MOSAIC5G.io

Enabling Agile 5G Service platforms

Communication Systems Department, Eurecom, France
ITU Demo, 2018

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What is Mosaic5G?

“A non-profit initiative fostering a community of industrial as well as academic contributors for open-source software development to realize the service-oriented vision of 5G”
Why Mosaic5G?

“Mosaic5G was formed to develop, promote, and share an ecosystem of open-source platforms and use-cases for 5G system R&D leveraging SDN, NFV, and MEC tech enablers”
M5G Ecosystem

JOX Store

FlexRAN LL-MEC

**JOX**
(Orchestration & Management)

- JSlice controller
- JCloud controller
- JOX plugins
- Juju VNFM

**Store**
(Data & Service & App)

- Open Data APIs
  - Monitoring Apps
  - Control Apps
  - Analytics Apps
  - SDK
- Knowledge Base

**FlexRAN**
(RAN Platform)

- Virtualization & Slicing
- RAN Runtime

**LL-MEC**
(Edge/CN Platform)

- Virtualization & Slicing
- Edge/CN Controller

**OAI-RAN & OAI-CN**
(Infrastructure)

- RAN-CU (Edge Node)
- Cloud
- Cloud
FlexRAN

- **Plug & Play control apps**
  - SDK for App2App and App2RAN
  - RAN slicing, Spectrum mgmt

- **FlexRAN Real-time Controller (RTC)**
  - Centralized controller
  - Abstract eNB/UE state and resources

- **FlexRAN Runtime**
  - Abstraction and programmability of network functions
  - Extendable RAN APIs
  - Virtualized resources and states
  - Local controller

- **FlexRAN Protocol**
  - Statistics
  - Configurations
  - Commands
  - Event Trigger
  - Control delegation
LL-MEC

- **Plug & Play control apps**
  - Video Optimization

- **Application manager (Mp1)**
  - Low-latency: CoreAPI, MBus
  - Elastic: RestAPI, MBus

- **Platform (Mp2)**
  - Edge packet service (EPS)
    - Multi OpenFlow libs
    - Static and dynamic rules
  - Radio network information service (RNIS)
    - Real-time RAN&CN information

- **Abstraction**
  - U-plane APIs: OF Agent
**JOX**

- **JOX**: *E2E service lifecycle orchestrator on slice manifest*
  - NS Templates
  - Application APIs
  - Slice manager (JSlice)
  - Plugins
- **Juju / JaaS**: *manages VNFs over the infrastructure*
  - Model-driven VNFM
  - Multi-cloud & multi-models
- **Network plugins**
  - RAN, CN, MEC, VIM
- **Cloud Infrastructure**
  - MaaS, LXD, AWS/GCE
Store

- Network Store Management
- Network Control Semantics and SDK
- Plug&Play Control Apps
- Access Control
- Service Registry, Inventory, and Discovery
M5G use cases

- **E-health**
  - Reshape the healthcare application in Health 4.0

- **IoT**
  - Leveraging IoT, Innovation shifts from products to solutions

- **V2N**
  - Enabling future intelligence transportation systems

- **Green networking**
  - 5G Network slicing leads to smart grid innovation
<table>
<thead>
<tr>
<th>Membership Level</th>
<th>User</th>
<th>Contributor</th>
<th>Sponsor Partner</th>
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<tbody>
<tr>
<td><strong>Free of Charge</strong></td>
<td>Access to the code and documentation</td>
<td>Access to the code and documentation</td>
<td>Membership Fee</td>
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<td>Access to mailing lists and get support</td>
<td>Access to Training and prototyping sessions</td>
<td>Establish a collaborative R&amp;D project</td>
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<td>Share use-case and PoC</td>
<td>Access to new features and fixes</td>
<td>Create a collaborative PoC</td>
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<td>Lead a collaborative R&amp;D project</td>
<td>Member of advisory board</td>
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<td>Contribute to the source code</td>
<td>Access to the Mosaic5G lab environment</td>
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[More information]
M5G Licensing model

Apache V2.0 Public License popular and widely deployed in Open Source Communities
M5G Call to Community for Innovation
Demo Setup and Components

Mosaic5G Platform

- Edge Applications
- SDK
- RAN Controller
- Radio API

Open Air Interface

RAN Slice 1
Control Apps

RAN Slice 2
Control Apps

RAN Slice 3
Control Apps

Control Plane
Data Plane

FlexRAN

OAI-RAN

S1-Flex

S2-Flex

OAI-RAN

OAI-CN-1

OAI-CN-2

Internet

Remote Servers
Mosaic5G-Contact

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Linkedin: mosaic-5g