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# JCT-VC AHG report: Complexity Assessment

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# Mandates

- Summarize and evaluate the various complexity assessment methods proposed in CEs and AHGs groups with regards to :
  - computational complexity,
  - parallelism,
  - memory bandwidth,
  - memory capacity,
  - dynamic range requirements,
  - any other aspects of complexity identified as being of interest.
- Develop and propose a set of general measurement metrics that can be used across the various CEs and AHGs.
- Develop and propose a metric for measuring the parallelizability of the proposed parallel algorithms, especially with regards to the parallelization at the slice level.
- Identify criteria to determine the hardware implementability of the key hardware modules.
- Identify bottlenecks in the current design with regard to implementation complexity.

# Reflector activity

- There was moderate activity on the e-mail reflector related to Complexity Assessment since the January meeting. The main topics were:
  - Anchor results for the new HM 2.0 software, released by the Software Development AHG.
  - Complexity-related mandates for the following Ad-Hoc Groups established at the last meeting:
    - **Spatial Transforms AHG:**
    - **In-Loop and Post-Process Filtering AHG**
    - **Coding blocks structures**
    - **Reference pictures memory compression AHG**
    - **Entropy Coding AHG**
    - **Quantization AHG**
    - **Motion compensation interpolation AHG**
    - **Decoder-side motion vector derivation**

# Related Contributions

- JCTVC-E054, “Preliminary complexity assessment on ARM”.
- JCTVC-E086, “Summary of Complexity Assessment for CEs and Three-Level Assessment method”

# Conclusions

The Complexity Assessment AHG recommends:

- To review all the complexity related contributions.
- To hold a break-out group discussion with delegates of the other AHG, in order to
  1. Discuss how to order to harmonize the different complexity assessment methodologies in a common method shared among the various groups.
  2. Identify criteria to determine the parallelization and hardware implementability of the key hardware modules.
- To continue complexity assessment experiments in order to further optimize the trade-off between complexity and coding efficiency in the new HM software.