CLAIMS

1. A video processing method, comprising:

performing a conversion between a video comprising multiple layers and a bitstream of the video according to a rule,

wherein the rule specifies that, in case that a first syntax element included in a sequence parameter set indicates that number of subpictures in a video picture is greater than 1, and that a subpicture with a first subpicture index is treated as one video picture for the conversion, a cross-layer alignment restriction is applied to a current layer that includes the subpicture and a subset of layers associated with the current layer,

wherein the cross-layer alignment restriction includes a restriction of a current picture including the subpicture and a first picture in the subset of layers having a same value for at least one of following syntax elements:

a value of the first syntax element,

a value of a second syntax element specifying a dimension of a video picture,

a value of a third syntax element indicating a dimension of an i-th subpicture,

a value of a fourth syntax element indicating a location of the i-th subpicture, or

a value of the first subpicture index.

2. The method of claim 1, wherein the subset of layers associated with the current layer includes one or more higher layers that depend on the current layer.

3. The method of claim 1 or 2, wherein the subset of layers associated with the current layer excludes all higher layers that do not depend on the current layer.

4. The method of any one of claims 1 to 3, wherein the subset of layers associated with the current layer excludes all lower layers of the current layer.

5. The method of any one of claims 1 to 4, wherein the subset of layers associated with the current layer are a subset of a dependency tree associated with the current layer,

wherein the dependency tree associated with the current layer includes the current layer, all layers that have the current layer as a reference layer, and all reference layers of the current layer.

6. The method of claim 5, wherein the subset of layers associated with the current layer are the subset of the dependency tree regardless of whether any of the subset of the dependency tree is an output layer in an output layer set.

7. The method of any one of claims 1 to 6, wherein the cross-layer alignment restriction further includes a restriction regarding a value of a fifth syntax element, and wherein the current layer and the subset of layers associated with the current layer have a same value of the fifth syntax element,

wherein the fifth syntax element specifies whether the subpicture of each coded picture in a coded layer video sequence is treated as a picture in a decoding process excluding in-loop filtering operations.

8. The method of any one of claims 1 to 7, wherein the cross-layer alignment restriction excludes a value of a sixth syntax element,

wherein the sixth syntax element specifies whether an in-loop filtering operation across subpicture boundaries is enabled.

9. The method of any one of claims 1 to 8, wherein the rule further specifies that the cross-layer alignment restriction is not applied in case the first syntax element indicates that the video picture includes a single subpicture.

10. The method of any one of claims 1 to 9, wherein the rule further specifies that the cross-layer alignment restriction is not applied in case a seventh syntax element included in a sequence parameter set indicates that subpicture information is not present.

11. The method of any one of claims 1 to 10, wherein the rule further specifies that the cross-layer alignment restriction is applied to pictures in a target set of access units.

12. The method of any one of claims 1 to 11, wherein, for each CLVS of the current layer referring to a sequence parameter set, the target set of access units includes all access units starting from a first access unit that includes a second picture of the CLVS to a second access unit that includes a last picture of the CLVS according to a decoding order.

13. The method of claim 1, wherein the first picture is a reference picture of the current picture or the current picture is a reference picture of the first picture.

14. The method of any one of claims 1 to 13, wherein the conversion comprises encoding the video into the bitstream.

15. The method of any one of claims 1 to 13, wherein the conversion comprises decoding the bitstream to generate the video.

16. An apparatus for processing video data comprising a processor and a non-transitory memory with instructions thereon, wherein the instructions upon execution by the processor, cause the processor to:

perform a conversion between a video comprising multiple layers and a bitstream of the video according to a rule,

wherein the rule specifies that, in case that a first syntax element included in a sequence parameter set indicates that number of subpictures in a video picture is greater than 1, and that a subpicture with a first subpicture index is treated as one video picture for the conversion, a cross-layer alignment restriction is applied to a current layer that includes the subpicture and a subset of layers associated with the current layer,

wherein the cross-layer alignment restriction includes a restriction of a current picture including the subpicture and a first picture in the subset of layers having a same value for at least one of following syntax elements:

a value of the first syntax element,

a value of a second syntax element specifying a dimension of a video picture,

a value of a third syntax element indicating a dimension of an i-th subpicture,

a value of a fourth syntax element indicating a location of the i-th subpicture, or a value of the first subpicture index.

17. The apparatus of claim 16, wherein the subset of layers associated with the current layer includes one or more higher layers that depend on the current layer.

18. The apparatus of claim 16 or 17, wherein the subset of layers associated with the current layer excludes all higher layers that do not depend on the current layer.

19. A non-transitory computer-readable storage medium storing instructions that cause a processor to:

perform a conversion between a video comprising multiple layers and a bitstream of the video according to a rule,

wherein the rule specifies that, in case that a first syntax element included in a sequence parameter set indicates that number of subpictures in a video picture is greater than 1, and that a subpicture with a first subpicture index is treated as one video picture for the conversion, a cross-layer alignment restriction is applied to a current layer that includes the subpicture and a subset of layers associated with the current layer,

wherein the cross-layer alignment restriction includes a restriction of a current picture including the subpicture and a first picture in the subset of layers having a same value for at least one of following syntax elements:

a value of the first syntax element,

a value of a second syntax element specifying a dimension of a video picture,

a value of a third syntax element indicating a dimension of an i-th subpicture,

a value of a fourth syntax element indicating a location of the i-th subpicture, or a value of the first subpicture index.

20. A non-transitory computer-readable recording medium storing a bitstream of a video which is generated by a method performed by a video processing apparatus, wherein the method comprises:

generating the bitstream of the video comprising multiple layers according to a rule,

wherein the rule specifies that, in case that a first syntax element included in a sequence parameter set indicates that number of subpictures in a video picture is greater than 1, and that a subpicture with a first subpicture index is treated as one video picture for the generating, a cross-layer alignment restriction is applied to a current layer that includes the subpicture and a subset of layers associated with the current layer,

wherein the cross-layer alignment restriction includes a restriction of a current picture including the subpicture and a first picture in the subset of layers having a same value for at least one of following syntax elements:

a value of the first syntax element,

a value of a second syntax element specifying a dimension of a video picture,

a value of a third syntax element indicating a dimension of an i-th subpicture,

a value of a fourth syntax element indicating a location of the i-th subpicture, or a value of the first subpicture index.