



MC-IF PROFILING WG: 3RD MEETING

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Agenda

- Opens
- Review of presentation to board May 2019 Yokohama meeting
- Discussion about how MC-IF can define sub-profiles for VVC
- Review of strawman proposal
- Discussion, next steps

BOARD MEETING REVIEW

Profiling Work Group

Chair: Jill Boyce

- Identify need for profiling, sub-profiling, constraint flags, and sets thereof, initially for VVC
- Communicate MC-IF requests or recommendations to relevant bodies, including VCEG, MPEG
- Define a process for MC-IF to use to serve as a registration authority for sub-profiles, initially focusing on VVC

Motivation for MC-IF involvement in VVC sub-profiling

- WG charter includes definition of a process for MC-IF to serve as a registration authority for VVC sub-profiles
 - Allocating code points for an MC-IF-specific terminal provider oriented code
- Benefits for industry
 - Improves VVC implementation interoperability by
 - Ensuring that the sub-profiles registered by MC-IF have been clearly and unambiguously described and have undergone review by technical experts
 - Providing easy access to sub-profile descriptions
- Benefits for MC-IF
 - Will increase visibility of MC-IF in industry
 - Will encourage companies to join MC-IF to participate in review process

VVC design, as of VVC specification Draft 5 (Apr 2019)

- Includes in Profile, Tier, Level syntax structure:
 - List of constraint flags/syntax elements
 - Specified in VVC spec
 - Sub-profile indicator syntax element
 - 3 bytes allocated in VVC spec
 - Contents specified by ITU-T T.35, outside of VVC specification
 - 1 byte for country code
 - 1 byte for terminal provider
 - 1 byte for terminal provider oriented code
- Any organization with an ITU-T T.35 Terminal Provider Code may define a VVC sub-profile

Next steps

- MC-IF to apply for an ITU-T T.35 terminal provider code
 - Probably in United States
 - Designate person to handle application process
- Define a process for allocation of a sub-profile indicator code point
 - Requirements for applications
 - Decision-making process
 - Publication of allocated code points

Additional steps

- Communicate with industry about sub-profiling
 - Should we solicit input from outside MC-IF on definition of process?
- Implement the process. Details will depend on defined process, but may include the following (from strawman process document):
 - Technical expert review of proposals in Profiling WG
 - Voting handled by VTM
 - Publish information on website about allocated sub-profile indicator code points
 - May include descriptions, conformance bitstreams

Overview of Board Discussion

- Support expressed for MC-IF to become involved in sub-profile allocation for VVC
- Some discussion about if ITU-T T.35 is the appropriate mechanism for JVET to use to allocate sub-profiles
 - Noted that this is a JVET decision, not an MC-IF decision

STRAWMAN PROPOSAL

First presented at Kickoff Profiling WG meeting 2 April 2019

Strawman proposal for sub-profile indicator code points: Proposal

- MC-IF will request to be assigned an ITU-T T.35 terminal provider code from a country (probably US)
- MC-IF will create a public registry of code points for sub-profiles
 - The code point space will have 8 bits per VVC profile, so 256 sub-profiles per VVC profile may be assigned
- MC-IF will develop a process to register a sub-profile code point

Strawman proposal for sub-profile indicator code points: Code point allocation request process

Organizations may submit a request for allocation of a sub-profile code point by meeting the following requirements for study by the Profiling WG:

1. Document describing the proposed sub-profile, containing:
 - Sub-profile name
 - Name of VVC profile which is being modified
 - List of any further restricted syntax elements and their allowed values
 - Any other restrictions to the bitstream
2. Set of conformance bitstreams for the sub-profile, with associated description
3. Report from two independent organizations confirming ability to properly decode conformance bitstreams, and description of how confirmation was performed

Strawman proposal for sub-profile indicator code points: Decision process

- Once requirement #1 is met, the submitting organization will be invited to present to a meeting of the Profiling WG
- Once requirements #2 and #3 are met, a majority vote will be held of the Profiling WG participants (one vote per member company) to recommend to allocate a sub-profile code point
- Once the profiling WG recommends allocation of a sub-profile code point, a majority vote of a quorum of the Board of Directors will allocate sub-profile code point

Strawman proposal for sub-profile indicator code points: Publication

- MC-IF will make publicly available on its website:
 - List per VVC profile of MC-IF allocated sub-profile code points
 - For each allocated sub-profile code point:
 - Description document
 - Conformance bitstreams, with associated description

Strawman proposal for sub-profile indicator code points: Example – Progressive Main sub-profile

- Assume that VVC will define a Main profile
- Request submission example
 1. Document
 - Sub-profile name: Progressive Main
 - Name of VVC profile which is being modified: Main
 - List of any further restricted syntax elements and their allowed values:
 - `general_progressive_source_flag` equal to 1
 - `general_interlaced_source_flag` equal to 0
 - `general_frame_only_constraint_flag` equal to 1
 - Any other restrictions to the bitstream: None

Strawman proposal for sub-profile indicator code points: Example – Progressive Main sub-profile

2. Conformance bitstreams generated using VTM reference software with appropriate input config to

- Populate `general_sub_profile_idc` 3 bytes as:
 - 1 byte for country code: `United States`
 - 1 byte for terminal provider: `MC-IF`
 - 1 byte for terminal provider oriented code: `allocated code point value`
- Set allowable values for further constrained syntax elements
 - `general_progressive_source_flag` equal to 1
 - `general_interlaced_source_flag` equal to 0
 - `general_frame_only_constraint_flag` equal to 1

3. Confirmation report from two independent organizations, confirming:

- Proper value of `general_sub_profile_idc` in `profile_tier_level()` syntax structure
- Allowable values of `general_progressive_source_flag`, `general_interlaced_source_flag`, and `general_frame_only_constraint_flag` in `general_constraint_info()` syntax structure

EXCERPT FROM 19 APRIL 2019 PROFILING WG MEETING

Background: General points on VVC sub-profiling

- Any organization with an ITU-T T.35 Terminal Provider Code may define a VVC sub-profile, with no requirement to publish any information about it
- In theory, up to 2^{24} sub-profiles can be defined per VVC profile
 - Limited by allocation of code points to countries, terminal providers
- Conforming decoders may safely ignore the sub-profile indicator value
 - Any decoder which conforms to the “full” profile is required to be able to decode any bitstream with any indicated sub-profile value
- Decoders may choose to conform to a sub-profile of a profile, and not the full profile
 - It has been long been common practice for implementations to conform only to restrictions to AVC/HEVC profiles defined by application specs
 - Example: DVB specifies particular supported resolutions & frame rates

DISCUSSION

Discussion

- Next steps?
 - Upcoming JVET meeting
- Scheduling Profiling WG next meeting