

CLAIMS

1. A method of video processing, comprising:
 - performing a conversion between a video having one or more video layers comprising one or more video pictures and a bitstream of the video according to a format rule, and
 - wherein the format rule specifies that a first video picture that is an associated intra random access point picture of a second picture and the second picture are constrained to belong to a same video layer.
2. The method of claim 1, wherein, between the first video picture and the second picture in decoding order, there is no gradual decoding refresh picture in the same video layer.
3. The method of claim 1, wherein the first video picture and the second picture have a same identifier of a layer to which a video coding layer network abstraction layer unit belongs or a same identifier of a layer to which a non-video coding layer network abstraction layer unit applies.
4. The method of any of claims 1-3, wherein, between the first video picture and the second picture in decoding order, there is no gradual decoding refresh picture with the same identifier.
5. The method of claim 1, wherein the format rule further specifies that a trailing picture follows an associated intra random access point picture or a gradual decoding refresh picture in an output order.
6. A method of video processing, comprising:
 - performing a conversion between a video having one or more video layers comprising one or more video pictures and a bitstream of the video according to a format rule, and
 - wherein the format rule specifies that a trailing picture in the bitstream is permitted to be associated with a gradual decoding refresh picture.

7. The method of claim 6, wherein the trailing picture is a picture for which each video coding layer network abstraction layer unit has a trail network abstraction layer unit type.
8. The method of claim 6 or 7, wherein the trailing picture is permitted to be associated with an intra random access point picture.
9. The method of any of claims 6-8, wherein the trailing picture associated with an intra random access point picture or a gradual decoding refresh picture follows the intra random access point picture or the gradual decoding refresh picture in decoding order.
10. The method any of claims 6-8, wherein pictures that follow the associated intra random access point picture in output order and precede the associated intra random access point picture in decoding order are not allowed.
11. The method of claim 6, wherein the format rule further specifies that, for each layer, each picture of the layer, except the first picture in the layer in the bitstream, is specified to be associated with a closer one of a previous intra random access point or a gradual decoder refresh picture of the same layer in decoding order.
12. The method of claim 6 or 11, wherein the trailing picture is required to follow the associated intra random access point or gradual decoder refresh picture in output order.
13. A method of video processing, comprising:
 - performing a conversion between a video having one or more video layers comprising one or more video pictures and a bitstream of the video according to a format rule, and
 - wherein the format rule specifies that a constraint for an output order of pictures preceding an intra random access point in a decoding order is applicable to pictures in a same video layer.
14. The method of claim 13, wherein the constraint specifies that any picture having a NAL (network abstraction layer) unit header layer identifier equal to a particular value and preceding, in a decoding order, an intra random access point picture with the NAL unit header layer identifier

equal to the particular value is required to precede, in an output order, the intra random access point picture and all associated random access decodable leading pictures.

15. The method of claim 14, wherein the NAL (network abstraction layer) unit header layer identifier is `nuh_layer_id`.

16. The method of claim 14, wherein the NAL (network abstraction layer) unit header layer identifier specifies the identifier of a layer to which a video coding layer network abstraction layer unit belongs or the identifier of a layer to which a non--video coding layer network abstraction layer unit applies.

17. A method of video processing, comprising:

- performing a conversion between a video having one or more video layers comprising one or more video pictures and a bitstream of the video according to a format rule, and

- wherein the format rule specifies a constraint that (1) a trailing picture follows an associated intra random access point picture or a gradual decoder refresh picture in an output order, or (2) a picture having a same NAL (network abstraction layer) unit header layer identifier as that of the gradual decoder refresh picture precedes, in the output order, the gradual decoder refresh picture and all associated pictures of the gradual decoder refresh picture.

18. A method of video processing, comprising:

- performing a conversion between a video having one or more video layers comprising one or more video pictures and a bitstream of the video according to a rule, and

- wherein the rule specifies to apply a constraint on a decoding order of a picture associated with an intra random access point picture and a non-leading picture if and only if the picture, the intra random access point picture and the non-leading picture are in a same layer.

19. The method of claim 18, wherein the constraint specifies that in case that a value of a field sequence flag is equal to 0 and the picture with a NAL (network abstraction layer) unit header layer identifier equal to a particular value is a leading picture associated with the intra random

access point picture, the picture precedes, in the decoding order, all non-leading pictures that are associated with the intra random access point picture.

20. The method of claim 19, wherein the value of the field sequence flag that is equal to 0 indicates that a coded layer video sequence conveys pictures that represent frames.

21. The method of claim 18, wherein the constraint specifies that in case that a value of a field sequence flag is equal to 0 and the picture is a leading picture associated with the intra random access point picture, the picture precedes, in the decoding order, all non-leading pictures that are associated with the intra random access point picture.

22. A method of video processing, comprising:

performing a conversion between a video having one or more video layers comprising one or more video pictures and a bitstream of the video according to a rule, and

wherein the rule specifies an order of a leading picture, a random access decodable leading picture and a random access skipped leading picture associated with a gradual decoding refresh picture.

23. The method of claim 22, wherein the leading picture associated with the gradual decoding refresh picture follows the gradual decoding refresh picture in decoding order and precedes the gradual decoding refresh picture in output order.

24. The method of claim 22, wherein the random access decodable leading pictures associated with the gradual decoding refresh picture is the leading picture associated with the gradual decoding refresh picture and has a NAL (network abstraction layer) unit type corresponding to a coded slice of the random access decodable leading picture.

25. The method of claim 22, wherein the random access decodable leading picture associated with the gradual decoding refresh picture is the leading picture associated with the gradual decoding refresh picture and has a NAL (network abstraction layer) unit type corresponding to a coded slice of the random access decodable leading picture.

26. A method of video processing, comprising:

performing a conversion between a video having one or more video layers comprising one or more video pictures and a bitstream of the video according to a rule, and

wherein the rule specifies that a constraint for a reference picture list for a slice of a clean random access picture is limited to a layer.

27. The method of claim 26, wherein the constraint specifies that, for a layer having the clean random access picture, a preceding intra random access point picture in a decoding or an output order is not referred to by an entry in the reference picture list.

28. The method of any of claims 1 to 27, wherein the conversion includes encoding the video into the bitstream.

29. The method of any of claims 1 to 27, wherein the conversion includes decoding the video from the bitstream.

30. The method of claims 1 to 27, wherein the conversion includes generating the bitstream from the video, and the method further comprises: storing the bitstream in a non-transitory computer-readable recording medium.

31. A video processing apparatus comprising a processor configured to implement a method recited in any one or more of claims 1 to 30.

32. A method of storing a bitstream of a video, comprising, a method recited in any one of claims 1 to 30, and further including storing the bitstream to a non-transitory computer-readable recording medium.

33. A computer readable medium storing program code that, when executed, causes a processor to implement a method recited in any one or more of claims 1 to 30.

34. A computer readable medium that stores a bitstream generated according to any of the above described methods.

35. A video processing apparatus for storing a bitstream representation, wherein the video processing apparatus is configured to implement a method recited in any one or more of claims 1 to 30.