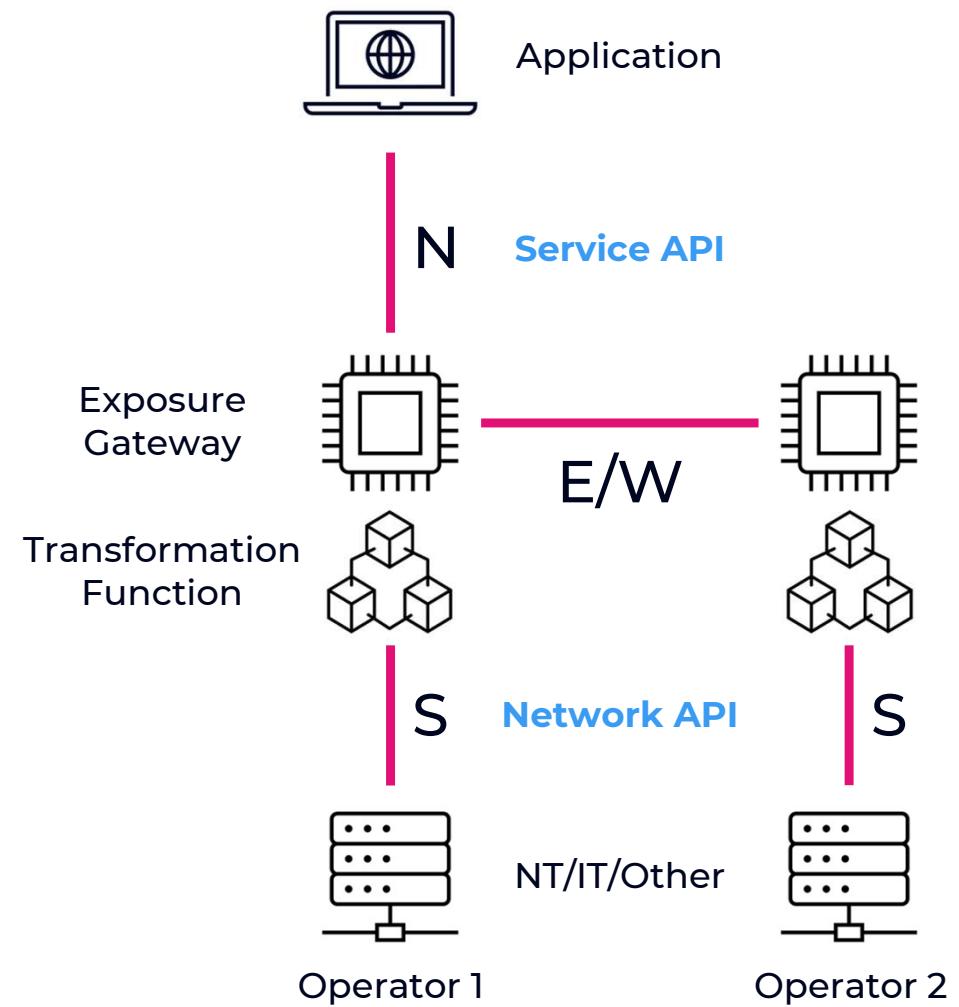


CAMARA Scope



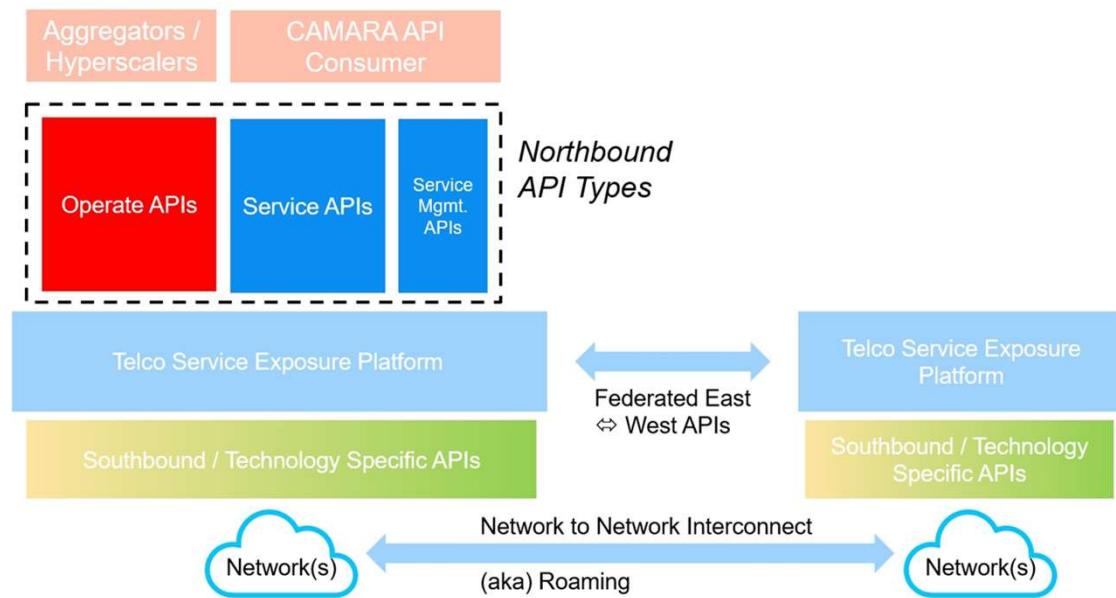
From functional perspective the scope is limited to **telco APIs**, that means APIs in the domain of telco mobile networks, telco fixed line networks, telco edge cloud, etc. or supporting these.

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.



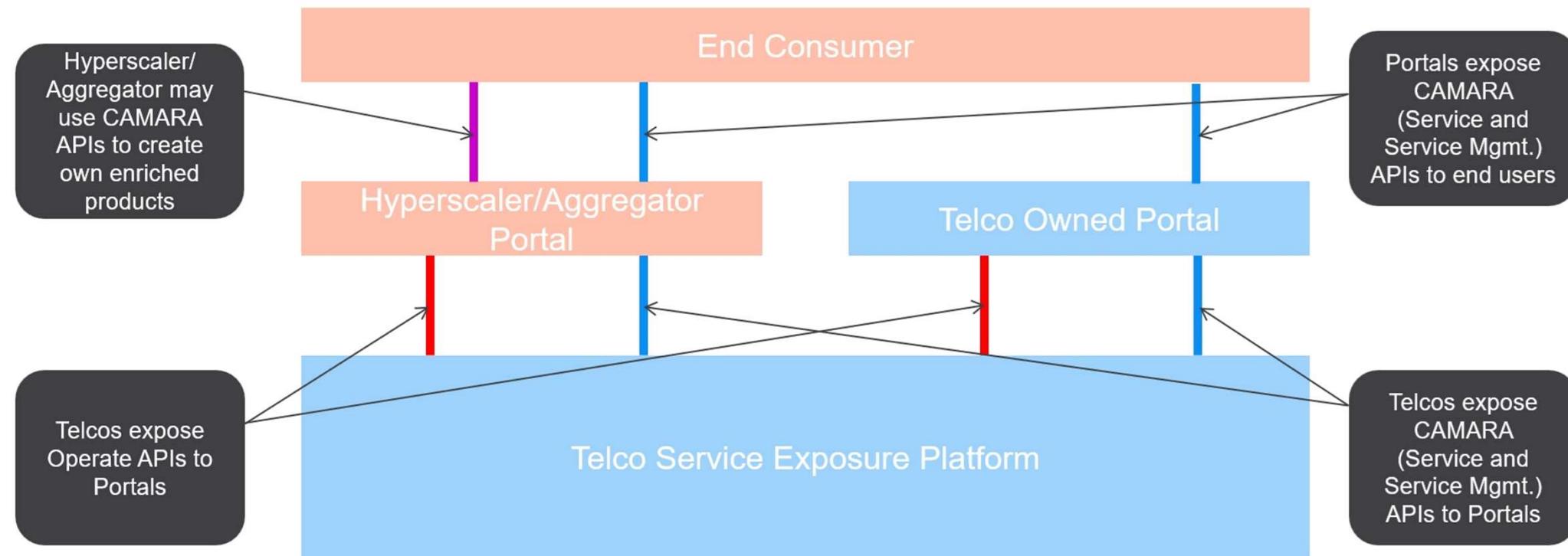
We differentiate between 3 types of Northbound APIs:

- **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 / Collaboration with Open Gateway and TM Forum

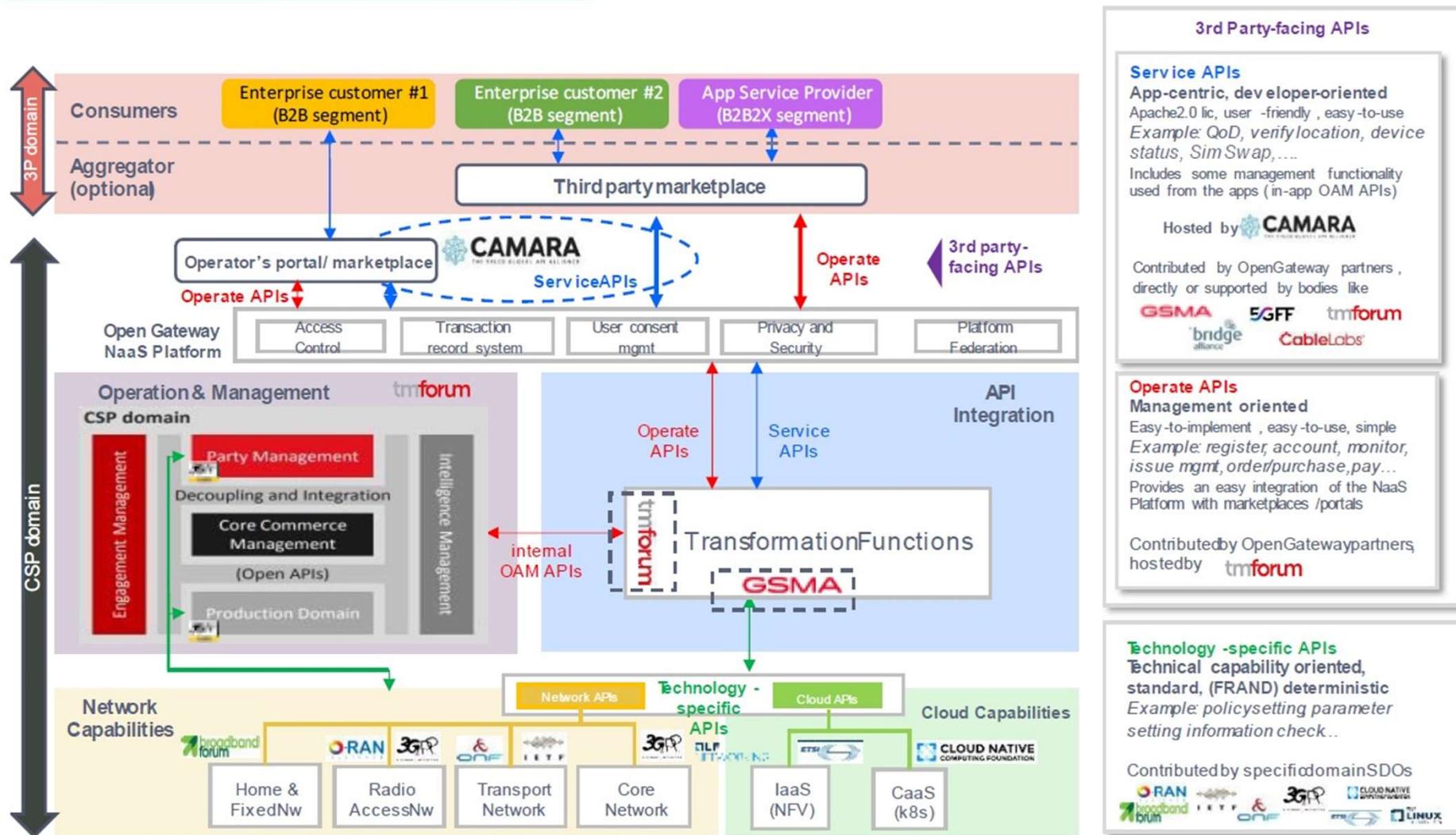


Hyperscalers and aggregators have the possibility to create own enriched products based on the CAMARA APIs and expose that in addition to the CAMARA APIs.

CAMARA – Scope / Collaboration with Open Gateway and TM Forum



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CAMARA project defines CAMARA APIs.

TMForum develops the Operate APIs.

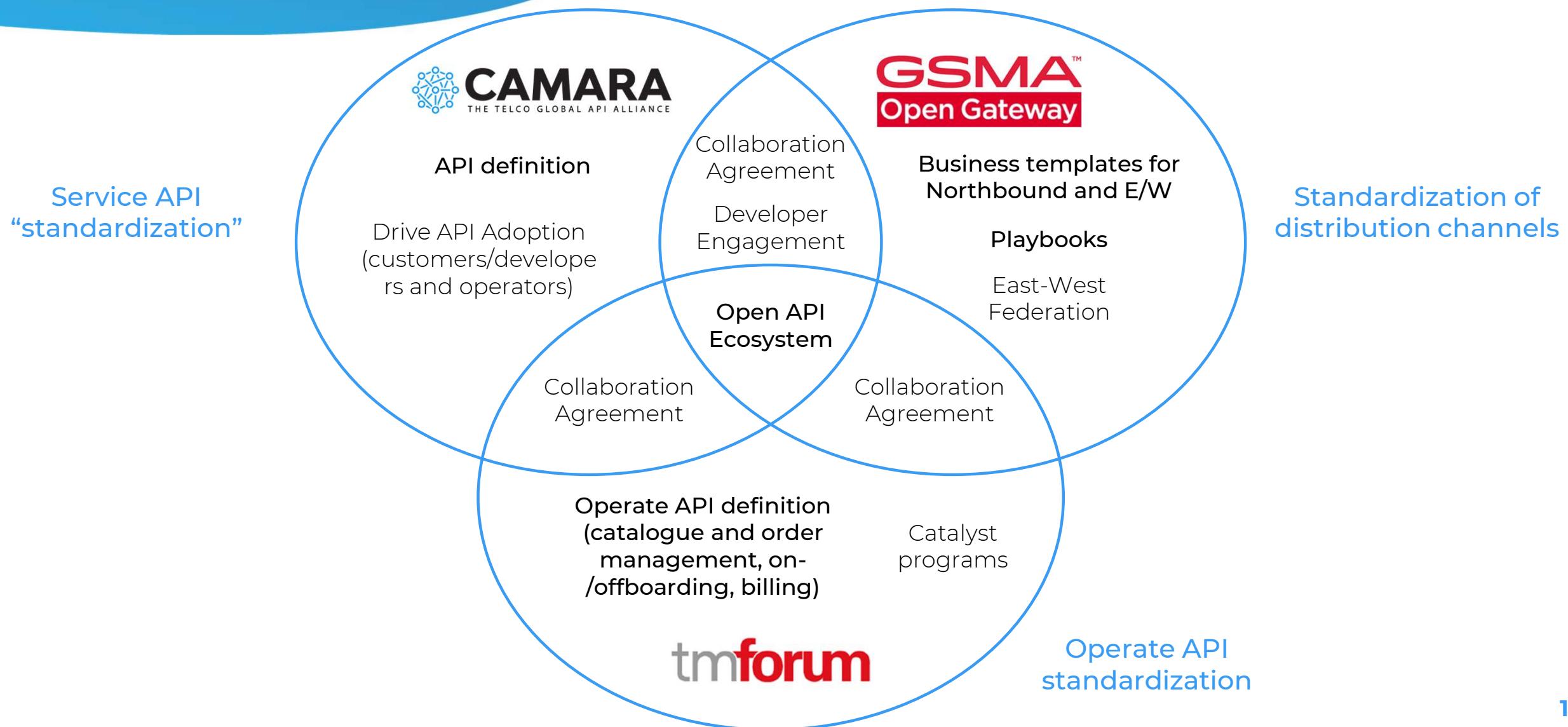
Several SDOs cover the different technology domains that provide the telco capabilities.

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 / Collaboration with Open Gateway and TM Forum



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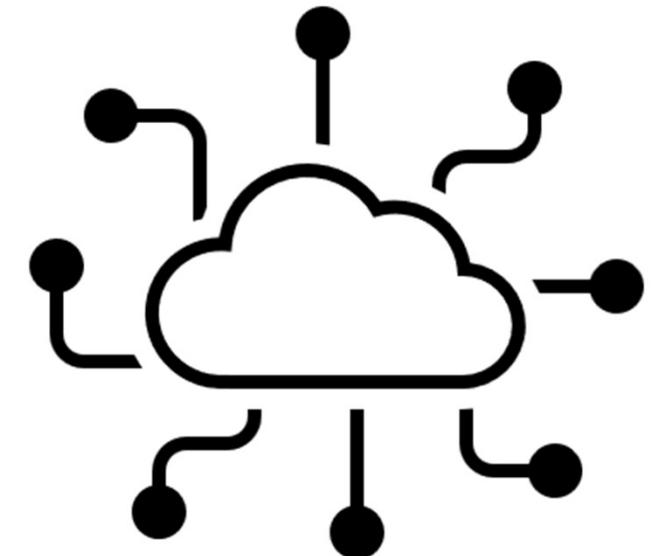
The scope of the CAMARA Project is:

- 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>.

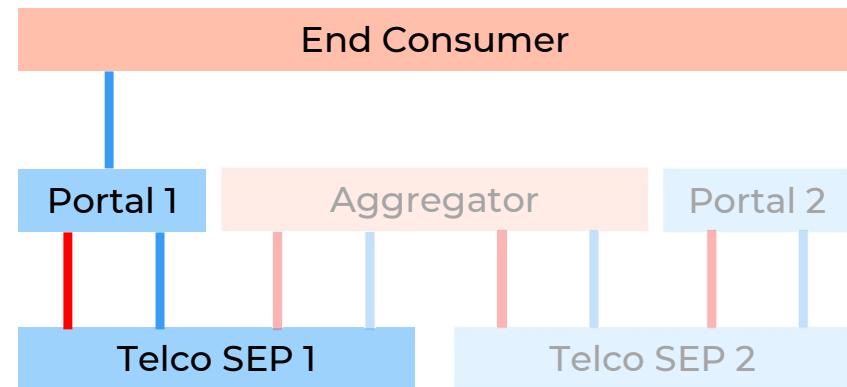


CAMARA API Distribution Options



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Single-Operator Relationship

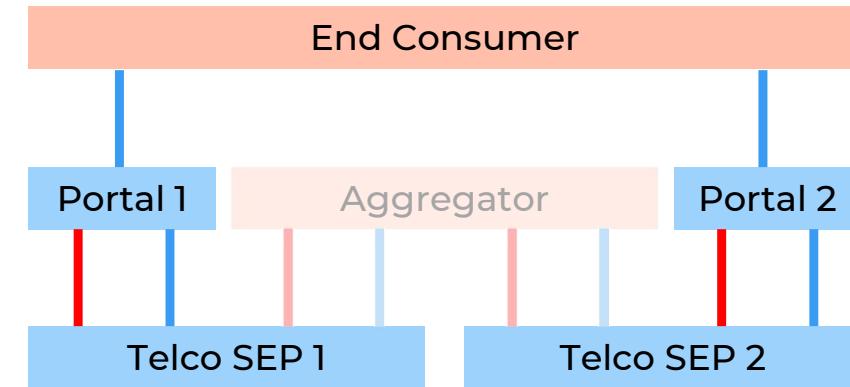


Blue lines =
CAMARA APIs

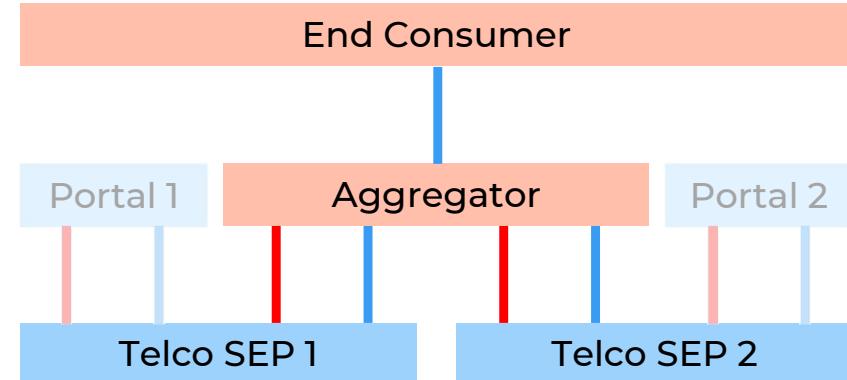
Red lines =
Operate APIs

SEP= Service
Exposure
Platform

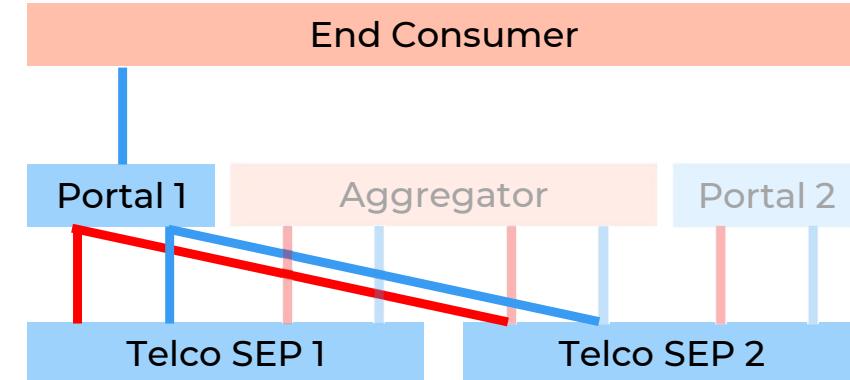
Multi-Operator Relationship



Operator Aggregation



Single-Operator “API Roaming”



What is different now in comparison
to former API exposure trials?



- **Simplicity** – Telco complexity is hidden behind simple, easy to use APIs
- **Demand driven** - Listening to customer's voice and demand
- **Availability** – Open APIs with great support of many operators on many platforms
- **Alignment** - With standardization bodies like TM Forum or ETSI-MEC
- **Sustainability** – We have the CEOs behind (e.g. Open Gateway MoU, API Venture)
- **Telco maturity** – Telcos are now more digital and cloud oriented
- **Privacy** – Well defined

CAMARA

Where we started...



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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| Members | Premier | General | | | | | | | | | | Associate Membership | | | | | | | | | |
|------------------------------------|------------------|--------------|----------------------|----------------|----------------------------|----------|---------------|----------|----------------------------|------------|-------------|----------------------|------------|-----------------|----------------|-----------------|--------------|--------------|-----------|----------|------|
| | accenture | T-Mobile | ERICSSON | Microsoft | NOKIA | orange | T-Mobile | vivo | verizon | ALEPH ZERO | CableLabs | CENTILLION | Charter | INDY | invia | SCENERA | OpenID | | | | |
| Participating Organizations | | | | | | | | | | | | | | | | | | | | | |
| China Unicom | INCE | A1 | ACL | .akross | AMANTYA | a·amdocs | apis training | ARGELA | AT&T | aws | axiata | Axiata Digital Labs | BCTI | BearingPoint | airtel | bridge alliance | BT Group | broadpeak | Cognimini | Chenosis | 中国电信 |
| Chinnox | cisco | CH | cloudoniX | CodeB | cognizant | Colony | comviva | CPaaSAA | csl. | CTHINGS CO | DATAcurve | DETECON | domos | DriveU.auto | EANTE+ | EdgeX | e2i | ETIYA | EVIDEN | | |
| Fujitsu | GAPASK | Google Cloud | GSMA | HCL Software | Hewlett Packard Enterprise | HKT | HUAWEI | IBM | IEEE 5G Innovation Testbed | infobip | INFO LYSIS | Infosys | intel. | IPification | equal networks | Italtel | IP PLATFORMS | KDDI | kt | | |
| LATENCETECH | Lenovo | LG U+ | THE LINUX FOUNDATION | LOTUSFLARE | lytn | M | MATRIXX | MAVENIR | MICROKS | MIQUEST | abstracto | NEARLY COMPUTING | Netcracker | N | NGMN | NOS | NTT DATA | | | | |
| Open Sesame | optare resources | Optiva | ORACLE | VIRTUAL 5G LAB | plusmo | PRYVX | quobis: | Radisys | Red Hat | REPLAY | sic | SEKURA | Simpli | sinch | SK Telecom | SPRY FOX | starHub | startellogic | | | |
| stechs | SUMMIT | swisscom | syniverse | tcs | TATA ELXSI | TELUS | TIM | TruSense | UNRYO | VIRTUS | wray castle | White Cloud | xacria | XSECURITY PULSE | XFLOW RESEARCH | ZTE | | | | | |

- 143 Named Partners
- 423 (+525*) companies participating in CAMARA
- 11 API family Sub Projects
21 Sandbox Projects
59 APIs
5 Working Groups
- 1255 (+2197*) people joined CAMARA
- Development "home" for GSMA Open Gateway

* Number in brackets indicates companies and people who are in contact but haven't joined

CAMARA Logos



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| Members | Premier | General | | | | | | | | | | | | Associate Membership | | | | | | |
|-----------------------------|--------------|------------------|-------------|----------------------|----------------|--------------|----------------------------|---------|------------|-----------|-------------------------------|------------------------|--------------------|----------------------|----------------|-----------------|----------------|-------------------|-------------|--------|
| | accenture | ERICSSON | Microsoft | NOKIA | orange™ | T Mobile | Telstra vivo | verizon | ALEPH ZERO | CableLabs | 3DE CENTILLION | Charter COMMUNICATIONS | INDY KITE | invia | SCENERA | OpenID' | | | | |
| | vodafone | | | | | | | | shabodi | | | | | | | | | | | |
| Participating Organizations | | | | | | | | | | | | | | | | | | | | |
| | INCE | A1 | ACL Digital | akross | AMANTYA | B-amdocs | apis training | ARGELA | AT&T | aws | axiata | AXIATA DIGITAL LABS | BCTI | BearingPoint. | airtel | bridge alliance | BT Group | broadpeak | | |
| | China unicom | CINNOX | cisco | BCH | cloudoni | CodeB | cognizant | Colony | comviva | CPaaS | csl. | CTHINGS CO. | DETECON CONSULTING | DOMOS | DriveU.auto | EANTC | EdgeXR | e& | ETIYA | EVIDEN |
| | f5 | FUJITSU | GAPASK | Google Cloud | GSMA | HCL Software | Hewlett Packard Enterprise | HKT | HUAWEI | IBM | IEEE 5G/6G Innovation Testbed | infobip | INFO LYSIS | intel | IP IPification | tquall Networks | Jio PLATFORMS | KDDI | kt | |
| | LATENTECH | Lenovo | LG U+ | THE LINUX FOUNDATION | LOTUSFLARE | lytn | M | M | MATRIXX | MAVENIR | MICROCKS | nabstraction | NEARBY COMPUTING | Netcracker | N | NGMN | NOS | NTT Data | | |
| | Open Sesame | optare solutions | Optiva | ORACLE | VIRTUAL 5G LAB | plusmo | PRYVX | quobis | Radisys | Red Hat | REPLAY | STC | SEKURA | Simpel | sinch | Singtel | SK telecom | SPRY FOX NETWORKS | startelogic | |
| | stechs | SUMMIT | swisscom | syniverse | tcs | TATA ELXSI | T | TELUS | ETIM | TruSense™ | UNRYO | VIRTUS | wray castle | Whale Cloud | xacria | XSECURITYPULSE | XFLOW RESEARCH | ZTE | | |

Release Management Motivation and Benefits



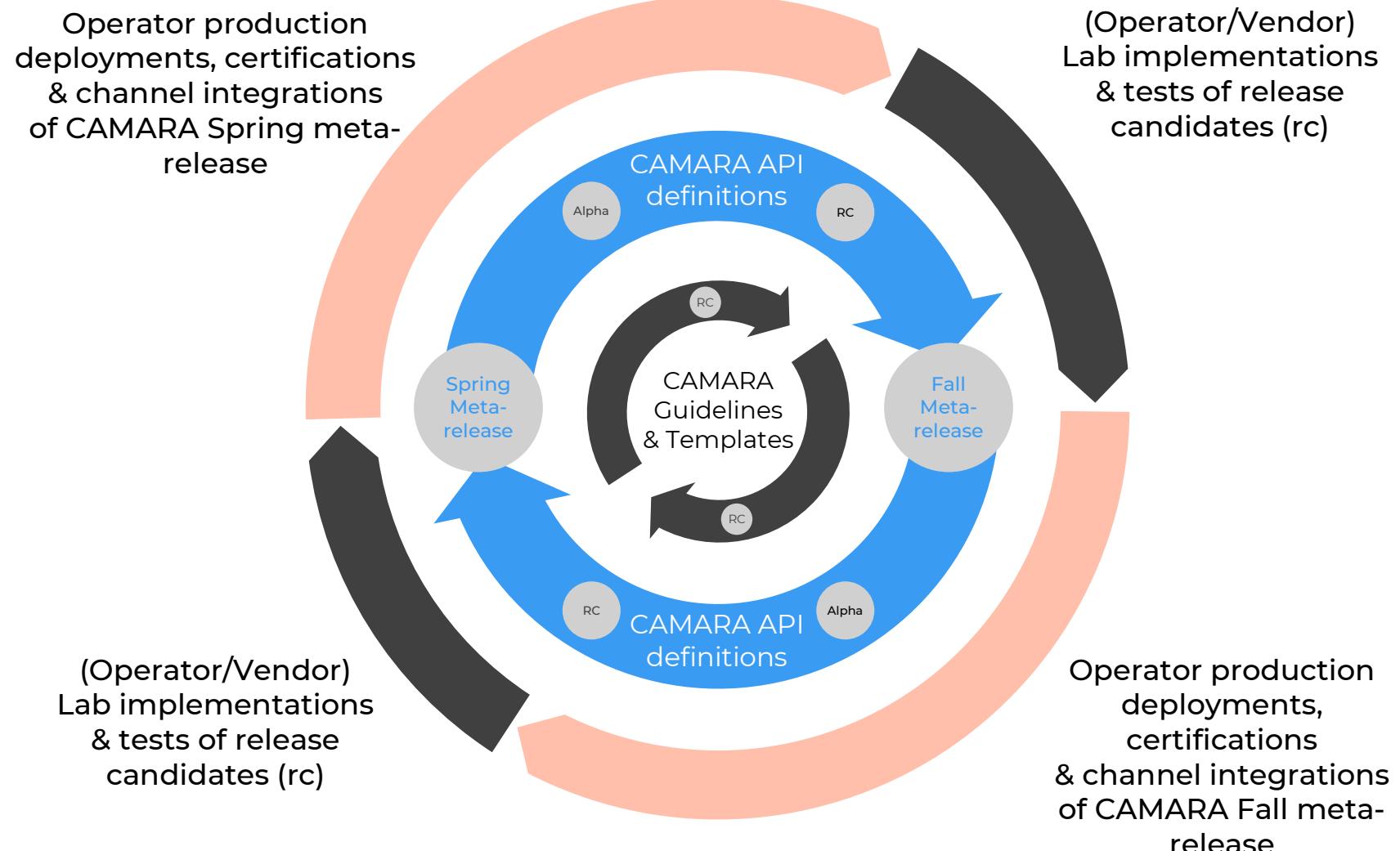
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- A **CAMARA meta-release** combines a set of CAMARA API versions into a **consistent** release.
- There will be **two meta-releases per year** (in spring and fall).
 - Network operator can plan their implementations and deployments in production.
 - API consumers can plan the integration in their platform and applications.
- All API versions in a meta-release **fulfill defined quality criteria** and are **compliant to current CAMARA guidelines** like from CAMARA Commonalities and Identity and Consent Management.
- **CAMARA meta-releases** ensure the
 - Availability of consistent API definitions (by use of guidelines, templates, and linting),
 - Quality of API definitions (by use of checklists, test definitions, and release management),
 - Stability of API definitions (clear criteria for stable versus initial API versions) and
 - Reliability of schedule and deliverables (with defined milestones and release candidates).
- **CAMARA meta-releases** provide the foundation for API version management in production.

Release Management Release Cycle



- 2 releases each year
 - Fall (in September)
 - Spring (in March)
- Continuous and overlapping cycles
 - Update of CAMARA guidelines
 - Development and updates of API definitions in CAMARA
 - Lab implementations and production deployments at network operators
- Tests of API release candidates
 - Within operator (lab) implementations
 - Based on CAMARA test definitions
- Feedback in all phases
 - From (lab) implementations and deployments to CAMARA API definitions and guidelines
 - From API definition work to CAMARA guidelines



For details see: <https://wiki.camaraproject.org/display/CAM/Meta-release+Process>

Stable and Initial APIs



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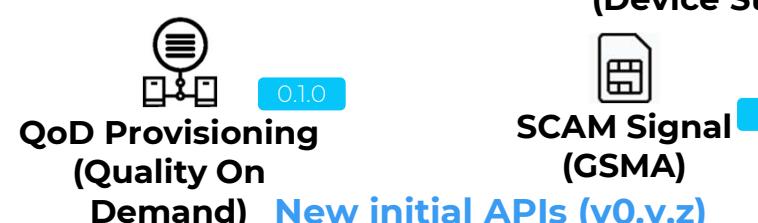
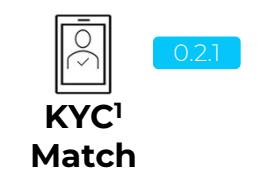
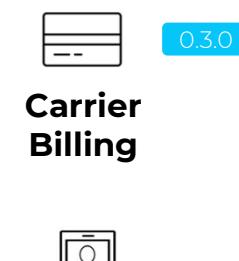
Stable CAMARA APIs (v1.0.0)

Previous versions launched in at least one market¹



Updated initial CAMARA APIs (v0.y.z)

Previous versions launched in at least one market¹



Stable and Initial APIs



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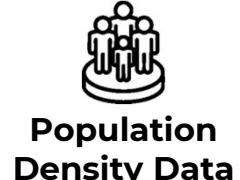
Stable CAMARA APIs (v1.0.0)

Previous versions launched in at least one market¹



Updated initial CAMARA APIs (v0.y.z)

Previous versions launched in at least one market¹



Upcoming APIs



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Upcoming APIs

Work in progress or newly started

| | | | | | | | | |
|--|---|--|------------------------------------|---|---|----------------------------------|---|---|
| | | | | | | | | |
| Application Endpoint Discovery (Edge Cloud) | Blockchain Public Address | Capability And Runtime Restrictions | Click To Dial | Connected Network Type (Device Status) | Connected Network Type Subscriptions (Device Status) | Customer Insights | Device Data Volume (Device Status) | Device Data Volume Subscriptions (Device Status) |
| | | | | | | | | |
| Device Identifier | Device Quality Indicator (Device Status) | Device Swap | Device Visit Location | Edge Application Management (Edge Cloud) | Energy Footprint Notification | KYC¹ Age Verification | KYC¹ Tenure | |
| | | | | | | | | |
| Most Frequent Location | Network Access Management (Home Devices QoD) | Network Slice Booking | Number Recycling (KYC¹) | QoS Booking (Quality on Demand) | Region Device Count | Site to Cloud VPN | SMS | |
| | | | | | | | | |
| SMS Delivery Notification Subscription | Subscription Status (KYC¹) | Traffic Influence (Edge Cloud) | Verified Caller | WebRTC Call Handling | WebRTC Event Subscription | WebRTC Registration | | |

Current CAMARA Sub Projects / Sandbox Projects



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| | | | | | |
|---|---|---|---|---|---|
| Blockchain Public Address Manage a blockchain public address associated to a phone number | Call Forwarding Signal Determine if a “call forwarding” service is enabled | Capabilities And Runtime Restrictions Provide capabilities and runtime restrictions | Carrier Billing CheckOut Purchase, pay, and follow up on fulfilment of products | Click to Dial Establish web-based communication by clicking an object | Connectivity Insights Alerts the consumers if and when the QoS threshold has breached |
| Customer Insights Provides an index or scoring related to the user's credit profile | Dedicated Networks Requests / modifies / deletes a (logical) dedicated network | 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 | Energy Footprint Notification Provide information about the E2E energy consumption and carbon footprint | High Throughput Elastic Netw. Calculates load-balancing paths with given duration, data and bandwidth | Home Devices QoD Request prioritization of traffic on a specific device on the home network | Know Your Customer Allows service providers to validate user information with operators | Location Insights Give insights to the home area and latest location of a device |

Current CAMARA Sub Projects / Sandbox Projects



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CAMARA Working Groups

Model as a Service

Build, deploy, monitor, and invoke LLM

Network Slice Booking

Reserve, dynamically provision, query, dynamically delete a slice

API Backlog

Maintains the API Backlog for CAMARA

Commonalities

Guidelines and assets mandatory for all CAMARA Sub Projects

Identity and Consent Management

Provides solutions to capture, store and manage user consent

Number Verification

Allows users to verify the phone number of the connected device

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

Marketing / Outreach

Plans and performs marketing activities for CAMARA

Release Management

Guidelines and assets for Release Management in CAMARA

Region Device Count

Query the number of active devices in the specified area

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

Verified Caller

Show certified information on the phone before a call is answered

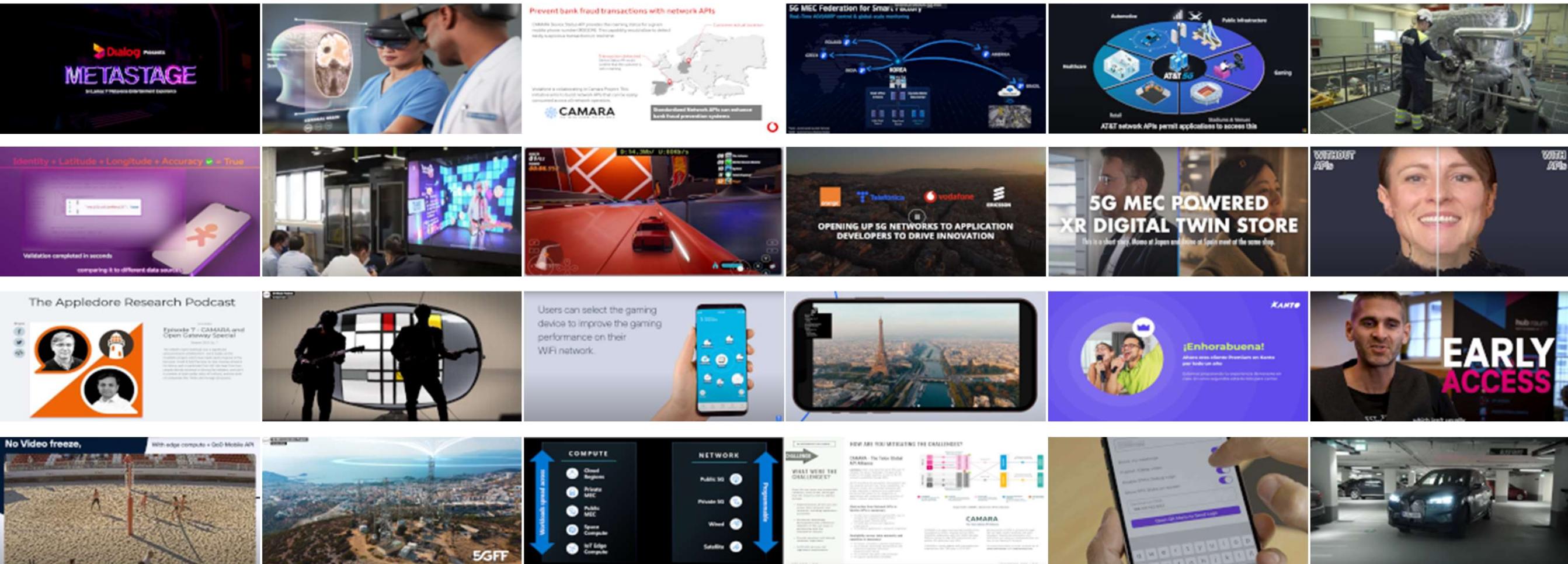
WebRTC

Add real-time communication capabilities to applications

CAMARA / Open Gateway API Showcases

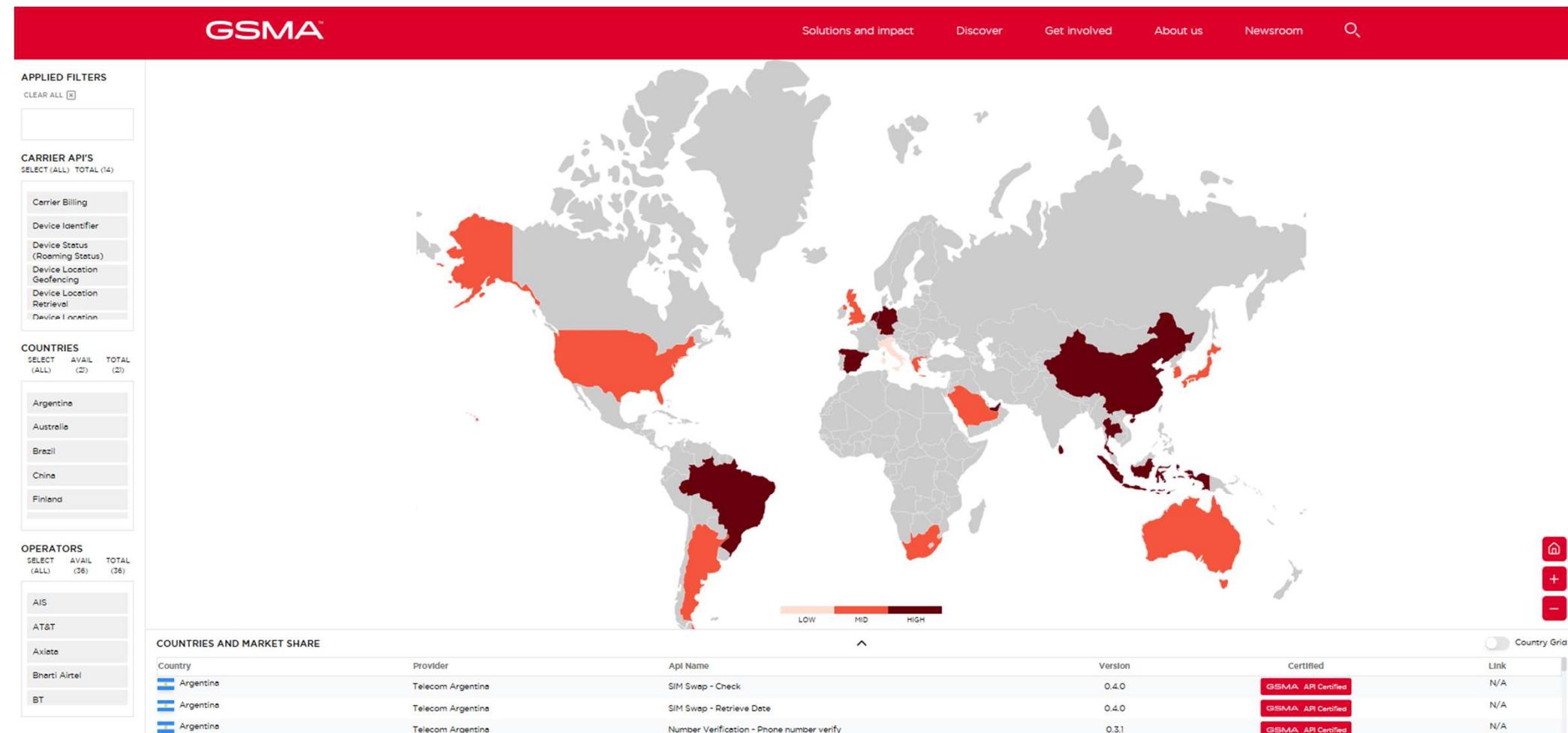


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<https://camaraproject.org/resources/>

CAMARA / Open Gateway API public launch status



<https://open-gateway.gsma.com/>

CAMARA / Open Gateway API public launch status



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Commitment

99

69 operator groups and **30** Channel Partners supporting the Open Gateway MOU

280

operator networks represented

>75%

of mobile connections represented

Assets

37

APIs published in
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54 APIs in Development

Technical

Standardization through certification
Certified APIs

Commercial

Open Service Agreement, Channel Partner On-Boarding and E-W Federation Agreement Templates

Impact

189

Tracked commercial API launches across **58** networks in **27** markets

11

market champion launches with align GTM services, engaged with **28** Markets

>22,973

media mentions in 2024,
8K in 2023

5G network capabilities

Introduction



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



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



Potential Business Use Cases



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Authentication and Fraud Prevention



Secure Auth
Fraud Prevention

Number Verify,
Sim Swap, etc.

Location Services



Location Verification
Location Retrieval
Location Geofencing

Location APIs

Communication Quality



Safeguarding of Transactions
Remote Control
AR/VR/XR
Gaming

Quality on Demand

Device Information



Proactive User Information

Device Data Volume

Computing Services



Edge Application hosting
Latency optimization

Simple Edge Discovery

Network APIs offer the opportunity

- For customers to optimize their use cases and applications
- For operators to monetize their investment in 5G infrastructure

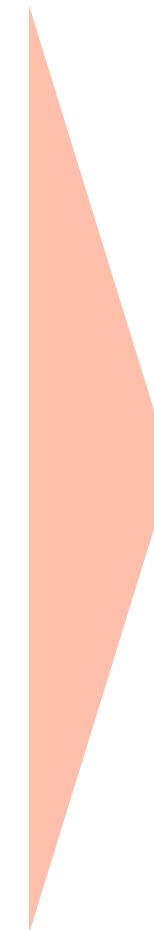
It's a win-win!

Benefit for developers to use CAMARA APIs



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- 1** Reduces friction for developers to access network information across telcos globally.
- 2** Increases usage and value of telco networks by providing easy access to network capabilities.
- 3** Enables developers to create new applications or improve existing ones with access to these capabilities.



Additional revenue on existing assets, leveraging SDN and NFV capabilities

Developers Getting Started with CAMARA APIs



The screenshot shows the CAMARA website's navigation bar. The "Sub Projects A-H" menu is open, displaying a list of ten items: Blockchain Public Address, Call Forwarding Signal, Carrier Billing Check Out, ClickToDial, Connectivity Insights, Device Identifier, Device Location, Device Status, Device Swap, Edge Cloud, and Home Devices QoD. A red arrow points from the text above to this menu. The main content area features a large blue background image with white text: "APIs enable seamless access to Telco network capabilities".

- THE LINUX FOUNDATION PROJECTS
- CAMARA**
THE TELCO GLOBAL API ALLIANCE
- Home About Sub Projects A-H Sub Projects I-Z Working Groups Events Resources Contact

Latest News: Initial focus areas of colla...
ays to process connecte... [Read More →](#)

APIs enable seamless access to Telco network capabilities

- Blockchain Public Address
- Call Forwarding Signal
- Carrier Billing Check Out
- ClickToDial
- Connectivity Insights
- Device Identifier
- Device Location
- Device Status
- Device Swap
- Edge Cloud
- Home Devices QoD

Developers Getting Started with CAMARA APIs



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Quality on Demand

Scope

- Service APIs for "Quality on Demand" (see [APIBacklog.md](#))
- It provides the customer with the ability to:
 - set quality for access network connections (e.g. mobile device connection or fixed access between a home gateway and the service providers gateway router)
 - get notification if network cannot fulfill
- Describe, develop, document and test the APIs (with 1-2 Service Providers)
- Started: October 2021
- Location: virtually

Meetings

- Meetings are held virtually: [Meeting registration / Join](#)
- Schedule: bi-weekly, Friday, 2 PM CET/CEST (13:00 UTC, 12:00 UTC during European DST). For date/time of next meeting see previous [meeting minutes](#).

Results and Status

- Note: Please be aware that the project will have frequent updates to the main branch. There are no compatibility guarantees associated with code in any branch, including main, until a new release is created. For example, changes may be reverted before a release is created. **For best results, use the latest available release.**
- The latest available and released version 0.10.0 is available within the [release-0.10.0 branch](#)

- API definition v0.10.0 with inline documentation:
 - [View it on ReDoc](#)
 - [View it on Swagger Editor](#)
 - [OpenAPI YAML spec file](#)

- The previous released version v0.9.0 is available within the [release-0.9.0 branch](#)
- For changes between v0.10.0 and v0.9.0 see the [CHANGELOG.md](#)
- Provider implementations (PI) are available within separate repositories (partly for previous releases):
 - [QualityOnDemand_PI1](#) by Deutsche Telekom
 - [QualityOnDemand_PI2](#) by Orange
 - [QualityOnDemand_PI3](#) by Spry Fox Networks

Contributorship and mailing list

- To subscribe / unsubscribe to the mailing list of this Sub Project and join or resign as a Contributor, please visit <https://lists.camaraproject.org/g/sp-qod>.
- A message to all Contributors of this Sub Project can be sent using sp-qod@lists.camaraproject.org.

Developers Getting Started with CAMARA APIs



CAMARA
THE TELCO GLOBAL API ALLIANCE

The image shows two side-by-side screenshots of a GitHub interface. On the left, the main GitHub dashboard for the 'CAMARA Project' is displayed, showing pinned repositories like 'Governance' and 'Commonalities'. On the right, a specific repository, 'camaraproject / QualityOnDemand', is shown in detail. This repository page includes a code editor view of a file named 'patch-1', a list of recent commits, and sections for people and top languages.

CAMARA Project

444 followers | Germany | <http://camaraproject.org> | adm@lists.camaraproject.org

Pinned

Governance (Public)

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 coun...

52 stars | 44 forks

Commonalities (Public)

Repository to describe, develop, document and test the common guidelines and assets for CAMARA APIs

JavaScript | 8 stars | 22 forks

Repositories

Find a repository... | Type | Language | Sort

QualityOnDemand (Public)

Repository to describe, develop, document and test the QualityOnDemand API family

Java | 37 stars | Apache-2.0 license | 60 forks | 20 issues | 6 pull requests | Updated 51 minutes ago

camaraproject / QualityOnDemand

Type to search | Go to file | Add file | Code

QualityOnDemand (Public)

main | 6 Branches | 9 Tags

/patch-1 · a531a6a · 3 weeks ago · 754 Commits

ate swagger-editor-validator.yml · last month
ate code/API_definitions/qos-profiles.yaml · 3 weeks ago
ate README.md · 5 months ago
ed configuration for linting ruleset · 3 months ago
ed .unotes/ to .gitignore · 2 years ago
ed configuration for linting ruleset · 3 months ago
ed configuration for linting ruleset · 3 months ago
ate CHANGELOG.md · 2 months ago
ate CODEOWNERS · 2 months ago

About

Repository to describe, develop, document and test the QualityOnDemand API family

wiki.camaraproject.org/x/DAEG

Readme | Apache-2.0 license | Activity | Custom properties | 37 stars | 29 watching | 60 forks | Report repository

Releases 9

Benefit for developers
to work in CAMARA



As a typical Open Source Project **CAMARA is driven by contribution!**

People who contribute define priorities and drive the direction.

Working in CAMARA on API definitions, API documentations and API code (transformation functions) enables to

- **Bring in own demand** and contribute a solution
- **Influence the definition** of new APIs and API versions
- Ensure that own requirements are considered
- **Provide code which can be used globally**
- **Learn** about CAMARA, Open Gateway and the Network API ecosystem
- **Get deep knowledge about the APIs**
- **Become maintainer and TSC member** to influence technical decisions in CAMARA

Joining CAMARA as Developer



To join the CAMARA mailing list send an (empty) email to all+subscribe@lists.camaraproject.org.

A screenshot of the CAMARA Members page. The left sidebar shows navigation options: Home (Owner), Subscription, Admin, Pending, Members (which is selected and highlighted in blue), and Activity. The main content area shows the user's membership details for 'markus'. The breadcrumb navigation is: All / Members / markus / markus.kuemmerle@telekom.de Mod. The 'Membership' tab is active. The 'User Details' section shows the email address 'markus.kuemmerle@telekom.de'. A note at the bottom states: 'Note: Changing this email address changes the email address for this person's account, affecting all of their other subscriptions.'

CAMARA Your Groups ▾

Home Owner

All / Members / markus / markus.kuemmerle@telekom.de Mod

Subscription

Membership ▾

User Details

Email Address

markus.kuemmerle@telekom.de

Note: Changing this email address changes the email address for this person's account, affecting all of their other subscriptions.

The CAMARA GitHub <https://github.com/camaraproject> can be accessed without any prerequisite. To create issues and start contributing to CAMARA you need a free GitHub account.

Joining CAMARA as Developer



Each API family / working group in CAMARA is organized as a separate Sub Project with (example QoD):

- A dedicated lead repository (containing API definition and API documentation)
- 0...n provider implementation repositories (containing API code)
- A dedicated mailing list

QualityOnDemand Public

Repository to describe, develop, document and test the QualityOnDemand API family

Java ⭐ 37 Apache-2.0 60 19 5 Updated 3 days ago

QualityOnDemand_PI1 Public

Provider Implementation of QualityOnDemand by Deutsche Telekom

Java ⭐ 5 Apache-2.0 8 0 0 Updated 2 hours ago

QualityOnDemand_PI2 Public

Provider Implementation of QualityOnDemand by Orange

Kotlin ⭐ 0 Apache-2.0 1 1 0 Updated on Nov 9, 2023

QualityOnDemand_PI3 Public

Provider Implementation of QualityOnDemand by Spry Fox Networks

Go ⭐ 0 Apache-2.0 2 0 0 Updated on Apr 24, 2023

sp-qod@lists.camaraproject.org

Sub Project "Quality on Demand"

Group Information

- 95 Members
- 27 Topics , Last Post: May 17
- Started on 07/05/22
- RSS Feed

Group Email Addresses

Post: sp-qod@lists.camaraproject.org

Subscribe: sp-qod+subscribe@lists.camaraproject.org

Unsubscribe: sp-qod+unsubscribe@lists.camaraproject.org

Group Owner: sp-qod+owner@lists.camaraproject.org

Help: sp-qod+help@lists.camaraproject.org

Joining a Sub Project as Developer



To join a Sub Project please have a look into its Readme.md (example Quality on Demand):

last commit may issues 20 open pull requests 5 open contributors 27 repo size 11.4 MB License Apache 2.0

QualityOnDemand

Repository to describe, develop, document and test the QualityOnDemand API family

Scope

- Service APIs for “Quality on Demand” (see APIBacklog.md)
- It provides the customer with the ability to:
 - set quality for a flow within an access network connections (e.g. mobile device connection or fixed access between a home gateway and the service providers gateway router)
 - Session mode, for a specific duration
 - Provision mode, indefinitely for each time the device connects to the same access network
 - get notification if network cannot fulfill
- Describe, develop, document and test the APIs (with 1-2 Service Providers)
- Started: October 2021
- Location: virtually

Meetings

- Meetings are held virtually: [Meeting registration / Join](#)
- Schedule: bi-weekly, Friday, 2 PM CET/CEST (13:00 UTC, 12:00 UTC during European DST). For date/time of next meeting see previous [meeting minutes](#).

Status and released versions

- Note: Please be aware that the project will have frequent updates to the main branch. There are no compatibility guarantees associated with code in any branch, including main, until a new release is created. For example, changes may be reverted before a release is created. For best results, use the latest available release.
- The latest available and released version 0.10.1 is available [here](#)
 - API definition v0.10.1 with inline documentation:
 - [View it on ReDoc](#)
 - [View it on Swagger Editor](#)
 - OpenAPI [YAML spec file](#)
 - The previous released version v0.9.0 is available within the [release-0.9.0 branch](#)
 - For changes between v0.10.0 and v0.9.0 see the [CHANGELOG.md](#)
 - Provider implementations (PI) are available within separate repositories (partly for previous releases):
 - [QualityOnDemand_PI1](#) by Deutsche Telekom
 - [QualityOnDemand_PI2](#) by Orange
 - [QualityOnDemand_PI3](#) by Spry Fox Networks

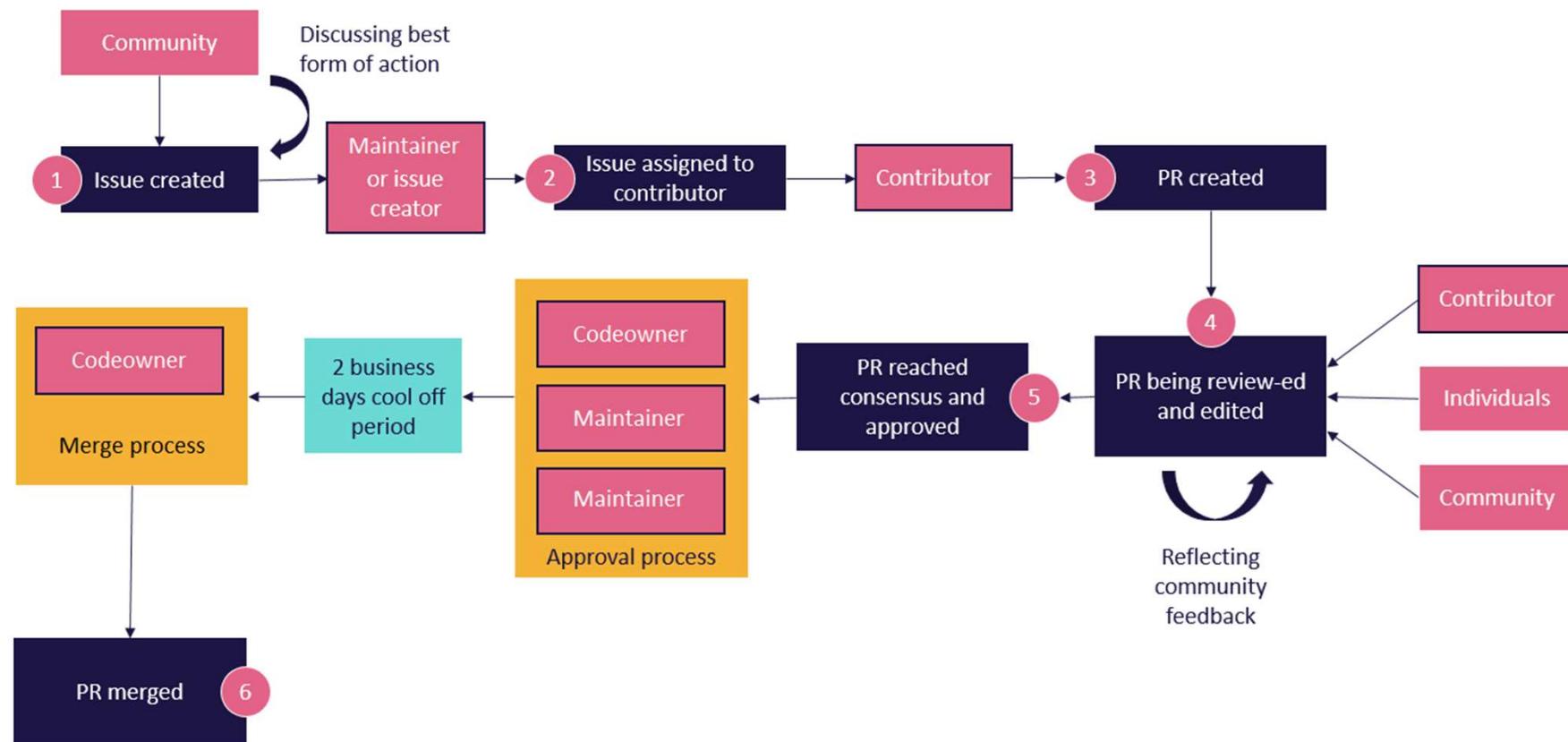
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Contributing to CAMARA



In the Project the “Fork and pull model” is used. Changes and contributions to CAMARA shall follow this process:



<https://github.com/camaraproject/Governance/blob/main/ProjectStructureAndRoles.md>

Benefit for operators to implement
CAMARA APIs in their networks



Operators have made high investments in

- Spectrum licences
- Infrastructure (cell towers, fibre)

Operators haven't been successful in

- Increasing prices for connectivity contracts

CAMARA APIs open a possibility

- To monetize the high investments
- To improve customer experience
- For market positioning



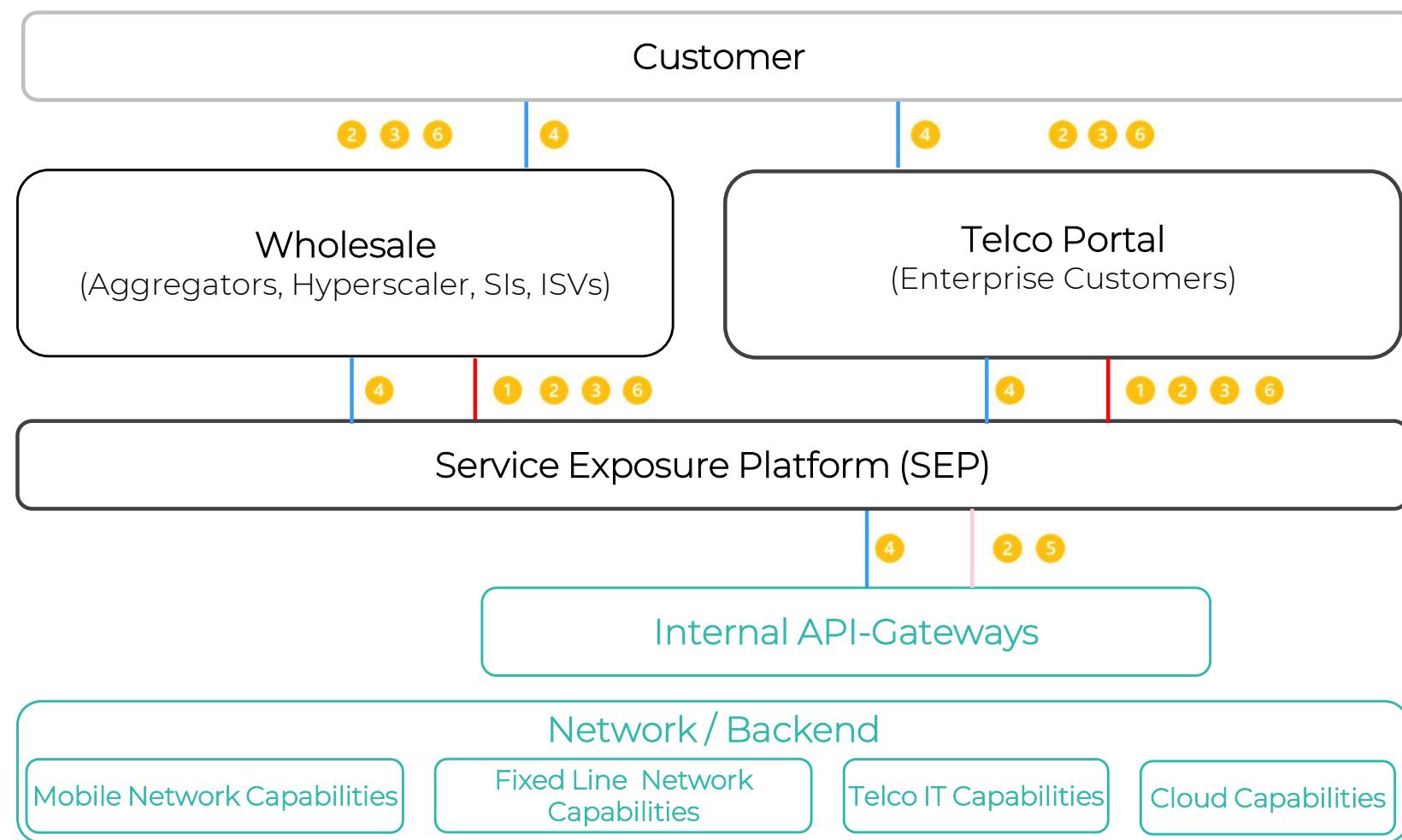
What have operators to do to implement Network APIs?



- Develop APIs and products based on the network capabilities
- Implement an exposure infrastructure
- Define commercial products
- Sell it



What have operators to do to implement Network APIs?



Possible API workflows

1. Catalog published from SEP to portals
2. Customer onboarding to SEP
3. Customer orders API, SEP sends credentials to access API
4. If necessary SEP requests user consent for API. Capacity management is done. Customer uses API. SEP performs metering and rating.
5. SEP initiates billing for wholesale and retail
6. Customer offboarding

Benefit for operators to work in CAMARA



CAMARA
THE TELCO GLOBAL API ALLIANCE

Collaborative Innovation

- Industry Collaboration
- Standardization: contribute to development of industry standards, ensuring interoperability and consistency across networks and services
- Bring in your requirements!

Networking and Partnerships

- Access to a growing global network of industry leaders
- Technological Advancements
- Knowledge Exchange

Shared Resources

- Collaborative projects often lead to cost savings through shared resources and reduced duplication of efforts
- Benefit from the collective research efforts

Benefit for operators to work in CAMARA



Why Join CAMARA as a sponsor /member?

Seat on the Governing
Board to influence
CAMARA strategy

Elevate your Brand

Signal Support &
Commitment to open API
development

Discounts on Linux
Foundation events &
programs

Help ensure the Project
continues to provide
needed governance &
infrastructure

Platform to showcase
thought leadership

Operators Getting Started with CAMARA



Individuals and organizations from API customers (e.g. enterprises and startups), aggregators, cloud operators, telco operators, network equipment vendors, system integrators, and software vendors are welcome to join CAMARA.

For organizations:

- If you are interested to show your logo on the CAMARA website as “**Participating Organization**” send a .SVG version of it to adm@lists.camaraproject.org. Participation is free, without any fees or obligations.
- If you would like to become a **CAMARA sponsor** please don’t hesitate to use the [enrollment link](#). The cost is depending on the kind of membership and the number of employees.
- Associate Members of The Linux Foundation can also join as "**Associating organization**" for free, without any fees or obligations.

CAMARA

Where are we going next...



CAMARA
THE TELCO GLOBAL API ALLIANCE

1

Additional APIs and roadmap sync across CSPs,
Aggregators and Hyperscalers

2

API lifecycle management consistency,
Documentation of API versioning and availability globally

3

Drive API Adoption (customers/developers and operators)

CAMARA Contacts



CAMARA
THE TELCO GLOBAL API ALLIANCE

Individuals and organizations from API customers (e.g. enterprises and startups), aggregators, cloud operators, telco operators, network equipment vendors, system integrators, and software vendors are welcome to join CAMARA.

To access CAMARA technical resources like API definitions, API specifications or API code just visit the [CAMARA GitHub](#). All resources are reachable without any prerequisite. To create issues and start contributing to CAMARA you need a free GitHub account without any further prerequisite. This participation is free, without any fees or obligation to work.

If you are interested to be included in the CAMARA communication, please subscribe to all+subscribe@lists.camaraproject.org. You may unsubscribe from CAMARA and these communications at any time. Participation is free.

If you are interested to show your logo on the CAMARA website as “Participating Organization” you can send it to adm@lists.camaraproject.org. Participation is also free.

If you would like to join as CAMARA sponsor or associating organization, please don't hesitate to use the enrollment link <https://enrollment.lfx.linuxfoundation.org/?project=camarafund>. Cost is depending on the kind of membership and the number of employees.





CAMARA

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