eXperimental Infrastructures for the Future Internet

Using S3C

Service Capability, Connectivity and Control

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15.05.2014, Berlin
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FUTURE INTERNET PPP

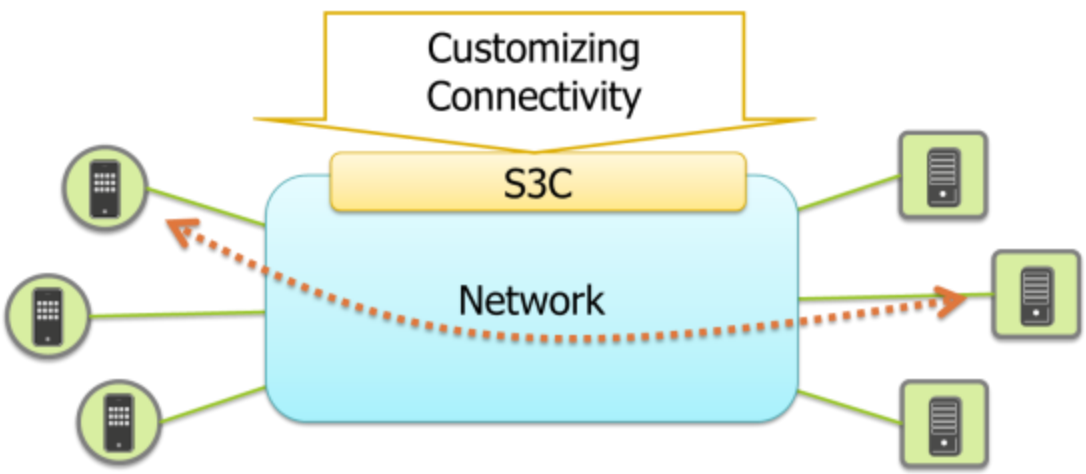
SEVENTH FRAMEWORK PROGRAMME

Deutsche Telekom (T-Labs) Site

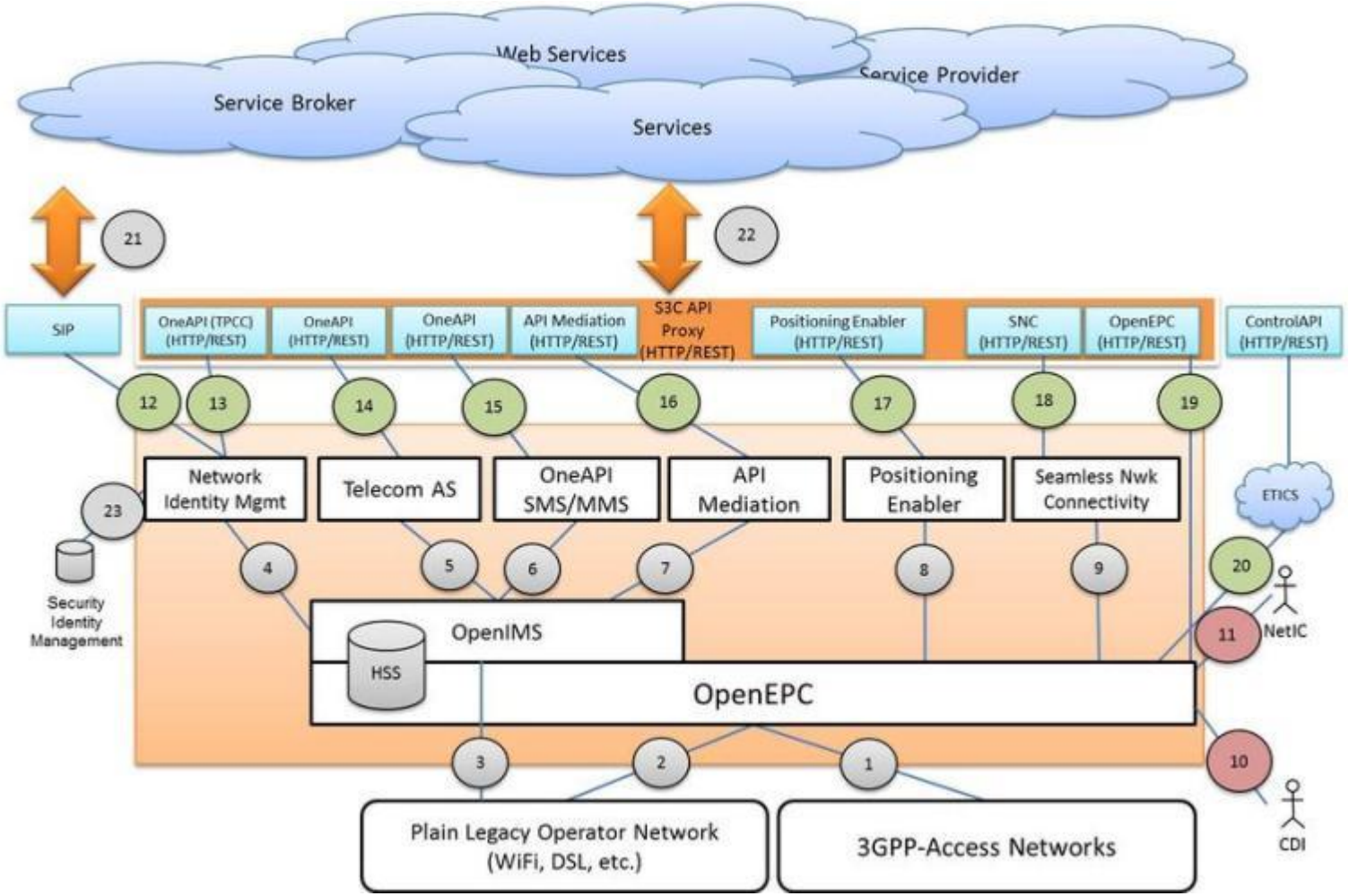
- Introduction – What is the S3C
- Developed Features of S3C
  - EPC OTT Enabler
  - SMS/MMS Enabler
  - API Mediation
  - Telecom AS
  - Network Identity Management
  - Seamless Network Connectivity

Introduction – What is S3C

- S3C: **Service Capability, Connectivity** and **Control**
- Manifestation of the adaption layers between the underlying network control layer for fixed-mobile convergence and network features for the overlying applications & services
- Provides control connectivity of devices and network functionality over heterogeneous networks

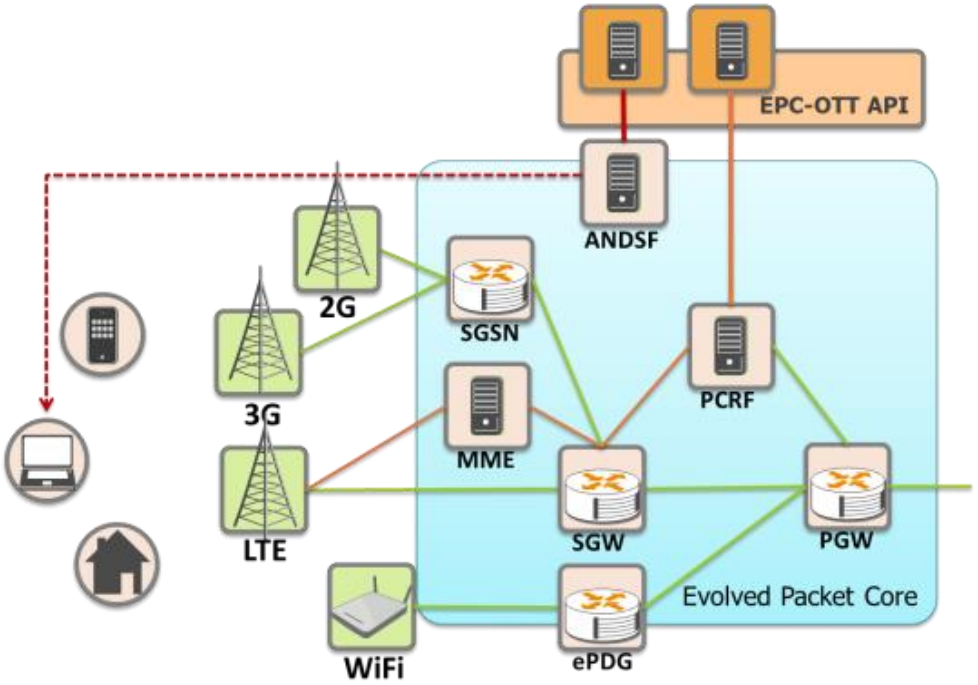


Introduction – What is S3C



Feature: S3C EPC-OTT Enabler

- 3GPP EPC provides transparent IP connectivity **based on operator internal policies** (Access network selection, Mobility Management and Handover support, and QoS and Charging support)
- Access Network Selections Indications
- QoS Reservations



Feature: S3C EPC-OTT Enabler

REQUEST:

POST
/ngsi.applicationDrivenQoS/rest/1/QoSManager/startSession?authkey&userName=001011234567894

```
<?xml version='1.0' encoding='UTF-8' standalone='yes‘ ?>
<qoSFeatureProperties>
  <upStreamSpeedRate>300000</upStreamSpeedRate>
  <downStreamSpeedRate>300000</downStreamSpeedRate>
  <otherProperties><name>Source_ip</name><value>192.168.103.48</value></otherProperties>
  <otherProperties><name>Source_port</name><value>8080</value></otherProperties>
  <otherProperties><name>Destination_ip</name><value>192.168.103.39</value></otherProperties>
  <otherProperties><name>Destination_port</name><value>54679</value></otherProperties>
  <otherProperties><name>Protocol</name><value>tcp</value></otherProperties>
  <otherProperties><name>Framed_IP</name><value>192.168.103.48</value></otherProperties>
  <otherProperties><name>Direction</name><value>out</value></otherProperties>
</qoSFeatureProperties>
```

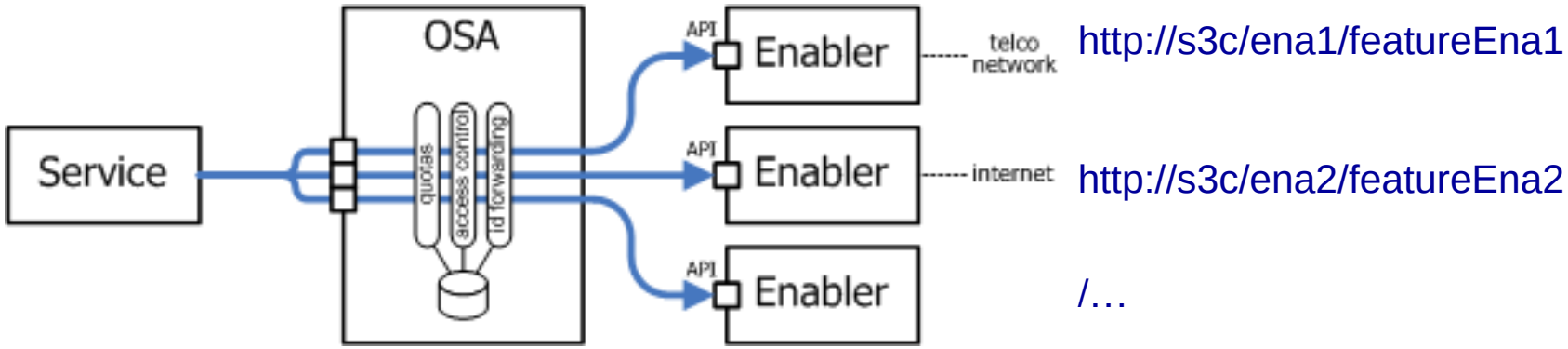
RESPONSE:

HTTP/1.1 200 OK

192.168.254.201;1828127682;13

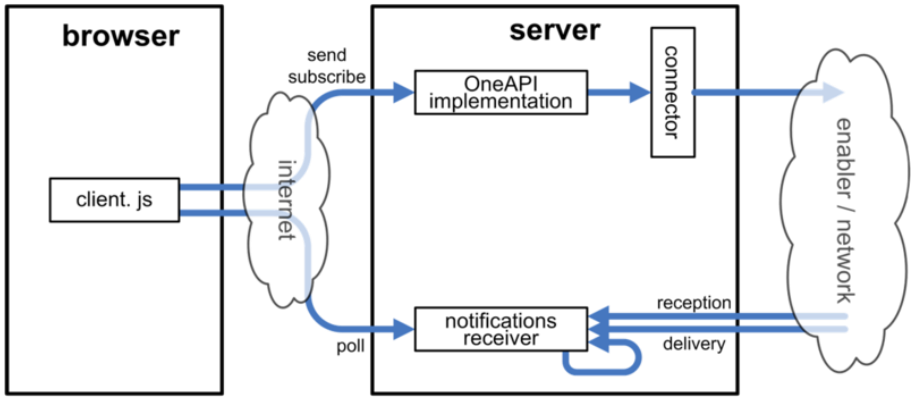
Feature: S3C API Mediation

- Open Service Access is a Web Services gateway designed as a security element of your network, dedicated to WebService protection and publishing. It supports:
  - Secured Publishing of backends on different networks with GUI
  - Apply user and global quotas (per second, day and month)
  - Forward consumer identity and publishing endpoint to provider
  - Provide advance service usage logging to administrators.
  - RESTFull compliant error management (for OSA errors)



Feature: S3C SMS/MMS Enabler

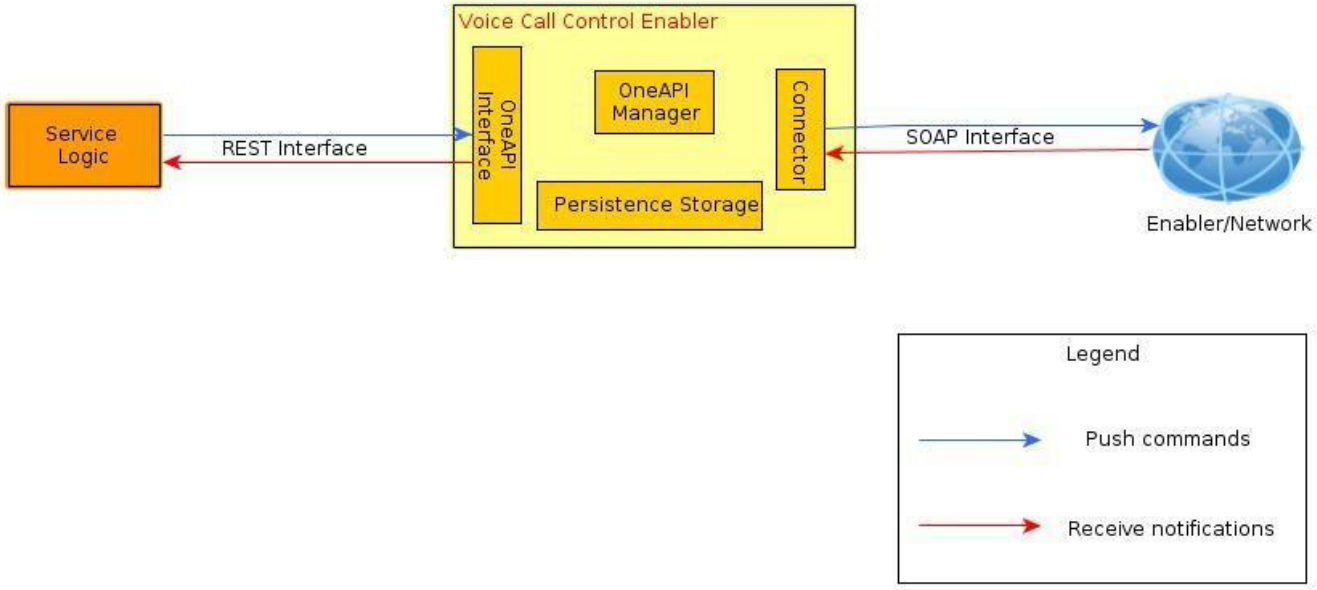
- Allows easily to send short messages from any application or Web Browser.
- This specification is intended for both software developers and re-implementers of this API.
- OneAPI SMS can actually be used (authentication credentials required) on Orange French mobile network



Feature: S3C Telecom AS

- It allows to manage outgoing calls from a service logic via a REST interface.

- Setup calls and manage conference bridges



S3C Network Identity Management

- Allows services to gain information of the subscribers in an NGN (IMS based) domain

- Two distinguish functionalities.
  - Intelligent Device Identification (published in R.2.3)
    - (GSMA OneAPI DeviceCapabilities & V(oice/ideo)CallControl)
  - Virtual Identities (stopped)
    - Stores base profile and mapping schemes

- This specification is intended for service developers

- Possible consumers are services, service providers, or end-user

S3C Network Identity Management

GET /oneapi/devicecapabilities/**<userpart>@<domainpart>**/capabilities

---

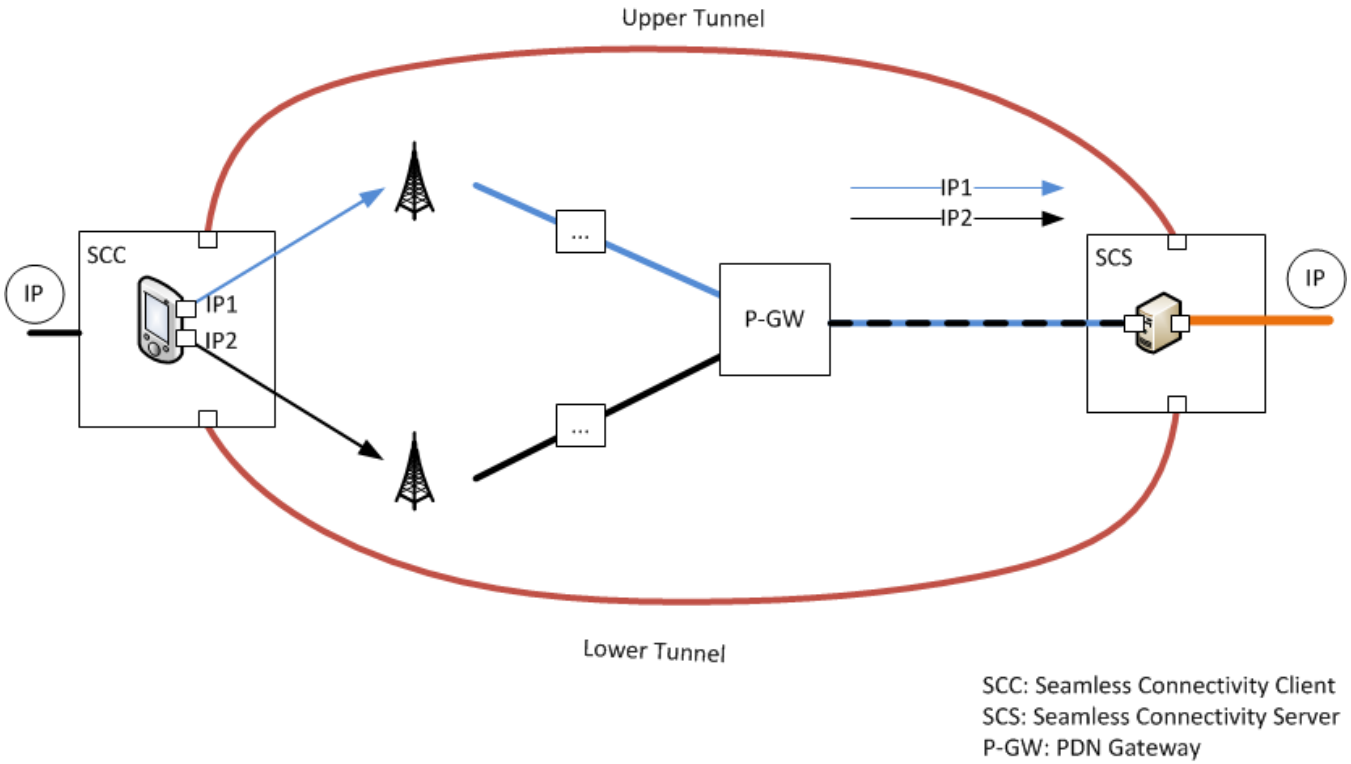
HTTP/1.1 200 OK


```
{
 "resourceURL":
"http://192.168.7.10:8080/oneapi/devicecapabilities/<userpart>@<domainpart>/capabilities",
 "deviceList": [
   {
     "expires": 3573,
     "name": "<userpart>@<domainpart>;gr=f81d4fae-7dec-11d0-a765-00a0c91e6bf6",
     "deviceId": "f81d4fae-7dec-11d0-a765-00a0c91e6bf6"
   },
   {
     "expires": 3572,
     "name": "<userpart>@<domainpart>;gr=ac235eae-efb1-1843-a21a-84120caef246",
     "deviceId": "ac235eae-efb1-1843-a21a-84120caef246"
   } ]}
```

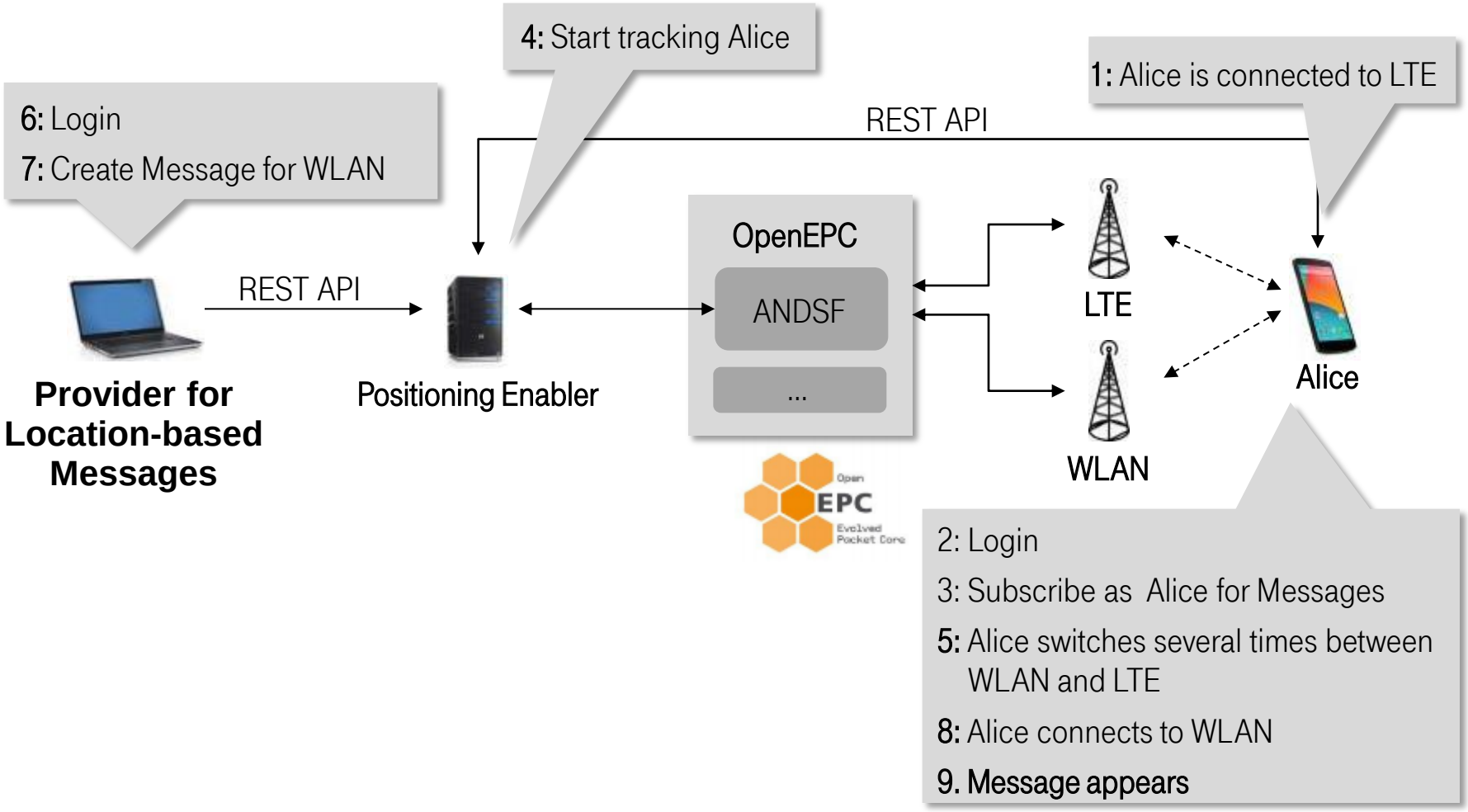
S3C Seamless Network Connectivity

- Use of several access technologies at the same time with one IP address
- Mobility and Handovers of flows and higher bandwidth usage (use of multiple access technologies at one time)
- Possible consumers: end-users and network provider
- PoC in R. 2.3, (No HTTP/REST API for service providers)
- Development has stopped due to decisions of PO

S3C Seamless Network Connectivity



S3C Network Positioning Enabler



S3C Network Positioning Enabler

GET /user/fd93f9df67d246bda36/position
HTTP/1.1
Accept: application/json
Accept-Charset:UTF-8
Host: {serverroot}

Status Code: 200 OK

{
 "apKey": "Test1#1#FFFE",
 "apName": "4G"
}

S3C WebRTC SE

- Special functional gateway which enables WebRTC Audio/Video Calls with the help of IMS network architecture and functions
- Uses special WebSocket protocol to signal between users and gateway (request and opt-response pattern)
- Gateway maps information into SIP messages and acts as a typical IMS user with call establishment and presence signalling
- Tested in OpenIMS Core and Clearwater environment

Message Format:

```
function message(message_command, status_code, attributes) {
        this.cmd = message_command;
        this.status = status_code;
        this.attributes = attributes;
}
```

Example:

```
{
    "cmd": "registerrequest",
    "status": 0,
    "attributes": {
        "user": "alice@openepc.test",
        "pass": "alice",
        "realm": "openepc.test",
        "pcscf": "192.168.101.40:4060"
    }
}
```

S3C WebRTC SE

Start a Call:

```
{
    "cmd": "startwebrtccallrequest",
    "status": 0,
    "attributes": {
        "callStatus": "offer",
        "sdp": “……",
        "sipUri": "bob@openepc.test"
    }
}
```

Thank you for your attention!

Acknowledgments:
The research conducted by XIFI receives funding from the European Commission FP7 under grant agreement N° : 604590

XIFI partners