INTERNATIONAL TELECOMMUNICATION UNION

TELECOMMUNICATION STANDARDIZATION SECTOR

STUDY PERIOD 2022-2024

SG11-TD460/GEN

STUDY GROUP 11

Original: English

Question(s): 2/11 Geneva, 10-19 May 2023

TD

Source: Editors

Title: Output – initial baseline text of draft Technical Report ITU-T TR-SSC "Signalling and Protocols of integrated Sensing and Communication network in future network" (Geneva, 10-19 May 2023)

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Abstract: This document contains the baseline of draft new Technical Report TR-SSC "Signalling and Protocols of integrated Sensing and Communication network in future network", resulting from discussion of Q2/11 meeting on 10-19 May 2023.

This document contains the baseline of draft new Technical Report TR-SSC "Signalling and Protocols of integrated Sensing and Communication network in future network", resulting from discussion of Q2/11 meeting on 10-19 May 2023.

This document is based on this meeting's discussion and results on the following contribution:

No.	Title	Source	Discussion
SG11-C99-R1	Proposal for initiating a new work item on signalling and protocols to support for integrated sensing and communication in future network	China Mobile Communications Co. Ltd.	Accepted with modifications

Draft Technical Report ITU-T TR-SSC

Signalling and Protocols of integrated Sensing and Communication network in future network

Summary

This Technical report research enhancement on the network architecture and interface to support integrated sensing and communication, and research the message between core network functionalities, procedure and signalling flow of data transport and processing, sensing node discovery and selection, authorization for sensing service, sensing result exposure, interface enhancement and message format to support the related procedure.

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Draft Technical report ITU-T TR-SSC

Signalling and Protocols of integrated Sensing and Communication network in future network

1. Scope

This Technical report research enhancement on the network architecture and interface to support integrated sensing and communication, and research the message between core network functionalities, procedure and signalling flow of data transport and processing, sensing node discovery and selection, authorization for sensing service, sensing result exposure, interface enhancement and message format to support the related procedure.

2. References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published.

[ITU-T Y.3102] Recommendation ITU-T Y.3102 (2018), *Framework of the IMT-2020 network*

[ITU-T Y.3104] Recommendation ITU-T Y.3104 (2018), *Architecture of the IMT-2020 network*

3. Definitions

3.1. Terms defined elsewhere

This Recommendation uses the following terms defined elsewhere:

[TBD]

3.2. Terms defined in this Recommendation

This Recommendation defines the following terms:

[TBD]

4. Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

[TBD]

5. Conventions

In this Recommendation:

The keywords "is required to" indicate a requirement which must be strictly followed and from which no deviation is permitted, if conformance to this Recommendation is to be claimed.

The keywords "is recommended" indicate a requirement which is recommended but which is not absolutely required. Thus, this requirement need not be present to claim conformance.

The keywords "can optionally" indicate an optional requirement which is permissible, without implying any sense of being recommended. This term is not intended to imply that the vendor's implementation must provide the option, and the feature can be optionally enabled by the network

operator/service provider. Rather, it means the vendor may optionally provide the feature and still claim conformance with this Recommendation.

6. Overview

In order to realize the vision of a "freely connected physical and digital fusion world", the future network not only needs to enhance the communication capability to realize the free connection between the physical and digital fusion world, but also needs to support sensing capability of the physical world.

In recent years, wireless sensing technologies aim at acquiring information about a remote object or environment and its characteristics without physically contacting it. Based on this, the network can utilize the sensing data to analyze the characteristics of the objects or environment requested by UEs or applications. Architecture enhancement is needed for the core network to support integrated sensing and communication. In addition, new network functionalities, new message services, new procedure and signalling flows need to be defined to control the sensing node discovery and selection, authorization for sensing service, data transport and processing, and sensing result exposure.

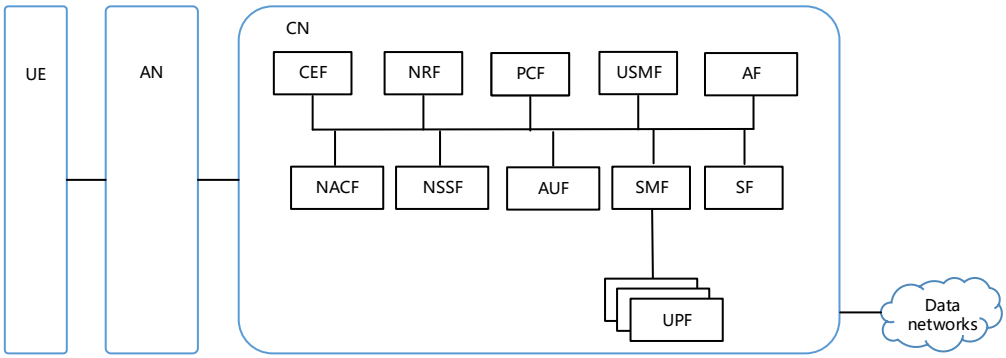

Figure 6-1 – Architecture reference model for supporting integrated sensing and communication

Figure 6-1 shows the architecture enhancement for supporting integrated sensing and communication in the future core network by adding a sensing function (SF). The SF may responsible for sensing authorization, sensing node selection, data processing, sensing result exposure and other capabilities. The SF may be integrated with an existing network function. Alternatively, the SF may include both SF in control plane (C-SF) and SF in user plane (U-SF). The detailed schemes of network architecture and interface enhancement will be discussed in Clause 7.

7. Studies of other SDO

[Editor's Note] This clause researches studies of integrated sensing and communication in other SDOs.

8. Network architecture and interface enhancement to support integrated sensing and communication

[Editor's Note] This clause researches the interface and protocol enhancement between core network functions and network management.

9. Network architecture and interface enhancement to support integrated sensing and communication

[Editor's Note] This clause researches the interface and protocol enhancement between core network functions and network management.

10. Procedure and signalling flow

[Editor's Note] This clause researches procedure and signalling flow of data transport and processing, sensing node discovery and selection, authorization for sensing service, sensing result exposure.

11. Message Format

[Editor's Note] This clause researches message format of related procedure

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