**3GPP TSG SA WG4 Meeting #127 S4-240463**

**Sophia Antipolis, France 29 January – 2 February 2024** revision of S4-240124

**Agenda item:** 6.2

**Source:** Qualcomm Incorporated, Dolby France SAS, China Mobile Com. Corporation, AT&T, Telecom Italia, Comcast, ATEME, Orange, Samsung Electronics Co. Ltd., NTT, BBC, ZTE, SWR, EBU, Rohde & Schwarz, China Unicom, Huawei Technologies Co Ltd., Ericsson LM, Tencent, InterDigital Communications, Sony Europe B.V.

**Title:** [FS\_AMD] Proposed Time and Work Plan for Advanced Media Delivery

**Version:** 0.0.0

**Document for** Agreement

# Introduction

During SA4#127 the Feasibility Study on “Advanced Media Delivery” was agreed in S4-240xxx and afterwards approved in by SA plenary #103 in SP-240xxx.

The objectives of the work item are as follows:

The objective of this study is in the context of the above potential improvements and extensions, referred to as key topics. Specifically, for each of the above key topics, the following objectives are identified:

1. Document the above key topics

a) Common Client Metadata

o Explicit Supporters: Qualcomm, Dolby, CMCC, AT&T, Telecom Italia, Comcast, Orange, BBC, EBU, Tencent, ATEME Sony Europe B.V.

b) Common Server-and Network-Assisted Streaming

o Explicit Supporters: Qualcomm, Dolby, AT&T, Comcast, Tencent, ATEME

c) Multi-Access and Multi-CDN Delivery

o Explicit Supporters: Qualcomm, Dolby, AT&T, Orange, Samsung Electronics Co. Ltd., Huawei Technologies Co Ltd., ATEME

d) Modem-Usage Optimized Media Streaming

o Explicit Supporters: Qualcomm, Dolby, Comcast, BBC, EBU, Tencent

e) DRM and Conditional Access

o Explicit Supporters: Qualcomm, Telecom Italia, Comcast, Rohde&Schwarz, Huawei Technologies Co Ltd

f) In-session Unicast Repair for MBS Object Delivery

o Explicit Supporters: Qualcomm, Telecom Italia, Comcast, Orange, BBC, SWR, EBU, Rohde&Schwarz, Huawei Technologies Co Ltd., ATEME

g) MBS User Service and Delivery Protocols for eMBMS

o Explicit Supporters: Qualcomm, Comcast, SWR, EBU, Rohde&Schwarz, ATEME

h) Selected MBMS Functionalities not supported in MBS

o Explicit Supporters: Qualcomm, Comcast, SWR, EBU, Rohde&Schwarz, Huawei Technologies Co Ltd., ATEME

i) DASH/HLS Interoperability

o Explicit Supporters: Qualcomm, Telecom Italia, Comcast, Orange, BBC, EBU, Rohde&Schwarz, Huawei Technologies Co Ltd., Tencent

j) Further harmonization of RTC and Streaming for Advanced Medial Delivery

o Explicit Supporters: Qualcomm, CMCC, Comcast, Samsung Electronics Co. Ltd., NTT, InterDigital Communications

k) Issues identified by Market Representation Partners

o Explicit Supporters: Qualcomm, Comcast, BBC, Dolby, EBU

l) Improved QOS support

o Explicit Supporters: Ericsson LM, Huawei Technologies Co Ltd., Qualcomm, BBC, InterDigital, Europe, Ltd., , InterDigital Communications

in more detail, in particular how they relate to the 3GPP Media Delivery Architecture and/or the MBS User Service Architecture.

2. Study collaboration scenarios between the 5G System and Application Provider for each of the key topics.

3. Based on existing architectures, develop one or more deployment architectures that address the key topics and the collaboration models.

4. Map the key topics to basic functions and develop high-level call flows.

5. Identify the issues that need to be solved.

6. Provide candidate solutions including call flows, protocols and APIs for each of the identified 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 DASH-IF, CTA WAVE, ISO/IEC JTC29 WG3 (MPEG Systems), 5G-MAG, DVB or IETF, as needed.

9. Identify gaps and recommend potential normative work for stage-2 and stage-3 , including which existing specifications would be impacted and/or if any new specifications would preferably be developed.

The overall timeline is as follows

|  |
| --- |
| **New specifications** *{One line per specification. Create/delete lines as needed}* |
| Type  | TS/TR number | Title | For info at TSG#  | For approval at TSG# | Remarks |
|  |  |  |  |  |  |

|  |
| --- |
| **Impacted existing TS/TR** *{One line per specification. Create/delete lines as needed}* |
| TS/TR No. | Description of change  | Target completion plenary# | Remarks |
| 26.802 | MBS User Service Enhancements and Extensions | SA#106(Dec 24) | Individual CRs for each of the key topics may be provided. |
| 26.804 | Advanced Media Delivery | SA#106(Dec 24) | Individual CRs for each of the key topics may be provided. |

This document provides an

- initial work plan to consider the completion of the work in the envisaged timelines.

- a vision towards potential normative work in 3GPP within Release -19

In scheduling telcos, no guidance from the MBS SWG chair has yet been sent, but take into account

* 1. 11 - 14 February 2024 (Mile High Video)
	2. 10 – 18 February 2024 (China New Year)
	3. 19 – 20 March 2024 (DVB World)
	4. 19 – 22 March 2024 (SA#103)
	5. 28 – 31 March 2024 (Easter Break)
	6. 22 – 26 April 2024 (MPEG)
	7. 1 May 2024 (General Holiday)

Here is the proposed list of available weeks for SA4 AH meetings:

* 1. 19 - 23 February 2024
	2. 26 February – 1 March 2024
	3. 4 – 8 March 2024
	4. 11 – 15 March 2024
	5. 25 – 28 March 2024
	6. 6 – 10 May 2024

1. Reminder on preferred day of the week per SWG:
	1. Monday – Audio SWG
	2. Tuesday – Video SWG
	3. Wednesday – RTC SWG
	4. Thursday – MBS SWG
	5. Friday –  Audio SWG

This study would formally only start after the SA#103, so it is only included in the telcos after SA#103.

This study also includes a proposal for

1. A virtual workshop with 5G-MAG to address issue 1k and 8 on May 7, 2024
2. A proposed 130bis or MBS AHG meeting in September or October 2024

# Vision towards normative work

This study is considered as an extension study of the existing Media Delivery Architecture as well as related stage-3 protocols, APIs and reference points. It is planned to identify topics for normative work to be addressed in the Rel-19 timeline as follows

* Completion of study by 09/2024 for stage-2 and by 12/2024 for stage-3
* Stage-2 normative work until 12/2024 (1 cycle work item, 100% completion within one cycle). An AHG meeting or an SA4#130bis in September/October 2024 should be considered to support the completion of the work.
* Stage-3 normative work until 09/2025 (3 cycle work item, 30% 03/2025, 70% 06/2025, 100% 09/2025)

The study may only conclude in a subset of the work topics on what normative work will be addressed in Rel-19. Conclusions in the study may include that certain topics are for further study. Those topics may be addressed with lower priority in Rel-19 timeline, with a clear understanding that they very likely not be addressed in Rel-19 timeline.

The timelines above 09/2024 for stage-2 and 12/2024 are considered are strict deadlines for what is addressed in Rel-19 normative work. This study as well as the follow-up normative work is expected to address the following

* Study:
	+ TR 26.802: Documents key issues and work topics only related to MBS
	+ TR 26.804: Documents key issues and work topics primarily related to 5G Media Streaming, but may include also hybid aspects as issues related to topic 1j)
* Stage-2 normative work (note not all work may be done based on topics completed in the study phase and what is not completed)
	+ TS 26.500 (new) "Media Delivery Architecture" may be created to harmonize commonalities between TS 26.501 and TS 26.506, and to address advances that apply to both.
	+ TS 26.501: Documents stage-2 enhancements for 5G Media Streaming and creates references to TS 26.500 as needed
	+ TS 26.502: Documents stage-2 enhancements for MBS and creates references to TS 26.500 as needed
	+ TS 26.506: Documents stage-2 enhancements for RTC and creates references to TS 26.500 as needed
* Stage-3 normative work (note not all work may be done based on topics completed in the study phase as well as in stage-2)
	+ TS 26.510: Addresses enhancements to the Media Delivery: Session Handling Reference points and APIs
	+ TS 26.512: Addresses enhancements to 5G Media Streaming: Protocols and APIs
	+ TS 26.517: Addresses enhancements to MBS User Services: Protocols and APIs
	+ TS 26.51x (new): Addresses common Media Delivery Content Delivery Protocols

# Proposed Time and Work Plan

|  |  |  |
| --- | --- | --- |
| Meeting | Feasibility Study on “Advanced Media Delivery” - #11xxxxx  | Completion Status |
| SA4#127 (29 January - 2 February 2024, Sophia Antipolis, FR) | * Agree work item in S4-24xxxx
* Start identifying leads for each work topic
* Agree vision for overall Rel-19 schedule
* Agree initial work and time plan
 | Target 0%Real |
| SA#103 (March 19 - 22 2023, Maastrict, NL) | * Approve work item in SP-24xxxx
 |  |
| 3GPP SA4 MBS SWG Telco (March 28, 2024, 15:30 – 17:30 CET, Host Qualcomm) | * Initiate CRs for each work topic
* Initiate documenting each work topics and collaboration scenarios
* Continue identifying leads for each work topic
* Submission Deadline March 27, noon CET
 | Target 5%Real |
| SA4#127bis-e (8 - 12 April 2024, Online) | * Agree on leads for each work topic
* Continue documenting each work topics and collaboration scenarios
* Progress CRs for each work topic
* Agree on workshop with 5G-MAG
* Communicate with other 3GPP working groups and external organizations, in particular 5G-MAG, on need basis
 | Target 15%Real |
| 3GPP SA4 MBS SWG Telco (May 7, 2024, 15:00 – 18:00 CEST, Host Qualcomm) | * 15:00-16:30 Workshop with 5G-MAG – get input and feedback on agreed work topics and potential new aspects.
* Progress definition of work topics
* Submission Deadline May 6, noon CEST
 | Target 20%Real |
| SA4#128 (20 – 24 May 2024, Jeju Island, KR) | * Complete documenting each work topic and collaboration scenarios
* Start developing high-level call flows.
* Start identifying the issues that need to be solved.
* Start candidate solutions including call flows, protocols and APIs for each of the identified issues.
* Progress CRs for each work topic
* Communicate with other 3GPP working groups and external organizations, in particular 5G-MAG, on need basis
 | Target 30%Real |
| SA#104 (18 – 21 June 2024, China) | * No actions
 |  |
| SA4#129-e (19 – 23 August 2024, online) | * Complete high-level call flows.
* Progress identifying the issues that need to be solved.
* Progress candidate solutions including call flows, protocols and APIs for each of the identified issues.
* Complete identifying gaps and recommend potential normative work for stage-2 for relevant work topics.
* Agree CRs addressing potential normative work for stage-2 for relevant work topics
* Progress CRs relevant for stage-3
* Communicate with other 3GPP working groups and external organizations, in particular 5G-MAG, on need basis
 | Target 50%Real |
| SA#105 (10– 13 September 2024, Melbourne, AU) | * Approve CRs addressing potential normative work for stage-2 for relevant work topics
 |  |
| SA4#130bis or MBS AHG (September/October 2024, EU, tbc)  | * Progress candidate solutions including call flows, protocols and APIs for each of the identified issues.
* Progress identifying gaps for stage-3 for relevant work topics.
* Progress CRs relevant for potential issues related to stage-3
* Communicate with other 3GPP working groups and external organizations, in particular 5G-MAG, on need basis
* Post IBC which is Sep 13 – 16 2024 (start Mon 2pm - finish at Fri 2pm), e.g.
	+ Sep 17 - 20
	+ Sep 23 – 27
	+ Oct 6 – Oct 10
 | Target 70%Real |
| SA4#130 (18 – 22 November 2024, Orlando, FL, US) | * Complete evalution of candidate solutions including call flows, protocols and APIs for each of the identified issues.
* Complete identifying gaps and recommend potential normative work for stage-3 for relevant work topics.
* Agree CRs addressing potential normative work for stage-3 for relevant work topics
* Communicate with other 3GPP working groups and external organizations, in particular 5G-MAG, on need basis
 | Target 90%Real |
| SA#106 (10 – 13 December 2024, Madrid, ES TBC) | * Agree CRs addressing potential normative work for stage-3 for relevant work topics
 |  |