

STUDY GROUP NETWORKS (SGN)



Telecommunications Standards Development Society, India (TSDSI), is an autonomous 'not for profit' Standards Development Organization for Telecom products and services in India. Our membership comprises stakeholder organizations from all segments of the Telecom Ecosystem in India including Industry, Operators, Service Providers, Manufacturers, R&D and Test Labs, Academia, PSUs and the Government. We are recognised by the Department of Telecommunications, Government of India, as India's Telecom SDO.

The technical activities of TSDSI are carried out through two Study Groups: Study Group – Networks and Study Group – Services and Solutions.

The Study Group - Networks has the following broad domain areas for technical studies & development of standards:

- Wireless communication systems, including overall system architecture, Radio-based access and Mobile core networks, the functional elements constituting these networks and the interfaces/protocols between these networks, Software Defined Network (SDN) and Network function virtualization (NFV) of the access and core networks, FWA Systems, Broadcast
- TN Coverage enhancement (e.g. Relays, RIS etc)
- ISAC and Positioning
- Non-terrestrial Networks (e.g. satellites, UAVs and HAPS)
- AI/ML
- Backhaul using wireless & wireline, microwave, optical and/or packet-based transport networks
- Spectrum studies related to the above areas and technical recommendations and interference studies, including co-channel, adjacent channel and inter-system interference
- Quantum Communications
- Free space optics and VLC

The group has spearheaded development of following standards

STANDARDS DEVELOPED BY SGN

- Methods and Interface Design for RIS-assisted Communication Systems (TSDSI STD 5003 V1.0.0)
- Generic Relay Architecture for 5G and Beyond (TSDSI STD 5002 V1.0.0) ** Adopted by TEC as a National Standard
- 5Gi Standard (3GPP 5G and 5Gi merged in Release 17 in 2022)
- CPRI Fronthaul Standard (TSDSI STD 5000 V1.0.0)

STANDARDS TRANSPOSED FROM 3GPP

TSDSI transposes updated and new 3GPP specifications (which include IMT-Advanced, 5G, and 5G-Advanced) regularly and publishes the same as TSDSI standards on its website. These standards are also adopted by TEC as national standards.

ADOPTED STANDARDS

- ATSC 3.0 (Versions 2022 and 2024) - Digital TV Broadcasting Standards

SGN IS CURRENTLY WORKING ON DEVELOPMENT OF STANDARDS IN FOLLOWING AREAS

- Positioning standard for 6G using Multi-GNSS including NavIC in India
- Technical Specification for supporting WoMT non-synchronous operations in mmWave licensed band
- Functional Split and Fronthaul Interface in FBS driven C-RAN for 5G and Beyond
- Coreless RAN
- AI Architecture for RAN (SON / RRM)
- New Architecture for 6G Communication Systems
- Update to TS on Methods and Interface Design for RIS-assisted Communication Systems
- 5G Extensions for Broadcast offload

A FEW PUBLISHED TECHNICAL REPORTS

- Joint communication & sensing in 5G networks & beyond (TSDSI TR 6069V1.0.0)
- Network Energy Saving functionality of the 5G-Advanced system and its Evolution (TSDSI TR 6068V1.0.0)
- Study Report on Supporting Wi-Fi over Licensed mmWave Band (TSDSI TR 6067 V1.0.0)
- Study of RIS empowered end-to-end application scenario with a focus on UE controlled and private deployments: Technical, cost-model and ownership aspects (TSDSI TR 6060 V1.0.0)
- Dynamic Joint Deployment of SDN Controllers and Hypervisors for Softwarized 5G and Beyond (TSDSI TR 6056 V1.0.0)
- Solar Panel Based Optical Wireless Communication (TSDSI TR 6050 V1.0.0)
- Implications of Network Slicing on UCaaS (TSDSI TR 6049 V1.0.0)
- Study of Multiple Access for 6G Communication (TSDSI TR 6048 V1.0.0)
- Radiative Near Field Communication with Extreme MIMO (TSDSI TR 6047 V1.0.0)
- System Requirements for NR based Future Railways Mobile Communication System (TSDSI TR 6045 V1.0.0)
- The Role of Edge Intelligence in a 6G Communication Network (TSDSI TR 6038 V1.0.0)
- Characterization of E-band for 4G/5G Backhaul & Rural Broadband (TSDSI TR 6024 V1.0.1)
- Study of 6GHz spectrum for IMT services in India (TSDSI TR 6020 V1.0.0)
- 6G: Use cases, Requirements and Enabling Technologies (TSDSI TR 6017 V1.0.0)

The full list is available at the link: <https://tsdsi.in/tr/>

Engagement with Global Standards Forums

Contributions are also made to

ITU (<https://www.itu.int/>) and **3GPP** (<https://www.3gpp.org/>)

For latest updates on technical activities, please read our newsletters at <https://tsdsi.in/newsletter/>

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