CAMARA

THE TELCO GLOBAL API ALLIANCE

WEBINAR

From Code to Connectivity: CAMARA's Fall25 Release

10.09.2025

Meet the Panelists

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Tanja de Groot
Open API Chief Architect, Nokia
CAMARA Board Member

Herbert Damker
Lead Architect, Deutsche Telekom
CAMARA TSC Chair & Board Member

Johanna Wood
Director Network API Portfolio,
Vodafone & CAMARA Board Member

Agenda

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1. Introduction / Overview
2. Meet the Fall25 Meta-Release
3. Overview of Stable, Updated & New APIs
4. Celebrating our Contributors
5. Open Q&A

APIs enabling seamless access to Telco network capabilities

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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.

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.

CAMARA – Scope / Collaboration with Open Gateway and TM Forum

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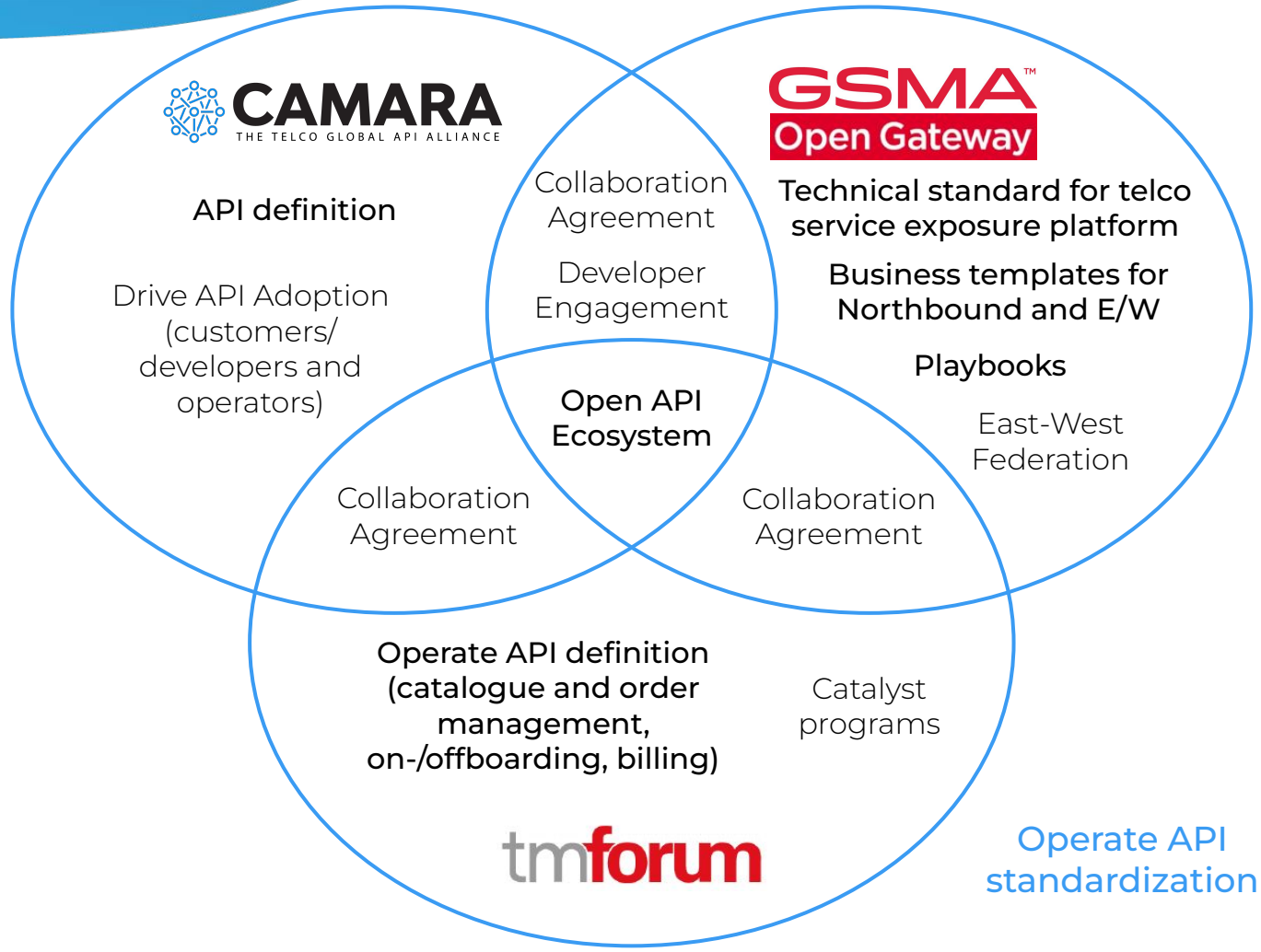
Service API "standardization"



Standardization of telco service exposure platform

Operate API standardization

CAMARA Scope

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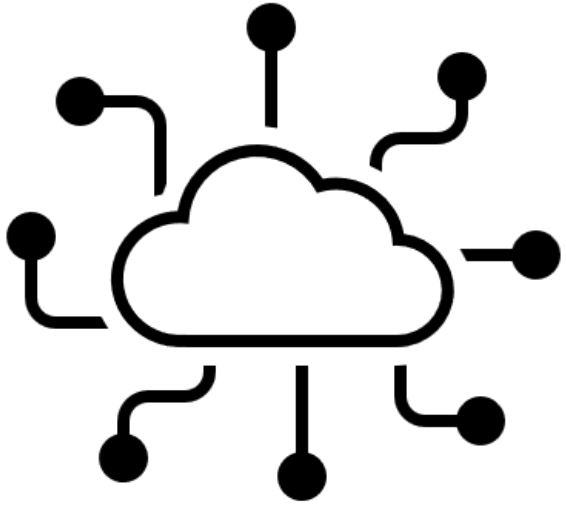
The scope of the CAMARA Project is:

- **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.

Meet the Fall25 Meta-Release

How CAMARA Works

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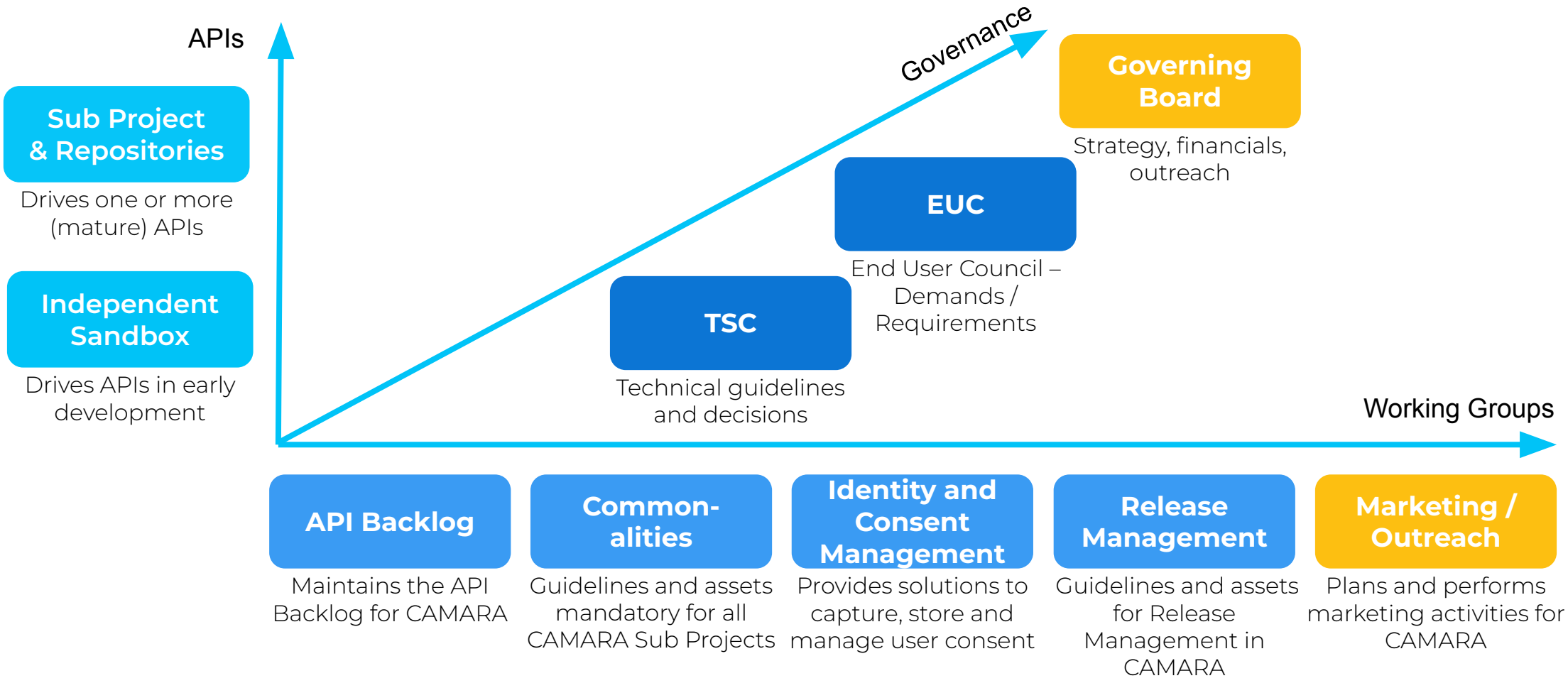
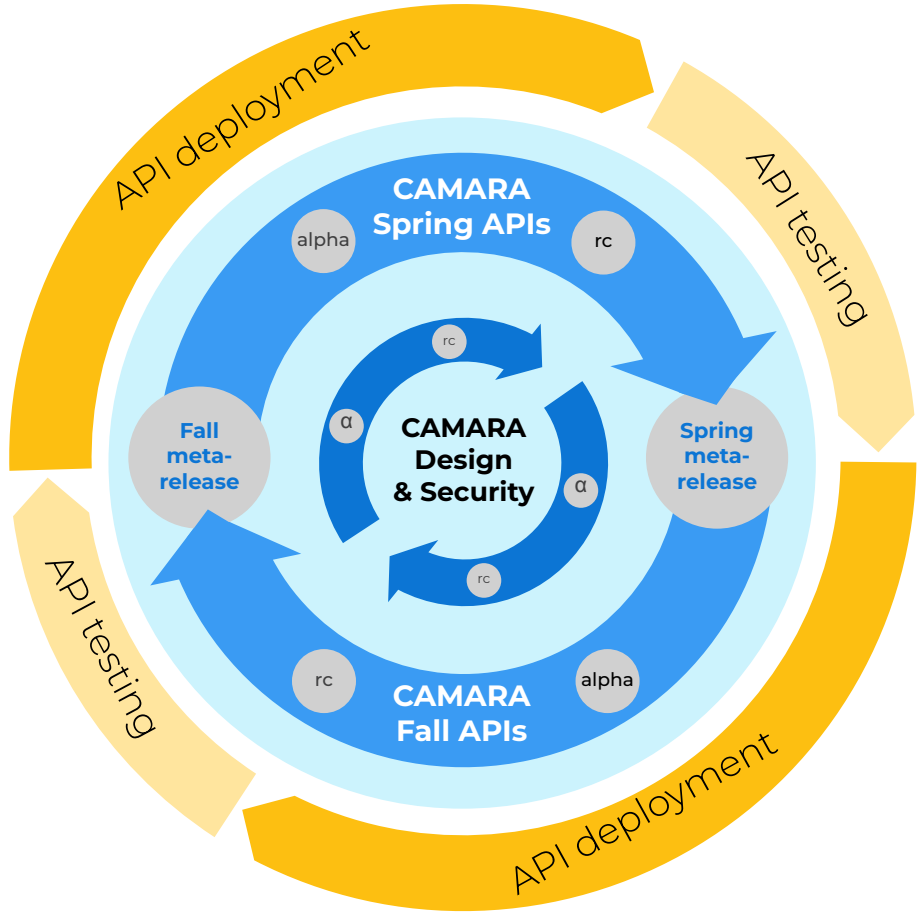


What are meta-releases ?

A CAMARA meta-release contains
- A set of released CAMARA API versions
- Common design and security guidelines

A CAMARA meta-release sets the schedule for
- implementations by API providers
- integration by API consuming applications

A CAMARA meta-release ensures
- API consistency
- API quality
- API stability
- reliable API delivery
- feedback integration



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

CAMARA APIs development & versioning

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Guidelines

- Commonalities
- Identity and Consent Management (ICM)

Sub Projects

- may manage multiple API repositories
- develop one or more APIs per API repository

API repositories

- the base of API releases
- three stages of maturity:
  - Sandbox
  - Incubating
  - Graduated

SemVer 2.0

API versions

- two types of public released API versions
  - Initial (v0.y.z)
  - Stable (>= v1.0.0)
- (pre-)releases successively
  - alpha
  - release-candidate

API version is independent of
API (repository) release number

Meta-release & API release Processes

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Meta-releases

- Fall25 meta-release
- Spring25 meta-release
- Fall24 meta-release
- Spring26 meta-release

Meta-release process

- Sets the **milestones** M0 through M6 and associated activities

- Defines criteria for stable and initial API versions
- Provides the checklist for each API version release

API release process defines

- API versioning during API lifecycle
- repository release

Details on the CAMARA wiki.

API Readiness Checklist

Checklist for api-name api-version in rx.y.

Nr	API release assets	alpha	release-candidate	initial public	stable public	Status	Reference information
1	API definition	M	M	M	M		relative link
2	Design guidelines from Commonalities applied	O	M	M	M		Comm. release nr
3	Guidelines from ICM applied	O	M	M	M		ICM release nr
4	API versioning convention applied	M	M	M	M		
5	API documentation	M	M	M	M		in yaml (or relative link)
6	User stories	O	O	O	M		relative link
7	Basic API test cases & documentation	O	M	M	M		relative link
8	Enhanced API test cases & documentation	O	O	O	M		relative link
9	Test result statement	O	O	O	M		issue link
10	API release numbering convention applied	M	M	M	M		
11	Change log updated	M	M	M	M		relative link
12	Previous public release was certified	O	O	O	M		comment
13	API description (for marketing)	O	O	M	M		wiki link

Fall25 Commonalities and ICM

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CAMARA API Design Guide

Updated

This document outlines guidelines for API design within the CAMARA project, applicable to all APIs developed under the initiative.

- 1. Introduction
  - 1.1. Conventions
  - 1.2. Common Vocabulary and Acronyms
- 2. Data
  - 2.1. Common Data Types
  - 2.2. Data Definitions
- 3. Error Responses
  - 3.1. Standardized Use of CAMARA Er
  - 3.2. Error Responses - Device Object/
  - 3.3. Error Responses - Mandatory Ter
- 4. Pagination, Sorting and Filtering
  - 4.1. Pagination

CAMARA API Event Subscription and Notification Guide

New

This document outlines specifics guidelines for API design within the CAMARA project, applicable to all APIs that provide capabilities for event subscription and notification management.

For general API design guidelines, please refer to CAMARA API Design Guide.

- 1. Introduction
  - 1.1. Conventions
  - 1.2. Common requirements
- 2. Event Subscription
  - 2.1. Instance-based (Implicit) Subscription
  - 2.2. Resource-based (Explicit) Subscription
  - 2.3. Event Versioning
- 3. Event Notification
  - 3.1. Event Notification Definition
  - 3.2. `subscription-started` Event

CAMARA Security and Interoperability Profile

Table of Contents

- Introduction
- Audience
- Conventions
- General Considerations
  - Transport Security
  - Sender-Constrained Tokens
- OIDC Authorization Code Flow
  - Signed Authentication Requests
  - Optic
  - Cross
- Client-Init
  - Optic

- Authorization code flow
- CIBA flow (Backend flow)
- Client Credentials
- JWT Bearer Flow

RFC 9700 for OAuth 2.0 Security

CAMARA APIs Access and User Consent Management

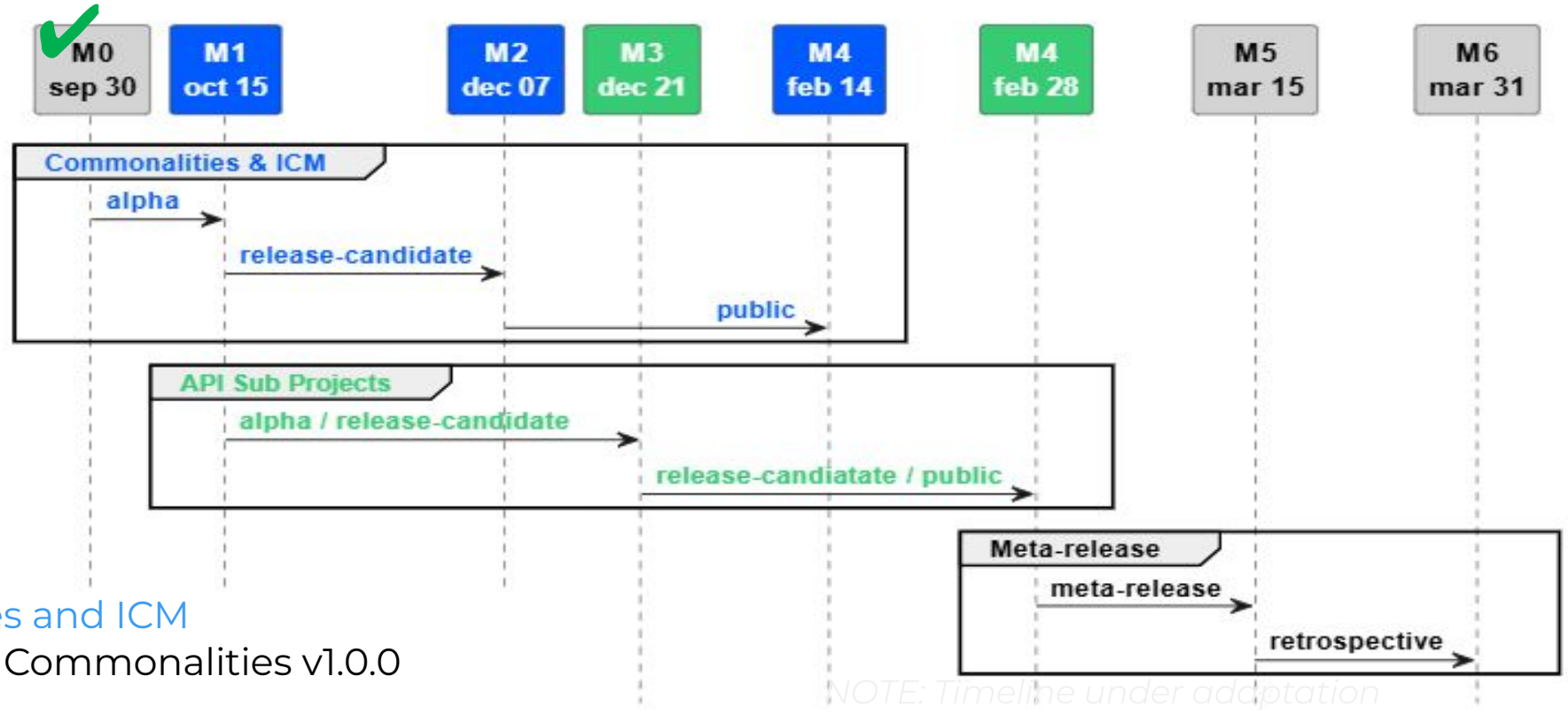
This document defines guidelines for API Providers to manage CAMARA API access and when applicable, User Consent.

Table of Contents

ConsentInfo API

- Introduction
- Glossary of Terms and Concepts
- Purpose within CAMARA
  - Using Purpose within the authorization request
- User Authentication/Authorization & Consent Management
  - Authorization flows / grant types
    - Authorization Code Flow (Frontend Flow)
      - Technical ruleset for the Frontend flow
    - CIBA flow (Backend flow)
      - Technical ruleset for the Backend flow
      - CIBA flow with Operator Token
    - Client Credentials
    - JWT Bearer Flow

Spring26 meta-release Schedule



Commonalities and ICM

- targeting Commonalities v1.0.0

Fall25 Meta-release APIs

CAMARA Fall25 Meta-release API Overview

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10 STABLE APIs

- device-reachability-status
- device-roaming-status
- device-swap
- location-verification
- number-verification
- one-time-password-sms
- qos-profiles
- quality-on-demand
- sim-swap
- simple-edge-discovery

23 NEW INITIAL APIs (v0.y.z)

- application-endpoint-discovery
- application-endpoint-registration
- blockchain-public-address-validation
- brand-registration
- consent-info
- dedicated-network
- dedicated-network-accesses
- dedicated-network-profiles
- device-data-volume
- device-data-volume-subscriptions
- energy-footprint-notification
- knowledge-base
- most-frequent-location
- network-slice-booking
- optimal-edge-discovery
- predictive-connectivity-data
- qa-assistant-manage
- qa-assistant-service
- qos-booking
- qos-booking-and-assignment
- subscription-status
- traffic-influence
- verified-caller

27 SPRING25 UPDATED INITIAL APIs (v0.y.z)

- application-profiles
- blockchain-public-address
- call-forwarding-signal
- carrier-billing
- carrier-billing-refund
- connected-network-type
- connected-network-type-subscriptions
- connectivity-insights
- connectivity-insights-subscriptions
- customer-insights
- device-identifier
- device-reachability-status-subscriptions
- device-roaming-status-subscriptions
- geofencing-subscriptions
- kyc-age-verification
- kyc-fill-in
- kyc-match
- kyc-tenure
- location-retrieval
- number-recycling
- population-density-data
- qos-provisioning
- region-device-count
- sim-swap-subscriptions
- webrtc-call-handling
- webrtc-events
- webrtc-registration

Getting Started with CAMARA APIs

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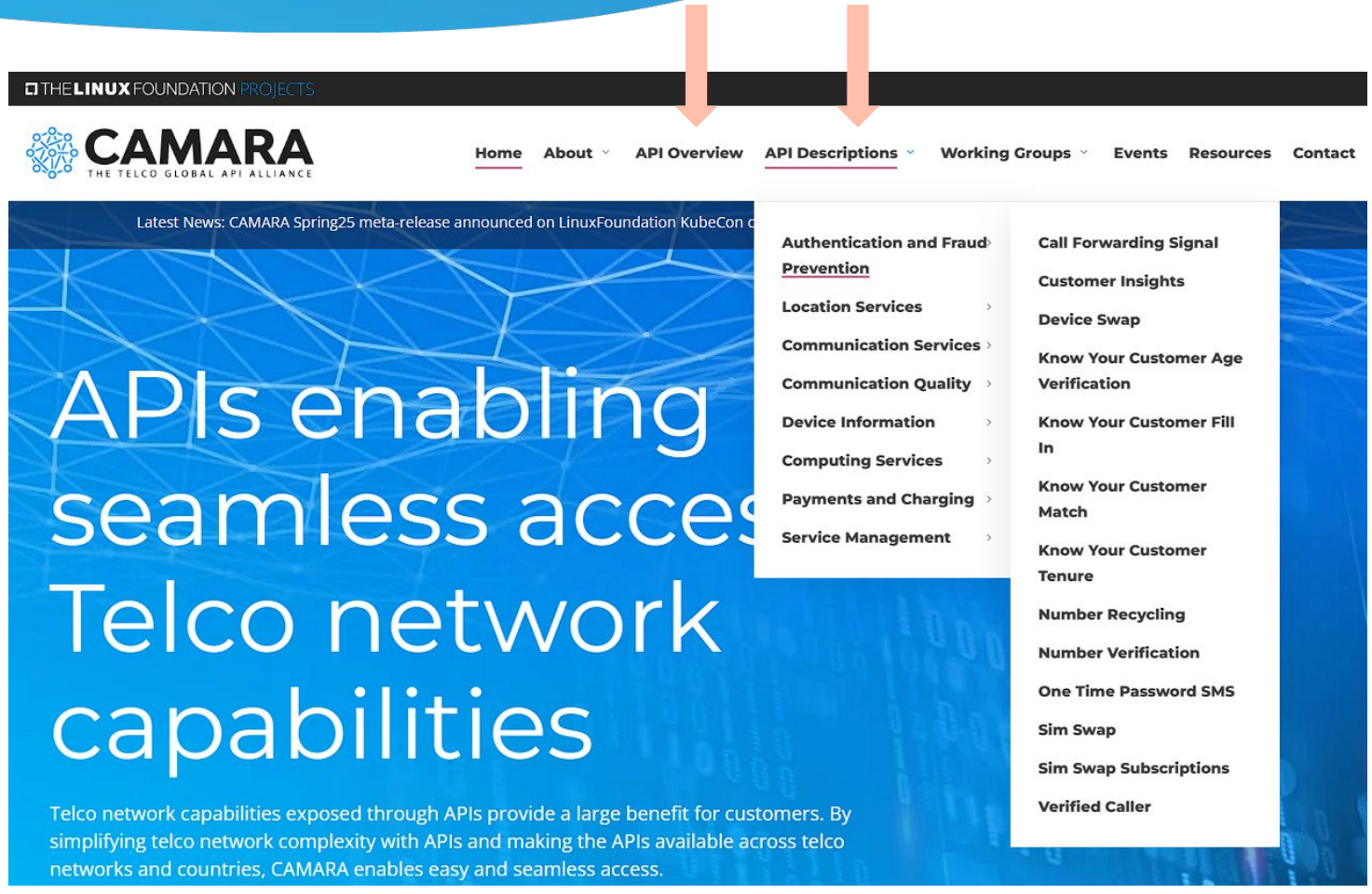
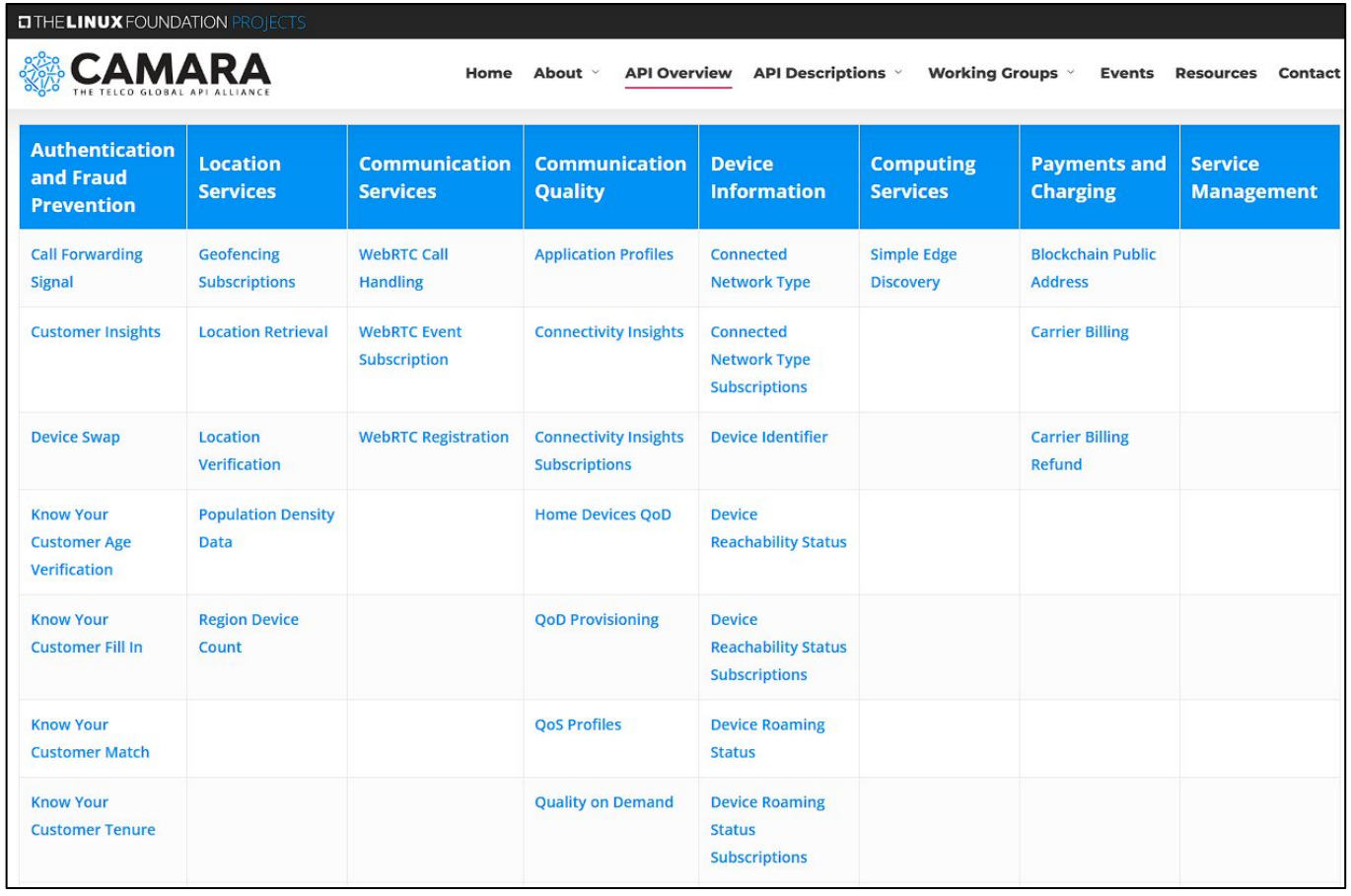


- CAMARA project website: https://camaraproject.org/
- CAMARA on GitHub: https://github.com/camaraproject/

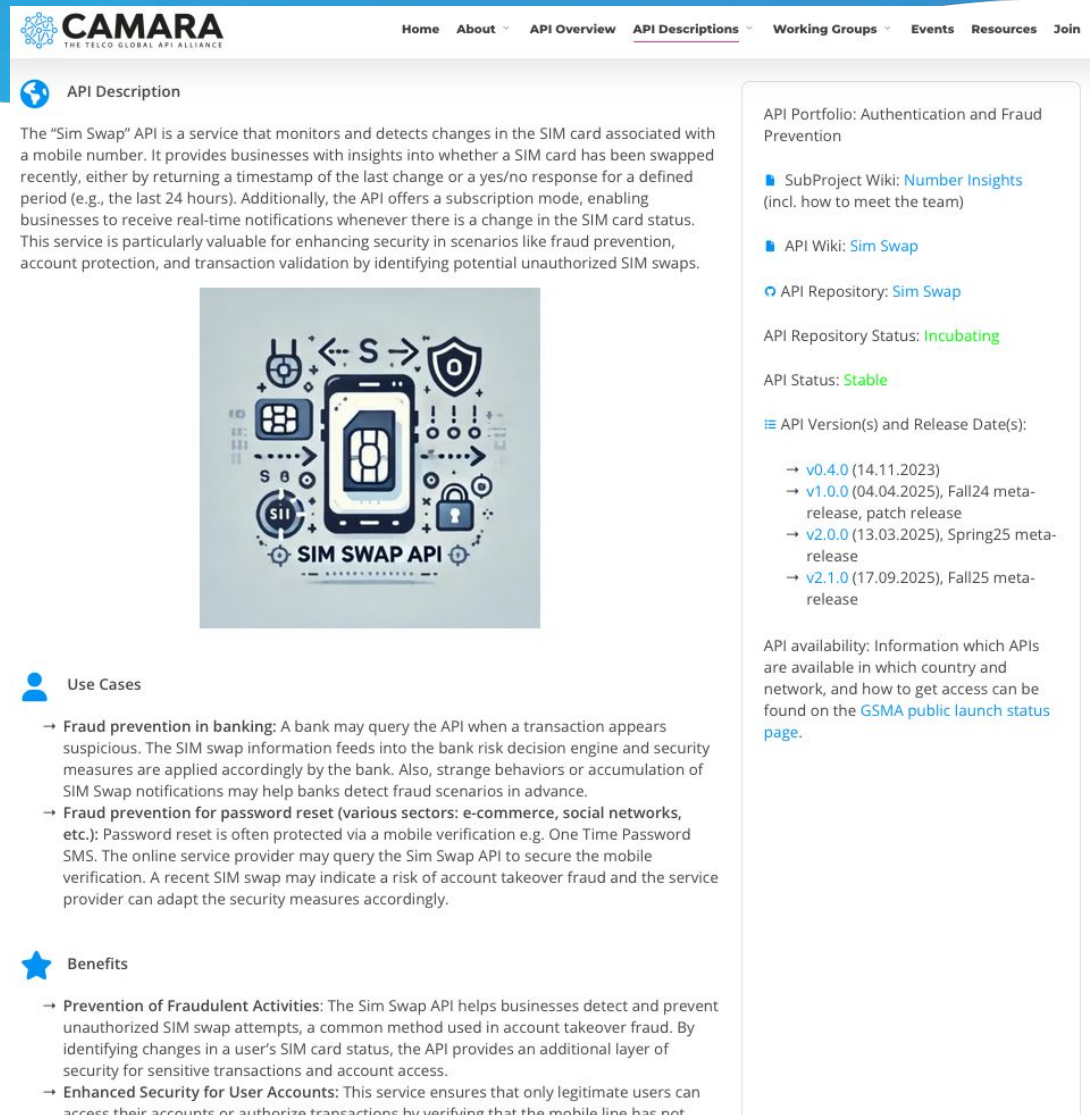
CAMARA API Overview



Authentication and Fraud Prevention	Location Services	Communication Services	Communication Quality	Device Information	Computing Services	Payments and Charging	Service Management
Call Forwarding Signal	Geofencing Subscriptions	WebRTC Call Handling	Application Profiles	Connected Network Type	Simple Edge Discovery	Blockchain Public Address	
Customer Insights	Location Retrieval	WebRTC Event Subscription	Connectivity Insights	Connected Network Type Subscriptions		Carrier Billing	
Device Swap	Location Verification	WebRTC Registration	Connectivity Insights Subscriptions	Device Identifier		Carrier Billing Refund	
Know Your Customer Age Verification	Population Density Data		Home Devices QoD	Device Reachability Status			
Know Your Customer Fill In	Region Device Count		QoD Provisioning	Device Reachability Status Subscriptions			
Know Your Customer Match			QoS Profiles	Device Roaming Status			
Know Your Customer Tenure			Quality on Demand	Device Roaming Status Subscriptions			

- https://camaraproject.org/api-overview/
- Mature APIs: Stable & updated API versions
- APIs in earlier development: first initial API versions or APIs still in progress

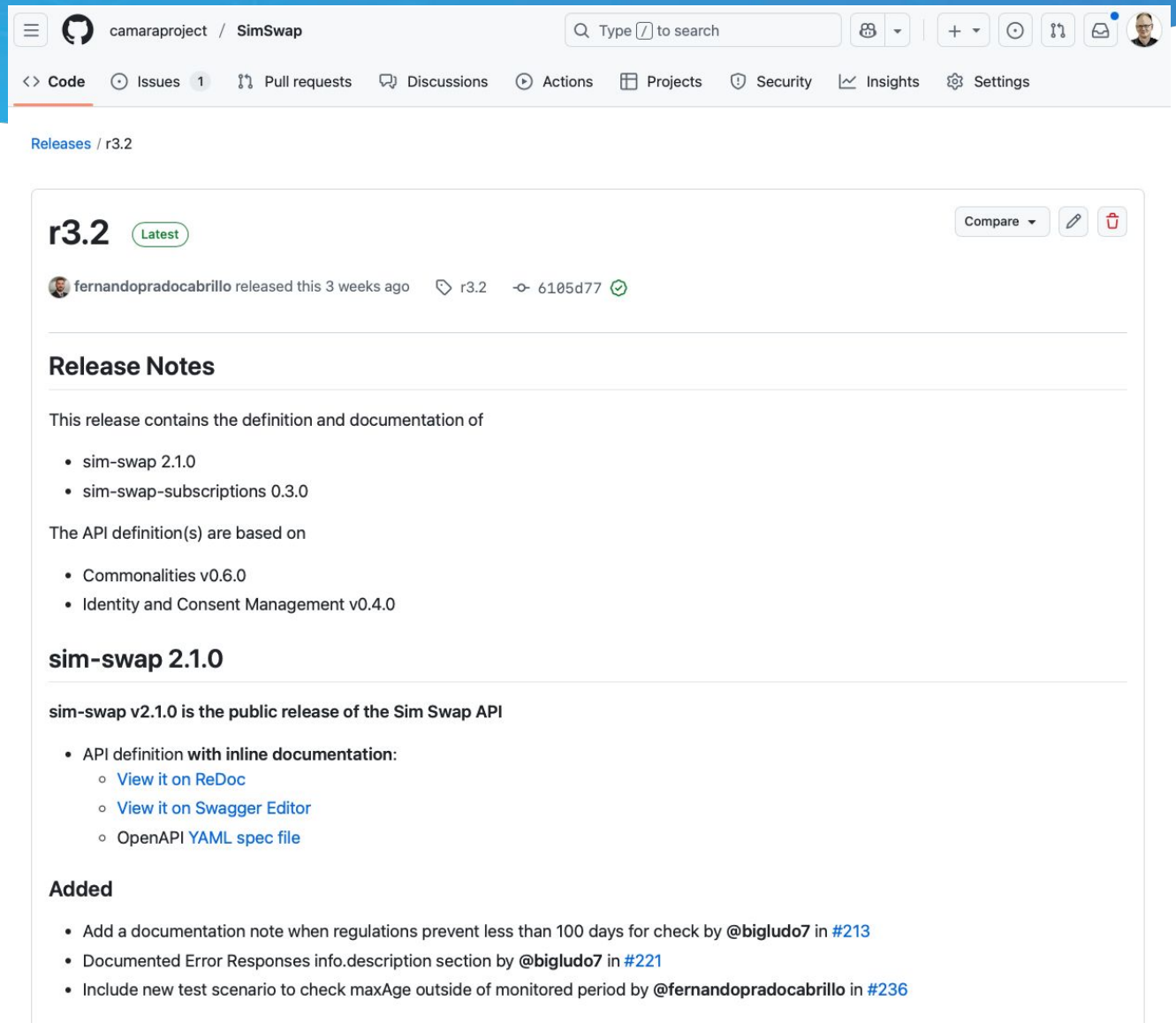
API Descriptions



- API Description
- Use Cases
- Benefits

- Links to
  - Sub Project (w/ contacts)
  - API Wiki
  - API repository
  - API version(s)
  - GSMA public launch status

Releases



- https://github.com/camaraproject/
  Entry point to all API Repositories and other technical information

- Release Notes
  - API Versions
  - Links to view API definitions in different formats
  - Changes described compared to previous public version

API Definition
(Redoc format as example)

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Retrieve SIM swap date

Get timestamp of last SIM swap event for a mobile user account provided with phone number.

AUTHORIZATIONS: *openId* or *openId*

HEADER PARAMETERS

`x-correlator` string (XCorrelator) `^[a-zA-Z0-9-_:;.\/<>{}]{0,256}$`
Example: `b4333c46-49c0-4f62-80d7-f0ef930f1c46`
Correlation id for the different services

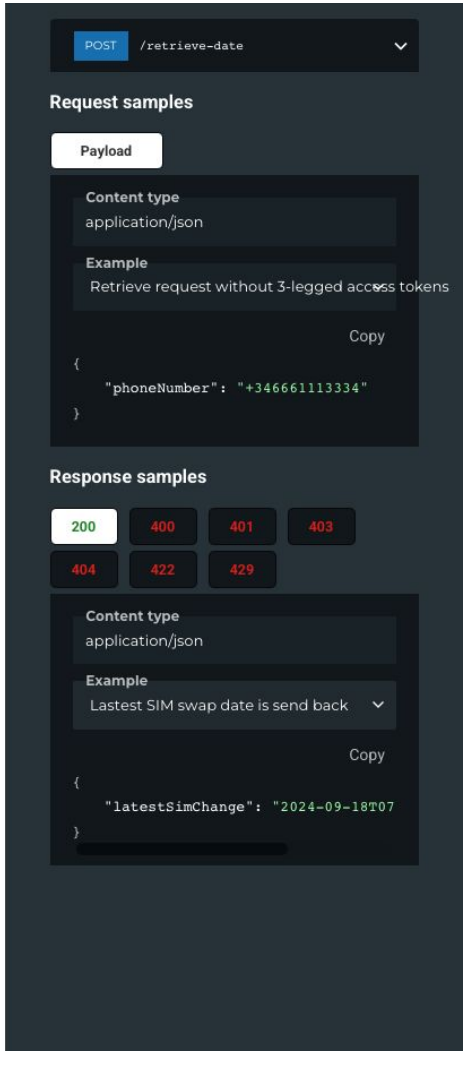
REQUEST BODY SCHEMA: application/json
required

Create a SIM swap date request for a phone number.

`phoneNumber` string (PhoneNumber) `^\+[1-9][0-9]{4,14}$`
A public identifier addressing a telephone subscription. In mobile networks it corresponds to the MSISDN (Mobile Station International Subscriber Directory Number). In order to be globally unique it has to be formatted in international format, according to E.164 standard, prefixed with '+'.

Responses

- **200** Contains information about SIM swap change
- **400** Bad Request
- **401** Unauthorized
- **403** Forbidden
- **404** Not found
- **422** Unprocessable Content
- **429** Too Many Requests



Stable, Implementation-ready APIs

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Device Reachability Status & Device Roaming Status	Service providers can ensure reliable service delivery by knowing whether a customer's device is connected and roaming
SIM Swap / Device Swap	Banks and fintech firms can combat fraud by detecting SIM or device changes in real time, reducing account takeover risks.
One Time Password SMS	Enterprises can provide secure, network-based authentication without relying on third-party SMS aggregators.
Number Verification / Location Verification	Retailers, insurers, and government services can validate user identity and prevent fraud at scale.
Quality-On-Demand with QoS Profiles	Gaming, streaming, and enterprise applications can request network performance for critical or latency-sensitive services.
Simple Edge Discovery	Edge computing providers can route workloads to the closest edge node for faster response times and lower latency.

Updated APIs from Spring25 (Examples)

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Carrier Billing	App developers and digital content providers can offer frictionless, telco-integrated payments.
Connectivity Insights	Enterprises can understand and optimize network usage trends.
Device Identifier / Location Retrieval	E-commerce and logistics companies can strengthen fraud detection and enable context-aware services.
Population Density Data	Smart cities and event organizers can make real-time decisions on traffic, safety, or capacity planning.
WebRTC Call Handling	Unified communications providers can integrate secure, network-aware calling features.

Key New APIs (early stages)

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Consent Info	Enterprises can validate and capture the necessary permission to process user's personal data with CAMARA APIs e.g. during onboarding.
Dedicated Networks / Network Slice Booking	Industrial, manufacturing, healthcare organizations can reserve network resources for mission-critical use cases.
Energy Footprint Notification	Sustainability-focused enterprises can track and reduce the environmental impact of their digital services.
Verified Caller	Call centers and service providers can eliminate phone scams by proving caller authenticity.

Developers Getting Started with CAMARA APIs

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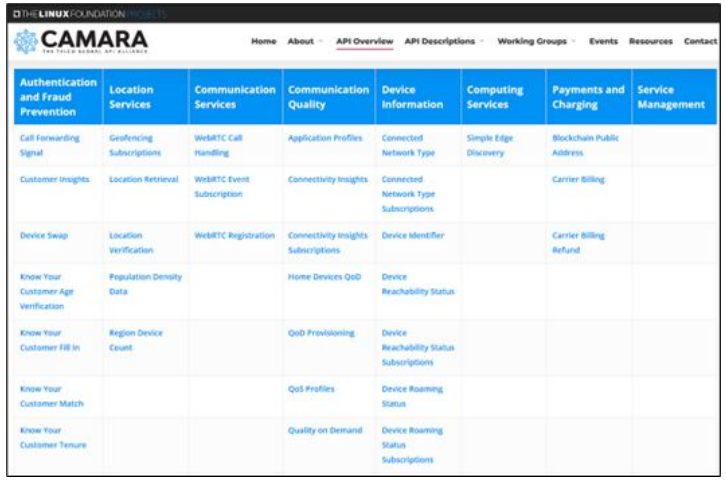
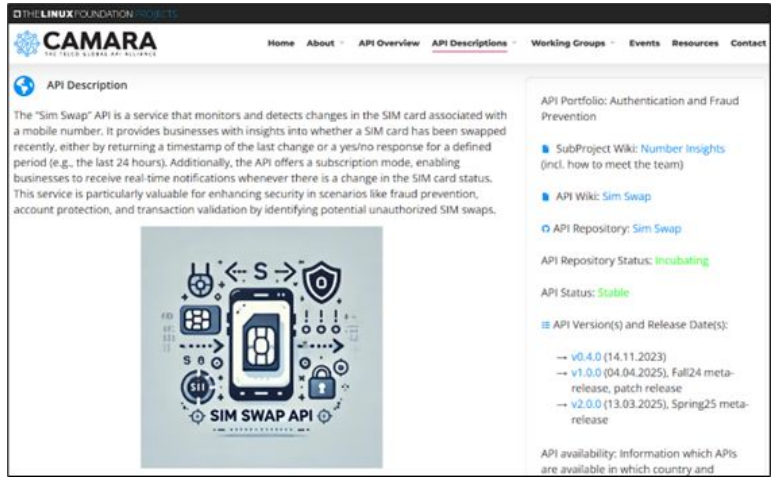
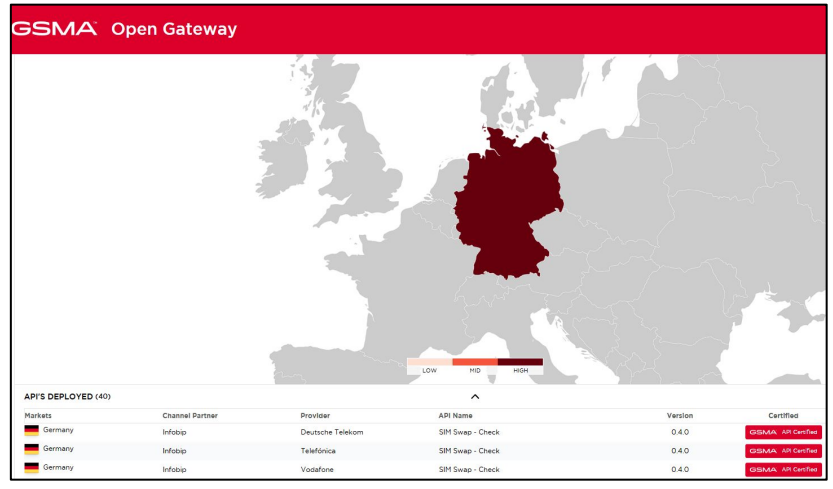
Integrate API call in own code, e.g. for Sim Swap:

- Get API definition and documentation from https://camaraproject.org/api-overview/
- Get API availability from GSMA public launch status map (linked in API description)
- Get API access e.g. from operator or channel partner (linked in map)







Benefit for developers to work in CAMARA

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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
- **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 or Contributor

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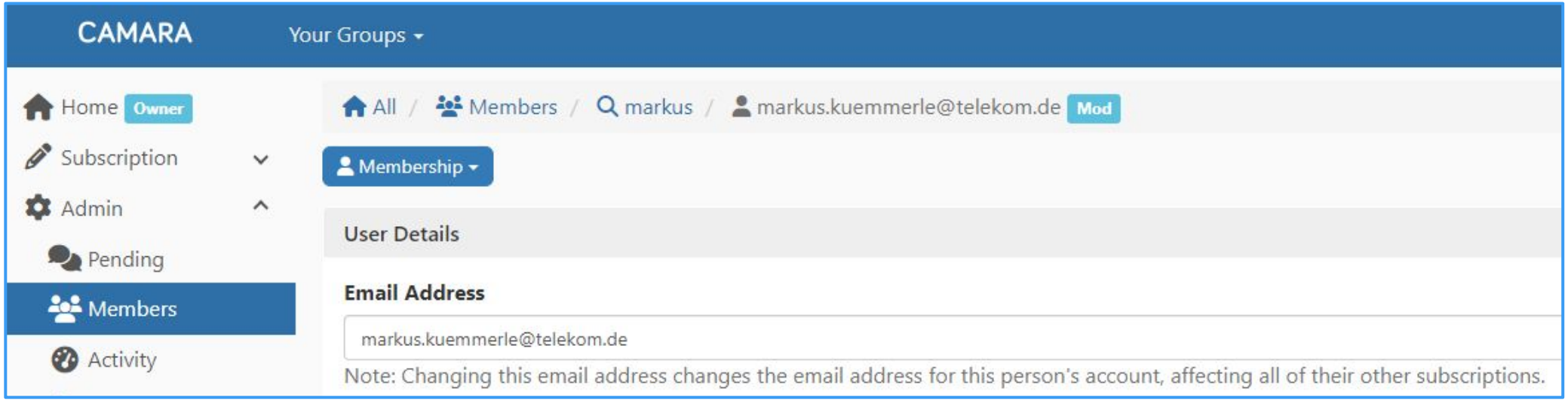
To join the CAMARA mailing list send an (empy) email to all+subscribe@lists.camaraproject.org.



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 (and an approved EasyCLA).


Celebrating Developers

Congrats to our top 10 Contributors

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Herbert Damker Maintainer


Eric Murray Maintainer


Fabrizio Moggio Maintainer


Ludovic Robert Maintainer


Kevin Smith Maintainer

Pedro Diez Garcia Maintainer


Rafał Artych Maintainer

Jose Luis Urien Maintainer


tanjadegroot Maintainer


Fernando Prado Cabrillo Maintainer

Open Q&A

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Where are we going next...

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1	Additional APIs and roadmap sync across CSPs, Aggregators and Hyperscalers
2	API lifecycle management consistency, Stability and documentation of API availability globally
3	Drive API Adoption (application developers and operators)

CAMARA Contacts

Individuals and organizations from application developers / API consumers (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.


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