9th April, 2021

MYRIOTA PTY LTD

Submission in response to the TRAI's Consultation paper
Licensing Framework for Satellite-based Connectivity for Low Bit Rate Applications

Myriota appreciates the TRAI recognising us as a global provider in low-cost, low-power, secure direct-to-orbit satellite connectivity for the Internet of Things. Myriota has a growing portfolio of more than 20 patents, and support from major Australian and international investors. With deep heritage in telecommunications research, Myriota achieved world-first transmission of IoT data direct to nanosatellite in 2013. Myriota has made this ground-breaking technology commercially available for partners worldwide, and has provided its commercial service since 2017.

Myriota welcomes the opportunity to offer comments on the licensing framework for satellite-based connectivity for low bit rate applications in India. Our recommendations aim to recognise the role of foreign operators like Myriota in addressing the large-scale communication needs of India, promoting a diverse and competitive market, and driving down the costs of satellite-based services. We highlight the importance of ensuring consistency with the ITU Radio Regulations, whilst encouraging the TRAI to follow international precedents of minimising regulatory burdens to market entry for operators, including costs, processing delay and ambiguity.

Myriota's Service

The Myriota system enables millions of terrestrial IoT modules – associated with sensors or other devices – to transmit small data messages direct-to-orbit, without requiring a gateway between the device and satellite. The IoT modules communicate with Myriota's NGSO constellation in LEO only at specific times as the satellites pass overhead, which leads to extended battery lifetime. The IoT modules' emissions are low power, low bandwidth, and low duty cycle, enabling extremely efficient use of the radio spectrum. Furthermore, they are small and inexpensive, with long battery life, which enables a myriad of different applications throughout India.

Myriota's service will provide significant public benefit to India, as well as tremendous productivity gains for industry. Myriota's low-cost, low-power technology can provide connections to objects and places of interest, which are currently not possible or prohibitively expensive. Myriota's platform can serve many applications across multiple industries, including environmental resource monitoring, equipment tracking and preventative maintenance, asset tracking, and infrastructure management. In amending its licensing framework, the TRAI should support foreign entrants to

provide satellite-based services to the Indian market. Product developers and manufacturers in India will also benefit, supplying a vast range of devices integrated with Myriota's IoT modules to the world. This will help achieve the TRAI's goal of facilitating popular and affordable satellite services, and in turn will bring great benefits to Indian industry and end-users.

Consistency with International Regulations

Questions 1 and 2 from the TRAI's consultation paper aim to determine which types of technology and satellite operations should be permitted. Myriota recommends that the TRAI should remain neutral to the design of satellite system architecture, and enable all possible technologies that operate in accordance with the relevant ITU Radio Regulations. Although the licensing framework should be revised for detail and clarity, the resulting rules must not be overly prescriptive, nor prohibitive to innovation. This would have unfavourable consequences of narrowing India's access to the diverse satellite industry and its capabilities.

Regarding question 3 from the TRAI's consultation paper, Myriota's system uses both the VHF and UHF uplink and downlink frequency bands that are internationally allocated for the Mobile Satellite Service (MSS). Myriota believes that at a minimum, the TRAI should permit operations in MSS frequency bands consistent with the ITU Table of Frequency Allocations. The TRAI should also uphold the ITU process for international frequency coordination of satellite networks that provide service in India. To ensure flexibility whilst upholding the paramount objective of preventing harmful interference, the TRAI should also consider allowing operators to use other frequency bands that do not have MSS allocation. Satellite-based connectivity could be permitted on a non-interference non-protection basis upon a sufficient demonstration to the TRAI of non-interference, under ITU Radio Regulations provision 4.4.

Streamlining Access

Myriota supports the TRAI's efforts to simplify processes for satellite operators to obtain complete permissions expeditiously and inexpensively. The proposed single-window clearance system executed end-to-end on an online portal is a commendable change to limit procedural delay. In addition, there is a need for this process and its requirements for demonstration or disclosure to be unambiguous. To encourage rapid development and deployment of novel satellite technologies in India, both licensing and market access procedures must follow a clearly established regulatory pathway.

In addition, the TRAI should implement streamlined processes for operators of systems that fall within specific categories, including: minimal spectrum bandwidth requirements; low risk of causing harmful interference; or relatively small satellite constellations. A variety of models for

streamlined licensing frameworks have been discussed and implemented by other national administrations, for example the Federal Communications Commission of the United States. Myriota suggests that the TRAI create provisions for expeditious licensing of systems using less than 1000 kHz of bandwidth, and systems of less than 100 satellites. In lieu of a blanket approach, streamlined processes will afford adequate concessions for certain operators who make less demanding applications. This will incentivise spectral efficiency and limit the regulatory burdens borne by applicants to match the risk they present.

Furthermore, the TRAI should enable expeditious licensing options for satellite systems that are already able to operate internationally without causing harmful interference, via demonstration of favourable ITU coordination status of a satellite network. Licensing should be further expedited by proving the satellite system does not cause interference to terrestrial services in India. For example, some VHF and UHF frequency bands are internationally allocated to the MSS for uplink communications of non-geostationary satellite systems exclusively. Systems operating in this spectrum that have completed international coordination will pose no risk to communication services in India. Accordingly, it is imperative that end-users in India are not obstructed from access to the services these systems provide by unnecessary regulatory delays. Myriota also suggests that the TRAI could adopt an approach allowing partial grant of market access[1], where limited low risk operations are authorised first, whilst operations with more complex coordination conditions remain pending approval, subject to the TRAI's deeper consideration.

Myriota appreciates the opportunity to aid in refining the licensing framework and aims to recognise the paramount importance of expeditious and widespread access to the Indian market. Myriota looks forward to working with the TRAI in the future, and serving India as a critical communications provider.

Yours sincerely,

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[1] For example, the FCC International Bureau has extensively authorised applications as "Granted in part, Deferred in part". There are many pertinent examples of partial grant on the FCC Public Notice, such as SpaceX's application for the Starlink mega constellation (IBFS File No. SAT-MOD-20200417- 00037).