RIVADA
SPACE NETWORKS

# Rivada Space Networks:
## Response to the Draft Determination on the Proposed Framework for the Licensing of Satellite-Based Telecommunications Providers

Date: 1 May 2025

# Summary of Key Positions

**1. General Support**

- Rivada welcomes and supports the Office's Draft Determination, and the development of a licensing framework tailored to satellite-based telecommunications services.
- Rivada particularly supports the Office's recognition that regulatory jurisdiction extends only to ground-based elements of satellite services within the Cayman Islands.

**2. Clarification on the Distinction Between Satellite Operators and Satellite Service Providers**

- Rivada clarifies that it operates solely as a **wholesale satellite operator**, providing capacity to **locally licensed service providers**, and does **not** offer services directly to end users in the Cayman Islands.
- Rivada respectfully requests the Office to distinguish between:
    - **Satellite Operators** (wholesale providers such as Rivada, who supply capacity to local service providers); and
    - **Satellite Service Providers** (including vertically integrated operators that serve end users directly, as well as local service providers that deliver satellite-based services to end users using capacity acquired from satellite operators).

**3. Request Regarding Licensing Requirements**

- Rivada requests confirmation that wholesale-only satellite operators:
    - **Are not required** to obtain an ICT Service Provider licence (e.g., Type 9 ISP licence).
    - If necessary, a **simple registration** mechanism would suffice.
    - Wholesale-only operators should **not be subject** to retail service obligations (e.g., consumer protection, outage reporting).

**4. Request for Clarification on Local Registration and Caymanian Participation**

- Rivada seeks confirmation that wholesale-only foreign operators are **not required** to establish a Cayman-registered entity where they do not provide services directly to end users.

**5. Conclusion**

- Rivada appreciates the Office's careful consideration and looks forward to continued constructive engagement as the framework is finalised.

# Detailed Response

**1. Introduction**

Rivada Space Networks ("Rivada") welcomes the opportunity to submit its response to the Office's Draft Determination entitled *"Proposed Framework for the Licensing of Satellite-Based Telecommunications Providers"* (ICT 2025 – 1), published on 17 April 2025.

Rivada commends the Office for its thorough consideration of the submissions received during the initial consultation and for its efforts to design a forward-looking regulatory framework that promotes innovation, competition, and consumer welfare, while recognising the unique characteristics of satellite-based services.

Rivada is broadly supportive of the proposed licensing framework and, in particular, welcomes the Office's recognition that its regulatory remit appropriately extends only to ground-based elements of satellite services within the jurisdiction of the Cayman Islands, and not to space-based infrastructure located beyond its jurisdiction.

In addition to expressing its general support, Rivada wishes to provide a clarification regarding its earlier consultation response, specifically in relation to the distinction between different categories of satellite service providers within the satellite value chain, namely between a "satellite operator" and a "satellite service provider." Rivada respectfully requests that the Office take this clarification into account when finalising its determination.

**2. General Support and Clarification on the Scope of Licensing**

Rivada concurs with the proposed framework and appreciates the Office's recognition, as reflected in paragraph 25 of the Draft Determination, that regulatory oversight should be confined to ground-based elements associated with satellite service provision.

However, Rivada wishes to elaborate on the reference in Section E, paragraph 19 (second bullet point), which states that "Starlink and Rivada both suggested that any licensing should apply to ground-based activities only and not to anything space-borne."

To clarify:

- Rivada acts exclusively as a **satellite operator**, providing **wholesale satellite capacity** to **locally licensed satellite service providers** that deliver services to end users.
- Rivada **does not provide retail or direct-to-consumer services** within the Cayman Islands.
- This model differs significantly from **vertically integrated satellite operators**, such as Starlink and Amazon (Kuiper), who not only operate satellites but also offer services directly to consumers.

Accordingly, Rivada respectfully requests that the Office expressly distinguish between:

- **Satellite operators** (such as Rivada), and
- **Satellite service providers** who deliver services directly to end users.

In particular, Rivada requests that the Office confirm that:

- Entities operating solely as wholesale satellite capacity providers should **not be required to obtain an ICT Service Provider licence** (e.g., a Type 9 Internet Service

Provider licence). If any form of authorisation is deemed necessary, **a simple registration mechanism** would be appropriate.

- **Regulatory obligations targeted at retail service provision** — including consumer protection measures, user-specific outage reporting requirements, and other obligations directly linked to service delivery to end users — **should not apply to wholesale-only satellite operators**.

Rivada believes that this distinction is essential to avoid unnecessary regulatory burden and to ensure that the resulting licensing framework is proportionate, appropriately tailored, and reflective of the operational realities of the satellite services ecosystem.

Rivada appreciates the Office's attention to this clarification and looks forward to continued constructive engagement as the framework is finalised.

**3. Request for Clarification on Local Registration and Caymanian Participation**

Rivada notes the Office's considerations and conclusions under Section E.3 regarding the requirement for local registration and Caymanian participation. Rivada welcomes the Office's recognition that, under the ICT Act, the establishment of a Cayman-registered entity and the participation of Caymanian ownership are not mandatory requirements for obtaining an ICT licence.

In light of this, Rivada respectfully seeks clarification on whether a wholesale-only satellite operator, such as Rivada, which provides satellite capacity to locally licensed service providers but does not offer services directly to end users in the Cayman Islands, would be required to establish a local Cayman-registered entity in order to obtain the necessary authorisation.

Rivada respectfully suggests that exempting wholesale-only operators from a mandatory local registration requirement would be consistent with the operational realities of the satellite service value chain, minimise unnecessary administrative burdens, and encourage greater participation in the Cayman Islands telecommunications market.

Rivada would appreciate the Office's confirmation or further guidance on this point in its final determination.

STARLINK

**April 30, 2025**

**Utility Regulation and Competition Office, Cayman Islands**

***Re: Draft Determination, Proposed Framework for the Licensing of Satellite-Based Telecommunications Providers***

Utility Regulation and Competition Office:

Starlink Cayman Islands Ltd. (Starlink Cayman) hereby responds to the above captioned consultation. At the outset, Starlink Cayman thanks the Utility Regulation and Competition Office (the "Office") for their consideration of this framework, which will bring new connectivity options to the islands. Starlink is supportive of the Office's proposals and offers a comment on the calculation of spectrum fees.

Starlink Cayman understands that the Office intends to set spectrum fees for Satellite Service Providers ("SSPs") at CI$75, which is approximately $90USD, for frequencies between 7.125-37 GHz. Starlink presently operates its user terminals such that they transmit at 14.0-14.5 GHz and receive at 10.7-12.7 GHz. Therefore, it appears the annual spectrum fee for 28 "channels" are approximately CI$6966 ($8037 USD), which would encompass all satellite terminals deployed by a licensed SSP in a "blanket" fashion. This single license, as opposed to licensing SSP's terminals individually, is essential to efficient operations on the islands.

Starlink believes this is a fair calculation for this shared spectrum, and requests clarification if the above calculations are not accurate, as higher fees could impact Starlink Cayman's incentives to provide service in the islands. Starlink Cayman notes that, while these channels could be used for spectrum fee calculation, they should not translate to technical requirements to use of this or any specific channel bandwidth.

Starlink once again thanks the Office for its forward-looking thinking on these novel issues of new technology and looks forward to providing resilient satellite communications to the Cayman Islands.

Respectfully Submitted,

*/S/ Shea Boyd*

Shea Boyd
Senior Counsel
SpaceX

SATELIOT
Space · Connecting · 5G IoT

## Utility Regulation and Competition Office of the Cayman Islands

# Draft Determination - Proposed Framework for the Licensing of Satellite-Based Telecommunications Provider


*Contact information:*

**Satelio IoT Services, S.L.**
Carrer de Berlin 61
Esc. A Entresuelo
08029 Barcelona
Spain

**Elisabet Fonalleras**
Head of Regulatory Affairs
elisabet.fonalleras@sateliot.com
+34 660 753 381

**Mariona Pazos Rovira**
Regulatory Affairs Associate
mariona.pazos@sateliot.com
+34 647 742 366


Date: 2nd May 2025

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**Introduction**

Sateliot IoT Services, S.L. ("Sateliot") welcomes the opportunity to submit its comments on the Draft Determination issued by the Utility Regulation and Competition Office ("OfReg") concerning the licensing framework for satellite-based telecommunications service providers.

We wish to express our sincere appreciation to OfReg for the careful consideration given to the submissions made during the initial consultation, including Sateliot's input. We are pleased to see that many of the concerns and recommendations raised have been thoughtfully addressed in the Draft Determination, reflecting OfReg's commitment to fostering a balanced and enabling regulatory environment for satellite-based services.

By way of reminder, Sateliot is a pioneering satellite operator dedicated to delivering global Internet of Things (IoT) connectivity through the 3GPP 5G NB-IoT Non-Terrestrial Network (NTN) standard. We operate under a wholesale-only business model, partnering with terrestrial Mobile Network Operators (MNOs) via GSMA-standard roaming agreements. Our mission is to extend the reach of terrestrial networks into remote, rural, and underserved areas using satellite connectivity, without requiring modifications to existing IoT devices or infrastructure. Through this model, Sateliot enhances the service portfolios of terrestrial providers, strengthens network resiliency, and promotes digital inclusion.

We strongly support OfReg's proactive approach in recognizing the distinct nature of satellite-based services and proposing a fit-for-purpose licensing framework. Sateliot remains committed to working collaboratively with OfReg and other stakeholders to advance the Cayman Islands' objectives of innovation, economic resilience, and expanded connectivity. We look forward to continuing our engagement in the regulatory process and to contributing our expertise to support the successful implementation of the proposed framework.

**Support for proposed framework**

Sateliot expresses its strong support for the proposed licensing framework outlined in the Draft Determination. We commend OfReg for adopting a balanced and forward-looking approach that addresses the unique characteristics of satellite-based services while ensuring regulatory consistency, consumer protection, and market development.

We particularly welcome the introduction of a dedicated Major ICT Licence (Type H) for Satellite Service Providers (SSPs). The establishment of a distinct licence class reflects international best practices and appropriately acknowledges the differences between terrestrial and satellite network architectures. For satellite IoT operators such as Sateliot, this regulatory clarity will enable the efficient deployment of standardized 5G NB-IoT NTN services that seamlessly extend terrestrial connectivity into underserved areas, strengthening the overall digital ecosystem of the Cayman Islands.

Sateliot commends OfReg's pragmatic stance in recognizing that the Government's directive on local traffic peering is not readily applicable to satellite-based services. Given the global architecture of satellite constellations, and the technical impracticality of routing local traffic exclusively onshore, the proposed exemption for SSPs ensures that regulatory obligations remain grounded in operational realities. This flexibility is essential to enabling services such as Sateliot's global IoT connectivity model to contribute

meaningfully to the Cayman Islands' objectives of disaster resilience, connectivity expansion, and economic diversification.

Finally, we appreciate the Office's emphasis on adopting a light-touch licensing regime for satellite operators, ensuring that licensing and compliance requirements remain proportionate to the nature and scale of services being provided. In the context of low-data-volume IoT applications, where transmissions are intermittent and bandwidth usage is minimal, a flexible and tailored regulatory approach will be critical to facilitating affordable, scalable solutions that align with the Cayman Islands' broader digital transformation goals.

Sateliot stands ready to collaborate with OfReg and other stakeholders to ensure the successful implementation of this framework and to help drive the continued growth of resilient, innovative, and inclusive telecommunications services in the Islands.

**Minor clarifications and recommendations**

While Sateliot fully supports the overall direction of the proposed licensing framework, we respectfully offer the following clarifications and recommendations to further strengthen its effectiveness and ensure its proportionality for low-data-rate satellite IoT services:

- **Tailoring of compliance obligations for IoT services**

  For the avoidance of doubt, Sateliot respectfully suggests that OfReg consider providing a consolidated list of all compliance obligations that may be imposed on Satellite Service Providers (SSPs) under the final framework. This would enhance transparency and allow SSPs, particularly those offering low-data-rate IoT services, to clearly understand their regulatory obligations from the outset. It would also facilitate the proportional tailoring of requirements, ensuring that compliance expectations—such as outage notifications, quality of service reporting, lawful interception support, and consumer complaint mechanisms—are appropriately calibrated to the technical and operational realities of IoT-focused satellite networks.

- **Clarification of lawful interception requirements for IoT services**

  While Sateliot fully supports the importance of public safety and lawful interception obligations, we respectfully suggest that OfReg consider clarifying how such requirements will apply to SSPs offering IoT services. In particular, given that IoT connectivity often involves passive, non-personalised data and operates with intermittent transmissions of limited technical content (such as sensor data or periodic status reports), it may be appropriate to tailor lawful interception expectations proportionally to the nature of the service provided. Such clarification would ensure that compliance efforts are focused and practicable while upholding public interest objectives. Additionally, in the service architecture of foreign satellite wholesale capacity providers partnering with terrestrial networks such as Sateliot, interception requests by local authorities are handled by local MNOs

- **Spectrum fee application for IoT services**

Sateliot supports the general approach of applying spectrum fees on a "per channel" basis as outlined in the Draft Determination. We respectfully recommend that, in implementing this framework, OfReg ensures that spectrum fees are proportional to the actual bandwidth assigned to each licensee.

Given that narrowband IoT services, such as those provided by Sateliot, require minimal spectrum resources, it is important that the fee structure accurately reflects the small amount of spectrum utilized. There are currently several service typologies in the markets for NTN IoT with varying spectrum requirements, The Cayman Islands should factor this in. In this vein, there are substantial differences between some proprietary technologies requiring average 5MHz channels for satellite IoT services, and the case of Sateliot and other NB IoT NTN solutions where services link-spectrum requirements may be as low as 1MHz operating in 200KHz channels.

This will help maintain fairness, support technology-neutral principles, and encourage the deployment of efficient, low-data-rate IoT solutions that complement existing terrestrial services. We also encourage OfReg to allow flexibility for licensees to scale the number of channels assigned up or down over time, reflecting the dynamic nature of service evolution and spectrum needs as deployments mature.

- **Future-proofing the framework for service and technology developments**

  Sateliot respectfully recommends that the final framework explicitly recognize the evolving nature of satellite-based services. With ongoing international developments, including discussions at the upcoming World Radiocommunication Conference 2027 (WRC-27) regarding NTN and direct-to-device services, it is important that the licensing regime remains adaptable. We suggest that OfReg consider embedding flexibility mechanisms, such as simplified license variation processes, to accommodate future service models, new technology standards, and changes in spectrum needs without requiring a major regulatory overhaul. This will ensure that the Cayman Islands remains well-positioned to benefit from innovation in satellite connectivity.

- **Recognition of wholesale-only business models**

  Sateliot also encourages OfReg to take into account that certain SSPs, including Sateliot, operate exclusively on a wholesale basis through partnerships with terrestrial MNOs. We respectfully suggest that the final framework clarify that wholesale-only operators partnering with existing licensees may be eligible for streamlined compliance pathways, particularly where end-customer interaction and service provisioning are managed through the terrestrial partner. This approach would reduce duplication of regulatory oversight, enhance operational efficiency, and facilitate the seamless integration of satellite IoT connectivity into the national digital ecosystem.

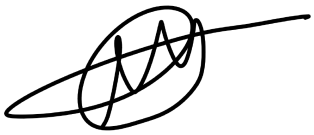
**Closing remarks**

Sateliot thanks OfReg for the opportunity to participate in this important consultation process and for its continued efforts to design a fair, proportionate, and future-ready licensing framework for satellite-based telecommunications services.

We commend the Office's recognition of the evolving satellite landscape and its openness to incorporating perspectives from operators like Sateliot, whose mission is to complement existing terrestrial networks through efficient, low-data-rate IoT connectivity. The proposals outlined in the Draft Determination demonstrate a commendable balance between regulatory oversight, technology neutrality, and practical flexibility, particularly in areas such as class licensing for VSATs, the exemption from local traffic routing requirements, and the introduction of a dedicated Type H licence for Satellite Service Providers.

Sateliot reiterates its commitment to working closely with OfReg and other stakeholders in the Cayman Islands to support the implementation of this licensing framework. We remain available to provide technical insight, share international best practices, and contribute to future regulatory developments that further advance connectivity resilience, innovation, and digital inclusion across the Islands

Sincerely,



**Mariona Pazos Rovira**
Regulatory Affairs Specialist
Satelio IoT Services, S.L

Utility Regulation and Competition Office
P.O. Box 10189 Grand Cayman KY1- 1002
CAYMAN ISLANDS

May 9, 2025

**Submitted Electronically:** consultations@ofreg.ky

**Subject: ICT 2025 – [1] – Draft Determination - Proposed Framework for the Licensing of Satellite-Based Telecommunications Providers**

Viasat welcomes the opportunity to submit comments to the Draft Determination issued by the Utility Regulation and Competition Office (OfReg) on April 17, 2025 ("Draft Determination") relating to the proposed Framework for the Licensing of Satellite-Based Telecommunications Providers ("Satellite Framework").

Viasat commends OfReg on its efforts to develop the Satellite Framework in a streamlined and transparent manner to further the continued development of the satellite communications industry in the Cayman Islands. We take this opportunity to reiterate and clarify a few aspects of our initial comments. The fact that we may not comment on a particular party's initial comments should not be construed as an indication of our agreement with those comments. We certainly welcome the opportunity to provide any additional information to OfReg in the future.

**Question 1: Should OfReg introduce new license types to facilitate the specific licensing of satellite-based services?**

In its Draft Determination, OfReg proposes to develop a separate license type for a satellite service provider (SSP) in order to reflect the specific service, network and regulatory differences presented by the delivery of service by satellite as opposed to by terrestrial means. OfReg further states that the regulatory framework governing the Cayman Islands mandates that all ICT service providers obtain a license, concluding that "a "registration-only" system for SSPs would not comply with the jurisdiction requirements." [1]

Viasat agrees with OfReg that there "needs to be appropriate regulatory oversight to services and networks offered in the Cayman Islands." In our initial comments, Viasat raised the issue of requiring a registration process. However, we wish to clarify the rationale and appropriate context for the implementation of such a mechanism. Viasat generally agrees with OfReg that it would be beneficial to differentiate between the licenses awarded to terrestrial and satellite-based service providers and recognizes the importance of imposing certain license conditions that may be unique to SSPs. However, Viasat believes that it is important for OfReg to recognize some of the key distinctions between the services that SSPs may offer and recognize that one "license size" may not fit all satellite service providers. In some

[1] OfReg Draft Determination at ¶22.

instances, SSPs may seek to provide services directly to consumers in the Cayman Islands **(Category 1)**. In other instances, existing terrestrial operators may simply seek to lease satellite capacity from SSPs and resell such services to consumers in the Cayman Islands **(Category 2)**. In addition, some SSPs may only provide Earth Station in Motion (ESIM) services via satellite to aviation and maritime customers in the airspace and territorial waters of the Cayman Islands, without providing services directly to consumers within the territory **(Category 3)**.

With respect to **Category 1** above, where SSPs are providing services directly to consumers within the territory of the Cayman Islands, Viasat agrees that OfReg should introduce a new license category, to allow OfReg, among other things, to impose certain conditions that are unique to satellite service providers and to ensure that they comply with ITU regulations, particularly with regard to issues relating to interference.

With regard to this category, Viasat urges OfReg to impose the conditions outlined in the response to Question 5 below. In summary, Viasat recommends that OfReg requires that Category 1 satellite service providers comply with the important Equivalent Power Flux Density (EPFD) limits of Article 22 of the ITU's Radio Regulations, in order to ensure adequate protection for GSO and other Non GSO satellite services. As noted in the response to Question 5 below, these conditions should be imposed at the market access stage, **prior to licensing**.

With respect to **Category 2** above, where existing licensed terrestrial operators are simply leasing satellite capacity from SSPs, Viasat believes that there is no need to create a separate duplicative licensing regime for the SSP, particularly when that SSP is not providing services directly to end users. In such instances, it should be sufficient for the local licensed terrestrial operator to comply with any existing license conditions. This approach will avoid a "double licensing" process that has the potential of unduly burdening the development of the satellite industry.

*Registration Mechanism*

Although OfReg believes that "a "registration-only" system for SSPs would not comply with the jurisdiction requirements," Viasat wishes to clarify that its suggestion of adopting such a mechanism was designed to apply in those instances where terrestrial operators are simply leasing satellite capacity from SSPs, under the Category 2 scenario. It was not intended to suggest that a "registration-only" system should be adopted for those SSPs who are providing services directly to end users in the territory of the Cayman Islands. In such Category 1 instances, Viasat agrees with OfReg that a separate licensing mechanism is appropriate.

There are multiple benefits associated with OfReg adopting a registration process under the Category 2 scenario. For one, it will allow OfReg the opportunity to know exactly who the terrestrial operator may be leasing satellite capacity from. Since these SSPs would typically be foreign-based and foreign-owned, a registration system would give OfReg the opportunity to solicit information relating to the satellite's country of origin as well as basic technical information as referenced below. This would enhance OfReg's

ability to ensure that satellite service providers in the market meet the administration's requirements (for example, around national security, spectrum interference, or any space sustainability criteria).

The adoption of a register should not be overly burdensome as it simply creates a list of authorized SSPs providing the information recommended below. The register should be displayed publicly on OfReg's website and contain the following information, at a minimum:

- Name of the satellite operator
- ITU network name/id (filing)
- Commercial name of the satellite network
- Frequency bands of operation in the Cayman Islands

We note that for D2D, this also works well, as local terrestrial service providers can procure satellite capacity to provision D2D services for their customers. Such an approach aligns with best practices in the region and avoids the duplication of a licensing approach in situations where local terrestrial service providers are simply acquiring satellite capacity from satellite operators, without the satellite operator providing services directly to end users.

This becomes particularly important as the Commission considers how to manage instances where local providers are leasing capacity from large mega-constellation NGSO systems. In such instances, Viasat recommends a more rigorous space segment registration for large constellation NGSO systems when allowing its use by local providers.

With respect to **Category 3** above, where SSPs may only provide ESIM services to aviation and maritime customers in the airspace and territorial waters of the Cayman Islands, we recognize that in June 2023, OfReg already issued a Determination regarding ESIMs, concluding that, subject to certain technical conditions, no further authorization is required from OfReg. Viasat commends OfReg for adopting such a forward-looking approach for the provision of ESIM services.

*Space Sustainability*

In its Draft Determination, OfReg recognizes the need to support space sustainability initiatives but believes that since the International Telecommunication Union ('ITU') and the United Nations Office for Outer Space Affairs ('UNOOSA') are already taking steps to develop requirements in this regard, it is not necessary to impose any requirements in its licenses. Instead, OfReg will "apply any internationally agreed rules or regulations it is required to abide by."[2]

While Viasat applauds OfReg's recognition of the need to support space sustainability initiatives, we respectfully urge OfReg to reconsider its position of not imposing any space sustainability requirements

[2] OfReg Draft Determination at ¶21.

on SSPs in its licenses. As outlined in more depth below, while important work in the ITU and UNOOSA is ongoing, the timelines and processes for these international fora almost certainly preclude meaningful action before it is too late. Moreover, as noted in further detail below, implementation of the UN guidelines established in 2019 is voluntary, and administrations may or may not choose to incorporate elements of the guidelines into their national framework. For the reasons outlined below, Viasat believes that OfReg is in a unique position, as the regulator of SSPs in the Cayman Islands, to adopt comprehensive and enforceable policies and rules at the national level that can lay the foundation for important considerations relating to the safe and sustainable use of space.

Viasat has a long history of and extensive expertise in designing, manufacturing, and operating satellite payloads, systems, and ground networks for communications and earth sensing missions for military and commercial users. We are a leading provider of satellite broadband and narrowband services to consumers, businesses, and national security government users, both domestically and globally.

Viasat also develops state-of-the-art payload components, modules, and subsystems for our own satellites, for other satellite operators, and for the U.S. government. Those include satellite payload and associated ground technologies used in low-Earth orbit ("LEO") systems, medium-Earth orbit ("MEO") systems, and geostationary orbit ("GSO") networks, including those used for earth observation and sensing, navigation, and communications. We currently develop and operate classified and tactical LEO communications satellites, and other national security LEO missions, and anticipate that those missions will increase substantially in the future.

In light of these activities, Viasat has an obvious interest in ensuring that the orbital environment remains sustainable and safe, both in the near and long terms. Viasat has taken steps to advance that objective in the United States and globally. It is within this context that we offer the observations and comments below as we believe that OfReg should be armed with comprehensive information on this issue to be able to make an informed decision moving forward. There are numerous comprehensive studies, reports and analyses spanning thousands of pages relating to the issue of space sustainability. Viasat takes just a few pages here to outline a few key issues for OfReg's important consideration.

Sadly, the need for administrations to develop their own policies and guidelines for the safe and sustainable use of space to ensure the safety of its citizens is no longer an academic exercise but a harsh reality. This is becoming even more urgent in the Caribbean region. As reported in January of this year, The Turks and Caicos Islands experienced debris from a space rocket explosion crash into its territory.[3] This incident required immediate action by the government to ensure the safety of its citizens and to assess the extent of any physical damage. A similar incident occurred in March of this year in The Bahamas.[4] The threat of space debris (including both that which stays in orbit and that which enters the atmosphere) is

[3] *See* Turks and Caicos Weekly News, January 31, 2025, SpaceX Debris Recovery Underway in the TCI, Public Urged to Report Debris; Turks and Caicos, The Sun, January 23, 2025, Turks and Caicos, UK Officials Meet with SpaceX Team.

[4] *See* BBC Article, March 6, 2025, SpaceX Rocket Explodes, Raining Debris from Sky for Second Time in a Row.

also heightened by the proliferation of mega-constellation satellite launches taking place in Low Earth Orbit.

As noted in Viasat's initial comments, considerations relating to the safe and sustainable use of space as well as equitable access to both spectrum and orbits are key determinants for the Cayman Islands' meaningful participation in the new space economy and the assurance of a competitive marketplace for satellite capacity. As a result, Viasat reiterates and strongly recommends that OfReg add the following policy principles relating to space sustainability and equitable access to orbital and spectrum resources to be considered in the adoption of its Satellite Framework.

- **Space Sustainability**: Actions must be taken today to "ensure that humanity can continue to use outer space for peaceful purposes and socioeconomic benefit now and in the long term."[5] The space surrounding the earth is a finite resource. The emergence of large non-geostationary (NGSO) constellations can trigger the following effects that may impact the long-term sustainability of space activities by the over-exploitation of Low-Earth Orbit (LEO):
    - Overconsumption of spectrum and "look angles," reducing the protection of other NGSO as well as GSO satellites serving markets like The Cayman Islands;
    - Increased risk of collisions that can lead to unsustainable levels of space debris that can foreclose access to space for all mankind;
    - The potential for large quantities of deorbiting satellites, burning aluminum in the upper atmosphere thereby releasing aluminum oxide, can damage the Earth's atmosphere and effect climate change through, among other things, the depletion of the ozone layer;
    - The same aluminum oxide increases the risk of neurological diseases like Alzheimer's and Parkinson's;
    - Impairing critical optical and radio astronomical research by disrupting the visible night sky as well as critical asteroid detection and defense capabilities; and
    - Creating light pollution, with the resulting negative impacts on the health and quality of life of humans, plants and animals.

  Adding a Space Sustainability principle to the Satellite Framework will ensure long-term, safe, and reliable access to and use of space for the benefit of all.

**Equitable Access to orbital and spectrum resources**: As mentioned above, the LEO orbit is a finite resource that needs to be administered carefully to ensure that markets remain competitive and national systems in the future can be deployed and operated. Likewise, the spectrum environment needs safeguarding to ensure protection of all systems from interference from the largest NGSO constellations. Recently, large NGSO constellations are consuming the entire aggregate EPFD "budget" that must be apportioned among all NGSO systems using the same or overlapping frequencies, blocking other LEO systems and overpopulating orbital planes that constrains the orbital access for GSO and NGSO systems. If this goes unchecked, it will harm consumer choice and chill investment and innovation.

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[5] *Definition of space sustainability from the Secure World Foundation*.

Action is needed urgently. It will not be possible to mitigate these risks once the sky is populated with tens of thousands of satellites operating with no meaningful constraints in place to ensure that others can share.

**Analysis of the Guidelines for the Long-Term Sustainability of Space Activities and the Regulation on Spectrum and Orbits**

The Committee on the Peaceful Uses of Outer Space (COPUOS) is the United Nations body responsible for promoting international cooperation in the peaceful uses of outer space and the development of the international legal regime that governs outer space. The United Nations Office for Outer Space Affairs (UNOOSA) is the Secretariat of COPUOS. To date, COPUOS has developed five main Treaties on activities in outer space, reflecting its essential role in enabling and sustaining space activities.

The Treaties constitute a fundamental international regulatory framework to establish rules and ensure the peaceful and cooperative use of space between nations. In addition to the aforementioned Treaties, COPUOS established principles and, in 2019, approved the Guidelines for the Long-term Sustainability of Outer Space Activities of the Committee on the Peaceful Uses of Outer Space (LTS). [6] These guidelines provide recommendations on the long-term sustainability of space activities, reinforcing the importance of complying with international rules provided for in the ITU Radiocommunication Regulations (RR).

Importantly, the very first guideline that is referenced states as follows:

**A. Policy and regulatory framework for space activities**

**Guideline A.1**

**Adopt, revise and amend, as necessary, national regulatory frameworks for outer space activities**

1 . States should adopt, revise and amend, as necessary, national regulatory frameworks for outer space activities, taking into account their obligations under the United Nations treaties on outer space as States responsible for national activities in outer space and as launching States. When adopting, revising, amending or implementing national regulatory frameworks, States should consider the need to ensure and enhance the long-term sustainability of outer space activities.

By its own language, the United Nations expects administrations to take action and adopt national regulatory frameworks to promote space sustainability. As noted above, implementation of the LTS guidelines is voluntary, i.e. states may or may not choose to incorporate elements of the guidelines into their national framework.

[6] *See* Guidelines for the Long-term Sustainability of Outer Space Activities of the Committee on the Peaceful Uses of Outer Space

In addition, the ITU has adopted resolutions relating to space sustainability, including those approved during the 2022 ITU Plenipotentiary Conference in Romania,[7] and during the 2023 Radiocommunications Assembly, held in Dubai, United Arab Emirates.[8]

The aforementioned international instruments are used as a grant for the determination of national rules for the exploitation of satellite services. One example that deserves highlighting is the procedure for removing from orbit (*deorbit*) geostationary satellites at the end of their useful life, provided for in the Recommendation of the ITU-R S.1003 ITU. It should be noted that there is no technical recommendation issued by a United Nations organization that is analogous and applicable to non-geostationary satellites. As such, it is important for OfReg to adopt its own enforceable policies and rules at the national level.

Viasat has taken steps to advance space sustainability objectives in the United States and globally:

- **First**, Viasat has designed its own satellite networks in a manner conducive to a sustainable and safe orbital environment. Policymakers need not choose between expanding broadband connectivity or ensuring safe and sustainable use of space. Rather, both goals are achievable with the sustainable design and operation of NGSO systems.

- **Second**, Viasat has been a leading voice in space sustainability policy debates and has consistently encouraged national administrations around the world to adopt comprehensive and enforceable policies and rules to address space sustainability and safety issues. In doing so, Viasat has highlighted material risks to space sustainability and safety that may not be fully appreciated by national administrations and has encouraged them to take immediate and decisive action to address those risks. The space sustainability rules that we have are outdated, having been written for a different time.

Viasat remains extremely concerned about recent trends in the use of space that threaten to make its use unsustainable and unsafe—to the detriment of the Cayman Islands and all peaceful nations of the world. To that end, Viasat has been a global leader in developing research exploring the issues around overconsumption of spectrum and orbits, collision risk mitigation, impacts of space debris creation, and modelling the different design trades for large NGSO constellations.[9] Our research has demonstrated that the COPUOS LTS Guidelines are not sufficient for the protection of the outer space environment given the way space is currently being populated.

An even more troubling development is the overconsumption of scarce and shared orbital and spectrum resources by a few large NGSO constellations. Recently disclosed plans by one company highlight the

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[7] *See Resolution 218 - ITU's role in the implementation of the "Space2030" Agenda: space as the driver of sustainable development, and its follow-up and review process; Resolution 219 -Sustainability of the radio-frequency spectrum and associated satellite-orbit resources used by space services; Final Acts of the Plenipotentiary Conference - Decisions and resolutions (Bucharest, 2022)*.

[8] *See Resolution ITU-R 74 - Activities related to the sustainable use of radio-frequency spectrum and associated satellite-orbit resources used by space services*.

[9] *See, for further Viasat research and resources from national administrations, news outlets, and other entities: https://www.viasat.com/about/sustainability-impact/space-policy/*.

imminent threat to shared and equitable use of spectrum and orbits by all space actors around the world—whether civil, scientific or governmental.

Just a single NGSO constellation seeks to (i) dominate about 51 GHz of spectrum, (ii) utilize as many as 34,000 satellites, (iii) spread those satellites across 444 km of space in the best orbits in low Earth orbit (LEO), and (iv) operate without regard for ITU allocations and spectrum sharing provisions.[10]

This includes over 68% of all the spectrum allocated for fixed, broadcast and mobile satellite services under 100 GHz, and virtually all spectrum contemplated for nascent direct to device (D2D) service by satellite. Reliable access to both spectrum and associated orbits drives the ability to meet evolving commercial, civic and military needs, and the ability of every nation to participate in the global space economy.

If one NGSO constellation is allowed to serve the Cayman Islands under these terms, no one else would be able to reliably share the same orbital resources. With over 34,000 satellites, potentially with 100s of beams on each satellite pointable in any direction, employing elevation angles as low as 5 degrees, and serving antennas as small as 15 cm, no one else could predict if their satellite system could operate alongside, regardless of the orbits they use. Absent the adoption of suitable regulatory limitations **at the market access stage**, the Cayman Islands could not ensure the opportunity for a national satellite system (or competitive systems) to share the same scarce orbital or spectrum resources.

Much like natural resources here on Earth, there are only so many orbits around Earth, all of which must be shared by the world and among different satellite technologies. There is also only so much collision risk that we can tolerate – risk that could lead to a runaway cascade of collisions that denies use of space to everyone for generations.[11]

That is, the new approach adopted by some operators creates significant negative externalities because the costs of one operator's unsustainable, excessive, or unduly risky operations are not borne entirely—or even mostly—by that operator.[12] Rather, those costs are borne by all who use, or benefit from the use of, space. Consequently, certain individual operators are incentivized to prioritize their own short-term interests above the long-term interests in the use of space by all[13]—a true Tragedy of the Commons.

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[10] *See* Space Exploration Holdings, LLC, Call Sign S3069, ICFS File Nos. SAT-MOD-20241011-00224 (link) and SAT-AMD-20241017-00228 (link); *see also Space Exploration Holdings, LLC Application for Authority for Modification of the SpaceX NGSO Satellite System to Add a Direct to Cellular System*, Order and Authorization, DA 24-1193 (rel. Nov. 26, 2024) (link).

[11] Concerns exist that increasing density of objects in LEO (active satellites, derelict satellites, and debris alike) can trigger a chain reaction of collisions, generating more debris and posing a growing threat to the future usability of LEO. This effect is sometimes referred to as a "Kessler Syndrome."

[12] *See, e.g., Mitigation of Orbital Debris in the New Space Age,* Notice of Proposed Rulemaking and Order on Reconsideration, 33 FCC Rcd 11352 (2018), at ¶ 89, https://www.fcc.gov/document/fcc-launches-review-rules-mitigate-orbital-space-debris-0 ("Debris generation by on-orbit activities is a negative externality, and is one which could lead to the degradation of the commons of the Earth orbital environment.").

[13] *Id.* ("While the debris problem is a significant consideration for the long-term use of orbital resources, such considerations may not play a significant role in economic decision making in the short-term. Individual satellite operators may have an interest in preserving the earth orbital environment for their continued operations,

While we historically have regulated use of space on a satellite-by-satellite and system-by-system basis, nature and physics do not make those artificial distinctions. The consequences of over-crowding space can be addressed only by taking into account the aggregate of all human activities in space. If we do not manage the total impact of all objects and activities in space, we cannot manage the resulting risks and harms.

The space industry is at an inflection point. The cost of launch has dropped precipitously, and economies of scale that enable small, inexpensive payloads are driving investment in inexpensive and disposable spacecraft. These same factors shatter established norms in accessing space that have driven the way safe flight was managed for decades. When the cost of accessing space is high, self-interest motivates high standards of care because the cost of failure is high. The term "space-qualified" once meant the industry's highest standards for quality and reliability even in the harsh conditions of space. Those high costs and risks once fostered a safe ecosystem, because the number of objects in space was limited, and the tools to manage them were adequate.

These developments demand new regulatory approaches. This is why Viasat has encouraged national administrations to adopt enforceable rules that discourage operators from emphasizing disposability and replaceability (redundancy in large numbers of satellites) rather than reliability and safety (deploying fewer, more efficient satellites that can be expected to be able to avoid collisions for the many years they remain in orbit). Absent such rules, SSPs: (i) will continue to make self-interested economic trades that endanger the sustainable and safe use of space; (ii) will not internalize the negative externalities created by their operations; and (iii) will not mitigate the burdens and adverse impacts that otherwise would be imposed on other operators and the public more generally.

Given the powerful economic incentives at work, we simply cannot rely on "best practices" or guidelines (whether created at the national or international level) to produce the correct—i.e., sustainable, safe, and responsible—results. **For this reason, it is critical that the LTS Guidelines not be read to convey a false sense of security or leave national administrations or private actors with the impression that they can ignore space sustainability and safety issues. It should be crystal clear that national administrations and private actors must act now to preserve space sustainability and safety—including by implementing comprehensive and enforceable policies and rules at the national level.**

**Shortcomings of the LTS Guidelines**

In particular, Viasat has identified the following gaps in the existing LTS guidelines:

1. **The LTS guidelines do not anticipate recent trends in the satellite industry that adversely impact space sustainability and safety.**

   The guidelines reflect outdated assumptions about how individual satellites and satellite systems are designed and operated and thus fail to appreciate the full scope or extent of

but a desire to avoid the short-term costs associated with deorbiting satellites to mitigate debris risk could override those long-term interests. Given these incentives, in the long term, the debris population is likely to continue to grow and could result in an exponential increase in the debris population such that use of certain valuable orbital configurations may no longer be economically feasible.").

risks to space sustainability posed by modern satellite operations. Unfortunately, these trends are heading in the wrong direction and making space less sustainable and less safe.

Among other things, LEO spacecraft are becoming larger and more massive, with significant implications for the space sustainability and safety risks posed by individual satellites, even when viewed in isolation (e.g., per-satellite collision risks), due to increased collision risk associated with greater cross-sectional area, and the larger resulting debris fields when these satellites collide with other space objects.[14]

Furthermore, LEO operators are iterating their satellite designs over time with virtually no constraints on this "evolution." Among other things, regulators have not clearly established that they will carefully examine new or increased risks that may be associated with iterative design changes where relevant NGSO systems have already been authorized based on earlier designs.

At the same time, LEO constellations have grown much larger; regulators are now evaluating proposed LEO constellations that would include tens of thousands of satellites instead of a few dozen or even hundreds. These trends increase risks to space sustainability and safety—including risks related to the potential for in-orbit collisions. Among other things, the increase in constellation size is driving an exponential increase in the number of conjunctions that a given constellation can be expected to experience over time—dramatically increasing the likelihood of an in-orbit collision that would have devastating impacts on space sustainability and safety. As Dr. Hugh Lewis has observed, "The law of very large numbers will tell you that very low probability events can happen if given enough opportunities."[15]

**2. The LTS guidelines do not address <u>aggregate</u> risks to space sustainability and safety posed by each large NGSO system <u>as a whole</u>.**

More generally, the LTS Guidelines ignore that many risks to space sustainability and safety are aggregate risks that scale with the size of a given constellation. For example, each additional satellite in a given constellation poses an incremental risk of collision—*i.e.*, all things being equal, the larger the constellation, the more likely it is that some satellite in that constellation will experience a collision during its lifetime. But the LTS Guidelines ignore this critical dynamic and consequently may leave individual nations with the

[14] *See* M. A. Sturza and G. Saura Carretero, "Design Trades for Environmentally Friendly Broadband LEO Satellite Systems," (2021), Advanced Maui Optical and Space Surveillance Technologies Conference (AMOS), https://amostech.com/TechnicalPapers/2021/Poster/Sturza.pdf; M. A. Sturza and G. Saura Carretero, Consequences of LEO Satellite Collisions – The Fragments (2021), 11th IAASS Conference – Managing Risk in Space, available at https://www.viasat.com/spaceinnovation/space-policy/space-debris/.

[15] *See: https://twitter.com/ProfHughLewis/status/1509903335251456045 (Apr. 1, 2022).*

impression that the collision risks associated with each individual satellite can or should be evaluated in isolation.

Notably, authorizing any NGSO system based on its apparent compliance with a per satellite collision risk metric alone would effectively sanction multiple collisions to occur over that system's lifetime. This is illustrated in the following table, which examines the application of a 0.001 collision probability limit (for objects 10 cm and larger) over a 15-year term:

| # of satellites in orbit | Allowed Mean Time Between Collisions in Years (Days) |
|---|---|
| 1,000 | 10 |
| 5,000 | 2 |
| 10,000 | 1 |
| 50,000 | 0.2 (72 days) |
| 100,000 | 0.1 (36 days) |

*Table 1: Aggregate Risk Applying a Single Satellite Risk Standard*[16]

As the table shows, a constellation that meets such a collision risk metric on a per-satellite basis could still experience multiple collisions over the course of a 15-year term—a result that is inconsistent with efforts to preserve space sustainability and safety. To avoid unacceptable risks to space sustainability and safety, individual nations can, should, and must evaluate and limit the aggregate collision risk posed by each NGSO system as a whole. This evaluation should consider all potential sources of significant risk, including:

- Risks associated with derelict satellites that fail and no longer can maneuver (and therefore create significant risks for as long as they remain in orbit);
- The risks during the entire period each satellite in the system remains in orbit and at all orbits it may populate (injection, operational, and post-mission disposal);
- The increased risk of collisions due to changes in the orbital environment (such as satellites breaking up or exploding, debris colliding with other debris and breaking up further, and the deployment of additional LEO systems—not just the environment as it existed in the past);
- Characteristics of the satellites in the system—cross-sectional area, mass, subsystem reliability, redundancy, shielding, and operational techniques to reduce the risk of system failures—and any subsequent proposed changes to those parameters;
- The risk of collisions with all sizes of space objects, whether trackable or not, including lethal non-trackable ("LNT") objects (discussed in further detail below);
- The continued reliability of critical command and propulsion capabilities needed to try to maneuver to avoid collisions—and the probability that those critical systems may be damaged by non-trackable debris that is too small to fragment the satellite;

[16] Calculations are based on 10-year satellite design life, and application of the one-in-1,000 (0.001) collision risk standard for objects 10 cm and larger that is commonly used for single satellite risk scenarios.

- The risk of intra-system collisions within a given NGSO system (due to all causes, including failed satellites, within that system);
- Known risks with large numbers of expected conjunctions between a given NGSO system and other space objects (*e.g.*, large numbers of maneuvers to avoid some collisions create other collision risks; low-probability conjunctions not resulting in avoidance maneuvers add up to significant collision risks with very large numbers of conjunctions);
- The interactions of all satellites in a system with all other objects in their environment (including overlapping and intersecting orbits) during orbit raising maneuvers for rising satellites, considering active and passive decay trajectories for satellites in the orbital disposal phase, as well as taking into account those satellites in active service;
- The impact of solar disturbances;[17] and
- The accuracy and tolerances of all orbital trajectories in order to accurately assess and model conjunction probabilities.

These risks should be measured, assessed, modeled, and tracked, and operations adjusted, during the lifetime of each mission—not just at the initial authorization stage (including for communications and Earth observation missions). And, needless to say, the following types of "simplifying" assumptions should be avoided in performing an aggregate collision risk assessment: (i) the myth of purported "self-cleaning orbits;"[18] (ii) blind belief in the efficacy of "autonomous" controls in avoiding collisions;[19] and (iii) the fallacy that maneuverable satellites have "zero risk" of collision.[20]

Further, research by Viasat demonstrates that constellations with large numbers of NGSO satellites are not necessarily more resilient than smaller networks, impose additional costs to other operators due to higher likelihood of collision and fragmentation events,

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[17] *See* ***Geomagnetic storms cause "mass migrations" of satellites,*** *in SpaceNews, by Jeff Foust, 11 December 2024] ("*The first problem was the low accuracy of forecasts of the timing, magnitude and duration of the storm. "As a result of this low skill in our forecasts, SpaceX saw 20 kilometers of position error in their one-day computations" of the orbits of Starlink satellites, he said. "If we're uncertain in where our spacecraft are by 20 kilometers, then you can throw collision avoidance out the window."
The problem was compounded by a lack of knowledge of just how inaccurate the forecasts were at the time. "We were pretty confident in those bad solutions," he said. "Being confident in the wrong answer fundamentally changes the decisions that we're making whether or not to maneuver the spacecraft.")

[18] *See Self-Cleaning Orbit Myth, available at https://www.viasat.com/space-innovation/spacepolicy/space-debris/.*

[19] *See* Comments of NASA, IBFS File No. SAT-AMD-20210818-00105, at 2 (filed Feb. 8, 2022) ("[T]he concern remains that other vendors proposing large constellations would also use auto-maneuvering capability within altitude ranges occupied by Starlink, thereby requiring multiple autonomous constellations to maneuver out of each other's way without clearly defined rules of the road for such interactions.").

[20] *See* id. at 3 ("[C]onsidering multiple independent constellations of tens of thousands of spacecrafts and the expected increase in the number of close encounters over time, the assumption of zero risk from a system-level standpoint lacks statistical substantiation.") (emphasis supplied).

and increased costs of Space Traffic Management (STM), Space Situational Awareness (SSA), and Space Surveillance and Tracking (SST) activities[21].

**3. The LTS guidelines do not adequately address risks to space sustainability and safety <u>collectively posed by emerging satellite systems.</u>**

As discussed above, national regulators are currently examining proposals to deploy tens of thousands of additional satellites into NGSO orbits—and there are additional proposals to submit hundreds of thousands of additional satellites that are likely to be considered in the near term. The deployment of even a fraction of these satellites would represent an exponential increase in the total number of satellites in LEO in particular—and create new challenges for the sustainability of satellite operations in all orbits.[22]

There is growing recognition that there are limits on the exploitation of LEO. [23] With respect to collision risk, the extent to which LEO can be populated in a safe and sustainable

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[21] *See* M. Sturza, M. Dankberg, and W. Blount, "Resilience of LEO Constellations to Accidental and Intentional Fragmentation Events", Advanced Maui Optical and Space Surveillance Technologies Conference – AMOS, 2024. Available at: https://amostech.com/TechnicalPapers/2024/Space-Debris/Sturza.pdf.

[22] *See, e.g., European Space Policy Institute, Space Environment Capacity: Policy, regulatory, and diplomatic perspectives on threshold-based models for space safety and sustainability, at 39 (Apr. 11, 2022), https://www.espi.or.at/reports/space-environment-capacity/ ("As the Earth orbital environment is getting increasingly congested, concerns about its long-term sustainability, potential overexploitation, and risk of interference are becoming increasingly clear and shared among policymakers, industry leaders, and academia") ("ESPI Paper").*

[23] *See*, e.g., L. Miraux, Environmental Limits to the Space Sector's Growth, SCIENCE OF THE TOTAL ENVIRONMENT (Feb. 2022), https://www.sciencedirect.com/science/article/abs/pii/S0048969721059404?via%3Dihub ("A common assumption is that limitations to the human enterprise in space are of a purely technical land economic nature. This paper challenges this assumption, by highlighting the existence of environmental limits to the currently planned development of space activities. Risks arising from these limits are explored, and the importance of ecodesign in the space sector is emphasized.").

European Space Policy Institute, *Space Environment Capacity: Policy, regulatory, and diplomatic perspectives on threshold-based models for space safety and sustainability* (Apr. 11, 2022), at 39, https://www.espi.or.at/reports/space-environment-capacity/ ("The Space Environment Capacity Concept has been developed with an ambition to create a metric-based, flexible, and transparent foundation within a wider policy discussion of regulating the Earth's orbital environment, a global common where tensions are increasingly rising and better regulation is necessary.");

A. Lawrence, M. L. Rawls, M. Jah, A. Boley, F. Di Vruno, S. Garrington, M. Kramer, S. Lawler, J. Lowenthal, J. McDowell, and M. McCaughrean, The case for space environmentalism, NATURE ASTRONOMY (Apr. 22, 2022);

M. Lifson, D. Jang and R. Linares, Space Environmental Governance and Decision Support Using Source-Sink Evolutionary Environmental Models (2023), at 8, 2023 Advanced Maui Optical and Space Surveillance Technologies Conference (AMOS) ("Multiple factors potentially constrain human ability to make use of the space environment over time. In the realm of kinetic space safety there are concerns related to the long-term sustainability of the space environment, operational threats to spaceflight safety and associated mitigation burden, and orbit coordination and cross-constellation orbital compatibility. Other potential limitations include access to

manner depends on the nature (e.g., mass, cross-sectional area, materials used) and number of relevant satellites, and the characteristics of their orbits. The way in which LEO is populated can, among other things:

(i) Accelerate the approach of a series of self-sustaining collisions in LEO among space objects (debris and satellites, whether active or derelict) that impairs or even precludes access to space in LEO—as well as MEO, GSO, and other orbits;
(ii) Threaten the continued safe and reliable operation of many space missions on which consumers, commercial enterprises, scientific research, and defense alike rely—including those that provide vital communications, Positioning, Navigation, Timing (PNT), and Earth Observation data and services;
(iii) Damage the Earth's atmosphere and effect climate change;[24] and
(iv) Disrupt the night sky and impair critical astronomical research.[25]

There also is growing recognition that these risks are increased by each LEO system that is authorized to operate in this increasingly congested part of space, and that the deployment and operation of each such system drives increased collision risks due to changes in the orbital environment created by the deployment of those systems, their interaction with each other, and their interaction with the growing amount of orbital debris.[26] **Accordingly, it is critical that national administrations evaluate the potential**

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communications spectrum to send and receive information between satellites and the ground, the risk to air and ground users from space debris that survives re-entering the Earth's atmosphere, changes to climate from increasingly large amounts of aluminum and other materials being vaporized in the Earth's upper atmosphere during post-mission disposal, and the carbon cost of spaceflight and associated terrestrial activities.").

Toni Feder, Q&A: Moriba Jah on the sustainability of near-Earth space, PHYSICS TODAY (Mar. 31, 2022), https://physicstoday.scitation.org/do/10.1063/PT.6.4.20220331a/full/.

M. A. Sturza and G. Saura Carretero, Design Trades for Environmentally Friendly Broadband LEO Satellite Systems (2021), 2021 Advanced Maui Optical and Space Surveillance Technologies Conference (AMOS), https://amostech.com/TechnicalPapers/2021/Poster/Sturza.pdf ("AMOS Paper").

[24] *See, e.g.* Andy Lawrence, Meredith L. Rawls, Moriba Jah, Aaron Boley, Federico Di Vruno, Simon Garrington, Michael Kramer, Samantha Lawler, James Lowenthal, Jonathan McDowell & Mark McCaughrean, The case for space environmentalism, NATURE ASTRONOMY (Apr. 22, 2022), https://www.nature.com/articles/s41550-022-01655-6;

Martin N. Ross and Karen L. Jones, Implications of a growing spaceflight industry: Climate change, JOURNAL OF SPACE SAFETY ENGINEERING (June 6, 2022), https://www.sciencedirect.com/science/article/abs/pii/S2468896722000386.

[25] *See* Id.; Chris Young, The worst case Starlink scenario? We could be 'right on the edge' of Kessler syndrome, INTERESTING ENGINEERING (Aug. 11, 2022), https://interestingengineering.com/innovation/worst-case-starlink-scenario-kessler-syndrome.

[26] *See* generally ESPI Paper.

**impact of each NGSO market access applicant both alone and in conjunction with other proposed deployments of NGSO systems**.

4. **The LTS guidelines do not identify other critical sources of potential risk to space sustainability and safety.**

The existing LTS Guidelines do not specifically identify or address significant sources of risk to space sustainability and safety. Perhaps most conspicuously, and as briefly noted above, the LTS Guidelines fail to appreciate the risks associated with lethal, non-trackable ("LNT") debris, i.e., objects in the 1-10 cm range that cannot be tracked (and hence cannot be avoided) yet are capable of fragmenting satellites with which they collide. Notably: (i) LNT "dominates the risk profile of operational spacecraft,"[27] and (ii) LNT is likely to be the fastest growing category of debris.

Indeed, an estimated 1,000,000 pieces of LNT exist[28] that: (i) increase the risk of collisions and human casualties in space; (ii) cannot be seen and thus cannot be avoided by in orbit satellite—regardless of whether they are nominally maneuverable; (iii) create risks that cannot otherwise be mitigated today; and (iv) have the potential to destroy and fragment a satellite, with the collision creating many thousands of new pieces of lethal debris.[29] **Nevertheless, the risks to space sustainability and safety posed by LNT are largely unaddressed by the existing LTS Guidelines, which may leave individual nations with the misimpression that these risks need not be addressed by comprehensive and enforceable national policies and rules**.

5. **The LTS guidelines pay insufficient attention to the need to ensure that authorized systems are <u>safe</u> in order to keep space <u>sustainable.</u>**

There are clear links between space safety and sustainability. For example, collisions resulting from the operation of satellites or satellite systems designed or operated in a

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[27] *See* generally R. Buchs, Collision risk from space debris: Current status, challenges and response strategies (Lausanne: EPFL International Risk Governance Center, 2021), at 13, available at https://go.epfl.ch/irgcspacedebrisreport ("LNT objects dominate the risk profile of operational spacecraft. As they are far more numerous than trackable objects and cannot be avoided, LNT objects make up more than 95% of the mission terminating collisional risk for a typical LEO satellite[.]").

[28] As of 2024, ESA estimates the existence of 36,500 objects greater than 10 cm, 1,000,000 objects from 1 cm to 10 cm, and 130 million objects from 1 mm to 1 cm. See ESA Space Environmental Statistics, https://www.sdo.esoc.esa.int/environment_report/Space_Environment_Report_latest.pdf

[29] *See* R. Thompson, A Space Debris Primer, CROSSLINK (Aerospace Corp. Fall 2015), at 6 ("Every [fragment smaller than 10 centimeters, down to 1 centimeter] has the potential to cause catastrophic damage to an active satellite. Space debris larger than 1 centimeter has the potential to completely fragment any object it hits. If that object is a large mass such as a satellite or rocket body, the resulting collision will add tens of thousands of new space debris fragments to the population.").

manner that causes undue risk can adversely affect the ability to safely access and use, and the cost of accessing and using, orbits near Earth for everyone else. Unfortunately, the existing LTS Guidelines pay insufficient attention to the links between space safety and space sustainability.

Although the LTS Guidelines discuss the "safety of space operations,"[30] they largely focus on recommendations that might make it easier to track space objects over time and predict if and when a conjunction could occur. Unfortunately, the LTS Guidelines do not recognize the significant risks to space safety—and thus space sustainability—that can result from satellites and satellite systems that are designed in the first instance without due regard for risk. Nor do the LTS Guidelines provide meaningful direction to national regulators as to how they might reduce these risks.

6. **The LTS guidelines do not provide a clear roadmap for scientific and technical research and development.**

The LTS Guidelines recommend efforts to "promote and support research into and the development of ways to support sustainable exploration and use of outer space" and "investigate and consider new measures to manage the space debris population in the near term."[31] Viasat believes that further research into space sustainability and safety issues is critical. Unfortunately, the LTS Guidelines do not provide a clear roadmap with respect to the types of substantive R&D that would be most beneficial for national administrations to undertake, individually and collectively.

**In conclusion, we strongly urge OfReg to take the above considerations into account as it considers issues of space sustainability further. At the very least, OfReg should require, as a pre-condition to licensing, that SSPs submit, in detail, what steps they will take to ensure space sustainability, including how the SSP plans to deorbit its satellite after its useful life.** As always, Viasat is at OfReg's disposal to discuss this issue in greater detail.

**Question 5: Do you have any comments on OfReg's assessment of the potential interference between satellite terminals and other services?**

In its Draft Determination, OfReg stated that "it is reassured that the potential for interference is minimal due to the work already undertaken internationally to study the issues and set in place necessary rules. Based on existing international standards and available data, the Office does not anticipate significant interference. However, to mitigate potential risks, the Office will ensure compliance with international regulations and will monitor developments to determine if additional measures are necessary. As with other spectrum bands, the Office will actively monitor the use of satellite frequencies. If any interference

30 *See LTS Guidelines at 19-29.*

31 *See:* LTS Guidelines at 37-38.

is reported, the Office will investigate and, if necessary, evaluate and implement appropriate measures to mitigate the issue."

Viasat commends OfReg for stating unequivocally that, in order to mitigate potential risks, it will ensure compliance with international regulations and monitor developments to determine if additional measures are necessary. While the crux of OfReg's analysis may be focused primarily on the potential for interference between satellite and terrestrial services, it is also very important for OfReg to consider some of the key issues surrounding interference between SSPs themselves and how this may impact service in The Cayman Islands.

Viasat reiterates the comprehensive analysis and findings contained in our initial comments relating to the potential for interference between GSO and NGSO satellite service providers. While we do not restate those findings here, we wish to emphasize the importance of this issue. Viasat supports the guidance and rules already provided by the ITU Radio Regulations, which set out appropriate protection criteria for both satellite and other services in the same frequency bands and adjacent bands, especially Articles 21 and 22 of the ITU Radio Regulations for large NGSO constellations. Based on those regulations, significant investment went into the design of current satellite systems that are in operation (as well as future systems), taking into consideration the ITU rules that were already established and which remain in effect today. Consequently, it is important not to abandon these ITU rules that have fostered a global ecosystem for satellite systems.

In its Draft Determination, OfReg recognizes that "internationally there have been many studies on the potential for interference between VSAT and terrestrial services and rules have been put in place at the ITU level to ensure that any VSAT use does not cause **harmful interference**. As long as satellite operators and users follow these rules, the risk of interference is deemed acceptable." [Emphasis added].

We wish to emphasize that, as noted in greater detail in Viasat's initial comments, Article 22 of the ITU Radio Regulations, the principal provision relating to the coexistence of GSO networks and NGSO systems, requires that NGSO systems not cause **Unacceptable Interference** to GSO networks, which is a much stricter standard than **Harmful Interference**.

Large NGSO systems pose significant interference risks to other operators, including GSO operators. The proliferation of large NGSO satellite systems at LEO presents a wide range of challenges for regulators and other satellite operators around the world. Given the importance of this issue, Viasat strongly urges OfReg to specifically reference Article 22 of the ITU Radio Regulations in its Regulatory Framework, as well as make compliance with all ITU Radio Regulations, including Article 22, a licensing condition.

Finally, attached to this submission as Annex 1 is a White Paper that Viasat presented to the Commonwealth Telecommunications Organization (CTO) in February 2025 entitled **Digital Transformation and Sovereignty in the New Space Age**. We provide this White Paper as an important reference as OfReg considers the future of satellite services.

February 2025

# Digital Transformation and Sovereignty in the New Space Age

Viasat

# Table of Contents

## 1. Introduction

This whitepaper examines the risks to national sovereignty and the policy objectives of accelerating digital transformation when scarce orbital and spectrum resources that must be shared are overconsumed by a small number of actors. It proposes measures for Commonwealth nations to collaborate in securing their stake in the future of space, namely by ensuring that the commercial activities of a few today do not shut nations out of pursuing their own opportunities to use space for their economic, technological, social and cultural development and other policy goals.

As has been said many times before, we are living in a "New Space Age." This is particularly evident in advances in satellite technology, including a significant reduction in the cost of accessing space. While these advances bring the promise of innovation, they also have given rise to the threats posed by the deployment of "mega-constellations" of many thousands of non-geostationary orbit (NGSO) satellites. These initiatives of a few commercial actors are part of a 21st century land grab, by which they attempt to monopolize the global space commons. These actors threaten to consume the vast majority of available spectrum and orbits, leaving little room for competition, innovation. They also deploy in a manner that allows them to bypass any nation's telecommunications regulatory requirements and frustrate that nation's security and sovereignty needs.

Access to space can afford many benefits to countries around the world. For example, improved access to broadband Internet can enable digital transformation, ranging from e-health and distance education to participation in digital economies and e-government. These are functions of the national administration, and the resources used (such as spectrum and orbits) are part of a global commons. Allowing the means for this digital transformation to be monopolized would harm administrations' ability to meet their public policy objectives.

International policy development moves too slowly to combat these threats – by the time consensus is reached at the UN or ITU, the harms of allowing mega-constellation operators to effectively privatize national resources will ripple through all parts of the economy. Fortunately, policymakers can address these threats at the national and regional levels, and through wide-reaching alliances like the CTO. Policymakers can rest assured that other commercial actors are responding to these threats by creating new open architecture, standards-based satellite networks that meet growing connectivity needs, while ensuring the integrity, security, and sovereignty of national telecommunications networks and related policy goals throughout the world.

Ensuring national policymaking responds to the new pace of technological change requires visionary leadership. What remains unchanged is the obligation states have to their citizens to use resources wisely and to think about the long-term impacts of new technologies. Sustainable use of outer space resources needs to be included in the ministerial plans and national regulation should support this. National policy should seek to protect sovereignty and not cede control of scarce resources that are needed for each nation to secure its place in the global space economy. **It's not too late to prevent the overconsumption of spectrum and orbits by a few commercial actors. But time is of the essence.**

## 2. Attempts to monopolize and restrict equitable access to space resources

Much has been written about the advent of the "New Space Age". The phenomenon is characterized by an intense period of investment, innovation, and deployment of new technologies in space, and on earth that use space-based technology. The impact of this new space age is being clearly felt in the satellite communications industry, where improvements in available capacity and affordability are revolutionizing the possibilities afforded by satellite, both in Geostationary Orbit (GSO) and non-GSO (NGSO). This in turn provides significant opportunities to close digital divides, extend Internet-based services, and improve economic activity in all countries. **In this way, satellite communication has become essential for meaningful, affordable, and universal connectivity.**

While satellite holds much promise for improved connectivity in administrations around the world, this new space age is not without risk. One troubling development is the overconsumption of scarce and shared orbital and spectrum resources by a few NGSO mega-constellations. Recently disclosed plans by one commercial company highlight the imminent threat to shared and equitable use of spectrum and orbits by all space actors around the world—whether civil, scientific or governmental.

Reliable access to both spectrum and associated orbits drives the ability to meet evolving commercial, civil and military needs, and the ability of every nation to participate in the global space economy. **Absent the adoption at the market access stage of suitable regulatory limitations on constellations of many of thousands of satellites operating in wide swaths of spectrum, an administration could not ensure the opportunity for its national satellite systems (or competitive systems) to share scarce orbital and spectrum resources.** As we discuss below, a single NGSO constellation seeks to colonize the vast majority of spectrum and orbits, and to do so without regard for international spectrum sharing provisions.

**Just a single NGSO constellation seeks to (i) dominate about 51 GHz of spectrum, (ii) utilize as many as 34,000 satellites, (iii) spread those satellites across 444 km of space in the best orbits in low Earth orbit (LEO), and (iv) operate without regard for ITU allocations and spectrum sharing provisions, and (v) otherwise restrict the free use and exploration of outer space on the basis of equality under the Outer Space Treaty for space-emerging nations**.[1]

**This includes over 68% of all the spectrum allocated for fixed, broadcast and mobile satellite services under 200 GHz, and virtually all spectrum contemplated for nascent direct to device (D2D) service by satellite.**

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[1] *See:* Space Exploration Holdings, LLC, Call Sign S3069, ICFS File Nos. SAT-MOD-20241011-00224 (link) and SAT-AMD-20241017-00228 (link); *Space Exploration Holdings, LLC Application for Authority for Modification of the SpaceX NGSO Satellite System to Add a Direct to Cellular System*, Order and Authorization, DA 24-1193 (rel. Nov. 26, 2024) (link); *Space Exploration Holdings, LLC, ICFS File Nos. SAT-LOA-20200526-00055, SAT-AMD-20210818-00105, SAT-AMD-20221216-00175; SAT-MOD-20241011-00224 and SAT-AMD-20241017-00228* (rel. Jan. 31, 2025) (link).

This mega-constellation operator not only plans to operate at variance from ITU spectrum allocations (which carefully designate spectrum bands for specific purposes) but also plans to operate without regard for the equivalent power flux density (EPFD) limits that are the only ITU constraint on the level on interference an NGSO system may generate into other satellite networks and systems.

It is evident that this operator would like to rewrite the existing international rules for sharing spectrum on its own terms and operate in a manner that would harm other users of spectrum, including sovereign nations. In addition to the significant increase in interference towards GSO networks, it also seeks to consume an even greater share of the aggregate EPFD interference budget available for all NGSO systems, such that only two mega-constellations would consume it entirely, leaving no room for any other NGSO system from any other nation to share the same spectrum.

If one NGSO constellation is allowed to serve a given administration under these terms, no one else would be able to reliably share these orbital resources. With over 34,000 satellites, potentially with hundreds of beams on each satellite pointable in any direction, employing elevation angles as low as 5 degrees, and serving antennas as small as 15 cm, no one else could predict if their satellite system could operate alongside, regardless of the orbits they use.

## 3. Opportunities for all Commonwealth members in the New Space Age

The effective use of space technology can further support and enable services, across the Commonwealth such as communications, telemedicine, tele-education, banking and trade; enabling and strengthening public services and economic resilience. The risks presented by some facets of this attempt to colonize space by NGSO mega-constellations is discussed in the next section. But first, it's important to take note of ways administrations around the Commonwealth are taking part in the New Space Age. We will briefly look at four aspects of this phenomenon:

- The growth in national space agencies seeking to enable sovereign states to define their own priorities in the New Space Age;
- Provision of critical government services like healthcare and education thanks to affordable satellite connectivity;
- The first truly ubiquitous mobile connectivity, powered by Direct to Device (D2D) satellite communications; and
- Economic gains being unlocked by satellite broadband provided to moving vehicles like planes, trains, and ships;

### A. The Growth of sovereign space agencies: South Africa turns space ambition into reality

National space initiatives continue to flourish, owing the lower barriers to entry of mounting a national space program. For many countries, the first steps into space involve launching a small satellite into Low Earth Orbit for data collection including earth observation to monitor weather and climate patterns, agricultural usage, and border security. These initial satellites typically have short life cycles but can plant seeds for long-term utilization of outer space resources. Other countries make significant investments in sovereign national or regional satellites that can provide for communications coverage for connectivity programs or government agencies; these typically have longer lifecycles and larger investment requirements. As a result, countries considering these first steps into space need to plan ahead on how to use and protection spectrum and orbit resources, as well as to use market access powers to ensure the ability for sovereign networks in the future.

South Africa stands as one of the leading nations in space exploration and satellite technology on the African continent, driven by the innovative work of the South African National Space Agency (SANSA). Established in 2010, SANSA has been instrumental in advancing space science, technology, and engineering to support socioeconomic growth and sustainable development. It has become a template for developing countries taking their first sovereign steps into space.

South Africa's geographic positioning and technical expertise make it an ideal location for ground-based space research, providing key support to global satellite networks and space missions. The country's investment in space-based services has significantly contributed to improving communication, navigation, and Earth observation for agricultural monitoring, disaster management, and environmental protection across Africa.

Among South Africa's major achievements is the development and successful launch of satellites like *SumbandilaSat*, which provided valuable remote sensing data for land and water resource management. South Africa has also played a critical role in hosting and supporting major international scientific infrastructure projects, including the Square Kilometre Array (SKA), the world's largest radio telescope. The country's leadership in space weather monitoring has positioned SANSA as a regional space weather center for Africa, enhancing the continent's capability to forecast solar events that impact critical technologies. These accomplishments reflect South Africa's strategic vision of harnessing space science for innovation, collaboration, and development, establishing the nation as a key player in the global space community.

The recently established Africa Space Agency (AFSA) represents a major step towards unifying Africa's space efforts and positioning the continent as a competitive player in the global space arena. This has the added benefit of including several Commonwealth members' space ambitions. AFSA's mandate includes enhancing space missions across the continent, ensuring optimal access to space-derived data, information, services, and products. By harnessing space technology for sustainable development, AfSA is poised to significantly impact Africa's economic growth, scientific advancement, and capacity building.

**B. Improving citizen services with broadband satellite connectivity: Preserving Jamaica's educational achievement in a global pandemic, and connecting millions of schoolchildren across Brazil**

Viasat and local partner ReadyNet, together with the Jamaican administration, undertook to connect approximately 100 rural schools to satellite-powered broadband. The sites, which use an ultra-high throughput geostationary Ka-band ViaSat satellite, allowed children to stay connected to the service during lockdown, via a Wifi network in the community. This allowed for the schools, many of which were in areas with only 2G coverage, to access high-definition video conferencing, multiple-device streaming services and online educational platforms.

This type of improved access to and affordability of broadband satellite communication has allowed administrations around the world to deploy healthcare via telemedicine posts in hard-to-reach areas, and to ensure equitable educational opportunities through distance learning. Both applications matured greatly during the global COVID-19 pandemic, giving national administrations additional tools to meet the needs of that particularly challenging time.

There has been significant growth in satellite services that involve the deployment of a large number of small form-factor user terminals, including for GSO satellites. This growth is fueled by consumer demand for high quality broadband connectivity regardless of their location, a demand that satellites are often uniquely positioned to address. The technological developments of space and ground segments are further enabling the ability to service this demand by providing higher data rates at reduced cost. Much of this growth in satellite services is expected to be met by the deployment of small user terminals, particularly in the Ka band.

Perhaps the largest government satellite connectivity project in the world, nearly 35,000 public schools and hundreds of additional sites across Brazil have already received access to high-speed internet through the Brazilian state's satellite, called "Geostationary Satellite of Defense and Strategic Communications" (SGDC-1), under the initiative of the Ministry of Science, Technology, Innovations and Communications (MCTIC) through the Brazilian e-government initiative "Governo Eletrônico - Serviço de Atendimento ao Cidadão (GESAC)." This amounts to close to 3 million Brazilian students brought online through the program, with the resulting significant positive impact on social and economic development in the underserved parts of the country.

Hundreds of additional sites have also benefited, such as border patrol posts from the armed forces, public health units and indigenous villages. In this partnership, Telebras is responsible for the management, commercialization and operation of the SGDC-1 satellite, while Viasat provides its terrestrial network equipment and satellite services widely used in the international market. Jointly the companies are focused on maximizing the use of the SGDC-1 satellite's capacity to bring high-speed broadband services to communities where internet service has historically been unavailable.

## C. Direct to Device (D2D) connectivity: From India to the world

In October 2024, Viasat and BSNL, India's telecommunications provider, successfully showcased satellite-powered two-way messaging services using a commercially available Android smartphone enabled for non-terrestrial network (NTN) connectivity. The messages were sent roughly 36,000km to one of Viasat's geostationary L-band satellites. The outcome proves satellite services to cell phone connectivity is technically feasible for Indian consumers and businesses using geostationary satellite networks. Direct-to-Device (D2D) could help reduce barriers to accessing satellite connectivity – particularly in India where millions do not have access to reliable terrestrial connectivity. In the future, D2D could help transform the Indian production and supply chain to become more efficient, more sustainable and safer, and support automotive applications to enhance safety and conditions-based maintenance.

The introduction of standards, beginning with 3GPP Release 17, ensures an open market for satellite and mobile equipment manufacturers to build interoperable equipment that can leverage the Mobile Satellite Service (MSS) bands that are already licensed and globally harmonized for this purpose, without relying on scarce IMT spectrum which can be better used terrestrially. Existing MSS networks and systems that operate in bands already allocated by the International Telecommunication Union (ITU) to MSS on a primary basis can communicate seamlessly with standardized terrestrial mobile end-user devices, including in the L- and S- bands.[2] While satellite has long been a provider of capacity to the mobile industry, new business models allow for greater integration and flexibility for both mobile and satellite operators. The advent of D2D service allows for truly ubiquitous coverage in the most geographically challenging places, for the first time ever.

Several factors have led to the growing demand for D2D services. Significant portions of the world rely on satellite connectivity as they have little to no terrestrial infrastructure that provides coverage. In the Americas, for example, 22% of the rural and isolated population is not covered by any terrestrial mobile signal, while an additional 5% only have access to a 2G network—meaning that 27% of that population is unable to access the Internet in a meaningful way.

Within 3GPP, ongoing standardization activities related to Non-Terrestrial Network (NTN) services[3] include satellite as a key part of 5G systems in 3GPP Release 17 and beyond. This standard enables the integration of 5G terrestrial networks with satellite network and systems, including as necessary to support the provision of satellite connectivity directly to

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[2] The L- and S- bands include the following bands:

- 1518-1525 MHz (space-to-Earth) paired with 1668-1675 MHz (Earth-to-space)
- 1525-1559 MHz (space-to-Earth) paired with 1626.5-1660.5 MHz (Earth-to-space)
- 1610-1626.5 MHz (Earth-to-space) paired with 2483.5-2500 MHz (space-to-Earth)
- 1980-2010 MHz[2] (Earth-to-space -- 1980-2025 MHz in Region 2) paired with 2170-2200 MHz (space-to-Earth – 2160-2200 in Region 2).

[3] Non-terrestrial network (NTN) refers to a Radio Access Network (RAN) that provides non-terrestrial access with 5G New Radio (NR), 4G NB-IoT or 4G eMTC radio interfaces to user equipment by means of an NTN payload embarked on an airborne or space-borne NTN vehicle and an NTN gateway (see 3GPP TS 38.300).

handheld devices (including mass-market consumer smartphones). For the first time, satellite services can leverage the economies-of-scale made possible by using MSS-allocated spectrum and being included as an integral part of the 3GPP ecosystem. Many MSS operators are planning to leverage this 3GPP-defined NTN standard to enhance the services MNOs already provide to consumers' mobile devices, while chip, device and infrastructure vendors are poised to provide devices and network equipment that readily integrate with terrestrial mobile networks.to ensure ubiquitous connectivity.

The L- and S-bands have been widely allocated and licensed for MSS by regulators and, a stable framework already exists that ensures successful use of this spectrum, including for D2D without concerns about interference, and while respecting national security and sovereignty concerns related to the provision of service direct to mobile handsets. Stated differently, the environment for these MSS bands is ready *today* to support the provision of new D2D applications.

In February 2024, the Mobile Satellite Services Association (MSSA) was formed to promote the development of a D2D ecosystem and create new opportunities via open, standards-based solutions.[4]

## D. In-Flight Connectivity (IFC): Broadband for aircraft, vessels, and terrestrial vehicles helping European airlines compete

In 2017, the European Aviation Network (EAN) was launched, using an S-band MSS satellite and a complementary terrestrial component to deliver seamless broadband services to European airlines, including British Airways flying over Europe. While providing a reliable broadband service that supports streaming and other high bandwidth requirements, the EAN provides additional value to airlines through the employment of small, low weight, low drag terminals, enabling cost-savings and advancing sustainability initiatives. This creates a market differentiator for carriers in a highly competitive market.

EAN is a unique example of European technological and regulatory leadership, allowing travelers in Europe to benefit from an outstanding, pan-European In-Flight Connectivity (IFC) experience. The EAN partnership leverages some of Europe's leading technology companies, including Viasat, Thales Alenia Space, Nokia, and Deutsche Telekom, and dozens of others. For European airlines, it unlocks ancillary revenue opportunities, delivers cost savings and improves operational efficiency, while reducing carbon emissions. In fact, connected aircraft have the potential to save airlines $15 billion annually in operational costs and 21.3 million tons of $CO^2$ by 2035.

New applications for satellite broadband, like Earth Stations in Motion (ESIM) allow for high-throughput broadband service on board moving vessels, aircraft, and vehicles, offering valuable service to passengers and crew, generating new revenue streams for airlines, and

[4] *See:* www.mss-association.org for further information.

allowing maintenance crews to perform better predictive analytics to improve safety and on-time performance. These satellite-powered ESIMs fly millions of passengers to and from Commonwealth countries every year, all around the world, providing connectivity and valuable services to promote economic productivity and ubiquitous connectivity.

Aircraft, ships and land vehicles need consistent connectivity when they travel long distances and also operate in areas outside terrestrial coverage. There is soaring demand by passengers to be connected while travelling. This demand is transforming the aviation and maritime industry and is facing rapid adoption by the terrestrial transportation sector, including the rail, inter-city bus, and long-haul trucking industries.

## 4. Risks to the New Space Age

In this section, Viasat details the emerging threats from NGSO mega-constellations, introduced above. The following issues are clearly interrelated, and national regulation should seek to address each of these elements in line with national policy priorities in a holistic manner. The existing international framework for shared use of space never envisioned the current circumstances in which a few commercial actors from one nation would dominate virtually all available satellite spectrum along with the best orbits around the Earth. While work in the International Telecommunication Union (ITU) and the United Nations Committee for the Peaceful use of Outer Space (UN COPUOS) is ongoing, the timelines and processes for these international fora almost certainly precludes effective and timely action. Ensuring sustainable use of orbit and spectrum resources for the benefit of all end users of satellite services segment should be approached holistically, with a particular focus on of several interlinked components:

- **Continued availability of spectrum and associated orbits for all nations, including protecting the sharing environment to benefit different satellite systems and technologies and to ensure room for future innovation in GSO and NGSO;**

- **Safe and reliable access to the lanes in the space highways in LEO itself and on the way to GSO orbit and beyond, including managing to acceptable levels collision risk in increasingly congested orbits in LEO;**

- **Acceptable impact to the environment and the human life, including:**
  a. Damage to the Earth's atmosphere, human life, and Earth itself from the daily disintegration of defunct LEOs at the end of orbital life and the continued launch of tens of thousands of replacements;
  b. Increase in marine toxicity from atmospheric ablation and link to human health issues; and
  c. Damage to optical astronomy, asteroid detection systems, and indigenous cultural practices from the light reflected by LEOs in night skies;

- **Preservation of a competitive marketplace to promote innovation.**

These topics are comprehensively covered in other Viasat white papers "Ensuring Innovation and Growth Opportunities in the New Space Age[5]," and "Managing Mega-Constellation Risks in LEO[6]." The following discussion covers certain elements most relevant in light of recent developments.

Regulation of NGSO constellations by national administrations at the market access stage is necessary and appropriate to manage the risks outlined above, ensure equitable access to the space environment in the short, medium and long term, and provide a guide for other like-minded countries to emulate and build a framework of national regulations that allow everyone to benefit from of the global commons in the spectrum and orbits around Earth. Absent the adoption of suitable regulatory limitations at the market access stage, an administration could not ensure the opportunity for its national satellite systems (or competitive systems) to share the same scarce orbital or spectrum resources. **Action is needed urgently. It will not be possible to mitigate these risks once the sky is populated with tens of thousands of satellites operating with no meaningful constraints in place to ensure others can share.**

Reliable access to both spectrum and associated orbits drives the ability to meet evolving commercial, civic and military needs, and the ability of every nation to participate in the global space economy.

If one NGSO constellation is allowed to serve a given territory under these terms, no one else would be able to reliably share the same orbital resources. With over 34,000 satellites, potentially with hundreds of beams on each satellite pointable in any direction, employing elevation angles across the entire sky and as low as 5 degrees, and serving antennas as small as 15 cm with wide beamwidths that make spectrum sharing more difficult, no one else could predict if their satellite system could operate alongside, regardless of the orbits they use.

***Overconsumption of spectrum and orbital resources in LEO space is a significant and growing threat to humanity's use of space.***

The overconsumption of spectrum resources, with regards to the energy limits set in place to protect GSO networks from NGSO interference, called the Equivalent Power Flux Density (EPFD) limits, could have very negative consequences for nations trying to use space for their national policy objectives. These limits are enshrined in the ITU Radio Regulations and are the backbone for a vast array of international spectrum use rules. As shown above, GSO remains a key part of the communications networks for Commonwealth member states around the world and will remain so for the foreseeable future. Thus, ensuring they are adequately

[5] *See:* Viasat, Inc. *"Ensuring Innovation and Growth Opportunities in the New Space Age," available at:* https://www.viasat.com/content/dam/us-site/corporate/documents/Ensuring%20Innovation%20and%20New%20Opportunities%20in%20the%20New%20Space%20Age%20(Updated%20March%2013%202024)(A4).pdf

[6] *See:* Viasat, Inc. "Managing Mega Constellation Risks in LEO," available at: https://www.viasat.com/content/dam/us-site/corporate/documents/Viasat%20White%20Paper-Managing%20Mega-Constellation%20Risks%20in%20LEO%20(Updated%20Nov%2022)%20(A4).pdf

protected from interference is of critical importance to those administrations. Likewise, many nations are planning their own NGSO networks, whether for scientific or national security purposes, and ensuring those networks have adequate available spatial look angles and spectrum is a key consideration for the success of those efforts. In particular, a) noncompliance with EPFD limits by one or two NGSO operators (or the modification of these limits in the ITU Radio Regulations) and b) the overconsumption by one or two companies of EPFD budgets (both single-entry and aggregate) and spatial look angles across vast swaths of spectrum, threaten to harm both GSO and NGSO operations by all others.

***Impact of noncompliance with EPFD limits***

EPFD limits are the only meaningful metric that constrains what interference a large LEO constellation can generate. The recent proposal by a US-based operator for the US FCC to effectively de-obligate it from these EPFD limits and increase interference by a factor of ***at least 100*** would:

(i) Adversely affect tens of billions of dollars of satellite investment by GSO operators and users from all nations – and the vital missions GSO satellites fulfil, including the provision of communication, broadcast, scientific, civic, and defense/security services
(i) Degrade and disrupt GSO service (e.g., disrupt a critical communication link, video call, or real-time news or sports event and increase the time needed to recover from such disruption)
(ii) Reduce GSO network capacity and constrain the deployment of more advanced, higher capacity GSO networks (offering more and better services at a lower cost per bit); and
(iii) Prevent the deployment by GSO operators of the same types of small user terminals (UT) that NGSO operators already can deploy today (including small terminals for mobility applications).

All nations must be able exercise their sovereign right to access and use finite, shared spectrum resources to support the deployment and operation of GSO and NGSO satellites for the policy objectives they wish to support. The plans of NGSO mega-constellations to avoid compliance with longstanding EPFD limits would allow them NGSO operators to deploy whatever terminals they want, while making it harder for GSO operators to compete by deploying the same types of small terminals NGSO operators currently deploy—terminals GSO operators are otherwise permitted to deploy under the current international rules.

At the ITU, the discussion about potential modification to the epfd limits was vociferously rejected by an overwhelming majority of countries at WRC-23, including many Commonwealth members from across the globe. Nevertheless, a minority of countries backed by two companies continues to attempt to propose changes to the limits in the Working Party 4A process, despite the direction by the WRC-23 plenary that there be no such regulatory changes.

This has had the detrimental effect of delaying critical work, developed by international consensus, toward improving the S.1503 software tool and evaluation of aggregate EPFD that the ITU and administrations alike use and need to model the single-entry and aggregate epfd

compliance of large constellations. With operators continuing to launch and operate large LEO constellations, it is critical to have adequate tools for determining the impact to the spectrum environment.

***Impact of overconsumption of aggregate EPFD budget by some NGSO operators***

The aggregate EPFD limits define the interference that all NGSO systems, collectively, may generate towards GSO network and thus establish a total interference budget that must be shared by ALL NGSO systems in a given band. The single-entry EPFD limits were established based on an apportionment to a single NGSO system of a portion of the applicable "aggregate" EPFD limits. To avoid disproportionate consumption by a single NGSO operator of the aggregate EPFD interference budget, it is critical to treat all the NGSO satellites of one NGSO operator as one single system; this needs to be enforceable in domestic market access to ensure operators stay within the limits and to avoid damage to the national market.

Notably, based on its US FCC's authorizations, a single operator is being allowed to consume two portions of the aggregate EPFD budget by artificially dividing its operations into two indistinguishable components. Together with the NGSO system of another US operator, these two operators are able to consume 86% of the aggregate epfd limit that must be shared amongst all NGSO systems in the world. *If the latest proposal is adopted, those two operators would be able to consume 100% of that aggregate limit.* This would leave no room for other operators to come into the market and would stifle innovation and be a disservice to end users.

***Flawed spectrum sharing methodologies between NGSO systems unduly benefit mega-constellations***

Under ITU rules, NGSO system operators are required to coordinate the use of the same spectrum with other NGSO system operators. For various reasons, coordination may not be achieved between two NGSO operators and in such case, a large NGSO system with many thousands of satellites would have multiple satellite selection options to protect itself from interference. Meanwhile, a smaller NGSO system, with fewer satellites to select from, is at risk of receiving interference from larger NGSO systems and being 'blocked' from providing service. And even where coordination is "agreed", it often comes at a huge commercial price. As recent press reporting reveal, one NGSO operator also "wields power over satellite rivals" to boost the commercial success of its NGSO system by having them cede valuable spectrum rights during launch contract negotiations.[7]

One of the methodologies advocated for shared spectrum use between two NGSO systems is based on the amount of *average* throughput degradation one NGSO system may cause to

[7] *See: Wall Street Journal, "SpaceX Wields Power Over Satellite Rivals to Boost Starlink: Elon Musk's space company asked rival satellite operators to cede valuable spectrum rights during talks to negotiate launches," available at: https://www.wsj.com/business/telecom/spacex-wields-dominance-in-rocket-launches-to-boost-starlink-fde71f17?st=fS1SfD&reflink=desktopwebshare_permalink*

another NGSO system. Driven by mega-constellations that are at little risk under this methodology, it masks the impact of NGSO system interference on specific performance objectives and does not provide the certainty needed for the Service Level Agreements (SLAs) that are vital for many end users. Simply put, the evaluation of interference from a NGSO system into another NGSO system based on this methodology does not ascertain the actual level of interference in real world – where services are provided to consumers with performance guarantees.

Furthermore, the statistical models make a number of flawed assumptions that underestimate interference. For example, at traffic hotspot locations like airports, ports or population centers, the methodology does not account for the increased demand (and thus the expected interference into the smaller NGSO system), because it relies on an unrealistic assumption that random satellites are serving the location (instead of considering how many and which satellites likely would be needed for prolonged period of time to meet local demand). The models also fail to consider all of the interference that is generates by the sidelobes of an NGSO system, which could be considerable given that thousands of those sidelobes could produce interference at any given time.

To make matters worse, such flawed approaches are now being proposed to significantly increase the interference towards GSO networks and replace the well-established EPFD framework that limits the interference from NGSO system into GSO networks to an acceptable level. Many such GSO networks and smaller NGSO systems are operated by or on behalf of sovereign states, for critical purposes ranging from defence to rural connectivity, thus posing a risk to the government's investments in sovereign space networks. It is critical for regulators to conduct a detailed and technical review of the spectrum sharing potential of any given NGSO mega-constellation to ensure that it does not unduly constrain the availability of key orbital and radio spectrum resources for other operators and governments.

### ***Managing the risk of mega-constellations bypassing sovereign national infrastructure***

The widespread availability of direct to device (D2D) service to ubiquitously used cell phones is a global wake-up call to nations about the threats poses by a few mega-constellations. D2D empowers anyone, or anything, in any country in the world to be directly connected to space — emboldening certain operators to seek to bypass every form of sovereign management of telecom, computing, and cloud infrastructure. It is a stark reminder that there are no borders in space. Ensuring continued peaceful and reliable access to and use of space demands global cooperation and policies while respecting national sovereignty. Satellite systems offering D2D connectivity must be required to ensure compliance with national telecommunications and security requirements.

Fortunately, new approaches are being proposed to offer vital connectivity, avoid these risks and satisfy these critical national goals. A very promising alternative is reflected in the vision of an open, interoperable approach for deploying an NGSO constellation to provide D2D

connectivity as recently endorsed by the European Space Agency (ESA)[8]. Such an approach is designed from the outset to ensure compliance with national telecommunications requirements and otherwise ensure satisfaction of sovereign interests, and it also is globally scalable. This inclusive way forward not only provides all nations the ability to play significant roles in developing next-generation space infrastructure and gain share in a highly competitive market. It also provides nations with access to autonomous, seamless and resilient connectivity solutions that drive technological competitiveness on the global stage.

***Preserving a competitive space marketplace for sustainable use of space resources and continued innovation***

Recent press reports in the Financial Times[9] and Wall Street Journal[10] highlight growing market distortions created by mega-constellations that threaten the ability of stakeholders from Commonwealth countries (whether satellite operators, manufacturers, supply chain participants, financiers, launch operators, or insurers) to participate in the global space economy.

As shown above, once-reliable access to spectrum and orbital resources is at increasing risk of foreclosure. Those essential inputs and the availability of launch services are increasingly being dominated by one vertically integrated and self-financed company that plans to deploy upwards of 34,000 satellites into LEO. These developments that threaten administrations' sovereign ability to exploit space for their benefit warrant a policy response at the highest levels of the Commonwealth administrations and appropriate regulation by national regulators. And yet, in many jurisdictions, NGSO mega-constellation operators seeking market access are not held to a competition review, despite the clear opportunity to use their market dominance in ways that can harm consumers.

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8 *See:* "ESA and Viasat to explore advanced satellite direct-to-device connectivity", available at: https://www.esa.int/Applications/Connectivity_and_Secure_Communications/ESA_and_Viasat_to_explore_advanced_satellite_direct-to-device_connectivity

9 *See: Financial Times, "The satellite spectrum battle that could shape the new space economy: Elon Musk's SpaceX is pushing to loosen power limits on transmissions in low Earth orbit, a move that some fear could give upstart US operators more power," available at: https://www.ft.com/content/ac7702c8-238f-4656-bd26-a2ba445af971*

10 *See: Wall Street Journal, "SpaceX Wields Power Over Satellite Rivals to Boost Starlink: Elon Musk's space company asked rival satellite operators to cede valuable spectrum rights during talks to negotiate launches," available at: https://www.wsj.com/business/telecom/spacex-wields-dominance-in-rocket-launches-to-boost-starlink-fde71f17?st=fS1SfD&reflink=desktopwebshare_permalink*

## 5. Towards a national regulatory framework on NGSO Mega-Constellations that protects sovereignty

As this paper demonstrates, regulating spectrum use has a direct impact on the satellite sector's structure and growth trajectory, investment appetite, and costs in any given country. Protecting national sovereignty and the opportunities of the New Space Age requires urgent proactive regulatory measures to be taken at the market access level, while respecting a balance for market openness in the near term and ensuring competitive markets for the longer term. **These measures should be in place prior to licensing NGSO mega-constellations, when an administration's market access authority holds the most power.**

Viasat appreciates administrations' attempts to deal with the challenges posed by NGSO mega-constellations. Many countries are actively working on national solutions to these novel issues. We recommend further enhancement and futureproofing by reinforcing key regulatory principles, to:

- Ensure increased opportunities for competition and the entry of additional satellite services within the market---whether commercial, civil, scientific, defense and security, or other sovereign uses by developing suitable policies regarding the use of spectrum and orbits to serve an administration.
- Manage the risk of undue influence that vertically integrated mega-constellations have terms for coexistence with other satellite operators.
- Ensure that a given administration can continue to, or have access to, benefit from the peaceful use of outer space today and in the future.
- Minimize the impact of the re-entry of NGSO satellites on the Earth's atmosphere, the marine environment and human health.
- Ensure that the scientific impact of mega constellations on the optical and radio astronomy is minimized.
- Ensure that the natural night sky is preserved to protect the cultural rights of indigenous peoples.

The emergence of mega-constellations creates risk to **the ability of sovereign nations to operate in space today and in the future.** To that end, Viasat proposes high-level policy objectives, with the following high-level requirements for mega-constellations seeking to serve an administration's territory:

A. **Avoid undue interference into GSO networks generated by NGSO systems,**
B. **Ensure large NGSO constellations share frequencies and orbital resources effectively with other NGSOs,**
C. **Take concrete steps to limit safety risks posed by NGSO operations.**
D. **Adopt measures to implement life cycle assessment of NGSO mega constellations in order to limit their impact on the Earth's atmosphere, and**
E. **Take measures to limit the impact of NGSO mega constellations on scientific and other communities (Dark & Quiet Skies).**

These measures may require adaptation for some of the national circumstances and priorities of different administrations but serve as the minimum requirements to preserve sovereign access to space resources and allow administrations to chart their own path to using spectrum and orbits above their territories.

Commonwealth nations have the opportunity to act in harmony to promote the sustainable use of space resources and protect their sovereign rights to space. As thought leaders recognize, it is imperative that preventative action be taken now at the national level because *we just won't reach international consensus in the short term* on a new framework for regulating large LEO constellations,[11] Commonwealth nations can agree to harmonize policies for market access and enforcement of the regulatory objectives mentioned above.

Indeed, there is already leadership in this regard from within the Commonwealth. In 2023, His Royal Highness King Charles III launched the "Astra Carta", providing clear leadership for Commonwealth nations to recognize the growing role of the private sector in space activity and exploration, and to offer an ambitious roadmap to address pressing issues in space sustainability, including particular focus on Equitable Access and Creating Sustainable Markets in Space.[12] Supporters of the Astra Carta acknowledge "the imperative of sustainable development in space – the harmonious integration of human progress and environmental protection are essential to ensure the wonders of the universe remain bountiful and resilient for future generations."

[11] R. Buchs, "Policy Options to Address Collision Risk from Space Debris," Lausanne: EPFL International Risk Governance Center (2021), at ii ("Given that the prospect of reaching consensus in the short term is very low, governments are advised to take unilateral but coordinated action by improving their national regulations."), available at: https://infoscience.epfl.ch/entities/publication/36f1fbdb-aa1b-4c36-8419-2c9ad7bdd071

[12] *See:* "Astra Carta: To Care for the Infinite Wonders of the Universe" available at: https://www.sustainable-markets.org/AstraCarta_charter.pdf

Submitted via electronic mail
consultations@ofreg.ky

9 May 2025

The Utility Regulation and Competition Office
3rd Floor, Monaco Towers II
11 Dr Roy's Drive
George Town, Grand Cayman
Cayman Islands

**Re: Comments on ICT 2025 – [1] – Draft Determination**
**Proposed Framework for the Licensing of Satellite-Based Telecommunications Providers**

Kuiper Systems LLC ("Kuiper"), a wholly owned subsidiary of Amazon.com Services LLC (together, "Amazon"), extends its gratitude to the Utility Regulation and Competition Office ("OfReg") for the opportunity to provide comments on the Proposed Framework for the Licensing of Satellite-Based Telecommunications Providers ("Proposed Framework"). Amazon commends OfReg for its ongoing efforts to update its licensing framework to reflect the significant technological evolution of satellite-based connectivity offerings.

## I. Background

Amazon's Project Kuiper will bring high-speed, low latency broadband to unserved and underserved communities globally. In July 2020, the U.S. Federal Communications Commission ("FCC") authorized Kuiper Systems LLC to deploy a constellation of non-geostationary satellite orbit ("NGSO") fixed-satellite service ("FSS") satellites in low Earth orbit ("LEO") using Ka-band frequencies ("Kuiper System"). Since committing to invest over 10 billion U.S. dollars in the Kuiper System, Amazon has made significant strides toward deployment, including the successful launch and operation of test satellites validating its system design, the continued expansion of its terrestrial infrastructure, and the unveiling of innovative customer terminals ("CTs") that will offer high performance in small form factors at affordable price points. Amazon has begun launching its satellite constellation and plans to begin offering commercial service in certain areas of the world this year. Amazon will expand coverage as it continues to deploy the Kuiper System, further advancing its goal of providing affordable, accessible, and high-quality broadband services to residential, governmental, and enterprise customers.

## II. Comments on the Proposed Framework

Amazon commends OfReg for recognizing the value that ubiquitous satellite connectivity brings to customers in the Cayman Islands and for taking steps to ensure that the Cayman Islands regulatory framework promotes the widespread proliferation of connectivity services. In developing this framework,

Amazon respectfully requests that OfReg account for the operational differences between satellite and terrestrial systems by reconsidering its proposal to impose per channel spectrum fees for Type H (Satellite Service Provider) licences.[1]

Amazon appreciates OfReg's recognition that a technology neutral approach does not require "service neutrality" and that there are "unique characteristics" of satellite-based service that justify different treatment from terrestrial fixed or mobile services, even where end-user experiences may be similar.[2] One area where satellite technology differs from those of other broadband providers is in satellite operators' access to and use of spectrum. Unlike terrestrial providers, satellite operators do not have exclusive use of particular spectrum bands. Multiple satellite operators share the same spectrum bands, with interference across different satellite networks resolved through frequency coordination mechanisms. Terrestrial operators require comparatively less spectrum for their systems than satellite operators due to their exclusive, and therefore unconstrained, spectrum access to particular bands. In contrast, satellite operators must use the full swathe of available shared spectrum to provide customers with connectivity offerings because the shared spectrum is more susceptible to interference and may be impaired. Pricing schedules for satellite operators based on terrestrial models would therefore result in satellite operators paying far more to operate their systems, contrary to OfReg's intent that "satellite and non-satellite uses pay the same amount."[3] Recognizing that satellite operator spectrum access and use differs from other types of broadband providers, Amazon respectfully requests that OfReg reconsider its proposal to define a channel for each frequency range "based on those which apply to other services with which the spectrum is shared" in determining fee allocations for satellite operators in the Cayman Islands.[4]

Instead, Amazon encourages OfReg to adopt a fee structure based on recovery of OfReg's reasonable regulatory costs. This could include, for example, the costs associated with application processing, regulatory management, and OfReg's monitoring, control, and enforcement activities. This structure better accounts for the shared nature of satellite spectrum across multiple operators and provides for more equitable fee assessment for satellite and terrestrial services. Spectrum fees based on the principle of administrative cost recovery are also better suited to foster the deployment of satellite services, which require intensive upfront capital expenditures that take time to recover.

This cost-recovery model aligns with regional approaches to satellite fee assessment. In the United States, the FCC assesses regulatory fees for satellite providers "to recover the costs" associated with its regulation of satellite providers.[5] Further, countries that continue to assess fees on the basis of spectrum use have sought to reduce fees significantly to account for the differences between satellite and terrestrial systems. For instance, in Panama, the National Authority for Public Services recently reduced its satellite spectrum licence fees by 75% to further facilitate the deployment of high-performance satellite systems and close

[1] *See Draft Determination Proposed Framework for the Licensing of Satellite-Based Telecommunications Providers*, Utility Regulation and Competition Office, §§ 16, 58-59 (April 17, 2025).

[2] *Id.* at §§ 23-24.

[3] *Id. at* § 58.

[4] *Id.*

[5] 47 U.S.C. § 159. *See id.* at § 158(a) ("The [FCC] shall assess and collect application fees at such rates as the Commission shall establish in a schedule of application fees *to recover the costs* of the [FCC] to process applications.") (emphasis added).

the digital divide.[6] Similarly, in a 2024 public consultation, the Utilities Regulation and Competition Authority of the Bahamas proposed a reduced spectrum fee for domestically registered and licensed earth stations in motion ("ESIM") and FSS licensees of $0.70 per MHz.[7] Such fee schedules encourage the entry of satellite providers while also providing national regulators with the necessary capital to carry out their jurisdictional duties as related to satellite spectrum usage. This cost recovery model and regional alignment would further enable satellite operators, including Amazon's Project Kuiper, to more efficiently deploy connectivity to underserved and unserved customers.

## III. Conclusion

Amazon is grateful to OfReg for the opportunity to contribute to the Proposed Framework and looks forward to working with OfReg to expand broadband access. We welcome the opportunity to discuss these comments or any other issues of interest in this submission.

Respectfully submitted,

***/s/ Madeleine Lottenbach***

Madeleine Lottenbach
Senior Lead, Licensing & Regulatory Affairs
Project Kuiper
*On behalf of Kuiper Systems LLC*

[6] *See Modernization of Regulations for Deployment of New Satellite Access Technologies,* Informative Document, OAS/Ser.L/XVII.4.1.44, CCP.I-TIC/doc. 5518/24, Delegation of the Republic of Panama (April 29, 2024) (referencing Autoridad Nacional de los Servicios Públicos, *AN No.19022-Telco de 2024-02-22, G.O. No. 29976-A del 26 de febrero de 2024*, https://asep.gob.pa/an-no-19022-telco-de-2024-02-22/ (last accessed April 18, 2025)) (attached as Appendix I).

[7] *See Regulatory Framework for Satellite-Based Electronic Communications Services in the Bahamas*, Consultation Document, ECS 75/2024, Utilities Regulation and Competition Authority (Dec. 9, 2024), https://urcabahamas.bs/wp-content/uploads/2024/12/Consultation-Document-URCA-satellite-regulatory-framework-06Dec2024.pdf.

**Appendix I**

(Modernization of Regulations for Deployment of New Satellite Access Technologies – English Translation)

**ORGANIZATION OF AMERICAN STATES**
**ORGANIZATION OF AMERICAN STATES**

**Inter-American Telecommunications Commission**
**Inter-American Telecommunication Commission**

**44th Advisory Committee Meeting**
**PERMANENT I: TELECOMMUNICATIONS/ INFORMATION AND TECHNOLOGY COMMUNICATION**
**May 20-24, 2024**
**Panama City, Panama**

**OAS/Ser.L/XVII.4.1.44**
**CCP.I-TIC/doc. 5518/24 April 29, 2024**
**Original: Spanish**

# MODERNIZATION OF REGULATIONS FOR DEPLOYMENT OF NEW SATELLITE ACCESS TECHNOLOGIES

**(Agenda point: 4.2.2)**

**(Informative document presented by the Delegation of the Republic of Panama)**

**Impact on the sector:**

Information document on some provisions for the use of next-generation satellite systems and the **financial compensation for their use,** aimed at ensuring greater access to broadband in rural, hard-to-reach, and/or unserved areas, facilitating connections for the unconnected, and closing the digital divide in our country.

**Executive Summary:**

The National Authority for Public Services (ASEP) of Panama, based, among other things, on the UN 2030 Agenda in the section ***"Industry, Innovation and Infrastructure"*** established within the Sustainable Development Goals (SDGs) and on **Resolution AG/RES. 2966 (LI-O/21)** of the **OAS.** which considers the global telecommunications/ICT infrastructure to be a fundamental and indispensable input for global and national economies and for the well-being of all societies, made the modification to the satellite regulations.

Considering the aforementioned recommendations, in addition to adapting the provisions for the use of next-generation satellite systems, ASEP, through **Resolution AN No. 19022-Telco of February 22, 2024,** established a 75% reduction in the value of the fee, since the value of the previous fee was considered a barrier to closing the digital divide, since new generation satellites, called high-performance or *"High Throughput Satellites",* require significant bandwidths of hundreds to thousands of Megahertz, which would generate high fee costs that discourage the entry of these new technologies.

# CABLE AND WIRELESS

**Response to The Office's Consultation on**

# ICT 2025 – [1] – Draft Determination Proposed Framework for the Licensing of Satellite-Based Telecommunications Providers

## 1. INTRODUCTION

**1.1** Cable and Wireless (Cayman Islands) Limited dba Flow is pleased to provide comments and remarks on The Office's **ICT 2025 – [1] – Draft Determination Proposed Framework for the Licensing of Satellite-Based Telecommunications Providers** (the Consultation Document) published April 17, 2025.

**1.2** Flow's response to this Consultation Document is to be read in conjunction with its response to **ICT 2024 – 2 - Consultation Framework for the Licensing of Satellite-Based Telecommunications Providers** (Initial Consultation), published November 21, 2024.

**1.3** Flow expressly states that failure to address any issue raised in the Consultation Document does not necessarily signify its agreement in whole or in part with any position taken on the matter by the Commission or respondents. Flow reserves the right to comment on any issue raised in the Consultation Document at a later date.

**1.4** Please send all responses to this Consultation Document and any matters arising to Bruno Delhaise at bruno.delhaise@cwc.com and Gavin Dixon at gavin.dixon@cwc.com .

## 2. OFREG'S DRAFT DETERMINATION

The Office's Draft Determination is as follows:

***D. Draft Determination***

*16. The Office is proposing the following:*

*• The introduction of a new class of major ICT licence: (Type H) Satellite Service Provider (SSP). All rules and requirements associated with terrestrial licensees (including the payment of fees, legal intercept and outage reporting) will apply with the exception of:*

*• the requirement to peer with other terrestrial operators to keep all locally generated and terminated telecommunications traffic onshore. This will only be required for SSP licensees who have the necessary infrastructure to effect it.*

*• Spectrum fees for Type H licences will be levied on a 'per channel' basis, where a channel is defined as follows:*

| ***Frequency Range*** | ***Channel Size*** |
|---|---|
| *Below 470 MHz* | *12.5 kHz* |
| *470 MHz – 7.125 GHz* | *5 MHz* |
| *7.125 – 37 GHz* | *28 MHz* |
| *Above 37 GHz* | *100 MHz* |

*• The application fee for a Type H licence shall be CI$3500.00 and the renewal fee shall be 50% of this value, as it is currently for other ICT service provider licences.*

*• The licensing of Very Small Aperture Terminals (VSAT) associated with the provision of a service by an SSP will be included within the SSP licence. Any VSAT used for connectivity other than through a licensed SSP will still require a Type E1 or Type E2 licence as per the current regulations.*

*• Introduction of a definition of the (Type 9) Internet Service Provider licence to provide clarity and distinction between licence types, as follows:*

*• "The provision of internet (or other data) services to homes or businesses through wireline, wireless terrestrial or satellite means"*

*• The introduction of a new class of ICT service: (Type 17) Connectivity Service Provider. This would cover the provision of private end-to-end connectivity (voice or data), i.e. which is not connected to the PSTN or Internet.*

• *The application fee for a Type 17 licence shall be CI$1500.00 and the renewal fee shall be 50% of this value. Licensees already providing this service shall have their licenses modified to include this service type without a fee.*

## 3. FLOW'S COMMENTS ON OFREG'S DRAFT DERTERMINATION: NON-DISCRIMINATION. TECHNOLOGY NEUTRALITY. CONSISTENT REGULATORY FRAMEWORK

### 3.1 Type H Satellite Service Provider (SSP) Licence

**3.1 (i)** Ofreg states that:

> 17. *Most respondents felt that a separate class of licence for satellite services would be beneficial in permitting the tailoring of the licence to the specifics of satellite-based service delivery*

**3.1(ii)** '*Most respondents*' are the satellite operators and their affiliated organisations. There were responses from seven (7) satellite organisations, three (3) local service providers in the Cayman Island and One (1) local Caymanian business. Ofreg's statement at paragraph 17 may lead terrestrial operators to be concerned that being three (3) rather than seven (7) is an obvious disadvantage.

**3.1(iii)** The Office's statement, prove Flow right in its response to the Initial Consultation, where it states that:

> *2.24 The outsize economic power of satellite-based telecommunications providers, like LEO satellite constellation and their investment consortiums has enormous implications for competition and regulation in Cayman. It means that Pan Caribbean operators, and local operators, are in a weak position compared to global LEO satellite consortiums, funded by private equity, powerful tech companies, and invested governments*

**3.1 (iv)** Flow cannot support the introduction of a new class of major ICT licence (Type H) for Satellite Service Providers (SSPs) because it inherently establishes an unlevel playing field among providers of the same service.

**3.1 (v)** We, however, acknowledge the extent to which the Office has sought to align the rules and requirements with those applicable to terrestrial licensees, including payment of licence/ regulatory fees, legal interception, and outage reporting.

**3.1(vi)** Flow remains very concerned about the differential treatment of SSPs in exempting SSPs from peering with other terrestrial operators to keep locally generated and terminated telecommunications traffic onshore. Flow has been prevented from offering certain services because of the requirement to keep local traffic local. In fact, when Flow had the conversation with the Office about the service which Flow wanted to offer, the Office's response, inter alia, was that Flow should demonstrate how its service offering is more important than the national interest of the Cayman Islands.

**3.1(vii)** The Office's proposal to exempt SSPs from keeping local traffic local, while burdening terrestrial providers with the requirement, could be viewed as anti-competitive, favoring satellite providers over terrestrial providers. This could lead to legal challenges if the regulatory framework unfairly restricts the ability of terrestrial providers to compete with SSPs.

**3.1(viii)** Without prejudice to the foregoing, the Office has to determine what the criteria is for determining if an operator, terrestrial or SSP, possesses the requisite infrastructure for peering. Ambiguity in this area could lead to inconsistent application and potential compliance challenges. Fundamentally, if an SSP lacks the necessary infrastructure, they should be required to develop it within a specified timeframe or partner with existing terrestrial operators to ensure that locally generated and terminated traffic remains onshore. This approach would uphold data sovereignty and ensure equitable regulatory obligations.

**3.1(ix)** Currently, there are two types of Satellite Licences:

E1 Satellite (incl VSAT) - Domestic -

E2 Satellite (incl VSAT) International

Can the Office please provide guidance between the difference in these licence types and the Type H Licence.

### 3.2 Per Channel Spectrum Fee

**3.2(i)** The proposed 'per channel' spectrum fee structure, with varying channel sizes based on frequency ranges, may not accurately reflect the operational realities and spectrum usage of SSPs, which often utilize dynamic bandwidth allocation and do not conform to fixed channel sizes. This structure could inadvertently favor SSPs over terrestrial operators, who often face more stringent spectrum allocation and usage requirements. Ofreg also has to provide the per channel spectrum fee in order for an adequate assessment to be made of the equity of the channelization and fees.

### 3.3 Definition of Internet Service Provider (ISP) Licence

**3.3(i)** Flow does not agree with creating distinctions along the lines of technology in the Type 9 ISP Licence. This is out of alignment with the progressive regulatory principle of technology neutrality and inherently creates an unlevel playing field for the provision of internet services which are also offered by terrestrial providers.

**3.3 (ii)** Should the Office insist on this approach, it must provide detailed guidelines around the requirements for SSPs, particularly when an SSP offers internet services directly to end-users and the licence amendments published for comments. Making a proposal for amendment of the Licence without including the Licence document, with the amendments, is not sufficient for Flow to provide an informed response.

### 3.4 New Class of Licence – Type 17 Connectivity Service Provider

**3.4(i)** A '…. *new class of ICT service: (Type 17) Connectivity Service Provider. This would cover the provision of private end-to-end connectivity (voice or data), i.e. which is not connected to the PSTN or Internet*' is not necessary. The Not only do the existing class of services suffice, the

introduction of a new class of licence provides opportunities for the creation of an unlevel playing field.

**3.4(ii)** Further, similar to Flow's comments on the Type 9 ISP Licence, it is not sufficient for Ofreg to only define the proposed new class of service. It is required, for a comprehensive and informed response to be provided, that the draft licence with the terms and conditions be provided for consultation. Without such, the Consultation is incomplete.

**3.4 (iii)** Flow's response on the Licence Types emphasizes the importance of technology neutrality, where licenses should be indifferent to the technology used to provide a service. This principle ensures that all providers offering similar services are subject to the same regulatory framework. Ofreg must ensure that all service providers are treated equally under the law. If satellite-based service providers are subject to different terms and conditions compared to terrestrial providers for the same service, it could be seen as discriminatory and promoting an unfair competitive landscape, contrary to the principles of regulatory fairness and consistency.

**3.5. Licensing of VSAT Terminals**

**3.5(i)** Including the licensing of Very Small Aperture Terminals (VSATs) within the licence issued to SSP simplifies the process for customers to obtain Customer Premises Equipment (CPE) and is recommended.

**3.5 (ii)** Still, a solution has to be found to prevent the use of VSATs beyond the scope of SSP services. OfReg may wish to consider a registration process for all VSAT terminals deployed under an SSP licence. This process would enable better oversight and ensure that VSATs are used in compliance with the terms of the licence. Additionally, any VSATs used for connectivity outside the SSP services should continue to require separate licensing, as per current regulations.

## 4. CONCLUSION

**4.1** Competition is expected. It is necessary for Ofreg to evolve the regulatory framework to facilitate entry of SSPs. However, it is crucial to ensure that the licensing of SSPs does not introduce discrimination against terrestrial providers, resulting in compromise of the principles of fair competition, consumer protection, and data sovereignty.

**4.2** We recommend a uniform licensing framework, that applies equally to all providers offering similar services, regardless of the technology used. This promotes competition, creates a level playing field for existing services, and ensures consumer protection. Flow's recommendations aligns with The Office's functions under Section 6 of the Utility Regulation and Competition Act which requires The Office*: (b) to promote appropriate effective and fair competition; (c) to protect the short and long term interests of consumers in relation to utility services; (d) to promote innovation and facilitate economic and national development; and Section 9(3) of the Information and Communication Technology Act (the 'ICT Act') that requires the Office: (a) to promote competition in the provision of ICT services and ICT networks where it is reasonable or necessary to do so*.

**4.3** We urge OfReg to consider our recommendations to maintain a balanced and equitable telecommunications environment in the Cayman Islands.

## 5. RECOMMENDATIONS

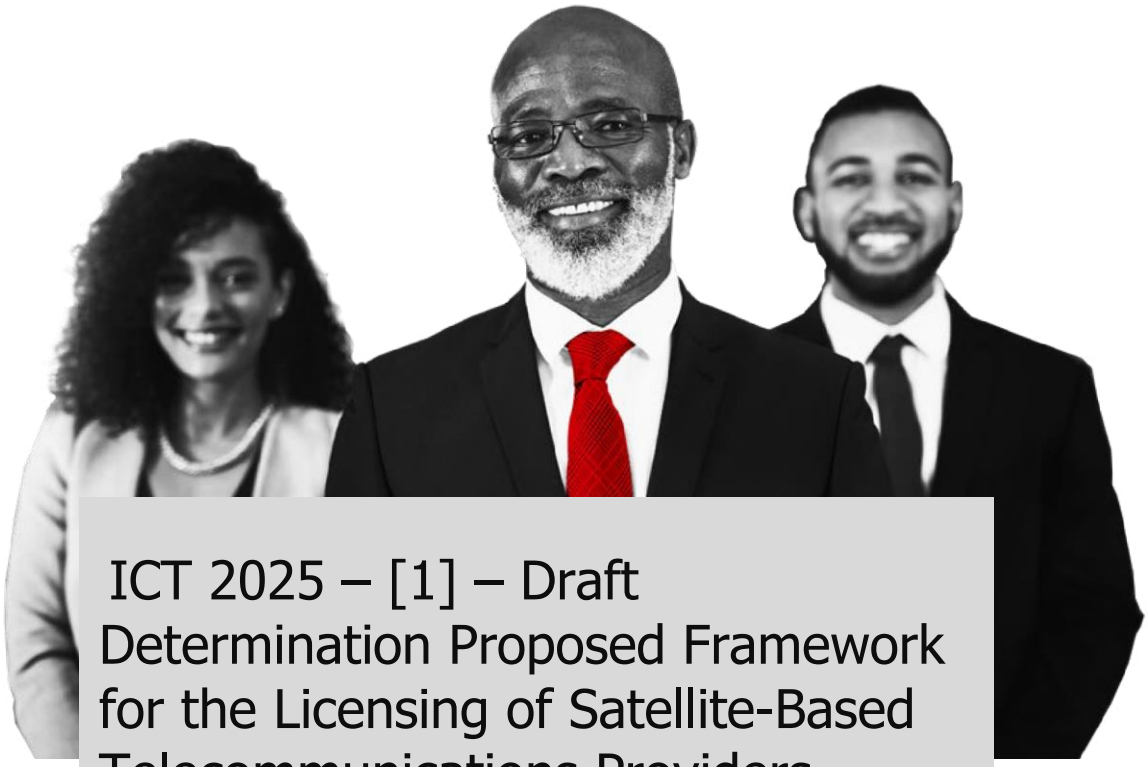
**5.1** Flow re-iterates the following recommendations to Ofreg:

- **Avoid return to monopoly**: The business model of satellite-based telecommunications providers, funded by private equity, powerful tech companies, and invested governments coupled with satellite operators' global economies of scale could enable pricing below local market sustainability levels, creating an unfair competitive advantage for satellite providers and driving terrestrial providers out of business. A return to monopoly is to be avoided. Monopoly could result in unfettered price increased for Caymanians.

- **Promote Fair competition**: where satellite-based telecommunications providers offer the same or similar service to terrestrial providers, and, or use, the same spectrum bands, they should be licensed within the same licensing regime as terrestrial providers and be subject to all the terms and conditions, taxes, and regulatory payments as existing terrestrial providers. It is well worth noting that in recent times, Starlink has announced that it has successfully implemented Direct-to-Device service, in partnership with T-Mobile, which means that Starlink's satellites can provide services directly to a mobile phone, without any need for modification of the mobile phone, just as a mobile operator can. The only missing piece is the allocation of spectrum to satellite-based telecommunications providers so that they can provide mobile services directly to customers, without the need to partner with a terrestrial operator.
- **Create jobs**: With the intense competition from global tech companies, like satellite-based telecommunications providers, terrestrial providers may have to shed jobs to meet the competition. In the same way that terrestrial providers created jobs, for Caymanians, that power the local economy, satellited-based telecommunications providers must be required to create jobs in the Cayman Islands and contribute directly to the growth of its people and economy. The Office should not encourage jobless innovation. Satellite providers should be encouraged to establish ground infrastructure within Cayman, contributing to the local economy.
- **Ensure Robust Interference Mitigation:** The Office must ensure that satellite providers present robust and tested means to mitigate interference, which is agreed by existing terrestrial operators as sufficient to mitigate interference.
- **Protect Customers**: the challenge that small island states could face when dealing with global tech companies, like satellite-based telecommunications providers, is that their small population and footprint may cause them to be overlooked. The Cayman Islands is attractive to satellite-based telecommunications providers because of its high GDP, its vibrant offshore financial sector, tourism, and affluent population. None of these factors

suggest that these providers are seeking to bridge an identified the digital divide in the tiny Cayman Islands or provide disaster relief, which although achievable, and popular arguments by satellite-based telecommunications providers, are not the drivers for entry. Licence conditions to support customers in the Cayman Islands must be consistent with those for terrestrial providers of similar/ same services.

**END**



# ICT 2025 – [1] – Draft Determination Proposed Framework for the Licensing of Satellite-Based Telecommunications Providers

**Prepared For:**

**UTILITY REGULATION AND COMPETITION OFFICE**

**THE CAYMAN ISLANDS**

**Primary Contact:**

**Mayra Castillo (345) 326-2000**

**115 Printer Way**

**Georgetown, Grand Cayman**

**Mayra.Castillo@digicelgroup.com**

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# WE DESIGN AND BUILD A BETTER FUTURE

**Digicel Cayman Ltd**

115 Printer Way
PO Box 700
George Town.
Cayman Islands

May 9, 2025

The Utility Regulation and Competition Office
P.O. Box 10189
Grand Cayman KY1-1002
CAYMAN ISLANDS

Dear Sirs,

**RE: Digicel Response to ICT 2025-[1]- Draft Determination Proposed Framework for the Licensing of Satellite-Based Telecommunications Providers**

The matter at caption refers.

First, Digicel Cayman Ltd thanks the Utility Regulation and Competition Office (OfReg) for the opportunity to provide our comments on the ICT 2025-[1]- Draft Determination Proposed Framework for the Licensing of Satellite-Based Telecommunications Providers document launched on April 17, 2025 (the "Draft Determination").

Digicel now respectfully submits its comments and responses to the Draft Determination. The comments as provided herein are not exhaustive and Digicel's decision not to respond to any particular issue(s) raised in the draft Regulations or any particular issue(s) raised by any party relating to the subject matter generally does not necessarily represent agreement, in whole or in part nor does any position taken by Digicel in this document represent a waiver or concession of any sort of Digicel's rights in any way.

Please do not hesitate to refer any questions or remarks that may arise as a result of these comments by Digicel to Mayra Castillo, General Manager, Digicel Cayman Ltd. (email: mayra.castillo@digicelgroup.com) and Sharian Hanson, Legal and Regulatory Director (Regional), Digicel Group (email: sharian.hanson@digicelgroup.com) in copy.

Yours sincerely

DocuSigned by:
Mayra Castillo
0B542DAB2BC8464...

Mayra Castillo
**General Manager**
Digicel Cayman Ltd

E.1 Question 1: Should OfReg introduce new licence types to facilitate the specific licensing of satellite-based services?

Response: While Digicel notes the Office's position to establish a separate licence type for Satellite Service Providers, Digicel stands by its initial response to the Consultation Document and reminds the OfReg that in the event that OfReg is to establish a new licence type for communication services via satellite technology, Digicel recommends a level playing field is maintained across all types of licences and considers the current obligations that ICT licensees have to pay licence fees comprising both regulatory and royalty fees (being 6% of revenue), spectrum fees and obligations to make contributions to the Universal Service Fund. Pursuant to Condition 8 of its ICT Licence an operator has to submit to the regulator every six months Development and Compliance Plans outlining among other things its planned nature and the extent of Caymanian participation as set out in Annex 1B of the ICT licence. More specifically, the proposed framework should not deliver any undue advantage to the satellite service provider.

Digicel does not agree with responses from satellite providers such as Viasat and Rivada that only ground based satellite providers, or their activities should be regulated or a "light touch" framework at minimum should be in place and cautions against any such consideration by the Office. As noted at paragraph 22 of the Draft Determination:

> "*The regulatory framework governing the Cayman Islands (e.g. the URC and ICT Acts) mandates that all ICT service providers obtain a license. Therefore, a registration-only system for SSPs would not comply with the jurisdiction requirements.*"

Digicel disagrees with paragraph 24 and notably does not agree with the position that based on the unique characteristics of satellite service providers a distinct class licence is required. The cornerstone of a credible regulatory framework is technology-neutral licensing and competitive parity. Mobile operators have operated under clear, established licensing regimes for decades. We have and continue to invest in nationwide coverage, comply with universal service mandates, pay significant fees, contribute to public safety systems, and operate within a regime of

comprehensive regulatory scrutiny. Any move to afford satellite providers lighter-touch or differently structured obligations would severely compromise regulatory fairness and distort market outcomes.

Digicel notes OfReg's position at paragraph 26 that it will "aim to ensure, as far as possible, that all service providers are treated equally to the extent that it is feasible to do so based on the method of service delivery." It is Digicel's view that premising regulatory treatment of service providers based on method of service delivery goes against the principle of technology-neutrality and in particular the legislative mandate. Adhering to the principles of a level playing field, OfReg is not expected to make decisions that are favourable to one group at the disadvantage of another group.

In fact there are other jurisdictions within the region where licenses to Starlink have been issued within existing license categories such as Trinidad and Tobago and Jamaica. Based on these licences Starlink is subject to the same regulatory obligations as terrestrial operators which arrangement promotes the principle of technology-neutrality. If any concessions are to be made to satellite providers same should apply to terrestrial providers as well.

E.2 Question 2: In what way should OfReg approach the issues associated with the fact that the provision of some parts of a satellite service occur outside its jurisdiction?

Response: Digicel notes the stance of OfReg to issue SSP licences which will make it clear that where conditions are not appropriate to the service being provided the appropriate clauses will not apply. While Digicel recognizes that there may be extraterritorial limitations we do not agree with OfReg's preemptive approach in relation to limitations surrounding outage notification and lawful interception. OfReg's mandate is to ensure fair and equitable competition and preempting challenges that an SSP provider may have with complying with local laws that terrestrial operators are obliged to comply with falls short of this principle. Even in the responses from Starlink they indicate that in relation to customer outages and lawful interception they possess "these capabilities in over a hundred countries around the world, despite the lack of physical infrastructure in many countries." OfReg has therefore taken a questionable stance where these issues are concerned.

Operators cannot be obliged to provide outage notifications/incident reports etc. and SSPs are absolved of said obligations. The same applies for legal interception obligations as well. In fact, ICT operators in Cayman are subject to other legislation such as the Cayman Islands Coast Guard Act, 2021 (Act 2 of 2021), where (ICT) licensees have specific obligations to support maritime law enforcement activities. Section 27 of the Act outlines these duties which stipulates that ICT licencees shall provide information regarding the current or last known location of an ICT device believed to be on board a vessel upon the request of the Coast Guard. Notwithstanding the economic burden that comes with putting the infrastructure in place in order to comply with the Coast Guard Act. Bearing in mind that these activities are not in the ordinary course of an ICT licencee's business.

In light of the foregoing, Digicel strongly urges OfReg to take a proactive, firm, and jurisdictionally assertive approach in regulating satellite-based internet services, particularly where elements of service provision originate or are controlled from outside the Cayman Islands. The extraterritorial nature of satellite operations must not be used as a shield to avoid regulatory compliance, undermine local obligations, or bypass the enforcement authority of the Office. Further, Digicel respectfully disagrees with OfReg's statements on its perceived limitations on the regulation of satellite services (i.e. paragraph 30).

It is immaterial where the satellite is launched, where the ground control is located, or where the core network functions reside. If the service "terminates" or is offered in the Cayman Islands, and serves end users here, it must be fully subject to national laws, regulations, licensing, taxation, and enforcement. Mobile operators are subject to strict regulatory obligations for every service offered within national borders, including spectrum use, quality of service, consumer protection, security, and universal access. There can be no regulatory exception for satellite providers simply because some aspects of their technical infrastructure are located overseas. The Office must assert full jurisdictional authority over any entity providing services into the country, regardless of where that service originates. This is consistent with international regulatory norms and established principles of territorial jurisdiction over services delivered to citizens.

Satellite operators may structure their operations to exploit gaps in national regulatory frameworks, for example, by locating call centres, customer databases, or billing systems offshore. This type of jurisdictional arbitrage strategy must be pre-emptively and explicitly addressed, failing which the people of the Cayman Islands will pay the ultimate price.

The Commission must require local licensing of all service providers delivering internet access to local consumers, irrespective of delivery platform. It must also mandate local legal representation and compliance contacts for enforcement and accountability. Matters of public safety, data protection, data sovereignty, lawful interception compliance, and network resilience are far too critical to go unregulated.

Digicel's position is that there should be fair and non-discriminatory application of the extant telecommunication legislation/ regulations to new entrants (satellite broadband providers) and incumbents alike and where there are limitations the regulator should incorporate best-effort clauses for compliance in areas where jurisdictional limitations exist, with penalties for non-compliance where enforceable.

E.3 Question 3: What models of service licensing would be most appropriate for OfReg to consider?

Response: Digicel maintains its position that there should be fair and non-discriminatory application of the extant telecommunication legislation/regulations to new entrants (satellite broadband providers) and incumbents alike.

Digicel requires clarification from OfReg in relation to paragraph 44 of its Draft Determination as it relates to the "evaluation of applications from entities with limited Caymanian participation if there are valid and justifiable reasons for doing so." We reiterate that while the discretion is within the remit of OfReg based on it powers under the ICT Act in particular section 26(2)(g) we call on the Office to:

- Reject any proposal to exempt satellite providers from Caymanian participation requirements
- Require that all operators demonstrate meaningful local ownership and participation of Caymanians as directors, management or otherwise with any exemption being based on clear and enforceable criteria
- Ensure a level playing field for all participants in the national telecommunications market

To grant an exemption for Caymanian participation to satellite providers who may have no local presence, negligible domestic employment, and no physical infrastructure on-island would directly undermine the principle of non-discrimination in the application of telecommunication legislation/regulation on operators in similarly situated markets in the Cayman Islands.

E.4 Question 4: What approach should OfReg take to the licensing of VSATs?

Response: Digicel notes the Office's proposal to provide SSP licensees with a class licence for the use of VSATs to connect to their networks but not provide a blanket licence for all VSATs. Having considered the Office's proposal, Digicel reiterates the position that OfReg should ensure that VSAT terminals operate within parameters that are not deleterious to any other operator (terrestrial or otherwise) by adopting a simplified framework for VSAT terminal licensing to balance regulatory oversight and market accessibility as follows:

- Require individual licensing for large-scale, high-impact deployments
- Allow blanket licensing for small-scale, standardized VSAT operations.
- Implement technical and operational standards to ensure compliance with spectrum regulations.
- Technical Certification: Mandating that all VSAT terminals meet stringent technical standards to avoid harmful interference with terrestrial services.

- Inclusion in Operator License: Include VSAT terminals under the satellite operator's license to streamline processes and reduce administrative burdens.
- Reduced Fees for Smaller Devices: Adjust fees for small-scale or IoT devices to encourage adoption while maintaining accountability.

This targeted approach supports the development of satellite services without disadvantaging current operators. These measures promote efficiency and fairness, ensuring that regulatory frameworks keep pace with technological advancements.

### E.5 Question 5: Do you have any comments on OfReg's assessment of the potential interference between satellite terminals and other services?

Response: Digicel notes the consideration of the Office and reiterates that interference between satellite terminals is a valid concern, and Digicel agrees with OfReg's overall assessment. The assessment of potential interference between VSAT terminals and other services appears thorough and balanced. It acknowledges the technical potential for interference, particularly in shared frequency ranges, while emphasizing that established international mechanisms, such as the ITU's Radio Regulations, significantly mitigate this risk. The recommendation for a regulated operational environment and ongoing oversight by OfReg is prudent to ensure compliance and address any unforeseen issues. There will also be the need for improved technological infrastructure and expertise in place to monitor and prevent interference.

### E.6 Question 6: How should OfReg handle the Government's requirement to keep local traffic onshore?

Response: Digicel notes the consideration of the Office to take into account the applicability or lack thereof to SSPs to keep traffic onshore due to the perceived challenges with the nature of the service. The Office has even chosen to advocate for the exemption of SSPs from the requirements of the Utility Regulation and Competition (Information and Communications Technology) Directions, 2020 in relation to keeping traffic onshore on the basis that satellite

services capabilities will provide further resiliency to the ICT network in the Cayman Islands especially in the face of natural disasters.

Digicel disagrees with the proposed position taken by OfReg in relation to the applicability to SSPs of keeping local internet traffic onshore while the Directive remains on the books. Digicel is of the view that OfReg's selective application of a regulatory requirement premised on the consideration of the different characteristics of said service is flawed. If said requirement cannot be applied to both terrestrial and satellite services, there is a case for a review of the suitability of said requirement in the first instance from a non-discriminatory and competitive parity perspective.

The OfReg has not indicated that any legislative/regulatory/market assessment would take place or even be contemplated same to determine any impacts to terrestrial operators, despite its legislative mandate to do. The said Cabinet Directive at paragraph 2(b) directs the Office to:

> *"(b) undertake to map ICT network development in the Islands, which includes assessing the national ICT network development of the Islands including critical national infrastructure, to understand where the Islands stand with regard to the quality and availability of the national ICT ecosystem and the extent of ICT infrastructure;"*

The OfReg has not proposed any innovative technological solutions to ensure compliance with said regulatory requirement by Satellite providers. Rather, the OfReg has decided to unilaterally absolve satellite operators of compliance as well as its attendant costs.

The OfReg is reminded that terrestrial operators would have made significant initial and ongoing investments to meet said regulatory requirements. From as far back as June 2012 Digicel has incurred monthly expenses associated with having infrastructure in place to maintain IXP connections. To essentially give a free pass or unilaterally write off this cost of regulatory compliance to potential and new non-terrestrial (satellite service providers) market entrants

premised on the uniqueness of the satellite service is very unfair. It also brings into stark question the need for continued investment in the sector by terrestrial operators if there is no regulatory certainty and a discernable bias in the application of regulatory requirements to operators in similarly situated markets.

As such, by the admission of the OfReg in paragraph 70, it is clear that there is a case for the assessment of the suitability of said regulatory requirement (i.e., 2020 Cabinet Directive) moving forward for all ICT providers not just SSPs. Otherwise

Digicel from the onset has simply requested for fairness, equity and a level playing field in the OfReg's contemplation of market entry by Satellite providers. The OfReg's treatment of this particular requirement is lacking from the standpoint of a thorough review of legal precedent regarding data sovereignty in the Cayman Islands, impact assessment on terrestrial operators given ongoing expenditures to ensure compliance with regulatory requirement and cost benefit analysis/impact assessment of the OfReg's proposed decision to continue the enforcement of this requirement on terrestrial operators only.

E.7 Question 7: What are your views on the extent to which the introduction of satellite-based services will impact the businesses of existing suppliers and affect consumers?

Response: Digicel takes note of the OfReg's comments at paragraphs 82 and 83.At paragraph 82 the OfReg considers that the addition of further competition from SSPs is expected to produce a relatively small effect on the prices and diversity of services already provided to the existing customers of terrestrial ICT networks. This is because satellite services have been generally viewed as complementary to the terrestrial services, and as pointed out by the responses of a number of satellite operators, in many cases the services they provide are most often adopted for niche applications, or in areas where there is poor existing service coverage. This consideration is in keeping with Satello T's comments referenced at paragraph 80 in relation to targeting niche markets in remote areas for example.

As far as Digicel is aware pursuant to section 23(6) of the ICT Act, a licence may specify:

> *" (a) the operations which the licensee may undertake under that licence; and (b) the conditions to which the licensee is subject, including but not limited to pricing, service standards, Universal Service provision, infrastructure sharing, interconnection and spectrum utilisation."*

In this regard, unless the OfReg intends to include as a condition in an SSP licence the specific geographical coverage of the operations, there is nothing to prevent in the short, medium to long term, SSPs from providing services to the general population. Therefore, services that may initially appear to be complementary in nature will eventually become competitive as admitted by the OfReg in paragraph 83. The OfReg is also reminded of the advancements in spectrum policy to facilitate the provisioning of mobile satellite services (i.e., D2D and D2C)

The introduction of satellite-based internet services into the Cayman Islands will have significant implications for both existing telecommunications providers and consumers. While technological advancement and innovation are welcome, it is imperative that such services are introduced in a manner that preserves fair competition, safeguards national investment, and protects consumers from fragmented or unregulated service environments.

The following should be noted:

1. Disruption without a level playing field will undermine existing suppliers:

Mobile and fixed broadband operators have made substantial long-term investments in:

- Spectrum acquisition and licence fees
- National network infrastructure (towers, fibre, microwave backhaul)
- Universal service obligations and public safety infrastructure
- Local employment, retail, and customer support networks

If satellite-based services are allowed to enter the market without equivalent licensing, regulatory obligations, or financial contributions, this would represent a serious distortion of competition. It would effectively reward offshore or asset-light providers while penalizing those who have built and sustained the national communications infrastructure.

This form of regulatory asymmetry would not only destabilize current operators' business models, but also disincentivize future investment in infrastructure upgrades, rural expansion, and service quality improvements.

2. Satellite Services may fragment the Consumer Experience

While satellite internet may offer basic connectivity in remote areas, it poses several challenges from a consumer perspective:

- Higher latency compared to terrestrial networks, impacting real-time applications like video conferencing, gaming, and VoIP
- Unclear consumer protections, particularly where the provider lacks a local presence or licensing
- Lack of integration with national emergency services, early warning systems, or lawful intercept frameworks
- Potentially higher prices, particularly where foreign currency billing or dynamic pricing models are used

Without strict local licensing and enforcement, consumers may be exposed to lower service quality, limited recourse for complaints, and reduced transparency around data usage, throttling, and contract terms.

3. Market Entry must be fair, structured, and fully regulated.

We do not oppose the introduction of satellite services per se, but we insist that their entry be governed by:

- Full licensing with equivalent financial and regulatory obligations
- Enforceable consumer protection standards
- Participation in national infrastructure obligations (e.g. infrastructure sharing/access emergency services)
- Transparency in pricing, data usage policies, and customer service standards

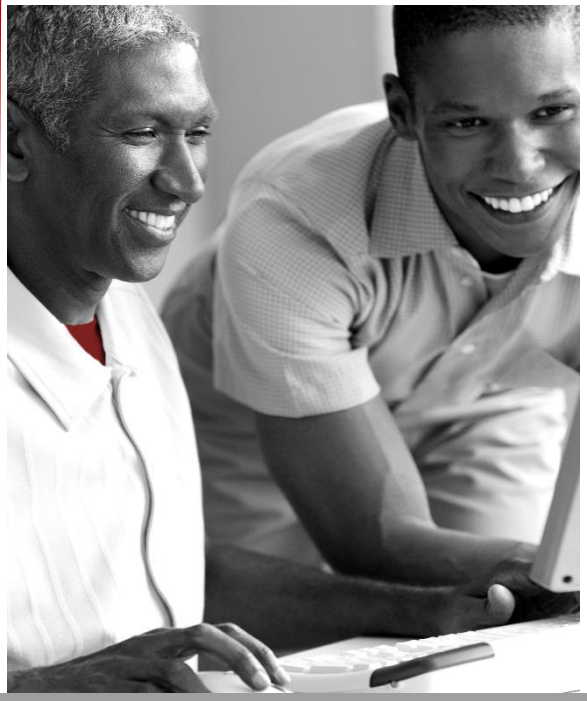
Without these, the impact on existing operators will be harmful, and the benefits to consumers will be unreliable and potentially short-lived.

We urge the OfReg to adopt a cautious, structured, and enforcement-led approach that ensures satellite providers are held to the same standards as terrestrial operators. The long-term health of the sector, and the interests of the people of the Cayman Islands demand nothing less.

**Alternative Point of contact:**



| | |
|---|---|
| **Name, Title** | **Kevin Mullings, Technical Lead, CEO Office and Admin** |
| **Email:** | **Kevin.Mullings@digicelgroup.com** |
| **Tel:** | **(345) 327 6003** |
| **Address:** | **115 Printer Way, Georgetown, Grand Cayman** |
| **Website:** | www.Digicelgroup.com |



# THANK YOU

## FOR ENGAGING US

May 9, 2025

**To**: consultations@ofreg.ky

**Subject: Eutelsat Group's response to ICT 2025–1 Consultation on Draft Determination Proposed Framework for the Licensing of Satellite-Based Telecommunications Providers (v.2)**

**Dear OfReg Team,**

Eutesat Group appreciates the opportunity to provide input on the proposed Draft Determination regarding the licensing framework for satellite-based telecommunications providers in the Cayman Islands and would like to thank OfReg for considering our comments made in response to the "ICT 2024 – 2 – Consultation on the Framework for the Licensing of Satellite-Based Telecommunications Providers" of last year.

We further commend the Office for recognizing the important role of satellite communications and the significant advantages that satellite systems might bring to the country, especially in times of emergency situations and natural disasters due to their resilience and ubiquitous nature.

Eutelsat Group would like to make the following comments on the Draft Determination:

**Spectrum Fees for Type H – Satellite Service Provider Licenses based on a "per channel basis":**

Specifically on spectrum fees for Type H / Satellite service Providers Licensees, Eutelsat Group is concerned that applying a per channel spectrum fee for the satellite user link could result in market entry barriers and high costs for satellite operators and service providers, ultimately leading to higher prices for consumers.

Eutelsat Group is of the view that imposing spectrum fees based on bandwidth may not be the appropriate measure to ensure its efficient use given the fact that modern high throughput satellite systems are no longer providing MHz capacity to users. Instead, they provide Mbps under a managed capacity approach proven more efficient in addressing customer needs and spectrum utilization. Having spectrum-based fees may impose unnecessary constraints and may conflict with modern satellite capacity offerings given the fact that the spectrum is shared among different service providers. Having spectrum fees based on bandwidth which would generally apply to exclusive allocations will also be difficult to implement equitably and could result in exorbitant costs for certain satellite players.

Therefore, Eutelsat Group proposes using the blanket license approach for User Terminals, with a flat fixed fee, instead of spectrum fees based on bandwidth for satellite services characterized by using large bandwidths. Adjusting licensing related fees in accordance with the changing requirements and technologies utilized by the satellite industry would assist in enabling the provision of more affordable products and services. It is thus important to adapt licensing pricing policies to provide reasonable fees that would encourage innovation and competition, ultimately benefiting consumers and helping in bridging the digital divide.

We further commend the Office for exempting from spectrum fees satellite terminals in certain frequency bands on aircraft and seagoing vessels, and in emergency situations. Eutelsat Group has advocated the implementation of blanket licensing for satellite UTs, including ESIMs onboard nationally registered aircraft/vessels, that comply with predefined and technical standards, operating on a non-interference non-protection basis. In these cases, it is submitted that the administrative work required is minimized and thus, a fixed reasonable fee for spectrum usage by satellite UTs shall suffice. It would further assist in the ubiquitous deployment of satellite services.

**Question 1: New License types for satellite-based services:**

As per our response submitted to OfReg's consultation, Eutelsat Group supports that to ensure regulatory simplicity it is important that OfReg avoids imposing additional licensing layers on service providers, who wish to provide telecommunication services through satellite networks. Having a general Service Licensing regime which is technology-neutral and allows licensed service providers to offer any type of communications services irrespective of the platform used will reduce the regulatory burdens and allow existing licensees to partner up with satellite operators such as Eutelsat Group and offer satellite connectivity services to residential and business subscribers without the need to apply for a new license type and comply with separate conditions.

At any rate, we agree with the conclusion of OfReg that simple registration shall not suffice, as appropriate regulatory oversight is needed, and regulatory requirements relating to the protection of consumers, ensuring QoS etc. shall be enforced to anyone offering direct services to consumers. Nevertheless, we kindly request OfReg to consider the two distinct business models of satellite operators, as follows, when determining the scope of the SSP License:

**1**. **NGSO/GSO satellite operators, or local/national satellite service providers** that provide direct in-country commercial services, such as those that: sell satellite terminals to consumers; provide direct ISP and other radio services directly to end-users;

**2. NGSO/GSO network operators,** that only provide satellite capacity and back-haul connectivity solutions to third party businesses, such as MNOs and telcos, or to maritime/aviation satcom providers. The satellite operator is thus not involved in the direct provision of services in-country.

In the latter case, for satellite operators like Eutelsat Group, who merely provides the satellite capacity on a B2B level to local service providers, there shall be no service license requirement. Rather, the proposed SSP license shall be obtained by the local service provider who is responsible for offering the satellite-based communications services directly to consumers or businesses in the Cayman Islands. In this context, should OfReg decide to implement an SSP License as a separate category, satellite service providers shall be treated equally as any other telecoms service provider in the country and not be subject to additional unnecessary regulatory requirements that might result in discriminatory treatment vis-à-vis service providers using terrestrial networks for the provision of same services (i.e. internet access, data, voice, etc.)

Moreover, Eutelsat Group commends OfReg for recognizing that it cannot apply rules related to the space segment to foreign satellite operators, who are already subject to the jurisdiction and licensing authority of their home administrations. Regulations related to the foreign satellite network cannot be practically enforced by OfReg and any domestic regulations shall rather refer

to the in-country service provisioning and the authorization of the ground segment / equipment being used by local service providers.

**Question 2: Lawful interception requirements**

As highlighted in our submission to the public consultation, Eutelsat Group does not serve the consumer market directly. It is therefore our local partners who shall comply with lawful interception requirements and other obligations linked to the provision of in-country services. We kindly ask OfReg to take the different business models of satellite operators – as described above - into account when designing any applicable licensing framework for SSPs.

See also our response to Q. 6 below.

**Question 3: Appropriate models of service licensing:**

As per the above, Eutelsat Group believes that the requirement to establish and operate a local entity as a precondition for the application and holding of the Service License is valid and shall remain applicable to B2C satellite operators and service providers offering satellite-based services directly to end-users in the Cayman Islands. We agree with OfReg that local presence is required, in compliance with national corporate laws and trade regulations.

Eutelsat Group's Go-To-Market strategy is based on the collaboration with local entities who are fully authorized to provide services in-country. We thus support the conclusion that SSP applicants shall be subject to local incorporation requirements, but we would like to kindly note that such requirement shall only be relevant to service providers or satellite operators who serve the consumer market directly.

We further oppose the comment that licensing of satellite-based services shall include a rigorous space segment registration process (so-called Landing Rights or Space Segment Authorization), as satellite networks are already licensed by their home administration and comply with international space-law related obligations and ITU regulations that ensure interference free operations. Imposing additional requirements to foreign satellite operators for market entry would only deprive the Cayman Islands from the multiple benefits that satellite communications have to offer to the country and its population and economy.

**Question 4: Licensing of VSATs**

Eutelsat Group has proposed that satellite UTs be license-exempted or covered by a blanket license as part of the spectrum authorization, as followed by many regulators around the world.[1] We commend OfReg for having already licensed the use of maritime / aero ESIMs on this basis.

Eutelsat Group further agrees with the Office that such blanket licensing shall not apply to all VSATs; in certain cases where for instance, coordination with terrestrial services might be required with larger dishes and there is a need to ensure the protection of the satellite earth station, individual licensing shall remain an option.

[1] and is recognized as best practice, see CITEL PCC.II/Rec.68

An important distinction shall also be made between national and international ESIMs, as follows:

For aviation and maritime applications, a differentiation in regulations is required between international platforms (e.g. onboard aircraft and vessels registered abroad) and national ones (e.g. aircraft and vessels registered in Cayman Islands). This is because foreign registered platforms are subject to both international rules from ITU, ICAO and IMO, as well as the rules of the country where such terminals are registered. As such, it is the norm in many countries that the satellite terminals mounted on such platforms are not strictly regulated by the host/transiting country. The only requirement necessary is the assurance that the satellite terminals operating in and over the country for a limited period or in transit thereof respect the international and national spectrum regulations for protection of other radio services from potential interference.

**Question 5: Potential satellite interference**

Eutelsat Group is of the view that any measures or protection techniques to avoid interference between satellite networks and other radio services should be based on limitations and protection criteria defined by the ITU Radio Regulations. Therefore, we kindly invite OfReg to keep alignment with ITU Radio Regulations and relevant technical standards, and to continue following international developments on that matter.

With regards to spectrum pricing, kindly see above our comment regarding the proposed fee "per channel" for UT networks. We respectfully submit that the proposed formula might result in exorbitant costs for modern satellite systems that use large bandwidths to provide services. For the user link, a blanket license fixed fee shall apply. On the other hand, for individually licensed stations such as gateways, a fee formula based on bandwidth would be acceptable.

**Question 6: Keeping Local Traffic onshore**

Eutelsat Group agrees with the submission that a requirement to keep local traffic onshore would be prohibitive to market access for foreign satellite operators like Eutelsat Group. As correctly recognized by OfReg, the establishment of a local ground station may not even meet the expected requirements due to the technical nature of the networks, while at the same time imposing barriers and huge operational costs to the satellite operators.

Eutelsat Group believes that the requirement to establish local ground infrastructure could negatively impact on the quality and cost of satellite connectivity solutions offered to end-users. Having a satellite gateway earth station or other ground infrastructure in each country does not align with the practicalities of satellite operations and brings additional costs and deployment delays. Imposing unnecessary licensing conditions to satellite operators fails to acknowledge their critical role. Hence, we hope the Office will allow for more flexibility in the regulations to accommodate technological innovation, to embrace and promote new satellite technologies that provide complimentary connectivity solutions and have the potential to bring great benefits to the country's economy, industry and citizens alike.

It is indeed important that OfReg recognizes the different operational characteristics of satellite systems and allows for flexible regulations that can practically be enforced, allowing for the use

of alternative mechanisms to achieve the Cabinet's proclaimed policy objectives. For instance, any Lawful Interception requirements and national security concerns could be effectively addressed with the use of alternative technologies and data management mechanisms, such as international PoPs, virtual interception points or through remote access to Gateways located in neighboring countries. Furthermore, as per our response to Q. 2 above, Eutelsat Group is of the view that any Lawful Interception requirements shall be vested on local service providers (SSP / Service License holders) offering services directly to consumers and shall not burden the satellite operator who is merely offering wholesale capacity.

Besides, as recognized by OfReg, by linking satellite systems with local ground infrastructure, their resilient nature is compromised and makes them more vulnerable to natural disasters, undermining their potential to offer a continuous means of connectivity in case of terrestrial service disruptions.

**Question 7: impact to local businesses, suppliers and consumers in the country**

Eutelsat Group commends the Office for recognizing that satellites are complementary to the terrestrial services and do not pose a threat to the local market and competition. To the contrary, as explained, satellite operators like Eutelsat Group work collaboratively with the local value chain and aid the locally licensed, service providers, MNOs and telcos to expand their reach and provide connectivity services in areas not yet connected.

In this context, allowing the provision of satellite-based services in the country will ultimately benefit consumers and assist in bridging the digital divide, and contribute to socioeconomic growth. It is thus important that OfReg embraces satellite technology and allows for flexible, non-discriminatory and less burdensome market entry regulations to facilitate the expansion of services to the benefit of local populations.

We hope the above comments will assist the Office to introduce a workable regulatory framework that offers opportunities for increased competition and innovation. Eutelsat Group remains at your disposal to discuss further the proposed Licensing Framework applicable to Satellite Service Providers and to clarify our submissions, if needed.

Thank you for your kind consideration.

# WestTel Response to OfReg ICT 2025 – 1 – Draft Determination Proposed Framework for the Licensing of Satellite-Based Telecommunications Providers

**2nd May 2025**

# Table of Contents

# 1/ Introduction

Thank you for the opportunity to respond to the OfReg draft Determination on Proposed Framework for the Licensing of Satellite-Based Telecommunications Providers in the Cayman Islands.

As we stated in our initial response to the Consultation, the key factors to be borne in mind when considering how to regulate the LEO sector are, in WestTel's view and in harmony with the points made by OfReg:

- The potential for competition with existing providers and therefore placing LEO providers on a level playing field with other non-dominant providers in terms of obligations.
- The ability to ensure compliance with laws and other Cayman Islands licensing requirements.
- Minimizing spectrum interference.
- Contributing to the country's development by fee payments and other financial contributions.

In the following pages we provide our feedback to the conclusions drawn by OfReg to each of the seven questions in the Consultation document.

# 2/ Responses to Consultation Questions

## Question 1: Licence Types

*Should OfReg introduce new licence types to facilitate the specific licensing of satellite-based services?*

WestTel agrees with OfReg's conclusion that a separate licence type for a Satellite Service Provider (SSP) is necessary in the Cayman Islands.

## Question 2: OfReg's Responsibilities and Powers

*How should OfReg approach the issues associated with the fact that the provision of some parts of a satellite service occur outside its jurisdiction?*

WestTel notes OfReg's conclusion that "Issued SSP licences will make clear that where conditions are not appropriate to the service being provided (e.g. 911 calls for data- or internet-only service providers), the appropriate clauses would not apply." WestTel would have liked the conclusion to have been worded the other way around to make it clearer/firmer, along the lines of "Unless a condition is clearly not appropriate to the service being provided (e.g. 911 calls for data- or internet-only service providers), issued SSP licences will contain the same terms and conditions as existing terrestrial licence categories."

WestTel also notes that in paragraph 32 it states "the Office must and will ensure that SSPs make clear what the limitations of the service may be so as to ensure that consumers fully understand what to, and what not to, expect in terms of service delivery." However, this important statement is missing from the conclusions section in paragraph 34; WestTel recommends also including this in the Conclusions so there is no confusion.

Finally, WestTel questions whether OfReg is correct when it states in paragraph 30 that outage notifications may not be able to be legally enforced. An outage notification clearly should be appropriate to the service being provided so the SSP licence template should include this. This is especially the case for planned outages by satellite service providers.

## Question 3: ICT Service Licensing

*What models of service licensing would be most appropriate for OfReg to consider?*

As WestTel highlighted in the Consultation response, it is critical that SSP licences are only awarded to locally registered Cayman Islands companies. As OfReg notes in the draft Determination, this opinion is shared with other terrestrial licensees and even Starlink. WestTel is therefore not aligned with OfReg's conclusions to this question whereby "registration in the Cayman Islands and compliance with local trade and business regulations may be considered …".

There should be a distinction between a licence applicant's corporate registration and its corporate ownership. WestTel firmly believes that all SSP licensees must be locally registered; however, OfReg could have some flexibility with regards limited Caymanian ownership participation 'if there are valid and justifiable reasons for doing so'.

## Question 4: VSAT Licensing

*What approach should OfReg take to the licensing of VSAT terminals?*

Further to WestTel's Consultation response, where we suggest small VSAT terminals be covered by a class licence, WestTel also agrees with OfReg's conclusion that SSP licensees be provided a class licence for the use of VSATs to connect to their network.

In the Consultation response WestTel also recommended that OfReg impose a licence fee for each satellite user terminal covered by the Class licence, which be paid when the equipment is imported into the country. WestTel would welcome OfReg's consideration of this point in the Determination.

## Question 5: Radio Interference from VSAT

*Do you concur with OfReg's assessment of the potential interference between satellite terminals and other services?*

WestTel is aligned with the draft Determination that the risk of interference from VSATs is small and all licensees should adhere to international rules and technical standards to ensure it does not happen in reality. That being said, WestTel does stand by the comment made in the Consultation response, that this reinforces the importance that OfReg licenses locally registered firms so there is a local contact to engage in the event of interference with another licensee.

With regards fees for spectrum use, WestTel is in agreement with OfReg's approach to define 'per channel' by using the reference service with which the spectrum band is shared.

WestTel also agrees with OfReg's conclusion that SSP spectrum assignments be on a non-exclusive basis.

## Question 6: Keeping Local Traffic Onshore

*How should OfReg deal with the Government's requirement to keep local traffic onshore?*

WestTel is not aligned with OfReg's comment that "Therefore 2020 Cabinet Directive was clearly intended for existing terrestrial licensees". This cannot be inferred and unless detailed minutes of the Cabinet meeting have been made publicly available, it cannot be stated as a 'truth'. OfReg then goes on to state "the Office considers that SSP services were not intended to be subjected to the mandate to ensure that local internet communication remains onshore."

WestTel's view is that rather Ofreg should not speculate on what Cabinet may or may not have discussed in 2020 and how it might interpret SSP services today, Cabinet should be re-engaged to review and update the ICT Directions 2020. If Cabinet aligns with OfReg's position that SSP services are out of scope of the requirement to keep local traffic onshore, there should be a discussion around the need for terrestrial network licensees to also comply with the requirement since all licensees should be treated equally.

WestTel firmly believes this clarification with Cabinet should be resolved before any SSP licences are issued.

WestTel also notes various references to satellite services being beneficial for disaster situations and improving resiliency. The current sector regulatory framework already allows for the emergency importation and use of satellite phones to support first responders and recovery efforts and therefore WestTel believes this justification is not directly relevant to discussions about keeping local traffic onshore.

## Question 7: Impact Assessment

*What are your views on the extent to which the introduction of satellite-based services will impact the businesses of existing suppliers and affect consumers?*

WestTel is disappointed that despite providing examples of satellite service providers being aggressive with pricing practices in other markets, OfReg chose to state in the draft Determination “the claim that lower prices offered by a new entrant is a threat to existing services providers, is on its own not sufficient to deny entry.” WestTel strongly recommends that the Ofreg does an exercise to evaluate the impact of the pricing of satellite services as well as quality of service standards where there are varying levels of traffic within a given jurisdiction, taking into account the population size and other variables that may impact the results of the study.

In addition, since multiple global LEO satellite service providers are large multinational corporations, coupled with our examples of aggressive pricing practices in other markets, WestTel is disappointed that OfReg is taking an ex-post approach to this matter since the potential negative impact on the financial health of terrestrial licensees is, we believe, significant.

# 3/ Further Comments

## Direct-to-Device (D2D)

We note that there is increasing activity and technological developments in the area of direct-to-device (D2D) satellite communications in many parts of the world. This started with simple SMS messages and has recently included voice calls and video calls. A number of mobile network operators have announced trials and plans to launch commercial services incorporating D2D.

We therefore question whether OfReg should expand the current consultation process around licensing of satellite-based telecommunications providers to explicitly incorporate D2D services because it is likely to become a practical matter for the Cayman Islands sooner rather than later.

Giving all interested stakeholders the ability to express their views on this developing technology solution would seem to be a sensible approach.

# 4/ Reservation of WestTel's Rights

Please note that a lack of response to any issue in this consultation wholly or in part does not necessarily represent entire or partial agreement, nor does any position taken by WestTel in this document mean a waiver of WestTel's rights in any way. WestTel expressly reserves all its rights.

Dear Sir/Madam,
I spend quite a lot of time in the Cayman Islands [redacted] I'll be back again within the next couple of months. [redacted]
https://caymannewsservice.com/2025/04/ofreg-issues-draft-licensing-regime-for-satellite-comms/

Iffitech has been in operation since 2011 and collaborates with Unmanned Aerial Vehicle (UAV) manufacturers worldwide. In New Zealand, we specialise in UAV engine design/manufacture, whilst also offering airframe manufacture/production and relevant support and training where necessary. We specialise in engines rather larger than the smaller ones used in most older-tech surveillance UAVs.
My company works in the international surveillance UAV (drone) space with a particular focus on the Pacific area where sovereign territories have large coastlines and thus need Ultra Long Range (ULR) drones for border protection, research and development, search and rescue operations, maritime shipping surveillance, cargo and pollution monitoring, illegal operations detection (drugs etc), and land, sea and wildlife analysis.
[redacted] we would be interested in providing a commercial base station on GC, as one of the key aspects of our ULR UAVs is satellite communication to base, and as I have long considered relocating to GC. As the island has no need for several base stations, we would be interested in establishing the infrastructure and providing comms services to the telco's and other interested parties from one location.

Because Iffitech's work is quite different to that of the regular telecoms or retail client oriented businesses, a certain amount of discretion is involved. Therefore I suggest a particular class of license relating to operation of satellite comms that are not general population oriented. That would enable Iffitech to be able to offer services, under the oversight of the appropriate Cayman Islands authorities, to any client across any range of services.

[redacted] I would be happy to engage in further discussions directly when I'm back in Grand Cayman in the next couple of months. [redacted] we can discuss schedules over the next few weeks.

Denver Lawson

Owner/Technical Director

+6421 664 663
+649 263 0603
den@iffitech.com
www.iffitech.com

7E Ryan Place
Manukau
Auckland 2104
New Zealand