CLAIMS

1. A method of processing video data, comprising:

performing a conversion between a video and a bitstream of the video,

wherein the bitstream comprises one or more output layer sets comprising one or more video layers according to a format rule,

wherein the format rule specifies that a value of layer identifier for a supplemental enhancement information (SEI) network abstraction layer (NAL) unit that includes a non-scalable-nested SEI message is not constrained.

2. The method of claim 1, wherein the non-scalable-nested SEI message is an SEI message that is not contained in a scalable nesting SEI message.

3. The method of claim 1 or 2, wherein the format rule further specifies that a non-scalable-nested SEI message that includes information regarding hypothetical reference decoder (HRD) is applicable to all output layer sets that include video layers as the bitstream.

4. The method of claim 3, wherein the format rule further specifies that a non-scalable-nested hypothetical reference decoder (HRD)-related supplemental enhancement information (SEI) message is omitted responsive to a condition that there does not exist an output layer set that includes the video layers as the bitstream.

5. The method of claim 4, wherein the non-scalable-nested SEI message is a buffering period (BP) SEI message, a picture timing (PT) SEI message, a decoding unit information (DUI) SEI message, or a subpicture level information (SLI) SEI message.

6. The method of claim 5, wherein the non-scalable-nested SEI message has a payload type that is equal to 0, 1, 130 or 203.

7. The method of claim 6, wherein the format rule further specifies that a particular payload type value corresponding to subpicture level information is disallowed from a list that includes allowable supplemental enhancement information (SEI) payload type values.

8. The method of claim 7, wherein the particular payload type value is 203.

9. The method of claim 8, wherein the allowable SEI payload type values include filler payload, film grain characteristics, frame packing arrangement, parameter sets inclusion indication, mastering display color volume, content light level information, dependent rap indication, alternative transfer characteristics, ambient viewing environment, content color volume, equirectangular projection, generalized cube map projection, sphere rotation, region-wise packing, omni viewport, frame field information and sample aspect ratio information.

10. The method of claim 9, wherein the allowable SEI payload type values include 3, 19, 45, 129, 137, 144, 145, 147 to 150, 153 to 156, 168, and 204.

11. The method of claim 9 or 10, wherein the SEI messages corresponding the allowable SEI payload type values of the list infer constraints on NAL unit header of the SEI NAL unit on the basis of the NAL unit header of associated video coding layer (VCL) NAL unit when non-scalable-nested.

12. The method of any one of claims 1-11, wherein the conversion includes encoding the video into the bitstream.

13. The method of any one of claims 1-11, wherein the conversion includes decoding the video from the bitstream.

14. 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 and a bitstream of the video,

wherein the bitstream comprises one or more output layer sets comprising one or more video layers according to a format rule,

wherein the format rule specifies that a value of layer identifier for a supplemental enhancement information (SEI) network abstraction layer (NAL) unit that includes a non-scalable-nested SEI message is not constrained.

15. The apparatus of claim 14, wherein the non-scalable-nested SEI message is an SEI message that is not contained in a scalable nesting SEI message.

16. The apparatus of claim 14 or 15, wherein the format rule further specifies that the format rule further specifies that a non-scalable-nested SEI message that includes information regarding hypothetical reference decoder (HRD) is applicable to all output layer sets that include video layers as the bitstream,

wherein the format rule further specifies that a non-scalable-nested hypothetical reference decoder (HRD)-related supplemental enhancement information (SEI) message is omitted responsive to a condition that there does not exist an output layer set that includes the video layers as the bitstream,

wherein the non-scalable-nested SEI message is a buffering period (BP) SEI message, a picture timing (PT) SEI message, a decoding unit information (DUI) SEI message, or a subpicture level information (SLI) SEI message,

wherein the non-scalable-nested SEI message has a payload type that is equal to 0, 1, 130 or 203,

wherein the format rule further specifies that a particular payload type value corresponding to subpicture level information is disallowed from a list that includes allowable supplemental enhancement information (SEI) payload type values,

wherein the particular payload type value is 203,

wherein the allowable SEI payload type values include filler payload, film grain characteristics, frame packing arrangement, parameter sets inclusion indication, mastering display color volume, content light level information, dependent rap indication, alternative transfer characteristics, ambient viewing environment, content color volume, equirectangular projection, generalized cube map projection, sphere rotation, region-wise packing, omni viewport, frame field information and sample aspect ratio information.

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

perform a conversion between a video and a bitstream of the video,

wherein the bitstream comprises one or more output layer sets comprising one or more video layers according to a format rule,

wherein the format rule specifies that a value of layer identifier for a supplemental enhancement information (SEI) network abstraction layer (NAL) unit that includes a non-scalable-nested SEI message is not constrained.

18. The non-transitory computer-readable storage medium of claim 17, wherein the non-scalable-nested SEI message is an SEI message that is not contained in a scalable nesting SEI message;

wherein the format rule further specifies that a non-scalable-nested SEI message that includes information regarding hypothetical reference decoder (HRD) is applicable to all output layer sets that include video layers as the bitstream,

wherein the format rule further specifies that a non-scalable-nested hypothetical reference decoder (HRD)-related supplemental enhancement information (SEI) message is omitted responsive to a condition that there does not exist an output layer set that includes the video layers as the bitstream,

wherein the non-scalable-nested SEI message is a buffering period (BP) SEI message, a picture timing (PT) SEI message, a decoding unit information (DUI) SEI message, or a subpicture level information (SLI) SEI message,

wherein the non-scalable-nested SEI message has a payload type that is equal to 0, 1, 130 or 203,

wherein the format rule further specifies that a particular payload type value corresponding to subpicture level information is disallowed from a list that includes allowable supplemental enhancement information (SEI) payload type values,

wherein the particular payload type value is 203,

wherein the allowable SEI payload type values include filler payload, film grain characteristics, frame packing arrangement, parameter sets inclusion indication, mastering display color volume, content light level information, dependent rap indication, alternative transfer characteristics, ambient viewing environment, content color volume, equirectangular projection, generalized cube

map projection, sphere rotation, region-wise packing, omni viewport, frame field information and sample aspect ratio information.

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,

wherein the bitstream comprises one or more output layer sets comprising one or more video layers according to a format rule,

wherein the format rule specifies that a value of layer identifier for a supplemental enhancement information (SEI) network abstraction layer (NAL) unit that includes a non-scalable-nested SEI message is not constrained.

20. The non-transitory computer-readable recording medium of claim 19, wherein the non-scalable-nested SEI message is an SEI message that is not contained in a scalable nesting SEI message;

wherein the format rule further specifies that a non-scalable-nested SEI message that includes information regarding hypothetical reference decoder (HRD) is applicable to all output layer sets that include video layers as the bitstream,

wherein the format rule further specifies that a non-scalable-nested hypothetical reference decoder (HRD)-related supplemental enhancement information (SEI) message is omitted responsive to a condition that there does not exist an output layer set that includes the video layers as the bitstream,

wherein the non-scalable-nested SEI message is a buffering period (BP) SEI message, a picture timing (PT) SEI message, a decoding unit information (DUI) SEI message, or a subpicture level information (SLI) SEI message,

wherein the non-scalable-nested SEI message has a payload type that is equal to 0, 1, 130 or 203,

wherein the format rule further specifies that a particular payload type value corresponding to subpicture level information is disallowed from a list that includes allowable supplemental enhancement information (SEI) payload type values,

wherein the particular payload type value is 203,

wherein the allowable SEI payload type values include filler payload, film grain characteristics, frame packing arrangement, parameter sets inclusion indication, mastering display color volume, content light level information, dependent rap indication, alternative transfer characteristics, ambient viewing environment, content color volume, equirectangular projection, generalized cube map projection, sphere rotation, region-wise packing, omni viewport, frame field information and sample aspect ratio information.

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

~~performing a conversion between a video and a bitstream of the video,~~

~~wherein the bitstream includes one or more output layer sets comprising one or more video layers according to a format rule,~~

~~wherein the format rule specifies that a non-scalable-nested supplemental enhancement information, SEI, message that includes information regarding hypothetical reference decoder, HRD, is applicable to all output layer sets that include same video layers as the bitstream.~~

~~2. The method of claim 1, wherein the non-scalable-nested SEI message is an SEI message that is not contained in a scalable nesting SEI message.~~

~~3. The method of claim 1 or 2, wherein the non-scalable-nested SEI message that includes information regarding the HRD is a buffering period (BP) SEI message, a picture timing (PT) SEI message, a decoding unit information (DUI) SEI message, or a subpicture level information (SLI) SEI message.~~

~~4. The method of claim 1 or 2, wherein the non-scalable-nested SEI message that includes information regarding the HRD has a payload type that is equal to 0, 1, 130, or 203.~~

~~5. A method of processing video data, comprising:~~

~~performing a conversion between a video and a bitstream of the video,~~

~~wherein the bitstream comprises one or more output layer sets comprising one or more video layers according to a format rule,~~

wherein the format rule specifies that a non-scalable-nested hypothetical reference decoder (HRD)-related supplemental enhancement information (SEI) message is omitted responsive to a condition that there does not exist an output layer set that includes a same set of layers as the bitstream.

6. The method of claim 5, wherein the non-scalable-nested SEI message is an SEI message that is not contained in a scalable nesting SEI message.

7. The method of claim 5 or 6, wherein the non-scalable-nested HRD-related SEI message is a buffering period (BP) SEI message, a picture timing (PT) SEI message, a decoding unit information (DUI) SEI message, or a subpicture level information (SLI) SEI message.

8. The method of claim 5 or 6, wherein the non-scalable-nested HRD-related SEI message has a payload type that is equal to 0, 1, 130, or 203.

9. A method of processing video data, comprising:
performing a conversion between a video and a bitstream of the video,
wherein the bitstream comprises one or more output layer sets comprising one or more video layers according to a format rule,
wherein the format rule specifies that a value of layer identifier for a supplemental enhancement information (SEI) network abstraction layer (NAL) unit that includes a non-scalable-nested SEI message is not constrained.

10. The method of claim 9, wherein the non-scalable-nested SEI message is an SEI message that is not contained in a scalable nesting SEI message.

11. The method of claim 9, wherein the non-scalable-nested SEI message is a buffering period (BP) SEI message, a picture timing (PT) SEI message, a decoding unit information (DUI) SEI message, or a subpicture level information (SLI) SEI message.

12. The method of claim 9, wherein the non-scalable-nested SEI message has a payload type that is equal to 0, 1, 130 or 203.

13. A method of processing video data, comprising:

performing a conversion between a video and a bitstream of the video,

wherein the bitstream comprises one or more output layer sets comprising one or more video layers according to a format rule,

wherein the format rule specifies that a particular payload type value corresponding to subpicture level information is disallowed from a list that includes allowable supplemental enhancement information (SEI) payload type values for non-hypothetical reference decoder (HRD) related supplemental enhancement information (SEI) messages.

14. The method of claim 13, wherein the particular payload type value is 203.

15. The method of claim 13, wherein the allowable SEI payload type values include filler payload, film grain characteristics, frame packing arrangement, parameter sets inclusion indication, mastering display color volume, content light level information, dependent rap indication, alternative transfer characteristics, ambient viewing environment, content color volume, equirectangular projection, generalized cube map projection, sphere rotation, region-wise packing, omni viewport, frame field information and sample aspect ratio information.

16. The method of claim 13, wherein the allowable SEI payload type values include 3, 19, 45, 129, 137, 144, 145, 147 to 150, 153 to 156, 168, and 204.

17. A method of processing video data, comprising:

performing a conversion between a video and a bitstream of the video,

wherein the bitstream includes one or more output layer sets comprising one or more video layers according to a format rule,

wherein the format rule specifies that a non-scalable-nested supplemental enhancement information, SEI, message that includes information irrelevant to hypothetical reference decoder (HRD) is applicable to all layers in the bitstream.

~~18. The method of claim 17, wherein the non-scalable-nested SEI message is an SEI message that is not contained in a scalable nesting SEI message.~~

~~19. The method of claim 17 or 18, wherein the non-scalable-nested SEI message that includes information irrelevant to the HRD has a payload type that is not equal to 0, 1, 130, or 203.~~

~~20. The method of claim 17 or 18, wherein the non-scalable-nested SEI message that includes information irrelevant to the HRD does not correspond to a buffering period (BP) SEI message, a picture timing (PT) SEI message, a decoding unit information (DUI) SEI message, or a subpicture level information (SLI) SEI message.~~

~~21. The method of any of claims 1 to 20, wherein the conversion includes encoding the video into the bitstream.~~

~~22. The method of any of claims 1 to 20, wherein the conversion includes decoding the video from the bitstream.~~

~~23. The method of any of claims 1 to 20, 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.~~

~~24. A video processing apparatus comprising a processor configured to implement a method recited in any one or more of claims 1 to 23.~~

~~25. A method of storing a bitstream of a video, comprising, a method recited in any one of claims 1 to 23, and further including storing the bitstream to a non-transitory computer-readable recording medium.~~

~~26. 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 23.~~

~~27. A computer readable medium that stores a bitstream generated according to any of the above described methods.~~

~~28. A video processing apparatus for storing a bitstream, wherein the video processing apparatus is configured to implement a method recited in any one or more of claims 1 to 23.~~