

CLAIMS

What is claimed is:

1. A method implemented by a decoder, the method comprising:
receiving, by a receiver of the decoder, a bitstream comprising a target output layer set (OLS), wherein a scalable nesting supplemental enhancement information (SEI) network abstraction layer (NAL) unit that contains a scalable nesting SEI message has been removed from the bitstream as part of a sub-bitstream extraction process when no scalable-nested SEI messages in the scalable nesting SEI message reference the target OLS and when the scalable nesting SEI message applies to specific OLSs; and
decoding, by the processor, a picture from the target OLS.
2. The method of claim 1, wherein the sub-bitstream extraction process is performed by a hypothetical reference decoder (HRD) on an encoder.
3. The method of any of claims 1-2, wherein the scalable nesting SEI message applies to specific OLSs when a scalable nesting OLS flag is set to one.
4. The method of any of claims 1-3, wherein no scalable-nested SEI messages reference the target OLS when the scalable nesting SEI message includes no index (i) value in a range of zero to a scalable nesting number of OLSs minus one (num_olss_minus1), inclusive, such that an ith nesting OLS index (NestingOlsIdx[i]) is equal to a target OLS index (targetOlsIdx) associated with the target OLS.
5. The method of any of claims 1-4, wherein the scalable nesting num_olss_minus1 specifies a number of OLSs to which the scalable nesting SEI message applies, and wherein a value of scalable nesting num_olss_minus1 is constrained to a range of zero to a total number of OLSs minus one (TotalNumOls-1), inclusive.
6. The method of any of claims 1-5, wherein the targetOlsIdx identifies an OLS index of the target OLS.

7. The method of any of claims 1-6, wherein the `NestingOlsIdx[i]` specifies an OLS index of an *i*th OLS to which the scalable-nested SEI messages apply when the scalable nesting OLS flag is set to one.
8. A method implemented by an encoder, the method comprising:
 - encoding, by a processor of the encoder, a bitstream comprising one or more output layer sets (OLSs);
 - performing, by a hypothetical reference decoder (HRD) operating on the processor, a sub-bitstream extraction process to extract a target OLS from the OLSs;
 - removing from the bitstream, by the HRD operating on the processor, a supplemental enhancement information (SEI) network abstraction layer (NAL) unit that contains a scalable nesting SEI message when no scalable-nested SEI messages in the scalable nesting SEI message reference the target OLS and when the scalable nesting SEI message applies to specific OLSs; and
 - performing, by the HRD operating on the processor, a set of bitstream conformance tests on the target OLS.
9. The method of claims 8, wherein the scalable nesting SEI message applies to the specific OLS when a scalable nesting OLS flag is set to one.
10. The method of any of claims 8-9, wherein no scalable-nested SEI messages reference the target OLS when the scalable nesting SEI message includes no index (*i*) value in a range of zero to a scalable nesting number of OLSs minus one (`num_olss_minus1`), inclusive, such that an *i*th nesting OLS index (`NestingOlsIdx[i]`) is equal to a target OLS index (`targetOlsIdx`) associated with the target OLS.
11. The method of any of claims 8-10, wherein the scalable nesting `num_olss_minus1` specifies a number of OLSs to which the scalable nesting SEI message applies.
12. The method of any of claims 8-11, wherein a value of scalable nesting `num_olss_minus1` is constrained to a range of zero to a total number of OLSs minus one (`TotalNumOls-1`), inclusive.

13. The method of any of claims 8-12, wherein the `targetOlsIdx` identifies an OLS index of the target OLS.
14. The method of any of claims 8-13, wherein the `NestingOlsIdx[ i ]` specifies an OLS index of an *i*th OLS to which the scalable-nested SEI messages apply when the scalable nesting OLS flag is set to one.
15. A video coding device comprising:
 - a processor, a receiver coupled to the processor, a memory coupled to the processor, and a transmitter coupled to the processor, wherein the processor, receiver, memory, and transmitter are configured to perform the method of any of claims 1-14.
16. A non-transitory computer readable medium comprising a computer program product for use by a video coding device, the computer program product comprising computer executable instructions stored on the non-transitory computer readable medium such that when executed by a processor cause the video coding device to perform the method of any of claims 1-14.
17. A decoder comprising:
 - a receiving means for receiving a bitstream comprising a target output layer set (OLS), wherein a scalable nesting supplemental enhancement information (SEI) network abstraction layer (NAL) unit that contains a scalable nesting SEI message has been removed from the bitstream as part of a sub-bitstream extraction process when no scalable-nested SEI messages in the scalable nesting SEI message reference the target OLS and when the scalable nesting SEI message applies to specific OLSs;
 - a decoding means for decoding a picture from the target OLS; and
 - a forwarding means for forwarding the picture for display as part of a decoded video sequence.
18. The decoder of claim 17, wherein the decoder is further configured to perform the method of any of claims 1-7.

19. An encoder comprising:
an encoding means for encoding a bitstream comprising one or more output layer sets (OLSs);
a hypothetical reference decoder (HRD) means for:
performing a sub-bitstream extraction process to extract a target OLS from the OLSs;
removing from the bitstream a supplemental enhancement information (SEI) network abstraction layer (NAL) unit that contains a scalable nesting SEI message when no scalable-nested SEI messages in the scalable nesting SEI message reference the target OLS and when the scalable nesting SEI message applies to a specific OLS;
and
performing a set of bitstream conformance tests on the target OLS; and
a storing means for storing the bitstream for communication toward a decoder.
20. The encoder of claim 19, wherein the encoder is further configured to perform the method of any of claims 8-14.