

Your response

- OneWeb welcomes Ofcom’s consultation on its proposed new approach to licensing Non-Geostationary Satellite Systems in the UK.
- OneWeb – a UK company - is the world’s second biggest satellite operator. As a global communications company powered from Low Earth Orbit (and therefore an “NGSO”), OneWeb is building an advanced satellite constellation to connect businesses, telecom, and governments with high speed, low-latency, internet connectivity.
- OneWeb brings secure, resilient connectivity, through a network of distribution partners, from pole to pole, across oceans and continents. OneWeb is committed to the responsible use of Space and sustainable practices on Earth, to bridge the digital divide and to serve communities currently denied schooling, health, and online government services.

Question	Your response
<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>Confidential? – N</p> <ol style="list-style-type: none"> 1. Ofcom’s assessment of the interference challenges raised by NGSO systems on <u>service quality</u> is accurate. 2. OneWeb agrees with Ofcom’s conclusion that the ITU framework needs to be <u>complemented</u> to deal with the potential issue of interference between NGSO systems in the UK more efficiently. However, OneWeb is concerned that in practice Ofcom is proposing to replace the well-established and internationally recognised ITU Coordination Procedures with a new regime that appears to not take into account the most elemental principles of the ITU Radio Regulations. Specifically, OneWeb is concerned that: <ul style="list-style-type: none"> • Ofcom’s proposed new framework could undermine and diminish the main principles of the ITU Constitution. The ITU is a treaty-based agency to which the UK has belonged since 1871. Its regime - based on the principle that the right to use orbital and spectrum resources for a satellite network or system is acquired through negotiations concerned by actual usage of the same portion of the spectrum and orbital resources - has proven to be the best means of achieving rational, cost-effective, and efficient spectrum and orbital management. • The new framework puts the burden of “flexibility” on earlier-invented systems, which cannot envision future systems and accommodate all possible new architectures. This is precisely why the ITU’s Radio Regulations oblige later-filed systems to be the ones to mitigate harmful interference should it occur, which encourages innovation, creativity, and the very “flexibility” to co-exist that Ofcom seeks. This does not mean that newcomers will not be able to access the same spectrum and orbital resources, but that they will need to consider previous

systems in their design and operational configurations. One-Web believes that this is achievable through good faith coordination and the adoption of mitigation techniques.

- Ofcom's proposals seem to imply a disregard for the ITU treaty, which sets a dangerous precedent. Ofcom and the UK are global leaders in regulatory best practices, and other nations will interpret a diminishment of the UK's commitment to the ITU as permission to do so themselves, in areas that Ofcom might not intend or desire.

3. Ofcom states that NGSO satellite services could be deployed before an appropriate level of coordination has been possible with other operators (Para 3.11), before going on to say that this risk to service quality could be solved by "encouraging cooperation". However, no incentive/criteria is provided as to how cooperation will be "encouraged". Under ITU Coordination Procedures, the system with the later date of protection needs to complete coordination to the maximum extent possible with prior filed systems before being brought into use and obtaining international recognition. This obligation is critical for two reasons:

- it encourages the later filed system to design their system with the flexibility necessary to avoid harmful interference from/to the previous filing system; and
- it encourages the later filed system to adopt any mitigation techniques at the design stage that, in the absence of this obligation, they would not otherwise be willing to adopt.

4. In the absence of such an obligation or incentive in the proposed requirement for NGSO licensees to "cooperate", it is not clear how Ofcom's objectives would be achieved.

5. With respect to "supporting competition", the very premise upon which Ofcom is basing its assessment of the challenges raised by multiple service operators is problematic: by attempting to make an "even playing field", Ofcom may have inadvertently suggested a system under which no entity has the motivation, encouragement, or requirement to be the one to innovate and create ways to co-exist.

6. The ITU Coordination Procedures have been developed over decades precisely because wireless technologies must share spectrum resource, but - as there is no way to predict future systems - both parties must undertake mutual efforts to overcome any difficulties which may arise, with the obligation to "mitigate the risk" of harmful interference ultimately placed upon the later-invented system.

	<p>7. Ofcom should therefore base its domestic approach to dealing with the interference challenges raised by NGSO systems upon the existing ITU Coordination Procedures, otherwise this will give an advantage to systems filed later, undermining fair competition (one of the main aims of Ofcom’s proposals set out in this consultation) and the recognised and effective international regulatory framework.</p>
<p>Question 2: Do you have any comments on our approach to dealing with the interference challenges raised by NGSO systems?</p>	<p>Confidential? – N</p> <p><u>Encouraging Cooperation</u></p> <p>8. Whilst it is true that Ofcom does not have a role in ITU coordination between foreign filed operators that are providing services in the UK, Ofcom does have the powers to connect the fulfilment of their coordination obligations to the UK domestic licensing process. As a consequence, Ofcom’s approach with respect to “encouraging cooperation” should be focussed on <u>encouraging/requiring NGSO operators in the UK to complete their required coordination (under the ITU) in a timely manner.</u></p> <p><u>Managing Interference</u></p> <p>9. OneWeb disagrees with the introduction of checks, such that NGSO licenses would only be granted if all systems (existing and new) were able to coexist and provide services to end users (Para 3.30 a). No detail is provided on how Ofcom intends to validate the information provided by applicants on whether systems can coexist or not.</p> <p>10. Further, any such validation must take into account the fulfilment of ITU coordination procedures. For example, System A files a system configuration before System B (<i>and so System A is unable to consider how to coexist with System B in its design</i>); System B then gets a license in the UK before System A. Is the burden now on System A to protect System B? If so, this is clearly in contradiction of ITU Coordination Procedures.</p> <p>11. It is important that Ofcom has the power to require licensees to change or cease operations in the event of harmful interference. OneWeb suggests that any action Ofcom take to resolve degradation to services is done so in alignment with ITU Coordination Obligations and the Procedure in case of harmful interference¹, i.e., that <u>later systems should be asked to modify their operations to ensure that there is no harmful interference into the more senior filings – regardless of which administration (UK or non-UK) filed the system.</u></p> <p><u>Supporting Competition</u></p>

¹ Article 15 of the Radio Regulations

12. OneWeb disagrees with the introduction of a “competition check” (Para 3.33).
13. The consultation document states that if a system needs “too much protection” or has “too little flexibility”, then they would be more likely to restrict competition from emerging. However, no information is provided on how Ofcom intends to assess this, e.g., what criteria will be used? what is the definition of “too much protection” or “too little flexibility”? It should be noted that such criteria and metrics are impossible to define when considering “future” systems that have not even been filed yet. As a result, any assessment of a license application with respect to these requirements would almost certainly be arbitrary and pose a significant threat to fair competition.

Role of the ITU Regulations

14. As stated in the consultation document, the potential for harmful interference between satellite systems should begin with the ITU framework for managing satellite filings. Following current ITU framework and Coordination Procedures, 99.95% of spectrum² assigned to satellite networks was free from reported harmful interference. It is therefore essential that any additional, domestic measures implemented by Ofcom must be complementary to the ITU process. They should not replace, supersede, or negate the ITU coordination requirements of NGSO operators in any way.
15. Ofcom believes it cannot rely solely on the ITU framework as the procedures only apply in cases where the filings are from different administrations, and because the ITU process may not resolve any issue in sufficient time to mitigate negative impacts.
16. However, the ITU framework provides a well-established, and globally understood and accepted process for dealing with interference issues - specifically, that the NGSO system with the later filing should be operated in a manner not to cause harmful interference to earlier systems which operate in accordance with the provisions of the Radio Regulations. There is no reason why this basic and core principle cannot underpin and apply to any new domestic approach that Ofcom introduces to deal with interference between NGSO systems in the UK (e.g. requiring “cooperation” between NGSO Licensees) regardless of ITU timelines and or filing administration.
17. It would be simple enough for Ofcom to incorporate domestically the same Coordination Procedures that the ITU does and build upon them by applying milestones, interim operational agreements, and

² <https://www.itu.int/bestofwrs20/wp-content/uploads/sites/4/2021/05/WRS-20-Orbit-Spectrum-International-Regulatory-Framework.pdf>

	<p><u>timeframes</u> (e.g. a limit of 6 months for operator “cooperation” discussions) - with associated penalties/action for non-compliance.</p> <p><u>An open and transparent process</u></p> <p>18. OneWeb agrees with Ofcom on the importance and benefits of an open and transparent licensing process, including the introduction of a period for stakeholders to comment on new NGSO licensing applications that Ofcom intends to grant. However, this should be strictly time limited and carried out in a streamlined manner (e.g., milestones and decisions points made clear from the outset) so as not to make the application process unnecessarily lengthy or complex.</p>
<p>Question 3: Do you have any comments on the proposed updates to our process for NGSO gateway and network licences?</p>	<p>Confidential? – N</p> <p><u>Managing Interference</u></p> <p>19. OneWeb agrees with Ofcom that it is best for the operators involved to determine how to achieve co-existence, including through the established ITU process for coordinating satellite systems, and the implementation of mitigations as a result of an ITU coordination agreement (Para 4.5 and 4.6).</p> <p>20. Whilst noting Ofcom’s objective to be satisfied that it is reasonable for all authorised systems to be able to coexist (Para 4.5), no information is provided on how Ofcom is going to conduct the assessments necessary to determine whether this is the case. It is not acceptable that a decision of such significance (i.e. whether an operator is given a license to operate in the UK) could be taken on the basis of undefined methodology and criteria.</p> <p>21. The ITU’s Working Party 4A (WP4A) has been studying the very issue of NGSO-to-NGSO coordination for some time. Unlike GSO coordination, NGSO-to-NGSO coordination is highly complex as each system’s architecture is different. An adoption by Ofcom of any specific protection criteria would be premature and arbitrary at this time. Instead, OneWeb recommends that Ofcom rely on the ITU Coordination process to provide operators the flexibility to determine the right approach to coordinating their systems. When the international NGSO community converges on a common set of agreed criteria, Ofcom could consider how to implement the criteria domestically as well, if necessary.</p> <p>22. OneWeb therefore believes that the only way of achieving Ofcom’s stated objectives for the proposed updated licensing process is that an applicant must prove:</p>

- that they have completed their ITU Coordination Obligations with those licensees operating earlier-filed systems, and that they commit to completing coordination with later applicants that (may) operate earlier-filed systems; or
- that significant coordination efforts have been undertaken and/or are underway with the applicant in accordance with any new milestones or timeframes that Ofcom enacts, and that it is accepted that in the event of interference into any licensee operating an earlier-filed system, they will change the way they offer services to the public to mitigate it in accordance with the provisions under No. 11.42 of the Radio Regulations.
- It is noted that similar procedures shall apply also in the case in which the interfering and interfered-with systems are both filed to the ITU by the UK.

Gateway Licenses

23. OneWeb agrees with Ofcom that a minimum separation distance is generally needed between the gateways of different NGSO systems (Para 3.17). The required separation distance would depend on the specific technical and operational characteristics of the concerned systems and would be negotiated during coordination discussions after detailed analyses.
24. In the absence of a coordination agreement between two NGSO systems, OneWeb believes that new gateway earth station licenses should not be issued for locations within a certain distance³ of a licensed gateway earth station (Para 4.7a). Alternatively, Ofcom could consult with the operator of the licensed gateway and request that they conduct analyses to determine what separation distance is feasible.

Network Licenses

25. OneWeb disagrees with the proposal that an applicant for a network license should need to provide “credible evidence about the technical ability for their system and future systems to coexist” to allow coexistence assessments to be made (Para 4.16).
26. It is not clear what form this “evidence” needs to take or consist of, or what Ofcom would consider “credible”. Herein lies the effectiveness of the ITU “priority” regime, where later filed systems are encouraged to innovate in order to implement mitigation techniques to prevent interference with earlier filed systems. Without there being a burden on

³ To be determined

one party to implement such creativity, stalemates result, and the UK consumer suffers when no system comes to market.

27. OneWeb does not believe that an applicant is able to know what systems/technical characteristics will be deployed in the future. It would be extremely difficult to establish fair and proportionate criteria against which a system is assessed for “flexibility” to enable future systems (i.e. undefined and not yet designed) to co-exist. This is the reason why the well-established and globally accepted ITU Coordination Procedures are so important, as it creates incentives and establishes the objectives necessary to ensure that all operators work towards achieving coordination, with future/later systems able to take into account priority systems into their design and operations.
28. Overall, the proposed process for NGSO licenses is vague and lacks criteria on how Ofcom would assess the information requested, and ultimately on what basis Ofcom would grant or deny a license. As a consequence, the process would be subjective with no guarantee of fair treatment between applicants.

Order of Processing

29. The proposed order of processing in Para 4.17 effectively replaces the whole basis of ITU priority with a UK local/domestic prioritisation. This would create an unacceptable misalignment with ITU Radio Regulation. Although Para 4.18 tries to state this is not the case, in practice Ofcom would be setting up a UK priority process that contradicts ITU Coordination Procedures.

Commenting Period

30. In the interests of openness and transparency, OneWeb is generally supportive of the proposal to publish the license application with a short commenting period. We agree that this would help facilitate information sharing and support coordination between NGSO operators.
31. To ensure maximum transparency and input, existing license holders and those in the process of applying for a license should be notified by Ofcom when a license application has been published and invited for comment.
32. It is noted that in the proposed process, Ofcom will make a decision on an application within an indicative 4-week period. However, it is important that this timeframe is not significantly exceeded in order to avoid prolonged delays to the processing of the license application (and the resultant negative competition implications). If Ofcom require longer than the 4-week period to make a decision, then they must keep the applicant and other stakeholders informed of the new timetable for a decision, as well as provide them with information on the reasons why.

Question 4: Do you have any comments on the proposed updates to existing and new NGSO network licences?

Confidential? – N

Draft conditions 1 and 2 for network licence

33. OneWeb agrees that Satellite network coordination as required under the ITU Radio Regulations is the most important element of the cooperation needed to mitigate the risk of harmful interference between NGSO systems - and OneWeb believes that Ofcom should require applicants/licensees to ensure co-existence through the fulfilment of their ITU coordination requirements
34. It is therefore imperative that new license conditions for NGSO network licenses specifically refer to the well-established and internationally recognised Radio Regulations of the ITU that already exist to coordinate co-existence between satellite systems and avoid harmful interference scenarios. These are the base upon which Ofcom can then build the milestones and timeframes it deems necessary to keep UK services operating.
35. As set out in the consultation document, it is welcome that Ofcom continues to support and acknowledge the critical importance of the ITU Radio Regulations and confirms that the proposed inclusion of any new conditions in UK NGSO network licenses does not change or replace any licensee obligations to coordinate under the ITU coordination process.
36. It is also noted that Ofcom recognise that co-existence is best achieved *“through the established ITU process for coordinating satellite systems”* (Para 4.5), and that *“coordination in accordance with ITU Coordination Procedures, such that multiple NGSO systems can coexist and compete in the UK”* supports Ofcom’s national licensing objectives (Para 4.18). Further, it is noted that *“Satellite network coordination as required under the ITU Radio Regulations is the most important element of the cooperation needed”* (Para 5.10); and that in the event of service degradation the *“UK’s responsibilities under the ITU Radio Regulations including, where appropriate, the status of the filings supporting those systems”* will be acknowledged in any action the Regulator may need to take to mitigate interference issues (Para 5.19).
37. However, this recognition and clear commitment from Ofcom to the ITU Radio Regulations is not reflected in the proposed NGSO license conditions - which make no specific reference to ITU procedures. Mentioning the ITU Radio Regulations elsewhere (such as a Note) does not hold the same weight.

38. Specifically, draft Condition 2 is insufficient as it makes no mention of the ITU coordination process: “*Shall cooperate*” does not imply any obligation or requirement, and in practice makes the condition impossible to enforce. If ITU Coordination Procedures are not followed, no NGSO Licensee has an incentive to mitigate interference, and no agreement will be reached to enable systems to “co-exist”. This will be to the detriment of the satellite operators, and ultimately the consumer.
39. Further, the absence of specific reference to ITU procedures in the license conditions risks giving the impression to other nations that Ofcom are deviating from the internationally agreed ITU process for coordination. This could set a precedent by which regulators across the globe adopt unilateral regulatory approaches that lead to the fragmentation of the current effective international rules, resulting in a “patchwork” of rules and regulations that stifle equitable access and rational use of the limited resources of the radio-frequency spectrum - hindering international cooperation, innovation, and deployment of satellite technology across the globe.
40. OneWeb therefore recommends that the following be included at the end of the proposed Condition 2, “***Such cooperation, for licensees operating under ITU satellite system filings from different administrations, shall be undertaken in conformity with the provisions of the Radio Regulations including the Procedures for effecting coordination with other administrations***”
41. This language makes it clear that existing ITU Coordination Procedures must be followed to address coexistence issues between systems and avoid harmful interference scenarios. Additional complementary domestic procedures and requirements which form part of the “cooperation” can be added. It also makes UK/Ofcom’s commitment to the ITU Rules without doubt.
42. OneWeb agrees with the proposed requirement for the different NGSO systems to co-exist applies to the whole system: satellites, earth stations and user terminals – as is the case under the ITU Coordination Procedures.
43. OneWeb does not agree that ITU coordination agreements may not deal with the specific locations of gateway earth station sites within the UK. If a separation distance between gateways is required, this can be included in a coordination agreement. As is made clear at the start of the consultation document, until a coordination agreement is signed between two NGSO systems, the ITU Radio Regulations require the later-filed system to eliminate any harmful interference into the earlier-filed system. This is therefore a critical factor in informing how two

(or more) NGSO operators will cooperate regarding the location of UK gateway sites.

44. As stated above, Ofcom should add domestic timeframes for completing the ITU process and require deliverables and evidence of good-faith efforts and mutual cooperation to complete coordination. Note that ITU procedures already require that operators still discussing coordination are required to take all practical and operational measures to avoid any harmful interference in compliance with the provisions under No. 11.41 of the Radio Regulations. Should Ofcom be given credible proof of harmful interference, then Ofcom should oblige the NGSO operator causing harmful interference to comply with the provisions under No. 11.42 of the Radio Regulations.

Cooperation under Condition 2

45. OneWeb agrees that given the complex and time-consuming nature of coordination discussions, that the relevant parties should provide evidence to Ofcom that discussions are progressing in a timely fashion and parties are participating constructively. As stated above, “cooperation” should take place in accordance with ITU Coordination Procedures.

Draft new network licence conditions 3 – 5

46. OneWeb agrees that in the event of interference it is important that operators have the opportunity to resolve the issue between themselves before any regulatory action is taken (Para 5.18).
47. If Ofcom decide it is necessary to take action, it is proposed that the UK’s responsibilities under the ITU Radio Regulations, including the status of the ITU filings supporting the relevant systems, will be one of the factors taken into account. However, the status of the ITU filings should be the primary factor taken into account in such a situation, i.e. if both systems are operating in accordance to their ITU filings then the lower priority system must take action to mitigate harmful interference against the priority system.
48. Further, Ofcom also state that another factor would be “ensuring the optimal use of spectrum” (Para 5.19). More detail needs to be provided on how “optimal use of the spectrum” would be assessed, e.g. total number of customers served? Quality of service? Throughput? Availability of service in remote areas? Government objectives such as universal or emergency services may not be “optimal” as far as monetary or market definitions go but are clearly of great import to the UK.

Draft note to be added into notes section of network licence

	<p>49. OneWeb welcomes Ofcom’s confirmation (Para 5.21) that no conditions in the license affect licensees’ obligations under the ITU regulations and agrees with the inclusion of the new note confirming this.</p> <p>50. However, although the inclusion of the note confirming that the License “<i>does not affect any obligations that the licensee may have under the ITU Radio Regulations</i>” is correct on its face, it should be noted that <u>on its own</u> this term does not imply any requirement whatsoever, and thus is not sufficient as the sole reference to the ITU within the License. Therefore, as detailed above, the ITU coordination process should be acknowledged and referenced in the license <u>conditions</u>.</p> <p>51. In addition, it would be more accurate for the note to state that the License “<i>does not supersede any obligations that the licensee may have under the ITU Radio Regulations</i>”.</p>
<p>Question 5: Do you have any comments on the proposed updates to existing and new NGSO gateway licences?</p>	<p>Confidential? – N</p> <p><u>Proposed requirement to only operate with a system that is covered by a network license</u></p> <p>52. OneWeb agrees with the proposed Condition 2 requiring that the gateway only to be used with a satellite system which has transmissions authorised under a UK network license.</p> <p>53. It is noted that by introducing this condition, appropriate coordination between operators will be done in accordance with the requirements/conditions set out in the associated NGSO Network License. Therefore, OneWeb’s position as set out in the answer to Question 4 of this consultation applies here with respect to NGSO Gateway Licenses.</p> <p><u>Draft conditions 3 – 5 of gateway licence</u></p> <p>54. As stated in Para 6.10 and 6.11, the draft conditions and approach are the same as those proposed for the draft NGSO Network License (although only covering the gateway as opposed to the wider satellite system). As a consequence, the relevant answers in Question 4 of this consultation apply here with respect to NGSO Gateway Licenses.</p> <p><u>Requirement to commence and maintain transmissions within 12 months</u></p> <p>55. OneWeb agrees with the proposed requirement for operators to commence and maintain transmissions within 12 months of being awarded a gateway license. However, this requirement should include <i>force majeure</i> clauses allowing the time period to be extended by an appropriate amount in the event of extraordinary events or circumstances beyond the control of the licensee.</p>

	<p><u>Draft note to be added into notes section of gateway licence</u></p> <p>56. OneWeb welcomes Ofcom’s confirmation that no conditions in the license affect licensees’ obligations under the ITU regulations (Para 6.14) and agrees with the inclusion of the new note confirming this.</p> <p>57. However, although the inclusion of the note confirming that the License <i>“does not affect any obligations that the licensee may have under the ITU Radio Regulations”</i> is useful, it would be more accurate to state that the License <i>“does not supersede any obligations that the licensee may have under the ITU Radio Regulations”</i>.</p>
<p>Question 6: Do you agree with our proposal regarding NGSO terminals operating in Ka band?</p>	<p>Confidential? – N</p> <p>58. Agree. It is important for both competition and interference risk reasons that <u>all</u> NGSO operators operate under a Network License and are therefore subject to the same licensing conditions regardless of whether they deploy user terminals operating in Ka or Ku band.</p> <p>59. As noted in the consultation document (Para 7.3), there is also a risk of Ka Terminals interfering with the NGSO Gateways that are operating in the same frequencies. OneWeb therefore agrees that NGSO land terminals must be operated under a network license and should no longer be exempt under HDFSS or ESOMPs.</p>