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| *Title:* | **HEVC errata: on the general decoding process** | | |
| *Status:* | Input Document to JCT-VC | | |
| *Purpose:* | Proposal | | |
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# Abstract

This contribution re-proposes the following item that was proposed in JCTVC-AI0022, but was not resolved at the 35th JCT-VC meeting in Geneva:

1. To change the description of the general decoding process, such that the term "the bitstream" in the specification does not refer to just one CVS.

It is asserted that a similar issue existed also in the VVC WD before the 14th JVET meeting in Geneva, and a similar proposal to VVC was agreed in Geneva and the issue in the VVC WD thus has been fixed.

# Problem

The general decoding process is specified in a CVS by CVS manner, because the sub-bitstream extraction process relies on the SPS syntax element sps\_max\_sub\_layers\_minus1, while the active SPS can change across CVSs.

For each CVS of the input bitstream, the sub-bitstream extraction process is applied first with the output being BitstreamToDecode. Therefore, BitstreamToDecode contains one CVS. After that, the decoding process for a coded picture specified in clause 8.1.3 is repeatedly invoked for each coded picture in BitstreamToDecode.

The following is stated in clause 8.1.3:

*The decoding process for the current picture takes as inputs the syntax elements and upper-case variables from clause 7. When interpreting the semantics of each syntax element in each NAL unit, the term "the bitstream" (or part thereof, e.g., a CVS of the bitstream) refers to BitstreamToDecode (or part thereof).*

From the yellow-highlighted wording, it is clear that the term "the bitstream" mentioned above was intended to mean something that can contain more than one CVS.

Furthermore, there are many places related to "*interpreting the semantics of each syntax element in each NAL unit*" that have the wording "the first picture in the bitstream", particularly when used to determine whether a CRA picture starts a CVS. In my understanding, in those places, the intent was that the term "the bitstream" mentioned above was intended to mean something that can contain more than one CVS.

Lastly, at the beginning of the general decoding process for the input bitstream, strictly speaking, determining the CVSs in the input bitstream would not be clear before determination of the variable NoRaslOutputFlag for each IRAP picture, which currently is only part of the decoding process of a CVS.

Therefore, this seems to be a bug in the latest HEVC spec, and it would clearer and cleaner to rearrange the description a bit.

# Proposal

It is therefore proposed to change the description of the general decoding process as follows:

1. Firstly the CVSs in the input bitstream are identified.
2. Sub-bitstream extraction is applied for each CVS.
3. The extracted results of all the CVSs are concatenated to BitstreamToDecode.
4. BitstreamToDecode is decoded CVS by CVS, and each CVS picture by picture.

# Patent rights declaration(s)

**Futurewei Technologies, Inc. does not have any current or pending patent rights relating to the technology described in this contribution (to the extent of the personal awareness of the contributor).**