

# OAI MOSAIC5G

## OAI Service Models

To the already delivered SLICE, MAC, RLC and PDCP SMs, a first implementation of KPM v2 has been deployed and the corresponding RAN Function implemented, as well as, a specific SM aiming to gather statistics from the IP based protocol GTP. Both are now supported in latest OAI.

Additionally, work is about to start implementing O-RAN's RAN Control and O-RAN's Cell Configuration and Control.

We are also expecting to deliver the widely expected 5G slicing Service Model after having been widely tested internally soon.

	OAI-4g	OAI-5g	SRS-4g	E2 Agent emulator	Near RT-RIC	xApp C/C++	xApp python	O-RAN standardized
MAC	Y	Y	Y	Y	Y	Y	Y	N
RLC	Y	Y	Y	Y	Y	Y	Y	N
PDCP	Y	Y	Y	Y	Y	Y	Y	N
SLICE	Y	N	Y	Y	Y	Y	Y	N
TC	N	N	N	Y	Y	Y	N	N
GTP	N	Y	N	Y	Y	Y	Y	N
KPM	N	Y	N	Y	Y	Y	N	Y, v.2.02

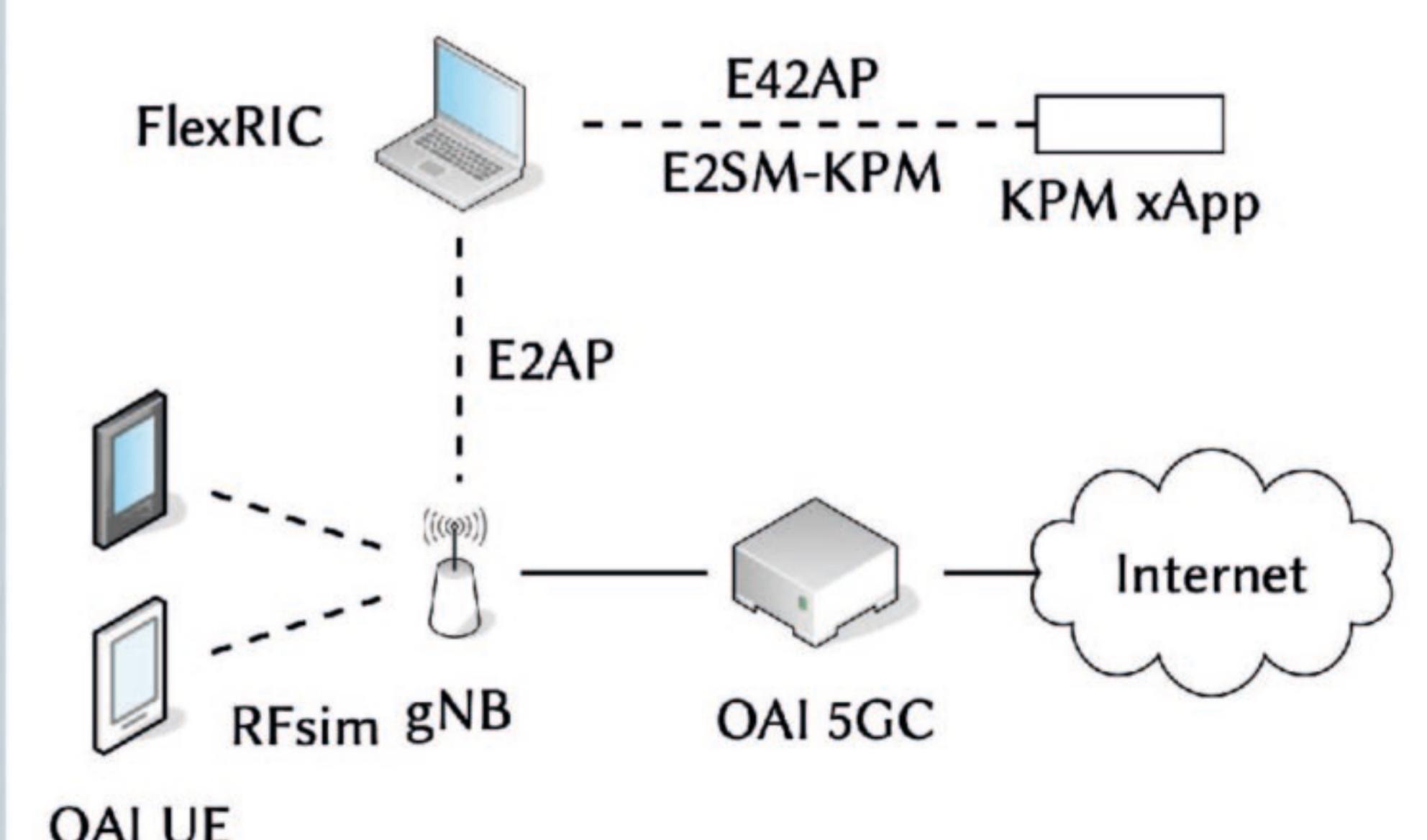
## E2 Agent implementation in OAI

Good news!

Officially FlexRIC's E2 Agent will be merged with OAI's main code in order to smooth the experience of FlexRIC's adopters avoiding the need to patch the code.

E2 Agent will be enabled through a compilation flag, following the zero cost abstraction model, where OAI users that do not need the E2 Agent will not compile it, avoiding the unnecessary waiting time while not bloating the executable.

Initially, the E2 Agent with E2AP v1 will be deployed while there already exist a plan to enable E2AP v2. In this manner, OAI will acquire the most complete O-RAN compliant E2 Agent open source implementation facilitating OAI's usage with other nearRT-RICs.



## Next FlexRIC steps:

- Upgrade to E2AP v2.0
- Merge of E2 agent to openairinterface5g repository
- Interoperability with O-RAN RIC and ONOS SD-RAN
- Introduction of KPM v2.0 and interoperability with kpimon xApp(s)

# OAI EVENTS



## Fyuz Event

In October, Florian Kaltenberger (OSA) led a session at the Fyuz event: «Accelerating O-RAN adoption through open source». In this presentation, he highlighted how OAI can improve the quality of specifications and facilitate the integration and testing of commercial products in a context of an xG world in which Modern standards often include code-like sections in their specifications.



## NI & OSA Joint Webinar: (EMEA) 6G Reference Designs Extend Real-Time Prototyping Beyond Simulation

In December, NI (National Instruments) and OAI held a webinar by Malay Duggar, Board Member at the OSA and Principal Solutions Marketer at NI. Florian Kaltenberger, Professor at EURECOM and Secretary General of the OSA also joined the webinar as a guest speaker.

During the webinar, we learned more about NI's customizable, high-performance hardware/software architecture and we showed a 5G-compliant end-to-end network demo using OAI and the USRP X410 showcasing 5G and 6G.

This webinar was a great example of the type of collaboration between OSA and its Strategic Members.

## O-RAN European Plugfest Fall 2022

From August to November, the OSA team proudly collaborated with VIAVI in the O-RAN European plugfest to enable the conformance testing of the OAI O-DU using the VIAVI O-RU emulator.

At the end of the event, the OAI DU successfully drove the O-RAN fronthaul compliant 7.2 services through commercial RU emulators like Viavi TMLite and interoperable physical RUs. We carried out conformance testing between OAI(DU) and Viavi (RU) on the S/C/U plane for O-RAN specifications. The RU has been tested through 10G link speed with 100MHz TDD n78 and 2T2R.



## 2022 Mobile World Congress Las Vegas

Victim of its success, the OSA team showcased for a second time this year its demo at the Mobile World Congress: End-to-End Open Source from OAI



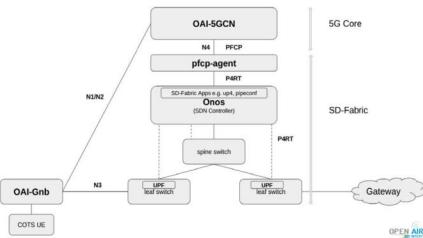
accelerated by the AMD T1 Telco Card.

## 2023 Mobile World Congress Barcelona

Alongside Eurecom, the OAI Team will present a new E2E 5G SA O-RAN 7.2 demo!  
Join us at the eurecom booth: hall 2, booth 2C50

# OAI 5G CN

Integration of OAI 5G Core Network with SD-Fabric



## Load Testing with Omcgnbsim

Based on the RAN emulator that the Open Networking Foundation developed, we were able to do load testing.

[More details here](#)

In the context of the 5G SA-Tester development, we took the opportunity to evaluate how many users our core supports. We deployed a basic NRF-based deployment with 2 UPF flavours (SPGWU-tiny and VPP-UPF). Then we deployed also 4 omec-gnbsim instances.

These instances would emulate 4 gNBs trying to connect hundreds of UEs. For registration, we are able to register 4000 UEs in less than 4 minutes.

For PDU session establishment, we are able to fully connect 550 UEs in 2 minutes.

[Full description of the test here](#)

## UE-Initiated PDU Session Release Support

« We integrated this functionality to our OAI-AMF and OAI-SMF network functions. This enables a smartphone to use the AirPlane On / Off feature. We've successfully tested it with commercial UEs. »

Raphaël Defosseux  
OAI DevOps Expert



## SD Fabric Integration with OAI 5G Core Network

The OAI team has successfully integrated and validated SD-Fabric UPF with OAI Core Network and OAI gNB using COTS UE. SD-Fabric UPF is a production grade UPF which leverages SDN principles and p4 enabled data planes, capable of handling Tbit/s of data transfer.

This OAI's SD-Fabric setup will also act as physical UPF for Snode under SLICES project, where community of researchers will be able to perform experiments around this ecosystem.

[More information here](#)

## MAGMA Orchestrator Integration with OAI 5G Core

OAI team have successfully integrated 3GPP compliant OAI Core network with magma Orchestrator framework. Magma Core ecosystem provides a converged core network for heterogeneous radio access systems including LTE, 5G and WiFi. We have introduced a middleware-based abstraction framework to interact with the Magma orchestrator which abstracts out Magma RPCs to REST APIs for OAI 5G core network. This abstraction layer is agnostic to the gateway type as far as the Magma orchestrator is concerned.

## PCF Initial Public Release

The OAI team is proud to release the first public version of the PCF. It supports the N7 interface between PCF and SMF and implements the PDU session related policy control, which has been validated with an edge-computing UL CL scenario. The PCC rules and policies can dynamically be configured using the file system. Additionally, the SMF has been updated to support the N7 interface.

## Testing with Commercial UEs (Release 15 & 16)

We successfully tested OAI core network and OAI gNB with below COTS-UE and testing modules:

COTS-UE:

- iPhone 14
- Huawei P40Pro
- OnePlus 8
- Google Pixel 5

Testing Modules:

- Quectel RM520N (Rel16)
- Quectel RM500Q (Rel 15)

Note: Iphone 14 and Huawei P40 pro both needs an IMS configured in SMF configuration file. For IMS we are using an asterisk server.

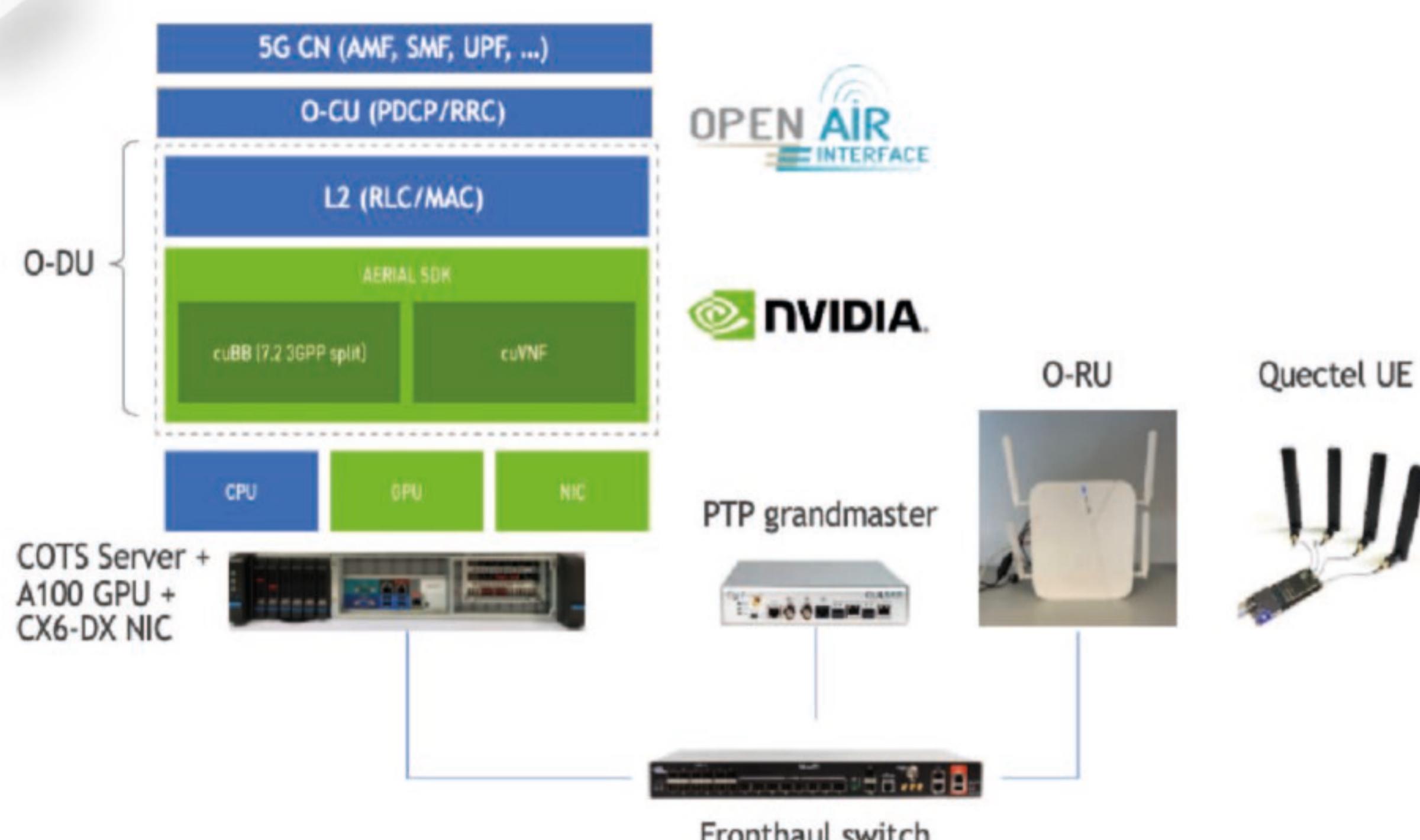
Starting release v1.5.0 we are adding Quectel RM520N in our CI testbed. This will make sure that all the develop and master images work well with Quectel modules.

# OAI 5G RAN

## OAI & NVIDIA Collaboration Work on L1, L2 and L3

The NVIDIA Aerial platform which includes GPU-accelerated 5G L1 is playing a central role in the enablement of 5G RAN and future communication systems. It provides source code (C programming) for rapid prototyping and network deployment instead of time-consuming FPGA development.

NVIDIA and OSA are closely collaborating to accelerate and advance wireless research. At the OAI workshop in San Diego in November 2022, we showed an end-to-end gNB implementation comprising the OAI L2/L3 software and NVIDIA GPU-accelerated Aerial L1 as well as a third-party O-RU. The OAI L2/L3 is interfacing with the Aerial L1 through the standardized FAPI, an interface defined by the Small Cell Forum while the Aerial L1 interfaces with the O-RU using the O-RAN 7.2 fronthaul interface.



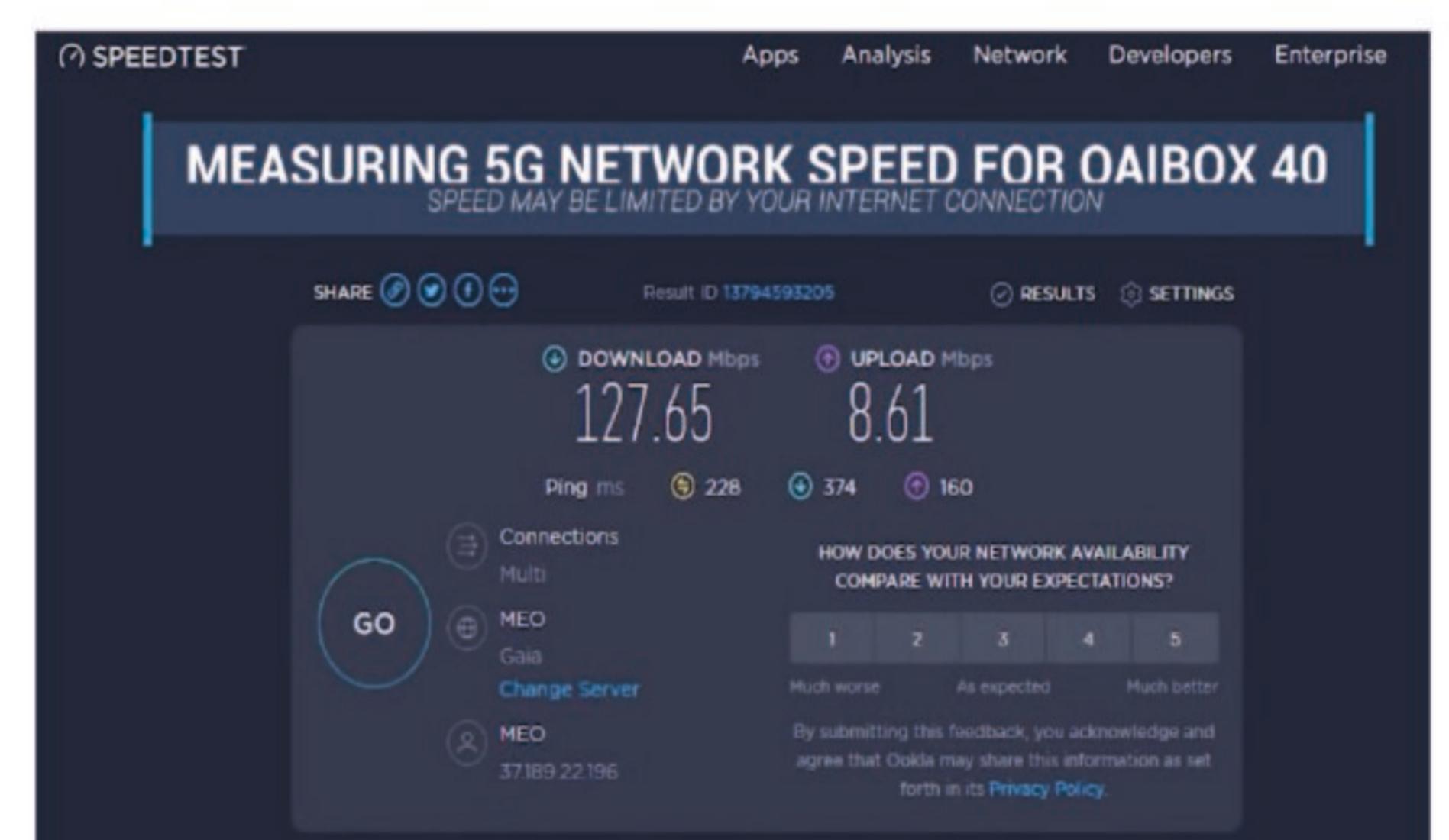
## AMD T2 Telco Accelerator Card Integration Into OAI

In the previous MWC Las Vegas and Barcelona, the team proudly showcased the AMD (Xilinx) T1 Telco Accelerator Card integration in OAI. At end of the same year, we went a step forward with the successful integration of the T2 card. The LDPC decoding is a computationally expensive task, and consumes up to 90% of the total RX processing time. Offload of the LDPC decoding to the dedicated hardware efficiently reduces the CPU load and processing time of the LDPC decoding, and this is where the T2 card comes in. We are now able to accelerate the data transmission in uplink by offloading channel decoding to the T2 card.

## New Downlink Throughput Record with Allbesmart

The Allbesmart downlink throughput record race is not over!

In the previous summer newsletter, Allbesmart was able to run a downlink throughput of 479 Mbps. Four months after, Allbesmart can now run a downlink throughput of 800 Mbps with the OAI gNB and COTS UE!



## OAI Software Now Compliant with O-RAN 7.2

OSA is proud to announce that OAI 5G software is now compliant with O-RAN 7.2 split. The O-RAN 7.2 Fronthaul interface between O-DU and O-RU has been integrated into the OAI DU using O-RAN FHI library. An API is implemented between OAI PHY layer and O-RAN FHI library. The interoperability tests of O-RAN C/U plane and S-plane have been done between OAI DU and VVDN RU. OSA showcased the end-to-end 5G SA O-RAN 7.2 demo during O-RAN European Plugfest Fall 2022.



# Newsletter

OAI 2022 Winter Edition

For yet another year OSA and its community grew and evolved together.

Participation in new projects, new members, development of the current activities, and joint projects. We are enthusiastic to share the latest news from the Alliance with you.

Please keep reading to learn more!

OPEN AIR  
Interface

## Fall 2022 OAI North American Workshop

The OSA team went back to the US after a prolonged COVID-imposed absence to continue the momentum built by the community at the last in-person 2019 North American Workshop.



This Fall 2022 Workshop was unique. We demonstrated 22 live demos all based on the community's work on OAI: a record and a testimony of your trust in OAI's stability and feature readiness. Inspiring talks and panels also made this event a great success.

We thank you all for your participation, and we hope to see you in our next Workshop!



**Sagar Arora**

OAI CN  
group



**Teodora Vladic**

OAI RAN  
group



**Romain Lacroix**

OAI CN  
group

### OAI TEAM

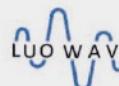
Welcome to  
our 3 new  
teammates!

### New partners

 **vodafone**



**NVIDIA**

 **LUOWAVE** 硼光电子

The OSA now counts:

- 13 Strategic Partners
- 15 Associate Partners

### Important coming dates

- OAI 2023 Summer Workshop
- OAI Webinar: January
- 2023 MWC Barcelona