boundary between coded pictures that are consecutive in decoding order. If slices are reordered or a subset of slices is extracted, first_slice_segment_in_pic_flag (or any syntax element with similar definition) may have to be rewritten. In an approach, first_slice_segment_in_pic_flag or alike is not included in the slice header syntax but rather a different start code is used for the first slice segment of a picture than for other slice segments of a picture. In another approach, first_slice_segment_in_pic_flag or alike is not included in the slice header syntax but rather different syntax element(s), such as picture order count, are used in determining the first slice segment of the picture. In an embodiment, first_slice_segment_in_pic_flag or alike is not included in the slice header syntax but rather the tile identifier is used in determining the first slice segment of a picture. When tile identifiers are assigned to tile positions implicitly, it is concluded that a slice segment with a certain tile identifier value, such as 0 (e.g., slice_tile_id equal to 0) is the first slice segment of a picture. When tile identifiers are assigned to tile positions explicitly as described in other embodiments, it is concluded that a slice segment with a certain explicitly indicated tile identifier value is the first segment of a picture. For example, the tile identifier assignment order to tile positions may be indicated in a PPS as described earlier, and a slice segment with a tile identifier equal to the first tile identifier in the list given in a PPS is concluded to be the first slice segment of a picture.

[00167] In some embodiments, the apparatus 10 further includes means, such as the processing circuitry 12, for encoding a decoding order constraint file associated with the bitstream in or along the bitstream that includes a reorder indication indicating whether tiles can be reordered without affecting decodability for each of the tiles. For example, the reorder indication may indicate that tiles within a particular tile set may or may not be reordered (as long as their dependency order is obeyed) without affecting their decodability. Alternatively, the reoder indication may indicate that tiles or indicated or inferred tile sets, such as motion-constrained tile sets, may or may not be ordered without affecting their decodability.

[00168] The reorder indication may be indicative of one, either, or both of the following: the tiles can be reordered without affecting decodability for each of the tiles, as long as the modified ordering is explicitly provided, e.g. as a list of tile identifier values as described above; the tiles can be reordered reordered without affecting decodability for each of the tiles without modifications in or along the bitstream. In the latter case, tiles may be need to be of the same size (e.g. in terms of width and height in CTUs).

[00169] In some embodiments, an encoder may conclude, e.g., based on the above described indication(s), that any tile decoding order that complies with an indicated or inferred tile grid may be used. The encoder may indicate a specific indication, e.g., in a