Consultation response form

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? – No Skylo is a 'direct-to-device' (D2D) Non-Terrestrial Network (NTN) service provider that powers end-to-end satellite service for phones, wearables and Internet of Things (IoT) devices using dedicated, licensed MSS satellites and spectrum. Because Skylo's D2D service is live across four continents, with more than 50 million square kilometres of coverage, Skylo has had a unique opportunity to assess the market opportunity for D2D services. Skylo has seen an exponential increase in the take-up of its service and the interest in deploying Skylo's connectivity has skyrocketed with the recent introduction of Skylo in all Google Pixel 9 smartphones, and recent partnership announcement with Verizon. Skylo's informed perspective is aligned with market estimates for global D2D of over $25B in 2025 and over $31B by 2035 (https://www.statista.com/statistics/1358497/d2d-satellite-telecommunications-market-size-by-segment-worldwide/).

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	One of the most important benefits for people and businesses in the UK is that D2D networks like Skylo's make satellite connectivity affordable, reliable, ubiquitous, and – most importantly – that it works from the same device that consumers have today. Because Skylo uses standardised cellular modems to connect to satellites, these services benefit from much larger economies of scale and therefore can be deployed into many more devices because of the lower cost compared to traditional satellite phones that are more limited in scale and therefore more costly. Additionally, by building on the 3GPP standards, Skylo is fully interoperable with the terrestrial mobile ecosystem, allowing satellite and terrestrial mobile services to operate no differently than standard roaming today. D2D services offer a crucial enhancement to connectivity across the UK, especially in areas where terrestrial networks—which currently cover 93% of the UK landmass—fall short. By providing reliable connectivity in regions with limited or no coverage, D2D services can significantly improve emergency and disaster response when terrestrial networks are compromised. Additionally, they ensure maritime and offshore communication, boosting safety and operational efficiency. D2D services also support IoT applications across industries like logistics, agriculture, fishing, energy and environmental monitoring, enabling data-driven decision-making and operational improvements.
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? – No D2D services can offer critical societal benefits in enhancing emergency services like 999 in the UK in underserved areas where terrestrial infrastructure is sparse or when terrestrial networks are compromised and the need is most dire. Deployed D2D services already ensure reliable communication during disasters by improving response times and providing accurate location information thereby playing an essential role in reducing casualties and saving lives. Skylo services that are deployed on Motorola Defy, Google Pixel smartphones, and other devices, enable three types of communications during an emergency: (1) sharing live location with emergency response service provider and personal contacts, (2) two-way messaging with an emergency response service provider, and (3) two-way messaging with personal contacts.

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	Users with no terrestrial service can now share their location and exchange messages live with a dedicated emergency response service that in turn invokes the nearest emergency service (public safety answering point or PSAP), and provides dedicated support as needed in instances where there is no local public safety access point, such as on the oceans. With Skylo's services integrated by carriers, such as that with U.S. carrier Verizon (https://www.verizon.com/about/news/verizon-skylo-launch-direct-device-messaging-customers), two additional elements are introduced for peer-to-peer texting when outside of terrestrial coverage: 1) consumers can share their location with their contacts, and 2) consumers can directly text with their contacts (SMS). These types of communications were all previously impossible for those suffering an emergency outside of cell phone coverage. The peace of mind that results from the knowledge that true mobile connectivity is available everywhere is clearly another intangible consumer benefit of D2D. Because of the high upfront costs and lower immediate returns to provide terrestrial-based service in underserved areas, the market alone may not address these needs. But now, for the first time, terrestrial operators and device manufacturers are integrating D2D as a service offering for consumers. This novel partnership between satellite and terrestrial networks started with emergency communications, but D2D connectivity is already evolving to messaging and soon into voice services as well.
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? – No Skylo already supports D2D service in the UK offered in partnership with various OEMs and carriers. One such example is Bullitt Group (https://bullitt.com), focusing on customer segments including emergency and messaging services on smartphones or wearables. Additionally, Skylo has partnered with a number of carriers and MVNOs, including Deutsche Telekom, floLIVE, Emnify, and others, to cater to a wide range of IoT applications. These services complement and enhance existing mobile networks by providing coverage in underserved areas, ensuring continuous connectivity. Moreover, Skylo's NTN service does not compete for the mobile operators' terrestrial spectrum as Skylo's service uses mobile satellite service (MSS) allocated spectrum.

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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? – No While there are various space segment options to render D2D services, Skylo has chosen to leverage existing GEO MSS satellites, since: (1) they are available today without any change to regulation, new licensing, or new launches, (2) provide persistent coverage, (3) operate in the appropriate L/S band frequencies (now in the 3GPP standards), (4) have the appropriate power profile to close the link budget, and (5) eliminate the need for additional spectrum allocations or sharing limited spectrum resources with mobile operators. It is important to note that Skylo's architecture remains agnostic to the space segment – it is equally compatible with both current and future NGSO MSS satellite architectures as well. Skylo's 3GPP standards-based Radio Access Network (RAN) infrastructure is installed globally in earth stations of our partner MSS operators. Skylo utilises dedicated, licensed mobile satellite spectrum for connectivity. This means that mobile carriers do not have to allocate valuable spectrum assets to enable satellite connectivity. Skylo's 24x7 global network operations centre with a cloud-native, carrier-class network core provides operational support enabling easy integration with mobile carrier partners worldwide. What Skylo does is complex and spans multiple industries and different technologies that are adjacent but not necessarily compatible. Skylo has brought chipset vendors, module vendors and manufacturers, SIM card partners, billing partners, RAN partners, core partners, satellite partners to the table to build users a network that seamlessly integrates with their current cellular operator. Skylo is leading open innovation based upon 3GPP NTN standards and its partnerships allow Skylo's capabilities to extend beyond smartphones to many different devices, including automotive and wearables. To bring about this complex technical achievement, Skylo has developed enhanced features above and beyond the 3GPP standards, called Skylo "Standards Plus", that offer, for example, optimised switching between satellite and cellular networks based on coverage area and location as well as functionality that manages connectivity to multiple satellite constellations on the same device. Below is an overview of Skylo's architectural 'stack':

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	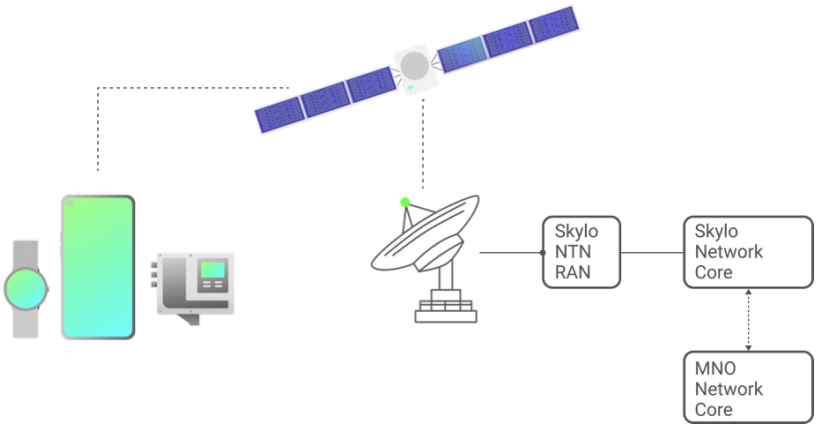 Skylo implements a robust Certification Program that provides the Skylo Standards Plus specifications and requirements to partners to follow with their specific devices. Once these standards have been implemented, Skylo reviews and tests the third-party devices on our network to ensure that they are compatible with both the 3GPP standards and Skylo's Standards Plus requirements. This certification ensures that the devices can connect seamlessly with Skylo NTN and take advantage of all the benefits in the user experience, reliability and capacity that our network provides. To learn more about Skylo's Certification Program, please see: https://www.skylo.tech/skylo-certification-program.
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? – **Yes** {✂

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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? – **Yes** {✂}

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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? – **Yes** {✂}

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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? – **Yes** {✂}

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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? – **Yes** {✂}
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? – No Our D2D services can and do coexist with other MSS users through mitigation techniques, such as channel arrangement, and frequency coordination between satellite operators.
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? – No D2D services are already operational and widely available. Skylo's D2D services are live across four continents, with more than 50 million square kilometres of coverage, providing reliable connectivity using spectrum already allocated globally to the MSS. Implementing D2D using IMT spectrum allocated for terrestrial mobile service is more complex due to sharing the same spectrum for both IMT and MSS and is being studied at the ITU leading up to WRC-27. Additionally, our view is that the use of IMT spectrum is potentially more expensive as well for carriers, who are in a difficult position of trading off scarce, expensive terrestrial spectrum for the D2D use-case versus using licensed MSS spectrum that is purpose-built for D2D. An example of available D2D service available now is the satellite SOS feature on the Google Pixel 9, which enables emergency communication via satellite:

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	https://www.skylo.tech/newsroom/skylo-connectivity-enables-new-satellite-sos-feature-on-google-pixel-9-series Another example is the U.S. operator Verizon that has deployed Skylo's D2D connectivity in its network. https://www.verizon.com/about/news/verizon-skylo-launch-direct-device-messaging-customers These features are set to expand to other smartphones and wearable devices in the coming years. Moreover, a wide variety of D2D IoT applications are also currently available in the market. Please visit the following link for a complete, up-to-date list of Skylo-certified chipsets, modules, and devices: https://www.skylo.tech/certified-devices
Question 12: Are there any mobile bands that should be prioritised for satellite based D2D?	Confidential? – No No comment
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? – No No comment
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? – No Spectrum for D2D services should be authorised through a flexible, technology-neutral approach that encourages innovation while protecting existing users. Authorisation should be tailored to specific frequency bands. D2D services using spectrum allocated to MSS pose a lower risk of harmful interference to existing mobile band users, therefore, they should continue being exempted under the conditions listed in the UK Interface Requirements 2016.
Question 15: Are there any other points that you think would be useful in our considerations? In providing your	Confidential? – No No additional comment

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response, please provide as much evidence as possible.	

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