5G network capabilities

Introduction

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

Quality on Demand / Traffic influence
- Enable augmented reality

# of UEs in geographic region
- Traffic jam or Corona warning

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

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

**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 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**
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
... and where we are now

- 78 Named Partners
- 236 (+142) companies participating in CAMARA
- 14 Active API development repos
- 130+ regular participants in Open Steering Calls
- 695 (+777) people joined CAMARA
- Development "home" for GSMA Open Gateway
CAMARA API Showcases

https://camaraproject.org/resources/
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).
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 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 Project

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 - Collaboration with GSMA Open Gateway

Cloud Infrastructure
Enhancing virtual ‘Cloud’ applications & services to enable Web3.0

Open Service (Northbound) Common Network APIs
via CAMARA GitHub & GSMA Agreement Templates

Open Federation APIs (East West Federation & Interconnection)
via GSMA Operator Platform Specifications & Agreement Templates

GSMA
Connect (N-E-W)

CAMARA
Service (N)

tmforum
Operate (N-E-W)


Earth Networks

Specification by Doing Code, not documentation
<table>
<thead>
<tr>
<th><strong>Current CAMARA API Families</strong></th>
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<td><strong>Blockchain Public Address</strong></td>
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<td><strong>Carrier Billing CheckOut</strong></td>
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<tr>
<td><strong>Commonalities</strong></td>
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<td><strong>SIM Swap</strong></td>
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CAMARA
Where are we going next...

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
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/.