Department for Digital, Culture, Media & Sport

Government response to the Telecoms Diversification Taskforce

2 July 2021

Ministerial foreword

The UK is already a leading nation in the adoption and use of mobile technologies. It is vital that we position ourselves for future generations of technology, particularly 5G, by ensuring that secure, diverse and resilient supply chains underpin our critical national infrastructure. That is why we published the 5G Diversification Strategy in November.

In order to ensure successful implementation of the strategy, I established the 5G Diversification Taskforce, an expert panel chaired by Lord Livingston of Parkhead, to provide recommendations to the government on where we can most effectively drive a more competitive and diverse 5G telecoms market. We have previously welcomed the report and I am pleased that we can now set out in more detail how we will progress this work.

The Taskforce has set out a strong and comprehensive set of recommendations for action. Many of these actions will take a number of years to implement and so this report will guide our activity in the years to come. We will continue to update regularly as we progress this work.

We have established a standing team within DCMS to deliver on the initial £250 million backed 5G Supply Chain Diversification Strategy and Taskforce recommendations. They are guided by a cross-government senior diversification board to facilitate joint working across departments and will also draw on the expertise of a new external Diversification Advisory Council, composed of experts from academia and industry.

And we are making rapid progress in a number of areas aligned with the Taskforce's priorities, in particular in relation to research and development where our priority will be to demonstrate

the performance of alternatives to give operators choice. As recommended by the Taskforce, we are taking immediate steps to accelerate the development of Open RAN technologies, including investing up to £30 million in a Future RAN Competition (FRANC) and opening the doors of the SmartRAN Open Network Interoperability Centre (SONIC Labs), alongside Digital Catapult and Ofcom.

We have also started conversations with international partners both bilaterally and via the G7. Under the UK's Presidency, the group agreed a statement on the importance of secure and resilient telecommunications, ICT and digital infrastructure supply chains in the G7 Digital and Technology Ministerial Declaration. We will continue engaging with a range of international partners in the coming months to further this important issue.

I am grateful to Lord Livingston and the Taskforce members for volunteering their valuable time and knowledge and for their excellent review. Their recommendations and expertise will remain instrumental in helping us bring greater resilience and competition to our future networks, as the Taskforce now transitions to the new Diversification Advisory Council.

I welcome Simon Blagden CBE as the chair of the Advisory Council. Simon brings with him a wealth of 30 years of experience in the IT and telecoms industry.

Rt Hon Oliver Dowden (Secretary of State for Digital, Culture, Media and Sport)

Introduction

1. The Diversification Taskforce, chaired by Lord Livingston of Parkhead and composed of independent experts from industry and academia, was established to advise the government on targeted measures to ensure effective, accelerated and sustainable diversification of the UK's 5G supply chain.

2. The independent review was conducted over the course of six months, with the final report submitted to the Secretary of State for Digital, Culture, Media and Sport in April. The focus was on diversification challenges and opportunities within 5G mobile access networks.

3. The Taskforce submitted recommendations across four primary areas: the role of government in ensuring that international standards-setting for telecoms equipment works for the UK; potential government and regulatory interventions to drive diversification; opportunities to accelerate the development and adoption of Open RAN; and opportunities for achieving longer-term ambitions for domestic capability in future telecoms supply chains.

4. The government has previously welcomed the review and is grateful to Lord Livingston and the Taskforce for the rapid and excellent work undertaken. The Taskforce recommendations were rich and substantive and as such, will need to be delivered over a number of years. The government will progress action across all four areas that the Taskforce focused on.

5. We have set up structures to drive the work set out in the recommendations forward. We have established a dedicated team within DCMS to deliver the work, guided by a cross-government senior diversification board and the permanent Diversification Advisory Council.

6. The government agrees with the Taskforce that it is imperative to move quickly to support Open RAN development to ensure it is both viable and competitive and aligns with operators' procurement cycles. Therefore, guided by the Taskforce recommendations and noting the need to act at pace, we are, in the immediate term, working to accelerate the deployment of Open RAN technologies with the launch of the Future RAN Competition (FRANC). This competition will invest up to £30 million in Open RAN research and development (R&D) projects across the UK, to address the barriers to high-performance, open deployments.

7. The government is also making rapid progress in other areas to support the development of an ecosystem in the UK to accelerate the development and deployment of open and interoperable technologies. The government-funded SmartRAN Open Network Interoperability Centre (SONIC Labs) announced in the 5G Supply Chain Diversification Strategy (the Strategy) has now opened its doors. This joint programme between the Digital Catapult and Ofcom for testing interoperability,

starting with Open RAN, will play a central role in the telecoms diversification ecosystem.

8. The government also recognises the importance of building international consensus among a critical mass of countries to ensure there is sufficient scale to effectively tackle this issue and are committed to collaborating with international partners. In line with this aim, the government is actively engaged in discussions with a wide range of international partners bilaterally and in multilateral fora.

9. For example, under the UK's G7 Presidency, the Digital and Technology Ministerial Declaration highlighted the importance of secure and resilient telecommunications, ICT and digital infrastructure supply chains and the G7 countries have committed to continue to work together on this important issue.

10. We will continue to work with partners across industry, academia and with other governments to drive the diversification agenda in the coming months. This response outlines our work to date across each of the four priority areas identified by the Taskforce as well as future plans and priorities.

Identifying interventions and investment to accelerate the development and adoption of Open RAN technology

Summary of Taskforce recommendations:

11. The Taskforce recommends that government should consider incentivising adoption of interoperable solutions by the UK operators by;
    a. Coordinating 5G specifications and requirements across UK MNOs and agree a subset (or profile) of 3GPP standards;
    b. Accelerating the availability of viable Open RAN suppliers. The government will need to support R&D, testing and piloting of Open RAN based components and solutions;
    c. Working with Ofcom to introduce a 'Permission to Experiment' (regulatory sandbox) arrangement for operators as they begin to deploy equipment from new vendors and/or Open RAN solutions.

Government response and activity to date

12. The Taskforce outlined several priority areas that require further R&D for the development of Open RAN. The purpose of investment in these priority areas will be to seek to develop the technology so that it is at least as performant, streamlined and secure as today's traditional deployment methods. Investment will also foster the development of the key subsystems and software that will be required to build and operate open networks. The government agrees with this approach and is supportive of accelerating Open RAN development.

13. It is equally important to encourage Open RAN adoption. Public commitments from UK operators demonstrate that the industry is committed to open and interoperable solutions that are capable of improving competition in the supply chain and delivering more resilient and diverse networks. Vodafone has committed to deploy Open RAN across 2,500 sites, and has recently announced its suppliers for initial sites in the South West, while other UK operators are taking proactive steps to support Open RAN trials. Furthermore, major European operators including Vodafone, Deutsche Telecom, Orange and Telefonica have signed an MoU to work together to drive Open RAN development. Prominent industry players such as NEC, Vodafone, Mavenir, and Airspan have also announced UK-based Open RAN facilities in recent months.

14. Government welcomes these decisions from industry and is committed to supporting the development of a thriving UK Open RAN ecosystem. The Taskforce recommended the government sets a challenging ambition to work toward a significant portion of equipment within mobile operators' networks being supplied by new suppliers and/or through open architectures, stating that they believe 25% by the mid 2020s should be the initial aspiration for mobile operators. We are working closely with operators to understand their roadmaps and priorities, ensuring our funding is targeted, solutions-led, and will deliver on the promise to accelerate Open RAN adoption. We plan to set a public ambition later this year.

15. That is why we have announced the launch of the Future RAN Competition (FRANC). The competition will invest up to £30 million in innovative projects that begin to address the key technological challenges of high-performance Open RAN. This will mean accelerating the availability of RAN solutions that can be deployed across the UK's networks, including in the most demanding environments.

16. FRANC will:
    a. Accelerate the development of 5G Open RAN solutions and components that meet UK requirements by 2025.
    b. Attract new 5G RAN suppliers to conduct R&D in the UK and foster professional collaborations between potential new entrants into the UK's public network.
    c. Contribute to the delivery of the 5G Supply Chain Diversification Strategy's objectives of disaggregated supply chains, open interfaces by default, and security being a priority in network deployment.
    Projects will explore the barriers to deploying Open RAN, including: Power Efficiency, Spectrum Management, Software Platforms, Systems Integration and Security.

17. The launch of FRANC builds upon previous announcements to commence work to establish test facilities for new suppliers and deployment models, fund a range of Open RAN trials through the DCMS 5G Testbeds and Trials Programme, and facilitate international discussions to build consensus across the global market. As an example of international collaboration and our commitment to drive progress across all regions of the UK, the government is pleased to be collaborating with Japanese supplier NEC for the NeutrORAN Open RAN testbed in North Wales.

18. We have also launched The SmartRAN Open Network Interoperability Centre (SONIC Labs) announced in November 2020. SONIC Labs is a joint programme between the

Digital Catapult and Ofcom for testing interoperability and integration of pre-commercial open networking solutions, starting with Open RAN.

19. SONIC Labs will demonstrate and foster an open disaggregated network ecosystem of large and small suppliers across the telecoms industry, helping to develop a supply chain with multiple suppliers for each element in the technology stack. In addition, it will enable UK companies to compete in a global supply chain to maximise their part in the new supply chain as part of an international effort. This will enable government, Ofcom and the Digital Catapult to build a better understanding of technology readiness and maturity and challenges of Open RAN, to inform technology roadmaps and strategies.

20. The Taskforce recommended that the government ensure the availability of independent testing facilities for security and verification testing. This is being taken forward as part of the UK Telecommunications Laboratory ("the Lab" - formerly the National Telecoms Lab). The Lab is a key element of the government's approach to investing in R&D activity that builds technical and commercial relationships between operators and suppliers. Work to establish the Lab is progressing at pace and we are consulting extensively with industry as part of that process.

21. The Lab will provide new suppliers with access to environments where they can effectively demonstrate the performance and security capabilities of their products, in an interoperable environment, once they reach high levels of technical maturity and market readiness. A key feature of the facility will be access to end-to-end networks that are sufficiently representative of real world UK deployments, in order to provide confidence to both operators and suppliers regarding the performance of incoming equipment.

22. The government will continue to maintain momentum and pace in support of Open RAN R&D. We will set out further steps on how we will draw upon the £250m funding in due course.

23. International partners are increasingly identifying opportunities to accelerate the deployment of open interface technologies. For example, the US has signed a collaboration agreement with Japan, which highlights undertaking efforts in particular to advance "secure and open 5G networks, including Open Radio Access Networks".[1] Such agreements will become more commonplace as international partners become more alive to the resilience risks that a lack of diversity in the telecoms supply chain poses, and the potential for Open RAN to help address these.

24. The UK is working closely with our international partners to remain at the forefront of these international discussions - accelerating the development and deployment of new open and interoperable technologies will require a coordinated global effort, and it is important that the UK plays a leading role. Most recently, the UK worked with

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[1] https://www.whitehouse.gov/briefing-room/statements-releases/2021/04/16/fact-sheet-u-s-japan-competitiveness-and-resilience-core-partnership/

G7 partners to highlight the importance of this issue. The G7 summit communique noted that securing supply chains would be a specific area of focus: "Recognising the foundational role that telecommunications infrastructure, including 5G and future communications technologies, plays and will play in underpinning our wider digital and ICT infrastructure, we will promote secure, resilient, competitive, transparent and sustainable and diverse digital, telecoms and ICT infrastructure supply chains."

Establishing influence in telecoms standards setting bodies to encourage best practice in security and open networks

Summary of Taskforce recommendations:

25. The Taskforce recommended establishing influence in telecoms standards setting bodies to encourage best practice in security and open networks. The recommendations fall under four headings: Improving capacity to monitor standards activity; growing influence and impact within existing structures; developing and delivering a strategic approach; and promoting new systems and structures.
    a. To improve capacity to monitor standards activity, the Taskforce recommends the government establish a function with responsibility for monitoring and tracking recommendations and standards activity in the telecoms space;
    b. To grow influence and impact within existing structures, the Taskforce recommends the government set out how different stakeholders can best pull together to deliver greater outcomes on standards (with support from government as needed);
    c. To develop and deliver a strategic approach, the Taskforce recommends the government should start work now to develop a long-term telecoms standards strategy, which will consider all elements of the telecoms network;
    d. To promote new systems and structures, the Taskforce recommends the government should consider a new free-standing body with the support of like-minded countries to be used as a platform to share policy and technical positions: the Digital Infrastructure Recommendations and Standards Alliance (DIRSA). This new body would facilitate balanced government and industry participation and provide a vehicle for the UK to demonstrate international standards leadership in security and resilience for telecoms infrastructure

Government response:

26. The government's view is that open standards, that will enable new technologies like Open RAN, must be underpinned by industry-led and global technical frameworks that support interoperability. We recognise the need for a comprehensive and holistic approach to standard setting for telecoms with security and interoperability at its heart.

27. The government agrees that the UK's influence and participation in shaping global digital technical standards is crucial to supporting our economic prosperity; safeguarding our national security; and protecting the UK's norms and values now, and in the future. We will seek to ensure UK interests are represented at global technical standards bodies, encourage more balanced participation by industry representatives, and enhance our strategic coordination with key partners.

28. To that end, we will establish a dedicated team which will monitor standards activity in the telecoms space and help to coordinate national telecoms standards activity. This will include coordinating activity across government, industry, academia and other telecoms standards stakeholders. The new team will also collaborate closely, and align with, the broader government work on digital standards led by DCMS. This includes broader work being done to increase HMG's coordination with international partners through the G7, as set out in the [Framework for G7 Collaboration on Digital Technical Standards](). As we establish this team, we will look to take forward the recommendations set out in the Taskforce's report, working closely with like-minded partners, including governments and industry.

29. In addition to the steps we are taking with regards to the government's approach to global telecoms standards setting, we are also considering the role of intellectual property and standard essential patents, as standard essential patents play a key role in the design and development of telecoms radio equipment. The Diversification Taskforce highlighted that the consolidation of intellectual property rights and standard essential patents among market leading suppliers has "the potential to serve as considerable barriers to diversification as technology suppliers staunchly protect their investment and designs".

30. The government's view is that in general intellectual property rights protect investment in new technologies, incentivise creativity and reward innovation. With regard to standard essential patents for 5G technology, the government agrees that appropriate measures need to be considered to encourage transparency in their essentiality and pricing which could be beneficial for both licensees and licensors. We are currently considering how to approach these complex issues, including in discussions with international partners and with industry.

Government policy and regulatory interventions

Summary of Taskforce recommendations:

31. The Taskforce recommended the government create the right environment for diversification through government policy and regulatory interventions. It recommended a range of policy measures that will help to foster the market conditions to drive diversification, by removing barriers to entry for new suppliers where they exist, and creating the right investment environment for both operators and suppliers. It recommended that the UK should seek to create the conditions that will attract the entry of at least one, and ideally two, additional 'scale' vendors into the market.

32. The Taskforce recommended the UK should continue to align with Europe where possible in order to remove any potential spectrum-related reasons why vendors must undertake significant customisations to their product in order to be fit for use in the UK. If the UK fails to do this, it risks becoming an isolated and specialised market with a greater threshold to entry for new suppliers. The Taskforce recommended the government should consider what role it can and should play in facilitating defragmentation.

33. The Taskforce also recommended the government should also convene UK operators and broader stakeholders to set out a proposal for the sunsetting of both 3G and 2G networks.

Government response:

34. The government agrees with the Taskforce's recommendation that the UK should seek to create the conditions that will attract new vendors into the market.

35. We welcome the early positive steps taken by Vodafone, who have announced deployment of Open RAN architecture including Samsung and NEC. However, this is initially a rural deployment - with urban areas, where there is the greatest traffic, facing the most critical security and resilience risks. This only represents a small part of the UK market and the government's assessment is that, without further intervention, the incumbent suppliers remain on course for a combined market share of greater than 90% by the middle of the decade.

36. As part of this ongoing work, we recognise the benefits of a transition away from technologies reliant on 2G and 3G, but are aware of the challenges associated with this, including the technical complexity involved in this transition and the ongoing requirement to support users and key public services.

37. However, as the government set out in response to the House of Commons Science and Technology Committee's recent report, progress can be made to reduce reliance on these older technologies and consequently the need for prospective suppliers to support them. The government is working with mobile operators, suppliers, and users to set a clear roadmap for the long-term use and provision of network services, including any sunsetting or streamlining of 2G and 3G technologies, which we will publish this autumn.

38. In addition, the government is considering a number of policy options to help facilitate the entry of new suppliers in the shorter term. These include commercial incentives linked to the cost of introducing new vendor equipment into networks; and investment to support interoperability and security testing of new suppliers.

39. We welcomed the results of the recent 5G spectrum auction in 3.6-3.8 GHz band, including the subsequent trade between O2 and Vodafone that was enabled due to

the novel negotiation stage. This means all operators now have proximate spectrum holdings. Future trades remain possible and we will continue to monitor the situation.

40. The government agrees that Ofcom has an important role to play in taking forward this agenda and in helping to create the right market conditions to support the process of diversification within the UK market. Ofcom has shown, and continues to show, support to the diversification agenda. Ofcom is enabling and encouraging innovation, having opened SONIC Labs which will test interoperable solutions for future use in the telecom supply chain, and contributing to the UK Telecoms Lab; addressing barriers to innovation and new vendor entry, such as supporting planning for legacy networks and engaging with operators on availability; and monitoring relevant standards and vendor progress; and there has also been an increase and investment in Ofcom's expertise to advise government and engage with industry where appropriate. We are working closely with Ofcom to ensure that they have sufficient powers to support the diversification agenda and the government will write to Ofcom shortly to commence joint work in this area.

Identifying opportunities to invest in long-term research and innovation to build UK capability for current and future generations of telecoms technology

Taskforce recommendations:

41. The Taskforce outlined that building UK capability is critical to guarantee that UK networks, now and in the future, are resilient in an increasingly interconnected world. It recommended that the government should prioritise funding research and investment across the following technologies: Software Defined and self-organising Open RAN; Software defined open networking; Edge Computing; Network Convergence; Internet of Senses; Quantum Internet; and Net Zero telecoms. It advised the UK should work in collaboration with other countries to coordinate and shape the development of adequate capability across all these technologies.

Government response:

42. The government is committed to strengthening UK capability and establishing the UK as a key player in the global supply chain. We are aware that multiple countries are investing significant capital in building their domestic telecoms capability. This includes a recent US $50billion fund, $4 billion on a US-Japan partnership, €700 million from Germany, and a €900 million EU 6G fund, matched by industry. China's influence in the sector is likely to continue to grow, with Huawei recently announcing plans to scale-up their software capabilities.

43. In response to the Taskforce's recommendations on building UK strategic advantage, we are exploring ways of developing a more coordinated and strategic approach to

research, development and innovation to drive this, including bringing more cohesion to the existing portfolio of publicly funded projects. As we take this work forward, there will be an opportunity to focus on longer-term trends in the telecoms technology roadmap, informed by an assessment of the way future networks are expected to evolve and with a focus on future connectivity needs.

Role of the Taskforce going forward

Taskforce recommendations:

44. The Taskforce recommends that, as it moves into the implementation phase, the government retains an external advisory group in some capacity to scrutinise the implementation of its strategy; assess and monitor its success; and to shape further work as the government assesses the need for diversity across the broader supply chain.

Government response:

45. The government is grateful for the Taskforce's work to date and pleased the Taskforce has agreed to continue its important work in a new capacity as the Telecoms Supply Chain Diversification Advisory Council, chaired by Simon Blagden CBE.

46. The Advisory Council will meet quarterly and play a key role in overseeing and offering scrutiny to the delivery of the 5G supply chain diversification strategy. We will draw on the Advisory Council for their advice on wider diversification issues beyond the RAN. We agree with the Taskforce, that an assessment of diversification requirements in broader network elements, such as fixed access and the core, should also be priorities for the Advisory Council moving forward.

47. We will draw on the Advisory Council's expertise as we continue to deliver on the 5G Diversification Strategy, guided by the Taskforce Recommendations. A further suite of government announcements are expected later in the year to ensure we continue to deliver our ambitions for a secure, resilient and diverse Telecoms Supply Chain.