

## **Telecom Standards Development Society, India (TSDSI): ushering in an era of Telecom Standardization in India**

Abhay Karandikar  
Professor,  
Department of Electrical Engineering,  
Indian Institute of Technology Bombay, Powai, Mumbai 400076  
Chairman, TSDSI

In the last two decades, India has witnessed spectacular growth in telecom sector. As of this writing, there are a billion plus telephone subscribers with an overall tele-density (number of telephone subscribers per hundred persons) of 84. Just 15 years ago, the overall tele-density was in single digit. This growth in the Indian telecom sector has been largely scripted by incessantly growing cellular wireless communications supported by a liberalized market with light touch regulations. However, with a rural tele-density at 51 and broadband subscribers just around 190 million, the potential for further growth is still substantial. The Government of India has also recognized Information and Communications Technology (ICT) to be a key driver of economic and social development and has taken several measures to address these challenges under its "Digital India" vision.

Though India has emerged as the second largest telecom market in the world, until recently, India's participation in international telecom standards was very limited. Moreover, there has been no thriving indigenous Research and Development (R&D) and manufacturing eco-system in the country. It was, therefore, felt that India should participate and collaborate in the global effort for developing standards for the telecom sector to promote Indian interests and requirements. This would also help to create an eco-system for technology development, generation of Intellectual Property Rights (IPR) and manufacturing of telecom equipment in the country. With these broad objectives, Telecommunications Standards Development Society, India (TSDSI) came into formal existence in January 2014.

TSDSI is an autonomous "not for profit" society with participation of all the stakeholders including government, academia, industry and R&D organizations. TSDSI's charter is to project Indian interests, articulate service providers' requirements and promote IPR into international standards and products. In its technical activities, TSDSI follows the principles of openness, fairness and consensus. The General Body (GB) is the apex decision-making body comprising of all member organizations. TSDSI's Rules and Regulations (R&R), Working Procedures and IPR policy have been framed following the best global practices. The Governing Council (GC), which acts like a Board of Directors, comprises of sixteen members elected by the GB for a duration of two years. The GC also has five members nominated by the Ministry of Communications and the Ministry of Electronics and Information Technology.

TSDSI is a member of Global Standards Collaboration (GSC)- a body comprising of global Standards Development Organizations (SDOs) in ICT. It became an Organizational Partner of Third Generation Partnership Project (3GPP) and Type one partner of oneM2M in January 2015. This has enabled TSDSI members to participate and contribute in 3GPP and oneM2M standards development activities. As of this writing, there are sixteen member organizations that are 3GPP Individual Members (IM) through TSDSI and have started contributing actively in Fifth Generation (5G) cellular mobile communication related standards activity of 3GPP. It has also signed cooperation agreements with all major regional telecom SDOs.

India's diverse social and economic scenario presents interesting opportunities for new technology solutions and standards. Despite a significant growth in wireless industry, Indian service providers continue to face teething challenges in terms of spectrum scarcity and fragmentation, network density, demand growth, security, availability of electricity and associated energy costs among others. Affordable and reliable broadband is one of the major public policy goals of the Government of India. As a part of BharatNet initiatives, the Government plans to provide connectivity to all the villages of India. In this context, evolution of wireless standards towards 5G is of high significance to address the challenges of providing universal broadband access. TSDSI members have recently proposed Low Mobility Large Cell (LMC) as a possible new configuration for IMT2020 to consider a typical Indian rural scenario.

TSDSI's technical work has been organized into the following focus areas- Wireless, Services, Optical Access and Transport, Energy Efficiency and Security. Technical activities in various telecom verticals are conducted in specific Study Group (SG). Each SG has been organized into various Work Groups (WG).

In Wireless System SG, TSDSI has been working on 5G requirements in the Indian context. Many 5G related topics such as Narrow Band Internet of Things (NB-IoT) in Time Division Duplex (TDD) mode, Radio Access Network (RAN) slicing, Network Function Virtualization (NFV), Software Defined Networking (SDN), Spectrum requirements for 5G, Relay, low energy affordable access among others are potential topics of interest for standardization by TSDSI members. Under Digital India initiative, the government has announced its intention of realizing many cities to be Smart Cities. TSDSI's Services SG has analyzed M2M use cases in several key application areas. Front haul optical and microwave networks are also being studied in Optical Access and Transport SG. TSDSI group on Energy Efficiency has been studying energy performance of telecom network while the group on Security has a broad scope of security and privacy requirements such as authentication framework in Indian context, security assurance testing etc.

TSDSI is in its infancy. It is currently working on process institutionalization which includes strengthening working procedures, Rules and Regulations and improving the value addition for its members. TSDSI is in the process of drafting a roadmap for its standards activities

which can appropriately identify key thrust areas to align with national as well as its members' priorities. It would also like to enhance international collaboration with global SDOs so that Indian requirements can be addressed in global standards and members' technical contributions can be enhanced.