Responses to ICT 2024 – 2 - Consultation

Framework for the Licensing of Satellite-Based Telecommunications Providers

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Subject: Consultation ICT 2024 – 2 – Framework for the Licensing of Satellite-Based Telecommunications Providers.

GSOA welcomes the opportunity to participate in the public consultation on the proposed Framework for the Licensing of Satellite-Based Telecommunications Providers ("Satellite Framework").

GSOA commends the Utility Regulation and Competition Office (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. OfReg's work to improve the Satellite Framework is of critical importance as it will directly impact the structure and growth trajectory of the satellite sector. Among other things, the Satellite Framework will shape incentives to invest in the sector and enable its continued evolution and ability to introduce innovative service offerings. It will also impact the extent to which consumers are able to benefit from the services that satellite operators will make available.

By way of brief background, GSOA is the global non-profit association that serves as the premier platform for worldwide collaboration, representing the entire satellite ecosystem and bringing industry together. As a CEO-driven satellite association, GSOA takes the lead in addressing global challenges, seizing opportunities, and providing a unified voice for the satellite industry. GSOA is widely recognized as the representative body for satellite operators by international, regional, and national entities, including regulators, policymakers, standard-setting organizations like 3GPP, and international organizations such as the International Telecommunications Union (ITU), the Inter-American Telecommunication Commission (CITEL) and the World Economic Forum (WEF). Our vision is to help policymakers improve the state of the world by continuously bridging digital, education, health, social, gender and economic divides across diverse geographies and across mature and developing economies.

It is against this backdrop of almost thirty years of experience in the satellite industry that GSOA is pleased to provide the following comments to OfReg's very timely public consultation.

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

GSOA appreciates OfReg's interest in ensuring that the licensing framework in the Cayman Islands takes into account new and innovative satellite services. Satellite can clearly play an important role in the telecommunications environment of the Cayman Islands, from improving broadband connectivity in underserved areas to disaster and emergency response, to the provision of connectivity for ESIMs and ensuring an "always there" mobile connection via Direct-to-Device (D2D) technology, satellite is as important today as it has ever been.

To encourage the development of satellite services in the Cayman Islands, GSOA believes that OfReg should consider a "light touch" approach focused on streamlining licensing processes according to international trends.

Many satellite operators provide satellite capacity to locally licensed telecommunications service providers, who in turn provide services to their end users. This is the case where satellites are under the jurisdiction of the country under whose flag they were launched and comply with the Radio Regulations published by the International Telecommunications Union (ITU). In general, the best practice is to follow the "open skies" approach, which avoids duplication of spectrum, earth station, and service licensing. A relevant example in the Americas is Colombia, which abolished its landing rights regime in February 2022, and instead relies on earth station licensing. Another example is Chile, which relies on ITU rules to ensure satellite operations within their country.

For those companies that are seeking to serve customers locally, it could be convenient to have a category of satellite-based services as part of an ICT License, as long as the ICT license requirements are not overly burdensome (please see our answer to Question 3, below).

We note that for D2D, this also works well, as Mobile Network Operators can procure satellite capacity to provide D2D services for their customers. It is important to consider that, although the satellite operator can offer satellite capacity to local service providers, the satellite operator is not necessarily contracted by the final end user, which further underscores that there is no need to establish a license framework focused on foreign satellite systems, but to rather license spectrum access, earth stations, and service provision. This approach is aligned with best practices in the region, as it will avoid a "double licensing" process that has the potential of unduly burdening the development of the industry.

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?

GSOA appreciates the concerns outlined by OfReg in terms of ensuring compliance with the Cabinet decision on data localization, as well as to investigate and resolve complaints from consumers and service providers concerning the provision of ICT services and ICT networks that might be provided by a service

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provider located outside of the Cayman Islands. Likewise, we understand the arguments of limited jurisdiction in terms of outage notification, 911 and lawful interception. GSOA agrees with OfReg's consideration that this requirement should not apply to satellite services for the reasons outlined below.

GSOA believes that any satellite services provided directly to end users in Cayman Islands should be provided by an entity that obtains a service license from OfReg. In the example provided in the public consultation of a service being provided to a person in the Cayman Islands by a company located in Jamaica, GSOA believes the company should also seek an authorization in Cayman Islands to be accountable to the regulator.

Satellite capacity providers require that their customers - local service providers - obtain and maintain all regulatory approvals necessary to serve end users in a country. All consumers should have equal recourse to OfReg, whether they are satellite-based internet users or not. The local service provider should obtain a license and comply with all required obligations. OfReg has jurisdiction over such licensee and should be able to provide assistance, raise complaints or offer other regulatory assurances to Cayman citizens. The locally licensed operator should be the first point of contact for OfReg and should be responsible for providing outage notifications, as required.

However, to accelerate the deployment of innovative new satellite-based services to the Cayman Islands, GSOA urges OfReg to take a cautious and incremental approach to new regulations. To the extent that OfReg's authority over components of a service located in the Cayman Islands prove insufficient, OfReg could impose additional license conditions.

Satellite networks are transnational and flexible, creating not just a standard satellite network. Today, there are hybrid networks conformed by inter-satellite links amongst space networks (for example, GSO interacting with NGSO) and even terrestrial networks. As such, gateways need to be located in the most advantageous geographical point possible to ensure better performance from a spectrum efficiency and terrestrial fiber availability standpoint. Therefore, GSOA believes that OfReg should exempt satellite services from data localization requirements, relying on contractual clauses, license conditions, and technological solutions like cryptography to ensure that data is secure while in transit and during any processing. Requiring local infrastructure for lawful interception matters does not solve the problem of data localization as most networks today are transnational. Satellite services are ubiquitous by nature and, unless required for improved networking purposes, local infrastructure increases the cost-basis for providing the service, which affects service affordability, and therefore defeats the purpose of connecting unconnected areas. GSOA has provided guidance on modern approaches to data sovereignty and gateway requirements.[1]

GSOA welcomes the opportunity to further OfReg's understanding on modern satellite networks and systems and the secure processing of data, taking into account distributed gateways, points of presence and cloud computing.

[1] See GSOA's paper on Rethinking Local Gateways – A Satellite Industry Perspective

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As a potential solution, for example, OfReg could include provisions in the licenses of local service providers to ensure sensitive data is cared for in accordance with national law and regulation, including when that service provider relies on satellite capacity to provide the service; that is, the obligation should be on the local licensee providing the service (which may or may not be the satellite capacity provider).

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

As a general consideration, GSOA believes that the provision of ICT services, whether satellite based or not, should be licensed on a non-discriminatory basis, regardless of national origin and foreign ownership, and without distinction between domestic and non-domestic providers. It would be beneficial to consider – as OfReg suggests – "allowing license applications from operators with no local presence or Caymanian participation." Such a regulatory environment would result in more choices for local customers and end users in the Cayman Islands, including in disaster relief efforts.

In addition, it is important to consider that there may be a distinction between the space segment (i.e., the satellite capacity enabled by a satellite operator) and the local service provider that will market such capacity locally in the Cayman Islands. For example, satellite operators could partner with an existing ICT licensee, who would then provide the service under their own license. As has been stated above, it is important to consider that, although the satellite operator would provide the satellite capacity, in this arrangement, this operator will not contract with the final end user, so there is no need to establish a license framework for the satellite operator. However, the local service provider who will be contracting with other local resellers or final end users to market the satellite capacity can hold the license for satellite-based services and the respective obligations.

Question 4: What approach should OfReg take to the licensing of VSAT terminals?

GSOA fully supports the issuance of class licenses for VSAT terminals, Internet of Things (IoT), and Earth Station in Motion (ESIM) terminals, as this approach would streamline the authorization process and facilitate the large-scale deployment of satellite terminals in the Cayman Islands. This is consistent with regional Recommendation 68 adopted in CITEL PCC-II earlier this year. [2] Larger dishes would still require an individual license as per the current arrangements.

Assuming that OfReg adopts a blanket licensing approach, it should ensure that the associated fee structure does not impede the benefits of that approach. GSOA suggests that OfReg consider adopting a fixed fee structure for blanket-licensed satellite terminals based on the principle of administrative cost recovery. Among other things, the fixed-fee approach would reflect that all blanket-licensed terminals use the same spectrum in similar ways and collectively impose certain administrative and management costs on OfReg that are independent of the number of terminals licensed or operated. These should therefore be subject to a single, fixed fee (spectrum fees should be designed to recover relevant administrative and

2 PCC.II/REC. 68 (XLIII-24) GUIDANCE FOR BLANKET LICENSING REGIMES FOR UBIQUITOUSLY DEPLOYED FIXED SATELLITE SERVICE (FSS) EARTH STATIONS

spectrum management costs and not more). In addition, this approach would avoid the administrative challenges associated with verifying and validating the number of domestic satellite terminals deployed.

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

GSOA supports the guidance and rules already provided by the ITU regulations, which set out appropriate protection criteria for both satellite and other services in the same frequency bands and adjacent bands. Based on those regulations, the current satellite systems in operation were designed and future systems are being designed under the ITU rules already established, so it is important not to abandon these ITU rules that have fostered a global ecosystem for satellite systems.

GSOA believes that the ITU framework is an efficient framework in terms of managing coordination between satellite networks and terrestrial systems by providing a mechanism for resolving interference issues. Satellite systems can coexist with terrestrial services through the implementation of the relevant coordination procedures as referenced in the ITU regulatory framework. The Ku and Ka bands are already vastly used by fixed FSS stations such as Gateways or Fixed VSAT, as sharing with terrestrial systems is feasible wherever the location and characteristics of the terrestrial systems are known. The technical conditions defined in the coordination agreements would offer the necessary protection of FSS fixed earth stations and set the conditions for operation of both FSS and FS in an interference free environment.
In any case, the protection of terrestrial services is ensured in accordance with Article 21 of ITU Radio Regulations.

We would like also to note that these bands are critical for the deployment of ubiquitous VSATs and earth station in motion (ESIM) applications that will operate under the relevant ITU framework.

Question 6: How should OfReg deal with the Government's requirement to keep local traffic onshore?

GSOA appreciates that OfReg recognizes the important role satellite internet can play to ensure communications for emergency response teams, government agencies and critical services during disaster recovery effort. GSOA further appreciates that OfReg has invited the government to consider whether it wishes to amend the directive that requires that measures be taken to ensure local internet communication remains onshore, recognizing that such a requirement could impede the availability of satellite services, since it is burdensome to install local infrastructure to comply with this requirement.

In fact, it is not a common practice to require placing a ground station locally as part of a license process. This is detrimental to the provisioning of affordable services since such deployment leads to unnecessary operational costs; local infrastructure is usually deployed only based on market needs. This could represent a constraint because it may not be justified by the market to be covered. It is important to mention that the ground-stations, such as gateways or similar technology for connecting a satellite network to the broader Internet, need to be located in a strategic place based on the best functionality for the operations of the system. Consequently, limiting the location of the ground-station to the Cayman

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Islands could impact the performance of the system and the provisioning of the services for the end users. The satellite system configuration, as a global network, is different from a local service provider's network that can locate its infrastructure domestically because the scope and coverage is focused within the Cayman Islands and not globally. In this sense, GSOA urges OfReg to address this issue with the government, as noted in the Consultation document.

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?

Satellite services play a significant role in closing the digital divide by providing connectivity to unserved and underserved areas, providing complementary solutions in regions already covered by terrestrial networks, and fulfilling a range of essential and critical communication requirements.

Unconnected areas remain unconnected despite the efforts to bridge the gap from industry, governments and even individuals. The aggregate effort and collaboration of all stakeholders will allow industry to bring affordable and ubiquitous services for all. Consumers will enjoy access to new education, health and financial services, just to name a few, while the country will improve its economy by entering the digital era.

Satellite services can provide connectivity for countless applications that benefit unserved and underserved communities. Satellite services ensure adequate connectivity for schools in rural areas and provide those students with similar opportunities as students in urban areas. Moreover, satellite services connect public institutions, enable them to receive and send emergency alerts, and transmit other critical safety information to improve lives in rural and remote communities.

In that context, the introduction of satellite services helps to fill gaps where there is no connectivity. Satellite services reach geographical areas that cannot be connected by any other means, whether because of geographic difficulties or lack of economic return on investment. As satellite services complement local networks to provide broader telecommunications services, they help close the digital divide and bring more options to the end user, fostering healthy competition. Satellite services offer the implementation of access points that can be managed by local citizens, thereby strengthening the local economy and enhancing the development of small businesses. Satellite availability and increased affordability will allow small and mid-size enterprises to flourish, accelerate the digital transformation, and diversify the economy.

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Utility Regulation and Competition Office of the Cayman Islands

Consultation Framework for the Licensing of Satellite-Based Telecommunication Providers

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Introduction

Sateliot, established in 2018, is a pioneering satellite operator committed to delivering global Internet of Things (IoT) connectivity through the 3GPP 5G NB-IoT Non-Terrestrial Network (NTN) standard. As the first company to extend terrestrial Mobile Network Operators' (MNOs) reach into remote, rural, and underserved areas using satellite constellations, we play a transformative role in enabling seamless, cost-effective, and standardized IoT connectivity worldwide.

Operating under a wholesale business model, Sateliot partners exclusively with MNOs and IoT operators through GSMA-standard roaming agreements. This approach ensures that terrestrial networks are extended seamlessly via satellites without requiring any modifications to existing IoT devices or infrastructure. Our focus is on complementing terrestrial networks, offering an affordable solution for IoT connectivity in areas where traditional infrastructure is economically or physically unfeasible.

We appreciate the Utility Regulation and Competition Office (OfReg) for launching this consultation on the licensing framework for satellite-based telecommunication services in the Cayman Islands. This initiative reflects OfReg’s commitment to fostering competition, innovation, and connectivity resilience, all of which are essential for addressing the evolving digital needs of island nations like the Cayman Islands.

Sateliot recognizes that satellite-based IoT connectivity offers significant benefits in improving digital inclusion, supporting critical sectors such as maritime operations, logistics, disaster resilience, and environmental monitoring, and enabling efficient resource management in remote and underserved areas. By leveraging low-earth orbit (LEO) satellite constellations, we aim to address these challenges, providing reliable and scalable solutions that enhance national connectivity and economic growth.

We acknowledge the unique regulatory considerations associated with satellite-based services, including spectrum management, local traffic routing, and jurisdictional challenges. As such, Sateliot welcomes the opportunity to contribute insights into building a forward-looking licensing framework that balances innovation, fair competition, and consumer protection.

This consultation marks a crucial step toward aligning satellite-based telecommunication services with national policy objectives, particularly in enhancing connectivity resilience and advancing the Cayman Islands' digital economy. Sateliot is eager to collaborate with OfReg and other stakeholders to ensure a robust regulatory environment that encourages investment, innovation, and sustainable satellite-based solutions for IoT connectivity.

We look forward to presenting our unique capabilities, sharing perspectives on the regulatory framework, and contributing to the Cayman Islands' ambitions for enhanced connectivity, economic resilience, and digital transformation.

Sateliot's Answers

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

Sateliot strongly supports the introduction of new licence types specifically tailored for satellite-based services. While existing terrestrial-focused frameworks, such as the Fixed Wireless Access (Type B) licence, could theoretically be applied to satellite services, doing so risks creating regulatory ambiguity and failing to address the distinct operational and technical characteristics of satellite networks. Introducing dedicated licence types would enable OfReg to establish clear, fit-for-purpose rules that reflect the unique capabilities of satellite-based services. This is particularly important for emerging applications such as direct-to-device IoT connectivity, additionally it supports maritime and aviation communications, and disaster recovery solutions.

A specific licensing regime for satellite services would also provide much-needed regulatory clarity for operators and investors. This clarity would cover tailored eligibility criteria, appropriate fee structures, and proportional technical and reporting obligations, ensuring that satellite operators are not burdened with requirements designed for terrestrial networks. Such an approach aligns with global best practices, as regulators like the Federal Communications Commission in the United States and Ofcom in the United Kingdom have implemented distinct frameworks for satellite-based services, particularly to accommodate the rise of LEO satellite constellations and IoT solutions.

Moreover, introducing specific licence types ensures fair competition between terrestrial and satellite operators, avoiding both regulatory gaps and imbalances. Terrestrial networks and satellite services serve distinct but complementary roles in the broader connectivity ecosystem. While terrestrial networks excel in high-capacity, low-latency solutions for urban and densely populated areas, satellite services uniquely address connectivity gaps in remote, rural, and underserved locations where terrestrial infrastructure is either economically unfeasible or physically impractical. By introducing dedicated licence categories, OfReg can account for the specific operational models, technical needs, and strengths of satellite services without undermining the role of terrestrial networks

Sateliot's 3GPP-compliant 5G NB-IoT Non-Terrestrial Network (NTN) business model exemplifies how satellite IoT services complement terrestrial networks. Sateliot operates exclusively on a wholesale basis, partnering with MNOs through GSMA-standard roaming agreements. This enables MNOs to seamlessly extend their terrestrial IoT services into areas lacking network coverage, such as agricultural zones, maritime regions, or disaster-prone areas, without requiring modifications to end-user devices or infrastructure. As such, Sateliot's model does not compete directly with terrestrial operators; instead, it enhances their service portfolios by filling critical connectivity gaps. Introducing a streamlined licence category specifically for satellite-based low-data-rate IoT services would acknowledge this symbiotic relationship and enable operators like Sateliot to deliver targeted, cost-effective connectivity solutions that complement terrestrial networks.

A separate licence category for satellite IoT services also aligns with the unique regulatory needs of low-data-rate satellite IoT operations. Unlike broadband or voice services, which demand high bandwidth and continuous two-way connectivity, IoT services typically involve small bursts of data transmitted intermittently for applications such as asset tracking, environmental monitoring, and remote equipment diagnostics. This operational model requires a proportionate regulatory framework with streamlined licensing conditions, lower fees, and simplified technical obligations. For instance, while broadband

services might necessitate extensive quality-of-service monitoring and infrastructure reporting, satellite IoT services should focus on spectrum efficiency, device compatibility, and service availability.

Furthermore, a distinct IoT service licence would encourage innovation and investment in emerging technologies that leverage satellite connectivity. Critical sectors such as agriculture, logistics, transportation, energy, and environmental monitoring stand to benefit significantly from satellite IoT solutions. In island nations like the Cayman Islands, where maritime connectivity and disaster resilience are crucial, satellite IoT services offer unique advantages, such as enabling real-time vessel tracking, supporting early-warning systems for natural disasters, and post-disaster recovery efforts by maintaining essential communications when terrestrial networks fail..

By establishing a dual framework with one licence category dedicated to high-capacity broadband and voice services and another streamlined category for low-data-rate IoT services, OfReg can create a balanced, forward-looking regulatory environment. This approach ensures fair competition while fostering innovation and economic growth through tailored frameworks for both terrestrial and satellite services. For operators like Sateliot, a dedicated IoT licence category would provide the necessary regulatory clarity and flexibility to deliver affordable, scalable, and innovative satellite IoT solutions that support national resilience, economic development, and digital inclusion. Sateliot looks forward to collaborating with OfReg to design a framework that reflects these principles while advancing the Cayman Islands' connectivity goals.

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?

OfReg's approach to regulating satellite-based services must account for the jurisdictional challenges inherent to satellite networks while balancing consumer protection, regulatory oversight, and the practical realities of global satellite operations. Unlike terrestrial networks, where infrastructure is entirely within national boundaries, satellite services involve multiple jurisdictions. The satellites themselves are registered under the regulatory frameworks of their country of origin, while ground stations and operations often span several nations. Recognizing this, OfReg can adopt a pragmatic and proportionate regulatory approach that ensures accountability for services provided in the Cayman Islands without creating undue burdens for satellite operators.

A tiered compliance framework could provide an effective solution to address jurisdictional limitations. OfReg should require satellite service providers to comply with local obligations for the aspects of their operations within the Cayman Islands, such as the use of satellite terminals, spectrum usage, and local business registration. For example, satellite user terminals—whether broadband VSATs or IoT devices—operate on licensed frequencies and can be effectively regulated under OfReg's existing spectrum management authority. Similarly, requiring providers to establish a local presence through a Cayman-registered entity or local partnership ensures compliance with national regulatory obligations, including consumer protection and fair competition.

However, for parts of the service that occur outside the Cayman Islands, such as the operation of satellites in space and ground stations located in other jurisdictions, OfReg should adopt a "best-efforts compliance" standard. Under this model, satellite operators would be required to make reasonable efforts to meet local regulatory requirements, such as quality-of-service standards, outage notifications, and lawful interception protocols, while recognizing practical limitations. For instance, operators could be mandated to demonstrate compliance with international best practices, such as the ITU Radio

Regulations, and provide transparency about their service delivery processes. This would strike a balance between regulatory oversight and the practical realities of satellite service provision.

In the case of consumer protection, where OfReg's jurisdiction may be limited, OfReg could require satellite providers to establish clear and enforceable consumer recourse mechanisms. These mechanisms might include robust service level agreements (SLAs), transparent complaint resolution processes, and direct communication channels for subscribers in the Cayman Islands. Such measures would ensure that consumers receive adequate support and recourse without relying solely on OfReg to resolve issues that occur outside its jurisdiction. Additionally, OfReg could require satellite providers to maintain reporting obligations, such as periodic performance and outage reports, to monitor service quality and compliance with licensing conditions.

Jurisdictional challenges also affect obligations like lawful interception and emergency services access. OfReg could mitigate these challenges by mandating that licensed satellite operators commit to facilitating compliance with lawful interception requirements through coordination with their respective jurisdictions and ensure interoperability with local emergency response systems. This approach is increasingly being adopted by regulators globally, as it balances national security priorities with the technical realities of satellite networks.

Ultimately, OfReg must acknowledge the global nature of satellite-based services and focus its regulatory oversight on areas within its control while leveraging international frameworks and industry standards for areas outside its jurisdiction. By adopting a tiered approach that combines local accountability, best-efforts compliance, and international alignment, OfReg can create a balanced and forward-looking framework that facilitates the deployment of satellite services. This framework not only supports innovation and fair competition but also ensures reliable service delivery, consumer recourse, and improved connectivity standards for subscribers in the Cayman Islands, fostering public trust and economic resilience. OfReg to address these challenges and contribute to a regulatory environment that supports innovation, connectivity, and economic resilience in the Cayman Islands.

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

Sateliot recommends a **light-touch licensing regime for NTN complementary services** that acknowledges the unique nature of satellite operations while fostering innovation, investment, and fair competition in the Cayman Islands' telecommunications landscape. Unlike terrestrial networks, satellite services operate on a global scale, relying on infrastructure such as satellites and ground stations often located outside national jurisdictions. This inherently unique nature requires a licensing model that provides regulatory clarity and oversight while avoiding unnecessary burdens that could stifle growth and deter investment.

Focusing on NTN complementarity for terrestrial netwrosk, OfReg can introduce a streamlined framework that reflects the distinct operational characteristics of these satellite-based services. Specifically:

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- **Flexible models for local partnerships** - OfReg should allow satellite providers to operate through partnerships with existing ICT licensees or through a locally registered entity acting as a conduit for satellite services. This model not only encourages compliance with local regulations but also facilitates knowledge-sharing and market access for satellite operators. At the same

time, OfReg could permit providers with no physical local presence to apply for a satellite-specific ICT licence under a reduced set of requirements, reflecting the global nature of satellite services.

- **Streamlined spectrum licensing** - Given that satellite services rely on specific frequency bands to connect user terminals to satellites, OfReg should ensure efficient and transparent allocation of spectrum. While traditional spectrum fees are often based on terrestrial networks' intensive spectrum usage, satellite services—particularly for IoT applications—are far less resource-intensive. A proportionate fee structure, tailored to satellite operation types and data usage, would encourage market entry while ensuring equitable spectrum management contributions.

A light-touch licensing regime is critical to promoting the growth of satellite-based services in the Cayman Islands. Satellite operators face significant global operational costs related to launching, maintaining, and managing their infrastructure. Overly burdensome local licensing requirements could create barriers to entry, particularly for innovative providers focused on delivering affordable and scalable solutions, such as Sateliot's wholesale IoT connectivity model. Adopting a streamlined, proportionate approach will attract providers to offering cutting-edge satellite services that complement terrestrial networks, enhancing connectivity resilience and digital inclusion across the Cayman Islands.

Moreover, a light-touch regime will foster competition while delivering tangible benefits to consumers. Satellite services offer unique advantages, such as bridging the digital divide in remote areas, improving disaster resilience, and enabling critical IoT applications that drive economic growth and sustainability. By adopting a forward-looking licensing model, OfReg can position the Cayman Islands as a regional leader in enabling next-generation connectivity solutions.

Question 4. What approach should OfReg take to the licensing of VSAT terminals?

Sateliot recommends that OfReg adopt a class licensing framework for small satellite terminals generally, for retail and low-data-rate IoT applications. This approach balances effective regulation, promotes innovation, and minimizes administrative and financial burdens for both operators and consumers. It is a pragmatic solution that reflects the evolving nature of satellite services, where technological advancements have led to smaller and more cost-effective equipment that can now serve a wide range of consumer, commercial, and industrial use cases.

Historically, individual licensing of VSAT terminals (much bigger and intended for different applications)—along with associated high fees—was justified when satellite communications primarily served large corporate entities or emergency backup connectivity requiring significant infrastructure. However, the landscape has changed dramatically with the introduction of compact VSATs and standardized off-the-shelf devices that provide seamless connectivity for everyday users.

However, Sateliot does not operate VSAT, but serve standardised small IoT devices A class licence would authorize the operation of the type of devices we serve and smaller VSAT terminals without the need for individual applications or approvals, provided they meet pre-defined technical and operational standards. This model is already being successfully adopted in several jurisdictions, including the European Union, where VSAT usage for consumer and IoT applications is permitted under harmonized standards. By simplifying the licensing process, OfReg would eliminate unnecessary regulatory barriers, lower costs for operators and end-users, and encourage wider adoption of satellite-based solutions in the Cayman Islands.

To maintain regulatory oversight and ensure compliance, OfReg could require satellite service providers to obtain a facility-based licence that includes provisions for managing their network of VSAT terminals.

Under this arrangement, the responsibility for ensuring that terminals meet technical specifications (such as ITU and ETSI standards) and do not cause interference would rest with the licensed service provider rather than individual users. Providers would be required to maintain an up-to-date registry of their active VSAT terminals and ensure that all devices are properly configured and compliant with spectrum usage requirements.

Additionally, OfReg could consider retaining individual licensing for large or high-power VSAT systems, such as ground stations or enterprise-grade terminals, which may have a greater impact on spectrum management and interference. This targeted approach ensures that critical infrastructure remains well-regulated while streamlining the process for smaller, low-power terminals used for consumer broadband and IoT applications.

In the context of Sateliot's operations, where standardized IoT devices connect seamlessly to satellite constellations using licensed spectrum, a class licence regime would significantly reduce the administrative overhead of individually licensing thousands of low-data-rate devices. This would facilitate the widespread deployment of IoT solutions that benefit sectors such as agriculture, logistics, maritime tracking, and environmental monitoring—key areas of development for island nations like the Cayman Islands.

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

Sateliot concurs with OfReg's assessment that the risk of interference between satellite terminals, particularly VSATs and terrestrial fixed point-to-point links can be effectively mitigated when proper technical standards and international regulations are followed. The potential for interference is minimal due to the directional and narrow-beam nature of VSAT transmissions, which are highly focused to establish precise communication with satellites. This ensures that radio frequencies are used efficiently and minimizes spillover into adjacent systems.

However, for low-power IoT devices, such as those used in Sateliot's NB-IoT NTN model, the risk of interference is negligible. These devices transmit very small amounts of data at low power, often below the threshold that could interfere with terrestrial fixed-point systems. Their operations are inherently designed to be spectrum-efficient and compliant with global standards, making them ideal for coexistence with other radio services.

Question 6. How should OfReg deal with the Government's requirement to keep local traffic onshore?

Sateliot acknowledges the importance of the Cayman Islands Government's directive to keep local internet traffic onshore as part of its broader objectives to enhance network security, resilience, and data sovereignty. However, applying these requirements to satellite-based services, particularly where NTNs are involved, requires flexibility and pragmatism to reflect the inherent characteristics and global operational nature of satellite networks.

Unlike terrestrial systems, where data flows remain entirely within a localized infrastructure, satellite networks rely on **foreign-flagged satellites** and ground stations situated in other jurisdictions to relay traffic. When data from the Cayman Islands is transmitted to a satellite, it inherently exits national borders

to connect with the nearest **ground station**, typically located in another country. This global architecture is both a technical necessity and an operational advantage, enabling satellite services to deliver seamless connectivity in remote and underserved areas without requiring significant onshore infrastructure.

Mandating that satellite operators establish **local ground stations** to keep traffic onshore is unlikely to be practical or economically viable for a market the size of the Cayman Islands. Building and maintaining a ground station entails significant capital and operational costs, which could discourage satellite operators from entering the market or lead to disproportionately high service costs for consumers. Given the limited scale of local demand, imposing such a requirement would create an unnecessary barrier to innovation and investment, undermining the Government's objectives to enhance connectivity and promote digital inclusion.

Instead, OfReg could adopt a more **pragmatic and proportional approach** that recognizes the realities of satellite-based services while aligning with the spirit of the Government's directive.

For instance, Sateliot utilizes third-party gateways for the ground segment network requirements. By partnering with third-party providers our operations are significantly more efficient and cost-effective. Third-party ground station providers are specialized in ground segment operations, ensuring that the infrastructure supporting our services is reliably managed. Sateliot's constellation uses store and forward technology, meaning that our satellites do not need to maintain constant visibility of a gateway to operate. This capability, combined with strategically positioned ground stations worldwide, ensures full global coverage, faster deployment, and the flexibility to scale our services in response to market demand.

We understand the importance of data management and lawful interception requirements globally for reasons of security and privacy. Our ground-segment infrastructure partners guarantee that our network security is enhanced and our overall system architecture can meet compliance requirements. Our team is prepared to brief OfReg on our network design and ground-segment partner data management in this regard.

Additionally, according to GSOA's paper on national gateways,[1] ground stations are no longer required in every country due to advancements in data technology. Functions such as encryption, decryption, and data routing, which were traditionally handled by local ground stations (Teleport Gateways), can now be managed at a Point of Presence (PoP) or Point of Interconnect (PoI) outside the country.

The paper emphasizes that national security and Lawful Interception (LI) requirements can be fulfilled without the need for a local gateway. Instead, satellite operators can use virtual gateways or leverage centralized infrastructure while still complying with security and regulatory standards. This approach not only enhances flexibility but also reduces costs and operational complexities, especially for satellite services in motion, such as those used on aircraft and vessels

In conclusion, Sateliot's shared approach reduces the financial burden on operators, promotes faster market entry, and ultimately enhances connectivity in the Cayman Islands. By adopting a flexible and proportionate approach to the Government's directive, OfReg can focus on practical measures that balance regulatory objectives with the realities of satellite operations. A best-efforts compliance framework, combined with transparency requirements and targeted exemptions, would ensure operators of varying sizes and capacities can comply with regulations without facing unnecessary barriers. This

[1] GSOA. (2024). Rethinking Local Gateways – A Satellite Industry Perspective. The Global Satellite Operators Association. Available at: https://gsoasatellite.com/wp-content/uploads/GSOA-National-Gateway-Paper-Aug-24.pdf.

approach fosters a more competitive and inclusive market environment, supports innovation and resilience, and aligns with the goals of the proposed amendments, ultimately advancing digital inclusion while respecting the intent of the Government's policy.

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?

Sateliot believes that the introduction of satellite-based services will complement rather than disrupt the operations of existing terrestrial service providers in the Cayman Islands. Satellite services and terrestrial networks serve distinct but complementary roles within the broader telecommunications ecosystem, addressing different use cases and customer needs. While terrestrial networks are optimized for high-capacity, low-latency connectivity in urban and populated areas, satellite-based services are particularly effective in extending connectivity to remote, rural, maritime, and underserved regions where traditional infrastructure is impractical or economically unviable.

For consumers, the entry of satellite-based providers will offer greater choice, resilience, and innovation in connectivity solutions. Satellite services can address existing gaps, particularly in areas where terrestrial coverage is limited or non-existent. This is especially critical in island nations like the Cayman Islands, where maritime connectivity, disaster recovery, and IoT-based applications are essential to economic and social development. For instance, Sateliot's low-data-rate IoT services, operating under the 3GPP 5G NB-IoT NTN standard, provide affordable and scalable solutions for asset tracking, environmental monitoring, agricultural optimization, and logistics—use cases that are underserved by traditional networks. These innovative applications create opportunities for businesses and consumers without directly competing with terrestrial networks optimized for high-bandwidth use cases.

The resilience benefits of satellite services are also noteworthy. In the event of natural disasters, such as hurricanes, which frequently affect the Cayman Islands, terrestrial infrastructure is often vulnerable to widespread damage. Satellite-based services can provide essential backup connectivity for emergency response, government operations, and critical services, ensuring continuity when terrestrial networks fail. This resilience enhances national preparedness and recovery efforts, delivering measurable benefits to both businesses and consumers.

From a competition perspective, the price point and capabilities of satellite-based services make them unlikely to significantly disrupt existing suppliers in the short to medium term. As highlighted in OfReg's impact assessment, the cost of satellite connectivity, particularly for broadband services, remains higher than terrestrial alternatives. Consequently, satellite services are more likely to target niche markets, such as remote areas, offshore locations, and IoT deployments, than directly competing for urban residential and enterprise markets who are already well-served by existing terrestrial networks. This segmentation reduces the likelihood of market cannibalization while providing opportunities for collaboration between satellite operators and terrestrial providers.

Importantly, satellite operators such as Sateliot operate under a wholesale business model, partnering with Mobile Network Operators (MNOs) to extend their coverage. Rather than competing with existing providers, this model enables MNOs to seamlessly integrate satellite connectivity into their service portfolios, expanding their reach and enhancing service offerings. For example, Sateliot's GSMA-standard roaming agreements allow terrestrial operators to offer ubiquitous IoT connectivity without modifying their existing devices or infrastructure. This creates a win-win scenario where terrestrial providers can tap into new revenue streams and address connectivity gaps while leveraging satellite operators' infrastructure.

In summary, the introduction of satellite-based services will complement the existing telecommunications landscape in the Cayman Islands by enhancing connectivity resilience, expanding coverage to underserved areas, and enabling new IoT-based applications. With the introduction of global standards, such as Sateliot's implementation of 3GPP 5G NB-IoT NTN, with affordable satellite connectivity prices and a clear operational focus, satellite services are well-positioned to target complementary markets without disrupting established terrestrial providers. For consumers, this means improved access to innovative connectivity solutions, greater network reliability during emergencies, and expanded opportunities for digital inclusion.

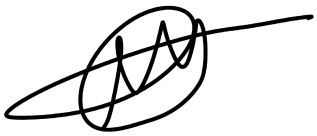
Closing Remarks

Sateliot appreciates OfReg's proactive approach in addressing the regulatory framework for satellite-based telecommunication services in the Cayman Islands. This consultation represents a significant opportunity to design a future-oriented and balanced policy that leverages the unique strengths of satellite connectivity while fostering innovation, competition, and digital inclusion.

Sateliot remains committed to supporting OfReg's efforts to establish a robust and sustainable satellite services landscape. Our innovative wholesale IoT business model is designed to work hand-in-hand with terrestrial operators, extending their reach and enabling critical solutions in areas such as disaster resilience, agriculture, maritime operations, and environmental monitoring. By fostering an environment that welcomes innovative operators and embraces collaborative partnerships, the Cayman Islands can position itself as a leader in connectivity resilience and digital transformation.

We look forward to continued collaboration with OfReg and other stakeholders in building a regulatory framework that meets the evolving needs of the Cayman Islands' digital economy. Sateliot is ready to contribute our expertise and insights to support this important initiative and help deliver impactful and scalable connectivity solutions to the nation. Thank you for considering our perspectives, and we remain available to assist in any way we can.

Sincerely,



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

CABLE AND WIRELESS

Response to The Office's Consultation on

ICT 2024 – 2 - Consultation 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 2024 – 2 - Consultation Framework for the Licensing of Satellite-Based Telecommunications Providers** (the Consultation Document) published November 21, 2024.

1.2 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 Office or respondents. Flow reserves the right to comment on any issue raised in the Consultation Document at a later date.

1.3 Please send all responses to this Consultation Document and any matters arising to Bruno Delhaise at bruno.delhaise@cwc.com and Melesia Sutherland at melesia.sutherland@cwc.com .

2. Flow's Response to the Office's Questions

Question 1: Should The Office introduce new licence types to facilitate the specific licensing of satellite based services?

2.1 Flow does not support the introduction of a new licence type for satellite-based services. Licenses should be technology neutral, that is indifferent to the technology used to provide a service. Technology neutrality, allows providers who own infrastructure and provide services over that infrastructure to offer a range of services on the same terms and conditions, regardless of the type of infrastructure used to provide the services, and regardless of the infrastructure used, the legal obligations are the same for the same services. Network operators/ service providers are not restricted to using a specific technology or equipment configuration in the provision of services to customers but have the flexibility to deploy any technology that would provide the service. Accordingly, Flow does not support the Office's position in the Consultation Document (all references to the Office's position is with reference to the Consultation Document, unless otherwise stated) that:

18. It would also be beneficial to be able to differentiate between terrestrial and satellite-based provision in the type of licence awarded to service providers in order that any specific licence provisions which may apply could more easily be tailored to the services involved and to form a distinction between terrestrial and satellite-based licensees.

2.2 At paragraph 19, the Office states:

- *19. Satellite services could be licensed using existing licence types, by shoe-horning services into the existing definitions;*

The use of pejorative language, '*shoe-horning'* is unfortunate. what the Office calls '*shoe-horning'* is technology neutrality which maintains parity between satellite-based providers of telecommunications services and terrestrial based providers of telecommunications services. That is same licence type for same/ similar services provided.

2.3 In support of technology neutrality, Flow endorses the Office's conclusion that:

31. All ICT licensees are subject to these requirements. There are no regulatory reasons that any company that wishes to supply retail internet or voice services in competition with (or in conjunction with) existing providers should not be licensed on a similar basis. Not requiring the same from a satellite-based provider would potentially put them at an unfair advantage compared with terrestrial providers and The Office is bound to ensure that competition between providers is fair.

2.4 There is precedence in the Caribbean for issuing licences to Satellite-Based Telecommunications Provider, Starlink, in existing licence categories:

(i) In Trinidad and Tobago, Starlink was issued a '*Type 2 Concession for the Provision of a Public Domestic Fixed (via satellite) Telecommunications Network and Public Domestic Fixed Telecommunications Services on a National Geographic Scale'* which is within the existing category of

licences. A Type 2 Concession is a Network-Service Concession (network-based) which authorises a concessionaire to own or operate a public telecommunications network in addition to providing public telecommunications services over that network.

(ii) In Jamaica, Starlink was issued a Carrier Licence and a Service Provider Licence, again within the existing licence categories, under which terrestrial operators are licensed. A Carrier Licence because it owns and operates a public telecommunications infrastructure and the Service Provider Licence that allows Starlink to offer services.

2.5 Use of existing licence categories facilitate competition on a level playing field and such an approach is inherently technology neutral. A technology neutral approach is consistent in the treatment of all service providers of the same/similar services and virtually eliminates arbitrage between different licence types for the provision of same/similar services.

Question 2: How should The Office approach the issues associated with the fact that the provision of some parts of a satellite service occur outside its jurisdiction?

2.6 The Office's conclusion that:

21. As such, existing satellite networks are regulated outside the jurisdiction of The Office. The only part of the satellite service that would be directly regulated by The Office are those parts which are situated in the Cayman Islands, which constitutes only the satellite terminals needed by end-users to connect to the satellite service...'

This statement does not adequately reflect reality. It is not user terminals that are regulated, or put another way, under the jurisdiction of the Office, but rather the services offered by satellite-based telecommunications providers in the Cayman Islands. We do not see the provision of telecommunications services via satellite as dissimilar to telecommunications services offered by the existing providers in the Cayman Islands via terrestrial infrastructure. Some parts of terrestrial service, particularly where destined for termination outside of the Cayman Islands, is outside of the Office's jurisdiction. Flow does not believe that this has impaired the Office's ability to regulate the licensees who provide services in the Cayman Islands.

2.7 Flow supports the Office's own solution to its defined limitations:

27. There are a number of ways in which The Office could approach these issues, for example:

- *Apply the necessary provisions which all terrestrial providers must adhere to, to the licences of any satellite services, with a requirement to ensure that they are met lest the licensee be subject to penalty.*
- *Include the necessary provisions in the licences of any satellite services, with a requirement to make best efforts to ensure that they are met.*
- *Recognise that there are certain issues which will fall outside the jurisdiction of The Office and exclude the requirement to meet these from the licence of any satellite-based provider.*

2.8 By virtue of its own solution, the Office has recognized, if unintentionally, that technology neutrality is the most practical and efficient approach to licensing satellite-based telecommunications providers. Our further comment on this matter is that with technology neutral licences, 'best effort' must apply to all licensee or to none.

Question 3: What models of service licensing would be most appropriate for The Office to consider?

2.9 A technology neutral approach should be taken by the Office. The existing licensing framework is adequate. Flow does not consider the options at Paragraph 32 as licence models:

32. There are, however, a number of ways in which this could be approached:

- *Satellite operators could establish their own company based in the Cayman Islands and apply for an ICT licence in their own right;*
- *Satellite operators could partner with an existing ICT licensee, who would then provide the service under their own licence;*
- *A (new) local company could be established and apply for an ICT licence, and then act as a conduit for a number of satellite operators;*
- *The Office could allow licence applications from operators with no local presence nor Caymanian participation.*

These are actually business models, which are ways a business may choose to structure its operations, which could be direct or through a third party. These business models are not subject to regulation as

the Office's paragraph 32 may imply. The licence is about a legal, formal authorization for the provision of service, with obligations, independent of the business model defined. Flow continues to recommend a technology neutral approach, which applies the existing licensing framework.

Question 4: What approach should The Office take to the licensing of VSAT terminals?

2.10 Flow's view is that a technology neutral approach should be taken by the Office and that the existing licensing framework is adequate for VSAT terminals. Within the context of the Consultation Document, where it is that VSATs are intended for use by residential customers for personal use, similar to the personal use of mobile phones, Flow's position is that consistent with technology neutrality, authorization should be included in the licence of the satellite-based telecommunications provider. As with mobile phones, the satellite provider, not the customer, must pay for the VSAT spectrum used.

Question 5: Do you concur with The Office's assessment of the potential interference between satellite terminals and other services?

2.11 Flow shares The Office's concerns about the potential for interference between VSAT transmission and point to point microwave links. This is perhaps a greater risk for the Cayman Islands because the islands of Little Cayman and Cayman Brac are connected by microwave links. The Office is right to take a posture of vigilance to protect existing services to the Islands from interference by VSAT transmissions. This in line with the international radio regulation principle to protect existing services.

2.12 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.

2.13 The Office must also have means of recourse to address interference.

Question 6: How should The Office deal with the Government's requirement to keep local traffic onshore?

2.14 In accordance with *ICT 2021 – 1 – Determination Internet Exchange Points (IXP) Regulatory Framework* (IXP Regulatory Framework) published March 5, 2021, Flow has had to modify

service offering to remain compliant with the IXP Regulatory Framework to keep local traffic onshore. Again, technology neutrality is the appropriate framework for evaluating this issue – either all operators comply with the IXP Regulatory Framework or it is abolished for all operators.

Should The Office maintain the IXP Regulatory Framework, The Office must require that satellite operators:

- Use local ground stations for traffic originating and terminating within Cayman Islands.
- Enforce the IXP Regulatory Framework, ensuring that locally generated traffic, originating and terminating in the Cayman Islands, remains in the Cayman Islands.

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?

2.15 The Office asserts at Paragraph 61 that:

61. Whilst satellite-based internet providers therefore offer competition to local services, we do not believe that at current price levels they would be taken up by a large enough number of subscribers to damage the ability of existing operators to continue to invest in their networks, or reduce their quality of service to a detrimental level which will materially impact the service they provide to consumers.

2.16 Flow has been issued a twenty (20) year licence. Flow would expect that a twenty (20) year licence will be issued to satellite providers. Given the relatively long licence term, the statement the Office has made is valid only in the short term.

2.17 On the other hand, at Paragraph 8, the Office acknowledges that:

8 '…..At the same time, the services offered have improved to the level where they are now similar to those provided by terrestrial equivalents and are likely to improve as more satellites are launched and as technology further improves'

It is important that in treating with provision of satellite-based telecommunications services, that the Office's framework is informed by the short, medium and long term, which paragraph 8 contemplates.

2.18 An understanding of the satellite business model is key to assessing the impact on existing suppliers and customers. Specifically, the business model of Low Earth Orbit (LEO) satellite providers, which are offering or seeking to offer services directly to consumers, businesses and governments. LEOs embrace the business model made popular by the likes of Amazon, Facebook and Uber, where Instead of expecting an immediate positive cash flow, the focus is on business models that facilitate the acquisition of customers and the control of ecosystems, through low initial prices to attract business, and subsidies, even if that eliminates the possibility of profits for a while. The goal is to become the early leaders and to create a foundation for long-term success, following the model of other high-tech players over the past twenty (20) years. These businesses first concentrated on creating scale and acquiring a critical mass of users and then shift their focus to generating revenues from the network[1].

2.19 LEO (Low Earth Orbit) providers like SpaceX (Starlink) and Amazon (Kuiper) can forgo profitability for relatively extended periods of time because of massive private capital investment, including from venture capital, private equity, and investment from tech giants. SpaceX has raised billions from investors such as Google and Fidelity, enabling rapid scaling of Starlink without immediate need for capital injection from subscribers. Their investors are willing to wait longer for profits from these large LEO constellations, with the expectation that satellite-based telecommunications providers will capture the market for telecommunications service and in the future return handsome profits.

2.20 LEO satellites, in particular, are a part of a connected business ecosystems meant to deliver adjacent strategic benefits. For example, by providing high-speed internet connectivity, SpaceX's Starlink could enable SpaceX Tesla connected cars and advance the development of various use cases. Similarly, Amazon's Project Kuiper could enable several services provided by Amazon, including further growth in the global e-commerce market and Amazon Web Services (AWS).

2.21 Even in more advanced economies, LEOs satellites now support low-latency applications and high-throughput connections, challenging terrestrial operators in those markets.

[1] Large LEO satellite constellations: Will it be different this time? | McKinsey

2.22 Satellite networks are global networks in that once fully launched, the service can be accessed from anywhere in the world. No terrestrial network is truly global. Regarding scale and reach, Starlink has launched over 5,000 satellites as of 2024 and plans to increase that number significantly. Amazon's Project Kuiper aims to deploy over 3,200 satellites. OneWeb has plans to establish a network of approximately 648 satellites, with many already in orbit. These satellites aim to provide global broadband connectivity and will, in time, provide mobile services, directly to customers**.** The only impediment, currently, to provide mobile services directly is the allocation of spectrum, at the global level, to satellite-based telecommunications providers.

2.23 Another aspect of the scale of LEO constellation is the massive scale of their principals. The GDP of the Cayman Islands is relatively small compared to the revenues of major tech companies who own or control LEO constellations. The GDP for Cayman is projected to be approximately $6 billion in 2024. In comparison, companies like Apple, Amazon, and Alphabet each generate annual revenues exceeding $300 billion. Apple's revenue alone in 2024 is projected at $400 billion, approximately 67 times the GDP of the Cayman Islands. The larger operators in the Caribbean, Cable & Wireless and Digicel, generate revenues in the hundreds of millions to low billions, with heavy investment costs in infrastructure.

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. Therefore, there is no doubt that satellite providers will have an enormous impact on existing service providers. The Office must devise regulations that account for the power of satellite consortiums, which is further evidenced by the fact that for World Radio Conference (WRC) 2027, 80% of the agenda is occupied by satellite matters. The WRC, among other things, allocates spectrum for new services and promotes international harmonization of the use of spectrum.

2.25 Flow recommends that the Office regulates satellite services within the existing service licence framework.

3. Conclusion

3.1 At paragraph 13, The Office states:

13. The Office is keen to consider the establishment of a framework for the licensing of new and innovative satellite-based telecommunication services. This has to be done bearing in mind the need to ensure fair competition between satellite, fixed and mobile services all of which have an important part to play in providing connectivity to Caymanian consumers.

3.2 Flow supports this objective and recommends that the Office regulates satellite services within the existing license framework, which is inherently technology neutral, supporting fair competition between satellite, fixed and mobile services.

3.3 In response to its questions, Flow makes the following recommendations to the Office:

i. **Promote competition**: 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.

ii. **Promote 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.

iii. **Promote employment**: With the intense competition from global tech companies, like satellite-based telecommunications providers, terrestrial providers may have to shed jobs to remain competitive. 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-based providers should be encouraged to establish ground infrastructure within Cayman Islands, contributing to the local economy.

iv. **Protect existing services and existing spectrum assignments from interference from satellite-based telecommunications providers**: 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.

v. **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.

3.4 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 ant ICT networks where it is reasonable or necessary to do so.*

END

ICT 2024 – 2 - Consultation

Framework for the Licensing of Satellite-Based Telecommunications Providers

Prepared For:

UTILITY REGULATION AND COMPETITION OFFICE

THE CAYMAN ISLANDS

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

We note that OfReg has proposed to approach the licensing of retail satellite services by either using existing licence types, by "shoe-horning services into the existing definitions; or by introducing new licence types to better reflect the "different types of satellite services**."**

Digicel's position is that new licence types should be introduced to better reflect the different types of satellite service.

However, Digicel is of the view that first, a proposed comprehensive regulatory framework addressing satellite services must first be put in place. Digicel's position is that there should be a fair and non-discriminatory application of the current ICT regulatory framework amongst current ICT operators/licensees and new entrants regardless of the nature of the licence type or technology being used to provision ICT services.

In the instant case, Digicel supports an approach whereby retail satellite service licence obligations regardless of whether it falls within an existing licence type or a "new licence type", should not be more advantageous than those for terrestrial network operators. It is Digicel's position that such an approach will ensure fairness and a level playing field for all ICT service providers. The licensing framework must provide clarity, promote investment in satellite technologies, and align with international best practices while addressing jurisdictional responsibilities.

Digicel is of the view that any regulatory framework implemented to regulate satellite service providers must take into consideration the obligations of holders of current ICT licences whose operations and maintenance of telecommunications network infrastructure resides physically in the Cayman Islands or its surrounding waters. Licensees with terrestrial networks are required to maintain a local workforce, that is responsible for the operation and maintenance of the network infrastructure. As such, licensees with terrestrial networks directly contribute to nation building through local job creation, government fees and taxes, which contribute to Cayman's economy. In direct contrast, the Satellite Technology service provider will not require any terrestrial network infrastructure within Cayman unless this is required by local law, thereby bypassing the need to employ a local work force, thereby limited to no vested interest in Cayman's local economy.

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.

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

Digicel respectfully disagrees with OfReg's statement on its perceived limitations on its jurisdiction insofar as its ability to regulate satellite providers. We strongly urge the OfReg to get detailed legal advice on this significant matter as will underpin the basis for the regulation of satellite providers in the Cayman Islands.

Digicel's understanding of the legal position is that a state not only has the sovereign right to regulate activities within its territory, but it also has the right to regulate activities that produce effects within its territory. In the context of satellite providers, this may include critical matters such :

Ground-based infrastructure: If the satellite operator has ground stations, offices, or facilities in the state, the local regulator has jurisdiction.

Service provision to users: Satellite services (e.g., broadband, TV) provided to individuals or entities within the state's territory fall under its jurisdiction.

National security: Monitoring or restricting satellite services that could threaten state security.

Public safety: Ensuring satellite communications comply with emergency response needs.

Economic interests: Regulating competition or spectrum use to protect the state's telecommunications market (interference, misuse of spectrum, avoiding harmful interference with other states' communications systems).

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. Digicel recommends and supports the approach of applying the necessary provision which all terrestrial providers must adhere to, to the licences of any satellite services.

Additionally, OfReg should :

- Require satellite operators to establish local entities to ensure accountability within the Grand Islands. This would enable OfReg to enforce compliance with local regulations, such as consumer protection laws, connection to emergency services, and establish licensing requirements for related services while maintaining oversight of operations impacting domestic subscribers.
- Develop policies for hosting satellite ground stations and promulgate the relevant regulations where this is concerned.
- Collaborate with the UK concerning matters of international law governing satellite services and the impact of the activities of satellite operators to ensure compliance with local requirements.
- Apply provisions mandating satellite service providers to meet the same consumer protection and service reliability standards required of terrestrial providers. Incorporate best-effort clauses for compliance in areas where jurisdictional limitations exist, with penalties for non-compliance where enforceable.
- Clearly communicate to consumers that OfReg has limited authority over the full scope of satellite services, ensuring realistic expectations and accountability on the part of the provider.

Digicel wishes to reiterate that the framework must provide a level playing field where all market participants situated in the same market are treated similarly).

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

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. This however must be first spearheaded by a comprehensive regulatory framework governing satellite services and activities, to provide clarity on OfReg's powers and jurisdiction where this is concerned.

The obligations as set out in line items 29 and 30 should be applicable to all players/operators.

It is Digicel's recommendation that satellite operators should be required to have a local presence and establish their own company based in the Cayman Islands and apply for an ICT licence or any such licence in their own right, anything less could be viewed as non-discriminatory.

Question 4: What approach should OfReg take to the licensing of VSAT terminals?

OfReg could adopt a simplified framework for VSAT terminal licensing to balance regulatory oversight and market accessibility:

- 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.

Question 5: Do you concur with OfReg's assessment of the potential interference between satellite terminals and other services?

Yes, interference is a valid concern, and Digicel agrees with OfReg's 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.
A few observations:

- Detail on Risk Mitigation: While mechanisms like beam direction controls are mentioned, further elaboration on how these will be monitored or enforced locally might enhance confidence in their effectiveness.
- Unutilized Frequency Ranges: Noting that some frequency ranges (e.g., 14.0–14.5 GHz and 27.5–30.0 GHz) are "not currently used," OfReg could address whether this situation might change and how future usage will be managed to avoid interference.
- Local Implementation: Explicitly stating how OfReg ensures adherence to ITU rules within the Cayman Islands would further strengthen the assessment.

Question 6: How should OfReg deal with the Government's requirement to keep local traffic onshore?

Digicel posits that there has to be non-discrimination in the application of telecommunication legislation/regulation amongst new entrants and incumbents in the domestic broadband market of the Cayman Islands.

Digicel disagrees with the OfReg's position expressed at line item 53. Notably, OfReg is of the view that the provisioning of telecommunications services is technology neutral. The new entrant should ensure that it complies with existing domestic telecommunication legislative/regulatory requirements and not the OfReg trying to revise same to the detriment of incumbent providers. The OfReg is mandated to ensure that the application of extant telecommunications legislation/regulation is fair and non-discriminatory as well as ensure fair and equitable competition in its domestic telecommunications markets.

Terrestrial network operators have network coverage, data privacy, and legal intercept regulatory commitments which are at significant cost to operators. To suggest that the cost of installation of a ground station by a satellite provider may be economically ineffective and expensive as the basis by the OfReg to determine that domestic traffic should be off-shored is not reasonable. The cost of a ground station would have to be factored in by the new entrant (satellite broadband provider) into the cost of bringing its broadband plan/package to market and/or price of its broadband plan/package.

There must be equivalence/non-discrimination in the regulator's application of extant telecommunication legislation/regulation. The new entrant has to bear the cost of compliance with these extant regulations in the same way as other operators. These costs would be reflected in the prices of their products for which the potential end-user/customer makes an informed economic choice.

In light of this Digicel is of the view that the Government should require that local traffic is kept onshore. The onshore requirement is challenging for satellite services but can be addressed through a mandate that satellite service providers establish local gateways or data centers to ensure compliance with the requirement as indicated by the office. Policies ensuring traffic routing and data sovereignty can protect local interests while allowing satellite services to integrate effectively with national infrastructure. Allowing these providers to circumvent the rule that terrestrial providers must adhere to will put them at an advantage and therefore be unfair. An amendment to the directive to a version that extends to all operators would be prudent, impartial and just.

As such Digicel would subscribe to a non-discriminatory approach to be undertaken by the Regulator in the discharge of its regulatory mandate and should maintain the requirement that operators ensure that local traffic remains onshore in their licence.

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?

Satellite broadband providers may be deemed to be dominant in the provisioning of broadband services on their networks. There is no supply side substitutability in the provisioning of said service but there is demand side substitutability. Hence the regulatory constraints/obligations due to a dominant provider provisioning broadband services with terrestrial networks may potentially have to be applied. A market definition of "satellite services" followed by a dominance assessment for the domestic broadband market would be a reasonable course to follow upon entry by a satellite broadband provider. This approach is likely to allay concerns on the competitive dynamics in the domestic broadband market as well as bode well for regulatory certainty.

The OfReg's position that competition would not be affected as a result of a cursory review of the price points of satellite broadband packages/products is questionable at best, as this conclusion has been formed without the necessary competitive assessments and cost analysis.

- Impact on Existing suppliers: While satellite services may provide competition, it is critical that existing suppliers are not placed at a disadvantage due to regulatory disparities. Existing suppliers who already face the threat of Over the Top technology companies eroding their revenues cannot be made to bear a heavier regulatory burden than satellite operators in the form of fees and other costs associated with regulatory compliance.
- Impact on Consumers: Satellite services can complement existing offerings by addressing gaps in connectivity. However, maintaining fair pricing and service quality across the market is essential to avoid cherry-picking profitable segments and undermining universal service commitments. The OfReg also needs to be mindful of the challenges associated with satellite regulation that have direct and significant impacts on customers such as access to customer care resources, accountability for billing and service issues, equipment defects and cooperation with local emergency first responders.

The OfReg is reminded that prices of telecommunications services should be cost-based. The OfReg should undertake an analysis to ascertain whether the price point as set out by satellite broadband providers are cost based.

This approach ensures that the licensing framework is equitable, fostering innovation while protecting the interests of existing operators and promoting sustainable market growth.

Lastly, the OfReg is reminded that the provisioning of telecommunication services should be technology neutral. In other words, the same regulatory principles should apply regardless of the technology utilized to provide a telecommunications service. Emphasis should be placed on the provisioning of the service by the new market entrant under the same regulatory obligations/requirements/constraints of incumbent operators in the market and not on the technology utilized to provision said service. The OfReg should not be perceived in its application of its regulatory mandate to be favouring a specific technology or use

regulations to push the market towards a certain structure. Digicel seeks to reiterate that OfReg's application of the telecommunication legislation/regulation should be non-discriminatory for operators in similarly situated markets (i.e., domestic broadband market).

Alternative Point of contact:

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

December 23, 2024

To: consultations@ofreg.ky

Subject: **Eutelsat Group's response to ICT 2024–2 Consultation on Licensing Framework for Satellite-Based Telecommunications Providers**

Dear OfReg Team,

Eutesat Group appreciates the opportunity to provide input on the proposed framework for licensing satellite-based telecommunications providers in the Cayman Islands.

Eutelsat Group was formed in September 2023 from the combination of Eutelsat, a global Geostationary Equatorial Orbit (GEO) satellite operator, and the Low Earth Orbit (LEO) constellation operator, OneWeb, creating one of the world's most innovative and experienced commercial satellite operators. With a fleet of 35 geostationary satellites and a LEO constellation of more than 600 satellites providing capacity for broadcasters, media service providers, telecom operators, Internet Services Provider (ISPs) and governmental agencies. Eutelsat Group is the world's first satellite operator with an integrated GEO-LEO infrastructure. Our satellites are used for video broadcasting, satellite newsgathering, broadband services, data connectivity, also for aviation and maritime, and enabling mission-critical government and NGO communications all around the world.

Eutelsat Group recognizes the critical role that satellite communications play in advancing the Cayman Islands' strategic objectives and commends OfReg for the efforts to establish a clear and transparent regulatory framework on the licensing of satellite-based communications services.

For island nations like the Cayman Islands, embracing satellite technology presents significant opportunities. Archipelagic geography often poses challenges to traditional infrastructure development, leading to connectivity disparities. Both GSO and NGSO satellites can bridge these gaps by providing reliable communications and internet access across all islands, fostering digital inclusion. This enhanced connectivity can stimulate socio-economic growth by attracting technology-driven businesses and supporting sectors such as tourism, finance, and education. Moreover, improved internet access facilitates e-government initiatives, enabling more efficient public services and better engagement with citizens.

Our responses here below address each aspect of the proposed framework, aligning our insights with the Cayman Islands Government's Strategic Policy Statement (SPS) for 2024–2026.

We kindly invite OfReg to take the below comments into consideration for the establishment of a regulatory framework that could encourage the provision of new and innovate satellite communication services in the country.

No.	Consultation Questions	Eutelsat Group Comments & Suggestions
1	Should OfReg introduce new licence types to facilitate the specific licensing of satellite-based services?	Eutelsat Group agrees that satellite systems have inherently different operational and technical characteristics compared to traditional terrestrial networks. Noting that there is currently no specific license type applicable to the provision of telecommunications services (voice or internet) by satellite, we believe that – in principle - any applicable licensing condition and regulatory requirement should first acknowledge and embrace the unique characteristics of both GSO and NGSO satellite networks. To fully leverage the tremendous benefits of satellite technology, the proposed framework must be adapted in a way that would facilitate the provision of satellite-based services and would not create unnecessary administrative burdens for satellite operators and service providers wishing to enter the market. Eutelsat Group supports OfReg's reasoning that satellite services could be licensed under the existing license types (para. 15). Having a Service Licensing regime which is technology neutral and allows licensed service providers to offer telecommunications 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.

		We further understand that this consultation mainly covers the provision of services to consumers and businesses and does not extend to issues of spectrum authorization. For the establishment of communication links between User Terminals (UTs) and the satellites, radio spectrum resources are used. For the use of radiofrequencies, we understand that a Type S (Spectrum) License would be separately required under the existing framework. Eutelsat Group expresses the view that traditional spectrum licensing regimes and spectrum pricing formulas originally designed for GSO satellite systems may not be suitable anymore to address the realities of modern satellite technology, especially in light of the emergence of NGSO constellations, such as that of Eutelsat-Oneweb and of high throughput satellites which use a large amount of spectrum. For instance, the high costs of spectrum use, often calculated using equations designed for GEO systems, can render services based on LEO networks economically unviable, pushing these innovative technologies out of the market. Furthermore, advancements in technology require the implementation of a more flexible licensing approach for UTs, such as blanket licensing, to streamline deployment and reduce administrative burdens and costs. We provide more elements on the licensing of UTs and on spectrum-related matters in response to Q. 4a below.
2	How should OfReg approach the issues associated with the fact that the provision of some parts of a satellite service occur outside its jurisdiction?	OfReg's Responsibilities and Powers While robust regulatory oversight is essential, it is imperative that any framework applicable to satellite communication services fosters innovation and does not impose undue constraints on satellite operators and service providers. Eutelsat Group advocates for a risk-based regulatory approach that minimizes unnecessary compliance costs for satellite operators. Collaborative

		efforts between OfReg and industry stakeholders can establish clear guidelines for spectrum sharing and interference management. This cooperative approach supports the government's priority to "*foster resilience and ensure infrastructure remains adaptable to global changes*" (SPS 2024–2026). We would like to note that, in page 7 of this consultation, OfReg raises several concerns, where they would have limited jurisdiction in case of satellite-based service provisioning. At this point, Eutelsat Group would like to underline that our business model is based on offering satellite capacity, partnering with local telecoms service providers who are duly licensed to provide ICT services directly to businesses and consumers. As stated above, it is important to recognize that certain obligations would be practically impossible to apply to foreign satellite operators, like Eutelsat Group, especially when they do not maintain any control over the end-user services. For example, Eutelsat Group is of the view that any consumer-related obligations and lawful interception requirements could be easily enforced and dealt with under the current License conditions and the ICT Regulations applicable to our licensed local distribution partners. We, therefore, believe that satellite operators like Eutelsat Group could not undertake such obligations, which are only relevant in case of direct provision of services to end-users and in case where there is control over the data traffic. We kindly ask OfReg to take this into consideration when designing any applicable licensing framework.
3	What models of service licensing would be most	ICT Service Licensing and Fees As per the above, Eutelsat Group's Go-To-Market model is based on partnering with existing ICT licensees, who are

	appropriate for OfReg to consider?	duly authorized and shall remain responsible for providing the satellite-based services directly to consumers. Therefore, we commend OfReg for recognizing that there shall be no need for the establishment of local presence, and subsequent compliance with local equity and corporate requirements, when a satellite operator like Eutelsat Group merely provides satellite capacity on a B2B basis. We further kindly note that the structure of licensing fees should reflect the operational realities of satellite systems to avoid deterring investment and we appraise OfReg for recognizing that any regulatory fees should reflect the cost-recovery principle aiming at covering the administrative costs associated with the monitoring and enforcement of the license. Eutesat Group proposes the introduction of tiered fees based on the scale and scope of operations, ensuring fairness and accessibility. Offering fee incentives for operators contributing to digital inclusion and disaster recovery efforts would further align with the government's goal of "*building modern infrastructure and future-proofing society*" (SPS 2024–2026). Regarding spectrum fees, we provide more suggestions in response to the next question.
4a	What approach should OfReg take to the licensing of VSAT terminals?	We note that currently, a VSAT terminal which connects internationally is subject to an application fee of CI$2500 and a renewal fee of CI$1250, while there are no licensing categories for smaller hand-held or IoT type terminals. Eutelsat Group believes that this existing framework may not appropriately reflect the advancements in satellite technology and the new capabilities of modern satellite systems. Applying the same model – originally designed for traditional GSO systems - to LEO networks would lead to significant administrative burdens and delays. More specifically, LEO satellites operate in extensive

constellations at altitudes ranging from approximately 300 to 1,400 kilometers. This proximity enables lower latency and higher bandwidth, enhancing the quality of internet services. The dynamic nature of LEO systems, characterized by rapid orbital movement and global coverage, necessitates a tailored regulatory approach, especially regarding the licensing of UTs. Maintaining an individual licensing approach would create regulatory barriers, especially for LEO systems, whereby satellites orbit the Earth rapidly, requiring user terminals to dynamically track multiple satellites to maintain continuous connectivity. This dynamic interaction results in a high volume of user terminals that are often mobile and deployed ubiquitously across various regions. Such inefficiencies could hinder the rapid deployment of LEO services, delaying the delivery of critical, high-speed internet connectivity to remote and underserved areas.

In this light, Eutelsat Group proposes that satellite UTs be license-exempted or covered by a blanket license as part of the spectrum authorization. The practice of issuing single licenses that cover a large number of user terminals is followed by many regulators around the world and would help reduce administrative burdens, aligning with the government's commitment to "*modernize business processes and enhance IT platforms*" (SPS 2024–2026).

Eutelsat Group has advocated for the implementation of blanket licensing for satellite UTs that comply with established international standards, such as those set by the Federal Communications Commission (FCC) and the Conformité Européenne (CE). Further streamlining the type approval process, particularly for terminals pre-certified in other jurisdictions, would support the government's aim to "*modernize processes and position the Cayman Islands as an attractive business jurisdiction*" (SPS 2024–2026).

		However, Eutelsat Group is also of the view that the case of individual licensing shall remain applicable for certain cases where for instance, coordination with terrestrial services is likely to be required and there is a need to ensure that satellite earth stations are recognized and protected. Thus, we concur with OfReg's proposals that certain equipment such as larger dishes would still require a license. At any rate, we recommend reducing the applicable fees to enable wider deployment and better coverage. Particularly regarding fees, Eutelsat Group kindly recommends OfReg to consider adopting a single reasonable, and suitable fee for the blanket license, irrespective of the number of terminals. This would minimize the reporting obligations for service providers and the administrative challenges associated with verifying and validating the number of domestic satellite terminals deployed. Moreover, in cases of individual licensing (incl. for satellite gateway earth stations), Eutelsat Group kindly invites OfReg to consider analyzing the applicable spectrum fees taking into account that modern satellite systems require the use of larger bandwidth not necessarily based on symmetrical pairs. 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.
4b	Additional elements on Maritime and Aeronautical ESIM Licensing:	Enhancing Connectivity for Tourism-Driven Economies

The licensing of Earth Stations in Motion (ESIM) for maritime and aeronautical applications, particularly for foreign vessels and aircraft, is critical to enabling seamless connectivity in tourism-focused economies such as the Cayman Islands. The Eutelstat-OneWeb LEO constellation, operating in the Fixed Satellite Service (FSS) frequency allocations of 14.0-14.5 GHz and 10.7-12.75 GHz, ensures robust global coverage and supports high-quality connectivity for these mobile platforms

Aeronautical terminals designed for Eutelsat-OneWeb are manufactured to the highest standards, ensuring compliance with ITU Radio Regulations and the safety of aircraft. This includes respecting ITU provisions 5.484A, 5.487A, and 5.441 to prevent harmful interference with other services in the 14 GHz band, as well as conforming to Article 18 of the ITU Radio Regulations, which mandates licensing by competent national authorities.

In alignment with international civil aviation frameworks, Eutelsat-OneWeb-equipped aircraft comply with ICAO Convention Article 30, which requires radio equipment licenses from the state of registration. This ensures compatibility with national regulations during overflights and operations in foreign territories. Moreover, ICAO guidelines explicitly state that terminals unrelated to flight safety, such as those for broadband connectivity, are permissible as long as they meet technical and operational conditions set by the state of operation.

For maritime applications, ESIMs on vessels provide reliable broadband connectivity for passengers and crew, critical for ensuring a positive travel experience and supporting operational efficiency. Blanket licensing for ESIMs, as practiced in jurisdictions like the United States, reduces administrative burdens and facilitates quicker deployment. This approach is vital for countries like the Cayman Islands,

		where tourism forms a significant portion of the GDP. Seamless in-flight and at-sea connectivity enhances the appeal of the destination, attracting high-value tourists and supporting economic growth. Eutelsat Group recommends adopting streamlined licensing practices that align with ITU and ICAO standards, so Cayman Islands can position itself as a leader in maritime and aeronautical connectivity, further boosting its reputation as a premier global tourism destination. This ensures compliance with international regulatory frameworks while fostering innovation and investment in the satellite communications sector.
5	Do you concur with OfReg's assessment of the potential interference between satellite terminals and other services?	Effective management of radio interference is crucial, especially considering the advanced capabilities of modern satellite systems, including frequency reuse and dynamic beamforming. Eustelsat Group suggests that interference mitigation policies be developed in collaboration with operators and aligned with ITU regulations. Implementing real-time dispute resolution mechanisms for interference cases would further enhance the regulatory framework, supporting the government's objective to "*enhance the Cayman Islands' reputation as a well-regulated jurisdiction*" (SPS 2024–2026). At any rate, Eutelsat Group is of the view that any measures or protection techniques should be based on limitations and protection criteria defined by the ITU Radio Regulations. Thereby, we kindly invite OfReg to keep alignment with ITU Radio Regulations in assessing and mitigating any possible interference that may be caused by satellites to other services. On another note, we kindly note that in the Table provided in para. 45, the following frequency ranges are missing:

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au capital de 475 178 378 €
481 043 040 RCS Nanterre

		C-Band (3400-4200 MHz, 4500-4800 MHz, 5091- 5250 MHz, 5850-7075 MHz and 7250-8400 MHz). Critical satellite services are provided in these frequency bands, so they must be included in the scope. Similarly, Q/V bands should be added in the Table as follows: Rx: 37.5-42.5 GHz and Tx: 42.5- 43.5/47.2-50.2/50.4-52.4 GHz.
6	How should OfReg deal with the Government's requirement to keep local traffic onshore?	While data sovereignty and information security is a valid concern, mandating that all traffic remain onshore may present challenges for satellite systems, particularly during initial deployment phases. As OfReg recognizes, the building and operation of such infrastructure can be very costly and financially ineffective and should rather constitute a strategic operational decision to be made freely by the satellite operator with a view to ensuring global, seamless coverage and optimal performance. Requiring satellite operators to build local infrastructure and to operate ground-stations in the Cayman Islands could ultimately prove impractical and result in posing market entry barriers, especially to smaller players, while also undermining the inherent resilience of satellite systems, who can serve as ideal backups during natural disasters, helping restore communications where terrestrial networks may have been affected. Eutelsat Group, therefore, respectfully submits that any applicable national regulatory regime should be more flexible, so that it can accommodate technological advancements in satellite and network technology. We thus request OfReg to refrain from asking to have a feeder-link Earth station to be built onshore and to allow for alternative solutions to effectively meet security needs and lawful interception requirements. Eutelsat Group supports removing this obligation for satellite-based telecoms service providers and invites

		OfReg to explore other alternative solutions such as utilizing virtual or external Gateways located outside the country, which can be used effectively to ensure landing of traffic, or to ensure network resilience. In today's world, information security can also be accomplished through alternative data management mechanisms; e.g. virtual interception points, points of presence (PoPs) and other mechanisms / capabilities. Alternatively, Eutelsat Group recommends encouraging partnerships to develop local infrastructure, with government support; this would further align with the strategic priority of "*enhancing competitiveness and building modern infrastructure*" (SPS 2024–2026).
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?	Eutelsat Group would like to clarify once again that it does not provide satellite-based connectivity services directly to end-users / consumers. Eutelsat Group rather works with local distribution partners, who are duly licensed telecoms service providers, offering satellite capacity under a B2B operational model. As such, our connectivity offering contributes to the local value chain and is not in direct competition with local service providers. At any rate, we concur with OfReg's conclusion that there is no risk of materially impacting the quality and the pricing of services offered to consumers at the time.
8	Other remarks:	Potential Risks to Strategic Priorities Eutelsat Group would like to kindly highlight that a complex and costly licensing framework may impede the deployment of satellite services, limiting access to affordable and reliable broadband connectivity, especially in underserved areas. This outcome would be contrary to the government's commitment to "*improve the quality of life for Caymanians and residents*" (SPS 2024–2026).

		In this light, we urge OfReg to consider the comments made in this Response and to adapt the applicable licensing framework to the peculiarities of satellite technology in an effort to maximize the potential of satellite networks to enhance connectivity and drive socio-economic development in the Cayman Islands. Eutelsat Group respectfully notes that introducing excessive regulatory burdens for satellite operators and service providers could deter investment, undermining efforts to position the Cayman Islands as a leader in telecommunications. Without accommodating the specific characteristics of satellite systems and space-based services, the proposed regulatory framework risks becoming outdated as satellite technologies rapidly evolve, conflicting with the goal of "future-proofing society" (SPS 2024–2026).

Eutelsat Group would like to thank OfReg for the opportunity to comment on this Consultation and respectfully invites OfReg to adopt a forward-thinking approach that balances regulatory oversight with the flexibility required to support the development and expansion of satellite systems. Aligning the framework with the government's strategic priorities will enable the Cayman Islands to become a hub for satellite innovation while effectively addressing local needs. Noting the current advancements in satellite communications, a clear and transparent regulatory framework which refrains from imposing burdensome obligations and high licensing fees on satellite operators and service providers will ensure more stability and regulatory certainty for the provision of satellite communications networks and services in the Cayman Islands. Embracing and supporting the development of satellite communications holds the potential to bridge the digital divide, enhance connectivity, and drive socio-economic development in remote and underserved areas.

We remain available for further discussions and welcome the opportunity to provide additional input.

Starlink Cayman Islands Ltd.

12/6//2024

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

RE: Starlink Cayman Islands Ltd. Response
ICT 2024 – 2 - Consultation
Framework for the Licensing of Satellite-Based Telecommunications Providers

Submitted via email: consultations@ofreg.ky

Dear Sir/Madam:

Thank you for the opportunity to provide comments to this consultation. Please find Starlink's response to the seven questions below.

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

Starlink supports the creation of a new licensing category for retail satellite services. Given the exercise underway to re-examine regulations for these types of provider, it seems of little benefit to attempt to "shoe horn" satellite into other license types. This separate category would enable regulations to consider the unique aspects of satellite service referenced by Ofreg in the consultation documents.

In either case, the license should only relate to the ground-based activities in the Cayman Islands (as opposed to issues related to the satellites themselves, which Ofreg correctly observes are regulated by the licensing country pursuant to international agreement) support 100% foreign ownership of the entity and provide for direct to consumer (residential and business) sales. Further, it should not be constrained by applying any voice-related requirements like emergency notifications or access as allowing providers to pick and choose which services to provide, such as by only providing internet service, will enhance competition in those markets by lowering barriers to entry. Starlink notes that a regulatory requirement to provide voice services would exclude Starlink, as an internet-only provider, from the market and thereby deprive individuals in the Cayman Islands from access to the largest, and only low-latency satellite internet provider widely available for residential applications.

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

As noted in the consultation, satellite service by its nature will require components of the network to be located outside the Cayman Islands. There are both technological and business operations that necessitate this.

Starlink notes that the location of infrastructure is not particularly relevant to the issues of outages notifications and lawful interception. Starlink can and does provide these capabilities in over a hundred countries around the world, despite the lack of physical infrastructure in many countries.

For outage notifications, Starlink recommends that Ofreg establish a reasonable threshold and time period triggering the need for such reports to ensure that it only receives information regarding consequential outages, and that the reporting obligation itself does not hinder the provider's ability to resolve the outage. For example, Ofreg could require satellite providers to report outages with a duration of longer than 1 hour affecting over 10,000 customers and to deliver such reports within two business days of discovery of the outage.
With respect to 911 service, as noted above, the new regulations should permit providers to elect which electronic communication services to provide and should not mandate the provision of voice services. These new regulations should therefore not impose 911 service requirements on satellite providers, which would effectively function as voice requirement. Satellite internet is not a direct replacement for voice services, and therefore it is expected that virtually all satellite internet subscribers would also have access to a voice service with 911 capabilities.

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

Starlink has created a local entity in the Cayman Islands, Starlink Cayman Islands Ltd. This is the entity we have previously and would under any new framework apply for license. The entity is 100% foreign owned, which is a critical requirement for Starlink to operate.

Starlink could not accept a centralized company offering all satellite service on the island or any type of mandatory partner in order to operate in the Cayman Islands. Starlink is highly-vertically integrated and engineers, manufacturers and operates its own distinct network. We must also have the ability to sell direct to consumers through our sales channel,

www.starlink.com. Similarly, as noted above, we do not offer voice service, so any updates to the licensing framework should be for internet service only.

Regarding fees, Starlink understands that there are fees in relation to the licensing and operation of an internet service. We highly recommend the fee structure be reasonable and administratively simple. Unduly high fees would impact the ability to provide accessible and affordable high-quality internet to the people and businesses of the Cayman Islands.

Notably for spectrum, satellite technologies, including Starlink, utilize *shared-spectrum*, unlike mobile network operators. Spectrum fees should not be calculated in the same manner given the shared and non-exclusive nature of the use of spectrum. Please find attached an economic report "How to price satellite spectrum" for your consideration.

Question 4: What approach should OfReg take to the licensing of VSAT terminals?

As noted in your consultation discussion, Starlink user terminals are consumer premise equipment, more similar to mobile phones than traditional geostationary VSAT/earth stations. There should be no requirement for individual licensing or fee payments. As such, Ofreg should provide a license exemption for all satellite internet terminals conforming to certain technical standards. This is the approach taken by the European Union, and Ofreg could easily leverage the technical standards already in use, including ECC Decision (17)04 and (18)05, and ETSI Standards ETSI EN 303 980 and ETSI EN 303 981. It is highly recommended to include user terminal usage within the license framework. This is both the most administratively and financially feasible option.

Additionally, as noted in the fee discussion, an egregiously high fee like is currently outlined would make doing business in the Cayman Islands infeasible. Our average residential monthly subscription in the region is approximately $60USD/ CI$50. To have to pay regulatory and spectrum fees, import and business taxes PLUS CI$1250 does not work.

Starlink is not proposing ground infrastructure in the Cayman Islands. User Terminals will be the only devices that will be utilized.

Question 5: Do you concur with OfReg's assessment of the potential interference between satellite terminals and other services?

Yes. There is virtually no risk of harmful interference between Starlink user terminals and other services. Starlink is widely deployed today in countries across the globe with millions of active daily users without instances of harmful interference.

Question 6: How should OfReg deal with the Government's requirement to keep local traffic onshore?

The only option for Starlink to be able to operate in the Cayman Islands would be to remove this requirement. This has been the largest impediment to bringing service thus far.

As your consultation has noted, it is impractical to require satellite providers to keep all traffic only within the Cayman Islands. Both technically and financially this is an infeasible requirement to comply with.

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?

Starlink internet is a complimentary connectivity option that provides those un- or under-connected to have access to high-quality service. It is not designed or sold as a replacement for terrestrial fiber or other internet choices that exist. Starlink already supports maritime through the authorization we received June 1, 2023.

The data supports that there is generally only a small percentage of consumers who switch to Starlink. Further, Starlink compliments its direct to consumer model with work with resellers and retailers that are often incumbent network operators and/or local retail businesses.

Kind regards,

Rebecca Hunter

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Submitted via electronic mail
consultations@ofreg.ky

23 December 2024

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 2024 – 2 – Consultation
Framework for the Licensing of Satellite-Based Telecommunications Providers

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

I. Background

Amazon's Project Kuiper will bring high-speed, affordable broadband internet to customers around the world, including in the Caribbean, where customers may face unique broadband access challenges due to weather events that cause damage to terrestrial broadband infrastructure. 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).

Amazon has committed to invest over ten billion U.S. dollars in the Kuiper System, and has made enormous strides toward its deployment, including (i) the successful launch of test satellites validating its system design; (ii) continued expansion of its terrestrial infrastructure, including within the Caribbean; and (iii) unveiling innovative customer terminals that will offer high performance, small form factors, and affordable price points. Amazon plans to begin offering commercial service in a number of countries next year, and thereafter expand coverage as it continues to deploy the Kuiper System and as it moves closer to its goal of providing high-speed, affordable broadband services to residential customers, schools, businesses, and institutions.

II. Comments on the Consultation.

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

Amazon commends OfReg for recognizing the value satellite connectivity brings to customers in the Cayman Islands, and encourages OfReg to develop a regulatory framework that facilitates the deployment of NGSO FSS satellite systems and the offer of services. Amazon urges OfReg to consider simplified and flexible licensing mechanisms that reflect the international nature of NGSO FSS systems, and to develop regulation that enables these systems to deliver high-speed broadband connectivity services to consumers in need of such services.

Amazon encourages OfReg to adopt a "light touch," flexible framework to enable satellite operators to efficiently and effectively provide broadband internet connectivity services in the Cayman Islands. Many countries around the world and in the region have implemented an "Open Skies" framework for satellite services. Others have adopted simplified registration requirements for satellite operators. These mechanisms are intended to streamline the ability of users to access satellite connectivity and minimize the administrative and regulatory burdens for both regulators and satellite operators.

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?

Amazon recognises that while domestic law requires OfReg to monitor, raise, and address broadband service issues in the Cayman Islands, OfReg may have limited jurisdiction over satellite operators that do not have operations or infrastructure located wholly within the Cayman Islands. Amazon also recognises that OfReg and satellite broadband customers in the Cayman Islands expect high quality service from satellite operators and, as part of its mission to be Earth's most customer-centric company, Amazon is working diligently to ensure that the Kuiper System meets these quality expectations. Amazon, therefore, encourages OfReg to adopt a balanced approach in exercising jurisdiction over foreign-licensed satellite operators with operations and infrastructure located outside of the Cayman Islands.

Amazon respectfully requests that OfReg avoid applying to foreign-licensed satellite operators all regulatory requirements designed for terrestrial systems. First, existing regulatory requirements designed primarily for terrestrial systems could have unintended consequences when applied to satellite-based connectivity systems. Additionally, extending the requirements designed for terrestrial systems to foreign-licensed systems may be unduly burdensome for both satellite operators and OfReg. One example where satellite technology differs from terrestrial systems is outage reporting which, if not carefully crafted to the unique architecture of an NGSO system, may generate unnecessary reporting even where there is little or no impact to service. Satellite operators provide ubiquitous coverage and operate in multiple jurisdictions, which supports the resiliency of NGSO constellations such as the Kuiper System and enables service continuity even in the event of a satellite outage. Outage reporting across the NGSO constellations such as the Kuiper System would therefore multiply the outage reporting burden for satellite providers compared to terrestrial systems, even where customers in the Cayman Islands did not lose or experience interrupted satellite broadband coverage.

To accelerate the deployment of innovative new satellite-based services to the Cayman Islands, Amazon urges OfReg to take a cautious and incremental approach to new regulations, beginning with a "light touch" regulatory approach and fashioning license conditions as necessary to address issues that arise. To the extent that OfReg's authority over components of a service located in the Cayman Islands proves insufficient, OfReg could impose conditions on satellite operators through license conditions for the provision of service in the islands.

Further, as the Consultation notes, Section 9(3) of the ICT Act confers on OfReg broad authority to investigate and resolve complaints concerning the provision of information and communications technology (ICT) service —an authority that allows OfReg to address issues actually affecting service within the Cayman Islands, notwithstanding the fact that certain network elements are located elsewhere. Service issues occurring outside the Cayman Islands, in turn, could be handled by authorities in the affected jurisdictions, if necessary.

Even in the absence of any local terrestrial infrastructure, OfReg's existing authority over service within the Cayman Islands should be sufficient to ensure lawful and high-quality service within its jurisdiction. Amazon, therefore, respectfully requests OfReg adopt a "light touch" regulatory approach for satellite systems, and to modify that approach through license conditions if this initial regulatory approach proves insufficient. Overall, this approach would benefit consumers by accelerating the deployment of new services while ensuring regulatory safeguards on network operations in the Cayman Islands.

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

Amazon supports OfReg's goal of maintaining fair competition among service providers, including through a fee structure designed to ensure competitive parity. However, Amazon supports an approach that would preserve parity while avoiding restrictions that increase cost or impact entry — such as requirements to engage with existing ICT licensees or establish local companies — that could unnecessarily delay service deployment to customers in the Cayman Islands.

As OfReg contemplates a new framework for satellite services, Amazon respectfully urges OfReg to consider the benefits for consumers of minimized local entity and foreign ownership restrictions. The corresponding reduction in barriers to entry will promote broadband access for customers in the Cayman Islands, including customers impacted by natural disasters. Amazon, therefore, encourages OfReg to allow licence applications from operators with neither local presence nor participation in the Cayman Islands. Amazon requests that OfReg develop a licensing framework that allows licensing applications on a non-discriminatory basis, regardless of national origin and foreign ownership, and without distinction between domestic and non-domestic providers. Such a regulatory environment would result in more choices for local customers and end users in the Cayman Islands, including in natural disaster events.

4. What approach should OfReg take to the licensing of VSAT?

Amazon supports a model whereby a satellite operator is granted one (1) approval for all services and equipment intended to provide satellite broadband offerings in the Cayman Islands, including class licensing (commonly known as "blanket licensing") for both fixed location and Earth Stations in Motion (ESIM). This model would facilitate the deployment and operation of multiple customer terminals, and ensure operators are able to quickly serve customers in the Cayman Islands. Class licensing of very small aperture terminals (VSAT) would reduce the cost and administrative burdens incurred by satellite operators, regulators, and service providers using satellite connectivity to service their networks. Customers would similarly benefit from class licensing because they would have access to a greater choice of cost-effective and reliable broadband connectivity options to meet their needs.

Licensing fixed and ESIM terminals as a "class" would be the most efficient licensing method for these terminals. The Kuiper System and other such next-generation satellite systems are designed to provide broadband offerings to retail customers, among other uses. Further, the Kuiper System is intended to serve many households in the Cayman Islands, each of which will have at least one (1) terminal, making individual licensing impracticable. Given that all ESIM and all VSAT terminals will be identical, and will present identical

issues in licensing, ESIM and VSAT terminals can be more efficiently handled in a single application rather than in many individual applications.

A class licensing framework also aligns with regional and global "best practices" on licensing. This year, the Inter-American Telecommunication Commission (CITEL) – within the Organization of American States — recommended the implementation of generic or class licensing frameworks in regulating the deployment of FSS Earth stations, including ESIM.[1] Jurisdictions in the Americas that have adopted the class licensing approach include Brazil, Canada, and the United States, among others. Amazon encourages OfReg to align its domestic framework with international standards for fixed and ESIM terminals. A comprehensive yet streamlined class licensing regime will enable satellite operators to efficiently serve both retail customers and commercial enterprises.

Further, Amazon urges OfReg to consider regulatory fees that are reasonably tailored to recover the costs of class licensing because unnecessarily high per-VSAT fees could raise the costs of service to end users. As OfReg contemplates its licensing and fee framework for satellite services, Amazon encourages OfReg to consider an administrative cost recovery fee model, rather than a per terminal fee. Amazon is of the view that for satellite services, spectrum fees based on the principle of administrative cost recovery are most suited to foster the development of systems aimed at bringing broadband connectivity to underserved and unserved customers because satellite spectrum is shared, whereas terrestrial providers tend to have exclusive use of spectrum. Such a simplification of the regulatory process enables the provision of satellite services and, as a result, amplifies the benefits that satellite broadband systems can bring to consumers in the region.

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

Amazon supports OfReg's determination that frequency uses in accordance with the International Telecommunication Union's (ITU) Radio Regulations will prevent significant interference problems between satellite services and fixed service (FS) point-to-point links. Technological innovation has made sharing between services increasingly feasible. For example, modern NGSO FSS systems employ frequency sharing techniques that can avoid harmful interference to other systems. Amazon encourages OfReg to consider and implement the spectrum-sharing rules of the ITU and any related ITU Recommendations and studies. Allowing satellite broadband systems to operate without harmful interference from other authorized services enables satellite operators and service providers to provide higher quality connectivity services to consumers. Coexistence between terrestrial and space systems can be managed both with appropriate spectrum assignment mechanisms and technical conditions for the operations of these systems.

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

Amazon commends OfReg for its recognition of the economic and physical variables satellite operators must consider in deploying ground infrastructure, and appreciates OfReg's efforts to advise the government of these challenges. While the presence of ground stations may ensure that some satellite operator traffic will remain onshore, the Consultation correctly recognises that a portion of satellite operator traffic will necessarily travel offshore to communicate with internationally flagged satellites.

Amazon agrees with OfReg that requiring a local ground station may result in a significant expense for satellite operators, which may raise the costs of satellite broadband for customers, and might delay the

[1] Guidance for Blanket Licensing Regimes for Ubiquitously Deployed Fixed Satellite Service (FSS) Earth Stations, PCC.II/Rec. 68 (XLIII-24), Organization for American States, Inter-American Telecommunication Commission (2024).

provision of satellite broadband services to users in the Cayman Islands. Further, such a requirement would have little benefit, given that even without in-country infrastructure, Amazon can still meet domestic lawful intercept requirements and maintain the protection and security of such traffic at all times. Allowing satellite operators to design systems efficiently lowers their costs and accelerates deployment efforts, leading to the faster delivery of more affordable service to customers in the Cayman Islands.

Further, Amazon encourages OfReg to consider the role LEO systems will play in expanding the reach of terrestrial networks. Establishing a regulatory environment that allows foreign-licensed satellite operators to provide service with minimal entry and local regulatory requirements, such as onshore data and traffic requirements, will position the Cayman Islands to benefit from new satellite-based offerings at a variety of developmental stages.

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?

Satellite-based services, particularly next-generation NGSO systems such as the Kuiper System, are in many respects different than incumbent systems. While satellite services may provide comparable service at an affordable price point, we agree with OfReg's determination that they will not damage the ability of existing operators to continue to invest in their networks. This is because satellite-based connectivity in many respects augments existing services.

Satellite communications play a critical role in rapidly establishing or restoring communications in cases of emergency and disaster relief, and help terrestrial mobile operators to extend the reach of their mobile networks, thereby extending connectivity to unserved or underserved communities. Consumers in the Cayman Islands will benefit from the contribution of satellite services to natural disaster relief efforts. Given network resilience and the lack of dependence on in-country terrestrial infrastructure, satellite operators can act as a backup for terrestrial networks during natural disasters and weather events, and enable the extension and resiliency of existing terrestrial coverage. Relief and recovery efforts can be supported by hand-held, temporary fixed, and portable satellite terminals. Additionally, there are opportunities for satellite operators to collaborate with local governments during natural disasters to ensure that government services and first responders remain connected to undertake critical communications and operations like search and rescue.

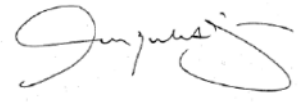
NGSO FSS satellite systems also provide supplemental support to the government and to enterprises, by providing flexible and secure broadband to connect remote assets to the cloud. Government and enterprises across multiple sectors—including commercial maritime operations—can access primary and redundant connectivity for remote sites, securely connect to cloud-based applications, and access online data storage, processing, and analytics. Finally, satellite ubiquitous coverage enables satellite operators to bring connectivity to underserved and unserved customers who lack access to robust terrestrial offerings. Overall, satellite-based connectivity will bring many benefits to the Cayman Islands.

III. Summary

Amazon is grateful to OfReg for the opportunity to contribute to the development of a framework for the licensing of satellite-based telecommunications providers, and looks forward to working alongside OfReg

to strengthen broadband access. We welcome the opportunity to further discuss these comments or any other issues of interest in this submission.

Respectfully submitted,



Gonzalo de Dios
Head of Global Licensing
Project Kuiper

Dart Response to OfReg consultation paper on the Licensing of Satellite-Based Telecommunications Providers in the Cayman Islands

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

Yes, OfReg needs to introduce new licence types to allow satellite-based services to be established in the Cayman Islands. This will increase consumer choice, continue to mature the services available within the jurisdiction, and aid Cayman in remaining competitive in the global space.

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?

In recognition of the fact that by the nature of satellite services, it is not possible for certain requirements currently imposed on local service providers to be met, as such, a hybrid approach should be taken where the requirements for 911, and lawful interception should be included in the terms of the satellite service providers license as best effort to establish. While outage notifications could be imposed as a requirement for the terms of the license.

However, consideration should be given to using the terms of the license, to require the satellite-based service provider to advise their customers of any limitations of their service to providing access to critical services such as 9-1-1.

OfReg should also embark on a consumer awareness campaign to provide clear information to consumers about the limitations of its jurisdiction over satellite services. This would help manage consumer expectations and avoid misunderstandings.

We also believe OfReg should explore what requirements can be imposed on encryption methods used in delivery of satellite-based services (which should also apply to local ISP's), and consider mandating 9-1-1 services and other critical services use terrestrial providers as their first choice.

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

We believe satellite operators should be required to establish a local Cayman based company as their license holder. This approach will help OfReg enforce compliance with the terms of their license for local customers.

Requiring the satellite operators to offer service through one of the local ISP's or the establishment a new local company as a conduit for satellite operators, creates an unnecessary middleman with possible

negative effects for consumers, including added costs. Consumers should not be forced to purchase through a reseller, as this limits choice, and adds unnecessary cost overhead.

Question 4: What approach should OfReg take to the licensing of VSAT terminals?

VSAT terminals should be licensed across several categories such as; Private/Commercial, Domestic or International, Receive Only terminal, with exceptions for certain types of user equipment that would not require an individual license to operate.
Consideration should also be given to whether the installation and maintenance of VSAT equipment should only be carried out by licensed Technical entities authorized by OfReg.

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

No comment.

Question 6: How should OfReg deal with the Government's requirement to keep local traffic onshore?

The obligation to keep traffic local should be removed for Satellite internet services only, as this would be very difficult if not unreasonable to achieve. Consumers will have to accept this reality and adjust their expectations of which workloads are best suited to utilize satellite-based services.

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?

The introduction of cost-effective satellite services will enhance business productivity and facilitate greater cloud adoption. A major concern of many local businesses is the risk of network isolation, the availability of satellite-based services will address this risk directly, offering peace of mind through greater diversity of mediums. Furthermore, as businesses embrace the cloud, internet traffic will increase, benefiting existing ISPs. Satellite services will offer consumers and businesses alike greater choice and flexibility, improving network resiliency. We see these services as complementing on-island providers rather than cannibalizing their market share or undermining their ability to remain competitive. We therefore, strongly support the introduction of satellite-based services as they will provide significant benefits to consumers, the business community, and the overall economy.

RIVADA
SPACE NETWORKS

Rivada Space Networks:

Response to OfReg 's consultation Framework for the Licensing of Satellite-Based Telecommunications Providers

1. Introduction

Rivada Space Networks is a global leader in satellite communications, pioneering innovative solutions through its state-of-the-art Non-Geostationary Satellite Orbit (NGSO) constellation. Designed to deliver secure, high-speed, and low-latency data services, Rivada's network focuses on business-to-business and government applications. Unlike traditional satellite operators, Rivada employs an advanced optical inter-satellite link architecture, forming a fully meshed optical network in space known as the Rivada Outernet. This groundbreaking design eliminates the reliance on gateways and terrestrial infrastructure, significantly reducing latency and enhancing data transmission speeds—ideal for mission-critical applications.

Using Ka-band spectrum for its service links, Rivada's system offers high-capacity data transmission tailored to meet the demands of enterprise customers, government agencies, and other sectors requiring secure and reliable connectivity. The Ka-band's substantial bandwidth enables next-generation satellite services with high data rates, ensuring seamless communication across even the most remote and underserved areas.

As a strong advocate for open and competitive markets, Rivada supports regulatory frameworks that foster innovation, promote efficient spectrum use, and reduce barriers to entry for NGSO satellite operators. The company believes regulatory policies should facilitate investment and fair competition, ensuring that consumers benefit from high-quality, affordable satellite services. Rivada is dedicated to collaborating with regulators, governments, and industry stakeholders to create an environment that drives innovation and advances the global satellite communications landscape.

By leveraging cutting-edge technology and advocating for progressive policies, Rivada Space Networks will transform satellite communications, delivering solutions that connect people, businesses, and governments worldwide.

2. Rivada's Response

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

Response to Question 1: Yes, OfReg should introduce new regulatory framework approach that reflects the fundamental differences between satellite-based and terrestrial communications services. This framework should prioritise fostering competition and attracting investment while minimising barriers to market entry in the Cayman Islands.

Satellites provide global coverage, making them critical for underserved or unserved areas where terrestrial networks are limited or unfeasible. Unlike terrestrial services, satellite operations rely

on strict international spectrum coordination under ITU regulations to ensure interference-free coexistence with other services. Their broad geographical reach and shared spectrum environments necessitate a distinct licensing approach.

Satellite deployment requires significant upfront investment and long-term return timelines, making regulatory certainty crucial for attracting investors. Fee structures, including those for licensing, spectrum, and administration, should reflect the operational costs of satellite services to ensure affordability and promote market entry. Differentiating fees for user terminals, such as VSATs for individual or small business use and gateways, can further encourage adoption.

A new licensing framework should include specific categories for satellite operators, ground station operators, and VSAT users, with flexibility for operators to collaborate with locally licensed partners to deliver services. The framework should focus on local ground-based infrastructure and user terminals while acknowledging the global nature of satellite operations.

International best practices highlight effective approaches. The EU employs a blanket licensing scheme for satellite terminals, while the FCC in the U.S. streamlines NGSO licensing with flexible spectrum policies. The Australian Communications and Media Authority (ACMA) offers a "class licence" for VSATs, reducing administrative burdens.

By adopting new licence types, OfReg can align with global standards, fostering innovation, competition, and consumer benefit in the Cayman Islands while supporting the growth of satellite services.

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

Response to Question 2: OfReg should adopt a pragmatic and internationally aligned approach to address the issues associated with the provision of satellite services that occur outside its jurisdiction. Satellite services inherently operate across borders, with key components such as the satellites themselves and ground stations often located in different jurisdictions. This global nature necessitates a regulatory strategy that focuses on aspects within OfReg's control while leveraging international frameworks and best practices to ensure effective oversight.

OfReg should prioritise regulating the aspects of satellite services that fall within its jurisdiction, such as the licensing and operation of user terminals, ground-based stations, and spectrum usage within the Cayman Islands. By focusing on these localised elements, OfReg can ensure compliance with national laws while leveraging ITU Radio Regulations and international standards as a robust framework for managing satellite services that operate globally.

Additionally, OfReg should establish clear licensing conditions that acknowledge the limitations of its jurisdiction over certain aspects of satellite services, such as satellite-to-satellite communications or uplinks and downlinks occurring outside the Cayman Islands.

For service quality and outage notifications, it is recommended that users of satellite-based services address their complaints or fault rectifications directly with the local satellite service provider, rather than relying on OfReg for assistance or other regulatory assurances.

Regarding lawful interception and emergency services, given the impracticality of direct enforcement of obligations, OfReg should leverage partnerships with local service providers and encourage their cooperation with local authorities. This approach would enable lawful interception and ensure access to emergency services without requiring the satellite operator's infrastructure to be installed locally.

Internationally, best practices demonstrate how regulators effectively address similar challenges, balancing jurisdictional limitations with consumer protection and service quality expectations

By focusing on localised control, aligning with international standards, fostering cooperation, and educating consumers, OfReg can effectively navigate the challenges of regulating satellite services. This approach ensures that jurisdictional limitations are addressed pragmatically while protecting the interests of Cayman Islands consumers and maintaining high service quality and reliability.

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

Response to Question 3: The most appropriate model of service licensing for satellite-based services should reflect the unique operational characteristics of satellite communications while fostering competition, investment, and innovation. OfReg should adopt a flexible licensing framework that minimises unnecessary barriers to market entry and aligns with international best practices.

Such an approach will reduce regulatory burdens, making it easier for new entrants to participate in the market, thereby fostering healthy competition and encouraging further investment in the communications sector. This will be crucial in expanding access to cutting-edge satellite services and promoting the public interest through improved connectivity.

Additionally, Rivada advocates for a less cumbersome and less costly process in the authorisation of satellite services. Emerging NGSO satellite services are uniquely positioned to address the digital divide by offering solutions that can bridge the gap in connectivity in underserved and unserved areas and ensure secure communications as well as backup for undersea cables. By enabling more efficient market access through flexible licensing, these satellite services can play a key role in enhancing broadband availability and accelerating digital inclusion.

rThe fee structure for satellite-based services should differ from that of terrestrial providers to account for the unique operational costs of satellite operators. Licensing fees, administrative charges, and spectrum costs should be differentiated to encourage market entry and ensure affordability for consumers. For example, fees for user terminals, such as VSATs for individual or business use, should be reduced to foster adoption and promote connectivity in underserved areas.

Regarding local presence, requiring satellite operators to establish a registered company in the Cayman Islands and mandating Caymanian participation in ownership or management creates unnecessary hurdles for market entry. Satellite operators typically provide capacity and services

on a global scale, with infrastructure and operations distributed across multiple jurisdictions. Requiring local registration is impractical given the nature of satellite operations, where ground-based infrastructure in the Cayman Islands may be minimal or non-existent. Similarly, mandating Caymanian participation could deter global satellite operators from entering the market as this requirement is burdensome and potentially unfeasible. Such restrictions could limit the availability of satellite-based services, stifle competition, and ultimately harm consumers by reducing their choices and increasing costs.

Instead, OfReg should allow foreign registered satellite operators with no local presence or Caymanian participation to provide satellite capacity with minimum or no licensing requirements. This approach would streamline market entry, promote competition, and attract leading global operators. Under this model, the local ICT licensee would provide services using the satellite operator's capacity, leveraging their existing compliance framework. This approach allows operators to access the market through local players without the need for direct local registration or Caymanian participation.

By adopting a regulatory framework that includes these provisions, OfReg can create an environment that encourages competition, investment, and innovation in satellite services. This approach ensures a balance between regulatory oversight and market openness, benefiting consumers through increased access to affordable, high-quality satellite services.

Question 4: What approach should OfReg take to the licensing of VSAT terminals?

Response to Question 4: OfReg should adopt a progressive and flexible approach to the licensing of VSAT terminals, recognising the advancements in satellite technology and the growing demand for satellite-based connectivity in both consumer and enterprise markets, especially from NGSO based systems.

To streamline licensing and encourage the deployment of VSAT terminals, OfReg should consider implementing a blanket licence for user terminals. Under this approach, individual terminals would not require separate licences, provided they comply with an envelope of specified technical and operational standards, such as those outlined in the ITU Radio Regulations and relevant European Telecommunications Standards Institute (ETSI) standards. This system would significantly reduce administrative complexity and costs for both operators and end-users, fostering broader adoption of VSAT services, particularly in underserved and remote areas.

Additionally, OfReg could include terminal licensing under the broader licence of the satellite operator or local service provider. This would ensure that terminal operations are regulated within the existing framework while avoiding duplicative licensing requirements.

The current arrangement, where each VSAT terminal requires an individual licence with associated fees, is outdated and does not align with modern satellite service delivery models. This approach places unnecessary financial and administrative burdens on both operators and users, especially as VSAT terminals become smaller, more cost-effective, and increasingly used for consumer applications.

Fee structures for VSAT terminals should also reflect the scale and type of deployment as well as aligning fees with international best practices to avoid making satellite services in the Cayman Islands uncompetitive compared to other jurisdictions.

By adopting a blanket licensing system and streamlining terminal regulation under operator licences, OfReg can create a licensing framework that supports the efficient deployment of VSAT services. This approach will reduce barriers to market entry, encourage competition, and expand access to satellite connectivity for consumers and businesses alike

Question 5: Do you concur with OfReg's assessment of the potential interference between satellite terminals and other services?

Response to Question 5: Yes, we concur with OfReg's assessment that the potential interference between satellite systems and other services, such as fixed point-to-point links, is manageable when appropriate mechanisms are in place. The ITU Radio Regulations provides a robust framework for coordinating frequency use and mitigating interference risks. These regulations, which are followed globally, establish technical standards and operational guidelines to ensure the coexistence of satellite and terrestrial services within shared frequency bands.

Satellite terminals, including VSATs, typically operate with highly directional antennas, which limit the potential for harmful interference with terrestrial systems as well as measures such as beam shaping, power control and ensuring that satellite beams do not point towards the horizon are standard practices to minimise interference risks.

In conclusion, while the potential for interference exists, it can be effectively managed through adherence to ITU Radio Regulations and international. This balanced approach ensures the reliable operation of satellite services while safeguarding the integrity of other spectrum-dependent systems.

Question 6: How should OfReg deal with the Government's requirement to keep local traffic onshore?

Response to Question 6: OfReg should adopt a pragmatic and realistic approach to addressing the Government's requirement to keep local traffic onshore, recognising the unique operational characteristics of satellite-based communications. Satellite services inherently operate across borders, with data relayed through satellites and ground stations often located outside the jurisdiction. This operational reality makes enforcing a strict onshore traffic requirement for satellite operators impractical.

To address this, OfReg should consider exempting satellite-based communication providers from the onshore traffic requirement. The technical nature of satellite operations, which necessitate data transmission through international infrastructure, makes it nearly impossible to confine traffic within national borders. Enforcing such a mandate could create unnecessary barriers for satellite operators and hinder their ability to deliver effective services to the Cayman

Islands. Instead, OfReg should emphasise the critical role of satellite services in enhancing the resilience and redundancy of the Cayman Islands' telecommunications infrastructure, particularly in disaster recovery scenarios where terrestrial networks may be compromised.

Satellite operators could also be encouraged to collaborate with local ICT providers, leveraging onshore infrastructure for traffic exchanges wherever feasible. This cooperative approach supports integration between satellite and terrestrial networks while promoting local industry development.

OfReg should engage with Government stakeholders to explain the operational constraints of satellite services and the impracticality of strict onshore traffic retention. Emphasising the socioeconomic benefits of satellite connectivity, such as bridging the digital divide and supporting underserved areas, can help shift the focus toward broader connectivity objectives rather than rigid onshore traffic mandates.

By exempting satellite providers from strict onshore traffic requirements and focusing on "best efforts" and collaborative approaches, OfReg can align with the intent of the Government's directive while accommodating the realities of satellite operations. This ensures reliable, high-quality connectivity for the Cayman Islands without imposing unnecessary regulatory burdens.

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 to Question 7: The introduction of satellite-based services is expected to have a positive overall impact, benefiting consumers by enhancing choice, fostering competition, and addressing the digital divide. While existing terrestrial service providers may face increased competition, the ultimate beneficiary is the consumer, who will gain access to a wider range of connectivity options at competitive prices.

Satellite-based services are uniquely suited to addressing the challenges of underserved and unserved areas, where terrestrial infrastructure is limited or economically unviable. By offering data connectivity to these regions, satellite services can bridge the digital divide, enabling communities to access critical services such as education, healthcare, and e-commerce. This is particularly important in the Cayman Islands, where geographical constraints can hinder the deployment of terrestrial networks in remote or less populated areas.

While there may be concerns about the potential impact on the market share of existing terrestrial providers, these are outweighed by the broader socioeconomic benefits. Consumers will enjoy greater choice and access to affordable, reliable data connectivity, contributing to the Cayman Islands' overall economic and social development.

In conclusion, the introduction of satellite-based services complements existing terrestrial offerings, enhancing connectivity options for consumers, fostering competition, and addressing the critical issue of digital inequality. By supporting a regulatory framework that encourages satellite service deployment, OfReg can ensure that the telecommunications landscape evolves to meet the diverse needs of all stakeholders, with consumers as the ultimate beneficiaries.

WestTel Response to OfReg ICT 2024 – 2 – Consultation on Framework for the Licensing of Satellite-Based Telecommunications Providers

19th of December 2024

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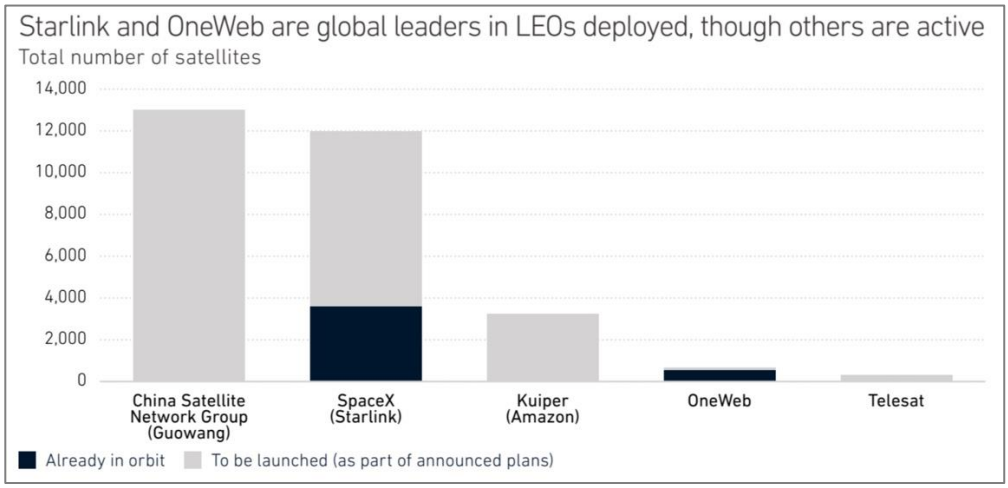
1/ Introduction

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

The Cayman Islands cover only 259 km^2 and are home to a population of approx. 71,000[1]; the terrestrial mobile networks already cover 100% of the population as per the ITU[2] so there is no coverage gap and the country's mobile penetration rate is over 180%[3]. Therefore, compared to many countries globally, there is little obvious need for satellite-based services to add new telecoms coverage or introduce new telecoms services in the Cayman Islands.

OfReg' s Consultation refers to satellite-based services in general, but WestTel recognizes that whilst these fall broadly into three technology types: GEO (geostationary orbit), MEO (Medium Earth Orbit) and LEO (Low Earth Orbit), it is the latter which are most relevant to the industry today and therefore this Consultation. LEO satellites, because they are physically closer to the earth, can offer communications solutions with much lower latency and thus are more like services offered by the terrestrial network operators.

To date the main provider of LEO services has been Elon Musk's Starlink; by September 2024 Starlink was available in more than 100 countries around the world and the company had more than 4 million subscribers[4]. It also noted that these devices are now available to customers at a price of CI$499 via local retailer in the Cayman Islands. However, internationally, other firms are planning to launch a global constellation of LEO satellites in the coming years, so OfReg needs to plan for more than just one new entrant in this space:



(Source: Satellites and telcos: coming to a place above you, GSMA October 2023)

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 the 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.

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 that satellite-based operators providing services to customers in the Cayman Islands should be licensed. This is because:

- They use spectrum resources.
- Many of their customers will be using equipment that is not passive receive only, but, instead, transmits data to the satellite constellation. Consequently, there is a risk of interference, and potentially public safety issues depending on the transmitter power combined with the antenna gain.
- They may cause radio interference with other networks operating in the Cayman Islands – for example, in-line interference.
- They receive revenue from customers in the Cayman Islands.
- Customers expect the same regulatory standards and consumer protections to be applied to all operators providing telecommunications service in the Cayman Islands to the extent possible.
- Fair competition requires that the same obligations are applied to satellite-based service providers in the Cayman Islands to the extent possible; otherwise, they will have an unfair competitive advantage over terrestrial service providers.
- There are critical implications regarding the storage and location of personal customer data pursuant to the Data Protection Act and therefore services of this nature should not be provided by an unlicensed provider.

WestTel believes it would be inappropriate for OfReg to try to "shoe-horn" satellite-based services into the country's existing licence types, in particular the Fixed Wireless Access (Type B) licence category because the service characteristics will be quite different to the terrestrial services offered by existing FWA licensees, both in the Cayman Islands and internationally (FWA is a globally recognized and used term which excludes satellite-based service delivery). Instead, OfReg is encouraged to introduce new licence type(s) for satellite-based telecommunications services.

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 is concerned with the tone taken in paragraphs 20 to 26 of the Consultation document – for example "the majority of the [satellite-based] service is provided outside the jurisdiction of the Cayman Islands" and "OfReg would have limited control in the provision of the [satellite-based] service".

OfReg has jurisdiction throughout the Cayman Islands and has an obligation "to protect the short- and long-term interests of consumers in relation to utility services" (Section 6(c) of the Utility Regulation and Competition Act). If a satellite-based service provider wants to start offering its retail services to customers in the Cayman Islands, it must comply with the local regulatory framework and licensing conditions for providers offering similar services. WestTel would argue that all the satellite-based retail service is actually being provided in the Cayman Islands and therefore OfReg has full jurisdiction of that.

The Consultation makes reference to three areas where OfReg would have limited jurisdiction, namely:

- Outage notifications
- 911 service
- Lawful intercept

WestTel believes Ofreg's viewpoint should be reexamined. OfReg has full jurisdiction throughout the Cayman Islands and therefore a satellite-based service provider needs to align with these areas, where OfReg considers it necessary to do so if it wants to operate here. It should be a licence condition that the satellite-based service provider circulates notifications to OfReg and their customers of planned maintenance/outages (beforehand) and unplanned outages (in a timely manner after the event starts). Likewise, it should be a licence condition to fully comply with the ICT (Interception of Telecommunications) Regulations.

In summary, WestTel firmly believes that it is in the best interests of Cayman Islands consumers for OfReg to apply the necessary provisions which terrestrial providers must adhere to, to the licences of any satellite services, with a requirement to ensure that they are met lest the licensee be subject to penalty (i.e. the first bullet in paragraph 27).

Question 3: ICT Service Licensing

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

Based on our answers to Questions 1 and 2, WestTel believes it is important that the new satellite-based service licence type(s) be issued to firms registered in the Cayman Islands and having the requisite Caymanian participation, so they comply with the existing rules. For the avoidance of doubt, WestTel is opposed to OfReg allowing licence applications from international satellite operators with no local presence or Caymanian participation.

Case Study: Haiti[5]

In November 2022 Starlink's locally registered subsidiary company, Starlink Haiti, was awarded a telecoms licence to operate in the country. Starlink terminal equipment can be purchased directly from the company's website or obtained through an authorized local reseller.

Case Study: Bahamas[6]

In February 2023 Starlink's locally registered subsidiary company, Starlink Services Bahamas, was issued an operating licence and spectrum licence to operate service in the country.

Case Study: Trinidad & Tobago[7]

In May 2023 Starlink's locally registered subsidiary company, Starlink Internet Services Trinidad & Tobago, was issued a 'Type 2 Concession for the Provision of a Public Domestic Fixed (via satellite) Telecommunication Network and Public Domestic Fixed Telecommunications Services on a National Geographic Scale'.

Case Study: South Africa[8]

Starlink has yet to get a licence in South Africa. Analysts say that a major sticking point in negotiations has been ICASAs insistence that Starlink should cede at least 30% equity to local ownership by black people, women, youth and people living with disabilities – a requirement for any telecommunications company seeking a licence in the country.

Question 4: VSAT Licensing

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

WestTel believes it is appropriate for OfReg to issue a Class licence for smaller user terminals using satellite services so that any current or future conditions can be captured. Larger terminals/dishes would still require a licence as per the current arrangements.

WestTel further recommends that OfReg imposes a licence fee for each satellite user terminal covered by the Class licence which be paid when the equipment is imported into the country.

Question 5: Radio Interference from VSAT

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

WestTel agrees with OfReg's assessment of the potential interference between satellite terminals and fixed point-to-point links using microwave frequencies. This is another reason why we believe it is important that OfReg licenses locally registered firms so there is a local contact to engage in the event of interference with another licensee.

Question 6: Keeping Local Traffic Onshore

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

WestTel is surprised by this question. Whilst the Cayman Islands Government Directive 2020 remains in place, OfReg is mandated to ensure all licensees comply with the requirement to peer their networks and keep all local data traffic onshore. Therefore, if OfReg starts issuing new satellite service licences there must be a condition that the licensee also complies with the Directive.

If the Cayman Islands Government responds to OfReg's letter and amends or withdraws this requirement then the licence condition would either be diminished or removed accordingly.

WestTel agrees with OfReg that because satellite ground-stations are expensive and the local market is small, it is highly unlikely that in the short term an international satellite operator would be willing to install one in the Cayman Islands. In future the economics of ground-stations may change but this is unlikely any time soon. Hence, any licence condition to keep all local data onshore will most likely be a 'deal-breaker' for an international satellite operator starting service in the Cayman Islands.

The Consultation discusses the benefits of using satellite connectivity, in particular LEO satellites, in the aftermath of a national disaster such as a hurricane. If the Cayman Islands Government refuses to relax the Directive 2020, perhaps OfReg can consider a special temporary emergency licence during times of national emergencies/ disasters which excludes the condition.

Case Study: Vanuatu[9]

In July 2024, Vanuatu's telecommunications regulator granted temporary permission for disaster management officials to use Starlink terminals after the three cyclones that hit the nation last year. However, until it gets a business licence from the Customs Department, other Starlink equipment is still being confiscated at the border.

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 notes the high-level pricing comparison in the Consultation (paragraph 59) which indicates that a satellite-based data service might be 50% more expensive than current terrestrial data services in the market. However, this premium pricing model is not guaranteed. We also note that LEO operator Starlink entered the Cook Islands market in the Pacific this year and launched an entry level product (Residential Lite) at just US$34 (NZD59) per month[10] which is lower than elsewhere in the Pacific and almost 40% lower than the equivalent entry-level market price in the Cayman Islands.

In other markets Starlink has already shown a propensity to increase prices when it can. In the USA, Starlink initially implemented a policy of charging US$120 per month in "areas with limited capacity" and US$90 per month for areas with "excess capacity". Starlink has since withdrawn the latter offering, with some users complaining that they live in sparsely populated areas, questioning the company's claim that its network is running out of capacity[11].

Case Study: Nigeria[12]

It was reported on 14 October that Starlink increased its monthly subscription fee for its 24,000 Nigerian users by 97%, from US$ 24 (N38,000) to US$ 49 (N75,000). This ignored local regulations that require all providers to obtain regulatory (NCC) approval before implementing any price hikes. That may be why as at 25 October the Starlink website showed the original pricing for Nigeria.

In summary, Starlink has the ability to enter telecoms markets around the world, reduce its retail prices until it weakens the terrestrial network providers and then raise prices once it has achieved critical market share / power. This is a key risk that OfReg needs to consider and address.

OfReg also needs to consider the costs, direct and indirect, incurred by terrestrial licensees and whether there will be a level playing field with any new satellite-based service licensees in future. Considerations include:

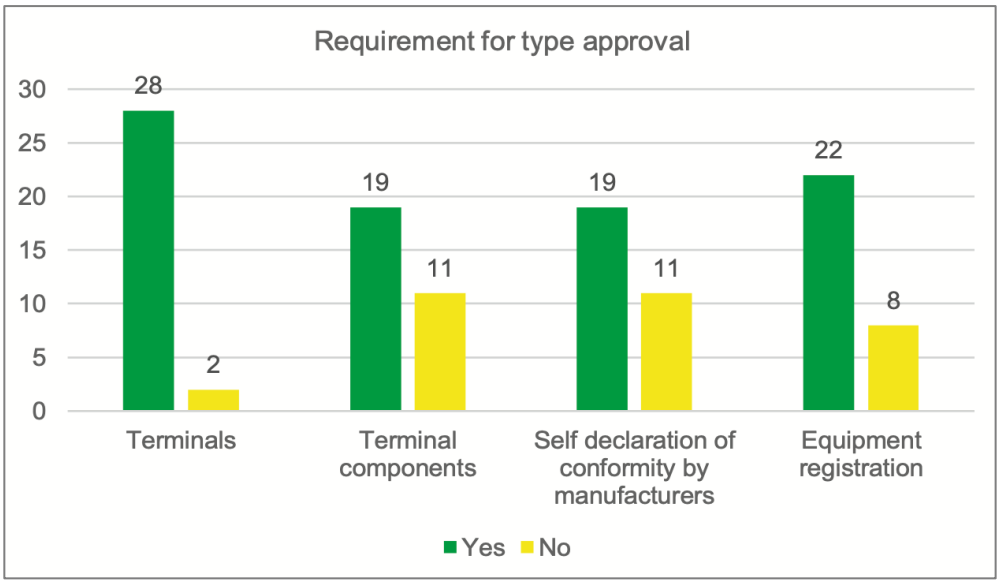
- Royalty fee (% revenue) paid to Government
- Regulatory fees paid to OfReg
- Spectrum fees paid to OfReg
- Network and support system costs to ensure SLAs are maintained
- Customer Service support costs to provide customer contact points and resolve issues
- Technical field support costs to resolve customer premise and end user equipment issues / faults

Given the small size of the Cayman Islands market, the above considerations could have a material bearing on the competitiveness of terrestrial operators in the market and therefore OfReg needs to give them serious consideration when considering the impact assessment.

3/ Further Comments

Equipment Approval and Registration

The African Telecommunications Union published the results of a large study in 2022[13]. The large majority of 30 African countries surveyed require type approval of satellite terminals. Equipment registration is also required in the majority of cases:



Source: African Telecommunications Union, 2022

We note that some form of type approval of telecommunications equipment is common in countries worldwide. This is aimed at ensuring public safety and interoperability. To the extent that there is not a type approvals scheme available, we suggest establishing one in the Cayman Islands.

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.

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23 December 2024

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CAYMAN ISLANDS

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Subject: Consultation ICT 2024 – 2 – Framework for the Licensing of Satellite-Based Telecommunications Providers

Viasat welcomes the opportunity to participate in the public consultation on the proposed Framework for the Licensing of Satellite-Based Telecommunications Providers ("Satellite Framework").

Viasat commends the Utility Regulation and Competition Office (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. OfReg's work to improve the Satellite Framework is of critical importance as it will directly impact the structure and growth trajectory of the satellite sector. Among other things, the Satellite Framework promises to facilitate investment in the sector, enabling its continued evolution and encouraging the introduction of new innovative service offerings. It will also impact the extent to which consumers are able to benefit from the services that satellite operators make available.

By way of brief background, Viasat began in 1986 as a manufacturer of components for the satellite industry, gaining significant expertise over the next several decades developing innovative satellite technologies for spacecraft, ground infrastructure, user terminals and network design. After launching our own satellites beginning in 2011, Viasat's broadband services began to empower communities, students, and microenterprises, drive growth and connectivity, and now support many new services in the areas of telemedicine, education, disaster recovery and relief, and agriculture. Today, Viasat is also a global leader in Earth Stations in Motion (ESIM) connectivity, providing service to a variety of global and regional airlines and maritime vessels. In May 2023, Viasat acquired global maritime company, Inmarsat, which was originally established in 1979 at the behest of the United Nations' International Maritime Organization (IMO), to operate a satellite communications network for the maritime community. With this transformational acquisition, Viasat has expanded its fleet of satellites which enables us to bring together spectrum, satellite, and other network assets, including 19 satellites in space spanning Ka-, L- and S- bands.

It is against this backdrop of forty-five years of experience in the satellite industry that Viasat is pleased to provide the following comments to OfReg's very timely public consultation.

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While satellite holds much promise for improved connectivity in administrations around the world, including the Cayman Islands, 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 large NGSO constellations. Recently disclosed plans by one 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.

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 International Telecommunication Union (ITU) allocations and spectrum sharing provisions.[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.

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 on at the market access stage, the Cayman Islands could not ensure the opportunity for its national satellite systems (or competitive systems) to share the same scarce orbital or spectrum resources.

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

Rather than create new license types to facilitate the specific licensing of satellite-based services, Viasat believes that OfReg should create a registration mechanism to allow OfReg to ensure that satellite operators meet OfReg's requirements as they may relate to national security, spectrum interference and space sustainability. As noted below, such an approach aligns with best practices in the region and avoids the duplication of a licensing approach in situations where local service providers are simply acquiring satellite capacity from satellite operators, without the satellite

[1] *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).

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operator providing services directly to end users. Any such mechanism should allow OfReg to exclude from the Caymans market (and not allow local licensees to procure capacity from), or appropriately condition the use of capacity on, any satellite network it finds noncompliant with the requirements it puts in place, including for reasons related to national security, spectrum interference, or space sustainability.

Satellite services can clearly play an important role in the telecommunications environment of the Cayman Islands. From improving broadband connectivity in underserved areas to disaster and emergency response to the provision of connectivity for ESIMs and ensuring an "always-there" mobile connection via Direct-to-Device (D2D) technology, satellite is as important today as it has ever been. At the same time, however, it is recognized that the increased use of the portions of space closest to Earth has led to urgent issues around the sustainable use of the fragile, shared and limited spectrum and orbital resources, especially in Low Earth Orbit where there has been a proliferation of mega-constellation satellite deployment.

Viasat believes that to encourage the development of satellite services in the Cayman Islands, the Satellite Framework should allow local service providers to acquire satellite capacity and provide services to end users under their existing licenses, allowing blanket licensing for Very Small Aperture Terminals (VSAT), Internet of Things (IoT), and ESIM terminals. It would be sufficient for OfReg to require the registration of satellite operators that provide capacity to local service providers and create a list of authorized satellite capacity providers (which would typically be foreign based). This would create a list of networks which meet OfReg's requirements for local licensees to procure from and specify the relevant conditions for the use of those networks. This would give OfReg the ability to ensure that service providers in the market meet the administration's requirements (for example, around national security, spectrum interference, and space sustainability criteria). We note that for D2D provided in satellite spectrum, this also works well, as Mobile Network Operators can procure satellite capacity to provision D2D services for their customers.

This approach, which would streamline the provisioning of satellite services in the Cayman Islands, is aligned with best practices in the region, and avoids a "double licensing" situation.

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?

Viasat notes OfReg's concern that it does not have the same regulatory control over a satellite service as it would over a local service provider whose operations and infrastructure are located

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wholly within the Cayman Islands but reminds OfReg that the market access power is a powerful tool to ensure compliance with national rules for all administrations. International Telecommunication Union (ITU) rules have not proven sufficient for dealing with the mega-constellation problem. Viasat believes that OfReg should include appropriate conditions in the licenses of local service providers to ensure that sensitive data is protected in accordance with national laws and regulations, as well as conditions related to satellite capacity that the service provider may use.

Employing national licensing processes to address national policy concerns this is specifically envisioned by relevant ITU instruments and regulatory procedures themselves. For example, Article 18 of the ITU Radio Regulations specifically reserves to individual Member States the authority and obligation to develop and implement licensing policies at the national level — including through the adoption of additional substantive requirements designed to safeguard the Cayman Islands' policy interests.

Given the importance and timeliness of OfReg's Satellite Framework consultation, Viasat urges OfReg to include the relevant policy principles outlined below within the Satellite Framework. In particular, considerations relating to the sustainable use of space, including 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 strongly recommends adding the following policy principles to be considered when a local service provider wants to provide satellite services using a satellite operator's capacity:

- **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"[2]. The space surrounding the earth is a finite resource. The emergence of large non-geostationary (NGSO) constellations can impact the sustainability of space activities by the over-exploitation of Low-Earth Orbit (LEO) in a variety of ways. Viasat believes that sustainable use of orbit and spectrum resources by the satellite services segment, and all space actors, should be looked at wholistically, that the policy approach of the Cayman Islands should consider several interlinked components:
  - **I. Continued availability of spectrum and associated orbits for all nations, including:**
    - a. Available spatial look angles that enable successful sharing of finite spectrum resources among different satellite systems and technologies;
    - b. Apportioning among multiple NGSO constellations the aggregate EPFD "budget" that must be shared by all NGSO systems using the same or overlapping frequencies

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

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c. Continued protection of GSO networks and services from large non-geosynchronous satellite (NGSO)systems' interference and ensuring room for future innovation in GSO networks.

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

III. **Acceptable environmental impact, including:**
   a. Damage to the Earth's atmosphere from the constant disintegration of defunct LEOs at the end of orbital life and the continued launch of replacements; and
   b. Damage to optical astronomy and indigenous cultural practices from the light reflected by LEOs in night skies

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

Adding a Space Sustainability regulation for those satellite operators seeking to bring their capacity to the Caymans market is essential to ensure safe and reliable access to and use of space for the benefit of all.

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

To have a clear vision of the models of service licensing, it is important to differentiate between the space segment which is the satellite capacity enabled by a satellite operator, and the local service provider that will market such capacity locally in the Cayman Islands. To do so, satellite operators could partner with an existing ICT licensee, who would then provide the service under their own license. As has been stated above, it is important to apply suitable regulations and conditions on with respect to the satellite capacity the local service provider wishes to utilize.

By ensuring the licensed local service provider obtains the satellite capacity only from a satellite capacity provider authorized by OfReg as outlined in Question 1 above, OfReg can use its market access granting power to ensure the local provision of satellite services in the Cayman Islands is done by satellite operators that satisfy OfReg's requirements. As a result, Viasat recommends a rigorous space segment registration process, including requirements for compliance with space sustainability regulations, particularly when large constellation NGSO systems are used by local providers.

This process should incorporate additional pre-requisite technical criteria and authorization obligations to ensure the development of a vibrant and competitive satellite sector while providing for the safer and more sustainable use of space and facilitating more equitable access to scarce spectrum resources. The registration should contain the elements provided in Requirements A, B, and C of Viasat's response to Question 5 below.

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Question 4: What approach should OfReg take to the licensing of VSAT terminals?

With respect to the licensing of VSAT terminals, Viasat believes that OfReg should issue a class license for VSAT terminals, meaning that certain types of user equipment would not require an individual license to operate (larger dishes above 1.8 m diameter would still require a license as per the current arrangements). In this context, Viasat supports the implementation of blanket licensing for VSAT terminals, as well as for IoT, D2D and ESIM terminals, as this approach would streamline the authorization process and facilitate the large-scale deployment of satellite terminals in the Cayman Islands.

Assuming that OfReg adopts a blanket licensing approach, it should ensure that the associated fee structure does not impede the benefits of that approach. Viasat suggests that OfReg should consider adopting a fixed fee structure for blanket-licensed satellite terminals. Among other things, the fixed-fee approach would reflect that all blanket-licensed terminals use the same spectrum in similar ways and collectively impose certain administrative and management costs on OfReg that are independent of the number of terminals licensed or operated—and should therefore be subject to a single, fixed fee (spectrum fees should be designed to recover relevant administrative and spectrum management costs and not more). In addition, this approach would avoid the administrative challenges associated with verifying and validating the number of domestic satellite terminals deployed.

When considering a blanket licensing approach, it will be very important to ensure compliance with the elements provided in Requirements A, B, and C of Viasat's response to Question 5 below.

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

As OfReg has recognized, regulating spectrum use has a direct impact on the satellite sector's structure and growth trajectory, investment appetite, and costs in the Cayman Islands. That is the basis for the elements provided in Requirements A, B, and C below.

Viasat appreciates the thoughtfulness that has gone into developing the consultation and the potential need for a new approach to satellite, and we recommend further enhancement and futureproofing by reinforcing key regulatory principles, to require certain sustainability conditions for any registrant network, including:

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- Ensure increased opportunities for competition and the entry of additional satellite services within the Cayman Islands---whether commercial, civil, scientific, defense and security, or other sovereign uses by developing suitable policies regarding the use of spectrum and orbits to serve the Cayman Islands;
- Manage the risk of undue influence that vertically integrated mega-constellations have in negotiating terms for coexistence with other satellite operators;
- Ensure that the Cayman Islands can continue to benefit from the peaceful use of outer space today and in the future.

Viasat believes the consultation provides a good opportunity to implement a regulation to ensure space sustainability. Viasat proposes the following practical goals, based on our experience as a global satellite operator and manufacturer, to further enhance OFREG's proposed regulatory framework:

- Prevention of harmful interference with other satellite/terrestrial network service providers.
- Promotion of competition by preventing monopolization of spectrum and orbital resources by early NGSO entrants to the market.

The realization of the above advantages hinges on the implementation of market access procedures that effectively manage the significant risks presented by large constellation NGSO systems, which include (for example):

- Consuming an undue amount of spectrum and orbits in contravention of the ITU Constitution, specifically Article 44, paragraph 2, which recognises that radio frequencies and orbits are limited natural resources and must be used "rationally, efficiently, and economically;"

- Generating undue interference that constrains the ability of other satellite systems to innovate and compete (both NGSO and GSO);

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- Consuming more than their share of the interference allowance toward GSO networks and thereby hindering opportunities for other parties, including national operators, to operate their own NGSO systems;

- Precluding equitable access to spectrum and orbits by other NGSO systems by using up all available "look angles" through the extremely large number of satellites within their networks and particularly when employing small user terminals with wide beamwidths; and

- Unduly raising the risks and costs associated with access to and use of space (regardless of orbit), including potential collisions and the creation of orbital debris.

Viasat proposes that OfReg requires NGSO registrants to satisfy the following requirements in order to help mitigate the threats posed by large NGSO LEO satellite systems seeking to serve the Cayman Islands:

Requirement A – Protect GSO networks from unacceptable interference generated by NGSO systems.

The potential for disruption to GSO networks by co-frequency NGSO systems is well-known and is what led to the development of various ITU Radio Regulations intended to protect GSO networks from interference generated by NGSO systems and define the terms under which both GSO and NGSO systems are to coexist. The principal provision for coexistence, No. 22.2 in the RR, requires NGSO systems to not cause *unacceptable* interference to GSO networks. Equivalent power flux density (EPFD) limits apply in certain bands that, if actually met during operation, fulfil the RR No. 22.2 obligation with respect to an NGSO system. There are two types of EPFD interference limits:

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- "Aggregate" EPFD limits constrain the amount of interference that all NGSO systems may generate in total, on a cumulative basis. These aggregate limits must be shared and apportioned among all NGSO systems using overlapping frequencies.
- "Single-entry" EPFD limits constrain the amount of interference that one NGSO system itself may generate with respect to GSO networks. The single-entry limits were established based on an apportionment to a single NGSO system of a portion of the applicable "aggregate" EPFD limits.

Single-Entry EPFD limits to be met by a single NGSO system

Based on the data provided in a given ITU EPFD input filing, the ITU's Radiocommunication Bureau (BR) does a limited assessment of the EPFD levels, based on ITU-R Recommendation S.1503[3], that may be generated by a NGSO system with respect to *one particular combination of earth station location and GSO satellite location* (so called "worst-case geometry"). This limited assessment has little bearing on the interference that a NGSO system can be expected to produce at various locations within the Cayman Islands, which may not be reflected in a worst-case-geometry assessment.

The ITU alone cannot effectively check all of the ways an NGSO system operator may try to artificially utilize EPFD inputs in a way designed to "pass" the ITU's spot checks regarding EPFD without reflecting how the NGSO system actually would operate and affect every nation. And there are multiple and well-documented examples of this already occurring. Notably, that responsibility falls on individual administrations and regulators that consider authorizing, or granting market access to, NGSO system operations.

In a recent contribution to WP4A[4], it was demonstrated how one NGSO operator has artificially designed a single PFD mask of one of the orbital shells, to force the current algorithm to select a specific and favorable, but non-representative, 'worst-case geometry' (WCG) for the entire NGSO

[3] ITU-R S.1503: Functional description to be used in developing software tools for determining conformity of non-geostationary-satellite orbit fixed-satellite service systems or networks with limits contained in Article 22 of the Radio Regulations.

[4] *See* WP4A document 4A/94 (18/04/2024) *Working document towards a preliminary draft revision of Recommendation ITU-R S.1503-4 - Underestimation of non-GSO interference arising from the use of worst-case geometry in S.1503 and necessity to supplement it with grid-based EPFD analysis*.

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system. Without inclusion of that particular PFD mask of the orbital shell, which has not been authorized by the filing administration for operation, S.1503-2 software produces higher EPFD with a lower number of satellites. Such practices conceal the interference produced by all other PFD masks of the same NGSO system filing that actually contain higher PFD levels at locations outside the WCG, leading to large exceedances of the limits at geometries other than WCG. These EPFD limit exceedances are not identified in the examination based on S.1503-2, which may result in a flawed favorable finding for an NGSO system based on an engineered PFD mask that forces the software to evaluate interference towards GSO networks in a limited and non-representative location on Earth.

As the ongoing work in ITU Working Party 4A reflects, there are significant shortcomings in the outdated Recommendation S.1503 software used by the ITU. Fortunately, alternative software is available, and more is being developed that allows a more accurate assessment of the expected interference within the Cayman Islands.

Aggregate EPFD limits to be met by *all* NGSO systems, collectively

Radio Regulations Resolution 76 (Rev. WRC-23) defines the aggregate EPFD limits that must be met by all NGSO systems, collectively, and calls for administrations to take all possible steps, to ensure that the aggregate interference into GSO FSS and GSO BSS networks caused by NGSO systems does not exceed those limits.

In the event that the aggregate EPFD limits are exceeded, it further calls for administrations, to take all necessary measures expeditiously to reduce the aggregate EPFD levels to the limits given in Tables 1A to 1D of Res. 76.

A critical component of the aggregate EPFD assessment is to define a methodology by which multiple NGSO operators would reduce EPFD levels in case of any exceedance. Such a reduction in EPFD level must be proportional to the contribution of each NGSO system towards the aggregate EPFD. Unequitable sharing of the aggregate EPFD budget amongst NGSO systems would hinder opportunities for other parties including national NGSO systems and new entrants.

Before authorizing any NGSO system to sell capacity in the Cayman Islands, OfReg should define a methodology for how the aggregate EPFD budget can be shared amongst all NGSO systems and how the NGSO systems will reduce the NGSO system EPFD levels, in case of exceedances. It is unreasonable to expect that NGSO licensees will adapt their operations if the aggregate EPFD exceedance is evaluated in the Cayman Islands at a later time, especially when there is no methodology defined upfront at the time of license grant. At the very least, it will be a long process that will cause harm to GSO operations throughout the time of the aggregate EPFD

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exceedances by the NGSO systems. Moreover, should interference issues arise, isolating and identifying individual EPFD contributions of every NGSO system toward the aggregate EPFD will be an impossible task.

Therefore, Viasat encourages OfReg to conduct an independent assessment of potential for interference, from a single NGSO system and all NGSO systems collectively, within the Cayman Islands' national territory that are not covered by the limited assessments performed by the BR regarding ITU filings for the LEO system. Such assessment should require from a NGSO operator:

- A demonstration of compliance with the single-entry and aggregate equivalent power flux density (EPFD) limits prescribed in the ITU Radio Regulations Article 22 (Art. 22) and ITU Resolution 76, respectively. This should include:
    - A demonstration for the LEO constellation as a whole;
    - A demonstration for the specific portions of the LEO constellation proposed to serve the Cayman Islands (including the exact satellite altitudes and inclinations proposed to be used);
    - A demonstration for a suitable number of representative geographic locations within the Cayman Islands and for all GSO satellite networks serving, or proposed to serve, the Cayman Islands;
    - A demonstration of how the LEO system avoids interference to GSO networks created by numerous LEO earth station and satellite antenna sidelobes, and earth station antenna backlobes, particularly when phased array antennas are employed;
    - A demonstration for the operation of the LEO constellation alongside the operation of all other co-frequency NGSO constellations serving the Cayman Islands.
    - Information on the ITU filing under which the each of the NGSO systems seek to operate in the Cayman Islands and where the NGSO system operate under multiple filings, each application should contain EPFD input files (e.g. SRS and mask database) that represent their system as a whole and that are consistent with their ITU submission.

In order to ensure that the expected interference evaluated based on above assessment is not exceeded during NGSO operation, following licensing conditions are necessary:

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1. Each individual NGSO system shall comply with the single-entry EPFD limits in Art. 22 and all NGSO systems, collectively, shall comply with aggregate EPFD limits in Resolution 76 (Rev. WRC-23);

2. The NGSO operator shall operate its system as a single constellation for purposes of the EPFD limits, no matter how many ITU filings it may seek to operate under;

3. The NGSO operator shall confirm that its deployed NGSO system is fully consistent with its ITU filings;

4. The NGSO operator shall comply with all the parameters provided in its ITU filing, specifically;

    - Maximum number of co-frequency beams serving a specific location in the Cayman Islands, commonly known as "Nco",
    - Minimum GSO arc avoidance angle, commonly known as "alpha angle,"
    - The downlink power flux density mask (PFD mask), taking into account the actual characteristics of NGSO system as deployed, including the radiation pattern of its satellite antenna.

As mentioned above, the aggregate EPFD limits define the interference that all NGSO systems, collectively, can generate towards GSO network and thus establish a total interference budget that must be shared by ALL NGSO systems. If, for example, one NGSO operator is allowed to operate with two NGSO systems (e.g. generation 1 and generation 2) and each one has a separate "share" of that aggregate budget, that NGSO operator can consume almost 60% of the total aggregate EPFD budget, which must be shared amongst *all* NGSO operators. To avoid disproportionate allocation to a single NGSO operator of aggregate EPFD interference budget amongst all NGSO operators, it is critical to treat all the NGSO satellites of one NGSO operator as a whole.

The need for the conditions discussed above is reinforced by the Director of the ITU's Radiocommunication Bureau recently released a report which explains that the practice of splitting a NGSO satellite system into several filed systems, "may affect the effectiveness of single-entry limits contained in Art. 22 to protect geostationary systems or have an impact in the implementation of Resolution 76 (Rev.WRC-15)."[5]

[5] Director, ITU Radiocommunication Bureau, Preliminary Draft Report of the Director to WRC-23 on the Activities of the Radiocommunication Sector Experience in the Application of the Radio Regulatory Procedures and Other

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Requirement B - Ensure large NGSO constellations share frequencies and orbital resources effectively with other NGSOs, including by not relying on the requirement to coordinate, but instead requiring:

- Operating with only 1/n of the look angles in a given country, where n is the number of NGSO systems authorised to serve the Cayman Islands in the same frequency band (whereby NGSO systems serving a country in overlapping frequencies would divide the range of satellite azimuths as seen from a location on the Earth whenever the potential for NGSO/NGSO interference exists at that location);

- Coordinating in good faith and in advance with other NGSO systems so that all n look angles may be used to serve the Cayman Islands by different NGSO systems; and

- Maintaining suitable orbital tolerances established by the Cayman Islands for the apogee and perigee of each NGSO satellite, and for each orbital inclination the NGSO system employs, in order to ensure other NGSO systems may access the shared LEO space, to ensure the ability of other satellites and systems serving its territory to operate in the same, or overlapping, orbits occupied by the NGSO system).

Viasat recommends the Cayman Islands to review the coordination terms used to provide service within the Cayman Islands to ensure that those agreements do not unduly constrain other NGSO systems seeking to serve the Cayman Islands and do not result in a disproportionate distribution to one NGSO operator of the aggregate EPFD allowance to be shared by all NGSO systems serving the Cayman Islands.

Requirement C – Take concrete steps to limit safety risks posed by NGSO operations, including by submitting a collision risk analysis of the NGSO system, as a whole, for the full orbital life of each satellite and its replacements, and as system characteristics and the orbital environment may change.

Related Matters, Addendum 2 to Document 4-3 (September 2023), at 28-29. Resolution 76 is discussed below. It addresses compliance with limits on the entirety of the aggregate EPFD↓ created by all NGSO systems of all operators.

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Question 6: How should OfReg deal with the Government's requirement to keep local traffic onshore?

We acknowledge the legitimate goals that the Government has in ensuring that its requirements are not bypassed and welcome the opportunity to discuss ways to both enable satellite service to the Cayman Islands and address the Government's sovereign needs.

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?

As mentioned in Question 1 above, there are significant threats to the sustainable use of spectrum and orbit resources and competition that require urgent action, especially using the market access tools available OfReg. As long as those matters are addressed by OfReg, the introduction of satellite-based services promises to have a positive impact on the businesses of existing suppliers and consumers, and to play a significant role in closing the digital divide by providing connectivity to unserved and underserved areas, providing complementary solutions in regions already covered by terrestrial networks, and fulfilling a range of essential and critical communication requirements.

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