

# Why an open network is central to maximizing the value of 5G



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To address the speed and latency needs of emerging innovative services, 5G networks need to support strict QoS requirements. Every operator is unique, with each network location, subscriber, service and usage pattern generating data that can be leveraged to provide a differentiated experience and support new services and industry verticals.

At the same time, with the introduction of technologies such as SDN, NFV and network slicing, networks are becoming increasingly flexible and programmable. Yet with these benefits, also comes the necessity for extreme automation of subscriber, service and network management.

To enable 5G networks to be adaptive and responsive to end-user needs, 5G systems need to provide an information set that enables analytics based on context (radio & capacity conditions) for each individual slice, cell (group), subscriber (group), device (group) and location.

This is where 5G open network architectures become a necessity. With their ability to take full advantage of the programmable 5G network, they enable operators to deploy multi-vendor solutions, innovate and deploy new network capabilities faster, as well as drive extreme automation in all parts of the network – including CI, CD, network management and network optimization.

## **O-RAN: open, programmable and intelligent**

The O-RAN alliance is a major industry initiative for defining the architecture and interfaces for an open, programmable and intelligent RAN, comprising a worldwide community of mobile network operators, vendors, as well as research and academic institutions. 5G is the initial target for standardization of interfaces in O-RAN alliance.

The community believes that to fully realize the benefits of 5G open architectures, operators need to follow through with key imperatives. The figure below highlights the major opportunities and imperatives for fully realizing the benefits of the O-RAN open architecture.



## Opportunities

Open architecture for **multi-vendor products** → larger supplier ecosystem

Open interfaces for **standardized O&M** → higher automation

Open interfaces for **network slicing** → fulfill enterprise SLAs

Platforms to deploy **ML / AI** → higher network efficiency & performance

## Imperatives

- 1 Test, integrate** – various combinations
- 2 Deploy new capabilities** – often & fast
- 3 Scale & optimize** – virtualized resources
- 4 Manage & assure slices** – for services
- 5 Develop ML / AI** – for performance

## O-RAN opportunities, imperatives

O-RAN architecture also provides standardized open interfaces, management protocols and newer data sets to drive service awareness and extended control in the RAN. Furthermore, the RAN Intelligent Controller with northbound interfaces, which accepts operator policies, enables the RAN to be service-centric and vendor-agnostic.

O-RAN specifications also allow flat management models (in addition to traditional hierarchical management models), where O-RAN elements expose O&M interfaces for data collection. Such models allow for service-based management architecture and distributed deployment of data collection and analytics systems closer to the network elements. So, for example, vendor-agnostic automation components can be deployed to support data collection and ML training. In the future, an interface (A1 in O-RAN terminology) is envisioned to support subscriber and slice-specific feedback and control.

## Open is the way to go

To enable the flexibility needed to deploy and upgrade best-of-breed solutions across their 5G networks, operators should drive their 5G vendors to propose and adopt open architecture systems, such as the ones proposed by the O-RAN alliance. At the same time, they should ensure their suppliers can provide open, standardized interfaces that allow access to the necessary operations and management interfaces to drive extreme AI/ML driven automation.