Your response

Question	Your response
Question 1: What is the market opportunity for D2D services? What is the nature of the benefits that could be delivered to people and business in the UK and what do you estimate the magnitude of the benefits to be?	Confidential? – Y / N
Question 2: Are there any wider citizen or societal benefits that D2D services could deliver that the market might not deliver? What is the nature of these benefits and why might the market fail to deliver them? For example, what role could D2D have in improving the availability of 999 services in the UK?	Confidential? – Y / N
Question 3: Subject to suitable regulatory frameworks being in place, do you have an interest in offering D2D services or expanding an existing service, in the UK? Which customer segments, devices and use cases would be served? Would your D2D service complement or compete with services delivered over existing mobile?	Confidential? – Y / N
If you have considered launching or expanding a D2D service in the UK: **Question 4:** What technology and network architecture do you consider appropriate to use to deliver D2D services? For example, what altitude and how many HAPS, LAPS or satellites would be required to deliver an initial service? **We're aware that different technologies and network architectures will have different costs, performance, and spectrum efficiency trade-offs**.	Confidential? – Y / N

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Question 5: What capacity (e.g., Mbps/Km2/MHz) and quality of service (e.g., latency) could be delivered with the D2D service you are proposing? What percentage of the UK landmass could be covered, and would coverage be provided indoors?	Confidential? – Y / N
Question 6: To inform our future policy development, which spectrum band would you like to deploy the service in? How much bandwidth would be required to provide the service at launch?	Confidential? – Y / N
Question 7: What take-up profile do you assume in your planning? For example, the number of active devices, monthly calls made, and data transferred per device. What is the roadmap for enhancing your network to meet anticipated future growth? What additional infrastructure and/or spectrum would be required? When?	Confidential? – Y / N
Question 8: What are the use cases and the benefits these services would deliver? What technology, network infrastructure and frequencies would be required to deliver the service? What are the advantages of using this MSS spectrum compared to other bands?	Confidential? – NMyriota is the global leader in low-cost, low-power, secure direct-to-orbit satellite connectivity for the Internet of Things (IoT). Myriota was founded to revolutionise IoT by offering disruptively low-cost and long-battery-life global connectivity. Based in Adelaide, a focal point of the Australian space industry and home of the Australian Space Agency, Myriota has a growing portfolio of over 100 granted patents, and support from major Australian and international investors. With a deep heritage in telecommunications research, world-first transmission of IoT data direct to nanosatellite was achieved in 2013. Myriota has made this ground-breaking technology commercially available for partners worldwide. As the leading provider of next-generation IoT services over satellite, Myriota welcomes the opportunity to provide comments on Ofcom's Call for Input relating to the Regulatory framework for satellite systems, non-D2D services in MSS spectrum. Myriota's service brings a wide range of benefits to IoT users globally, most notably the ability to track thousands and

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	potentially millions of devices that can be attached to almost anything. Our technology addresses some of the major challenges in IoT network deployment such as security, control, design and cost. The technical solution and frequencies chosen are ideally matched to deliver IoT type services to private enterprises, government departments, defence, utilities and more. Access to the 400 MHz range is specifically important as it aligns with the network design criteria. Myriota wishes to underline the primary importance of the adequate regulatory framework that enables the innovative solutions that reconciles policy objectives of the government and does not stifle the innovation of the industry by imposing too high regulatory burden combined with regulatory uncertainty. The most successful and innovation oriented jurisdictions continue to be those where the regulation is light touch with simple licensing schemes. In this regard Myriota wishes to underline to OFCOM the importance to implement the updated decision of the CEPT ERC Decision of 10 March 1999 on the harmonised introduction of satellite personal communication systems operating in the bands below 1 GHz (S-PCS<1GHz) and the ERC Decision of of 10 March 1999 on Free Circulation, Use and Exemption from Individual Licensing of Mobile Earth Stations of S-PCS. The decision ERC/DEC/(99)05 stipulates: *Given that S-PCS<1GHz systems are intended to offer regional or global services, placing a requirement for individual licences for MESs would be detrimental to the concept of free circulation and use. Therefore, this Decision requires that S-PCS<1 GHz MESs shall be exempted from individual licensing. The implementation of the concept of free circulation and use requires administrations to accept the use of the S-PCS<1GHz MESs originating from other CEPT countries without requiring any further authorisation or licence*. These decisions have been updated in 2022 to incorporate such systems as Myriota after an extensive period of compatibility studies that demonstrated coexistence of IoT devices and incumbent services. It should be noted that other CEPT countries are considering the adoption of the ERC decision noting the continued increase in demand for satellite IoT type services and that it will help to open up the market for access to such systems. Myriota and other interested stakeholders have repeatedly asked OFCOM to implement these amended decisions. Ofcom has not raised any concerns during the CEPT process that led to the amendment of the decisions and it is highly surprising that no action has been taken so far.

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	Currently the systems such as Myriota need to obtain individual licences for their devices with the specific indication of geographical locations in order to deploy them in the UK. This presents a major barrier for the IoT type of systems whose business model is built on the deployment of thousands of devices tracking various objects either mobile or fixed throughout the UK. In addition it represents an unreasonable burden on Ofcom itself who will be forced in processing thousand of applications that will be submitted by IoT service providers that unavoidably will lead to the inflation of regulatory procedures. It is a matter of urgency that OFCOM aligns its policy with the updated CEPT frameworks for the specific band ranges of interest below 1 GHz to enable Myriota to deploy its–IoT systems and open up a rapidly growing market.
Question 9: What current, or future, technology developments will offer the opportunity for more efficient use of MSS spectrum? E.g., more spectrally efficient, or greater ability to share spectrum.	Confidential? – Y / N
Question 10: Could your existing, or proposed, service coexist with other users of the same frequencies within the MSS spectrum bands? If so, how is coexistence achieved? If not, please explain why sharing is not possible.	Confidential? – Y / N
Question 11; Do you expect D2D services to be available prior to WRC-27? What services and benefits do you think an authorisation prior to WRC-27 might bring to UK consumers and businesses?	Confidential? – Y / N
Question 12: Are there any mobile bands that should be prioritised for satellite based D2D?	Confidential? – Y / N

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Question 13: Are there existing systems that you consider could be subject to an increased risk of harmful interference from the introduction of satellite based D2D using mobile bands? If yes, are there specific mobile bands that you consider should be avoided to reduce this risk?	Confidential? – Y / N
Question 14: Do you have any views on how spectrum for D2D services should be authorised? Does this vary by band, or type of NTN? Please explain the reasoning behind your preference.	Confidential? – Y / N
Question 15: Are there any other points that you think would be useful in our considerations? In providing your response, please provide as much evidence as possible.	Confidential? – N OfcoMyriota notes that Ofcom is seeking comments (Section 4) on the evolving demand for MSS spectrum from existing non-D2D services. These will inform Ofcom's future approach to both MSS spectrum and other spectrum for D2D services. As Ofcom acknowledges (Section 1), there are existing, highly important non-D2D services using MSS spectrum, including next-generation IoT platforms and devices (like Myriota's). It is essential that regulators like Ofcom take a measured approach when making available MSS spectrum for D2D, having due regard for these services that depend upon the MSS frequencies. In this regard, Myriota commends this initiative from Ofcom, in taking into account the existing spectrum uses outside D2D. On a global basis, the MSS-allocated bands are widely used by satellite operators for supporting low bit rate IoT services. In particular, the UHF and S-bands. These bands offer themselves very well to IoT applications. As a prime example, the S-band frequencies enable higher coverage, penetration and weather resilience than other bands (e.g. Ku/ Ka), making them ideal for IoT applications requiring reliable connectivity in diverse and rugged environments. The S-band offers an optimal balance between bandwidth and range, suitable for various IoT applications that need moderate data rates. Myriota wishes to make specific comments on the S-band (2GHz MSS) spectrum and suggests some authorisation models based on other countries. Ofcom elaborates on the S-band (2 GHz MSS), in Section 3.7-3.2, which is exclusively licenced to Echostar and Inmarsat in the UK and among EU neighbours. To this effect Myriota invites Ofcom to consider in this, and any future consultation (on the S-bands

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	specifically), the experience of the European Union as an example why the exclusive allocation of the 2 GHz MSS band should be avoided. In short, the European Commission concluded in 2009 upon the exclusive allocation of the 2 GHz MSS frequency band to two operators, Inmarsat and Echostar (formerly Solaris), following an auction procedure. Each operator was granted separate 2 x 15 MHz spectrum rights, lasting until 2027 on a pan-EU basis (with the option for CGC). For the following decade, this 30 MHz of valuable spectrum sat largely unused by the selected operators, depriving other evolving operators and uses, which triggered enforcement procedures by some European countries. Only after this did the operators progress materially with bringing into use the spectrum, and limited services finally commenced in the aeronautical sector in 2017, 10 years later (through the EAN, as the exclusive service proposition of Inmarsat). As Ofcom is certainly aware, the European Radio Spectrum Policy Group (RSPG) was recently invited by the European Commission to assess different possible scenarios for the use of the 2 GHz MSS frequency band beyond 2027 considering the current use of the spectrum. After a call for public consultation during which the industry had an opportunity to comment, RSPG released its Opinion on 25 October 2023 ("Opinion on assessment of different possible scenarios for the use of the frequency bands 1980-2010 MHz and 2170-2200 MHz by the Mobile Satellite Services beyond 2027"). From this Opinion it may be inferred, firstly, that the spectrum allocated to Echostar had not been entirely used, and no revenues were collected after 13 years of holding the licence (none were declared in answering the report). Also noting that Inmarsat uses this spectrum only on certain aviation routes for airlines that have selected this product, and without any land-based offerings that would serve the European territories themselves. Secondly, in terms of future allocation scenarios for the bands, the RSPG also considered different assignment options (two existing operators, several new operators, etc.) and concluded that continuing with the same exclusive allocation to Inmarsat and Echostar "may limit competition in MSS service provision, for future innovation or development, e.g. other stakeholders or usages and is therefore not a preferred scenario". Furthermore, RSPG concluded that opening the bands to multiple assignments "would enable Europe for other usage, e.g. for the inclusion of IRIS". In its detailed Study, the RSPG also made reference to multiple types of technologies and services, rather than mainly aeronautical. The RSPG noted that the expiry of the current 2 GHz MSS allocation in the EU "concurs with important recent technological and market developments in the satellite sector in Europe and worldwide. This (therefore) provides a timely

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	opportunity to assess at the EU level the current and future use of the band." RSPG previously invited the ETSI and CEPT to provide information on the latest technological developments in satellite communications and trends in the provision of MSS services with relevance to the future use of the 2 GHz MSS frequency band. The responses can be summarised as follows: "The current usage by the Mobile-Satellite Service (MSS) / Complementary Ground Components (CGC), has been highlighted, but also potential future opportunities have been outlined for the 2 GHz MSS bands. These include the latest technical developments on Non-Terrestrial Networks (NTN), Machine-type-communication (M2M), Internet-of-Things (IoT) also covering LoRa, Aero-CGC, and generic MSS applications. The ongoing considerations on direct-to-cell (D2C) and direct-to-device (D2D) connectivity are also reflected. It is to be noted that all presented usages and opportunities are equally based on GSO networks and non-GSO systems. This would require, that the principle of technology neutrality continues to apply". In light of the above Myriota invites Ofcom to look at the example of Australia when considering the best model for the 2GHz MSS spectrum allocation beyond 2027. ACMA has set the benchmark for other countries to follow, f*ollowing very extensive studies and stakeholder consultations during 2020 – 22. ACMA concluded* in its *Replanning the 2 GHz band (1980–2010 and 2170–2200 MHz)* upon a separate and dedicated *2 × 5 MHz block (2005–2010 MHz paired with 2195–2200 MHz) for satellite IoT and similar narrowband services to be licensed and used on a shared basis between operators. This arrangement will provide spectrum access with a low barrier to entry for innovative satellite applications and will assist in growing the Australian space industry. Noting the very modest bandwidth requirements of narrowband applications (typically 125-250 KHz in the uplink), ACMA created a framework whereby multiple operators can operate and co-exist within the dedicated 2x5 MHz block. ACMA concluded upon a non-exclusive assignment approach with this block, rather than licensing exclusive blocks in the band, noting the potential to limit flexibility. ACMA instead leave for licensed operators to self-coordinate access to the band, for their system needs and characteristics, and based on alignment with common technical parameters (such as 3GPP NTN). Ofcom follows the same "self-coordination" approach, under its existing licensing framework, e.g. with the Satellite (Earth Station) Network Licences.* In addition OFCOM could consider to avoid exclusive allocation in this frequency band and allow shared use in this band. One of the configurations that could be assessed is an allocation of one sufficient portion as a shared use allocation. Up to 2 x 15 MHz of paired bandwidth can accommodate different uses and systems in the 2 x 25 MHz available paired

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	bands, while the remaining portions could still be licensed bands, exclusive to the licence holders. This will enable the newer entrants to develop their technology in the shared frequency band, and open the door to future models of partnership with the matured technology. Myriota looks forward to participating in future, more detailed discussions on the 2GHz MSS bands, among others.

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