Issues for Consultation

Q1. There are two models of provision of Satellite-based connectivity for IoT and low-bit-rate applications — (i) Hybrid model consistingof LPWAN and Satellite and (ii) Direct to satellite connectivity.

(i) Whether both the models should be permitted to provide satellite connectivity for IoT devices and low-bit-rate applications? Please justify your answer.

(ii) Is there any other suitable model through which the satellite-based connectivity can be provided for IoT devices? Please explain in detailwithjustifications.

Inmarsat: We believe that both models (i.e. Hybrid and Direct to Satellite) should be permitted. There are use cases that require a Hybrid model where a number of IoT devices, usually of low power, are connected to a satellite terminal, which serves for aggregating the data from these devices and connecting it to the relevant application server through satellite backhauling. Examples of such use cases include agriculture and mining. Other use cases may need single IoT devices, which could be connectable directly to the satellite like for asset tracking/management for example. In both cases, the licensing framework should be flexible enough to encourage the update of these important services.

Q2. Satellite-based low-bit-rate connectivity is possible using Geo Stationary, Medium and Low Earth orbit Satellites. Whether all the above type of satellites should be permitted to be used for providing satellite-based low-bit-rate connectivity? Please justify your answer.

Inmarsat: IoT/M2M services are in most cases low data rate applications that do not require very low latency. Accordingly, GEO satellites are very well suited to enable these applications and at the same time provide global and reliable coverage.

Q3. There are different frequency bands in which communication satellites operate such as L-band, S-band, C-band, Ku-band, Ka- band and other

higher bands. Whether any specific band or all the bands should be allowed to be used for providing satellite-based IoT connectivity? Please justify your answer.

Inmarsat: We operate satellites in different bands (L-band, Ka-band and S-band). Based on our experience with IoT/M2M applications and services worldwide, we are of the view that the L-band is the most convenient band for this type of services as it presents the highest reliability, mobility, global coverage, devices availability and can accommodate low data rates. Future IoT/M2M applications and services may require higher throughput and hence require connectivity in other band such as the Ka band (however, this is not relevant, as we understand that the scope of this consultation is only low data rate services).

Q4 (i) Whether a new licensing framework should be proposed for the provision of Satellite-based connectivity for low-bit-rate applications or the existing licensing framework may be suitably amended to include the provisioning of such connectivity? Please justify your answer.

Inmarsat: Existing licensing framework for satellite services includes regulatory requirements that cover both data and voice services via satellite. IoT/M2M is a particular type of data services using low data throughputs and does not have much difference from the satellite backhauling perspective compared to other data services. Accordingly, the existing licensing framework should be suitable to cover these services from a connectivity perspective. However, it is necessary to relax certain requirements in relation to the terminals licensing to make the business case viable for IoT/M2M and to encourage the uptake of these services. For instance, IoT/M2M terminals are expected to be very large in number in many use cases, and imposing licensing fees per terminal would be a huge burden to IoT/M2M providers. Accordingly, we are of the view that using the existing licensing framework that enables satellite services and relaxing per terminal licensing fees in the particular case of IoT/M2M

2

would be a suitable approach to make these services available to end users in a manner that will guarantee their success and rapid update.

Q5. The existing authorization of GMPCS service under UnifiedLicense permits the licensee for provision of voice and non-voice messages and data services. Whether the scope of GMPCSauthorization may be enhanced to permit the licensees to provide satellite-based connectivity for IoT devices within the service area? Please justify your answer.

Inmarsat: As stated in our answer to Q4, existing licensing framework for satellite services includes regulatory requirements that cover both data and voice services via satellite. This includes current authorizations and licenses for GMPCS/GSPS, which have very stringent requirements including the establishment of a satellite gateway in India. IoT/M2M should be permitted under these existing licenses/authorizations for GMPCS/GSPS with appropriate relaxation of the terminals licensing scheme.

Q10. Whether the licensees should be permitted to obtain satellite bandwidth from foreign satellites in order to provide low-bit-rate applications and IoT connectivity? Please justify your answer.

Inmarsat: Providers of low bit rate applications and IoT connectivity, as well as any other satellite-enabled services, should have non-discriminatory access to both domestic and foreign satellite capacity. This is the most appropriate way to simplify the access to satellite services and to encourage investment in the sector by lowering the cost burdens associated with the licensing requirements. This in turn stimulates technological developments and increases competition in the market. The result would be a better access to satellite services at lower cost and higher quality, with innovative use cases.

Q11. In case, the satellite transponder bandwidth has been obtained from foreign satellites, what conditions should be imposed on licensees, including

regarding establishment of downlink Earth station in India? Please justify your answer.

Inmarsat: As mentioned in our answers to Q4 and Q5, the existing licensing framework for satellite services can accommodate low data rates IoT/M2M applications, subject to relaxation of the terminal licensing fees. This existing licensing framework already contains very strict requirements including the establishment of gateways in India.

Q12. The cost of satellite-based services is on the higher side in the country due to which it has not been widely adopted by end users. What measures can be taken to make the satellite-based services affordable in India? Please elaborate your answer with justification.

Inmarsat: There are two main set of actions that will have direct impact on the cost of satellite-based services in general:

- **Increasing competition: the key enabler to increase competition amongst players in the satellite market is to allow non-discriminatory access to both domestic and foreign satellite capacity in a level playing field.**

- **Lowering licensing costs: this can take the form of reducing the current complexity of the licensing journey and simplifying the overall licensing process, as well as reducing the direct licensing costs.**

Q13. Whether the procedures to acquire a license for providing satellite- based services in the existing framework convenient for the applicants? Is there any scope of simplifying the various processes? Please give details and justification.

Inmarsat: The current procedures to acquire licenses/authorizations for satellite-based services in general are very complex with a large number of licensing stakeholders with whom an applicant shall communicate separately. This makes the licensing journey very

4

lengthy, costly, and in some instances confusing. Reducing the number of entities involved in the licensing process and streamlining the overall licensing journey, together with ensuring a non-discriminatory access to domestic and foreign satellite capacity in a level playing field will be very beneficial to the satellite market in India.