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Satcom Industry Association

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**Subject:** **Consultation Paper on Licensing Framework for Establishing Satellite Earth Station Gateway – SIA-India Comments**
**Ref:** **TRAI Consultation Paper No.6 /2021**

Dear Sir,

SIA-India, at this moment, respectfully submits its comments to the above-referenced consultation.

SIA-India is excited to observe the industry developments as the space segment matures from limited earth observation and communication applications to the multiple constellations that need to be supported with necessary ground infrastructure, including multiple gateways, data centres and communications links.

It is also important to note the changing landscape of the use of gateways – where the provision of telecommunication services was previously operated from start to end by one telecommunications operator. The telecommunications market now consists of multiple different actors in the service delivery chain.

Much discussion has focused on the space segment, ranging from investments and announcements related to regulations, business models and technology. In comparison, the ground segment in the industry is beginning to ramp up internationally, and discussions need to keep pace with industry developments.

Enabling a facilitative environment for satellite earth stations will also help the Indian SatCom sector compete globally. It will be aligned with the Government's objectives under the National Digital Communications Policy, 2018, which seeks to provide affordable digital communications infrastructure and services to customers, as well as strengthen and promote the development of satellite communications related infrastructure through appropriate policies, including by *'revising licensing and regulatory conditions that limit the use of satellite communications'* and *'reviewing SATCOM policy for communication services, along with Department of Space, to create a flexible, technology-neutral and competitive regime'*, to support India's transition to a digitally empowered economy.

As rightly mentioned in clause 2.38 of this consultation paper, *"Infrastructure sharing is key to achieving cost reduction, and therefore the regulatory regime should enable the creation of sharable*

*active infrastructure. Accordingly, sharing of Earth Station too among the licensees needs to be explored."*

TRAI, in one of its recent recommendations, mentioned that
"*Infrastructure sharing tends to impact coverage, quality of service, and pricing of services to consumers positively, as the cost-saving characteristics of infrastructure sharing allow for increased efficiency. It may lead to efficient and positive outcomes such as:*

- *Decrease in duplication of investment tending to reduce costs for operators and prices for consumers.*
- *Positive incentives to provide services in underserved areas*
- *Improved quality of service*
- *Product and technological innovation*
- *Increased consumer choice."*

SIA-India comments on the scope of the discussion
While the ground segment is essential for all space-based applications, some of which find mentioned in Sec 1.3 of this consultation paper, a few of these services require the one-way transfer of data for non-telecom purposes such as:

- Earth observation – weather prediction (analysing downlinked weather data to predict patterns) or natural disaster (analysing downlinked data during natural disasters to identify survivors and assess structural damage);
- telemetry tracking and control (TT&C) data encompassing data related to the health and status of the satellite and the determination of the exact location of the satellite;
- command function (uplinking commands for control of satellite), etc.

In this regard, it would be prudent to limit the scope of this consultation paper and exclude discussion on satellite gateways that

- Do not provide a telecommunication service.
- Enable private one-way transfer of data (space to ground or ground to space).
- Do not have a hub station and cannot enable the ground to space to ground communication.

The issues around these satellite gateways are addressed by the existing and proposed policies of the Department of Space and the Indian National Space Promotion and Authorisation Center (In-SPACe).

On the telecommunication side, the ground stations that have hitherto been mandated for satellite service licensees to operate and maintain as part of their license could benefit from this consultation paper and the way forward that this consultation paper has the potential to herald. The scenarios that come forth in this consultation paper are

1. Satellite Operator putting up their gateway hub and sharing it with satellite service licensees as a satellite bandwidth seeker. This issue gains importance as new age GSO HTS and NGSO systems (for satellite beam coverage connectivity) may require the installation of several gateway earth stations in the desired coverage area of a country to address the full capacity potential of the designed satellite system architecture and beam handover capability.
2. Service licensee sharing their owned gateway hub with another licensee.
3. Third party Satellite Gateway

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SIA-India wishes to highlight the benefits of effective regulation and the international approach regarding the licensing of gateway earth stations. Such an approach lessens the

administrative burden on telecommunication regulators, eases the regulatory burden on the part of the satellite communication stakeholders and increases competition and consumer welfare on the market.

We, at SIA-India, are available to provide further inputs as necessary to facilitate ease in licensing of establishing, implementing and operating satellite access gateways within India.

Respectfully

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**Enc. Consultation Paper on Licensing Framework for Establishing Satellite Earth Station Gateway – SIA-India Comments**

**SIA-India responses to TRAI Questions**

***Q1. Whether there is a need to have a specific license for establishing satellite Earth Station Gateway in India for the purpose of providing satellite-based resources to service licensees? Do justify your answer.***

The Consultation document recognises that technological developments in GSO HTS and NGSO systems (for satellite beam coverage connectivity) may require the installation of several gateway earth stations in the desired coverage area of a country to address the full capacity potential of the designed satellite system architecture and beam handover capability.

We welcome the move to create a flexible, independent regulatory environment for the setting up of satellite earth stations, de-linked with the provision of license for services enabled by these advancements in satellite communication technology.

As indicated by TRAI in Section 1.7 and 1.8 of the Consultation documents, there is no specific license for operating an Earth Station to provide satellite-based services. Instead, "the respective service licensees are required to establish their own Earth Station (Hub) and Terminal Station and provide the service after obtaining the satellite transponder bandwidth from the satellite operator."

SIA-India supports the initiative of the Indian Government and agrees that there is a need to have a specific authorization for establishing the satellite Earth Station gateway and this specific license should be dissociated from the telecommunications service license. Establishing a framework for a Gateway license will allow infrastructure sharing and avoiding the duplication of investment in the interest of creating low capex, scalable infrastructure.

The licensing procedures should also address other types of gateway earth stations as those used to interconnect to the telecommunication network, including hub stations for VSAT, IoT, MSS-R and GMPCS systems, feeder link earth stations for broadcasting, and those gateways mandated by existing regulations, as the IFMC Policy.

As these gateway earth stations are deployed by the satellite system operators or their authorised proxy entities based on design or regulatory requirements to achieve the desired performance, for network interconnection purposes or mandated by existing regulations, there is no need to link their licenses to the regulatory authorisations for the provision of the services. In order to ensure FDI say in terms of establishing high tech facilities in the country, the satellite operators of foreign satellite systems and independent earth stations network providers through its subsidiary or a JV with an Indian Private Company shall be made responsible for establishment of Gateway Stations. Such Gateways can be shared by TSPs who lease the capacity from satellite operators of foreign satellite systems.

Gateway earth stations that do not serve telecom functions, should not be treated at par with telecom services. Instead, these gateways engaged in Earth observation data

acquisition, TT&C and command functions in relation to satellites should be subject to the existing or proposed policies of the Department of Space (DoS).

***Q2. If yes, what kind of license/permission should be envisaged for establishing Satellite Earth Station Gateway in India? Do provide details concerning the scope of the license and technical, operational, and financial obligations, including license fee, entry fee, bank guarantees, and NOCC charges, etc.***

The establishment by WPC-DoT of a Gateway Earth Station License category is supported. It should cover all kinds of gateways with a fixed location in the Indian territory, including feeder link earth stations for communications and broadcasting systems, hub stations of VSAT, IoT, MSS-R and GMPCS systems, operating with GSO and NGSO satellite systems.

The use of Gateways should be licensed under a Separate Earth Station Gateway License in India. This license will not be a telecommunication services license however it be made eligible to obtain Wireless Telegraphy Licenses from the WPC wing to possess and import wireless equipment on the same terms and conditions as applicable to other licensees.

The Gateway License should be subject to similar regulatory requirements as the Infrastructure Provider (IP-I) License. The IP-I license had the same purposes as the Gateway License, meaning that it enables a pure infrastructure provider to put up infrastructure that is shared between multiple Telecom Service Licensees. Hence the light-touch licensing mechanism for the IP-I license should apply.

A telecommunications license should not act as a prerequisite for obtaining a gateway license. In the case of the gateway operation, the satellite operator is not involved in the end-to-end signal transmission or provision of telecom services to end-users. We recommend that no telecommunications license will be required if a gateway is operated by a party that does not provide connectivity services to end-users. Such an approach removes the regulatory burden from gateway operators, exempting them from telecommunications obligations (including paying high regulatory fees) and allows operators of gateways to apply for the establishment of a gateway without a requirement to be licensed as a telecommunication provider. Therefore, entities that purely operate gateways without providing services to the end-users should not be required to obtain a telecommunications license and should not be subject to any authorisation of the Unified License (UL) Regime. However, we agree, as stated in Section 2.28 of the Consultation, that in cases where the satellite operator entity may wish to provide the services directly to the end-users, the entity will be required to obtain the requisite telecommunications service license for the provision of services to the end-users.

Concerning the technical, operational, and financial obligations, the latter should be proportionate to the purposes of the Gateway License as presented above. As proposed, similar regulatory requirements as the IP-I License should apply. More specifically, there should be no restriction on foreign equity and the number of entrants. An Indian entity having tie-up with satellite operator should be sufficient as an operational requirement to obtain the Gateway License.

Specifically, the earth station authorisation should contain the following characteristics as per EXISTING regulations:

- Identification of the associated satellite network (e.g., a letter of endorsement by the DoS should state that the satellite network proposed to be used should have been coordinated with INSAT networks and notified as per the ITU procedures.)
- Physical data: site location, equipment details (antenna type/size, transmit power, elevation angles)
- Technical and operational requirements and data: the gateway earth station should obtain SACFA-DoT clearance (including the use frequencies allocated in the NFAP to the corresponding satellite services), obtain certification on technical characteristics established by TEC-DoT; demonstrate having undertaken any frequency coordination with existing and planned space and terrestrial systems enjoying priority rights; have successfully performed NOCC-DoT mandatory performance verification testing

However, SIA-India has consistently advocated for Ease of doing business and relaxation from multiple approvals from different agencies. In this case too, we would recommend that the complete satellite services segment including earth station authorisations under this consultation paper be allowed a light touch regime with the removal of NOCC verification testing that serves as a layer of additional approval against global best practices. On similar lines, the need to comply with TEC technical standards should be reconsidered to exploit the benefits of evolving technology advancements in NGSO satellite communications

About the financial obligations, there should be no entry fee and no bank guarantee similar to the IP-I License. The authorisation should be limited to the recovery of the regulator's administrative costs to process the application and maintain the license (e.g. the applicant company is to be required to pay Rs. 5000/- as a processing fee along with the application).

Earth stations where the service being provided is non-telecom and instead provides backend communication for telecommand & telemetry, Scientific and Earth Observation requirements so that the core services can remain operational should be under the purview of the DoS and In-SPACe. Thus, the TRAI should recommend that DoS and In-SPACe take the lead in formulating all necessary regulation for such earth stations, regulations, including GSaaS.

***Q3. Whether such Earth Station license should be made available to the satellite operator, its subsidiary, or any entity having a tie-up with the satellite operator? Do justify your answer.***

The license to establish an earth station should not be made contingent on any relationship between the licensee and any satellite operator or satellite service licensee. These licenses must allow independent entities to provide such services after tie-ups with satellite operators and service licensee. Given the vast growth in satellite-led innovation, barriers to establishing GSaaS earth stations can stifle this growth.

The Gateway Earth Station licensee could be the satellite system operator (via its Indian local representative legal entity or subsidiary or Indian JV partner) or another Indian entity made responsible for the gateway operation by the satellite system operator.

Depending on the gateway type, this flexibility could provide options where different service providers could share the gateway services. If it is the license holder, it could also give the satellite operator the possibility of providing services directly to the users if it could have also obtained the appropriate service license.

***Q4. What mechanism/ framework should be put in place to regulate the access to satellite transponder capacity and satellite-based resources of a Satellite operator/Earth Station licensee by the service licensees so as to get the resources in a time-bound, transparent, fair and non-discriminatory manner?***

SIA-India endorses TRAI's input in Section 3.5 of the Consultation regarding the Spectrum Authorization and the method of access to the satellite transponder capacity [Section 3.5: As per the current licensing regime in India, the spectrum is assigned to the relevant service licensee for establishing the Earth Station and user terminal station and for using the assigned transponder bandwidth. Though the orbit-spectrum (orbital slot and frequency band) proposed to be used by the satellite operator is coordinated as per the ITU procedure, the frequency carriers (Channels) are assigned to the service licensee based on the space segment acquired from the satellite operator].

In addition to a Spectrum Authorization, SIA-India believes that TRAI should also promote the possibility of service providers obtaining access to satellite capacity through a partnership with satellite operators that have the associated space asset authorisation. All forms of market access are essential to foment the local industry and competition, increasing the space capacity offered in the market.

The service licensees should agree with the satellite network operator to access its satellite-based resources, including the gateway services. In the case of commercial systems, the relevant laws and regulations (e.g., The Competition Act) should be observed concerning the rights and obligations of the parties concerning granting transparent, fair and non-discriminatory access to the satellite-based resources.

As in the case of IP-I registration, there should be a light-touch regulation for entry of multiple entities providing ground station services that will drive availability of these services in a time-bound, transparent, fair, and non-discriminatory manner. Authorisation should be granted on all cases, at the earliest, if the applicant fulfils all requirements. The growth of different models of satellite services such as GSaaS is only possible in a regime that does not restrict satellite operators/ GSaaS earth station operators to specific models of provision of services.

***Q5. Whether the Earth Station Licensee should be permitted to install baseband equipment also for providing satellite bandwidth to the service licensees as per need? Provide a detailed response.***

This is a function of the applicable agreement between the Earth Station Gateway Service Licensees and Satellite operators. If the Baseband is shareable between multiple Telecom Service Licensees, the Gateway license holder should invest and provide that. This baseband

could include satellite networking baseband, routers, internet gateway, cloud access, collocated servers for storage or hosting, cyber-security solutions, lawful intercept solution, etc. In other words, the baseband may be installed by Earth Station Gateway licensee or by Service licensee as per business need.

However, all legal compliance for delivery of such services that use the internet, or cloud, or other such facilities provided by the Gateway License holder, remain solely with the Telecom Service Operator / Licensee that includes but is not limited to monitoring and security requirements and should be secured by contractual agreements between the contracting parties. As service provisioning & management happens at baseband level, it is important that service licensee has complete view & control of its baseband.

***Q6. What amendments will be required to be made in the existing terms and conditions of the relevant service authorizations of Unified License, DTH License/Teleport permission to enable the service licensee to connect to the Satellite Earth Station Gateway established by Earth Station Licensee/Service Licensee, for obtaining and using the satellite transponder bandwidth and satellite-based resources? Do justify your answer.***

This Gateway license will not overlap in its scope with the Telecom Service Licenses, except in relation to the establishment of the Earth Station Gateway. The Unified License framework needs to be revised in order to remove the references to the service provision licensees needing to deploy a gateway/hub. The requirement for establishing an earth station gateway as a part of service licence should be eliminated. Existing Telecom Service Licensees, who have established their own Earth Station Gateway under the license, should be able to continue to operate their own Earth Station Gateway, if preferable and be allowed to share this infrastructure with other licensees.

Furthermore, rather than only publishing the amendments to the specific sections of the license, this could be the chance for the overall Unified License to be re-published in totality as a single document to reflect all amendments and revisions made in the last few years.

***Q7. Whether the sharing of Earth Station among the licensees (between proposed Earth Station licensee and Service Licensee; and among service licensees) should be permitted? Do provide the details with justification.***

One of the benefits of establishing a separate category for the Gateway Earth Station License is sharing the gateway operational services among the Earth Station licensee and service licensees. Earth station sharing should be permitted as the purpose of the Gateway License is to allow infrastructure sharing, avoid duplication of infrastructure Capex and Opex.

SIA-India supports DoT's position referenced by TRAI in Section 1.11 of the Consultation, that sharing of the gateway established by the satellite constellation operator among different service providers, wherein the service providers need only to deploy baseband systems at gateways to start harnessing the satellite capacity, may result in cost-effective and optimum use of infrastructure. It should be therefore allowed for the service licensees to be sharing and using the same Earth Station Gateway, whether owned by a telecom service licensee, satellite operator or an authorized satellite gateway. As mentioned by TRAI in Section 2.37 of

the Consultation, this will ensure the faster rollout of provisioning of satellite transponder capacity. Infrastructure sharing will lead to cost reduction and therefore to more affordable end-user services.

It must also be noted that the TRAI's and the DoT's efforts allowing sharing of both passive and active infrastructure in the telecom sector led to the rapid growth of this sector, combined with reduced costs, and resulted in India emerging as a trendsetter in infrastructure sharing. It also helped the green telecom initiative, and thereby maximised efficient utilisation of resources. Sharing of GSaaS earth stations used for providing GSaaS between service licensees/spacecom authorisation holders should also be permitted, as it will further the Consultation Paper's objective of reducing costs related to infrastructure and increase proliferation through sharing.

The Gateway Earth Station license holder will be accountable for ensuring the use of the gateway to authorized satellite operators and service licensee only and informing the regulator of the service contracts that use the concerned gateway earth station.

***Q8. To whom should the frequency carriers be assigned: the Earth Station Licensee, or the Service Licensee, or whoever establishes the Satellite Earth Station? Do justify your answer.***

In the existing arrangements, DOS/ISRO operates INSAT satellites and Service Providers establish gateways/Teleports/etc. and pay for the spectrum as per their usage. This will soon gradually shift to private Indian Satellite Systems as per Spacecom Policy-2021.

The WPC-DoT frequency carrier assignment should be delivered to the Service licensee, the accountable entity to meet the license requirements for delivering services and spectrum utilization of satellites through the earth station.

The Earth Station licensees however, should be made eligible to obtain Wireless Telegraphy Licenses from the WPC wing to possess and import wireless equipment on the same terms and conditions as applicable to other licensees.

***Q9. What should be the methodology for the assignment of spectrum for establishing satellite Earth Station? Provide a detailed justification.***

There is no need to change the methodology applied by WPC-DoT, which examines the applications for frequency assignment and issues the Wireless Operating License (WOL) considering:

- Compliance with NFAP,
- Satisfaction of the conditions of the Agreement in Principle (AIP) or Decision Letter (DL), including equipment and SACFA clearance
- Payment of applicable fees

The spectrum as identified in NFAP for satellite service, is assigned to respective service licensees, who may then use this spectrum by a contract with the Earth Station for use of their gateway services to use this spectrum. The requirement to obtain a telecom service license and associated spectrum should not be applicable for the earth station licensee.

As in case of NGSO, the user spectrum should not be assigned per user wise, rather the user spectrum will get utilised over multiple users of the service license. Thus assignment of spectrum per user terminal wise should be done away with.

***Q10. What should be the charging mechanism for the spectrum assigned to the satellite Earth Station licensee? Elaborate your answer with justification.***

A cost-based approach is the most efficient pricing system to ensure affordable satellite services.

The cost of the authorization should be limited to the recovery of the regulator's administrative costs to process the application and maintain the license. Internationally, in most of the administrations, fee for the Gateway license is charged as an administrative fee generally to cover the administrative costs. Licensing fees should not be used as a source of revenue or be excessive, as licensing fees are generally passed on to the customer.

Spectrum charges in the current WPC formula involving the Royalty led to potentially exorbitant fees for High Throughput Satellites (HTS) and new NGSO constellations that takes away the cost advantages brought in by the innovation and technology advancements. Modern HTS can flexibly and efficiently use up to approximately 4 GHz of the spectrum (overall for uplink and downlink) but by transmitting at a variable bandwidth, the earth stations will only utilize a small portion of the band at a time.

In general, spectrum costs vary from country to country, depending on whether it is for gateway earth stations or user terminals. The general trend is towards a lowering of spectrum fees for satellite services. For example, Australia has recently deliberated on a drastic reduction (factor of 10) of spectrum fees. Similarly, New Zealand has also allowed a more straightforward licensing system for satellite services. As another example, spectrum fees for user terminal operations are generally zero in Europe.

***Q11. Give your comments on any related matter that is not covered in this Consultation Paper***

A) SIA-India also STRONGLY SUPPORTS TRAI's input in section 3.3 on globally harmonized and ITU identified & co-ordinated spectrum for satellite services. [Section 3.3: Satellite technologies are more and more diverse and pervasive, but they all rely on the same core element: the availability of radio frequencies that can be operated free from interference. In order to ensure this availability, the Radio Regulations, the international treaty governing the use of the radio-frequency spectrum and the associated satellite orbits (both geostationary and non-geostationary), on the one hand, allocate specific frequencies for various space applications, and on the other hand, contain detailed technical provisions and regulatory procedures to ensure the rational, equitable, efficient, and economic use of spectrum/orbit resources. The orbit-spectrum resources for satellite communication are globally coordinated at the ITU level. Once the proposed frequencies to be used in a specific satellite are globally

coordinated, the same is to be assigned and used for that particular satellite by the national administrations.]

Given TRAI consultation on "Auction of Spectrum in frequency bands identified for IMT/5G", it is therefore of utmost importance that Gateway earth stations are allowed to operate in the 27.5-28.5GHz band. This is an essential band for current and future FSS.

Given that as the 5G networks are deployed, a large amount of backhauling capacity will need to be provided by satellite systems, so the use of 27.5-28.5 GHz for satellite gateway is essential in enhancing national infrastructure to roll out new broadband services, including 5G.

It is vital to ensure that India exploits the full capabilities of satellite systems, with Gateway earth stations operating in this band.

B) The latest FDI policy of India allows 100% FDI in 'satellites' with government approval, and 100% FDI in telecom services through automatic route. The description for these services is as follows:

a. Satellites- establishment and operation, subject to the sectoral guidelines of Department of Space (DoS)/Indian Space Research Organisation (ISRO)

b. Telecom services- All telecom services including Telecom Infrastructure Providers Category-I, viz. Basic, Cellular, United Access Services, Unified License (Access Services), Unified License, National/International Long Distance, Commercial V-Sat, Public Mobile Radio Trunked Services (PMRTS), Global Mobile Personal Communications Services (GMPCS), All types of ISP licenses, Voice Mail/Audiotex/UMS, Resale of IPLC, Mobile Number Portability Services, Infrastructure Provider Category-I (providing dark fibre, right of way, duct space, tower) except Other Service Providers

TT&C stations and SCCs do not fall under either of the FDI categories of 'satellites' or 'telecom services'. Since they do not meet the description of the activities under these two headings. Hence, this creates uncertainty for investors wishing to invest in the creation of TT&C earth stations and SCCs. This is an anomaly and needs to be addressed for coordinated regulations.

C) In order to ensure that innovators and start-ups are able to enter the sector without major barriers, an experimental license regime should be enabled that allows easy access to spectrum for short term practical use.