**3GPP TSG-SA2 Meeting #170 *S2-2507776***

**Gothenburg, August 21st – 25th 2025**

**Source: Intel**

**Title: KI#4, New Sol: Sensing Data Collection via DCF**

**Document for: Approval**

**Agenda Item: 20.2.1**

**Work Item / Release: FS\_Sensing\_ARC / Rel-20**

*Abstract: The Sensing Data and the Associated Information Collection and Transport for FS\_Sensing\_ARC are proposed.*

# 1. Introduction

This pCR proposes the solution for Key issue#4 Sensing Data and the Associated Information Collection and Transport.

# 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 | <Key Issue #4> | <Key Issue #y> |
| #1 | X |  |
| #2 |  |  |

\* \* \* \* First change (all text new)\* \* \* \*

## 6.X Solution #X: Sensing Data and associated information transport via DCF

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

The solution is based on the following general principles to support sensing service:

- The sensing data and associated information from multiple Sensing Entities and Sensing Function (SSMF) in the 5G Core Network is collected and coordinated by theDCF (Data Control Function).

- The Sensing Function (SSMF) discovers and selects the DCF based on the Sensing Service request from the consumer based on criteria such as location/coverage area.

- The SSMF sends the Sensing Configuration Request to the selected Sensing Entities. The request includes the DCF endpoint information as selected by the SSMF to establish a data connection to coordinate the sending sensing data collection and processing from the Sensing Entities.

### 6.X.1 Description

 This solution is built on the high-level system architecture described in Solution 7. A new Core Network function SSMF is introduced. The SSMF is responsible for coordinating sensing services between 5GC, NG-RAN, and external applications and handling all control signalling aspects, including sensing-service authorisation, configuration of sensing entities. A new network function Data Control Function is introduced for sensing data collection and processing from the Sensing Entities.

### 6.X.2 Procedures



Figure 6.X.2-1: Procedure for sensing data transport

1. A sensing service consumer (either an external AF or an internal network function) triggers a request for a sensing service (e.g. detecting the presence of an object in a geographic area).
2. The NEF authenticates and authorizes the sensing consumer and forwards the subscription to the SSMF.
3. The SSMF selects one or more sensing entities (gNBs) according to coverage . The exact mechanism by which the SSMF discovers, filters, selects sensing entities is dependent on the solution for key issue 3.
4. The SSMF discovers and selects DCF based on the sensing coverage area required based on the sensing service request in step1.
5. The SSMF sends Namf\_SensingCfg\_Request configuration instructions to the chosen sensing entities via AMF. In addition to the configuration parameters included in step 5 clause 6.7.3.2.1, the SSMF includes the DCF endpoint information (e.g., DCF ID/ FQDN).
6. SSMF subscribes with the DCF selected in step 4 for sensing data management with the request including service operation, sensing data specification.

Editor’s Note: Whether single or multiple SSMF are considered in this Release of the study is for FFS.

1. A data connection is established between the SE(s) and DCF for sensing data transfer using the DCF endpoint information provided in step 5.
2. The Sensing Entity(s) performs the sensing operations according to the configurations received in step 5. The sensing data generated is reported to theDCF. The data can be reported either periodically, aggregated report, or partial sensing data reporting depending on the configuration information provided by the SSMF in step 5.
3. If the SSMF included sensing data specification in step 6 for the sensing data collected by SE(s), the DCF performs the sensing processing on the sending data report received in step 8.
4. The DCF uses Ndcf\_DataManagement\_Notify to send the sensing data to the SSMF.

Editor’s Note: Whether service-based operations can be used to support sending data delivery from DCF to SSMF is for FFS.

1. The SSMF processes the sensing data received in step 10 from multiple SE(s) as needed for example - running detection algorithms, or filtering noise - to generate a sensing result that meets the consumer request.
2. -13. The SSMF sends Nssmf\_SensingService response the final sensing result (which may include detected object info, positions, radio environment maps, etc. along with optional confidence metrics or timestamps) is sent to the AF via the NEF.

### 6.X.3 Impacts on Services, Entities and Interfaces

- **SSMF**: It is a control-plane function and does not replace any existing NF.

**New/Extended Interfaces:**

* **NEF**: The Nnef interface (between NEF and SSMF) is extended to support exposure of sensing services where NEF invokes an SSMF service for incoming request from the sensing consumer.
* **AMF:** The AMF interface with the SSMF is supported to send the sensing configuration request for sensing entities and the sensing data response from the sensing entities to the SSMF.
* **DCF:** Support new Service operation, Data specification to support sensing data collection and processing from the Sensing Entities.
* **gNB:** Support to establish the data tunnel with the DCF using the tunnel information received from the SSMF, transfer sensing data and the associated information to the DCF via the data tunnel

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