**3GPP SA WG2 Meeting #170 S2-2507702**

**25th – 29th August 2025, Goteborg, SE (revision of S2-250xxxx)**

**Source: China Telecom**

**Title: KI#4, New Sol: Sensing Data Collection, Transfer and Sensing Result Storage**

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*Abstract of the contribution: The contribution proposes a new solution to address Key Issue#4 Sensing Data and the Associated Information Collection and Transport.*

# 1. Introduction

According to TR 23.700-14, Integration of sensing and communication requires 3GPP network to collect and transfer sensing data and the associated information to a Sensing Function. In particular, Key Issue #4 will address:

*- How to collect sensing data (and the associated information, if any) for Sensing result generation?*

*- Which Sensing Function performs Sensing result generation?*

*- Whether and what the above associated information is required for Sensing result generation*

*NOTE: Implications to RAN or RAN dependent aspects will be coordinated with RAN WGs.*

The paper proposes a new solution to address Key Issue#4.

# 2. Text Proposal

It is proposed to capture the following changes in TR 23.700-14.

\* \* \* \* First change \* \* \* \*

# 6 Solutions

## 6.0 Mapping of Solutions to Key Issues

Table 6.0-1: Mapping of Solutions to Key Issues

|  |  |
| --- | --- |
|  | Key Issues |
| Solutions | 1 | 2 | 3 | 4 | 5 | 6 |
|  X |  |  |  | X |  |  |

\* \* \* \* Second change (All Text New) \* \* \* \*

## 6.X Solution #X: Sensing Data Collection,Transfer and Sensing Result Storage

### 6.X.0 High-level solution Principles

This solution uses the same terms **‘Sensing Control Function (SCF)’** and **‘Sensing Processing Function (SPF)’** defined in TR 23.700-14 Solution #3.

The high level principles of the solution are:

* A new Network Function, i.e., **Sensing Data Management Function (SDMF)** is introduced for the storage and management of the Sensing result.
* When the Sensing Entity is a gNB, the **SCF** sends the sensing service request and the configuration information to the gNB via a new interface defined between the **SCF** and the gNB.
* The **SCF** needs to send the Sensing Initiated Request and the corresponding parameters to the **SPF**.
* When the gNB finishes the sensing data measurement, the gNB reports the sensing data to the **SPF** directly via the established data tunnel.
* The Sensing Entities can be multiple gNBs, and the **SPF** performs the aggregation of the sensing data collected from multiple sources.
* The **SPF** generates the Sensing result based on the sensing data received from the gNB/gNBs, and sends the Sensing result to the **SCF** and the SCF can further send the Sensing result to the **SDMF** for storage.

### 6.X.1 Description

In TR 23.700-14 Solution #3 (S2-2506063, High-level procedure and architecture for sensing), the terms **‘Sensing Control Function’** and **‘Sensing Processing Function’** have been defined to indicate that the sensing signalling control and the sensing data processing capabilities can be deployed in different entities.

In order to prevent duplicated definitions of sensing-related Network Function, the two terms are reused in this paper, and the definition copied from solution #3 are as following:

***Sensing Control******Function****: Indicating the logical function which is involved to support Sensing Service and responsible for providing the related configuration information.*

***Sensing Processing Function****: responsible for receiving the 3GPP Sensing Data and for performing the elaboration for determining the Sensing Result.*

In addition, considering the Sensing result may need to be stored on-demand and used by subsequent/other sensing service, it is proposed to introduce a new **Sensing Data Management Function (SDMF)** to store and manage the Sensing result.



Figure 6.X.1.1-1: The split of Sensing Function and the SDMF

The definition of SDMF is as following:

***Sensing Data Management Function (SDMF)****: Responsible for the storage and management of the Sensing result.*

In the above figure, the Sensing Function (SF) is splitted into the SCF and the SPF, and the SDMF is connected to the SBI bus. Therefore, this contribution provides a solution for sensing data collection, transfer and storage, with the involvement of **SCF**, **SPF** and **SDSF**. The coordination among SCF, SPF and SDMF can be described as following:

* After the SCF received a sensing service request for the target sensing area, it should first check whether the sensing result for the target sensing area is available or not in the SDMF.
* If the sensing result is not available, the SCF sends the sensing service request and the configuration information to the gNB/gNBs, and sends the Sensing Task Initiated Request and the corresponding parameters to the SPF.
* The gNB/gNBs perform the sensing data measurement and reports the collected sensing data to the SPF.
* The SPF generates the Sensing result based on the sensing data received from the gNB/gNBs,
* After the SPF generated the sensing result, it sends the sensing result to the SCF, and the SCF can further send the sensing result to the SDMF for storage.

Editor's note: Whether and how to define the interface between the SPF and the SDMF for sensing data/sensing result storage is FFS.

### 6.X.2 Procedures



Figure 6.X.2.1-1: Procedure of sensing data collection, transfer and sensing result storage

1. The AF sends Nnef\_Sensing Service Request message to the NEF, or directly to the SCF, the request message contains sensing service requirement parameters (e.g. Sensing Service Type, Target Sensing Service Area, one-time/periodical/event-triggered Sensing result report mode).

2. The NEF select the appropriate SCF for the corresponding sensing service.

3. The NEF sends the Nscf\_Sensing Service Request message to the selected SCF. The request message contains the sensing service requirement parameters provided by the AF.

4. The SCF performs the authorization of sensing service request, the selection of SPF, and the selection of Sensing Entities (i.e. gNB/gNBs).

NOTE 2: The authorization of sensing service request is addressed in KI#2, the sensing entities selection is addressed in KI#3.

NOTE 3: The SCF selects the suitable SPF based on the supported sensing service area of the SPF and Target Sensing Service Area requested by the AF.

5. The SCF sends the Sensing Task Initiated Request and the corresponding parameters (e.g. the gNB ID, the Sensing Task ID) to the seleted SPF, for example, based on these information, the SPF can identify the data from the gNB to know which sensing task it belongs to.

6. The SCF sends the sensing service request and the corresponding configuration information (e.g. the IP address of the SPF, the Sensing Task ID) to the seleted gNB/gNBs via a new interface defined between the **SCF** and the gNB.

7. The gNB/gNBs establish the data reporting tunnel with the SPF.

8. Based on the received sensing service request, the gNB/gNBs perform the sensing measurement to collect the sensing data.

9. The gNB/gNBs report the collected sensing data to the SPF. The gNB/gNBs can use a data tunnel to transfer the sensing data to the SPF, the Sensing Task ID can be carried in the transport protocol header to identify the task of the sensing data if the gNB generates multiple copies of sensing data for different tasks.

NOTE 4: The format and the detailed transport protocol (e.g. GPT-U) of the 3GPP sensing data provided from the gNB to the Core Network will be determined by RAN WGs.

10. The SPF performs the aggregation of the 3GPP sensing data from multiple gNBs and the generation of the Sensing Result. The SPF may perform the aggregation of sensing data with the same Sensing Task ID if a gNB generates multiple copies of sensing data for different task.

11. The SPF sends the generated Sensing result to the SCF.

12. The SCF can further send the Sensing result to the SDMF for storage and subsequent management.

NOTE 5: The subsequent management of the sensing result stored in the SDMF is not addressed in this solution.

13. The SCF performs the exposure of the Sensing result to the AF.

NOTE 6: The exposure of the Sensing result is addressed in KI#5.

### 6.X.3 Impacts on services, entities and interfaces

NEF:

- Receive sensing service requirements and expose Sensing result.

SCF:

 - Authorization of the sensing service request.

- SPF selection.

- Sensing Entity selection.

- Sensing result reception and exposure.

SPF:

 - Sensing data collection and transfer.

- Sensing result generation based on the 3GPP sensing data.

SDMF:

 - Sensing result storage and management.

\* \* \* \* End of changes \* \* \* \*