**3GPP TSG-SA3 Meeting #113 *S3-23xxxx***

**Chicago, US, 6 - 10 November 2023** **(revision of xx-yyxxxx)**

**Source: Xiaomi, OPPO, China Telecom, Apple, ZTE, Lenovo, vivo, Cable Labs, Huawei, HiSilicon, Intel**

**Title: New SID on security aspects of Integrated Sensing and Communication**

**Document for: Approval**

**Agenda Item: 4**

3GPP™ Work Item Description

Information on Work Items can be found at <http://www.3gpp.org/Work-Items>   
See also the [3GPP Working Procedures](http://www.3gpp.org/specifications-groups/working-procedures), article 39 and the TSG Working Methods in [3GPP TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm)

Title: Study on security aspects of Integrated Sensing and Communication

Acronym: FS\_ISAC\_Sec

Unique identifier:

Potential target Release: Rel-19

# 1 Impacts

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Affects: | UICC apps | ME | AN | CN | Others (specify) |
| Yes |  | X | X | X |  |
| No |  |  |  |  |  |
| Don't know | X |  |  |  | X |

# 2 Classification of the Work Item and linked work items

## 2.1 Primary classification

### This work item is a …

|  |  |
| --- | --- |
| X | Study |
|  | Normative – Stage 1 |
|  | Normative – Stage 2 |
|  | Normative – Stage 3 |
|  | Normative – Other\* |

**\* Other = e.g. testing**

## 2.2 Parent Work Item

For a brand-new topic, use “N/A” in the table below. Otherwise indicate the parent Work Item.

|  |  |  |  |
| --- | --- | --- | --- |
| Parent Work / Study Items | | | |
| Acronym | Working Group | Unique ID | Title (as in 3GPP Work Plan) |
| N/A | N/A | N/A |  |

### 2.3 Other related Work Items and dependencies

|  |  |  |
| --- | --- | --- |
| Other related Work /Study Items (if any) | | |
| Unique ID | Title | Nature of relationship |
| 950003 | Study on Integrated Sensing and Communication | SA1 preceding study item (Rel-19) on use cases and potential requirements for enhancement of the 5G system to provide integrated communication and sensing services addressing different target verticals/applications. |
| 1000026 | Integrated Sensing and Communication | SA1 preceding work item (Rel-19) to introduce KPIs and 5G system functional requirements for wireless sensing service. |
|  |  |  |

# 3 Justification

Integrated Sensing and Communication (ISAC) in a 3GPP 5G system means the sensing capabilities are provided by the same 5G NR wireless communication system and infrastructure as used for communication. Mobile operators can play an important role in providing 5GS-based ISAC service to customers, including e.g. the management and control of 5G-based sensing service. SA1 has completed a Rel-19 study FS\_Sensing in TR 22.837 which contains an entire section on security and privacy considerations as well as a table of security consolidated requirements. Rel-19 specification on Sensing in TS 22.261 is now being developed by SA1 to introduce normative KPIs and functional requirements for 5GS-based ISAC service, covering configuration and authorization, network exposure, charging, security and privacy aspects, i.e. security and privacy are already self-contained as the stage 1 objectives of ISAC.

Following SA#100 guidance to SA2 on Rel-19 work planning, discussion has been initiated on architecture and functional enhancements supporting ISAC service. Among the initial set of 7 work tasks (WTs), security is already identified as a standalone work task that is viewed as essential and high priority to be included in the scope of Rel-19 and to be led by SA3. Security and privacy need to be studied for many functional and procedural aspects, including authorization of service initiation, authentication and authorization of sensing transmitter/receiver for participating in sensing operations, security and privacy protection for the sensing signal and data being collected, security and privacy protection for the sensing data being processed, security and privacy protection for sensing results being exposure, etc.

With the above analysis on related SA1 and SA2 work, it is identified that there is a need for SA3 to investigate security and privacy issues to support the architecture and functional enhancements for 5G system supporting ISAC service.

# 4 Objective

This study item aims at investigating the security and privacy aspects of Integrated Sensing and Communication (ISAC), based on the related Rel-19 work in SA1, SA2 and RAN, with the following objectives:

- Identify key issues for authentication, authorisation, security and privacy protection during the entire process of ISAC services, e.g. service initiation, discovery and selection of sensing devices/entities, sensing data collection, sensing data processing and sensing data exposure, etc.;

- Study potential solutions for the identified key issues, e.g. exploring mechanisms for user consent to address privacy issues.

NOTE 1: Timely liaison with SA2 / RAN WGs needs to be considered.

NOTE 2: The output to address the above objectives shall leave space for the future enhancement for ISAC security.

## TU estimates and dependencies

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Work Task ID | TU Estimate  (Study) | TU Estimate  (Normative) | RAN Dependency  (Yes/No/Maybe) | Inter Work Tasks Dependency |
| Objective #1 | ~ 1.5 | TBD | Maybe | Self-contained |
| Objective #2 | ~ 3.5 | TBD | Maybe | Dependent on Objective #1 |
|  |  |  |  |  |

Total TU estimates for the study phase: 5

Total TU estimates for the normative phase: TBD

Total TU estimates: 5

# 5 Expected Output and Time scale

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| New specifications {One line per specification. Create/delete lines as needed} | | | | | |
| Type | TS/TR number | Title | For info  at TSG# | For approval at TSG# | Rapporteur |
| Internal TR | 33.XXX | Study on Security Aspects of Integrated Sensing and Communication | SA#104 (June 2024) | SA#105 (Sept. 2024) | TBD |
|  |  |  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Impacted existing TS/TR {One line per specification. Create/delete lines as needed} | | | |
| TS/TR No. | Description of change | Target completion plenary# | Remarks |
|  |  |  |  |
|  |  |  |  |

# 6 Work item Rapporteur(s)

TBD

# 7 Work item leadership

SA3

# 8 Aspects that involve other WGs

Potential interaction with SA2 WG for architecture aspects, with RAN WGs for RAN dependent issues.

# 9 Supporting Individual Members

|  |
| --- |
| Supporting IM name |
| Xiaomi |
| OPPO |
| China Telecom |
| Apple |
| ZTE |
| Lenovo |
| vivo |
| Cable Labs |
| Huawei |
| HiSilicon |
| Intel |
| China Unicom |
| China Mobile |
| Philips International B.V. |
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