

Your response

Question	Your response
Introduction	<p>Intelsat is the world's leading provider of fixed-satellite services (FSS), delivering high performance connectivity applications for the past 50 years covering more than 99% of the world's populated regions and serves a wide variety of customers in the UK, from large telecommunications carriers and broadcasters to corporate networks and Internet service providers. Through the Intelsat Inflight subsidiary (previously known as Gogo Commercial Aviation division) satellite communications enable essential communications to a broad range of UK-based aircraft, passengers and crew as well as to UK passengers on foreign aircraft serving the UK market. Intelsat employs a highly skilled workforce in its London office, directly contributing to the UK work force in space technology as outlined in the recent UK Space Agency report.</p> <p>Intelsat, already a large exporter of satellite services from the UK), intends to grow its strong presence in the UK and to engage with the UK Government to build on its commitment to enable broadband services in accordance with the UK Government broadband 'universal service obligation' (USO).¹ Furthermore, Intelsat is currently planning to build and launch a non-geostationary satellite constellation to augment services provided by its geostationary satellites.</p> <p>Intelsat supports Ofcom's commitment to enhance and improve its licensing policy to promote competition and increase the choice for consumers and businesses in the UK by facilitating a competitive NGSO policy in the UK in a manner that does not undermine or overly fragment those systems.</p> <p>We compliment Ofcom in this well-timed consultation which recognizes that NGSO systems are characterized by licensing and sharing complexities compared with geostationary (GSO) networks.</p> <p>Although not included in this Consultation, it is imperative that Ofcom also be cognizant and</p>

¹ The Electronic Communications (Universal Service) (Broadband) Order 2018 (the '2018 Order').

	<p>take appropriate action to ensure the protection of GSO network operations from NGSO systems. As Ofcom recognizes, the ITU processes/criteria have not kept pace with the evolution in the satellite industry. Specifically, NGSO systems contemplated today are significantly different from those studied by the ITU twenty years ago. When licensing NGSO systems, Ofcom needs to be mindful of the aggregate interference from multiple NGSO systems to GSO networks and take steps to ensure that the NGSO systems they license do not degrade the services of GSO networks.</p> <p>Intelsat welcomes Ofcom's position to respect the critical importance of the ITU Radio Regulations and to confirm that any new conditions in UK NGSO network licenses will not change or replace the ITU Radio Regulations but rather complement them.</p>
<p>Question 1: Do you have any comments on our assessment of the interference challenges raised by NGSO systems and their potential impact on a) service quality; and b) competition?</p>	<p>Intelsat fully agrees with the Ofcom's assessment of the complexities of coordination amongst NGSO systems. While we strongly believe that the ITU Rules & Regulations should form the basis for the coordination process between NGSO systems, we also recognize that these Rules & Regulations do not provide a clear path to resolving interference cases in a timely manner. These ITU processes, on their own, are not sufficient to incentivise all stakeholders to cooperate and do not describe coordination methods or mechanisms to facilitate compatibility. Administrations have the sovereign right to implement steps, in addition to the ITU Rules & Regulations, to ensure fair and efficient use of spectrum in their territories. Relying solely on ITU priority as the only principle for effecting coordination does not serve the public interest of UK citizens and stifles competition. At the same time, Intelsat certainly does not advocate for supplanting the ITU processes. Rather, layering additional steps to ensure that all NGSO operators are incentivised to engage in genuine coordination discussions can help in achieving agreeable outcomes. To spur competition, it is important that not all the burden is placed on later filed systems to protect the system with the higher ITU priority date. To incen-</p>

tivise and accommodate as many NGSO systems Ofcom should ensure that coordination is based on actual operational parameters versus ITU filed parameters. Each NGSO licensee should file with Ofcom a set of parameters it proposes to operate and the underlying ITU filings that cover such operations. This will support increased competition as the overly broad system parameters, typically contained in ITU filings, could result in unnecessary constraints for later filed NGSO systems.

Given the global nature of NGSO systems Intelsat cautions Ofcom not to be overly prescriptive in licensing of NGSO systems. It would be detrimental to have individual administrations adopt inconsistent or contradictory rules as this could hamper the development of NGSO systems and delivery of services to the public.

Intelsat also has further comments on the following sections of the consultation:

- In Section 3.10, as discussed above for NGSO systems serving the UK, Ofcom should require operators to provide a set of operational characteristics that can be used in the coordination process versus exclusively relying on ITU filings, which for some NGSO are much broader than the system planned for deployment. Additionally, some NGSO systems have filed multiple ITU filings through more than one administration and the public interest is not served by requiring later filed NGSO systems to coordinate all of these filings especially when the filings don't reflect actual operations.
- In Section 3.12 Ofcom states that it has no role in effecting coordination between foreign-filed NGSO systems. While this is a true statement in principles, Intelsat believes that Ofcom can have a role when and if the operators of these foreign-filed NGSO systems seek to be licensed to provide services in the UK. For example, Ofcom may require these NGSO operators to provide a coordination status with other NGSO systems. Seeking a UK license provides a nexus for Ofcom to encourage coordination

	<p>between foreign-filed NGSO systems operating in the UK.</p>
<p>Question 2: Do you have any comments on our approach to dealing with the interference challenges raised by NGSO systems?</p>	<p>Intelsat agrees that the foundation for dealing with cases of harmful interference should be the ITU framework. We also believe that when a later-filed system causes interference to an earlier-filed system, and if coordination has not been completed, the later-filed system should take steps to immediately eliminate the interference, providing that the earlier-filed system is operating in accordance with the ITU and Ofcom Rules and Regulations. In order to mitigate such situations Ofcom should examine the potential for interference prior to licensing additional systems so that the potential for interference between licensed systems is kept to a minimum.</p> <p>Intelsat would like to also comment on the need to introduce measures in section 3.30 on NGSO licenses to be granted only if all systems (existing and new) are able to coexist and provide services to end users. At this stage Intelsat would like to seek further clarification from Ofcom on how they intend to implement such rules.</p> <p>While we do understand that the purpose of such condition is to encourage all operators to do everything within their powers to coordinate, there may be cases where coordination is technically infeasible. Therefore, imposing such condition at the outset will result in significant uncertainty to all operators. It must be recognised that there may be a point where new NGSO systems may not be accommodated. This is akin to how two geostationary satellites may not be able to operate simultaneously from the same orbital position in the same frequency and over the same geographical areas. Similar situations may arise among NGSO systems where all technical methods for achieving coordination would not be able to yield a solution to maintain the integrity of either system. In such cases, the only way to achieving compatibility between NGSO systems is by some sort of band segmentation or</p>

	<p>geographical segmentation. While this approach may work, repeated segmentation to accommodate newcomers will ultimately result in diminished economic viability for all NGSO systems.</p> <p>Ultimately, Ofcom needs to strike a balance between proactively encouraging and facilitating coordination among NGSO operators and deciding if demonstrable and good-faith coordination efforts have been made by operators but without reaching an agreeable outcome.</p> <p>Intelsat also has further comments on the following sections of the consultation:</p> <ul style="list-style-type: none">• In section 3.29 Intelsat agrees on the principle of publishing applications for new licenses before granting them. See also comment on 2.29 below²• In section 3.30 Intelsat considers that introducing new checks and conditions to take action to resolve degradation to services is a good principle however it is not clear how Ofcom intends to validate the information provided by applicants on whether systems can coexist or not. Intelsat would like to seek further elaboration from Ofcom on the metrics, decision making protocols and organs within Ofcom that will implement this concept. It is also worth noting that the relevant study groups at the ITU are working on developing methods to assess interference between NGSO system, so it is advisable that Ofcom do not take actions that pre-empt the outcome of the ITU study groups on this matter.• In section 3.31 Intelsat considers that the approach on network licensing for Ka band
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² A comment on 2.29: "Given that the license terms and process for issuing NGSO licenses are the subjects of this consultation, we will not process applications for NGSO licenses received .during the consultation period." Intelsat requests that a maximum period is detailed for any consultation, this is in line with the principle of fostering competition as stated in the document. How does it fit with 4.17: "We believe that each of these objectives can be achieved whilst continuing to process license applications in the order that we receive them."

	<p>should be extended to all currently contemplated NGSO bands, including Q and V bands. Intelsat, as well as other satellite operators, is exploring other bands, not only Ku and Ka bands.</p> <ul style="list-style-type: none"> • In section 3.33, while we applaud the principle of ensuring that no single NGSO operator can warehouse spectrum resources and unfairly prevent other NGSO systems from operating, it is unclear what metrics Ofcom would use to determine if an NGSO operator requires “too much protection” or if it has “too little flexibility”. These terms are quite elastic and arbitrary, and their meaning can evolve over time. Without clarity as to how measure these terms, such conditions can result in unintended obstacles. • In section 3.34, Intelsat agrees that encouraging NGSO operators to cooperate and manage interference is a good principle. It may even be more effective, however, if Ofcom requires NGSO operators that seek to operate in the UK to disclose certain key parameters about their system in order to facilitate candid coordination discussions. For example, disclosing accurate ephemeris data about their constellation, frequency reuse schemes while operating over the UK, actual operational parameters (e.g., power levels, emissions, antenna performance, etc.) can certainly help in expediting resolution of interference cases and facilitating co-existence. <i>Note availability of ephemeris data seems to be required to avoid in line interferences between NGSOs.</i> • In section 3.35 Intelsat agrees with the requirement for gateway licensees to commence and maintain transmissions within 12 months of obtaining such license, unless the licensee can demonstrate that its inability to operate was due to unforeseen circumstances, or due to <i>force majeure</i>.
<p>Question 3: Do you have any comments on the proposed updates to our process for NGSO gateway and network licences?</p>	<p>Intelsat generally supports Ofcom’s proposal to adopt a process for NGSO gateway and network licenses that allows interested parties to submit comments. However, as noted in our responses to questions 2 and 3, we believe Ofcom should</p>

provide additional guidance on a number of substantive issues relating to managing interference and promoting competition. The right to comment would be an empty gesture if commenters are limited to addressing whether it is “reasonable for all authorised systems to be able to coexist (in bands they are using in common).” Such a standard would be needlessly vague and almost impossible to enforce. Lacking detail on how Ofcom intends to validate the information provided by applicants, or even if it proposes to do so, commenters will be left to aim at a non-existent or moving target.

A few examples deserve special mention:

- In section 4.13, Ofcom notes that it has a role in considering competition impacts of a gateway on how flexible the system is to allow operators deploying gateways near them in the future. However, it is not clear how Ofcom will determine and quantify the appropriate distance between gateways of different operators.
- In section 4.16, Ofcom states that a network license should provide “credible evidence about the technical ability for their system and future systems to coexist” to allow coexistence assessments to be made. This raises complex issues such as how an applicant can know the technical requirements of a future system, how ITU priority rules will apply and what mitigation techniques are needed to prevent interference. We suggest that these are matters to be addressed in a future proceeding.
- Section 4.22 indicates the requirement to coexist with other NGSO systems, current and future, but does not mention GSO systems. Intelsat feels strongly that any NGSO system licensed in the UK must also coexist with current and future GSO systems.
- Section 4.26 indicates two alternative scenarios that both appear to result in the same process of publishing the license application and opening a public consultation period before grant of license. Unless there is another intent, it may be better to simply

	<p>indicate that once any concerns held by Ofcom are addressed a public consultation period will be held before potentially granting any license.</p>
<p>Question 4: Do you have any comments on the proposed updates to existing and new NGSO network licences?</p>	<p>Intelsat agrees that satellite network coordination as required under the ITU RR is an important element of the cooperation needed to mitigate the risk of harmful interference between NGSO systems and we support the proposal that ITU coordination requirements be fulfilled.</p> <p>Intelsat agrees with the proposed requirement for the different NGSO systems to cooperate and coexist should apply to the whole system: satellites, earth stations and user terminals as is the case under the ITU coordination procedures.</p> <p>Further, as noted in previous sections, we emphasize the need to also protect relevant GSO systems according to current practices as may be implied by 5.21.</p> <p>Intelsat also submits further comments on the following sections of the consultation:</p> <ul style="list-style-type: none"> • In section 5.3 Intelsat agrees that licenses already granted by Ofcom should be reviewed and updated according to the new provisions as cited in the consultation document. Although Intelsat cautions Ofcom that operators rely on licenses granted and therefore updating conditions after the fact should be a very limited practice. • Proposed new network license conditions 3 - 5 and sections 5.16 - 5.20 identify requirements to comply with an Ofcom notice if a Licensee's services are degraded due to interference from another licensee, however the policies, parameters and processes related to independently determining "material degradation", the potential scope or limits of Ofcom instructions and eventual remedies should also be documented. This may be addressed in an eventual future proceeding.

	<ul style="list-style-type: none"> • Intelsat strongly supports Ofcom’s regulatory principles that prefer operators first attempting to resolve issues among themselves before resorting to any regulatory action imposed by Ofcom.
<p>Question 5: Do you have any comments on the proposed updates to existing and new NGSO gateway licences?</p>	<p>Intelsat agrees that licenses already granted by Ofcom should be reviewed and updated according to the new provisions as proposed by Ofcom to update the conditions of existing Satellite (Non-Geostationary Earth Station) licenses. It is especially relevant that existing NGSO gateway licensees be required to cooperate with the other existing and future NGSO gateway licensees operating in the same frequencies in order to coexist and provide regulatory certainty for the future.</p> <p>Intelsat also welcomes Ofcom’s confirmation that no conditions in the license affect licensees’ obligations under the ITU regulations under section 6.14 and agrees with the inclusion of the new note confirming this.</p> <p>Intelsat also has further comments on the following sections of the consultation:</p> <ul style="list-style-type: none"> • Intelsat agrees on the new license conditions for independent gateway operators as proposed in sections 6.7 - 6.11. However, as per the response to Question 4, above, Intelsat believes the policies, parameters and processes related to independently determining “material degradation”, the potential scope or limits of Ofcom instructions and eventual remedies should also be documented. Please see comments above related to 3.30, 3.31 and 3.35. This objective may be addressed in an eventual future proceeding.
<p>Question 6: Do you agree with our proposal regarding NGSO terminals operating in Ka band?</p>	<p>Intelsat agrees with Ofcom’s proposal to amend the exemption for NGSO land terminals in Ka band to instead require a network license just as for the Ku bands. By removing these exemptions for NGSO systems, Ofcom will bring NGSO Ka band user terminals in line with NGSO systems with Ku band user terminals and hence promote competition. Additionally, other bands that, in</p>

the future, may be used for FSS/MSS such as the Q and V bands should be also be treated equally.

Therefore, Intelsat supports the idea that existing and future NGSO terminals operating in any band in which coordination is required should be subject to the same regulatory framework for clarity and to achieve coexistence.

Intelsat expects NGSO networks to provide significant space segment capacity to earth stations in motion (ESIMs) on land, at sea and in the air. Operation of ESIMs as part of an NGSO network should also be included in the licensing framework to ensure coexistence among all spectrum users.