Consultation on the proposed new Licensing Framework for Satellite Services

12 November 2024

1. Introduction

1.1. SENTECH thanks the Independent Communications Authority of South Africa (ICASA) ("Authority") for the opportunity to provide inputs on the *Consultation on the new Licensing Framework for Satellite Services ("Satellite Framework")* as published in Government Gazette No. 51044 on 14 August 2024.

1.2. SENTECH advocates for the Authority to clearly indicate that the Satellite Framework is for both planned and unplanned bands.

2. FSS planned and unplanned bands

2.1. Fixed Satellite Services (FSS) refer to satellite systems that provide communication services between fixed points on Earth. They are used for various purposes, including television broadcasting, internet services, and private network communications.

2.2. **FSS Bands** are divided into planned and unplanned categories, depending on the way they are allocated by international agreements. These bands are typically within the microwave frequency range.

2.2.1. Planned Bands

2.2.1.1. Planned bands are frequencies that are specifically allocated to certain regions or countries by international agreements. These bands are subject to regulatory processes and coordination, ensuring that the frequencies are efficiently distributed, and interference is minimized.

2.2.1.1.1. **C-Band** (3.4 to 4.2 GHz): The traditional band for FSS, used extensively for TV broadcasting and data communication services. It is also important to note that the Authority is planning on introducing terrestrial broadband services within this band based on dynamic spectrum access and opportunistic spectrum management, Government Gazette No. 50376, dated 26 March 2024.

2.2.1.2. **Ku-Band** (10.7 to 12.75 GHz): Also heavily used for broadcasting and internet services. It offers smaller antennas than C-band but is more susceptible to rain fade.

2.3. In these planned bands, satellite locations and frequencies are predetermined, and new entrants must adhere to established frameworks.

2.3.1. Unplanned Bands

2.3.2. Unplanned bands, by contrast, are not subject to the same level of international regulation. Operators are free to coordinate among themselves to avoid interference. These bands are typically used for more flexible services and new technologies, allowing for innovation but with potential risks of interference if not managed properly.

2.3.3. **Ka-Band** (17.7 to 31 GHz): This band is less regulated and often used for high-capacity satellite internet services, given its large bandwidth. Ka-band is more vulnerable to weather conditions like rain but allows for very high data transmission rates.

2.4. The distinction between planned and unplanned bands is important for managing satellite communications and ensuring that different services can coexist without interference.

3. BSS planned and unplanned bands

3.1. Broadcasting Satellite Services (BSS) are satellite services dedicated to direct-to-home (DTH) broadcasting, such as satellite television and radio. Like Fixed Satellite Services (FSS), BSS frequencies are divided into planned and unplanned bands to manage spectrum usage and reduce interference.

3.2. Planned Bands

3.2.1. Planned bands are frequency ranges that have been allocated specifically for BSS by international regulatory bodies, primarily through the International Telecommunication Union (ITU). These bands follow strict regulatory frameworks and planning to ensure they are efficiently used and to minimize interference.

3.2.2. **Ku-Band** (11.7 to 12.7 GHz): Used primarily in Regions 1 (Europe, Africa, and the Middle East) and 3 (Asia and Oceania). This band is commonly used for DTH television broadcasting.

3.2.3. **Ka-Band** (21.4 to 22 GHz): Allocated for BSS in some regions for HDTV and digital television services. With higher bandwidth, Ka-band supports high data rates for modern video formats.

3.3. In planned bands, satellite operators must adhere to specific orbital positions and technical parameters established by the ITU.

3.4. Unplanned Bands

3.4.1. Unplanned bands, in contrast, are not subject to the same regulatory pre-allocation process. Instead, frequencies are assigned through coordination among satellite operators, offering more flexibility but increasing the potential for interference.

3.4.2. **Extended Ku-Band** (12.75 to 13.25 GHz and 13.75 to 14.5 GHz): These bands are sometimes used for flexible broadcasting services or satellite news gathering but are subject to coordination.

3.5. The distinction between planned and unplanned bands in BSS helps regulate how satellite operators share spectrum, balancing innovation opportunities with the need to manage interference for reliable broadcasting services.

4. MSS planned and unplanned bands

4.1. Mobile Satellite Services (MSS) provide communication for mobile users on land, sea, and air, enabling voice, data, and messaging services for devices on the move. Like FSS and BSS, MSS operates in planned and unplanned frequency bands. However, MSS bands are designed to support mobile users with small, portable terminals, often requiring careful coordination to manage interference with other satellite and terrestrial services.

4.2. Planned Bands

4.2.1. Planned bands are frequencies allocated to MSS through international regulatory processes, primarily by the International Telecommunication Union (ITU). These bands are carefully planned to ensure stable, interference-free communication, especially for critical applications such as emergency and rescue operations.

4.2.2. **L-Band** (1.5 to 1.6 GHz): This is the primary band for MSS and is heavily used for maritime and aviation communication, satellite phones, and GPS augmentation systems.

4.2.3. **S-Band** (2 to 2.5 GHz): Often used for mobile communications and for regional MSS services, including satellite internet services for rural and remote areas.

4.2.4. Within planned bands, operators must follow specific rules regarding frequency allocation and satellite positioning to minimize interference, especially since MSS often shares these ands with terrestrial services.

4.3. Unplanned Bands

4.3.1. Unplanned bands offer more flexibility and are not subject to the same stringent pre-allocation processes. These bands are assigned through coordination among satellite operators and allow for new MSS services but come with a higher risk of interference.

4.3.2. **Ku-Band** (around 10.7 to 14.5 GHz): While not traditionally a mobile band, MSS operators sometimes use Ku-band to support high-data-rate services, like in-flight Wi-Fi for airlines and maritime internet.

4.3.3. **Ka-Band** (20 to 30 GHz): Used increasingly for high-throughput applications, Ka-band enables MSS to provide broadband connectivity in remote or underserved regions. However, it is more prone to weather interference and requires more robust coordination.

4.3.4. In MSS, planned bands ensure the stable functioning of critical communication services, while unplanned bands provide operators with flexibility to innovate and expand mobile connectivity solutions, especially for high-data-rate applications.

5. ITU procedures for unplanned bands in MSS, FSS and BSS

5.1. The International Telecommunication Union (ITU) oversees frequency allocation procedures to manage the growing demand for satellite services and mitigate interference. For unplanned bands in Mobile Satellite Services (MSS), Fixed Satellite Services (FSS),

and Broadcasting Satellite Services (BSS), ITU procedures focus on coordination and notification rather than the stricter regulatory planning used for planned bands. An overview of the key ITU procedures is a follows:

5.2. Coordination Procedures (Article 9)

5.2.1. In unplanned bands, operators must follow ITU's coordination procedures to ensure their satellite networks do not interfere with other existing or planned systems. This coordination process involves:

- **Submission of Coordination Request:** Satellite operators must submit a coordination request to ITU, specifying technical parameters such as frequency band, orbital location, service area, and antenna characteristics.
- **Coordination with Affected Administrations:** If the proposed satellite could interfere with another country's existing or planned satellite or terrestrial services, it must coordinate directly with the affected administrations.
- **Mutual Agreements:** Administrations negotiate to reach mutually acceptable arrangements to avoid harmful interference. They may modify technical parameters or agree on operational procedures to resolve issues.

5.2.2. This process is collaborative, and coordination agreements are based on mutual consent between administrations.

5.3. Notification Procedures (Article 11)

5.3.1. Once coordination is successfully completed, operators must submit a notification to the ITU, detailing their finalized satellite parameters. The notification includes:

- **Formal Registration Request:** The request for registration in the ITU Master International Frequency Register (MIFR) ensures the satellite network's protection from future interference.
- **Publication in MIFR:** Upon ITU approval, the network is published in the MIFR, officially recognizing it as a protected service within the specified parameters. This means other networks or services entering the band later must not interfere with it.

5.3.2. Notification to the MIFR grants the satellite operator international recognition and protection of its operational parameters.

5.4. No-Objection Procedure (Resolution 49)

5.4.1. For MSS, FSS, and BSS systems operating in unplanned bands, the no-objection procedure allows administrations to launch and operate satellites without full global coordination, provided there are no objections from potentially affected countries. This procedure:

- **Simplifies Authorization:** Resolution 49 provides a simplified process, especially for regional systems, as long as affected administrations do not object.
- **Reduces Time to Deployment:** This can accelerate deployment but may still require coordination with specific countries if they raise interference concerns.

5.5. Interference Resolution and Dispute Mechanisms

5.5.1. If interference arises, the ITU facilitates dispute resolution to resolve conflicts between administrations. Procedures may include technical analyses and collaborative modifications to the operational parameters or use of mitigation techniques like power control and beam shaping.

5.5.2. These ITU procedures for unplanned bands ensure that satellite operators have some flexibility while maintaining protection against interference, balancing innovation with regulatory oversight.

6. ITU procedures for planned bands in MSS, FSS and BSS

6.1. For planned bands in Mobile Satellite Services (MSS), Fixed Satellite Services (FSS), and Broadcasting Satellite Services (BSS), the International Telecommunication Union (ITU) establishes more stringent procedures compared to unplanned bands. These procedures are guided by the ITU's Radio Regulations and are designed to ensure equitable, interference-free access to the spectrum for each region. The main ITU procedures for planned bands are:

6.1.1. Allotment and Assignment Plans

6.1.1.1. The ITU establishes predetermined allotment and assignment plans for each region based on service needs and satellite coverage requirements. This means:

- **Allotments:** Frequency and orbital slots are allocated to specific geographic regions, countries, or groups of countries based on anticipated demand and service requirements.
- **Assignments:** Individual countries are assigned specific frequencies and orbital positions within the broader allotment, ensuring equitable access to the spectrum.

6.1.1.2. These pre-defined plans are especially common in BSS and FSS to enable efficient, interference-free satellite communications.

6.1.2. Coordination and Planning Procedures (Appendices 30, 30A, and 30B)

6.1.2.1. For planned bands in BSS and FSS, the ITU has specific rules in Appendices 30, 30A, and 30B that govern frequency use:

- **Appendix 30:** Deals with the **Broadcasting-Satellite Service (BSS)** in the 12 GHz band, ensuring dedicated slots for television and radio broadcasting in specific regions.
- **Appendix 30A:** Applies to feeder links used in conjunction with BSS to ensure feeder link operations align with BSS satellites.
- **Appendix 30B:** Covers **Fixed-Satellite Service (FSS)** allocations, ensuring equitable and interference-free access in each region.

6.1.2.2. For each appendix, there are detailed planning requirements for countries, specifying permissible power levels, orbital positions, frequency ranges, and geographic coverage.

6.1.3. Submission and Examination of Plans

6.1.3.1. To establish a network in a planned band, countries must submit a request to the ITU that aligns with the predetermined assignment plan. The steps include:

- **Submission of Parameters:** Countries submit satellite network parameters, including frequency, orbital location, coverage area, and power levels, to the ITU.
- **Technical and Regulatory Examination:** The ITU's Radiocommunication Bureau reviews the submission to ensure compliance with assignment plans, examining technical specifications to prevent interference with existing networks.
- **Adjustment and Coordination:** If conflicts or non-compliance issues are identified, the submitting country may need to adjust its network parameters. This may involve further coordination with the ITU and potentially affected countries.

6.1.4. Notification and Registration in the Master International Frequency Register (MIFR)

6.1.4.1. Once the ITU approves the submission, the satellite network can be officially registered in the Master International Frequency Register (MIFR). This grants:

- **International Recognition and Protection:** The network receives international recognition, giving it priority in the planned band and protection against future interference.
- **Binding Status:** This registration is binding, meaning that other satellite networks operating in the same band and region must respect the registered parameters.

6.1.5. Periodic Review and Plan Modification

6.1.5.1. ITU conducts regular reviews of the planned band allotment plans to ensure they continue to meet changing demands. Countries can also submit requests to modify the plan if:

- **Increased Demand:** New services or increased capacity requirements emerge in a region.
- **Technological Advancements:** New satellite technology may allow for more efficient use of the allocated spectrum.

6.1.5.2. Any changes must go through the ITU's rigorous examination and coordination process to ensure the modification does not disrupt the existing satellite ecosystem.

6.1.6. Interference Resolution Mechanisms

6.1.6.1. For planned bands, the ITU prioritizes interference protection as these bands are often used for critical services. If interference arises:

- **Technical Adjustments:** The affected parties must negotiate to adjust operational parameters like power, beam patterns, or transmission timing.
- **Dispute Resolution:** The ITU facilitates negotiations between parties and can provide technical guidance to resolve disputes while ensuring compliance with the assignment plan.

6.1.7. These ITU procedures for planned bands ensure a stable and predictable environment for MSS, FSS, and BSS services, allowing countries to provide high-quality services while respecting the rights of neighbouring states and other users in the band.

7. Direct-to-device satellite

7.1. SENTECH is arguing that one of the objectives of the inquiry to develop a framework that is forward looking.

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7.3. For example, agenda item 1.13 (WRC-27) is looking at studies on the possible allocations to the MSS in the frequency range between 694/698 MHz and 2.7 GHz. The intention is to "consider studies on possible new allocations to the mobile-satellite service for direct connectivity between space stations and International Mobile Telecommunications (IMT) user equipment to complement terrestrial IMT network coverage".

7.4. Direct-to-device connectivity seeks to seamlessly connect existing devices, e.g. mobile phones, smart watches, or cars plus industrial machinery and transport operators to

through both terrestrial and satellite coverage[1]. This is enabled by the adoption of 3GPP Release 17 standards by satellite operators, MNOs, handset and chipset manufactures. Release 17 included, among other projects, the following: New Radio on Non terrestrial Networks (NTN), and IoT over NTN.

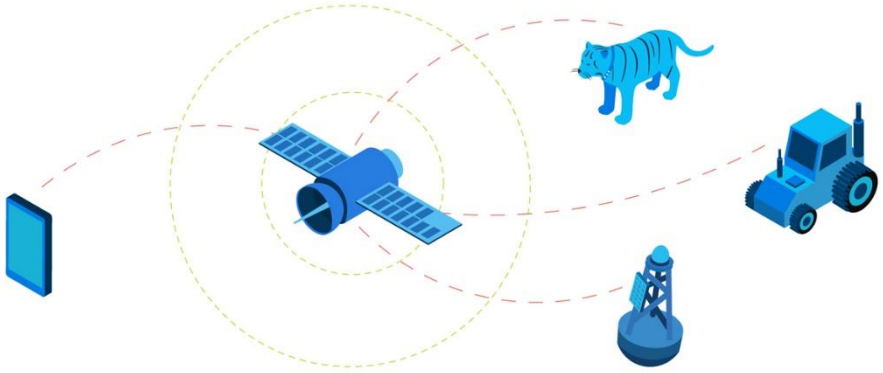

Figure 1: Direct-to-device satellite connection (source: Ground Control)

7.5. In January 2024, Salt (Swiss MNO) announced an agreement with SpaceX to provide ubiquitous coverage through satellite technology with direct-to-cell capability. According to Salt, Starlink is now deploying satellites with Direct to Cell capabilities at scale that "works with existing phones and IoT devices with common LTE standards, requiring no changes to hardware, firmware, or downloading apps[2]".

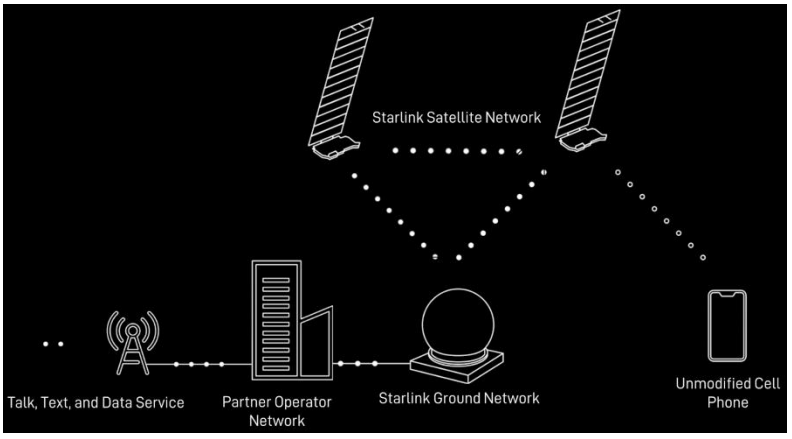

Figure 2: Starlink Direct to Cell satellite (source: Starlink[3])

[1] https://news.viasat.com/newsroom/press-releases/direct-to-device-satellite-services-successfully-trialed-for-first-time-in-india-by-viasat-and-bsnl

[2] https://www.salt.ch/sites/default/files/2024-01/20240103-SpaceX-FirstMilestone_EN.pdf?srsltid=AfmBOooWvlrq8m6JESvtwEVZauidlkVe--gEzTorYtq30bFZ4l3KrShQ

[3] https://www.starlink.com/business/direct-to-cell

7.6. In October 2024, Viasat announced it “successfully showcased direct-to-device smartphone connectivity during this week’s India Mobile Congress in New Delhi[4]”. The demonstration included “two-way messaging and SoS messaging using a commercial Android smartphone enabled for non-terrestrial network (NTN) connectivity”.

7.7. It is on this basis that SENTECH argues for the inclusion of NTN, *Figure 3*, in the framework.

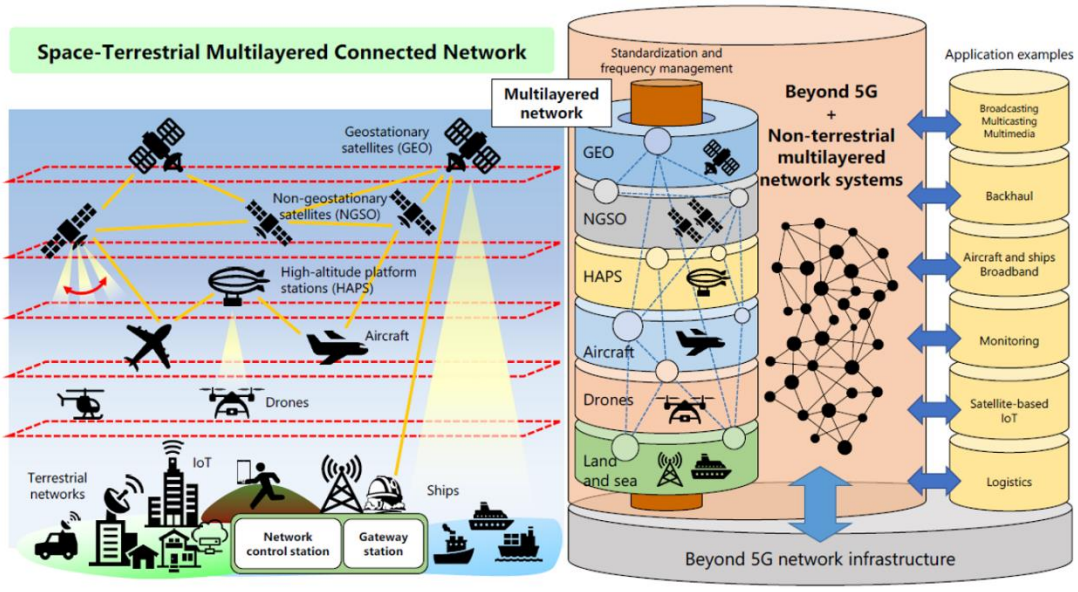

Figure 3: Conceptual image for networks in Beyond 5G (source: NICT (2021)[5])

8. Space Affairs Act and the South African National Space Agency Act

8.1. SENTECH notes that there is some level of overlap between the ECA and the Space Affairs Act, that requires clarification of roles and responsibilities between the Authority and the South African Council for Space Affairs. For example, sub-section 5(2) of the Space Affairs Act (SACSA) states the following:

> *5. (2) The Council shall on behalf of the State take care of the interests, responsibilities and obligations of the Republic regarding its space and space-related activities in compliance with international conventions, treaties and agreements entered into or ratified by the Government of the Republic.*

8.2. SACSA states that the “primary South African legislative instrument governing the regulation of both governmental and non-governmental space-related activities is the

[4] https://news.viasat.com/newsroom/press-releases/direct-to-device-satellite-services-successfully-trialed-for-first-time-in-india-by-viasat-and-bsnl

[5] https://www2.nict.go.jp/wireless/en/sat5g-scl.html

Space Affairs Act, No. 84 of 2 July 1993, as amended by the Space Affairs Amendment Act, No. 64 of 6 October 19956".

9. Satellite Value Chain

9.1. The importance of clarification of roles and responsibilities between the Authority and SACSA, speaks to scope of the satellite value chain.

9.2. South Africa, through SADC and ATU, has increasing participated in upstream segment on satellite matters post WRC-19 adoption of Resolution 170: Additional measures for satellite networks in the fixed-satellite service in frequency bands subject to Appendix 30B for the enhancement of equitable access to these frequency bands.

9.3. Post WRC-19 SADC and ATU faced several challenges with the implementation of Resolution 190 (WRC-19) and with the assistance of ITU-R, WRC-23 was convinced to revised Resolution 170.

9.4. WRC-23 improved the definition of coverage and service areas associated with submissions under Resolution 170.

9.5. Resolution 170 (Rev.WRC-23) contains a special procedure for the processing of submissions received by the Bureau under Article 6[7] of Appendix 30B[8] for:

I. Conversion of the allotment of an Administration into an assignment with modifications outside the envelope of the initial allotment while restricted to providing service to its national territory; or

II. An additional system submitted by an Administration the service area of which is limited to its national territory; or

III. An additional system submitted by an Administration acting on behalf of a group of named Administrations the service area of which is limited to the national territories of that group of named Administrations.

9.6. The satellite value chain encompasses the stages of production, deployment, and operation of satellite technology, involving different sectors and actors that contribute to the satellite's lifecycle. Broadly, it includes:

I. **Upstream Segment**: The focus here is on designing, manufacturing, and launching satellites, namely:

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[6] http://www.sacsa.gov.za/wp-content/uploads/2019/06/Space-Brocure-upgrade-2Sept08-p1-10.pdf

[7] Appendix 30B Article 6: Procedures for the conversion of an allotment into an assignment, for the introduction of an additional system or for the modification of an assignment in the List

[8] APPENDIX 30B (REV.WRC-23): Provisions and associated Plan for the fixed-satellite service in the frequency bands 4 500-4 800 MHz, 6 725-7 025 MHz, 10.70-10.95 GHz, 11.20-11.45 GHz and 12.75-13.25 GHz

a) **Satellite Manufacturing**: Companies produce the satellite's hardware and payload (the instruments or sensors that collect data or transmit signals).
b) **Launch Services**: Companies or agencies handle the logistics and technology required to launch satellites into space. This includes private companies, such as SpaceX or Arianespace, as well as governmental space agencies.

II. **Downstream Segment**: After the satellite is operational, the downstream segment centers on its data processing, application, and commercialization.

a) **Data Reception and Processing**: Ground stations receive the satellite data, which then undergoes processing to be made useful for different applications.
b) **Application Development**: Businesses and organizations develop applications from the data, targeting industries such as agriculture, telecommunications, navigation, and environmental monitoring.
c) **End Users**: The final users are companies, governments, and individuals who utilize satellite-based services like GPS, satellite TV, internet, or Earth observation data.

III. **Supporting Services**: This includes policy development, financing, insurance, and regulation. These entities enable the functioning of the entire value chain by managing risks, investment flows, and compliance with space policies and treaties.

Stage	User Value Chain	Notifying Administration Value Chain
Design & Procurement	Identifies satellite services or solutions to meet specific needs (e.g., satellite data or connectivity).	Approves satellite projects, ensuring alignment with international frequency allocation and orbital slot regulations.
Manufacturing	Typically not involved directly; procures services or equipment as needed for ground stations or terminals.	May have oversight to ensure that manufactured satellites comply with national and international standards.
Launch & Deployment	No direct involvement; relies on commercial service providers to launch satellites they use.	Monitors satellite launch approvals, ensuring compliance with national security, orbital debris, and frequency coordination policies.
Frequency Coordination	Not involved in frequency allocation; relies on pre-approved frequency licenses from service providers.	Coordinates frequency allocation with the International Telecommunication Union (ITU) and neighbouring administrations to prevent interference.
Licensing & Compliance	Acquires licenses from relevant authorities to operate or access satellite services.	Issues licenses, enforces regulations, and ensures users and operators adhere to national and international satellite policies.
Data Reception & Processing	Operates ground stations or uses third-party data to receive and process satellite data.	Regulates ground stations within its jurisdiction and monitors data usage policies for security and compliance.

Application Development	Uses satellite data for specific applications (e.g., IoT, weather monitoring, navigation, or communications).	Supports application development by enforcing secure and fair access policies for public and private sector satellite data usage.
End-User Access & Service Delivery	Delivers satellite-based products or services to the end customers.	Oversees service delivery standards, ensuring operators adhere to user privacy, security, and quality standards.
Monitoring & Maintenance	Uses operational data to ensure service reliability and troubleshoot issues with satellite providers.	Conducts spectrum monitoring to detect interference, oversees adherence to space traffic management rules, and updates ITU records.

Table 1: *User* on application and data usage vs regulatory and coordination roles of the *Notifying Administration* in maintaining compliance and international alignment.

9.7. The value chain also interacts with emerging technologies like IoT, 5G, and AI, which integrate satellite data for enhanced global connectivity and data analytics.

9.8. In *Table 1* the comparison illustrates the operational focus of the *User* on application and data usage, contrasting with the regulatory and coordination roles of the *Notifying Administration* in maintaining compliance and international alignment.

10. Inquiry Questions

10.1. QUESTION 1: These are the policy principles from the ATU that ICASA seeks to align with. Kindly provide comment(s) on the proposed policy principles and any further recommendations listed in the above section?

Answer 1

SENTECH agrees in principle.

10.2. QUESTION 2: Do you agree with the exclusions of radio navigation satellite services, amateur satellite services, earth exploration, space research satellite services and radio astronomy services indicated above and others if applicable? If not, please explain your reasoning and propose an alternative to this proposal.

Answer

The Authority has not expressed the reasons for the exclusions of radio navigation satellite services, amateur satellite services, earth exploration, space research satellite services, and radio astronomy services. Therefore, it is difficult to indicate any form of agreement or disagreement, let alone any alternative proposals. SENTECH assumes that the mentioned exclusions seem historically regulated by the SACSA in compliance with the Space Affairs Act and the South African National Space Agency Act. One of the main themes of SENTECH's submission is the clarification of roles and responsibilities between the Authority and the SACSA.

10.3. QUESTION 3: Do you agree with the proposed approach of having a separate licence/authorisation (where applicable) for each segment of the Satellite Communication value chain? Please elaborate.

Answer

SENTECH in principle agrees with the Authority's proposal of "having a separate/authorization (where applicable) for each segment of the Satellite Communication value chain". The company is of the view that there are more than three (3) types of categories that must be considered for licensing, namely:

- Satellite Control Earth Station;
    - A **Satellite Control Earth Station** (SCES) is a critical ground-based facility designed to manage and monitor satellites in orbit. It provides communication links between the satellite and ground operators, ensuring the satellite's health, proper functioning, and alignment. The SCES communicates with the satellite via radio frequencies, sending commands and receiving telemetry data (i.e., information on the satellite's operational status).
    - Key functions of a SCES includes, namely: Telemetry, Tracking, and Commanding (TT&C); Orbit and Attitude Control; Health Monitoring; and Contingency Management.
    - The SCES supports both the *Upstream* (monitoring satellite deployment and health) and *Downstream* segments (relaying operational data to users). It is an essential element in satellite operations, enabling continuous oversight and control over the satellite's lifecycle.
- Communications Traffic Earth Station (teleport)/gateway station;
    - A **Communications Traffic Earth Station** (also known as a **Teleport** or **Gateway Station**) is a specialized ground-based facility designed to manage high-volume communication traffic between satellites and terrestrial networks. Unlike a Satellite Control Earth Station, which focuses on the operational management of satellites, a teleport or gateway station handles the actual data and communication services for end users. It acts as an access point for transmitting data to and receiving data from satellites, providing essential links for internet, television, telephony, and other communication services.
    - In the satellite value chain, teleports and gateway stations form a critical component of the *Downstream Segment*, facilitating data distribution to end

users and connecting satellite systems with ground-based networks. By acting as data hubs, they enable various applications, including internet connectivity in remote areas, media broadcasting, military communications, and disaster response.

    - These stations are pivotal in bridging the gap between space and terrestrial infrastructure, making satellite-based services accessible and reliable for users worldwide.

- Very Small Aperture Terminal (VSAT);
- Direct-to-Home (DTH) terminal;
- Satellite News Gathering;

SENTECH argues that SNG should not be considered in the same category as user-terminal applications like Very Small Aperture Terminals (VSAT) and Direct-to-Home (DTH) systems, though all three involve satellite communications. The argument is based on the following:

1. **VSAT** (Very Small Aperture Terminal) is a two-way satellite communication system often used by enterprises and institutions for reliable data, voice, and sometimes video communication over satellite. It usually requires user terminals for interactive use, such as for internet access or remote network access.
2. **DTH** (Direct-to-Home) is a satellite broadcasting service that delivers television content directly to users' homes. DTH is a one-way system where users receive satellite signals but do not transmit them back.
3. **SNG** (Satellite News Gathering) is a mobile satellite communication service used mainly by broadcasters to transmit live video, such as news coverage, sport events, political rallies or press conferences back to the station. SNG systems are equipped with uplink capabilities to broadcast high-quality video and are more transportable than fixed VSAT or DTH installations. SNG units can be quickly set up to transmit video and audio from the field, making them unique in their design and purpose compared to user-terminal satellite applications. It is also important to note that SNGs enables news agencies to report from virtually any location around the world, allowing them to deliver timely and reliable news coverage.

Therefore, while VSAT and DTH are user-terminal systems focused on end-

user content delivery (VSAT also allowing interaction), SNG is a specialised broadcast tool for content generation and transmission. It is also important to note that SNGs are also categorised as services ancillary to broadcasting/services ancillary to programme making (SAB/SAP).

Answer 2

As indicated, the Satellite Framework must take into consideration the licensing for applications such as direct-to-device.

10.4. QUESTION 4: Please provide your comments on the proposals in the preceding paragraph and the duration of the Gateway Earth Station licences

Answer 1

It is SENTECH's understanding that the EC Act does not provide a scenario where "any right of ownership of the frequency spectrum" is conferred to any user either through licensing or license exempt provision. The EC Act empower the Authority to licence services as Individual or Class for both ECNS or ECS. Sub-section 6 of the EC Act provides a framework for licence exemption. Subsection 6(1) and 6(2)(e) clearly indicate that PECN can operate under licence exemption provision.

On the issue of Gateway Earth Stations being located outside the borders of the Republic of South Africa, SENTECH advocates for the Authority to consider other consequences of such scenarios. DCDT in August gazette an artificial intelligence framework for the policy formation. The issue of Gateway Earth Stations will be impacted by the policy. Having a gateway within the territory where services are offered is essential for a few key reasons, namely:

- **Data Sovereignty and Compliance**: Many countries have regulations that require certain types of data, particularly personal or sensitive information, to remain within national borders. A local gateway helps ensure that data flows comply with local data protection laws and regulations, reducing the risk of legal issues.
- **Security and Privacy**: Local gateways enhance security by limiting data exposure to external jurisdictions, which might have different standards for security and privacy. It also allows for better control over data access and auditing, which is vital for high-security industries like finance and healthcare.

The licensing of Gateway Earth Stations under the framework of I/C-ECNS or I/C-ECS must be based on existing regulations to ensure regulatory parity. Therefore, the licensing period for PECNs must also be similar.

10.5. QUESTION 5: Please comment on the above-mentioned alternative proposals to levy the spectrum fees for Gateway Earth Stations and indicate your preferred option. The Authority understands that there are other spectrum fee calculation methodologies used elsewhere in the world. Please give details of the methodologies which you believe would be most suitable for South Africa.

Answer 1

SENTECH advocates for the Authority to review the fees for Gateway Earth Stations to take place within the Regulations on Radio Frequency Spectrum Fees, Government Gazette no. 38642 dated 30 March 2015 and must not be done separately. There is also the issue of characteristics of HTS. The Authority's definition only specifies two (2) characteristics, namely increased capacity and use of spot beams. Does this mean that characteristics such as frequency reuse and focus on data transmission are excluded?

10.6. QUESTION 6: Kindly comment on the section above and on the proposal for blanket licensing with a fee for a set number of terminals under a new proposed licence regime to be referred to as "Satellite User Station Network Licence". If possible, please provide a breakdown of the number of terminals with the corresponding spectrum fee values in South African Rands.

Answer 1

There

10.7. QUESTION 7: Kindly comment on the appropriateness of using regulation 37 of the ICASA radio regulations ("Recognition of licences issued by other countries") to recognize ESIM licences issued by other countries.

Answer 1

SENTECH advocates for precaution with respect to the use of regulation 37 of radio regulations. The Authority must have at minimum requirements based on ITU-R recommendations advising national regulations, aiming to harmonise ESIM standards globally and facilitate cross-border service continuity. The use of Regulation 37 only is not sufficient, nor it is advisable. There is a need to comply with power levels, interference mitigation, spectrum use based on the distinctions between maritime, aeronautical, and land-mobile ESIMs. It is also important to note that ESIM licenses often require periodic renewal, and operators must demonstrate ongoing compliance with regulatory requirements. This can involve submitting reports or allowing inspections to verify that ESIMs are operating as licensed.

10.8. QUESTION 8: Please provide your comments and details of the best practices in other jurisdictions to fulfill the intentions of the Authority as indicated in the above section. Furthermore, considering the provision set out in the Astronomy Geographic Advantage (AGA) Act of 2007, and the requirements of the Radio Quiet Zone, what measures and techniques do you propose to be employed in mitigating the possible interference that may be caused by the satellites within the Astronomy radio frequency bands in South Africa?

Answer

10.9. QUESTION 8: Please provide proposals on the role the Satellite operators can play in ensuring that broadband connectivity reaches the areas of the country in terms of community networks with Satellite connectivity as a backhaul. Kindly provide a regulatory solution that can be applied by Satellite operators to address the shortcomings of terrestrial networks in providing to unserved and underserved areas of the country. This may include collaboration with government programs to reach out to those unserved and underserved areas of the country.

10.10. QUESTION 9: Please provide proposals on the role the Satellite operators can play in ensuring that broadband connectivity reaches the areas of the country in terms of community networks with Satellite connectivity as a backhaul. Kindly provide a regulatory solution that can be applied by Satellite operators to address the shortcomings of terrestrial networks in providing to unserved and underserved areas of the country. This may include collaboration with government programs to reach out to those unserved and underserved areas of the country.

Answer 1