



## **BUREAU OF INDIAN STANDARDS**

### **MINUTES**

#### **28<sup>th</sup> MEETING OF 'INTERNET OF THINGS AND DIGITAL TWIN' SECTIONAL COMMITTEE, LITD 27 IN JOINT SESSION WITH ITS WORKING GROUPS (Hybrid meeting)**

Date & Time	26 <sup>th</sup> September 2024, 14:00 hrs
Venue	Hybrid Meeting (BIS Headquarter, New Delhi, India)

**Chairperson:** Mr Sushil Kumar, Addl. DG, DoT

**Member Secretary:** Mr Priyanshu Sharma, Scientist-C, BIS

#### **Attendees: -**

<b>S. No.</b>	<b>Name of Organization</b>	<b>Name of member</b>
3.	BIS	Mr Jitender Kumar
4.	BITS-Pilani	Dr Sarang C. Dhongdi
5.	C-DAC	Mr Hari Babu
6.	C-DAC	Ms Karthika V
7.	CSIR-NIO	Mr Vasudev P. Mahale
8.	III-T, Bangalore	Dr Kurian Polachan
9.	In Personal Capacity	Mr Ganga Prasad G L
10.	K L University	Dr Aravind Kilaru
11.	MEFGI	Dr Amit Sata
12.	MITS	Dr N Mohan Krishna Varma
13.	NASSCOM	Mr Sudhanshu Mittal
14.	TEC	Ms Namrata Singh
15.	MeitY	Mr Ravinder Kumar Meena
16.	Noida International University	Dr Tanya Singh (earlier representing, Amity University, Noida)
17.	CDAC	Mr Kaushik Nanda
18.	TUV Rhineland	Mr Lokesh Ramu
19.	IETE	Dr M. H. Kori
20.	Chandigarh Engineering College	Dr Pradeep Reddy (earlier representing VIT-AP University)
21.	STQC	Mr Ankit Jain

22.	STQC	Mr Vishal Jaiswal,
23.	Capgemini	Mr Yashowardhan Sonwale
24.	Idemia	Mr Pranav Singh
25.	CMET	Dr Parag Adhyapak

**Invitees:-**

S. No.	Name of Organization	Name of member
26.	Manipal Institute of Technology	Dr. Prathviraj N
27.	Chandigarh College of Engineering and Technology	Dr. Anil Kumar Rose
28.	Open Geospatial Consortium	Mr. Harsha Madiraju
29.	Manipal Institute of Technology	Dr. G. Pradeep Reddy

**Regrets:-**

S. No.	Name of Organization	Name of member
30.	Jadavpur University	Dr. Sarmistha Neogy
31.	KPMG	Mr Rishabh Dangwal

## ITEM 0 WELCOME

**0.1** Member Secretary welcomed to all participants to the meeting on behalf of BIS.

**0.2** The Chairperson of LITD 27 extended a warm welcome to all participants and commended members working in core technologies. He emphasized the need to increase India's involvement in international standardization efforts, comparing it to the actively contributing nations.

The Chairperson highlighted the importance of the ISO/IEC JTC 1 SC 41 meetings, which discusses on the technology focus areas for standardization pertaining to IoT & DT. He pointed out the growing importance of standardization in the emerging technologies like the Metaverse, Digital Twin, and AI, noting detailed discussions within the international community. He encouraged participation in the global events of such high repute, and also extended an invitation to the members to attend the upcoming WTSA event, being held in New Delhi in October 2024. The Chairperson urged members to participate in the upcoming SC 41 meetings and prepare useful contributions for submission from India.

**0.3** After a brief introduction of the participants present during the meeting, the committee requested the Member Secretary to take up the formal agenda items.

## ITEM 1 FORMAL CONFIRMATION OF THE MINUTES OF THE LAST MEETING

**1.1** Since no comments were received, the committee formally confirmed the minutes of the last (27th) meeting of LITD 27 held on 20<sup>th</sup> March 2024, which were circulated vide email and BIS portal.

## ITEM 2 SCOPE & COMPOSITION OF SECTIONAL COMMITTEE

**2.1** The committee reviewed the scope and composition of LITD 27 given in Annex-1 of the agenda.

**2.1.1** The committee considered the co-option requests received and again reiterated its previous decision that only the experts who are actively contributing in the WG/Panel level activities by providing regular inputs, will be considered for co-option in the committee. Highlighting this, the following experts were requested to provide details of the specific panel (s) under LITD 27, where they would be **willing to contribute based on their relevant expertise & experience** and also provide inputs on ongoing balloting documents for consideration of their co-option requests:

- **Google India Private Limited, Bengaluru** – Mr. Manoj Kumar
- **Chandigarh College of Engineering and Technology** – Dr. Anil Kumar Rose (Showed interest in P5 & P7)
- **Narnix Technolabs Private Limited, New Delhi** – Mr. Narang N. Kishor
- **Open Geospatial Consortium** – Mr. Harsha Madiraju (Showed interest in P5 & P6)
- **Individual capacity** – Dr. Prathviraj N
- **National Centre for Communication Security (DOT)** – Ms. Mounika Adepu
- **Manipal Institute of Technology** - Dr. G. Pradeep Reddy (Showed interest in P7)
- **EU Project SESEI** – Mr. Dinesh Chand Sharma
- **Telecommunications Standards Development Society, India** – Mr. Vijay Madan

**2.1.2** The committee **rejected** the following co-option requests since their CVs and experience were not relevant to the scope of work of the committee:

- **Gujarat Technological University** – Dr. Makwana Gautam Durlabhji
- **Veer mata Jijabai Technological Institute, Mumbai** – Mr. Rahul Ramdas Ingle
- **PSNA College of Engineering and Technology** – Mr. A. Dyson Bruno
- **Individual capacity** – Mr. Devendra N. Tandel
- **Individual capacity** – Mr. Gaurav Joshi

The committee advised these experts listed in 2.1.2 to approach the relevant committee of BIS based on their work and expertise.

**The committee also advised the members to ensure regular participation and recommended that absence in two consecutive meetings will call for their withdrawal from the committee. Members were requested to adhere to this recommendation.**

**2.3** The committee noted the information provided in Item 2.3 of the agenda.

**2.4** The following participants informed that they have parted ways with the institute they were earlier representing in the committee and requested the committee to consider updating their membership through the new institute. They were requested to share a formal confirmation letter through proper channel with the copy to their new affiliated institute (s) to the Member Secretary for further consideration:

- Dr Tanya Singh (earlier representing, Amity University, Noida) - Noida International University
- Dr Pradeep Reddy CH (earlier representing VIT-AP University) - Chandigarh Engineering College

**2.5** The committee also recommended the representation of Dr Mohan Krishna Varma in personal capacity in the committee, given his resignation from MITS.

## ITEM 3 DRAFT INDIAN STANDARDS UNDER DEVELOPMENT

3.1 The committee noted information given in Item 3 of the Agenda.

#### ITEM 4 PROPOSAL FOR FORMULATION OF INDIAN STANDARDS

4.1 The committee considered the proposal given at Item 4 of the agenda and **decided** to circulate draft Indian Standards identical to the following draft ISO/IEC Standards proposed by India within SC 41, under Wide Circulation for a period of 30 days, given the fact that these two draft standards have already gone through multiple discussions both within the national and the international forum:

- Internet of Things - IoT for Stress Management, Good health & Well-being
- Internet of Things - Underwater Network Management System - Interworking

#### ITEM 5 Working Groups/Panels under LITD 27

##### 5.1 WG 3 'IoT Architecture'

Member Secretary provided a brief update to the committee.

##### 5.2 WG 4 'IoT Interoperability'

Member Secretary provided a brief update to the committee.

##### 5.3 WG 5 'IoT Applications'

Member Secretary provided a brief update to the committee.

##### 5.4 WG 6 'Digital Twin'

Member Secretary provided a brief update to the committee.

##### 5.5 WG 7 'Maritime, underwater IoT and Digital Twin applications'

Member Secretary provided a brief update to the committee.

##### 5.6 Panel 1 'IoT for Stress Management, Good Health & Well-Being'

The committee noted the information given in Item 5.6 of the agenda and appreciated the work done.

#### ITEM 6 PROPOSED RECONSTITUTION OF LITD 27 & ITS WORKING GROUPS/ PANEL

6.1 The committee appreciated the proposal given in Item 6 of the agenda and **decided** to disband the following Working Groups under LITD 27 sectional committee:

- LITD 27/WG 3 "IoT Architecture"
- LITD 27/WG 4 "IoT Interoperability"
- LITD 27/WG 5 "IoT Applications"
- LITD 27/WG 6 "Digital Twin"
- LITD 27/WG 7 "Maritime, underwater IoT and Digital Twin applications"

The committee also **decided** to constitute 5 new working panels under LITD 27 on the following areas and with the initial Terms of reference as provided below.

- LITD 27/Panel 3 “IoT Foundational Standards”
- LITD 27/Panel 4 “IoT Interoperability”
- LITD 27/Panel 5 “IoT Applications”
- LITD 27/ Panel 6 “Digital Twin”
- LITD 27/ Panel 7 “Maritime, underwater IoT and Digital Twin applications”

The committee authorized the BIS Secretariat, in consultation with the Chairperson to decide on the Panel Convenorship offline. The committee also authorized the to-be appointed Convenor (s) to co-opt new members within the Panel (s) as and when felt appropriate by the Panel.

For the initial composition, the committee **decided** to retain the active participants from the corresponding respective LITD 27 WGs in these working panels.

Further, the Member Secretary was requested to send out a “**Call for membership**” for these newly constituted Panels via email. The committee requested the experts to proactively contribute in these panels based on their relevant expertise and experience. The initial composition and Terms of Reference of these panels is given in [Annex-1](#) of the minutes.

## ITEM 7 BRAINSTORMING POTENTIAL SUBJECTS TO BE TAKEN UP

**7.1** The committee deliberated on potential subjects to be taken up in the future and the following subjects were suggested by the participants for initiating future work:

- **Digital Twin for Telecom Network** - Dr Aravind Kilaru (K L University)
- **Extending applications of DT on Manufacturing** - Dr Amit Sata (MEFGI)
- **Integrity Blockchain on IIoT Networks (Blockchain integration in IIoT Networks)** - Dr Amit Sata (MEFGI)
- **Explainable AI** – Dr Tanya Singh (Noida International University) – To also review if this subject pertains to LITD 27 or LITD 30

The committee requested the concerned experts to kindly initiate the work on these subjects (preferably through a white paper or a supporting document), which may be utilized by the committee for initiating standardization work on these subjects. The committee will discuss further in the next meeting.

## ITEM 8 INTERNATIONAL STANDARDIZATION WORK

### 8.1 ISO/IEC 30177 ED1: Internet of Things (IoT) - Underwater network management system (U-NMS) interworking - Indian led project

The committee noted the information provided in Item 8.1 of the agenda and nominated the following Indian experts in JWG 32 “Maritime and Underwater IoT Effects on Environment and Ecology” of SC 41, given the significance of the JWG dealing with a project closely relevant to the Indian led project 30177:

- Dr G. Pradeep Reddy, MIT
- Dr N Mohan Krishna, MITS
- Shri Priyanshu Sharma, BIS
- Shri Pramod K Maurya, NIO
- Dr Sarang Dhongdi, BITS

## 8.2 ISO/IEC 30197 ED1: Internet of Things (IoT) – IoT for Stress Management, Good Health & Well Being - Indian led project

The committee noted the information provided in Item 8.2 of the agenda and nominated the following experts in JWG 33 “Embodied IoT Systems” of SC 41, given the significance of the JWG handling the Indian led project 30197:

- Mr Sushil Kumar, DoT
- Mr Priyanshu Sharma, BIS
- Dr Sarmistha Neogy, Jadavpur University
- Mr Ajit Ashok Shenvi, Philips India Pvt Ltd
- Mr Dorai Subramaniam, Wipro GE HealthCare
- Mr Maheshappa, Siemens Healthcare Private Limited
- Mr Jitender Kumar, BIS
- Dr Amit Sata, MEFGI
- Mr Ankur Bansal, Samsung
- Mr Kaushik Nanda, CDAC
- Dr V Karthika, CDAC
- Dr M H Kori, IETE

## 8.3 Plenary Meetings of ISO/IEC JTC 1/SC 41

### 8.3.1 Debriefing from last Meeting of JTC 1/SC 41

The committee noted and appreciated the active participation from Indian experts during the last Plenary & WG meetings of JTC 1/SC 41 held during 27-31 May 2024 in Espoo, Finland.

### 8.3.2 Upcoming Meeting of JTC 1/SC 41

The committee noted the information provided in 8.3.2 of the agenda and members were encouraged to consider their participation in the upcoming plenary meeting as well as the working group of the JTC 1/SC 41 during 11-15 November 2024. Members of LITD 27 & its WGs/Panel may communicate their interest in attending the SC 41 meetings before 11<sup>th</sup> October 2024 to the BIS Secretariat, for finalization of the Indian delegation.

**8.4** The Committee reviewed the list of experts registered in various WGs/AGs/ahGs under JTC 1/SC 41, and **decided** to withdraw the following members due to lack of participation from WGs of SC 41:

SI No.	WG	Experts
1.	<b>JTC 1/SC 41/ WG 3 IoT Foundational Standards</b>	1. Mr Prashant Sankhla 2. Ms Kavita Bhatia 3. Ms Ashima 4. Mr Shekhar Singh 5. Dr Delphin Raj

2.	<b>JTC 1/SC 41/ WG 4 IoT Interoperability</b>	<ol style="list-style-type: none"> <li>1. Ms Kavita Bhatia</li> <li>2. Mr Delphin Raj</li> <li>3. Mr Prashant Sankhla</li> <li>4. Mr Tulasi Dwarakanath</li> <li>5. Mr Mohan Kumar R</li> <li>6. Mr Balaji Rajendran</li> </ol>
3.	<b>JTC 1/SC 41/ WG 5 IoT Applications</b>	<ol style="list-style-type: none"> <li>1. Mr Abhik Chaudhuri</li> <li>2. Mr Prashant Sankhla</li> <li>3. Mr Vaibhav Pratap Singh</li> <li>4. Ms Ashima</li> <li>5. Dr Vikram Venkateshwaran</li> <li>6. Mr Supratik Gupta</li> </ol>

## 8.5 Standards of JTC 1/SC 41

**8.5.1** The committee noted the information provided in 8.5.1 of the agenda.

### ITEM 9 DOCUMENTS DUE FOR VOTING

Members were **requested** to provide their inputs on the SC 41 balloting documents before the due date to the BIS Secretariat through the IR portal.

Further, the Member Secretary was requested to share the balloting document “JTC1-SC41/444/NP” with Mr. Harsha Madiraju, OGC and “JTC1-SC41/452/NP” with Dr. Anil Kumar Rose, CCET for review.

Dr. Anil Kumar Rose and Mr. Harsha Madiraju were requested to provide their inputs to the Member Secretary at least a week before the due date.

### ITEM 10 GUIDELINES FOR RESEARCH & DEVELOPMENT (R&D) PROJECTS FOR THE FORMULATION AND REVIEW OF STANDARDS INVITING POTENTIAL R&D PROJECTS FROM THE COMMITTEE MEMBERS

The committee noted the information given at Item 10 of the agenda and committee members were again encouraged to submit potential R&D projects & their associated ToR for the consideration & review by the committee.

### ITEM 11 DATE AND PLACE FOR THE NEXT MEETING

**11.1** It was **decided** to schedule the next committee meeting tentatively in the first week of December 2024. The exact date would be finalized in consultation with the Chair.

### ITEM 12 ANY OTHER BUSINESS

**12.1** There being no other items to be discussed, the meeting ended with a vote of thanks to the Chairperson and the participants.

**Annex-1**

<b>Panel</b>	<b>Composition</b>
LITD 27 Panel 3 “IoT Foundational Standards”	<ol style="list-style-type: none"><li>1. Dr. Anand Kumar, TCS</li><li>2. Dr Sarmistha Neogy, Jadavpur University</li><li>3. Shri Prashant Sankhla, KPMG</li><li>4. Dr Tanya Singh, Noida International University</li><li>5. Shri Hari Babu, C-DAC</li><li>6. Shri Aurindam Bhattacharya, C-DOT</li><li>7. Shri Sushil Kumar, TEC</li><li>8. Shri Naveen Choudhary, ERNET India</li><li>9. Dr Gargi Keeni, In Personal Capacity</li><li>10. Shri Ganga Prasad G L, In Personal Capacity</li><li>11. Dr N Mohan Krishna, MITS</li><li>12. Shri Sudhanshu Mittal, NASSCOM</li><li>13. Shri Abhik Chaudhuri, TCS</li><li>14. Shri Vishal Jaiswal, STQC</li></ol>
LITD 27 Panel 4 “IoT Interoperability”	<ol style="list-style-type: none"><li>1. Shri Hari Babu, C-DAC</li><li>2. Dr Tanya Singh, Noida International University</li><li>3. Mr Jitender Kumar, BIS</li><li>4. Mr Vasudev P. Mahale, CSIR - NIO</li><li>5. Mr Sushil Kumar, TEC</li><li>6. Dr Sarmistha Neogy, Jadavpur University</li><li>7. Dr N Krishna Varma N, MITS</li><li>8. Mr Pramod Kumar Maurya, NIO</li><li>9. Ms Namrata Singh, TEC</li><li>10. Dr Gargi Keeni, In Personal Capacity</li><li>11. Shri Ganga Prasad G L, In personal Capacity</li><li>12. Shri Vishal Jaiswal, STQC</li><li>13. Dr Sarang Dhongdi, BITS</li><li>14. Shri Kaushik Nanda, C-DAC</li><li>15. Dr Nancy Victor, VIT</li><li>16. Shri Sudhanshu Mittal, NASSCOM</li><li>17. Shri Abhik Chaudhuri, TCS</li><li>18. Shri Lokesh R, TUV</li></ol>
	<ol style="list-style-type: none"><li>1. Shri Ankur Bansal, Samsung</li><li>2. Dr Tanya Singh, Noida International University</li><li>3. Mr Jitender Kumar, BIS</li><li>4. Shri Kaushik Nanda, C-DAC</li><li>5. Shri Vasudev P Mahale, NIO</li><li>6. Dr A Paventhan, ERNET India</li><li>7. Dr Sarmistha Neogy, Jadavpur University</li><li>8. Dr. Aravind Kilaru, K L University</li><li>9. Dr. Amit Sata, Marwadi Education</li><li>10. Shri Ravinder Kumar Meena, MEITY</li></ol>

<p>LITD 27 Panel 5 “IoT Applications”</p>	<ol style="list-style-type: none"> <li>11. Dr Mohan Krishna Varma N, MITS</li> <li>12. Shri Sudhanshu Mittal, NASSCOM</li> <li>13. Shri Pramod K Maurya, NIO</li> <li>14. Shri Ajit Shenvi, Philips,</li> <li>15. Dr Pradeep Reddy, Chandigarh Engineering College</li> <li>16. Dr Gargi Keeni, In Personal Capacity</li> <li>17. Shri Rajendra Prasad, Philips</li> <li>18. Dr Pavan Kumar, VIT-AP University</li> <li>19. Dr Sudhanshu Maurya, Symbiosis University</li> <li>20. Dr Vikram Venkateshwaran, Deloitte India</li> <li>21. Dr Nancy Victor, VIT University</li> </ol>
<p>LITD 27 Panel 6 “Digital Twin”</p>	<ol style="list-style-type: none"> <li>1. Shri Veerendra Vasamsetty, Schneider Electric</li> <li>2. Shri Vasudev P. Mahale, CSIR - NIO</li> <li>3. Shri Sushil Kumar, TEC</li> <li>4. Dr Aravind Kilaru, K L University</li> <li>5. Dr. Amit Sata, Marwadi Education</li> <li>6. Dr N Mohan Krishna, MITS</li> <li>7. Dr Pradeep Reddy, Chandigarh Engineering College</li> <li>8. Dr Gargi Keeni, In Personal Capacity</li> <li>9. Dr V Karthika, CDAC</li> <li>10. Ms Namrata Singh, TEC</li> </ol>
<p>LITD 27 Panel 7 “Maritime, underwater IoT and Digital Twin applications”</p>	<ol style="list-style-type: none"> <li>1. Shri Pramod Kumar Maurya, NIO</li> <li>2. Dr N Mohan Krishna Varma, MITS</li> <li>3. Shri Vasudev P. Mahale, CSIR - NIO</li> <li>4. Dr Sarang Dhongdi, BITS</li> <li>5. Dr N Vedachalam, NIOT</li> <li>6. Mr P Muthuvel, NIOT</li> <li>7. Dr Tanya Singh, Noida International University</li> <li>8. Dr. Delphin Raj, In Personal Capacity</li> <li>9. Dr. Pradeep Reddy, Chandigarh Engineering College</li> <li>10. Dr Pavan Kumar, VIT-AP University</li> <li>11. Mr Sushil Kumar, TEC</li> <li>12. Dr Gargi Keeni, In Personal Capacity</li> <li>13. Dr V Karthika, CDAC</li> </ol>

