Spectrum issues for Non-Terrestrial and Satellite Networks

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Recent satellite regulatory activity in India

- Telesat congratulates the Government of India for its decision towards administrative allocation of spectrum for a variety of satellite services
- This reflects the physics of the links which allows efficient spectrum sharing between multiple satellite operators and is aligned with global practices
- Intense activity in the last 5 months with several consultations by TRAI
  1. Framework for Service Authorisations to be Granted Under the Telecommunications Act, 2023 – July 24
  2. Terms and Conditions for the Assignment of Spectrum for Certain Satellite-Based Commercial Communication Services – Sept 24
  3. The Terms and Conditions of Network Authorisations to be Granted Under the Telecommunications Act, 2023 – Oct 24
- It is now timely for regulations to be finalized

1. Framework for Service Authorizations to be Granted Under the Telecommunications Act, 2023

- **Merging the scopes of the GMPCS authorization and Commercial VSAT CUG Service authorization into a single authorization**
  - -GMPCS and Commercial VSAT services are rather different, with GPMCSs using typically much lower frequencies
  - -It would be best to keep the licenses separate
- The services provided under the VSAT authorization should be categorized as public, including also backhauls and IFMC services
- To simplify the service authorization framework, VSAT licensees should be able to provide internet without the need for an ISP authorization

2. Terms and Conditions for the Assignment of Spectrum for Certain Satellite-Based Commercial Communication Services

- Why the focus on NGSO systems?
  - While LEO is an emerging technology, NGSO FSS systems will provide similar services to GSO FSS networks
  - Moving towards multi-orbit systems with UTs are being developed that can switch seamlessly between GSO and NGSO satellites
  - There should be no difference in terms of spectrum assignment/pricing
- No need for additional provisions, beside those prescribed in the ITU-RR, for the protection of GSO and terrestrial services
- No need for separation distances between gateways of satellite systems, as these can vary from system to system and they are better left as part of the coordination between satellite operators
  - No risk of scarcity of NGSO gateway sites

2. Terms and Conditions for the Assignment of Spectrum for Certain Satellite-Based Commercial Communication Services - Continued

▲Spectrum charges

- either based on a percentage of the AGR (e.g. 1% as already previously recommended also by TRAI) or
- on a per MHz basis provided that the fees are reasonable and sustainable, bearing in mind the large bandwidths utilized in the higher frequency bands by newer GSO and NGSO satellite systems (the formula Royalty = 35000 x Bs would lead to astronomical amounts)
- Makes sense for multiple user terminals (VSATs or ESIM) to be covered by a single "blanket license" (i.e. avoiding cumbersome individual terminal-by-terminal licenses)

▲In any case, there should be no differentiation between spectrum charges for NGSO and GSO FSS providing data communication and internet services

3. The Terms and Conditions of Network Authorisations to be Granted Under the Telecommunications Act, 2023

- Yes to a separate Satellite Earth Station Gateway (SESG) License (i.e. the SESG License will not form part of the Unified License)
- Yes to the SESG Licensee not being permitted to provide Services

However:

- As some satellite systems require that the baseband equipment be owned and operated by only one entity, it makes sense to allow flexibility in terms of who can install the baseband equipment at the SESG
- The recommended disclosure of the financial terms of the offer to service licensees is commercially sensitive and confidential and should not be public

3.The Terms and Conditions of Network Authorisations to be Granted Under the Telecommunications Act, 2023 – Continued

- While TRAI has recommended that the gateway frequency spectrum should be assigned the service licensees, in the case of multiple service licensees, it could imply multiple licensing of the same spectrum for operation of the same antennas
- In any case, the SESG licensee needs its own authorization for using the spectrum for purely operational purposes for testing, installation, operations management (i.e. not service provision)
- Makes sense to finalize first the conditions for spectrum assignment to service licensees