**Source: MTSI SWG Chairman**[[1]](#footnote-1)

**Title: MTSI SWG Report during SA4#115-e**

## Document for: Approval

## Agenda Item: 14.3

Executive summary

The 3GPP SA4 MTSI SWG met for six telco sessions and also handled documents via the MTSI\_SWG email reflector during SA4#115-e.

A total of 35 delegates participated while 31 Tdocs were discussed with SWG-status concluded for 30 Tdocs. Below is a summary of what was agreed during this meeting.

ITT4RT

* The following were agreed to be included into the mega-draft CR collecting all remaining features and updates for Phase 2 of ITT4RT:
  + Clarification of the syntax for the itt4rt\_group SDP attribute for supporting multiple 360 videos.
  + Use of HEVC encoded image/image sequences formats for still image support in media, overlays, and background
  + Formula for calculating the spherical distance between the center of two viewports
  + Correcting errors in the ABNF of some SDP attributes to align with normative text
  + Addition of an SDP attribute to enable exclusion of overlays from other participants in a 360-degree video stream
  + Addition of SDP parameter sphere-locked and viewport-locked VDP
  + Addition of an SDP attribute and procedures for supporting presentation content replacement in 360-degree video by the MRF or 360-degree video Tx client
* Update to TR 26.862 to include all agreed use cases from the permanent document. ***It was decided any further updates to the TR will be contribution-driven and not automatically transferred from the PD***. Member companies who are interested in having their proposals transferred from the PD to the TR are encouraged to submit proposals for SWG agreement so that the editor can incorporate them into the TR.
* Update to TR 26.962 to include encoder recommendations (adaptive RAP frequency, mode, QP) for viewport-dependent processing
* Update to the Permanent Document to include example call flows on how presentation content replacement can be performed
* Scheduled two telcos for
  + 29 September 2021 6:00-8:00 CEST
  + 27 October 2021 16:00-18:00 CEST

FS\_FLUS\_NBMP

* The work on this Study Item was completed
* CR to TR 26.939
* Endorsed/agreed a Study Item summary

New Work Item

* A proposed Work Item Description on Extensions to FLUS for supporting Media Processing in the Network was discussed but not agreed as not enough supporting companies had been identified.

**The output documents from the MTSI SWG sessions are:**

|  |  |  |
| --- | --- | --- |
| 14 | Reports and general issues from sub-working-groups |  |
| 14.3 | MTSI SWG | 1252 |
| 15 | CRs to features in Release 16 and earlier |  |
| 16 | Release 17 Features |  |
| 16.2 | ITT4RT (Support of Immersive Teleconferencing and Telepresence for Remote Terminals) | 1263 (TR 26.862), 1257(TR 26.962), 1260 (TP)  1265 (PD), 1258 (dCR) |
| 18 | Study Items |  |
| 18.4 | FS\_FLUS\_NBMP (Feasibility Study on the use of NBMP in E\_FLUS) | 1048 (CR), 1266e(summary) |
| 20 | New Work / New Work Items and Study Items |  |

**Agreed in MTSI SWG**

**No status in MTSI SWG**

SWG Minutes during SA4#114-e

## 12.1 Opening of the session

Mr. Nikolai Leung (Qualcomm, Chairman of MTSI SWG) opened the e-meeting sessions on August 18, and the Telco sessions at 15:03 CEST on August 19.

The minutes are shared online here:

<https://docs.google.com/document/d/1uefO5rZex6ncv0AhM3vfNd6br1KuhH_-AXij9UVcTQY/edit?usp=sharing>

Bo Burman, Iraj Sodagar, and Simon Gunkel agreed to serve as the acting secretaries for the meeting.

**Draft Schedule for the MTSI SWG Telcos:**

**Thursday August 19:**

12.1 Opening of the session

12.2 Registration of documents

12.3 Reports and liaisons from other groups

**1066 (ITU-T)**

12.4 CRs to Features in Release 16 and earlier

12.5 ITT4RT

**Corrections: 1141 (dCR)**

**multiple 360: 1126 (dCR), 1157 (dCR)**

**Overlay replacement: 1003 (dCR), 1004 (PD)**

**Friday August 20:**

12.5 ITT4RT

**dCR to TS26.114: 1177 (dCR)**

**TR 26.962: 1176, 1154**

**TR 26.862: 1152**

**Monday August 23:**

12.5 ITT4RT

**Audio: 1158 (dCR) First contribution in case the EVS/SQ SWG members want to join**

**Still Image: 1138 (dCR)**

**VDP: 1139 (dCR), 1142 (dCR)**

**Tuesday August 24:**

12.6 FS\_FLUS\_NBMP: **1048 (CR)**

12.8 New Work/ New Work Items and Study Items: **1049 (WID)**

Wash-up

**Wednesday August 25:**

Wash-up

**Thursday August 26:**

Wash-up

12.9 Any Other Business

12.10 Close of the session

## 12.2 Registration of documents

The following documents were registered before the meeting:

|  |  |  |  |
| --- | --- | --- | --- |
| 12 | Multimedia Telephony Service for IMS (MTSI) SWG | - |  |
| 12.1 | Opening of the session | A |  |
| 12.2 | Registration of documents | A |  |
| 12.3 | Reports and liaisons from other groups | A | 1066 |
| 12.4 | CRs to Features in Release 16 and earlier | A |  |
| 12.5 | ITT4RT (Support of Immersive Teleconferencing and Telepresence for Remote Terminals) | A | 1003, 1004, 1126, 1138, 1139, 1141, 1142, 1152, 1154, 1157, 1158, 1176,    1177 |
| 12.6 | FS\_FLUS\_NBMP (Feasibility Study on the use of NBMP in E\_FLUS) | B | 1048 |
| 12.7 | Others including TEI | B |  |
| 12.8 | New Work / New Work Items and Study Items | B | 1049 |
| 12.9 | Any Other Business | B |  |
| 12.10 | Close of the session | B |  |

Agenda and registration of documents was approved.

## 12.3 Reports and liaisons from other groups

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| [**S4-211066**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/TSGS4_115-e/Docs/S4-211066.zip) | LS on the new work item Q.DC-SA "Signalling architecture of data channel enhanced IMS network" | ITU T SG11 |

Presenter: Nik

Discussion:

* Nik: impact of datachannel is not clear so further study is needed
* Stephane Ragot: there is also work in GSMA, a new PRD (permanent document) is being drafted, most important is consistency between standardisation bodies
* Nik: in CCSA there is also activity

Document was noted

## 12.4 CRs to Features in Release 16 and earlier

## 12.5 ITT4RT (Support of Immersive Teleconferencing and Telepresence for Remote Terminals)

**Thursday August 19**

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| [**S4-211003**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/TSGS4_115-e/Docs/S4-211003.zip) | **ITT4RT dCR for Presentation Overlay** | **KPN N.V.** |

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| --- | --- | --- |
| [Re: [12.5, S4-211003, Block A, 19-Aug, 15:00 CEST] ITT4RT dCR for Presentation Overlay](https://list.etsi.org/scripts/wa.exe?A2=3GPP_TSG_SA_WG4_MTSI;e48e0ed8.2108C&S=) | Nikolai Leung <nleung@QTI.QUALCOMM.COM> | Thu, 19 Aug 2021 01:24:56 +0000 |
| [Re: [12.5, S4-211003, Block A, 19-Aug, 15:00 CEST] ITT4RT dCR for Presentation Overlay](https://list.etsi.org/scripts/wa.exe?A2=3GPP_TSG_SA_WG4_MTSI;d0650128.2108C&S=) | Gunkel, S.N.B. (Simon) <simon.gunkel@TNO.NL> | Thu, 19 Aug 2021 09:19:05 +0000 |

Presenter: Simon Gunkel, KPN.

Discussion:

* Nik: I was looking to when the MRF sends the SDP invite, there’s nothing conditional about the replacement attribute. Clarify when the attribute is included in the SDP answer. If the content can be replaced by the MRF, does the -Tx client have to include the attribute and make the MRF replace it?
* Simon: I’m not sure what to change.
* <on-screen editing>
* Naotaka: The on-screen correction is that MRF ask for replacement permission from the -Tx client in terminal? I think an offer requests something and the request is accepted or not, but this sentence asks for permission, and if permission is not given, replacement is not done? Is that the correct understanding?
* Simon: To some extent, yes. I want to allow either MRF or -Tx to be in charge and allow for some application logic. We don’t put all charge to -Tx client.
* Naotaka: You want to leave room for application logic, but it makes it unclear what -Tx and MRF do.
* Simon: Agree. I try to keep some balance. Maybe I’m wrong.
* Naotaka: OK.
* Iraj: Instead of “allows for replacement”, can we say “accepts the offer to perform replacement”?
* Simon: <editing on-screen>
* Naotaka: In another paragraph case, -Tx is asking MRF to do replacement. The meaning of the attribute is different depending on the direction? Is that OK?
* Simon: I think the meaning is always “allow to do replacement”.
* Naotaka: In the first case -Tx is an offerer and asks the MRF answerer to do replacement. In the second case, MRF offerer is declaring that it wants to do replacement and ask permission to do it. So, the meaning is different.
* Simon: I think the meaning is “feature is used or not”.
* Naotaka: I think the text is clear now, but my question is more if the SDP attribute usage is OK or not. I’ll think about it.
* Nik: Simon, talk to Naotaka.

Document was revised to 1253.

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| [Re: [12.5, S4-211003, Block A, 19-Aug, 15:00 CEST] ITT4RT dCR for Presentation Overlay](https://list.etsi.org/scripts/wa.exe?A2=3GPP_TSG_SA_WG4_MTSI;2beaff3e.2108C&S=) | Naotaka Morita <naotaka.morita@NTT-AT.CO.JP> | Thu, 19 Aug 2021 17:59:37 +0100 |
| [Re: [12.5, S4-211003, Block A, 19-Aug, 15:00 CEST] ITT4RT dCR for Presentation Overlay](https://list.etsi.org/scripts/wa.exe?A2=3GPP_TSG_SA_WG4_MTSI;48b194c6.2108C&S=) | Naotaka Morita <naotaka.morita@NTT-AT.CO.JP> | Thu, 19 Aug 2021 18:29:43 +0100 |

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| [Re: [12.5, S4-211003, Block A, 19-Aug, 15:00 CEST] ITT4RT dCR for Presentation Overlay](https://list.etsi.org/scripts/wa.exe?A2=3GPP_TSG_SA_WG4_MTSI;14bc32cd.2108C&S=) | Gunkel, S.N.B. (Simon) <simon.gunkel@TNO.NL> | Fri, 20 Aug 2021 00:17:49 +0000 |

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| [[12.5, S4-211003, Block A, 19-Aug, 15:00 CEST][S4-211253][S4-211254] ITT4RT Presentation Replacement](https://list.etsi.org/scripts/wa.exe?A2=3GPP_TSG_SA_WG4_MTSI;3661b272.2108D&S=) | Gunkel, S.N.B. (Simon) <simon.gunkel@TNO.NL> | Mon, 23 Aug 2021 13:12:47 +0000 |

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| [Re: [12.5, S4-211003, Block A, 19-Aug, 15:00 CEST][S4-211253][S4-211254] ITT4RT Presentation Replacement](https://list.etsi.org/scripts/wa.exe?A2=3GPP_TSG_SA_WG4_MTSI;fac9d2b4.2108D&S=) | Nikolai Leung <nleung@QTI.QUALCOMM.COM> | Tue, 24 Aug 2021 04:04:50 +0000 |
| [Re: [12.5, S4-211003, Block A, 19-Aug, 15:00 CEST][S4-211253][S4-211254] ITT4RT Presentation Replacement](https://list.etsi.org/scripts/wa.exe?A2=3GPP_TSG_SA_WG4_MTSI;8d506ec4.2108D&S=) | Naotaka Morita <naotaka.morita@NTT-AT.CO.JP> | Tue, 24 Aug 2021 09:02:56 +0100 |
| [Re: [12.5, S4-211003, Block A, 19-Aug, 15:00 CEST][S4-211253][S4-211254] ITT4RT Presentation Replacement](https://list.etsi.org/scripts/wa.exe?A2=3GPP_TSG_SA_WG4_MTSI;bb0f91b9.2108D&S=) | Gunkel, S.N.B. (Simon) <simon.gunkel@TNO.NL> | Tue, 24 Aug 2021 10:36:14 +0000 |
| [Re: [12.5, S4-211003, Block A, 19-Aug, 15:00 CEST][S4-211253][S4-211254] ITT4RT Presentation Replacement](https://list.etsi.org/scripts/wa.exe?A2=3GPP_TSG_SA_WG4_MTSI;ab511d8e.2108D&S=) | Timo Pousi <timo.pousi@ERICSSON.COM> | Tue, 24 Aug 2021 11:35:52 +0000 |
| [Re: [12.5, S4-211003, Block A, 19-Aug, 15:00 CEST][S4-211253][S4-211254] ITT4RT Presentation Replacement](https://list.etsi.org/scripts/wa.exe?A2=3GPP_TSG_SA_WG4_MTSI;523127f2.2108D&S=) | Naotaka Morita <naotaka.morita@NTT-AT.CO.JP> | Tue, 24 Aug 2021 12:59:26 +0100 |

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| [**S4-211253**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/TSGS4_115-e/Docs/S4-211253.zip) | **ITT4RT dCR for Presentation Overlay** | **KPN N.V.** | **draftCR** | **Agreement** |

Presenter: Simon Gunkel, KPN

Discussion:

* Nik: What does the receiver of a=includes:content:slides do when it receives this? I think you said nothing. Naotaka said that it clearly indicates that content has been replaced.
* Simon: I don’t want to over-complicate it.
* Nik: How does the receiver know which slides was inserted into the stream?
* Simon: That is a bit complicated would be part of the content:slides; there cannot be more than one content:slides.
* Nik: If the receiver receives another offer with content:slides, how does it know if that is the same as was replaced or not? The receiver could get both the 360 with replaced content and a separate content:slides, how does it know if it is the same or not?
* Simon: I think that is to make things too difficult. I don’t want to define everything around content:slides. If we do, I might have to add another chapter just on that.
* Nik: I still question if a=includes:content:slides is needed. The -Rx client doesn’t seem to ever receive both the 360 and the content:slides stream. That simplifies.
* Simon: The main benefit of having a=includes:content:slides is consistency, indicating if the replacement happened or not.
* Nik: If -Tx could not do the replacement, it would perhaps reject the content:slides and the source of the content:slides would have to find another way to send it.
* Simon: You assume that if the -Tx accepts the content:slides, it would do the replacement, but that is very implicit.
* Nik: So even if -Tx accepts content:slides, it would not necessarily do the replacement? Would it then not do it as an overlay instead, which would also be clear to the -Rx client? Accepting the content:slides have to mean something.
* Simon: I think we are inferring a lot on the IMS signaling. In the current state, is this agreeable if I remove a=includes:content:slides?
* Naotaka: OK.
* Timo: I also don’t like the a=includes:content:slides.
* Simon: I’m OK to remove it.
* Naotaka: I asked Simon to update the second figure to remove the reverse media flow and to clarify the meaning of the replacement attribute. It is clear now. Next question is if we need a=includes:content:slides or not and I’m not sure. I’m OK to remove a=include:content:slides. In these sequences, both availability of a=content:slides and capability to do replacement must be present to do replacement. We should consider replacement to occur if there is both replacement capability and availability of content.
* Nik: How the owner of the presentation content discovers capability to do replacement and where to send it is left outside of the scope. It may for example ask the MRF in advance.
* Naotaka: I consider both -Tx clients are close by in the room and have a responsibility to handle the presentation.
* Nik: It seems a lot simpler to me to start the negotiation between the -Tx presentation holder to the MRF.
* Naotaka: Agree. It could also start with the 360 -Tx that could know that the presentation is too degraded and need assistance from the presentation -Tx. Starting with presentation -Tx also works.
* Simon: If I remove a=includes:content:slides, are there any other objections?
* Nik: Seems like none. We still want to see the final text.
* Naotaka: Can you please check that the terms “overlay” and “replacement” are used consistently.

Document was agreed for inclusion in the main dCR (1258).

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| [**S4-211004**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/TSGS4_115-e/Docs/S4-211004.zip) | **ITT4RT example flow for presentation overlay** | **KPN N.V.** |

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| [Re: [12.5, S4-211004, Block A, 19-Aug, 15:00 CEST] ITT4RT example flow for presentation overlay](https://list.etsi.org/scripts/wa.exe?A2=3GPP_TSG_SA_WG4_MTSI;a93c7c2c.2108C&S=) | Nikolai Leung <nleung@QTI.QUALCOMM.COM> | Thu, 19 Aug 2021 01:42:44 +0000 |
| [Re: [12.5, S4-211004, Block A, 19-Aug, 15:00 CEST] ITT4RT example flow for presentation overlay](https://list.etsi.org/scripts/wa.exe?A2=3GPP_TSG_SA_WG4_MTSI;34d09bf3.2108C&S=) | Gunkel, S.N.B. (Simon) <simon.gunkel@TNO.NL> | Thu, 19 Aug 2021 14:15:28 +0000 |

Presenter: Simon Gunkel, KPN.

Discussion:

* Nik: In the call flow, -Tx receives a reply from MRF and attribute is not included. Later on, MRF believes that -Tx can do replacement itself so MRF sends SDP with content:slides to -Tx. How does the MRF know that -Tx can do replacement?
* Simon: This is just an example flow and there could be application logic behind it. I think the answer is that MRF doesn’t know. To do replacement, the -Tx would need the content:slides. I’m not 100% clear on why streams are sent and not sent, e.g. to the client.
* Nik: How does the MRF know that the -Tx is going to do replacement and cause it to send that SDP? I think application logic can be between -Tx and -Rx but that wouldn’t include the MRF. How would MRF know to not send as an overlay and not have the -Tx client to do the replacement?
* Simon: Not sure. This is a question of all the streams. The MRF wouldn’t get a message to send it as an overlay, so it wouldn’t. I think it would be overkill to specify all to that level of detail.
* Nik: I think the text is very short. Can you say that if the MRF by other means knows to do the replacement? The -Tx 360 accepted the content:slides and I want to make it clear that it then agreed to do the replacement?
* Simon: I don’t think so. I think that’s when we introduced the replacement attribute. The 360 -Tx and presentation -Tx in the room are two separate things.
* Nik: When MRF sends content:slides to 360 -Tx, it has to do replacement for the -Rx to get the presentation.
* Simon: How would it work overall; is all content sent to all clients in the session? Specifying that would create a lot of work for all overlays and such.
* Nik: I think that when 360 -Tx accepts content:slides, MRF doesn’t have to include it to the -Rx clients?
* Iraj: I think the MRF should be informed that slides don't have to be sent to -Rx clients. I think that resolves the problem and makes it clear that the -Tx performs the replacement.
* Simon: This is just one example. We can think of making it more explicit. One option could be to add something in the replacement attribute who is doing the replacement. So far, I thought things could be a bit more transparent. That could be one suggestion.
* Naotaka: My previous concern is also related to the large flexibility of this flow, depending on application logic. An exact flow and actions of -Tx and MRF should be described.
* Iraj: The two lines you have (“\_replacement” and “accept”) can be repeated again as an indication that the MRF does the replacement.
* Simon: That’s not how it works. If MRF doesn’t do the replacement, it doesn’t care and all streams will be treated the same. It’s not clear what is sent to which entity and at which time.
* Nik: Maybe take this offline for a while? Nit: It is not “SDP accept” but “SDP answer” in all of the call flows.

Document was revised to 1254.

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| [**S4-211254**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/TSGS4_115-e/Docs/S4-211254.zip) | **ITT4RT example flow for presentation overlay** | **KPN N.V.** |

Discussion:

* Nik: There’s a minor editorial mistake in the first and third Figures. Can be fixed when updating the PD.

Document was agreed for inclusion in the PD (1265).

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| [**S4-211265**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/TSGS4_115-e/Docs/S4-211265.zip) | **ITT4RT Permanent Document - Requirements, Working Assumptions and Potential Solutions (v0.13.0)** | **KPN N.V.** |

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| [**S4-211126**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/TSGS4_115-e/Docs/S4-211126.zip) | **[ITT4RT] Updates on multiple 360 videos** | **Samsung R&D Institute UK** |

Agreed via email.

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| [**S4-211141**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/TSGS4_115-e/Docs/S4-211141.zip) | **draft CR 26.114 Corrections on ITT4RT** | **Samsung Electronics Co., Ltd.** |

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| [Re: [12.5, S4-211141, Block A, 19-Aug, 15:00 CEST] draft CR 26.114 Corrections on ITT4RT](https://list.etsi.org/scripts/wa.exe?A2=3GPP_TSG_SA_WG4_MTSI;2570699e.2108C&S=) | Ahsan, Saba (Nokia - FI/Espoo) <saba.ahsan@NOKIA.COM> | Thu, 19 Aug 2021 06:55:25 +0000 |

Presenter: Hyun-Koo Yang, Samsung.

Discussion:

* Hyun-Koo: I have uploaded a draft addressing the mail comments.
* Saba: We have a gap if the size of the encoded picture changes if it is not region-wise packed. We had that as a RTP header extension before, but it was removed. I agree that the text could be removed but we should then describe the gap.

Document was revised to 1255.

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| [Re: (2) (2) [12.5, S4-211141, Block A, 19-Aug, 15:00 CEST] draft CR 26.114 Corrections on ITT4RT](https://list.etsi.org/scripts/wa.exe?A2=3GPP_TSG_SA_WG4_MTSI;a2c0baa1.2108C&S=) | Hyun-Koo Yang <hyunkoo.yang@SAMSUNG.COM> | Thu, 19 Aug 2021 23:56:58 +0900 |  |
| [Re: (2) (2) [12.5, S4-211141, Block A, 19-Aug, 15:00 CEST] draft CR 26.114 Corrections on ITT4RT](https://list.etsi.org/scripts/wa.exe?A2=3GPP_TSG_SA_WG4_MTSI;936dfef4.2108C&S=) | Ahsan, Saba (Nokia - FI/Espoo) <saba.ahsan@NOKIA.COM> | Thu, 19 Aug 2021 17:18:36 +0000 |  |
| [Re: (2) [12.5, S4-211141, Block A, 19-Aug, 15:00 CEST] draft CR 26.114 Corrections on ITT4RT](https://list.etsi.org/scripts/wa.exe?A2=3GPP_TSG_SA_WG4_MTSI;d12e1d37.2108C&S=) | Hyun-Koo Yang <hyunkoo.yang@SAMSUNG.COM> | Thu, 19 Aug 2021 22:00:23 +0900 |  |

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| [**S4-211255**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/TSGS4_115-e/Docs/S4-211255.zip) | **draft CR 26.114 Corrections on ITT4RT** | **Samsung Electronics Co., Ltd.** |

Presenter: Hyun-Koo Yang, Samsung.

Discussion:

* Saba: I’m OK.

Document was agreed without presentation, for inclusion in the “mega-CR” (S4-211258).

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| [**S4-211157**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/TSGS4_115-e/Docs/S4-211157.zip) | **Draft CR updates on Multiple grouping of 360 video** | **Tencent** |

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| [Re: [12.5, S4-211157, Block A, 19-Aug, 15:00 CEST] Draft CR updates on Multiple grouping of 360 video](https://list.etsi.org/scripts/wa.exe?A2=3GPP_TSG_SA_WG4_MTSI;cf3470a1.2108C&S=) | Ahsan, Saba (Nokia - FI/Espoo) <saba.ahsan@NOKIA.COM> | Thu, 19 Aug 2021 10:08:22 +0000 |

Presenter: Iraj Sodagar, Tencent.

Discussion:

* Saba: My first comment was if you’re only grouping 360 with overlays, not 360 with 360?
* Iraj: Yes.
* Saba: The attribute is optional and it allows overlays. If the attribute is missing, it is unclear if the client doesn’t support the attribute or if overlays are not allowed. I think the default should be that overlays are allowed.
* Iraj: I think it makes sense. I’ll look at your email and make a revision.

Document was revised to 1256.

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| [Re: [12.5, S4-211157, Block A, 19-Aug, 15:00 CEST] Draft CR updates on Multiple grouping of 360 video](https://list.etsi.org/scripts/wa.exe?A2=3GPP_TSG_SA_WG4_MTSI;cc00d5fe.2108C&S=) | Iraj Sodagar <irajs@LIVE.COM> | Thu, 19 Aug 2021 18:36:07 +0000 |

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| [**S4-211256**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/TSGS4_115-e/Docs/S4-211256.zip) | **Draft CR updates on Multiple grouping of 360 video** | **Tencent** |

Presenter: Iraj Sodagar, Tencent.

Discussion:

* Eric: Is the restriction on the clients?
* Iraj: The restriction is on the group. The 360 video cannot be combined with overlays from other -Tx clients. If you have A setting the no\_other\_overlays to the MRF, then the MRF should put the 360 from A in a separate itt4rt\_group.
* Eric: So any receiving client receiving that group, all the media will be from client A?
* Iraj: Yes. If the attribute is not there, the receiver can mix and match overlays from different clients on the 360.
* Saba: I agree with Eric, it should be the restriction group. You cannot take media from one restriction group and mix into another?
* Eric: Yes.
* Iraj: Then it can be applied on restriction group level, not on ITT4RT level. The 360 video cannot be mixed with content from other participants. <Editing on-screen>.
* Eric: Now it doesn’t conflict with the original rest-group definition.
* Iraj: You cannot have more than one 360 video in a rest-group?
* Eric: I think it says one or more. I’m fine with this text.
* Saba: Is there any heading to Y.6.8.1?
* Iraj: I think the text should go into Y.6.8.2 and have its own subsection, so previous text needs to go into Y.6.8.1 and have a heading too. We need a title, “Excluding other participants’ overlays”.
* Naotaka: Editorial: In the new text, second line, I think “360-degree media streams” should be “... stream” without “s”.
* Iraj: Yes.
* Saba: Suggest grouping is with overlay media streams, not just media streams.
* Iraj: OK.
* Saba: Editorial: “itt4rt-group” -> “itt4rt\_group”

Document was agreed without presentation.

**Friday August 20**

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| [**S4-211152**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/TSGS4_115-e/Docs/S4-211152.zip) | Update on TR 26.862 (v.0.0.2) | KPN N.V. (Rapporteur) |

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| --- | --- | --- |
| [Re: [12.5, S4-211152, Block A, 20-Aug, 15:00 CEST] Update on TR 26.862 (v.0.0.2)](https://list.etsi.org/scripts/wa.exe?A2=3GPP_TSG_SA_WG4_MTSI;50e59101.2108C&S=) | Nikolai Leung <nleung@QTI.QUALCOMM.COM> | Thu, 19 Aug 2021 23:35:41 +0000 |
| [Re: [12.5, S4-211152, Block A, 20-Aug, 15:00 CEST] Update on TR 26.862 (v.0.0.2)](https://list.etsi.org/scripts/wa.exe?A2=3GPP_TSG_SA_WG4_MTSI;810c6c7f.2108C&S=) | Gunkel, S.N.B. (Simon) <simon.gunkel@TNO.NL> | Fri, 20 Aug 2021 00:06:06 +0000 |

Presenter: Simon Gunkel, KPN.

Discussion:

* Simon: Only parts of the PD are copied into this document, the parts that were easy to make into TR format.
* Saba: On chapter 9, I think that was revised and copied into the other TR, so I don’t think we need it here.
* Simon: It would be great if you can check.
* Saba: I’ll check.
* Nik: I think Qualcomm wants to bring the use of scene description into phase 2. Chapter 10 may eventually be part of the selected solutions in the TS, based on what is agreed in MTSI.
* Simon: I think chapter 8 will not be much text, just references. Even if chapter 10 will be part of normative work in the TS, further explanatory text and call flows may go into this TR. We can clarify that along the way.
* Simon: For further updates, should people make proposals to the PD or to the draft TR?
* Nik: Please make proposals directly towards the TR. It is OK to keep text in brackets if you want. If brackets are not resolved, they will eventually be taken out. We’ll handle editor’s notes in the same fashion, either formalizing into a NOTE or taking it out.
* Saba: The text I was talking about is in 9.12. People that have been contributing or are interested should review it and actively bring it into the TR. More work is needed in my opinion.
* Simon: This is quite big so just placing it into the TR chapter 7 may not be a good idea.
* Saba: Agree. Should we change structure and add more subsections?
* Simon: Even if it is rather big, it could still be a subchapter to chapter 7.
* Nik: Are there a lot more parts to this that were not adopted into the TS?
* Saba: I think there shouldn’t be a lot.
* Simon: Note that I wasn’t yet very careful in cross-checking v0.0.2 towards the TS.
* Nik: I believe people that made proposals to the PD that were not adopted into the TS should, by contributions, make sure those are properly described in the TR. People that are interested in bracketed text should also bring in further proposals to remove the brackets. Otherwise, bracketed text will be removed. People that got text adopted into the TS should provide reference text for chapter 8.
* Nik: Please make a new v0.0.3 without bracketed text and editor’s notes to share with the plenary, as basis for further work, which will be v0.1.0 after agreement in SA4 plenary.

Document was revised to 1259.

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| [Re: [12.5, S4-211152, Block A, 20-Aug, 15:00 CEST] Update on TR 26.862 (v.0.0.2)](https://list.etsi.org/scripts/wa.exe?A2=3GPP_TSG_SA_WG4_MTSI;4676d4fa.2108D&S=) | Naotaka Morita <naotaka.morita@NTT-AT.CO.JP> | Wed, 25 Aug 2021 10:04:23 +0100 |
| [Re: [12.5, S4-211152, Block A, 20-Aug, 15:00 CEST] Update on TR 26.862 (v.0.0.2)](https://list.etsi.org/scripts/wa.exe?A2=3GPP_TSG_SA_WG4_MTSI;1e0d3171.2108D&S=) | Gunkel, S.N.B. (Simon) <simon.gunkel@TNO.NL> | Wed, 25 Aug 2021 09:49:07 +0000 |
| [Re: [12.5, S4-211152, Block A, 20-Aug, 15:00 CEST] Update on TR 26.862 (v.0.0.2)](https://list.etsi.org/scripts/wa.exe?A2=3GPP_TSG_SA_WG4_MTSI;db48be37.2108D&S=) | Naotaka Morita <naotaka.morita@NTT-AT.CO.JP> | Wed, 25 Aug 2021 11:10:29 +0100 |

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| [**S4-211259**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/TSGS4_115-e/Docs/S4-211259.zip) | Update on TR 26.862 (v.0.0.3) | KPN N.V. (Rapporteur) |

Presenter: Simon Gunkel, KPN

Discussion:

* Nik: In section 4.8.2, it is a potential solution and I think it should be taken out from the use case section. Probably also 4.8.3.
* Simon: It is very difficult to track the original proposals. I’d be more happy to include it in the potential solutions or in the TS.
* Nik: I think the proponents should bring updated text. The responsibility is on the proponents to bring text to the TR, not on the editor.
* Nik: Are the signaling flows based on potential solutions or not?
* Simon: We had signaling flows in the PD in chapter 8 and the draft TR text is a direct copy from there.
* Saba: I think the source of 9.1 is either InterDigital or Huawei and they should check before including it here.
* Nik: I’m reluctant to include anything that is not clear. We should take 9.1 out as well for now. It’s better to make it more contribution-driven.

Document was revised to 1263.

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| [**S4-211263**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/TSGS4_115-e/Docs/S4-211263.zip) | Update on TR 26.862 (v.0.0.4) | KPN N.V. (Rapporteur) |

Document was agreed without presentation.

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| [**S4-211154**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/TSGS4_115-e/Docs/S4-211154.zip) | Informational Encoding recommendations for Viewport-dependent Processing | Tencent |

Agreed via email.

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| [**S4-211176**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/TSGS4_115-e/Docs/S4-211176.zip) | TR 26.962 - ITT4RT Operation and Usage Guidelines | Nokia Corporation |

Agreed via email.

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| [**S4-211257**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/TSGS4_115-e/Docs/S4-211257.zip) | TR 26.962 - ITT4RT Operation and Usage Guidelines | Nokia Corporation |

Further revision to S4-211257 to include S4-211154.

Discussion:

* Naotaka: Do both TRs refer to each other? The scope or introduction could include such reference. I don’t mind if they’re independent either.

Document was agreed.

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| [**S4-211177**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/TSGS4_115-e/Docs/S4-211177.zip) | draftCR TS 26.114 ITT4RT Phase 2 | Nokia Corporation |

Agreed via email.

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| [**S4-211258**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/TSGS4_115-e/Docs/S4-211258.zip) | draftCR TS 26.114 ITT4RT Phase 2 | Nokia Corporation |

**Monday August 23**

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| [**S4-211138**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/TSGS4_115-e/Docs/S4-211138.zip) | HEVC encoded images in ITT4RT | Nokia Corporation, Ericsson |

Agreed via email.

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| [**S4-211139**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/TSGS4_115-e/Docs/S4-211139.zip) | Viewport-locked Viewport-dependent Processing | Nokia Corporation |

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| --- | --- | --- |
| [Re: [12.5, S4-211139, Block A, 23-Aug, 15:00 CEST] Viewport-locked Viewport-dependent Processing](https://list.etsi.org/scripts/wa.exe?A2=3GPP_TSG_SA_WG4_MTSI;9f7e2a4c.2108C&S=) | Eric Yip <eric.yip@SAMSUNG.COM> | Fri, 20 Aug 2021 14:13:53 +0900 |
| [Re: [12.5, S4-211139, Block A, 23-Aug, 15:00 CEST] Viewport-locked Viewport-dependent Processing](https://list.etsi.org/scripts/wa.exe?A2=3GPP_TSG_SA_WG4_MTSI;2da017f3.2108C&S=) | Ahsan, Saba (Nokia - FI/Espoo) <saba.ahsan@NOKIA.COM> | Fri, 20 Aug 2021 09:54:06 +0000 |
| [Re: [12.5, S4-211139, Block A, 23-Aug, 15:00 CEST] Viewport-locked Viewport-dependent Processing](https://list.etsi.org/scripts/wa.exe?A2=3GPP_TSG_SA_WG4_MTSI;1e83b718.2108C&S=) | Eric Yip <ericyip.samsung@GMAIL.COM> | Fri, 20 Aug 2021 19:25:06 +0900 |
| [Re: [12.5, S4-211139, Block A, 23-Aug, 15:00 CEST] Viewport-locked Viewport-dependent Processing](https://list.etsi.org/scripts/wa.exe?A2=3GPP_TSG_SA_WG4_MTSI;de522a7c.2108C&S=) | Ahsan, Saba (Nokia - FI/Espoo) <saba.ahsan@NOKIA.COM> | Fri, 20 Aug 2021 11:00:28 +0000 |
| [Re: [12.5, S4-211139, Block A, 23-Aug, 15:00 CEST] Viewport-locked Viewport-dependent Processing](https://list.etsi.org/scripts/wa.exe?A2=3GPP_TSG_SA_WG4_MTSI;fbc091db.2108C&S=) | Eric Yip <ericyip.samsung@GMAIL.COM> | Fri, 20 Aug 2021 20:19:28 +0900 |

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| [Re: [12.5, S4-211139, Block A, 23-Aug, 15:00 CEST] Viewport-locked Viewport-dependent Processing](https://list.etsi.org/scripts/wa.exe?A2=3GPP_TSG_SA_WG4_MTSI;6837b261.2108D&S=) | Ahsan, Saba (Nokia - FI/Espoo) <saba.ahsan@NOKIA.COM> | Mon, 23 Aug 2021 06:36:35 +0000 |
| [Re: [12.5, S4-211139, Block A, 23-Aug, 15:00 CEST] Viewport-locked Viewport-dependent Processing](https://list.etsi.org/scripts/wa.exe?A2=3GPP_TSG_SA_WG4_MTSI;d9b846d2.2108D&S=) | Eric Yip <ericyip.samsung@GMAIL.COM> | Mon, 23 Aug 2021 16:12:12 +0900 |

Document was revised to 1261.

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| [**S4-211261**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/TSGS4_115-e/Docs/S4-211261.zip) | Viewport-locked Viewport-dependent Processing | Nokia Corporation |

Document was agreed.

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| [**S4-211142**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/TSGS4_115-e/Docs/S4-211142.zip) | Spherical Distance for Viewport Change | Nokia Corporation |

Agreed via email.

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| [**S4-211158**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/TSGS4_115-e/Docs/S4-211158.zip) | Audio mixing of multiple streams in ITT4RT | Tencent |

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| [Re: [12.5, S4-211158, Block A, 23-Aug, 15:00 CEST] Audio mixing of multiple streams in ITT4RT](https://list.etsi.org/scripts/wa.exe?A2=3GPP_TSG_SA_WG4_MTSI;4bb340a9.2108C&S=) | Bo Burman <bo.burman@ERICSSON.COM> | Fri, 20 Aug 2021 09:09:17 +0000 |
| [Re: [12.5, S4-211158, Block A, 23-Aug, 15:00 CEST] Audio mixing of multiple streams in ITT4RT](https://list.etsi.org/scripts/wa.exe?A2=3GPP_TSG_SA_WG4_MTSI;afe97ac8.2108C&S=) | Iraj Sodagar <irajs@LIVE.COM> | Fri, 20 Aug 2021 14:41:39 +0000 |
| [Re: [12.5, S4-211158, Block A, 23-Aug, 15:00 CEST] Audio mixing of multiple streams in ITT4RT](https://list.etsi.org/scripts/wa.exe?A2=3GPP_TSG_SA_WG4_MTSI;f169e82b.2108C&S=) | Bo Burman <bo.burman@ERICSSON.COM> | Fri, 20 Aug 2021 16:53:35 +0000 |
| [Re: [12.5, S4-211158, Block A, 23-Aug, 15:00 CEST] Audio mixing of multiple streams in ITT4RT](https://list.etsi.org/scripts/wa.exe?A2=3GPP_TSG_SA_WG4_MTSI;5485001c.2108C&S=) | Iraj Sodagar <irajs@LIVE.COM> | Sat, 21 Aug 2021 00:42:36 +0000 |

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| --- | --- | --- |
| [Re: [12.5, S4-211158, Block A, 23-Aug, 15:00 CEST] Audio mixing of multiple streams in ITT4RT](https://list.etsi.org/scripts/wa.exe?A2=3GPP_TSG_SA_WG4_MTSI;b30554cf.2108D&S=) | Bo Burman <bo.burman@ERICSSON.COM> | Mon, 23 Aug 2021 12:04:21 +0000 |
| [Re: [12.5, S4-211158, Block A, 23-Aug, 15:00 CEST] Audio mixing of multiple streams in ITT4RT](https://list.etsi.org/scripts/wa.exe?A2=3GPP_TSG_SA_WG4_MTSI;b875373a.2108D&S=) | Stephane Ragot <stephane.ragot@ORANGE.COM> | Mon, 23 Aug 2021 12:15:31 +0000 |
| [Re: [12.5, S4-211158, Block A, 23-Aug, 15:00 CEST] Audio mixing of multiple streams in ITT4RT](https://list.etsi.org/scripts/wa.exe?A2=3GPP_TSG_SA_WG4_MTSI;f371966.2108D&S=) | Iraj Sodagar <irajs@LIVE.COM> | Mon, 23 Aug 2021 13:38:24 +0000 |
| [Re: [12.5, S4-211158, Block A, 23-Aug, 15:00 CEST] Audio mixing of multiple streams in ITT4RT](https://list.etsi.org/scripts/wa.exe?A2=3GPP_TSG_SA_WG4_MTSI;d596cff2.2108D&S=) | Iraj Sodagar <irajs@LIVE.COM> | Mon, 23 Aug 2021 13:50:24 +0000 |

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| [Re: [12.5, S4-211158, Block A, 23-Aug, 15:00 CEST] Audio mixing of multiple streams in ITT4RT](https://list.etsi.org/scripts/wa.exe?A2=3GPP_TSG_SA_WG4_MTSI;5733d11e.2108D&S=) | Stephane Ragot <stephane.ragot@ORANGE.COM> | Mon, 23 Aug 2021 15:04:21 +0000 |

Presenter: Iraj Sodagar, Tencent

Discussion:

* Iraj: agree to have SDP as declarative as defined by Bo
* Bo: could change ABNF so that if attribute is in SDP from the Rx (without any value) indicates that it is OK to keep sending updates to the parameter by the Tx
* Iraj/Bo: this will allow independent negotiation of RTP header extension and use of SDP
* Iraj: I didn’t understand the email question on out-of-band?
* Stephane: In the TR we have messages outside of the media flow, in the signaling. We would like to verify the possible impact. Is this still pending?
* Iraj: We have no header extension today. A receiver can with the proposed text indicate what it wants to receive, in SDP or RTP header extension.
* Stephane: Why don’t we choose just a simple RTP header extension?
* Iraj: Inserting information in RTP header extension is more complex than adding an SDP attribute.
* Stephane: We would be cautious with using SDP. If it is once in a call, it is OK, but if it is more…
* Iraj: It doesn’t happen just once in a call, but perhaps once every couple of minutes. Should we add a note to be cautious to not send SDP frequently? In those cases RTP header extension method should be recommended.
* Stephane: Having more ways to do things adds complexity in testing, etc.
* Iraj: A transmitter has a choice to use it with SDP or RTP. A transmitter that doesn’t send the information often can use the SDP method. If the -Rx client doesn’t want to use the SDP method, it can signal that.
* Stephane: It would be good to verify. If it is sent once, it’s OK, but if it is sent once every 2 or 10 seconds, it can be too much. Is there a way for the network to avoid getting many SDP sent. It is only controlled by the -Rx client?
* Iraj: If there’s an MRF, it can send to all -Tx that they shouldn’t use the SDP method. Are you concerned that there would be an MRF-less conference where clients choose to use SDP and to send it frequently? If we’re using network bandwidth, we can control and restrict it.
* Stephane: The concern from an operator point of view is to use SDP information during the session. There could be filtering of this.
* Nik: Even if you have an MRF, it might not be in home operator control.
* Iraj: The recipient can also say yes or no to the SDP method.
* Nik: There’s always an attempt to reduce SDP traffic. If the operator that has the MRF doesn’t have an SIP/SDP load issue, it might still impact the other operator that has a bandwidth issue.
* Iraj: Making a design that impacts others is a bad design. What’s the suggestion, only have the RTP method, not the SDP?
* Stephane: One option is to do that, but it could be a bit strong. Another way is if there’s a way for the network to limit this usage. Having the endpoints to decide is bad.
* Iraj: What entity in the network can set this? MRF is one. Is there any other?
* Stephane: We need to look at the call flow to see if MRF is in there. There could also be policy control and modification of packets. If there’s a way to have a MRF configuration, that would be perfect.
* Iraj: If MRF is there, it has control. The only time there’s no control is when the MRF is not in the call.
* Stephane: If there’s a configuration parameter (ed note: management object) to set this. Another possibility is SDP capneg. I want to avoid making the SDP go wild.
* Bo: We have MTSI management objects to some extent. Other parameters are specified in GSMA.
* Nik: The management object is exchanged between the OMA-DM and the UE.
* Tomas: I saw some sentences that the -Tx client can include both. Is that not the case for -Rx?
* Bo: With the online change made in this meeting, that would apply also to the -Rx client.
* Tomas: Can -Rx say that it doesn’t want any gain at all?
* Iraj/Bo: Yes.
* Nik: You said that it is not clear if IVAS addresses this codec-agnostic feature but that we can remove it later if IVAS would support it natively. I’m not comfortable with that. I don’t want to include a conflict between Rel-17 and Rel-18.
* Tomas: In IVAS there could be more parameters transmitted. It would be better to have the same solution for all metadata. There could be a need for change later, depending on which solution is chosen for IVAS.
* Iraj: We also don’t know if IVAS will be the only speech codec in the future. This functionality can happen cross-codecs. If we didn’t propose this now, we would not have had this useful discussion.
* Nik: I’m OK to have it in the TR but I’m not sure that we should put it in the draft CR now.
* Iraj: Are we sending only one dCR or several? If only one, IVAS would be included there, I guess?
* Nik: In the past, we converted the last dCR into a real CR. I’d like to have that at the end of Rel-17. If IVAS is done by then, it’s clear. If it is not, it becomes less clear.
* Simon: My worry is if IVAS is not finished at the end of Rel-17. If the change to revert was just a single sentence, it could be OK, but it can be hard to make needed changes. We have very little time to address IVAS, only two more meetings for Rel-17.
* Nik: If we have a codec-agnostic solution, I guess it may not cause a conflict.

Document was revised into 1262.

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| [**S4-211262**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/TSGS4_115-e/Docs/S4-211262.zip) | Audio mixing of multiple streams in ITT4RT | Tencent |

Document was **noted**.

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| [**S4-211260**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/TSGS4_115-e/Docs/S4-211260.zip) | Updated Timeplan for ITT4RT (v0.13.0) | Nokia Corporation (Rapporteur) |

Presenter: Igor Curcio, Nokia

Document was agreed.

## 12.6 FS\_FLUS\_NBMP (Feasibility Study on the use of NBMP in E\_FLUS)

**Tuesday August 24**

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| [**S4-211048**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/TSGS4_115-e/Docs/S4-211048.zip) | [FS\_FLUS\_NBMP] Support of Network-Based Media Processing | Tencent |

Agreed via email. This completes the work on the Study Item.

**Wednesday August 25**

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| [**S4-211264**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/TSGS4_115-e/Docs/S4-211264.zip) | Summary for FS\_FLUS\_NBMP | Tencent |

Presenter: Iraj Sodagar, Tencent.

Discussion:

* Nik: I have a few suggested editorial changes <editing on-screen>.

Document was revised into 1266.

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| [**S4-211266**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/TSGS4_115-e/Docs/S4-211266.zip) | Summary for FS\_FLUS\_NBMP | Tencent |

Document was agreed without presentation.

## 12.7 Others including TEI

## 12.8 New Work / New Work Items and Study Items

**Tuesday August 24**

|  |  |  |
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| [**S4-211049**](https://www.3gpp.org/ftp/TSG_SA/WG4_CODEC/TSGS4_115-e/Docs/S4-211049.zip) | Extensions to the FLUS for supporting media processing on network | Tencent |

Presenter: Iraj Sodagar, Tencent.

Discussion:

* Nik: There’s only a single supporting company and we need at least 4.
* Iraj: It is a small work with only two small additions. Please contact me if you support it.

Document was <kept open to possibly find more supporters>.

## 12.9 Any Other Business

## 12.10 Close of the session

The MTSI SWG Chair closed the session at 15:00 CEST on August 26, 2021.

# Annex A: Meeting Agenda

|  |  |  |
| --- | --- | --- |
| 12 | Multimedia Telephony Service for IMS (MTSI) SWG |  |
| 12.1 | Opening of the session |  |
| 12.2 | Registration of documents |  |
| 12.3 | Reports and liaisons from other groups | 1066n |
| 12.4 | CRs to Features in Release 16 and earlier |  |
| 12.5 | ITT4RT (Support of Immersive Teleconferencing and Telepresence for Remote Terminals) | 1003->1253(dCR)a, 1004->1254(PD)a, 1126(dCR)a, 1138(dCR)a, 1139->1261(dCR)a, 1141->1255(dCR)awp, 1142(dCR)a, 1152->1259->1263(TR)a, 1154(TR)a, 1157->1256(dCR)awp, 1158->1262n, 1176a, 1257(TR)a,1177a,1258(dCR), 1260 (TP)a, 1265(PD) |
| 12.6 | FS\_FLUS\_NBMP (Feasibility Study on the use of NBMP in E\_FLUS) | 1048a, 1264->1266(summary)a |
| 12.7 | Others including TEI |  |
| 12.8 | New Work / New Work Items and Study Items | 1049 |
| 12.9 | Any Other Business |  |
| 12.10 | Close of the session |  |

Sent for email discussion

# Annex B: List of participants

35 delegates attended

## Self-registration attendance list

If you are attending, please remove the underline if your name is listed. Otherwise please add your name and organization to the list.

|  |  |
| --- | --- |
| **Name** | **Organization Represented** |
| Abhishek, Rohit | Tencent |
| Ahsan, Saba | Nokia |
| Bouazizi, Imed | Qualcomm |
| Bruhn, Stefan | Dolby |
| Burman, Bo | Ericsson LM |
| Chen, Lulin | MediaTek |
| Curcio, Igor | Nokia |
| Ehara, Hiroyuki | Panasonic |
| Gudumasu, Srinivas | InterDigital |
| Gunkel, Simon | KPN N.V. |
| Han, Jae-Shin | LG Electronics Inc. |
| Jelinek, Milan | VoiceAge Corporation |
| Jung, Kyunghun | Facebook |
| Laaksonen, Lasse | Nokia |
| Leung, Nikolai | Qualcomm Incorporated |
| Lo, Charles | Qualcomm Incorporated |
| Ma, Liangping | Qualcomm Incorporated |
| Morita, Naotaka | NTT |
| Moriya, Takehiro | NTT |
| Multrus, Markus | Fraunhofer IIS |
| Pazos, Marcelo | Qualcomm |
| Plante, Fabrice | Apple |
| Pousi, Timo | Ericsson LM |
| Ragot, Stéphane | Orange |
| Reimes, Jan | HEAD acoustics |
| Rämö, Anssi | Nokia |
| Saha, Jayeeta | ETSI MCC |
| Sodagar, Iraj | Tencent |
| Su, Huan-yu | Huawei |
| Szczerba, Marek | Philips |
| Toftgård, Tomas | Ericsson |
| Varga, Imre | Qualcomm Incorporated |
| Wang, Dong | OPPO |
| Yang, Hyun-Koo | Samsung Electronics |
| Yip, Eric | Samsung Electronics |

1. Nikolai Leung, Qualcomm Inc., with detailed minutes provided by Bo Burman of Ericsson LM, Iraj Sodagar of Tencent, and Simon Gunkel of KPN [↑](#footnote-ref-1)