

**SONIC Labs Annual Report 2023/24**  
Building the foundations for  
telecoms supply chain diversification

August 2024

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# Foreword



The second year of the SONIC Labs programme has been a demonstration of strengthened partnerships, ecosystem development and technical excellence contributing towards the diversification of the UK telecoms supply chain.

Through dialogue and technical collaboration with domestic and international players, the programme has explored how mobile network operators (MNOs), and Open RAN vendors in the UK and beyond can improve network disaggregation, diversification and interoperability through Open RAN.

The past year has been truly outstanding and it is inspiring to see the impact of SONIC Labs being felt around the world, delivered through the ongoing partnership between Digital Catapult, Ofcom and the Department for Science, Innovation and Technology (DSIT), with results that demonstrate the world class innovation prevalent in the UK in open networks.

This report builds on the learnings and insights from 2022/2023 (Year 1), which the SONIC Labs team have carried into 2023/2024 (Year 2). It highlights the great strides made since the inception of SONIC Labs in October 2020 and how the programme continues to provide value to build capability for the UK.

As anticipated, there has been significant progress from last year. The SONIC Labs laboratory testing facility, which launched in March 2023, continues to provide a unique platform for cutting-edge research and collaboration between world class innovators in Open RAN. It is fully operational, and remains the most advanced of its kind in the UK. In 2023/2024 we added indoor and outdoor field testing facilities, thus building the lab-to-field testing capability offered by SONIC Labs to support products and services on their journey to market.



SONIC Labs is applying learnings to date, to drive discussion and collaboration at home and around the world, with support from labs and testbeds across the globe, which has been disseminated nationally and internationally.

The programme continuation for 2024/25 has been agreed with our partners, and the focus will now be on delivering industry-first results through to 2025. The plan remains to continue developing this unique UK national facility and capability in the coming years, building on the extensive equipment and personnel expertise that has been so successfully demonstrated until now. The joint aim of the collaborators in SONIC Labs remains one of enabling supply chain diversification, and going beyond that, towards open networks, and to contribute to the transformation of the UK telecommunication capabilities landscape towards future communication systems.

More specifically, I want to note that the next stage for SONIC Labs will be addressing integration and challenges around open networking and its confluence with native AI networks. The next decade is certain to see AI play a major part in economic innovation and advances throughout UK industries and society. Advanced open networks and evolved networks with low latency and flexible edge capabilities are key enablers of the widespread development and growth of AI services across sectors from healthcare and education to manufacturing. Open and flexible advanced networks thus become even more critical as they underpin not just our communications and daily lives, but the potential for AI driven economic growth. In turn, the communications networks themselves will become AI native, bringing issues of trustworthiness, security, safety and reliability in their design. This is the natural direction of travel for SONIC Labs as a key national facility in supporting future communication systems innovation in the UK.

My sincere thanks to all of our partners and staff across the project. Everyone has worked diligently and passionately to break barriers and make SONIC Labs the success it is. It is remarkable to witness such a huge team effort. I also want to thank DSIT for its continued support.

**Joe Butler**  
**Chief Technology Officer, Digital Catapult**

“The next decade is certain to see AI play a major part in economic innovation and advances throughout UK industries and society... Open and flexible advanced networks thus become even more critical.”



“The UK Government’s significant investment in SONIC Labs, has been a strategic move towards diversifying the UK’s telecoms market. We have already seen success from SONIC Labs in increasing collaboration within the UK ecosystem, and with the new outdoor site in 2024 its capabilities are increasing even further. We welcome this latest report, as SONIC Labs continues to lead innovation within the UK’s telecommunications industry, building on the foundational learnings to influence future developments.”

**Sarah Connolly**  
**Director of Digital Infrastructure,**  
**Department for Science Innovation and Technology, UK Government**

# Executive summary

## **SONIC Labs: driving impact and value for the UK economy**

The SmartRAN Open Network Interoperability Centre (SONIC) Labs programme was established in October 2020 through UK Government funding as part of the UK's 5G Supply Chain Diversification Strategy. It is co-delivered by Digital Catapult and Ofcom. SONIC Labs is a groundbreaking and world-leading innovation programme and R&D facility with the focus on accelerating the integration of new open network solutions into the UK telecoms supply chain. It undertakes in-house integration and testing of multi-vendor Open RAN systems with a view to create commercially viable combinations of vendor products, as well as provide the telecommunication ecosystem stakeholders, including policy makers, with an insider view of the progress in the market.

## **Gathering momentum in 2023/24**

Moving into its second year, SONIC Labs has:

- Broadened its scope to outdoor and public-scale networks
- Expanded its reach, building relationships and raising awareness of Open RAN across the telecoms sector and beyond, including key MNOs
- Accelerated a growing wave of optimism for Open RAN architecture and interfaces
- Developed a deeper understanding and shared learnings globally on the support offered to businesses in this area, including how to onboard and foster experimentation of testing services
- Capitalised on our globally leading state-of-the-art facilities in London, to enable market exploration of innovation opportunities, aligned with new, programmable, intelligent, virtualised and interoperable functions that Open RAN technologies can offer
- Continued to build the UK's profile and highlight the global reach of SONIC Labs as a recognised leader in the area of Open RAN innovation and R&D

## Year 2 at a glance

The key drivers for Year 2 were to:

- Continue to contribute to the development of UK technical expertise; and
- Maintain the strong reputation of the UK as a market leader in telecoms.

Following on from the success of Cohorts 1 and 2, the programme was in a strong position to add two more cohorts this year. Cohorts 3 and 4 joined the ranks of early-adopting innovators working to develop the Open RAN landscape.

## SONIC Labs Partners





# 14

COUNTRIES ENGAGED



## 20

TOTAL ORGANISATIONS  
SUPPORTED BY  
SONIC LABS



## 24

TELECOMS  
COMPANIES  
PARTICIPATING



## 3

CORE  
INDUSTRY  
GROUPS



# 150+

STRATEGIC ENGAGEMENTS

# £20M

UK GOVERNMENT FUNDING



“Partnering with Digital Catapult in SONIC Labs has provided us with a great opportunity to see first-hand Open RAN in action. There’s been a real sense of progress in the second year of this programme, and it’s been great seeing a healthy collection of vendors and products benefit from the commercially neutral and collaborative environment we’ve created. As we enter the third year, we’re looking forward to continuing this momentum, leading the charge towards a more integrated and secure future in telecoms.”

**Lindsey Fussell**  
**Group Director, Networks & Communications, Ofcom**



# Telecoms diversification and the transforming telecoms landscape

As the backdrop to SONIC Labs, global telecommunication markets are currently undergoing a significant change in the face of disruptive new technologies, business models and requirements for advanced digitalisation. New, open and interoperable approaches to how telecoms supply chains operate are vital to their future success, while also creating a blueprint for how industry transforms business models for digital infrastructure globally. In achieving this, it is necessary to look at topics such as the importance of Open RAN, the challenges being faced in its development and deployment, and how the UK is fast becoming recognised as a leading country in innovation related to Open RAN and telecoms supply chain diversification - through SONIC Labs and beyond.



Expected to reach a global market value of approximately \$44.7bn by 2029, Open RAN has the potential to be a game changing technology at a time of major change in the telecoms industry. By enabling operators to run software-based network services on general purpose, vendor-neutral hardware, it allows stakeholders to benefit from increased choice of equipment and services, reduced or no hardware lock-in, lower costs, and facilitate faster adoption of future networks.

## Barriers and challenges to Open RAN progress

While Open RAN will be a crucial enabler in the telecoms landscape, there are still several barriers and challenges to adoption. The barriers explained below are based on the SONIC Labs team's discussions with industry experts and ongoing data analysis, with the intention to mitigate them through the programme:

### Industry readiness and skills

Diversification involves new players entering the supply chain, but it also requires traditional vendors to transition and innovate, and MNOs to make changes in what they do. Vendors may implement their solutions differently, leading to compatibility issues and potential conflicts between components. Additionally, the deployment of these systems is complex and often requires the necessary technical skills and expertise to integrate. Ensuring seamless interoperability is crucial for the success of Open RAN deployments.

**\$44.7BN**

**Estimated global market size  
of Open RAN by 2029**

### **Cost effectiveness**

Deploying Open RAN architectures could bring substantial cost savings in the long run, but will require investment, and could potentially involve systems integration and deployment delays. The question of whether the cost of Open RAN is worthwhile is slowly being addressed as there is more and more value connected with the work being undertaken, including at SONIC Labs and internationally.

### **Process timescales**

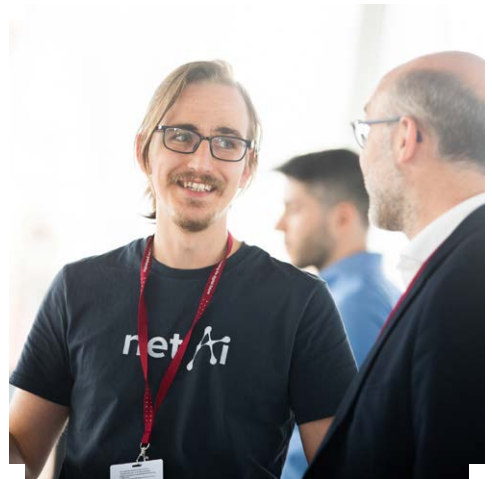
Integrating diverse RAN components is a complex task. It involves combining hardware and software elements from multiple vendors, each with its specifications, interfaces and configurations. Achieving smooth integration and functionality across the entire network requires careful planning, rigorous testing, and well-defined interfaces to bridge the gaps between different components.

### **A limited Open RAN ecosystem**

It is well known that there are a number of major players who are leading in the Open RAN space, with smaller suppliers just starting on their Open RAN journey. However, if the ecosystem of equipment suppliers is not broad enough, MNOs may just focus on working with a small set of players. This defeats the Open RAN objective of supporting supplier diversity. With a number of incumbent RAN suppliers moving slowly on Open RAN, concerns about the limited ecosystem need to be taken seriously. This reinforces the pressing need for collaboration to drive innovation in the global Open RAN ecosystem and create a new supply chain.

### **Lack of standards compliance and consistency**

Although some standards applicable to Open RAN already exist through the O-RAN Alliance and the Telecom Infra Project, there are still ongoing conversations around the technical approach required to achieve performance



consistency with single-vendor solutions – particularly as to whether different approaches are required in different environments (for example; rural versus urban), resulting in widely varying results for Open RAN products in the current market.

### **Security threats**

As Open RAN becomes more widely deployed, it must be secure. The disaggregation of the RAN and its interface could increase the risk of security threats; misconfiguration, impact on other network functions due to resource sharing, and undeveloped specifications that are not secure by design.



# Telecoms diversification: a UK Government priority

Future telecommunications is one of the UK Government's five critical science and technology priorities in its push for the UK to become a science superpower in those areas by 2030. Behind this strategy is the ambition to put wireless connectivity right at the heart of new and existing infrastructure, and to make sure that infrastructure is fit for the digital age.

As outlined in the Wireless Infrastructure Strategy<sup>2</sup>, the government seeks to achieve this through:

## **Supporting and accelerating the deployment of open networks**

- There is an opportunity to build specialisms in industry verticals and design innovative components for network architecture
- Private networks can be a proving ground for new entrant vendors & Open RAN technology
- Supporting this market to mature, by accelerating the commercialisation of 5G private networks, designed through open principles, will help diversify suppliers in the market

## **Shaping the development of 6G and Open Networks**

A particular focus is on UK research and development for 6G – launching a new, long-term national mission, with initial funding of up to £100 million as part of the Open Networks R&D Fund, to ensure that the UK is leading on future telecoms and 6G.

**£250M**

**UK Government investment into  
Open Networks R&D Fund**



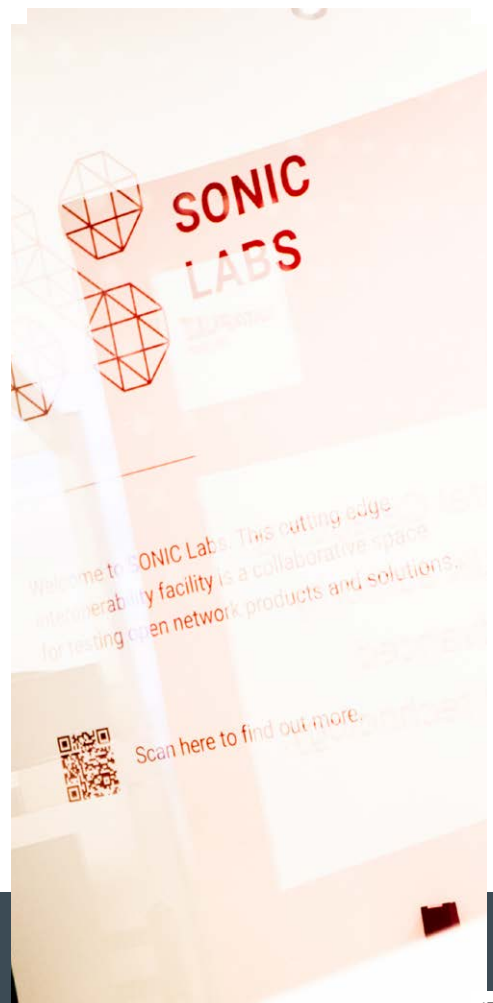
DSIT has also directly invested in future telecoms research and activity through the government's 5G Supply Chain Diversification Strategy<sup>3</sup>, backed up by the aforementioned £250 million Open Networks R&D Fund, which also includes bodies such as SONIC Labs, UK Telecoms Lab (UKTL) and the UK Telecoms Innovation Network. Recent projects include the Open Networks Ecosystem Competition, which provides £80 million of funding to support development of open network solutions.

In 2020, the National Cyber Security Centre (NCSC) issued guidelines recommending that the UK avoid using equipment from high-risk vendors. This has left only two large-scale vendors with equipment suitable for the UK market: Ericsson and Nokia, which laid the foundations for the next phase of diversifying the telecoms supply chain.

The Government's 5G Supply Chain Diversification Strategy focuses on three areas of activity to ensure the UK is "not reliant on any single vendor and begins to realise its long-term vision for a more open and innovative market". These are:

- Supporting incumbent suppliers
- Attracting new vendors to the UK market
- Accelerating open interface solutions and deployment

In support of the third priority, two lab-based interventions were announced: SONIC Labs to test and demonstrate interoperable solutions and a UK National Telecoms Lab to assess the technical performance and security of equipment.



# Telecoms diversification: the current landscape

The UK market for telecoms network equipment and infrastructure has remained heavily dominated by three global vendors which controlled over half of the market share in 2023<sup>4</sup>.

Literature and survey responses from industry practitioners suggest that the high sum of capital expenditure required to establish a network – reaching £7.2 billion in 2023 – and an expectation from service providers to support legacy 2G/3G connectivity may be significant barriers to new market entrants<sup>5</sup>.

Further down the value chain, apparent stiff price competition between service providers continued through the year, while heightened inflation contributed to price-cautious consumer behaviour<sup>6</sup>. A Deloitte analysis of the UK telecoms market found that UK MNOs' EBITDA (earnings before interest, taxes, depreciation, and amortisation) was on average ten percentage points lower than the European average, excluding the UK<sup>7</sup>. Evidence suggests that high capital costs and comparatively low returns on capital investment compound each other and create significant market barriers.

In this context, Open RAN technologies can play a critical role in lowering barriers to entry and enabling greater competition in the UK market.

Although adoption of Open RAN technologies is still limited, 2023 saw some significant developments. One example is Vodafone's rollout. While previous deployments of Open RAN

**10%**

**Less EBITDA average earnings  
for UK MNOs compared to  
European counterparts**

had often been in rural areas for 4G connectivity, Vodafone successfully deployed Open RAN radios from Samsung across Wales and the South West of England<sup>8</sup> for 4G and 5G – including in urban environments; outperforming traditional radios on call success and upload and download speeds – and announced a collaboration with ARM to produce new Open RAN platforms<sup>9</sup>.

The UK Government has continued to support Open RAN through the Open Networks Ecosystem competition. This will enable Open RAN trials across the UK, such as in Glasgow, Cambridge, Liverpool, Bath and London, including in major sports and entertainment venues.

The significant potential of Open RAN technologies has been demonstrated in 2023/24, but there is still more to come.

The UK Government has continued to support Open RAN through the Open Networks Ecosystem competition.



## Highlights from across the UK Innovation Landscape for Open RAN - outside of SONIC Labs

Open RAN offers remarkable benefits to the ecosystem and several key industry stakeholders are focused on continued collaboration to take advantage of all the technology has to offer, enabling industry to realise its full potential. Current efforts by the government, R&D hubs and industry show that the ecosystem is demonstrating that the UK is a wellspring of innovation in telecoms.

There are a number of collaborative projects in the UK outside of SONIC Labs that are exploring the development and deployment of Open RAN:

### **UK Telecoms Lab (UKTL)**

The UK Telecoms Lab is the telecoms security lab, established by DSIT and operated by National Physical Laboratory. This national facility, located at the heart of the fast-growing West Midlands technology hub in the Metropolitan Borough of Solihull, will provide test and evaluation capability to enhance confidence in the resilience and security of telecoms systems deployed in the UK.

UKTL has been established to support the UK government's security and diversification policy, and help drive UK supply chain diversification ambitions. UKTL will engage with industry to ensure that its activities remain relevant as networks and the technology that underpins them evolve.

### **UK Telecoms Innovation Network (UKTIN)**

The UKTIN Expert Working Groups bring together academic and industry leaders and experts, governmental and regulatory specialists, and representative bodies to explore the opportunities, gaps and challenges in the UK telecoms ecosystem. The groups focus on specific technology areas, aligned to current telecoms research, development and innovation priorities and opportunities, including but not limited to: security, wireless network technologies, network management and core networking technologies, with Open RAN deployment featuring in several of the discussions.



## UK Government Open Networks Ecosystem (ONE) Competition

The Open Networks Ecosystem (ONE) Competition,<sup>10</sup> established by the UK Government DSIT, awarded £80m of funding to 19 projects as part of the next phase of the UK Open Networks Research and Development (R&D) Fund.



## 2023/24: The Year of Industry Open RAN Commitments

This year, some of the world's most prevalent telecoms multinationals as well as industry organisations have expressed full commitment to Open RAN and are building momentum on Open RAN activities.



### **AT&T: USA**

AT&T announced plans to lead the USA in commercial scale Open RAN deployment<sup>11</sup>. This industry leading move, in collaboration with Ericsson, will further the telecoms industry's efforts and help build a more robust ecosystem of network infrastructure providers and suppliers. AT&T's plan is for 70% of its wireless network traffic to flow across open-capable platforms by late 2026. The company expects to have fully integrated Open RAN sites operating in coordination with Ericsson and Fujitsu, starting in 2024.

Verizon, along with a consortium of industry carriers, vendors and developers, was awarded a grant from the National Telecommunications and Information Administration (NTIA) to drive testing and evaluation of Open RAN-compliant wireless infrastructure<sup>12</sup>. The work of this consortium will focus on refining and driving standards, equipment and interoperability to accelerate Open RAN across the globe, especially as it relates to multi-vendor performance. The award of \$42.3m is made under the Public Wireless Supply Chain Innovation Fund created by Congress.

### **USA, Japan & Republic of Korea Open RAN Cooperation**

In August 2023, the USA, Japan and the Republic of Korea announced their joint commitment to expand trilateral cooperation on Open RAN. This international collaboration provides opportunities for greater global innovation and interoperability of open radio access network solutions<sup>13</sup>.

### **Anatel: Collaboration between Brazil & Japan**

Recent multinational cooperation deals have enabled nations to commit to knowledge exchange on Open RAN initiatives, such as the August 2023 agreement between Brazil's communications regulator Anatel and the Japanese government. Notable achievements from this cooperation deal include the exploration of business opportunities and cross-border innovation in Open RAN<sup>14</sup>.

### **Asia Open RAN Academy: O-RAN Interoperability Lab, Supported by USAID**

The Asia Open RAN Academy recently announced the launch of an Open RAN

interoperability lab in the Philippines. The lab secured grant funding support from the U.S. Agency for International Development (USAID) and will serve the Indo-Pacific Region<sup>15</sup>.

### **NTT Docomo: Open RAN Field Trials**

In February 2024, NTT Docomo announced its plans to begin Open RAN field trials with the purpose of accelerating global adoption of Open RAN infrastructure. The field trials bring together multinational players including Ooredoo, Smart Communications, and StarHub Limited<sup>16</sup>.

### **Teléfonoica: Germany**

In February 2024, Teléfonoica announced plans to expand its commitment to Open RAN by deploying Open RAN across multiple countries beginning with Offenbach Germany this year. This commitment allows for greater flexibility, faster service delivery and increased network scalability allowing the MNO to offer an enhanced user experience<sup>17</sup>.

### **Vodafone: Romania**

Vodafone is installing new Open RAN sites in 20 cities across Romania to give customers a responsive network that will boost innovation and increase industrial efficiency<sup>18</sup>. It is working with several partners, including Samsung, for 2G, 4G and 5G radio and baseband units (for transmitting customer traffic from the mast to the core network); Dell PowerEdge servers designed for cloud-based Open RAN workloads from Dell Technologies; and containers as a service software from Wind River (also known as abstraction layer software).

### **Vodafone and Nokia Collaboration: Italy**

Vodafone and Nokia announced the successful completion of a three-month Open RAN trial across a live 5G standalone (5G SA) test network in the towns of Arcisate and Sernio on the fringes of the Alps in northern Italy.<sup>19</sup> Open RAN masts at these sites were connected back to Vodafone's main test centre in Milan over Vodafone's high speed, high capacity 5G SA network, which also uses Nokia technology.



**Accelerating innovation in Open RAN**

SONIC Labs aims to foster a thriving and sustainable ecosystem for Open RAN in the UK and globally, while supporting wider goals for telecoms supply chain diversification. Led by Digital Catapult, SONIC Labs plays a key role for innovators as a platform for those both within and outside of the telecoms industry to explore new market opportunities and transform business models, as well as developing best practices and new approaches for the future of the sector.



# What is SONIC Labs?

The SONIC Labs programme creates a range of platforms for existing and emerging suppliers to test the interoperability and integration of open and software-centric networking solutions, starting with 5G Open RAN technology. Launched in February 2022 following a pilot phase, the DSIT-funded SONIC Labs programme provides a unique opportunity for UK-based companies to get involved and showcase their capabilities whilst enabling new suppliers to participate in the UK ecosystem building a path towards a more diverse and competitive supply base for telecoms networks.

SONIC Labs facilitates interoperability in open mobile networks, foster participation and evaluate critical technologies.



# SONIC Labs ambition

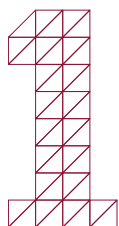
SONIC Labs is driving the future agenda for open interoperability in mobile networks. Through its cutting-edge facilities, it is examining and exploring the possibilities of Open RAN technologies working in collaboration with a range of actors and partners - both in the UK and internationally.

The programme's work is helping to set the foundations for transformation in the telecommunications sector by providing the basis for evaluating critical and longer-term technologies across fixed, mobile and media networks, as identified in Ofcom's [Technology Futures report](#).

The impact goals of the programme include:

- Supporting innovators to develop new Open RAN applications and stretching the capability of vendors using field trial locations
- Gaining key insights by working with new and existing Open RAN vendors and products, and sharing with the ecosystem to accelerate multi-vendor system development
- Providing a better understanding of the state of the Open RAN market from the point of view of multi-vendor interoperability and maturity
- Building knowledge and skills in the UK for Open RAN technologies
- Improving collaboration and ecosystem engagement, in particular by giving MNOs and other infrastructure providers access to key data and a platform through which to interact and make connections
- Fostering improved product-to-market fit for vendors with faster paths to deployment and a better understanding of customer needs, to be achieved

To achieve these ambitions, SONIC Labs utilises a robust technical platform where the suppliers and vendors can test and develop their product set, offering opportunities to advance innovative ideas. The programme is also equipped with a comprehensive dissemination strategy to share learnings and foster curated connections between the demand and supply sides. SONIC Labs consists of five areas of focus and is delivered by a team of 40+ experts spanning innovation, technology, policy, research and industry:



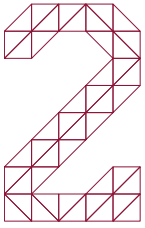
### **SONIC Labs design, build and operation**

The SONIC Labs design, build and operation stream of work aims to develop the technical architecture for the SONIC Labs facility to ensure that all the technical elements across the programme are fully aligned. This workstream carries out the design, building, deployment and operation of the common infrastructure, including the representative indoor and outdoor networks, and responsibility for the security of the platform.

Additionally this stream of work focuses on the design, build and operation of a solid, highly reliable and efficient open network technology-neutral platform to support the activities of SONIC Labs.

# 40+

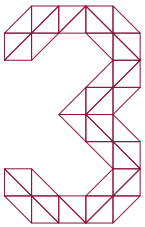
**SONIC Labs experts working across disciplines of innovation, technology, policy, research and industry engagement**



### **SONIC Labs integration, interoperability, operational test and measurement**

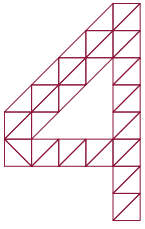
The integration, interoperability, operational test and measurement workstream will incorporate all technical activities for onboarding, deployment, experimentation and testing of open network technology solutions, starting with Open RAN, with changeable components in the SONIC Labs facility, both indoor and outdoor.

It focuses on end-to-end integration capabilities, aiming to incorporate automated tests, facilitating a streamlined integration process.



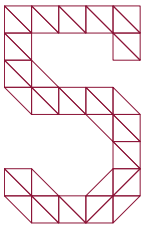
### **SONIC Labs open network technology innovation platform**

The open network technology innovation platform is a programme of activities that aims to accelerate the growth of the UK's open network ecosystem and diverse telecommunications supply chain and overcome barriers to growth.



### **Strategic partnerships and ecosystem engagement**

The strategic partnership and ecosystem engagement workstream focuses on establishing and fostering strong links between the SONIC Labs programme and other relevant national, international, and regional programmes, projects, organisations and initiatives.



### **External governance**

The external governance workstream seeks to both ensure that the programme meets and continues to focus on broader strategic objectives, and to build and maintain alignment with other national initiatives to ensure that SONIC Labs contributes to coherent national capability delivery. The objective is to maximise the benefit and alignment of SONIC Labs with both governmental and Ofcom priorities, as well as with the other related DSIT-funded initiatives as efficiently as possible.

# Programme goals for 2023/24

## Year 1 and Year 2 achievements

The first two years of the SONIC Labs programme focused on establishing a collaborative, commercially neutral testing facility for interoperable, integrated and open network products.

In these initial years, the goal was to engage the ecosystem and set up the programme. This has been achieved through five cohorts (including Cohort 0) of 20 organisations testing Open RAN systems.

Through this initial stage, there have been 59 products tested and 150+ strategic engagements, with more than 10 of these being engagements with international stakeholders. SONIC Labs is now working to capitalise on the extraordinary accomplishments of these foundational years.

## The value in developing the wider Open RAN ecosystem

Year 3 of SONIC Labs will focus on:

- Continuing to run cohort activities and targeted innovation and acceleration programmes within SONIC Labs facilities
- Conducting outdoor field trials
- Making use of the assets built at the testing facilities in Years 1 and 2

All of these activities are taking place as part of the intention to foster substantial growth of the UK Open RAN ecosystem and to develop a pathway to deployment for new entrants into the UK market.

# 20

**Organisations testing  
Open RAN Systems across  
SONIC Labs' five cohorts**



The next phase of SONIC Labs will involve further strengthening and building upon collaborations with vendors and stakeholders engaged with so far, with the goal of consolidating existing relationships in a purposeful manner around mature integration of telecom system components. This will be done through focusing on engagements with key identified organisations, meaningful international engagements with global peers and broader dissemination of SONIC Labs activities.

The programme will also continue in its mission to encourage vendors with new and/or innovative products from around the world to increase participation in the UK ecosystem, in order to provide UK MNOs with a strengthened pipeline of effective vendors and products.



# Meeting the needs of Open RAN innovation for 2023/24

In 2023/24 SONIC Labs gathered market insights and educational activities to help support Open RAN vendors to bring their products closer to market, while helping to inform industry and adopters about the opportunities of Open RAN technologies.

**Initially, the programme's work in market insights aimed to support innovators with solutions at a higher technology readiness level (TRL) by providing:**

- Brand exposure and access to potential clients
- Identifying industry-led use cases for private network deployment

**Through a series of tailored innovation support, including training, events and networking sessions, the stream aided vendors in:**

- **Entering the UK market:** Showcasing their products and offerings for the UK
- **Addressing critical challenges:** Bringing MNOs and system integrators closer to the Open RAN products to understand their maturity and road to commercialisation

The stream's adaptability, as seen in the shift towards an open registration process, ensures accessibility and compliance with subsidy control rules.

**The impact of these activities has been shown in:**

- Fostering connections
- Encouraging knowledge exchange
- Building a clearer understanding of market dynamics

This has ultimately helped to propel the adoption of Open RAN technology forward in line with UK Government priorities, as is demonstrated through the sections below.

The case studies and feedback provided in this report, demonstrate the tangible benefits accrued by vendors, system integrators and MNOs alike, underscoring the pivotal role of the market readiness activities in shaping the future of UK Open RAN technology.

### **Responding to market needs**

To ensure that the market readiness activities were fit for purpose, a request to utilise requirements gathering sessions was suggested. This coincided with the beginning and the exit interviews at the end of each cohort. The aim was to build understanding of what Open RAN vendors needed to do to move forward in commercialising their products.



Several high level findings were used to inform the market readiness activities:

**UK Market:**

Most Open RAN vendors noted that their general sales were lower in the UK compared with other markets such as the USA or EU, due to lower demand from these markets (generally the market size being smaller rather than because of a barrier) and to a lack of a base in this region to establish connections. Open RAN vendors also expressed that while technical requirements were not a specific challenge for them to operate in the UK market, for smaller vendors the opportunity to connect with key UK MNOs and system integrators (SI) was a barriers to entering the UK market.

**Platform:**

SONIC Labs has helped to showcase how Open RAN vendors are aligned with UK telecoms strategy. Going through the selection process and being chosen for the SONIC Labs programme demonstrated a technical competency and connection to UK policy, which helps them when talking to UK customers.

**Connections:**

The biggest area where vendors wanted support from SONIC Labs was in the creation of spaces to meet with key stakeholders. This is particularly important for smaller vendors, who found it difficult to know which companies to target when first entering the UK market and who to contact within those companies about their Open RAN products. This was less of a struggle for larger Open RAN vendors, which have the resources to dedicate entire teams to business development work, and often already have connections in the UK market through their other services or products.

**Business model:**

Currently, most vendors act through system integrators (SIs) in order to sell their products. SIs were highlighted almost unanimously as the key to selling Open RAN products. Very few vendors wanted to sell directly to customers and those that did had dedicated resources for these sales. Exposure to more SIs and a shared understanding of what SIs were looking for was highlighted as a key opportunity for SONIC Labs to facilitate.

SONIC Labs delivered a series of events with the aim of strengthening the connection with SIs and their vital role in the ecosystem. Further, the programme engaged with multiple vendors who played the role of SIs for Cohort 3 and 4, as follows:

<b>Cohort 3</b>	<b>SI</b>
Chain -1	Airspan
Chain -2	Radisys
Chain -3	Accelleran

<b>Cohort 4</b>	<b>SI</b>
Chain -1	Accelleran
Chain -2	Capgemini
Chain -3	G REIGN

**Product maturity:**

The main factor that the SIs highlighted as to why they were not investing as actively in Open RAN was due to the market readiness of the products. Although there is a concerted effort for public networks to invest in Open RAN, there is concern regarding the readiness of the products and the additional cost it requires to overcome the integration issues. This additional cost for integration was seen as the R&D being absorbed by the end customer. For many MNOs, finding better solutions for Open RAN end-to-end network visibility is still a challenge. MNOs require a consistent way to evaluate interoperability. Before service is turned on, MNOs must test to make sure everything is functioning as it should and, if not, to identify whether the faults are with one or more vendors or the interface that connects them. Validating new site performance to guarantee quality of experience (QoE) is crucial because MNOs cannot afford to risk a negative customer experience during the crucial roll-out phase.

**Sustainability of vendors:**

Similarly, a risk highlighted by both MNOs and SIs was their ability to supply and rapidly scale their products where required. This led to hesitation among SIs to invest in the products of smaller vendors.

**System Integrator challenges:**

SIs raised the unique challenge of providing services to an Open RAN gNodeB chain. If there are any issues to troubleshoot, it requires the handling of multiple vendors, who may not have collaborated and could also be competitors. This increases the difficulty when trying to resolve technical issues, particularly if handling critical infrastructure.



## SONIC Labs market readiness event series

The SONIC Labs programme in 2023/24 has created a new transformational design approach for its market readiness activities. This has allowed the programme team to reach a wider selection of Open RAN vendors outside the cohorts of SONIC Labs.

A public page on the SONIC Labs website featured these activities with a registration of interest form. This allowed the programme team to filter those for whom a session would not be relevant and make sure all sessions made the most sustained impact.

The activities included a variety of interventions to enable knowledge sharing and foster new connections and potential collaborations between different stakeholders including Open RAN vendors, MNOs, SIs, neutral host providers and testing labs:



**Market insights session:** This was an online session to share valuable market insights from Digital Catapult's Annual Report, MNOs and SIs for Open RAN vendors to utilise in their value proposition and commercialisation strategy for approaching the UK Open RAN market.



**Business models workshop:** This session explored the different types of business models that Open RAN will use in its deployment. Digital Catapult brought together experts looking at these potential models and the key concerns and opportunities for vendors in the Open RAN market.



**SONIC Labs launch and networking:** Open RAN vendors had the opportunity to network with key industry players at the official launch of the SONIC Labs facility in March 2023.



**SONIC Labs product booklet:** This detailed SONIC Labs' activities, impact and the cohort members that have been involved in the programme to highlight alignment with a major UK government Open RAN intervention.



**Community of Practice – system integrator session:** A selection of SIs learned about advancements made during the technical testing of the SONIC Labs phases. SONIC Labs provided an opportunity for the cohort to present their findings to the SIs and the SIs to introduce their ambitions for Open RAN.



**Community of Practice – testing labs session:** A selection of national and international testing labs, commercial and non-commercial, outlined to vendors what they were looking for, and vendors showcased their capabilities to the labs.



**Community of Practice – use case discussion session:** Central to this discussion was a real example of the Open RAN design process with exploration of how to put an end-to-end solution into CAD through to the technician building on the shop floor.



**MNO industry group:** 1:1 networking sessions gave individual vendors from the SONIC Labs programme and MNOs the chance to discuss vendors' learnings from the interoperability testing on how it may impact MNO requirements.



**Collaboration building event:** This virtual event fostered collaboration and knowledge exchange in the Open RAN ecosystem. It included keynote presentations, virtual roundtables and 1:1 matchmaking with members of the ecosystem (Open RAN vendors, SIs, MNOs, testing labs end users).



**System integrator webinar:** This online event was open to all to share experiences from the Cohort 2 SIs and insights from network deployment SIs.

“Although we didn’t officially enter as a participant, having the opportunity of being a collaborator and attending the SONIC Labs Showcase in March 2023, and the Collaboration Building online event in February 2024 has made it much easier for us to connect, communicate and liaise with other vendors. The events have helped us to identify trusted Open RAN players to purchase new products, exchange ideas, and make ourselves known in this community to explore new potential partnerships.”

**Maura Outeiral García**  
**Director, Business Development, Gsertel**

# SONIC Labs: The cohorts

## Cohorts are the fuel that drives SONIC Labs

SONIC Labs works with innovative companies in various parts of the telecoms supply chain to build learnings and shared understanding of the challenges and opportunities associated with the adoption of Open RAN technology. Over the course of the past year of SONIC Labs the team has delivered two important cohorts for the future of Open RAN:

- **Cohort 3:** focusing on RAN Intelligent Controllers (RIC)
- **Cohort 4:** focusing on testing of indoor and outdoor products

In the financial year 2024/25, Cohort 5 and a Technology Access Programme will be delivered:

- **Cohort 5:** This cohort will run from April 2024 to February 2025, with a focus on addressing the challenges of increasing interest for integration and interoperability of Open RAN components and solutions. The cohort will evaluate Open RAN in a reference network to test for performance, scalability, mobility and handover in indoor and outdoor environments
- **The Technology Access Programme:** This programme will run from June 2024 to January 2025 and will focus on SMEs and established vendors to develop solutions that address two Open RAN energy efficiency themes:
  - RIC enabled sleep modes
  - Optimising CU/DU Power utilisation of server CPU cores

“IS-Wireless appreciates the cooperation with Digital Catapult within the SONIC Labs programme in the UK. Thanks to this collaboration, we had the opportunity to perform interoperability tests with other participants in the programme. This provided IS-Wireless with highly valuable input and enhanced the functionality of our products. We are grateful that the programme focuses not only on technical aspects but also, through numerous online sessions with British companies, paves the way to the UK market. The product we currently sell would not be as effective and reliable without”

**Rafal Sanecki**  
**Head of Marketing & Partnerships Manager, IS-Wireless**

## Cohort technical experimentation

### Cohort 3: RAN Intelligent Controllers (RICs)

The third cohort of the programme began in Spring 2023 and explored the topic of RICs, providing the opportunity to have multiple radio units, distributed units and centralised units and understand the ways in which these components interact. The open call for Cohort 3 began in October 2022, with technical experimentation starting shortly afterwards.

Cohort 3 Open RAN chains were formed from components of nine vendors, with the focus on integrating RIC with different Open RAN products. The functional testing of RIC was completed successfully using tests for interoperability, E2E performance and LLD and component specification. Further information on testing can be found in the section titled *Technical Learning Deep Dives*. There were several insights gained from this cohort, including the identification of potential issues of compatibility with O-RAN Alliance specifications, mainly with respect to backward compatibility of interfaces. Through Cohort 3 experimentation, vendors were able to develop solutions and insights regarding specifications were shared with the O-RAN Alliance for consideration in future iterations.





The following activities characterised the Cohort 3 technical journey:

- Cohort engagement, which included initial technical engagement, pre-integration assessment and vendor assessment, swapability experimentation assessment and agreement on low-level design
- Integration and benchmarking of an Open RAN gNB system in SONIC Labs, as per the deployment scenarios



“Benetel has been involved with SONIC Labs Cohorts 1, 3 & 4 with both its 5G ORAN Split 7.2 Indoor RAN550 and Outdoor RAN650 products. The independent verification provided by SONIC Labs has been crucial in giving both the 5G marketplace and potential customers independent confidence in our products.”

**Padraig McNamara,**  
COO & Co-founder, Benetel

#### Cohort 4: Indoor Performance, Scalability, Mobility & Functional Testing of Outdoor RUs

Cohort 4 ran from July 2023 - January 2024, during which systems were created from Open RAN products of eight vendors, and were designed around two themes:

- The first theme was about evaluation of the performance, scalability, and mobility testing in an indoor environment. The operation of Open RANs for these scenarios was verified, for example when DUs are operating with two RUs of another vendor, and the connection for the mobile phone is handed over between the cells
- The second theme focused on functional testing of outdoor RUs in the indoor lab environment

The logo for Acelleran, featuring the word "Acelleran" in a blue sans-serif font with a stylized orange and blue graphic element to the left.The logo for is-wireless, featuring a blue circular graphic with a white swoosh and the text "is-wireless" in a blue sans-serif font.The logo for Benetel, featuring the word "Benetel" in a bold red sans-serif font.The logo for LITEON, featuring the word "LITEON" in a bold blue sans-serif font.The logo for Capgemini, featuring the word "Capgemini" in a blue sans-serif font with a blue diamond shape to the right.The logo for WNC, featuring the letters "WNC" in a bold blue sans-serif font with the text "Wistron NeWeb Corp." in a smaller blue font below it.The logo for G REIGNS, featuring a stylized blue and green "R" above the text "G REIGNS" in a blue sans-serif font.

“Accelleran has been part of SONIC Labs from the very beginning, and each experience within these cohorts has proven to be highly beneficial, collaborative and educational, with the latest cohort being no exception. It has provided Accelleran with invaluable opportunities to demonstrate our advanced solutions, such as the Cloud Native CU and RIC platform, as well as our RAN systems integration capabilities. Being part of SONIC Labs aligns with our goal of advancing a diversified Open RAN supply chain, and the progress made during this cohort is another significant milestone towards that.”

**Arnaud Polster**  
**Chief Sales Officer, Accelleran**

## Future experimentation

### Cohort 5: Testing Open RAN deployability in real-world outdoor setting

SONIC Labs Cohort 5 is an eleven month programme, taking place between April 2024 to February 2025. It will allow participants to evaluate Open RAN products at scale. For the first time, SONIC Labs will include both indoor and outdoor testing in reference networks to evaluate the interoperability, performance, mobility and handover of Open RAN components.

On top of access to SONIC Labs facilities and technical support throughout the programme, participants in this cohort will also have the opportunity to connect with potential clients and key players in the Open RAN ecosystem, and the space to collaborate with other innovators.

The intended outcomes of Cohort 5 include to:

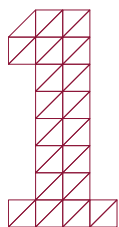
- Enable and encourage innovative suppliers of 5G Open RAN products to participate in the UK telecoms ecosystem
- Facilitate a path towards deployment by UK MNOs of Open RAN technologies
- Provide UK MNOs with a pipeline of innovative and competitive suppliers and products to choose from



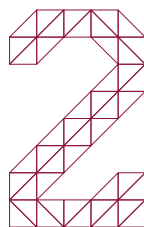
## SONIC Labs' first Open RAN Technology Access Programme

SONIC Labs Technology Access Programme (TAP) is the first TAP for SONIC Labs and an eight month structured programme, running from June 2024 to January 2025. It aims to facilitate experimentation, unlock innovation and help accelerate the adoption of Open RAN technology in the UK.

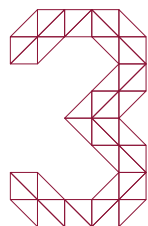
SONIC Labs TAP's ambitions include:



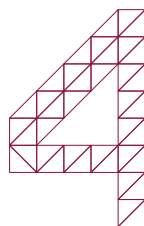
Developing new  
prototype RIC solutions  
with meaningful usage  
to the MNO community



Upskilling innovators  
with highly transferable  
expertise to start  
or expand new value  
propositions  
in telecoms



Providing UK MNOs with  
a pipeline of innovative  
and competitive  
suppliers and products



Generating  
opportunities for  
innovators to engage  
with pre-commercial  
grade O-DU and O-CU  
vendors

It will enable participating companies to develop and implement solutions and algorithms to address the two Open RAN energy efficiency challenges:

### **Theme 1: RIC enabled sleep modes**

UK-based startups, small and medium sized enterprises (SMEs), academia and software developers participating under Theme 1 will develop solutions for rApps and xApps to run on non-real time and near-real time RAN Intelligent Controller (RIC) platforms to improve energy savings in the Radio Access Network (RAN). The challenge focuses on leveraging sleep mode, a new feature identified by the MNO community.

The goal of this theme is to optimise the sleep mode patterns of the RAN through the utilisation of xApps and rApps. These applications will receive real-time usage and load patterns from O-RAN network nodes through RIC, a platform that allows different software applications to work together with the radio network. xApps and rApps will be able to use AI and ML techniques to evaluate, diagnose, and learn to improve the performance and resource utilisation of the radio network.

### **Theme 2: Optimising CU/DU power utilisation of server CPU cores**

UK-based companies participating under Theme 2 will be expected to provide, deploy and integrate O-CU/O-DU software solutions within an energy monitoring and optimisation test platform. The goal of this theme is to optimise O-DU and O-CU solutions for providing energy efficient solutions to the MNOs and private network provider community.

Participating companies will explore innovative solutions and optimise their products' energy consumption using standardised testing methodologies. During this programme, the SONIC Labs team will provide access to an energy consumption monitoring test platform.



## Accelerating the route to market for Open RAN innovation

In the next phase, SONIC Labs will be accelerating vendors' route to market for Open RAN innovation by providing tailored business innovation support to our participants in Cohort 5. SONIC Labs Technology Access Programme (TAP) participants who meet the minimum requirements for quality for subsidy aid, and whose Open RAN solutions have reached a higher Technology Readiness Level (TRL) suitable for product launch, will be offered a range of innovation support including:

- bespoke sessions to build business and technology leadership and capabilities
- targeted networking to establish products and a customer base
- product showcase to drive customer connections investment readiness training
- leveraging our unique Communities of Practice sessions to help vendors to build knowledge from key industry players

SONIC Labs will also seek to engage with the 'demand' side of Open RAN to encourage the industry to move closer to adopting Open RAN technology. This will involve working closely with SIs, MNOs and investors to understand where the challenges are and share these with cutting edge vendors to increase product market fit.



# Deep dive: SONIC Labs technology innovation

Working with industry-leading suppliers, the SONIC Labs team has designed, built and launched an open network, technology-neutral platform to support the programme's technical activity. This is the basis of the network infrastructure, and provides necessary services for the integration and interoperability activities in the programme.

## SONIC Labs locations

SONIC Labs is distributed across four sites.

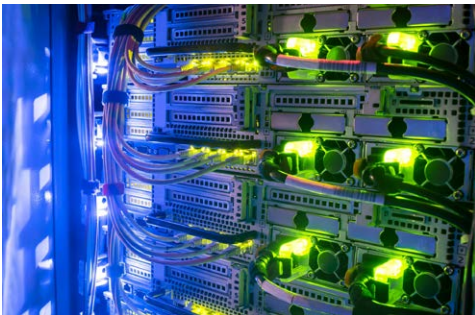
- **Site 1:** main indoor lab environment, in dedicated areas of the Digital Catapult office in London
- **Site 2:** connected indoor lab environment, part of the media and network lab at Ofcom's Riverside House, London
- **Site 3:** indoor field trial location in Digital Catapult's open office space
- **Site 4:** outdoor field trial location, selected and deployed in 2023, during the programme's second year





### **Site 1: Digital Catapult, London**

In this state-of-the-art test facility, technical staff from Digital Catapult and participating organisations collaborate and carry out testing, as well as using the space for demos, exhibitions and on-premise seminars. Its data centre houses the common 5G infrastructure, which provides distributed computing across all sites, and hosts the network management and orchestration capability for all the Open RAN sites within SONIC Labs.



### **Site 2: Ofcom, Riverside House**

Approximately 3 km from Site 1, Site 2 houses a SONIC Labs Open RAN testbed, enabling newer vendors to test technology in a commercially neutral environment. As well as adding to the capability offered by Site 1, this second site gives Ofcom experts visibility and insight into Open RAN challenges, and enables vendors to test geographically distributed deployments.

### Site 3: Digital Catapult, London

Designed for evaluation of deployment, scalability and manageability of Open RAN systems in a large-scale indoor environment, Site 3 facilitates field testing with a private 5G network for up to 30 users. It supports the deployment of open systems constituting multiple RUs, DUs, CUs and RICs. Private or non-public networks are a key deployment being targeted by the O-RAN Alliance and the wider ecosystem, and learnings from Open RAN deployments and experimentation at Site 3 have provided useful insights and experience for planning and implementing the outdoor field trials at Site 4.

At Site 3, SONIC Labs conducted the following experimentation and testing, assessing and verifying the following within a large-scale indoor deployment:

- scalability of Open RAN systems by deploying multiple RUs
- operational stability of Open RAN networks
- viability of disaggregated RAN functions and corresponding interfaces
- constraints on the service management and orchestration (SMO) systems as Open RAN functions are scaled
- handover in large-scale indoor Open RAN deployments
- whether Open RAN maintains coverage and capacity KPIs (compared with best predicted performance/RF budget)
- the impact of Open RAN on end user quality of experience
- Open RAN RIC xApps applications, such as traffic steering
- the feasibility of Open RAN in the context of shared networks deployed indoors
- the feasibility of different deployment scenarios of Open RAN networks in an indoor environment (co-located and geographically distributed RAN components)

The high-level architecture of all indoor reference network sites – network components and distribution for both 5G standalone (SA) and 5G non-stand-alone (NSA) – includes centralised units that are geographically distributed between all the three indoor sites, a core network hosted in the Digital Catapult London office, RIC, DUs and RUs.



“As the UK’s leading wireless neutral host player, Cellnex UK is delighted to be delivering the infrastructure which will support the next stage of the SONIC Labs programme. This project will leverage the significant Open RAN activity that Cellnex UK and the wider Cellnex Group has undertaken to date to support the development and adoption of this exciting technology.”

**Jonathan Freeman**  
**Strategic Growth and Regulatory Director at Cellnex UK**

#### **Site 4: Outdoor field trial – Hammersmith and Fulham**

The outdoor field trial selection process concluded that the deployment should be located in Hammersmith and Fulham. Ofcom allocated a specialist R&D licence in this high density location with an adequate frequency radio channel size to test the highest 5G throughputs.

The deployment was made possible by the successful collaboration between the programme and well-known global telecoms organisations such as Cellnex UK and Capgemini. Cellnex UK's role is to provide site infrastructure, edge hosting and transmission services, while Capgemini is focusing mainly on delivering Open RAN and system integration capabilities. The first successful call over the network was achieved in January 2024.

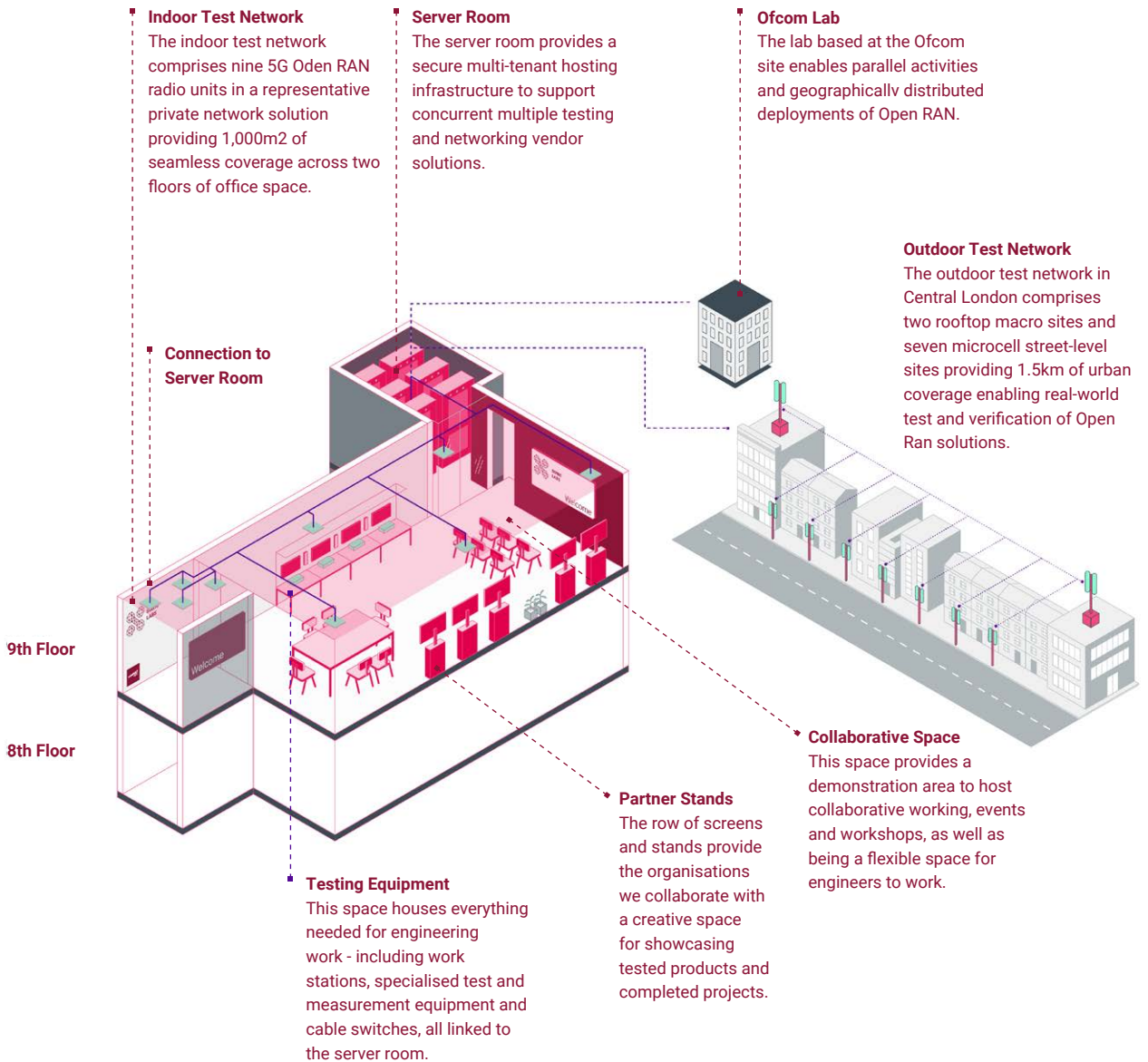
Detailed RF planning was undertaken to understand the interference conditions around the site and to finalise the positions of the macro and micro cells. The figure below shows the proposed locations and coverage for the macro and micro cells to provide the required coverage for the area.

The outdoor facility in Hammersmith and Fulham is a vital centre for development and verification of Open RAN solutions, where vendors can test their products in a representative network deployment scenario. The new outdoor test site complements and enhances the existing indoor facilities and offers a unique place to enhance product testing by characterising the common challenges of a real-world network. The outdoor test environment emulates 5G outdoor commercial deployments and reproduces the intricacies of both public and private 5G networks to support commercialisation of Open RAN technology.

The outdoor 5G SA Open RAN network comprises two macro cells, deployed at Fulham telephone exchange (TE) and Parsons Green telephone exchange respectively, facing each other and covering the area in between. To improve the coverage and performance of the system, this network also includes seven micro cells deployed at street level between Fulham TE and Parsons Green TE. Antennas for the macro cells are installed on the rooftops of the TEs while those for the micro cells are installed on street-side lampposts. This will enable test participants to evaluate network capabilities such as handover, mobility, interference management and overall performance.



A high level architecture diagram is shown below:



“We’re proud to be part of the first 5G outdoor trial network from Digital Catapult. Capgemini’s 5G Open RAN solution alongside its engineering capabilities have been a vital part of this chapter, the final phase of establishing the world class SONIC Labs. This is an important moment for this technology and the wealth of opportunities it will bring to businesses in the UK.”

**Jason Glew**  
**Managing Director, Capgemini Engineering, UK**

# SONIC Labs cohorts: technical learning deep dives

As part of the learnings and throughput testing for SONIC Labs, a number of O-RAN specifications were not backward compatible. For the integration and testing of O-DU/O-CU and Near-RT RIC of different vendors (with different versions), software upgrades were required to improve compatibility.

- The KPMs supported by the O-DU and O-CU vendors were basic ones that can be used for simple use cases, but O-RAN Alliance has defined many advanced KPMs for advanced use cases, which are not yet supported by O-DU and O-CU vendors
- It was seen that even if O-CU/O-DU vendors were following O-RAN specifications for E2, they were still not ready for the O1 interface towards SMO. Thus, fault-handling, configuration and auto-correction are still not possible through O-CU/O-DU
- RIC vendors were mostly supporting RIC as an SDK and allowing interfaces to be opened towards xApp/rApp, enabling app developers to develop apps per their use cases
- The available frame structures supported by vendors were not ready for UL-heavy applications (as required for some 5G use cases)

## Lessons learned from Cohort 3 test campaign:

- During the testing, it was found that a number of O-RAN specifications (e.g. for E2AP and E2KPM) were not backward compatible. As such, for the integration and testing of O-DU/O-CU and Near-RT RIC of different vendors (with different versions), software upgrades were required
- The KPMs supported by the O-DU and O-CU vendors were basic ones that can be used for simple use cases, but O-RAN Alliance has defined many advanced KPMs for advanced use cases, which are not yet supported by O-DU and O-CU vendors

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- The available frame structures supported by vendors were not ready for UL-heavy applications (as required for some 5G use cases)

**Cohort 4 gave the following technical learnings;**

- For O-RU/O-DU L1, FlexRAN L1 was widely adopted by vendors. From the conducted experiments, it was observed that FlexRAN versions need to be the same version for O-RU and O-DU to enable interoperability, otherwise the fronthaul integration would fail. This can be a major fronthaul integration bottleneck when considering integration of an O-DU to multiple O-RUs of different vendors
- The operation of two levels of scalability (multiple O-RUs per O-DU, and multiple O-DUs per O-CU) was successfully validated. However, integration of O-RUs of different vendors (on the same O-DU) could not be attempted as some vendors had proprietary L1 implementations
- Mobility and handover across O-RUs of the same vendor as well as O-RUs of different vendors were validated
- The functionality of outdoor O-RU in a lab environment was verified, but further optimisations are required to reduce the performance gap of available solutions with maximum theoretical peak that can be achieved
- For different multi-vendor systems, stable operation (for > 8 hrs) was confirmed

“SONIC Labs has witnessed the maturation of Open RAN implementations from various global vendors with significantly reduced interoperability and system integration timelines, driven in part by the advancement of O-RAN Alliance standardisation. However, the management of Open RAN systems will require further improvements to fully support fault, configuration, accounting, performance (FCAP) operations. This may explain why most large scale Open RAN deployments are currently dominated by single vendor Open RAN solutions”

**Charles Turyagyenda**  
**Lead 5G Technologist, Digital Catapult**

# SONIC Labs: Enabling the Open RAN ecosystem

SONIC Labs plays a crucial role in enabling the Open RAN ecosystem in the UK, crowding in policymakers, industry innovators and regulators. Through our work we align agendas, drive common goals and help to build the future vision for UK and global telecoms supply chains.

## SONIC Labs Strategic Advisory Board

SONIC Labs created the Strategic Advisory Board to provide expert insight and knowledge, and to align with relevant key industries and UK and international initiatives. The Board advises on challenges, opportunities, technology roadmaps and capabilities relating to 5G diversification.

The membership is composed of ten public and private stakeholders from the telecoms industry, with accomplished experts offering independent advice and a perspective that benefits the wider ecosystem. Members include representatives for Open RAN vendors, SIs, testbeds and academia, as well as potential adopters of Open RAN MNOs and neutral hosts.

The Strategic Advisory Board met four times this year to discuss SONIC Lab's role in the UK ecosystem, Cohort progression and lessons learned, potential future study items and ways in which SONIC Labs can complement and collaborate with other testing facilities in their respective roles.

## The Strategic Advisory Board





### **Industry groups**

SONIC Labs industry groups bring together core stakeholders from across the telecoms ecosystem to share their journey in the future of network deployment. The industry groups are composed of MNO's, wireless infrastructure, neutral host and telecoms services providers and UK and international testing facilities.

The industry groups show great enthusiasm towards the work of SONIC Labs, in particular the progress of the later Cohorts and to the outdoor field trial being conducted in Hammersmith and Fulham. Members of the industry groups have also shared that communicating experiences and lessons learned has been beneficial in their own individual journeys to the deployment of future networks.



### **MNO Industry Group**

- Mobile UK
- Vodafone
- Virgin Media / O2
- BT
- Three

### **Wireless Infrastructure Industry Group**

- Cellnex
- Circet UK
- Dense Air
- Freshwave
- Ontix
- Verizon UK
- Wireless Infrastructure Group

### **Testbed Industry Group**

- BT
- Dense Air
- Department of Home Affairs
- i14y
- ITRI
- NEC
- NTIA
- Rakuten
- Telecoms Infra Project
- University of Bristol
- University of Surrey
- University of Sussex
- VVDN

Through these industry groups, members have had the opportunity to showcase their facilities and experience through their respective Open RAN journeys. Cross harmonisation has been established between countries which has led to a more collective approach between the UK and other international parties, vendors, cohorts and MNOs, which was the intended vision of SONIC Labs. A further understanding has been achieved regarding the potential barriers to Open RAN, as previously outlined and this will form the basis for future work and discussion going forward. The creation and facilitation of the SONIC Labs industry groups and fostering collaboration have helped contribute towards the creation of a UK-centric focus towards a centre of excellence for Open RAN.

Further information on the Strategic Advisory Board and Industry Group participants can be found on the [SONIC Labs website](#)



“Building on the success of last year’s programme, 2023 has been a huge leap forward, expanding the capability of SONIC Labs with the development of our indoor and outdoor testing networks. During this time we have also significantly grown the portfolio of vendors and products that have undergone test and evaluation in our lab. This was an incredible volume of work and is a clear demonstration of the dedication, expertise and passion of everyone involved across Digital Catapult, Ofcom, DSIT and our suppliers. This is a clear demonstration of the success of the engagement and collaboration with all of our partners.”

**Paul Sludden**  
**Director, SONIC Labs, Digital Catapult**

# International engagement, impact and collaboration

During the last year, SONIC Labs has forged strong relationships with multiple global partners. This includes visits from international delegations including South Korea, Japan and Canada to the lab and learning from the SONIC Labs team, and engagement with companies who have been through the programme cohorts to help inform best practices.

This international partnership work also includes visits by the SONIC Labs team to labs across the world and key global conferences such as MWC in Barcelona and RIC Forum in Dallas for Open RAN leadership. SONIC Labs has been at the forefront of leading international voices in Open RAN innovation and R&D - helping to drive the agenda as is demonstrated by the following activities.







## Fyuz 2023, Madrid, Spain

Digital Catapult and SONIC Labs represented UK Open RAN innovation at Fyuz23 in Madrid, hosted by Telecom Infra Project (TIP) from 9 to 11 October 2023. Senior executives from around the world converged to discuss and dissect essential topics such as O-RAN, Open Transport, and Open WiFi deployments. This event served as a platform for knowledge exchange and collaboration among industry leaders. As a member of TIP, SONIC Labs attendance was critical to staying engaged with developments in the telecommunications industry as well as connecting with existing partners and new potential vendors who might be interested in joining SONIC Labs' Cohort 5 starting April 2024.

The event provided great value both in terms of the networking opportunities and the knowledge gathered around the latest O-RAN deployments, technology advancements, challenges and barriers to adoption and innovation opportunities with the RIC and AI-driven applications.



**The key themes at the event were:**

- Widespread recognition amongst speakers that technology developments and early adoption have been driven by the clear opportunity that Open RAN offers in advancing network automation and virtualisation
- Artificial Intelligence (AI) and its applicability to telecoms was a hot topic
- Eagerness for technology adoption to cross the chasm but recognition of challenges still to be overcome, including bridging the gap in conformance testing and mitigating national disparities for more consistent test results





## 5G Summit 2023, Taipei, Taiwan

On 3 November 2023, Taiwan's Ministry of Economic Affairs (MOEA) hosted the 5G Summit in Taipei in collaboration with global partners.

At the summit, SONIC Labs joined representatives from industry groups, leading Open RAN innovators, MNOs and a selection of government bodies. These experts discussed first-hand their respective progress and insights toward Open RAN testing & validation, deployment, and ways to leverage policy resources to expedite global market entry. This summit brought together key industry leaders and Open RAN innovators to share their valuable takes on the issues at hand, and to contribute to the co-evolution of our global telecom ecosystem. Experts from SONIC Labs took part in the summit, participating in several panel sessions.

The key takeaways from the speakers, panels, meeting and conversations at the summit were:

- TIP Community Lab in Taiwan is supplying validated market-ready Open RAN products to support global deployment
- Open RAN is the most exciting new development in the mobile industry. ABI research predicts that Open RAN equipment revenue in public networks will surpass traditional RAN equipment by 2028
- Open RAN needs to bridge the gap in functions, performance and stability in order to be ready for large-scale public network deployment
- Open RAN vendors should take advantage of the private network opportunities as an entry point in order to grow and mature



## Global O-RAN insights: Working with Taiwan's Industrial Technology Research Institute (ITRI)

"ITRI lab started close communications with SONIC Labs in October 2023, where we had the opportunity to welcome members of the SONIC Labs team on a visit to our lab and our ecosystem in Taiwan. We have started to explore ways for us to work together for more synergy and we look forward to following up on those fronts.

Taiwan's Open RAN supply chain has great potential in contributing both experience and expertise in areas such as radio units, as well as centralised and distributed units. SONIC Labs provides these companies with a great platform for interoperability and integration opportunities with other vendors, and to validate their capability through a neutral lab in a market other than Taiwan. This has proven to be attractive to the Taiwanese ecosystem.

SONIC Labs has provided a valuable testing environment for industrial partners to validate the quality and capability of their solutions. "From test to deployment" is the goal that testing labs would like to achieve, and engagement with SONIC Labs ecosystem partners will bring more opportunities for the next steps, such as shortening the testing time and process, enhancing reliability of the testing result, and increasing chances to conduct PoC or field trials with telecom MNOs.

According to companies from Taiwan that have participated in the previous cohorts, SONIC Labs has provided a great opportunity for them to be introduced to MNOs and SIs with future opportunities after the testing activities. This type of match-making is also greatly appreciated by companies in Taiwan.

Given ITRI's role as not only a R&D institute, but to also run a designated industry development project office delegated by Taiwan's Ministry of Economic Affairs, a partner such as SONIC Labs is invaluable to us in identifying synergies between the two neutral labs to create current test plans for comprehensive for the various use cases, and even contribute to organisations such as Telecom Infra Project (TIP). From the industry development perspective, we also appreciate the industry activities SONIC Labs hosts for ecosystem members from Taiwan to join and explore opportunities with partners in the UK."

**Tiffany Lin**  
Acting Deputy Manager, ITRI





## MWC 2024, Barcelona, Spain

In February 2024, SONIC Labs team members attended MWC (formerly known as Mobile World Congress) as part of the UK Pavilion for the second year running.

SONIC Labs' objectives at MWC were to demonstrate the state-of-the-art lab testing and field testing technical capabilities, raise awareness, and show the strength of the partnerships formed through the programme's cohort and stakeholder activities.

An expert technologist from the SONIC Labs team was also present on the VIAVI stand to provide a live demo highlighting the commercial robustness and maturity of Open RAN technologies by validating O-DU/O-CU. Delivered in partnership with VIAVI, Capgemini and Teledyne LeCroy Xena, this highlighted the work undertaken as part of the O-RAN Alliance PlugFest.

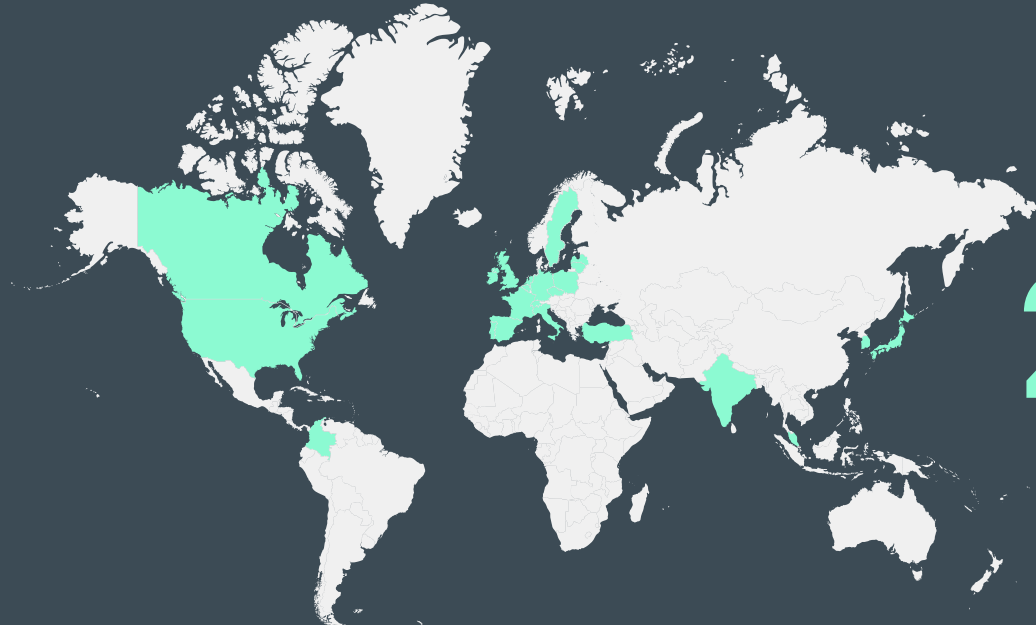
Over the duration of MWC, there were a number of key themes from the conference that took centre stage:

- AI and generative AI emerged as a pivotal theme, with many speakers emphasising the role AI will play in helping to transform telecoms networks
- The rapid spike in global energy costs has pushed the drive for energy efficiency further up the priority list right across the telecoms sector
- The convergence of automation and telecommunications was a central theme and highlighted the transformative potential of automation in reshaping the telecommunications landscape
- It is still critical to open the telecoms ecosystem beyond the dominating incumbents for new companies to innovate. Industry must align ambitions with other international alliances, share best practices and collaborate on developing future network initiatives

The SONIC Labs team connected with stakeholders from 22 different countries and over half of the visitors met at MWC were from outside the UK. SONIC Labs also met stakeholders from 24 different sectors and 60% of stakeholders visiting the SONIC Labs stand were interested in 5G/6G.

A total of 40 pre-planned meetings were set and 100+ connections were made over the duration of MWC with SONIC Labs. These ranged from international vendors (such as Mavenir, Samsung, Qualcomm, and Rakuten), investors, SMEs system integrators (such as NEC), testing facilities (such as ITRI and i14y Labs) and Government departments in order to cement relationships, scout for new vendors and products, and raise the profile of SONIC Labs and the UK Government's ambitions for open and interoperable networks. Further information on the key takeaways and trends at MWC can be [found here](#).

MWC AT A GLANCE



**22**  
COUNTRIES  
ENGAGED



**40**  
STAKEHOLDER  
MEETINGS



**24**  
SECTORS  
REPRESENTED

**100+**

CONNECTIONS BUILT TO  
DEVELOP THE ECOSYSTEM

**60%**

VISITORS INTERESTED IN 5G/6G





“It is good to see the dynamic development of SONIC Labs as it is a welcome and prominent part of the community travelling together on the road to Open RAN, helping to shape the future of mobile networks. On that journey, different labs will have to play different roles. Collaboration and sharing will be key, as standardisation and ultimately badging/ certification will be of great importance for the success of Open RAN, supporting fast and reliable implementation. This requires continued alignment among labs of all profiles and a common understanding of the direction of travel, so that startups and established vendors can get all the support towards a successful productisation and become part of the innovative and diverse ecosystem that we aspire to nurture.”

**Katja Henke**  
**Senior Innovation Project Manager, Deutsche Telekom**



## RIC Forum 2024, Dallas, USA

In March 2024, key members of the SONIC Labs team attended the RIC Forum in Dallas, Texas, with a request to speak on a panel, discussing Open RAN vendors' vision for full deployment.

Representatives from the SONIC Labs team were able to watch and participate in a number of demonstrations, with Microsoft, Mavenir and Nokia.

The demonstrations ranged with some focused on controlling energy utilisation in base stations and radios while still ensuring the appropriate service performance to connected users and saving network operation expense costs, and others working towards Energy Saving for dynamic Multi-Carrier (ESMC). Others demonstrated improved spectral efficiency of 5G vRAN by detecting external wireless interference (including jammers) generated by unauthorised transmissions of 3rd parties in a licensed spectrum.

There were demos by AT&T and Nokia, who demonstrated three standalone applications: traffic steering, energy savings and application-aware RAN, which identified application types, creates user groups based on the types, and applies policies such as scheduling, traffic steering, toward defined user groups to prioritise and improve user experience.

The SONIC Labs team was able to solidify its relationships with Taiwan, Canada and the USA, and is working on a programme of future international events with knowledge transfer activities at the forefront of the discussions and something that the team will be working to support into 2025.



## Global O-RAN insights: Working with the US National Telecommunications and Information Administration (NTIA) and the Institute for Telecommunication Sciences (ITS)

“NTIA and SONIC Labs have collaborated closely in a number of ways over the course of the past year, through both event participation and meetings. This year’s collaboration commenced with NTIA/ITS joining the SONIC Labs Collaboration Building Event in February 2023, an event designed to foster collaboration and knowledge exchange in the telecommunications sector, specifically focusing on Open RAN technologies.

This was followed by a representative from the NTIA speaking at the **SONIC Labs showcase** in London in March 2023 during a panel session on international Open RAN labs and testbeds, and discussing the state of the industry with other international panellists. Other events that NTIA/ITS and SONIC Labs participated alongside each other include the **i14y Lab Summit 2023** in Berlin on the **Global Lab Approaches to Open RAN Testing and Validation** panel and on the Taiwanese **Driving Open RAN Forward with Global Collaborators** panel at MWC in February 2024.

On a strategic level, NTIA/ITS has also been involved in the SONIC Labs Testbed Industry Group and Community of Practice meetings, providing insight on international approaches to technical Open RAN progress, experimentation and ecosystem development. Collaboration has taken place through participation of the two organisations in several DSIT led International Neutral Lab meetings. With regards to technical collaboration, SONIC Labs and NTIA/ITS have worked closely together and attended many technical exchange virtual meetings to share technical Open RAN progress.”

**Julie Kub**  
Software Engineer Division Chief, NTIA





# Innovation programme insights from Year 2 of SONIC Labs

Fostering the Open RAN innovation ecosystem

As multiple programmes and facilities are established in the UK and around the world related to Open RAN innovation and R&D, this chapter provides some key 2023/24 insights into innovation delivery, methodologies and technical learnings that can be used to propel the market forward through best practices.

Completion of Cohort 3 in 2023/24 and the findings emerging from Cohort 4 have provided valuable insights that will be used in future cohorts and offer the potential to educate the wider Open RAN ecosystem. These learnings span a range of areas, including technical, partnerships and strategic engagements, innovation and regulatory.

## Innovation learnings spotlight



### **Enabling knowledge sharing through a 'Community of Practice'**

Alongside the technical programme, SONIC Labs created opportunities for participants to build relationships with other vendors and share their learnings. Community of Practice (CoP) was selected as the key engagement model for group discussions and knowledge sharing.

Three CoP sessions were offered to cohort members to engage in an open and collaborative space for the exploration of technical activities, opportunities, best practices of deployment and integration of Open RAN.

Stakeholders from the wider ecosystem including industry adopters were invited to participate in later sessions to discuss market needs, system integration challenges and opportunities with other testing labs.





### **Community of Practice: system integrator session**

This session enabled the following:

- System integrators to connect with cohort vendors and learn about the advancements made during technical testing, vendor findings and present ambitions for Open RAN
- Greater clarity provided to system integrators for developing a long term technology product strategy



### **Community of Practice: testing labs session**

- Extended to external speakers including national and international testing labs, both commercial and non-commercial, to address the requirements for participation
- Provided an opportunity for vendors to showcase their capabilities to the labs and gain additional information about differing lab entry requirements
- Resulted in an agreement on testing practices to speed up the integration process between vendors



### **Community of Practice: private networks deployment / use case discussion**

- Included industry partners to allow insights on deployment and best practice to be shared
- Provided further use case examples of deployment and the required integration skills
- Several themes raised in these Community of Practice sessions were explored further in the market readiness events, which were open to a wider audience

“The Community of Practice sessions provide a unique, neutral and collaborative space for Open RAN vendors to discuss their learnings, integration processes, and standardisation and configuration requirements with System Integrators and innovators. The insights gained from this activity so far have been crucial for evolving Open RAN technology strategies and for the ecosystem to work towards providing high performance end-to-end systems.”

**Suzana Moreira**  
Innovation Partner, Digital Catapult

# Strategic engagement within the UK ecosystem

Engagement with the industry groups and the Strategic Advisory Board has been a valuable starting point for exploring innovation opportunities in line with programme objectives. Stakeholders have made clear that SONIC Labs is viewed as a cutting-edge facility which provides an open space to discuss critical issues that are not considered detrimental to competition. Insights from stakeholders include the following:

- Support is required from national and international institutions to maintain momentum in the existing Open RAN ecosystem
- Support has been garnered from international labs – for example; i14y Lab and NTIA have both shown that they are keen and willing to work with SONIC Labs to create and foster greater collaboration
- Progress in the telecoms ecosystem is needed to break down current barriers to entry, in line with the work of Ofcom
- International participants are looking to build relationships that broaden their knowledge and understanding of the UK's diversification strategy over the next ten years
- Further expansion is needed within the UK telecoms supply chain beyond CU, RU and DU components. This includes a sustained focus on the RIC as one of the key enablers for third party applications

Feedback from Cohort 3 has indicated that participants appreciated the value of SONIC Labs as a space for supporting vendors in their product and performance improvement journey, and for facilitating connections helping them to scale and expand their scope of operations. Participants are keen to showcase their products, and to connect with the wider ecosystem including SIs, MNOs and other end users.

# Navigating integration complexities:

## Building technical excellence through the SONIC Labs test & measurement platform

Integration is becoming more complex, in line with the growing interest in Open RAN and the number of new vendors developing Open RAN components and interfaces. This drives the need for a higher level of certainty, performance and interoperability, which in turn increases reliance on test and measurement (T&M) tools and the need to develop capabilities.

The SONIC Labs technical team developed T&M capabilities that enable effective characterisation of the performance of integrated Open RANs. The team used the following T&M platforms to provide comprehensive capabilities for a wide range of test cases:

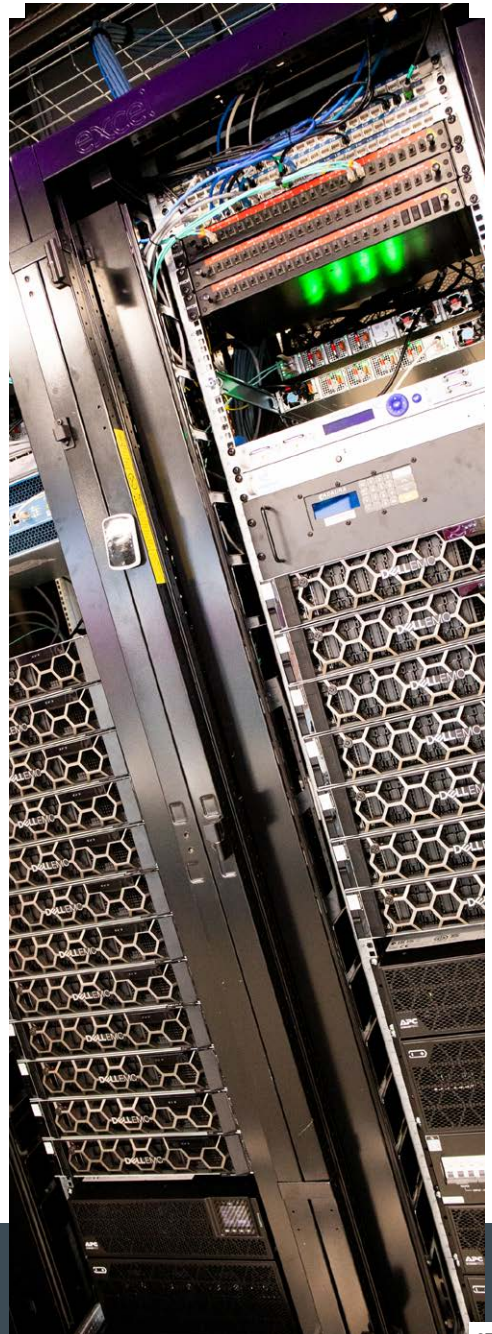
- VIAVI T&M platform (E500, TM500 & MTS 5800)
- Keysight log analysis (Nemo, PBM)
- Rohde & Schwarz RF scanner



The SONIC Labs technical team is also developing an automated test process that will simplify and reduce testing time, enhancing both efficiency and repeatability. Looking forward, the challenge is expected to be determining how to automate the test process using advanced T&M platforms.

Key validations that the team will focus on in the future include:

- O-RU, O-DU and O-CU energy efficiency characterisation and optimisation
- RIC and xAPP/rAPP testing
- Multi-vendor interoperability tests, including the disaggregation of CU/DU components
- Interoperability testing on fronthaul, backhaul and RIC interfaces
- Individual disaggregated Open RAN tests such as O-RU, O-DU and O-CU to make sure individual disaggregated components are optimised and tested correctly
- Functional and non-functional testing on a system level
- Testing of protocols and open interfaces to ensure compliance with 3GPP and Open RAN standards specifications
- Performance monitoring of open interfaces and protocols as part of the non-functional testing



# From Ideate to technology access:

## Driving future innovation in Open RAN

Leveraging Digital Catapult's innovation practice expertise, the Ideate workstream applies innovation methodologies to lower the barrier to entry for new entrants with relevant capabilities, who are just starting or have yet to apply them in the sector.

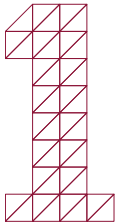
Through a series of workshops and consultations with MNOs and Open RAN vendors, the SONIC Labs innovation team explored whether these capabilities could be translated into new solutions that take advantage of open interfaces and new intelligent and programmable components.

The RIC was identified as an area in which there is strong interest from potential adopters to address critical challenges and monetise 5G services, as well as offering a lower barrier of entry for new companies in the software industry than hardware design activities.

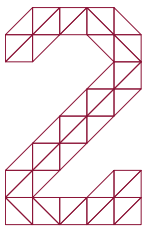
Following an ideation session to explore how AI and ML expertise could be applied to RIC use cases, a hackathon event brought together innovators and industry challenge owners to start developing xApp and rApp solutions for energy reduction in open networks.

By supporting early stage solution development in a neutral and collaborative environment, SONIC Labs demonstrated that there is significant opportunity to bring innovation to telecom networks in a way that was not possible with previous closed and proprietary solution ecosystems.

As a result of the experimental activities, the innovation methodology developed within SONIC Labs has opened two main opportunities:



**Continuing to unlock innovation in Open RAN** by exploring new use cases or technical challenges and educating the innovation ecosystem on opportunities for new product development



**Providing funding and business support** to existing and new innovators interested in creating solutions that tap into Open RAN's new functions to address specific industry challenges

The first opportunity will help SONIC Labs to maintain a forward-looking approach to foster innovation and ecosystem growth. This may include exploration of other areas in which innovation could be enabled, such as leveraging standard DevOps and AIOps to support Open RAN lifecycle management.

The second opportunity has evolved into the Technology Access Programme (TAP), a brand new structured innovation programme funded by DSIT to facilitate experimentation, unlock innovation and help accelerate the adoption of Open RAN technology in the UK.

In the first phase of the programme, participating companies will carry out their own research to develop and implement solutions relevant to address Open RAN energy efficiency challenges under two themes:

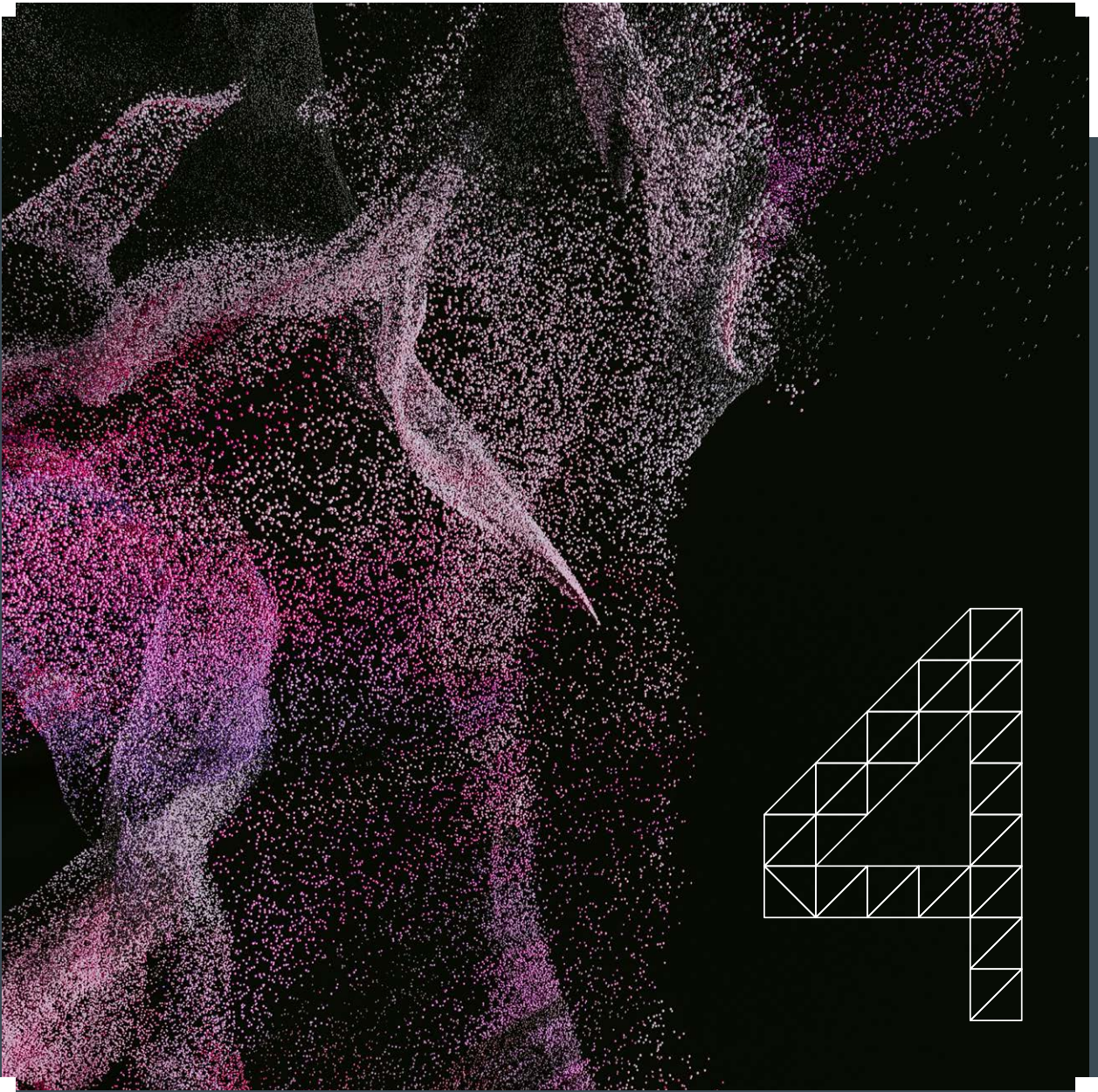
- RIC enabled sleep modes
- Optimising CU/DU power utilisation of server CPU cores

In the future, the Technology Access Programme will explore other areas to facilitate early-stage experimentation in the telecoms space.



“By leveraging tested innovation methodologies and maintaining a forward-looking approach, we can bring innovation to UK telecommunication networks faster. SONIC Labs is acting as a breeding and testing ground for completely new companies and offers to emerge that can take advantage of the openness of the networking systems whilst addressing the supply chain diversification, thus providing economic growth opportunity.”

**Linda Ligios**  
**Head of Innovation - Ecosystem Building, Digital Catapult**



**Looking forward:  
SONIC Labs in 2024 and beyond**

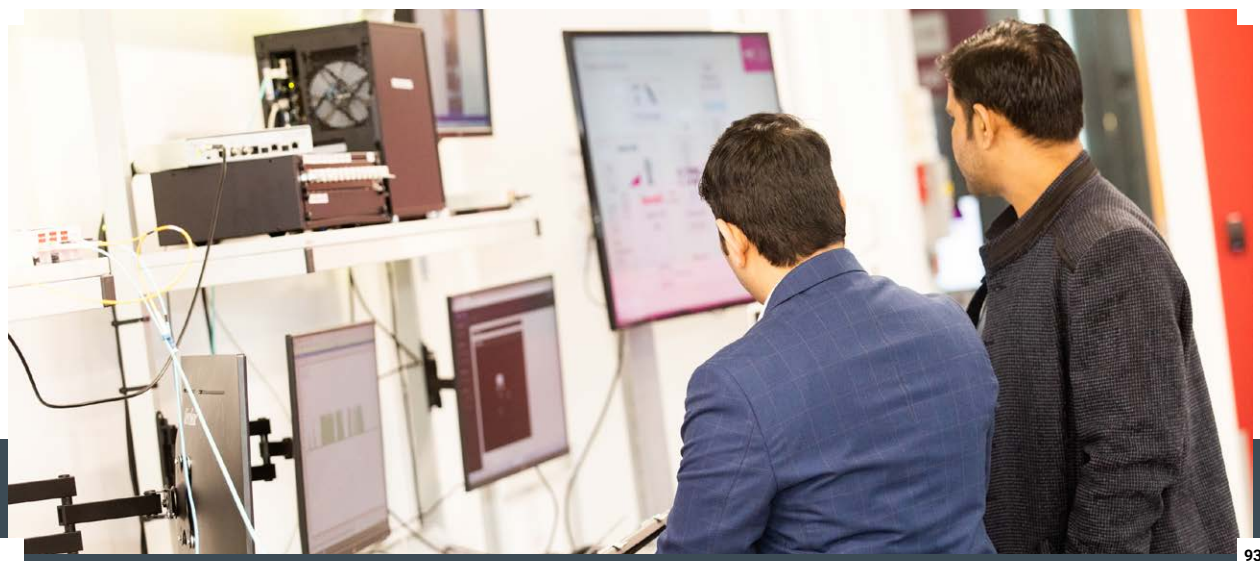
SONIC Labs is playing a vital role in supporting and accelerating the readiness of open interoperable networks towards deployment. The programme is working closely with the relevant UK government departments and the UK communications regulator, Ofcom.

Looking ahead, SONIC Labs will look at new activities while continuing current key priorities across innovation, ecosystem development and market readiness. With the programme's strategic and cross-industry groups, it continues to explore ways to share stakeholders' experience, knowledge and lessons from their Open RAN journey. This is an important part of helping vendors understand what is required when entering the UK telecoms ecosystem.

Through the cohort progression and testing facilities, SONIC Labs encourages new vendors to enter the UK mobile network space. Testing facilities allow vendors to experiment and demonstrate Open RAN product capabilities.

SONIC Labs aids the journey to commercialisation and deployment through innovative activities including the market readiness event series. This facilitates knowledge exchange and collaboration within the Open RAN ecosystem, investor roundtables, and tailored support provided through access to mentors, value proposition workshops and matchmaking.

The principal focus of extending the ecosystem development will be enhanced through tailored knowledge-sharing events designed to raise awareness of Open RAN and RIC opportunities.





# Summary of future activities and priorities

To progress the ecosystem and help to transform the Open RAN ecosystem further, our plans for the next phases of SONIC Labs includes:

## **Future technical activities**

The progress and development of SONIC Labs are underpinned by technical excellence. Allowing for further innovation, planned technical activities include the evaluation of Open RAN products at scale in both indoor and outdoor reference networks, and user experience validation including performance, handover and mobility in reference networks.

Other planned innovations include:

- Energy efficiency and optimisation of Open RAN systems in relation to COTS hardware
- RIC and xAPP/rAPP testing, security considerations of open networks and network management
- Exploration of operational models for multi-vendor deployments
- Study aimed at producing security guidelines and recommendations for vendors new to the UK market or to telecoms overall in general
- Study regarding shared network and neutral host Open RAN deployment, including solution design and build recommendations
- Study regarding network management and operational models for multi-vendor deployment (OSS, SMO) and DevOps/CI/CD/software lifecycle management options
- Study investigating the implications and requirements of integrating voice support into the test lab and providing it to vendors

- Study assessing the implications and requirements for deployments in existing or 'brownfield' networks, along with migration models
- Study on technology evolution (6G) and its implications for subsequent years, specifically collaborating with Ofcom on its future network research

### **Future partnership and strategic engagement activities**

Partnerships and strategic engagement activities sit at the heart of a connected and diverse telecoms supply chain. The following activities will take place to continue this work:

- SONIC Labs will continue to strengthen relationships with international counterparts and collaborate with international workstreams
- Continued relationship building with innovators within and outside telecoms, including AI and ML startups and academia
- Bringing together diverse key stakeholders from across the telecoms ecosystem to guide and share the journey towards future network deployment
- Contributing and enhancing the Open RAN ecosystem by sharing knowledge and insights from SONIC Labs and encouraging innovation in the UK

### **Supporting and aligning with the UK Government**

Since its inception, the SONIC Labs programme has worked closely with DSIT to ensure optimal alignment with government policy and priorities, as well as to strengthen relationships that will aid in global policy development. This will be continued through:

- Ongoing practical and strategic support of the 5G Supply Chain Diversification Strategy
- Supporting and accelerating the deployment of open networks to achieve governmental telecoms infrastructure ambitions

- Contributing to potential opportunity development for a more coordinated network of domestic and international labs to accelerate progress towards widespread deployment of Open RAN

### Open RAN business innovation

Innovation and ecosystem development is of vital importance to the progress of SONIC Labs. SONIC Labs continues to extend collaboration among industry partners and vendors through ecosystem engagement, thought leadership workshops and targeted innovation and acceleration activities to retain new innovators. Looking forward, this will be continued through the following activities:

- Two ideation/thought leadership workshops to explore themes of strategic importance such as AI and automation to ensure the continuous deployment of Open RAN and disaggregation
- Cohort 5 - Welcoming new international vendors to the programme, collaborating in testing the outdoor site in West London
- A Technology Access Programme to provide access to investment, business and tech expertise, mentorship and collaboration for participants
- Tailored business support to facilitate market readiness for innovators, vendors and partners
- Engagement with commercial labs in the UK and internationally with the aim of streamlining activities for innovators and vendors





# Final considerations

Over the past year of SONIC Labs, the programme has built upon the significant achievements made in its first year and has been successful in continuing its work as a world leading centre of expertise in its quest to support the development of the UK and global telecoms supply chain diversification.

This has been achieved through a number of ways, beginning with strengthened engagement with key government departments both domestically and internationally, MNOs, vendors, SIs, infrastructure providers and other industry players across the telecoms supply chain, and with industry organisations. This has all taken place with the intention of gaining well informed insights into the rapidly progressing state of play of the telecoms world. This accelerated engagement has demonstrated the increasing position of the UK as a location for developing an innovative, profitable and well connected environment for Open RAN and telecoms development.

In 2023/2024, building on the results achieved during the ideation and early stage development workshops, SONIC Labs has developed a robust innovation offer. One key intervention to achieve this is through the development of the Technology Access Programme, opening the door for both SMEs and academia to participate in this previously closed domain and unlock new innovation opportunities to enhance communication network resilience.



As industry wide technological development and understanding of the potential of telecoms components has expanded, so has the technical expertise of the world class SONIC Labs team. Through continued testing, experimentation and system exploration, in the past year the SONIC Labs team has helped to bring both domestic and international industries one step closer to wide scale disaggregation of the supply chain. This is backed by a world-class investment in technical facilities for integration and testing of end-to-end Open RAN systems from lab-to-field, both indoor and outdoor, including state-of-the-art test & measurement with automated testing capabilities.

Looking forward to SONIC Labs activities in 2024/2025, SONIC Labs will continue to bring together more mature solutions into multi-vendor Open RAN systems testing, including outdoor high performing systems, and investigate further the role of RIC products in enabling the transition of Open RAN into deployments in real world, and demonstrating in the process the UK's position as one of the best places in which to conduct and invest in Open RAN related innovation. Part of this activity will include increased focus on routes to commercialisation for vendors who are still in the experimentation stage of their activities.

**Read more about SONIC Labs and register your interest on the [SONIC Labs website](#).**



# FOOTNOTES

- 1 [https://www.ey.com/en\\_jp/tmt/open-ran-will-change-the-future-of-the-telecom-industry](https://www.ey.com/en_jp/tmt/open-ran-will-change-the-future-of-the-telecom-industry)
- 2 <https://www.gov.uk/government/publications/uk-wireless-infrastructure-strategy/uk-wireless-infrastructure-strategy>
- 3 <https://www.gov.uk/government/publications/5g-supply-chain-diversification-strategy/5g-supply-chain-diversification-strategy>
- 4 <https://www.delloro.com/worldwide-telecom-equipment-market-slumps-in-2023/>
- 5 <https://committees.parliament.uk/writtenevidence/5863/pdf/>
- 6 <https://committees.parliament.uk/oralevidence/969/pdf/>
- 7 <https://www2.deloitte.com/content/dam/Deloitte/uk/Documents/financial-advisory/deloitte-uk-future-of-the-uk-mobile-value-chain-feb-2022.pdf>
- 8 <https://www.vodafone.co.uk/newscentre/press-release/volume-deployment-of-openran-for-2500-sites-begins/>
- 9 <https://www.telecomstechnews.com/news/2023/oct/10/vodafone-and-arm-collaborate-open-ran-platforms/>
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- 11 <https://about.att.com/story/2023/commercial-scale-open-radio-access-network.html>
- 12 <https://www.verizon.com/about/news/new-grant-ntia-o-ran-carriers-vendors-globally>
- 13 <https://www.openranpolicy.org/governments-worldwide-embrace-open-ran-a-glimpse-of-recent-initiatives/>
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- 15 <https://www.asiaopenranacademy.org/press/press-releases/open-ran-interoperability-lab-study-tour/>
- 16 [https://www.docomo.ne.jp/english/info/media\\_center/pr/2024/0226\\_00.html](https://www.docomo.ne.jp/english/info/media_center/pr/2024/0226_00.html)
- 17 <https://www.ericsson.com/en/press-releases/3/2024/ericsson-and-o2-telefonica-begin-open-ran-journey-with-first-cloud-ran-deployment-in-europe>
- 18 <https://www.vodafone.com/news/technology/vodafone-starts-rollout-of-commercial-open-ran-in-romania>
- 19 <https://www.vodafone.com/news/technology/vodafone-and-nokia-take-open-ran-to-new-heights-in-italy>

# GLOSSARY

<b>AI/ML</b>	Artificial intelligence/machine learning
<b>CoP</b>	Community of Practice
<b>CU</b>	Centralised unit
<b>Chain</b>	A group of Open RAN vendor products
<b>Disaggregation</b>	Separation of networking equipment into functional components and allowing each component to be individually deployed
<b>DU</b>	Distributed unit
<b>DSIT</b>	Department for Science, Innovation and Technology
<b>E2AP</b>	E2 Application Protocol - The interface designed for communication between DU/CU and Near-Real Time RIC
<b>E2KPM</b>	E2 key performance measurements
<b>FONRC</b>	Future Open Networks Research Challenge
<b>FRANC</b>	Future Radio Access Network Competition
<b>gNB</b>	gNodeB: a 3GPP 5G next gen base station that supports 5G new radio
<b>Interoperability</b>	The ability of a product or system to work with other products or systems
<b>IoT</b>	Internet of Things
<b>LLD</b>	Low level design
<b>MNO</b>	Mobile network operator
<b>Ofcom</b>	Office of Communications, the UK's communications regulator
<b>Open RAN/O-RAN</b>	Open Radio Access Network - supporting interoperation between equipment from different vendors
<b>RAN</b>	Radio access network
<b>RIC</b>	RAN intelligent controller
<b>RU</b>	Radio unit
<b>SI</b>	System Integrator
<b>SmartRAN</b>	Smart radio access network
<b>SONIC</b>	SmartRAN Open Network Interoperability Centre
<b>TRL</b>	Technology readiness level
<b>UKTIN</b>	UK Telecoms Innovation Network
<b>WS</b>	Workstream

## About Digital Catapult

Digital Catapult is a deep tech innovation organisation driving business value by accelerating the application of advanced technologies. Partnering with government, industry and academia, we focus on significant challenges and opportunities facing the UK's economy and society, where technology can play a major role in providing solutions. We break down barriers, de-risk innovation, open up markets and responsibly shape the products, services and experiences of the future. Digital Catapult is part of the Catapult Network that supports businesses in transforming great ideas into valuable products and services. We are a network of world-leading technology and innovation centres established by Innovate UK. Visit [www.digicatapult.org.uk](http://www.digicatapult.org.uk) for more information.

## About Ofcom

Ofcom is the UK regulation and competition authority for broadcasting, communications and postal industries. Ofcom has a statutory duty to represent the interests of citizens and consumers through promoting competition, encouraging innovation, and investment in relevant markets. They adopt a tech-first approach to regulation, which allows us to anticipate rather than react to emerging technologies/technology trends and understand how they will impact the sectors that are regulated. They work closely with DSIT.

## About DSIT

The Department for Science, Innovation, and Technology was created following a machinery of government change in 2023 that brought together parts of the former Department for Business, Energy, and Industrial Strategy, (BEIS) and the Department for Culture, Media, and Sport. They are responsible for keeping the UK at the forefront of global science and technological innovation, delivering talent programmes, physical and digital infrastructure, R&D funding, and regulation that supports the UK economy, security, and public services.



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