



OAI MOSAIC5G (M5G) PROJECT GROUP – CHARTER

Abstract: This OpenAirInterface (OAI) community PROJECT GROUP named the **OAI MOSAIC5G PROJECT GROUP** has been set up at the OpenAirInterface Software Alliance (OSA) with the goal of designing agile RAN and CN service platforms capable of providing fine-grained monitoring, control, and orchestration of the underlying network infrastructure.

The MOSAIC5G software was donated by EURECOM to the OpenAirInterface Software Alliance on 12th May 2021.

The MOSAIC5G software will be developed and distributed under the OAI Public License V1.1.

Output of the PROJECT GROUP: The M5G PROJECT GROUP will provide software implementations of the O-RAN E2 protocol (named E2 Agent), Flexible RAN intelligent controller (named FlexRIC), Flexible Core controller (name FlexCN), and intelligent RAN and CN operator (named Trirematics) over the course of two years. The final goal will be the delivery of an open and agile 4G and 5G service platform and a range of xApps for the OAI community.

Project Duration: The project will run over an initial period of two years starting from 1st June 2021.

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 of developments of software within OAI M5G PG, as well as the aggressive timeframe envisioned, the project group seeks support of donors through monetary donations to enable the OSA to staff and manage the project. Donors of the Project Group are to come from among the Strategic Members of the Alliance. Given that the minimum duration of the project is two years, the donations are to be paid in two equal annual installments (see “Donation Levels” and “Voting Rights” below). Any extension to the project scope beyond the two-year period 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 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 that are donors to the OAI M5G 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 recruitment 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 M5G PROJECT GROUP. Each individual 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 its President 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 evolution of the MOSAIC5G 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 SC. The TOC will submit regular progress reports to the SC.

Donation Levels: There are three categories among which donor organizations involved in the OAI M5G PROJECT GROUP are classified:

- **Gold Donors:** Organizations in this category donate **200,000€** per annum in monetary contribution to OSA.
- **Silver Donors:** Organizations in this category donate **100,000€** per annum in monetary contribution to OSA.
- **Bronze Donors:** Organizations in this category donate **50,000€** per annum in monetary contribution to OSA.

Voting Rights: As previously noted, individual persons representing their respective organizations from among the Strategic Members who are also donors to the OAI M5G PROJECT GROUP will each have a seat at the Steering Committee. As Steering Committee Members, individual persons will have the following voting rights.

- **Gold Donors:** Three (3) votes
- **Silver Donors:** Two (2) votes
- **Bronze Donors:** One (1) vote



- **EURECOM (the Founding Member of the OSA):** Three (3) 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 give OSA the means of delivering the MOSAIC5G software tools (for example by appointing staff within the development team), as well as procuring any testing tools and gear needed for the development process. The project will also be supported by the DevOps and Documentation team from the OSA that will help with the CI and CD tooling and quality management of the MOSAIC5G 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 M5G PROJECT GROUP activities: Any external communication including those 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

MOSAIC5G (M5G) project group aims to transform radio access (RAN) and core networks (CN) into agile and open network-service delivery platforms. Such a platform allows for exploring new use-

cases of interest to different vertical industries. This PG will develop a set of extendable control and orchestration frameworks with extendable APIs on the top of OpenAirInterface RAN and CN to enable fine-grained monitoring and programmability of the underlying network infrastructure. It further allows to leverage a customizable 4G/5G service delivery platform empowered by an ecosystem of intelligent network applications (xApps) and service development kits (SDK). The figure below shows the M5G stack and its relation to the OpenAirInterface RAN and CN.

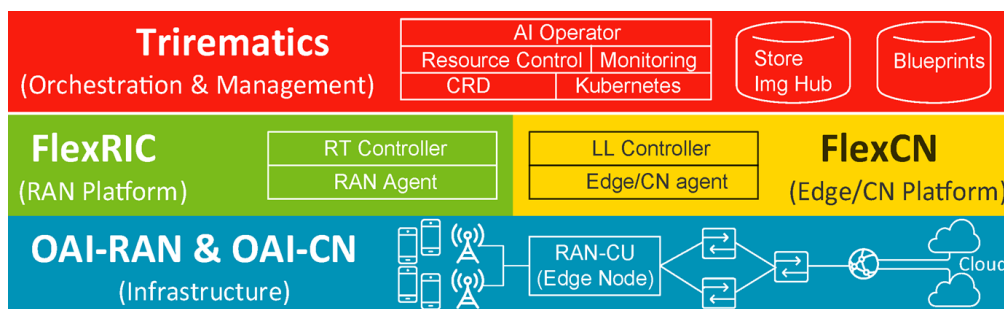


Figure 1. MOSAIC5G stack.

The foremost focus of the M5G PG will be on providing software implementations of

- the O-RAN¹ E2 protocol named **E2 Agent**,
- a flexible RAN intelligent controller named **FlexRIC**,
- a flexible Core controller named **FlexCN**, and
- an intelligent RAN and CN operator named **Trirematics**.

The final goal will be to deliver an open and agile 4G and 5G service platform and a range of xApps for the OAI community.

The figure highlights the four main components of M5G.

1. **Trirematics** is a cloud-native orchestration and management framework allowing to operate the lifecycle of divers RAN and CN deployment scenarios in the form of blueprints. It supports multiple extensions as value added functionalities, such as
 - a. Kubernetes as a container orchestration technology,
 - b. Kubeflow as a Machine Learning Toolkit for Kubernetes, and
 - c. Operator to achieve zero-touch configuration and dynamic services updating and upgrading.
2. **FlexRIC** is a flexible and programmable RAN intelligent controller for Software-Defined Radio Access Networking (SD-RAN) with a generic and extendable E2 interface. It also supports real-time monitoring and control of the underlying 4G and 5G RAN and provides divers service models (e.g., key performance monitoring) and xApps/SDK (e.g., radio resource management).
3. **OAI-RAN Generic E2 Agent** is a library that implements multiple control protocols, including O-RAN E2, within the RAN stack allowing to connect it to different families of RIC (O-RAN-RIC, FlexRIC, etc.).

¹ O-RAN: <https://www.o-ran.org/>

4. **FlexCN** is a flexible and programmable core network controller using software-defined core networks (SD-CN). It also support monitoring and control of the underlying 4G and 5G CN leveraging the standardized 3GPP subscription/notification mechanism. FlexCN, in a similar fashion as FlexRIC, also includes divers service models (e.g., key performance monitoring) and xApps/SDK (e.g., traffic control or slicing).

The project will be organized into different phases and a subset of the functionality will be implemented in each phase. The implementations in the first phase will be started at the ending of Q2 2021. Its functions will incrementally be added with the following timeline.

OAI MOSAIC5G Project

Timeline

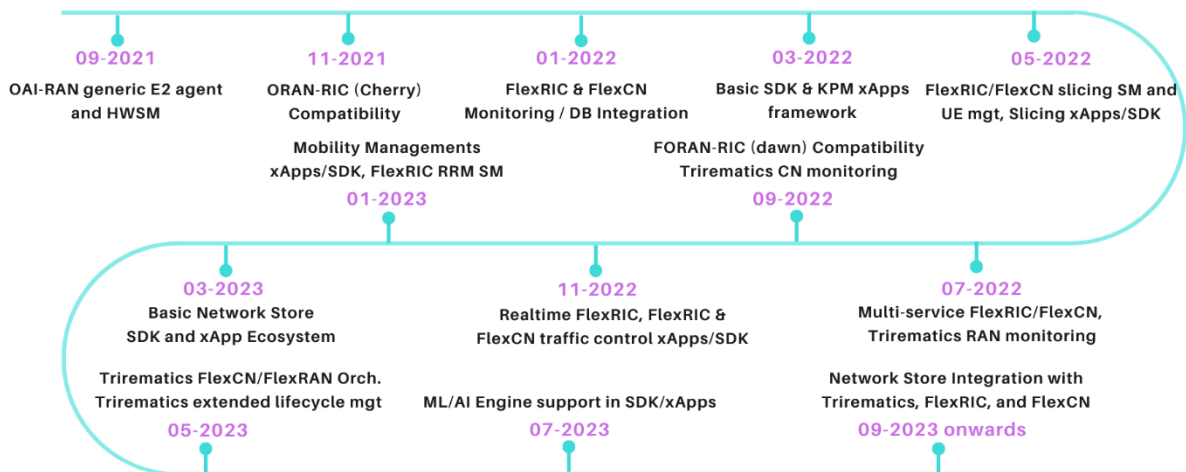


Figure 2. OAI M5G Project Roadmap.