Amended Set of Claims

1. A method of decoding video data, the method comprising:

decoding a random access point (RAP) picture;

decoding one or more tagged for discard (TFD) pictures associated with the RAP picture; and

decoding one or more decodable leading pictures (DLPs) for the RAP picture in accordance with a restriction that all of the one or more TFD pictures precede the DLPs associated with the RAP picture in output order.

2. The method of claim 1, wherein the DLPs comprise one or more pictures having output order values that indicate a output order earlier than a output order value of the RAP picture and having decoding order values that indicate a decoding order later than a decoding order value of the RAP picture, and wherein the one or more pictures do not refer to video data earlier than the RAP picture in decoding order.

3. The method of claim 1, further comprising decoding one or more leading pictures relative to the RAP picture in accordance with a restriction that all of the leading pictures for the RAP picture precede all trailing pictures for the RAP picture in decoding order, wherein the trailing pictures comprise pictures having output order values that are greater than an output order value of the RAP picture.

4. The method of claim 1, wherein the RAP picture comprises one of a clean random access (CRA) picture and a broken link access (BLA) picture.

5. The method of claim 4, wherein any picture preceding a CRA or BLA picture in decoding order precedes any DLP picture associated with the CRA picture or the BLA picture in output order.

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6. The method of claim 1, the method further comprising:

decoding one or more leading pictures associated with the RAP picture, wherein the leading pictures precede the RAP picture in output order value and succeed the RAP picture in decoding order; and

decoding one or more trailing pictures associated with the RAP picture in accordance with a restriction that all of the leading pictures precede all the trailing pictures in decoding order, wherein the trailing pictures succeed the RAP picture both in output order value and in decoding order.

7. The method of claim 1, wherein the one or more TFD pictures precede the RAP picture in output order value and succeed the RAP picture in decoding order and refer to video data earlier than the RAP picture in the decoding order.

8. The method of claim 7, wherein decoding the one or more DLPs for the RAP picture comprises decoding the one or more DLPs associated with the RAP picture in accordance with the restriction that all the TFD pictures precede the DLPs in output order, wherein the DLPs precede the RAP picture in output order and succeed the RAP picture in the decoding order and do not refer to video data earlier than the RAP picture in the decoding order.

9. The method of claim 1, the method further comprising:

decoding one or more pictures that precede the RAP picture in a decoding order; and

wherein decoding the one or more DLPs comprises decoding the one or more DLPs associated with the RAP picture in accordance with a restriction that all pictures that precede the RAP picture in decoding order also precede all the DLPs in output order, wherein the DLPs precede the RAP picture in output order and succeed the RAP picture in decoding order and do not refer to video data earlier than the RAP picture in decoding order.

10. The method of claim 1, wherein decoding the RAP picture is performed as part of a video encoding process.

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11. A device for decoding video data, the device comprising:

a video decoder configured to:

decode a random access point (RAP) picture;

decoding one or more tagged for discard (TFD) pictures associated with the RAP picture; and,

decode one or more decodable leading pictures (DLPs) for the RAP picture in accordance with a restriction that all of the one or more (TFD) pictures precede the DLPs associated with the RAP picture in output order.

12. The device of claim 11, wherein the DLPs comprise one or more pictures having output order values that indicate a output order earlier than a output order value of the RAP picture and having decoding order values that indicate a decoding order later than a decoding order value of the RAP picture, and wherein the one or more pictures do not refer to video data earlier than the RAP picture in decoding order.

13. The device of claim 11, wherein the video decoder is further configured to decode one or more leading pictures relative to the RAP picture in accordance with a restriction that all of the leading pictures for the RAP picture precede all trailing pictures for the RAP picture in decoding order, wherein the trailing pictures comprise pictures having output order values that are greater than a output order value of the RAP picture.

14. The device of claim 11, wherein the RAP picture comprises one of a clean random access (CRA) picture and a broken link access (BLA) picture.

15. The device of claim 14, wherein any picture preceding a CRA or BLA picture in decoding order precedes any DLP picture associated with the CRA picture or the BLA picture in output order.

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16. The device of claim 11, wherein the video decoder is further configured to decode one or more leading pictures associated with the RAP picture, wherein the leading pictures precede the RAP picture in output order value and succeed the RAP picture in decoding order; and decode one or more trailing pictures associated with the RAP picture in accordance with a restriction that all of the leading pictures precede all the trailing pictures in decoding order, wherein the trailing pictures succeed the RAP picture both in output order value and in decoding order.

17. The device of claim 11, wherein the one or more TFD pictures precede the RAP picture in output order value and succeed the RAP picture in decoding order and refer to video data earlier than the RAP picture in the decoding order.

18. The device of claim 17, wherein the video decoder is configured to decode the one or more DLPs for the RAP picture by decoding the one or more DLPs associated with the RAP picture in accordance with the restriction that all the TFD pictures precede the DLPs in output order, wherein the DLPs precede the RAP picture in output order and succeed the RAP picture in the decoding order and do not refer to video data earlier than the RAP picture in the decoding order.

19. The device of claim 11, wherein the video decoder is further configured to decode one or more pictures that precede the RAP picture in a decoding order; and wherein the video decoder is configured to decode the one or more DLPs by decoding the one or more DLPs associated with the RAP picture in accordance with the restriction that all pictures that precede the RAP picture in decoding order also precede all the DLPs in output order, wherein the DLPs precede the RAP picture in output order and succeed the RAP picture in decoding order and do not refer to video data earlier than the RAP picture in decoding order.

20. The device of claim 11, wherein the device comprises at least one of:
an integrated circuit;
a microprocessor; and,
a wireless communication device that includes the video decoder.

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21. An apparatus for decoding video data, the apparatus comprising:

means for decoding a random access point (RAP) picture;

means for decoding one or more tagged for discard (TFD) pictures associated with the RAP picture; and,

means for decoding one or more decodable leading pictures (DLPs) for the RAP picture in accordance with a restriction that all of the one or more TFD pictures precede the DLPs associated with the RAP picture in output order.

22. The apparatus of claim 21, wherein the DLPs comprise one or more pictures having output order values that indicate a output order earlier than a output order value of the RAP picture and having decoding order values that indicate a decoding order later than a decoding order value of the RAP picture, and wherein the one or more pictures do not refer to video data earlier than the RAP picture in decoding order.

23. The apparatus of claim 21, further comprising means for decoding one or more leading pictures relative to the RAP picture in accordance with a restriction that all of the leading pictures for the RAP picture precede all trailing pictures for the RAP picture in decoding order, wherein the trailing pictures comprise pictures having output order values that are greater than a output order value of the RAP picture.

24. The apparatus of claim 21, wherein the RAP picture comprises one of a clean random access (CRA) picture and a broken link access (BLA) picture.

25. The apparatus of claim 24, wherein any picture preceding a CRA or BLA picture in decoding order precedes any DLP picture associated with the CRA picture or the BLA picture in output order.

26. The apparatus of claim 21, the apparatus further comprising:

means for decoding one or more leading pictures associated with the RAP picture, wherein the leading pictures precede the RAP picture in output order value and succeed the RAP picture in decoding order; and

means for decoding one or more trailing pictures associated with the RAP picture in accordance with a restriction that all of the leading pictures precede all the trailing pictures in decoding order, wherein the trailing pictures succeed the RAP picture both in output order value and in decoding order.

27. The apparatus of claim 21, wherein the one or more TFD pictures precede the RAP picture in output order value and succeed the RAP picture in decoding order and refer to video data earlier than the RAP picture in the decoding order.

28. The apparatus of claim 27, wherein the means for decoding the one or more DLPs for the RAP picture comprises means for decoding the one or more DLPs associated with the RAP picture in accordance with the restriction that all the TFD pictures precede the DLPs in output order, wherein the DLPs precede the RAP picture in output order and succeed the RAP picture in the decoding order and do not refer to video data earlier than the RAP picture in the decoding order.

29. The apparatus of claim 21, the apparatus further comprising:

means for decoding one or more pictures that precede the RAP picture in a decoding order; and

wherein the means for decoding the one or more DLPs comprises means for decoding the one or more DLPs associated with the RAP picture in accordance with a restriction that all pictures that precede the RAP picture in decoding order also precede all the DLPs in output order, wherein the DLPs precede the RAP picture in output order and succeed the RAP picture in decoding order and do not refer to video data earlier than the RAP picture in decoding order.

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30. A computer readable storage medium storing instructions that when executed by one or more processors cause the one or more processors to:

decode a random access point (RAP) picture;

decode one or more tagged for discard (TFD) pictures associated with the RAP picture; and,

decode one or more decodable leading pictures (DLPs) for the RAP picture in accordance with a restriction that all of the one or more TFD pictures precede the DLPs associated with the RAP picture in dis output play order.

31. A method of encoding video data, the method comprising:

encoding a random access point (RAP) picture;

encoding one or more tagged for discard (TFD) pictures associated with the RAP picture;

encoding one or more decodable leading pictures (DLPs) for the RAP picture in accordance with a restriction that all TFD pictures precede the DLPs associated with the RAP picture in output order.

32. The method of claim 31, wherein the DLPs comprise one or more pictures having output order values that indicate a output order earlier than a output order value of the RAP picture and having decoding order values that indicate a decoding order later than a decoding order value of the RAP picture, and wherein the one or more pictures do not refer to video data earlier than the RAP picture in decoding order.

33. The method of claim 31, further comprising encoding one or more leading pictures relative to the RAP picture in accordance with a restriction that all of the leading pictures for the RAP picture precede all trailing pictures for the RAP picture in decoding order, wherein the trailing pictures comprise pictures having output order values that are greater than a output order value of the RAP picture.

34. The method of claim 31, wherein the RAP picture comprises one of a clean random access (CRA) picture and a broken link access (BLA) picture.

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35. The method of claim 34, wherein any picture preceding a CRA or BLA picture in decoding order precedes any DLP picture associated with the CRA picture or the BLA picture in output order.

36. The method of claim 31, the method further comprising:

encoding one or more leading pictures associated with the RAP picture, wherein the leading pictures precede the RAP picture in output order value and succeed the RAP picture in decoding order; and

encoding one or more trailing pictures associated with the RAP picture in accordance with a restriction that all of the leading pictures precede all the trailing pictures in decoding order, wherein the trailing pictures succeed the RAP picture both in output order value and in decoding order.

37. The method of claim 31, wherein the one or more TFD pictures precede the RAP picture in output order value and succeed the RAP picture in decoding order and refer to video data earlier than the RAP picture in the decoding order.

38. The method of claim 37, wherein encoding the one or more DLPs for the RAP picture comprises encoding the one or more DLPs associated with the RAP picture in accordance with the restriction that all the TFD pictures precede the DLPs in output order, wherein the DLPs precede the RAP picture in output order and succeed the RAP picture in the decoding order and do not refer to video data earlier than the RAP picture in the decoding order.

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39. The method of claim 31, the method further comprising:

encoding one or more pictures that precede the RAP picture in a decoding order; and

wherein encoding the one or more DLPs comprises encoding the one or more DLPs associated with the RAP picture in accordance with a restriction that all pictures that precede the RAP picture in decoding order also precede all the DLPs in output order, wherein the DLPs precede the RAP picture in output order and succeed the RAP picture in decoding order and do not refer to video data earlier than the RAP picture in decoding order.

40. The method of claim 31, wherein encoding the RAP picture is performed as part of a video encoding process.

41. A device for encoding video data, the device comprising:

a video encoder configured to encode a random access point (RAP) picture; encode one or more tagged for discard (TFD) pictures associated with the RAP picture; and encode one or more decodable leading pictures (DLPs) for the RAP picture in accordance with a restriction that all TFD pictures precede the DLPs associated with the RAP picture in output order.

42. The device of claim 41, wherein the DLPs comprise one or more pictures having output order values that indicate a output order earlier than a output order value of the RAP picture and having decoding order values that indicate a decoding order later than a decoding order value of the RAP picture, and wherein the one or more pictures do not refer to video data earlier than the RAP picture in decoding order.

43. The device of claim 41, wherein the video encoder is further configured to encode one or more leading pictures relative to the RAP picture in accordance with a restriction that all of the leading pictures for the RAP picture precede all trailing pictures for the RAP picture in decoding order, wherein the trailing pictures comprise pictures having output order values that are greater than a output order value of the RAP picture.

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44. The device of claim 41, wherein the RAP picture comprises one of a clean random access (CRA) picture and a broken link access (BLA) picture.

45. The device of claim 44, wherein any picture preceding a CRA or BLA picture in decoding order precedes any DLP picture associated with the CRA picture or the BLA picture in output order.

46. The device of claim 41, wherein the video encoder is further configured to encode one or more leading pictures associated with the RAP picture, wherein the leading pictures precede the RAP picture in output order value and succeed the RAP picture in decoding order; and encode one or more trailing pictures associated with the RAP picture in accordance with a restriction that all of the leading pictures precede all the trailing pictures in decoding order, wherein the trailing pictures succeed the RAP picture both in output order value and in decoding order.

47. The device of claim 41, wherein the one or more TFD pictures precede the RAP picture in output order value and succeed the RAP picture in decoding order and refer to video data earlier than the RAP picture in the decoding order.

48. The device of claim 47, wherein the video encoder is configured to encode the one or more DLPs for the RAP picture comprises encoding the one or more DLPs associated with the RAP picture in accordance with the restriction that all the TFD pictures precede the DLPs in output order, wherein the DLPs precede the RAP picture in output order and succeed the RAP picture in the decoding order and do not refer to video data earlier than the RAP picture in the decoding order.

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49. The device of claim 41, wherein the video encoder is further configured to encode one or more pictures that precede the RAP picture in a decoding order; and wherein the video encoder is configured to encode the one or more DLPs by encoding the one or more DLPs associated with the RAP picture in accordance with a restriction that all pictures that precede the RAP picture in decoding order also precede all the DLPs in output order, wherein the DLPs precede the RAP picture in output order and succeed the RAP picture in decoding order and do not refer to video data earlier than the RAP picture in decoding order.

50. The device of claim 41, wherein the device comprises at least one of:
an integrated circuit;
a microprocessor; and,
a wireless communication device that includes the video encoder.

51. An apparatus for encoding video data, the apparatus comprising:
means for encoding a random access point (RAP) picture;
means for encoding one or more tagged for discard (TFD) pictures associated with the RAP picture; and,
means for encoding one or more decodable leading pictures (DLPs) for the RAP picture in accordance with a restriction that all TFD pictures precede the DLPs associated with the RAP picture in output order.

52. The apparatus of claim 51, wherein the DLPs comprise one or more pictures having output order values that indicate a output order earlier than a output order value of the RAP picture and having decoding order values that indicate a decoding order later than a decoding order value of the RAP picture, and wherein the one or more pictures do not refer to video data earlier than the RAP picture in decoding order.

53. The apparatus of claim 51, further comprising means for encoding one or more leading pictures relative to the RAP picture in accordance with a restriction that all of the leading pictures for the RAP picture precede all trailing pictures for the RAP picture in decoding order, wherein the trailing pictures comprise pictures having output order values that are greater than a output order value of the RAP picture.

54. The apparatus of claim 51, wherein the RAP picture comprises one of a clean random access (CRA) picture and a broken link access (BLA) picture.

55. The apparatus of claim 54, wherein any picture preceding a CRA or BLA picture in decoding order precedes any DLP picture associated with the CRA picture or the BLA picture in output order.

56. The apparatus of claim 51, the apparatus further comprising:

means for encoding one or more leading pictures associated with the RAP picture, wherein the leading pictures precede the RAP picture in output order value and succeed the RAP picture in decoding order; and

means for encoding one or more trailing pictures associated with the RAP picture in accordance with a restriction that all of the leading pictures precede all the trailing pictures in decoding order, wherein the trailing pictures succeed the RAP picture both in output order value and in decoding order.

57. The apparatus of claim 51, wherein the one or more TFD pictures precede the RAP picture in output order value and succeed the RAP picture in decoding order and refer to video data earlier than the RAP picture in the decoding order.

58. The apparatus of claim 57, wherein the means for encoding the one or more DLPs for the RAP picture comprises means for encoding the one or more DLPs associated with the RAP picture in accordance with the restriction that all the TFD pictures precede the DLPs in output order, wherein the DLPs precede the RAP picture in output order and succeed the RAP picture in the decoding order and do not refer to video data earlier than the RAP picture in the decoding order.

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59. The apparatus of claim 51, the apparatus further comprising:

means for encoding one or more pictures that precede the RAP picture in a decoding order; and

wherein the means for encoding the one or more DLPs comprises means for encoding the one or more DLPs associated with the RAP picture in accordance with a restriction that all pictures that precede the RAP picture in decoding order also precede all the DLPs in output order, wherein the DLPs precede the RAP picture in output order and succeed the RAP picture in decoding order and do not refer to video data earlier than the RAP picture in decoding order.

60. A computer readable storage medium storing instructions that when executed by one or more processors cause the one or more processors to:

encode a random access point (RAP) picture; and

encode one or more tagged for discard (TFD) pictures associated with the RAP picture;

encode one or more decodable leading pictures (DLPs) for the RAP picture in accordance with a restriction that all TFD pictures precede the DLPs associated with the RAP picture in output order.

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CLAIMS

1. An invention not claimed in any divisional application.