JCT-VC BOG report:
Complexity Assessment

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Revised TLCA

- TLCA = three-level complexity assessment

- Level 1: analytical description
- Level 2: software & algorithm measures
- Level 3: hardware measures

Level 1: analytical

- Exhaustive textual description of proposed tool.
  - Flowchart / block schemes
- Report analytical assessments:
  - Elementary operations count analysis
  - Storage requirements analysis
  - Bandwidth requirement analysis
- No of processing stages → **pipelining**
  - Critical path to be considered.
- Data dependency analysis → **parallelization**
  - internal / external (with other tools)
- See CE7 and CE10 for good examples.

Level 2: sw & algo measures (1/2)

- **HM runtime**
  - Report average results (mandatory)
  - Identify and explain worst cases
  - Report the environment: OS 32/64 bits, CPU, <u>compiler</u>, …
  - Run on same machine for consistency, at least decoder. (encoder takes ~48 CPU days to produce all the anchors)
  - Take results critically
  - **AHG can offer sw to benchmark variance within clusters.**

- **Profiling**
  - Need internal understanding of HM.
  - AHG to do further investigation before recommending it.

Level 2: sw & algo measures (2/2)

- **Memory**
    - Memory usage difference reported and explained.
    - Memory BW measured with NEC tool
    - Recommend integrate it in main branch (disabled by default).
    - avg/best/worst case to be considered
    - peak memory bw measured at sequence/slice/cu/etc level
    - consider slice type

Level 3: hw measures

- Report results of HW design implementations.
- No consensus on which measures to consider.
- Priority one (agreed):
  - Throughput
  - Latency
- Other useful numbers could be:
  - Clock frequency
  - Technology
  - Area
  - Power consumption