Parallel WIRELESS

Understanding the Different OpenRAN Groups in the Telecoms Industry

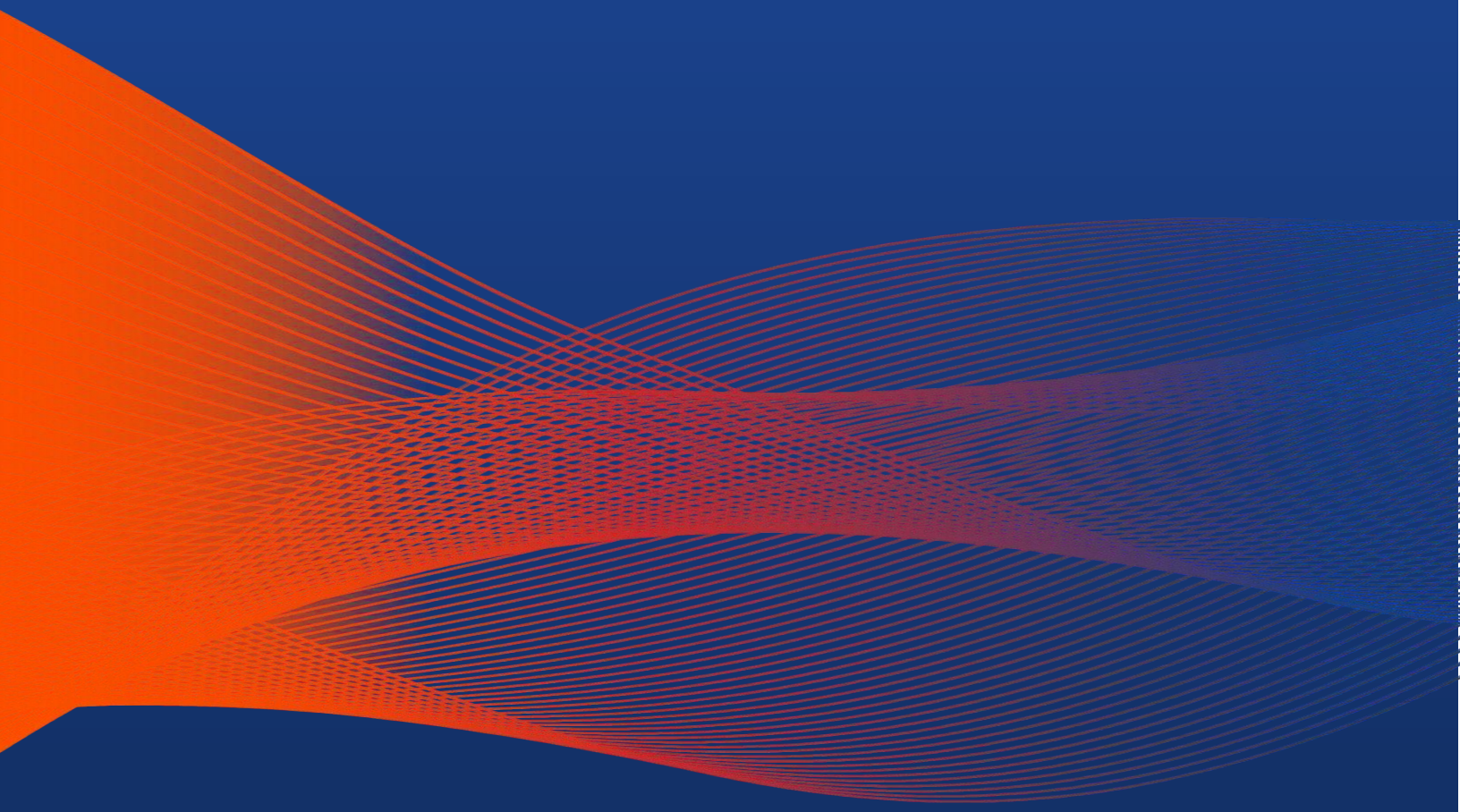

Table of Contents

Understanding the Different OpenRAN Groups in the Telecoms Industry

There are a variety of Open RAN groups and advocacy organizations focused on Open RAN, and it can be a challenge to understand the role each plays in the telecoms industry. In this blog, we will take a closer look at the key Open RAN industry groups, as well as other important initiatives around Open RAN.

Telecom Infra Project (TIP)

The first of the two industry groups who are leading the Open RAN movement is Telecom Infra Project, or TIP. TIP was formed by Facebook in 2016 as an engineering-focused, collaborative methodology for building and deploying global telecom network infrastructure, with the goal of enabling global access for all. TIP is jointly steered by its group of founding tech and telecom companies, which forms its board of directors. It is currently chaired by Vodafone's Head of Network Strategy and Architecture, Yago Tenorio. Member companies host technology incubator labs and accelerators, and TIP hosts an annual infrastructure conference known as TIP Summit.

With over 500 participating member organizations, including operators, vendors, developers, integrators, startups and other entities that participate in various TIP project groups, TIP adopts transparency of process and collaboration in the development of new technologies. All projects are member-driven and employ current case studies to evolve telecom equipment and software into more flexible, agile, and interoperable forms.

As a company, Parallel Wireless is focused on the OpenRAN and OpenRAN 5G NR groups as you may have learned in our educational Open RAN videos. The OpenRAN project group is an initiative to define and build 2G, 3G and 4G RAN solutions based on general-purpose vendor-neutral hardware and software-defined technology. The OpenRAN 5G NR project group, as the name suggests, focuses on 5G NR or New Radio. And why is Parallel Wireless, along with a growing number of the telecom industry, so focused on Open RAN? Because the general consensus is that RAN is 60% of CAPEX and OPEX. Open RAN helps significantly reduce RAN costs and reducing RAN costs can significantly help mobile network operators cut down their CAPEX.

O-RAN Alliance

The second group leading the Open RAN movement is the O-RAN Alliance, which was founded in February 2018 with the intention of promoting open and intelligent RAN. It was formed by a merger of two different organizations, namely the C-RAN Alliance and the XRAN Forum. The C-RAN Alliance consisted of China Mobile and a lot of other Chinese vendors. On the other hand, the XRAN Forum consisted of US, European, Japanese and South Korean vendors and operators. AT&T, China Mobile, Deutsche Telekom, NTT Docomo and Orange were the initial founding operators. Since then many more operators, vendors, integrators, etc. have joined.

Due to an increase in the amount of traffic resulting from better devices, newer applications, faster connections and even generous data plans, a complete paradigm shift is required for mobile networks. While 3GPP does an excellent job of defining these new flexible standards separating the user and control planes and keeping the different implementation options open, organizations like the O-RAN Alliance have an important role in bringing the industry together to create a more software-based, virtualized, flexible, intelligent and energy-efficient network. These goals can be achieved by evolving RAN to a higher level of openness and intelligence, and the O-RAN Alliance does just that. They specify reference designs consisting of virtualized network elements using open and standardized interfaces, and they call for more intelligence in the network through

information collection for these virtualized network elements. Artificial Intelligence and Machine Learning can then be applied on this collected information.

The O-RAN Alliance lays out their vision on their website. As discussed earlier, there are two high-level goals:

1. The first is openness, which will help bring service agility and cloud-scale economics to enable smaller vendors and operators to introduce their own services or customize the network to suit their own unique needs. As we have discussed in our videos, open interfaces enable multi-vendor deployments, enabling a more competitive and vibrant supplier ecosystem. Finally, open source software and hardware reference designs enable faster, more democratic and permission-less innovation.
2. The second goal is to automate these increasingly complex networks, thereby simplifying operation and maintenance, which in turn will reduce OPEX. This will be possible by embedding intelligence using emerging deep learning techniques in every layer, at both component and network levels of the RAN architecture. In combination with the standardized southbound interfaces, AI-optimized closed-loop automation is achievable and is expected to enable a new era for network operations.

As in case of TIP groups, the O-RAN Alliance have their own set of working groups. These nine working groups can be broadly divided as follows:

- Work Group 1 focuses on studying use cases and overall architecture.
- Work Groups 2 and 3 focus on optimization and automation of the RAN Radio Resource Management, or RRM, using the RAN Intelligent Controller, or RIC.
- Work Groups 4 and 5 focus on open interfaces for achieving interoperability between different RAN hardware and software vendors.
- Work Groups 6, 7 and 8 focus on commoditization, virtualization and modularization of RAN hardware and software.
- Finally, Work Group 9 focuses on the new open transport network based on new architectures and end-user service requirements for fronthaul, midhaul and backhaul, collectively known as X-haul.

What Are the Similarities and Differences Between TIP and O-RAN Alliance?

It may be confusing as to the role each of these organization plays in the industry. Here is a quick breakdown between the two leading Open RAN organizations.

The O-RAN Alliance develops, drives and enforces standards to ensure that equipment from multiple vendors inter-operate with each other. It creates standards where none are available – for example, the Fronthaul specifications. In addition, it creates profiles for interoperability testing where standards are available – for example, X2 interface. Of course, there are a lot more things the O-RAN Alliance does, as mentioned earlier in this post.

TIP is more deployment and execution focused; they encourage Plugfests and live deployments in the field. TIP enables the Open RAN ecosystem, ensures different vendor's software and hardware equipment works with each other, is responsible for productization of use cases, and facilitates trials, field testing and deployment. The O-RAN Alliance is heavily focused on 5G and 4G, whereas TIP is focused on solutions across All Gs –2G, 3G, 4G and 5G. It would also be reasonable to say that the Open RAN movement owes its popularity and success to the initial steps that TIP took by bringing together a community of service providers, software and hardware vendors, system integrators and other connectivity stakeholders to facilitate real-world trials and deployments in different operators' networks.

Earlier this year, these two groups announced a liaison agreement to ensure their alignment in developing interoperable Open RAN solutions. Because TIP is agnostic about the specifications it uses to create the solutions service providers are looking for, it has to work with various standards bodies to ensure smooth operation. But the liaison agreement with O-RAN Alliance allows for the sharing of information, referencing specifications and conducting joint testing and integration efforts. So, if you look at the TIP OpenRAN 5G NR Base Station Platform requirements document, you see normative references to the O-RAN Alliance specifications. Within TIP, only companies that are members of both the TIP and the O-RAN Alliance can participate in any discussions related to O-RAN specifications.

Other Key Open RAN Groups

The O-RAN Software Community is a collaboration between the O-RAN Alliance and Linux Foundation, with a mission to support the creation of open-source software for the RAN. The goal of the O-RAN Software Community is to advance opening the Radio Access Network with focus on the open interfaces, followed by implementations that leverage new capabilities enabled by the O-RAN specifications. Back in December, the O-RAN Software Community released its first software code called “Amber.” It covered initial functionality of the O-RAN unique Near Real-Time RAN Intelligent Controller, the O1 interface and the protocol stack.

The Small Cell Forum, or SCF, has created its own ecosystem of Open RAN with small cells in mind. Recently they have been focusing heavily on creating open interfaces. Earlier this year, they expanded the set of specifications they released last year, to enable small cells to be constructed piece-by-piece using components from different vendors, in order to easily address the diverse mixture of 5G use cases. These open interfaces are called FAPI and nFAPI, which stands for network FAPI. FAPI helps equipment vendors to mix PHY & MAC software from different suppliers via this open FAPI interface. So, FAPI is an 'internal' interface. On the other hand, nFAPI, or more specifically 5G-nFAPI, is a 'network' interface and is between a Distributed Unit (DU) and Centralized Unit (CU) of a split RAN small cell network solution. This will help network architects by allowing them to mix distributed and central units from different vendors. In short, the SCF nFAPI is enabling the Open RAN ecosystem in its own way by allowing any small cell CU/DU to connect to any small cell radio unit or S-RU.

The Open RAN Policy Coalition is a new Open RAN group that was announced this year. The Open RAN Policy Coalition represents a group of companies formed to promote policies that will advance the adoption of open and interoperable solutions in the RAN as a means to create innovation, spur competition and expand the supply chain for advanced wireless technologies, including 5G. Its main goals are to:

- Support global development of open and interoperable wireless technologies;
- Signal government support for open and interoperable solutions;
- Use government procurement to support vendor diversity;
- Fund research and development;
- Remove barriers to 5G deployment; and
- Avoid heavy-handed or prescriptive solutions.

In Summary

We hope you found this more detailed blog helpful in understanding the different Open RAN groups and how they are working together to enable a truly open ecosystem for various organizations and governments. Want to discuss further? Contact us.