Claims

1. An apparatus for encoding video content into a data stream, comprising:

an encoder configured for, based on the video content,

encoding sub-portions of the video content into a sequence of packets organized into a plurality of access units, wherein each of the plurality of access units relates to a picture of the video content and includes one or more decoding units and each of the decoding units includes at least one payload packet, and each of the sub-portions corresponds to a slice, the encoding including entropy encoding of slices across slice boundaries in accordance with a wavefront parallel processing technique, the slices including an independent slice and a dependent slice of the video content; and

interspersing, in each of the plurality of access units, one or more timing control packets corresponding to the one or more decoding units, respectively, wherein each timing control packets is indicative of a decoder buffer retrieval time by which content of the corresponding decoding unit is to be retrieved from a buffer,

wherein each packet of the sequence of packets includes a packet type field in a packet header of the respective packet, the packet type field for the at least one payload packet being different than the packet type field for the one or more timing control packets.

2. The apparatus of claim 1, wherein the at least one payload packet is of a non-removable packet type and each of the one or more timing control packets is of a removable packet type.

3. The apparatus of claim 1, wherein the sequence of packets includes Supplemental Enhancement Information (SEI) packets of different types, each of the SEI packets includes an SEI packet type field, wherein content of an SEI packet type field of a timing control packet differs from that of a different type of SEI packet.

4. The apparatus of claim 1, wherein the at least one payload packet includes encoded information of a sub-portion of a picture of the video content.

5. The apparatus of claim 1, wherein different types of packets in the sequence of packets are arranged in accordance with a pre-determined organization, and an organization of the packets in the sequence of packets can be determined in accordance with the pre-determined organization when one or more removable packets are removed from the sequence of packets.

6. The apparatus of claim 3, wherein the different type of SEI packet includes a Region of Interest (ROI) packet.

7. An apparatus for decoding a data stream to reconstruct video content, comprising:

a decoder configured for

extracting, from the data stream, a sequence of packets, representing sub-portions of the video content and organized into a plurality of access units, wherein each of the plurality of access units relates to a picture of the video content and includes one or more decoding units and each of the decoding units includes at least one payload packet, and each of the sub-portions corresponds to a slice, the extracting including entropy decoding of slices across slice boundaries in accordance with a wavefront parallel processing technique, the slices including an independent slice and a dependent slice of the video content;

identifying, in each of the plurality of access units, one or more timing control packets corresponding to the one or more decoding units, respectively, and interspersed in the access unit, wherein each of the timing control packets is indicative of a decoder buffer retrieval time by which content of the corresponding decoding unit is to be retrieved from a buffer;

retrieving, from the buffer, the content of each decoding unit in accordance with a decoder buffer retrieval time associated with the decoding unit, wherein each packet of the sequence of packets includes a packet type field in a packet header of the respective packet, the packet type field for the at least one payload packet being different than the packet type field for the one or more timing control packets; and

decoding the one or more decoding units using predictive decoding to reconstruct the video content.

8. The apparatus of claim 7, wherein the at least one payload packet is of a non-removable packet type and each of the one or more timing control packets is of a removable packet type.

9. The apparatus of claim 7, wherein the sequence of packets includes Supplemental Enhancement Information (SEI) packets of different types, each of the SEI packets includes an SEI packet type field, wherein content of an SEI packet type field of a timing control packet differs from that of a different type of SEI packet.

10. The apparatus of claim 7, wherein the at least one payload packet encodes includes encoded information of a sub-portion of a picture of the video content.

11. The apparatus of claim 7, wherein different types of packets in the sequence of packets are arranged in accordance with a pre-determined organization, and an organization of the packets in the sequence of packets can be determined in accordance with the pre-determined organization when one or more removable packets are removed from the sequence of packets.

12. The apparatus of claim 10, wherein the different type of SEI packet includes a Region of Interest (ROI) packet.

13. A method for decoding a data stream to reconstruct video content, comprising:

extracting, from the data stream, a sequence of packets, representing sub-portions of the video content and organized into a plurality of access units, wherein each of the plurality of access units relates to a picture of the video content and includes one or more decoding units and each of the decoding units includes at least one payload packet, and each of the sub-portions corresponds to a slice, the extracting including entropy decoding of slices across slice boundaries in accordance with a wavefront parallel processing technique, the slices including an independent slice and a dependent slice of the video content;

identifying, in each of the plurality of access units, one or more timing control packets corresponding to the one or more decoding units, respectively, and interspersed in the access unit, wherein each of the timing control packets is indicative of a decoder buffer retrieval time by which content of the corresponding decoding unit is to be retrieved from a buffer;

retrieving, from the buffer, the content of each decoding unit in accordance with a decoder buffer retrieval time associated with the decoding unit, wherein each packet of the sequence of packets includes a packet type field in a packet header of the respective packet, the packet type field for the at least one payload packet being different than the packet type field for the one or more timing control packets; and

decoding the one or more decoding units using predictive decoding to reconstruct the video content.

14. The method of claim 13, wherein the at least one payload packet is of a non-removable packet type and each of the one or more timing control packets is of a removable packet type.

15. The method of claim 13, wherein the sequence of packets includes Supplemental Enhancement Information (SEI) packets of different types, each of the SEI packets includes an SEI packet type field, wherein content of an SEI packet type field of a timing control packet differs from that of a different type of SEI packet.

16. The method of claim 13, wherein the at least one payload packet encodes includes encoded information of a sub-portion of a picture of the video content.

17. The method of claim 13, wherein different types of packets in the sequence of packets are arranged in accordance with a pre-determined organization, and an organization of the packets in the sequence of packets can be determined in accordance with the pre-determined organization when one or more removable packets are removed from the sequence of packets.

18. The method of claim 15, wherein the different type of SEI packet includes a Region of Interest (ROI) packet.

19. A machine readable non-transitory medium for storing data associated with video content, comprising:

a data stream stored in the non-transitory machine readable medium, the data stream comprising a sequence of packets representing sub-portions of the video content, wherein each of the sub-portions corresponds to a slice, and slices are encoded into the data stream as the sequence of packets based on entropy encoding of the slices across slice boundaries in accordance with a wavefront parallel processing technique, the slices including an independent slice and a dependent slice of the video content, and

the sequence of packets is organized into a plurality of access units, wherein each of the plurality of access units relates to a picture of the video content and includes one or more decoding units, each of the decoding units includes at least one payload packet, each of the plurality of access units has one or more timing control packets interspersed therein and corresponding to the one or more decoding units, respectively, wherein each of the timing control packets is indicative of a decoder buffer retrieval time by which content of the corresponding decoding unit is to be retrieved from a buffer, and each packet of the sequence of packets includes a packet type field in a packet header of the respective packet, the packet type field for the at least one payload packet being different than the packet type field for the one or more timing control packets.

20. The machine readable non-transitory medium of claim 19, wherein the at least one payload packet is of a non-removable packet type.

21. The machine readable non-transitory medium of claim 19, wherein the sequence of packets includes Supplemental Enhancement Information (SEI) packets of different types, each of the SEI packets includes an SEI packet type field, wherein content of an SEI packet type field of a timing control packet differs from that of a different type of SEI packet.

22. The machine readable non-transitory medium of claim 19, wherein the at least one payload packet includes encoded information of a sub-portion of a picture of the video content.

23. The machine readable non-transitory medium of claim 19, wherein different types of packets in the sequence of packets are arranged in accordance with a pre-determined organization.

24. The machine readable non-transitory medium of claim 21, wherein the different type of SEI packet includes a Region of Interest (ROI) packet.

25. The machine readable non-transitory medium of claim 23, wherein an organization of the packets in the sequence of packets can be determined in accordance with the pre-determined organization when one or more removable packets are removed from the sequence of packets.

26. The machine readable non-transitory medium of claim 20, wherein each of the one or more timing control packets is of a removable packet type.