CLAIMS

What is claimed is:

1. A method of decoding implemented by a video decoder, comprising:

receiving, by the video decoder, a bitstream including a coded video sequence start (CVSS) access unit (AU), wherein the CVSS AU contains a picture unit (PU) for each layer, and wherein a coded picture in each PU is a coded layer video sequence start (CLVSS) picture;

identifying, by the video decoder, the coded picture from one of the layers based on a picture order count (POC) value; and

decoding, by the video decoder, the coded picture to obtain a decoded picture.

2. The method of claim 1, wherein the CLVSS picture is an intra random access point (IRAP) picture.

3. The method of claim 1, wherein the CLVSS picture is gradual decoding refresh (GDR) picture.

4. The method of any of claims 1 to 3, wherein the CLVSS picture is associated with a no output before recovery flag disposed in a picture parameter set (PPS) of the PU, and wherein the no output before recovery flag is equal to 1.

5. The method of any of claims 1 to 4, wherein each layer of the CVSS AU is specified by a video parameter set (VPS).

6. The method of any of claims 1 to 5, wherein the CVSS AU is an initial AU of a coded video sequence (CVS).

7. The method of any of claims 1 to 6, wherein the PU is referred to as a layer access unit.

8. The method of any of claims 1 to 7, wherein the CVSS AU is referred to as a complete AU because each layer of the CVSS AU contains one of the PUs.

9. The method of any of claims 1 to 8, further comprising displaying the coded picture as decoded on a display of an electronic device.

10. The method of any of claims 1 to 9, further comprising:

receiving, by the video decoder, a second video bitstream including a second CVSS AU, wherein the second CVSS AU contains a picture unit (PU) for each layer, and wherein a coded picture in each PU is not a CLVSS picture; and

in response to the receiving, taking some other corrective measures to ensure that a conforming bitstream corresponding to the second video bitstream is received prior to decoding the coded picture.

~~11. A method of encoding implemented by a video encoder, the method comprising:~~

~~inserting, by the video encoder, a picture unit (PU) containing a coded picture in each layer of a coded video sequence start (CVSS) access unit (AU), wherein the video encoder is constrained such that the coded picture in each layer is a coded layer video sequence start (CLVSS) picture;~~

~~encoding, by the video encoder, a coded layer video sequence (CLVS) including the CVSS AU into a bitstream; and~~

~~storing, by the video encoder, the bitstream for communication toward a video decoder.~~

~~12. The method of claim 11, wherein the CLVSS picture is an intra random access point (IRAP) picture.~~

~~13. The method of claim 11, wherein the CLVSS picture is gradual decoding refresh (GDR) picture.~~

~~14. The method of any of claims 11 to 13, wherein each layer of the CVSS AU is specified by a video parameter set (VPS).~~

~~15~~11. A decoding device, comprising:

a receiver configured to receive a bitstream including a coded video sequence start (CVSS) access unit (AU), wherein the CVSS AU contains a picture unit (PU) for each layer, and wherein a coded picture in each PU is a coded layer video sequence start (CLVSS) picture;

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 10.

~~identify the coded picture from one of the layers based on a picture order count (POC) value; and~~

~~decode the coded picture to obtain a decoded picture.~~

~~16. The decoding device of claim 15, wherein the CLVSS picture is an intra random access point (IRAP) picture.~~

~~17. The decoding device of claim 15, wherein the CLVSS picture is gradual decoding refresh (GDR) picture.~~

~~18. The decoding device of any of claims 15 to 17, wherein each layer of the CVSS AU is specified by a video parameter set (VPS).~~

~~19. An encoding device, comprising:~~

~~a memory containing instructions;~~

~~a processor coupled to the memory, the processor configured to implement the instructions to cause the encoding device to:~~

~~insert a picture unit (PU) containing a coded picture in each layer of a coded video sequence start (CVSS) access unit (AU), wherein the encoding device is constrained such that the coded picture is in each layer a coded layer video sequence start (CLVSS) picture;~~

~~encode a coded layer video sequence (CLVS) including the CVSS AU into a bitstream; and~~

~~a transmitter coupled to the processor, the transmitter configured to transmit the video bitstream toward a video decoder.~~

~~20. The encoding device of claim 19, wherein the CLVSS picture is an intra random access point (IRAP) picture or a gradual decoding refresh (GDR) picture.~~

~~21. The encoding device of any of claims 19 to 20, wherein each layer of the CVSS AU is specified by a video parameter set (VPS).~~

~~22. A coding apparatus, comprising:~~

~~a receiver configured to receive a picture to encode or to receive a bitstream to decode;~~

~~a transmitter coupled to the receiver, the transmitter configured to transmit the bitstream to a decoder or to transmit a decoded image to a display;~~

~~a memory coupled to at least one of the receiver or the transmitter, the memory configured to store instructions; and~~

~~a processor coupled to the memory, the processor configured to execute the instructions stored in the memory to perform the method in any of claims 1 to 10 and any of claims 11 to 14.~~

~~23. The coding apparatus of claim 22, further comprising a display configured to display a decoded picture.~~

~~24~~12. A system, comprising:

an encoder; and

a decoder in communication with the encoder, wherein ~~the encoder or~~ the decoder includes the decoding device~~, the encoding device, or the coding apparatus of any~~ of claim~~s 16 to 23~~ 11.

13. A non-transitory computer-readable medium storing computer instructions for audio coding, 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 10.

~~25. A means for coding, comprising:~~

~~receiving means configured to receive a picture to encode or to receive a bitstream to decode;~~

~~transmission means coupled to the receiving means, the transmission means configured to transmit the bitstream to a decoding means or to transmit a decoded image to a display means;~~

~~storage means coupled to at least one of the receiving means or the transmission means, the storage means configured to store instructions; and~~

~~processing means coupled to the storage means, the processing means configured to execute the instructions stored in the storage means to perform the method in any of claims 1 to 10 and any of claims 11 to 14.~~