

CLAIMS

1. A method of processing multi-layer video data, the method comprising: obtaining multi-layer video data comprising more than one operation point; storing the multi-layer video data in a file format, wherein the file format includes an operation points information (oinf) box which identifies the operation points included in the multi-layer video data; storing representation format information for each operation point of the multi-layer video data in the oinf box; storing bitrate information for each operation point of the multi-layer video data in the oinf box of the file format and not signaling a bit rate box after a configuration box of the file format, wherein the representation format information comprises one or more of a spatial resolution, a bit depth, or a color format; and generating a file of video data formatted according to the file format.
2. The method of claim 1, further comprising: enabling signaling of the bitrate information for each operation point of the multi-layer video data in the oinf box of the file format.
3. The method of claim 1, further comprising: not storing profile, tier, and level (PTL) information, representation format information, and frame rate information in a decoder configuration record of the file format; and associating all information in the decoder configuration record with all layers of the multi-layer video data in a track.
4. The method of claim 1, further comprising: storing representation format information and frame rate information in a decoder configuration record for each layer of the multi-layer video data.
5. The method of claim 4, further comprising: storing parallelism information in the decoder configuration record for each layer of the multi-layer video data.
6. The method of claim 1, further comprising: not storing an operation point index in a decoder configuration record of the file format.
7. The method of claim 1, further comprising: storing a list of operation point indices associated

with a track of the multi-layer video data in a decoder configuration record of the file format.

8. The method of claim 1, further comprising: storing a layer count in the oinf box of the file format, wherein the layer count indicates a number of necessary layers of an operation point of the multi-layer video data.

9. The method of claim 1, wherein the oinf box is included in a media information box.

10. The method of claim 9, wherein the oinf box is further included in sample group-description box, wherein the sample group-description box is included in a sample table box, and wherein the sample table box is included in the media information box.

11. The method of claim 1, wherein each operation point of the multi-layer video data comprises, respectively, a bitstream created from another bitstream by operation of a sub-bitstream extraction process with the another bitstream.

12. A video device for processing multi-layer video data, the device comprising: a data storage medium configured to store the multi-layer video data; and one or more processors configured to: obtain multi-layer video data comprising more than one operation point; store the multi-layer video data in a file format, wherein the file format includes an operation points information (oinf) box which identifies the operation points included in the multi-layer video data; store representation format information for each operation point of the multi-layer video data in the oinf box; store bitrate information for each operation point of the multi-layer video data in the oinf box and not signal a bit rate box after a configuration box of the file format, wherein the representation format information comprises one or more of a spatial resolution, a bit depth, or a color format; and generate a file of video data formatted according to the file format.

13. The device of claim 12, wherein the one or more processors are further configured to: enable signaling of the bitrate information for each operation point of the multi-layer video data in the oinf box of the file format.

14. The device of claim 12, wherein the one or more processors are further configured to: not store profile, tier, and level (PTL) information, representation format information, and frame rate information in a decoder configuration record of the file format; and associate all information in the decoder configuration record with all layers of the multi-layer video data in a track.
15. The device of claim 12, wherein the one or more processors are further configured to: store representation format information and frame rate information in a decoder configuration record for each layer of the multi-layer video data.
16. The device of claim 15, wherein the one or more processors are further configured to: store parallelism information in the decoder configuration record for each layer of the multi-layer video data.
17. The device of claim 12, wherein the one or more processors are further configured to: not store an operation point index in a decoder configuration record of the file format.
18. The device of claim 12, wherein the one or more processors are further configured to: store a list of operation point indices associated with a track of the multi-layer video data in a decoder configuration record of the file format.
19. The device of claim 12, wherein the one or more processors are further configured to: store a layer count in the oinf box of the file format, wherein the layer count indicates a number of necessary layers of an operation point of the multi-layer video data.
20. The device of claim 12, wherein the oinf box is included in a media information box.
21. The device of claim 20, wherein the oinf box is further included in sample group-description box, wherein the sample group-description box is included in a sample table box, and wherein the sample table box is included in the media information box.
22. The device of claim 12, wherein each operation point of the multi-layer video data

comprises, respectively, a bitstream created from another bitstream by operation of a sub-bitstream extraction process with the another bitstream.

23. A video device for processing multi-layer video data, the device comprising: means for obtaining multi-layer video data comprising more than one operation point; means for storing the multi-layer video data in a file format, wherein the file format includes an operation points information (oinf) box which identifies the operation points included in the multi-layer video data; means for storing bitrate information for each operation point included in the multi-layer video data and not signaling a bit rate box after a configuration box of the file format; means for storing representation format information for each operation point of the multi-layer video data in the oinf box, wherein the representation format information comprises one or more of a spatial resolution, a bit depth, or a color format; and means for generating a file of video data formatted according to the file format.

24. The device of claim 23, wherein the oinf box is included in a media information box.

25. The device of claim 24, wherein the oinf box is further included in sample group-description box, wherein the sample group-description box is included in a sample table box, and wherein the sample table box is included in the media information box.

26. A non-transitory computer-readable storage medium storing instructions that when executed cause one or more processors to: obtain multi-layer video data comprising more than one operation point; store the multi-layer video data in a file format, wherein the file format includes an operation points information (oinf) box which identifies the operation points included in the multi-layer video data; store representation format information for each operation point of the multi-layer video data in the oinf box; store bitrate information for each operation point of the multi-layer video data in the oinf box and not signal a bit rate box after a configuration box of the file format, wherein the representation format information comprises one or more of a spatial resolution, a bit depth, or a color format; and generate a file of video data formatted according to the file format.

27. The non-transitory computer-readable storage medium of claim 26, wherein the oinf box is included in a media information box.

28. The non-transitory computer-readable storage medium of claim 27, wherein the oinf box is further included in sample group-description box, wherein the sample group-description box is included in a sample table box, and wherein the sample table box is included in the media information box.

29. A method of processing multi-layer video data, the method comprising: obtaining multi-layer video data comprising more than one operating point; storing the multi-layer video data in a file format, wherein the file format includes an operating points information (oinf) box for a group of samples which identifies the operating points included in the multi-layer video data; storing representation format information for each operating point of the multi-layer video data in the oinf box for a group of samples; storing bitrate information for each operation point of the multi-layer video data in the oinf box for a group of samples and not signaling a bit rate box for a group of samples after a configuration box for a group of samples of the file format, wherein the representation format information comprises one or more of a spatial resolution, a bit depth, or a color format; and generating a file of video data formatted according to the file format.

30. The method of claim 29, further comprising: enabling signaling of the bitrate information for each operation point of the multi-layer video data in the oinf box for a group of samples.

31. The method of claim 29, further comprising: not storing profile, tier, and level (PTL) information, representation format information, and frame rate information in a decoder configuration record of the file format; and associating all information in the decoder configuration record with all layers of the multi-layer video data in a track.

32. The method of claim 29, further comprising: storing representation format information and frame rate information in a decoder configuration record for each layer of the multi-layer video data.

33. The method of claim 32, further comprising: storing parallelism information in the decoder configuration record for each layer of the multi-layer video data.
34. The method of claim 29, further comprising: not storing an operating point index in a decoder configuration record of the file format.
35. The method of claim 29, further comprising: storing a list of operating point indices associated with a track of the multi-layer video data in a decoder configuration record of the file format.
36. The method of claim 29, further comprising: storing a layer count in the oinf box for a group of samples, wherein the layer count indicates a number of necessary layers of an operating point of the multi-layer video data.
37. The method of claim 29, wherein the oinf box for a group of samples is included in a media information box for a group of samples.
38. The method of claim 37, wherein the oinf box for a group of samples is further included in sample group-description box for a group of samples, wherein the sample group description box for a group of samples is included in a sample table box for a group of samples, and wherein the sample table box for a group of samples is included in the media information box for a group of samples.
39. The method of claim 29, wherein each operating point of the multi-layer video data comprises, respectively, a bitstream created from another bitstream by operating of a sub-bitstream extraction process with the another bitstream.
40. A video device for processing multi-layer video data, the device comprising: a data storage medium configured to store the multi-layer video data; and one or more processors configured to: obtain multi-layer video data comprising more than one operating point; store the multi-layer video data in a file format, wherein the file format includes an operating points information

(oinf) box for a group of samples which identifies the operating points included in the multi-layer video data; store representation format information for each operating point of the multi-layer video data in the oinf box for a group of samples; store bitrate information for each operation point of the multi-layer video data and not signal a bit rate box for a group of samples after a configuration box for a group of samples of the file format; wherein the representation format information comprises one or more of a spatial resolution, a bit depth, or a color format; and generate a file of video data formatted according to the file format.

41. The device of claim 40, wherein the one or more processors are further configured to: enable signaling of the bitrate information for each operation point of the multi-layer video data in the oinf box for a group of samples.

42. The device of claim 40, wherein the one or more processors are further configured to: not store profile, tier, and level (PTL) information, representation format information, and frame rate information in a decoder configuration record of the file format; and associate all information in the decoder configuration record with all layers of the multi-layer video data in a track.

43. The device of claim 40, wherein the one or more processors are further configured to: store representation format information and frame rate information in a decoder configuration record for each layer of the multi-layer video data.

44. The device of claim 43, wherein the one or more processors are further configured to: store parallelism information in the decoder configuration record for each layer of the multi-layer video data.

45. The device of claim 40, wherein the one or more processors are further configured to: not store an operating point index in a decoder configuration record of the file format.

46. The device of claim 40, wherein the one or more processors are further configured to: store a list of operating point indices associated with a track of the multi-layer video data in a decoder configuration record of the file format.

47. The device of claim 40, wherein the one or more processors are further configured to: store a layer count in the oinf box for a group of samples of the file format, wherein the layer count indicates a number of necessary layers of an operating point of the multi-layer video data.

48. The device of claim 40, wherein the oinf box for a group of samples is included in a media information box for a group of samples.

49. The device of claim 48, wherein the oinf box for a group of samples is further included in sample group-description box for a group of samples, wherein the sample group-description box for a group of samples is included in a sample table box for a group of samples, and wherein the sample table box for a group of samples is included in the media information box for a group of samples.

50. The device of claim 40, wherein each operating point of the multi-layer video data comprises, respectively, a bitstream created from another bitstream by operating of a sub-bitstream extraction process with the another bitstream.

51. A video device for processing multi-layer video data, the device comprising: means for obtaining multi-layer video data comprising more than one operating point; means for storing the multi-layer video data in a file format, wherein the file format includes an operating points information (oinf) box for a group of samples which identifies the operating points included in the multi-layer video data; means for storing representation format information for each operating point of the multi-layer video data in the oinf box for a group of samples; means for storing bitrate information for each operation point of the multi-layer video data and not signal a bit rate box for a group of samples after a configuration box for a group of samples of the file format, wherein the representation format information comprises one or more of a spatial resolution, a bit depth, or a color format; and means for generating a file of video data formatted according to the file format.

52. The device of claim 51, wherein the oinf box for a group of samples is included in a media

information box for a group of samples.

53. The device of claim 52, wherein the oinf box for a group of samples is further included in sample group-description box for a group of samples, wherein the sample group-description box for a group of samples is included in a sample table box for a group of samples, and wherein the sample table box for a group of samples is included in the media information box for a group of samples.

54. A non-transitory computer-readable storage medium storing instructions that when executed cause one or more processors to: obtain multi-layer video data comprising more than one operating point; store the multi-layer video data in a file format, wherein the file format includes an operating points information (oinf) box for a group of samples which identifies the operating points included in the multi-layer video data; store representation format information for each operating point of the multi-layer video data in the oinf box for a group of samples; store bitrate information for each operation point of the multi-layer video data and not signal a bit rate box for a group of samples after a configuration box for a group of samples of the file format;, wherein the representation format information comprises one or more of a spatial resolution, a bit depth, or a color format; and generate a file of video data formatted according to the file format.

55. The non-transitory computer-readable storage medium of claim 54, wherein the oinf box for a group of samples is included in a media information box for a group of samples.

56. The non-transitory computer-readable storage medium of claim 55, wherein the oinf box for a group of samples is further included in sample group-description box for a group of samples, wherein the sample group-description box for a group of samples is included in a sample table box for a group of samples, and wherein the sample table box for a group of samples is included in the media information box for a group of samples.