IETF 85

video-codec BoF

Process

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Introduction

• This is a proposal for how to do the work
  – Just a starting point (comments welcome!)
  – Nothing here overrides standard IETF process

• This is not the requirements
  – Refer to draft-maxwell-videocodec-requirements
Proposed Process

1) Identify requirements
2) Solicit codec contributions
   • Under the IPR rules of the IETF (BCP 78 & 79)
3) Iteratively improve requirements based on
   • Received contributions
   • Collaboration with other WGs
4) Evaluate strengths and weaknesses of the contributions
Proposed Process (cont.)

5) Choose starting point for development based on one or more contributions (no final decision)

6) Iteratively improve/rewrite/replace any component of the codec
   • Any change allowed if it helps meet requirements
     • As decided by regular IETF rough consensus
     • Any interested party can contribute to development

7) Characterization of final codec
Intellectual Property

• Goal is to have royalty-free technology
  – SHOULD be distributable without negotiating a license, entering a business agreement, paying royalties, or meeting other special conditions (NDAs)
  – We understand we cannot guarantee this outcome
• From charter: “Developed under the IPR rules of the IETF”
  – BCP 78 and 79
• BCP 79, Section 8: “In general, IETF working groups prefer technologies with no known IPR claims or, for technologies with claims against them, an offer of royalty-free licensing.”
Intellectual Property (cotd.)

• BCP 79, Section 6.4.1
  - “The disclosure must list the numbers of any issued patents or published patent applications or indicate that the claim is based on unpublished patent applications.”
  - “The disclosure must also list the specific IETF or RFC Editor Document(s) or activity affected.”
    • May be prudent to use multiple, smaller drafts

• BCP 79, Section 6.4.3
  - “The requirement for an IPR disclosure is not satisfied by the submission of a blanket statement of possible IPR on every Contribution.”
Relationship with Other SDOs

• Other SDOs doing video codecs
  – ITU-T SG 16
  – ISO/IEC JTC1/SC29 WG11 (MPEG)
  – SMPTE

• No natural monopoly on video codecs

• Cooperation with other SDOs welcome
Relationship with Other SDOs (cotd.)

• “Uncoordinated Protocol Development Considered Harmful” (RFC 5704)
  - “[T]he IAB considers it an essential principle of the protocol development process that only one SDO maintains design authority for a given protocol, with that SDO having ultimate authority over the allocation of protocol parameter code-points and over defining the intended semantics, interpretation, and actions associated with those code-points.”

• No harm possible here
  - No code-point collision
  - All signaling technology can negotiate codecs
  - Transport protocols are designed to support any codec
Testing and Characterization

• Continuous testing (during development)
  - Informal tests (see draft-terriberry-codingtools-00 for examples)
  - Possible measures
    • IPR safety (available on RF terms, 20+ years old, etc.)
    • Quality per bit (PSNR, SSIM, visual comparison)
    • Complexity (hardware or software)
    • Simplicity (of implementation)
    • Robustness (to packet loss; to bit errors is “nice to have”)
    • Congestion control responsiveness

• Formal characterization
  - The IETF is a volunteer organization
    • Any test plan must have a volunteer willing to perform the tests
Specification and Conformance

• Specify behavior required for interoperability
  – Primarily decoder behavior
  – Bit-exact output required for practical reasons
    • Conformance tools, test vectors required
    • Does not preclude post-processing outside of the decoder

• Specification in normative prose
  – Symbolic/mathematical notation okay if well-defined

• Software reference implementation corresponding to “best-known implementation”
  – Where should this live?