UKTIN

Unifying the
buzzing telecoms
sector

EVENTS

WHAT'S HAPPENING?

Hear and engage with the UKTIN team at these events over the coming months

UPCOMING UKTIN EVENTS

INNOVATION WORKOUTS

- **08-09 NOV 2023** (ONLINE)
- **14-15 DEC 2023** (ONLINE)
- **30-31 JAN 2024** (ONLINE)

INVESTMENT WORKOUTS

- **28-29 NOV 2023** (ONLINE)
- **09-10 JAN 2024** (ONLINE)
- **20-21 FEB 2024** (ONLINE)

SME STANDARDS WORKSHOP

12 DEC 2023
LONDON

IP AND STANDARDS SEMINAR SERIES

07 DEC 2023, 09 JAN 2024, 10 JAN 2024
BRISTOL

OTHER EVENTS

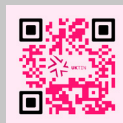### NOTTINGHAM TRENT UNIVERSITY STEM CAREERS FAIR

07 NOV 2023
NOTTINGHAM

CWIC: FROM THE MOON TO THE DEEP BLUE SEA

05 DEC 2023
CAMBRIDGE

MOBILE WORLD CONGRESS 2024

26-29 FEB 2024
BARCELONA

Review all the details of upcoming telecoms events here →

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ACCELERATING UK TELECOMS

Nick Johnson, Head of UKTIN

Welcome to the UKTIN quarterly review. These moments in the calendar are simultaneously super gratifying and incredibly scary. I get to talk about the great stuff the UKTIN consortium is doing to accelerate the UK telecoms innovation engine, but I also need to take stock of the guidance I gave last time and whether we measured up. Then, of course, it's always fun to speculate about what there is to look forward to as we approach 2024.

But first, let's take a step back. You'll remember that as the UK celebrated the Windsor agreement, announced back in February, we were looking forward to the imminent re-association with Horizon and all its benefits. As we now know, imminent was not a fortunate choice of word, but as I write

> "UNIVERSITIES AND BUSINESSES ACROSS THE COUNTRY ARE LOOKING FORWARD TO PLAYING THEIR FULL PART"

this, the news is breaking that agreement has been achieved to reassociate the UK with Horizon. This single event really is the brightest star in the UK innovation firmament right now. Universities and businesses across the country are looking forward to playing their full part in the international collaborations that are essential to technological progress. By the time you're reading this, I sincerely hope that this piece of news has entirely faded

from the headlines, that the agreements are all fully ratified and we have resumed business as usual.

What does this mean for UKTIN? As you'll see from the articles in this issue, we're well down the track. It's really exciting to see tangible differences we're making at all stages of the innovation cycle. Our Research Capability Discovery Service has just put its toe in the water, gathering feedback from early users in preparation for extending the service in 2024. Our Expert Working Groups are now in full flow, plotting the future of telecoms innovation to help guide government, academia and industry in where to direct their efforts over the coming years. The Specialist Supplier Guidance Service continues to help companies find the partnerships they need when it comes to getting innovations funded and to market. The Innovation Translation services continue to help spinouts and other SMEs shape themselves up for investment and product delivery.

The UKTIN Talent and Clusters initiatives continue to make great strides across the nations and regions of the UK, bringing people back into the telecoms workforce and encouraging entrepreneurship at all levels. And the UKTIN Adoption extension is helping the public and private sectors to deliver on deployments of advanced communications solutions for many vertical markets, as well as urban and rural in-fill.

It was also a pleasure to exhibit at this year's European Conference on Optical Communications, hosted in Glasgow. UKTIN's mission encompasses all aspects of the telecoms ecosystem and this event is a must-attend for the optical world, an area in which the UK truly excels.

UKTIN's agenda continues to promote innovation across fixed, mobile and non–terrestrial telecoms.

Join us at uktin.net, and enjoy the read.

INDUSTRY NEWS

from across the sector

POP-UP NETWORKS GIVE A BOOST TO THE GREAT BRITISH SUMMER

High-density crowds in areas with patchy coverage create a unique challenge for network operators

WINNERS ANNOUNCED IN GOVERNMENT'S SMART INFRASTRUCTURE PILOTS PROGRAMME

A new fund, launched by the government's Department for Science, Innovation and Technology, has seen £1.3m in funding awarded to six places throughout the UK

Minister Sir John Whittingdale announced at this year's Connected Britain event that Cambridgeshire County Council, Tees Valley Combined Authority, Royal Borough of Kingston upon Thames, and Westminster City Council, as well as Oxfordshire County Council and North Ayrshire Council, were awarded a share of £1.3m to support the procurement and testing of smart, multi-purpose columns that will offer mobile and wireless connectivity services in their areas.

The Smart Infrastructure Pilots Programme, or SIPP, has been designed to further real-world testing of BSI's PAS 191.

The awarded authorities' planned use cases range from providing EV charging points to connected environmental sensors, with an overall aim of helping authorities to make efficiency savings while increasing connectivity for local communities.

Funding is being matched by smart service providers, who will bring the total investment to £4m and work alongside the winning local authorities to deliver on their proposed visions.

These freshly-funded projects will build on outputs from the 2022, DCMS-funded Digital Connectivity Infrastructure Accelerator programme, during which PAS 191 was developed.

Summer in the UK – with its array of music festivals, sporting spectacles, and other outdoor events — is full of such occasions.

In recent months, plenty of pop-up 4G and 5G networks have helped keep revellers connected. Vodafone, EE, 3 UK, and Virgin Media O2 have erected temporary, site-specific masts at events including Glastonbury, Creamfields North, Kendal Calling, and Reading and Leeds Festival, among others.

Operators view these deployments as an opportunity to tout their performance and generate loyalty among existing customers (as well as attracting new subscribers with SIMs handed out on-site).

Network operators are also beginning to innovate on the pop-up template. August brought news that Virgin Media O2 Business, following successful trials, will offer to market a portable commercial 5G Standalone private network. The device at its core packs down to little more than the size of airline hand luggage.

The portable network solution is aimed at enabling 5G trials and deployments without the need for building a whole network, as well as providing dependable, high-speed connectivity for mission-critical networking — offering potential far beyond next festival season.

AS THE PLANET HOTS UP, SO DOES THE RACE TOWARDS INDUSTRY-WIDE SUSTAINABILITY

Against a backdrop of raging wildfires and overheating oceans, telecoms professionals are tackling big questions about their sector's sustainability efforts

According to the most recent research conducted by the GSMA, the telecoms industry is responsible for as much as 3% of total global energy consumption. With a sense of increasing urgency, telecoms players are employing strategies aimed directly at curbing their environmental impacts.

Vodafone is extending its use of solar energy across Germany, Portugal, and Spain, inking deals that will deliver 410 gigawatt-hours of sun power per year; Ericsson is testing AI-powered solutions to reduce energy consumption on its 5G sites in the US, projecting a 65% drop in annual electricity consumption; Telefonica has set out detailed plans to achieve

Net Zero and Zero Waste status by 2040 and 2030 respectively. Japan's three largest telecoms providers, NTT, KDDI, and SoftBank, have collaborated on a standardised self-assessment questionnaire which will track Scope 3 emissions and encourage greater end-to-end efficiency throughout their supply chains.

> "THE TELECOMS INDUSTRY IS RESPONSIBLE FOR AS MUCH AS 3% OF TOTAL GLOBAL ENERGY CONSUMPTION"

The challenge however is nuanced. Despite the greater efficiencies of advanced

connectivity solutions, concurrent increases in density and traffic are expected to push consumption beyond the savings made.

Finding ways to measure the wider consumption offsets of greater connectivity — such as enabling customers to operate more sustainably through intelligent transport systems, better energy management in commercial buildings, or lower impact delivery of public services, including healthcare — will be vital as the sector tries to get a clean grip on minimising its environmental impact.

NEWS BYTES

What's up, what's down, and what's around the corner in the telecoms sector this quarter.

Every cloud... The Competitions and Markets Authority has cleared Broadcom's $60 billion acquisition of VMWare, a move expected to have big ripples in the current cloud market.

Satellite revenues go stratospheric:
Yearly satellite 5G revenues are expected to hit $18 billion by 2031, according to new predictions from analyst firm ABI Research, as the 5G non-terrestrial network market experiences a stellar compound annual growth of 59% between 2024 and 2031.

Optical transport equipment driving to new highs:
A new report from US-based forecasters Dell'Oro Group estimates that demand for optical transport equipment will hit highs of $83 billion over the next five years.

Quarterly results fall in autumn:
Against a backdrop of tough macroeconomic conditions, a dip in telco spending, and smartphone sales hitting a slump, Nokia (Q2), Ericsson (Q2), and Qualcomm (Q3) all turned in disappointing quarterly results as autumn arrived.

TalkTalk's future up for conversation: With TalkTalk's acquisition by VMO2 a no-go, and with over £700 million worth of debt deadlines looming, the UK-based ISP is reportedly preparing to break up and sell off its remaining business units (joining ongoing efforts to sell the company's TalkTalk Business Direct division).

Visit the UKTIN website for the latest news from across the sector.

UKTIN NEWS

OPPORTUNITY AND COMPLEXITY AT THE INAUGURAL OPEN NETWORKS PROGRAMME COLLABORATION EVENT

September saw the inaugural Open Networks Programme Collaboration Event bring together 250 attendees engaged in cohorts from across the government's Open Networks Programme (ONP)

The ONP includes a £250 million fund from the Department for Science, Innovation and Technology, which supports the diversification of the telecoms supply chain. Represented on the day were FRANC (Future RAN Competition), FONRC (Future of Networks Research Competition), Flexi-DAS (a collaborative project between the UK and Republic of Korea), and ONE (Open Networks Ecosystem) projects.

Minister for Data and Digital Infrastructure, Sir John Whittingdale, announced the 19 winners of ONE's £88 million funding competition (for more on this, head to page 10) but the day was about much more than that.

Panel sessions honed in on the learnings and opportunities thrown up by cross-project collaboration across telecoms, with open networks offering a lightning rod for a number of fluent debates.

Interoperability was a key theme, with SONIC Labs Strategic Advisory Board Member Simon Saunders describing it as "table stakes for Open RAN". Maria Lema, founder of Weaver Labs, suggested Open RAN should be the "de facto configuration for the next generation of cellular", and that bringing in the open source community could be a route to success.

Microsoft's Bozidar Radunovic suggested that the ONP ecosystem provides a strong test of whether interoperability can be achieved without the need for heavy-handed regulation.

One practical challenge, said Eran Shalev of Parallel Wireless, is differing interpretation of standards (especially on optional elements).

He recognised labs like SONIC can help with pushing conformity and testing network elements before deployment.

Cyber security, as ever, remains a constant concern. Or should that be "cyber resilience"? A session on the implications of AI for future network security threw up the consideration that growing cyber threats are outpacing human ability to tackle them, with 855 breaches occurring every 60 seconds in the USA — and 95% of them resulting from human error.

Private 5G networks were also a hot topic and provoked discussion of how private and public networks can comfortably co-exist. A necessary but complex undertaking.

Indeed, if one word was heard as often as "collaboration", it was "complexity", with attendees realistic about the challenges. But is making it work worth it? Well, there was little debate on that front.

For a deeper dive on everything that went down, head to ⟶

UKTIN GUIDES INTERNATIONAL ORGANISATIONS

Supplier Specialist Guidance Service (SSGS) adds an international arm

UKTIN is now actively raising the profile of UK telecoms on the global stage through a series of targeted outreach programmes, and supporting internationally-based companies as they navigate the UK's unique telecoms ecosystem.

The Supplier Specialist Guidance team expanded its offering this Summer and is now able to support and guide international organisations looking to explore, seek partners or invest in the UK market.

"The UK telecoms ecosystem primarily operates today on a 'who you know' basis, making it difficult for new entrants and international players to efficiently connect to the right partners and explore new opportunities", says Dr Mario de Miguel Ramos, who leads the SSGS team. "Almost every company we've spoken to sees the need for UKTIN and the value of its Supplier Specialist Guidance Service. Best of all we are technology agnostic and commercially neutral so I'd encourage companies to reach out to us for help and guidance".

For more on how we support international organisations, scan here. ⟶

Contact the SSGS team:
specialistguidance@uktin.net

UKTIN'S CLUSTERS PROGRAMME IS CONNECTING THE COUNTRY'S CENTRES OF EXPERTISE

Work to identify and connect centres of expertise across the country is underway through UKTIN's Clusters programme

Despite the obvious national importance of telecommunications, venture capital investment in the sector remains concentrated in the south of England, and London in particular.

This situation not only creates an imbalance in available opportunities for talented new entrants to the sector, but also means that the industry as a whole risks missing out on ideas that originate from parts of the country outside of the south.

For the UK telecoms ecosystem to flourish, a more connected approach is needed. UKTIN's Clusters programme, led by WM5G, is designed to address this imbalance.

With regional and national leaders representing all corners of the UK, the Clusters Advisory Group is focused on identifying, promoting and increasing

the success of the UK's telecoms and technology clusters.

Work has already begun on mapping out regional capabilities across the UK, including identifying networks of expertise that already exist. These findings are in turn being fed into UKTIN's Supplier Specialist Guidance Service, so that the most up-to-date and relevant information on the UK's distribution of expertise remains readily available.

Scan for an overview of the UK's regional capabilities

NOT THE YELLOW PAGES

HOW WE'RE CREATING A TELECOMS INDUSTRY SEARCH PORTAL

Dr Hamid Falaki, University of Bristol

From know-how to 'do now', a new AI-powered solution for telecoms capability discovery will join the dots across our fragmented telecom sector

For a while, when I was a kid, my party trick involved stacking up copies of the Yellow Pages, climbing on top, and then reaching down to touch the floor and show off how bendy I was.

By 2019, when the directory hit doormats for the last time, it had shrunk to a fraction of its once iconic size. But the value that the big yellow book represented — in its ability to connect us with the services, organisations, or individuals we need — has only grown. As the world has become more saturated by information and disinformation, tools that can help us to identify the answers we need, and the questions we should be asking to reach them, are more vital than ever.

This is the case for any number of discrete sectors, and telecoms is no different. It's a thriving industry, the backbone of modern life, and one that provides critical services that keep the country's households, businesses, and wider economy ticking over on a daily basis. But ours is a fragmented industry. The great challenge that has emerged in recent years has been figuring out where our strengths and capabilities lie when it comes to research

and development. And as the march towards the future continues to pick up pace, the scale and significance of this task has only grown. It is this feat that my brilliant, dedicated team of talented colleagues at the University of Bristol, in collaboration with the wider UKTIN network, will be tackling over the coming months.

We are working to progressively build out a solution for an intelligent search and discovery service for the telecoms sector. We're calling it the UKTIN Research Capability Discovery Service, and it could eventually form part of a broader Discovery Toolkit (snappier names are in the works too!) This, of course, will be more than a telecoms Rolodex or yellow-papered doorstop.

The aim, ultimately, is to democratise insight: connecting researchers with labs, suppliers with providers, investors with those seeking fresh injections of capital, and making access to telecoms industry insights open, inclusive and informed.

Often, the most difficult part of discovery is knowing what exactly it is you're looking for, and which questions will help you get to the answer you seek. We are exploring the use of Artificial Intelligence to offer smart search engine capabilities, and bridging the gaps between the numerous floating islands of information of our fragmented sector.

We have a huge task on our hands.
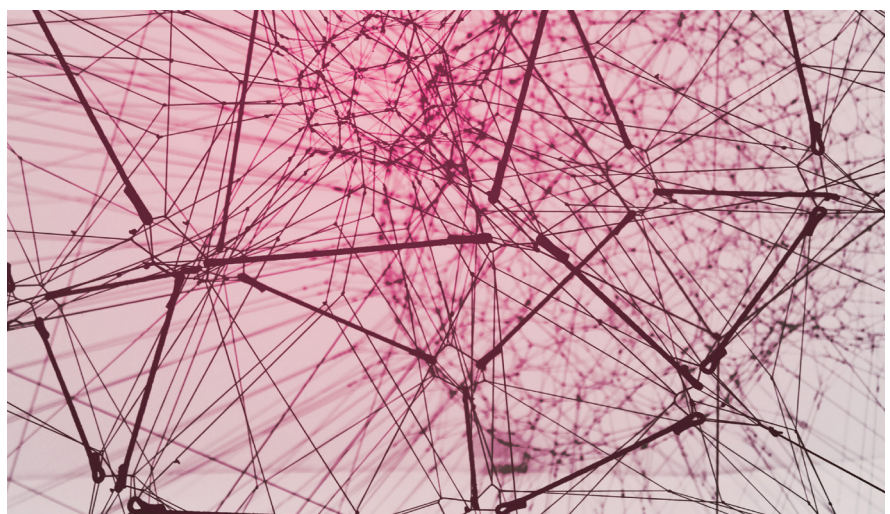
The first, and arguably most onerous step in realising this vision is to identify relevant data sources and arrange them in a way that not only enables but actively assists our users in their searches. We aim to balance our open source principles with the gamut of paywalls and subscriptions and licence fees so often required to access useful datasets, research, or directories. So far, we have identified 60 telecoms-relevant

data sources, from which we have selected a top 10. Of those 10, just four are 100% open source and suitable for AI use with direct API access. While our service won't be able to subsidise access to subscription-only sources, in time our search engine could provide content overviews and signpost users to which information can be found beyond the sign-up screen. It won't be a perfect solution — no such thing exists — but it could represent the strongest response to an industry-wide reality, and the most effective use of our limited resources. For now we have created a first, quick-win iteration of our intelligent research capability discovery service, which we will continue to take our time to develop over the coming

months. We plan to deliver a prototype, proof-of-concept solution, based on open source data, by March 2024.

"THE AIM, ULTIMATELY, IS TO DEMOCRATISE INSIGHT"

Here's how, with a simplified example, a future AI-based solution could work in practice. Let's say you're running a small company based in Newcastle that's developing radio units. You want to complete some tests, but to do this you'll need to know who can provide you with the right equipment to test the air interface. You'll need to know someone who can provide an emulator for other parts of the system too. You might simply be seeking a reliable supplier, or you could be more interested in finding a compatible research partner to collaborate with in a way that's mutually beneficial. Or maybe there are funding options you could pursue?

What started as simply identifying a task to take your company to the next step of its development has quickly become a bewildering array of options and possibilities, each more opaque than the

next. When you start applying this example to core networks, as well as RAN, the potential scale of things starts to come into view. With AI- and Large Language Model-enhanced search capabilities, we could provide users with responses tailored to the specifics of their queries. Such a chat-based application could allow users to interact in real time and request information in everyday language without needing to manually explore data sources individually.

This is just the most basic way our envisioned toolkit could help to connect users with the industry subsystems and outside areas of expertise they need to access. By introducing more data, and tweaking algorithms based on performance and user feedback, over time this resource will sharpen. The combination of expansive scope and precise responses is the point.

We are being purposefully ambitious, and tying our build at each stage to potential real-life applications. In time, our service will represent a helping hand reaching out from the cloisters of academia to the fizzing open telecoms market. I am of course aware of the irony of a telecoms industry lacking strong internal connections. Such an intelligent AI-based toolkit could come to reflect the complex structure and dynamics of our industry, and — more importantly — contribute to UKTIN's broader mission of unifying this buzzing sector as we continue to take strides into the future.

Scan to start your search— and find what you've been looking for.

OPEN NETWORKS ECOSYSTEM COMPETITION

In September the Government announced the winners of the Open Networks Ecosystem (ONE) competition – with £88m of funding for 19 new projects, this will help boost the technical capabilities of the UK's open telecoms ecosystem

INTEROPERABLE 5G NETWORKS

The ONE competition brings together the telecoms ecosystem to develop a range of software and hardware products that will enable enhanced development and adoption of open and interoperable technology, and demonstrate Open RAN technologies in challenging high-demand density environments. This new cohort of projects encompasses all UK MNOs plus around 100 other organisations from across the UK telecoms ecosystem, including ARM, Boldyn Networks, Mavenir, NEC, Parallel Wireless and over 40 SMEs.

Ultimately, the projects will help position the UK as a world leader in modern connectivity – showcasing the strength of the R&D ecosystem that has been built over the past three years.

KEY FOCUS AREAS

The competition was designed to tackle barriers to the adoption of open mobile networks in three key challenge areas:

High-Demand Density – HDD sites such as urban areas, airports, sports venues and major public events (where large numbers of users are connected at the same time in a relatively small area), represent the most challenging environments for the technical performance of mobile networks. They stretch the limits and capabilities of current network technologies – needing high connection density, radio resource efficiency, operation with high levels of interference and higher equipment performance level - and have high commercial stakes: eq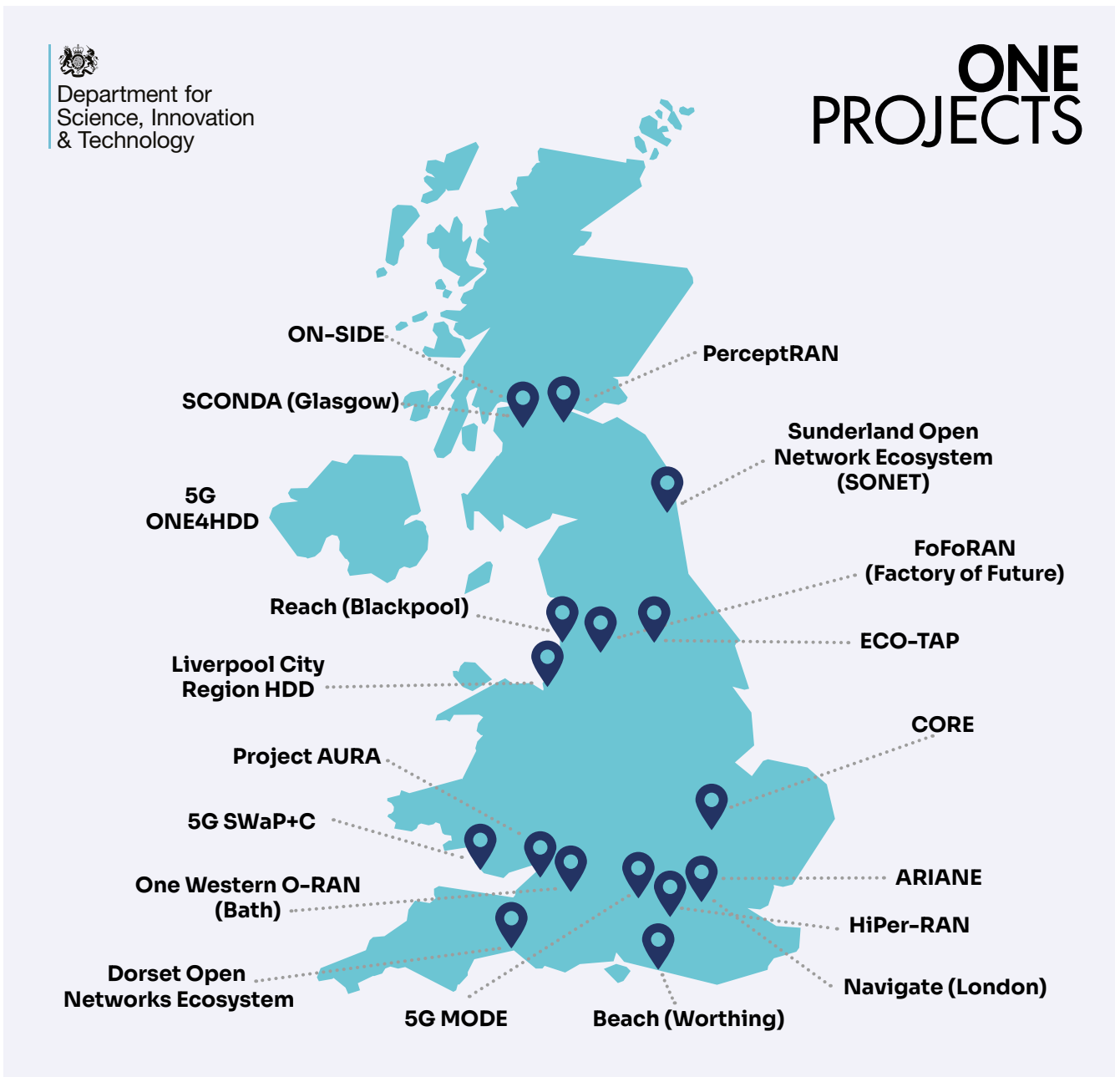uipment failure can have a significant impact due to high volumes of traffic. Our funding will help ensure Open RAN equipment and networks are in a position to meet expectations, demonstrating the effectiveness of HDD solutions and accelerating deployment.

RAN Intelligent Controller (RIC) and other RAN Software Automation – The RIC, responsible for controlling and optimising RAN functions, is critical to the development of open networks, enabling interoperability between vendors, intelligence, agility, and programmability.

It helps operators reduce infrastructure and operational costs, improve network performance, and increase business agility but can also facilitate new revenue streams with personalised services, network slicing, and indoor location tracking capabilities. Critically, the RIC enables autonomous software innovations by allowing more developers to access the network information, projects will improve innovation and the electronic efficiency of networks, contributing to our net zero targets. Supporting the development of RIC platforms and the xApps and rApps that enable these functions is key to delivering on the promise of Open RAN.

Processors, RF, and other RAN Hardware –
The perceived lack of performance and maturity of Open RAN solutions is a significant barrier to the adoption of open interface RAN infrastructure, particularly in the most challenging environments. ONE is also, therefore, investing in projects seeking to accelerate the development of performant open interface RAN hardware, such as analogue RF (Radio Function) and antenna components, RF chips, and baseband processing solutions to address the disparity in features, performance, and Total Cost of Ownership between traditional and open solutions.

Department for Science, Innovation & Technology

ONE PROJECTS

- ON–SIDE
- SCONDA (Glasgow)
- PerceptRAN
- 5G ONE4HDD
- Sunderland Open Network Ecosystem (SONET)
- Reach (Blackpool)
- FoFoRAN (Factory of Future)
- Liverpool City Region HDD
- ECO–TAP
- Project AURA
- CORE
- 5G SWaP+C
- One Western O–RAN (Bath)
- ARIANE
- HiPer–RAN
- Dorset Open Networks Ecosystem
- Navigate (London)
- 5G MODE
- Beach (Worthing)

For full information on the various projects scan here: ⟶

UKTIN

Over 6,000 people are already part of the UK Telecoms Innovation Network

Join our inclusive and collaborative forum for the UK telecoms innovation ecosystem, bringing together industry, government, and academia to catalyse R&D investment, cooperation, and commercialisation

Sign up today at uktin.net