tsdsi NEWSLETTER

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HIGHLIGHTS (July-September 2025)

Transposed Standards

TSDSI transposes oneM2M Rel 4 specifications

TSDSI releases Technical Reports on

- System Requirements for NR based Future Railways Mobile Communication System (TSDSI TR 6045 V1.0.0)
- Recommendations for use of Dynamic AI/ML Models for Self-Sustainable V2X Applications in 6G (TSDSI TR 6044 V1.0.0)
- Suggested Recommendations for Sustainable 6G Networks (TSDSI TR 6043 V1.0.0)
- Slice Identification in 5G RAN and Core for End-to-End Secure and Resilient Slice Services (TSDSI TR 6042 V1.0.0)
- Enablement of Common Data Payload for Agricultural Automation Solutions (TSDSI TR 6041 V1.0.0)

MoUs

TSDSI signs MoUs with African Telecommunications Union (ATU), Bharat 6G Alliance (B6GA) and renews its MoU with 6G Brasil

Proposal for developing Standard

A proposal for developing a standard on WLAN over mmWave has been initiated

TTDD 2025

TSDSI's Annual Flagship Conference TTDD 2025 (TSDSI Tech Deep Dive) was held from 15-18 July 2025. The theme of the conference was "Standardising 6G: Architecting Intelligent, Secure and Sustainable Networks & Services". This edition features a report on the deliberations and key outcomes of the conference.

Call for Nominations - TSDSI Hall of Fame Awards 2025

TSDSI invites nominations for the Hall of Fame Awards for Financial Year 2024-25. The nominations are open till 4 November 2025. For more details, click here.

Standardization Activities

TSDSI has released the following new Technical Reports:

Networks Study Group:

- **System Requirements for NR based Future Railways Mobile Communication System (FRMCS)** (TSDSI TR 6045 V1.0.0)

  The report provides findings from a study of the existing communication system architecture deployed in the Indian Railways including RF bands, bandwidth etc. It provides a performance comparison of previous generations (GSM-R) with 5G-based FRMCS and outlines the benefits of migrating to FRMCS systems using 5G wireless communication.

Services and Solutions Study Group:

- **Recommendations for use of Dynamic AI/ML Models for Self-Sustainable V2X Applications in 6G** (TSDSI TR 6044 V1.0.0)

  The report focuses on autonomous systems to enable effective and reliable communication through vehicular networks, self-sustaining network design driven by AI models. It covers connected vehicular applications and time-critical issues for Safety and high Bandwidth Infotainment. Enhancements of network architectures are considered to serve various aspects related to Key Performance Indicators (KPIs) for V2X connectivity including applications. Dynamic AI/ML models to support features like variable environments mobility and traffic patterns of V2X.

- **Suggested Recommendations for Sustainable 6G Networks** (TSDSI TR 6043 V1.0.0)

  The study report deals with energy consumption (EC) methods & saving techniques in RAN (Radio Access Network) part of the mobile wireless network. Key recommendations outlined in the report include development of new 6G energy efficiency (EE) KPIs that take carbon emissions and the impact of renewable energy into account, exploration of Green AI/ML models to optimize the energy efficiency of 6G network, and guidance for users on energy consumption-related design and use of enhanced sustainable service options.

- **Slice Identification in 5G RAN and Core for End-to-End Secure and Resilient Slice Services** (TSDSI TR 6042 V1.0.0)

  The study report is based on key scenarios related to micro-slice deployment and aggregation for resilient control plane overload at the intersection of 5GC and RAN. It identifies possible gaps and unexpected situations in the Trusted Execution Environment (TEE) in end-to-end deployment of one or more slices or slice subnets. It recommends potential solutions, and suitable slice deployment options in network entities appropriately for end-to-end slice deployment.

- **Enablement of Common Data Payload for Agricultural Automation Solutions** (TSDSI TR 6041 V1.0.0)

  This report proposes a common standardised data payload for agricultural use cases, making it easy to integrate multi-vendor products and dashboards deployed in the agricultural ecosystem. By defining a common payload schema, diverse agricultural devices and IoT systems can work together using a oneM2M-based common service layer, enabling interoperability, efficient cloud-based data handling, and seamless secure communication between sensors, gateways, and platforms to promote the exchange of agricultural insights in secure manner for all stakeholders.

Technical Activities

TSDSI members are currently conducting technical studies and developing standards in the areas of 6G, 5G enhancements, broadcast offload, spectrum studies, wireless backhaul, VLC, quantum communications, Security, application layer interfaces and related protocols, services architecture and frameworks. New proposals on topics in these areas and additionally from the TSDSI Standardization Roadmap 3.0 are being deliberated in the Networks, and Services & Solutions Study Groups.

Following new technical activities have been initiated in July-September 2025 period:

SG-Services and Solutions:

Technical Studies:

- Study on UAV communication and security standards for secure airspace control (SI 161)
- Study on Solution for Artificial Intelligence supporting Use cases in Agriculture Domain — Plant Leaf disease Identification (SI160)
- Technology recommendations for Telecom Service Providers to increase efficiency towards Capex/Opex (SI159)

Please visit here for a full list of ongoing technical activities.

Please reach out to sweta@tsdsi.in and Chandrakanta@tsdsi.in for details of our technical activities in the Networks and Services & Solutions Study groups respectively.

Liaisons:

TSDSI has received 3 liaison statements (LS)

- From ITU-R WP5D on the schedule for updating recommendation ITU-R M.2012 to Revision 8
- From ITU-R WP5D on the schedule for updating recommendation ITU-R M.2150 To Revision 4
- From TEC to refer to the matter for Development of Technology Standards for using Wi-Fi over mmWave in IMT spectrum (26 GHz band) allotted to TSPs in India-Regarding

List of Liaisons received and sent by TSDSI can be viewed at https://tsdsi.in/liaison-statements/.

ACTIVITIES

Pre-standardization Activities

TSDSI Technology Roadmap Item Forums:
TSDSI has constituted Technology Roadmap Item Proposal (TRIP) Forums to carry out discussions with stakeholders in select areas of its Standardization Roadmap with the objective of recommending topics that can potentially be taken up for developing standards within TSDSI. The forums are open to participation by non-members.

Currently, the TRIP forum on Automated Electric Transportation, IoT/M2M is active.

Post-standardization Activities

Govt. Advisory on deployment of oneM2M standards based IoT solutions

The Department of Telecommunications (DoT) has issued an advisory on August 2025 urging M2M service providers, government ministries and departments, as well as IoT device makers to deploy solutions based on oneM2M standards on IoT to derive the advantages ensuring interoperability and security of data services and transfer among all stakeholders.

GLOBAL STANDARDS ROUNDUP

ITU-R:

The ITU-R WP5D meeting (#50) is to be held from 7 to 16 October 2025 in hybrid mode at Geneva, Switzerland. A contribution from TSDSI on "support for acceptance of Extended Connectivity as a minimum Technical Performance Requirements for IMT2030" has been submitted to the meeting.

TSDSI has also provided information regarding its activities related to 5G and beyond technologies for incorporation in the ITU-R Region 3 (R3) Rapporteur report to this meeting.

ITU-T:

ITU-T CITS: Dr Satyam Agarwal (IIT Ropar, Member TSDSI) presented a status report of TSDSI activities in Intelligent Transport Systems (ITS) (Doc 22R1) to the ITU-CITS e-meeting held on 12 September 2025.

ITU-T FG-AINN: TSDSI members are contributing to the ITU-T Focus Group on AI Native for Telecommunication Networks based on Studies being carried out in TSDSI Services & Solutions SG on "AI-Enhanced Massive Digital Twinning Framework for Networks Supporting Sustainable Development Goals. (SI-154)

ITU-T AI for Good Global Summit 2025: Use cases submitted by TSDSI members - C-DAC, HFCL, TATA Elxsi and TCS, highlighting AI solutions in transport, 5G and healthcare, were recognised under ITU-T's **"Innovate for Impact Initiative" in its "AI For Good Global Summit 2025"**, held in Geneva on 9 July 2025.

TSDSI members participated in the meetings of ITU-T Study Group 20 (Internet of Things, Digital Twins and Smart Sustainable Cities and Communities), and its Regional Group for Asia and the Pacific, and ITU-T Study Group 13 (Future Networks and Emerging Network Technologies) in the reporting period.

3GPP:

TSDSI hosted meetings of the 3GPP RAN Working groups in Bengaluru from 25 to 29 August 2025. This was the first "6G RAN" meeting and witnessed participation by over 1500 global delegates. A total of 214 contributions were made by 189 participants from 20 TSDSI IMs. The discussions were pivotal in kickstarting study items toward 6G standards as part of Release 20, and simultaneously finalizing specifications for Release 19, which will update 5G Advanced specifications.

TSDSI thanks the Department of Telecommunications (DOT) for their support in hosting the meetings, in the form of assisting in securing the necessary approvals for travel of the foreign delegates and financial grant for hosting the meetings. The support from the Ministry of External Affairs, India and its offices in over 55 countries for timely processing of the visa requests for approximately 1200 delegates is highly appreciated.

TSDSI thanks Apple, 5G India Forum, Keysight Technologies, Elena Geo Systems Private Limited, IIT Hyderabad, oneMedia Sinclair Inc. and IIT Madras for supporting the hosting of these meetings in the form of sponsorships.
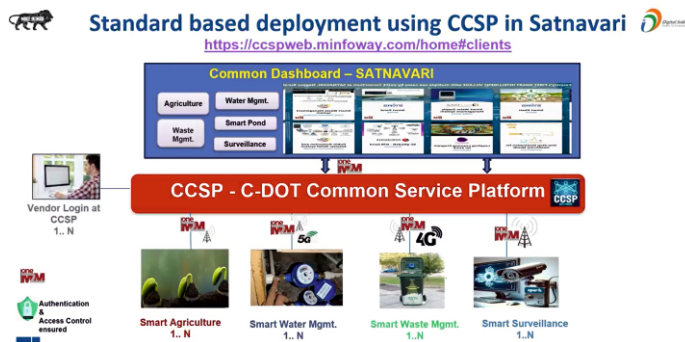
GLOBAL STANDARDS ROUNDUP

oneM2M:

TSDSI has transposed 27 specifications (including 4 technical reports) of oneM2M Release 4. This Release introduces new common service functions for time, session and process management. It also supports features like semantic reasoning, enhances support of Fog/Edge Computing by enabling software campaigning and resource synchronization, enhanced 3GPP interworking, geo-query capability, public warning service enablement, and security enhancements across multiple domains".

Transposition of Release 2A specifications and few specifications of Release 3 that had not been transposed earlier has also been done.

14 representatives from 7 TSDSI member organisations participated in the oneM2M Technical plenary meeting #71 held from 8 to 12 September 2025.

oneM2M based solutions implemented in Smart Village in Maharashtra, India

A group of Indian organisations - CDOT, INVAS, Core Data Networks and Coral Telecom showcased Smart Agriculture, Water, Waste and Surveillance use case solutions based on oneM2M framework, as part of a demonstration Smart Village set up in Satnavari village in the state of Maharashtra, India. It can be viewed at link here.

PARTNER ENGAGEMENTS

TSDSI signed the following MoUs in July 2025:

- African Telecommunications Union (ATU), to collaborate and build the needed synergies for mutual benefits in the areas of telecommunication and ICT standardization, radiocommunication and inclusion of regional requirements into development of standards appropriately. Significantly, the partners will also facilitate coordination at global standards, radio and ICT development forums, and undertake capacity building initiatives in the relevant fields.

- Bharat 6G Alliance (B6GA), to address India's priorities in 6G and future technologies, co-operate in the field of development of standards for 6G and regularly exchange information on activity roadmaps and workplans at global forums related to technologies as well as on technical activities carried out within each other's organizations.

TSDSI has renewed its MoU with 6G Brasil, to cooperate mainly, but not exclusively, in the potential areas of rural and remote connectivity; exchange information regarding challenges and use cases in the India and Brazil regions as well as any other territories that the parties may agree to, in order to extract common needs and cooperate in development of Standards that address the common needs and taking these to the relevant global platforms (ITU, 3GPP, oneM2M etc.)

OUTREACH

Partnered Event:

TSDSI supported organisation of a conference on "Standards Essential Patents (SEPs): Creating an Innovation Ecosystem for Vikshit Bharat @2047" in New Delhi on 23 August 2025 by FICCI as the Standards Partner. Mr A. K. Mittal, Director General, TSDSI delivered the inaugural address. He highlighted the surge in telecom patents and the shift from monopolistic to collaborative standard-setting that enables global interoperability and public benefits. Mr Mittal stressed the need to integrate standardization and patenting into organizational business strategies rather than treating them separately.

Speaking opportunities:

TSDSI Member Expert, **Mr Pranav Jha, IIT Bombay**, delivered a talk on "Global Standards Shaping Mobile Data Offloading on Wifi" in the Workshop on "Mobile Data Offloading on Wifi" organized by Telecommunication Engineering Center (TEC), Department of Telecommunications, Govt. of India in New Delhi on 20 August 2025.

TSDSI Member Expert, **Prof. Brejesh Lall, IIT Delhi**, delivered a talk on **"Enabling Responsible AI for Telecom and ICT through Standards: TSDSI's Perspective"** in the Workshop on "Artificial Intelligence: Shaping the Future with Innovation" conducted on the sidelines of 89th IEC General Meeting, hosted by Bureau of Indian Standards (BIS) on 16 September 2025.

Capacity Building:

Awareness Session on Upcoming ITU-T Meetings: Mr Vishnu Ram, Consultant TSDSI conducted an online Awareness Session on participation and contributing to ITU-T meetings on 1 September 2025. He also gave a brief description of the upcoming meetings of select ITU-T Study groups and their focus areas.

PROGRAMME

TSDSI Tech Deep Dive 2025:

TSDSI organises its Annual Flagship program - TSDSI Technical Deep Dive (TTDD) Conference to bring together technocrats, researchers and standards experts from around the world for discussions on topics related to global standardisation activities, and emerging and futuristic technology trends. The Conference has come to be widely acclaimed in the digital communications ecosystem for its choice of topics and the high-quality deliberations.

The 8th edition of the conference TTDD2025 was held from 15 to 18 July 2025, with the theme "Standardising 6G: Architecting Intelligent, Secure and Sustainable Networks & Services". As global 6G standardization initiatives gather pace the conference deliberated on the foundational aspects of 6G standardization, shaping a path towards future-ready, inclusive, and resilient digital infrastructure.

The conference hosted 63 distinguished speakers representing a balanced mix of research and academia, government bodies, international standard development organizations (SDOs), regional forums, and industry players, including startups. They enriched the conference through keynotes and panel discussions, addressing a wide range of topics in following six technical fully online sessions:

- New network architecture possibilities for 6G
- Will AI find a central role in 6G?
- Future path and Challenges for integration of Non-Terrestrial (Satellite, HAPS and UAVs) & Terrestrial Networks for 6G communication
- Security in a hyper connected world, especially for 6G
- Management and Service Delivery Architectures
- The OFDM dilemma and Potential new Waveforms for 6G

The conference concluded with a workshop on New Network & Services Ecosystems for 6G that was held in hybrid mode in New Delhi.

Key takeaways from the technical deliberations in the conference are given below:

- Simplified standalone designs with AI/ML-native features were highlighted as critical, since they reduce complexity, enable faster adoption, and ensure long-term scalability.
- Embedding AI across all functions will make networks autonomous and efficient, though addressing energy, bias, and privacy challenges is vital for trust and global adoption.
- Satellites, HAPS, and UAVs can bridge connectivity gaps in remote areas, showing how 6G can drive digital inclusion, though interoperability remains a hurdle
- Security-by-design with quantum-safe cryptography and Zero Trust will safeguard future networks, ensuring user trust and resilience against next-generation threats.
- Cloud-native frameworks and AI-driven orchestration can cut operator costs and improve efficiency, making 6G services more reliable and commercially viable.
- Exploring new waveforms beyond OFDM is crucial, as it supports extreme mobility and IoT use cases, ensuring flexibility and innovation in 6G deployments.
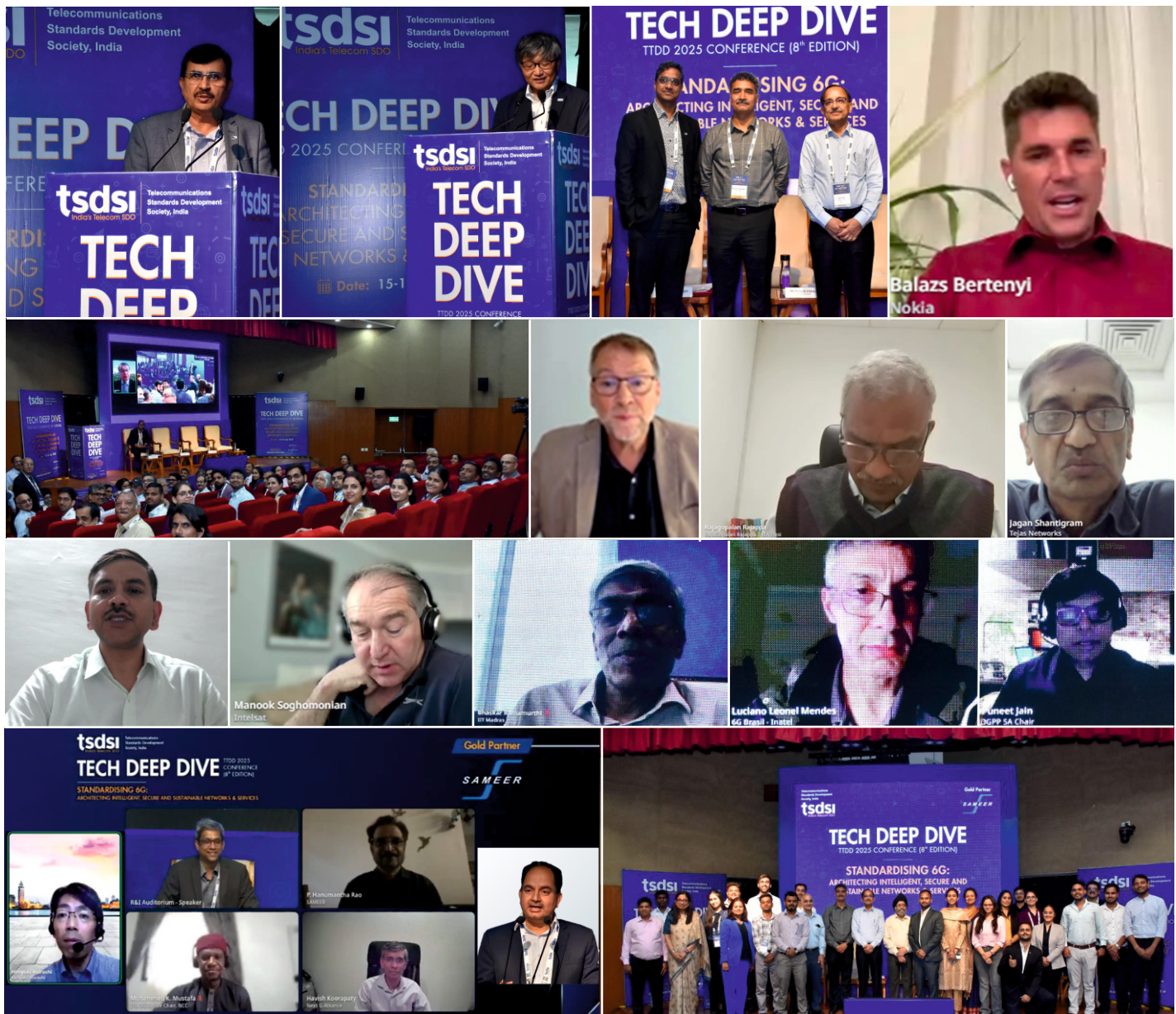
- Highlighted India's strategic vision for affordable, sustainable 6G, reinforcing its leadership role in shaping global standards and ecosystems.

- Emphasized a user-first approach and cross-sector collaboration, ensuring 6G services deliver real value, drive monetization, and align with global standardization efforts.

Overall, the conference stressed on an intelligent, secure and sustainable 6G, with AI, NTN integration, quantum-safe security, and India's leadership in driving inclusive global standards.

The conference witnessed a robust and diverse participation, drawing over 675 unique attendees from across the globe, including 174 returning participants from previous editions—reflecting the continued relevance and impact of the event. On an average, participants engaged in three technical sessions, demonstrating sustained interest in the programme content. A notable highlight was the active inclusion of over 200 women participants, reinforcing the event's commitment to diversity and inclusivity in the technology ecosystem. Individual technical sessions recorded participation ranging between 154 and 336 attendees, underscoring the wide appeal and relevance of the topics discussed.

TSDSI thanks SAMEER and Tejas for providing sponsorship support to the conference as the Gold Partner and Silver Partner respectively!

ANNOUNCEMENTS

TSDSI Outstanding Technical Contributions Awards:

The TSDSI Outstanding Technical Contributions (OTC) Award recognizes the efforts and contributions of individuals in progressing the development of a standard. It recognizes an individual's efforts in contributing to and/or championing a technical activity within TSDSI during the year.

Awardees for the financial year 2024-25, Ms Priyanka Dey, Mr Hemant Jeevan Magadum, Dr. K Sowjanya were felicitated by Mr Satish Jamadagani, Chair TSDSI in a special session held as part of the hybrid day proceedings of the TSDSI Tech Deep Dive (TTDD) 2025 Conference on 18 July 2025.

Call for Nominations-TSDSI Hall of Fame Awards 2025

TSDSI invites nominations for the Hall of Fame Awards for Financial Year 2024-25. Members are invited to submit nominations accompanied by endorsements from 3 other member representatives, latest by 4 November 2025, EoD. For more information, please visit here.

Operational Matters:

Elections for Technical group Leadership and vacant positions in the GC were held on 30 July 2025.

Mr. Niranth Amogh and Mr. Abhijeet Abhimanyu Masal have been elected as Chairs of the Study Group on Services & Solutions (SGSS) and the Study Group on Networks (SGN), respectively. Ms. Gomathy Padmanabha and Mr. Pradeep H. (Jio) have been elected as Vice Chairs of these Study Groups, in the same order. The new Chairs assumed charge from the outgoing Chairs, Mr. R. Prakash (SGSS) and Mr. Mahesh M.A. (SGN), during the TSDSI SG TP #40 meetings held on 17 September 2025. Notably, the incoming Chairs had earlier served as Vice Chairs of their respective Study Groups.

TSDSI extends its heartfelt gratitude to the outgoing Chairs - Mr Prakash R, Study Group Network, and Mr. Mahesh Nayaka Mysore Annaiah, Study Group Services & Solutions for their dedicated leadership, guidance, and valuable contributions that have strengthened the study groups and advanced the standardization ecosystem.

Mr. Jaspreet Singh and Mr. Utkarsh Ahuja were elected as GC Members in CAT 4 & CAT 7 respectively.

EVENTS

Upcoming Events

TSDSI is exhibiting at Indian Mobile Congress 2025, Bharat Pavilion, Stalls C-17 & C-18.

TSDSI is participating as Technical Partner in IEEE Future Networks World Forum from 10-12 November 2025 and is organizing a Workshop on Standardization Trends in 6G and Beyond as part of the Conference.

Meetings/Workshops/Conferences/Webinars	Date	Venue
ITU-R WP5D Meeting	07 - 16 Oct 2025	Geneva, Switzerland
ITU-T SG 21 Meeting	6-17 Oct 2025	Geneva, Switzerland
India Mobile Congress 2025	08 - 11 Oct 2025	New Delhi, India
ITU-T SG15 Meeting	13-24 Oct 2025	Geneva, Switzerland
2025 oneM2M International Hackathon	13 Oct - 17 Nov 2025	Online
ITU-T SG13 Meeting	28 Oct - 6 Nov 2025	Tashkent, Uzbekistan
ITU-T SG5 Meeting	29 Oct - 6 Nov 2025	Geneva, Switzerland
ITU-T SG3 Meeting	3-7 Nov 2025	Geneva, Switzerland
Emerging Science, Technology and Innovation Conclave ESTIC 2025	3-5 Nov 2025	New Delhi
IEEE Future Networks World Forum	10-12 Nov 2025	Bangalore
oneM2M TP#72 with Industry Day	10-14 Nov 2025	Malasiya
3GPP PCG#55/OP 54	13-14 Nov 2025	Online
ITU-T SG 11 Meeting	17-26 Nov 2025	Geneva, Switzerland
ITU-T SG 17 Meeting	3-11 Dec 2025	Geneva, Switzerland
3GPP SA/RAN/CT#110	8-9 Dec 2025	Baltimore, USA
IEEE International Conference on Advanced Networks and Telecommunications Systems (ANTS)	15-18 Dec 2025	New Delhi, India
TSDSI SGN-SGSS Technical Plenary Meeting	16-19 Dec 2025	TBC

Visit here for the Upcoming Calendar of Events.

MEMBERSHIP UPDATES

TSDSI welcomes following organisations that joined us as members in July-September 2025:

New Corporate Members: Space Pulse Technosolutions Private Limited (converted from Guest to Corporate), iSignal Research Labs Private Limited, CLUPAV Scientific Private Limited, QClairvoyance Quantum Labs Private Limited, Patenti Technology Solutions (OPC) Private Limited

New Guest Members: CloudConnect Communications Private Limited, ML Infomap Private Limited, IIT Guwahati, Paravani Business Solutions Private Limited

The full member list can be viewed here https://tsdsi.in/present_members/.

To apply for TSDSI membership, please visit https://tsdsi.in/membership/.

About **TSDSI**

Telecommunications Standards Development Society, India (TSDSI), aims at developing and promoting India-specific requirements, standardizing solutions for meeting these requirements and contributing these to international standards, contributing to global standardization in the field of telecommunications, maintaining the technical standards and other deliverables of the organization, safe-guarding the related IPR, helping create manufacturing expertise in the country, providing leadership to the developing countries (such as in South Asia, South East Asia, Africa, Middle East, etc.) in terms of their telecommunications-related standardization needs.

TSDSI is recognised by the Department of Telecommunications as India's Telecom Standards Development Organisation (SDO).

TSDSI is registered as a Society under the Societies Registration Act (Act XXI of 1860).