JCTVC-C121

Suggested approach toward HEVC Test Model creation

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Summary

- Geneva agreement: "define HEVC Test Model with only the minimum set of well-tested tools that together form a coherent design that is confirmed to show good capability"

- Joint proposal of approach to be taken for HEVC Test Model (HM) creation
  - Construct **a base structure of the HM** with minimum set of TMuC tools
  - Create HM by adding only the other tools verified as efficient through TE reports, to the base structure

TE based tool selection

- TE demonstrates efficiency of a tool relative to specific "reference point"
  - Evaluation result only shows evidence of incremental effect to the reference point
  - Real impact within HM?

What should reference point be?

- B300(TE12 anchor)
  - Agreed in Geneva, but…
  - Too complex and many tool overlaps per one functionality
- Alternative proposal
  - Review tool set basis evaluation reports (C065, C066, C122, C269)
    - Shares "One tool per one functionality" concept
    - Significant complexity reduction relative to B300, while keeping certain coding efficiency
  - **PLUS** other related documents addressing issues on performance/complexity trade-off
    - MV prediction(C115,C119,C293)
    - transform coefficient coding(C114)

TMuC software issues

- When AMVRES is turned on, which is the default setting of B300, it automatically turns on QC_AMVRES_LOW_COMPLEXITY macro. This means that a specific 8-tap interpolation filter, which has not been documented into TMuC, is always applied for 1/8-pel generation. When evaluating a single MC interpolation filter combined with AMVRES feature, it should be noted that adaptive interpolation filter is invoked depending on MV resolution.

- When the macro DEFAULT_IS is turned on, which is the default setting of B300, it always applies (1 2 1) low-pass filtering to reference samples for intra prediction. The performance of this default setting is worse than the case when DEFAULT_IS is turned off.

- The default setting of RDO-Q process for low-complexity condition is unstable.

- ROUNDING_CONTROL_BIPRED is activated as default in the B300 condition and complex RDO based rounding offset decision is implemented in the current software. However, this feature has not been tested at all.

Conclusion

- **Propose the following approach toward creation of HEVC Test Model**
  - To consider TMuC software related issues for evaluation of relevant TE reports
  - To review all tool set basis performance evaluation reports C065, C066, C122, C269
  - To make careful assessments on MV prediction techniques (C115, C119, C293) and adaptive scanning part of transform coefficient coding (C114)
  - To define a base structure of HM that follows "one tool per one functionality"
  - To define HM by adding only the other tools, whose advantage have been proven as sufficient through TE reports, to the base structure of HM