

## **TSDSI Induction Program**

### **Membership Engagement Model**

**Amit Gupta**

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TSDSI attracts members from all sections of Telecom/ICT Eco-system.

An organization can join TSDSI as a Corporate / Associate / Guest member. TSDSI Members can join 3GPP and oneM2M on attractive terms.

MEMBERSHIP TYPE	DESCRIPTION	PRIVILEGES
CORPORATE	Entities registered in India and engaged in telecom related activities	Contribute to technical activities Participate in Decision Making and Voting Hold Office bearer positions
ASSOCIATE	Industry Associations, Foreign Entities, Foreign Industry Associations	Contribute to Technical Activities
GUEST / OBSERVER	Professional Experts, Researchers in their individual capacity as observers. Companies wishing to explore before becoming full members are granted Guest Membership for six months.	Participate in Technical Activities and contribute on invitation

# Vertical Wise Membership Category

CAT 1	CAT 2	CAT 3	CAT 4	CAT 5	CAT 6	CAT 7	CAT 8	CAT 9	CAT 10	CAT 11	CAT 12
ASTROME	CISCO	BHARTI AIRTEL	FACEBOOK	DOLBY	INTEL	APPLE	CSIR	IISc	BSNL	SYNIVERSE	Interdigital
BEL	DSP WORKS	RELIANCE JIO	KIRAT	NIRAL	MEDIA TEK	SAMSUNG	C-DoT	IIT BOMBAY	DoT	KEYSIGHT	COHERENT LOGIX
ITI	ERICSSON	VODA-IDEA Ltd	SENSORISE	SOOKTHA	QUALCOMM	TATA MOTORS	CEWIT	IIT BHILAI	DCPW		Fraunhofer
LEKHA	HUAWEI		TCTSL	MAVENIR	SIGNALCHIP		IDRBT	IIT Delhi	ERNET		ONE MEDIA
SAANKHYA	NEC			TCS	WISIG		SAMEER	IIIT Delhi	MEITY		ICEA
STERLITE	NOKIA			TCIL				IIT KANPUR	NSGM		PLUM
TEJAS				TECH M				IIT Kharagpur	Prasar Bharti		
				WIPRO				IIT MANDI	ISRO		
				Sirab				IIT MADRAS			Observer
				TEKUNCORKED				IIT HYD			
								IIIT HYD			
Telecom nw equipment manufacturer with Indian IPR	Domestic Telco nw equipment manufacturer	Telecom Service Providers	Other Service Providers	Application sw / digital solution providers / developers	Semiconductor Design / Manufacturing	Terminal Equipment Manufacturer	R&D Organizations	SITM	Govt agencies / autonomous bodies	Other ICT Manufacturers	Associate Members
								UIET			
								Ganpat			

# Academic Institutions – Technical contributions made

Name	Study Item/New Item Proposal
IIT-B	<ul style="list-style-type: none"> <li>Lead a Study Item on PPDR. Currently, proposed a new NIP on PPDR.</li> <li>Key contributor of Study Item on Indian Language support for financial transactions &amp; applications (ILFTA)</li> </ul>
IIT-M	Key contributor of Study Item on Indian Language support for financial transactions & applications (ILFTA)
IIT-D	Proposer of NIP on Context Specific Data Pruning in Smart IoT Applications
IISc	Proposer of NIP on Common User Profile Format
IIIT Hyd	One of the proponents of NIP on oneM2M Release 3 transposition

Name	Study Item/New Item Proposal
IIT-B	Evaluation of the existing Relay/IAB architecture in 3GPP 4G LTE/5G NR Networks and Standardization of a new generic and flexible Relay/IAB Architecture along with the associated protocols
IIT-KGP	Load and Latency Aware Joint Hypervisor Controller Deployment for 5G and Beyond
IIT-KGP	UAV Assisted C-RAN for 5G and beyond
IIT-KGP	EPON based back-hauling in 4G/5G networks to reduce hand-off latency
IIT-KGP	Bandwidth aggregation for 5G TV Broadcast from the co-located UEs: A physical layer prospective with FeMBMS and downlink broadcast control channel.
IIT-D	Study and develop Dynamic Spectrum Access architecture for cognitive use of DTV and other licensed bands for communication without restriction of static protection contours

The recently published "5Gi Standard" was championed by IIT-M, IIT-H

# Academia Engagement

Member Organisation	Name of the person	TSDSI Initiatives	Strategic Events Support	TOPIC Champion	Key Position
Indian Institute of Technology, Madras	Mr. Bhaskar Ramamurthi			TSDSI RIT on IMT2020	Chairman of TSDSI (Oct 2018 Oct 2020)
Indian Institute of Technology Kanpur	Mr. Abhay Karandikar				DG and Chairman (Oct 2016 to Oct 2018)
Indian Institute of Technology, Hyderabad	Mr. Kiran Kuchi	Transposition Committee Chair, R&R, IPR Committee Member		TSDSI RIT on IMT2020	
Indian Institute of Science, Bangalore	Mr. K V S Hari	Standardization Committee Chair	TSDSI Tech Deep Dive Prog, Committee		

# Start ups – Technical contributions made

Start up	Technical Contribution made by Start ups in Study Groups
Astrome	<ol style="list-style-type: none"> <li>1. Characterization of E-band for 4G/5G</li> <li>2. Backhaul &amp; Rural Broadband</li> <li>3. Rural Broadband Architecture</li> </ol>
DSP Works	<ol style="list-style-type: none"> <li>1. Mobile Device Data Protection &amp; Privacy (MDPP)</li> <li>2. Public protection disaster and relief (PPDR)</li> </ol>
Lekha wireless	<ol style="list-style-type: none"> <li>1. CSI Enhancements for 5G NR and Future Networks</li> <li>2. MC-IOT Standard Proposal for channel BW below 100 kHz</li> </ol>
Sensorise	<ol style="list-style-type: none"> <li>1. NB-IoT Performance Assessment for Metering and SCADA</li> <li>2. User Device Data Protection</li> <li>3. Common User Profile Format</li> <li>4. Smart IoT Communication : Context Specific Data Pruning in Smart IoT Applications</li> <li>5. Indian Languages for financial transactions and applications</li> <li>6. IoT Identifier</li> <li>7. KYMC- Know your machine custodian</li> <li>8. Communications requirements and recommendations for the Energy Sector</li> </ol> <p style="text-align: right;"><b>(Contd..)</b></p>

# Start ups – Technical contributions made (contd ..)

Sensorise <b>(contd..)</b>	<ol style="list-style-type: none"><li>9. Public protection disaster and relief (PPDR)</li><li>10. Need of Post Quantum Cryptography in 5G Networks</li></ol>
Saankhya Labs	<ol style="list-style-type: none"><li>1. Broadcast Offload</li><li>2. Smart IoT Communication : Context Specific Data Pruning in Smart IoT Applications</li></ol>
Sooktha	<ol style="list-style-type: none"><li>1. Virtualization for Open-Disaggregated RAN</li><li>2. Mobile Device Data Protection &amp; Privacy (MDPP)</li><li>3. User Device Data Protection</li><li>4. Rural Broadband Architecture,</li><li>5. Smart IoT Communication : Context Specific Data Pruning in Smart IoT Applications</li><li>6. Public protection disaster and relief (PPDR)</li></ol>
Tejas	<ol style="list-style-type: none"><li>1. Proposal for study on use cases, requirements and technologies towards 6G</li><li>2. Need of Post Quantum Cryptography in 5G Networks</li><li>3. Rural Broadband Architecture</li><li>4. Public protection disaster and relief (PPDR)</li><li>5. Smart IoT Communication : Context Specific Data Pruning in Smart IoT Applications</li></ol>

# Start ups – Engagement with TSDSI

Start-up	Name of the person	Key Position
Sensorise	Sharad Arora	<ol style="list-style-type: none"> <li>1. Vice Chair - SGSS</li> <li>2. Chair - Outreach Committee</li> <li>3. Member - Roadmap Committee</li> </ol>
Saankhya Labs	Anindya Saha	Chair - Roadmap Committee
Sookhta	Balaji Rangaswamy	<ol style="list-style-type: none"> <li>1. Chair- Start up TF</li> <li>2. Member - Roadmap Committee</li> </ol>
TEJAS	Dr Kumar Sivarajan	<ol style="list-style-type: none"> <li>1. Chairman (from XXX)</li> <li>2. Member - Standardization committee</li> <li>3. Member - Start-up TF</li> </ol>
	Jishnu A	<ol style="list-style-type: none"> <li>1. Member - Open Source TF</li> <li>2. Member - Roadmap Committee</li> </ol>
Niral Networks	Abhijeet Chaudhary	Open Source transport sub team co - lead
WiSig	Dr Sai Dheeraj Amuru	Member - Budget and Finance Committee Member - R&R Committee



## **Task Forces at TSDSI**

# Application / Services Layer Standards Task Force

## Objectives:

- Formulate action plan for creation and adoption of Application & Services Layer Standards and for taking these to local and global SDO forums (such as ITU, 3GPP, oneM2M, IEEE, IETF)
- Considering the diversity and heterogeneity of ASL, explore also the route of APIs and open source for identification, specification and adoption of application layer standards.
- Develop Strategy for interoperability testing of application/services and enabling technologies across verticals
- Come out with Recommendations for field pilots across the ecosystem.

**Application/Services Layer Standards Task Force**  
**Co-Chairs:** Kamesh Chelluri (TCS) & Dr. Rajeev Shorey (IIT D), **Sectt Support:** Vijay Madan & Akash Malik

**Domain 1: Finance & Banking**

1. Abhishek Thakur (IDRBT)/ recommendation by Director, IDBRT– Finance & Banking

**Domain 2: Smart Cities**

1. Aurindam Bhattacharya (CDOT)
2. BIS nominees  
Mr Manikandan K (BIS)  
Mr Kshitij Bathla (BIS)

**Domain 3: Enabling Technologies**

1. Hemant Kumar Rath (TCS)
2. BIS nominees  
Mr Manikandan K (BIS)  
Mr Kshitij Bathla (BIS)

**Domain 4: Open Systems**

1. Inder S. Gopal (IISc)
2. Manish Gangey (Airtel)

**Domain 5: Future Technologies & Domain**

1. Dr. N. Subramanian (C-DAC)
2. Prashant Chugh (CDOT)

# Global SDO Task Force

## Objectives:

- Motivating and mobilizing Indian Industry/Academia to participate in Global SDO meetings
- Enhancing the quality and quantity of contributions from TSDSI to the global SDOs
- Mobilizing support for contributions made by TSDSI members especially those of National importance
- Mobilization of IPR declarations from TSDSI members
- Improved and increased hosting of Global SDOs meetings in India

## Global SDO Strategy Task Force

**Co-Chairs** : Prof Bhaskar Ramamurthi & Puneet Jain  
**Sectt Support** : Jean- Pierre Bienaime, Bindoo

### ITU Strategy

**ITU-R Co-Chairs** : RK Ganti,  
WPC Nominee  
**ITU - T Co-Chairs** : Jishnu A, TEC  
Nominee  
**Sectt Support** : Vishnu + Mr  
Mittal

### 3GPP Strategy

**Co-Chairs** : Satish Jamadagni,  
Suresh Chitturi  
**Sectt Support** :  
RAN/CT : MH Kori + Mr Mittal  
CT: Jayeeta SA : Mr Madan

### oneM2M Strategy

**Co-Chairs** : Aurindam + TEC  
Nominee  
**Sectt. Support** : Uday Desai

### IEEE-SA/other SDOs Strategy

**Co-Chairs** : Subhas Mondal +  
Sesh Simha  
**Sectt. Support** : Shefali

# Start up Strategy Task Force

## Objectives:

TSDSI commissioned a study on issues and challenges faced by deep-tech startups in India leading to creation of a White Paper.

Task Force was set up as one of the recommendations of the startup white paper (released by Secretary Telecom in Nov 2020):

- to hand-hold start-ups and plug them into the standards development process to evolve innovative domestic requirements and solutions.
- to create awareness and enable start-up participation in standards development process, provide inputs to policy changes as may be needed.

## Start up strategy Task Force

**Chair:** Balaji Rangaswamy (Sooktha)  
**Sectt Support :** Amit Gupta & Niwedita Pathak

### Members:

- **From TSDSI**
  - Anindya Saha (Saankhya)
  - Balaji Rangaswamy (Sooktha)
  - Kiran Kuchi (WiSig)
  - Kumar Sivarajan (Tejas)
  - Ramu TS (Lekha)
  - Anurag Vibhuti (TSDSI/TCoE)
- **From Govt:**
  - Rajesh Pathak (DoT/TCoE)
  - Brajesh Mishra
  - Alex Vikas
  - Jitendra Boi
- **Industry:**
  - Arvind Pai (Telecom/Semiconductor Consulting)
  - Guna Bala Shekar (Arukona/Startup Consulting)
  - Poornima Shenoy (Hummingbird/Funding Consulting)

# Open Source Task Force

## Objectives:

To answer the following questions:

- Meta question: Given the proliferation of Open Source components across all segments of the 5G architecture, how can Indian 5G deployments benefit?
- Can components of the 5G stack be entirely built from Open Source? Which ones? What must be done to make this a reality?
- What aspects of the Indian 5G ecosystem will benefit and how? What are the inhibitors in realizing these benefits? Are any of them unique to India?
- Can Open Source level the playing field for Indian 5G product companies? What will be the impact of Open Source on overall Indian 5G Industry?
- What specific actions need to be taken? Standards? IPR protection? Open Source Industry Consortia? Policy advocacy?

## Open Source Task Force

**Co-Chairs** : Prof Inder Gopal (IISc Bangalore) &  
Manish Gangey (AIRTEL)

**Sectt Support**: Niwedita Pathak

## Application sub team

**Leader**: Prabhu Rajashekaraiiah  
(AIRTEL)

## RAN sub team

**Co-Leaders**: Ankur Chauhan  
(AIRTEL)  
Ambarish (Sooktha)

## Transport Sub team

**Co-Leaders**: Abhijit Chaudhary (Niral Networks) &  
Harpreet Kaur (Hughes Systique Limited)

# Resources

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Visit <https://tsdsi.in/about/> for more information on TSDSI

Introductory Video on TSDSI @ <https://tsdsi.in/introductory-video-of-tsdsi/>

TSDSI Standards <https://tsdsi.in/published-standards/>

TSDSI transposed Standards at <https://tsdsi.in/3gpp/> and <https://tsdsi.in/onem2m/>

TSDSI Technical Reports from <https://tsdsi.in/tr/>

TSDSI White Paper on Startups at [link here](#)

Download our newsletters from <https://tsdsi.in/newsletter/>

TSDSI YouTube Channel: TSDSI [https://www.youtube.com/channel/UCM3WSD2bKWf5D\\_CDCoM54Ug](https://www.youtube.com/channel/UCM3WSD2bKWf5D_CDCoM54Ug)

TSDSI Twitter: @TSDSI\_India [https://twitter.com/TSDSI\\_India](https://twitter.com/TSDSI_India)

TSDSI LinkedIn: company/tsdsi <https://www.linkedin.com/company/tsdsi>

**Thank You**  
**[amit.gupta@tsdsi.in](mailto:amit.gupta@tsdsi.in)**