**3GPP TSG-SA4 Meeting #119-e *S4-220685***

**Online, 11th May 2022 - 20th May 2022**

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| *CR-Form-v12.2* | | | | | | | | |
| **draft CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **26.223** | **CR** |  | **rev** | **-** | **Current version:** | **17.0.0** |  |
|  | | | | | | | | |
| *For* [***HELP***](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 |  | Radio Access Network |  | Core Network |  |

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|  | | | | | | | | | | |
| ***Title:*** | ITT4RT feature | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Nokia Corporation, Samsung Electronics Co., Ldt. | | | | | | | | | |
| ***Source to TSG:*** |  | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | ITT4RT | | | | |  | ***Date:*** | | | 2022-05-04 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | F |  | | | | | ***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-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | The ITT4RT capability is fixed by reference as per TS 26.114. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Sections 5.4 and 15 are added, 8.2.2 is changed. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | The Telepresence service lacks the 360 degree video capability. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  |  | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  |  | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  |  | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

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

## 5.4 Still Images

The still images requirements for MTSI clients in terminals specified in TS 26.114 [2], clause 5.2.4, also apply for TP UEs.

**====== END OF 1st CHANGE ======**

**====== 2nd CHANGE ======**

### 8.2.2 Visual Parameters

Table 8.2.2.1: Visual parameters

| Parameter | Need for signalling at session initiation | Need for signalling during session | Remarks |
| --- | --- | --- | --- |
| colorGamut | Y | N | This parameter indicates the Colour Gamut used in a Telepresence Video Stream. Signalled as part of the codec information, e.g. in H.264 and H.265 SEI [16]-[17]. |
| lumaBitDepth | Y | N | This parameter indicates the bit depth of the luma samples in a digital picture. Signalled as part of the codec information, e.g. in H.264 and H.265 SEI [16]-[17]. |
| chromaBitDepth | Y | N | This parameter indicates the bit depth of the chroma samples in a digital picture. Signalled as part of the codec information, e.g. in H.264 and H.265 SEI [16]-[17]. |
| effectiveResolution | N | N | This parameter indicates effective resolution of a rendered video stream as perceived by the viewer, as defined by ITU-T H.TPS-AV [41]. Not signalled. |
| captureArea | Y | Y | See the Area of Capture attribute in clause 7.1.1.3 of IETF CLUE framework [7] and the <captureArea> element in clause 11.5.2 of IETF CLUE data model schema [10]. |
| capturePoint | Y | Y | See the Point of Capture attribute in clause 7.1.1.1 of IETF CLUE framework [7] and the <captureOrigin> element in clause 11.5.1 of IETF CLUE data model schema [10]. |
| lineOfCapturePoint | Y | Y | See the Point on Line of Capture attribute in clause 7.1.1.2 of IETF CLUE framework [7] and the <captureOrigin> element in clause 11.5.1 of IETF CLUE data model schema [10]. |
| fovAzimuth  (NOTE1) | Y | N | This parameter indicates the azimuth range of the captured Field of View of a 360-degree video and is signalled in SDP. See azimuthrange in Annex Y.6.2.3 of TS 26.114 [2]. |
| fovElevation  (NOTE1) | Y | N | This parameter indicates the elevation range of the captured Field of View of a 360-degree video and is signalled in SDP. See elevationrange in Annex Y.6.2.3 of TS 26.114 [2]. |
| fovCentreAzimuth  (NOTE1) | Y | N | This parameter indicates the azimuth of the centre of Field of View of a 360-degree video and signalled in SDP. See centreazimuth in Annex Y.6.2.3 of TS 26.114 [2]. |
| fovCentreElevation  (NOTE1) | Y | N | This parameter indicates the elevation range of the Field of View centre of a 360-degree video and signalled in SDP. See centreelevation in Annex Y.6.2.3 of TS 26.114 [2]. |
| azivalue  (NOTE2) | Y | N | This parameter indicates the azimuth for the circular region that contains the fisheye video and is signalled in SDP. See azivalue in Annex Y.6.5.2 of TS 26.114 [2]. |
| elevalue  (NOTE2) | Y | N | This parameter indicates the elevation for the circular region that contains the fisheye video and is signalled in SDP. See elevalue in Annex Y.6.5.2 of TS 26.114 [2]. |
| tilvalue  (NOTE2) | Y | N | This parameter indicates the tilt angle of the sphere region that corresponds to the fisyeye video and is signalled in SDP. See tilvalue in Annex Y.6.5.2 of TS 26.114 [2]. |
| fovvalue  (NOTE2) | Y | N | This parameter indicates the field of view of the lens that corresponds to the fisheye video in the coded picture and is signalled in SDP. See fovvalue in Annex Y.6.5.2 of TS 26.114 [2]. |
| maxVideoBitrate | Y | Y | This parameter indicates the maximum number of bits per second relating to a single video encoding and is signalled in the SDP. See "max-mbps" in IETF RFC 6184 [18] and "CustomMaxMBPS" in ITU-T H.241 [22]. |
| maxWidth | Y | N | This parameter indicates the maximum video resolution width in pixels and is signalled in the SDP. See "horizontal image size" in IETF RFC 6236 [23] and "CustomPictureFormat" in ITU-T H.245 [24]. |
| maxHeight | Y | N | This parameter indicates the maximum video resolution height in pixels and is signalled in the SDP. See "vertical image size" in IETF RFC 6236 [23] and "CustomPictureFormat" in ITU-T H.245 [24]. |
| maxFramerate | Y | N | This parameter indicates the maximum video framerate and is signalled in the SDP. See "framerate" in IETF RFC 4566 [25] and "MaxFPS" in ITU-T H.241 [22]. |
| NOTE1: The parameters fovAzimuth, fovElevation, fovCentreAzimuth and fovCentreElevation should be used in case of immersive 360-degree video capture for ITT4RT clients, as defined in clause 15 of this document. In this case captureArea is not used.  NOTE2: The parameters azivalue, elevalue, tiltvaluea and fovvalue should be used in case of immersive 360-degree fisheye video capture for ITT4RT clients, as defined in clause 15 of this document. In this case captureArea is not used. | | | |

**====== END OF 2nrd CHANGE ======**

**====== 3rd CHANGE ======**

# 15 Immersive Teleconferencing and Telepresence for Remote Terminals (ITT4RT)

A TP-UE may support ITT4RT functionality as defined in TS 26.114 [2], Annex Y. A TP-UE may be an ITT4RT-Tx client or an ITT4RT-Rx client. A TP-UE that is an ITT4RT-Tx client is capable of providing at least one immersive 360-degree video. A TP-UE that is an ITT4RT-Rx client is capable of receiving exactly one immersive 360-degree video.

Media requirements for ITT4RT clients as specified in TS 26.114 [2], Annex Y.3 on Immersive 360-degree video, Annex Y.4 on Immersive Audio/Voice support, and Annex Y.5 on Overlay support, also apply to TP UEs that wish to support ITT4RT functionality

The media configuration requirements for the main 360-degree video for ITT4RT clients specified in TS 26.114 [2], Annex Y.6.2, also apply for TP UEs that support ITT4RT functionality.

The media configuration requirements for the still background for ITT4RT clients specified in TS 26.114 [2], Annex Y.6.3, also apply for TP UEs that supportITT4RT functionality.

The media configuration requirements for overlays for ITT4RT clients specified in TS 26.114 [2], Annex Y.6.4.1, Y.6.4.2 and Y.6.4.3, also apply for TP UEs that support ITT4RT functionality.

The media configuration requirements for fisheye video for ITT4RT clients specified in TS 26.114 [2], Annex Y.6.5, also apply for TP UEs that support ITT4RT functionality.

The media transport requirements for ITT4RT clients specified in TS 26.114 [2], Annex Y.7, also apply for TP UEs that supportITT4RT functionality.If the TP UE supporting ITT4RT functionality intends to negotiate at least one 360-degree video and at least one overlay, the SDP offer from the TP UE shall contain all of them in the basic (i.e., non-CLUE controlled) stream offered with the capabilities for ITT4RT clients using the itt4rt\_group attribute as specified in Annexes Y.6.2.6 and Y.6.8 of 3GPP TS 26.114 [2]. If the initial SDP offer-answer is successful, the CLUE ADVERTISEMENT message should contain the list of global views ( <globalViews>) containing a global view as specified in [11] for each rest-group.

**====== END OF 3rd CHANGE ======**