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SMPTE Standards Quarterly Report: Executive Summary

The Q4 report includes detail on a very large number of current projects. This Executive Summary highlights just projects at a critical stage, particularly where user input is needed, and major new work items.

The Group studying Reference Display and Environment for Critical Viewing of Television Pictures is conducting an intensive series of weekly meetings to advance the work on reference monitors based fixed pixel matrix displays.

In TC-24TB Television and Broadband Media the work on SMPTE Timed Text continues. Some of the FCC rules for captioning television content distributed via the Internet are already in force with SMPTE-TT as a "safe harbor" solution. SMPTE-TT is based on W3C TTML, and the group is working with W3C to ensure coordination in future work.

This Technology Committee also continues work on developing and testing a fingerprint-based mechanism for end-to-end measurement and control of audio/video synchronization.

The imminent release of *The Hobbit: An Unexpected Journey* by Warner Bros. in 48fps 3-D has heightened awareness of the work of the Study Group on High Frame Rates for 3D and 2D D-Cinema Applications. Projects are starting to amend a number of D-Cinema documents to include higher frame rates.

Selected New Work Items

Over the last two years, the B-Chain Study Group has investigated a number of issues related to sound in cinemas and areas for possible improvement. An interim report will be summarized in the next issue of the *SMPTE Motion Imaging Journal*. The group made a number of recommendations for continuing research and standardization. As a result, the Society has formed a new Technology Committee, TC-25CSS Cinema Sound Systems. This Group is accessible to Standards Community Members at https://kws.smpte.org/apps/org/workgroup/25css/ .

In TC-24TB Television and Broadband Media a new Study Group has been created to examine end-to-end issues at 4k and above. The group TC-24B SG on UHDTV Ecosystem is accessible to Standards Community Members at https://kws.smpte.org/apps/org/workgroup/24tb-uhdtv/ .

There are two new groups in TC-32NF Network/Facilities Architecture. One group will develop High Availability protocols for video over IP; another will address network design issues for media facilities.

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SMPTE Standards Quarterly Report: Details

As a result of SMPTE Standards Committee Meetings
12-16 September 2012
Hosted by EBU,
Geneva, Switzerland

The Society of Motion Picture and Television Engineers is the world leader in motion-imaging standards for the communications, media, and entertainment industries – and the only organization to connect the areas of motion-imaging research, standardization, education, and business success.

We encourage interested parties to contact Standards Committees to learn more about specific activities. Go to www.smpte.org/standards for more information.

If you need help getting started with the SMPTE Standards process and some of the conventions used in this report, jump to the Annex.

This Quarterly Report provides a detailed account of the meetings of the following Technology Committees and their sub-groups:

Essence Technology Committee (10E)
Digital Cinema Technology Committee (21 DC)
Television and Broadband Media Committee (24TB)
Metadata and Registers Committee (30MR)
File Formats and Systems Committee (31FS)
Network and Facilities Architecture Committee (32NF)
Time Labeling and Synchronization Committee (33TS)
Media Systems, Control and Services Committee (34CS)
Media Packaging and Interchange Committee (35PM)

It is a snapshot in time and should not be considered formal minutes or a positioning statement or analysis piece.
Provide your comments or suggestions at standards@smpte.org

If you are interested in learning more about SMPTE Standards program, please contact Peter Symes, Director of Engineering and Standards, at psymes@smpte.org.

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Detailed Account of September 2012 Meetings

Essence Technology Committee (10E) chaired by John Hudson and Paul Gardiner

The application of the general scope as it applies to electronic capture, generation, editing, mastering, archiving, and reproduction of image, audio, subtitles, captions, and any other master elements required for distribution across multiple applications

Topic: TC-10E Publications in the last quarter

SMPTE ST 2042-1:2012 VC-2 Video Compression (Revision)

AHG Project: Reference Display and Environment for Critical Viewing of Television Pictures

Users have requested standardization work in SMPTE on new fixed pixel matrix reference displays since CRT-based reference monitors have practically disappeared from the market. A suite of four documents is planned:

- Part 1: Reference Display characteristics
- Part 2: Reference Viewing Environment characteristics
- Part 2: Measurement Techniques for Reference Display and Reference Viewing characteristics
- Part 4: Engineering Guideline to provide context and background

Status: Since the last meeting round, the group has held 3 telecons and a 2-day face-to-face meeting in Munich to advance the document suite. Telecons are scheduled through to the December meeting round to maintain the momentum.

Part 1 has been reviewed end-to-end and a revised draft has been posted. There is remaining work on defining and setting Reference Black.

A draft of Part 2 is being developed and now includes proposals for viewing angle based on the need for 3 monitoring positions side-by-side.

Part 3 is still in development and Part 4 is not yet started.

Impact: professional displays that comply with the final SMPTE documents will allow consistent assessment of image quality

Topic: Video compression standards in SMPTE

AHG Project: Revision of SMPTE ST 2019 VC-3 Video Compression Documents

This project extends the functionality of VC-3 (based on AVID's DNxHD technology) by adding 5 new Compression IDs to support 4:4:4 and RGB color space. Two documents are covered by this work - Part 1: VC-3 Picture Compression and Data Stream Format and Part 2: VC-3 Decoder and Bitstream Conformance.

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Status: The revised Picture Compression and Data Stream Format document passed FCD ballot on 2012-06-11. All 31 comments have been resolved but, during the 2 week comment resolution review, an error in a formula was found. The TC decided that a document with the formula fixed should be posted for a further 2 week review.

The next step will be to revise Part 2 of the document suite and provide a new reference decoder.

Impact: Standardizing current industry practice ensures that SMPTE standards remain relevant to the industry.

AHG Project: Draft ST 2073: VC-5 Video Essence

This project standardizes the Cineform / GoPro video compression algorithm. The document suite will include:

- Part 1 - Elementary Bitstream
- Part 2 - Advanced Bitstream
- Reference Codec

Status: Part 1 is almost ready for submission to TC-10E for ballot by December. Some optional elements are still being moved out to Part 2.

The Part 2 draft needs more work and the group is likely to split it into additional Parts that deal with advanced features that are independent of one another.

The reference codec is finished except for some late document revisions.

Impact: Standardized compression formats with clear IPR allow enhanced interoperability among multiple vendors and educated business decisions.

AHG Project: Revision of SMPTE 2042-1: VC-2 Video Compression Standard

This revision of the SMPTE mezzanine video compression standard (based on BBC's DIRAC pro) adds a new high quality profile to support Archiving and Production applications.

Status: The document was published 2012-08-30. The project originally included work to update RP 2042-3 VC-2 Conformance Specification to include new bitstreams; an enquiry has been made to the group about plans for this.

Impact: Standardized compression formats with clear IPR allow enhance interoperability among multiple vendors and educated business decisions

Topic: Stereoscopic 3D Essence Projects

AHG Project: Draft ST 2068: Stereoscopic 3D Frame Compatible Packing and Signaling

This work documents the various ways an image pair is sampled and packed into a single image frame and a method of signaling the packing method.

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Status: The document passed FCD ballot on 2012-03-01, with 79 comments. The AHG Chair had previously indicated that all comments had been addressed and were believed resolved, but the information is required to be entered on the ballot record to show acceptance by commenters of the proposed resolutions.

Impact: supports the market acceptance of 3DTV and development of interoperable systems with new features.

AHG Project: Draft ST 2066 Stereoscopic 3D Disparity Map
This work standardizes a data representation of disparity maps in 3D production and mastering systems (excluding Digital Cinema applications)

Status: This document closed ST Audit on 2012-08-01. An issue was raised regarding a Patent Statement associated with the project; it is being resolved.

Impact: supports the market acceptance of 3DTV and development of interoperable systems with new features.

AHG Project: Revision of RP 157 Key and Alpha Signals
This project adds the 'Alpha Channel' nomenclature that exists in other SMPTE standards. The text has also been improved to be more relevant to digital production.

Status: This document closed FCD ballot on 2012-06-11. In the TC meeting, a vote was held to raise the document to DP; the vote passed. A DP version has been submitted for ST audit.

Impact: update to clarify future use of SMPTE standard.

AHG Project: Revision of ST 125: SDTV Component Video Signal Coding 4:4:4 and 4:2:2, for 13.5MHz and 18MHz Systems
This is a revision of ST 125:1995 that also incorporates Standard ST 267 for 16x9 and Recommended Practice RP175 for 4:4:4:4 dual link.

Status: This document passed FCD ballot on 2012-02-07 with 63 comments.
The AHG Chair reported that about 6 comments remain to be resolved.

Impact: clarifications and update of the SMPTE standard which is a fundamental baseband standard for digital standard definition television.

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New TC-10E Business

Proposed project: RDD: JPEG 2K Mezzanine Profile for HD Applications
A presentation was given on this project and its project proposal was reviewed. This profile is currently deployed by a number of users and the RDD is proposed to aid interoperability.

In the meeting, liaison with VSF was discussed but the balance of opinion was that it was not necessary.

Proposed project: Revision ST 2036-1: Ultra High Definition Television - Image Parameter Values for Program Production
The presented purpose of this project was "to align with the ITU-R UHDTV Recommendation" which has recently been published. However, the TC was informed that the project actually requires just a small amount of updating to the published document, mainly to include 120Hz frame rate. The new project description is:
"Proposed revision of SMPTE ST 2036-1 to add support for an additional frame rate and a wider color gamut."

Impact: update and align the SMPTE standard for UHDTV with ITU-R BT.2020. This is required since SMPTE has and develops further interface standards for UHDTV.

Presentation: Full-scale RGB use-cases
At the last meeting round there was a presentation on encoding video using the full range of available code values; no values reserved for overshoots or sync signals. This is a common industry practice where DPX files are used.
This time, a presentation was given that gave seven use-cases for the full-range format and conversion between full range and "SMPTE range". It was also mentioned that it would be useful to have metadata to indicate which form of encoding is in use. There was support in the TC meeting for introducing this work as a SMPTE project, and the next step will be to prepare a project proposal.

Impact: this project would address a significant interoperability problem of "head / full range coding".

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Film Technology Committee (20F) chaired by David Schnuelle

The application of the general scope as it applies to application of mastered essence to theatrical film distribution, including, media and component creation, marking, laboratory methods, reproduction, packaging, projection, and related topics. Additionally film capture, editing and recording.

This group does not meet during the quarterly sessions.

Digital Cinema Technology Committee (21 DC) chaired by John Hurst and Nelson Meacham

The application of the general scope as it applies to application of mastered essence to theatrical digital distribution, including compression, encryption, wrapping, marking, packaging, media, logging, playout, projection, reproduction, and related topics.

SG Project: FIPS Revision
This project was set up to assess the impact of revisions that have been made to some US Federal Information Processing Standards on 21DC documents that reference them.

 Status: The group completed its study and is dormant pending further publication from NIST.

AHG Project: Audio Channel Labeling – D-Cinema Application
This work defines constraints to the Multichannel Audio Framework, ST 377-4 for application in D-Cinema. The group has developed these documents:
- ST 428-12 "D-Cinema Distribution Master - Common Audio Channels and Soundfield Groups"
- An amendment to ST 429-2 D-"Cinema Packaging - DCP Operational Constraints" document to add requirements to accommodate MCA labels.

 Status: ST 428-12 and ST 429-2 have been sent for ST Audit. Universal label requirements have been sent for ST Audit. This AHG should be disbanded after its two documents are published.
The AHG recommends that ST 428-3:2006 "D-Cinema Distribution Master Audio Channel Mapping and Channel Labeling" be made stable and that a Study Group should be set up to study new "3D" audio systems.

 Impact: New audio channel arrangements can be precisely labeled in a DCP without the need for additional standards development for each proposed arrangement.

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Topic: Digital Cinema High Frame Rate Projects

SG Project: Study Group on High Frame Rates for 3D and 2D D-Cinema Applications
This project identifies the impact of increasing 3D content frame rate to 48, 50, or 60 fps per eye or increasing 2D content frame rate to 96, 100, or 120 fps. The group is investigating the capabilities of deployed and about-to-be deployed equipment, playback on legacy equipment, mastering and workflow impacts and compression requirements.

Status: An interim internal report has been issued. A test "shoot" is being put together to create material at a variety of frame rates, so that impairments can be compared.

Impact: Provide science and basic understanding about next-generation HFR-capable systems and develops recommendations for future standards needs.

AHG Proposed Project: Revise ST 428-11:2009 to include High Frame Rates
This AHG will revise ST428-11-2009 to define the use of additional high frame rates as specified in the Study Group work statement: 48, 50, 60 fps per eye 3D (2K only) and 96, 100, 120 fps 2D (2K only).

Status: Go-ahead to set up this project was given at the last meeting round. Since then, there has been much discussion on the group's email, as well as in the TC meeting concerning the actual frame rates and resolutions and the best way to document them.

Impact: Enable HFR presentation in currently deployed hardware and provide guidance and standards to be used by the designers of next-generation HFR-capable systems.

AHG Project: Stereoscopic Subtitle and Timed Text Rendering
This AHG will revise SMPTE standards in compliance with "Stereoscopic On-Screen Text – Study Group Report" version 1.2. Documents affected:
ST 428-7 - D-Cinema Distribution Master - Subtitle
ST 429-12 - D-Cinema Packaging - Caption and Closed Subtitle

Status: Since the last meeting, a new draft ST 428-7 was sent to 2 week pre-ballot review and comments were received on some attributes. These comments will be resolved and the resulting document will be proposed for FCD ballot.
ST 429-12 will then be prepared for 2 week pre-ballot review.
Future work has also been identified to amend or revise ST 429-2: DCP Operational Constraints and ST 429-5: Timed Text Track File.

Impact: Improved fidelity of subtitle rendering between systems and run-time rendering of subtitles for stereoscopic program, as is currently available for 2D systems.

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AHG Project: Amendment to ST 430-3 D-Cinema Operations – Generic Extra-Theater Message Format
This project further constrains the encryption metadata requirements in the standard to improve interoperability.

Status: This document was elevated to DP on 2012-08-21. There was no report to the TC in Geneva.

Impact: interoperability between systems.

New TC-21DC Business
Note: the TC Chairs may convene a group to decide how to proceed with the following 3 projects.
Proposed AHG Project: Auxiliary Data Track File
This AHG will write a standard to carry data information that does not fall into the existing Sound, Picture, and Subtitle track files in a SMPTE Digital Cinema Package. Examples are object-oriented sound, motion control, and effects programming (wind, fog, etc).

Impact: interoperability between systems.

Proposed AHG Project: Synchronization Signal for External Processor
This AHG will write a standard for a synchronization signal that can be played back from a server and be used to accurately synchronize an external processor. This is related to the Auxiliary Data Track File proposal.

Impact: interoperability between systems.

Proposed AHG Project: Multidimensional audio
The project proposal has not been formalized, but the proponent describes the work as:
"With the development of high-order audio formats being offered by various companies, common methods are needed for distributing to multiple types of sound systems. Special consideration needs to be given to the B-chain to maximize shared components."
It was noted in the TC meeting that there are already implementations of this technology.

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Television and Broadband Media Committee (24TB) chaired by Ann Marie Rohaly

The General Scope as applied to mastered essence for television and broadband distribution (both separately and for hybrid television/broadband environments), including compression, encryption, wrapping, marking, packaging, media, tracking/control, presentation, reproduction, and related topics.

AHG Project: ST 2052 document suite on SMPTE Timed Text
This group is developing / maintaining this multipart standard. The work builds on W3C Timed Text Markup Language (TTML).
Already published: Part 1: Timed Text Format (SMPTE-TT)
                        Part 10: Conversion from CEA-608 Data to SMPTE-TT
Ongoing work: 1-year Review and update of Parts 1 and 10 above
                        Part 11: Conversion from CEA-708 Caption Data to SMPTE-TT
                        Part 12: Conversion from ST 428-7 Digital Cinema Subtitles to SMPTE-TT

Status: In the last quarter, there has been amendment work on Parts 1 and 10 and drafting work on Parts 11 and 12. Two important liaison documents have been sent to W3C, whose TTML specification is a basis for SMPTE-TT. They outline some additional TTML features that are desirable in the development of the ST 2052 suite. One of the liaisons has relevance to IMF data essence work. (See TC 35PM for further information on IMF.)

Impact: Ensure the availability of closed captions when television content is delivered through the Internet.

AHG Project: Draft ST 2064 document suite on A-V Sync Measurement and Assessment
This group studies A-V sync problems and liaises with other bodies that have interest in this field. Currently, its main work is to standardize a two-part 'Audio to Video Synchronization Measurements' document based on audio and video fingerprints:
- Part 1: Fingerprint Specification
- Part 2: Fingerprint Transport (includes VANC in SDI/HD-SDI, IP, MPEG)

Status: The draft of Part 1 is well-advanced; the target is to have the document at Committee Draft (CD) status by the December meeting block.
Part 2 drafting is underway. The group is considering splitting it further into separate parts for each of the transport bindings - *e.g.*, SDI, MPEG, IP.
Prototype testing continues; the test kit is in use in by broadcasters in Australia for 50Hz field/frame rate tests.

Impact: when standardized enhances the end-user experiences by avoiding lip-sync issues.

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AHG Project: Draft RP 2072: Emphasis of AES/EBU Audio in Television Systems and Preferred Audio Sampling Rate

Status: This project started as a Revision of EG 32, but as that document contains conformance language, it was thought more appropriate to issue it as a new RP. The document completed two week pre-FCD ballot review and will be sent to ballot after one comment is addressed.

AHG Project: Revision of ST 96: 35- and 16-mm Motion-Picture Film — Scanned Image Area
Revision under way and a Kavi group has been formed to facilitate collaboration.

AHG Project: Amendment ST 2035-2009: Audio Channel Assignments for Digital Television Recorders
This work brings ST 2035 into conformance with ITU-R BS. 1384-1 by adding two further 12 track channel assignments.

Status: The document is a Draft Publication and will be sent out for Standards Committee (ST) audit. Two additional metadata labels will be requested from TC 30MR.

New Business

Presentation: UHDTV Roadmap

This presentation covered NHK plans for development, deployment and standardization of UHDTV through the year 2025. It includes 120Hz frame rate which is part of the ST 2036-1 work just started in TC 10E.
The EVP introduced a new work proposal for a Study Group to identify requirements for interoperable production and distribution of UHDTV essence. The Study Group is expected to kick-off shortly and anyone interested is invited to join.

Impact: The Study Group will give guidance of what technologies/standards are required in a future UHDTV chain.

ITU-R Initiative on Access Services

The EVP will prepare a submission for ITU-R that responds to the question on this topic and promotes the ST 2052 suite as a worldwide standard. The submission will be made by SMPTE as a sector member of ITU-R.

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Metadata and Registers Committee (30MR) chaired by Phil Tudor and Paul Treleaven

The application of the general scope as it applies to definition and implementation of the SMPTE Registration Authority, used to identify digital assets and associated metadata. Additionally, the common definition of metadata semantic meaning across multiple committees.

Impact: Metadata and Identifiers such as UMID are essential to automated workflows and a pre-requisite to achieving the potential efficiencies and cost savings of these workflows.

AHG Project: Glossary of Stereoscopic 3D Terms
This project takes as its starting point the glossary developed last year by the 3D Home Master project in TC-35PM.

Status: This is a new project. A kick-off telecon will be scheduled for early/mid October.

SG Project: UMID Application
Unique Material Identifier (UMID) is standardized in ST 330. RP 205 covers application of UMIDs in Production and Broadcast Environments. This SG is studying whether further standardization would make the UMID more useful, particularly in Material location across various systems.

Status: At this meeting round, the SG held a meeting at which 8 papers related to UMIDs were presented. The plan is for an intermediate report at the December round and a final report, proposing standardization, at the March 2013 round.

SG Project: HQ implementation of On-line Registers
TC-30MR's metadata registers are currently spreadsheet-based and it has long been recognized that an online database is required. This SG is developing a report listing requirements for an online system.

Status: The group's report is almost complete. A telecon will be held 2012-09-27 to finalize the report and get it submitted to the TC. A further telecon will be scheduled to discuss potential tools to satisfy the requirement.

SG Project: Metadata Strategy
This review of the role of the TC started in the 2012-03 meeting round, examining how the focus of the TC should expand beyond the registration of metadata and towards standardizing metadata schemes and XML projects.

Status: The SG held a one-day face-to-face meeting at the BBC, London on 5th September and then a half-day at the end of this round of meetings. A strong feeling emerged that the Online Registry should be set up as a high priority. There was also strong encouragement for the TC to standardize a

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"SMPTE core" that is not bound to any one application or file format. The EBU and Movielabs offered to help with this work.

AHG Project: Revision of RDD18 - Acquisition Metadata Sets for Video Camera Parameters

Status: This document is now published and the group will be disbanded.

Topic: Register Structure Document Projects
There are several SMPTE standards defining the structure of various metadata registers defined by ST 336: Data Encoding Protocol Using Key-Length-Value. They are all being updated to include new requirements such as including xml symbols. Two of these updates are now published:
- ST 335:2012 Metadata Element Dictionary Structure
- ST 2003:2012 Types Dictionary Structure

AHG Project: Revision ST 400: Labels Register Structure

Status: This document has passed ST Audit and is being prepared for publication.

AHG Project: Revision ST 395: Groups Register Structure

Status: This AHG met during the meeting round and resolved a WD issue. It is expected that the document will be submitted as a WD to the TC by the December meetings.

AHG Project: Draft Essence Register Structure
This project creates a controlling standard for SMPTE ULs used as essence keys in MXF standards.

Status: The WD is close to completion, the next step is to structure the sub-classes.

AHG Project: Draft ST 2024: Registry XML Interchange Format
This work defines a format for exchanging data with the SMPTE metadata registry. It comprises a prose document and a schema.

Status: This work will resume after the ST 395 revision is completed.

WG Project: Metadata Definition
This Working Group (30MR10) co-ordinates a number of AHG projects for adding or maintaining metadata items in registers. Because the registers are updated frequently, each revision is identified by a version number.
The Elements and Labels contents have historically been identified with an 'RP' number. Now, register contents are specified as an *element* of the structure standard and no RP numbers will be used for new registers.

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AHG Project: Update Metadata Element Dictionary Contents (RP 210)

Status: AT this meeting round, there was a last call for proposed additions for RP 210v14. This version will conform to the current published ST 335 - i.e. with URN format and XML symbols.

AHG Project: Update Metadata Labels Register Contents (RP224)

Status: Some additional requests for aaditions to RP 224v13 have been received and will be incorporated. v13 will conform to the requirements of draft ST 400, which is on the point of being published.

AHG Project: Create and Update Types Register Contents
For some while, an informal Types Register has being maintained.
Now that the defining structure document, ST 2003, is published this register can be introduced formally for ballot.

Status: Some unnecessary columns are being removed from the informal register and it is being checked for conformance with the recently-published ST 2003 document. It can then be balloted.

AHG Project: Create and Update Groups Register Contents
For some while, an informal Groups Register has being maintained. The register is awaiting publication of the ST 395 revision, rather than constructing it to meet the limited features of the existing published ST 395.

Status: Addition requests for the EBU Subtitle List in MXF have been received.

AHG Project: Draft EG 2074: Metadata Naming Guidelines
This document aims to improve the consistency of names given to metadata items

Status: This document closed FCD ballot on 2012-09-10 with 4 comments to resolve. The comments appear to be easy to resolve.

Topic: Other TC-30MR Business

Process Issues arising from RP 2057 / AMWA AS-03 conflict.
An issue has arisen because the same Group key UL value has been used in RP 2057 and in AMWA AS-03.
Status: The TC Chair showed a proposal for dividing the UL space between AMWA and MXF to prevent this issue reoccurring.

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File Formats and Systems Committee (31FS) chaired by Mike Dolan and Pierre Lemieux

The application of the General Scope as it applies to definition of common wrappers, file formats and file systems for storage, transmission, and use in the carriage of all forms of digital content components.

Topic: Material Exchange Format (MXF)

MXF defines a file format for Video, Audio and Data essence along with associated Metadata, for use in production systems (rather than final delivery).

There are several MXF projects under way, introducing new MXF features / applications and revising existing documents for better interoperability.

Impact of MXF work: The various efforts on MXF are key enablers for interoperability and cross-vendor support of content exchange and processing in file based workflows – in all media related applications

AHG Project: Amendments to ST 377-1:2011 and Bitstream Exchange

When ST 377-1:2009 was published, certain topics were omitted because they needed more work or testing before consensus could be achieved. This project took on these topics for amendments to ST 377-1. One amendment was published and also rolled-up into the Standard published as ST 377-1:2011. Another amendment that focused on "Channel ID and Mono Source track properties" was published as Amendment 1: ST 377-1:2011 and this required amendment to ST 382, as Amendment1: ST 382:2007.

Status: The one remaining amendment, Amendment 2: ST 377-1:2011 passed DP ballot on 2012-08-27 and is now at ST Audit.

The TC agreed to put the AHG into suspension, although it will continue to manage the Bitstream Exchange (see below).

Bitstream Exchange

Status: Additional bitstreams containing picture, sound and subtitle material are being uploaded for member use in testing. It was noted that a file size issue has been experienced.

AHG Project: Draft ST 377-2: KLV-encoded extension syntax (KXS)

This work specifies an alternative approach to the 'Application Metadata Plug-ins' specified in SMPTE 377-1.

Status: Work on this document has languished for some time, but it should resume now as a new Chair has been appointed.

AHG Project: Draft EG 377-3: MXF Engineering Guideline

This project expands the scope of an earlier MXF EG to include updates and new MXF documents

Status: All comments have been resolved and a revised document has been posted for 2 week review prior to a DP vote.

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AHG Project: Amendment ST 380: MXF – Descriptive Metadata Scheme-1

Status: The document editor has not had time to progress this work as priority has been given to ST 377-3, though he agreed that it would take priority over EG42 that he is also editing.

AHG Project: Revision EG 42 MXF Descriptive Metadata

Status: No progress

AHG Project: Draft VC-2 mapping to MXF Generic Container

Status: There has been no recent activity on this project. A new AHG chair and document editor has been appointed to get the project moving again. It was reported that the document is substantially complete.

AHG Project: Revision ST 392: MXF Operational Pattern 2a

Status: The final two FCD ballot comments on the document were resolved during the TC meeting and the document will be posted for DP ballot.

AHG Project: Draft Mapping of EBU Tech 3264 Subtitle List to MXF Generic Streams
This document defines a method to encapsulate EBU Tech 3264 Subtitle List files within the MXF file that contains the program material, without modification to the underlying STL data.

Status: This document passed FCD ballot on 2012-08-23. Most comments are resolved. The document defines new element and group UL's; these need to be added to the TC-30MR registers.

AHG Project: Draft ST2070: 3D in MXF Operations
The project name was formerly "Stereoscopic 3D in interleaved MXF for TV".
Document suite comprises: ST 2070-1 Common Provisions document
                                  ST 2070-2 OP1a mapping
                                  ST 2070-3 OP-ATOM mapping
                                  xx 2070-4 Applications and Usage Rules

Status: Ongoing. Drafts of Parts 1,2,3 went to 2-week preballot review at the end of 2011. Comments were received and many have been resolved. The document editor has not been able to work on Part 1 or Part 2 and a new document editor has volunteered to take over.
Part 4 has not been started yet.

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AHG Project: Draft ST 381-3: – Mapping AVC streams into the MXF Generic Container
This project started as a revision of RP 2008. The group decided that the document should be a Standard.

> **Status:** The draft document went for pre-ballot comment review that closed 2012-09-13. The only comment received was editorial and resolved in the AHG meeting. The document is ready for FCD ballot.

AHG Project: Revision ST 422:2006: JPEG2000 in MXF
The main purpose of this revision is to add provisions for interlaced images.

> **Status:** The group met at the Geneva meeting round and resolved some issues that may require revision to ST 379-1 and ST 379-2. A revised draft will be submitted to the TC for 2 week pre-FCD-ballot review.

AHG Project: Revision ST 434: XML representation of MXF metadata
Update ST 434 to take account of changes to ST 377-1 and other MXF documents

> **Status:** The group has set a deadline of 12th October for updated MXF documents to be included in this revision of ST 434. The document and its schema will then be finalized for 2 week pre-FCD-ballot review.

AHG Project: Revision RDD 9:2009 Sony MPEG Long GOP Products
The revision will clarify the descriptions of system and essence items; add further constraints of codec and mapping implementation; add examples of Index Table application.

> **Status:** The draft RDD has completed an informal 2 week pre-RDD-ballot review and will be ready for ballot by the end of September.

AHG Project: Draft RDD: AVC MXF Proxies
This RDD defines an MXF Application Profile for AVC proxies with MPEG-2 AAC audio per Operational pattern 1A (OP1a).

> **Status:** RDD drafting is progressing with an aim to have a ballot document by the end of September.

AHG Project: Amendment ST 382: Mapping AES3 and Broadcast Wave Audio into the MXF Generic Container
This amendment adds Constant Duration Audio Custom Wrapping.

> **Status:** This document is at FCD ballot closing 2012-09-17. At the time of the TC meeting there was one comment that had been resolved in an updated draft.

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AHG Project: Amendment RP 2057: Text-Based Metadata Carriage in MXF
This amendment overcomes a problem of duplicate UL assignment.
An advisory note has been posted.

> **Status:** The group's amendment document was at 2 week pre-FCD-ballot review at the time of the TC meeting. It will be sent to ballot as soon as possible.

AHG Project: Revision ST 436: MXF Mappings for VBI Lines and Ancillary Data Packets

> **Status:** It has been decided that this project will create ST 436-1 and will compile a list of topics for a separate project, ST 436-2, that will add new features or constraints that are possibly incompatible with ST 436-1. It is anticipated that the AHG will have at least one more review before requesting a TC pre-ballot review.

End of MXF Projects

WG Project: Draft ST 2034: Archive Exchange Format (AXF)
This Working Group (31FS-30) will define an archive format that will promote interoperability between all forms of archive media. A multipart suite of documents is planned; Part 1 deals with 'AXF Structure and Semantics' and includes an XML schema.

> **Status:** Part 1 is well-advanced and the group expects this document to go to the TC for 2 week pre-FCD-ballot review before the December meeting round.

Impact: The work on an Archive Exchange format will provide the basis for standards that facilitate interoperable content exchange between archives, independent of physical media or archive system vendor.

AHG Project: XML Schema for Audio and Related Metadata
This project will develop an XML Schema for audio and related metadata focusing on technical aspects

> **Status:** The group met and reviewed an early draft document and schema. Decisions need to be made about how this work fits in with other audio metadata projects and with UL-based metadata. The TC has asked the group to clarify the tasks and deliverables for the project.

AHG Project: Draft ST 2065-4: ACES Image Container File Layout
This project defines an AMPAS Image Interchange Format (IIF) file format for 'ACES'. An associated IIF-related SMPTE project has published an amendment to ST 268: File Format for Digital Moving-Picture Exchange (DPX) for APD_ADX data.

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Status: This draft document completed 2 week pre-FCD-ballot review and comments are resolved. A version ready for FCD ballot will be posted to the TC by 14th September.

AHG Project: Draft ST 2001: XML Representation of SMPTE-registered Data (Reg-XML)

ST 2001 is about representing <u>instances</u> of SMPTE-registered data in XML.

There are two Parts: ST 2001-1: Mapping Rules (includes 2 schemas)

ST 2001-2: AAF and MXF data (includes an XML meta-dictionary and schema)

Status: The Part 1 draft package passed FCD ballot on 2012-07-16 with 10 comments to resolve - late comments were submitted and there are now 31.

The Part 2 document completed 2 week pre-FCD-ballot review with no comments and the AHG requests FCD ballot.

Topic: New TC-31FS Project Proposals

A new project will be initiated to revise/amend ST 379-1 and ST 379-2.

Network and Facilities Architecture Committee (32NF) chaired by Alan Lambshead and John Snow

The application of the general scope as it applies to definition and control of elements supporting the infrastructures of content production and distribution facilities, including file management, transfer protocols, switching mechanisms, and physical networks that are both internal and external to the facility excluding unique final distribution methods.

WG Project: *Mappings*

This Working Group (32NF40) co-ordinates projects that specify how image formats are mapped onto interfaces.

There was WG discussion on the proliferation of serial digital video interfaces and the need for an explanatory document that pulls them all together and increases the visibility of some documents - e.g. ST 372 and RP174.

The WG proposed that the TC should consider a project to draft an EG to provide an overview of SDI interface standards and technologies.

AHG Project: ST 425 suite of 3Gb/s Multi-Link Interfaces

To create 3G SDI interface mappings for the real time transport of image formats: 1920x1080; 1280x720; currently approved 2k and 4k; UHDTV-1; UHDTV-2, including stereoscopic images.

Current Document Set: ST 425-2 (3D images that fit in one 3 Gb/s link), now published

ST 425-3 (Single images that fit in two 3 Gb/s links)

ST 425-4 (3D images that fit in two 3 Gb/s links), now published

Status: Progress was made on several ST 425-3 issues during the AHG meeting and the group anticipates ST 425-3 will be posted for pre-FCD-ballot review before the December meeting cycle.

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After completion of ST 425-3, the group will continue with work on the development of quad 3G link mapping documents.

Impact: this work is relevant to all areas of real-time and uncompressed content exchange applications in the professional domain. With these standardized interfaces the industry can build interoperable products and users can define real-time production systems with functioning workflows.

AHG Project: 3D Production Timing & Sync
This group is developing a document suite on 3D timing and sync for:
Part 1: Acquisition Systems
Part 2: Live Production Systems
Part 3: Physical Layer / Transmission System.

Status: Development of the document suite drafts has continued in telecons since the last meeting round. A new editor has taken over Part 1 and a body of text has been contributed for Part 3.
Impact: This document (when complete) will be relevant for all facilities doing Stereoscopic 3DTV production

WG Project: Interfaces
This Working Group (32NF50) co-ordinates projects that specify electrical and optical interfaces.

AHG Project: Draft ST 2062: 25 Gb/s Serial Signal/Data Interface
Documents: Part 1: Image Format Mapping   Part 2: Optical Fiber Interface

Status: These documents both went to FCD reballot that closed 2012-08-22.
Draft ST 2062-1 passed ballot with 36 comments to resolve.
Draft ST 2062-2 passed ballot with 13 comments to resolve.
Comment resolution will start by email and the WG Chair will reserve a 2 hour slot at the December meeting round for this AHG.

Impact: Ultra High Definition is defined in two levels – as 4k and 8k formats for TV frame rates. This work is required for the exchange of real-time and uncompressed UHDTV images between systems in the professional domain, thus it will directly impact equipment manufacturers.

Topic: Video Jitter / Pathological Documents

Impact: This set of documents for jitter and pathological signals will ensure the quality of service in digital production environments.

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AHG Project: Revision EG34: Pathological Conditions in Serial Digital Video Systems and Revision RP 198: Bit-Serial Digital Checkfield for Use in High-Definition Interfaces

AHG Project: Revision RP184: Specification of Jitter in Bit-Serial Digital Systems and Revision RP192: Jitter Measurement Procedures in Bit-Serial Digital Interfaces

Status of 2 AHG projects above: These projects are interrelated and are being undertaken by the same AHG. The two document editors made a proposal on the best way forward. It generally involves reduction in the documents' scope and the rationale was explained in a presentation to the WG. This proposal will be discussed at the AHG to make sure there is consensus on how to proceed.

SG Project: Jitter definition, measurement and specification
The purpose of this group is to write a "best practise" report on jitter measurement, leveraging techniques used in telecommunications.

Status: This group is on hold until new resources are found.

AHG Project: Revision ST 424: 3 Gb/s Signal/Data Serial Interface
Revision is primarily to tighten the jitter requirements to improve interoperability.

Status: This document is at ST Audit closing 2012-10-06.

WG Project: Video Over IP
This Working Group (32NF60) was established to handle all projects related to IP transport of media. See below for a new project proposal from this WG.
Impact: The set of documents being developed in regard to video transport over IP will address the important need of the media industry to move towards IP based infrastructures in professional media production. The standards will facilitate interoperability between systems.

AHG Project: SDI on IP
Documents: Draft ST2022-5: FEC for High Bit Rate Media Transport on IP
                     Draft ST2022-6: High Bit Rate Media Transport on IP

Status: Both documents were elevated to DP status at the TC meeting and are now in ST Audit closing 2102-10-06.

AHG Project - High-Availability delivery of SMPTE 2022 streams through Fully Redundant Transmission

This project will standardize an interoperable method for generating redundant SMPTE 2022-n streams such that a receiver can generate a single highly-available output.

> **Status:** This project will have its kick-off meeting on 2012-10-02 at Broomfield, Colorado with the facilities being provided by VSF.

AHG Project: Draft RP 291-2: Ancillary Data Space use – SDTV and HDTV component systems
There have been a number of issues with Ancillary space implementations and this document has been introduced to make some additional provisions and explanations.

> **Status:** This document closed FCD reballot on 2012-08-22 with a total of 34 comments to resolve. The plan is to complete comment resolution by mid October and complete the pre-DP document review by the first week of November.

AHG Project: Revision of ST 352:2011: Payload Identification Codes for Serial Digital Interfaces
The project tasks are to revise ST 352:2011 to address the issues of Payload ID assignment for external SDOs, and to clarify ambiguities in the existing ST352:2011.

> **Status:** This document closed FCD ballot on 2012-09-10 with a total of 43 comments to resolve. All have been addressed and 11 are resolved.

AHG Project: Revision: ST 2036-3: Ultra High Definition Television -Mapping into Single-link or Multi-link 10 Gb/s Serial Signal/Data Interface

> **Status:** This document is in the publication queue.

Topic: Other TC-32NF Business

Liaison with IEC TC100 over Data Types for Non-PCM audio and Data in AES 3
Two TC-32NF members attended a liaison meeting with IEC TC100 in Budapest in 2012-04.
They gave a report on the meeting with details of a code point extension scheme that TC 100 plans to use in the consumer space. At the TC meeting, it was decided that details of the scheme would be prepared for the TC to decide whether it could form the basis of a revision to ST 337 and ST 338.

Proposed SG Project: Media System IP Network Design
Several SMPTE TCs have projects that involve IP networks. There is a need for a SG to identify parameters to consider in network design. A presentation was given at the TC that served as an introduction to the topics that need to be considered.
Project approval is in progress.

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Time Labeling and Synchronization Committee (33TS) (chairs John Fletcher and Bob Edge)

The application of the general scope as it applies to the definition of time labeling of essence and the synchronization of systems and essence in both digital and analog forms over networked and streaming transports.

Report of Plenary Meeting Sep. 14th 2012

The two WGs below held meetings over 3 days, 2012-07-23 to 2012-07-25 at Ryerson University, Toronto, Canada.

WG Project: Time Labeling (TL)

This WG (33TS-10) will specify a Time Label to replace SMPTE Time Code and provide support for: Higher frame rates; Time duration greater than 24 hours; Off-speed acquisition

> **Status:** A number of submission documents were reviewed at the WG meeting concerning requirements and use-cases. Some proposals for time labels were also reviewed. The group made some decisions on the TL; more decisions are needed. The document editor has started drafting the proposed documents.

WG Project: Synchronization

This WG (33TS-20) will define a media synchronization system that can be distributed over standard IP networks

> **Status:** Working Drafts for 'SMPTE Epoch/Signal Generation' and 'SMPTE PTP Profile' are progressing well. It is hoped that the former could be ready for Committee Draft by the end of the October WG meetings. The latter has a few issues to resolve before CD.

> *Impact: These standard should provide substantial business savings when implementing new production infrastructures.*

AHG Project RDD: Sony e-TSync Products - Transferring Synchronization Signals over an IP network

This RDD defines the method of transferring a synchronization signal using an existing time synchronization protocol.

> **Status:** A WD document was sent for approval and a comment was received which has been addressed in the latest draft. The draft will be (subsequently completed) sent to the TC for review before ballot.

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AHG Project: Revision of Date and Timezone documents
ST 309 needs a correction for a Daylight Saving Time Problem. EG35 needs revision to procedures for maintaining sync between ST 12 timecode and clock time.

Documents: Revision of ST 309: 1999 Transmission of Date and Time Zone Information in Binary Groups of Time and Control Code

Revision EG 35: 1999 Time and Control Code Time Address Clock Precision for Television, Audio and Film

Status: Both draft documents passed DP ballot in the last quarter. ST 309 has been sent to ST Audit and EG 35 will have an editorial change to the Introduction before going to ST Audit.

AHG Project: Revision of EG 40:2002: Conversion of Time Values Between SMPTE 12M Time Code, MPEG-2 PCR Time Base and Absolute Time

Status: The EG40 draft passed FCD ballot on 2012-01-18. There was discussion in the TC about presentation of the math in a formula and this was resolved; the document is ready for DP ballot.

Other TC-33TS Business
The following new project proposals have been introduced in order to add 48fps and 48/1.001fps rates:

Proposed AHG Project: Amend ST 12-1: Time and Control Code and Amend ST 12-2: Transmission of Time Code in the Ancillary Data Space

Proposed AHG Project: Amend ST 2051: Two-Frame Markers for 50-Hz and 60(/1.001)-Hz Progressive Digital Video Signals on 1.5 Gb/s and 3 Gb/s Interfaces

Media Systems, Control and Services Committee (34CS) chaired by Chris Simons and John Footen

The General Scope as applied to the implementation of media services, methods of managing and controlling hardware devices and software systems, and the management of media workflow processes, including associated signaling and control mechanisms.

WG Project: BXF
This Working Group (34CS-10) has defined the Broadcast Exchange Format. It is primarily an XML-based system that standardizes exchange of Schedule, As-run and Content-related metadata.

The document suite is: ST 2021-1: General Information and Informative Notes
ST 2021-2: Protocol
EG 2021-3: Use Cases
EG 2021-4: Schema Documentation

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RP 2021-9: Implementing BXF

Project: BXF 3.0
This project adds further feature enhancements to BXF - see project for initial list.

Status: Most of the nine items on the BXF 3.0 list are complete. The next meeting will be a 2-day face-to-face, 2012-10-3&4, at Mequon, Wisconsin USA. In addition to completing the Agency Instructions work, the group will review all BXF 3.0 work to date and agree a plan to complete BXF 3.0 and take it ballot.

AHG Project: Media Device Control over IP
This project will produce a suite of documents:
ST 2071 Part 1: Media Device Control Framework
ST 2071 Part 2: Wire Level Protocol
ST 2071 Part 3: Core Capability Interfaces
ST 2071 Part 4: Discovery

Status: Part 1 is ready for ST Audit. Part 2 passed FCD ballot on 2012-08-23 with 9 comments; all now resolved. Part 3 is still being drafted. Part 4 is not yet started.

Impact: greater control flexibility and reduced costs of equipment and infrastructure

Topic: Other TC-34CS Business
The TC is maintaining a 'watching brief' on developments with FIMS - the Framework for Interoperable Media Services.
Proposed RDD Project :The FIMS 1.0 framework has been approved and it will be brought to SMPTE as an RDD.

Impact: detailed SMPTE review of the FIMS specification

Media Packaging and Interchange Committee (35PM) chaired by Howard Lukk and Thomas Bause Mason

The General Scope as applied to the packaging of media elements, to facilitate interchange and interoperability of formats within specific integrated application ecosystems in the professional fields of media creation, production, post-production archiving and related topics.

WG Project: Interoperable Master Format (IMF)
The Working Group (35PM-50) co-ordinates the activities of a number of AHGs defining various aspects of IMF.

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Status: The WG has defined the document set for the IMF Core and a series of IMF applications. It has set up a Sample Material Exchange project (see AHG below). The WG announced that it plans to submit the documents marked "ready for pre-FCD-ballot review" below to the TC 2 weeks after the TC meeting.

Impact: The IMF format is vital for studios, broadcasters, content owners with multiple distribution path requirements. It will help to reduce the file format diversity in media content which should help decrease operation costs.

Project: Draft ST 2067-20: IMF Application #2, JPEG 2000

Status: This draft document is ready for pre-FCD-ballot review.

Project: Draft ST 2067-30: IMF Application #3, MPEG-4 Visual Simple Studio Profile (SStP)
Status: This draft document is ready for pre-FCD-ballot review.

Project: Draft ST 2067-2: IMF Core Constraints

Status: This draft document is ready for pre-FCD-ballot review.

AHG Project: IMF CPL and OPL
This group is developing a draft ST 2067-3: Composition Play List (CPL) and draft ST 2067-4: Output Profile List (OPL)

Status: Draft ST 2067-3: Interoperable Master Format – Composition Playlist is currently at ST Audit. The ST 2067-4 OPL document will incorporate contribution from the IMF audio group.

AHG Project: IMF Wrapping, Security & Packaging

Status: Draft ST2067-5: Interoperable Master Format – Essence Component is currently at ST Audit. The AHG does not currently have any other activities.

AHG Project: IMF Data (Text) Essence

Status: Mapping from ST428-7: D-Cinema Subtitle to SMPTE-TT is currently under way in TC-24TB. Liaisons to W3C have been sent, requesting additional features in their TTML system that are required for IMF.

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AHG Project: IMF Audio

Status: The group has contributed audio requirements to IMF Application #2, Application #3, Core Constraints and OPL documents .
The group's following two documents are ready for pre-FCD-ballot review:
Draft ST 2067-6: IMF PCM Audio Essence
Draft ST 2067-8: IMF Common Audio Channels, Soundfield Groups and Group of Soundfield Groups

AHG Project: IMF Sample Material Interchange
This group has been set up to facilitate interoperability testing by making sample material available online. An initial proposal for the operation of this process has been drafted.

Status: A server has been set up and Application #2 files have been uploaded.

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Notes on this report and the SMPTE Standards Process

SMPTE Technology Committees (**TC's**) are tasked with the development and ongoing maintenance of engineering documents relevant to Television, Broadband, Film and Digital Cinema. The TC's are set up by the Engineering Vice President (**EVP**) and are overseen by the Standards Committee (**ST**).

The standards process operates under the SMPTE Engineering Operations Manual .

Within Technology Committees, there may also be Working Groups (**WG's**), Study Groups (**SG's**) and Ad-Hoc Groups (**AHG's**).
'Standards Community' (**SC**) is a collective term that include all Technology Committees. It is used to convey information that is relevant to all TC's, such as meeting logistics and registration information. An SC meeting is held during each meeting round.

SMPTE document development process

The document stages are:
WD = Working Draft   **CD** = Committee Draft
FCD = Final Committee Draft
DP = Draft Publication, which initiates **ST Audit** - a due process check by the Standards   Committee

SMPTE document-type abbreviations

ST = Standard   **RP** = Recommended Practice
EG = Engineering Guideline   **RDD** = Registered Disclosure Document

Other Notes

This report describes each active **Project** in each TC. Occasionally, there is more than one project group working on a particular technology field. In this case, those projects are grouped under a **Topic** headline.

SMPTE manages its standards documentation, meetings and ballots in an online system called **Kavi**.
Kavi has a new **Project View** feature that includes a project summary page. It is used to state the project justification at the proposal stage and to track progress through to completion.
In this report access to the project view, where available, is via a hyperlink in the **Project** word in the title.