

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);
 - 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 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 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:
$$\text{TemporalId} = \text{nuh_temporal_id_plus1} - 1.$$
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 VCL NAL units is constrained to be the same for all VCL NAL units in a same AU.
8. The method of any of claims 1-7, further comprising:
receiving, by the decoder, a second bitstream including a second one or more VCL NAL units and a second non-VCL NAL unit, wherein a TemporalId for the second non-VCL NAL unit is not equal to a TemporalId of a second AU containing the second non-VCL NAL unit when a nal_unit_type of the second non-VCL NAL is a SEI message; and
in response to the receiving, taking some other corrective measures to ensure that a conforming bitstream corresponding to the second bitstream is received prior to decoding the coded picture from the second VCL NAL units.
9. A method implemented by an encoder, the method comprising:
encoding, by a processor of the encoder, a coded picture in one or more video coding layer (VCL) network abstraction layer (NAL) units in a bitstream;
encoding into the bitstream, by the processor, a non-VCL NAL unit such that a NAL unit header temporal identifier plus one (nuh_temporal_id_plus1) for the non-VCL NAL unit is constrained to be equal to a nuh_temporal_id_plus1 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;
performing, by the processor, a set of bitstream conformance tests on the bitstream based on the SEI message; and
storing, by a memory coupled to the processor, the bitstream for communication toward a decoder.
10. The method of claim 9, wherein the nal_unit_type of the non-VCL NAL is equal to a prefix SEI NAL unit type (PREFIX_SEI_NUT).
11. The method of claim 9, wherein the nal_unit_type of the non-VCL NAL is equal to a suffix SEI NAL unit type (SUFFIX_SEI_NUT).
12. The method of any of claims 9-11, wherein a value of nuh_temporal_id_plus1 is not equal to zero.

13. The method of any of claims 9-12, wherein a `nuh_temporal_id_plus1` of the VCL NAL units is constrained to be the same for all VCL NAL units in a same AU.

14. 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 1-13.

15. 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 1-13.

16. A decoder comprising:

a receiving means for receiving 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 decoding means for decoding the coded picture from the VCL NAL units to produce a decoded picture; and

a forwarding means for forwarding the decoded picture for display as part of a decoded video sequence.

17. The decoder of claim 16, wherein the decoder is further configured to perform the method of any of claims 1-8.

18. An encoder comprising:
an encoding means for:
 encoding a coded picture in one or more video coding layer (VCL) network abstraction layer (NAL) units in a bitstream; and
 encoding into the bitstream a non-VCL NAL unit such that 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 hypothetical reference decoder (HRD) means for performing a set of bitstream conformance tests on the bitstream based on the SEI message; and
 a storing means for storing the bitstream for communication toward a decoder.
19. The encoder of claim 18, wherein the encoder is further configured to perform the method of any of claims 9-13.