



Meet our experts in the O-RAN Alliance

Introduction

The O-RAN Alliance defines specifications in areas of RAN automation, cloudification, and disaggregation. The ambition of O-RAN Alliance is to enable an Open RAN by creating a multi-supplier RAN solution that allows for the separation - or disaggregation - of hardware and software with open interfaces and virtualization, hosting software that controls and updates networks in the cloud.

With many claims on the Open RAN leadership, understanding the impact of key companies in standardization within the O-RAN Alliance is an important indication of technology leadership in Open RAN development.

Ericsson's impact on the O-RAN Alliance is undisputed and clearly show that Ericsson is a leading company in the development of driving Open RAN development forward.

Ericsson holds three co-chair positions in Non-Real-Time RAN Intelligent Controller and A1/R1 Interface work group (WG2), the Open F1/W1/E1/X2/Xn Interface work group (WG5) and the Security work group (WG11).

Open RAN is an industry term for open radio access network architecture. It is a RAN that includes open interoperable interfaces and virtualization and is big data and AI-enabled.

O-RAN Alliance is an industry initiative for additional disaggregation, automation, and openness in RAN. Its main objective is to create global standard specifications. It can be considered a complement to 3GPP.



Ericsson's contribution to the O-RAN Alliance

Ericsson's focus areas in the O-RAN Alliance are network automation within SMO, including orchestration, RAN OAM, Non-RT-RIC, and rApps, network internal interfaces (especially enhancements to LLS and inter-operable profiles for interfaces specified by 3GPP), and security.

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These chair positions are clear evidence of Ericsson's exceptional commitment to supporting standardization organizations. Only 12 companies out of the total 289 O-RAN Alliance contributors have any co-chair positions in O-RAN Working Groups and only one company in addition to Ericsson has three co-chair positions.

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Scott Poretsky
Director of Security, North America
Co-chair the Security Work Group (WG11)

What do you see as the biggest opportunity for Open RAN?

The biggest opportunity for Open RAN is the formalization of a security certification process in collaboration with GSMA. This will provide operators with the highest level of confidence that their O-RAN architectural elements meet O-RAN Alliance interoperability and security requirements, just as the GSMA NESAS provides for 3GPP-based products.

What areas of security are the most important to focus on in Open RAN architectures?

The O-RAN architecture continues to evolve to meet new deployment scenarios and use cases. New features not only create flexibility and optimizations, but also introduce new security risks that need to be mitigated to achieve the target security posture for critical infrastructure based upon a zero trust architecture (ZTA). WG11 is focused on securing Shared O-RU, Decoupled SMO, RAN Analytics Information Exchange (RAIE), and RAN-Core Data Sharing. WG11 is also securing AI data and models used in O-RAN to mitigate risks from AI attack vectors while meeting the goals of RAN sustainability and optimization use cases.



Kurt Essigmann
Technical Product & Portfolio Manager
Co-chair the Open F1/W1/E1/X2/Xn
Interface Work Group (WG5)

Interoperability between vendors for Open RAN to work is essential. How is the O-RAN Alliance facilitating this?

Most O-RAN interfaces are reusing the standards that 3GPP has developed. That is especially true for the interfaces X2, Xn, and F1 used for example mobility and for context management use cases. Since the 3GPP defined use cases contain a large variety of options, O-RAN has defined so called profiles that specify which options should be supported by vendors striving for interoperability. These profiles describe the messages flows but also include details about the applicability of information elements in the respective messages. It should be noted that O-RAN profiles do not contradict 3GPP specifications in any case.

How can the RAN ecosystem benefit from interoperability work done in O-RAN?

Any operator or vendor can use both the aforementioned profiles but also the extensive catalogue for test case specifications. The specified test cases cover the most important use cases for UE network access, and handover, but also for complex cases like dual connectivity. Following the profiles and executing the test cases will ensure interoperability between various vendors of the RAN ecosystem for several network configurations, such as NSA and SA with or without dual connectivity and optionally with split architecture.



John Power
Expert Automation Cloud based Open RAN
Co-chair the Non-Real-Time RAN Intelligent
Controller and A1/R1 Interface work group (WG2)

In layman's terms, what benefits does a Non-RT RIC architecture bring to mobile networks?

The Non-realtime RAN Intelligent Controller enables RAN optimization by AI/ML enabled rApps to analyse network data and propose policies and configurations to achieve optimum performance with efficient use of resources. Using the A1 and R1 interfaces, CPSs can develop their own rApps or source the best in class from the Open RAN ecosystem and deploy them in a cloud native and secure way.

How will AI/ML contribute to or benefit from an Open RAN architecture?

Openness and Intelligence are two of the cornerstones of the O-RAN Alliance, and a key enabler of those is AI/ML. Using AI/ML enables developers to focus on the high-level optimization objectives and spend less effort on trying to find insights in large and changing data sets. Federated learning on different data sets allows for rApps to be tuned automatically for different scenarios such as urban versus suburban. Models can be trained in the Non-RT RIC with vast amounts of data and then deployed in the resource constrained RAN for inference. Model management, storage, and deployment can be performed centrally in a multi-vendor environment.

O-RAN Alliance facts

O-RAN Alliance is a global alliance founded in 2018. This alliance includes communication service providers (CSP) and vendors, as well as academia and governmental institutions. The objective of the O-RAN Alliance is to create global technical specifications and standards for RAN automation, cloudification, and disaggregation. It can be considered a complement to 3GPP.

An overview of the O-RAN Alliance workgroups and focus groups is shown below. There are 11 work groups (WG), 6 focus groups (FG) and one research group (RG). The Technical Steering Committee (TSC) supervises the technical workgroups which are responsible for O-RAN specification work. Each of the technical workgroups covers a part of the O-RAN architecture.

For network automation, the O-RAN Alliance is specifying two alternative RAN Intelligent Controllers (RICs), Non-RealTime and Near-RealTime RIC. NonRT RIC is specified in the O-RAN Alliance work group 2, while NearRT RIC is specified in work group 3. The overall Service Management and Orchestration (SMO) architecture is specified in work group 1.

For RAN internal interfaces, the O-RAN Alliance has been working on the development of interoperable profiles for interfaces specified by 3GPP (especially F1, X2, and Xn interfaces) and on lower layer split (LLS). Interoperable profiles are developed in work group 5, while LLS is developed in work group 4.

For cloudification, the O-RAN work group 6 has two main activities. Firstly, it specifies the O2 interface that will be used to deploy, manage, and orchestrate the cloud infrastructure used in the RAN. Secondly, it also specifies how hardware (HW) acceleration can be implemented.

Security is critical to the entire O-RAN architecture. Previously the Security Focus Group (SFG) was created to oversee the security aspects of the entire open RAN ecosystem. Naturally, SFG's work encompasses all WGs. Focus groups do not normally engage on the O-RAN specifications, but with SFG, it is different. The SFG has published several technical specifications, and operates much like a WG, as a result of which, it was changed to WG11 (Security).

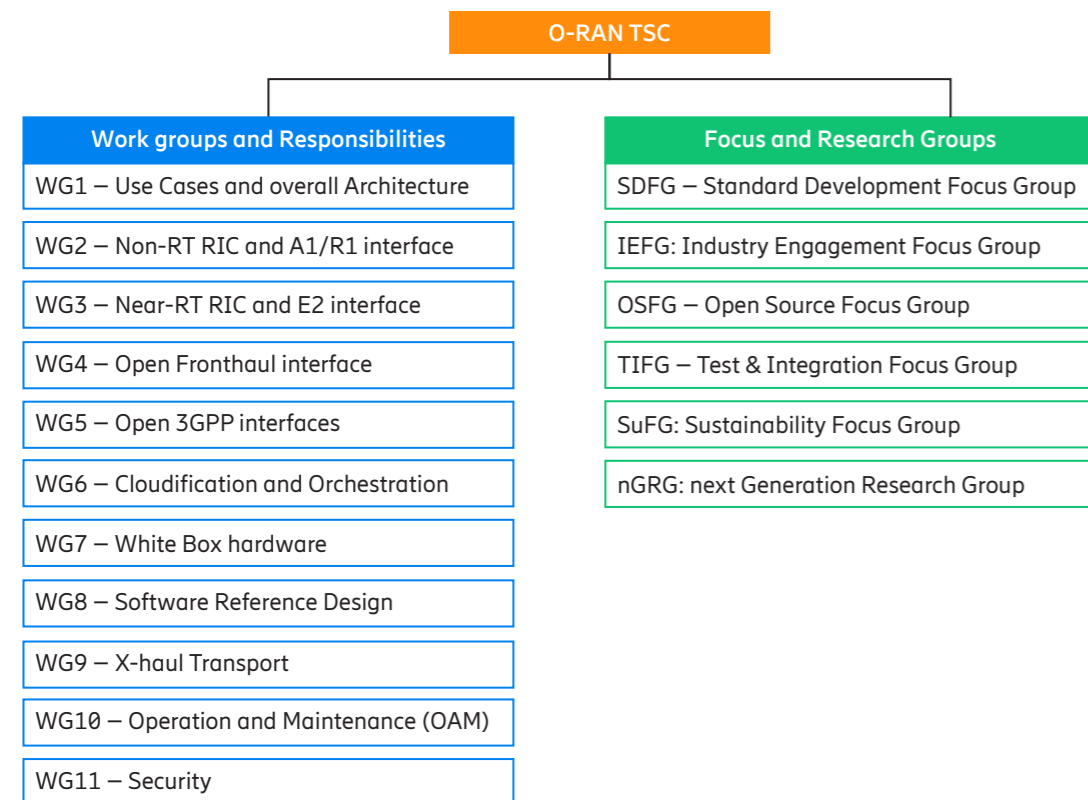


Figure 1: O-RAN Alliance Technical Steering Committee structure

O-RAN Software Community (OSC) leadership

In addition to traditional standardization contributions, the O-RAN Alliance has associated open source projects hosted in the O-RAN Software Community (OSC). The O-RAN Software Community (OSC) is a collaboration between the O-RAN Alliance and the Linux Foundation with the mission to support and simplify the creation of software for the radio access network (RAN). OSC is sponsored by the O-RAN Alliance and is under the Linux Foundation.

The O-RAN Software Community is focused on aligning with the O-RAN Alliance's open architecture and specifications to provide solutions that can be utilized for industry deployment. Initial focus areas for the OSC are non-RT RIC, near-RT RIC, cloudification and virtualization platforms, open central unit (O-CU), open distributed unit (O-DU), and a test and integration effort to provide a working reference prototype.

Summary

In this document, we have touched on Ericsson's commitment to the O-RAN Alliance and the O-RAN Alliance Open Source Community (OSC). O-RAN Alliance is a key forum, which is building on the foundation set by 3GPP in RAN automation, cloudification, and disaggregation.

To conclude, some of the key points are:

- Ericsson is a leading member and contributor to the O-RAN Alliance, and has actively worked in defining global technical specifications that secure highest performance
- Ericsson holds co-chair positions in WG2, WG5 and WG11. Only two contributors, other than Ericsson, hold **three** chair positions in the O-RAN Alliance.
- Ericsson believes that future networks need to be increasingly resilient, open, sustainable, and intelligent. Open RAN plays an important role in achieving this vision, and Ericsson is leading the industrialization of the three pillars of Open RAN: cloudification, open fronthaul and open management for network programmability.

Ericsson enables communications service providers to capture the full value of connectivity. The company's portfolio spans Networks, Digital Services, Managed Services, and Emerging Business and is designed to help our customers go digital, increase efficiency and find new revenue streams. Ericsson's investments in innovation have delivered the benefits of telephony and mobile broadband to billions of people around the world. The Ericsson stock is listed on Nasdaq Stockholm and on Nasdaq New York.