CLAIMS

What is claimed is:

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

receiving, by the video decoder, a coded video bitstream including a current picture;

deriving, by the video decoder, a first reference picture list and a second reference picture list for each slice of the current picture, wherein the first reference picture list and the second reference picture list are coded or constructed by the video decoder using information stored in the decoder and information from the bitstream;

determining, by the video decoder, that the current picture is a clean random access (CRA) picture, the CRA picture signifying that there shall be no picture referred to by an entry in the first reference picture list or the second reference picture list that precedes, in an output order or a decoding order, any preceding intra random access point (IRAP) picture in the decoding order; and

decoding, by the video decoder, each slice of the CRA picture based on one or both of the first reference picture list and the second reference picture list.

2. The method of claim 1, wherein the preceding IRAP picture precedes the CRA picture in the output order or the decoding order.

3. The method of any of claims 1-2, wherein the preceding IRAP picture starts a coded video sequence (CVS) that contains the CRA picture.

4. The method of any of claims 1-3, wherein the CRA picture is decoded using intra prediction.

5. The method of any of claims 1-4, wherein one or more pictures following the CRA picture in the decoding order are decoded using inter prediction.

6. The method of any of claims 1-5, wherein the first reference picture list is designated RefPicList[0] and the second reference picture list is designated RefPicList[1].

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

deriving, by the video encoder, a first reference picture list and a second reference picture list when a current picture is a clean random access (CRA) picture, wherein there shall be no picture referred to by an entry in the first reference picture list or the second reference picture list that precedes, in an output order or a decoding order, any preceding intra random access point (IRAP) picture in the decoding order, wherein the first reference picture list and the second reference picture list are coded or constructed by the encoder using information stored in the encoder;

encoding, by the video encoder, the CRA picture and one or both of the first reference picture list and the second reference picture list into a video bitstream; and

storing, by the video encoder, the video bitstream pending transmission toward a video decoder.

8. The method of claim 7, wherein the preceding IRAP picture precedes the CRA picture in the output order or the decoding order.

9. The method of any of claims 7-8, wherein the preceding IRAP picture starts a coded video sequence (CVS) that contains the CRA picture.

10. The method of any of claims 7-9, wherein the CRA picture is encoded using intra prediction.

11. The method of any of claims 7-10, further comprising encoding one or more pictures following the CRA picture in the decoding order using inter prediction.

12. A decoding device, comprising:

a receiver configured to receive a coded video bitstream including a current 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:

derive a first reference picture list and a second reference picture list for each slice of the current picture, wherein the first reference picture list and the second reference picture list are coded or constructed by the decoding device using information stored in the decoding device and information from the bitstream;

determine that the current picture is a clean random access (CRA) picture, the CRA picture signifying that there shall be no picture referred to by an entry in the first reference picture list or the second reference picture list that precedes, in an output order or a decoding order, any preceding intra random access point (IRAP) picture in the decoding order; and

decode each slice of the CRA picture based on one or both of the first reference picture list and the second reference picture list.

13. The decoding device of claim 12, wherein the preceding IRAP picture precedes the CRA picture in the output order or the decoding order.

14. The decoding device of any of claims 12-13, wherein the preceding IRAP picture starts a coded video sequence (CVS) that contains the CRA picture, the CRA picture is decoded using intra prediction, and one or more pictures following the CRA picture in the decoding order are decoded using inter prediction.

15. 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:

derive a first reference picture list and a second reference picture list when a current picture comprises a clean random access (CRA) picture, wherein there shall be no picture referred to by an entry in the first reference picture list or the second reference picture list that precedes, in an output order or a decoding order, any preceding intra random access point (IRAP) picture in the decoding order, wherein the first reference picture list and the second reference picture list are coded or constructed by the encoding device using information stored in the encoding device and information from the bitstream;

encode the CRA picture and one or both of the first reference picture list and the second reference picture list into a video bitstream; and

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

16. The encoding device of claim 15, wherein the preceding IRAP picture precedes the CRA picture in the output order or the decoding order.

17. The encoding device of any of claims 15-16, wherein the preceding IRAP picture precedes the CRA picture in the output order or the decoding order, the CRA picture is encoded using intra prediction, and one or more pictures following the CRA picture in the decoding order are encoded using inter prediction.

18. A system, comprising:

an encoder; and

a decoder in communication with the encoder, wherein the encoder or the decoder includes the decoding device, or the encoding device of any of claims 12-17.

19. 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 1-11.

20. A computer-readable storage medium, wherein the computer-readable storage medium stores a computer program that can be executed by a processor, and when the computer program is executed by the processor, the processor performs the method according to any of claims 1-11.

21. A computer program product comprising instructions which, when the program is executed by a computer, cause the computer to carry out the method according to any of claims 1-11.