**3GPP SA4#115-e - Meeting  *S4-211253***

**August 18th - 27th 2021**

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| *CR-Form-v12.0* |
| **DRAFT CHANGE REQUEST** |
|  |
|  | **26.114** | **CR** |  | **rev** | **-** | **Current version:** | **17.1.0** |  |
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| *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:***  | S4aM210640 ITT4RT dCR for Presentation Overlay |
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| ***Source to WG:*** | KPN N.V. |
| ***Source to TSG:*** | SA4 |
|  |  |
| ***Work item code:*** | ITT4RT |  | ***Date:*** | 2021-05-04 |
|  |  |  |  |  |
| ***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 canbe 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-12 (Release 12)**Rel-13 (Release 13)Rel-14 (Release 14)Rel-15 (Release 15)Rel-16 (Release 16)* |
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| ***Reason for change:*** | How to handle presentation type content in ITT4RT is a requirement of the work item and currently not sufficiently addressed in 26.114. |
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| ***Summary of change:*** | Proposed a new section Y.6.4.4. to add functionality and message flows to handle signalling, detection, and replacement of presentation content in the 360-degree content.  |
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| ***Consequences if not approved:*** | How to handle presentation type content in ITT4RT is not explicitly addressed. |
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| ***Clauses affected:*** | Y.6.4.4. |
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|  | **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:*** |  |
| ***56***  |  |
| ***This CR's revision history:*** |  |

**===== 1st CHANGE =====**

## Y.6.4.4 Captured Content Replacement

To prevent the degradation of presentation material (e.g., slides, screen share, video, notes) that may be captured from a display (screen or projector) with a 360-degree camera, the captured content in the 360-degree video can be replaced with the original presentation material. Such replacement implies decoding the content (360-degree video and presentation material), identifying the position of the presentation material in the 360-degree video, replacing the captured presentation content at the display coordinates in the 360-degree video, and finally encoding the new 360-degree video (i.e., with the same encoding parameters as the original 360-degree video). The replacement could either be performed in the ITT4RT-Tx client in terminal which is sending the 360-degree video or in the ITT4RT-MRF.

When replacement is to be performed, the availability of the original presentation content must be signalled by the source of the content to the client performing the replacement (that is, the ITT4RT-Tx client in terminal or the ITT4RT-MRF) using the SDP attribute “a=content:slides” [81] which may include different content, for example slides, screen share, video, notes. The client performing the replacement shall determine an appropriate configuration for performing the content replacement in the 360-degree video, unless overlay parameters are given by the source of the original presentation content (e.g., configuration in terms of sphere-relative overlay coordinates as defined in Y.6.4.3.2).

When the SDP negotiation is initiated by the ITT4RT-Tx client in terminal, the ITT4RT-Tx client in terminal shall include the attribute “a=3gpp\_360video\_replacement” in its SDP offer to indicate that the content captured in the 360-degree video can be replaced. If the ITT4RT-MRF supports content replacement and receives an SDP offer with the attribute “a=3gpp\_360video\_replacement”, then the ITT4RT-MRF shall include the attribute “a=3gpp\_360video\_replacement” in its SDP answer and shall perform content replacement.

If the ITT4RT-Tx client in terminal includes the attribute “a=3gpp\_360video\_replacement” in its SDP offer but does not receive the attribute in the SDP answer (that is, replacement is not supported in the ITT4RT-MRF) then the ITT4RT-Tx client in terminal may send the original presentation content using a different process than ITT4RT-MRF replacement (e.g., the presentation can be sent as an overlay as defined in Y.6.4., or inserted into the 360-degree video by the ITT4RT-Tx client in terminal as described above).

If the ITT4RT-MRF does not receive the attribute “a=3gpp\_360video\_replacement” in an SDP offer, it shall not perform any replacement and will not include the attribute in its SDP answer.

When replacement is to be performed by the ITT4RT-MRF and the SDP negotiation is initiated by the ITT4RT-MRF, the offer sent by the ITT4RT-MRF to the ITT4RT-Tx client in terminal shall include the attribute “a=3gpp\_360video\_replacement”. If the ITT4RT-Tx client in terminal accepts the offer by the MRF to perform replacement, the ITT4RT-Tx client in terminal shall include the attribute “a=3gpp\_360video\_replacement” in the SDP answer and the ITT4RT-MRF shall perform content replacement.

If the ITT4RT-MRF does not receive the attribute “a=3gpp\_360video\_replacement” in the SDP answer of the ITT4RT-Tx in terminal (i.e., the content captured in the 360-degree video cannot be replaced), the ITT4RT-MRF shall not perform any replacement.

If the ITT4RT-MRF does not support content replacement, it shall not include the attribute “a=3gpp\_360video\_replacement” in an SDP offer, it will not perform any replacement, and the ITT4RT-Tx client in terminal may send the original presentation content using a different process (e.g., the presentation can be sent as an overlay as defined in Y.6.4., or inserted into the 360-degree video by the ITT4RT-Tx client in terminal as described above). In the case that the ITT4RT-MRF does not send the attribute “a=3gpp\_360video\_replacement” in an offer, the ITT4RT-Tx client in terminal shall not send the attribute “a=3gpp\_360video\_replacement” in an answer.

After an accepted offer/answer between ITT4RT-Tx in terminal and ITT4RT-MRF with both offer and answer including the attribute “a=3gpp\_360video\_replacement”, the ITT4RT-MRF shall perform content replacement once the original presentation content is available from the source of the content and the replacement configuration is determined. Once the ITT4RT-MRF is performing the replacement, the ITT4RT-MRF shall renegotiate the SDP of the 360-degree stream sent by the ITT4RT-MRF to ITT4RT-Rx clients, by adding the attribute “a=includes:content:slides”. Any subsequent SDP negotiation (relating to the 360-degree stream) sent by the ITT4RT-MRF shall also include the attribute “a=includes:content:slides” as long as replacement is performed.

If the replacement configuration of the content is analysed and determined by the ITT4RT-Tx in terminal, the client shall include the configuration as sphere-relative overlay coordinates (defined in Y.6.4.3.2) in the SDP offer/answer while negotiating the stream with the ITT4RT-MRF. If the sphere-relative overlay coordinates are not signalled in the SDP offer/answer by the ITT4RT-Tx, the ITT4RT-MRF shall analyse and determine an appropriate configuration for performing the content replacement in the 360-degree video.

In case the replacement is performed in the ITT4RT-Tx client in terminal, the ITT4RT-Tx client in terminal shall renegotiate the SDP of the 360-degree stream sent by the ITT4RT-Tx client in terminal to the ITT4RT-MRF, by adding the attribute “a=includes:content:slides”. Any subsequent SDP negotiation (relating to the 360-degree stream) sent by the ITT4RT-Tx client in terminal shall also include the attribute “a=includes:content:slides” as long as replacement is performed.

The ABNF syntax for the replacement attribute is as follows:

replacement-attrib = “a=3gpp\_360video\_replacement [: sphere\_relative\_overlay\_config”

performed-replacement-attrib = “a=includes:content:slides”