CLAIMS

~~What is claimed is:~~

1. A method implemented in a decoder, the method comprising:

receiving~~, by a receiver of the decoder,~~ a bitstream comprising ~~a~~one or more sub-picture~~s~~ partitioned from a picture, and sequence parameter set (SPS) comprising parameters, wherein the parameters ~~are for~~comprise a sub-picture size for each of the one or more sub-picture~~s~~ and a sub-picture location for each of the one or more sub-picture~~s~~, wherein the SPS further comprises a sub-picture identifier (ID) for each of the one or more sub-pictures;

parsing ~~, by the processor,~~ the SPS to obtain the sub-picture ID, ~~parameters for~~ the sub-picture size and the sub-picture location for each of the one or more sub-pictures; and

generating~~, by the processor,~~ the one or more sub-picture~~s~~ based on the sub-picture ID, the sub-picture size and the sub-picture location for each of the one or more sub-pictures to create a video sequence.

2. The method of claim 1, wherein a corresponding~~the~~ sub-picture is a temporal motion constrained sub-picture, and wherein the sub-picture size and the sub-picture location indicate a layout of the temporal motion constrained sub-picture.

3. The method of ~~any of claims 1-2~~claim 1 or 2, further comprising determining~~, by the processor,~~ a size of ~~the~~ a corresponding sub-picture relative to a size of a display based on the sub-picture size.

~~4. The method of any of claims 1-3, further comprising determining, by the processor, a position of the sub-picture relative to the display based on the sub-picture location.~~

~~5. The method of any of claims 1-4, wherein the sub-picture location includes an offset distance between a top-left sample of the sub-picture and a top-left sample of the picture.~~

~~6. The method of any of claims 1-5, wherein the sub-picture size includes a sub-picture height in luma samples and a sub-picture width in luma samples.~~

~~7. The method of any of claims 1-6, wherein the SPS further comprises sub-picture identifiers (IDs) for each sub-picture partitioned from the picture.~~

~~8~~4. A method implemented in an encoder, the method comprising:

encoding~~, by a processor of the encoder, a~~ one or more sub-pictures, partitioned from a picture, into a bitstream; and

encoding~~, by the processor,~~ a sub-picture identifier (ID), a sub-picture size and a sub-picture location for each of the one or more sub-pictures into a sequence parameter set (SPS) in the bitstream.

~~9~~5. The method of claim ~~8~~4, the method further comprising:

storing, in a memory of the encoder, the bitstream for communication toward a decoder.

~~10~~6. The method of ~~any of claims 8-9~~claim 4 or 5, further comprising encoding, by the processor, a flag in the SPS to indicate that ~~the~~ a corresponding sub-picture is a temporal motion constrained sub-picture.

~~11~~7. The method of any one of claims 4 to 6~~8-10~~, wherein the sub-picture size and the sub-picture location indicate a layout of a temporal motion constrained sub-picture.

~~12. The method of any of claims 8-11, wherein the sub-picture location includes an offset distance between a top-left sample of the sub-picture and a top-left sample of the picture.~~

~~13. The method of any of claims 8-12, wherein the sub-picture size includes a sub-picture height in luma samples and a sub-picture width in luma samples.~~

~~14. The method of any of claims 8-13, further comprising encoding, by the processor, sub-picture identifiers (IDs) for each sub-picture partitioned from the picture into the SPS.~~

~~15. The method of any of claims 8-13, further comprising encoding, by the processor, a number of sub-pictures partitioned from the picture in the SPS.~~

~~16~~8. A video coding device comprising:

a processor, a memory, a receiver coupled to the processor, and a transmitter coupled to the processor, the processor, memory, receiver, and transmitter configured to perform the method of any one of claims 1~~-~~ to ~~15~~7.

~~17~~9. A non-transitory computer readable medium comprising a computer program product for use by a video coding device, the computer program product comprising computer executable instructions stored on the non-transitory computer readable medium such that when executed by a processor cause the video coding device to perform the method of any one of claims 1 to ~~7~~15.

~~18~~10. A decoder comprising:

a receiving unit, configured to receive a bitstream comprising ~~a~~ one or more sub-pictures partitioned from a picture, and sequence parameter set (SPS) comprising parameters, wherein the parameters ~~are for~~comprise a sub-picture size for each of the one or more sub-pictures and a sub-picture location for each of the one or more sub-pictures, wherein the SPS further comprises a sub-picture identifier (ID) for each of the one or more sub-pictures;

a parsing unit, configured to parse the SPS to obtain the ~~parameters for~~ sub-picture ID, the sub-picture size and the sub-picture location for each of the one or more sub-pictures; and

a generating unit, configured to generate the one or more sub-pictures based on the sub-picture ID, the sub-picture size and the sub-picture location for each of the one or more sub-pictures to create a video sequence.

~~19~~11. The decoder of claim ~~18~~10, wherein the decoder is further configured to perform the method of ~~any of claims 1-7~~claim 2 or 3.

~~20~~12. An encoder comprising:

an encoding unit, configured to:

encoding ~~a~~ one or more sub-pictures, partitioned from a picture, into a bitstream; and

encoding a sub-picture identifier (ID), a sub-picture size and a sub-picture location for each of the one or more sub-pictures into a sequence parameter set (SPS) in the bitstream.

~~21~~13. The encoder of claim ~~20~~12, the encoder further comprising:

a storing unit, configured to store the bitstream for communication toward a decoder.

~~22~~14. The encoder of claim 12 or 13~~ any of claims 20-21~~, wherein the encoder is further configured to perform the method of ~~any of claims 8-15~~claim 6 or 7.

~~23~~15. A non-transitory storage medium which includes an encoded bitstream, the bitstream comprising ~~a~~ one or more sub-pictures partitioned from a current picture, and a sequence parameter set (SPS) comprising parameters, wherein the parameters comprise~~are for~~ a sub-picture size for each of the one or more sub-pictures and a sub-picture location for each of the one or more sub-pictures, and the SPS further comprises a sub-picture identifier (ID) for each of the one or more sub-pictures.

~~24~~16. A device for coding, comprising:

receiving unit, configured to receive a bitstream to decode;

transmission unit coupled to the receiving unit, the transmission unit, configured to transmit a decoded image to a display unit;

storage unit coupled to at least one of the receiving unit or the transmission unit, the storage unit, configured to store instructions; and

processing unit coupled to the storage unit, the processing unit, configured to execute the instructions stored in the storage unit to perform the method in any one of claims 1 to ~~15~~7.

~~25~~17. A~~n~~ decoder comprising processing circuitry for carrying out the method according to any one of claims 1 to ~~7~~3.

~~26~~18. An encoder comprising processing circuitry for carrying out the method according to any of claims ~~8~~ 4 to ~~15~~7.

~~27~~19. A computer program product comprising program code for performing the method according to any one of claims 1 to ~~15~~ 7 when executed on a computer or a processor.

~~28~~20. A non-transitory computer-readable medium carrying a program code which, when executed by a computer device, causes the computer device to perform the method of any one of claims 1 to ~~15~~7.