**Source: Tencent**

**Title: Work Plan for 5GMS\_Ph2 v3.0**

**Agenda Item: 8.7**

**Document for: Agreement**

1. **Introduction**
   1. **Justification**

TS 26.501 defines the 5GMS architecture, call flows, and procedures. While this specification defines the general architecture, core features, and functionalities, several features are missing from it. The FS\_5GMS-EXT study has explored several of these topics which are documented in TR 26.804. Similarly, the FS\_5GMS\_Multicast study has identified and evaluated potential enhancements to the 5GMS architecture to provide multicast-broadcast streaming services, documented in TR 26.802.

Particularly, some of the TR 26.804 recommendations are:

1. Uplink streaming is one of the two key use cases in the 5G Media Streaming Architecture. However, while TS 26.501 and TS 26.512 extensively describe and define the functionalities and APIs for downlink streaming, uplink streaming is severely underdefined and lacks the essential features needed for mainstream deployments. Recently, the FS\_5GMS-EXT study explored the 5GMSA uplink streaming features and compared them to the uplink streaming defined in TS 26.238. This study explored five collaboration scenarios for uplink streaming in 5GSMA architecture. For each scenario, a high-level call flow was developed. Several gaps were identified during this process. Additionally, the uplink steaming features of TS 26.501 and TS 26.512 were compared with both TS 26.238 as well as the download streaming features of TS 26.501 and TS 26.512, and the missing features and functionalities are identified. The goal of this work item for this topic is to add extensions to TS 26.501 to make the uplink streaming deployable in 5G networks.

2. Live TV services of different scales (professional, user-generated, session-based, etc.) are increasingly distributed over broadband and mobile networks, including 5G Networks. To address these s services, the 5G Media Streaming Architecture needs to support low latency live protocols including the combination of low-latency CMAF formats, chunked transfer from the content provider to the device, as well as consistent signaling and support of service quality points. The FS\_5GMS-EXT study developed the collaboration scenarios and related call flows for the distribution of low latency content using the 5G Media Streaming architecture. It also defined the gaps in TS 26.501 various reference points to support low latency live streaming.

In addition, TR 26.802 recommends documenting:

3. Relevant call flows and procedures to support carriage of 5GMS streaming sessions over 5MBS as documented in TR 26.802 clause 7.3.5.

4. Relevant call flows and procedures to support 5GMS hybrid services (5MBS and 5GMS), specifically architecture and call flows for the following hybrid 5GMS unicast and 5MBS scenarios with high priority (based on existing functionalities in eMBMS): (i) Interactive Service, (ii) Session Continuity, (iii) Time-shifted viewing, (iv) Targeted content replacement, (v) Reporting, and (vi) Unicast recovery.

5. MBMS supports Hybrid DASH/HLS delivery based on CMAF content as defined in TS 26.346, clauses 5.6, and 5.7. This option is not supported in 5GMS which in itself results in limitations but results in limitations when running 5GMS via eMBMS. Support for hybrid DASH/HLS is essential.

In addition:

6. Improve the definition of reference point M3 to more fully support interoperability in scenarios where the 5GMS AS is deployed in the Trusted DN, including:

- Definition of relevant call flows and procedures to support configuration of 5GMS AS instances by the 5GMS AF.

## **Objectives**

The Work Item has the following objectives:

1. Uplink streaming:

- Updating the procedures for uplink streaming to be on par with downlink streaming.

- Include collaboration scenarios and their associated call flows.

- Adding informative call flows for connected uplink-downlink media streaming sessions.

2. End-to-end low latency live streaming:

- Inclusion of the collaboration scenarios and call flows for end-to-end low latency live streaming.

- Updating the reference point to support low latency live streaming services.

* 1. Inclusion of the typical operational points.

3. 5GMS over 5MBS:

- Adding call flows and procedures to support carriage of 5GMS streaming sessions over 5MBS.

4. 5GMS hybrid services (5MBS and 5GMS):

- Adding call flows and procedures to support 5GMS hybrid services (5MBS and 5GMS).

5. Hybrid DASH/HLS operation

- Updating existing call flows and procedures to support hybrid DASH/HLS delivery in 5GMS architecture.

6. Configuration of 5GMS AS instances by 5GMS AF at reference point M3:

- Inclusion of collaboration scenarios and associated call flows for configuration of 5GMS AS.

The work is to be carried out in close collaboration with SA2 and other 3GPP groups.

# **Proposed Time and Work Plan**

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| **Meeting** | **5G Media Streaming Architecture Phase 2- #960047** |
| **SA4#120-e (17 – 26 Aug 2022, e-meeting)** | * Agree on the initial workplan * Review the inputs for each topic and generate the initial DCRs to 26.501. |
| **3GPP SA4 MBS SWG Telco (September 8, 2022, 15:30 – 17:30 CEST, Host Qualcomm)** | * Progress work on DCRs to 26.501 * Submission deadline September 7, 2022, noon cest |
| **3GPP SA4 MBS SWG Telco (September 22, 2022, 15:30 – 17:30 CEST, Host Qualcomm)** | * Progress work on DCRs to 26.501 * Submission deadline September 21, 2022, noon cest |
| **3GPP SA4 MBS SWG Telco (October 6, 2022, 15:30 – 17:30 CEST, Host Qualcomm)** | * Progress work on DCRs to 26.501 * Submission deadline October 5, 2022, noon cest |
| **3GPP SA4 MBS SWG Telco (October 20, 2022, 15:30 – 17:30 CEST, Host Qualcomm)** | * Update the DCRs to 26.501. * Outline the remaining topics to be completed. * Submission deadline October 19, 2022, noon cest |
| **SA4#121 (20 – 24 Nov 2022, Toulouse)** | * Progress work on CRs for each topic to 26.501 * Update the CRs to 26.501. |
| **3GPP SA4 MBS SWG Telco (Dec 8, 2022, 15:30 – 17:30 CET, Host Qualcomm)** | * Progress work on CRs to 26.501 * Submission deadline Dec 7, 2022, noon cest |
| **SA#98-e (12 – 19 Dec 2022)** | * Present the completed CRs to TS 26.501 for approval |
| **3GPP SA4 MBS SWG Telco (Dec 22, 2022, 15:30 – 17:30 CET, Host Qualcomm)** | * Progress work on the remaining CRs to 26.501 * Submission deadline Dec 21, 2022, noon cest |
| **3GPP SA4 MBS SWG Telco (Jan 12, 2023, 15:30 – 17:30 CET, Host Qualcomm)** | * Progress work on the remaining CRs to 26.501 * Submission deadline Jan 11, 2023, noon cest |
| **3GPP SA4 MBS SWG Telco (Feb 9, 2023, 15:30 – 17:30 CET, Host Qualcomm)** | * Progress work on the remaining CRs to 26.501 * Submission deadline Feb 8, 2023, noon cest |
| **SA4#122 (20 – 24 Feb 2023, Athens)** | * Progress work on the remaining CRs to 26.501 |
| **3GPP SA4 MBS SWG Telco (Mar 9, 2023, 15:30 – 17:30 CET, Host Qualcomm)** | * Progress work on the remaining CRs to 26.501 * Submission deadline Mar 8, 2022, noon cest |
| **3GPP SA4 MBS SWG Telco (Mar 16, 2023, 15:30 – 16:30 CET, Host Qualcomm)** | * Progress work on the remaining CRs to 26.501 * Submission deadline Mar 15, 2023, noon cest |
| **3GPP SA4 MBS SWG Telco (Mar 30, 2023, 15:30 – 17:30 CET, Host Qualcomm)** | * Progress work on the remaining CRs to 26.501 * Submission deadline Mar 29, 2023, noon cest |
| **SA4#123 (17 – 21 Apr 2023, e-meeting)** | * Progress work on the remaining CRs to 26.501 |
| **SA4#124 (22 – 26 May 2023, Berlin)** | * Complete work on the remaining CRs to 26.501 on all topics. * Endorse work item summary |
| **SA#100 (16 – 20 Jun 2023, TBD, EU)** | * Present Phase 2 Features for 5G Media Streaming remaining CRs to TS 26.501 for approval * Present work item summary |