**3GPP TSG-SA4 Meeting #-MBS SWG AH *S4aI250120***

Paris, France, 3rd Sep 2025 - 5th Sep 2025 (revision of S4-251431 and S4-251575)

**Source: Qualcomm Incorporated, Thales, Dolby Laboratories Inc., NTT, Orange, Ericsson LM**

**Title: [Draft] New Study on Media Aspects for 6G System**

**Document for: Endorsement**

**Agenda Item: 11**

Editor’s Note: The study was part of the agreement during SA4#133-e to be added to package 2. In addition, it was considered to potentially cover the study in the SA4 plenary or the MBS SWG. Hence, this document is submitted for further consideration and discussion, with potential additional topics being clarified and more co-signers being added in order to submit the document for agreement for SA4#134, and possibly already start discussions on certain topics.

Proposed work plan:

* start in November 2025
* study until end of Rel-20 (February 2026)

After study completion, this will result in Rel-21 work

* Normative work
* New and additional studies
* Additional studies may be concluded from this first overall study.

Impacted Specs:

* Study: new internal Technical Report
* Normative: to be defined

Implementation/Test: should be part of the study discussion

Overlap/Merge with other studies: other 6G studies

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 Media Aspects for 6G System

Acronym: FS\_6G\_MED

Unique identifier:

Potential target Release: Rel-20

# 1 Impacts

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

# 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) |
| FS\_6G\_REQ | SA WG1 | 1050110 | Study on 6G Use Cases and Service Requirements; Stage 1 |

### 2.3 Other related Work Items and dependencies

|  |
| --- |
| Other related Work /Study Items (if any) |
| Unique ID | Title | Nature of relationship |
| 1060079 | Study on 6G Scenarios and Requirements | The media related requirements from RAN may need to be taken into account. |
| 1080057 | Study on Architecture for 6G System (FS\_6G\_ARC) |  |
|  | RAN WG studies (TBD) |  |

**Dependency on non-3GPP (draft) specification:**

# 3 Justification

The 5G network architecture marked a significant leap forward compared with previous generations, with its adoption of a Service-Based Architecture (SBA) enabling a cloud-native deployment, and 5G promoted business opportunities to providing services to verticals. These innovations enhanced flexibility and scalability, enabling more dynamic and adaptable network orchestration.

5G media services built on top of this new architecture, primarily with the Media Delivery Architecture as defined in TS 26.501 and TS 26.506 for streaming and real-time communication.

While 5G is continuously introducing remarkable advancements, there is the need from operators for further CAPEX/OPEX reduction by further improvement of overall 3GPP system performance, as well as to introduce new services and experiences in the era of 6G. 6G brings a good opportunity to provide solutions to meet those needs, e.g. by means of simplifying the overall system, integrating of new technologies, etc.

March 2025 Workshop on 6G indicated of the motivation to be: *Enabling new services and use cases beyond traditional communication, such as integrated sensing and communication (ISAC), XR/immersive communication, and AI-based services – Compute.* And one of the 6G Goal to be *“Improved end-user/customer experience through seamless, ubiquitous connectivity, ensuring reliable, high-quality services delivery. Optimized Quality of Experience (QoE) across diverse devices and network conditions.”*

3GPP SA1 has started the FS\_6G\_REQ study item to identify use cases and service/operational requirements for 6G system. TSG RAN has also initiated the FS\_6G\_RAN\_Scen\_Req study item to develop requirements for 6G Radio. 3GPP SA2 has started the FS\_6G\_ARC study item to address critical challenges identified in 5G deployments and study the architecture aspects to support both connectivity service and beyond connectivity services in 6G era in a more efficient, sustainable, and innovative way.

This study is aimed to identify media-related opportunities and gaps in the context of 6G, building on service requirements and architectural enhancements. One of the objectives is to support the 6G studies in other working groups with media related aspects. Another objective is to identify media-related industry trends from operators, third-party providers and verticals that may impact 6G media architectures.

Work topics related to media aspects include the following:

1) Media Delivery Architecture: Define the Media Delivery architecture for 6G based on TS 26.501, TS 26.506 and the new developments in 6G architecture to support flexible deployment scenarios in support of new services e.g. XR/Immersive communication and use cases in addition to baseline services like telephony, Real-Time Communication, Media streaming, Messaging etc. The media delivery architecture is defined as collection, of capabilities and high-level functionalities. Aspects to be taken into account include, but are not limited to:

- re-use of existing components from 5G and possibly earlier Gs.- simplification of the architecture allowing the integration of streaming and conversational services in the same architecture, and enabling use of different delivery protocols.

- aligning the media delivery architecture with 6G design concepts to be defined by SA2

- aligning the architecture with commercially deployed media services

- Identify use cases adding value to operators by deploying the use cases

 - cost reduction both CAPEX and OPEX

- decrease dependencies on third party services

- easier to deploy and combine services

- optimized distribution of media data in terms of end-end bandwidth usage

- Identify use cases adding value to users in the delivery architecture

 - enabling seamless switching of media services between devices

 - enabling lower latency services

 - enabling more constant quality

2) Migration and interworking: Study how to migrate from 5G media delivery architecture as well as IMS-based media services and how to identify synergies.

3) 6G Media: Identify trends and expected services related to media, in particular including immersive media, that may impact mobile networks in the 6G era and collect potentially relevant QoE requirements, traffic characteristics and other design vectors, also taking into account SA1 service requirements and to support other working groups in 6G design. Study aspects include:

a) End-to-end service quality for media services: Study aspects and identify opportunities to define end-to-end service quality for media related services, in particular but not limited to when UEs are included in capturing and rendering. This includes capturing, rendering as well as definition of media related QoE metrics. This also includes aspects such as user-experience based services, traffic analysis and different connectivity realizations, e.g. between the 6G System and the media servers (N6).

b) Traffic characteristics: Study and identify traffic characteristics of emerging media services that support the design of 6G radio and service architectures, based on initial SA1 service requirements and new developments in the media industry.

c) Immersive media formats: collect and study standard media formats that are either currently specified in 3GPP or elsewhere that would fit with 6G XR/immersive media service requirements.

4) Media Aspects of SA2 topics: Study media related aspects resulting from the SA2 study different topics and identify if any work is needed to be addressed in SA4 including

a) AI in 6G Media: Study how to support and enable use of AI in 6G Media Delivery (e.g. AI agent framework) based on decisions and in alignment with WT#3 in the SA2 study, if any.

b) Sensing and 6G Media: Study aspects and opportunities of sensing in combination with Media Services based on decisions and in alignment with WT#4 in the SA2 study, if any.

c) Data handling: Study aspects and opportunities for efficient and scalable media related data handling including, for example, data collection, distribution, processing, storage, data access and data exposure, with consideration of access control/user consent and privacy where relevant based on decisions and in alignment with WT#5 in the SA2 study, if any.

d) Computing: Study aspects and opportunities on support of computing for UE and application servers in 6G for media delivery related functionalities based on decisions and in alignment with WT#6 in the SA2 study , if any.

NOTE: The topics above may be updated based on decisions in upcoming SA2 meetings.

NOTE: The below topics may be considered part of later studies and not be added to the initial one. However, they are surely candidates under WT3 above.

5) Media for NTN: Study aspects and opportunities for support of media services on Non-Terrestrial Networks beyond speech. The primary focus is to identify supported bitrates, functionalities, delays and other design vectors taking into account the information collected in the FS\_ULBC study.

6) Trusted and private communication for media in GenAI era: Study and identify aspects and opportunities to support trusted and provide media communication in the generative AI area, including end-to-end work flows, authentication, trust and other aspects.

NOTE: Topics 2-6 do not necessarily rely on the 6G media delivery architecture developed in topic 1.

Additional study areas may be added during the study phase.

The progress of the topics above may depend on progress in other working groups, and it is not expected that the first phase necessarily completes all work topics. Certain topics may require more time and be addressed later.

# 4 Objective

The objective of this study is in the context of the above background, referred to as work topics. Specifically, the following objectives are identified:

1. Document the work topics introduced above in more detail, in particular how they relate to media delivery and based on the progress in other working groups:

- WT#1: Media Delivery Architecture in 6G System

- WT#2: Migration and Interworking

- WT#3: 6G Media

- WT#4: Media Aspects of SA2 topics

- WT#5: support of media services over NTN

- WT#6: Trusted media communication

2. Identify potential additional work topics based on SA1 requirements and input from other WGs, as well as based on new media trends with lower priority.

3. Identify the dependencies of the issue to other working groups and collect information on relevant development within 3GPP and externally.

NOTE: Topics potentially requiring input into other WG studies or those creating dependencies on other work topics will be prioritized.

4. Based on existing media delivery architectures and functionalities, as well as the development in SA2 architectures and design concepts with respect to 6G, map the work topics to basic functions and develop high-level call flows, if appropriate.

5. Identify potential gaps and opportunities that may need solutions and either

a)

b) provide candidate solutions that may address the issues

7. Coordinate work with other 3GPP groups e.g. SA2, SA3, SA5, SA6 and others as needed.

8. Coordinate work with external organizations such as SVTA, CTA WAVE, ISO/IEC JTC1 SC 29 AG02 (MPEG), 5G-MAG, Metaverse Standards Forum, Khronos or IETF, as needed.

During the study, the progress and results of 3GPP TR 22.870 (SA1 study), TR 38.914 (RAN study) and TR 26.801 (SA2 study) shall be taken into account.

A single TR is expected to capture the output of this study.

Specific work topics may be concluded earlier than the envisaged timeline below and may then be progressed in a dedicated study in the Rel-20 timeframe, or in a newly defined timeframe, for example in a new or dedicated SWG.

# 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 |
| TR | 26.xxx | Study on Media Aspects for 6G System | TSG#xx(TBD) | TSG#xx(TBD) |  |

NOTE n: The timeline for the study will be decided earliest at SA#111 (Mar 2026)

|  |
| --- |
| 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)

[Thomas Stockhammer, Qualcomm Incorporated, tsto@qti.qualcomm.com]

NOTE: Additional leaders for individual work tasks will be defined as part of the study

# 7 Work item leadership

SA4

# 8 Aspects that involve other WGs

Potential RAN impact to be covered by RAN WGs.

Potential architecture impact to be covered by SA2.

Potential security impact to be covered by SA3.

Potential specific exposure related aspects to be covered by SA6

# 9 Supporting Individual Members

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| --- |
| Supporting IM name |
| Qualcomm Incorporated |
| Thales |
| Dolby Laboratories Inc. |
| NTT |
| Orange |
| Ericsson LM |