CLAIMS:

1. A method for video decoding in a decoder, comprising:

decoding coded information of a coding block (CB) in a picture from a coded video bitstream, the coded information indicating a width of W samples and a height of H samples of the CB;

partitioning the CB into sub-processing units (SPUs) having a width that is a minimum one of W and K and a height that is a minimum one of H and K, at least one of the width W and the height H of the CB being larger than a processing data unit size K;

determining a partitioning structure to further partition the SPUs based on the width and the height of the SPUs and a maximum transform unit (TU) size of M samples, at least one of the width and the height of the SPUs being larger than M; and

partitioning each of the SPUs into TUs of MxM based on the determined partitioning structure.

2. The method of claim 1, wherein

the width and the height of the SPUs are larger than M;

the determining the partitioning structure includes determining the partitioning structure to be a quadtree partitioning structure; and

the partitioning the SPUs into the TUs includes partitioning the SPUs into the TUs based on the quadtree partitioning structure.

3. The method of claim 1, wherein

the width of the SPUs is larger than M and the height of the SPUs is equal to M;

the determining the partitioning structure includes determining the partitioning structure to be a vertical binary tree partitioning structure; and

the partitioning the SPUs into the TUs includes partitioning the SPUs into the TUs based on the vertical binary tree partitioning structure.

4. The method of claim 1, wherein

the height of the SPUs is larger than M and the width of the SPUs is equal to M;

the determining the partitioning structure includes determining the partitioning structure to be a horizontal binary tree partitioning structure; and

the partitioning the SPUs into the TUs includes partitioning the SPUs into the TUs based on the horizontal binary tree partitioning structure.

5. The method of any of claims 1 to 4, wherein the partitioning the SPUs into the TUs includes partitioning one of the SPUs recursively into the TUs based on the partitioning structure.

6. The method of any of claims 1 to 5, further comprising:
processing the SPUs according to a first scan order; and
processing the TUs in each of the SPUs according to a second scan order.

7. The method of claim 6, wherein at least one of the first scan order and the second scan order is one of (i) a raster scan order, (ii) a vertical scan order, (iii) a zig-zag order, and (iv) a diagonal scan order.

8. The method of claim 7, wherein the first scan order and the second scan order are the raster scan order.

9. The method of claim 6 or 7, wherein
W is 128, H is 64, K is 64, and M is 32;
the first scan order is from left to right; and
the second scan order is a raster scan order.

10. The method of any of claims 1 to 9, wherein
the processing data unit size K indicates a size of a virtual pipeline data unit (VPDU);
a first one of the SPUs is included in a first VPDU and a second one of the SPUs is included in a second VPDU in the picture; and
the method further includes:
after processing the first VPDU in a first stage of a multi-stage pipeline, simultaneously processing the first VPDU in a second stage of the multi-stage pipeline and the second VPDU in the first stage.

11. The method of claim 1, wherein at least two TUs in one of the SPUs are configured to be processed simultaneously at different stages of a multi-stage pipeline.

12. The method of claim 1, wherein partitioning the CB comprises:

selecting a partitioning structure from among plural partitioning structures to partition the CB based on a comparison of at least one of the width W and the height H of the CB to the maximum transform unit (TU) size M.

13. The method of claim 12, wherein the plural partitioning structures comprise at least one of a quadtree partitioning structure, a vertical binary tree partitioning structure, and a horizontal binary tree partitioning structure; and the method further comprises:

in response to the width W being greater than M and the width W being greater than the height H, selecting the vertical binary tree partitioning structure to partition the CB into two partitions, each having a size of W/2 x H;

in response to the height H being greater than M and the height H being greater than the width W, selecting the horizontal binary tree partitioning structure to partition the CB into two partitions, each having a size of W x H/2.

14. An apparatus for video decoding, comprising processing circuitry configured to perform the method of any of claims 1 to 13.