REQUEST FOR PROPOSALS

Open Binding Of IDs To Media

An online/teleconference meeting will take place on April 20, 2015, to answer questions. Non-SMPTE members, please RSVP to the Drafting Group Chair, Chris Lennon at clennon@medianswers.tv if you plan to attend.

A publicly available description of this project can be found here:

https://kws.smpte.org/kws/public/projects/project/details?project_id=284

Questions to the group may be addressed to: 24tb-binding@lists.smpte.org

Table of Contents

Foreword

SMPTE (the Society of Motion Picture and Television Engineers) is an internationally-recognized standards developing organization. Headquartered and incorporated in the United States of America, SMPTE has members in over 80 countries on six continents. SMPTE's Engineering Documents, including Standards, Recommended Practices and Engineering Guidelines, are prepared by SMPTE's Technology Committees. Participation in these Committees is open to all with a bona fide interest in their work. SMPTE cooperates closely with other standards-developing organizations, including ISO, IEC and ITU.

General Information

SMPTE's Technology Committee on Television and Broadband Media (24TB) has a Drafting Group, focused on "Open Binding of IDs to Media". This Request for Proposals (RFP) originates from this group.

This Drafting Group was formed as a direct result of the findings of an earler 24TB group, the Open ID Study Group. That group's report can be found here.

The task of the Drafting Group is to develop SMPTE document(s), defining an open and standardized means of embedding identifiers such as Ad-IDs and EIDRs into content in such a way that they not only survive all processing that content is subjected to, but can then be detected and read, regardless of how the content gets to the viewer. The goal is that, based solely on the specification that is developed, someone can implement a watermark insterter such that the watermark can de detected by a detector, independently developed using solely the published specification.

The problem the group is trying to solve is stated in its project outline as follows

Currently, there is no open binding technology standard (e.g., watermarks, fingerprints, metadata sidecars, etc.) for embedding persistent content identifiers into audio/video essence in a way that survives compression and distribution through the M&E supply chain.

Content creators and distributors need an effective way of reliably binding content identifiers to video/audio content that will robustly transit an end-to-end media ecosystem. Unique content identifiers, such as EIDR, Ad-ID – and others – have been important developments. However, within the supply chain, M&E entities "bind" the identifiers in file containers, to data streams in a file container or to the structural metadata of the video/audio stream itself. These types of bindings can be destroyed in video/audio processing and delivery systems along the media production, distribution and measurement supply-chain.

An open standard for essence-based video/audio binding can enable a wide range of new capabilities. Most importantly it will enable increased speed, transparency and accountability in video content and advertising measurement across a wide range of delivery systems and devices. Additional benefits are improved media workflow automation within and between M&E entities; fewer barriers to deploying cross-platform dynamic ad insertion; enablement of new anti-piracy tools and methods, broader digital locker adoption; more complete long-tail content monetization; improved accuracy in automatic content recognition and detection; better second-screen integration and improved multi-screen content discovery… the list goes on.

In short, there are a plethora of business and workflow benefits that a robust, open ID-to-asset binding enables. Today, no such reliable open-standard method exists.

Utilize the report generated by the 24TB Open ID SG as guidance in development of SMPTE document(s) to facilitate standardization in this area.

Objective

The objective of this RFP is to collect proposals for standardization of the embedding of Ad-IDs and EIDRs into audiovisual content, adhering to a set of requirements outlined in this document.

A Draft Test Plan accompanies this RFP in a separate document and is provided as information. Respondents will be expected to self-administer a set of Robustness and Complexity tests, and provide the results of those tests to the SMPTE OBID Drafting Group later on in the process (see Dates in Section 3 of this document). It is possible that the test plan may be revised following review of RFP responses, so the test plan will not be finalized until later in the process. However, the draft version of the test plan is included now so that respondents will have an idea of what will be expected of them.

It should also be noted that respondents will be expected to participate in Subjective tests that are expected to be conducted in a lab environment. Costs associated with these Subjective tests will be shared among respondents, based on the share of resources utilized by each.

Any proposed technologies will be considered for standardization only if the response to this RFP is followed by completion of the tests listed above.

Responses to this RFP are expected to include their levels of adherence to the requirements specified herein, and confirmation that they adhere to SMPTE IP requirements (see section 2.12). Feedback on the test plan which accompanies this RFP is also appreciated.

1. Technical Requirements

This section outlines the technical requirements that the Drafting Group has determined to be applicable to the end goal of creating an open technique of binding media IDs to essence. These requirements have undergone a process of refinement as this work has evolved. The list below represents the current state of the technical requirements for responses to this RFP.

These represent minimum requirements. If the respondent can exceed any of these, that should be noted.

1.1. Mandatory Requirements

The following requirements must be supported in an overall solution.

1.1.1 Payload

The most compact representations of the identifiers to be bound are 32 bits for Ad-ID and 96 bits for EIDR. An additional 8 bits must be carried for payload identification. The payload will consist of a one byte identifier, plus either an Ad-ID or an EIDR, but not both simultaneously.

1.1.2 Survivability across Platforms

The binding technique is required to ensure that IDs survive all common distribution platforms and all associated processing.

Common distribution platforms include, but are not limited to, terrestrial broadcast, cable/satellite networks, IP (managed or open) networks, and mobile networks. Ad hoc distribution in consumer applications (e.g., AirPlay, WiDi, Chromecast, etc.) that access either file-based or streaming content also should be included.

Processing may include resolution change, scaling, transcoding, frame/bit-rate conversion, audio sampling rate change, audio up/down mix, A-to-D/D-to-A, audio spectral band replication, and the like. Proponents were asked to identify any processing and/or distribution platforms that their proposed solutions may not support.

It is not anticipated that geometric transformation and/or distortion, or partial/full overlay of video imagery will be accommodated. Proponents were encouraged, however, to state any additional types of processing that a particular proposed solution supports.

Some of the transformations that are expected to be addressed are those between video codecs such as WMV, JPEG2000, H.264, MPEG-2, VP8, VP9, and HEVC. On the audio side, transformations between codecs such as WMA, MPEG 1 Layer 2, AC-3, E-AC-3, Dolby E, AAC, HE-AAC, HE-AAC v2, and MPEG-H should be considered, although a review of the draft test plan will show that testing will focus on AAC, Dolby Digital, and Dolby E.

Security concerns should not trump openness of this binding.

1.1.3 Recording and Playback

The binding technique is required to ensure that IDs survive commonly used recording and replay in the professional and delivery to the consumer (survivability of transcoding performed by consumers is not required). Proponents are requested to state clearly all known limitations to their proposed solutions, including recording quality metrics such as resolution, bit rates, and/or audio sampling rates.

1.1.4 Granularity

The binding mechanism shall allow the transition to or from a uniquely identified or unidentified piece of content to be detected within 1 second of the transition. Transition detection does not necessarily require the recovery of the content ID.

1.1.5 Retrievability

Identifiers are required to be recoverable from any continuous three-second segment of content in the case of Ad-IDs or from any continuous five-second segment of content in the case of EIDRs.

1.1.6 ID Replacement

IDs must be removable or capable of being overwritten in cases in which media with an ID is re-aired, used within a new work, or in similar situations.

This limitation should not be confused with reversibility. For some of the audio watermarking technologies that already are in wide use, reversibility is impossible, in the sense that perfect restoration and/or recreation of the original audio content cannot be achieved once these watermarks have been applied. Because emission codecs introduce material changes to any watermark, the goal of watermark removal is problematic. Instead, an undesirable watermark inserted upstream should be able to be overwritten (or retained, but superseded) by the insertion of an additional watermark.

1.1.7 Insertion and Detection Points

The adopted method is required to allow IDs to be inserted and detected at any point between production and display to consumers.

1.1.8 Quality

ID transport is required not to degrade the perceptible quality of audio and/or video, including lip sync, at the consumer's reception point. In particular, because the same content may take multiple paths between production and display, the ID binding technology should preserve the subjective quality of the content at the level of its highest quality distribution path to viewers. Respondents are encouraged to provide subjective quality assessment reports using established methodologies (e.g. ITU-R BS.1116-2 for audio, ITU-R BT.500-13 for video) which describe the perceptual quality of content processed using the proposed technology.

Widespread use of overlapping watermarks due to broadcast workflows might, however, result in a tradeoff between survivability and quality. Respondents should note any known tradeoffs (and solutions available) between robustness, impact on quality (imperceptibility), ID replacement, and recovery and detection time, as well as co-existence with other watermarks.

1.1.9   Non Interference

ID binding watermarks shall not interfere with any existing watermarks (e.g., Nielsen TV and Nielsen Audio) and vice-versa.

1.1.10   Linear and Non-Linear Support

There must be both linear and non-linear (file based) methods for insertion of watermarks.

1.1.11   Performance Impact

Processing needed for detecting IDs should not cause noticeable performance degradation on typical consumer devices.

2.   Submission Guidelines

2.1   Introduction

This part provides the information that is needed to respond properly to this RFP. We invite you to read it carefully.

2.2   Respondents

All interested parties are invited to respond to this RFP. Interested parties do not have to be a member of SMPTE to respond.

2.3   Communications

All communications regarding this RFP should be directed to Drafting Group's reflector at 24tb-binding@lists.smpte.org. The Chair of the Drafting Group may be reached at clennon@medianswers.tv.

2.4   Single Point of Contact Required

Respondents shall provide a Single Point of Contact for all communications regarding the RFP. It is the responsibility of the Point of Contact to disseminate communications from the RFP management team appropriately within his/her organization.

2.5   Intent to Respond

We ask that you notify us by April 10, 2015, if you intend to respond. Such notification should be by e-mail to clennon@medianswers.tv, and should include the organization name and the Single Point of Contact.

2.6   Withdrawal of Responses

If you need to withdraw a previously submitted Response to this RFP, you must do this in an e-mail sent to clennon@medianswers.tv before the cut-off date (April 24, 2015). You should receive a confirmation e-mail acknowledging your withdrawal.

2.7   Respondent Meeting

The RFP Management Team will hold an online meeting with Respondents on April 20, 2015, at which time the team will discuss the RFP and address any questions that Respondents may have. Respondents should be aware that in the interest of fairness, all questions and answers may be documented and may be shared with other Respondents, whether they attend the meeting or not. Parties who are not members of the SMPTE

SMPTE RFP: OPEN BINDING OF IDs

Standards Community must RSVP forthis meeting to clennon@medianswers.tv to obtain meeting participation details. SMPTE members can find the details on the Kavi system, under the 24TB Open Binding of IDs Drafting Group's calendar.

2.8 Queries

It is recognized that when Respondents review this RFP they might need to contact the Drafting Group at 24tb-binding@lists.smpte.org with points for clarification. The group will attempt to assist Respondents with background information, additional explanations, etc. Respondents should be aware that, in the interest of fairness, all questions and answers which serve to clarify the RFP or which provide additional information may be shared with other Respondents.

2.9 Sharing the RFP

This RFP is a public document. Provided that it is not modified in any way, it may be passed on to other parties who may have a bona-fide interest in responding to the RFP.

2.10 Partial Responses

We understand that it is unlikely that any single technological solution will fully address all the Technical Requirements described in this RFP. Partial responses are perfectly acceptable.

2.11 Less is More

In providing the required information, you can always provide additional details or refer to complementary documents that you can include in your submission. Be aware that considering the very aggressive timeline that will follow, it may be in the interest of Respondents to highlight the most essential information to be considered.

2.12 Intellectual Property

Respondents are advised to review SMPTE's Intellectual Property Policy that goes into effect as of January 31, 2015, as specified in Section 9 of the Society's Standards Operations Manual. Particular attention should be paid to Section 9.1.4.

2.13 SMPTE Standards Community

Respondents are advised that they must join the SMPTE Standards Community upon submitting a response to this RFP. This will require acceptance of SMPTE's Participation Policy, and will allow them access to crucial materials in the ongoing work of the Drafting Group.

3. Dates

The anticipated time schedule is as follows.

- RFP issued: April 3, 2015
- Intent To Respond Due: April 17, 2015
- Open Q&A session for respondents: April 20, 2015 (RSVP required to Chair)
- Follow up from Q&A session (summary, potential revisions to RFP/Test Plan)
- RFP closes: May 4, 2015 (Responses in advance of the deadline are acceptable and encouraged)
- Invitations for technology discussions/demos: May 5, 2015
- Meeting in NY for review of submissions: May 20/21, 2015
- Potential Revisions to Test Plan based on responses: May 28, 2015
- Distribution of Final Test Plan: May 29, 2015

SMPTE RFP: OPEN BINDING OF IDs

- Results of Self-Administered Tests Due: July 14

4. Submission Procedure

4.1 Submission Format

- Title Page
- Table of Contents
- Experience and Qualifications of Respondent
- Technology Proposal
- Maturity of Technology
- Listing of Technical Requirements from this document with indication as to support (or not) of each requirement, and any pertinent details relating to each requirement
- Intellectual Property Disclosure (if applicable)

4.2 Submission Steps

1. Respondents should contact the Drafting Group Chair at clennon@medianswers.tv as described above, to indicate their intent to respond.

2. When ready, please email your submission to 24tb-binding@lists.smpte.org.

NOTE: To be considered as valid, all Responses to this RFP must be submitted per the process described in this RFP. Verbal or written submissions which are not made per the submission guidelines described here will NOT be accepted.