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1 August 2024

Attention: Shri Akhilesh Kumar Trivedi  
Advisor (Networks, Spectrum & Licensing)  
Telecom Regulatory Authority of India (TRAI)  
Tower F, NBCC World Trade Centre, Nauroji Nagar  
New Delhi -110029  
[advmn@traai.gov.in](mailto:advmn@traai.gov.in)

### **TRAI Consultation Paper on 'Authorisation' under the Telecommunications Act 2023**

Respected Sir,

Viasat takes this opportunity to thank TRAI for giving industry a chance to respond to this consultation paper, which aims to review and streamline the current licensing regime in alignment with the Telecommunications Act 2023, the Indian Space Policy 2023, and market developments. We find the exercise as an endeavour to enable delivery of affordable, trusted, and meaningful connectivity to people everywhere.

We are a global communications company that believes everyone and everything in the world can be connected. Founded in 1986 and based in Carlsbad, California, including our engineering solutions team based in Chennai, India, we have significantly expanded our reach and capabilities. In May 2023, we completed the acquisition of Inmarsat, combining our teams, technologies, and resources to create a new global communications solutions company. We currently power millions of internet connections on land, in the air, and at sea, with reliable networking and advanced cybersecurity. Viasat is recognized for quality satellite broadband solutions, where we continue to innovate with plans to launch ViaSat-3 APAC providing over one Terabit per second in Asia Pacific. Through technical advancements, we have reduced costs by 400 times and improved capacities by 500 times compared to traditional satellite networks. Viasat also manufactures state-of-the-art antenna equipment for other satellite networks, further solidifying our position as a leader in global connectivity solutions.

At Viasat, as a global communications provider, we believe it is important to explore the intersection of satellite technology, and internet connectivity, highlighting the potential for satellite services to bridge the digital divide. The consultation paper offers an opportunity to discuss the regulatory challenges and opportunities in satellite for internet services, emphasizing the importance of affordable and equitable access to satellite and space-based internet for all.

We are inspired by the vision laid out in the Telecommunications Act 2023 and Indian Space Policy 2023. We expect that the outcomes of the review of the authorization framework will enable us to deploy class-leading, and socio-economically impactful technology.

We hope that TRAI recommendations and subsequent policies for simple and streamlined authorizations would bring:

- a. **Regulatory Clarity:** a well-defined set of guidelines and requirements for entities involved in satellite services, ensuring that all stakeholders understand the regulatory landscape.
- b. **Encourage Innovation and Investment:** a conducive environment for innovation and investment in satellite and space technologies by offering clear and predictable regulations.
- c. **Compliance and Fair Competition:** to ensure that all service providers comply with national and international standards, thereby promoting fair competition and preventing monopolistic practices.
- d. **Facilitate Connectivity:** enhance digital connectivity, especially in underserved areas, by providing guidelines that support the expansion of satellite-based internet services.
- e. **International Alignment:** to align national policies with international standards and agreements, facilitating cooperation and coordination with foreign satellite operators and other international stakeholders.
- f. **Technological Advancement:** to support the advancement and deployment of new technologies in the satellite and internet sectors, keeping pace with global technological developments.
- g. **Public Interest and Security:** to safeguard public interest and national security by ensuring that satellite and internet services are used responsibly by citizens and authorities in times of peace, emergency and natural disasters.

The role of satellite connectivity should be considered beyond “telecommunication service” where it adds robust resiliency especially in disaster relief management, in minimizing climate change impact and in provisioning of enterprise grade connectivity. Telecommunication and associated services that bring connectivity to the remotest part of the country and in the difficult times should be treated as “**infrastructure of importance**” that equalizes the digital access opportunities to the citizens and affords “**development in equality**” across demographics of the country. Please find our responses to the questions in Annexure to this letter.

We look forward to any further discussions on the matters posed by the consultation document.

Sincerely,

A handwritten signature in black ink, appearing to read "Cristian Gomez", with a horizontal line drawn through it.

**Cristian Gomez**  
Senior Director  
Government & Regulatory APAC, Viasat

## Annexure

### The extant licensing framework for telecommunication services

**Q1. For the purpose of granting authorisations under Section 3(1) of the Telecommunications Act, 2023, whether the Central Government should issue an authorisation to the applicant entity, as is the international practice in several countries, in place of the extant practice of the Central Government entering into a license agreement with the applicant entity? In such a case, whether any safeguards are required to protect the reasonable interests of authorized entities? Kindly provide a detailed response with justifications.**

The Telecommunications Act, 2023 should move towards issuing authorizations instead of license agreements for granting permissions under Section 3(1) to provide telecommunication services, establish networks, or possess radio equipment. This approach is more aligned with international best practices and provides several benefits:

- a. Streamlined process: issuing authorizations is a simpler, more transparent process compared to negotiating individual license agreements. It reduces bureaucratic delays and provides a level playing field for all applicants meeting the specified criteria.
- b. Flexibility for authorized entities: authorizations provide more flexibility for authorized entities to adapt to changing market conditions. License agreements often have rigid terms that may become outdated. Authorizations can be updated more easily through general regulations.
- c. Reduced regulatory burden: issuing authorizations instead of negotiating licenses reduces the regulatory burden on both the government and authorized entities. It would allow the government to focus on setting broad policy objectives and technical standards rather than focusing on individual operators.

The Telecom Act 2023, can clarify the 'Rights' of the 'Service Providers', even if these are not specified in detail, in the 'Authorisation'. We understand that the shift from licensing to authorization in India represents a modernization of the regulatory approach.

To protect the reasonable interests of authorized entities, the following safeguards should be incorporated:

- a. Clearly defined eligibility criteria and authorization terms in regulations to ensure a transparent process
- b. Reasonable authorization fees based on administrative costs, not revenue sharing as in license fees
- c. Automatic renewal of authorizations upon meeting specified conditions to provide certainty to operators
- d. Dispute resolution mechanism to adjudicate conflicts between the government and authorized entities
- e. Judicial review of government decisions to ensure they are fair, reasoned and proportionate
- f. Grandfathering of existing licenses for their remaining term or for five years as prescribed in the paper.

The shift to an authorization framework in India could yield several benefits:

- a. **Efficiency:** Streamlining the process can reduce delays in service deployment, allowing companies to respond more swiftly to market demands and technological changes.

- b. **Encouragement of investment:** a clearer and less burdensome regulatory environment may attract more investment into the telecom sector, fostering competition and innovation.
- c. **Adaptability:** an authorization regime can be more flexible in adapting to new technologies and service models, such as Internet of Things (IoT) applications, which are evolving rapidly.

In conclusion, issuing authorizations instead of license agreements is a more efficient and flexible approach aligned with international best practices. It reduces regulatory burden while protecting the reasonable interests of authorized entities through clearly defined rules and safeguards. The Telecommunications Act, 2023 should incorporate these provisions to modernize the authorization process.

### The structure of authorisations

**Q2. Whether it will be appropriate to grant authorisations under Section 3(1) of the Telecommunications Act, 2023 in the form of an authorisation document containing the essential aspects of the authorisation, such as service area, period of validity, scope of service, list of applicable rules, authorisation fee etc., and the terms and conditions to be included in the form of rules to be made under the Telecommunications Act, 2023 with suitable safeguards to protect the reasonable interests of the authorised entities in case of any amendment in the rules? Kindly provide a detailed response with justifications.**

**Q3. In case it is decided to implement the authorisation structure as proposed in the Q2 above, -**

**(a) Which essential aspects of authorisation should be included in authorisation documents?**

**(b) What should be the broad category of rules, under which, terms and conditions of various authorisations could be prescribed? (c) Whether it would be appropriate to incorporate the information currently provided through the extant Guidelines for Grant of Unified License and Unified License for VNO, which included, inter-alia, the information on the application process for the license, eligibility conditions for obtaining the license, conditions for transfer/ Merger of the license etc., in the General Rules under the Telecommunications Act, 2023?**

**(d) What could be the broad topics for which the conditions may be required to be prescribed in the form of guidelines under the respective rules? Kindly provide a detailed response with justifications.**

**Q4. In view of the provisions of the Telecommunications Act, 2023, what safeguards are required to be put in place to ensure the long-term regulatory stability and business continuity of the service providers, while at the same time making the authorisations and associated rules a live document dynamically aligned with the contemporary developments from time to time? Kindly provide a detailed response with justifications.**

It would be appropriate to grant authorizations under Section 3(1) of the Telecommunications Act, 2023 in the form of an authorization document containing the essential aspects of the authorization, such as service area, period of validity, scope of service, list of applicable rules, and authorization fee. The terms and conditions should be included in the form of rules made under the Act, with suitable safeguards to protect the reasonable interests of authorized entities in case of any amendment to the rules. While moving to an authorizing regime, it is important that the salient features of TRAI Act are maintained and protected. They

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**L. Amendment of the TRAI Act in 2000**

1.22 In March 2000, the Indian Parliament amended the TRAI Act. The salient features of the amendment are as below:

- (a) Establishment of the Telecom Disputes Settlement and Appellate Tribunal (TDSAT) for adjudicating disputes between licensor and licensees, between two or more service providers, and between a service provider and a group of consumers, and to hear and decide appeals against any direction, decision or order of TRAI under the Act
  - (b) Introduction of a clear distinction between the regulatory functions and recommendatory functions of TRAI
  - (c) Making it mandatory for the Central Government to seek TRAI's recommendations with respect to the need and timing for introduction of a new service provider and the terms and conditions of license to a service provider
  - (d) Inclusion of the regulatory function of laying down the standard of quality of service to be provided by the service providers and ensuring quality of service
  - (e) Inclusion of the regulatory function of fixing the terms and conditions of interconnectivity between the service providers
  - (f) Inclusion of the recommendatory function on efficient management of available spectrum.
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are reproduced here from the Consultation paper as mentioned in clause 1.22.

It simplifies the process for new entrants and encourages investment in the communications sector. From the extant licenses, following sample table is made to help compare and understand various aspects of licensing and how certain elements can be merged to bring uniformity within the new authorization regime.

	GMPCS	ISP	IFMC
<b>SERVICE AREA</b>	National	National/Metro/SSA	Globally/National
<b>SCOPE</b>	Area of operation, all types of mobile services, GMPCS gateway utilise any type of network equipment.	Internet Telephony through public internet by the use of PC air CPE. Any device conforming to TEC in INDIA to abroad.	Establishment, maintenance and working of telegraph to provide wireless data in aircraft and on ships.
<b>VALIDITY</b>	20 years	20 years	10 years
<b>AREA (Limitations)</b>	1)Area boundary specified +/- 100 meters		1)Service provide at minimum height of 3000 meters 2)Wi Fi available when electronic devices are permitted to be used only in airplane mode
<b>RESTRICTIONS</b>	CLIR should not be normally provided to the customers. Govt agencies can detect and investigate of it.	Licensee shall ensure that an entity, requesting ILL connection to use it for provision of internet services customers have a valid authorisation	
<b>ELIGIBILITY</b>	1)There shall be no change in the Indian and Foreign promoter or equity participation unless permitted by the licensor	1)Any device International standard connected to IS 2)Any device to International standard connected to ISP node with static IP addresses to similar device; within or outside India	1)Holds a license for access service or an ISP category A license 2)Holds an NLD license or a commercial VSAT CUG service license
<b>REGULATORY PROVISIONS</b>	The license shall be responsible for, authorised to own, install, test and commission all the equipment	1)The licensee shall have the right to undertake the sale, hire purchase, lease of the subscriber 2)Responsibility of the licensee to obtain IP addresses, domain name etc from NSO	1)These rule shall be same for both Indian and Foreign registered airlines or ships National and ready 2)These rules also applicable for business jets, executive aircraft and yachts
<b>FEES</b>	Entry fee is 1 crore, annually 10% of AGR, also have to pay license fee, royalty charges, GMPCS gateway and etc	Accounts shall be maintained separately for each telecom service operated by the licensee company. Amount billable shall be shown gross indicated separately.	The fee to the satellite bandwidth charges, license fees, spectrum charges and other charges which paid by telecom licensees to the DOT through Bharatkosh.

- a. **Service area:** In respect of a satellite operator, the footprint or service area must be maintained on PAN India basis including National Maritime waters and move towards gate-to-gate and pier-to-pier connectivity to enable efficient ESIM<sup>1</sup> services in the country.
- b. **Period of validity:** As per the usual practice, the term or length of the license should be within the range of 15-20 years<sup>2</sup> given the fact that satellite operators (unlike IMT operators) not only make long term investments but also make advance commitment towards technology, designing, manufacturing and towards a coordinated ITU filing process.
- c. **Scope of service:** The scope of license from satellite perspective should essentially enable broadband internet from satellites. The internet connectivity –to both subscriber and IoT machine type communication () must be enabled as part of the scope of the authorization. This includes Aeronautical and Maritimes -ESIMs, subscriber broadband connectivity, UAV (Drones) Satellite based connectivity in a Beyond Visual Line of Sight environment (BVLOS) for better UTM (UAV Traffic Management), Satellite based IoT/NTN NB-IoT connectivity to devices, machines and sensors, and provision of Direct to Device (D2D)<sup>3</sup>.

<sup>1</sup> (WRC-19) adopted regulatory and technical conditions under which the frequency bands for space-to-Earth (17.7-19.7 gigahertz; GHz) and Earth-to-space (27.5-29.5 GHz) can be used by earth stations in motion (ESIM) communicating with geostationary space stations in the fixed-satellite service, , in-additional to Resolution 156 (WRC-15).. [Regulation of satellite systems \(itu.int\)](https://www.itu.int/en/ITU-T/Newsroom/2019/06/Regulation-of-satellite-systems-(itu-int).aspx)

<sup>2</sup> For satellite services, the FCC issues licenses that are valid for 15 years - [Small Satellite and Small Spacecraft Licensing Process | Federal Communications Commission \(fcc.gov\)](https://www.fcc.gov/news-releases/2019/06/06190601)

<sup>3</sup> FCC's "single network future" vision- [FCC issues satellite-to-mobile servic... - Mobile World Live](https://www.fcc.gov/news-releases/2019/06/06190601)

- d. Authorization fee: A nominal or admin cost recovery fee as per extant global practice must be adopted. It is also important to highlight that while “nominal” and “fee structure” maybe subjective and differ, “cost recovery” is largely a common factor.

While enhancing and reviewing the scope of the authorizations, it is not only important to understand, and focus on ESIM services but also to address some of the challenges in provisioning this important application:

- I. Earth stations in motion (ESIM) address a complex challenge – how to provide reliable and high-bandwidth connectivity to mobility users across land, sea, and air. ESIM provides broadband communications, including Internet services, on platforms in motion. There are currently three types of ESIMs: ESIM on board aircraft (aeronautical ESIM), ESIM on board ships (maritime ESIM) and ESIM on board land vehicles (land ESIM).
- II. Advances in satellite earth station technology have made ESIMs more widespread and more practical. When ships are at sea or aircraft cross the oceans, they are out of reach of terrestrial networks. ESIM systems can provide continuous and consistent service with very wide, or literally global, geographic coverage as ships and aircraft operate almost in any location including within India territory waters/ports and airspace/airports.
- I. ESIM services are being deployed generally in two frequency bands and 27.5-30 GHz (aka. Ka band) as well 14-14.5 GHz (aka. Ku band). Authorising both these bands for ESIM systems has become a priority for users in India.
- II. ESIM contribute to Sustainable Development Goal 9 <sup>4</sup>(industry, innovation, and infrastructure) by connecting ships, aircraft and land vehicles and ensuring their safety and security and that of their passengers, cargo, and systems. When information and communication infrastructure is down in natural disasters, land ESIM can be a critical resource.
- III. ESIM communicate, currently, with GSO systems operating in the FSS and operate on platforms in motion in the frequency ranges 17.7-20.2 GHz (space-to-Earth) and 27.5-30 GHz (Earth-to-space).
- IV. When ships are at sea or aircraft cross the oceans, they are out of reach of terrestrial networks. For such craft on or over vast oceans, an ESIM system can resolve this challenge by providing continuous broadband connectivity for crew and passengers.
- V. ESIMs provide broadband communications on cruise ships, the largest of which can accommodate several thousands of passengers. In addition, ESIM stations can provide broadband communications for managing ship operations, such as for transmission of engine diagnostics, as well as for access to the ship operator's corporate network and for its crew's communications.

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<sup>4</sup> Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation  
[Goal 9 | Department of Economic and Social Affairs \(un.org\)](#)



- VI. In addition, ESIMs meet the broadband connectivity requirements of land vehicles, including trains, coaches, vans, trucks, and motorhomes. Land ESIM can provide connectivity throughout countries and are particularly useful in areas that are not served by terrestrial networks.
- VII. ESIM applications also exist for government users and aid organizations that have broadband communication needs for land vehicles, ships, and aircraft during their field operations. For example, when telecommunications infrastructure is down due to natural disasters, land ESIM can be vital.

**In conclusion**, the 'Authorisation' under Section 3(1) of the Telecommunications Act, 2023 should be a simplified authorisation. Only specific aspects of an 'Authorisation' – like the Scope of Service authorised, Service Area, Period of Validity, Authorisation Fee, and list of applicable Rules, need to be there. Remaining details can be part of the Rules, made under the Telecom Act 2023. The salient features of TRAI Act must be protected and maintained. Scope of services must be enhanced to include ESIM and Drone UAV Connectivity in a BVLOS Environment. The above mentioned ten broader topics for conditions can be used to form detailed guidelines. While spectrum assignment and allotment may be a different subject than authorization, a due must be given as authorization for satellite services without certainty in the spectrum assignment would be lifeless. Particularly, as per point IV, V and XI (discussed above), the importance of ESIM in fulfilling UN SDG-9 and the corresponding requirement for spectrum from 27.5-29.5 GHz as per International Harmonization practices cannot be stressed further. This requires bringing the spectrum 27.5-29.5 GHz back as full allotment to satellite services and subsequently recording the decision in National Frequency Allocation Plan.

#### **Need for a single authorisation for the provision of end-to-end telecommunication services**

**Q5. In addition to the service-specific authorisations at service area level, whether there is a need for introducing a unified service authorisation at National level for the provision of end-to-end telecommunication services with pan-India service area under the Telecommunications Act, 2023? Kindly justify your response.**

**Q6. In case it is decided to introduce a unified service authorisation at National level for the provision of end-to-end telecommunication services-**

**(a) What should be the scope of service under such an authorisation?**

**(b) What terms and conditions (technical, operational, security related, etc.) should be made applicable to such an authorisation?**

**(c) Would there be a need to retain some of the conditions or obligations to be fulfilled at the telecom circle/ Metro area level for such an authorisation?**

**(d) Should assignment of terrestrial access and backhaul spectrum be continued at the telecom circle/ Metro area level for such an authorisation?**

**(e) Any other suggestion to protect the interest of other authorised entities/ smaller players upon the introduction of such an authorisation. Kindly provide a detailed response with justification.**

There is a case for introducing or unifying service authorization at the national level in India for end-to-end telecommunication services, only if different industry perspectives are not mixed. There should not be confusion amongst services, or claims for “same service, same rules” which would only be based on the interest of the significant market player (read SMP). This could lead to develop barriers to entry. The unification of authorizations must consider international spectrum regulations and investment in services that will help reduce the digital divide. As part of global satellite industry, we trust and hope that in the Unified Authorisation scenario, the administrative assignment of spectrum for SatCom services (provided in the Telecom Act. 2023) shall continue in letter and spirit.

A unified service authorization would imply:

- I. **Simplification and flexibility:** A unified national authorization simplifies the regulatory framework and provides operators more flexibility to offer diverse services across the country. For example, in the United Kingdom, Ofcom introduced a unified authorization regime that allows providers to offer any electronic communications service nationwide under a single general authorization.<sup>5</sup>
- II. **Promoting innovation:** A unified authorization enables operators to quickly introduce new technologies and services without seeking separate approvals for each service area. This model has been successful in countries like Singapore, where the Infocomm Media Development Authority (IMDA) issues a single Facilities-Based Operator (FBO) license for nationwide operations<sup>6</sup> of infrastructure<sup>7</sup> and this license include satellite gateway operation and providing services. IMDA also issues a single Services-Based operator (SBO) licence for nationwide with any type services provisioning (e.g. IFC, maritime, UAV, IoT, etc) if there is no infrastructure should there be no satellite gateway in the country.
- III. **Encouraging investment:** A pan-India authorization can attract larger investments by allowing operators to achieve economies of scale. In Australia, the unified carrier license system has encouraged significant infrastructure investments by major telecom players.<sup>8</sup>
- IV. **Reducing administrative burden:** Both for regulators and operators, a unified national authorization reduces paperwork and administrative overhead. The European Union's authorization directive promotes this approach across member states to create a more harmonized telecom market<sup>9</sup>.

### **Regarding the introduction of a unified service authorization at the national level:**

#### **(a) Scope of service:**

The scope should be clear, comprehensive, covering all types of telecommunication services, with separate conditions, obligations and rules.

#### **(b) Terms and conditions:**

Key terms and conditions to include:

- Technical standards compliance (e.g., ITU recommendations)

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<sup>5</sup> [Archived: The General Authorisation Regime - Ofcom](#)

<sup>6</sup> [Facilities-Based Operations \(FBO\) Licence | IMDA](#)

<sup>7</sup> [Facilities-Based Operations \(FBO\) Licence | IMDA](#)

<sup>8</sup> [ACMA Communications report 2015-16 pdf.pdf](#)

<sup>9</sup> [European Electronic Communications Code | EUR-Lex \(europa.eu\)](#)

- Quality of Service (QoS) requirements
- Network security and data protection measures
- Interconnection obligations
- Universal service obligations
- Compliance with International Radio Regulations, particularly Article 22.
- Reporting and audit requirements

**(c) Retention of circle/Metro area level conditions:**

The ITU Radio Regulations provide a framework for international coordination and protection of satellite systems, but individual countries may also have their own national regulations that further specify protection measures for satellite gateways and user terminals within their territories.

Typically, other than security, LEA and/or emergency deployment of capacity the circle/metro level rules may not directly apply to a satellite service. However, some conditions could be retained at the circle/Metro level to address local needs:

- Emergency services and public safety requirements
- Local language customer support
- Specific QoS targets
- Local infrastructure sharing obligations
- Local/applicable Right of Way rules

Whether at national or circle level, satellite gateways, user terminals, and their associated frequencies are protected under several provisions of the ITU Radio Regulations, including but not limited to:

- I. Article 5: This article deals with frequency allocations and provides the basis for protecting allocated frequency bands for satellite services.
- II. Article 21.5: This provision specifically aims to protect space services from aggregated interference from new generations of terrestrial stations.
- III. Article 22: This article contains provisions relating to space services and stations, including measures to prevent unacceptable interference to GSO satellite systems.
- IV. Article 9: This article outlines the procedure for effecting coordination with or obtaining agreement of other administrations, which is crucial for protecting satellite systems from interference.
- V. Article 11: This article deals with notification and recording of frequency assignments, which is essential for establishing and maintaining protection for satellite systems.

**(d) Spectrum assignment:**

From the consultation paper,

- clause 2.40 of the consultation paper, "This consultation paper deals with the issues related to authorisations for providing telecommunication services under Section 3(1) of the

Telecommunications Act, 2023. It does not deal with matters related to assignment and use of spectrum by the authorized entity.”,

- clause 2.50 “While the proposed single unified service authorisation for the provision of end-to-end telecommunication services can be made available with pan-India service area, it is noted that to protect the interest of the smaller players, there may be a need for continuing the extant practice of the assignment of access spectrum and network interconnection at Telecom Circle/ Metro Area level. For this purpose, the authorised entity, with a permission to provide end-to-end telecommunication services at National level, may be required to continue to fulfil certain requirements/ obligations at the telecom circle/ Metro area level. “

We understand that this consultation does not deal with spectrum assignment and is only discussing the circle/metro level assignment to protect the interest of the smaller players, which is more applicable to circle level Cellular mobile telephony licensing. Particularly, the importance of ESIM in fulfilling UN SDG-9 and the corresponding requirement for spectrum from 27.5-29.5 GHz as per International Harmonization practices cannot be stressed further. This requires bringing the spectrum 27.5-29.5 GHz back as full allotment to satellite services and subsequently recording the decision in the upcoming National Frequency Allocation Plan.

## **(2) Possibility of clubbing the scopes of the extant GMPCS and Commercial VSAT CUG Service authorization under a single authorisation**

**Q11. Whether there is need for merging the scopes of the extant GMPCS authorization and Commercial VSAT CUG Service authorization into a single authorisation namely Satellite-based Telecommunication Service authorisation under the Telecommunications Act, 2023? Kindly provide a detailed response with justifications.**

**Q12. In case it is decided to merge the scopes of the extant GMPCS authorization and Commercial VSAT CUG Service authorization into a single authorisation namely Satellite-based Telecommunication Service authorisation under the Telecommunications Act, 2023, -**

**(a) What should be the scope of service under the proposed Satellite-based Telecommunication Service authorisation? (b) What should be terms and conditions (technical, operational, security related, etc.) that should be made applicable on the proposed Satellite-based Telecommunication Service authorisation?**

**(c) Any other suggestion to protect the reasonable interests of other authorised entities upon the introduction of such an authorisation? Kindly provide a detailed response with justification. Kindly provide a detailed response with justifications.**

Yes, there is a need for merging the scopes of the extant GMPCS authorization and Commercial VSAT CUG Service authorization into a single authorization, namely Satellite-based Telecommunication Service authorization, under the Telecommunications Act, 2023.

Hence, it may be advisable to combine the GMPCS and VSAT-CUG services into a single service (& for authorisation).

The proposed scope for the Satellite-based Telecommunication Service authorization should include:

- Global Mobile Personal Communication by Satellite (GMPCS)
- Commercial Very Small Aperture Terminal (VSAT) services
- Aeronautical and Maritime ESIM
- UAV satellite connectivity in BVLOS environment
- Broadband Internet services- IoT/NB-IoT and M2M communications
- direct-to-device (D2D) operating in satellite bands
- Emergency and disaster management communications
- Broadcasting and multicast services
- maritime and aviation safety communications

In particular, the UAV satellite connectivity in BVLOS environment to provide the reliable long-range connectivity needed for BVLOS drone operations, especially in remote areas with limited terrestrial network coverage.

- I. Enabling BVLOS drone (UAV) operations is crucial for unlocking the full potential of commercial drone applications in areas like agriculture, logistics, infrastructure inspection, etc. Many countries are moving in this direction.
- II. In the US, the FAA has been granting waivers for BVLOS operations under Part 107 rules and is working on new regulations to enable routine BVLOS flights.<sup>10</sup>
- III. The EU has introduced a risk-based regulatory framework that allows for BVLOS operations under the "specific" category with appropriate risk assessment and mitigation measures. BVLOS operations are permitted under the Specific category, which requires operators to conduct a risk assessment and implement appropriate mitigation measures. This is typically done using the Specific Operations Risk Assessment (SORA) methodology<sup>11</sup>

By adopting a unified Satellite-based Telecommunication Service authorization, India can align with international best practices, promote innovation, and ensure efficient use of satellite resources while protecting the interests of all stakeholders. This approach will simplify the regulatory landscape, encourage investment, and foster the growth of satellite-based services in India.

**Q23. In view of the provisions of the Telecommunications Act, 2023 and market developments, whether there is a need to make some changes in the respective scopes and terms and conditions associated with the following service authorisations, recently recommended by TRAI:**

**(a) Digital Connectivity Infrastructure Provider (DCIP) Authorization (under Unified License)**

**(b) IXP Authorization (under Unified License)**

**(c) Content Delivery Network (CDN) Registration**

**(d) Satellite Earth Station Gateway (SESG) License**

**If yes, kindly provide a detailed response with justifications in respect of each of the above authorisations.**

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<sup>10</sup> [Part 107 Waivers | Federal Aviation Administration \(faa.gov\)](https://www.faa.gov/air-traffic/operations/107-waivers)

<sup>11</sup> [Specific Operations Risk Assessment \(SORA\) | EASA \(europa.eu\)](https://www.easa.europa.eu/en/sora)

**Q24. In view of the provisions of the Telecommunications Act, 2023 and market developments, any further inputs on the following issues under consultation, may be provided with detailed justifications:**

**(a) Data Communication Services Between Aircraft and Ground Stations Provided by Organizations Other Than Airports Authority of India;**

**(b) Review of Terms and Conditions of PMRTS and CMRTS Licenses; and**

**(c) Connectivity to Access Service VNOs from more than one NSO.**

Yes, there is a need to make changes in the scope and terms and conditions associated with the Satellite Earth Station Gateway (SESG) license in view of the provisions of the Telecommunications Act, 2023, market evolution, technological advancements and importance of ESIM as described previously. The physical presence of a gateway could be relooked at to enhance security, redundancy, optionality (*geographically, technologically and network- described in Table 1*) have a better capacity delivered. The Global Satellite Operators Association (GSOA)<sup>12</sup> advocates for less prescriptive national regulations to facilitate satellite service provision, using alternative compliance mechanisms to meet security and lawful intercept requirements effectively.

The IFMC (In-Flight & Maritime Mobile Connectivity) services would be able to allow the Regulatory Communications between the Aircraft and Airports, as well as between ships and ports. Also, most communications are now moving towards Internet. Hence, the 'Authorisation' for IFMC can include other Regulatory Communications as well (and not limited to Airport Authority only), especially considering the paramount need for reducing the weight on aircrafts as much as possible.

Satellite communications often involve satellites operating on a global or regional scale, spanning multiple countries and territories. Mandating each operator to have a gateway station in every country may not align with the practicalities of certain satellite operations, which are typically managed and coordinated at a broader level. Advances in satellite technology, such as non-geostationary satellite orbit (NGSO) constellations or software-defined satellites, also enable reduced reliance on local gateway stations. This is especially true when it comes to ESIM type of services.

Overall, the nature of LI and internet content regulation has changed substantially, and mostly require access to the functionality of Data Gateway, rather than the Teleport Gateway. The regulatory regime in each country should be flexible enough to accommodate and benefit from advances in technology that could, for instance, provide the respective national authorities access to data from gateway Earth stations outside the country.

- ESIM onboard aircraft and vessels operate as Local Area Network (LAN) to provide Wi-Fi to passengers. These ESIM are local internet connections (akin to a private network), only providing connection to passengers. Particularly, ESIM on transiting foreign-licensed aircraft and vessels do not connect to the in-country telecommunications infrastructure. Aircraft and vessels equipped with ESIM systems for broadband connectivity should be exempted from any form of local gateway station requirement.

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<sup>12</sup> [Rethinking Local Gateways – A Satellite Industry Perspective – GSOA – Global Satellite Operator's Association \(gsoasatellite.com\)](https://gsoasatellite.com)

- Satellite services are often used for emergency and disaster relief situation, especially when the terrestrial infrastructure is impacted. Having the gateway station in-country increases the chance that the same disaster impacting terrestrial networks would also disrupt the local gateway station and, therefore, the satellite service being provided to that country.
- Lawful Intercept (LI) Compliance: ETSI sets standards for Lawful Intercept, which involve intercepting communications, extracting metadata, being undetectable, and ensuring protection of personal information. Compliance with these standards can be achieved without necessarily having local gateway stations, using licensed operators and intercept points instead.
- As International Best Practices and Alternative Solutions, local gateway stations include leveraging existing infrastructures, centralized hubs, and virtual gateways. Information security can be maintained through data management instead of physical stations.
- Regional hubs or centralized solutions can meet LI requirements for law enforcement.
- A flexible regulatory approach that avoids mandating local gateway stations is encouraged. Utilizing international gateways and regional hubs is more cost-effective and streamlined, particularly for ESIM services by foreign-licensed aircraft and vessels.

**(a) Data Communication Services Between Aircraft and Ground Stations Provided by Organizations Other Than Airports Authority of India;**

Gate-to-gate in-flight connectivity is an important component of airline operational and digital transformation efforts. This connectivity supports important flight crew and aircraft functions, and any improvements in connectivity offers a means to enhance the on-board experience by providing better telecommunication services to the flying public. The size of the inflight connectivity market is described in a report by the London School of Economics (LSE)<sup>13</sup>, which forecasts ubiquitous global inflight connectivity by 2035, as reaching 7.2 billion passengers creating a \$130 Billion economic ecosystem for the benefit of airlines, content providers, retail goods suppliers, hotel and car suppliers, and advertisers<sup>2</sup>.

By updating the SESG license and formalizing the licensing regime for data communication services between aircraft and ground stations, India can enhance the efficiency, safety, and competitiveness of its satellite communication and aviation sectors. These changes align with international best practices and address the evolving needs of the market.

**Q29. What amendments are required to be incorporated in the terms and conditions of authorizations for providing telecommunications services using satellite-based resources in light of the policy/ Act in the Space Sector? Kindly provide a detailed response with justifications.**

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<sup>13</sup> LSE (2017), Sky high economics – Chapter One: quantifying the commercial opportunities of passenger connectivity for the global airline industry, report for Inmarsat, September 2017. Available at <https://www.lse.ac.uk/business/consulting/reports/sky-high-economics>.

Terms and conditions for authorising satellite services need to address the negative impacts of spectrum-orbit resource overconsumption by few players, particularly very large NGSOs. Very large NGSO systems, by design, will deplete orbital and spectrum resources and close market entry of NGSO newcomers. Such overconsumption will also cause unacceptable interference to GSO systems servicing the India market.

**Q39. In case it is decided to merge the scopes of the extant GMPCS authorization and Commercial VSAT CUG Service authorization into a single authorization namely Satellite-based Telecommunication Service authorization under the Telecommunications Act, 2023, what should be the: -**

- (i) Amount of application processing fees**
  - (ii) Amount of entry fees**
  - (iii) Provisions of bank guarantees**
  - (iv) Definitions of GR, ApGR and AGR**
  - (v) Rate of authorisation fee**
  - (vi) Minimum equity and networth of the Authorised entity**
- Please support your response with proper justification.**

To make the satellite-based services affordable, their growth has to be facilitated and encouraged, so that the 'Economies of Scale' can help bring down the tariffs to affordable levels. All fees and levies, etc. for SatCom Service Operators should be fixed with this objective.

**Q55. In case of merged extant GMPCS authorization and Commercial VSAT CUG Service authorization into a single authorization namely Satellite-based Telecommunication Service authorization, what should be the format of Statement of Revenue Share and License Fee for each of these authorisations? Please support your response with justification.**

Keeping in view the paramount objective of reducing the digital divide in India, low entry barriers for satellite-based services should be a primary objective. Compliance costs on satellite services should be kept to the minimum while this infrastructure is being built and adopted by users. This will help in achieving volumes, and allow affordability for the users, through economies of scale.