

Realizing the

**6G**  
VISION

Societal Needs,  
Usage Scenarios  
& Technologies

**ANNUAL REPORT**  
2024-25

# TABLE OF CONTENTS

<b>About TSDSI</b> .....	<b>02</b>
<b>Our Objectives</b> .....	<b>04</b>
<b>TSDSI Journey</b> .....	<b>07</b>
<b>Key Metrics</b> .....	<b>10</b>
<b>Partnerships &amp; Alliances</b> .....	<b>13</b>
<b>Organization Structure</b> .....	<b>15</b>
<b>TSDSI Management</b> .....	<b>17</b>
<b>Messages</b> .....	<b>17</b>
<b>The Year Gone By</b> .....	<b>18</b>
• Technical Activities	
• Strategic Initiatives	
• Awards & Recognitions	
• Organizational Matters	
• Global Standards Activities	
• Partnerships & Alliances	
• Programmes	
• Articles	
• Ecosystem	
• Capacity Building	
<b>Looking Ahead</b> .....	<b>23</b>
<b>Finances</b> .....	<b>25</b>
<b>Annexures</b> .....	<b>27</b>
• Annexure 1 – Technical Group Leaders	
• Annexure 2 – Secretariat Team	
• Annexure 3 – List of TSDSI Members	
• Annexure 4 – Composition of TSDSI Committees	



GG

# About TSDSI

## WHO WE ARE

TSDSI is an autonomous, membership based, **standards development organization (SDO) for Telecom/ICT products and services in India**. We develop standards for access, back-haul, and infrastructure systems, solutions and services that best meet India specific **Telecom/ICT needs**, based on research and innovation in India. We work closely with global standards' bodies to reflect Indian requirements into international telecom/ICT standards. We play an important role in encouraging generation of Indian IPRs in this technology intensive field and get them incorporated into **international standards**. This in turn promotes indigenous research, product development and manufacturing. Department of Telecommunications & Ministry of Electronics and Information Technology, Govt. of India are jointly supporting TSDSI as **India's Telecom/ICT SDO**.

TSDSI is registered as a not-for-profit society, under the **Indian Societies Registration Act XXI of 1860**.

## OUR VISION

Our vision is to ensure that Digital Communication Standards increasingly drive domestic, economic and policy activities and enhance India's competitiveness for ICT goods and services in global markets. We aim to do this by creating a leadership position through India's participation and contribution to emerging Digital Communication Standards in global SDOs.

## OUR PHILOSOPHY



Follow a consensus-based approach, enforcing a methodical and transparent, open-to-all-members (Industry, Government and Academia) process while generating standards.



Adhere to the principles of Openness, Transparency, Fairness, Consensus and Due Process in conducting its activities.



Maintain technology neutrality and provide a uniform playing field for its members.



Represent the views of our members to DoT and other Government bodies on matters concerning policy, regulatory and standardisation issues in the field of Telecom.

# Our OBJECTIVES

- Developing, promoting and standardising India-specific Telecom/ICT requirements and solutions.
- Taking Indian requirements to global standards organizations.
- Helping create standards-based manufacturing expertise in the country.
- Providing guidance and leadership to developing countries.

## Effective Standards Facilitate



Accelerated  
Deployment



Interoperability



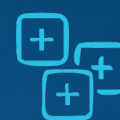
Inclusion across  
ecosystem



Market Growth



Innovation  
that matters



Integration of  
services

# TSDSI Journey 2014-2025



**2013-14**

Registered as a Not-for-Profit Society.



**2014-15**

Admitted into 3GPP and oneM2M as partner.



**2015-16**

Contributed M2M Use Cases to ITU - T SG20.



**2023-24**

Released Standardisation Roadmap 3.0  
Adopted ETSI IoT and NFV Standards  
Started hosting 3GPP Meetings in India  
Published Standard on "Cloud Interoperability and Portability - Stage 1"  
Adopted ATSC Standards

**2024-25**

Published 5 Standards on "A Generic Relay Architecture for 5G & Beyond";  
"Standardization of common data payload for adaptive traffic control system and other Intelligent Transportation system";  
"Methods and Interface Design for RIS-assisted Communication Systems";  
"Cloud Interoperability & Portability (CIP) Stage II & Stage III" respectively.



**2024-25**

Total 10,789 Standards,  
154 Technical Reports published and  
124 members as on 31 Mar'25.

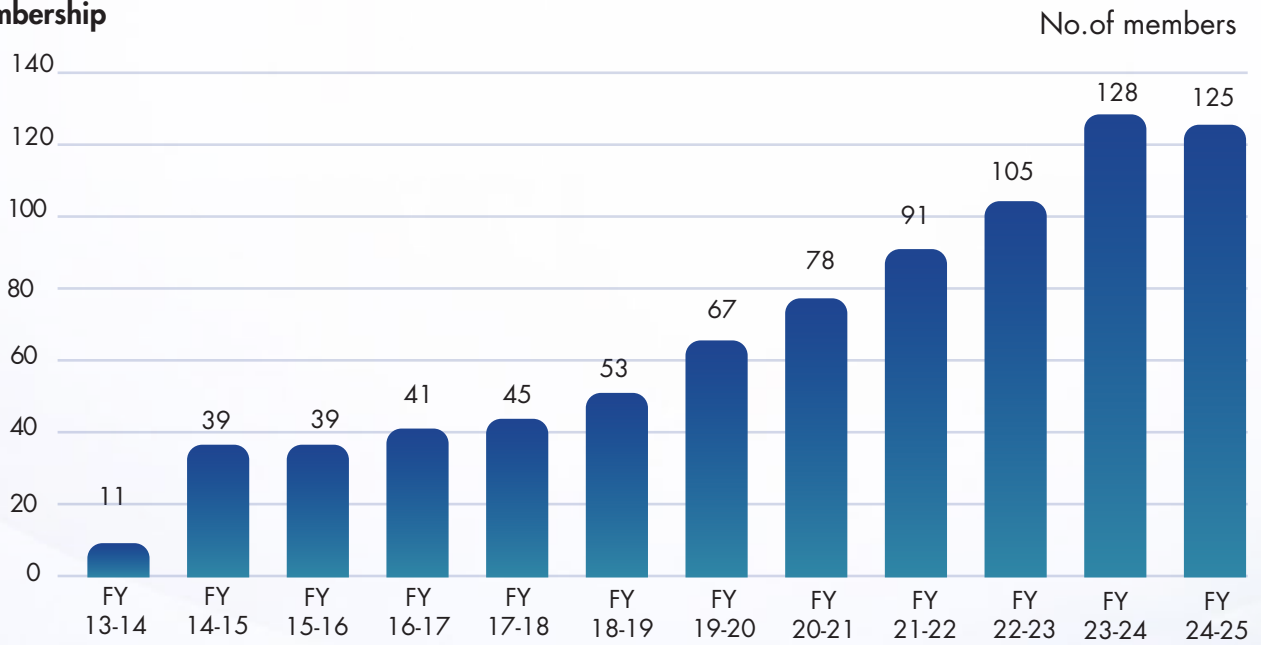


# Key METRICS

## Published Standards And Reports

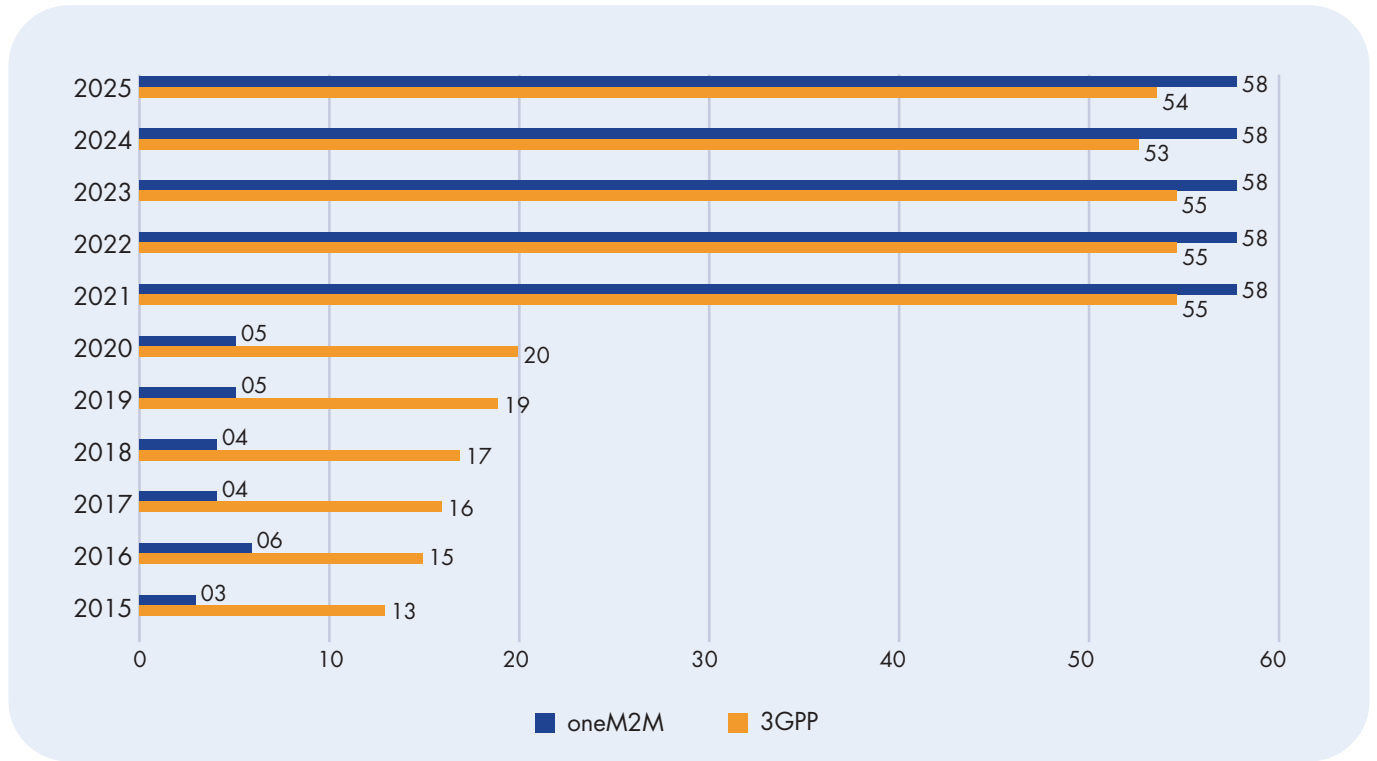
Group	Study Group – Networks	Study Group – Services & Solutions
No. of Technical Reports Published	13	141
No. of Technical Standards Published	10,563	226

## Membership

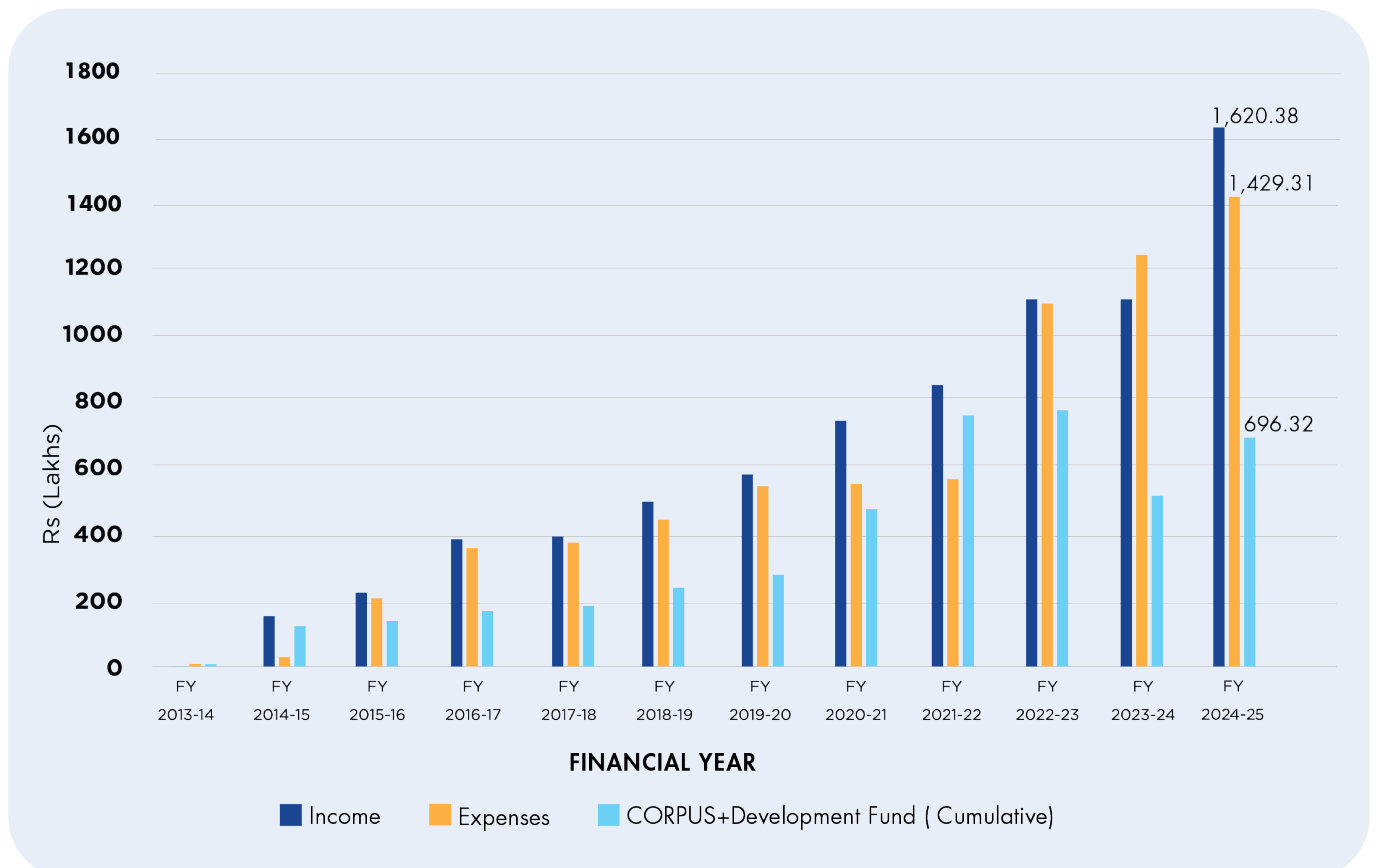


# GLOBAL FORUMS PARTICIPATION

## Membership in Global Projects



## Financials



# Partnerships & ALLIANCES



## MOU's

<b>6G Brasil</b>	Malaysian Technical Standards Forum Bhd (MTSFB), Malaysia	Telecommunications Technology Association (TTA), Korea
<b>6G Infrastructure Association (6G-IA)</b>	ORAN Alliance	Telecommunications Industry Association (TIA), US
<b>Advanced Television Systems Committee (ATSC)</b>	Wireless World Research Forum (WWRWF)	The Institute of Electrical and Electronics Engineers Standards Association (IEEE-SA)
<b>IMT 2030 PG</b>	Taiwan Association of Information and Communication Standards (TAICS) Taiwan	Global Certification Forum (GCF)
<b>Broadband India Forum (BIF)</b>		

## Regional Cooperation:

<b>5G Multilateral MoU</b>	Between IMT 2020 PG (China), 6G-IA (Europe), 6G Forum (Korea) XGMF (Japan), 6G Brasil, and TSDSI for organising '5G Global Event'
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# Organization STRUCTURE

(As on 31<sup>st</sup> March 2025)

General body	
<ul style="list-style-type: none"> <li>Chair</li> <li>Vice Chair</li> <li>Treasurer</li> </ul>	<p>Satish Jamadagni (Reliance jio) Suresh Chitturi (Samsung Research) Rajeev Sharma (BIS)</p>
Governing Council: 21 Elected members + 8 Govt. nominees	Technical Groups
<p><b>Budget &amp; Finance:</b> Rajeev Sharma, BIS Rahul Vatts, Bharti Airtel Ashwani Kumar, NOKIA.</p> <p><b>Rules &amp; Regulations:</b> Vinod Kumar, DoT Suresh Chitturi, Samsung Research.</p> <p><b>Legal &amp; IPR:</b> VJ Christopher, DoT Satish Jamadagni, Reliance Jio.</p> <p><b>Outreach:</b> Kanamariapudi Anuradha, Wipro GE P. Hanumantha Rao, SAMEER.</p> <p><b>Standardisation &amp; Transposition:</b> N.Subramanian, SETS Tripti Saxena, TEC.</p> <p><b>Roadmap:</b> Rajagopalan Rajappa, TATA Elxsi</p>	<p><b>Study Group - Networks</b></p> <p><b>Chair:</b> Prakash R, C-DOT</p> <p><b>Vice Chair:</b> Abhijeet Masal, CEWiT</p> <p><b>Study Group - Services &amp; Solutions</b></p> <p><b>Chair:</b> Mahesh Nayaka Mysore Annaiah, Reliance Jio.</p> <p><b>Vice Chair:</b> Niranth Amogh, Nokia Solutions &amp; Networks India Pvt. Ltd.</p>
<p><b>Standing Committees</b></p>	
Secretariat	
Director General	N Mohanram
Advisors	<p><b>Networks:</b> A K Mittal <b>Services &amp; Solutions:</b> Vijay Madan</p>
Technical Activities Support	<p><b>SGN:</b> Akansha Arora, Sweta Singh <b>SGSS:</b> Rajesh Kapoor, Vishnu Ram OV, Chandrakanta Rathore</p>
MARCOM & Partner Relations	Bindoo Srivastava, Shefali Sinha, Ritika Deo, Tushar Kulshrestha
Operations, Membership Development, IT & Information Management	Kuljit Singh, P K Jaswal, Akash Patel, Anupam Sinha, Asif Iqbal, Harsh Arora, Mukesh Kumar, Niwedita Pathak, Rajesh Vasudev Karbele, Rahul Roy, Shagun Dua, Sushil Kumar Paswan, Vinayak Singh Shekhawat
Strategic Initiatives	<p><b>Membership Development &amp; Start-ups:</b> Amit Gupta <b>IT Strategy Consultant:</b> Udayan Banerjee <b>Strategy Consultant - Government Sector:</b> B M Baveja</p>

# TSDSI MANAGEMENT

(As on 31<sup>st</sup> March 2025)



**CHAIR**  
**Satish Jamadagni**

Senior Vice President,  
Head of Global Standards



**VICE CHAIR**  
**Suresh Chitturi**

Senior Director,  
Head of Technology Standards  
at Samsung Research (Bangalore)



**TREASURER**  
**Rajeev Sharma**

DDG Standardization-I at  
Bureau of Indian Standards

## Governing Council (As on 31<sup>st</sup> March 2025)

### Telecom Network Equipment Manufacturers with Indian product related IPR



**Sreenath  
Ramanath**

Lekha Wireless  
Solutions Pvt Ltd



**Manish  
Kumar Rai**

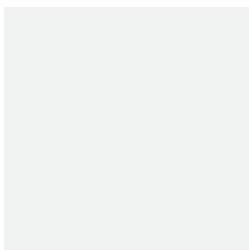
Resonous Technologies

### Domestic Telecom Network Equipment Manufacturers



**Ashwani  
Kumar**

Nokia



**Vacant**

**Telecom Service Provider**



**Rahul  
Vatts**

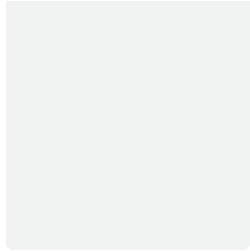
Bharti Airtel Limited



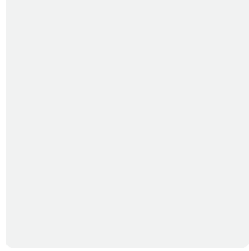
**Satish  
Jamadagni**

Reliance Jio

**Any other Service Providers**



**Vacant**



**Vacant**

**Applications/Solutions Developers/Application Software/Service Platform  
Developers/Digital communication Software Developers**



**Rajagopalan  
Rajappa**

Tata Elxsi



**Kanamarlapudi  
Anuradha**

Wipro GE

## Semiconductor components designer/manufacturing



**Vinosh Babu  
James**

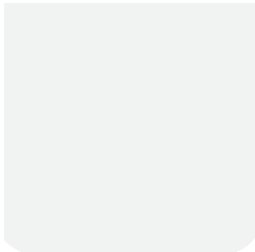
Qualcomm



**Akshay  
Aggarwal**

MediaTek

## Terminal Equipment Manufacturers



**Vacant**



**Suresh  
Chitturi**

Samsung R&D Institute India,  
Bangalore (SRI-B)

## R&D Organizations



**N. Subramanian**

SETS



**P. Hanumantha  
Rao**

SAMEER

**Academic Institutions**



**Kiran Kumar  
Kuchi**

Indian Institute of Technology,  
Hyderabad



**Rohit  
Budhiraja**

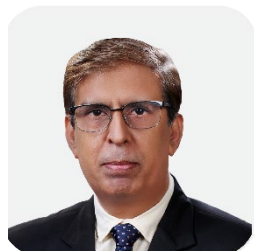
Indian Institute of Technology,  
Kanpur

**Government Department/Statutory or Autonomous bodies/organizations  
set up by the Government or Statutory or autonomous bodies**



**A. Paventhan**

ERNET



**Vivek  
Khaneja**

C-DAC

**Any other entity in ICT enabled product manufacturing/service/solution provider domain**



**Neeraj  
Dhawan**

INVAS

## Nominated Members



**Ashok  
Kumar Jain**

Department of Telecommunications,  
Govt. of India



**VJ Christopher**

Department of Telecommunications,  
Govt. of India



**Vinod  
Kumar**

Department of Telecommunications,  
Govt. of India



**Vishwa  
Mohan**

Department of Telecommunications,  
Govt. of India



**Dindayal  
Tosniwal**

Department of Telecommunications,  
Govt. of India



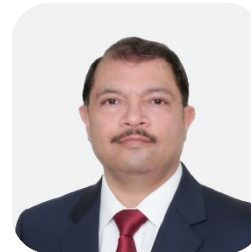
**Tripti  
Saxena**

TEC - Department of  
Telecommunications, Govt. of India



**Sunita  
Verma**

MeitY



**Rajeev  
Sharma**

Bureau of Indian Standards  
(BIS)



**K N Jha**  
Special Invitee

Department of Telecommunications,  
Govt. of India

# CHAIR'S MESSAGE



As we start the 6G journey, it's important to understand the 6G landscape, initial directions and where India stands on key issues. We must also take into cognizance the learnings from 5G deployments with respect to expectations. . Global Open RAN initiatives have not yet secured industry wide acceptability. New intersections are emerging between Communication, Sensing, Compute and Intelligence which earlier were previously unrelated subject areas. Such inter disciplinary technologies coming together opens new opportunities for India. It also triggers innovation and disruption across manufacturing, media & entertainment (including broadcast-broadband convergence), connected vehicles etc.

The Government of India has set bold aspirations for 6G and the onus is now on our industry partners, academia, and R&D institutions to make it happen. IoT, Broadcast, V2X, Drones / HAPS and even sensing will have strong local regulatory and security concerns while being mandated as national standards.. It must be emphasised that today, communication networks are being increasingly leveraged for national security purposes. . For example, security agencies are showing interest in Sensing as a technology for Drone tracking.. Other technologies such as cloud interoperability and portability specifications continue to be enablers for the Digital India ambitions (e.g., smart city programs). Based on TRAI recommendation, DoT

had directed TSDSI to develop Cloud Interoperability and Portability (CIP) standards for India. TSDSI has developed Cloud Interoperability and Portability (CIP) Standards after conducting agap analysis of global CIP standards.

The focus for TSDSI in the coming years will be in taking the global 6G Centre Stage, trying to solve ongoing issues of 5G and the broader goal of enabling digitization of critical sectors in India. TSDSI is a "technology" standards development organization, and the focus shall remain strongly on delivering technology standards.

Seeing the opportunity available, TSDSI has also started to review its processes for developing specifications and deliver specifications for next generation technologies in a phased manner. Our study group leadership is engaging with the membership for success of this effort through coordinated and collective efforts.

In order to drive commoditization and to help "Make in India" initiatives in 5G and 6G, TSDSI should strive for enabling Open Hardware reference designs while relooking at the global Open RAN, Open Platforms initiatives.

I have no doubt that our members and passionate professionals across industry and academia will fuel the above, realise our potential and achieve the bold aspiration set in Bharat 6G Vision.

I take this opportunity to encourage you all to think, breathe and live for taking the centre stage on 6G standards.

Yours Sincerely  
**Satish Jamadagni**  
Chair, TSDSI

# VICE CHAIR'S MESSAGE



I am delighted to connect with you once again as we reflect on another productive and impactful year for TSDSI. FY 2024–25 has been a year of significant progress, marked by strong technical momentum, expanding stakeholder engagement, and focused strategic initiatives.

With sustained efforts and the continued support of our members and partners, TSDSI has further consolidated its role as a key Standards Development Organization on the global stage. During the year, we witnessed encouraging participation across Study Groups and TRIP Forums, with notable outputs in the form of technical standards, reports, and white papers. Participation by a wide spectrum of stakeholders in the TRIP forums such as the Automated Electric Transportation (AERT) and IoT/M2M underline the growing relevance of TSDSI's work in addressing emerging national requirements. TSDSI continued to spearhead creation of awareness towards standards-driven research supporting India's objective of assuming a leadership position in the global standards arena. During the year, TSDSI promoted the awareness through dedicated sessions and active participation in leading research conferences, including IEEE ANTS, COMSNETS, and NCC.

TSDSI actively supported the Network of Women initiative at WTSA 2024 and organized a Round Table on "Women in Standards" in March 2025.

These efforts reflect our commitment to encouraging balanced and inclusive participation in the standards development process.

TSDSI also continued to enhance India's engagement with global standards bodies by regularly hosting 3GPP Working Group meetings in the country. Such initiatives not only facilitate wider domestic participation by reducing logistical barriers but also strengthen interaction with international experts, thereby increasing India's visibility and influence in global standardization. Further, our active participation in PCG meetings has been recognized by our global partners and helping our overall engagement in 3GPP.

Collaborative outreach was further strengthened through the hosting of the 11th 5G Multilateral MoU meeting, facilitating cross-regional discussions on standardisation and deployment aspects of AI and cloud technologies in 5G and 6G.

As global engagement in 6G gains momentum, TSDSI is focusing on specific segments of 6G where our members are doing innovative work, enabling preparedness for substantive contributions to ITU and 3GPP.

Overall, I am pleased with the steady advancement of TSDSI across technical, strategic, and outreach dimensions. I extend my sincere appreciation to all members, contributors, partners, and the Secretariat for their continued dedication and support in strengthening TSDSI's role and stature in the global standards landscape. Together, we look forward to building on this strong foundation in the years ahead.

Yours Sincerely

**Suresh Chitturi**

Vice Chair

# DIRECTOR GENERAL'S MESSAGE



Over the past year, TSDSI has continued to strengthen its presence in the global and national telecom standards ecosystem through impactful technical contributions, sustained international engagement, and active support to India's 6G vision.

During this period, TSDSI published important standards namely A Generic Relay Architecture for 5G & Beyond, Standardization of common data payload for adaptive traffic control system and other Intelligent Transportation system, Reconfigurable Intelligent Surfaces (RIS), and Cloud Interoperability and Portability (II & III). The adoption of the Generic Relay Architecture Standard by Telecommunication Engineering Centre (TEC) as a National Standard reaffirms the growing relevance of TSDSI standards to the ICT ecosystem in India. We also released seven new Technical Reports covering critical emerging domains including Metaverse system requirements, user identity privacy enhancement, network encryption mechanisms, oneM2M for smart agriculture, semi-autonomous telerobotics, AI/ML security for 5G-6G, and location privacy.

TSDSI continued to represent India effectively in global forums. Our members made significant contributions in 3GPP towards 5G Advanced and are continuing to drive efforts towards 6G. We contributed to the ITU-R report on Technical Performance Requirements of IMT-2030 as well as Evaluation of IMT-2030 technologies.

TSDSI hosted 3GPP Working Group meetings in Hyderabad (CT WG) in May where 43 experts from 10 Indian IMs participated and contributed 99 proposals. There was a 56% improvement in participation from Indian IMs for these meetings compared to the two previous meetings held outside India. We also hosted the SA WG meetings in October 2024 where 78 experts from 19 Indian IMs participated and contributed 180 proposals. There was a 46% improvement in participation from Indian IMs for these meetings compared to the two previous meetings held outside India. Thus, hosting of global meetings in India has helped Indian organizations to be part of these meetings at much lower cost compared to attending the meetings abroad.

Through the WTSA Task Force, TSDSI supported national contributions to key resolutions at WTSA 2024 hosted by DoT in New Delhi in October 2024 and facilitated member participation in associated initiatives including the ITU WTSA Hackathon – AI Bharat 5G/6G Sandbox, ITU Kaleidoscope Conference, and Network of Women activities. Director General, TSDSI and other Secretariat leaders held bilateral Meetings with leaders of ATU, ETSI, MTSFB, TTC, TTA and ITU-T TSB on the sidelines of the WTSA 2024 event. Additionally, TSDSI hosted the 68th Technical Plenary meeting of oneM2M in hybrid mode in February 2025 in New Delhi.

During the year, two whitepapers, one on Quantum Communication Technologies and the other on Insights into Smart City Solutions were published. As part of our ongoing initiatives to promote standardization in RIS, a standard which we published this year, we organised a dedicated workshop jointly with WWRF in September 2024. TSDSI also organised the 11th 5G Global Event in August 2024 in collaboration with leading international 5G/6G organizations, focusing on

the theme “Unlocking the Future: Convergence of AI, Cloud, and Networks in Telecom.”

The membership development team’s efforts resulted in 13 net additions to corporate membership during the year, including both new enrolments as well as upgrades from the observer category.

Our flagship annual conference, TSDSI Tech Deep Dive (TTDD) 2024, conducted in July, brought together 70 distinguished speakers and 589 unique delegates to deliberate on the theme “Realizing the 6G Vision: Societal Needs, Usage Scenarios & Technologies.” The strong participation underscored TTDD’s growing stature as a highly sought-after forum for deep-dive discussions on next-generation technologies.

TSDSI was honoured to induct Mr K. Rajaraman, Former Secretary (Telecom), into TSDSI Hall of Fame in the Champions Category. TSDSI also recognised outstanding member contributions through the TSDSI Outstanding Technical Contributions (OTC) Awards for FY 2023–24. Heartiest congratulations to Dr Rashmi Kamran Bhatia (IIT Bombay), Ms Shwetha Kiran (IIT Bombay), Dr Paventhan Arumugam (ERNET India), and Mr Sandeep Agarwal (C-DOT) on being conferred these awards.

Elections for the 6th Governing Council were successfully conducted in July 2024, along with the elections for SGN Vice Chair and the leadership of the SGSS working groups. The 6th Governing Council assumed office in September 2024. I congratulate Mr Satish Jamadagni on his election as Chair, TSDSI, succeeding Mr N.G. Subramaniam after his two successful terms and Mr Suresh Chitturi for continuing in his role as Vice Chair, TSDSI. I also extend my congratulations to Abhijeet Abhimanyu Masal on his election as SGN Vice Chair. I further congratulate Mr Saurabh Khare, Dr. A. Paventhan, Mrs Roopa C., on their elections as Chairs, and Mr Sridhar C. V., Mr Abhijan Bhattacharyya, and Mrs Gomathy Padmanabha on their election as Vice Chairs of the SGSS Working Groups.

TSDSI remains committed to advancing India’s

interests in global standardization, fostering innovation, and building a robust ecosystem for next-generation communication technologies.

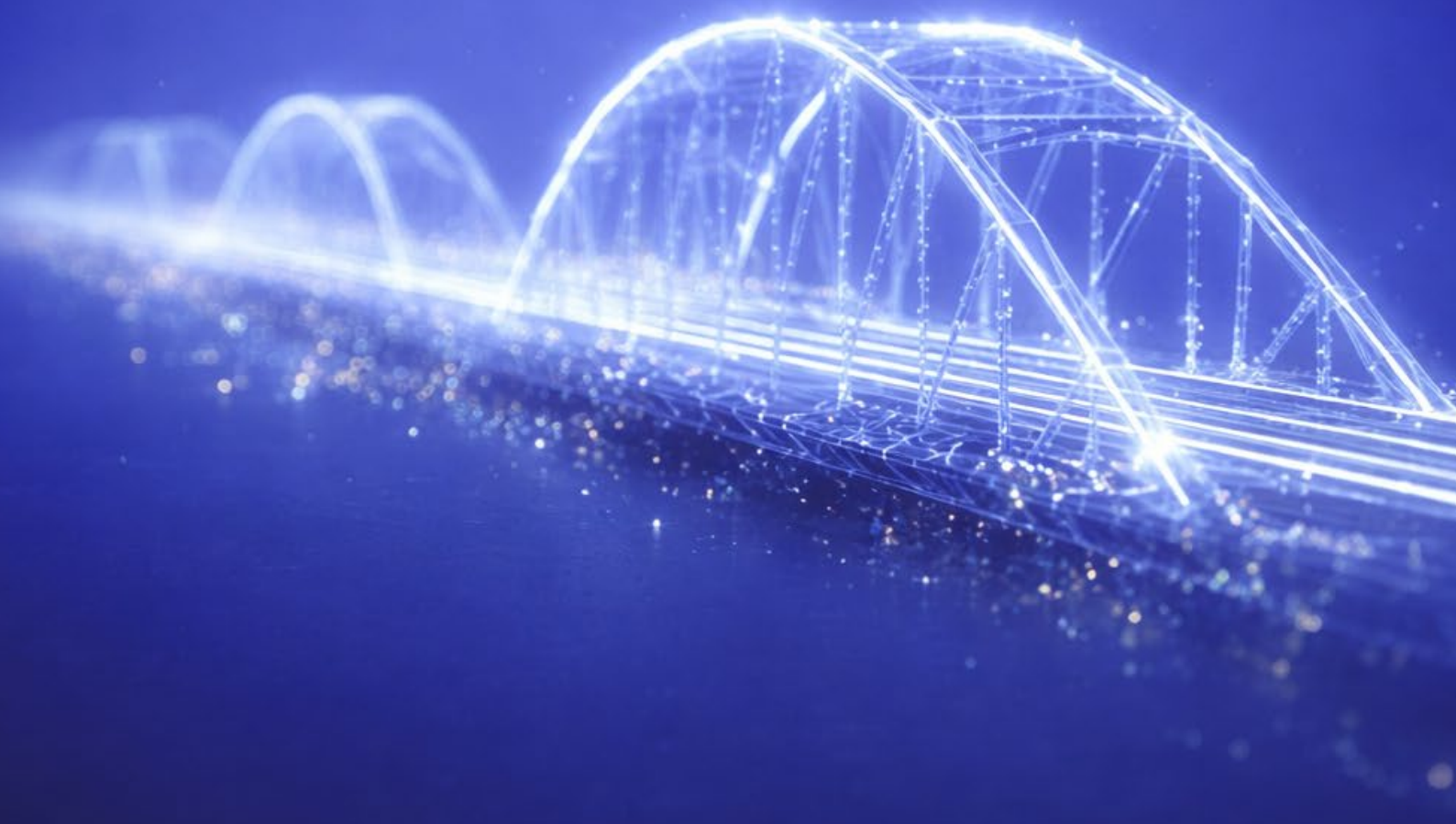
I extend my sincere appreciation to all members, partners, experts, and Secretariat staff for their continued support and dedication.

Yours Sincerely

**A K Mittal**

Director General

# The Year Gone by



# Technical ACTIVITIES

## Standardisation

Following Standards were published in the reporting period:

### **“A Generic Relay Architecture for 5G and Beyond” (TSDSI STD 5002 V1.0.0):**

This Standard defines a new 5G relay architecture using 3GPP elements featuring gNodeB Centralized Unit (gNB-CU) and Distributed Unit (DU) split for relay nodes serving User Equipments (UEs) via NR-Uu interface. The same can be viewed [here](#).

### **“Methods and Interface Design for RIS-assisted Communication Systems” (TSDSI STD 5003 V1.0.0):**

This standard specifies the architecture, interfaces and mechanisms in a RIS-assisted communication system Intelligent Reflecting Surface consists of multiple meta-elements that are reflective in nature and can be used to direct the RF signal in a desired direction through appropriate technical measures. Introducing RIS in a network helps to solve coverage issues at low cost. Other applications comprise interference management, joint sensing and communication, energy saving, etc. The same can be viewed [here](#).

### **“Standardization of common data payload for adaptive traffic control system and other Intelligent Transportation system” (TSDSI STD 5004 V1.0.0):**

The Standardization of Common Data Payload for Adaptive Traffic Control Systems and Other Intelligent Transportation System Products proposes an ontology for smart city use cases, facilitating the integration of multi-vendor products and dashboards deployed in smart cities. For different IoT products, such as traffic controllers used in smart cities and integrated with smart city dashboards, a standardized common service layer needs to be connected to multivendor traffic controllers and other intelligent transportation system products. Currently, such standardization of data payloads is not available in India, and it is expected to facilitate the integration of different intelligent transportation system products for comprehensive deployment scenarios. This standard may also have applications for global contributions. This would help eliminate compliance delays in the deployment of various intelligent transportation system applications for public use in smart cities. The same can be viewed [here](#).

### **“Cloud Interoperability & Portability Stage III” (TSDSI STD 5005 V1.0.0):**

This standard includes architecture, use cases, call flows, data models, and APIs, fulfilling Stage III requirements. The same can be viewed [here](#).

### **“Cloud Interoperability & Portability Stage II” (TSDSI STD 5001 V1.1.0):**

This CIP standard is an updated version of standard Stage II (TSDSI STD 5001 V1.0.0) It includes relational changes to enhance document workflow and with new annexures. The same can be viewed [here](#).



Following Standards were adopted as TSDSI Standards in the reporting period:

### ATSC 3.0 Standards:

TSDSI had earlier adopted 19 specifications corresponding to ATSC 3.0 standards in 2022. TSDSI has now adopted updated versions of these specifications that were revised by ATSC. Additionally, 3 new ATSC specifications have also been adopted. The adopted standards can be viewed at the link [here](#).

Following Technical Reports were published in the reporting period:



Study on system requirements related to Metaverse use cases in mobile network ([TSDSI TR6031 V1.0.0](#))



Enhancement of the Privacy of User Subscription Identity in Future Networks ([TSDSI TR6032 V1.0.0](#))



Network Security Encryption Mechanism ([TSDSI TR 6033 V1.0.0](#))



Study on the Usage of oneM2M for Smart Agriculture End-to-End Monitoring Use Case in the Indian Context ([TSDSI TR 6034 V1.0.0](#))



Study on Semi-Autonomous Collaborative Telerobotics ([TSDSI TR 6035 V1.0.0](#))



Study on the security aspects of Artificial Intelligence (AI)/Machine Learning (ML) models for 5G and 6G applications ([TSDSI TR 6036 V1.0.0](#))



A location privacy-preserving scheme to mitigate the authentication relay attack under False Base Station in 5G and 6G ([TSDSI TR 6037 V1.0.0](#))



TSDSI members initiated/carried out technical activities in the following areas:

## Study Group Networks

Area	Study Items	Work Items
<b>6G</b>	<p>Study of waveforms for B5G communication systems (NIP288-SI96)</p> <p>Defining qualitative metrics for 6G KPI definitions (NIP295-SI97)</p> <p>Study on channel modeling and physical layer requirements for near field communication in 6G networks (NIP312-SI107)</p> <p>Joint communication &amp; sensing in 5G networks &amp; beyond (NIP308-SI108)</p> <p>Study of Multiple Access for 6G communication (NIP322-SI110)</p> <p>TSDSI Contribution to ITU-R IMT-2030 TPR (SI147)</p> <p>Open interfaces for RIS-assisted communication (SI148)</p> <p>Study of Autonomous Reconfiguration of RIS for Reduced Control Overhead (SI149)</p> <p>Evolution Aware Solutions for LoRa Deployment (SI150)</p> <p>Simulation Environment and benchmarking for RIS performance Evaluation (SI151)</p> <p>Use case study for RIS empowered end-to-end applications for future smart villages and unplanned urban areas in developing nations (SI153)</p>	<p>Coreless RAN (W11-NIP314)</p> <p>AI Architecture for RAN (SON/RRM) (W11-NIP313)</p> <p>New Architecture for 6G Communication Systems (W1-NIP290)</p> <p>Update to TS on Methods and interface design for RIS-assisted communication systems (W11-NIP367)</p> <p>Positioning standard for 6G using Multi-GNSS including NavIC in India (W11-NIP388)</p>
<b>5G Enhancements</b>	<p>Handling of Diverse Services in Future Mobile Networks (SI130)</p> <p>System Requirements for NR based Future Railways Mobile Communication System (FRMCS)(SI129)</p>	<p>Functional Split and Fronthaul Interface in FBS Driven C-RAN for 5G and Beyond (W11-NIP270)</p>

## Study Group Networks

Area	Study Items	Work Items
	<p>Functional Split Selection &amp; Transition for FBS-assisted C-RAN Operation in 5G and Beyond (SI127)</p> <p>Minimum Performance Spec for Mobile Devices (SI122)</p> <p>Role of Edge Intelligence in a 6G Communication Network (SI121)</p> <p>Technical Report on Network Energy Saving functionality of the 5G-Advanced system and its Evolution (SI119)</p> <p>Unified network slicing model (NIP316-SI109)</p> <p>Dynamic joint deployment of SDN Controllers and Hypervisors (NIP251-SI80)</p>	
<b>Spectrum Studies</b>	Study of the channel model for integrated sensing and communication network (SI128)	
<b>Wireless Backhaul</b>	Characterization of E-band for point-to-multipoint backhaul (SI117)	Characterization of E-band for 4G/5G Backhaul & Rural Broadband (WI1-NIP258)
<b>Broadcast Offload</b>		<p>Extension of Broadcast Offload (WI1-NIP226)</p> <p>5G extensions for Broadcast offload (WI1-NIP386)</p>
<b>VLC</b>	<p>Solar Panel Based Optical Wireless Communication (SI120)</p> <p>Enhancement to media access control (MAC) protocols for visible light communication (VLC) in indoor scenarios (SI118)</p>	
<b>Quantum Communications</b>	<p>Trusted node mapping for diverse Quantum channels (SI144)</p> <p>Under water QKD (SI145)</p>	
<b>Others</b>		Profile for Smart Meters (WI1-NIP358)

## Services & Solutions Study Group

Area	Study Items	Work Items
<p><b>Security</b></p>	<p>Study on Security Enablers for 6G (SI111)</p> <p>5G and 6G Beyond Network Security Architecture to support Multilevel End-to-End User Plane Security (SI115)</p> <p>AI/ML-based Security Implementation in 6G Wireless Communication Systems (SI133 NIP349)</p> <p>Interoperability of Multi-vendor QKD Hardware using SDN for 6G (SI142 NIP366)</p> <p>PQC in embedded system to secure the connected devices for 6G (SI146 NIP373)</p>	
<p><b>Application Layer</b></p>	<p>Research directions and Collaboration on Intelligent Transport Systems Communication Standards (SI112)</p> <p>Enablement of common payload for Agricultural Automation Solutions (SI113)</p> <p>Slice Identification in 5G RAN and Core for End-to-End Secure and Resilient Slice Services (SI134 NIP352)</p> <p>Suggested recommendations for sustainable 6G networks (SI135 NIP353)</p> <p>Recommendations for use of Dynamic AI/ML models for self-sustainable V2X applications in 6G Networks (SI137 NIP354)</p> <p>Public Safety Use Cases for 6G Networks (SI143 NIP369)</p>	<p>A local language repository as an enabler for financial workflows (WI1-NIP279)</p> <p>Integrated communication and sensing at the Application level (WI-NIP310)</p>

Area	Study Items	Work Items
<b>Services Architecture &amp; Framework</b>	Enablement of common edge connectivity for public utility purposes (SI101)	
	Cost model considering network assets and utilization (SI123)	
	Study on further enhancements on RBSA (Rural Broadband Service Architecture) (SI125)	
	Study of Carrier Grade Linux Specification (SI126)	RBSA – Operational Framework and Marketplace Design (W11-NIP328)
	Use cases for rural connectivity (SI138 NIP355)	Architecture to support tactile applications with edge intelligence over 5GS (W11-NIP282)
	Framework for AI/ML operation splitting in 6G context (SI136 NIP350)	Technical standard and regulation for autonomous driving system (W11-NIP374)
	Easing Operations using ML/AI solution for 6G and beyond (SI139 NIP359)	
	Service requirements and reference architecture for Railways Communications using 5G (SI140 NIP361)	
Study on Network Capabilities Exposure (SI141 NIP362)		

## Technical Group Meetings:

Technical groups held meetings as per details below:

Date	Meeting	Venue	Participation (Member Organizations)
4-5 April' 24	SG-Services & Solutions	Hybrid (Reliance Jio, Bengaluru/ Online)	70 (30)
4-5 April' 24	SG-Networks	Hybrid (Reliance Jio, Bengaluru/ Online)	69 (26)
8-9 July' 24	SG-Services & Solutions	Online	132 (48)
8-9 July' 24	SG-Networks	Online	33 (68)
26-27 September' 24	SG-Services & Solutions	Hybrid (IIT Madras Research Park, Chennai/Online)	100 (32)
26-27 September' 24	SG-Networks	Hybrid (IIT Madras Research Park, Chennai/ Online)	56 (22)
17-18 December' 24	SG-Services & Solutions	Online	63 (30)
17-18 December' 24	SG-Networks	Online	69 (30)
27-28 March' 25	SG-Services & Solutions	Hybrid (Nokia, Bengaluru/Online)	91 (29)
27-28 March' 25	SG-Networks	Hybrid (Nokia, Bengaluru/Online)	75 (26)

A workshop on 6G Use Case Scenarios, Services and Applications was held following the TP held on 8-9 July'24.

## Liaison Statements

TSDSI received 7 Liaison Requests Statements and sent 7 liaison Requests in the reporting period. A list of the Liaisons can be viewed at link - <https://tsdsi.in/liaison-statements/>

## Pre-Standardisation

2 Whitepapers were released in the reporting period:

1. Whitepaper on **“Standardization Opportunities for Quantum Communication Technologies Standardization Gaps and Demands, Challenges & Opportunities to arise in the Future”** developed under the aegis of the Quantum Communication Trip Forum was released during the TSDSI Hall of Fame Award Ceremony on 2 January 2025. The paper explores technology advancements, emerging use cases, regional customizations, implementation challenges and identifies standardization gaps. It provides recommendations on standardization activities, open sourcing, research and IP development.
2. Whitepaper on **“Innovations for Sustainable Urban Living: Insights into Smart City Solutions”** developed by the IoT/M2M TRIP Forum was released in the oneM2M Stakeholders’ Day conference on 12 February 2025. It provides valuable insights into the role of IoT/M2M technologies in shaping sustainable urban infrastructure and smart city development.

## Post-Standardisation

Telecommunication Engineering Centre (TEC) Adopted TSDSI Standard for An Advanced Relay System for 3GPP 5G and Future Networks:

TEC adopted TSDSI developed standard ([TSDSI STD 5002 V1.0.0](#)) on “A Generic Relay Architecture for 5G and Beyond” as a national standard after public consultation. This standard addresses the existing limitations while utilizing existing 3GPP defined network interfaces with minimal changes by making it more scalable and flexible with generic ‘plug-and-play’ architecture having the following key features:

- Gives flexibility to use different radio technologies on access and backhaul links across two interfaces of the relay node.
- Supports multi-hop relays and mobility of UEs and relay nodes and UAV based relays

Ease of deployment, faster and reduced overall cost for rural broadband and Public Protection and Disaster Relief (PPDR) applications are some of the benefits of this standard.

It can be viewed on the TEC website at the link [here](#).



# Strategic Initiatives

**TSDSI Technology Roadmap Item Proposal (TRIP) Forums** have been constituted to carry out discussions with stakeholders in select areas with the objective of recommending topics that can potentially be taken up for developing standards within TSDSI. Following TRIP forums were active during the reporting period:

## Automated Electric Road Transportation TRIP Forum

This forum is deliberating on the development of a standardized reference architecture for automated electric vehicles (EVs) in dedicated lanes to enhance safety, address traffic congestion, and improve road utilization through market-driven solutions. It will also address various use case scenarios for automated electric vehicles in general, e.g. platooning, road and traffic object monitoring, automated toll vehicle tracking, traffic signage detection, emergency and warning scenarios etc. For each scenario current gaps in standardization, technology and infrastructure will also be assessed. Technology implementation aspects like lateral control, guided navigation control, location granularity (NavIC), emergency handling technologies as well as technology stacks necessary to support various use cases will also be studied and suggestions to fill the gaps through standardisation are proposed to be provided.

## IoT/M2M TRIP Forum

This forum is working with stakeholders from various verticals such as Fintech, Agri-Tech, Healthcare, and Smart Cities for assessing readiness of the current digital infrastructure, to come out with recommendations for a suitable roadmap for future deployments. The forum is also studying the global standards landscape including oneM2M for this purpose. It has published the whitepaper on Smart Cities as mentioned in section on Pre Standardisation.

Tenure of the TRIP Forums were extended by the Governing Council, in its 51<sup>st</sup> Governing Council Meeting held on 25 March 2025, as follows:

TRIP Forum	Extension Date
Automated Electric Road Transportation TRIP Forum	June 2025
IoT-M2M TRIP Forum	June 2025

## Global SDO Co-ordination Group:

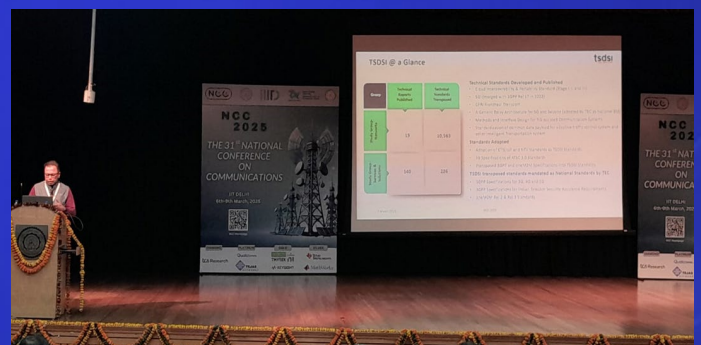
The Governing Council in August 2023 had approved the formation of Global SDO Co-ordination Group with the objective of providing dedicated and focused attention to enhance the contributions in Global SDOs. In this reporting period, the sub-groups namely for 3GPP, ITU-R, ITU-T and oneM2M were constituted.

## Test & Certification Task Force:

The Test & Certification Task Force was formed to study the current status of Test and Certification infrastructure in the country, project future requirements as we gear up for 5G and beyond technologies and recommend role of TSDSI in enabling the same, with a special focus on IoT (like oneM2M) testing. The Task Force continued its activities in the reporting period. Its tenure was extended by the Governing Council, in its 51<sup>st</sup> Meeting held on 25 March 2025, till 30 June 2025.

## Standards Driven Research:

TSDSI has been spearheading standards driven research in the Indian ecosystem in order to channelise research to generate IP which can be contributed into standards, so as to facilitate India taking a leadership position on the global standards arena and also monetization of IP. TSDSI regularly conducts awareness sessions on this concept in the community, including at research conferences such as IEEE ANTS, COMSNETS and NCC.



**SDR NCC 2025**

Invited Talk/Workshop	Date	Details
SDR@IEEE ANTS 2024	18 December 2024, IIT Guwahati	Bindoo Srivastava, Director-MARCOM and Partner Relations, TSDSI delivered a talk on "Achieving Leadership in Standards by Leveraging Research"
SDR@COMSNETS 2025	7 January 2025, Bengaluru	A Standards Driven Research workshop was conducted in the COMSNETS 2025 conference on 10 January 2025. It discussed key developments in global Standards Development Organizations (SDOs), including ITU, 3GPP, IEEE, and ISO/IEC. The workshop focused on ongoing deliberations in Technology Working Groups (WGs) and the roadmap for future standards, including 6G and 3GPP Rel-19 and beyond. Thirteen (13) contributions from TSDSI Members were presented in the form of oral papers and posters.
SDR@NCC 2025	7 March 2025, IIT Delhi	TSDSI member expert, Mr Anindya Saha (Tejas Networks) delivered a talk on Standards Driven Research in the plenary session

### Women in Standards:

In the age of Artificial Intelligence (AI) and digitally driven society, gender diverse participation in the standardization process is imperative to ensure balanced, accountable, and bias-free technology development. Women bring valuable perspectives to development of standards as users of technology and as innovators. However, despite significant advancements, participation of women in developing technology standards remains disproportionately low as compared to men.



TSDSI organized an online Round Table on "Women in Standards" on 11 March 2025 with the objective of promoting participation of women in standards development. A key finding was that even though organizations with higher female representation in leadership roles serve as exemplars, systemic and institutionalized practices are still lacking. It emphasized the need for future technologies to be accountable and inclusive. It recommended mentorship programs led by successful women in the field to support emerging professionals and educational courses on Standards development processes and standards bodies such as TSDSI and ITU.

TSDSI also played a pivotal role in garnering participation in the [Network of Women](#) event in **WTS 2024**. **Neha Satak**, TSDSI member expert participated in the panel on "**Bridging the Gender Gap: in STEM and Standardization**" & **Vishnu Ram OV** from TSDSI Secretariat participated in the panel discussion on "**Standards for Inclusive AI**" where he highlighted the need for Inclusive AI.

### Promoting Standardization Activities in Reconfigurable Intelligent Surfaces (RIS):

TSDSI developed a standard on Reconfigurable Intelligent Surfaces (RIS) in August 2024. Following activities by way of workshops and invited talks were conducted during the reporting period in order to promote the standard:

#### TSDSI-WWRF RIS Workshop:

TSDSI conducted an online workshop on [Reconfigurable Intelligent Surfaces \(RIS\) on 17 September 2024](#) in partnership with Wireless World Research Forum (WWRF). The workshop provided an overview of the standard published by TSDSI, titled "Methods and Interface Design for RIS-assisted Communication Systems". It featured keynotes by expert speakers including Prof. Arzad Alam Kherani (Chair of the TSDSI working group on Application Layer Standards) and Prof. Angeliki Alexiou (Chair of the WWRF Working Groups on Radio Communication Technologies and High Frequency Radio Technologies).

#### Workshop on Reconfigurable Intelligent Surfaces (RIS):

TSDSI in partnership with **IIIT Bangalore COMET Foundation**, conducted a workshop on RIS on **17 March 2025** in the IIIT Bangalore campus in hybrid mode to discuss the **TSDSI RIS Standard**, the COMET RIS Testbed, and exchange views among academia, industry, and R&D on the topic. Comet Foundation has established a Test Bed on RIS that is compliant to the recently published TSDSI Standard on RIS. Presentations made in the workshop can be viewed at the link [here](#).

**TSDSI member expert, Prof. Arzad Alam Kherani (IIT Bhilai)** delivered a talk on TSDSI's activities on Reconfigurable Intelligent Surfaces (RIS) and other technical areas during the workshop on "**Reconfigurable Intelligent Surfaces for 6G**" organized by **VNIT Nagpur** on **26 March 2025** with support from MeitY.

## Workshop on Reconfigurable Intelligent Surfaces (RIS)



# Strategic Events:

## IMC 2024:

Satish Jamadagni, Chair, TSDSI joined a panel discussion in [International 6G Symposium](#) which was supported by TSDSI, held alongside WTSA 24 and IMC24, where he emphasized the need to focus on end user use case scenarios (B2C and B2B) rather than solely on “network optimization aspects”.

While participating in key panel discussions in the [IMC 2024](#), Satish Jamadagni reiterated the importance of aligning academia and industry while also securing the supply chain early on for 6G technologies, including semiconductors. He also noted that Standardization bodies will need to address issues related to “quality” in 5G-A and 6G that will arise due to the multimodality of data, with machines serving as both generators and consumer of data and emergence of assisting technologies such as sensing and Intelligent Reflecting Surfaces (IRS).

## IMC 2024 - 6G Symposium



## 3GPP CT RAN SA #107 TSG Plenary Meetings



# Awards and Recognitions

## TSDSI Hall of Fame Awards 2024



### TSDSI Hall of Fame Awards 2024 (<https://tsdsi.in/hall-of-fame/>)

TSDSI inducted Mr K Rajaraman, former Secretary Telecom, in its Hall of Fame in the Champions Category. This award was conferred by Prof. Arogyaswami J. Paulraj, Prof (Emeritus), Stanford University, in the presence of Mr S. Krishnan (Secretary, MeitY), Prof. Bhaskar Ramamurthi (Prof Emeritus, IIT Madras), Mr Satish Jamadagni (Chair, TSDSI), and Mr Mohanram Natarajan (DG, TSDSI) in the TSDSI Hall of Fame awards ceremony held on 2 January 2025.

Mr Rajaraman's notable contributions to India's standardization landscape include:

- Integration of the TSDSI 5Gi Standard with 3GPP 5G (Release 17) standards enabling the inclusion of Indian IPR in global 5G standards. It marked the first time a TSDSI standard was adopted as a global standard, thereby enhancing the visibility and prestige of TSDSI
- Advancing India's leadership in 6G vision and standards, ensuring a strong presence in ITU discussions, particularly for IMT-2030 (6G)
- Championing the development of an indigenous telecom equipment ecosystem for 5G in India

Speaking on the occasion, Mr Rajaraman emphasized the need to scale up the number of PhDs in Deeptech areas, adopt a strategic focus on research in both public and private sectors, establish standardization cells within organizations, and ensure greater participation in formal standards development activities within Global Standards Development Organizations. He remarked, "The path from academic research to product development to the development of Standards is a relay race, for which a collaborative approach is essential."

In his address, Prof. Paulraj highlighted that leadership in today's technology-driven world requires building revenue-generating product companies with innovation at their core. He added "AI is a revolutionary technology that must be invested in strategically by India".

**TSDSI Outstanding Technical Contributions Awards FY23-24**  
 (<https://tsdsi.in/tsdsi-outstanding-technical-contributions-award/>)

TSDSI Outstanding Technical Contributions Award has been instituted to recognise the efforts of individuals towards contributing to and/or championing a technical activity within TSDSI during the year (April through March). The efforts may either have given desired results or have the potential of yielding significant results.

Awardees for the financial year 2023-24, Dr Rashmi Kamran, Mr Sandeep Agarwal, Ms Shwetha Kiran and Dr A Paventhan, were felicitated on 19 July 2024 by Ms Tripti Saxena, Sr. DDG and Head, Telecommunication Engineering Centre, in the concluding day session of TSDSI Tech Deep Dive (TTDD) 2024 Conference in New Delhi. TSDSI is also grateful to the jury of experts for selecting the awardees.

**Awardees of the Technical Contributions Awards FY23-24**



# Awards and Recognitions



**Dr. Rashmi Kamran Bhatia**  
IIT Bombay



**Ms Shwetha Kiran**  
IIT Bombay



**Dr. Paventhan Arumugam**  
ERNET India



**Mr Sandeep Agrawal**  
C - DOT



# Organizational Matters

As per the Rules and Regulations of TSDSI, Governing Council is constituted for a two-year term through elections. The term of the 5<sup>th</sup> Governing Council came to an end in September 2024. Elections for the 6<sup>th</sup> Governing Council of TSDSI were held on 31 July 2024.

Elections for the Chair and Vice chairs of the SGSS working Groups and vacant position of Vice Chair of SGSS were also conducted simultaneously.

Mr Pushpendra Singh, (Principal General Manager, Regulations and VAS, BSNL) served as the Election Officer.

Mr Satish Jamadagni, Senior Vice President - Head of Global Standards, Reliance Jio and Mr Suresh Chitturi, Senior Director, Standards Research Group, Samsung R&D Institute were elected unopposed as the Chair and Vice Chair respectively.

The list of elected members of the GC and Technical groups is provided in the section on TSDSI Management and Annexure 1 respectively.

## Operations:

Subsequent to the formation of the 6<sup>th</sup> GC, the standing committees were reconstituted. Composition of the GC Standing Committees as on 31 March 2025 is provided at Annexure 4.

List of Governing Council and General Body Meetings held in the reporting period is given below:

Meeting	Date	Mode
47 <sup>th</sup> GC	15 May 2024	Online
48 <sup>th</sup> GC	14 Jun 2024	Online
49 <sup>th</sup> GC	20 Sep 2024	Online
50 <sup>th</sup> GC	8 Nov 2024	Hybrid (R&I Park, IIT Delhi/Online)
51 <sup>st</sup> GC	25 Mar 2025	Hybrid (R&I Park, IIT Delhi/Online)
22 <sup>nd</sup> GBM	15 May 2024	Online
23 <sup>rd</sup> GBM	8 Nov 2024	Hybrid (R&I Park, IIT Delhi/Online)
24 <sup>th</sup> GBM	25 Mar 2025	Hybrid (R&I Park, IIT Delhi/Online)

### Important decisions taken in these meetings are as follows:

- M/s Hingorani M & Co. were appointed as TSDSI's new Statutory Auditor.
- TSDSI membership revised fee structure for the period FY 24-25 and FY 25-26 was approved by the General Body in its 22<sup>nd</sup> meeting. Revision in membership Fee for Start-Ups with a turn-over less than or equal to INR 5.0 Crores in the previous fiscal years was ratified by the GBM in its 23<sup>rd</sup> meeting held on 8 November 2024. The membership fee structure is given in Section on Membership.
- Budget for FY 2024-25 was approved in the GBM 22.
- The Audited Accounts Report FY 23-24 approved by the GBM 23.
- The Annual Report for FY 2023-24 was confirmed and adopted in GBM 23.

Following changes were effected in the Composition of the 5<sup>th</sup> Governing Council (that was valid till Sep 2024) during the year:

GC Member	Change in Representative
NEC Corporation India Pvt Ltd	Relinquished membership of TSDSI in FY 24-25 hence exited from the GC
TATA Communications	Ms Alka Asthana replaced Mr Neeraj Dindore in May 2024
WiSiG Representative	Mr Shravan Kumar Gampa replaced Sai Dhiraj in June 2024
DDG SRI nominated Member	Mr Vinod Kumar replaced Mr Robert Ravi in July 2024
DoT nominated Members	Mr Ashok Kumar Jain (DDG-IP) replaced Mr Subodh Saxena (DDG-IC, DoT) in May 2024. Mr P.K Singh replaced by Mr Vishwa Mohan (DDG-Security Assurance, DoT) in May 2024.

The following changes were effected in the 6<sup>th</sup> Governing Council during the reporting period:

GC Member	Change in Representative
MeitY Nominated Member	Mr Sudhir Marwaha replaced by Ms Sunita Verma in March 2025

A web portal has been created for automated processing of visa support for 3GPP and other meetings being hosted by TSDSI in India.

## Membership

There were 13 net additions to corporate membership (including new and conversions from observer category). Observer membership period for 16 organizations lapsed.

Total member strength as on 31 March, 2025 stood at 125. List of Members is provided in Annexure 3.

### Membership Fees:

The TSDSI Membership Fee structure was revised with effect from 1 April, 2024 as described in the Operations section of this report. It comprises a one-time admission fee, and a recurring Annual Membership Fee. The same is outlined in the table below:

Eligibility Criteria for Fees	Fee Category	Admission Fee (₹ in lakhs)	Annual Membership Fee (FYs 2024 - 26) (₹ in lakhs)
Corporate	1		
i) INR 10 Crore > Annual Turnover <= INR 100 Crore	1A	2.00	6.10
ii) INR 10 Crore > Annual Turnover <= INR 1000 Crore	1B	2.00	8.10
iii) Annual Turnover > INR 1000 Crore	1C	2.00	14.10
iv) R&D organizations, Test labs	1D	2.00	6.10
V) Sub Cat a : INR 5 Crore > Annual Turnover <= INR 10 Crore	1E (a)	1.00	4.60
Sub Cat b : Annual Turnover <= INR 5 Crore	1E (b)	0.00	0.10
Vi) Academic institutions, Not-for-profit R&D organizations Govt Public Sector Undertaking (PSU)	2	1.00	4.60
Associate (Indian Entities)	3	1.00	4.60
Associate (Foreign Entities)	4	USD 1600	USD 6500

# Global Standards Activities:

## ITU-R

### WP 5D

TSDSI delegation attended 3 meetings of ITU-R WP5D during the reporting period:

Meeting No. and Participation	Contribution
ITU-R WP5D #46 (25 June to 2 July 2024) 6 TSDSI Delegates attended the meeting.	2 contributions submitted. <ul style="list-style-type: none"> <li>Based on SWIC 1094 "TSDSI views on the working document towards a preliminary draft new Report ITU-R M. [IMT 2030.TECH PERF REQ].</li> <li>TSDSI views on the working document towards a preliminary draft new Report ITU-R M. [IMT 2030.EVALUATION]".</li> </ul>
ITU-R WP5D #47 (3-11 October 2024) A total of 9 TSDSI delegates registered for the meeting, with 6 attending in person.	A contribution regarding unwanted emissions characteristics for IMT 2020 was submitted.
ITU-R WP5D Meeting #48 (4 to 13 February 2025) 8 TSDSI member representatives attended the meeting.	TSDSI submitted a contribution on IMT-2030 minimum technical performance requirements in the meeting.

### WP4B#56:

ITU-R WP4B#56 was held from 16 to 22 October, 2024 in Geneva, Switzerland. TSDSI submitted transposition references for 3GPP specifications to ITU-R WP4B towards recommendation M. [IMT-2020 SAT.SPECS].

## ITU-T

### WTSA 2024

The World Telecommunication Standardization Assembly (WTSA-24) was hosted by the Department of Telecommunications (DoT) in New Delhi from 15 to 24 October, 2024. TSDSI members contributed to several resolutions for the assembly through the Telecom Engineering Centre (TEC).

**Global Standards Symposium 2024 (GSS 2024)** A key highlight was the participation of Mohanram Natarajan, Director General, TSDSI in a panel discussion at the "International AI Standards Summit", held as part of the Global Standards Symposium 2024 (GSS2024), wherein he laid emphasis on how 'AI standards can be made more inclusive and aligned with the Sustainable Development Goals (SDGs)', discussed emerging trends in AI that stand to benefit from new international standards and covered the ongoing AI standardization efforts at TSDSI.

TSDSI, through its WTSA Task Force made contributions to a few resolutions of the WTSA 2024 through Telecom Engineering Centre in key areas that include AI/ML, Cybersecurity, Financial inclusion, Accessibility, Test Beds, Safety, Interconnection of Networks, Conformance and Interoperability testing, Quantum, IoT/Smart Cities, Metaverse, Sustainability, Bridging the Standardization Gap, Gender Equality, and Digital Public Infrastructure.

TSDSI actively contributed to several other parallel events at WTSA 2024, including mentoring of members for contributing to and participating in the ITU WTSA Hackathon - AI Bharat 5G/6G Sandbox, ITU Kaleidoscope conference and Network of Women NoW events.

**ITU Kaleidoscope 2024:** TSDSI organized an open online awareness workshop on 19 April 2024 to disseminate information on the conference topics and share guidelines on how to draft and submit good quality papers.

Mr Gagan N (GE HealthCare, TSDSI member) was recognized as a Young Author in Kaleidoscope 2024. A paper on spectrum by a team from HFCL (TSDSI Member), led by Dr Sonali Garg was presented in the poster section of the conference.

**ITU-T SG13:**

Date	Contribution Details
15-26 July 2024	TSDSI members submitted proposals for new work items on "Use cases for application initiated on-demand end-to-end QoS provisioning in multi-user telerobotics" [1023], and "Use cases for wireless E-band multibeam backhaul supporting rural connectivity" [1148] in its Q20 Meeting.
3-14 March 2025	TSDSI submitted a contribution on "proposal to initiate a new Supplement ITU-T Supply. DynamicQoS-usecases-req: "Requirements for dynamic QoS provisioning between application-endpoints in multi-user telerobotics use cases for developing countries".

**ITU-T CITS:**

TSDSI presented a report on updates about recent and planned activities of TSDSI in the area of intelligent transport systems (ITS) in the ITU-T CITS meeting held on 13 September 2024 and 28 March 2025. These activities are being championed by experts from TSDSI member organizations such as TCS, CDAC Trivandrum, IIT Ropar, IIT Mandi and IIT Bombay.

**ITU AI For Good: Innovate for Impact initiative:**

The AI for Good Innovate for Impact Event, hosted by the ITU, is a global initiative that brings together Academia and Research Entities, Startups, Industry, Policymakers and Government Bodies, Non-Governmental Organizations (NGOs), Civil Organizations, and Individual Innovators to explore innovative AI solutions for societal challenges and create a collaborative ecosystem for impactful outcomes. It aims to build further on showcasing AI solutions that support the Sustainable Development Goals (SDGs).

**The Winning AI Use Cases Workshop 2024** - Mr Ramesh Ramanathan and Mr Jayaprakash Govindarajulu from TATA ELXSI (TSDSI member), presented a paper on "Easing Operations using AI/ML solution for 6G and beyond" at the Innovate for impact: The Winning AI use Cases workshop held on 30 May 2024 in Geneva, as part of the AI for Good 2024 Summit. This presentation was based on TSDSI NIP (TSDSI-SGSS-NIP359-V1.0.0). The team received winner certificates from the ITU Deputy Secretary General for this presentation.

**ITU innovate for Impact 2025** - TSDSI organized an online ITU Innovate for Impact 2025 – Online Awareness Workshop on 31 January 2025. It provided an overview of the AI for Good 2025 event, showcased impactful case studies from the 2024 event, and offered a platform to connect with TSDSI mentors, network, and explore collaborative opportunities. Subsequently, TSDSI members have submitted 11 use cases to the project. A few submissions were also made for contributing as Technical Advisory Committee (TAC) Experts and AI for Good Scholars.

**3GPP**

Regular transposition of new and updated 3GPP specifications is being carried out. 3,204 specifications were transposed in the reporting period.

53 and 54 TSDSI members enrolled in 3GPP as Individual Members in the Calendar year 2024 and 2025 respectively.

Participation and contributions by representatives from TSDSI member organizations in 3GPP technical meetings in the reporting period is as follows:

3GPP Participation and Contribution Data			
Groups	No. of Meetings	No. of Participants	No. of Contributions
RAN	32	750	2012
SA	41	514	1166
CT	26	346	728

**3GPP Meeting Hosting in India:**

TSDSI is hosting meetings of 3GPP WGs regularly in India. This gives opportunity for TSDSI's 3GPP members in India to participate in these meetings within their country, reducing costs and efforts associated with international travel. It also fosters domestic innovation and engagement with international experts and enhances TSDSI's engagement and visibility in the global standardization landscape. The following meetings were hosted in the reporting period:

3GPP Working Group	Dates & Place	# Experts, # IMs, # Contributions	Sponsorships & Grants
CT1, CT3, CT4 and CT6	27-31 May 2024 Hyderabad	43 Experts, 10 IMs, 99 Proposals	TCS, BIF and DoT
SA2, SA3, SA5 and SA6	14-18 October 2024 Hyderabad	78 Experts from 19 IMs, 180 Contributions	Tata Elxsi, Tejas Networks, Elena Geo, Keysight Technologies and DoT

A 3GPP TSG Wide 6G workshop was held immediately preceding the 3GPP CT/RAN/SA #107 TSG Plenary Meetings in Incheon, S.Korea on 10-11 March 2025. 12 contributions were made by TSDSI IMs on several topics related to 6G.

The following meetings of 3GPP PCG/OP were held in the Reporting period:

Meeting	Date-Venue	Details
PCG#52/OP#51	23-24 April 2024 in USA	The 3GPP 6G logo was approved in these meetings. The Release 20 workplan was agreed upon in the PCG meeting, marking commencement of 6G requirements work at 3GPP.
PCG#53/OP#52	13-14 Nov 2024 online mode	

## oneM2M

TSDSI hosted the technical plenary (TP) meeting #68 of oneM2M in New Delhi from 10 to 14 February 2025 in hybrid mode. Twelve contributions from TSDSI member experts were accepted in the meeting.

### oneM2M Stakeholders' Day Conference:

During the TP meeting, TSDSI organised a mid-week [oneM2M Stakeholders Day Conference](#) on 12 February 2025. The goal of the conference was to deliberate amongst the experts of IoT and machine-to-machine (M2M) oneM2M solutions & standards from organizations such as oneM2M/International experts/Indian Industry and R&D/Government Departments/vertical sectors working on IoT solutions experts and Indian Industry. Apart from extensive interaction attended by over hundred delegates, eleven organizations from India showcased their products/solutions during the conference.

58 TSDSI members enrolled in oneM2M as Individual Members in the Calendar year 2024 and 2025 respectively

Five Technical Plenary meetings of oneM2M were held in the reporting period:

TP Meeting	Venue
TP 64 (22-26 Apr'24)	Online
TP 65 (24 -28 Jun'24)	Online
TP 66 (9-13 Sept'24)	Hybrid (ETSI, Sophia Antipolis/Online)
TP 67 (12-15 Nov'24)	Hybrid (Ottawa/Online)
TP 68 (10-14 Feb'24)	Hybrid (TSDSI, IIT Delhi, New Delhi/ Online)

Mr Sushil Kumar, Additional Director General Telecom, North (DoT) and Chair of ITU-T SG-20 (IoT and Smart cities) Regional Group for Asia Pacific, delivered a presentation titled "oneM2M Development and Use Cases in India" at the oneM2M Workshop organised in conjunction with the 36<sup>th</sup> APT Standardization Program Forum (ASTAP-36) on 21 May 2024, in Bangkok, Thailand, in hybrid mode.

Mr Hemant Jeevan Magadam (CDAC, TSDSI Member) made an online presentation on "TSDSI Standardised Based Platform for Smart City & Agriculture" in a hybrid workshop on Global Data Standards Landscape and Gap Analysis (GDSLAND), organised by oneM2M in partnership with IEEE IoTWF in Ottawa, Canada on 12 November 2024.

A Team from IIIT Hyderabad (Team Nexus) was recognised for the Best Promotion of oneM2M, for their "[oneM2M-powered Digital Twin System for Water Network Management](#)" in the oneM2M 4<sup>th</sup> **International oneM2M Hackathon 2024**, organised by ETSI & oneM2M Partnership Project.

# Partnerships & Alliances

## Partner Activities

### 11<sup>th</sup> 5G Global Event:

TSDSI (Telecommunications Standards Development Society, India) organized 11<sup>th</sup> 5G Global event on 29-30 August 2024 in collaboration with six leading 5G/6G organizations from around the world, including 5G Americas from the Americas, 6G Brasil from Brazil, IMT-2020 (5G) PG from China, 6G-IA from the European Union, 6G Forum from South Korea and XGMF from Japan. The theme of the meeting was: "Unlocking the Future: Convergence of AI, Cloud, and Networks in Telecom". The event served as a platform for experts from Brazil, China, Europe, Japan, South Korea, the US and India to discuss topics related to current AI and Cloud Implementation Models in 5G Networks, Multi-Access Edge Computing Use Cases with AI, regional experiences from 5G deployments, and the path to 6G with AI and cloud, in four technical sessions. It helped in understanding the views from across the regions on the potential opportunities, challenges, standardization and deployment strategies of AI and cloud in 5G and 6G.

### IEEE:

TSDSI experts Dr. T R Ramya (CEWiT), Ms Pimmy Gandotra (Bharti AIRTEL) & Mr Amit Gupta (TSDSI) delivered lectures on Telecom Standards Development in the standards workshop series organised by **IEEE India Council Industry Academia Young Professionals Committee (IAYPC) – 2024**.

### Bilateral Meetings:

Mr N Mohanram, Director General, TSDSI and other Secretariat leaders held bilateral Meetings with leaders of ATU, ETSI, MTSFB, TTC, TTA and ITU-T TSB on the sidelines of the WTSA 2024 event in New Delhi.

## 11<sup>th</sup> Global 5G Event



# Programmes

## TSDSI Tech Deep Dive 2024 (TTDD 2024)

TSDSI organised the 7<sup>th</sup> edition of its Annual Flagship Conference “TSDSI Tech Deep Dive (TTDD) 2024 from 16 to 19 July 2024. Its theme was “Realizing the 6G Vision: Societal Needs, Usage Scenarios & Technologies”.

It deliberated on topics related to Usage Scenarios, Emerging Technology Trends, Ubiquitous Intelligence: AI/ML enabled Future Networks, Security & Privacy, Spectrum Aspects for 5G Advanced and 6G, Rural Broadband Technology Landscape in 6 fully online technical sessions. The conference theme session “Realizing the 6G Vision – Societal Needs” was held in hybrid mode in Indian Habitat Centre, New Delhi. Key findings from the conference technical sessions on Usage Scenarios and Technologies was used as a reference point for the discussions in this session.

The conference concluding session was presided over by Ms Tripti Saxena, Sr DDG & Head, TEC. Summaries from the various technical sessions were presented in this session. Key takeaways from the technical deliberations in the conference are given below:

- 6G networks will prioritize smart communication and efficiency, leveraging AI to enhance user experience and anticipate needs.
- Security is a major concern, with quantum cryptography emerging as a potential solution for protecting privacy and infrastructure.
- Bridging the digital divide in India was a focus, exploring innovative technologies to provide internet access and enhance education in remote areas.

The conference featured 70 expert speakers from within India and around the world and saw participation by 589 unique delegates (including 273 repeat participants). The presentations made in the conference may be viewed on the event website at link:

<https://tdd.tdsi.in/archive/2024/sessions/>

The conference was supported by Tejas Networks, NOKIA & CEWiT by sponsoring one technical session each.

## TSDSI Tech Deep Dive 2024 (TTDD 2024)



# Articles

TSDSI Experts published the following articles in the reporting period:

Publication	Article	Author
3GPP Newsletter June 2024 Edition	Article on Ambient IoT: Redefining Wireless Communication for Industry 4.0	Mr Jyotirmay Saini, Suman Malik, Shyam Vijay Gadhai, Rohit Budhiraja, IIT Kanpur
TSDSI Newsletter October 2024 Edition	Rural Broadband Service Architecture to Realise the Rural Phygital Marketplace	Dr Abhishek Thakur – IDRBT
TSDSI Quarterly Newsletter December 2024 edition	Reconfigurable Intelligent Surfaces: Standardization and Testbed Development in India	Dr Arzad Alam Kherani and Ms Smriti Kumar, TSDSI Member, IIT Bhilai
Tele.net Magazine December 2024 Edition	Interview with Satish Jamadagni	Mr Satish Jamadagni, Chair TSDSI, Reliance Jio
Tele.net Magazine January Issue 2025 – 25th Anniversary Special	6G Blueprint: Strategy for taking the lead in developing standards for the technology	Mr Satish Jamadagni, Chair TSDSI, Reliance Jio



# Ecosystem

## Outreach Events

A Workshop on **“Achieving Leadership in Standards – Enabling Organizational Frameworks”** was organized by TSDSI on 9 May 2024 at IIIT Bangalore. Its goal was to encourage companies and R&D organizations to establish dedicated internal structures for adoption and contribution to the development of standards. It also acted as an ideation platform to discover locally relevant use cases/topics that have a potential for standardization. Several TSDSI experts from the membership & secretariat spoke at the workshop. The keynote address was delivered by Prof Debarata Das, IIIT Bangalore.

This was preceded by a Workshop on **“Achieving Leadership in Standards Leveraging India’s Potential through IP”** which was jointly organised by TSDSI, TEC and DoT on 8 May 2024 at IIIT Bangalore and online. It discussed how India can strategically generate intellectual property (IP) assets in telecom technologies to establish leadership in setting global standards. Several TSDSI experts from the membership spoke at the workshop. The Inaugural address was delivered by Secretary (Telecom)- DoT, Dr. Neeraj Mittal.

## Invited Talks:

Mr A K Mittal, Advisor- Networks, TSDSI joined a panel discussion on **“Research and Standardization Roadmaps for 6G”** in the 2<sup>nd</sup> edition of **“Bharat 6G 2024 International Conference”** held in New Delhi on 15 May 2024.

Mr A K Mittal, Advisor - Networks, TSDSI & Mr Vijay Madan, Advisor & Mentor (Services & Solutions) delivered a lecture on **Workshop on Telecom Technologies, Use Case and Standards Driven Research** at Jaypee Institute of Information Technology on 19 September 2024.

Mr A K Mittal, TSDSI participated in a panel discussion on **“How Can USA and India Collaborate on 6G Technologies and Win Together”** & **“Practical Next Step Goals for India + US 6G Innovations & Standardization”** in Indo-US Workshop on 6G Technologies organised by IIT Delhi on 9-10 December 2024.

TSDSI member expert, Ms Sonali Garg (HFCL) delivered a talk on Standards and TSDSI at SLIET College, Longowal, Punjab on 18 February 2025, under the ATAL FDP scheme.



# Capacity Building

## NTIPRIT Organised Trainings:

TSDSI experts delivered lectures in various trainings organised by NTIPRIT as per following details:

Program	Date	Speaker/s
NTIPRIT Training	14 July 2024	Satish Jamadagni, Chair, TSDSI
NCA JTO Induction Training	5 March 2025	Bindoo Srivastava, Director, MARCOM & Partner Relations, TSDSI

TSDSI Induction program was conducted on 20 June 2024 to give an overview of two newly onboarded members.

Tushar Kulshrestha and Ritika Deo participated in the Workshop on "Bridging the Standardization Gap" organised by NCA in collaboration with ITU Area Office for South Asia & Innovation Centre on 15 - 16 May 2024.



# Looking Ahead

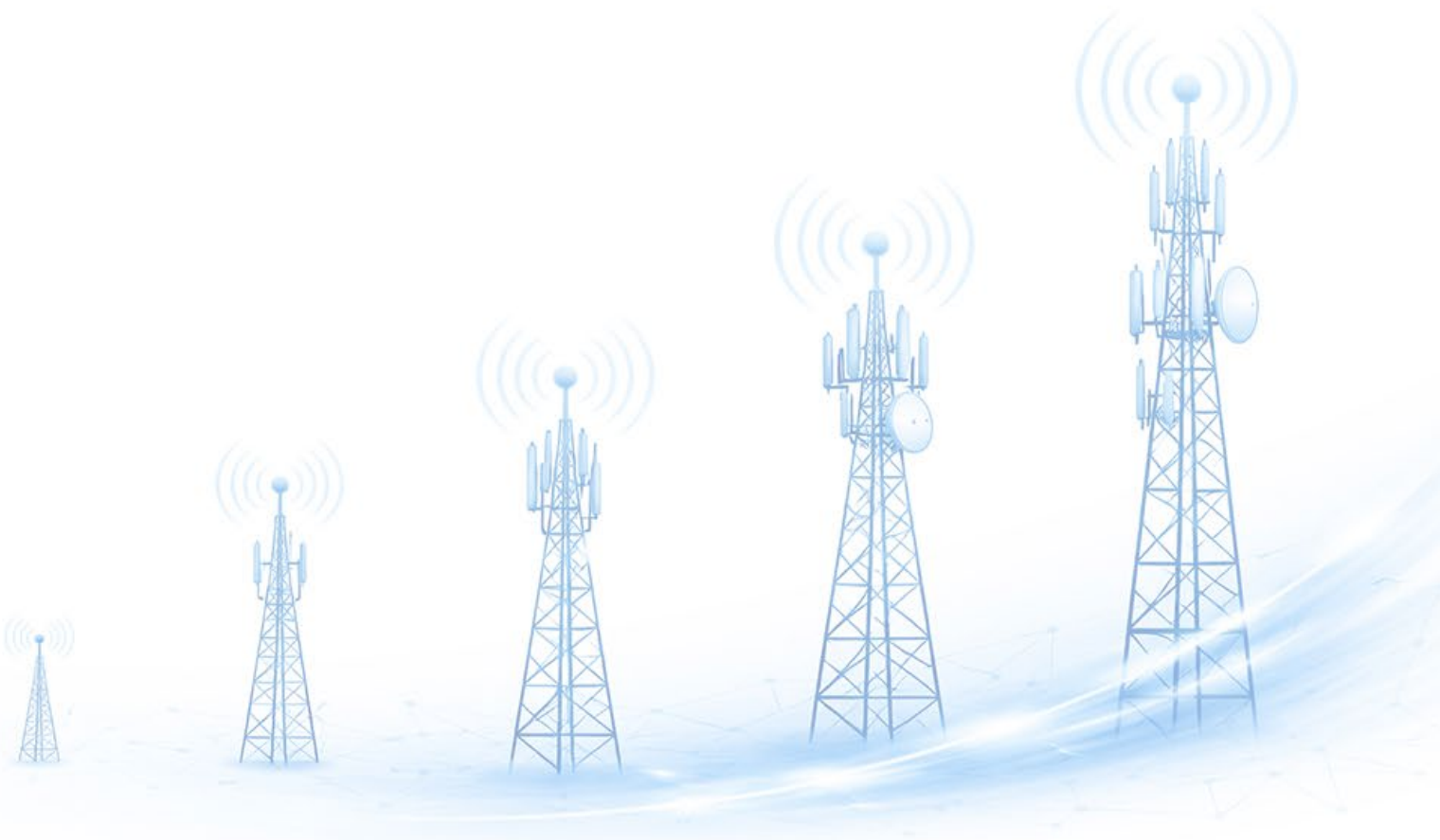
TSDSI has come a long way since its inception in shaping the telecom standardization landscape. It has provided a platform for a range of stakeholders to collaborate to better understand the Indian requirements and work towards deep technical studies and delivery of standards. 5Gi is an example of such a standard.

TSDSI had started working on 6G related studies in the year 2021 soon after 5G standards were finalized by ITU. Since then, TSDSI has made several contributions to the studies and recommendations at ITU-R for IMT-2030 a.k.a 6G while simultaneously undertaking studies and normative work, with Indian requirements in view, to keep pace with the global developments. Bringing the Indian ecosystem together to drive meaningful contributions to global 6G standards is a foremost requirement. TSDSI will continue to strengthen collaboration among industry, academia, research institutions, startups, government bodies and policy stakeholders to align national innovation with global standardization efforts. By enabling coordinated participation and collective thought leadership, TSDSI aims to ensure that Indian requirements, innovations and use cases are effectively reflected in emerging 6G standards.

TSDSI will build upon considerable progress achieved in its technical activities. The Study Groups have handled a significant number of New Item Proposals (NIPs) and Standard Work Item Contributions (SWICs), published multiple Technical Reports, and advanced several Work Items that are expected to lead to standards in FY 2025–26 and beyond. Global engagement will be further strengthened through hosting 3GPP Working Group meetings, expanding participation in ITU-R, ITU-T and oneM2M activities, and increasing industry and academic involvement.

With growing global engagement and technical momentum, TSDSI will continue its efforts to position India at the forefront of global standards development while simultaneously advancing standards that address Indian requirements in global and domestic contexts.

In summary, the key focus areas in FY 2025-26 and beyond will be enhancing technical excellence, driving impact on global standards, addressing Indian requirements, fostering ecosystem development and strengthening organizational capabilities.



# Finances



**INDEPENDENT AUDITOR'S REPORT**

**To the Members of Governing Council,**

**TELECOMMUNICATIONS STANDARDS DEVELOPMENT SOCIETY, INDIA**

**Opinion**

We have audited the accompanying financial statements of **Telecommunications Standards Development Society, India** a society registered under Societies Registration Act XXI 1860 bearing regn. no S/1525/Distt.South/2013-14 (**the Society**), which comprises the Balance Sheet as at 31st March 2024 and the statement of Income & Expenditure for the year ended on that date, and notes to the financial statements, including a summary of significant accounting policies.

In our opinion, the accompanying financial statements give a true and fair view of the financial position of the society as at March 31, 2024, and of its financial performance for the year ended on that date in accordance with the Accounting Standards issued by the Institute of Chartered Accountants of India (ICAI).

**Basis for Opinion**

We conducted our audit in accordance with the Standards on Auditing (SAs) issued by ICAI. Our responsibilities under those standards are further described in the Auditor's Responsibilities for the Audit of the Financial Statements Section of our Report. We are independent of the entity in accordance with the ethical requirements that are relevant to our audit of the financial statements, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

**Responsibilities of Management and Those Charged with Governance for the Financial Statements**

Management is responsible for the preparation and fair presentation of the financial statements in accordance with the aforesaid Accounting Standards, and for such internal control as management determines it necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is responsible for assessing the society's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the society or to cease operations, or has no realistic alternative but to do so. Those charged with governance are responsible for overseeing the society's financial reporting process.



## **Auditor's Responsibilities for the Audit of the Financial Statements**

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance but is not a guarantee that an audit conducted in accordance with SAs will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

**For Hingorani M. & Co.**  
Chartered Accountants  
Firm Reg. No. 006772N



**CA. Sanjay Kumar Narang**  
Partner

Membership No. 090943

UDIN: 24090943BJZZYT9889

Place: New Delhi

Date: September 27, 2024

**TELECOMMUNICATIONS STANDARDS DEVELOPMENT SOCIETY, INDIA**  
Balance Sheet as at 31st March 2024

(in Rupees)

Particulars		Note No.	As at 31st March 2024	As at 31st March 2023
1		2	3	4
<b>I</b>	<b>LIABILITIES</b>			
1	Corpus Fund	1	5,05,24,234	6,76,95,121
2	Development Fund	2	-	62,74,875
3	Non-current liabilities			-
4	Current liabilities			
	(a) Trade Payables	3	31,85,120	11,71,855
	(b) Advance Received From Debtors	4	3,37,638	2,20,500
	(c) Other current liabilities	5	86,29,793	65,56,762
	<b>TOTAL</b>		<b>6,26,76,785</b>	<b>8,19,19,112</b>
<b>II.</b>	<b>ASSETS</b>			
	Non-current assets			
	(a) Fixed assets			
	(i) Tangible assets	6	11,51,667	13,32,588
	Current assets			
	(a) Cash and cash equivalents	7	5,57,05,833	7,00,08,226
	(b) Short Term Loans and Advances	8	2,58,000	81,292
	(c) Trade Receivables	9	9,61,196	6,68,642
	(d) Other current assets	10	46,00,089	98,28,364
	<b>TOTAL</b>		<b>6,26,76,785</b>	<b>8,19,19,112</b>

Significant Accounting Policies and Notes to Accounts

(1-18)

**AUDITORS' REPORT**

As per our separate report of even date attached

Hingorani M & Co.  
Chartered Accounts  
(Firm Reg No. : 006772N)



CA Sanjay Kumar Narang  
(Partner)

M. No. : 090943

UDIN: 24090943BJZZYT9889

(SATISH JAMADAGNI)  
CHAIR

(SURESH CHITTURI)  
VICE CHAIR

(RAJEEV SHARMA)  
TREASURER

(N MOHANRAM)  
DIRECTOR GENERAL

(KULJIT SINGH)  
EXECUTIVE DIRECTOR

Place : New Delhi

Date : 27.09.2024

**TELECOMMUNICATIONS STANDARDS DEVELOPMENT SOCIETY, INDIA**  
**INCOME AND EXPENDITURE ACCOUNT FOR YEAR ENDED 31st March, 2024**

( in Rupees)

Particulars	Note No.	For the year Ended 31st March 2024	For the year Ended 31st March 2023
I. Membership Fees	11	4,34,14,689	4,49,92,482
II. Grants		2,74,23,436	2,59,11,688
III. Sponsorship Fees		10,99,980	2,99,660
IV. Other income	12	3,23,11,701	3,40,05,685
<b>V. Total Revenue (I + II + III + IV)</b>		<b>10,42,49,806</b>	<b>10,52,09,515</b>
VI. Expenses:			
Subscription & Membership	13	6,44,03,318	6,16,50,134
Other Office & Administration Expense	14	4,87,32,421	2,90,31,133
Salary to Staff	15	1,09,22,451	1,01,60,347
Deputation Cost		48,59,160	33,65,493
Depreciation and amortization expense	6	6,11,258	5,86,987
Total expenses		12,95,28,608	10,47,94,094
<b>VII. Surplus (Shortfall) Being excess of Income over Expenditure (Vice Versa)</b>		<b>(2,52,78,802)</b>	<b>4,15,421</b>

Significant Accounting Policies and Notes to Accounts

(1-18)

**AUDITORS' REPORT**

As per our separate report of even date attached



Hingorani M & Co.  
Chartered Accounts  
(Firm Reg No. : 006772N )

*[Signature]*  
CA Sanjay Kumar Narang  
(Partner)

M. No. : 090943  
UDIN: 24090943BJZZYT9889

Place : New Delhi  
Date : 27.09.2024

*[Signature]*

(SATISH JAMADAGNI)  
CHAIR

*[Signature]*

(SURESH CHITTURI)  
VICE CHAIR

*[Signature]*

(RAJEEV SHARMA)  
TREASURER

*[Signature]*

(N MOHANRAM)  
DIRECTOR GENERAL

*[Signature]*

(KULIT SINGH)  
EXECUTIVE DIRECTOR

**Notes to the Financial Statements**  
**For the year ended 31st March, 2024**

**1. Corpus Fund**

Particulars		As at 31st March 2024	As at 31st March 2023
Opening Balance		6,76,95,121	5,09,13,694
Add: Admission Fees Received During the year		18,33,040	10,00,000
Add: Transferred from Development Fund			1,57,81,427
Less:			
Excess of Expenditure over Income during the year	(2,52,78,802)		
Utilisation out of Development Fund	62,74,875	(1,90,03,927)	
<b>Total</b>		<b>5,05,24,234</b>	<b>6,76,95,121</b>

**2. Development Fund**

Particulars		As at 31st March 2024	As at 31st March 2023
Opening Balance		62,74,875	2,16,40,881
Less: Utilisation during the year		(62,74,875)	(2,16,40,881)
Add: Accumulation of Surplus Income in Development Fund		-	62,74,875
<b>Total</b>		<b>-</b>	<b>62,74,875</b>

**3. Trade Payables**

Particulars		As at 31st March 2024	As at 31st March 2023
Aditi Das		-	35,216
Aircruise Travels Pvt Ltd		2,06,072	23,069
Ajay Kumar Mittal		41,345	-
Akansha Arora		4,03,520	44,930
Akash Malik		1,08,465	50,064
Akash Patel		1,300	1,710
All Unique Creation		266	266
Animatiny Univeres		1,19,386	1,92,227
Anupam Sinha		11,286	28,584
Arunav Datta Chaudhary		5,806	-
Best Digital Prints Pvt Ltd		14,361	14,291
Bhatia & Bhatia		625	625
Brij Mohan Baveja		27,000	-
C-Dot		6,93,000	-
Chandrakanta Rathore		1,300	51,000
Excel Solutions		11,033	-
Harsh Kumar		4,968	-
Credit Card		-	81,650
Holidayinn New Delhi Int Airport		-	6,000
Jaskirat Singh		-	17,244
Kalinga Car Rental Private Ltd.		2,35,134	-
Kingdom Of Gifts		8,676	-
Kuljit Singh		1,42,699	3,794
Mr Guna Bala Shekar		27,000	-
Mr Mohanram Natrajan(Dg)		5,000	-
Md Asif Iqbal		-	49,527



**Notes to the Financial Statements**  
**For the year ended 31st March, 2024**

Ms. Bindoo Srivastava		1,07,204	-
Mukesh		890	-
Network Tours Pvt Ltd		-	11,290
National Express Cargo Solution		57,153	-
Niwedita Pathak		1,300	53,260
P K Jaswal		1,30,500	-
Print Orbit		1,80,612	70,992
Rahul Chandalia		13,500	-
Rajesh Kapoor		54,000	-
Rajesh Vasudev Karbele		4,606	53,108
Shefali Sinha		1,35,832	-
Shivam Print Solutions		130	130
Shyam Spectra Private Limited		-	59,000
Sisl Infotech Pvt Ltd		2,24,121	1,03,840
Sushil Kumar Paswan		3,380	-
Sweta Singh		1,300	-
Sonia Sachdeva Sharma		-	48,288
Syed Zeeshan Hasan		-	1,26,000
Transcending Horizons Pvt Ltd		33,150	33,150
Udayan Banerjee		27,000	-
Vijay Madan		1,29,600	-
Visual Information System Pvt.Ltd		400	400
Webtel Electrosoft Pvt. Ltd.		12,200	12,200
<b>Total</b>		<b>31,85,120</b>	<b>11,71,855</b>

**4. Advance Received from Debtors**

Particular	As at	As at
	31st March 2024	31st March 2023
Ericsson India Pvt Ltd	1,70,000	1,70,000
Capgemini Technology Services India Ltd	1,20,000	-
Tata Motors Ltd. Engineer Reserch Center	18,500	-
Tata Teleservices Ltd	6,638	-
Nec India Pvt Ltd	-	28,000
Unlimit lot Private Limited	22,500	22,500
<b>Total</b>	<b>3,37,638</b>	<b>2,20,500</b>

**5. Other Current Liabilities**

Particular	As at	As at
	31st March 2024	31st March 2023
Duties & Taxes Payables	25,54,455	26,17,298
Advance Membership Fee	50,58,000	17,40,000
Provision for Performance incentive	-	19,21,238
Expense Payable	10,17,338	2,78,226
<b>Total</b>	<b>86,29,793</b>	<b>65,56,762</b>

A handwritten signature in blue ink is written over a circular blue stamp. The stamp contains the text "Hingorani M. & Co." around the top edge, "Chartered Accountants" around the bottom edge, and "New Delhi" in the center.

Notes to the Financial Statements  
For the year ended 31st March, 2024

**7. Cash and cash equivalents**

Particular	As at 31st March 2024	As at 31st March 2023
<b>Savings Bank Accounts</b>		
Canara Bank	30,89,992.80	25,595
Cash in Hand	-	6,337
<b>Fixed Deposit</b>		
Fixed Deposits- A/c No-8657413000121	43,25,294	41,13,459
Fixed Deposits- A/c No 8657401001345	42,45,882	48,00,958
Fixed Deposits- A/c No-8657307000089	29,59,831	28,25,838
Fixed Deposits-A/c No-8657307000087	22,67,056	21,93,562
AUTO SWEEP FDs	3,88,17,777	5,60,42,477
<b>Total</b>	<b>5,57,05,833</b>	<b>7,00,08,226</b>

**8. Short Term Loans & Advances**

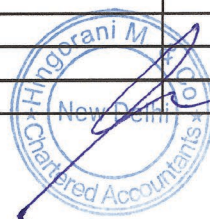
Particular	As at 31st March 2024	As at 31st March 2023
Imperest with staff	28,000	3,000
Other Advances	2,30,000	78,292
<b>Total</b>	<b>2,58,000</b>	<b>81,292</b>

**9. Trade Receivables**

Particular	As at 31st March 2024	As at 31st March 2023
Indian Institute of Technology Mandi	2,675	2,675
Bharti Airtel Ltd	3,94,783	16,500
Indian Institute of Science, Banaglore	19,999	5,999
Indian Space Research Organisation	16,500	23,500
Indian Institute of Technology Bombay	14,000	7,000
India Cellular & Electronics Association(ICEA)	12,516	12,516
Intel Technology India Pvt Ltd	-	4,86,000
Telecommunications Consultants India Ltd	87,348	73,348
Worxpace Consulting Private Limited	-	137
ERNET INDIA	-	37,800
Astrome Technologies Private Limited	1,65,200	-
IDEMIA Syscom India Pvt Ltd	81,000	-
Indian Institute of Technology Hyderabad	7,000	-
Indian Institute of Technology, Kharagpur	59,000	-
Fraunhofer Institute for Integrated Circuits IIS	-	492
Wisig Networks Pvt Ltd	14,000	-
Indian Institute of Technology Madras	7,000	-
Reliance Jio Infocomm Limited	77,500	-
Sensorise Digital Services Pvt Ltd	2,675	2,675
<b>Total</b>	<b>9,61,196</b>	<b>6,68,642</b>

**10. Other Current Assets**

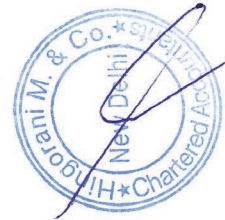
Particular	As at 31st March 2024	As at 31st March 2023
Interest Accrued on FDR	2,95,138	3,69,052
GST Receivable	-	20,02,680
TDS on GST	2,03,600	1,63,800
TDS on sweep deposit	558	558
Tax Deducted at Source AY 2024-25	24,17,893	-
Tax Deducted at Source AY 2023-24	15,17,462	15,17,462
Advance to Suppliers	1,65,438	57,74,812
<b>Total</b>	<b>46,00,089</b>	<b>98,28,364</b>



Notes to the Financial Statements  
For the year ended 31st March, 2024

**6. FIXED ASSETS AS AT 31st MARCH 2024**

S.NO.	PARTICULARS	DEP RATE	OPENING BALANCE AS ON 01-04-2023	ADDITIONS DURING THE YEAR		TOTAL AS ON 31-03-2024	ASSETS WRITTEN OFF	DEPRECIATION FOR THE YEAR	WRITTEN DOWN VALUE AS ON 31-03-2024
				FOR MORE THAN 180 DAYS	FOR LESS THAN 180 DAYS				
1	<b>COMPUTERS &amp; PRINTERS :-</b>								
1.1	LAPTOP	40%	6,84,826	2,60,589		9,45,415	-	3,78,166	5,67,249
1.2	PRINTER	40%	-	49,788		49,788	-	19,915	29,873
1.3	TABLET	40%	9,353			9,353	-	3,741	5,612
1.4	HEADPHONE SONY WH500	40%	5,830			5,830	-	2,332	3,498
1.5	SOFTWARE	40%	3,39,300	33,000	35,656	4,07,956	-	1,56,051	2,51,905
1.6	TALLY SOFTWARE	40%			24,303	24,303	-	4,861	19,442
1.7	EXTERNAL HARD DISK	40%	4,919			4,919	-	1,968	2,951
	<b>TOTAL (A)</b>		<b>10,44,228</b>	<b>3,43,377</b>	<b>59,959</b>	<b>14,47,564</b>	<b>-</b>	<b>5,67,034</b>	<b>8,80,530</b>
2	SAMSUNG LED	15%	22,430			22,430	-	3,365	19,065
3	TCL LCD	15%	22,441			22,441	-	3,366	19,075
4	MICROWAVE OVEN	15%	7,362			7,362	-	1,104	6,258
5	PORTABLE PROJECTER	15%	9,783			9,783	-	1,467	8,316
6	POLYCOM	15%	96,655	27,000	-	1,23,655	-	18,548	1,05,107
7	MOBILE PHONE	15%	20,391			20,391	-	3,059	17,332
8	LG AIR CONDITIONER	15%	47,701			47,701	-	7,155	40,546
	<b>TOTAL (B)</b>		<b>2,26,763</b>	<b>27,000</b>	<b>-</b>	<b>2,53,763</b>	<b>-</b>	<b>38,064</b>	<b>2,15,699</b>
9	SAFE	10%	8,136			8,136	-	814	7,322
10	OFFICE CHAIR	10%	29,524			29,524	-	2,952	26,572
11	Room Heater	10%	23,937			23,937	-	2,394	21,543
	<b>TOTAL (C)</b>		<b>61,597</b>	<b>-</b>	<b>-</b>	<b>61,597</b>	<b>-</b>	<b>6,160</b>	<b>55,437</b>
	<b>GRAND TOTAL (A+B+C)</b>		<b>13,32,588</b>	<b>3,70,377</b>	<b>59,959</b>	<b>17,62,924</b>	<b>-</b>	<b>6,11,258</b>	<b>11,51,667</b>



Notes to the Financial Statements  
For the year ended 31st March, 2024

**11. Membership Fees**

Particular	For the year ended at 31st March 2024	For the year ended at 31st March 2023
Membership Fees	2,79,39,689	2,73,47,536
3GPP-IM Fees	1,54,75,000	1,76,44,946
<b>Total</b>	<b>4,34,14,689</b>	<b>4,49,92,482</b>

**12. Other Incomes**

Particular	For the year ended at 31st March 2024	For the year ended at 31st March 2023
Interest on Fixed Deposits From Banks	28,59,908	36,52,403
Interest on Savings Banks Accounts	27,793	22,670
Interest on Swipe In	-	14,564
Compensation for deputation @3GPP	1,12,15,800	1,19,85,600
Credit Note From ETSI	24,06,200	38,55,400
Manhours at One M2M	1,58,02,000	1,42,72,000
Interest on Income tax Refund	-	2,03,048
<b>Total</b>	<b>3,23,11,701</b>	<b>3,40,05,685</b>

**13. Subscription & Membership**

Particular	For the year ended at 31st March 2024	For the year ended at 31st March 2023
Membership Fees- ETSI 3GPP	4,22,90,534	4,38,54,698
Membership Fees- TTC One M2M	1,63,76,700	1,42,72,000
Membership Fees- International Telecommunication Union	57,36,084	35,23,436
<b>Total</b>	<b>6,44,03,318</b>	<b>6,16,50,134</b>

**14. Other Office & Administration Expense**

Particular	For the year ended at 31st March 2024	For the year ended at 31st March 2023
Administration charges -PF	11,475	10,575
Auditor Remuneration	65,000	50,000
Bank Charges	1,36,530	77,020
Computer Repair & Maintenance	1,26,643	98,130
Design and Art Work Expense	2,63,946	4,88,800
Diwali Expense	2,05,623	1,21,838
Employer Share PF	2,79,620	2,65,815
FCRA Registration Fee	-	10,006
Fee and subscription	6,48,868	2,61,384
Flight Ticket Expenses	25,04,811	25,24,489
Foreign currency exchange charges	8,294	-
Foreign Remittance Charges	745	615
Group Medical Insurance Policy	7,07,972	3,44,458
GST on Audit fees Reversed		(13,500)
Honorarium	1,03,86,290	1,13,44,000
Hotel Accomodation Expenses	40,19,943	19,28,767
Interest Paid on Grant Reced	35,547	15,947



**Notes to the Financial Statements**  
**For the year ended 31st March, 2024**

Internet Charges	45,96,775	2,52,357
Internet Reimbursement	1,16,025	1,24,154
Interen Expenses	1,87,848	-
IT Expenses	71,561	29,539
Leave Encashment	-	1,37,378
Legal Expenses	40,000	4,15,000
Local Conveyance	44,111	1,65,190
Management fee	27,99,084	-
Meeting & Conference Expense	1,39,45,211	24,13,432
Mobile Reimbursement Exp	2,26,099	1,68,720
Office Cleaning Charges	11,300	14,240
Office Rent	1,40,000	1,40,000
Office Repairs & Maintenance	56,267	80,180
OneM2M Support	5,60,875	5,39,375
Pantry Expense	97,805	30,328
Per Diem	3,33,819	9,17,919
Postage & Courier Expense	3,27,471	38,976
Printing & Stationery	3,88,421	5,37,859
Professional Charges	13,81,259	6,58,761
Short & Excess	146	(3)
Skill Enhance Expense	87,902	8,200
Taxi/Cab Hire Charges	15,24,961	6,86,487
Transportation Expense	12,00,000	14,10,833
Transposition Expenses	1,55,700	11,59,700
TTCN-Work Load Exp	7,57,167	12,83,334
Visa Fees	1,84,157	1,42,080
Web Hosting Charges	97,150	1,48,751
<b>Total</b>	<b>4,87,32,421</b>	<b>2,90,31,133</b>

**15. Salary to Staff**

Particular	For the year ended at 31st March 2024	For the year ended at 31st March 2023
Basic pay	50,71,503	32,26,118
Conveyance Allowance	-	6,38,666
DA on TA	2,05,686	2,17,113
Dearness Allowance	11,26,455	10,57,435
House Rent Allowance	17,73,474	8,39,713
Performance Incentive	29,342	38,60,781
Salary Arrear	1,70,074	32,690
Special allowance	16,57,504	-
Staff Welfare Expense	2,73,399	-
Transportation allowance	6,15,014	2,87,831
<b>Total</b>	<b>1,09,22,451</b>	<b>1,01,60,347</b>



## ANNEXURE TO BALANCE SHEET

### 1. Imprest with Staff

Particular	As at 31st March 2024	As at 31st March 2023
Lalit Bhandari	3000	3,000
Anupam Sinha	25000	-
<b>Total</b>	<b>28,000</b>	<b>3,000</b>

### 2. Other Advances

Particular	As at 31st March 2024	As at 31st March 2023
<b>Advance Receivables from Employees-</b>		
Salary Advance Rajesh Vasudev	100000	40,000
Harsh Kumar	-	24,654
Salary Advance Sushil	130000	-
<b>Advance Receivables from Vendors-</b>		
M/s India International Centre	-	13,638
<b>Total</b>	<b>2,30,000</b>	<b>78,292</b>

### 3. Duties & Taxes Payable

Particular	As at 31st March 2024	As at 31st March 2023
TDS - Contractors	7604	6,635
TDS - Profession	189587	1,67,760
TDS - salary	122885	-
GST Payable	2234378.95	24,42,903
<b>Total</b>	<b>25,54,455</b>	<b>26,17,298</b>

### 4. Expenses Payable

Particular	As at 31st March 2024	As at 31st March 2023
Audit Fees Payable	65000	50,000
Salary Payable	745928	26,051
Provision for Leave Encashment	153425	1,53,425
Employee Provident Fund	52985	48,750
<b>Total</b>	<b>10,17,338</b>	<b>2,78,226</b>



## **TELECOMMUNICATIONS STANDARDS DEVELOPMENT SOCIETY, INDIA**

### **SIGNIFICANT ACCOUNTING POLICIES & NOTES TO THE FINANCIAL STATEMENT FOR THE YEAR ENDED 31<sup>ST</sup> MARCH 2024**

#### **16. BACKGROUND**

Telecommunications Standards Development Society, is an autonomous, membership based, standards development organization (SDO) for Telecom/ICT products and services in India. It aims at developing and promoting standards for access, back-haul, and infrastructure systems, solutions and services that best meet India-specific requirements based on research and innovation in India. They are also working closely in 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 Registered as Not for Profit Society, under Indian Societies Registration Act of 1860.

#### **17. SIGNIFICANT ACCOUNTING POLICIES**

##### **17.1 Basis of Accounting**

Financial statements have been prepared under Historical Cost convention, on accrual basis of accounting except for membership fee receipts which are being accounted as income in the year of receipt.

##### **17.2 Revenue Recognition**

The membership fees are recognized in the books of accounts in the year of receipts. Interest on Fixed Deposits of the Society is taken into account on an accrual basis during the Current Year.

##### **17.3 Fixed Assets**

The value of Fixed Assets is stated at cost of acquisition or construction, including any cost attributable to bringing the assets to their working condition for their intended use. Assets having their useful one year or less are expensed off in the year they are acquired.



#### **17.4 Depreciation on Fixed Assets**

Depreciation on fixed assets has been provided under "written down value method" at the rates and in the manner as provided in the Income Tax Act, 1961.

#### **17.5 Grant in aid**

Grants in aid received from the Government are treated as Income.

#### **18. NOTES ON ACCOUNTS**

- a) Admission Fees received during the year has been transferred to Corpus Fund.
- b) During the year amount of Rs. 6274875/- carried forward from Development Fund has been utilized.
- c) Gratuity is recognized at the time of separation / retirement of the employee.
- d) Previous Years figures have been regrouped /rearranged wherever necessary to make them comparable with current year figures.


For Hingorani M & Co.  
Chartered Accounts  
Firm Reg No. 006772N




  
CA Sanjay Kumar Narang  
Partner

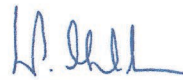
M. No. 090943

Place: New Delhi  
Date: 27.09.2024

  
(SATISH JAMADAGNI)  
CHAIR

  
(SURESH CHITTURI)  
VICE CHAIR

  
(RAJEEV SHARMA)  
TREASURER

  
(N MOHANRAM)  
DIRECTOR GENERAL

  
(KULJIT SINGH)  
EXECUTIVE DIRECTOR

# Annexures



# Annexure 1

## List of TSDSI TECHNICAL LEADERS

(As on 31<sup>st</sup> March 2025)

### Study Group - Networks



**CHAIR**  
**R Prakash**  
(C-DOT)



**VICE CHAIR**  
**Abhijeet Masal**  
(CEWiT)

### Study Group - Services & Solutions



**CHAIR**  
**Mahesh Nayaka**  
**Mysore Annaiah**  
(Reliance Jio Infocomm Ltd)



**VICE CHAIR**  
**Niranth Amogh**  
(Nokia Solutions &  
Networks India Pvt Ltd)

### SGSS- WG1 [Security]



**CHAIR**  
**Saurabh Khare**  
(Nokia)



**VICE CHAIR**  
**Sridhar CV**  
(TCS)

# Annexure 1

## List of TSDSI TECHNICAL LEADERS

(As on 31<sup>st</sup> March 2025)

### SGSS- WG2 [Applications Layer]



**CHAIR**  
**A Paventhan**  
(ERNET)



**VICE CHAIR**  
**Abhijan  
Bhattacharyya**  
(TCS)

### SGSS-WG3 [Services Architecture and Framework]



**CHAIR**  
**Roopa C**  
(C-DOT)



**VICE CHAIR**  
**Gomathy  
Padmanabha**  
(Tata Elxsi)

# Annexure 2

## Secretariat TEAM

(As on 31<sup>st</sup> March 2025)

### Director General



**N Mohanram**

### Advisors



**A K Mittal**



**Vijay  
Madan**

### Operations & Strategy to Operations, Membership Development, IT and Information Management



**Kuljit  
Singh**



**P K Jaswal**



**Anupam  
Sinha**

# Annexure 2

## Secretariat TEAM

(As on 31<sup>st</sup> March 2025)

Operations & Strategy to Operations, Membership Development,  
IT and Information Management



**Harsh  
Arora**



**Asif  
Iqbal**



**Akash  
Patel**



**Niwedita  
Pathak**



**Rahul  
Roy**



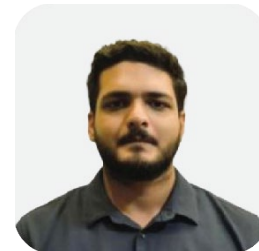
**Rajesh Vasudev  
Karbele**



**Shagun  
Dua**



**Sushil Kumar  
Paswan**



**Vinayak Singh  
Shekhawat**



**Mukesh  
Kumar**

# Annexure 2

## Secretariat TEAM

(As on 31<sup>st</sup> March 2025)

### MARCOM and Partner Relations



**Bindoo  
Srivastava**



**Shefali  
Sinha**



**Ritika  
Deo**



**Tushar  
Kulshrestha**

### Technical Activities Support



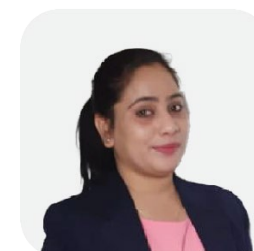
**Rajesh  
Kapoor**



**Vishnu  
Ram OV**



**Akansha  
Arora**



**Chandrakanta  
Rathore**



**Sweta  
Singh**

# Annexure 2

## Secretariat TEAM

(As on 31<sup>st</sup> March 2025)

### Strategic Initiatives



**Amit  
Gupta**



**B M Baveja**



**Udayan  
Banerjee**

# Annexure 3

## List of TSDSI MEMBERS

(As on 31<sup>st</sup> March 2025)

### TSDSI Corporate Members

S.No.	Name of the Organization	Membership ID
1	Apple India Private Limited	TSDSIC029
2	Astrome Technologies Private Limited	TSDSIC117
3	Bharat Sanchar Nigam Limited	TSDSIC020
4	Bharti Airtel Limited	TSDSIC019
5	Bosch Global Software Technologies	TSDSIC175
6	Capgemini Technology Services India Ltd	TSDSIC156
7	Centre for Development of Advanced Computing ( C- DAC)	TSDSIC018
8	Centre for Development of Telematics (C-DOT)	TSDSIC002
9	Centre of Excellence in Wireless Technology (CEWiT)	TSDSIC017
10	Cisco Systems India Pvt. Ltd.	TSDSIC031
11	Contriver Autonomous Systems Pvt Ltd	TSDSIC176
12	Da"Spacio Rhobotique Laboratory Pvt Ltd	TSDSIC178
13	Department of Telecommunications, Govt. of India	TSDSIC010
14	Dhruva Space Private Limited	TSDSIC135
15	DNN Wireless Technologies	TSDSIC148
16	DOLBY Technology India Private Limited	TSDSIC112
17	Elena Geo Tech Pvt Ltd	TSDSIC134
18	Engineering Research Center TATA Motors Ltd	TSDSIC095
19	Enhanced Communications & Technologies Pvt Ltd,(ECTL)	TSDSIC131
20	Ericsson India Pvt. Ltd.	TSDSIC006
21	ERNET India	TSDSIC086
22	Meta	TSDSIC096
23	Ganpat University	TSDSIC121
24	Himachal Futuristic Communications Ltd ( HFCL )	TSDSIC124
25	HNNOIX India Pvt Ltd	TSDSIC163
26	Huawei Telecommunications (India) Co. Pvt. Ltd.	TSDSIC032
27	IDEMIA SYSCOM INDIA Private Limited	TSDSIC153
28	IIT Gandhi Nagar	TSDSIC141
29	IIT Jodhpur	TSDSIC126
30	IIT PATNA	TSDSIC127
31	Indian Institute of Science, Bangalore	TSDSIC065
32	Indian Institute of Technology Bhilai	TSDSIC075
33	Indian Institute of Technology Bombay	TSDSIC001
34	Indian Institute of Technology Delhi	TSDSIC068
35	Indian Institute of Technology Hyderabad	TSDSIC016
36	Indian Institute of Technology Kanpur	TSDSIC026
37	Indian Institute of Technology Madras	TSDSIC012

# List of TSDSI MEMBERS

(As on 31<sup>st</sup> March 2025)

## TSDSI Corporate Members

S.No.	Name of the Organization	Membership ID
38	Indian Institute of Technology Mandi	TSDSIC038
39	Indian Institute of Technology, Kharagpur	TSDSIC093
40	Indian Institute of Technology, Roorkee	TSDSIC122
41	Indian Institute of Technology, Ropar	TSDSIC160
42	Indian Space Research Organization (Department of Space)	TSDSIC109
43	Indraprastha Institute of Information Technology, Delhi(IIT Delhi)	TSDSIC119
44	Innogle Technologies Pvt Ltd	TSDSIC133
45	Institute for Development and Research in Banking Technology	TSDSIC113
46	Intel Technology India Pvt Ltd	TSDSIC013
47	International Institute of Information Technology, Blr (IIIT Blr)	TSDSIC120
48	International Institute of Information Technology, Hyderabad	TSDSIC087
49	INVAS Technologies Pvt. Ltd.	TSDSIC125
50	Ittiam Systems Pvt Ltd	TSDSIC144
51	Keysight Technologies India Pvt Ltd	TSDSIC118
52	Kigen India Pvt Ltd	TSDSIC165
53	Kirat Communications (OPC) Pvt Ltd	TSDSIC171
54	Lekha Wireless Solutions Pvt Ltd	TSDSIC108
55	Marquis Technologies Pvt Ltd	TSDSIC161
56	Mediatek India Technology Pvt. Ltd.	TSDSIC101
57	Ministry of Electronics & Information Technology (MeitY)	TSDSIC066
58	MV Mobility Ltd	TSDSIC166
59	National Smart Grid Mission	TSDSIC107
60	Niral Networks Private Limited	TSDSIC115
61	Nokia Solutions and Networks India Pvt. Ltd.	TSDSIC025
62	OptimusLogic Systems India Private Limited	TSDSIC150
63	OptM Media Solutions Private Limited	TSDSIC130
64	Pantherun Technologies Pvt Ltd	TSDSIC168
65	Philips India Ltd	TSDSIC128
66	Prasar Bharati	TSDSIC114
67	Qualcomm India Private Limited	TSDSIC005
68	Quantumstats AI Global Pvt Ltd	TSDSIC174
69	QuNu Labs Pvt Limited	TSDSIC129
70	Reliance Jio Infocomm Limited	TSDSIC028
71	Resonous Technologies Pvt Ltd	TSDSIC151
72	Rohde & Schwarz India Pvt. Ltd.	TSDSIC035
73	Samsung R&D Institute India - Bangalore (SRI-B)	TSDSIC044
74	Scytale Alpha Pvt Ltd	TSDSIC170

# List of TSDSI MEMBERS

(As on 31<sup>st</sup> March 2025)

## TSDSI Corporate Members

S.No.	Name of the Organization	Membership ID
75	Sensorise Digital Services P Limited	TSDSIC104
76	Signalchip Innovations Pvt Ltd	TSDSIC105
77	SMOAD Networks Pvt Ltd	TSDSIC159
78	Society for Applied Microwave Electronics Engineering and Research (SAMEER)	TSDSIC094
79	Society for Electronic Transactions and Security (SETS)	TSDSIC137
80	Sooktha Consulting Pvt Ltd	TSDSIC088
81	Symbiosis Institute of Telecom Management	TSDSIC011
82	SYNIVERSE TECHNOLOGIES SERVICES (INDIA) PVT. LTD.	TSDSIC091
83	Tata Communications Limited (TCL)	TSDSIC111
84	Tata Consultancy Services Ltd.	TSDSIC014
85	Tata Elxsi Limited	TSDSIC146
86	Tata Teleservices Ltd	TSDSIC164
87	Tech Mahindra Ltd	TSDSIC074
88	TechPhosis Pvt Ltd	TSDSIC179
89	Tejas Networks Ltd	TSDSIC003
90	Telecommunications Consultants India Limited (TCIL)	TSDSIC027
91	University Institute of Engineering and Technology, Panjab University, Chandigarh	TSDSIC100
92	Vaan Megam Networks	TSDSIC142
93	Vodafone Idea Limited	TSDSIC033
94	Wipro GE Healthcare Pvt Ltd	TSDSIC136
95	Wipro Limited	TSDSIC090
96	WiSig Networks Pvt. Ltd	TSDSIC089
97	ZTE	TSDSIC140

## TSDSI Associate Members

S.No.	Name of the Organization	Membership ID
1	Advanced Television Systems Committee, Inc	TSDSIC145
2	Fraunhofer Institute for Integrated Circuits IIS	TSDSIC008
3	India Cellular & Electronics Association (ICEA)	TSDSIC116
4	ONE Media 3.0 LLC	TSDSIC092

# List of TSDSI MEMBERS

(As on 31<sup>st</sup> March 2025)

## TSDSI Observer Members

S.No.	Name of the Organization	Membership ID
1	Rebaca Technologies Pvt Ltd	
2	Apazuc Pvt Ltd	
3	ESDS software solution ltd	
4	DENSHO Technoplus Private Limited	
5	Aeries communication India Pvt Ltd	
6	Spiktel Technologies pvt ltd	
7	Gigayasa Wireless Private Limited	
8	MSRIT	
9	Vincular Testing Labs India Pvt. Ltd.	
10	L&TT	
11	Susan Future Technologies Private Limited	
12	Cientra TechSolution Pvt Ltd	
13	Government Polytechnic Mumbai	
14	Samridhi Automation Pvt. Ltd (SPARSH)	
15	Jaypee Institute of Information Technology, Noida (JIIT)	
16	JSS Academy Of Technical Education Noida, U.p.-201301, India	
17	IMZ Corporate	
18	Bharat Electronics	
19	Wireless 4 Scale Laboratory Pvt Ltd	
20	Simnovus India Pvt Ltd	
21	AGILINK Systems Pvt Ltd	
22	IIIT Naya Raipur	
23	SVNIT	
24	Spirent Communications India Pvt Ltd	

# Annexure 4

## Composition of TSDSI COMMITTEES

(As on 31<sup>st</sup> March 2025)

Name of the Committee	Co-Chairs	Members
GC Standing Committee on Standardization & Transposition	N. Subramanian, SETS Tripti Saxena, TEC	Mahesh Nayaka Mysore Annaiah, Reliance Jio - SGSS, Chair
		Kanamarlapudi Anuradha, WIPRO GE
		R Prakash , C-DOT - SGN, Chair
		Kiran Kumar Kuchi, IIT Hyderabad
		A Paventhan, ERNET
		Vijay Madan, TSDSI, Convenor
		Niwedita Pathak, TSDSI Coordinator
GC Standing Committee on Roadmap	Rajagopalan Rajappa, TATA Elxsi	Abhijeet Masal, CEWiT
		Vivek Khaneja, CDAC
		Suresh, CDAC
		Vinay Shrivastava, Nokia
		Arzad Alam Kherani, IIT Bhilai
		Akshay Aggarwal, Mediatek
		Ashwani, Nokia
		Niranth Amogh, Nokia
		Sreenath Ramnath, Lekha Wireless
		Abhijan Bhattacharyya, TCS
		Col. Suresh Warriar, Elena Geo Tech
		R Prakash, SGN Chair
		Mahesh Nayaka Mysore Annaiah, SGSS Chair
		Rohit Budhiraja, IIT Kanpur
A.K. Mittal, TSDSI, Convenor		
Sweta Singh, Coordinator		
GC Standing Committee on Rules and Regulations	Vinod Kumar, DoT Suresh Chitturi, Samsung	P. Hanumantha Rao, SAMEER
		Sunita Verma, MeitY
		Manish Kumar Rai, Resonous Technologies Pvt. Ltd
		Kuljit Singh, Convenor
GC Standing Committee on Legal & IPR Matters	VJ Christopher, DoT Satish Jamadagni, Reliance Jio	Niwedita Pathak, TSDSI, Coordinator
		Sreenath Ramanath, Lekha Wireless Solution Pvt Ltd
		Vinosh Babu James, Qualcomm
		Mr Vishwa Mohan, DOT
		Shefali Sinha, TSDSI, Convenor
Tushar Kulshreshtha, Coordinator		

# Composition of TSDSI COMMITTEES

(As on 31<sup>st</sup> March 2025)

Name of the Committee	Co-Chairs	Members
GC Standing Committee on Budget and Finance	Rajeev Sharma, BIS Rahul Vatts, Bharti Airtel Ashwani Kumar, Nokia	Neeraj Dhawan, Invas
		Akshay Aggarwal, MediaTek
		Vivek Khaneja, CDAC
		Kuljit Singh, Convenor
		Harsh Arora, Coordinator
GC Standing Committee on Outreach	Kanamarlapudi Anuradha, WIPRO GE P. Hanumantha Rao, SAMEER	Mombasawala Mohmedsaeed, Keysight Technologies India Pvt. Ltd
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