

CLAIMS

1. A method of video processing, comprising:
performing a conversion between a video unit of a video and a coded representation of the video using at least a video picture, and
wherein only one of a sub-picture coding mode or a resolution-changing coding mode is enabled for the video unit, the sub-picture coding mode being a mode in which the video picture is divided into multiple sub-pictures, and the resolution-changing coding mode being a mode in which a resolution of the video picture is adjusted during the conversion.
2. The method of claim 1, wherein the video picture comprises a current picture or a reference picture.
3. The method of claim 1 or 2, wherein the resolution-changing coding mode comprises a Reference Picture Resampling (PRP) mode.
4. The method of claim 1 or 2, wherein the resolution-changing coding mode comprises a Dynamic Resolution Conversion (DRC) mode.
5. The method of claim 1 or 2, wherein the resolution-changing coding mode comprises an Adaptive Resolution Conversion (ARC) mode.
6. The method of any of claims 1 to 5, wherein the video unit comprises a video sequence.
7. The method of any of claims 1 to 6, wherein a syntax element is included in the coded representation to indicate that the sub-picture coding mode is enabled for the coding unit in case the resolution-changing coding mode is disallowed.
8. The method of any of claims 1 to 7, wherein resolution-changing coding mode is disallowed in case a syntax element is included in the coded representation to indicate that the sub-picture coding mode is enabled.

9. The method of claim 7 or 8, wherein the syntax element comprises `subpics_present_flag`.
10. The method of any of claims 7 to 9, wherein a width of the video picture is set to be equal to a maximum width allowed for video pictures in the video unit in case the syntax element indicates that the sub-picture coding mode is enabled.
11. A method for video processing, comprising:
performing a conversion between a video unit of a video and a coded representation of the video using at least a video picture,
wherein both a sub-picture coding mode and a resolution-changing coding mode are enabled for the video unit, the sub-picture coding mode being a mode in which the video picture is divided into multiple sub-pictures, and the resolution-changing coding mode being a mode in which a resolution of the video picture is adjusted during the conversion.
12. The method of claim 11, wherein the video unit comprises a video sequence.
13. The method of claim 11, wherein the resolution-changing coding mode comprises an Adaptive Resolution Conversion (ARC) mode, a Dynamic Resolution Conversion (DRC) mode, a Reference Picture Resampling (PRP) mode.
14. The method of any of claims 11 to 13, wherein the video picture includes multiple video blocks, each having a dimension of $W \times H$, and wherein a sub-picture adjusted according to the resolution-changing coding mode has a width of $K \times W$ and a height of $M \times H$, K and M being integers.
15. The method of claim 14, wherein the sub-picture is not located at a boundary of the video picture.
16. The method of claim 15, wherein the boundary comprises a right boundary or a bottom boundary.

17. The method of any of claims 11 to 16, wherein the video picture includes multiple video blocks, and wherein a dimension of individual video blocks is adjusted based on a resolution of the video picture.
18. The method of claim 17, wherein the coded representation comprises a syntax element indicating a maximum dimension for a video block, and wherein the dimension of an individual video block is adjusted based on the maximum dimension and the resolution of the video picture.
19. The method of claim 17, wherein the dimension of the individual video blocks is signaled in a sequence parameter set, a picture parameter set, or at a sub-picture level in the coded representation.
20. A method of video processing, comprising:
performing a conversion between a video comprising one or more video pictures and a coded representation of the video,
wherein a dimension of an individual video picture is constrained to be greater than or equal to 8.
21. The method of claim 20, wherein the dimension is a width of the individual video picture.
22. The method of claim 20, wherein the dimension is a height of the individual video picture.
23. A method for video processing, comprising:
performing a conversion between a video picture of a video and a coded representation of the video according to a rule,
wherein the video picture comprises at least one sub-picture, and wherein the rule specifies that a characteristic of a sub-picture is represented as at least one syntax element in the coded representation, the at least one syntax element being different than an index value of the sub-picture grid in the video picture.

24. The method of claim 23, wherein the characteristic comprises a top-left position of the sub-picture.
25. The method of claim 23, wherein the characteristic comprises a bottom-right position of the sub-picture.
26. The method of claim 23, wherein the characteristic comprises a width of the sub-picture.
27. The method of claim 23, wherein the characteristic comprises a height of the sub-picture.
28. The method of claim 23, wherein the index value of the sub-picture in the video picture is smaller than a maximum number of subpictures in the video picture.
29. The method of claim 28, wherein integer values in a range of [0, the maximum number of subpictures-1] have a one-to-one correspondence with indices values of subpictures in the video picture.
30. A method for video processing, comprising:
 - performing a conversion between a video picture of a video and a coded representation of the video according to a rule,
 - wherein the video picture comprises multiple sub-pictures, each sub-picture comprising multiple elements, and wherein the rule specifies that a dimension of individual elements in a sub-picture satisfies a constraint.
31. The method of claim 30, wherein the constraint specifies that a width of an individual element is smaller than T1.
32. The method of claim 30 or 31, wherein the constraint specifies that a height of an individual element is smaller than T2.

33. The method of any of claims 30 to 32, wherein the video picture comprises multiple video blocks, and the constraint specifies that the sub-picture determined based on the dimension of the individual elements is covered by a current video block being processed during the conversion.
34. The method of claim 33, wherein a sample outside of the sub-picture covered by the current video block is considered as unavailable for the conversion.
35. The method of any of claims 30 to 34, wherein the constraint specifies that the dimension of the individual elements is determined based on a profile, a level, or a tier of a video coding standard.
36. The method of any of claims 30 to 35, wherein the constraint specifies that the dimension of the individual elements is determined based on a width of the video picture.
37. The method of claim 36, wherein a width of the individual elements is equal to $\text{pic_width_max_in_luma_samples}/4 + \text{offset}$, wherein $\text{pic_width_max_in_luma_samples}$ represents a maximum picture width in luma samples and offset is zero or a non-zero integer.
38. The method of any of claims 30 to 37, wherein the constraint specifies that the dimension of the individual elements is determined based on a height of the video picture.
39. The method of claim 38, wherein a height of the individual elements is equal to $\text{pic_height_max_in_luma_samples}/4 + \text{offset}$, wherein $\text{pic_height_max_in_luma_samples}$ represents a maximum picture height in luma samples and offset is zero or a non-zero integer.
40. The method of any of claims 1 to 39, wherein the conversion generates the video from the coded representation.
41. The method of any of claims 1 to 39, wherein the conversion generates the coded representation from the video.

42. A video processing apparatus comprising a processor configured to implement a method recited in any one or more of claims 1 to 41.

43. A computer-readable medium having code stored thereon, the code, when executed, causing a processor to implement a method recited in any one or more of claims 1 to 41.