



OAI 5G CORE NETWORK (CN) PROJECT GROUP – CHARTER

Abstract: This OpenAirInterface (OAI) community PROJECT GROUP named the **OAI 5G CN PROJECT GROUP** has been set up at the OpenAirInterface Software Alliance (OSA) with the goal of designing a 3GPP compatible Stand-Alone (SA) 5G Core Network as open source software. The project will be developed and distributed under the OAI Public License V1.1. The OAI 5G CN will provide software functions implementing all the blocks of 5G core specified by 3GPP. The final goal will be a Cloud Native Service Based Architecture (SBA)-based 3GPP compatible 5G Core Network for the OAI community.

Output of the PROJECT GROUP: The PROJECT GROUP has been designed to give the Alliance the means to accelerate 5G developments in the interest of the OAI community. The motivation of the donors to the PROJECT GROUP, who are also as members of the OSA, is to maintain and enhance the impact that the OSA has as open source community in the area of 5G telecoms. The open source code that will be available as output of the PROJECT GROUP work will be entirely available under the OAI Public License V1.1.

Project Duration: The project will run over an initial period of two years starting from 15th September 2020.

Participating Members: The project will be open for software contributions from all interested members of the OAI community.

Donation and Human Resource Contributions: Given the significant volume and coverage of developments of OAI 5G CORE NETWORK as well as the aggressive timeframe envisioned, the project group seeks support of donors through monetary donations as well as providing engineering support to the OSA in order to enable the OSA Alliance to staff and manage the project. Donors of the Project Group come from among the Strategic Members of the Alliance. The donations are to be paid in two equal annual installments (see “Donation Levels” and “Voting Rights” below) given that the minimum duration of the project is two years. Any extension to the project scope that could eventually induce the donors to wish to extend their donation will be proposed by the Steering Committee (see “Governance Structure” below) and validated by the OSA Board of Directors (“Conseil d’administration”).

Management of the Project: The project group day to day progress will be managed by the staff of the OpenAirInterface Software Alliance that will regularly report to a **Steering Committee**. This Committee will be composed of representatives from EURECOM, the founding member of the OSA, as well as the Strategic Members of OSA who donors to the OAI are 5G CORE NETWORK PROJECT GROUP.

The Steering Committee will have the role of defining the technical orientations of the project, setting goals and objectives, and monitoring the progress of the project. Decisions on the Steering



Committee will be taken through voting. Financial and staff resources decisions will be made according to the OAI statutes and bylaws, under the sole authority of the Board of Directors of the OSA Endowment Fund (“Conseil d’administration du fond de dotation OAI”) in conformity with the OSA Board of Directors decisions.

Steering Committee and its Working: The Committee will consist of individuals representing their respective organizations including EURECOM, the founding member of OSA, as well as donors of the OAI 5G CN PROJECT GROUP. Each individual person will thus be a Member of the Steering Committee (SC).

The President of the OpenAirInterface Software Alliance, also a representative of EURECOM, the founding member of OSA, will be an *ex-officio* member of and will preside over the Steering Committee.

The Steering Committee will meet on a quarterly basis when called by the President of the Steering Committee to address any matters regarding the technical orientation as well as the status of developments in the project. The quarterly meeting will be the appropriate forum to discuss and take decisions on the topics that will be distributed as agenda to the Committee members fifteen days prior to the date of the meeting. The President of the Committee will propose an initial agenda to which any member could request addition of any other items.

Technical Oversight Committee: The development of the 5G CORE NETWORK architecture and software developments will be overseen by a Technical Oversight Committee (TOC) that will be appointed by the members of Steering Committee (SC). Each donor as well as EURECOM and the OSA will appoint one engineering delegate each to the TOC. The TOC will meet as and when required over the course of a regular set of meetings at its own initiative to closely follow the day to day technical evolution of the project as per the roadmap and will be responsible for ensuring the respect of the project timelines agreed with the Steering Committee. The TOC will submit regular progress reports to the SC.

Donation Levels: There are four categories among which donor organizations involved in the OAI 5G CN PROJECT GROUP are classified:

- ***Platinum Donors:*** Organizations in this category donate either **400,000€** per annum in monetary contribution to OSA or **300,000€** per annum plus one full-time senior staff dedicated to contributing software to the OAI 5G CN as member of the OAI development team.
- ***Gold Donors:*** Organizations in this category donate either **300,000€** per annum in monetary contribution to OSA or **200,000€** per annum plus one full-time senior staff dedicated to contributing software to the OAI 5G CN as member of the OAI development team
- ***Silver Donors:*** Organizations in this category donate either **200,000€** per annum in monetary contribution to OSA or **100,000€** per annum one full-time senior staff dedicated to contributing software to the OAI 5G CN as member of the OAI development team



- **Bronze Donors:** Organizations in this category donate **50,000€** per annum in monetary contribution to OSA plus one senior staff dedicating 50% of her/his time to contributing software to the OAI 5G CN as member of the OAI development team

Voting Rights: As previously noted, individual persons representing their respective organizations from among the Strategic Members who are also donors to the OAI 5G CN PROJECT GROUP will each have a seat at the Steering Committee. As Steering Committee Members, individual persons will have the following voting rights.

- **Platinum Donors:** Four (4) votes
- **Gold Donors:** Three (3) votes
- **Silver Donors:** Two (2) votes
- **Bronze Donors:** One (1) vote
- **EURECOM (the Founding Member of the OSA):** Four (4) votes

Decisions at the SC will be taken through a vote. Resolutions will be adopted by two thirds majority.

Utilization and Allocation of the Donations: The main purpose of the collected donations is to accelerate the technical developments of the 5G CORE NETWORK project in order to have them available sooner to the whole OAI community (for example by appointing temporarily staff within the development team), as well as procuring any testing tools allowing for acceleration of the development process. The project will also be supported by the DevOps and Documentation team from the OSA in order to help with the CI and CD tooling and quality management of the software stack. Web presence as well as Press and Media exposure is expected to carry some additional costs. Some of the budget may also be used for exposure at industry events.

External Communications regarding the OAI 5G CN PROJECT GROUP activities: Any external communication including communications through the website and press releases will be proposed by the Steering Committee and will be validated by the Board of Directors of the OSA Endowment Fund (“Conseil d’administration du fonds de dotation OAI”).

DONOR’S SIGNATURE:

Donation Category

Signed name

Title

Print name

Company Name

Email address

Date

Annex 1: Technical Specs and Development Path

As previously stated, the scope of the OAI 5G CN project is to build the Next Generation Core (NGC) / Next Generation Core Network (NGCN), also called the 5G next generation core network according to 3GPP specifications. NGC or NGCN is the part of the network that provides services to mobile subscribers through the radio access network (RAN). It is also the gateway to other networks, for instance to the public switched telephone or to public clouds.

The design of the NGCN is based on the Service-based architecture (SBA), a type of architecture standardized by 3GPP for 5G core networks. The 3GPP defines an SBA to include service-based interfaces between control plane functions, with user plane functions connecting over point-to-point links.

The main components of the 5G core within the scope of the OAI 5G CN are:

- AMF – Access and mobility management function:
 - A component of the 3GPP core network architecture that manages user equipment registration, authentication, identification, and mobility. AMF also terminates non-access stratum signaling.
- SMF – Session management function
 - A fundamental element of the 5G service-based architecture (SBA) that establishes and manages sessions. It also selects and controls the user plane function and handles paging.
- UPF – User plane function
 - The 5G equivalent of the packet gateway in a 4G LTE network. The user plane (also known as data plane) function includes features to support packet routing and forwarding, interconnection to other data networks, and policy enforcement.
- AUSF – Authentication server function
 - A major component of the 5G core network used to facilitate security processes. The AUSF authenticates UEs and stores authentication keys.
- NRF – Network repository function
 - A component of the 3GPP architecture that provides service discovery between individual network functions.
- NEF – Network exposure function
 - A function of the 3GPP core network architecture that provides a means to securely expose capabilities and events. NEF stores the received information as structured data and exposes it to other network functions.
- NSSF – Network slice selection function
 - 3GPP architecture function that selects the set of network slice instances serving the user equipment and determines which access and mobility management function to use.
- PCF – Policy control function
 - Element of the 3GPP core network architecture that provides policy rules to control plane functions.
- UDM – Unified data management
 - A significant component of the 5G core network that stores subscriber data and profiles.
- UDR – Unified Data Repository
 - The UDR stores the policies. It is the master database

- UDSF – Unstructured Data Storage Function, dynamic state data storage
 - o The UDSF is introduced to store dynamic state data
- SMSF – Short Message Service Function
 - o SMSF supports the transfer of SMS over NAS
- N3IWF – Non-3GPP Interworking Function
 - o The N3IWF is responsible for interworking between untrusted non-3GPP networks and the 5G Core

The project will organize itself into different phases and a subset of the functionality will be implemented in each one. The starting target is the AMF, SMF and UPF for the first phase ending Q3 2020 and incrementally other functions will be incrementally added with the following timeline.

OAI 5G CN Project

Project Timeline

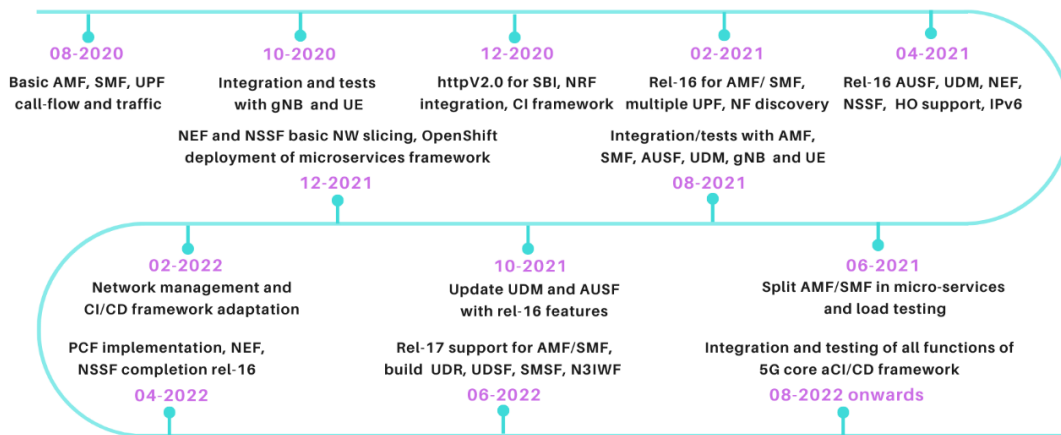


Figure 1. OA 5G CN Roadmap.