Department for Digital, Culture, Media & Sport

Accelerating the pace of telecoms innovation

UK Open Networks R&D Fund

Prospectus 2022-25

Contents

The UK is one of the best places to invest and grow a business: we are the fifth largest economy in the world and the leading destination for foreign investment in Europe.

Our competitive economy is brimming with world class talent and an excellent scientific research base that is supported by a business-friendly regulatory environment.

This is why we saw £27.4 billion of private capital flow into UK tech last year[1] – one third of the total flow (£89.5 billion) into the European tech ecosystem.[2]

And we are ready to support the UK's digital businesses and telecommunications sector to reach new heights.

This government is committed to building an innovative ecosystem to deliver world-class digital infrastructure that will deliver crucial economic and social benefits for the UK.

That is why I am delighted to set out further details of our world-first ***£250 million Open Networks R&D Fund*** that will lead to greater security, resilience and diversity of supply for the UK's telecoms networks.

We will be investing in research and development alongside industry and international partners to take open-interface solutions from infancy toward commercial viability and deployment both in the UK and globally.

And we will ensure long-term success by championing international consensus and global standards for the sector.

This prospectus is part of the roadmap that we will follow to diversify the UK's telecoms supply chain, deliver world-class digital infrastructure and strengthen the UK's global position as a Science and Tech Superpower.

Matt Warman, MP
Minister for Media, Data, and Digital Infrastructure

1 https://bit.ly/3zvi6Sy
2 https://bit.ly/3zaOngo

Investing in a more diverse telecoms supply chain

A major step forward for the UK

The UK is the ideal place to develop and produce innovative telecommunications solutions that will power the global digital economy. Our thriving, connected and compact digital ecosystem is ready to support your innovation.

The UK government is committed to building secure and resilient communications infrastructure by increasing diversity and innovation within the telecoms supply chain. Our ambitious plans are supported by a £250 million Open Networks R&D Fund to accelerate the development and deployment of open interface architectures, such as Open RAN.[3]

3 https://bit.ly/3J9cGQ8

The UK is a global player. With the fifth largest economy in the world, we have a long and successful history of collaboration and pride ourselves on our support for global partnerships. The UK has attracted significant foreign direct investment, securing a third of the total £89.5 billion that flowed into the European tech ecosystem in 2021.

We are the number one major European economy for ease of doing business. The UK does not deduct dividend withholding tax, allowing full repatriation of net profits to overseas shareholders. Businesses also benefit from a research and development (R&D) tax credit worth 13% of qualifying expenditure.

The UK boasts an impressive depth of research, development and industrialisation capability, including 90 world-class universities - with four in the global top ten. We attract global talent to our diverse and vibrant society and make it easy for people to work here. Our skilled workforce is flexible and adaptable, ready to rise to the challenges of developing new telecoms solutions to meet the ambitions set out in the UK's 5G Supply Chain Diversification Strategy.

This foundation of excellence will build a more competitive, innovative, and diverse supply chain for the global telecoms market. Our commitment of £250 million through the Open Networks R&D Fund will help develop the performance, economics, and security of open-interface solutions so that they become competitive and viable for scale commercial deployments as soon as possible.

We invite you to explore the prospectus and engage through the UK telecoms innovation network to explore what we have to offer, to see how you can co-invest in our global ambitions, to meet our experts and to experience the exciting possibilities that telecoms networks will enable for our everyday lives and businesses.

Our 5G Supply Chain Diversification Strategy

The UK's 5G Supply Chain Diversification Strategy sets out targeted and ambitious plans to diversify the telecoms supply market, focussing on three key areas of activity:

- Supporting incumbent suppliers,

- Attracting new suppliers into the UK market,

- Accelerating open-interface solutions and deployment,

We look forward to working with you to achieve our shared goals of a more competitive and vibrant telecoms supply market.

Want more details?

Working together to create an interoperable future

This prospectus sets out our plans for allocating the £250 million Open Networks R&D Fund - helping to make the UK the ideal place to develop and produce innovative telecoms solutions that underpin the global digital economy.

This collaboration, together with other steps that the Government is taking through its Diversification Strategy, will help us to meet the Government and UK mobile network operators' joint ambition to carry 35% of the UK's mobile network traffic over open and interoperable RAN architectures by 2030.

In an increasingly digital world, secure and reliable digital connectivity has become a necessity for citizens and businesses.

We are ever more dependent on our telecoms networks for all aspects of our lives, so it is essential for our economy and way of life that those networks are resilient. Increasing supply chain diversity for telecoms networks is an essential goal for the UK and other governments internationally, to enhance security, resilience, innovation and competition in critical national infrastructure and beyond.

We are already seeing momentum in the global market to ensure that open-interface solutions are near commercial grade for wide-scale deployments. Mobile network operators, builders and suppliers are taking proactive steps to support Open RAN trials and committing to deployments in their commercial networks.

The Government's £250 million investment will accelerate and support these initiatives - enabling the development of open-interface solutions and stepping up our efforts to shape technology standards alongside key industry and international partners. This is consistent with the Prague Proposals on Telecommunications Supplier Diversity which the UK and other governments supported in 2021.[4]

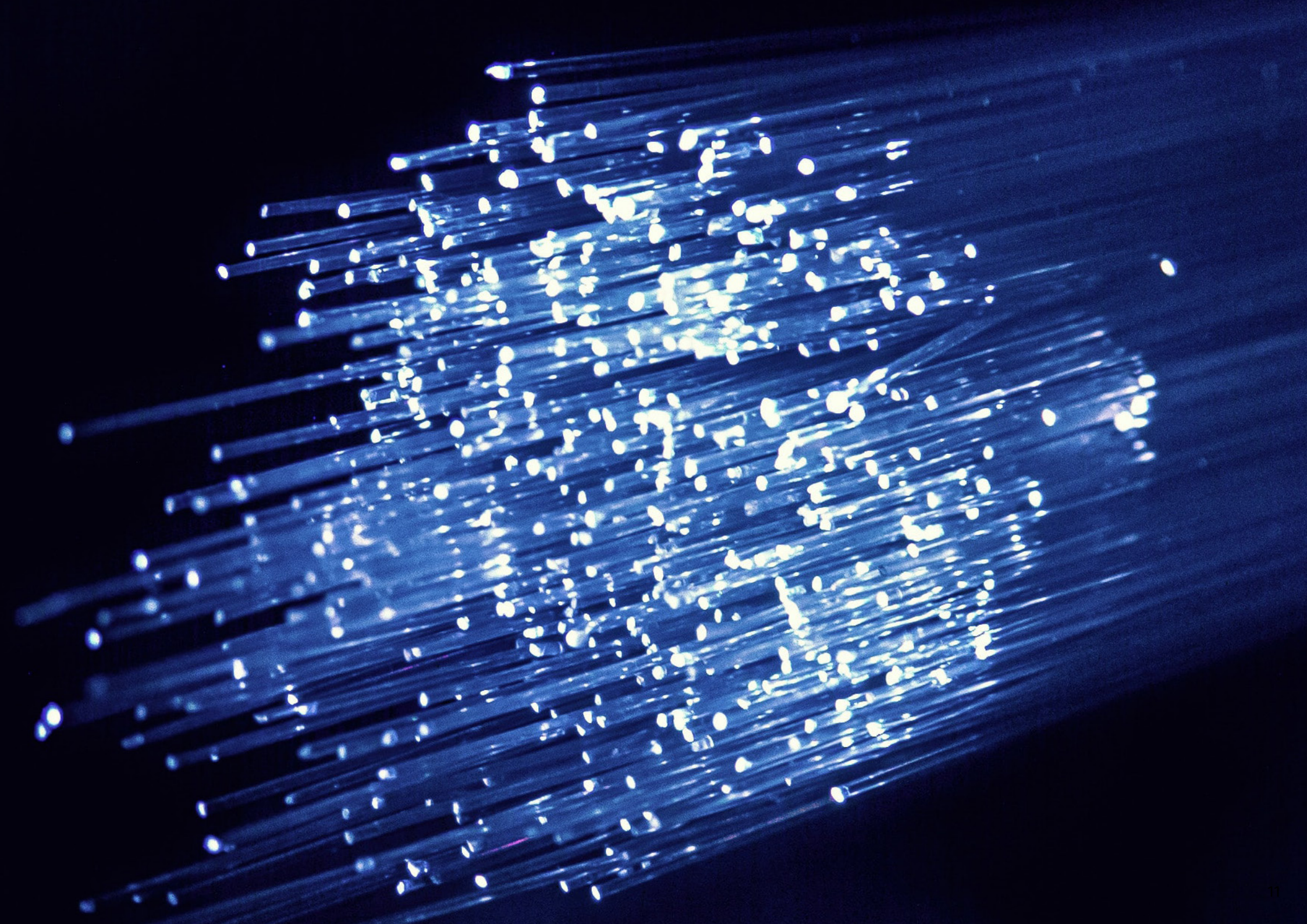
We will invest through a series of competitions and challenges with funding made available until the end of March 2025. These activities will encourage greater collaboration towards addressing key barriers including power efficiency, spectrum management, software platforms, systems integration and security - ensuring that the development of innovative telecoms solutions meet the performance and security requirements of mobile network operators and other network builders.

The applications process for the competitions and challenges will remain competitive and transparent so that the best ideas to ensure sustainability of the open-interface solutions are successful. You will be further supported by the UK telecoms innovation network to help pair your project consortium with the right people on the ground to help take those solutions to commercialisation and attract further investment.

Achieving our ambitions will draw on the world leading telecoms research capability of UK universities, innovative businesses, empowered local authorities, international partners and also the expertise in building, managing and maintaining interoperable networks provided by major equipment suppliers and network operators.

We look forward to working with you and commit to continue playing a leading role in coordinating a global effort to secure telecoms supply chains through competitive, transparent and sustainable solutions.

4 https://bit.ly/3cEy6IT



Implementing the strategy

Running until the end of March 2025, the fund comprises a series of activities focused on enabling different aspects of open interface architectures and ecosystems - helping the telecoms sector make the transition quickly and securely. It also provides flexibility and new options for businesses and researchers as the market develops. To ensure the sustainability of our approach, we will work towards a global consensus on a set of Open RAN principles to ensure a universal approach to open-interface solutions development and their implementation.

Open RAN principles

OPEN DISAGGREGATION

Allowing elements of the RAN to be sourced from different suppliers and implemented in new ways.

STANDARDS-BASED COMPLIANCE

Allowing all suppliers to test solutions against standards in an open, neutral environment.

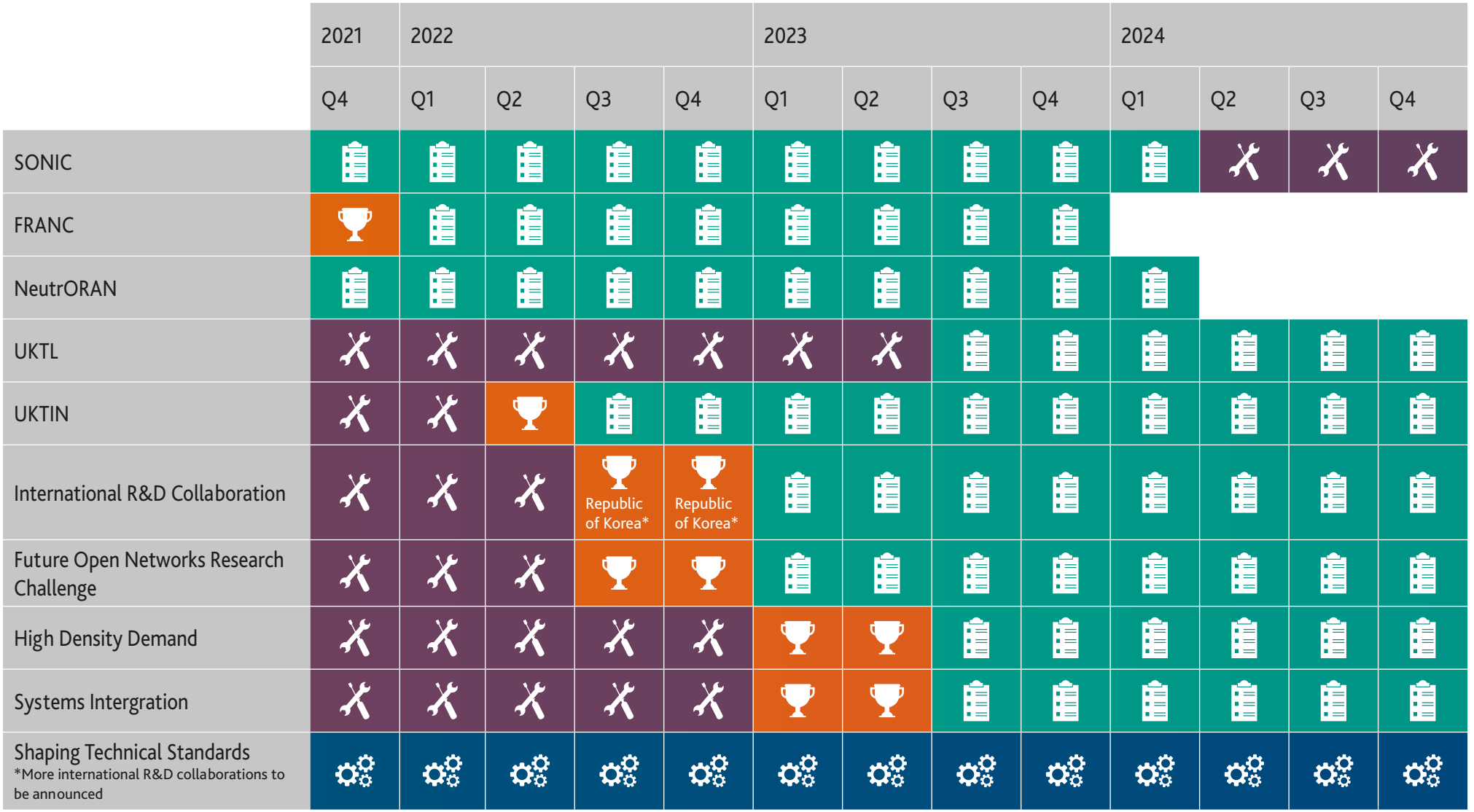
DEMONSTRATED INTEROPERABILITY

Ensuring disaggregated elements work together as a fully functional system — at a minimum matching the performance and security of current solutions.

IMPLEMENTATION NEUTRALITY
OPEN RAN PRINCIPLES' WITH THIS GRAPHIC

Allowing suppliers to innovate and differentiate on the features and performance of their products.

Towards faster commercialisation



*More international R&D collaborations to be announced

Evolving the innovation ecosystem

The UK Government is not only investing in the development of open-interface solutions, we are investing in the wider ecosystem to support globally renowned innovation.

A new association to bring us together

A new UK telecoms innovation network will be the central docking point for you to engage with us and the organisations who form part of the telecoms ecosystem, including industry verticals. It will guide businesses and researchers through the UK R&D ecosystem, including directions for relevant funding and investment opportunities, R&D facilities and testbeds, as well as providing high-level insight on how to engage with the opportunity, fund or facilities.

The network stands ready to introduce you to the people and organisations who are working with us to help you get the most out of what the UK has to offer.

Maximising innovation through standardisation

The UK's continuous pipeline of innovations will further benefit from coordination and assistance in the development of technical standards. This will be supported by the UK telecoms innovation network to ensure that the specifications and intellectual property generated from our partners goes to inform standards development activities in fora and groups such as 3GPP, ETSI and the O-RAN Alliance. Essentially helping us and your business to monitor the development of the global market to understand whether further steps are necessary to support greater adherence and adoption of industry-driven standards for longer-term sustainability.

Accelerating maturity

We know that the growth and sustainability of open interface architectures will depend on a range of factors, including performance, quality and security of the hardware and software solutions; operational expenses and complexity of end-to-end integration; and the global demand from network operators and other network builders. The UK's strong tech sector is well placed to support the development, scale up and commercialisation of open-interface solutions central to our aim of diversifying the UK's telecoms supply chain.

Unlocking the full potential of open interface architectures

We are already supporting 15 projects through the Future RAN Competition (FRANC) to help accelerate the development of subcomponents and market models for open interface architectures. Our commitment of up to £36 million enables a wide range of organisations to focus on developing technical solutions such as radio transmitters, signal processing equipment, power management systems and software to support open interface architectures. The projects are spread across the UK, including Glasgow, Cardiff, Cambridge, Newcastle, Newport, Slough and Ebbw Vale - building on the existing industrial strength of these regions, while further developing an engineering base with a new set of skills.

Future Open Networks Research Challenge

Ultimately, the government is committed to working with you to ensure that openness and interoperability are sustained in future communications network architectures. We will invest up to £25 million through the Future Open Networks Research Challenge to encourage the UK's world-class academic researchers and industry to co-create future-facing telecoms technologies that are open and interoperable by default - making the UK an even more attractive place to invest. This will enable a rich R&D environment from which more patents will be filed by UK-based organisations to continue to support the growth of a stronger domestic telecoms market.

Developing a set of Open RAN requirements for UK requirements

The pioneering research and development of open-interface solutions will be coupled with a detailed understanding of the domestic market for Open RAN systems. We invite you to work with us to develop a balanced set of Open RAN requirements for end-to-end deployments in high-demand dense (HDD) environments.[5] This will help us identify key market and technology gaps, focussing on components, services and appropriate suppliers, that we need to address to support the deployment of Open RAN in HDD environments.

The outcomes from this activity will underpin our future investments in supporting further solutions development and trials while at the same time providing smaller suppliers with direction for their product development to better target public network requirements in the UK.

5 High Demand Density environments are defined as "dense urban areas as well as locations such as airports, sports venues and major public events. While these locations represent a small portion of network sites, they carry a significant volume of overall network traffic, and act as leading-edge commercial deployments of technical features and performance which will later be deployed extensively across the network as demand continues to rise."

Fast forward to market-ready solutions

HDD sites represent the most challenging environments for the technical performance of RAN elements and systems. We will commit up to £20 million to support the development of Open RAN solutions to meet the HDD requirements. This will ensure that any new open-interface solutions developed are market-ready and tested to meet the needs of stakeholders responsible for building networks, especially mobile network operators and neutral host providers.

International collaboration and coordination

Developing HDD requirements will give new and emerging market entrant suppliers greater clarity over the products they must develop to compete in the UK, as defined by their customers, and this greater transparency should make the UK a more appealing market. We will maximise this opportunity through international partnerships and collaborative R&D to develop global markets for export and provide an avenue for like-minded partners to contribute to the diversification of the UK's telecoms supply chain.

Up to £15 million will be made available for UK-based researchers and industry to address specific challenges through collaborative projects with global counterparts.

The first of these partnerships to be launched is with the Republic of Korea to accelerate the development of power-efficient products and solutions for open interface architectures. With additional global partnerships to be announced during the course of the fund. We look forward to engaging with international governments and industry across the world as we develop and implement the measures set out in the Diversification Strategy.

Developing facilities and demonstration capabilities

To add to the UK's telecoms ecosystem the government is providing existing and emerging suppliers with neutral environments to come together to test and demonstrate open-interface solutions. These facilities will help shape the overall ecosystem design and broader activity such as our approach to influencing telecoms standards. In addition, insight from these facilities will help to build a better understanding of technology readiness and challenges for maturity to inform our roadmaps and strategies. The facilities will play an enabling role for UK-based organisations to maximise their role in the new supply chain as part of an international effort.

SONIC Labs

We welcome you to participate through the SmartRAN Open Networks Interoperability Centre (SONIC Labs), which is designed to help commercialise open-interface solutions and test their performance. We have committed up to £16 million to establish SONIC Labs as a commercially-neutral, collaborative environment for open, disaggregated and software-centric network solutions and multi-vendor architectures. It is maintained and operated by Digital Catapult and Ofcom to provide testing services for suppliers, and empowers the wider community to demonstrate their equipment to the standards demanded by the network operators. We are designing and building this facility for long-term capability with the intention to make a lasting impact.

UK Telecoms Lab

In addition, we are establishing the UK Telecoms Lab (UKTL) to support and inform UK security and supply chain diversification ambitions. The UKTL will enable both security evaluations of equipment and functional and secure interoperability testing, reducing barriers to the deployment of open-interface solutions. We encourage businesses and researchers to use the UKTL to evaluate the security of telecoms equipment before deployment, and to take advantage of their guidance on mitigation measures where security falls short.

Driving adoption

The UK will set the standard to diversify the telecoms supply chain sustainably by promoting the benefits and adoption of open-interface solutions - underpinned by world class security and resilience requirements. We will work in partnership with a wide range of international partners to ensure that open, flexible and diverse networks become the default in markets across the globe.

The Open Networks R&D Fund will help create a dynamic and vibrant proving ground in the UK for the industry to test and demonstrate the performance and capabilities of innovative telecoms solutions across a range of environments, use cases and applications.


BUGA
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A neutral-host solution for deploying Open RAN technology

Early progress in this space is demonstrated by our commitment to work with NEC - one of the leading suppliers of Open RAN equipment - to implement and demonstrate the performance of a 'neutral host' Open RAN solution in outdoor rural environments. This project builds on NEC's recent strategic investments to establish both a Global Open RAN Centre of Excellence and 5G Radio R&D Centre in the UK.

The NeutrORAN project has established a testbed for a multi-operator, neutral host solution in Wales including in Cefn Du and Menai Science Park (M-Sparc) . This 'neutral host' solution is showcasing a more cost efficient way to deliver capacity and coverage to underserved regions with the potential for the architecture and deployment model to be scalable beyond the UK.

New challenges in systems integration

While an open interface architecture will unlock the supplier lock-in across today's market, the industry will need to manage the introduction of additional 'touch points' across the network from a security and resilience perspective and new challenges in system integration.

We will further invest up to £21 million to enable industry to integrate open-interface solutions from different suppliers to work together beyond the laboratory environment, both technically and commercially, to be deployed within public networks. This will give us an early indication on the viability of deploying and maintaining the operations of open interface architectures against the security and performance requirements for public telecoms providers' networks and services.

Open RAN trials in high demand dense urban environments

Alongside NeutrORAN and other industry-led commercial trials and deployments for Open RAN, we will be offering up to £22 million to collaboratively trial open-interface solutions in high demand dense urban environments across the UK. These real-world trials will look to utilise the test cases derived from the initial HDD requirements gathering exercise as set out by network operators and other network builders. This will provide a crucial assessment of market readiness of the open-interface solutions and help analyse the capacity of the systems integration ecosystem in the UK. These technological developments and trials represent an opportunity for the UK to grow presence and influence within the global supply chain.

Driving greater diversity and innovation

The UK is widely recognised for its leadership in R&D, innovation and the excellence of our scientific institutions and is also widely recognised for its leadership in shaping international standards – one of the underpinning threads across all the activities in this prospectus.

All together, we believe these key ingredients will deliver lasting and meaningful change in the global telecoms supply chain and pave the way for a vibrant, innovative and dynamic market. One where competition and innovation bring forward new deployment models based on open interfaces and interoperable standards; where networks are flexible, built on a best of breed approach and made up of an array of suppliers; and where security standards are adopted by all operators and suppliers to ensure the robustness and resilience of our networks.

Through the Open Networks R&D Fund, we will seek to work closely with industry - both suppliers and operators - to ensure that the funded activities support existing initiatives, technology roadmaps and with consideration of broader trends in the market. Together, we must work towards building a consensus view on immediate and long-term challenges, including interoperability, network quality and resilience.

We will also be working with local leaders and initiatives to help stimulate the demand and provision of open interface architectures in their regions. This will help new-to-market and emerging suppliers to form commercial relationships with network operators and other network builders, and foster an ecosystem of innovation to meet the future connectivity needs of citizens, businesses and public services.

Our approach has been developed in parallel with other key government programmes including the Industrial and Digital Strategies and the Integrated Review and is consistent with the government's broader levelling-up, R&D and investment, and security and resilience priorities. We will also, later this year, set out plans through the Wireless Infrastructure Strategy to support the development, deployment and adoption of 5G and future networks in the UK.

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UK Open Networks R&D Fund

A world of opportunity awaits

Register your interest today.

The UK telecoms innovation network will be on-hand to help you access relevant funding and investment opportunities as well as the R&D facilities and testbeds operating in the UK.

If you are interested in learning more about the opportunities through the Open Networks R&D Fund, please join our mailing list and provide us with your details and we will update you as new information is released.

For any immediate inquiries, please contact us at **ONP.enquiries@dcms.gov.uk**