TV RAMACHANDRAN

THE EVOLVING SKYSCAPE

Satcom is fast emerging as a game-changer in India—bridging rural connectivity gaps, fueling innovation, and fostering inclusive development

Despite decades of dedicated efforts, adequate tele connectivity for the remote and unconnected many, remained a pipedream in India. None of the terrestrial technologies could succeed in bridging the divide in connectivity. Big practical and operational challenges as well as financial viability issues have been, and still are, being faced to connect such difficult-to-reach areas of our vast and diverse country.

SATELLITES CAN BE THE VERITABLE MESSIAH OF CONNECTIVITY

It is a sheer delight to listen to the connectivity achievements of today thanks to modern-day advancements in satellite communications. For example, on 15 March, while inaugurating the Centre for Broadband Proliferation in Rural Areas (CBPiR), Chairman – DCC and Department of Telecom Secretary Dr Neeraj Mittal highlighted that a huge pent-up demand for data and broadband exists in rural and inaccessible areas.

Citing an example where 4G was launched in a poorly connected area of North East through satellite, he noted the surprising trend of connectivity-deprived consumers consuming up to 25 GB per month, 40% higher than the national average. This and many more such interesting but unsung and unknown connectivity accomplishments are quietly happening in India today, thanks to the increasingly powerful role played by the progressively reformed and liberalised satellite communications sector over the last few years and the crying need for more satellite broadband.

> Technologies like reusable launch platforms, software-defined payloads, and High Throughput Satellites can bring down the cost of satellite broadband.

THE BEGINNING OF THE REFORMS

It is well accepted by all that the scientists of ISRO constitute the greatest heroes of the nation, thanks to their remarkable achievements in strategic space activity. However, in commercial communications, India had a long way to go and the liberalisation of the satellite sector commenced on 24 June 2020 when the Union Cabinet chaired by Prime Minister Narendra Modi approved far-reaching reforms in the space sector aimed at boosting private sector participation in the entire range of space activities. The vision behind this historic move was that of transforming India through the use of satellite communication to connect the unconnected and making the country self-reliant and technologically advanced in all space activities.

The Cabinet also approved the creation of the Indian National Space Promotion and Authorisation Centre (IN-SPACe) to ensure a level playing field for private sector players to use Indian space infrastructure and also empowered it to promote and guide the private industries in space activities through facilitating policies and a friendly regulatory environment. These actions seem to have borne rich and substantial fruits already.

A great outcome has been the entry of LEO satellites which could be instrumental in delivering low latency high-quality broadband to the remote and unconnected to bridge the digital divide. The reforms of the government have spurred the interest and entry of LEO players like Eutelsat OneWeb India, Amazon's Kuiper, Jio Satellite Communications, Starlink and others. With probably only around 600 million unique broadband users out of a total of 850 million, satellite players, especially the LEOs, are targeting the potential of at least 500 million unserved potential subscribers.

Although satellite broadband is perceived to be costly, it can be less expensive than alternative terrestrial technologies. Modern technological innovations like re-usable launch platforms, software-defined payloads, High Throughput Satellites, especially of the LEO category and many other state-of-the-art techniques can help bring down the cost per GB significantly and this has been the thrust of INSPACe incessantly in their interactions with industry.

EODB REFORMS AND THE END OF SPECTRUM UNCERTAINTY

While privatisation and liberalisation of satellite communications had nominally commenced a few years ago with the introduction of VSAT players and a significant impetus was provided by NDCP 2018, the regular full-blooded reforms and liberalisation commenced only after June 2020 when the powerful triumvirate of ISRO, IN-SPACe, and DoT in tandem with TRAI, synergistically commenced catalysing satellite communications.

In May 2021, the Government of India (TEC/DoT) came out with new liberalised specifications which helped remove erstwhile restrictions which curbed the use of modern Satcom technologies and brought huge benefits to the end consumer by way of high-capacity, high-speed broadband services and better Quality of Service at lower cost. Subsequently, after consultations in August 2021, TRAI released recommendations on the licensing framework for satellite-based connectivity for Low Bit Rate applications. In November 2022, it published the recommendations on licensing framework for Establishing and Operating Satellite Earth Station Gateway in a standalone mode.

Earlier in October 2022, DoT had issued a package of satellite communication reforms "to propel growth and accelerate provisioning of affordable services to the citizens". This package of Ease-of-Doing Business (EoDB) reforms included waiver of the high NOCC charges, waiver of Mandatory Performance Verification Testing (MPVT) charges, enhancement of the scope of satellite licenses including commercial VSAT authorisation to enable the provisioning of satellite-based M2M and IoT devices and User Terminal stations on moving platforms, automated and contactless online processing of all applications through Saral Sanchar Portal.

The other highly impactful announcement was the Telecommunications Act 2023, which provided the long-awaited clarity on allocation methodology for spectrum

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for Satcom. Schedule I of the Act made it clear that all satellite spectrum will be assigned through administrative allocation. This permanently put to rest the uncertainty for potential investors and the satellite sector.

SUPPORT FOR GROWTH THROUGH 100% FDI

India is now targeting to grow its share in the global satellite market from the current 2% to 10%, which surely is not a cakewalk. The key to this growth would be access to the significant capital required and that too at a low cost. This means maximum inflow of FDI, at 100% level. Happily, the sector had been, like Barkis, "ready and waiting" merely for the spectrum clarity and EoDB reforms.

The government had already prepared the ground for the take-off of satellite communications in October 2021 through its Press Note 4 which amended Para 5.2.14 of the FDI Policy to bring all telecom services including GMPCS, VSAT, etc. under the 100% FDI automatic route. This permission would only be limited by the security constraint regarding nations having borders with India.

UNIQUE SATCOM USE CASES

Helping the entrepreneur: In Mumbai, Satish, a young entrepreneur, was grappling with the challenges of launching his sustainable energy start-up to provide affordable solar power solutions to rural communities. However, he faced a daunting obstacle: reaching these remote regions with reliable communication to monitor and maintain his solar panels.

Fortunately, India's burgeoning satellite communication infrastructure offered a lifeline. Through satellite-enabled Internet connectivity, Satish could remotely monitor his solar installations, ensuring optimal performance and timely maintenance. This enabled him to scale his business efficiently.

Combating tax evasion: By providing tax authorities with unprecedented visibility into remote regions, satellite-enabled real-time data transmission has significantly reduced opportunities for evasion, bolstering revenue collection efforts and promoting transparent governance.

Supporting agribusiness: Agriculture and related businesses in India are increasingly using satellite data for precision agriculture. Companies like Agribotix provide satellite-based solutions for monitoring crop health, predicting yields, and optimising farm operations.

Enabling remote sensing services: Private companies like BlackSky and Planet operate satellites that provide high-resolution imagery for various applications, including urban planning, infrastructure monitoring, and environmental management.

Aiding in disaster response: Private satellite operators collaborate with government agencies and NGOs to provide timely imagery and communication services during disasters. For example, during the 2022 Uttarakhand floods, private satellite imagery was used to assess the damage and plan rescue operations.

The impact of satellite communication extends far beyond communication or fiscal matters and represents a gateway to innovation and progress within the technology sector. From enhancing disaster response and management to revolutionising agricultural practices through precision farming techniques, satellite technology has become deeply intertwined with various aspects of Indian life.

Educational initiatives, empowered by satellite connectivity, have reached even the most remote corners of the country, unlocking doors of opportunity for the youth and driving progress towards a more knowledge-driven and inclusive society. It has now emerged as an indispensable tool for tracking progress towards the SDGs and crafting targeted public policies.

Researchers recognise the instrumental role of satellite communication in delivering granular insights into the development of villages and neighbourhoods, bridging information gaps, and enabling tailored interventions towards a more equitable, inclusive and sustainable future.

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Views are personal.

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