GRUPPO TIM

CAMARA

Traffic Influence API

TIM

08 November 2022

Coordination with GSMA

The work on the Traffic Influence API is also started in **GSMA OPAG**.

A **Sandbox**, working according **Apache 2.0** license, recently started.

According to **GSMA Openverse** the APIs for "**Edge Site selection and routing**" must be ready in CAMARA for **30/11** to be adopted by Operators and demonstrated at the MWC 2023, in February.

We need a **close cooperation and a continuous alignment** with GSMA OPAG.

It is better to **focus on a simple use case** for the first release (30/11)

API Summary

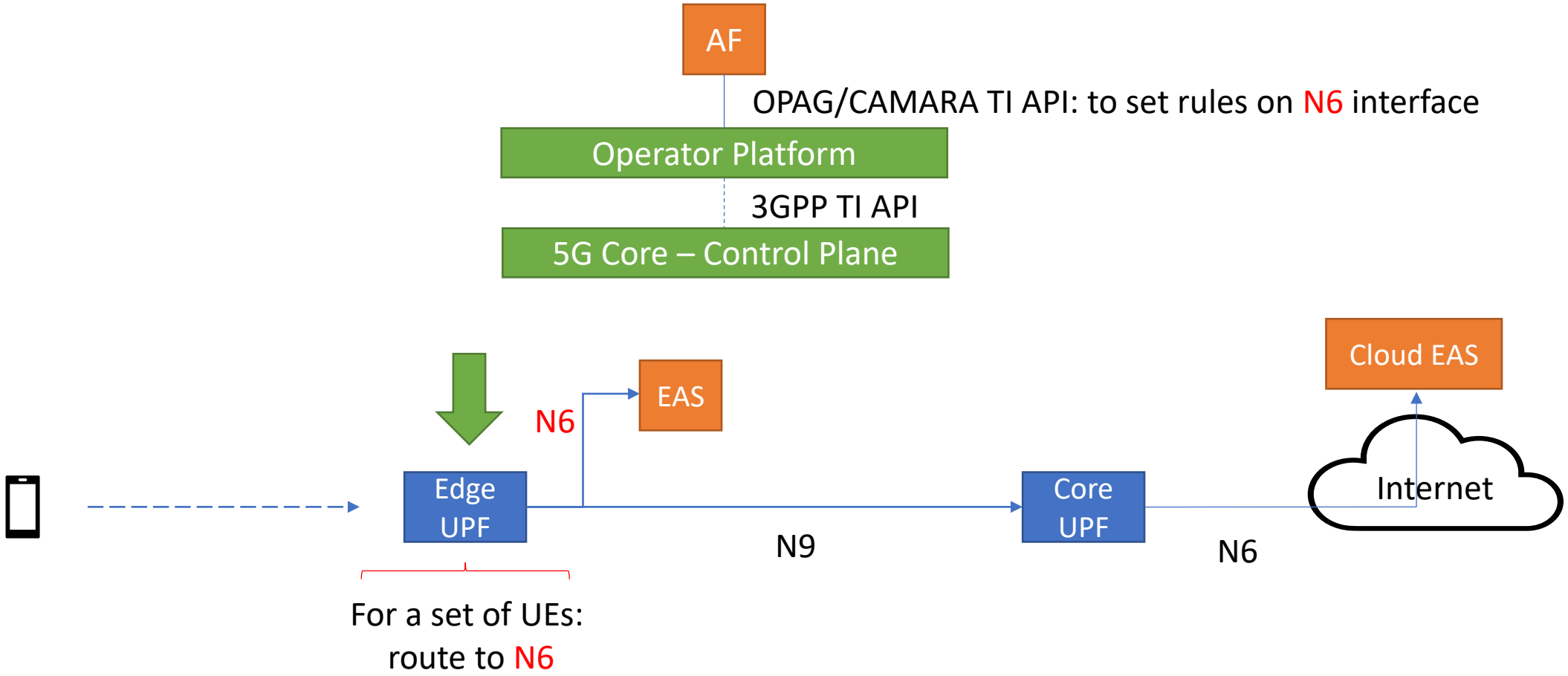
Fields	Description
API name	Traffic Influence
API summary	The Traffic Influence API provides the AF with the **ability to modify the connection policies of UEs and EAS in terms of how the traffic flows** (e.g. QoS and routing). For a 5G network, the UPF connected to the target Data Network can be updated with new traffic **steering rules, for a set of users, with a specific QoS, for a specific time period.** Furthermore, in a UE mobility scenario, the **PDU Session Anchor UPF, may be relocated** considering the **latency requirements** provided by the AF. **A basic scenario** foresees the AF requesting the **connection of an EAS to the Core Network** user plane, typically at the Edge. **Local Breakout - LBO** (on 4G or 5G networks) on the closest UPF must be implemented. **A further scenario** foresees the **UE moving** from one geographical area to another. The AF could move the application session from one EAS in one Edge Data Network to another EAS in another Edge Data Network. As a consequence, a new anchor UPF could be selected.

API Summary after OPAG discussion

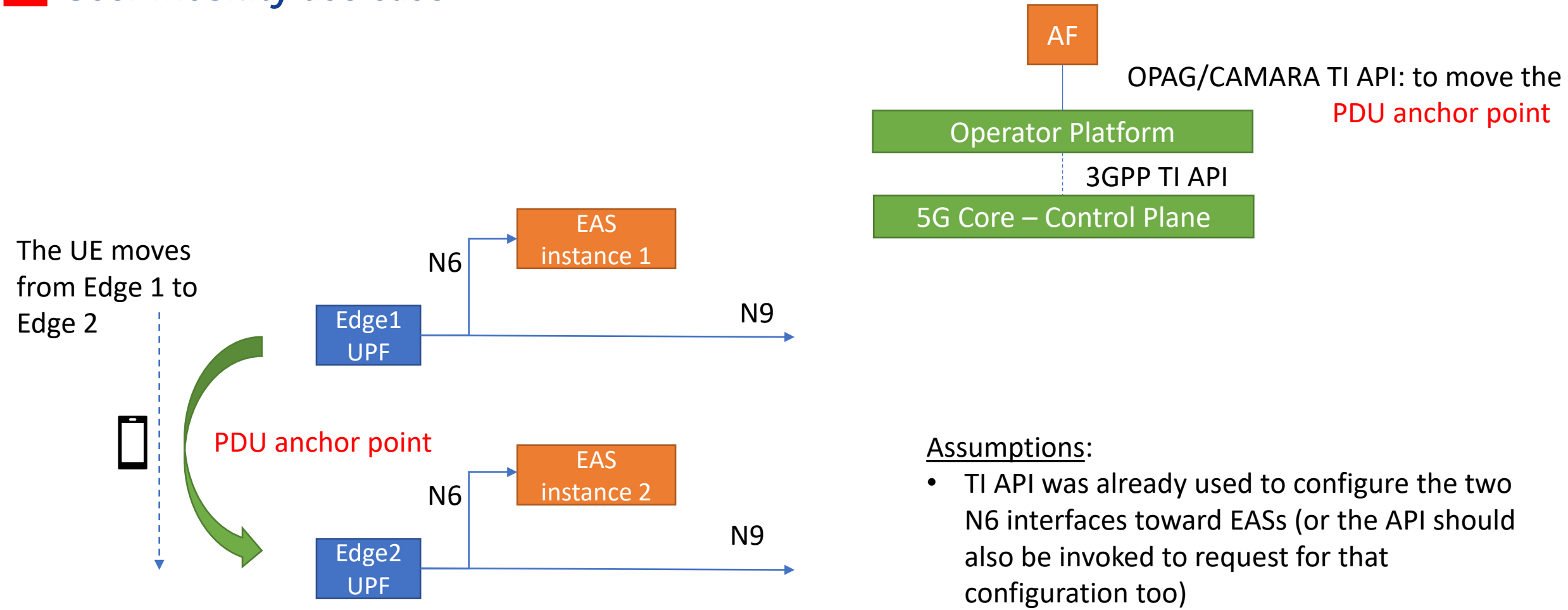
Fields	Description
API name	Traffic Influence
API summary	The Traffic Influence API provides the AF with the **ability to modify the connection policies of UEs and EAS in terms of how the traffic flows** (e.g. ~~QoS~~ and routing). For a 5G network, the UPF connected to the target Data Network can be updated with new traffic **steering rules, for a set of users, ~~with a specific QoS~~, for a specific time period.** Furthermore, in a UE mobility scenario, the **PDU Session Anchor UPF, may be relocated** considering the **latency requirements** provided by the AF. **A basic scenario** foresees the AF requesting the **connection of an EAS to the Core Network** user plane, typically at the Edge. **Local Breakout - LBO** (on 4G or 5G networks) on the closest UPF must be implemented. **A further scenario** foresees the **UE moving** from one geographical area to another. The AF could move the application session from one EAS in one Edge Data Network to another EAS in another Edge Data Network. As a consequence, a new anchor UPF could be selected.

Considering the goal to simplify the usage by the developers: **QoS is removed to avoid confusion with QoD**

Basic use case



User mobility use case



Assumptions:

- TI API was already used to configure the two N6 interfaces toward EASs (or the API should also be invoked to request for that configuration too)
- AF subscribed to UE mobility notification

Proposed approach for an Intent Driven TI API

The goal is to provide a simple, **intent driven API** to the developers hiding the complexity and the technical parameters of the 3GPP TI API.

For the **basic UC (LBO)**: the **Intent** could be:

I want to have a better network performance:

- For a specific **application**
- In a **geographical** area
- For a set of **users**
- In a specific **time** period
- For a specific **port and protocol**

The 3GPP Traffic Influence API as technical parameters that can be mapped on those intents.

Proposed approach for an Intent Driven TI API

Mapping the intent with parameters:

Intent need	3GPP TI API technical parameters	OPAG/CAMARA TI API Intent based parameter	Note
For a specific application	afServiceId, afAppId, snssai	easId	Output of the CAMARA Edge Cloud onboarding API. It is up to the OP to identify the best EAS.
In a geographical area	geoAreas	geoAreas	by 3GPP already is “intent based”
For a set of users	anyUeInd, gpsi, ipv4Addr, externalGroupId, ipv6Addr, macAddr	mobileNumbers (array od MSISDN)	Other network APIs must be used by the Operator Platform to map MSISDN to the 3GPP required fields
In a specific time period	tempValidities	tempValidities	by 3GPP already is “intent based”
For a specific application resource	trafficFilters, ethTrafficFilters, trafficRoutes	trafficFilters	the other 3GPP parameters are too technical (eth or N6). This parameter can be used to connect to a specific EAS instance that is not deployed using the CAMARA APIs.

Note: it is important that similar fields (e.g. Users identification or Application identification) are filled with the same parameter in each API

Attribute name	Data type	P	Cardinality	Description	Applicability
civicAddress	CivicAddress	C	0..1	Identifies a civic address.	
shapes	GeographicArea	C	0..1	Identifies a geographic area specified by different shapes.	
NOTE: One of "civicAddress" attribute or "shapes" attribute shall be included.					

Alignment with CAMARA APIs

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applicationId by «MEC exposure and experience management»

```
applicationId:
  type: string
  description: Unique ID representing the Edge Application
```

Alignment with CAMARA APIs

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UEIdentity by «simple_edge_discovery»

```
types_UEIdentityType:
  description: Type of User Equipment identifier used in `UEIdentity`.
  type: string
  enum:
    - IPAddress
    - MSISDN
    - IMEI
    - MDN
    - GPSI
types_UEIdentity:
  description: Identifier value for User Equipment. The type of identifier is defined by the 'UEIdentityType' parameter.
  type: string
```

```
description: User equipment identifier
type: object
properties:
  externalId:
    $ref: '#/components/schemas/ExternalId'
  msisdn:
    $ref: '#/components/schemas/MSISDN'
  ipv4Addr:
    $ref: '#/components/schemas/Ipv4Addr'
  ipv6Addr:
    $ref: '#/components/schemas/Ipv6Addr'
```

UeId by QoD

API Spec

TrafficInfluence API GET Operation

GET	`/traffic-influences`	Retries existing TrafficInfluence Resources
GET	`/traffic-influences/{TIResource_id}`	Reads the specific TrafficInfluence resource

TrafficInfluence API POST Operation

POST	`/traffic-influences`	Creates a new TrafficInfluence Resource

TrafficInfluence API PUT Operation

PUT	`/traffic-influences/{TIResource_id}`	Updates a specific trafficinfluence resource

TrafficInfluence API Delete Operation

DELETE	`/traffic-influences/{TIResource_id}`	Deletes an existing trafficinfluence resource

API Status

Considering the “**API Readiness minimum criteria checklist**”

No	Deliverables/Criteria
1	API Spec
2	API Implementation
3	API Documentation
4	User Stories
5	API test cases and documentation
6	Tested by atleast 2 operators
7	Security review

OPAG - CAMARA coordination and possible planning

Considering as a target having the Traffic Influence API (basic use case) **defined in CAMARA for MWC 2023** (end of February)