



UKTIN

# What is UKTIN?

A new innovation network for a new era of UK telecoms

## Why R&D is vital for the telecoms sector?

Translational research is essential to land value to customers and to society

## Bridging the skills gap

We need R&D to deliver new benefits to the telecoms ecosystem

## Why the UK is a great place for telecoms investment

The UK is particularly strong when it comes to the practical application of technical skills

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The UK authority  
on advanced  
digital technology



# Welcome from Joe Butler

Welcome to the first issue of the UKTIN Journal – a quarterly publication to keep you up to date with the work of the new UK Telecoms Innovation Network (UKTIN) and the wider telecoms ecosystem.



The UK has had a profound impact on communications technology over the last century. From the first demonstration of wireless communications across the Atlantic to the invention of the telephone, the launch of the first commercial mobile network and firing the starting gun on the mobile phone revolution, the country has been a nexus for innovation.

The fundamental base of research and technology development rooted in this country is embedded deep in the fabric of our universities, our companies and our culture. It can be traced from Marconi's first transatlantic wireless transmissions in the 1900s from Cornwall, to the development of fibre optics in the 1960s in Harlow and to the European collaborations which delivered GSM (Global System for Mobile communication).

Governments around the world have recognised the vital role of telecoms and digital infrastructure in powering economies, underpinning the resilience of critical infrastructure and delivering societal benefits. In the UK, this has resulted in a raft of public funding and initiatives – from support for 5G adoption to nationwide deployment of fibre.

Set against this rich heritage and burgeoning backdrop of funding and developments is a period of significant change and market development in the telecoms landscape. We are seeing market stimulus through technology like Open RAN, Open Gateway, the adoption of artificial intelligence (AI) into networks and increasingly cloud-powered operations. New business and deployment models are emerging from private network innovation, neutral hosting and the emergence of direct satellite-to-handset communications. It is clear now, more than ever, that the UK telecoms landscape needs to be an easy place to engage with.

UKTIN is here to support a pro-investment and pro-innovation environment in the UK. It aims to make it easy to find productive partnerships in the rich landscape of research, development and testing that exists here; to support coherence and the best use of public and private investment; and help match the perspectives of innovators and suppliers to the initiatives and funding of government and public bodies.

That's why UKTIN needs you. We want to hear from the best individuals in industry and academia to ensure UKTIN has an authoritative and informed neutral voice. A wide range of views is crucial to inform a clear and positive impact for UK plc as the telecoms market evolves – from operators and established vendors to challenger entrants, SMEs, innovators and academics. We want to maximise the value of our ecosystem and support informed public funding decisions.

UKTIN is a vital part of making the UK one of the best places in the world to do business. Thank you for taking the time to find out more – and I hope you will get involved.



**Professor Joe Butler**  
CTO, DIGITAL CATAPULT  
CHAIR, UKTIN PROJECT BOARD

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5G



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# What is the UK Telecoms Innovation Network?

The UK Telecoms Innovation Network (UKTIN) is an inclusive and collaborative forum for the UK telecoms innovation ecosystem, bringing together industry, government, and academia to catalyse R&D investment, cooperation, and commercialisation. UKTIN aims to transform the UK telecoms innovation ecosystem, by forging connections and aligning the sector, enabling the UK to capitalise on its strengths as new opportunities emerge in telecoms.

From wireless infrastructure, satellite technology and fibre to network management, system integration and network security, UKTIN will provide a single point of coordination across the UK telecoms ecosystem – ensuring knowledge is shared effectively and efficiently across the industry.

The £10 million UKTIN programme is being funded by the newly formed Department of Science, Innovation & Technology (DSIT). It is part of a broader £250 million investment from UK government to accelerate the development and deployment of open interface architectures.

But UKTIN is independent of the government and is being delivered by a consortium of four partners – Digital Catapult, Cambridge Wireless, the University of Bristol and WM5G.

The aim is to build on the undoubted strengths of the existing UK telecoms ecosystem. The UK has a world-beating track record in research and development (R&D). It is the best place

in Europe to start a telecoms business – and one of the best places in the world.

But the challenge is the same as it's always been. This is a global industry, in which the manufacturing of equipment benefits from economies of scale. Network operators tend to purchase complete systems, and many individual elements of those systems have become commoditised. Success requires a distinctive product offering and a route to market based on an appropriate set of partnerships.

This is where UKTIN can help. It will make it easier for people with great ideas to meet, learn from each other and build profitable businesses. It plans to help companies wishing to invest in the UK find domestic partners – and help UK-based start-ups understand what's going on internationally.

A key aspect of UKTIN's work will be supporting new market entrants, vendors and innovators in navigating the



fragmented telecoms R&D ecosystem – acting as a “front door” and steering them to the right place for help. This is designed to ease the burden on suppliers – particularly smaller organisations – and lead to more effective engagement and matching of suppliers and innovators with relevant government initiatives and funding or other commercial opportunities.

International engagement will be part of this – to bring new players to the UK and build on activity already being undertaken by international partners. UKTIN will also be able to help new market entrants understand international telecoms standards and regulations to boost global collaboration.

Events and expert working groups are among the practical ways in which UKTIN aims to foster innovation and understanding. Themed events tailored to specific topics and with relevant expert speakers, for example, will be used to encourage knowledge sharing and networking. And

expert working groups will enable complex issues – such as international standards – to be explored in more detail.

The 5G standards set out by the 3rd Generation Partnership Project (3GPP), for example, have involved national standards

development organisations from around the world. But it can be challenging for smaller companies to engage with such standards bodies. The involvement of UKTIN – and the collaboration with other like-minded companies it offers – can make a real

difference. Similarly, UKTIN has experts on hand to help with understanding the international agreements involved in the management of access to the radio spectrum – a hurdle which can be difficult for small companies to overcome on their own.

All in all, UKTIN is set to ensure that the ‘front door’ to government funding and R&D activity is well and truly open for innovators – while providing the government with a window on to the world of the very latest in telecoms innovation.

## The UK has a world-beating track record in research and development (R&D). It is the best place in Europe to start a telecoms business...







# SUPPORTING THE NEXT GENERATION OF INNOVATIVE TELECOMS START-UPS

**Access fully-funded Investment & Innovation Support for start-ups innovating for the 5G+ infrastructure and applications via the UKTIN Innovation Platform.**

Through our Smart Internet Lab, the University of Bristol is a global leader in the telecoms sector and Future Networks research.

To support the translation of early-stage technology solutions into commercial products, alongside our delivery partner SETsquared, we will deliver a comprehensive programme of support to ensure companies have well-developed business models with the potential to scale globally and raise investment for growth and R&D.

## Innovation Workouts

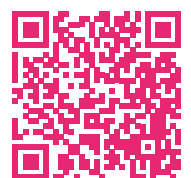
- Emerging opportunities in UK telecoms market
- Make a plan to scale
- Connect with potential partners in the telecoms value chain
- Look at the market dynamics that will drive profits

## Investment Workouts

- Understand the investment landscape
- Position your company to attract the right investors
- Develop an investment narrative
- Plan a multi-stage investment campaign

## ACCESS THE SUPPORT

To access this support, sign up for the UKTIN's Innovation Platform at:  
[uktin.net/commercialise-rd/innovation-platform](http://uktin.net/commercialise-rd/innovation-platform)





# The telecoms R&D landscape

The UK has a long history of leading the way when it comes to telecoms research – shaping the direction of telecoms networks and the technologies that help keep people connected wherever they are in the world. And the country’s universities and academics have always been at the heart of this drive for innovation.

From optical fibre and radio to key elements of the internet, the UK has been at the forefront of research to address some of the major challenges of our time, improve people’s lives and deliver for business. A whole host of new materials, devices, systems and applications have emerged from university research and development (R&D) activities.

That’s why academia is such a vital part of the UK Telecoms Innovation Network (UKTIN) – and why UKTIN is key to driving future innovation in the telecoms sector.

With world-leading academics and well-equipped laboratories, UK academia is ideally positioned to feed a pipeline of ideas and solutions directly into industry to translate academic research into commercial impact. But increasingly in recent years the UK has become a consumer of telecoms technology rather than a creator. UKTIN is on a mission to change that, transforming the UK telecoms innovation ecosystem by forging connections and aligning the sector, enabling the UK to capitalise on its strengths as new opportunities emerge.

Across the sector we’re seeing a move away from large vendors and towards creating supply chain diversification, with universities playing a central role – maximising the potential of technology breakthroughs to feed a new pipeline of innovation and commercialisation through co-operation with industry.

This collaborative way of working was in the spotlight during the race to create a vaccine in the early days of the Covid-19 pandemic. With groundbreaking research already being hosted in university laboratories, the knowledge could be mobilised rapidly to create impact at the time it was desperately needed.

Now it’s the turn of the telecoms sector to benefit from an injection of home-grown innovation – with UKTIN acting as a catalyst to boost development and commercialisation of the next generation of telecoms technology.

UKTIN’s expert working groups will bring together industry and academia and cover topics ranging from photonics, optics and fibre to artificial intelligence and satellite technology. A specific strategic group will also bring together UK academics to advise UKTIN and the government on the contribution academia can make – and highlight the gaps where further investment is required.

As well as R&D activity, universities also have an important role to play as skills providers. Closer collaboration with industry will help identify the skills the telecoms sector needs for the future and enable degree programmes and other training to be tailored accordingly.

## As well as R&D activity, universities have an important role to play as skills providers

Aligning academic research with industrial road maps is also crucial – to maximise the benefits of telecoms-related university research. Visibility of plans for 10-15 years ahead gives valuable insights to focus research on the technology that industry will

need in the future – so that work can start now. This can also help ensure funding is in place to keep university laboratories up to date and operating at the forefront of research.

A thriving telecoms ecosystem is in all our interests. UKTIN is now poised to build on the firm foundations provided by the UK’s world-leading universities, and make it a reality.

**Professor Dimitra Simeonidou**  
DIRECTOR SMART INTERNET LAB, CO-DIRECTOR BRISTOL  
DIGITAL FUTURES INSTITUTE, UNIVERSITY OF BRISTOL  
UKTIN LEAD FOR UK RESEARCH CAPABILITY

# Engaging the UK telecoms research and innovation ecosystem

The telecoms industry is undergoing major changes. This is partly a reflection of the economic, political and societal challenges that we face, with many potential solutions enabled by digital technologies – including telecoms as a critical infrastructure service.

However, the changes in the telecoms industry are also the result of the maturity of the technology involved, the associated research and innovation – and the influence of adjacent technology developments such as cloud computing, artificial intelligence (AI) and the increasing use of software solutions.

The UK's extensive track record in telecoms research is evidenced by the fact that a third of the lead/highest-cited academic papers on communications in the world come from UK academia. There has always been a strong academia-industry collaboration in the UK, although this has been affected by the progressive shift of industrial research and development (R&D) investment away from the UK in areas such as wireless communications and networks in recent years.

One of the activities that clearly put the spotlight on the need for an open and inclusive ecosystem of UK telecoms R&D and innovation was a series of 'town hall' workshops in 2021 with around 40 academic leaders in telecoms research in the UK. They came together voluntarily, and the white paper they wrote recognised the importance of the profound transformation that has started in the provisioning of advanced digital infrastructure – and the increased importance that a flexible, responsive, sustainable, secure and resilient digital infrastructure has in the delivery of our future digital solutions. This is critical to help the UK address fundamental challenges for our planet, society and businesses.

It was also recognised that there is excellence in telecoms research in UK academia, driven by a strong discovery ethic, with world-leading examples across the UK. These

can be characterised as existing in pockets, with strong collaboration in their areas of specialisation such as photonics and optical communications, wireless and satellite communications, and networking systems and management. But there is currently little collaborative research that moves across the telecoms technology stack to bring these together more firmly, and thus facilitate the translation of discoveries into products and adoption by industry.

It is clear that the demonstrable ability of UK academia and industrial research to continue to lead the world in telecoms innovation needs to be recognised, protected and grown – and their ability to identify and set the direction of long-term research should be taken advantage of directly and in a more co-ordinated way.

The UK will benefit significantly from drawing on this expertise to establish a coherent vision for long-term research into the communication and network systems of the future, to develop a road map to deliver that vision, to provide clear mapping of UK R&D capabilities, to produce people with the skills and excellence to deliver against this road map, and to provide an execution framework that instils collaboration for end-to-end systems output.

The UK Telecoms Innovation Network (UKTIN) will address the fragmentation of the UK telecoms R&D and innovation ecosystem by acting as an impartial, neutral and informed community co-ordinator – creating a network of networks that is accessible and inclusive to all stakeholders.

More specifically, it aims to identify, map and connect the UK R&D activities relevant to telecoms. The next step





will be to leverage this landscape knowledge and create a strong, inclusive and critical-mass ecosystem to provide community views and recommendations as to what the UK telecoms road map for the next five to 10 years should look like.

UKTIN will build an environment and processes whereby a critical-mass community will define what the future of telecommunication capability is in the UK; analyse the capability map and gaps and say what can be done; and recommend interventions to bridge the gap between the 'should' and the 'can' and deliver the capabilities needed for system-level working telecoms solutions in the UK.

To achieve this, UKTIN is setting up a number of research and industry focus groups in areas such as photonics and optical communications, semiconductors, network management, telecoms AI, non-terrestrial network convergence and wireless communications. These groups will be supported by experienced technical staff and enabled to provide their views on the future capability development in their technology areas – and where connection between the technology areas are necessary and can be developed in the UK or with close international partners.

The output of these expert working groups will be taken up and synthesised with a view to connecting the different

technology area views into a single, telecoms-focused, system perspective of capabilities, existing and to be developed. Leadership forums will prepare the overall

capability development road map, as well as recommendations for interventions to make this happen over the next decade. A cross-government telecoms capability development working group will inform the government of the ecosystem analysis and recommendations, and assist in facilitating

information sharing and cross-government alignment on telecoms policy.

UKTIN provides a unique, once-in-a-generation, opportunity for a willing UK R&D ecosystem to contribute to the development of a clear, cohesive and deliverable roadmap for telecoms systems capabilities in the UK – in ways that build on existing excellent research capabilities, strengthen industrial research in the UK, and will lead to key contributions from the UK in the advanced digital infrastructure that will underpin our economic and social future.

## ...there is excellence in telecoms research in UK academia... with world-leading examples across the UK

**Dritan Kalessi**  
DIRECTOR OF TECHNOLOGY – 5G  
CO-DIRECTOR SONIC LABS, DIGITAL CATAPULT  
UKTIN LEAD FOR FUTURE TELECOMS CAPABILITY

# Bridging the skills gap

Talent is the raw ingredient for success when it comes to telecoms research, development and innovation. But it's an ingredient that can be hard to find – with a national shortage of technology talent in some key areas.

Bridging this skills gap is crucial if the UK is to grow its world-class reputation for innovation and continue to attract businesses and investors from around the world. A workforce with unrivalled knowledge and skills is a fundamental part of what the UK has to offer.

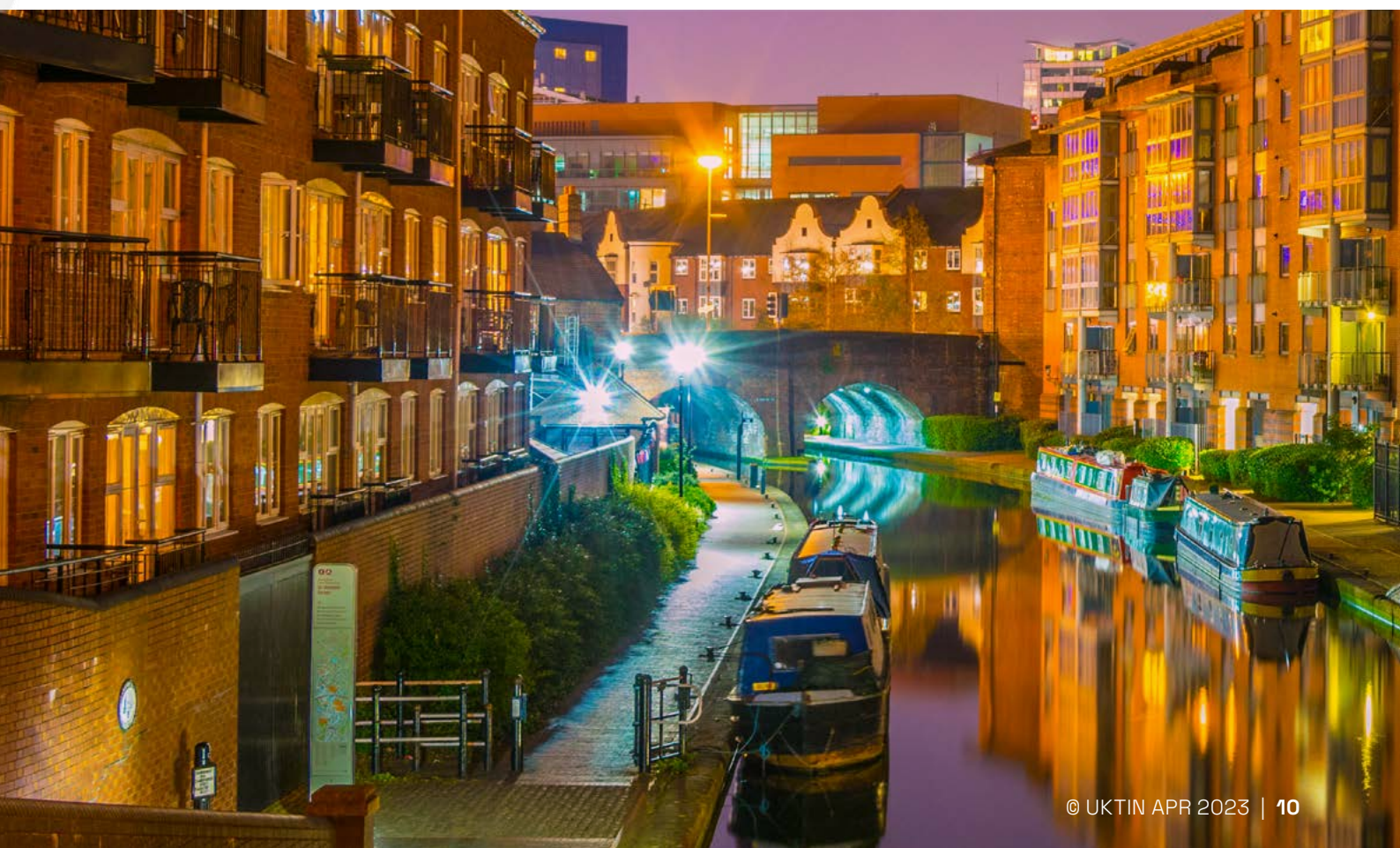
According to industry feedback and job vacancies, telecoms engineers appear to be in short supply today. Yet they are vital for the planning, design, deployment and management of connectivity networks – both outdoor and indoor. Without them, we can't deploy new technology fast enough.

There are also emerging skills gaps that will become increasingly important in the future. As the worlds of IT and telecoms collide further – through virtualisation and open networks, for example – more software engineers are being required in telecoms research, development and innovation. This is a potential challenge because those are the skills already in short supply in the IT industry.

Fortunately, some of the top universities for computer science are based in the UK. In addition, there are a number of vocational training providers as well as a large number of apprenticeships funded and supported by telecoms and technology companies.

In a bid to address the skills gap, the UK Telecoms Innovation Network (UKTIN) is bringing together employers who need to hire talented individuals, both today and in the future, and skills providers – vocational as well as further education. The aim is to understand, in the short term, where the gaps are now, and how by working together more effectively the UK can build a stronger pipeline of talent to address those gaps.

The discussions are also exploring where the skills shortages are likely to be in the near future and identifying possible routes to address the issue – the setting up of new training programmes, for example, as well as other ways of encouraging more people to choose a telecoms innovation career.





Another vital piece of the jigsaw when it comes to telecoms innovation is the role of entrepreneurs. We need R&D to deliver new benefits to the telecoms ecosystem. But it's often hard for large organisations to have the risk appetite that's needed to deliver bleeding-edge innovation.

A key route to success is innovation being spun out of universities and eventually acquired by an established player for industrialisation and scale-up. For this to happen, it is critical to create the conditions for entrepreneurs to thrive. The UK already has some of these conditions through its strength as a global hub for venture capital (VC) investment – London is the largest hub in Europe and one of the largest in the world, for example, and cities such as Cambridge, Birmingham, Bristol and Manchester are growing fast.

The volume of tech start-ups in the UK is also impressive – but the challenge is that most of them are not focused on telecoms. However, there are lots of exciting capabilities dotted around the UK and clusters such as industry clusters, regional innovation centres, R&D clusters centred around universities, and a variety of accelerators and testbeds.

UKTIN hopes to make it easier to navigate this telecoms ecosystem by bringing together the demand side (operators, equipment vendors, etc) and the supply side (entrepreneurs, accelerators and their investors).

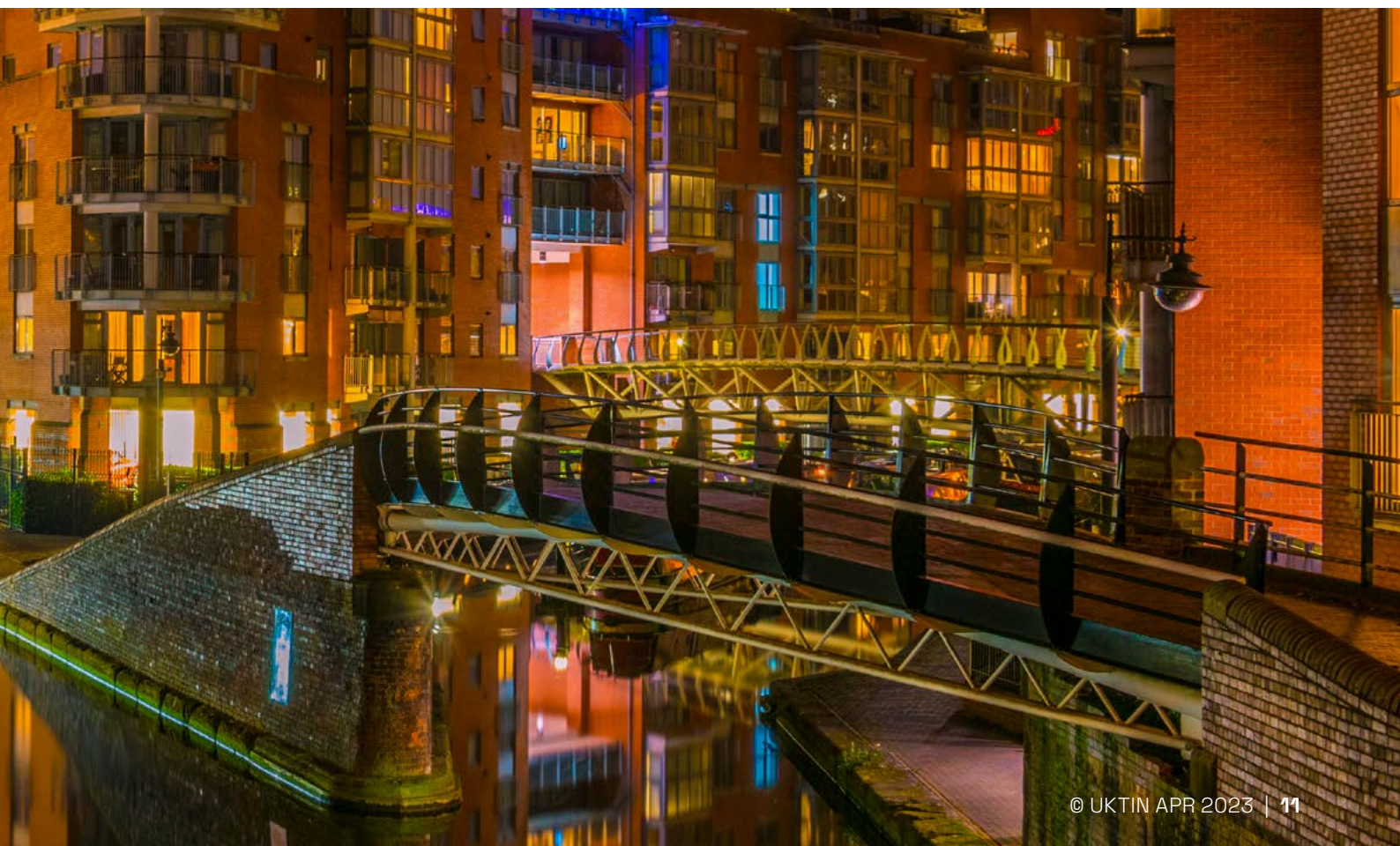
Initial activity is focused on building a picture of the innovation funnel – looking at the existing clusters and helping drive greater collective visibility across the ecosystem of what innovation is already happening. Key to this is establishing a common language and a common understanding of how telecoms research, development and innovation goes from 'cradle to grave' – the various stages innovation goes through and what is involved. The aim is to improve understanding and avoid mismatches of expectations.

This collaborative approach will also be used to explore opportunities to facilitate even more demand-side challenges – looking at where there are problems and opportunities that need further innovation and how UKTIN can work with existing accelerators to harness some of the best brains to solve them. Government and universities, as well as the telecoms industry, will all have a part to play in this.

UKTIN doesn't claim to have all the answers – it's why we're so keen to talk to and engage as many employers, training providers and other interested parties as possible. The telecoms ecosystem is the customer for UKTIN.

## We need R&D to deliver new benefits to the telecoms ecosystem

**Robert Franks**  
MANAGING DIRECTOR, WM5G  
UKTIN PROJECT BOARD MEMBER



# WM5G CONSORTIUM DELIVERY PARTNER

“Bridging the telecoms skills gap”

## UKTIN TALENT

One of the significant challenges in driving innovation within the sector though is the ability to attract and retain skilled talent, within the context of a diverse workforce. The industry faces stiff competition from other digital sectors both in the UK and abroad, which has created a highly competitive job market, exacerbating the existing skills shortage. As part of the UKTIN consortium, WM5G will be leading on skills and talent, convening employers and skills providers, promoting careers and training opportunities, and attracting talent to the industry and ensuring the sector has access to the talent and expertise it needs to stay ahead of the curve.

## UKTIN CLUSTERS

The role of entrepreneurs is also crucial in terms of telecoms innovation and R&D, but it's often difficult for large organisations to pivot, and drive next-gen innovation. As well as encouraging innovation on a large scale, entrepreneurs and SMEs play a key role in shaping the future. WM5G will work with existing clusters of innovation and capability across the UK to understand the challenges, raise awareness and help make it easier to navigate this telecoms ecosystem.

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# Why the UK is a great place for telecoms investment

NEC Europe has long-established research and development (R&D) facilities and product development resources in the UK, where it has been providing radio access network (RAN) support for more than 20 years – first for 3G and later for 4G.

Now, with 5G and Open RAN, there are good reasons for additional investment in the UK. We know there is a good academic network here and excellent engineering resources – we regularly hire graduates with a good foundation in mobile technologies, for example. And the UK is particularly strong when it comes to the practical application of technical skills – the Ocado grocery warehouse powered by 4G-connected robots is a good illustration of this. Innovation with commercial sense is something the UK does very well.

Even though its market size is not huge compared with many other countries, the UK has also proved to be a good ‘shop window’ over the years to showcase NEC’s work and attract further investment of its own. When NEC became a radio equipment provider to BT more than 30 years ago, for example, the company subsequently found it easier to promote its technology in the rest of the world.

In a similar vein, the hope is that the UK government’s support for innovation and the introduction of new technology such

**The UK is particularly strong when it comes to the practical application of technical skills**

as Open RAN could encourage other like-minded countries to follow. International collaboration that makes the most

of the complementary strengths in different countries is good for market growth and provides opportunities for new entrants, including start-ups in the UK.

International collaboration is also important to secure supply chain resilience.

Among various industry sectors, supply chain resilience for telecoms needs to be prioritised as a foundation for economic activity – with joint initiatives, new standards and encouragement for new market entrants.

Other challenges facing the telecoms sector include accelerating development of the market for new technologies such as Open RAN or it will be tough for small companies to continue to invest in the technology. Funding support for these small companies is crucial. But even large companies need milestones to show progress to the market. Integration of new technology is not easy, so government support makes sense in the form of financial support for operators to deploy such technology more widely.

Looking further ahead, the UK government has said it wants to be a leader in 6G. So now is the time for like-minded countries to join forces and decide what 6G should be and develop product specifications and so on. Operators haven’t seen a return on their investments in 5G yet – and commercialising 6G could be even harder. So it’s important to have consistent global industry requirements to give wider market access and encourage investment and new entrants.



**Takeshi Yamamoto**  
VICE-PRESIDENT OF PLANNING, NEC EUROPE



# The importance of successful partnering

**In May 2020, SpaceX launched the first crewed Dragon mission, carrying NASA astronauts Doug Hurley and Bob Behnken to the International Space Station. The partnership between NASA and SpaceX not only advanced space exploration but also demonstrated the power of collaboration and innovation.**

SpaceX had the goal of reducing the cost of space exploration and making human life multi-planetary. NASA had been at the forefront of space exploration for over 60 years. Two very different organisations, partnering to deliver a north star goal. And critically, it is widely accepted that neither organisation could have succeeded without the deep research and development partnership.

Quite simply, the whole was greater than the sum of part – a phrase we’ve all heard many times which, although often misquoted, does capture the value of partnering. In the ever-evolving telecoms industry partnering has become an essential aspect of research and development. No single company can master all the different technology domains; change is fast and challenges complex. The growing use of artificial intelligence (AI) in telecoms, for example, is driving a need to bring together experts in data science, AI and telecoms to explore a new generation of telecoms innovation. With the rapid pace of technological advancements and intense competition, companies are increasingly relying on partnerships to innovate, expand their reach and bring new products to market.

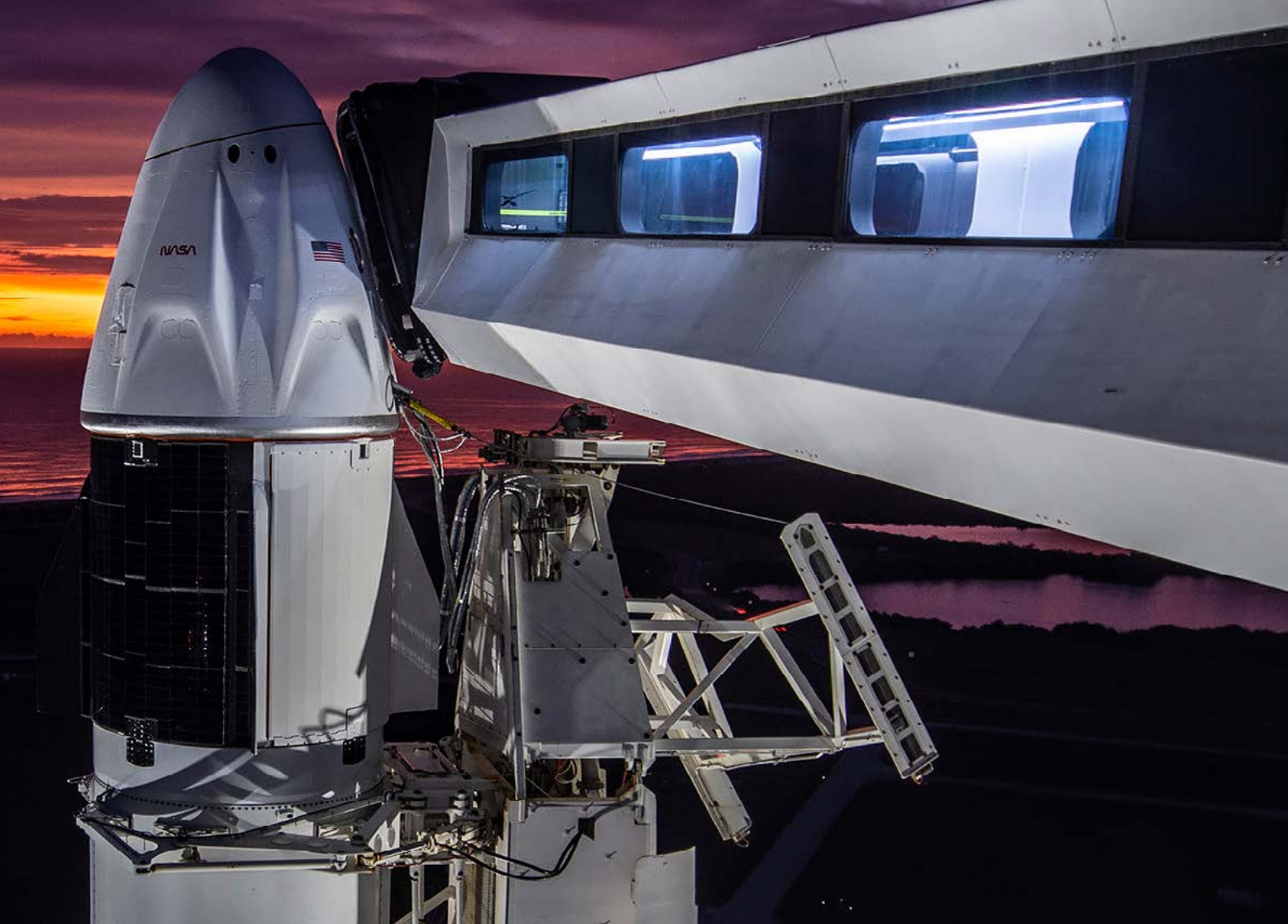
Collaboration allows companies to harness the strengths of their partners, sharing expertise, increasing diversity and leading to more innovative and creative solutions. By sharing resources, knowledge and expertise, partnerships can also help companies reduce costs, mitigate risk, speed

up product development cycles and accelerate time-to-market. That’s why partnering is at the core of the UK Telecoms Innovation Network (UKTIN). The network itself is delivered by a consortium of four partners who each draw on their distinct strengths, wider teams and extensive networks to provide the breadth of expertise required to ensure success. Covering all aspects of telecoms and all regions of the UK, the consortium is well equipped to run the network as an impartial coordinator and facilitator of UK telecoms capabilities and interests.

Partnerships also lie at the heart of everything we do at Cambridge Wireless (CW). CW’s business is grounded in bringing together the technical community to unlock the full potential of digital technology in the increasingly connected world. With a broad and active community of organisations ranging from major network operators and device manufacturers to innovative start-ups and universities, CW stimulates debate and collaboration, harnesses, and shares knowledge, and helps to build connections between academia and industry. And it’s this heritage, and network, that we are excited to bring to bear in UKTIN.

Finding the right individuals and organisations to partner with can be challenging though, especially in a fragmented sector. UKTIN enables a route to forming partnerships via the Supplier Specialist Guidance Service run by CW. This provides expert signposting support to national and





international supplier organisations, assisting existing and new suppliers in navigating the UK's research, development and innovation ecosystem – and identifying partners to help them succeed in growing their business in the UK.

The success of the telecoms industry is based on international standards. Partnership and collaboration have been crucial to the success of 3GPP in the development and evolution of mobile communication technologies. Partnering will continue to be crucial to ensure that standards continue to be developed so that complex technology can be built at scale for a global market. UKTIN will provide a forum which will enable companies to navigate the standards landscape and form partnerships to contribute to specifications.

The UK government has expressed a desire to transform the UK into a science superpower: our world leading research will lead the way to that. UKTIN brings together academia and industry to aid the translation of research into innovations which could form the basis for future telecoms

infrastructure. Industry partners are perfectly positioned to guide researchers as they explore potential applications of their technology. Further down the line as the technology matures, such partners can put the technology to the test in real-life environments. By working together, academic researchers and telecoms industry experts can more effectively transition from invention to implementation of technologies in live networks.

UKTIN is an inclusive and collaborative forum for the UK telecom innovation ecosystem, bringing together industry, government, and academia to catalyse R&D investment, cooperation, and commercialisation.

The whole will certainly be greater than the sum of parts.

## CW's business is grounded in bringing together the technical community to unlock the full potential of digital technology

**Paul Crane**  
CEO, CAMBRIDGE WIRELESS  
UKTIN PROJECT BOARD MEMBER

# Why R&D is vital for the telecoms sector

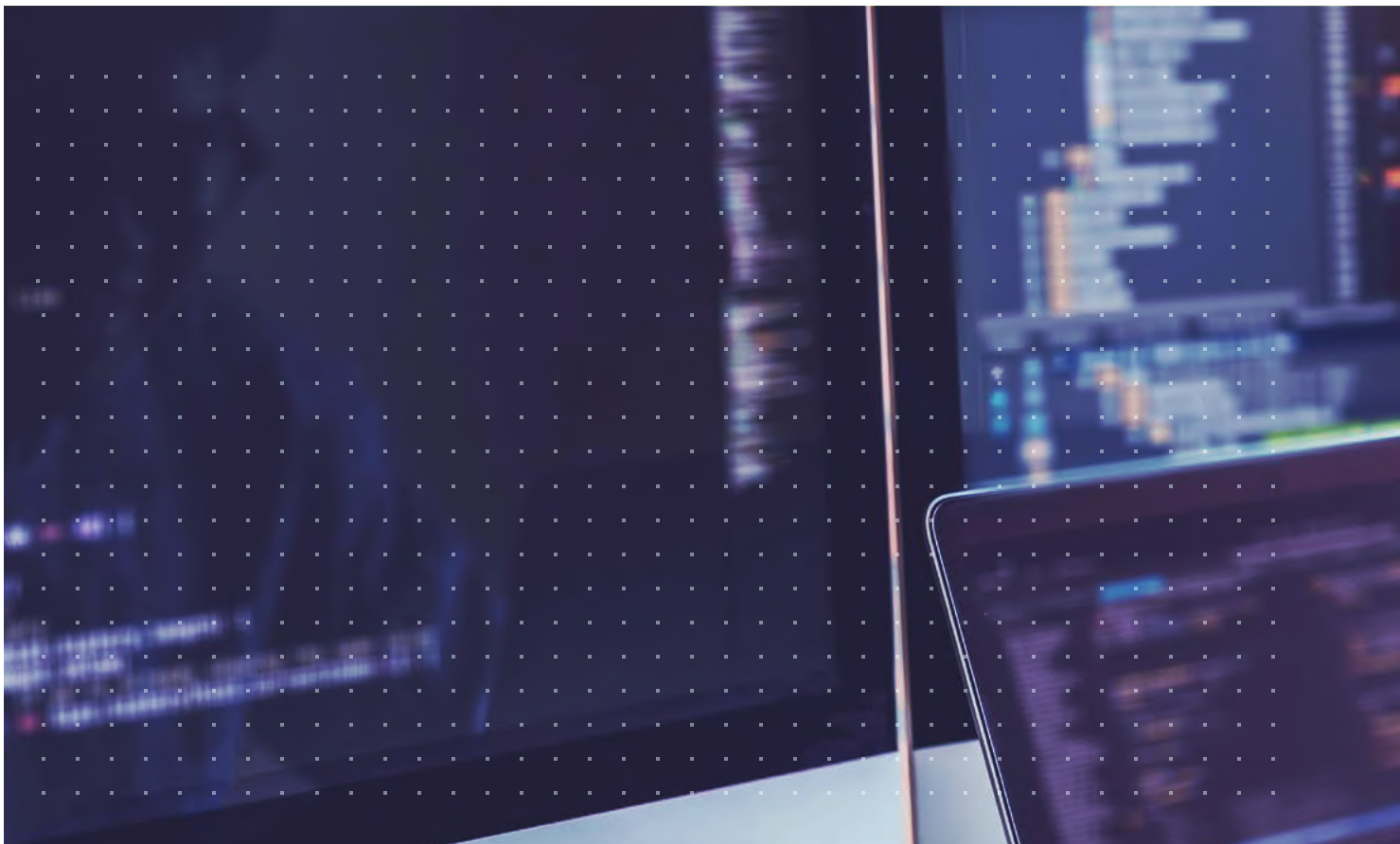
Research and development (R&D) is important for all industry sectors in today's world of relentless change fuelled by science and technology. But for the telecoms industry at the heart of our modern, connected, digital world it is absolutely fundamental.

R&D is the process by which companies such as BT can engage with science, understand and translate it through engineering, and turn it into something useful for customers and citizens. It is the mechanism by which we land the societal value from the knowledge and intellectual potential that emerges from universities.

BT is proud of the fact that it is an active participant in the global world of research – conducting scientific research, publishing in peer-reviewed journals, conceiving and patenting inventions. We see this applied research, also

known as translational research, as an essential way of helping to map the art of the possible through to the art of the practical and eventually the art of the desirable to land some value for our customers and, ultimately, the citizens of the countries we operate in – particularly the UK.

It is genuinely in the DNA of BT – after all, the company began with the filing of a patent on 12th June 1837 for the electric telegraph in a collaboration between academia and business. This kind of purposeful innovation is a big part of BT's history – and its future. Applied research is





about having a foot in both camps – the world of scientific discovery and also the practical world with the challenges of successful deployment and opportunities to deliver something useful for people.

This kind of diversity of thought, added to the right technical knowledge and skills, is a key element for a successful telecoms ecosystem, along with curiosity and entrepreneurial skills. Discovery science and new knowledge has value in its own right but, in the context of delivering value to industrial laboratories for customers, you've got to see a benefit. What does it do for somebody that is better? It might be as simple as it makes your Wi-Fi work better at home, improves your broadband speed a fraction or gives you a better app experience on your phone. Or it could be something that genuinely transforms society – the internet, for example, or wireless communications.

Looking ahead, the voracious appetite for capacity is set to be a recurring theme – the age-old questions around bits per second per hertz per watt of power and how do we get more out of that? So there will continue to be a focus on the classical science of encoding information onto a variety of carrier mechanisms such as light or radio waves.

The rise of artificial intelligence (AI) and data science will be another key aspect of future telecoms innovation. We are familiar with the idea that AI is going to assist with automation – making things work better and more

efficiently, for example. But I think it will also have a role to play in engineering – how do I encode information, how efficient and resilient can I make my network, how do we defend ourselves from cyber attacks? We are also right at the start of learning how to harness the potential of things such as digital twins and quantum technology.

We are moving towards a world where communications infrastructure is not just about connecting and conveying information but also the delivery of actionable insights – providing the data to help people make better decisions in an increasingly complex environment. Initiatives such as smart cities and the Internet of Things, for example, mean roads can be run more efficiently, with less congestion and pollution. In effect, we're moving towards a world where the communications infrastructure is delivering insight as a service. It's what we then do with that insight that is really exciting and what the next decade will be about.

Communications research has given us all the ingredients – it's now about how we create the value chains, the business models, the correct checks and balances, etc to enable us to harness that benefit. We have a huge agenda ahead of us so it's vital to ensure the UK is as excellent at translational research as it is at discovery science.

**Professor Tim Whitley**  
MANAGING DIRECTOR OF RESEARCH AND  
NETWORKS STRATEGY, BT





# UKTIN – Who’s the Customer?

Imagine my reaction when I mentioned to a friend that I was joining to head up UKTIN. “UKTIN? Isn’t that just another talking shop?” Let me assure you, dear reader, that if it were, I would not be here.



The thing that separates UKTIN from the rest, is the customer – or actually the multiplicity of customers. Each of our customers is a link in a chain that runs all the way from university research, through corporate research labs, through SME and LE product development, through skills, tools, training and deployment all the way to, you guessed it, the end customer, be that a large global telco, TowerCo, a small shared network, private network or neutral host provider. And of course, our immediate sponsor the UK Government, in the form of the Department of Science, Innovation & Technology.

## **UKTIN’s customers are all of the above.**

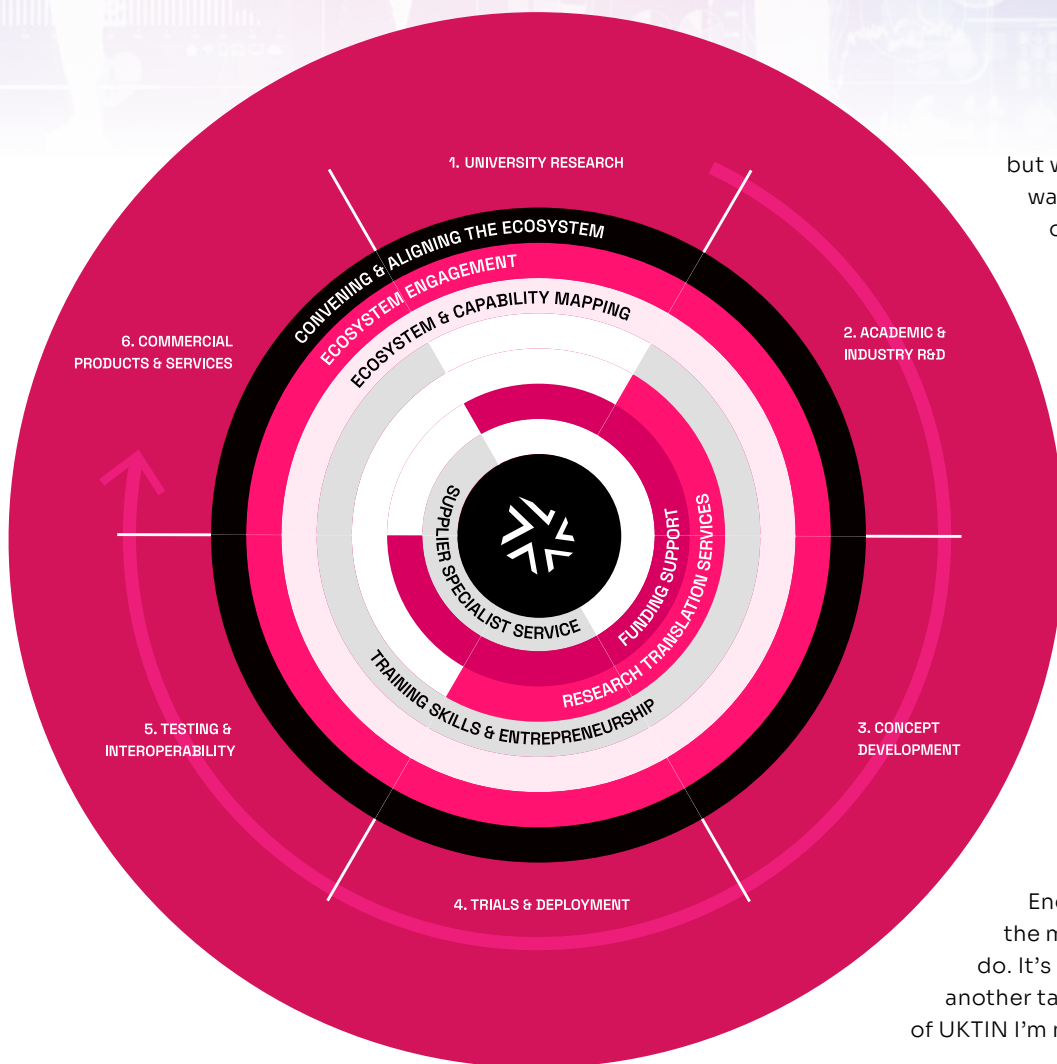
Some have an aversion to the word ‘customer’, perhaps thinking it doesn’t do justice to the value of the ideas that power the innovation cycle. But it is exactly the right word, for that very reason. When you think of a customer, you think of trade, of exchange, of added value,

of money. And this of course is the central reason for innovation: to turn intellectual capital into money capital. That is what elevates innovation from something we did because we could, to something meaningful with real-world impact.

It’s a truism of sales that no-one buys what you do, they buy why you do it. In our relationships with the ecosystem, we strive to think of all of our relationships as customer relationships. We are providing a service – or more accurately a suite of services – and we have to deliver clear value. We have to build those relationships. We have to be clear about why we’re doing what we’re doing. We have to be clear with ourselves, and we have to be clear with our customers, every step of the way, every link in the chain.

One of the images I’m embedding in the UKTIN culture is the idea of a True North. It may not be an original concept,





but when we're struggling to find our way through the innovation forest, our concept of True North will be our constant guide. And where do we find True North? You guessed it: the customer.

In this case, True North is the guidance that the telecoms innovation end-customer, the service provider, can give us. The telco, whether they be the multi-billion pound international telco, or the emerging shared network operator, knows what their priorities are. They may be technical or commercial or both, but they are our guide. We lose sight of them at our peril.

Engaging with the customer is the most important thing UKTIN can do. It's what will ensure we're not just another talking shop. And it's the element of UKTIN I'm most excited about.

No matter what part of the ecosystem you operate in, UKTIN has a range of services to help you navigate the UK landscape and smooth your path to growth, as the above diagram shows.

**Nick Johnson**  
HEAD OF UKTIN

# How UKTIN has a key role to play in driving telecoms innovation

‘Future telecommunications’ is one of five critical technologies identified by the government as part of its framework to make the UK the most innovative economy in the world.

It means the evolution of the infrastructure for digitised data and communications takes its place alongside artificial intelligence (AI), engineering biology, semiconductors and quantum technologies on the government’s Science and Technology Superpower agenda.

This is a unique opportunity to set the telecoms research and development (R&D) agenda on a long-term and strategic path that will drive big benefits for the UK. When it comes to the telecoms vendor landscape, for example, we want there to be a vibrant, dynamic, competitive market that drives innovation whilst raising standards for security and resilience. But, if the UK wants to influence the shape of the industry, it has to do it with a long-term strategy and at scale.

We have seen, through the development of the 5G Supply Chain Diversification Strategy, how important the role of engaging with the industry is to help inform policy development and future funding calls. So we hope the new UK Telecoms Innovation Network (UKTIN) will play a key role in helping to ensure our policies and funding are targeting the areas of high potential growth within the UK’s rapidly growing digital economy.

The main aim of UKTIN is to create an inclusive and collaborative forum for the UK telecoms innovation ecosystem – bringing together industry, government and academia to boost R&D investment, co-operation and commercialisation. It will provide a road map to help organisations navigate routes to funding for innovative businesses in the telecoms space.

At the same time, the government is taking action to accelerate the development and deployment of open

interface architectures, such as Open RAN, with its £250 million Open Networks R&D Fund. The latest example of this is the Open Networks Ecosystem competition, recently announced by the Department for Science, Innovation and Technology (DSIT), which aims to tackle some of the barriers to the adoption of open mobile networks.

The competition is offering up to £80 million of funding for the development of a range of software and hardware products that will enable enhanced development and

adoption of open and interoperable technology, as well as the opportunity to apply for funding for demonstrations of Open RAN technologies in high demand density (HDD) environments.

As well as projects to optimise mobile

network performance in HDD environments such as airports and sports venues, the competition is focusing on RIC and other RAN software automation, as well as processors, RF and other RAN hardware.

The UK’s competitive economy, full of world-class talent and scientific research excellence, provides a brilliant environment for progressing telecoms R&D. There is a real benefit for DSIT in having an industry-facing neutral body like UKTIN to help us execute programmes and make sure they are going to land correctly and have the desired impact.

## The UK’s competitive economy... provides a brilliant environment for progressing telecoms R&D

**Keith Bullock**  
PROGRAMME DIRECTOR  
FUTURE NETWORK PROGRAMMES, DSIT



# About UKTIN

UKTIN – the UK Telecoms Innovation Network – formally started in October 2022 with the intention of transforming the UK telecoms innovation ecosystem through forging connections and aligning the sector so the UK can capitalise on its strengths as new opportunities emerge.

Designed to be an inclusive and collaborative forum that brings together industry, government and academia, UKTIN will catalyse R&D investment, cooperation and commercialisation across the telecoms sector.

## Get in touch

For more information about UKTIN contact: [enquiries@uktin.net](mailto:enquiries@uktin.net)



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# Over 5,000 people are already members 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](https://uktin.net)