tsdsi
India's Telecom SDO

Telecommunications
Standards Development
Society, India

STUDY GROUP SERVICES AND SOLUTIONS

Induction Program

20 June 2024

Agenda

- About SGSS and Working Groups
- SGSS Activities
- Upcoming Plenary and 6G Workshop
- Working Procedure

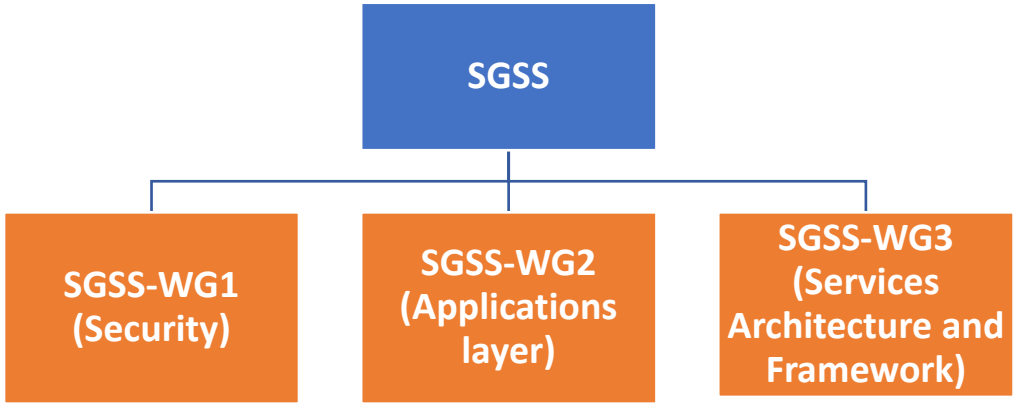
SGSS is Responsible for(1/2)

1. Definition of requirements for the telecom industry and related services and applications, including:
   - Service level requirements and features for various domains and applications (e.g., IoT/M2M, Automotive, Public Safety, Health).
2. Development of end-to-end service capabilities and architecture, based on the requirements, including:
   - Technical specifications for application layer functional elements and interfaces.
   - System aspects such as QoS, interoperability, etc.
   - Data management aspects such as schemas, analytics, provisioning, etc.
   - Localization components in services and systems e.g., Indian languages.
3. Security and Privacy aspects in the end-to-end telecom networks. It includes
   - Determining the security and privacy requirements for telecom networks including the mobile cellular and fixed-line networks across user equipment, access network, transport network, core network, and service layer security aspects.
   - Specifying the related security architectures and protocols.

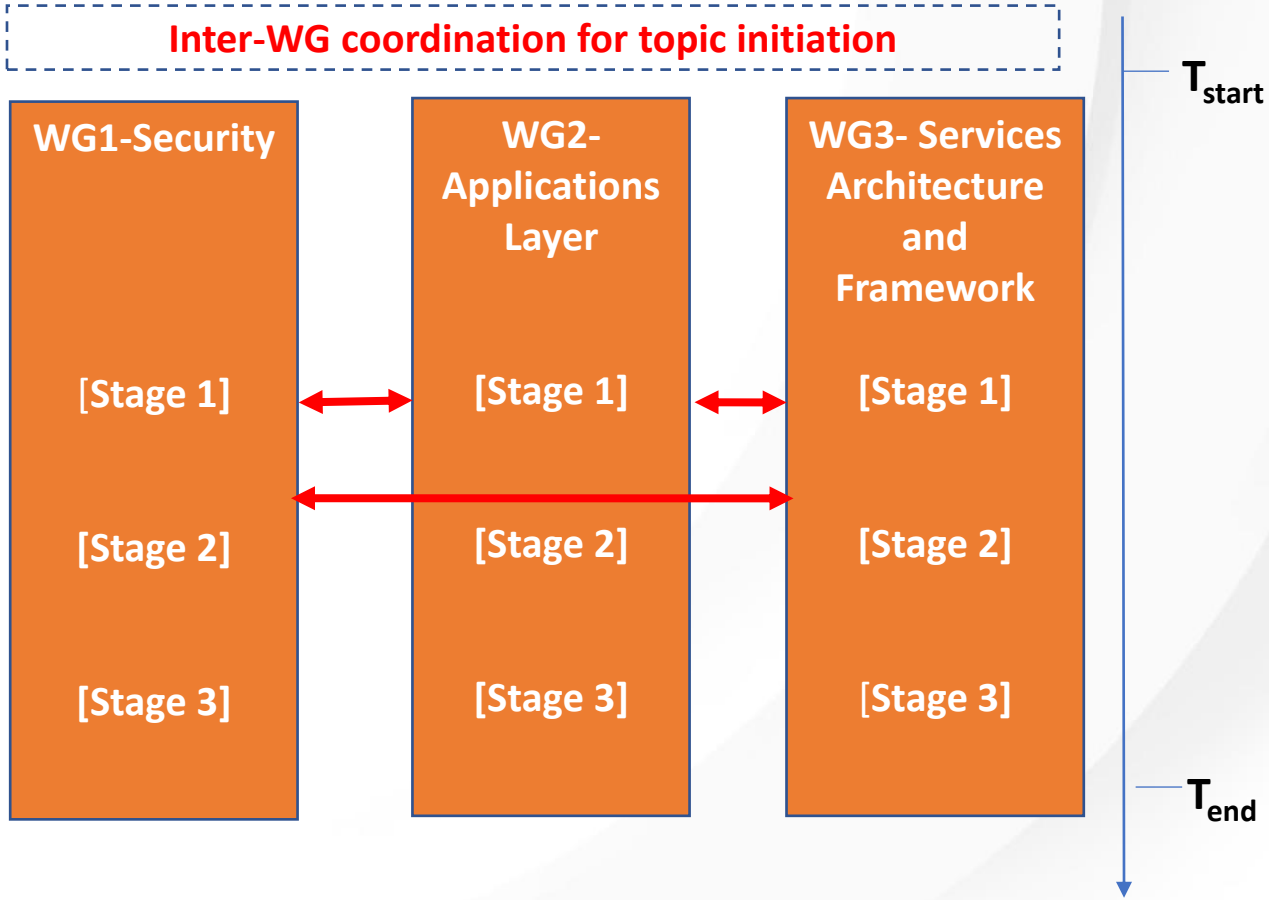
SGSS is Responsible for(2/2)

4. Energy performance for telecommunication networks including access, user equipment, aggregation, core including the underlying transport systems, including:
   - Setting the energy performance related requirements across the end-to-end network
   - Benchmarking network energy performance
   - Energy optimization for networks
   - Energy performance testing
5. Recommendations of test requirements and evaluation methodologies for any service level conformance testing activities.
   - SG-Services & Solutions is also responsible for liaison for regulatory aspects between TSDSI and external govt. agencies on the above topics as required, in coordination with the TSDSI secretariat
   - SG-Services & Solutions works closely with SG-Networks for those aspects that are related to security in the access network, core networks, or wireless/wireline-based backhaul networks.

SGSS – WG Organization and Focus Areas



- **NIPs for SI/WI need E2E focus from the time topic is initiated.**
- **Coordination mechanisms between WGs should be setup depending on the topic need.**



Mr. Mahesh Nayaka M.A. (R-Jio)
Chair - SGSS

Mr. Niranth Amogh (Nokia)
Vice Chair –SGSS

WG1 - Security

Mr. Aurindam Bhattacharya
(C-DOT)
Chair

Mr. Saurabh Khare
(Nokia)
Vice - Chair

WG2 – Application Layer

Prof. Arzad A. Kherani
(IIT-Bhilai)
Chair

Prof. Vireshwar Kumar
(IIT-Delhi)
Vice - Chair

WG3 – Services Architecture & Framework

Ms. Roopa C
(C-DOT)
Chair

Vice – Chair
Vacant

SGSS WGs

WG1: Security

Chair – Aurindam Bhattacharya (CDOT)
VC – Saurabh Khare (Nokia)

- Security and Privacy aspects in the end-to-end telecom networks. It includes
  - Determining the security and privacy requirements for telecom networks including the mobile cellular and fixed-line networks across user equipments, access network, transport network, core network and service layer security aspects.
  - Specifying the related security architectures and protocols.
  - Post Quantum Cryptography, security aspect of AI/ML model transfer in 5GS, security enablers for 6G, CEIR, Network Security.

WG2: Applications Layer

Chair – Prof. Arzad Kherani (IIT Bhilai)
VC - Dr Vireshwar Kumar (IIT Delhi)

- Definition of requirements for telecom industry and related services and applications, including:
  - Service level requirements and features for various domains and applications (e.g. Automotive, Health, Finance, Indian Language Support for Financial Transactions, Metaverse, Telerobotics, Slice identification in 5G RAN and Core, Sustainable 6G networks, AI/ML models for self-sustainable V2X applications in 6G Networks, integrated sensing at application level, common payload Agriculture).
- Development of end-to-end application specific functional service capabilities and architecture, based on the requirements, including:
  - Technical specifications for application layer functional elements and interfaces.
  - Application specific system aspects such as QoS, interoperability, etc.
  - Application specific Data management aspects such as schemas, analytics, provisioning, etc.
  - Localization components in services and systems e.g. Indian languages.

WG3: Services Architecture and Framework

Chair – Roopa C (CDOT)

- Definition of architecture and protocol requirements for telecom industry and related services and applications, including:
  - Service, Architecture and protocol level requirements and features for various domains and applications (e.g. IoT/M2M, Public safety/Critical communications, Cloud. Rural Broadband, common edge connectivity, affordable cost modeling data services, Smart Agriculture, Carrier grade Linux, AI/ML operation splitting context in 6G).
- Development of service framework/architecture and protocol aspects (including Critical Communications, Cloud, AI/ML, APIs)
  - Technical specification for architecture and framework for service platforms including aspects of functional elements , interfaces, common data models
  - Technical specification for common protocols
- Energy efficiency for telecommunication networks including access, user equipment, aggregation, core including the underlying transport systems, including:
  - Setting the energy efficiency related requirements across the end-to-end network
  - Benchmarking network energy efficiency
  - Energy optimization for networks
  - Energy efficiency testing
- Recommendations of test requirements and evaluation methodologies for any service level conformance testing activities.

SGSS Activities

Ongoing Activities & Published artifacts

Ongoing Study / Work Items – WG1: Security

S. No.	Title	% Status	Proponents
1	SI103 - Study on the security aspects of Artificial Intelligence (AI)/Machine Learning (ML) models for 5G applications (NIP 303)	50%	Debanka Giri, IIT Bhilai
2	SI 104 - Enhancement of the security and privacy of the user subscription identity in 5G AKA (NIP 306)	70%	K Sowjanya, IIT Bhilai
3	SI 105 - A location privacy-preserving scheme to mitigate the authentication relay attack under False Base Station in 5G (NIP 307)	30%	K Sowjanya, IIT Bhilai
4	SI111 - Study on Security Enablers for 6G (NIP321)	30%	Saurabh Khare, Nokia
5	SI115 - 5G and Beyond Network Security Architecture to support Multilevel End-to-End User Plane Security (NIP317)	10%	Aneesh K, C-DAC
6	SI124 - Fortifying Telecommunication, Safeguarding Users: A Technical Exploration of the Significance and Implementation of Central Equipment Identity Register (CEIR)(NIP336)	10%	Sandeep Aggarwal, C- DOT
7	SI132- Network Security (NIP345)	10%	Sunesh Gupta, TCS
8	SI133- AI/ML-based Security Implementation in Wireless Communication Systems (NIP349)	10%	Jayati Dutta, IIT Hyderabad

Ongoing Study / Work Items – WG2: Application Layer

S. No.	Title	% Status	Proponents
1	SI98 - Study on system requirements related to Metaverse use cases in mobile network (NIP 296)	99%	Bighnaraj Panigrahi, Nokia
2	WI1-NIP279 - A local language repository as an enabler for financial workflows	40%	Devendra Jalihal, IIT Madras
3	WI1-NIP310 - Integrated communication and sensing at the Application level	20%	Satish Jamadagni, R -Jio
4	SI112 - Research directions and Collaboration on Intelligent Transport Systems Communication Standards (NIP323)	70%	Satyajit Thakor, IIT Mandi
5	SI113- Enablement of common payload for Agricultural Automation Solutions (NIP324)	20%	Anish Satyan, C-DAC
6	SI114 - Study on semi-autonomous collaborative telerobotics (NIP325)	40%	Amit Sethi, TCS
7	WI1-NIP330 - Standardization of common data payload for adaptive traffic control system and other Intelligent transportation system products for interoperability	25%	Hemant Jeevan, C-DAC
8	SI134 - Slice Identification in 5G RAN and Core for End-to-End Secure and Resilient Slice Service (NIP352)	10%	Antony Franklin, IIT Hyderabad
9	SI135 - Suggested recommendations for sustainable 6G networks (NIP353)	10%	Amit Sethi, TCS
10	SI137 - Recommendations for use of Dynamic AI/ML models for self-sustainable V2X applications in 6G Networks (NIP354)	10%	Amit Sethi, TCS

Ongoing Study / Work Items – WG3: Services Architecture and Framework

S. No.	Title	% Status	Proponents
1	SI101 - Enablement of common edge connectivity for public utility purposes (NIP 292)	45%	Sandeep Verma, IIT Delhi
2	WI1-NIP282 - Architecture to support tactile applications with edge intelligence over 5GS	30%	Sandeep Verma, IIT Delhi
3	WI-NIP 309 – Stage III WI proposal for CIP (Cloud Interoperability & Portability)	10%	Satish Jamadagni, R- Jio
4	SI116 - Study on the Usage of oneM2M for Smart Agriculture end-to-end monitoring use case in Indian context (NIP327)	80%	Neeraj Dhawan, INVAS
5	WI1-NIP328 - RBSA – Operational Framework and Marketplace Design	25%	Sandeep Agrawal, C-DOT
6	SI123 - Cost model considering network assets and utilization (NIP334)	25%	Ashok Singh Tomer, BSNL
7	SI125 - Study on further enhancements on RBSA (Rural Broadband Service Architecture)(NIP337)	25%	Rajat Duggal, Nokia
8	SI126 - Study of Carrier Grade Linux Specification (NIP342)	10%	Digambar Sangavkar, C-DoT
9	SI136 - Framework for AI/ML operation splitting in 6G context(NIP350)	10%	Amit Sethi, TCS
10	SI138 - Use cases for rural connectivity (NIP355)	10%	Phalguni Mathur

Technical Standard and Report

S. No.	Reports released by SGSS	Date
1.	Study of Existing Models and Gap Analysis for a BB PPDR Communication System in India (TSDSI TR 6000 V1.0.0)	Jul'19
2.	Information Centric Networking (TSDSI TR 6001 V1.0.0)	Aug' 19
3.	Cloud Interoperability & Portability (CIP) Standard Reference report (TSDSI TR 6005 V1.0.0)	Aug'20
4.	Reducing Threats to the National Critical Infrastructure Using DNS (TSDSI TR 6006 V2.0.0)	Sept'20
5.	Drone Communication Services Support in Cellular Network (TSDSI TR 6007 V1.0.0)	Feb'21
6.	Smart IoT Communication: Context Specific Data Pruning in Smart IoT Applications (TSDSI TR 6008 V1.0.0)	Mar'21
7.	User Device Data Protection (TSDSI TR 6012 V1.0.0)	Oct'21
8.	Digital Process For Know Your Machine Custodian (TSDSI TR 6013 V1.0.0)	Nov'21
9.	Indian Languages in Mobile Transactions(TSDSI TR 6014 V1.0.0)	Dec'21
10.	Service Delivery using 5G Broadcast for TV, Radio, IPTV and File-casting (TSDSI TR 6015 V1.0.0)	Apr'22
11	Minimum Technical Requirements for PPDR system deployment in India (TSDSI TR 6019 V1.0.0)	Aug'22
12	Study on Edge Intelligence standards for haptics related IIoT use cases (TSDSI TR 6018 V1.0.0)	Oct'22
13	Digital Process For Know Your Machine Custodian (TSDSI TR 6013 V2.0.0)	Feb'23
14	Study of Post-Quantum-Cryptography for Future 5G Networks and Application Verticals (TSDSI TR 6021 V1.0.0)	Mar'23
15	Rural Broadband Services & Architecture(TSDSI TR 6023 V1.0.0)	Jun'23
16	Study UAV/Drone 3GPP-5G standards applicability to India use cases (TSDSI TR 6025 V1.0.0)	Jun'23
17	Slice Identification in 5G RAN and Core for End-to-End Secure and Resilient Slice Services (TSDSI TR 6028 V1.0.0)	Oct'23
18	Enablement of common ontology for adaptive traffic control system and other ITS products (TSDSI TR 6029 V1.0.0)	Dec'23
19	Communications Requirements and Recommendations for the Energy Sector (TSDSI TR 6030 V1.0.0)	Feb'24

S. No.	Standard released by SGSS	Date
1.	Cloud Interoperability & Portability Standard (TSDSI STD 5001 V1.0.0)	Jun'23

Upcoming Plenary and SGSS 6G Workshop

The Next SGSS Technical Plenary starts on -

Monday, 08th July 2024 (2 days conference) (8th & 9th July 2024)

Come, join us!

Take Indian innovation to global Standards!!

Register here for TP and workshop

6G workshop on Use case scenarios, Services, and Applications

As we transition towards the next generation of wireless technology, 6G promises revolutionary advancements that will reshape our societies and economies. This workshop aims to bring together research and standards experts from academia, industry to discuss the multifaceted dimensions of use case scenarios, services, and applications/frameworks that will drive the adoption and evolution of 6G networks.

Secretariate		
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Mr Vijay Madan	Advisor & Mentor	vijay.madan@tsdsi.in
Mr Vishnu Ram OV	Consultant	Vishnu@tsdsi.in
Mr Rajesh Kapoor	Technical Consultant	Rajesh.kapoor@tsdsi.in
Mr Akash Malik	Engineer Standards	akash@tsdsi.in
Ms Chandrakanta Rathore	Program Executive	Chandrakanta.Rathore@tsdsi.in

Working Procedure

SGSS Process (1/2)

How It Works…?

SGSS works based on

- Participation in face-to-face meetings, Virtual Meeting
- Pro-activity & Contributions – you need to write proposals to get attention
- Support from at least 4 organization on the proposal
- Proposals are approved by consensus

- **Work organization**
  - Study Items, Work Items

SGSS Process (2/2)

Some SGSS Terms explained…

- **NIP(New Item Proposal)**:
  The proposal to initiate work on a new item as per the SG ToR and which are not currently covered by existing SI or WI in SG can be proposed by the Members using a NIP. It could result in a new Study or Work Item. The template for NIP is provided in next Slide

Champion:
Champion is a primary contact assigned for each of the WI or SI.

- **SI(Study Item)(check working procedure)**

  Feasibility study to analyze the market and potential technical difficulties of a given service or approach. The results may be made available in a TR (technical report).
- **WI(Work Item)**:
  The actual specification development for a new feature and/or a building block. Produces TS (technical specification). WI may cover more than one specification within SGSS.
- **SWIC(Study work Item Contribution):**
  Contribution to existing Study Item or Work Item shall be submitted using a SWIC. SWIC is a common template that can be used to contribute to either SI or WI. The template for SWIC is provided in Next Slide .

The template for NIP

Appendix-2 New Item Proposal template

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New Item Proposal

[Form to be used for proposing a new item for standardization, study, or consideration by TSDSI]
[Instructions for filling are given at the end of the Form]

Study/Work Group meeting for which the contribution is submitted	*<SG-Networks/SG-Services> <Meeting Number>*	
Date of Meeting	*<Date of meeting>*	
Title	*<Provide the name of the NIP. The title shall be specific and indicate the item clearly. Do not use bold letters>*	
NIP Number	*<Please mention entire NIP number with version no as generated while filling up the form on website following the Action 1 of the Instructions.>*	
Proposed Outcome *(Please tick anyone)*	Study Item	Work Item
Supporters: *< Please give one name from each supporting corporate member. The first name shall be of the champion for the NIP. Additional names can be incorporated in the list depending upon support from members during the course of discussion in Study Group. The e-mail ids shall be the official email ids with organization domains or ids used while registering as a member with TSDSI>*		
Member Organization Name	**Name of the Person**	**Email**

**Please add additional rows if required.*

1. Description

<Provide detailed background, justification, and description of the proposal. The scope of the proposal should be clearly brought out.>

2. Objectives

<List the objectives of the proposal and intended output (e.g., Technical Report, Technical Guide, Technical Standard)>

3. Impact

<Provide the impact of the objective/outcome of the NIP on User, Networks and applications considering Industry/user vertical etc.>

4. Relation with any existing/planned domestic or international standards/TSDSI Roadmap

4.1 Dependence on/modification of any existing TSDSI, national or international standard.....Yes/No

The template for SWIC

Appendix-3 Study or Work Item Contribution template

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Study or Work Item Contribution

Study/Work Group meeting for which the contribution is submitted	*<SG-Networks/SG-Services> <Meeting Number>*
Date of Meeting	*<Date of meeting>*
Title	*<Please mention title of the contribution (SWIC) clearly>*
SWIC Number Allotted	*<Please mention entire SWIC number with version no. as generated while filling up the form on website following the Action 1 of the Instructions.>*
Study Item/ Work Item Number	*<Mention the Study Item/Work Item number # for which contribution is submitted. If required, refer to TSDSI website>*
TSDSI Document Number(s)	*<List of the TSDSI Document number(s) wherein the corresponding proposals in the Contribution will be implemented, as approved>*
SWIC Type	*<Mark "X" against the type of SWIC below>* [ ] Discussion Paper [ ] Contribution

Proposers and *Supporters:

< Please give only one name from proposer and each supporting corporate member organization. The first name shall be of the proposer. The e-mail ids shall be the official email ids with organization domains or ids used while registering as a member with TSDSI>

Member Organization Name	Name of the Person	Email ID

**Please add additional rows if required.*

1. Introduction

<This section should contain introduction to the contribution and justification for the Contributions >

2. Description of the contribution

<This section provides the description of the contribution. If the contribution has multiple Contributions, t can be separately listed as Contribution 1, Contribution 2 etc. Also clearly mention the TSDSI document corresponding to each Contribution. Change marks should be enabled for Contributions containing modifications to existing content of a TSDSI document. If the contribution is a discussion paper, suitable sub-sections can be provided for detailed illustrations.>

3. References

References

- Links for published TRs: https://tsdsi.in/tr/
- Brief about SGSS(ToR): https://tsdsi.in/study-group-sg-servicessolutions-2/
- To view SGSS WG1 (ToR & activities) - https://tsdsi.in/wg1-security/
- To view SGSS WG2 (ToR & activities) - https://tsdsi.in/wg2-application-layer/#_WG2:_Application_Layer
- To view SGSS WG3 (ToR & activities) - https://tsdsi.in/wg3-services-architecture-and-framework/#_WG3:_Services_Architecture
- Form to fill contribution form: https://wp.me/P92n5k-vj
- Links for NIP/SWIC templates: https://members.tsdsi.in/index.php/f/9950
- To view existing NIP/SWIC/SI documents: https://wp.me/P92n5k-hD

Thank You

SGSS Team