

भारत सरकार
अन्तरिक्ष विभाग
उपग्रह संचार कार्यक्रम कार्यालय
अन्तरिक्ष भवन, न्यू बी.ई.एल रोड,
बेंगलूर - 560 094. भारत
दूरभाष :+ 91-80-23415301
फैक्स :+ 91-80-23412141



सत्यमेव जयते

Government of India
Department of Space
**SATELLITE COMMUNICATIONS
PROGRAMMES OFFICE**
Antariksh Bhavan, New B.E.L Road,
Bangalore 560 094. India.
Telephone : + 91-80-23415301
Fax : +91-80 23412141

DIRECTOR

No. SCPO/F. TRAI/2007

Office of Chairman (TRAI)
Diary No.....
Date.....

15 January 2007

Shri Nripendra Misra
Chairman
Telecom Regulatory Authority of India (TRAI)
Mahanagar Doorsanchar Bhawan
Jawahar Lal Nehru Marg
NEW DELHI - 110002.

Subject: Comments in response to Telecom Regulatory Authority of India's Consultation Paper on "Review of Internet Services" (Consultation Paper No. 19/2006 of 27th December, 2006).

Dear Shri Misra,

Government of India's Department of Space and Indian Space Research Organisation are pleased to participate in the consultation process initiated by Telecom Regulatory Authority of India in regards to Review of Internet Services, especially in giving inputs on the emerging technological trends and making valuable changes to the current regulatory regime for ISPs in this context while enhancing this sector's contribution to the Indian economy.

1. Introduction

As TRAI formulates its recommendations on key regulatory measures relating to Internet Services, DOS wishes to emphasize that satellite-delivered services will be an important element in the portfolio of solutions used to extend speedy and economical deployment of Internet access and services. It should take cognisance of the increasing role that the satellite communication could play in addressing the ICT requirements of rural and remote areas.

Department of Space strongly believes that any regulatory regime put in place for Internet Services should facilitate and not restrict new technological and applications development and the new horizons of services and attendant benefits that it opens up. The objective should be to drive full exploitation of the potential of new technologies in the shortest time-frame for the fullest benefit of the consumer, commerce, and society at large. Within the Indian context, an additional important consideration must be addressed, i.e. bringing cost-effective Internet access to remote and rural areas of the country. We must create a regulatory regime for Internet Services that ensures their benefits will be delivered to all our citizens without prejudice to their location or economic strata.

2. Role of Satellites in Internet Services

Satellite based services have certain unique advantages that other access technologies cannot intrinsically match. Satellite delivery by its very nature can provide connectivity for urban and rural areas without any distinction. This is particularly important in India where vast swaths of remote and rural areas cannot be physically or economically connected by other technologies. The biggest advantage of satellite is that it can provide instantaneous infrastructure so that it can be used for Point-to-Point, Point-to-Multipoint and for Broadcast applications. In addition, satellite delivery also ensures that basic access as well as emergency services can be continuously provided even during natural and manmade disasters and that the network is not adversely affected. In recent times, satellites are being used for societal applications like Tele-medicine and Tele-education as well. A single satellite platform can be designed to have communication, entertainment, societal, and emergency applications.

Department of Space wishes to highlight that satellite based solutions continue to play an important role in advanced economies despite the rapid development of terrestrial Internet backbone and terrestrial wireless last mile infrastructure, including broadband access. Recent trends in satellite communications, which involves use of higher modulation and coding techniques and use of multiple spot beams, make satellite communication affordable. Satellite communications can supplement other communication media such as WiMax, WiFi and WLL, and in this perspective, satellite communication is an ideal candidate for national and rural area communication.

To overcome the "Digital Divide" by ensuring universal access particularly in rural or remote areas, where other forms of wired and wireless infrastructure are not economically or operationally viable, is possible only through space based systems. The same trends will be replicated in India despite the rapid development of terrestrial and wireless telecom/Internet infrastructure. The large unmet demand and potential for Internet Services is geographically dispersed in India, making it a fertile ground for satellite based Internet Services, as a vital complement to the other access technologies.

3. Emerging Technology Trends

Globally we are seeing that significant developments in satellite technologies, including mobile, broadcast, and fixed satellite services, are enabling the delivery of mobile broadband and multimedia Internet Services and thereby leading to a renaissance of satellites in new convergent services. Inmarsat's BGAN aims to provide mobile broadband data and voice through a single portable device. In the US, the forthcoming next-generation of hybrid satellite systems in the L-band and S-band including Mobile Satellite Ventures, ICO North America, TerraStar are going to provide an array of mobile, broadband data, and voice services through multiple access devices, including mobile phones and PDAs. WildBlue and Spaceway in the US and iPSTAR in Thailand provide fixed broadband Internet access to remote and rural users through high power & high throughput satellites. New S-DMB systems operated in the S-band by TU Media in South Korea and Mobile Broadcasting Corporation in Japan deliver broadcast multimedia and data services to mobile phones and portable devices through a hybrid satellite network. Similar S-DMB systems with new

interactive features are being developed for coverage in Europe by Alcatel and SES/Eutelsat and in China.

Department of Space has made significant technological advances in providing similar satellite based services in India. Our evolving and augmented INSAT system provides a variety of data services using high-powered satellites in the C-band, Ku-band, and S-band. DOS' current initiative is a state-of-the-art hybrid system with MSS/BSS/S-DMB capability that provides a critical national platform for delivery of broadband multimedia, interactive data, and Internet access services, to both mobile and fixed users, especially in remote and rural areas. The system, whose development is already well underway, will economically deliver IP-based services a variety of mobile devices including mobile phones, PCs, and other devices. It will make important contributions toward the goals of improving Internet access and promoting broadband technologies in India, complementing the efforts of other terrestrial and wireless infrastructure.

4. ISRO / DOS's Views on TRAI's question for consultation under 3.7 (Q1 – The emerging technological trends have been discussed in Chapter 3. Please suggest changes you feel necessary in ISP licences to keep pace with emerging technological trends):

Considering the background as explained under Role of Satellites (Para 2 above) and Emerging Technology Trends (Para 3 above), following recommendations on TRAI's consultation questions under point 3.7 (Q1) are made:

4.1 Provision for adoption of new technologies by ISP:

In the new regulatory regime for ISPs, the Government should aim to promote the adoption of new technologies rather than hinder the same. Recognizing that establishing national satellite-based systems such as the INSAT MSS/BSS/S-DMB initiative accrues a number of key benefits, DOS strongly believes that the new ISP regulatory regime should specifically recognise and incorporate INSAT systems into the regulatory regime for Internet Services. In this regard, satellite based hybrid networks using their ancillary terrestrial component for direct Internet access must be explicitly encouraged along with other technologies including wired and wireless. The cost economies of scale and quicker rollout times enjoyed by satellite-based systems along with their new hybrid satellite/terrestrial technologies will ensure that new Internet-based services can be delivered by satellites to a wide array of consumer segments in urban, rural and remote areas.

4.2 Scope of ISP Services

With regards to scope of services, the Government should allow all IP-based services including Internet access, web surfing, email, chat, ecommerce, multimedia, video/audio, IPTV, and voice under one umbrella of ISP license in the new ISP regulatory regime. Given the global trends, it is both difficult and meaningless to distinguish the services that should be allowed on each platform. Hybrid networks using wired, satellites, and wireless links offering a full portfolio of broadband, data, video, and voice services to both mobile and fixed users are

already a reality in many markets around the world and the same must be recognized in the licensing regime for ISP Services in India.

5. Conclusion

The new licensing regime for ISP Services should recognize that satellite based systems can provide a variety of Internet Services including broadband multimedia, interactive data, and Internet access services, to both mobile and fixed users. It should also recognize that satellites can provide effective last mile access to rural, remote, and difficult terrains in a cost effective manner.

With a new holistic and accommodative regulatory regime for ISPs that encourages and promotes satellite-based technologies, India can leap frog ahead of developed markets in Internet penetration.

Department of Space looks forward to the opportunity to discuss this matter further with TRAI and provide actionable inputs as it reviews and formulates the new ISP licensing regime for Internet Services.

With Best Regards,

Yours sincerely,



(A. Bhaskarnarayana)
Director, SCP/FM