**SA WG2 Meeting #S2-149E S2-2201231r14**

**14 February – 25 February 2022, Electronic, Elbonia (revision of S2-2201231)**

**Source: T-Mobile USA, Futurewei, China Mobile, Huawei, Hisilicon, Xiaomi, Tencent, Tencent Cloud, Nokia, Nokia Shanghai Bell,ZTE**

**Title: Adding architecture assumption and requirement.**

**Document for: Approval**

**Agenda Item: 9.19**

**Work Item / Release: FS\_XRM / Rel-18**

*Providing some architectural assumptions and requirements for the study.*

# Discussion

Several of the work tasks defined in the WID for this study suggest that enhancing QOS may be necessary to deliver on the expected performance of XRM services. These include:

“ *WT#2.1: Study whether and how interaction between AF and 5GS is needed for application synchronization and QoS policy coordination among multiple UEs or between multiple QoS flows per UE.* ”

“ *WT#2.2: Study exposure of 5GS QoS information (e.g., QoS capabilities) and network conditions to the Application to enable quick codec/rate adaptation help to provide desired QoE (e.g. such as assist in alleviating 5GS congestion).* “

“*WT#3.1: Study the traffic characteristics of media service enabling improved network resources usage and QoE.*“

“ *WT#3.2: Enhance QoS framework to support media units granularity (e.g., video/audio frame/tile, Application Data Unit, control information), where media units consist of PDUs that have the same QoS requirements*. ”

“ *WT#3.3: Support differentiated QoS handling considering different importance of media units. e.g., eligible drop packets belong to less important media units to reduce the resource wasting.* “

Since only a limited amount of time has been allocated to this study it is necessary to focus the study on aspects of QOS enhancement that do not require complete re-design and re-development of the existing QOS structure defined for 5GS over the past several releases (release 15, 16 and 17). The proposed Architectural assumptions and requirements are intended to avoid solution proposals that would require extensive interaction with RAN groups to define and require lengthy normative work to specify.

NOTE: also including Architectural Assumptions from S2-2200295 and S2-2200426, S2-2200908.

# Proposal

It is proposed to add the following to TR 23.700-60 as new text.

## **\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*START of CHANGE \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[a] 3GPP TS 23.501: "System Architecture for the 5G System (5GS); Stage 2".

[b] 3GPP TS 23.502: "Procedures for the 5G System; Stage 2".

[c] 3GPP TS 23.503: "Policy and charging control framework for the 5G System (5GS); Stage 2".

[d] 3GPP TS 22.261: "Service requirements for the 5G system".

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# 4 Architectural Assumptions and Requirements

## 4.1 Architectural Assumptions

The following architectural assumptions are applicable to this study:

* This study assumes that the XR services are supported when UE accesses ~~NR with~~ 5GC via a radio access(e.g.NR), in order to obtain XR services. The architecture, framework and the QoS model as specified in TS23.501 [a], TS23.502 [b], and TS23.503 [c] are regarded as the baseline for this study.

NOTE: The study focuses on using NR as access technology. Other access types are not required to be studied in this TR (although not prohibited).

* XRM services in this study include the interactive XR and media services and tactile/multi-modality services, with low latency requirements, e.g. AR/VR/gaming with cloud rendering..
* The functional split in 5GS between UE, RAN and CN remains unchanged, i.e., packet classification of DL packets is performed in CN, and the packet classification of UL packets is performed in UE.
* XRM services are assumed to use the IP PDU session types (however other PDU types are not excluded).
* XRM services/devices and existing services/devices will operate simultaneously within a PLMN or SNPN and in some cases some NFs may support these multiple services simultaneously.
* XRM services can be between client-server (i.e., UE - application server) or peer-to-peer (i.e., between two UEs routed via the PSA UPF without the DN).

NOTE: The study item description refers to examples including mobile media services, cloud AR/VR, cloud gaming, video-based tele-control for machines or drones, some of which are client-server, others peer-to-peer or a combination.

* Architecture enhancements should support XRM applications and its traffic characteristics. However, media codec mechanisms are not in the scope of this study.
* XR and media application data may be encrypted by the client and/or server in some cases and unencrypted in other cases.

## 4.2 Architectural Requirements

The following architectural requirements are applicable to this study:

* Solutions shall build on the 5G System architectural principles as in TS 23.501 [a], including:
	+ flexibility and modularity for newly introduced functionalities.
	+ existing methods for communicating the QoS profile (i.e. Standardized 5QI, Operator Pre-configured 5QI, Dynamically Signalled QoS Profile).
* Any enhancements for this study shall not impact Emergency Services and other Priority Services (MPS, Mission Critical, etc) capabilities.
* Services using existing QoS functions shall not require enhancement to co-exist with any QoS enhancement being specified for XRM services.

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