CLAIMS

1. A method of processing video data, comprising:

performing a conversion between a video including one or more layers and a bitstream of the video according to a rule,

wherein the rule specifies, in a process of sub-bitstream extraction to output an output sub-bitstream, whether to generate non-scalable-nested supplementary enhancement information (SEI) messages by extracting scalable-nested SEI messages from a scalable nesting SEI message is based on a first flag indicating whether the scalable nesting SEI message applies to specific output layer sets (OLSs) and a second flag indicating whether the scalable nesting SEI message applies to all subpictures or only to specific subpictures.

2. The method of claim 1, wherein the scalable nesting SEI message is contained in a first SEI NAL unit contained in the output sub-bitstream, and

wherein in a case that the non-scalable nested SEI messages are generated, a second SEI NAL unit is generated, and the scalable-nested SEI messages are extracted from the scalable nesting SEI message and are included in the second SEI NAL unit as the non-scalable nested SEI messages.

3. The method of claim 2, wherein the second SEI NAL unit is included immediately after the first SEI NAL unit in a PU containing the first SEI NAL unit.

4. The method of claim 2 or 3, wherein the first SEI NAL unit is removed from the output sub-bitstream.

5. The method of any one of claims 1-4, wherein the rule specifies to generate the non-scalable-nested SEI messages when a set of conditions are satisfied, wherein the set of conditions comprise that the second flag has a second value that specifies that the SEI message that applies to the specific OLSs applies to all subpictures of the specified OLSs.

6. The method of claim 5, wherein the set of conditions further comprise that the first flag has a first value that specifies that the SEI message applies to specific output layer sets (OLSs).

7. The method of any one of claims 1-6, wherein the rule specifies to generate the non-scalable-nested SEI messages when a set of conditions are satisfied, wherein the set of conditions comprise that a list of NAL unit header identifier values in an OLS with a target OLS index does not include all values of NAL unit header identifiers in all video coding layer (VCL) NAL units in a bitstream that is input to the process of sub-bitstream extraction.

8. The method of claim 7, wherein the rule further specifies that, in response to that the list of NAL unit header identifier values in the output layer set does not include all values of NAL unit header identifiers in all VCL NAL units in the bitstream that is input to the process of sub-bitstream extraction, the following further applies:

1) all SEI NAL units that contain a non-scalable-nested SEI message with payload type equal to 0 or 130 are removed from the output sub-bitstream, and

2) when general_same_pic_timing_in_all_ols_flag is equal to 0, all SEI NAL units that contain a non-scalable-nested SEI message with payload type equal to 1 are removed from the output sub-bitstream.

9. The method of any one of claims 1-8, wherein the conversion includes encoding the video into the bitstream.

10. The method of any one of claims 1-8, wherein the conversion includes decoding the video from the bitstream.

11. An apparatus for processing video data comprising a processor and a non-transitory memory with instructions thereon, wherein the instructions upon execution by the processor, cause the processor to:

perform a conversion between a video including one or more layers and a bitstream of the video according to a rule,

wherein the rule specifies, in a process of sub-bitstream extraction to output an output sub-bitstream, whether to generate non-scalable-nested supplementary enhancement information (SEI) messages by extracting scalable-nested SEI messages from a scalable nesting SEI message is based on a first flag indicating whether the scalable nesting SEI message applies to specific output layer sets (OLSs) and a second flag indicating whether the scalable nesting SEI message applies to all subpictures or only to specific subpictures.

12. The apparatus of claim 11, wherein the scalable nesting SEI message is contained in a first SEI NAL unit contained in the output sub-bitstream,

wherein in a case that the non-scalable nested SEI messages are generated, a second SEI NAL unit is generated, and the scalable-nested SEI messages are extracted from the scalable nesting SEI message and are included in the second SEI NAL unit as the non-scalable nested SEI messages,

wherein the second SEI NAL unit is included immediately after the first SEI NAL unit in a PU containing the first SEI NAL unit, and

wherein the first SEI NAL unit is removed from the output sub-bitstream.

13. The apparatus of claim 11 or 12, wherein the rule specifies to generate the non-scalable-nested SEI messages when a set of conditions are satisfied, wherein the set of conditions comprise that the second flag has a second value that specifies that the SEI message that applies to the specific OLSs applies to all subpictures of the specified OLSs.

14. The apparatus of claim 13, wherein the set of conditions further comprise that the first flag has a first value that specifies that the SEI message applies to specific output layer sets (OLSs).

15. The apparatus of any one of claims 11-14, wherein the rule specifies to generate the non-scalable-nested SEI messages when a set of conditions are satisfied, wherein the set of conditions comprise that a list of NAL unit header identifier values in an OLS with a target OLS index does not include all values of NAL unit header identifiers in all video coding layer (VCL) NAL units in a bitstream that is input to the process of sub-bitstream extraction.

16. The apparatus of claim 15, wherein the rule further specifies that, in response to that the list of NAL unit header identifier values in the output layer set does not include all values of NAL unit header identifiers in all VCL NAL units in the bitstream that is input to the process of sub-bitstream extraction, the following further applies:

1) all SEI NAL units that contain a non-scalable-nested SEI message with payload type equal to 0 or 130 are removed from the output sub-bitstream, and

2) when general_same_pic_timing_in_all_ols_flag is equal to 0, all SEI NAL units that contain a non-scalable-nested SEI message with payload type equal to 1 are removed from the output sub-bitstream.

17. A non-transitory computer-readable storage medium storing instructions that cause a processor to:

perform a conversion between a video including one or more layers and a bitstream of the video according to a rule,

wherein the rule specifies, in a process of sub-bitstream extraction to output an output sub-bitstream, whether to generate non-scalable-nested supplementary enhancement information (SEI) messages by extracting scalable-nested SEI messages from a scalable nesting SEI message is based on a first flag indicating whether the scalable nesting SEI message applies to specific output layer sets (OLSs) and a second flag indicating whether the scalable nesting SEI message applies to all subpictures or only to specific subpictures.

18. The non-transitory computer-readable storage medium of claim 17, wherein the scalable nesting SEI message is contained in a first SEI NAL unit contained in the output sub-bitstream,

wherein in a case that the non-scalable nested SEI messages are generated, a second SEI NAL unit is generated, and the scalable-nested SEI messages are extracted from the scalable nesting SEI message and are included in the second SEI NAL unit as the non-scalable nested SEI messages,

wherein the second SEI NAL unit is included immediately after the first SEI NAL unit in a PU containing the first SEI NAL unit, and

wherein the first SEI NAL unit is removed from the output sub-bitstream.

19. A non-transitory computer-readable recording medium storing a bitstream of a video which is generated by a method performed by a video processing apparatus, wherein the method comprises:

generating the bitstream of the video including one or more layers according to a rule,

wherein the rule specifies, in a process of sub-bitstream extraction to output an output sub-bitstream, whether to generate non-scalable-nested supplementary enhancement information (SEI) messages by extracting scalable-nested SEI messages from a scalable nesting SEI message is based on a first flag indicating whether the scalable nesting SEI message applies to specific output layer sets (OLSs) and a second flag indicating whether the scalable nesting SEI message applies to all subpictures or only to specific subpictures.

20. The non-transitory computer-readable recording medium of claim 19, wherein the scalable nesting SEI message is contained in a first SEI NAL unit contained in the output sub-bitstream,

wherein in a case that the non-scalable nested SEI messages are generated, a second SEI NAL unit is generated, and the scalable-nested SEI messages are extracted from the scalable nesting SEI message and are included in the second SEI NAL unit as the non-scalable nested SEI messages,

wherein the second SEI NAL unit is included immediately after the first SEI NAL unit in a PU containing the first SEI NAL unit, and

wherein the first SEI NAL unit is removed from the output sub-bitstream.

~~1. A method of video processing, comprising:~~

~~performing a conversion between a video including one or more layers and a bitstream of the video according to a rule,~~

~~wherein the rule specifies, in a process of sub-bitstream extraction, a non-scalable-nested supplementary enhancement information (SEI) message is generated by extracting an SEI message that is scalably-nested from a scalable nesting SEI message based on a first flag indicating whether the SEI message applies to specific output layer sets (OLSs) and a second flag indicating whether the SEI message applies to all subpictures or only to specific subpictures.~~

2. The method of claim 1, wherein the rule specifies to generate the non-scalable-nested SEI message responsive to conditions i) the first flag having a first value that specifies that the SEI message applies to specific output layer sets (OLSs) and ii) the second flag having a second value that specifies that the SEI message that applies to the specific OLSs applies to all subpictures of the specified OLSs being satisfied.

3. A method of video processing, comprising:

performing a conversion between a video including one or more layers and a bitstream of the video according to a rule,

wherein the rule specifies, in a process of sub-bitstream extraction, a non-scalable-nested supplemental enhancement information (SEI) message is generated by extracting multiple scalable-nested SEI messages from a first SEI network abstraction layer (NAL) unit in a picture unit.

4. The method of claim 3, wherein the multiple scalable-nested SEI messages are included in a second SEI NAL unit included in the picture unit.

5. The method of claim 4, wherein the second SEI NAL unit is immediately after the first SEI NAL unit.

6. A method of video processing, comprising:

performing a conversion between a video including one or more layers and a bitstream of the video according to a rule,

wherein the rule specifies a sub-bitstream extraction process to generate an output bitstream,

wherein the rule specifies handling of one or more supplemental enhancement information (SEI) network abstraction layer (NAL) units during the sub-bitstream extraction process.

7. The method of claim 6, wherein the rule specifies to remove the one or more SEI NAL units from which some SEI messages have been extracted and included as non-scalable-nested SEI messages.

8. The method of claim 6, wherein the rule specifies to remove a SEI NAL unit that contains a scalable-nested SEI message applying only to a target output layer set.

9. The method of claim 6, wherein the rule specifies to remove a SEI NAL unit that contains a scalable nested SEI message that applies to output layer sets (OLSs) in which there is no OLS other than a target OLS.

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10. The method of any of claims 1 to 9, wherein the conversion includes encoding the video into the bitstream.

11. The method of any of claims 1 to 9, wherein the conversion includes decoding the video from the bitstream.

12. The method of any of claims 1 to 9, wherein the conversion includes generating the bitstream from the video, and the method further comprises: storing the bitstream in a non-transitory computer-readable recording medium.

13. A video processing apparatus comprising a processor configured to implement a method recited in any one or more of claims 1 to 12.

14. A method of storing a bitstream of a video, comprising, a method recited in any one of claims 1 to 12, and further including storing the bitstream to a non-transitory computer-readable recording medium.

15. A computer readable medium storing program code that, when executed, causes a processor to implement a method recited in any one or more of claims 1 to 12.

16. A computer readable medium that stores a bitstream generated according to any of the above described methods.

17. A video processing apparatus for storing a bitstream representation, wherein the video

~~processing apparatus is configured to implement a method recited in any one or more of claims 1 to 12.~~