

TERMS OF REFERENCE of ETSI ISG “Integrated Sensing And Communications” (ISG ISAC)

Approved by the Director-General on **19 September 2023** following ETSI Board#144 consultation

SCOPE

ETSI ISG ISAC will provide an opportunity for ETSI members to coordinate their pre-standards research efforts on integrated sensing and communication technology across various EU/National funded collaborative projects, extended with relevant global initiatives, towards paving the way for 6G standardization of the technology.

The ISG will prepare systematic output on 6G use cases, channel models, architecture and deployment considerations, KPIs and evaluation assumptions, for subsequent evaluation by standards organizations such as 3GPP future 6G releases and ITU-R IMT-2030 deliverables (e.g. capabilities, evaluation methodology).

The scope of ETSI ISG ISAC is summarized below:

- Definition of a prioritized set of 6G use cases and sensing types with a roadmap for their study and evaluation.
- Development of advanced channel models for the target 6G ISAC use cases and sensing types, and validation through extensive measurement campaigns, that can fill the gaps of existing communication-based channel models (e.g. 3GPP, IEEE 802, ITU-R).
- Specification of KPIs and evaluation methodology building upon the channel modelling and measurements, simulations/POCs, and synergies with ETSI ISG RIS and ISG THz.
- Study of a System and RAN architecture framework for 6G ISAC, including end-to-end deployment considerations.
- Study of the privacy and security aspects of sensing data in the ISAC 6G framework.
- Study of impact of widespread deployment of ISAC on UN sustainability goals

AREAS OF ACTIVITIES

The activities of the ISG include the following areas:

- Develop a roadmap of prioritized ISAC 6G use cases and sensing types, focusing on advanced 6G use cases and sensing types that are not expected to be covered by 3GPP Release 19 and therefore have the potential to be included in future 6G releases of 3GPP, IEEE and ITU-R IMT-2030 deliverables.
- Develop advanced radio channel models for the target ISAC use cases and sensing types that can overcome the limitations of current baseline radio communication channels (e.g. 3GPP, IEEE 802, ITU-R) and validate them through extensive measurement campaigns, address scattering for both communications and sensing channel measurements within the same framework, to enable verification of the different stochastic and deterministic cluster models. .
- Specify KPIs and their evaluation methodology.
- Study architectural changes at System and RAN levels for ISAC in 6G, including end-to-end deployment considerations for different aspects:
 - Level of integration of sensing and communication (full, partial, etc.).
 - Sensing type to be performed (monostatic, multistatic, or combinations thereof).
 - Deployment modes to be used (DL, UL, SL, or cross-link) and nodes involved (TRP, UE, non-3GPP device).
 - Radio access technologies (3GPP and non-3GPP) to be used for sensing
- Study mechanisms in the System and RAN architectures to meet security and privacy requirements for sensing.
- Study of impact of widespread deployment of ISAC on UN sustainability goals

ORGANIZATION

No internal organisation or Working Groups have yet been identified. The ISG will be able to re-consider and evolve its internal structure as required, taking into consideration the workload, priorities, and available resources.

SPECIFIC RULES, COMPLEMENTING THE ETSI TECHNICAL WORKING PROCEDURES, APPLYING TO THE ISG:

Term of Office of the ISG Chair (as specified in ETSI TWP Clause 3.3.1)	
The ISG Chair shall be appointed by the ISG for a term of office of	2 years

Term of Office of ISG Vice-Chairs (as specified in ETSI TWP Clause 3.3.2)	
The ISG Vice-Chair(s) shall be appointed by the ISG for a term of office of	2 years

Term of office of ISG Working Group Chairs (see ETSI TWP Clause 3.3.2)	
The ISG Working-Group Chair(s) shall be appointed by the ISG for a term of office of	2 years

Duration of the ISG Kick-off Period	
The ISG Kick-off Period shall start with the ISG Kick-off Meeting (KoM) and shall end	at the end of the KoM

ISG Members eligibility to vote after the ISG Kick-off Period (see ETSI TWP Clause 3.7.2)	
Option 3	ISG Members are eligible to vote (voting Members) if they have attended at least two (2) of the previous three (3) ISG Plenary Meetings, the ISG Kick-off Meeting being counted as a Plenary Meeting.

ISG Members voting weight (see ETSI TWP Clause 3.7.3)	
Option 2	All ISG voting Members shall have the same voting weight equal to one (1) i.e. one (1) ISG Member, one (1) vote, weighted one (1).

ISG Members voting results interpretation (see ETSI TWP Clause 3.7.4)	
Option 1	<p>A proposal shall be deemed to be approved if seventy one percent (71%) of the votes cast are in favour.</p> <p>Abstentions or failure to submit a vote shall not be included in determining the number of votes cast.</p> <p>If a proposal fails to achieve seventy one percent (71%), the result shall be re-calculated using only the votes of the ISG voting Members with the ETSI Full member status.</p> <p>If the re-calculated result achieves seventy one percent (71%), the proposal shall be deemed to be approved;</p>

COLLABORATION WITH OTHER BODIES

The ISG may set up appropriate communication channels with the following groups:

ETSI GROUPS	
EPP 3GPP	ETSI Partnership Project - Third Generation Partnership Project
TC ERM	Technical Committee - EMC and Radio Spectrum Matters
ISG ENI	Industry Specification Group - Experiential Networked Intelligence
ISG MEC	Industry Specification Group - Multi-access Edge Computing
ISG mWT	Industry Specification Group - millimeter Wave Transmission
ISG RIS	Industry Specification Group - Reconfigurable Intelligent Surfaces
ISG SAI	Industry Specification Group - Securing Artificial Intelligence
ISG THz	Industry Specification Group - TeraHertz
ISG ZSM	Industry Specification Group - Zero touch network & Service Management

and others as identified during the progression of the work.

EXTERNAL GROUPS	
Relevant Funded projects (e.g. EU HEU/H2020, UK DSIT FONRC, German BMBF, COST IRACON)	Government funded collaborative projects (regional/national)
IEEE and ACM Initiatives	Institute of Electrical and Electronics Engineers and American Computing Society Initiatives
ITU-R	ITU Radiocommunication Sector
ITU-T	ITU Telecommunication Standardization Sector
IMT-2030 (6G) Promotion Group	China's IMT-2030 Promotion Group
IEEE ISAC-ETI	IEEE Emerging Technology Initiative on ISAC
ATIS Next G Alliance	Alliance for Telecommunications Industry Solutions – Next Generation Alliance
One6G Alliance	One6G Alliance
5GAA	5G Automotive Alliance
5GACIA	5G Alliance of Connected Industries and Automation
CCSA	Chinese communications standard association

and others as identified during the progression of the work.