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 coded picture in one or more video coding layer (VCL) network abstraction layer (NAL) units and a non-VCL NAL unit, wherein a temporal identifier (TemporalId) for the non-VCL NAL unit is constrained to be equal to a TemporalId of an access unit (AU) containing the non-VCL NAL unit when a NAL unit type (nal_unit_type) of the non-VCL NAL is equal to a prefix supplemental enhancement information (SEI) NAL unit type (PREFIX_SEI_NUT) or a suffix SEI NAL unit type (SUFFIX_SEI_NUT), wherein the non-VCL NAL unit includes a scalable nesting SEI message with a payload type set to one hundred thirty-three, wherein the scalable nesting SEI message contains one or more scalable-nested SEI messages, wherein the scalable nesting SEI message includes an output layer set (OLS) flag equal to one when the scalable-nested SEI messages apply to an OLS and equal to zero when the scalable-nested SEI messages apply to a layer, and wherein the scalable nesting SEI message includes a scalable nesting number of SEIs minus one (num_seis_minus1) plus one that specifies a number of the scalable-nested SEI messages with a value constrained to a range of 0 to 63, inclusive;

deriving, by a processor of the decoder, the TemporalId for the non-VCL NAL unit based on a NAL unit header temporal identifier plus one (nuh_temporal_id_plus1) syntax element in the non-VCL NAL unit; and

decoding, by the processor of the decoder, the coded picture from the one or more VCL NAL units to produce a decoded picture.

2. The method of claim 1, wherein the nal_unit_type of the non-VCL NAL is equal to the PREFIX_SEI_NUT.

3. The method of claim 1, wherein the nal_unit_type of the non-VCL NAL is equal to the SUFFIX_SEI_NUT.

4. The method of any of claims 1-3, wherein the coded picture is decoded from the one or more VCL NAL units based on a SEI message in the non-VCL NAL unit.

5. The method of any of claims 1-4, further comprising deriving the TemporalId for the non-VCL NAL unit as follows:
TemporalId = nuh_temporal_id_plus1 – 1.

6. The method of any of claims 1-5, wherein a value of nuh_temporal_id_plus1 is not equal to zero.

7. The method of any of claims 1-6, wherein a TemporalId of the one or more VCL NAL units is constrained to be the same for all VCL NAL units in a same AU.

8. A non-transitory computer-readable medium storing computer instructions that when executed by at least one hardware processors, cause the at least one hardware processors to perform the method of any one of claims 1 to 7.

9. A decoding device, comprising:

a receiver configured to receive a bitstream comprising a coded picture in one or more video coding layer (VCL) network abstraction layer (NAL) units and a non-VCL NAL unit, wherein a temporal identifier (TemporalId) for the non-VCL NAL unit is constrained to be equal to a TemporalId of an access unit (AU) containing the non-VCL NAL unit when a NAL unit type (nal_unit_type) of the non-VCL NAL is a supplemental enhancement information (SEI) message;

a memory coupled to the receiver, the memory storing instructions; and

a processor coupled to the memory, the processor configured to execute the instructions to cause the decoding device to: perform the method according to any one of claims 1 to 7.

10. A method implemented by an encoder, the method comprising:

encoding a coded picture in one or more video coding layer (VCL) network abstraction layer (NAL) units in a bitstream;

encoding into the bitstream a non-VCL NAL unit, wherein a temporal identifier (TemporalId) for the non-VCL NAL unit is constrained to be equal to a TemporalId of an access unit (AU) containing the non-VCL NAL unit when a NAL unit type (nal_unit_type) of the non-VCL NAL is equal to a prefix supplemental enhancement information (SEI) NAL unit type (PREFIX_SEI_NUT) or a suffix SEI NAL unit type (SUFFIX_SEI_NUT), wherein the

non-VCL NAL unit includes a scalable nesting SEI message with a payload type set to one hundred thirty-three, wherein the scalable nesting SEI message contains one or more scalable-nested SEI messages, wherein the scalable nesting SEI message includes an output layer set (OLS) flag equal to one when the scalable-nested SEI messages apply to an OLS and equal to zero when the scalable-nested SEI messages apply to a layer, and wherein the scalable nesting SEI message includes a scalable nesting number of SEIs minus one (num_seis_minus1) plus one that specifies a number of the scalable-nested SEI messages with a value constrained to a range of 0 to 63, inclusive.

11. The method according to claim 10, wherein the nal_unit_type of the non-VCL NAL unit is equal to a prefix SEI NAL unit type (PREFIX_SEI_NUT).

12. The method according to claim 10, wherein the nal_unit_type of the non-VCL NAL unit is equal to a suffix SEI NAL unit type (SUFFIX_SEI_NUT).

13. The method according to any one of claims 10 to 12, wherein the TemporalId for the non-VCL NAL unit is derived as follows:
TemporalId = nuh_temporal_id_plus1 – 1.

14. The method according to claim 13, wherein a value of nuh_temporal_id_plus1 for the non-VCL NAL unit is not equal to zero.

15. The method according to any one of claims 10 to 14, wherein a nuh_temporal_id_plusl of the VCL NAL units is constrained to be the same for all VCL NAL units in a same AU.

16. A non-transitory computer-readable medium storing computer instructions that when executed by at least one hardware processors, cause the at least one hardware processors to perform the method of any one of claims 10 to 15.

17. An encoding device, comprising: a memory and a processor, wherein the memory storing instructions; and

the processor configured to execute the instructions to cause the encoding device to: perform the method according to any one of claims 10 to 15.

18. A non-transitory storage medium which includes a bitstream, wherein the bitstream comprises: a coded picture in one or more video coding layer (VCL) network abstraction layer (NAL) units and a non-VCL NAL unit, wherein a temporal identifier (TemporalId) for the non-VCL NAL unit is constrained to be equal to a TemporalId of an access unit (AU) containing the non-VCL NAL unit when a NAL unit type (nal_unit_type) of the non-VCL NAL unit is equal to a prefix supplemental enhancement information (SEI) NAL unit type (PREFIX_SEI_NUT) or a suffix SEI NAL unit type (SUFFIX_SEI_NUT), wherein the non-VCL NAL unit includes a scalable nesting SEI message with a payload type set to one hundred thirty-three, wherein the scalable nesting SEI message contains one or more scalable-nested SEI messages, wherein the scalable nesting SEI message includes an output layer set (OLS) flag equal to one when the scalable-nested SEI messages apply to an OLS and equal to zero when the scalable-nested SEI messages apply to a layer, and wherein the scalable nesting SEI message includes a scalable nesting number of SEIs minus one (num_seis_minus1) plus one that specifies a number of the scalable-nested SEI messages with a value constrained to a range of 0 to 63, inclusive.