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| *Title:* | **Reuse of AVC SEI messages** | | |
| *Status:* | Input Document to JCT-VC | | |
| *Purpose:* | Information | | |
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# Abstract

Reuse of AVC (as well as SVC and MVC) SEI messages in HEVC was discussed at the Daegu meeting as a response to the proposal in JCTVC-D082. The table provided in JCTVC-D082, which includes a list of all the AVC SEI messages and whether to reuse them in HEVC, was agreed as the starting point, with revisions documented in the meeting report in JCTVC-D500. *This document provides an update to the table to reflect the agreed revisions, to maintain a clear state of the agreed starting point.*

One “agreement” per the recollection of the author of this document but not included in the meeting report was that the full\_frame\_freeze SEI message and the full\_frame\_freeze\_release SEI message are probably not needed as the output\_flag in the NAL unit header could be used to achieve the same functionality. This “agreement” has also been included in the updated table.

It is suggested that the group discusses and decide how to work towards the specification text of the SEI messages to be reused. Should they be directly incorporated into the next version of the HEVC draft specification, or should they be included in a separate document for a while and incorporated into a future version of the HEVC draft when the texts for the SEI messages are sufficiently mature? What about potentially new SEI messages?

# Reuse of AVC SEI messages in HEVC

The table below documents the starting point on reuse of AVC (as well as SVC and MVC) SEI messages in HEVC, as agreed at the 4th JCT-VC meeting. The table lists all the AVC SEI messages, whether an SEI message should be supported (if not, the reason), revised, and so on.

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| **SEI message in AVC, SVC and MVC** | In HEVC? |
| buffering\_period | Yes. |
| pic\_timing | Yes. Some interlace related semantics should be dropped unless interlace coding is to be supported. |
| pan\_scan\_rect | Yes. |
| filler\_payload | Yes. |
| user\_data\_registered\_itu\_t\_t35 | Yes. |
| user\_data\_unregistered | Yes. |
| recovery\_point | Yes. The syntax element changing\_slice\_group\_idc is not needed unless slice group is to be supported. |
| dec\_ref\_pic\_marking\_repetition | Yes. The syntax elements original\_field\_pic\_flag and original\_bottom\_field\_flag are not needed unless interlace coding is to be supported. |
| spare\_pic | Yes. The syntax elements spare\_field\_flag, target\_bottom\_field\_flag, and spare\_bottom\_field\_flag[ i ] are not needed unless interlace coding is to be supported. |
| scene\_info | Yes. |
| sub\_seq\_info | There may be some useful aspects. To be further studied, taking into account the presence of temporal\_id in NAL unit header. |
| sub\_seq\_layer\_characteristics | Yes. SEI message name, syntax, and semantics should be adapted based on temporal\_id, and should be aligned with the scalability\_info SEI message for SVC but excluding dependency\_id, quality\_id and other unneeded aspects. |
| sub\_seq\_characteristics | Probably not needed due to the inclusion of temporal\_id in NAL unit header. Consider together with sub\_seq\_info SEI message. |
| full\_frame\_freeze | Probably no, as output\_flag in NAL unit header may be used to achieve the same functionality. |
| full\_frame\_freeze\_release | Probably no, as output\_flag in NAL unit header may be used to achieve the same functionality. |
| full\_frame\_snapshot | Probably yes. |
| progressive\_refinement\_segment\_start | Probably yes. |
| progressive\_refinement\_segment\_end | Probably yes. |
| motion\_constrained\_slice\_group\_set | No, unless slice group is to be supported. |
| film\_grain\_characteristics | Probably yes. Film grain experts should revisit it, and check the exact syntax and semantics. |
| deblocking\_filter\_display\_preference | Probably yes. De-blocking experts should revisit it, and check the exact syntax and semantics. |
| stereo\_video\_info | No (use frame packing arrangement SEI message instead, as suggested in AVC) |
| post\_filter\_hint | Probably yes. Post-processing experts should revisit it, and check the exact syntax and semantics. |
| tone\_mapping\_info | Probably yes. Tone mapping experts should revisit it, and check the exact syntax and semantics. |
| frame\_packing\_arrangement | Yes. |
| scalability\_info //SVC | No. However some temporal scalability specific features should be considered to be integrated into the sub\_seq\_layer\_characteristics SEI message (after adapted to the new context based on temporal\_id). |
| sub\_pic\_scalable\_layer //SVC | No, unless slice group is to be supported. |
| non\_required\_layer\_rep //SVC | No. Only relevant for spatial and quality scalabilities. |
| priority\_layer\_info //SVC | No. Only relevant when priority\_id is present in NAL unit header. |
| layers\_not\_present //SVC | No. The SEI message was primarily for spatial and quality scalabilities. |
| layer\_dependency\_change //SVC | No. The SEI message was primarily for spatial and quality scalabilities. |
| scalable\_nesting //SVC | No. Temporal subset specific SEI messages can be identified by including temporal\_id into NAL unit header for SEI NAL units. |
| base\_layer\_temporal\_hrd //SVC | No. However, the HRD parameters for temporal subsets should be included into VUI. |
| quality\_layer\_integrity\_check //SVC | No. Only relevant for quality layers (the so-called medium-grain scalability) in SVC. |
| redundant\_pic\_property //SVC | No. Only relevant when redundant slices are supported and when there is inter-layer prediction between spatial and/or quality layers. |
| tl0\_dep\_rep\_index //SVC | Probably yes. Temporal scalability experts should revisit it, and check the exact syntax and semantics. |
| tl\_switching\_point //SVC | Probably yes. Temporal scalability experts should revisit it, and check the exact syntax and semantics. |
| parallel\_decoding\_info //MVC | No. Only relevant within multiview context. |
| mvc\_scalable\_nesting // MVC | No. Same as for scalable nesting SEI message. Temporal subset specific SEI messages can be identified by including temporal\_id into NAL unit header for SEI NAL units. |
| view\_scalability\_info // MVC | No. Temporal scalability features are all covered in scalability information SEI message. |
| multiview\_scene\_info //MVC | No. Only relevant within multiview context. |
| multiview\_acquisition\_info //MVC | No. Only relevant within multiview context. |
| non\_required\_view\_component //MVC | No. Only relevant within multiview context. |
| view\_dependency\_change // MVC | No. Only relevant within multiview context. |
| operation\_points\_not\_present // MVC | No. Only relevant within multiview context. |
| base\_view\_temporal\_hrd //MVC | No. Same as base\_layer\_temporal\_hrd SEI message, the HRD parameters for temporal subsets should be included into VUI. |

# Relevant notes from JCTVC-D500

For information, the most relevant notes from the meeting report of the 4th JCT-VC meeting are copied below.

The table below documents the starting point on reuse of AVC (as well as SVC and MVC) SEI messages in HEVC, as agreed at the 4th JCT-VC meeting. The table lists all the AVC SEI messages, whether an SEI message should be supported (if not, the reason), revised, and so on.

In discussions of the proposal, it was agreed that filler\_payload, user\_data\_registered\_itu\_t\_t35, and user\_data\_unregistered are commonly used and should be retained. It was also agreed that there may be some useful aspects to sub\_seq\_info. It was additionally agreed that full\_frame\_snapshot, progressive\_refinement\_segment\_start, and progressive\_refinement\_segment\_end also seem useful and should probably be retained.

Decision: As revised above, this was agreed as our starting point.”

# Patent rights declaration(s)

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