

# Open RAN | The Path Forward

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# What is O-RAN?

XRAN AND CRAN MERGED TO FORM O-RAN

These carriers formed an O-RAN Alliance (<https://www.o-ran.org/>)

*“O-RAN Alliance members and contributors have committed to evolving radio access networks around the world. Future RANs will be built on a foundation of virtualized network elements, white-box hardware and standardized interfaces that fully embrace O-RAN’s core principles of intelligence and openness. An ecosystem of innovative new products is already emerging that will form the underpinnings of the multi-vendor, interoperable, autonomous, RAN, envisioned by many in the past, but only now enabled by the global industry-wide vision, commitment and leadership of O-RAN Alliance members and contributors.”*

## Why O-RAN?

They wanted an open RAN network architecture that allowed competition and enabled them to rapidly deploy the new and differentiated services they expect to offer in 5G.



# Why O-RAN is Happening Now ?

CAPTURE GROWTH IN NEW 5G VERTICAL MARKETS CAPEX/OPEX CONTROL

## Driving Forces



## Objectives

- Network Densification
  - Scalability limitations of traditional architectures
  - Proprietary Networks dependence
  - Virtualization technology
- Increase Network Resource utilization (Slicing , Pooling)
  - Same cost reduction as data Centers
  - Power, Space Saving
  - Automation / orchestration

## Expected Gains

### Operational Efficiency

- Capex Reduction (HW optimization)
- Opex Reduction
- Revenue maximization

# O-RAN Alliance Overview

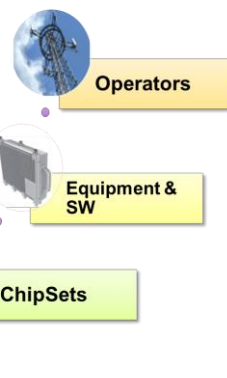


MULTI-VENDOR, INTEROPERABLE, AUTONOMOUS, RAN

## Members



20+ Operators  
130+ Manufacturers & other entities



## Mission

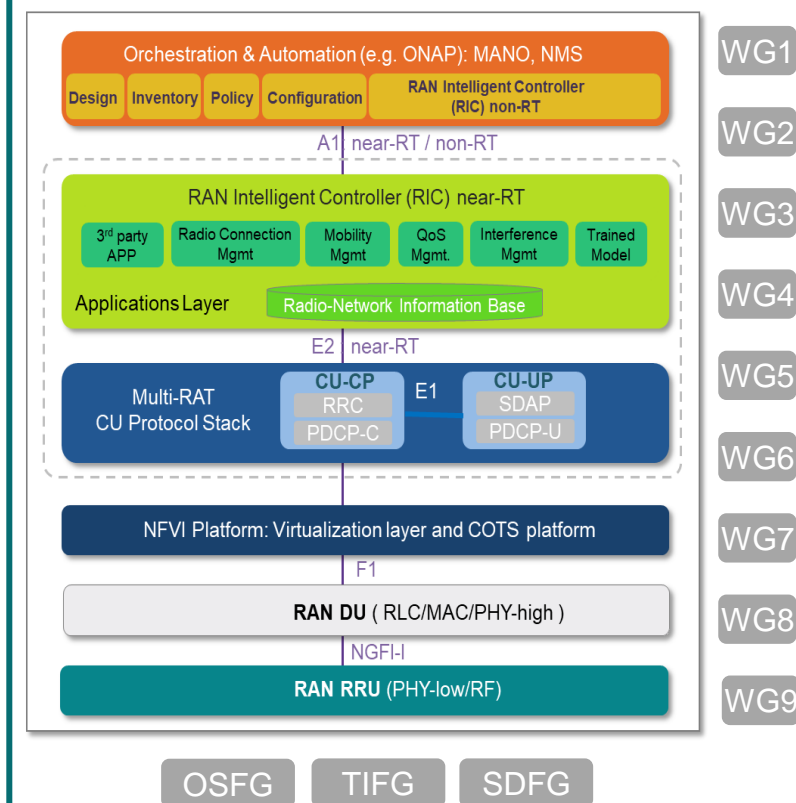
*Multi-vendor, Interoperable,  
autonomous, RAN*

*Open, Standardized  
interfaces*

*Global industry-wide vision,  
commitment and leadership*

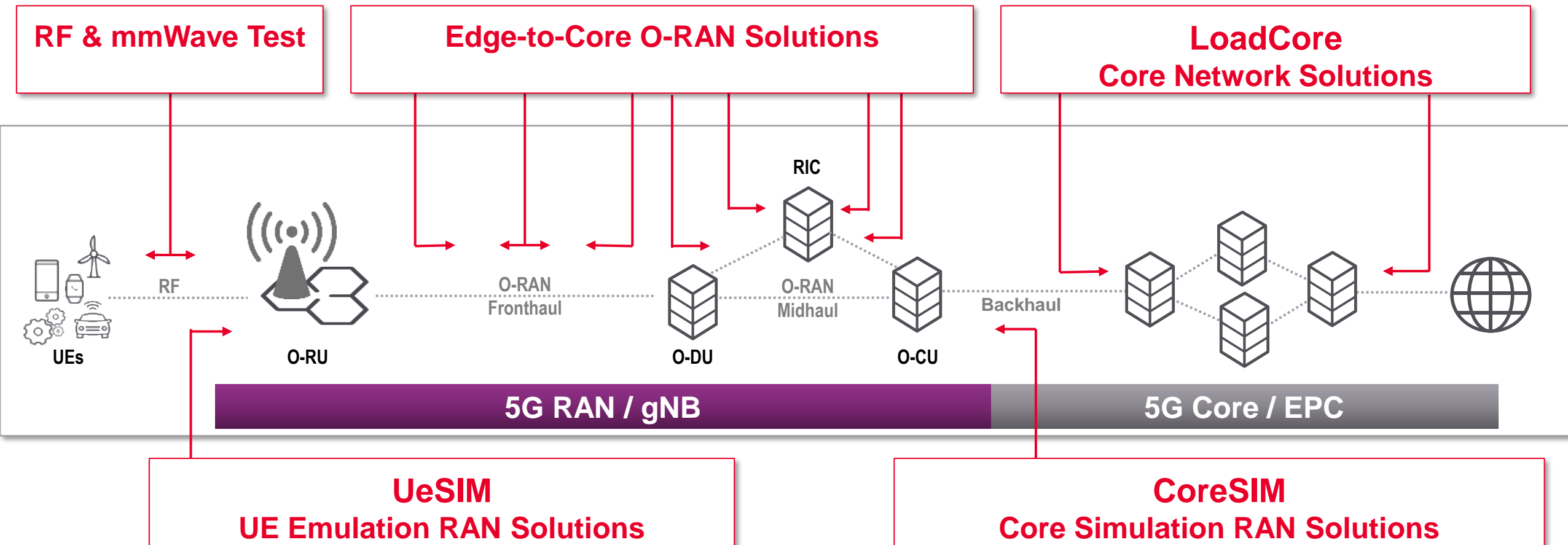
*Reference Design &  
Whitebox*

## New Architecture

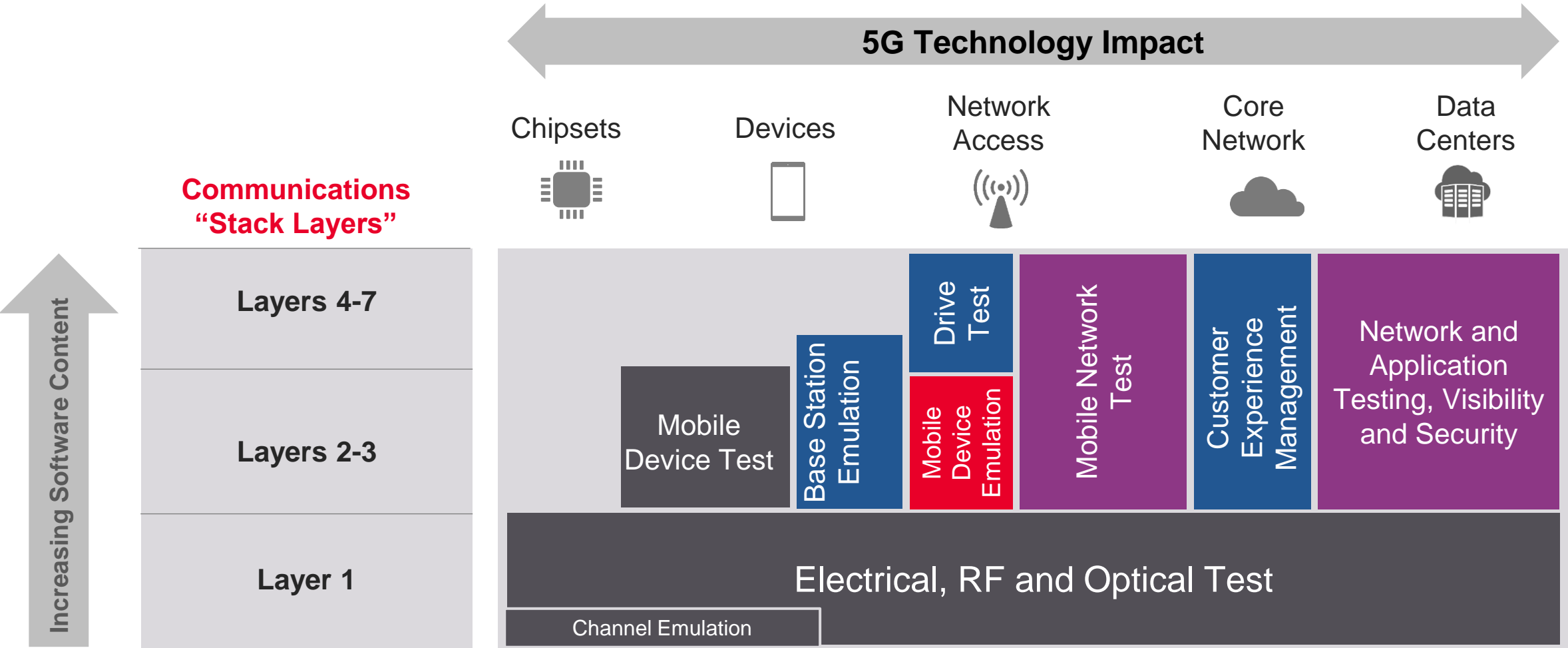


# Keysight 5G Radio Access and Core Network Test

ENABLING END TO END TESTING



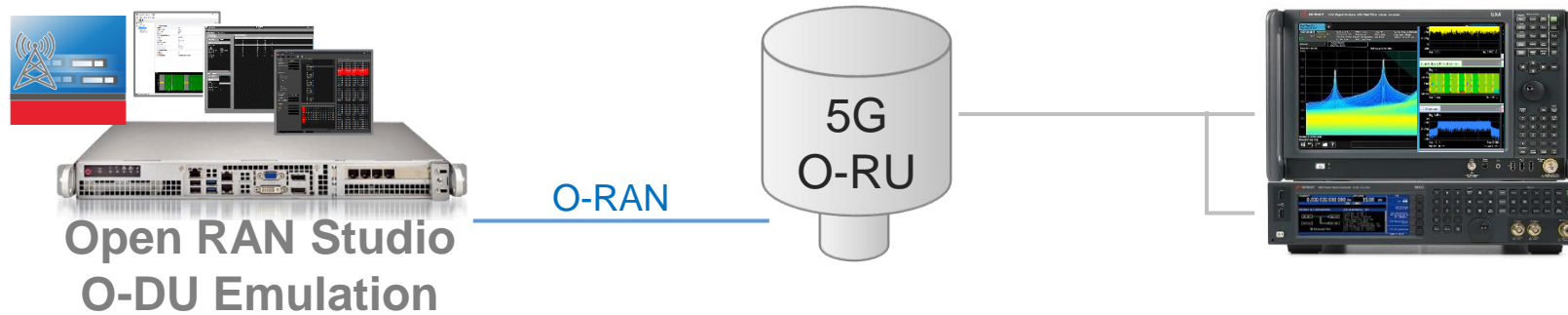
# Keysight Provides Insight Across the Entire Stack



# Keysight Open RAN Studio Solution



COMPLETE O-DU EMULATION PLATFORM FOR O-RU (RADIO UNIT) TESTING



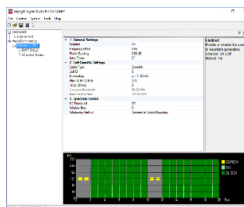
- Comprehensive** : O-RAN Stimulus and Analysis portfolio for uplink/downlink test
- Compliant** : O-RAN Standard CUS\_plane (ORAN-WG4.CUS.0-v03.00)
- Configurable** : Maximize and optimize O-RAN test coverage
- Cross Domain** : for complete Radio RF / Protocol / Timing testing
- Integrated** : with RF / mmWave instrumentation and applications

# Keysight Open RAN Studio Solution

COMPREHENSIVE SOLUTION FOR O-RU (RADIO UNIT) TESTING

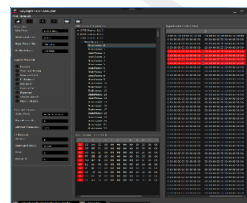
## Signal Studio for 5G NR

Create 3GPP  
compliant 5G NR  
Waveforms



## Open RAN Studio Builder

Construct O-RAN  
compliant CUS  
stimulus



## Open RAN Studio Player

Ethernet

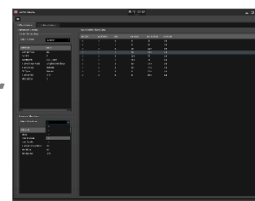


FR1  
Radios



## Open RAN Studio Explorer

O-RAN/eCPRI  
Protocols Decode



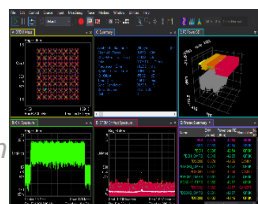
## Open RAN Studio Capture

FR2  
Radios



## 89600 VSA for 5G NR

5G NR Modulation  
Measurements



*IQ Extractor*





# Summary

**O-RAN IS THE NEXT GEN  
PARADIGM IN RADIO  
ACCESS NETWORKS**

