**3GPP TSG-S4 Meeting #117-eS4-220073**

**Online, 14th – 23th February 2022**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **26.114** | **CR** | **0523** | **rev** |  | **Current version:** | 17.3.0 |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network |  | Core Network | **X** |

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| ***Title:*** | Overlay Support using MPEG-I Scene Description | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Qualcomm Inc. | | | | | | | | | |
| ***Source to TSG:*** | S4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | ITT4RT | | | | |  | ***Date:*** | | | 8th February 2022 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | B |  | | | | | ***Release:*** | | | Rel-17 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Adding support for scene-based overlays | | | | | | | | |
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| ***Summary of change:*** | | The proposed changes add the capability for signaling the presence of a scene description and define the usage of the scene description to signal overlays in an ITT4RT session. | | | | | | | | |
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| ***Consequences if not approved:*** | | A scene-based solution for overlay signaling would not be available. | | | | | | | | |
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| ***Clauses affected:*** | | 2, A.18, Y.6.9 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

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| First 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".

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[182] ISO/IEC 23090-14: Information technology — Coded representation of immersive media — Part 14: Scene Description for MPEG Media

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| Second Change |

# A.18 SDP offers and answers for ITT4RT

Table A.18.1 shows an example of an SDP offer for an ITT4RT session with a 360 video, 2 overlay streams, and a scene description.

**Table A.18.1: Example SDP offer with scene description signalling**

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| **SDP offer** |
| v=0  o=ITT4RT 3413526809 0 IN IP4 server.example.com  s=Example of using AS in MTSI  c=IN IP4 aaa.bbb.ccc.ddd  b=AS:345  t=0 0  a=tcap:1 RTP/AVPF  a=itt3rt\_group: 1 2 3  m=video 49154 RTP/AVP 99  a=pcfg:1 t=1  b=AS:315  b=RS:0  b=RR:5000  a=rtpmap:99 H264/90000  a=fmtp:99 packetization-mode=0; profile-level-id=42e00c; \  sprop-parameter-sets=J0LgDJWgUH6Af1A=,KM46gA==  a=3gpp\_360video: Stereo  a=mid:1  m=video 49154 RTP/AVP 99  a=pcfg:1 t=1  b=AS:315  b=RS:0  b=RR:5000  a=rtpmap:99 H264/90000  a=fmtp:99 packetization-mode=0; profile-level-id=42e00c; \  sprop-parameter-sets=J0LgDJWgUH6Af1A=,KM46gA==  a=mid:2  a=3gpp\_overlay:2 1 0,0,0,0,0,0,0,0,0,0  m=video 49154 RTP/AVP 99  a=pcfg:1 t=1  b=AS:315  b=RS:0  b=RR:5000  a=rtpmap:99 H264/90000  a=fmtp:99 packetization-mode=0; profile-level-id=42e00c; \  sprop-parameter-sets=J0LgDJWgUH6Af1A=,KM46gA==  a=mid:3  a=3gpp\_overlay:3 1 0,0,0,0,0,0,0,0,0,0  m=application 52718 UDP/DTLS/SCTP webrtc-datachannel  b=AS:500  a=sctp-port:5002  a=max-message-size:1024  a=fingerprint:SHA-1 4A:AD:B9:B1:3F:82:18:3B:54:02:12:DF:3E:5D:49:6B:19:E5:7C:AB  a=tls-id: abc3de65cddef001be82  a=dcmap:0 subprotocol="http"  a=dcmap:110 subprotocol="mpeg-sd"  a=mid:4 |

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| Third Change |

### Y.6.9 Scene-Based Overlays

#### Y.6.9.1 General

ITT4RT clients that support the “Overlay” feature may support the scene description as defined in [182] for signaling the overlay configuration.

If scene-based overlays are supported, the following subset of the MPEG-I scene description extensions and features shall be supported:

* The MPEG\_media extension: used to reference the media streams.
* The MPEG\_accessor\_timed and the MPEG\_buffer\_circular: used to bind timed media.
* The MPEG\_texture\_video: used to define video textures for the overlay and the 360 video.
* The scene description update mechanism as defined in clause 5.2.4 of [182].

If scene-based overlays are used in an ITT4RT session with multiple participants, then the ITT4RT MRF shall be used for the session and shall own the scene description.

If scene-based overlays are used, then the ITT4RT-TX client in the ITT4RT MRF shall:

* Create a sphere or cubemap mesh node (depending on the selected projection) in the scene description for each 360 video stream in the ITT4RT session. The source of the node’s texture shall reference the ITT4RT media stream of the corresponding 360 video as signaled by the SDP.
* Create a rectangular or spherical mesh node in the scene description for each overlay stream in the ITT4RT session. The source of the node’s texture shall reference the media stream of the corresponding overlay stream as signaled by the SDP.
* The location of the overlay shall be indicated by the transformation of the corresponding overlay node in the scene description.

The URL format as specified in 23090-14 Annex C shall be used to reference media streams in the ITT4RT session.

For participants that support scene description, the overlay information and positioning that is provided as part of the scene description shall take precedence over any information provided as part of the 3gpp\_overlay attribute.

An ITT4RT-Tx client in terminal that offers overlays may select to signal the overlay either through the 3gpp\_overlay attribute or through a scene update that adds the overlay node. The scene update mechanism is described in [182]. In case the ITT4RT-Tx uses the 3gpp\_overlay attribute to describe its overlays, the ITT4RT-Tx client in the ITT4RT MRF shall generate the scene description or scene description update document that signals the presence and position of that overlay.

#### Y.6.9.2 Offer/Answer Negotiation

An ITT4RT-Tx client that support scene-based overlays, shall offer a data channel with a data channel indicating the “mpeg-sd” sub-protocol. The ITT4RT-Rx client in the MRF that supports scene-based overlays shall answer by accepting the scene description data channel.

If the offer is accepted, the ITT4RT MRF shall generate and send the scene description to the offerer upon establishment of the data channel.

If the ITT4RT MRF receives an offer that does not contain a data channel with the “mpeg-sd” sub-protocol, it shall assume that the ITT4RT client does not support scene description-overlays. In such case, the answer shall describe any overlays using the 3gpp\_overlay attribute.

#### Y.6.9.3 SDP Signaling

An ITT4RT-Tx in the ITT4RT MRF that supports scene-based overlays, shall support MTSI data channel media and act as an DCMTSI client. The data channel stream id shall be in the range allocated for bootstrap channels, i.e. between 1 and 1000, ecluding values in Table 6.2.10.1-2. A single data channel with sub-protocol “mpeg-sd” shall be present in the offer/answer SDP. If multiple data channels with the “mpeg-sd” sub-protocol are detected, the one with the lowest stream ID shall be used. The scene description data channel shall be configured as ordered, reliable, with normal SCTP multiplexing priority.

When scene-based overlays are offered, the ITT4RT-Tx in the ITT4RT MRF shall offer a data channel with a stream id that indicates the “mpeg-sd” subprotocol in the dcmap attribute. The “mpeg-sd” messages shall be JSON formatted in UTF-8 coding without BOM.

scene-based overlay descriptions, including complete scene descriptions and scene updates, shall be delivered through the same data channel.