

## **Telecom Infra Project Response to Public Consultation of the Department for Digital, Culture, Media & Sport on the Wireless Infrastructure Strategy**

Telecom Infra Project (TIP) welcomes the opportunity to respond to the Department for Digital, Culture, Media & Sport's (DCMS') call for evidence on the Wireless Infrastructure Strategy. We particularly applaud the continued support towards the UK's Diversification Strategy to grow the UK's telecom supply chain.

In this response, we outline our support for the DCMS upcoming focus on cellular technologies and supply chain diversification. TIP would like to in particular address Questions 1, 5, 7 and 8 of the consultation. We would urge DCMS to consider the role that open and disaggregated technologies can and will play in ensuring fast, secure, reliable and ubiquitous wireless infrastructure in the UK. We provide additional detail below.

### **Open and Disaggregated Network Architectures Provide Operators with Flexibility and Stimulate Competition**

Open network architectures permit operators to disaggregate traditional components of their networks, such as separating a mobile "base station" into its constituent functions. Disaggregating network infrastructure into smaller elements, each connected across standards-based interfaces, provides operators with flexibility as they deploy their networks. This is particularly important as 5G networks are seeing ever-greater amounts of network technology being shifted either from the network core closer to the edge, or vice-versa, facilitating performance improvements in lower latency and lower energy consumption, among other benefits.

By using standards-based interfaces and specifications from groups like 3GPP or the O-RAN Alliance, and by adhering to productization, testing, validation, and delivery requirements from TIP, the result is a more competitive ecosystem that provides operators with flexibility to mix-and-match equipment from different vendors.

### **Open and Disaggregated Technologies in the UK**

For the UK to lead in the digital economy it needs to scale up its traditional telecommunications infrastructure to grow the UK's telecom supply chain. The current highly concentrated telecoms market has enabled wide deployment of mobile networks and wireless connectivity. However, it has also resulted in certain rigidities in telecom equipment markets and in certain cases a lack of interoperability and lack of diversification in the market, which impose costs on mobile network operators (MNOs).

Current telecommunications network infrastructure requires significant upgrades to keep up with increasing network demand which will be essential in satisfying the growing demand for wireless connectivity across a range of sectors such as education, health and social care, transport, environment, manufacturing, logistics and energy distribution.

## **Q1 What wireless connectivity will the UK require by 2030 in order to support the needs of consumers, businesses and public services?**

Disaggregation can change the way the telecom equipment market works, ushering a new generation of vendors and by providing network operators with more choice and flexibility to improve networks at a pace that keeps up with rising demand.

Deployment will happen as the technology matures and reaches mass-industrial scale. While Open RAN is initially more expensive, the use of standard hardware and network automation, plus an increased level of competition will drive down overall costs in the medium to long run – given the right policy and regulatory environment. Two factors can drive this:

- *Gradual upgrades over time.* When using a traditional vendor, many network operators may perform significant upgrades to their networks very infrequently, perhaps only every 10 years as major new generations of wireless technology have been released (2G, 3G, 4G). However, as 5G deployments become more common, the trend is toward new features being released more frequently, with major new 3GPP releases being finalized (for example) more often than once per decade. Open architectures allow vendors to respond to these trends by upgrading their systems gradually. Importantly, this spreads out an operator's deployment costs over time, significantly lowering costs compared to conducting a once-per-decade complete overhaul of equipment.
- *Design flexibility.* Disaggregation of network components provides operators with much greater flexibility to design and deploy their network architectures to meet specific use cases. Rather than being tied to one-size-fits-all solutions (such as a traditional "base station") from a traditional operator, open architectures allow operators to make creative decisions about where to place various network operations. This design flexibility will enable operators to lower their deployment costs.

We would recommend that the Government consider the role a range of open and disaggregated technologies will play in its future wireless connectivity strategy, including Open RAN, Open Wi-Fi, Open Optical & Packet Transport Technologies, and Open Core Networks.

## **Q5 How might the market structure for wireless connectivity services change over the next decade and what impact would these changes have on investment in wireless networks?**

As noted above, competition among vendors is currently limited, especially in the 5G RAN infrastructure space. Open architectures will significantly lower the barriers for new entrants, enabling more competition, more innovation in product and service offerings, and ultimately lower costs for operators to deploy infrastructure.

This also means SMEs, can compete in different parts of the technology stack, incentivising innovation and giving network operators more choice among both incumbent and emerging solutions.

This method of development also has benefits for security by changing the development culture. Network security is best achieved from open scrutiny of development practices. Security is also enhanced by a more diverse market, as it provides greater incentives to compete on security and trust, as well as greater flexibility to mobile network operators.

We expect to see greater investment from private enterprises as more opt for private network deployments, which could play a mutually reinforcing role for the diversification agenda. As disaggregation opens up the vendor market, enabling private enterprises to adopt more tailored and cost-effective solutions, the private enterprise market will grow and offer greater avenues for innovation in the underlying technologies.

**Q7 What should government consider when designing a policy and regulatory framework to support the development of new wireless technologies?**

- **a). Is the current policy and regulatory framework suitable? If not, what changes are required?**

TIP industry participants see open networking as as a reality, an inevitability and a necessity for networks to be more resilient, commercially and technically. This is well understood by companies in our industry. However, the regulatory framework will need to evolve alongside this. Several of our board members have recently published a roadmap toward Open RAN ecosystem in Europe that set out detailed recommendations about creating a flourishing ecosystem that will support innovative new vendors.<sup>1</sup> Key recommendations are summarised below:

**Policy support for the ecosystem of open, disaggregated technologies:**

Supporting MNOs:

- Government should support MNOs financially to deploy Open RAN in the short term and provide greater incentives to procure from outside the established vendors in the longer term.
- Having the right environment for the new market to flourish is indispensable to gaining the advantages inherent in that diverse marketplace. Other countries around the world, such as Indonesia, have been able to successfully design nimble regimes which enable them to be further along in OpenRAN than the UK.
- One of the most effective ways of strengthening this support would be through public-private partnerships whereby industry takes a lead in innovation projects, supported by government; and government grows the ecosystem for open and disaggregated technologies, including by stimulating the demand side for OpenRAN.
- Planning rules remain a barrier to effective roll out of new infrastructure. Implementing already agreed reforms in this area will accelerate deployment and, with it, the market as a whole.

Investment:

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<sup>1</sup> Available from: <https://www.vodafone.com/sites/default/files/2021-11/building-open-ran-ecosystem-europe.pdf#:~:text=Europe%27s%20best%20opportunity%20to%20defend%20and%20grow%20its,and%20secure%20networks%20underpinned%20by%20strong%20supply%20chains..>

- Government should provide support for innovative companies in RAN. Funds allocated to connectivity should be able to support developing new, open and disaggregated components and stimulate innovation among SMEs through programmes focused specifically on OpenRAN. The recent FRANC competition, to which TIP applied, is one example of best practice here but there are other models for different technology readiness levels.

Priorities:

- Semiconductor (chips and components) – support growth opportunities for specialist chip providers and work closely with likeminded nations (for example, G7) to increase supply
- RAN:
  - Supporting common platforms and alliances with global partners via testbeds and labs
  - Driving new revenues for technology providers through enterprise channels and ecosystems. For example, German and Dutch manufacturers are actively planning 5G networks and creating their own supply chains to realise this goal. Tax credits could be designed to 'buy local'.
  - Supporting increased manufacturing and assembly capacity to reduce cost and improve technical self-sufficiency.
  - Support common Open RAN software frameworks, such as through xNFs (software components for RAN), or RAN Intelligent Controllers (RICs) and xApps.
  - Support entry of non-telecom industry into the ecosystem
- Cloud:
  - Support alternative, telco-centric cloud providers, taking into account the likely requirements of 6G
- Services:
  - Consider support of a certification scheme for interoperability and quality to build confidence
  - Facilitate strong links between industry and systems integrators
  - Continue to position the UK as a testing hub
  - Leverage public sector projects to support deployment of new wireless infrastructure
- **b). What spectrum is required for future wireless networks? Is the current spectrum management framework suitable for delivering this?**

Licensing fees contribute significant revenue to the Treasury and support development of public goods. While governments naturally see auction design as an opportunity to maximise returns, the high costs involved can promote conservative procurement practices. Government should reconsider the balance of public benefit and enable mobile operators to offset these costs against innovation.

Accelerating time-to-market for new Open RAN technologies that support greater energy and spectrum efficiency are priorities for mobile network operators and align well with DCMS's functional key priorities around Power Management and Spectrum Management.

### **Q.8 What can the UK learn about the development and deployment of wireless networks in other countries?**

The UK is already a forward-thinking jurisdiction when it comes to the future of wireless infrastructure. With initiatives such as SONIC, the FRANC competition and NeutrORAN, among others, the Government has created several facilities that can be catalysts for long-lasting change.

TIP's work on connectivity rollout and technology, particularly in the 5G domain, including the role of open and disaggregated technologies, can contribute to many of the UK's goals in providing connectivity across rural areas of the UK and ensuring connectivity in light of growing cross-sectoral demand.

The common denominators of success in our experience are long-term government commitment, the successful convening of telecom operators, academia and vendors. Multilateral cooperation is a must – here, the UK should take note of the policy example of from the United States, where multilateral cooperation is built into certain funds such as the Multilateral Telecommunications Security Fund, which, if activated, can allow likeminded countries to pool their efforts.

In this, we can offer two examples. TIP's OpenRAN Field Trials on a 4G Network with commercial traffic in rural Indonesia has supported the Indonesian Government in capturing the economic benefits from better connectivity, and building a more robust, secure, and sustainable telecom supply chain, involving SMEs and local start-ups. This public-private partnership supports the development of domestic capabilities and fosters opportunities for local enterprises.

The Connected City Infrastructure project has already been deployed successfully across European Cities, including Dublin City. The Connect City Infrastructure project is a large-scale innovation programme which investigates how we can leverage new and emerging technologies including 5G to tackle challenges which cities face and provide better city services and infrastructure for citizens and businesses, promote economic output, and encourage innovation in the telecoms sector, SMEs and tech industry in general. Part of this solution is the deployment of small cells which deployed in a planned and structured way. The project group members deploy newly constructed modular street assets alongside retro-fitted modular street assets with LTE / 5G Small Cells and Public Wi-Fi E2E architectures in field trials supporting interchangeable backhaul and access technologies, to showcase a sustainable business model for street assets, managed by municipalities or public utilities, providing citizen services and generating appropriate revenue streams.

### **About Telecom Infra Project**

With UK mobile network operators such as BT, Vodafone, and Telefónica (O2) at its heart, TIP is taking an innovative approach to building and deploying the technology that improves global connectivity. A community of manufacturers, software makers, network operators, integrators, and connectivity stakeholders work to make the telecom supply chain more diverse, innovative, and open, so that future digital infrastructure is brought more quickly to market for everyone.

We are an engineering-led organisation focused on technological solutions and providing alternative and complementary options for connectivity. One of the central components of our organisation is our TIP Community Labs - physical spaces that enable collaboration between member companies to develop new solutions. We host two TIP community labs in the UK: one in Ipswich, sponsored by BT, and another in London, sponsored by Meta.

TIP looks forward to supporting DCMS' initiatives on the Wireless Infrastructure Strategy and together creating a fast, reliable secure and ubiquitous connectivity ecosystem.

Yours sincerely,

TIP Executive Team

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