Question	Your response
Question 1: Do you agree with our assessment of the business models that could potentially emerge?	The GSMA agrees with the assessment of Ofcom in relation to the business models and capabilities of D2D using IMT bands, including the need for protection of terrestrial services. Direct connectivity from a satellite to an unmodified mobile handset or IMT device may be a useful tool for expanding coverage or improving resilience and may offer benefits to consumers, governments, and companies. It is however a nascent technology, and regulatory best-practice is in its infancy. D2D connectivity may support coverage extension for mobile operators in remote areas currently not covered by terrestrial networks, making it possible to use emergency messaging services, voice calls or basic data services, although white spots in the United Kingdom are usually small compared to satellite spot beams. Any approach to D2D introduction should enable the technology safely and with surety on coexistence with mobile terrestrial networks that are currently providing services to millions of users in the United Kingdom. It is important to emphasise that D2D does not expand connectivity to the unconnected but serve as a solution to areas not yet covered, providing SMS and limited voice services.

Question	Your response
Question 1(a): Are there any other business models that you think could deliver benefits for people and businesses in the UK?	Please refer to the response to Question 1.
Question 1(b): Are there any business models that could not operate under our proposed approaches?	Please refer to the response to Question 1.
Question 2: Do you agree with our assessment of the benefits that could be realised through authorisation of D2D services?	Please refer to the response to Question 1.
Question 2(a): Are there any other benefits for UK citizens and businesses that could be realised?	The role that D2D can play in enhancing coverage can only be fully exploited if the regulatory frameworks give market players confidence that all their current rights are protected. The GSMA and our members are optimistic that, providing terrestrial networks are protected, the development of D2D solutions will function as a supplementary means of providing services to customers. It is important to again emphasise that D2D does not expand connectivity to the unconnected but serve as a solution to areas not yet covered, providing SMS and limited voice services.
Question 3: Do you have comments on how emerging D2D technology should support 999 service provision?	Access to emergency services using a satellite connectivity should follow the same principle that applies for terrestrial services: access to the service should be granted to any customer with a compatible handset, irrespective of the mobile operator and service plan they subscribe to. Technical solutions should be provided by satellite companies as part of the agreement with MNOs.
Question 4: Are there any mobile spectrum bands not in scope of our proposals that you think we should consider?	N/A
Question 5: Does deployment in supplementary downlink spectrum (SDL) present any challenges in comparison to other bands? Is there interest in deploying in this spectrum?	N/A

Question	Your response
Question 6: Do you agree with our proposal to limit this authorisation to the UK mainland and territorial waters? If not, please explain why.	N/A
Question 7: Do you agree that our proposed technical conditions for D2D satellite emissions will protect mobile services delivered by other operators in adjacent areas and in adjacent spectrum?	Several technical, regulatory and spectrum issues must be considered role in the development of D2D. WRC-27 will look at certain technical conditions required for D2D. These will include looking at how satellite and mobile can use the same spectrum in bands from 700 MHz to 2700 MHz, and consideration of new mobile satellite bands which may be integrated into mobile handsets. At a national level, licensing mechanisms will require renovation and new definitions for regulatory frameworks governing hybrid NTN services will need to be developed. The suitability of many aspects of mobile, satellite and spectrum regulation need to be tested against D2D technologies. A clear definition of potential interference scenarios will be required both at the ITU, including the work of WRC-27, and subsequently in national regulatory frameworks. For D2D using mobile bands, these must consider: • The safe coexistence between an MNO and the satellite service provider which it uses to provide D2D satellite connectivity within the MNO licensed area. • The safe coexistence of an MNO operating in a neighbouring location to an MNO using a satellite D2D provider. Beyond the definition of co-existence measures at the ITU, the roles of each of these elements of the service will need to be defined in national frameworks. Their ability to disrupt each other will need to be understood, and the measures to resolve interference will also need to be laid out by national authorities.
Question 8: Do you agree with out high-level co-existence assessment for other services in adjacent spectrum to D2D?	The interference issue is a significant concern and can only be helped if mobile operators are able to guarantee coexistence and full control of the spectrum to which they have been licensed. This has

Question	Your response
	given rise to an informal terming of the '4 Cs' approach to D2D, stipulating: 1. Control of the spectrum by the licensee 2. Coordination by the licensee 3. Contract with the licensee 4. Coexistence with the licensee
Question 9: Are there other services co-channel or in adjacent spectrum that you think we should take into account when assessing coexistence? If so, please provide evidence of the nature of interference and what level of protection you consider is necessary.	N/A
Question 10: Do you agree with our preferred authorisation approach (option 2)? If not, please set out your reasoning.	The GSMA has convened the SNO and MNO sectors for the past year under the umbrella of its D2D Spectrum Task Force, a group made up of more than 150 individuals from 50 companies. Briefly, its output suggests the following guidelines for D2D using IMT spectrum: 1. Regulators should allow D2D IMT services to be provided under existing MNO licences on a secondary basis (satellite services must protect IMT networks in accordance with the Radio Regulations). 2. SNO must obtain agreement from MNO to use their licensed spectrum in the licensed area. 3. Interference issues to mobile terrestrial networks that should be addressed in interim frameworks (ahead of WRC-27) include adjacent band and adjacent area. 4. Decisions by WRC-27 may lead to a review of any local regulation decided beforehand. New MSS allocations in IMT bands should be secondary and must protect IMT identification (in accordance with the Radio Regulations). As such, we have concerns about pre-empting the outcome of WRC-27 and suggest that any measures are kept highly flexible until global agreements are reached in two years' time, as proposed by Ofcom. In addition, we consider it is important to ensure compliance to the common requirements and

Question	Your response
	have clear procedures when identifying non-compliance, and thus we support Ofcom considerations and recommendations related to this, as it clearly recommends D2D-IMT only being allowed under MNO licences, based on agreement with the MNO holding the licence.
Question 11: Are there any alternative authorisation options, not discussed here, that you believe are worth considering?	N/A
Question 12: Do you agree with the proposed conditions?	Please refer to the response to Question 10.
Question 13: Do you have any other comments on the proposals set out in this document?	N/A

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