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| *Title:* | **On the regional nesting SEI message** | | |
| *Status:* | Input Document to JCT-VC | | |
| *Purpose:* | Proposal | | |
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# Abstract

This document provides some comments on the text of the regional nesting SEI message in the draft text in JCTVC-Z1005 ("HEVC Additional Supplemental Enhancement Information (Draft 1)"), and proposes some text changes to address all the comments.

The text changes are in the attachment, with changes marked relative to JCTVC-Z1005. Some other changes, asserted as obvious and minor, are also included.

Note that although some of the comments originated from the fourth author, the proposed solutions were primarily drafted by the other authors and have not necessarily all been reviewed by the fourth author due to lacking of time.

In revision 1 of this document, changes have been included in the attachment based on the first presentation and discussion of this document. Summary of the changes include the following:

– Changes in the annotated text produced during the discussion; the annotated text document is also attached.

– Alternate text for inclusion user data registered by ITU-T T.35 SEI messages and user data unregistered SEI messages in regional nesting SEI messages. It is asserted that proposed text allows the presence of these two types of user data SEI messages to be allowed to be present in regional nesting SEI messages, but does not impose restrictions that are applicable to other region-nested SEI messages.

– Text to express the following preference: when an access unit contains region-nested SEI messages of a particular type and contains non-region-nested SEI messages of the same type, the region-nested SEI messages should be preferred to be considered as applicable to the access unit.

– Replace the usage "(non-)regionally-nested" with "(non-)region-nested."

# List of comments and suggestions-

1. **Comment:** In the following text:

"When an SEI message is nested in a regional nesting SEI message, the semantics of the nested SEI message are to be interpreted as to be applicable to each region identified in the SEI message."

The wording "to be interpreted as to be applicable to" does not seem as good as "to be interpreted as applying to", and there is syntax to indicate which of the specified regions to apply to the regionally-nested SEI messages (i.e., some of the regions specified by the regional nesting SEI message).

**Suggestion:** Change the sentence to be the following:

"For each regionally-nested SEI message in a regional nesting SEI message, one or more regions are specified in the regional nesting SEI message, and the semantics of the regionally-nested SEI message are to be interpreted as applying to each of these regions."

1. **Comment:** Regarding the NOTE 1 below the definition of listOfRegionNestableMessageTypes:

* It doesn’t mention registered user data, which is inconsistent with the treatment given to unregistered user data.
* Why does that NOTE give special treatment to tone mapping? Can it be rephrased with equal clarity in a way that treats all the messages in exactly the same way?
* The order in which SEI messages are listed in the NOTE should match the order in the definition of the list (which should match the order of the subclauses in the text where the specification of each SEI message is found, which should match the ordering of the numerical value of the SEI message identifier).

**Suggestion:** Change NOTE 1 to be the following, or similar:

"NOTE 1 – SEI messages of each of the following are considered different types of SEI messages: 1) user data registered by Rec. ITU-T T.35 SEI messages with different combinations of country code, terminal provider code and terminal provider oriented code, 2) user data unregistered SEI messages with different values of uuid\_iso\_iec\_11578, 3) tone mapping information SEI messages with different values of tone\_map\_id, 4) knee function information SEI messages with different values of knee\_function\_id, and 5) colour remapping information SEI messages with different values of colour\_remap\_id."

1. **Comment:** The statement that "Each nested SEI message has the same persistence scope as if the SEI message were not nested." seems redundant.

**Suggestion:** Change the statement and the subsequent paragraph that provides the detailed persistence scope specification as follows:

When an SEI message of a particular type in listOfRegionNestableMessageTypes has film\_grain\_characteristics\_cancel\_flag, tone\_map\_cancel\_flag, knee\_function\_cancel\_flag, or colour\_remap\_cancel\_flag equal to 1, regardless of whether it is regionally-nested or non-regionally-nested, it cancels the persistence of all the regionally-nested SEI messages of the type, regardless of their associated regions. When an SEI message of a particular type having film\_grain\_characteristics\_persistence\_flag, tone\_map\_persistence\_flag, knee\_function\_persistence\_flag, or colour\_remap\_persistence\_flag equal to 1 is regionally-nested, the persistence of the SEI message is determined by the semantics of the SEI message irrespective of which region it applies to.

NOTE 2 – A regionally-nested SEI message has the same persistence scope as if the SEI message was non-regionally-nested.

1. **Comment:** The following constraint exists:

"When an SEI message of a type belonging to listOfRegionNestableMessageTypes that is not nested in a regional nesting SEI message is applicable to the current picture, there shall be no SEI message of the same type belonging to listOfRegionNestableMessageTypes that is nested in a regional nesting SEI message that is applicable to the current picture."

Firstly, the second instance of "belonging to listOfRegionNestableMessageTypes" is redundant.

More importantly, the specification generally should not try to govern what people can do with user data (the two user data SEI messages belong to listOfRegionNestableMessageTypes). What users want to do with it should be their business, and the responsibility for clearly defining its usage and interpretation is theirs.

In particular, it is not a good idea to prohibit regionally-nested and non-regionally-nested SEI messages of the same type being present at the same time. The current draft would force encoder makers to choose between providing only the information to guide the most sophisticated and complex decoders (which would be completely ignored by less sophisticated or older decoders) or providing only the information to guide the less sophisticated decoders. (More precisely, the term “decoder” used in this paragraph refers to post-processing that follows after the specified decoding process in the decoding/receiving system.)

**Suggestion:** Allow both regionally-nested and non-regionally-nested SEI messages of the same type to be present at the same time.

Specify either of the following when both are present:

* When an access unit contains both regionally-nested SEI messages of a particular type belonging to listOfRegionNestableMessageTypes and non-regionally-nested SEI messages of the same type, decoders shall ignore either all the regionally-nested SEI message of that type or all the non-regionally-nested SEI messages of that type.
* The regionally-nested SEI message(s) in the are considered preferred, but the non-regionally-nested one(s) may be used instead to apply to the entire picture (e.g., as a less sophisticated way of operating for decoders that were designed before the regional nesting SEI message was designed or for decoders that are not capable of applying different processing to different regions.
* Especially remove the stated constraints on user data (either registered or unregistered).

# Patent rights declaration(s)

**Qualcomm Incorporated and Microsoft Corporation do not have any current or pending patent rights relating to the proposed changes described in this contribution (to the extent of the personal awareness of the authors).**