



## SERVICE OVERVIEW

# Driving Open RAN Deployment with Confidence and Success

NEC System Integration and Professional Services

Published by

**MOBILE**  
WORLD LIVE

In partnership with

Orchestrating a brighter world **NEC**

5G and Open RAN are entering a critical phase where the true promise and vision of 5G will become a reality. To ensure success and assure operators that 5G Open RAN can deliver on its promise, NEC has made significant investments in system integration, testing and professional services capabilities. This includes the establishment of world-class test facilities in the NEC 5G Open RAN Center of Excellence and the NEC Aspire Technology Open Networks Lab.

The NEC 5G Open RAN Center of Excellence (CoE) provides world-class integration and interoperability testing capabilities as well as complete end-to-end QA expertise. But the NEC Open RAN CoE also provides a collaborative environment where the Open RAN community can work together on designing, implementing and validating innovative solutions to emerging and future needs. This uniquely addresses the specific challenges of ensuring success with multi-vendor Open RAN deployments where collaboration is essential.

The NEC Aspire Technology Open Networks Lab provides an independent test facility supporting Open RAN community-focused integration testing as well as NEC Aspire Technology consultative projects and professional services for both operators and major vendors. The NEC Aspire Lab works both independently and collaboratively with the NEC 5G Open RAN CoE depending on customer requirements.



# Delivering confidence in the next phase of 5G deployment

The deployment of 5G is well underway, but many of the challenges still remain ahead. The vast majority of 5G deployments today are 5G Non-Stand-Alone (NSA), which means that many high-value 5G capabilities, such as network slicing, have yet to be deployed. According to GSMA Intelligence surveys, 19% of operators claim to have already begun deploying 5G SA with 83% reporting that they plan to launch 5G Stand-Alone (SA) in two to three years<sup>1</sup>.

It is in this next phase of deployment that operators will build the foundation to address new markets and opportunities with the advanced 5G capabilities that have long been discussed, but have yet to be deployed at scale. It is in this phase that virtualized, disaggregated functions that can be dynamically deployed to support

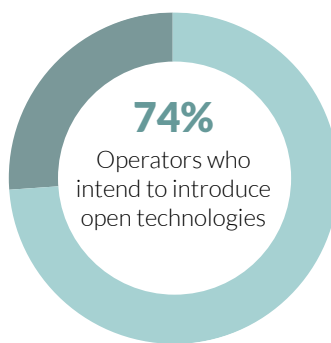
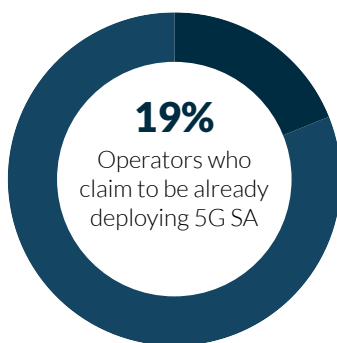
network slices based on AI-driven management and orchestration will need to be tested at scale.

A key part of 5G SA is the 5G Radio Access Network (5G RAN). The 5G RAN is a major investment for operators where hundreds of 5G Radio Units (RU) are needed to cover the same area as a 4G LTE macro-cell. According to GSMA Intelligence<sup>2</sup>, almost 3 out of 4 operators are likely to leverage 5G to introduce open networking technologies including Open RAN. This will lead to a multi-vendor RAN with horizontal disaggregation of RAN functions and vertical disaggregation of hardware, software and management. In short, the 5G RAN will be dramatically more complex to deploy, test and manage.

The continued success of 5G deployments and 5G SA, in particular, requires that multi-

vendor, open networks can be planned, implemented, tested and deployed with a high-level of confidence. To ensure this, suitable environments need to be created that enable multiple vendors to collaborate on solution design and development, integrate and test their solutions using state-of-the-art facilities and where operators can validate that planned 5G SA deployments based on Open RAN can deliver what they need.

NEC is a long-term, leading advocate of 5G Open RANs and is committed to supporting the successful deployment of Open RANs. To this end, NEC has established the NEC 5G Open RAN Center of Excellence (CoE) providing exactly the environment that the Open RAN community and operators need to ensure success with 5G deployments.



<sup>1</sup> Source: GSMA Intelligence Operators in Focus: Network Transformation Survey 2022

<sup>2</sup> Source: GSMA Intelligence Operators in Focus: Network Transformation Survey 2022

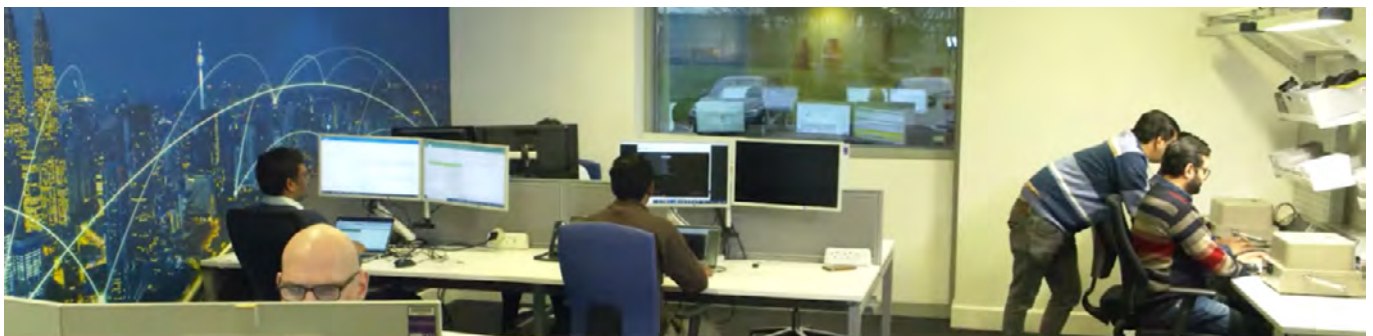


# The NEC 5G Open RAN Center of Excellence

NEC is one of the leading proponents of Open RAN with experience from several successful Open RAN deployment projects based on a broad portfolio of open 5G RAN equipment, software and management solutions. NEC has also acted as Systems Integrator (SI) for several projects taking responsibility for integrating hardware and software from multiple independent vendors to meet operators' specific needs.

This experience led NEC to identify a 5G Open RAN capabilities gap that needed to be closed. This gap related to the availability of suitable environments for the multiple parties involved in 5G Open RAN projects to collaborate, co-ideate and develop Open RAN solutions to address operator needs. While many test laboratories exist, these labs are usually focused on interoperability testing, which is an

important and essential part of the process, but assumes that participants can prepare independently. With the establishment of the 5G Open RAN CoE in November 2020, NEC wants to both provide world-class interoperability test facilities, but also a suitable environment for collaboration on new solutions and deployment planning that precedes testing.





# From ideation to implementation to validation

The next phase of 5G deployment introduces challenges that have never been experienced before in the mobile industry. New technologies and concepts are required to provide solutions that can address new opportunities in non-traditional mobile markets. While standards and specifications, such as those provided by O-RAN ALLIANCE, make it easier for vendors to develop products, integrating these various products together to address a specific end-user challenge successfully requires a structured approach and a great deal of collaborative effort.

The NEC 5G Open RAN CoE provides the environment where all phases of these activities can be addressed.

## Ideation

Addressing specific service or end-customer needs requires a level of collaboration not traditionally seen in the mobile

industry. This can require new and innovative solutions leveraging 5G capabilities that might not be widely deployed. With hundreds of Open RAN vendors offering a broad variety of products and competencies, finding the right combination of capabilities and features from the right vendors that can address the specific solution need requires a collaborative effort and rigorous testing. This in turn requires an environment where the various involved parties (operators, system integrators and vendors) can meet, ideate and test both technology and vendor offerings.

## Implementation

In many cases, new solutions will be required that have not been implemented before. Testing now becomes crucial in ensuring that the right performance can be provided at the right cost and, increasingly, in an energy-efficient manner. This includes testing of

individual products from specific vendors, integration and interoperability testing to ensure that vendor products are compatible and compliant and finally solution implementation testing to ensure that the final solution meets requirements.

## Validation

For operators who need to deliver an efficient and cost-effective solution to a new customer in a new market, it is important to validate that the proposed solution can meet their needs before deploying at scale. For many operators this activity can be performed in their own lab, but the CoE can provide the facilities to support the operator validation process saving time and resources, especially in continuation of the previous ideation and implementation phases.

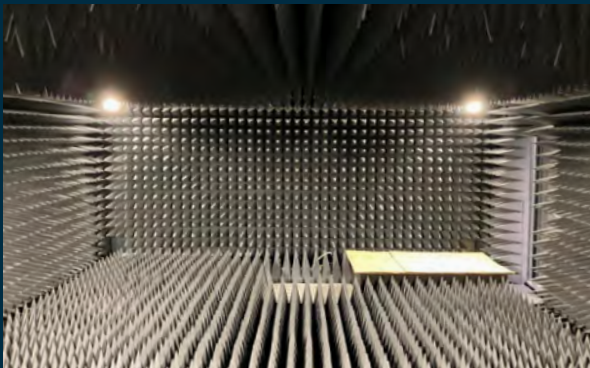
# NEC Center of Excellence Services

Currently, the NEC CoE includes two locations with more to come; the NEC CoE and its lab based in the UK as well as the NEC CoE Laboratory in Chennai, India. The following provides an overview of the services provided at each facility:



## NEC CoE lab in the UK

- Facilities for hosting visiting vendors, SIs and operators and collaborative meetings
- Integration and test of O-RAN compliant RUs\*
- mMIMO Validation including FR1/FR2 Over the Air (OTA) tests\*
- Anechoic chamber and RF “Wonder Wall” for fast installation of new RUs\*
- Fronthaul interface testing\*
- Training facilities



## NEC CoE lab in India

- End-to-end Open RAN system development
- End-to-end Design Quality Assurance (DQA) testing of 5G Open RAN including hardware performance, solution verification and system stability testing
- Multiple test lines with Red Hat OpenStack Platform (RH-OSP) Red Hat OpenShift Container Platform, (RH-OCP) and VMware Telco-Cloud Platform (TCP) RAN clusters already installed



*\*The information provided above on the CoE lab in the UK is based on results obtained from “Research and Development Project of the Enhanced infrastructures for Post-5G Information and Communication Systems” (JPNP20017), commissioned by the New Energy and Industrial Technology Development Organization (NEDO).*





# NEC Aspire Technology Open Networks Lab

NEC Aspire Technology has a well-established reputation as Open RAN experts providing consultancy, design, specialized systems integration and test services. NEC acquired Aspire Technology in July 2022 to strengthen its competencies in end-to-end Open RAN project delivery including system integration and testing.

One of the important roles that NEC Aspire Technology and the NEC Aspire Technology Open Networks Lab plays is in providing an independent test facility both for the Open RAN community and for operators. The NEC Aspire Technology Open Networks Lab has played host to Open RAN community PlugFests and other interoperability testing activities, but it is the capability to act as a truly independent lab that sets it apart.

NEC fully supports the independent role that NEC Aspire Technology plays for many

operators. The Aspire Technology Open Networks Lab and NEC (CoE) collaborate continuously in expanding capabilities and maintaining leadership in Open RAN. This allows the capabilities and expertise of both facilities to be utilized in individual projects.



## The capabilities offered by the NEC Aspire Technology Open Networks Lab are:

- Radio vendor integration and verification including 4G and 5G
- Network Operator Continuous Integration and Continuous Delivery with lab-to-field trials and early validation of operator configurations
- Cloud integration and solution optimization
- Open RAN OEM Performance Benchmarking
- Service Management and Orchestration with Remote Intelligent Controller applications (xApps and rApps) design and verification
- Lab-as-a-Service for vendor and operator testing
- Open networks end-to-end testing

5G has the potential to enhance every aspect of the way we live, work and play. But delivering on that promise requires a commitment to openness and collaboration. NEC is committed to working openly with operators, vendors, industry bodies and even competitors to change how we think about mobile networks and create a better 5G future for all. That's what we mean when we say we're radically open.

**For more information, visit NEC at [www.nec.com/en/global/solutions/5g/index.html](http://www.nec.com/en/global/solutions/5g/index.html)**

## **MOBILE** **WORLD LIVE**

Mobile World Live is the premier destination for news, insight and intelligence for the global mobile industry. Armed with a dedicated team of experienced reporters from around the world, we are the industry's most trusted media outlet for breaking news, special features, investigative reporting, and expert analysis of today's biggest stories.

We are firmly committed to delivering accurate, quality journalism to our readers through news articles, video broadcasts, live and digital events, and more. Our engaged audience of mobile, tech and telecom professionals, including C-suite executives, business decision makers and influencers depend on the unrivalled content and analysis Mobile World Live provides to make informed business decisions every day.

Since 2016, Mobile World Live has also had a team of in-house media and marketing experts who work directly with our brand partners to produce bespoke content and deliver it to our audience in strategic yet innovative ways. Our portfolio of custom work - including whitepapers, webinars, live studio interviews, case studies, industry surveys and more - leverage the same level of industry knowledge and perspective that propels our newsroom.

Mobile World Live is published by, but editorially independent from, the GSMA, producing Show Daily publications for all GSMA events and Mobile World Live TV - the award-winning broadcast service of Mobile World Congress and home to GSMA event keynote presentations.

**Find out more at [www.mobileworldlive.com](http://www.mobileworldlive.com)**