

CLAIMS

1. A method of video processing, comprising:
performing a conversion between a video comprising one or more pictures comprising one or more subpictures and a bitstream of the video,
wherein the bitstream conforms to a format rule that specifies a syntax of network abstraction layer (NAL) units in the bitstream, and
wherein the format rule specifies that a NAL unit of a video coding layer (VCL) NAL unit type includes a content associated with a particular type of picture or a particular type of subpicture.
2. The method of claim 1, wherein the content of the NAL unit of the VCL NAL unit type indicates that a coded slice is associated with a clean random access picture or a clean random access subpicture.
3. The method of claim 2, wherein the clean random access subpicture is an intra random access point subpicture for which each VCL NAL unit has a clean random access type.
4. The method of claim 1, wherein the content of the NAL unit of the VCL NAL unit type indicates that a coded slice is associated with an associated gradual decoding refresh picture or an associated gradual decoding refresh subpicture.
5. The method of claim 4,
wherein the associated gradual decoding refresh subpicture is a previous gradual decoding refresh subpicture in a decoding order with an identifier of a layer to which a VCL NAL unit belongs or an identifier of a layer to which a non-VCL NAL unit applies equal to a first particular value and with a second particular value of subpicture index, and
wherein between the previous gradual decoding refresh subpicture and a particular subpicture with the first particular value of identifier and the second particular value of subpicture index in the decoding order, there is no intra random access point subpicture with the first particular value of identifier and the second particular value of subpicture index.

6. The method of claim 1, wherein the content of the NAL unit of the VCL NAL unit type indicates that a coded slice is associated with an associated intra random access point picture or an associated intra random access point subpicture.
7. The method of claim 6,
wherein the associated intra random access point subpicture is a previous intra random access point subpicture in a decoding order with an identifier of a layer to which a VCL NAL unit belongs or an identifier of a layer to which a non-VCL NAL unit applies equal to a first particular value and with a second particular value of subpicture index, and
wherein between the previous intra random access point subpicture and a particular subpicture with the first particular value of identifier and the second particular value of subpicture index in the decoding order, there is no gradual decoding refresh subpicture with the first particular value of identifier and the second particular value of subpicture index.
8. The method of claim 1, wherein the content of the NAL unit of the VCL NAL unit type indicates that a coded slice is associated with an instantaneous decoding refresh picture or an instantaneous decoding refresh subpicture.
9. The method of claim 8, wherein the instantaneous decoding refresh subpicture is an intra random access point subpicture for which each VCL NAL unit has an instantaneous decoding refresh type.
10. The method of claim 1, wherein the content of the NAL unit of the VCL NAL unit type indicates that a coded slice is associated with a leading picture or a leading subpicture.
11. The method of claim 10, wherein the leading subpicture is a subpicture that precedes the associated intra random access point subpicture in output order.
12. The method of claim 1, wherein the content of the NAL unit of the VCL NAL unit type indicates that a coded slice is associated with a random access decodable leading picture or a random access decodable leading subpicture.

13. The method of claim 12, wherein the random access decodable leading subpicture is a subpicture for which each VCL NAL unit has a random access decodable leading type.
14. The method of claim 1, wherein the content of the NAL unit of the VCL NAL unit type indicates that a coded slice is associated with a random access skipped leading picture or a random access skipped leading subpicture.
15. The method of claim 14, wherein the random access skipped leading subpicture is a subpicture for which each VCL NAL unit has a random access skipped leading type.
16. The method of claim 1, wherein the content of the NAL unit of the VCL NAL unit type indicates that a coded slice is associated with a step-wise temporal sublayer access picture or a step-wise temporal sublayer access subpicture.
17. The method of claim 16, wherein the step-wise temporal sublayer access subpicture is a subpicture for which each VCL NAL unit has a step-wise temporal sublayer access type.
18. The method of claim 1, wherein the content of the NAL unit of the VCL NAL unit type indicates that a coded slice is associated with a trailing picture or a trailing subpicture.
19. The method of claim 18, wherein the trailing subpicture is a subpicture for which each VCL NAL unit has a trail type.
20. A method of video processing, comprising:
 - performing a conversion between a video comprising a picture comprising a subpicture and a bitstream of the video,
 - wherein the bitstream conforms to a format rule, and
 - wherein the format rule specifies that the subpicture is a random access type of subpicture in response to the subpicture being a leading subpicture of an intra random access point subpicture.

21. The method of claim 20, wherein the random access type of subpicture is a random access decodable leading subpicture.
22. The method of claim 20, wherein the random access type of subpicture is a random access skipped leading subpicture.
23. A method of video processing, comprising:
performing a conversion between a video comprising a picture comprising a subpicture and a bitstream of the video,
wherein the bitstream conforms to a format rule, and
wherein the format rule specifies that one or more random access skipped leading subpictures are absent from the bitstream in response to the one or more random access skipped leading subpictures being associated with an instantaneous decoding refresh subpicture.
24. A method of video processing, comprising:
performing a conversion between a video comprising a picture comprising a subpicture and a bitstream of the video,
wherein the bitstream conforms to a format rule that specifies that one or more random access decodable leading subpictures are absent from the bitstream in response to the one or more random access decodable leading subpictures being associated with an instantaneous decoding refresh subpicture having a type of network abstraction layer (NAL) unit that indicates that the instantaneous decoding refresh subpicture is not associated with a leading picture.
25. The method of any of claims 1 to 24, wherein the performing the conversion comprising encoding the video into the bitstream.
26. The method of any of claims 1 to 24, wherein the performing the conversion comprises generating the bitstream from the video, and the method further comprises storing the bitstream in a non-transitory computer-readable recording medium.

27. The method of any of claims 1 to 24, wherein the performing the conversion comprises decoding the video from the bitstream.
28. A video decoding apparatus comprising a processor configured to implement a method recited in one or more of claims 1 to 27.
29. A video encoding apparatus comprising a processor configured to implement a method recited in one or more of claims 1 to 27.
30. A computer program product having computer instructions stored thereon, the instructions, when executed by a processor, causes the processor to implement a method recited in any of claims 1 to 27.
31. A non-transitory computer-readable storage medium that stores a bitstream generated according to the method in any one of claims 1 to 27.
32. A non-transitory computer-readable storage medium storing instructions that cause a processor to implement a method recited in any of claims 1 to 27.
33. A method of bitstream generation, comprising:
generating a bitstream of a video according to a method recited in any of claims 1 to 27,
and
storing the bitstream on a computer-readable program medium.
34. A method, an apparatus, a bitstream generated according to a disclosed method or a system described in the present document.