

O-RAN ALLIANCE Welcomes New Board Members and Announces Further Progress and Demos Towards Open and Intelligent RAN

- KDDI, Rakuten Mobile and Vodafone are elected to the O-RAN ALLIANCE Board of Directors
- Newly released technical specifications enrich the standards for developing O-RAN networks
- O-RAN Security Task Group addresses the security aspects of open RAN
- **O-RAN Virtual Exhibition** Provides Insights on Companies Progressing with their O-RAN Implementations

Bonn/Germany, November 3, 2020 – The O-RAN ALLIANCE concluded its first two years of successful operation, delivering major progress in standardizing open and intelligent Radio Access Networks (RAN).

Welcoming Rakuten Mobile as its new operator member, the O-RAN ALLIANCE now represents the leadership of 27 major carriers joining forces towards making the RAN industry truly open, intelligent, virtualized and fully interoperable. With strong support of contributors and academic contributors, O-RAN now has **over 230 companies** driving the definition and realization of O-RAN technology.

At its Annual General Meeting held on October 27, 2020, the O-RAN ALLIANCE Members have elected the Board of Directors for the upcoming 2-year term. 3 new operators are coming on the Board: KDDI, Rakuten Mobile and Vodafone, bringing it to its full strength of 15 members.

“In its first two years the O-RAN ALLIANCE has driven a tremendous pace in delivering new standards for open and intelligent RAN, and has helped facilitate implementations by releasing open software and supporting the integration and testing of concrete O-RAN implementations,” said Andre Fuetsch, Chairman of the O-RAN ALLIANCE and Chief Technology Officer of AT&T. “We welcome the new members of the O-RAN Board, and look forward to the continuing contributions from all O-RAN participants that will drive a global mobile network ecosystem based on openness, interoperability and intelligence.”

“The expanding operator commitment validates the O-RAN ALLIANCE’s approach to drive RAN transformation by creating global standards for open and intelligent RAN,” said Alex Jinsung Choi, COO of the O-RAN ALLIANCE and SVP Technology Strategy & Innovation, Deutsche Telekom. “The alignment of the ecosystem building effort with other major Standards Development Organizations, the close cooperation with the O-RAN Software Community and the support for the worldwide Open Test and Integration Centres are concrete steps to accelerate the commercial availability of multi-vendor O-RAN compliant technology.”

“We are very excited to work with O-RAN ALLIANCE partners in acceleration and adoption of the open and intelligent RAN network,” said Tatsuo Sato, vice president and managing officer, technology planning, KDDI CORPORATION. “We expect O-RAN openness and intelligence bring us enhanced RAN innovations and cost-effective and flexible network.”

"Through our work on our mobile network in Japan, we have shown that open, interoperable and disaggregated RAN is a valid alternative to traditional network architecture," commented Tareq Amin, Representative Director, Executive Vice President and CTO, Rakuten Mobile, Inc. "As a new member of the O-RAN ALLIANCE, we look forward to sharing the lessons learned from building our 4G/5G

commercial network to accelerate the establishment of fully open standards for RAN and contribute to the development of a rich and diverse vendor ecosystem."

"The O-RAN ALLIANCE has become a key enabler of the OPEN RAN vision," said Nadia Benabdallah, Head of Networks, Vodafone Group. "In the next few years, it is essential that we set out a plan for truly transformational initiatives, while ensuring end-to-end System Integration and delivering a quality service to our customers. These are the most complex and important areas to address. In order to deliver on these promises, the evolution of OPEN RAN requires a single voice, and therefore we are delighted to increase our effort within the O-RAN ALLIANCE to make that happen."

20 O-RAN Specifications Released since June 2020

The new set of specifications adds to the total of 40 standards in 73 versions.

O-RAN specifications published in 2nd half of 2020 introduce the initial version of O2 interface general aspects and principles, the HW reference design for the indoor picocells in 7.2 and 8.0 split, as well as an end to end system testing framework.

Publishing the Criteria and Guidelines for the Open Testing and Integration Centres (OTIC) initiates the global platform for testing and integration of O-RAN based network equipment.

15 other released specifications represent newer versions to existing O-RAN standards, enriching them with new functions according to the O-RAN Architecture.

For more details on the new specifications, please check this O-RAN [blog post](#).

O-RAN Security Task Group addresses the security aspects of open RAN

O-RAN has created a Security Task Group (STG) to investigate and address the security considerations of the O-RAN architecture. In its recent [blog post](#), the STG tackles the security challenges on all O-RAN interfaces and components.

O-RAN Virtual Exhibition Provides Insights on Companies Progressing with their O-RAN Implementations

To substitute the canceled MWC Los Angeles 2020, O-RAN member companies present their recent demonstrations of O-RAN based equipment at the [O-RAN Virtual Exhibition](#). 23 new demonstrations of O-RAN Open and Intelligent solutions have been added:

IPLOOK demonstrates an End-to-end 5G SA/NSA open mobile core network. This demo showcases the highly scalable End-to-end 3G/4G/5G converged mobile core solution based on COTS and Cloud for MNOs, MVNOs, WISPs and Private Networks in order to reduce TCO and grow revenue.

Airspan demonstrates its 5G virtual end-to-end massive MIMO Open RAN based solution OpenRANGE. It includes: O-RAN Open Fronthaul based Massive MIMO O-RU, cloud native containerized vDU and vCU x86 based protocol stack and Airspan's Service Management and Orchestration (SMO) framework.

Juniper Networks demonstrates 5G Network Slicing across Telco Cloud and Transport Network domains, which can be used for O-RAN xHaul slicing. The demo showcases network slices created by domain specific Juniper controllers – Contrail and Northstar – and explains how Network Slicing works to deliver service guarantees for 5G applications.

ArrayComm presents two demonstrations:

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- (1) an end to end 5G solution based on NXP BonnyRigg, which proves the possibility of small cell solution on new platform.
 - (2) an end to end 5G solution based on NXP LX2160A + Xilinx FPGA ZU21DR. It provides higher throughput performance and is ready for commercial deployment.

Comba Telecom demonstrates Open RAN Multi-band Remote Radio Unit with advanced technology that maintains low level of power consumption and better receiver sensitivity. The small form factor and improved Mean Time Before Failure performance contributes to installation and maintenance cost saving. These features facilitate fronthaul integration with O-DU partners.

Xilinx presents two demonstrations:

- (1) Virtual BBU, O-DU and O-CU FPGA-based HW acceleration in the Edge Cloud based on Xilinx T1 Telco Accelerator cards, which transform a standard server into a virtual baseband unit (O-DU) with the performance, low latency, and power efficiency required for O-RAN 5G deployments. Xilinx T1 cards further implement O-RAN MCUS planes protocols for the Open Front Haul interface.
- (2) O-RAN massive MIMO radio unit reference design based on Xilinx RFSoc devices incorporating GSPS integrated ADC/DACs (direct RF sampling transceiver architecture), 32TRX and 64TRX configurations, DFE, high EIRP and high TRP aligned with the requirements stated in OMAC HAR.

Calnex demonstrates precision timing and sync is a key technical challenge and standards bodies have been working on specifications. This demo showcases the methodology for conformance testing of timing for Fronthaul and O-RAN that will enable successful deployment of the new standards and technologies.

NTT DOCOMO, Fujitsu, NEC and Samsung present multi-vendor IOT with O-RAN's Open Fronthaul and X2. It includes 5G NSA by multi-vendor RAN with NR on sub 6GHz and mmWave, which is already live in NTT DOCOMO's commercial network. It also includes a pre-commercial realization of Fronthaul Multiplexer (FHM) and NR sub 6GHz inter-band Carrier Aggregation.

Baicells, QCT and Wind River demonstrate the E2E outdoor micro cell solution based on Open Fronthaul and Open Cloud platform. In addition, the co-platform for both O-CU/O-DU and 5GC are tested with commercial UEs to showcase the MU-MIMO peak throughput with Outdoor micro AAU.

VIavi presents 3 demonstrations:

- (1) the TM500 O-RU tester, which covers a wide range of test capabilities, addressing the conformance, interoperability and performance test needs for NEMs and Service providers.
- (2) its TM500 O-RU Emulator to test the interoperability and interworking of the O-RAN O-DU. Including full bandwidth testing of CU plane with multi-UE traffic while monitoring signal quality for different bandwidth.
- (3) end-to-end 5G NSA performance system testing across multiple O-RAN components from multiple vendors. Providing performance and interoperability validation with integrated test automation across a full O-RAN multi-vendor network with the TM500 Network Tester.

Keysight presents 7 demonstrations:

- (1) a virtualized RU Simulator that runs on commercial hardware to test O-DUs/O-CUs. This helps accelerate the development/manufacturing, Operator, and OTIC Labs to accelerate O-RAN development and testing.
- (2) a RIC tester that is built as a microservice and can be deployed on private/public cloud environments. This verifies the E2 interface as well as the ability for RIC to respond to KPM reports from simulated O-DUs and O-CUs.

(3) 5G SA O-RAN network end-to-end performance verification. MNOs can now evaluate the performance of a multi-vendor RAN.

(4) automated O-RAN Test Solution for O-RUs. This test suite enables NEM development/manufacturing, Operator, and OTIC Labs to accelerate O-RU conformance testing.

(5) xhaul transport Network validation solution using IxNetwork. It enables transport device vendors and operators to benchmark forwarding performance and total delay budget of time sensitive fronthaul network

(6) IxNetwork TSN test solution for time sensitive fronthaul network. This test enables transport devices vendors and operators to validate frame preemption capability of transport devices, ensuring end-to-end latency of the express radio traffic.

(7) IxNetwork Segment Routing test solution for xHaul transport. This test enables transport devices vendors and operator to validate transport network slicing infrastructure supporting differentiated 5G services.

AT&T, VIAVI, Samsung and Nokia demonstrate an end-to-end traffic steering use case based on a number of open source components namely, near-RT RIC platform, Traffic steering xApp, KPI monitoring xApp and a RAN Simulator.

NEC demonstrates its 5G base station equipment with open fronthaul interfaces, ie, Open Radio Units (O-RU) for macrocells that support the 3.7GHz and 4.5GHz bands, as well as Open Fronthaul Multiplexers (FHM) for 5G.

Ericsson demonstrates how the SMO performs automated management of RAN xNFs (any Network Function) through O1 interface. It also demonstrates how OSC (O-RAN Software Community) A1 Controller function supports QoE (Quality of Experience) refinement in RAN through the use of A1 policies.

About O-RAN ALLIANCE

The O-RAN ALLIANCE is a world-wide community of more than 230 mobile operators, vendors, and research & academic institutions operating in the Radio Access Network (RAN) industry. As the RAN is an essential part of any mobile network, the O-RAN ALLIANCE's mission is to re-shape the industry towards more intelligent, open, virtualized and fully interoperable mobile networks. The new O-RAN standards will enable a more competitive and vibrant RAN supplier ecosystem with faster innovation to improve user experience. O-RAN based mobile networks will at the same time improve the efficiency of RAN deployments as well as operations by the mobile operators. To achieve this, the O-RAN ALLIANCE publishes new RAN specifications, releases open software for the RAN, and supports its members in integration and testing of their implementations.

For more information please visit www.o-ran.org.

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