**3GPP TSG-SA3 Meeting #107-e *S3-220791***

**e-meeting, 16 - 20 May 2022**

**Source: China Mobile, CableLabs, Huawei, Hisilicon, Xiaomi, Vivo**

**Title: New SID on Study on security aspects for XR and media services**

**Document for: Approval**

**Agenda Item: 6**

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 for XR and media services

Acronym: FS\_XRM\_sec

Unique identifier: xxx

Potential target Release: Rel-18

# 1 Impacts

{For Normative work, identify the anticipated impacts. For a Study, identify the scope of the study}

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

# 2 Classification of the Work Item and linked work items

## 2.1 Primary classification

### This work item is a …

{Tick one box. "**Feature** / **Building Block** / Work Task" form a hierarchical structure. E.g. no Building Block can be proposed without a corresponding parent Feature. The full structure of all existing Work Items is shown in the 3GPP Work Plan in ftp://ftp.3gpp.org/Information/WORK\_PLAN}

|  |  |
| --- | --- |
|  | Feature |
|  | Building Block |
|  | *Work Task* |
| X | Study Item |

## 2.2 Parent Work Item

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

### 2.3 Other related Work Items and dependencies

|  |
| --- |
| Other related Work /Study Items (if any) |
| Unique ID | Title | Nature of relationship |
| 900027 | Study on supporting tactile and multi-modality communication services (Release 18) | Study of requirement about tactile and multi-modality communication services  |
| 800014 | Study on Audio-Visual Service Production (Release 17) | Multiple devices collecting data for the same task with strict KPI requirements. |
| 940068 | Study on XR (Extended Reality) and media services (Release 18) | SA2 study on the architecture of XR and media services |
| 940016 | Study of privacy of identifiers over radio access | SA3 study on privacy of identifiers over radio access |

# 3 Justification

Mobile media services with high bandwidth, low latency and mass connection requirements such as XR (eXtended Reality) based healthcare, self-driving, industrial automation and gaming etc pose fundamental challenges to 5G network. It is relatively easy to configure the 5G network to meet one of above requirements for XR, but it's difficult to satisfy all of them.

From the security perspective, XR services also attract more security attacks because of its coexistence with potential adversary entities in an open environment and its increased points of attacking with data from multiple sources and sensors. Some of the security and privacy threats include the following:

To enhance the QoS, SA2 is considering PDU set packet handling of XR multi-modality data flows to better utilize radio resources, 5GS may perform filtering on PDU sets to selectively discard the packets from data flows with low priority based on radio utilization. In order to help classify PDU sets, data packets are appended with extra information such as PDU set ID, importance level, correlation sequence number etc, it's to be investigated whether these classification fields need to be protected for confidentiality and integrity.

Moreover, the coordination between 5G network and XR application is also considered in SA2. XR may require further information exposure from 5GS to AF that hosts XR applications (especially for the media services with large traffic burst) to help application adapt to network congestion and provide better QoE. It needs to prevent sensitive information (e.g., network congestion level/UE data rate/RTT latency (might be associated with NF ID, S-NSSAI(s) etc)) of the 5GS from being exposed and whether they need security and privacy protection.

Considering the above security challenges, it is important to start SA3 research to identify security issues brought by XR related services, investigate on the security solutions to mitigate the security threats and issues to help the further advancement of XR services and their wide deployment.

# 4 Objective

The objectives include the following:

This study analyses the security aspects related to the conclusion and outcome from the SA2/SA4/RAN WGs studies, such as investigating the privacy and security protection of information exposure between 5GS and XR applications,

identifying the security/privacy issues of 5GS network information (e.g., network congestion level/UE data rate/RTT latency (might be associated with NF ID, S-NSSAI(s) etc.)) to be exposed to XR applications and their protection mechanisms.

NOTE: Coordination with the Privacy Study in TR 33.870 may be needed for the above bullets.

Track any potential security issues SA2/SA4/RAN WGs will have while they are in progress.

# 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 for XR and media services | TSG SA#97 | TSG SA#98 | Hua Song, China Mobile, songhua@chinamobile.com  |

|  |
| --- |
| 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)

Hua Song, China Mobile, songhua@chinamobile.com

# 7 Work item leadership

SA3

# 8 Aspects that involve other WGs

Potential interactions with SA2 for the architectural aspects, and RAN 2/3 for the RAN architectural aspects.

9 Supporting Individual Members

|  |
| --- |
| Supporting IM name |
| China Mobile |
| CableLabs  |
| CATT  |
| Huawei |
| HiSilicon |
| Interdigital |
| Lenovo |
| Xiaomi |
| ZTE |
| Vivo |
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