Standards Quarterly Report

Result of the SMPTE Standards Commitee Meetings December 2013
Hosted by Turner Global Technology & Operations Studios
Atlanta, Georgia, USA

Society of Motion Picture and Television Engineers
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SMPTE Standards Quarterly Report
Executive Summary

As a result of SMPTE Standards Committee Meetings
9 - 13 December 2013
Hosted by Turner Broadcasting System, Atlanta, Georgia, USA

Ten SMPTE Technology Committees and sixteen subgroups were hosted by Turner Broadcasting System, 9 - 13 December.

An additional half-day session "Users Have Your Say" was held during this meeting round. There were 12 presentation topics from a good selection of users and a number of potential areas for media technology standardization were identified. More details in this section of the report.

Some 80 members attended in person over the 5 days, and there was additional participation by remote access. This Executive Summary captures a few of the more notable projects and their current status; more information on the 160 current projects in the detailed report.

The Essence Technology Committee has a set of 3 projects under way that are related to High Dynamic Range video. At this meeting cycle, an additional Study Group was initiated to help put this HDR work into context. Details

The Study Group on the UHDTV Ecosystem completed its initial report in 2013-09, available free here. The Study Group's work continues with refinement to some parts of the initial report and drafting a second report on topics such as UHDTV-2. Details

Work on Open Binding Technology aims to define a method for embedding persistent content identifiers into audio/video essence in a way that survives compression and distribution through the supply chain. The group expects to complete its report around 2014-03-01. Details

A new "Interoperability of Immersive Sound Systems in Digital Cinema" Working Group has been formed. Its scope is for systems greater than 7.1 channels and includes standardizing a single object-based distribution file format for playback into a variety of theatrical speaker configurations. Details

There are currently 13 MXF projects in process, adding features to this file-based suite of standards or creating constraints for improved interoperability. Details

The File Formats and Systems Technology Committee also has a project defining the "Archive Exchange Format" standard suite. Part 1 passed its Final Committee Draft ballot in the last quarter. Details

There are a number of projects aimed at extending the bandwidth capacity of real-time video interfaces.
- A document suite defining how sets of two and four 3Gb/s SDI interfaces can be combined is largely complete.
- A Working Group defining 6, 12 and 24Gb/s SDI interfaces (targeting UHD) has made very good progress, with the 6 and 12Gb/s documents approaching Final Committee Draft ballot.
- A project on UHDTV Multi-link 10Gb/s interfaces will extend the ST 2036 suite to include transport of 120fps UHDTV-1 and UHDTV-2.

The Broadcast Exchange Format (BXF) group has published its documentation of version 3.0 of the specification and is starting work on features to be added for version 4.0. Details

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SMPTE Standards Quarterly Report
Detailed Account

As a result of SMPTE Standards Committee Meetings
9 - 13 December 2013
Hosted by Turner Broadcasting System,
Atlanta, Georgia, USA

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

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

A change was recently introduced to call the groups developing documents “Drafting Groups” (DGs) rather than “Ad-Hoc Groups”. If you follow any Drafting Group links in this report, you will find that they mostly show up as AHGs; projects started before the change will not be renamed.

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

The next quarterly Standards meeting round will be held 3 - 7 March 2014 in Niagara-on-the-Lake, Ontario and will be hosted by Semtech.

Further quarterly Standards meeting rounds are planned for:
June 2014 - This meeting round will be held in Tokyo in conjunction with the NHK-STRL “open days”.
17 - 21 September 2014 - EBU, Geneva, Switzerland

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

Details from each Technology Committee meeting

Essence Technology Committee (TC-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 documents published in the last quarter

SMPTE ST 2036-1:2013, Ultra High Definition Television - Image Parameter Values for Program production
SMPTE ST 2068:2013, Stereoscopic 3D Frame Compatible Packing and Signaling for HDTV
SMPTE ST 421:2013 (Revision of SMPTE 421M-2006), VC-1 Compressed Video Bitstream Format and Decoding Process

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Topic: Video compression standards in SMPTE

DG Project: Revision of SMPTE ST 2019 VC-3 Video Compression Documents
This project extends the functionality of SMPTE VC-3 compression (based on AVID's DNxHD technology) by adding 5 new Compression IDs to support 4:4:4 sampling and RGB color space. This work affects two documents - ST 2019-1: VC-3 Picture Compression and Data Stream Format and RP 2019-2: VC-3 Decoder and Bitstream Conformance. In addition, ST 2019-4 is being revised in TC-31FS.

Status: ST 2019-1 passed DP ballot on 2012-10-23. Some editorial corrections have since been applied. For RP 2019-2, a new software reference decoder has been completed and test files are available. It was agreed that RP 2019-2 will be submitted to the TC for 3 week pre-FCD ballot review (extended to allow for the holidays). Part 1 is being held until Part 2 is ready.

Business Impact: Interoperability between systems

DG Project: Draft ST 2073: VC-5 Video Essence
This project standardizes the Cineform / GoPro video compression system. The document suite plan currently comprises:

- Part 1 - Elementary Bitstream
- Part 2 - Conformance Specification (includes Reference Decoder, Sample Encoder, sample bitstreams)
- Part 3 - Image Formats
- Part 4 - Color Difference Component Sub-sampling
- Part 5 - Layers
- Part 6 - Sections (this refers to a mechanism for implementing special functions without disturbing standard decoders)
- Part 7- Metadata

Status: Part 1 passed ST Audit on 2013-07-29. It will be held until Part 2 is ready.
Part 2 was submitted for pre-FCD ballot review with no comment, so it will now proceed to a 6-week ballot (extended to allow for the holidays).
Note: the associated files were submitted to Kavi, but arrangements are under way to set up a permanent test materials repository.
The Part 3 draft is nearly ready for submission to TC-10E; it has been on hold until Part 2 and its test materials were done.
Parts 4, 5, 6 & 7 will follow.

There is also VC-5 work under consideration for an MXF Wrapper (TC-31FS) and a VC-5 IMF Application (WG 35PM50).

Business Impact: Interoperability between systems

DG Project: Revision of ST 2042-1: VC-2 Video Compression Standard and ST 2042-3: VC-2 Conformance Specification
This revision of the SMPTE mezzanine video compression standard (based on BBC's DIRAC pro) adds a high quality profile to support Archiving and Production applications.

Status: The Part 1 revision was published 2012-08-30 (the TC Chair has noted that this probably should not have been done, because it is normal to wait until the reference decoder/bitstream files

are available). The bitstreams to complete Part 3 are expected to be completed 2014-01, together with the source code for the reference decoder and sample encoder. The conformance document will then be updated to reference these materials and proceed to pre-FCD ballot review.

Business Impact: Interoperability between systems

DG Project: RDD: JPEG 2000 Mezzanine Profile for HD Applications

This project will create a JPEG2000 profile with consistent visual qualities so that in a multi-vendor environment, insert edits, assemble edits and concatenation can take place without significant visual artifacts. This profile is currently deployed by a number of users and the RDD is proposed to aid interoperability.

Status: Work on this RDD has resumed and it is expected to be ready for ballot early 2014-01.

Business Impact: Interoperability between systems

DG Project: Draft SMPTE 2080 suite: Reference Display and Environment for Critical Viewing of Television Pictures

The task of this project is to draft the following suite of documents dealing with the use of fixed pixel matrix reference displays:

ST 2080-1: Reference White Luminance Level and Chromaticity
RP 2080-2: Measurement and Calibration Procedure for HDTV Displays (deals with parameters that can be regularly adjusted)
ST 2080-x: Reference Display Characteristics
ST 2080-x: Reference Viewing Environment Characteristics
RP 2080-x: Full Measurement / Calibration
EG 2080-x: Engineering Guideline to provide context and background

Status: The Part 1 document passed FCD ballot on 2013-06-21 with 27 comments and ballot comment resolution continues with a revised draft v2.1.
A WD of the Part 2 document is being developed by the group; it is needed as a reference for Part 1.
An issue has arisen with reference white looking different on different displays. This has been tracked down to an error in the original 1931 color matching equations. There is consideration of using offsets in u' v' color space to overcome the problem.

Business Impact: Users and industry have common standards to assess image quality on a reference display.

DG 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 RP 175 for 4:4:4:4 dual link.

Status: The document is on the point of publication. It was agreed that a withdrawal statement is required for the incorporated documents ST 267 and RP 175. The group will be disbanded.

Business Impact: Interoperability between systems

DG Project: Revision of RP 219: High-Definition, Standard-Definition Compatible Color Bar Signal
The proposal is to add optional components to part of the signal to exercise levels in the white overshoot region above level 940 and in the sub-black region below level 64 (10bit samples).

Status: This draft document passed FCD-ballot on 2013-08-26 with 61 comments to resolve. Comment resolution is in progress and the group is down to 3 main issues to resolve.

Business Impact: Improved interoperability between HD and SD color bar

DG Project: Draft RP 2077: Full-Range Image Mapping
This project defines the full-range method of image coding in bit depths of 10 and 12 bits - i.e. no reserved code values. It recommends methods of conversion between full-range image coding and the corresponding conventional image formats. This method is currently in use for some file-based applications such as DPX.

Status: This document is now in the publication queue.

Business Impact: Addresses a long known issue and enhances interoperability

DG Project: Draft ST 2084: Perceptually-based EOTF
The scope of the proposed project is to define an expanded luminance range for next generation entertainment content and to define a new Electro-Optical Transfer Function (EOTF) based on a human perceptual model.

Status: This group was formed after the last meeting round and has held 3 meetings. The DG Chair announced that there was consensus to submit the draft to the TC for a 3-week pre-FCD ballot review.

DG Project: Draft ST 2085: Color Differencing for High Luminance and Wide Color Gamut Images
The proposal is analogous to the transform from RGB to YUV, but in XYZ color space, allowing sub-sampling of the color difference channels.

Status: This group was also formed after the last meeting round and has held 3 meetings. The DG has developed a draft document that is now at version 2.

DG Project: Draft ST 2086: Color Gamut Metadata
The metadata is designed to convey both the color gamut and the dynamic range of the display used for mastering.

Status: This group was also formed after the last meeting round and has held 3 meetings. The DG has developed a draft document. A number of valuable comments have been received from DG members and during the TC meeting.

Business Impact: A number of companies are proposing a "Next Generation" vision for delivering an enhanced viewing experience to the home. These three projects contribute to this vision.

Possible new SG associated with the 3 projects above
Discussion during the meeting week identified that there was confusion about the application area for the above work. It is proposed that a Study Group be set up to look at the "HDR ecosystem" and to give it a clear definition and context, without curtailing the existing work. For instance, it was pointed out that the "ACES" standard defines an HDR system.

DG Project: Draft Depth Map Representation
This project will define a standard for a data representation of depth maps in multi-view production and post-production to support interoperability and exchange between relevant processes.

Status: This group was also formed after the last meeting round. A Working Draft has been created and work continues documenting some use-cases that complicate depth and disparity translations.

DG Project: Revision of RP 173: Loudspeaker Placements
This project will update the Recommended Practice in line with techniques adopted by the broader recording industry, as embodied by AES and ITU standards.

Status: The Chair reported difficulty accessing the SMPTE project resources, but has assembled a number of resources ready for use in this work.

Topic: New TC-10E Project Proposals

Proposed Project: Television Lighting Consistency Index
The scope of the proposal is to document the "Television Lighting Consistency Index (TLCI)" and the "Television Lighting Matching Factor (TLMF)". It has been requested that the project should also address the needs of cinematographers.

Status: This proposal was presented last time, but has not moved forward to approval. A Chair has now been found for the work, so project approval will be initiated.

Other TC-10E Business

Fractional Frame Rates
The topic of whether the higher frame rate of 120Hz should also support the rate of 120/1.001 was discussed at several meetings this round, principally TC-10E which has recently revised its UHDTV standards to include 120Hz. The Standards Committee will investigate possible ways to avoid fractional frame rates.

Additional Higher Frame Rates for ST 2036-1
It was proposed that 100Hz and 120/1.001Hz should be added. These additional rates are under consideration by ITU-R.

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 Mike Radford

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.

Project: Digital Cinema Distribution Master Metadata
Status: It has not been possible to get participants to contribute to this project and it will be closed.

DG Project: Stereoscopic Subtitle and Timed Text Rendering
This DG will revise SMPTE standards in compliance with "Stereoscopic On-Screen Text – Study Group Report" version 1.2.
Documents affected:
- Revise ST 428-7 - D-Cinema Distribution Master - Subtitle
- Revise / Amend ST 429-2: DCP Operational Constraints
- Revise / Amend ST 429-5: Timed Text Track File

Status: The revised draft ST 428-7 was posted for pre-DP review and is ready for a DP vote. There has been no change to the proposed changes/additions documents for ST 429-2 and ST 429-5.

Business Impact: Compatibility and Interoperability

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: The group has completed its final report and it has been submitted to the TC. The group will be disbanded.

Business Impact: proposals for high frame rate technology standards

DG Project: Revise ST 428-11:2009 to include High Frame Rates
This work adds 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: This revised document has been published. The group will be disbanded.

Business Impact: Interoperability between systems

DG Project: Draft ST 429-14: Auxiliary Data Track File and **ST 429-15: DCP - Auxiliary Data Composition Asset**
This DG will specify a method to carry data 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.).

Status: The draft documents passed FCD ballot on 2013-10-07, both with 16 comments to resolve. By the time of the TC meeting, all comments were resolved and DP elevation votes were held. The votes passed. It was then agreed that the two documents would be amalgamated into one document that would be submitted to the TC to check the accuracy of the amalgamation followed by an administrative vote to approve it.

Business Impact: Interoperability between systems

DG Project: Draft ST 430-12: DCO - Auxiliary Data Synchronization Signal

This project will define the modulation and protocol for a signal using a digital audio link that can be played back from a server and used to carry timing and identification information to accurately synchronize an external processor.

Status: Note that this document was changed to an RP, but at the TC meeting it was decided that it should be a Standard. It was also agreed that there may be additional synchronization signals introduced for other purposes (such as immersive audio) and that the title should be made more specific - perhaps by using the qualifier "FSK". Apart from these points, the document is probably ready for TC pre-FCD ballot review.

Business Impact: Interoperability and quality improvements

DG Project: Draft ST 429-16: Additional Composition Metadata and Guidelines
The DG will develop DCP CPL Metadata Asset item as a new Standard.
Additional Composition Play List metadata items are needed. As a work-around, these items are currently encoded in the title of the composition, whose structure cannot accommodate the full range of desired metadata. As a result, metadata contained in the Composition Playlist is inconsistent and seldom utilized by exhibition equipment.

Status: The document is at FCD ballot, closing 2014-01-10.

SG Project: D-Cinema Crypto Evaluation
This project will study and draft recommendations for current and future use of cryptography in the d-cinema distribution chain.
It is a follow-up to the SG that was set up some time ago to assess the impact of revisions to NIST and FIPS reference cryptographic algorithms, methods and/or standards.

Status: This project is newly-approved.

DG Project: Revision ST 429-9: D-Cinema Packaging - Asset Mapping and File Segmentation
This project will add support for multiple ASSETMAP.xml files in a single volume.

Status: This project is newly-initiated.

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.

Topic: TC-24TB documents published in the last quarter

ST 2052-1:2013, Timed Text Format (SMPTE-TT)
RP 2052-10:2013, Conversion from CEA-608 Data to SMPTE-TT
RP 2052-11:2013, Conversion from CEA-708 Caption Data to SMPTE-TT

DG Project: Draft ST 2064 documents on A-V Sync Measurement and Assessment
This group studies A-V sync problems and liaises with other bodies that have interests in this field. Its main work is to standardize an "Audio to Video Synchronization Measurements" document suite based on audio and video fingerprints:

- Part 1: Fingerprint Generation
- Part 2: Fingerprint Stream Transport (includes VANC in SDI/HD-SDI, IP, MPEG)
- Part 3: Fingerprint File Binding

Status: Part 1 and Part 2 have completed pre-FCD-ballot review and will go to FCD ballot.
The group is evaluating approaches for Part 3:
- MXF-specific binding
- Media-filetype-agnostic sidecar fingerprint file (rather like a caption file)
- Use of Content ID (SG in TC-24TB)

Business Impact: Improved quality of experience and interoperability between systems

DG Project: Revision of ST 96: 35- and 16-mm Motion-Picture Film — Scanned Image Area

Status: Revision work is proceeding. The diagrams in the standard are being recreated.

DG Project: Draft RP 2072: Emphasis of AES/EBU Audio in Television Systems and Preferred Audio Sampling Rate This project started as a Revision of EG 32, but as that document contains conformance language it was thought better to issue it as a new RP. EG 32 will be withdrawn when RP 2072 publishes.

Status: The draft RP 2072 was elevated to DP by vote at the TC meeting.

Business Impact: Interoperability between systems

SG Project: UHDTV Ecosystem
The study group will review image and audio technology standards available. It will determine the requirements and impact on interfacing/exchanging 4K and 8K in an end-to-end chain (e.g., with a reference diagram visualizing the areas where new exchange standards are needed). The work covers

the needs of professional applications producing content for delivery to the home by television, broadband and Blu-ray. The group will provide recommendations for future standardization work.

Status: The initial SG report was published 2013-09-15. The group's continuing work consists of refining the information in the initial report as well as working on UHDTV-2.
The SG held a 3-hour meeting during the Atlanta round and discussed:
- High Dynamic Range in a UHDTV Ecosystem
- Higher Frame Rates and debate over Fractional Frame Rates
- Color space conversion
- Media Networks (Non-Live) and further discussion on (hard) real-time network
- Creation of 2nd report to cover UHDTV2 issues

A new deadline of NAB 2014 was set for the final report.

Business Impact: Formulate an understanding of future standards requirements in the full UHDTV eco chain.

SG Project: Open binding technology for persistent content identification in A/V essence
This project aims to define an 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 supply chain.

Status: The group has completed work on Use Cases and Technical Requirements. Its RFI is nearing completion. It plans a Q & A session for respondents, a review of responses and completion of its report around 2014-03-01.

Business Impact: Formulate an understanding of potential technologies and future standards requirements that can be applied to content identification

DG Project: Revision of Closed Captioning suite documents
This project is a straightforward updating of references for documents ST 333:2008, ST 334-1:2007, ST 334-2:2007, and RP 2007:2007 that cover carriage of CEA-708 (and CEA-608) closed caption data over various interfaces.

Status: Revision has started by formatting the documents into the current template.

DG Project: Revision ST 2010: VANC Data Mapping of ANSI/SCTE 104 Messages
This project is a straightforward updating of references.

Status: Revision has started by formatting the document into the current template.

DG Project: Revision ST 2031: Carriage of DVB/SCTE VBI Data in VANC

This project is a straightforward updating of references.

Status: Revision has started by formatting the document into the current template.

DG Project: Revision ST 2016-2: Format for Pan-Scan Information and ST 2016-4: Ancillary Data Mapping of Pan-Scan Information
The project will ensure these documents provide support for UHDTV signals.

Status: This work has not yet started.

DG Project: Revision ST 2020-x: Audio Metadata in VANC
The project is a straightforward updating of references for:
ST 2020-1: Format of Audio Metadata and Description of the Asynchronous Serial Bitstream Transport
ST 2020-2: Vertical Ancillary Data Mapping of Audio Metadata - Method A
ST 2020-3: Vertical Ancillary Data Mapping of Audio Metadata - Method B.
This suite of documents standardizes the carriage of Audio Metadata in VANC packets.
Part 1 defines the overall metadata format, Part 2 and Part 3 standardize methods for formatting the metadata into VANC packets.

Status: The 3 documents are at FCD ballot, closing 2014-01-01.

DG Project: ST 2052 document suite on Captions
This group is developing / maintaining this multipart standard. The work builds on W3C Timed Text Markup Language (TTML). Revision of Part 1: Timed Text Format (SMPTE-TT), Revision of Part 10: Conversion from CEA-608 Data to SMPTE-TT and new document Part 11: Conversion from CEA-708 Caption Data to SMPTE-TT have been published.

Status: The project has one more document:
Part 12: Conversion from ST 428-7 Digital Cinema Subtitles to SMPTE-TT
that is held awaiting W3C work. The DG will remain "dormant" until the W3C work is complete.

Business Impact: Interoperability between systems in the full eco-chain

Cinema Sound Systems (25CSS) chaired by Brian Vessa and Kurt Graffy

The application of the general scope as it applies to standards for theater sound and cinema B-Chain systems, including performance, measurements, setup, calibration, acoustics and related topics.

The TC is maintaining a set of diagrams that show the relationship of various parts of the TC-25CSS workflow and projects; the latest version was reviewed.

DG Project: Analysis of SMPTE B-Chain Study Group Theater Testing Data Report

This group will compile and analyze the theater testing data that was collected by the earlier B-Chain Study Group Theater Testing group and produce a report with analysis, comparisons and recommendations.

> **Status:** The analysis for all venues (4 cinemas, 2 dubbing stages) is now complete and the report is well-advanced. It is expected to be complete 2014-03, when it will be published.

DG Project: SMPTE Pink-Noise Calibration and Test File
Examination of various "reference" noise files has revealed inconsistency in both RMS and Peak amplitude values. This group will create a pink-noise calibration Standard, and produce a reference pink-noise .wav file and a DCP containing the file. The pink noise defined in ST 202:2010 and RP 200-2012 will be used and the algorithm used to generate the pink-noise file will be specified.

> **Status:** The group has drafted a "strawman" standard that defines the necessary parameters for the pink noise signal and it has been submitted to the AES x216 group. They have responded with helpful comments.
>
> A sub-group has been formed to develop code for the algorithm and a field-test session is planned.

DG Project: B-chain Modern Calibration Procedure
This group will create a Recommended Practice that codifies and expands currently-practiced measurement methodology using today's technology and analyzers into step-by-step procedure(s) for measuring and calibrating the frequency response and sound pressure levels of the B-chain sound system in indoor theater spaces.

> **Status:** The latest draft of the group's RP was presented to the TC. It is quite a large document and it was suggested that a companion EG would be useful. It was also suggested that the document needed to be exposed for feedback from operational staff that would use it.

SG Project: Immersive Audio Systems: B-Chain and Distribution Study Group
This group will study the new cinema immersive "3D" audio systems and determine what standards and recommended practices are needed. The B-chain and distribution requirements of the various systems will be studied. The National Association of Theater Owners (USA) and the International Union of Cinemas (Europe) have jointly submitted their Immersive Sound Requirements to the group.

> **Status:** A comparison of the characteristics of existing immersive audio systems has been documented in a spreadsheet. Other elements of the draft report have been assembled - system descriptions, speaker installation drawings, glossary and suggestions for next steps.

WG Project: Interoperability of Immersive Sound Systems in Digital Cinema
This working group will identify areas of the D-Cinema architecture that require standardization to achieve interoperability of audio for systems with capability greater than 7.1. It will create engineering

documents as needed, including standardizing a single object-based distribution file format and related protocols for interoperable playback into a variety of theatrical speaker configurations.

The group will also address recommended calibration methods for these audio playback systems as well as any other standards the group determines to be necessary to achieve D-Cinema interoperability. A suite of documents is anticipated. The working group will liaise with TC-21DC and work closely with them in the creation of these standards.

> **Status:** This newly-created WG gave an introductory presentation to the TC. The work was motivated by a desire at the last meeting to harmonize two proposals for Object-Based audio systems, but has grown to include mappings into speaker-position based systems.

Other TC-25CSS Business
There has been considerable liaison activity with MPEG, ITU-R, EBU and AES. This demonstrates the high level of interest in the work of this TC.

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.

Topic: 30MR Publications in last quarter

EG 2074:2013, SMPTE Metadata Naming Guidelines
ST 400:2012**,** SMPTE Labels Structure

DG Project: EG 2061: 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**: The draft document closed FCD-ballot on 2013-10-24 with 6 comments to resolve. The Chair reported that the group is considering widening the scope beyond the items inherited from the 3D Home Master project.

Business Impact: Understanding and common use of terms

Topic: UMID Projects
The Chair of these two closely-related projects gave a status report.

SG Project: Application of the Unique Material Identifier (UMID)
The UMID is standardized in ST 330 and RP 205 covers application of UMIDs in Production and Broadcast Environments. This SG is studying ways to make the UMID more useful, particularly in Material location across various systems. The SG is preparing two reports:
- Study Report on UMID Applications Part 1 (UMID Application Principles, Best Practices) - now submitted to HQ.
- Study Report on UMID Applications Part 2 (Additional Technology that needs Standardization)

> **Status:** A presentation on this work was made at the 2013 SMPTE Technical Conference. The Part 2 report is being developed in parallel with the RP 205 project (below).

DG Project: Revision of RP 205: Application of Unique Material Identifiers in Production and Broadcast Environments
This project will incorporate improvements identified in the Study Group report.

> **Status:** The draft document was submitted for pre-FCD ballot review and a number of useful comments were received. The draft has been updated and a further 2-week review will be initiated.

DG Project: RP 2079: DOI Name and EIDR Identifier representation
These acronyms are DOI = Digital Object Identifier EIDR = Entertainment Identifier Registry

> **Status:** The DG chair reported that the document had passed ST audit and was being prepared for publication.

Business Impact: Interoperability between systems

DG Project: SMPTE-Core Metadata Set
This group's scope is to define an interoperable minimum core set of descriptive metadata for professional motion imaging applications and users.
Existing SMPTE metadata is application-specific and is not supported right through media workflows.

> **Status:** The DG chair reported that the group has held two meetings (with mainly US participants) since September. Several attributes have been discussed and a mapping to other schemes is being maintained.

Business Impact: potential foundation for Metadata

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 has completed a report listing requirements for an online system.

Status: The SG Chair reported that SMPTE HQ was currently considering two options for implementation and that any further proposals need to be submitted by the end of 2013. The SG will remain open to respond to implementation queries and to offer help with reviewing proposals.

Business Impact: Interoperability between systems

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 Chair is revising the draft report to address comments received from the SG. When there is SG consensus, the report will be submitted to the TC.

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. Three of these updates are now published:

- ST 335:2012 Metadata Element Dictionary Structure
- ST 400:2012 SMPTE Labels Structure
- ST 2003:2012 Types Dictionary Structure

DG Project: Revision ST 395: Groups Register Structure

Status: ST Audit of the revised ST 395 is underway, closing 2013-12-18.

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

Status: A drafting telecon will be held, after which the document should be ready for pre-FCD-ballot review.

DG 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: The DG Chair reported that this work is currently paused, in order to complete work on the set of metadata structure documents.

WG Project: Metadata Definition

This Working Group (30MR10) co-ordinates a number of DG projects for adding or maintaining metadata items in registers. Because the registers are updated frequently, a version number identifies each revision.

The Elements and Labels contents have historically been identified with a 'RP' number. Now, register contents are specified as an *element* of the structure standard and no RP numbers will be used for new registers.

Status: During the June 2013 meeting, the TC appointed a pro-tem Chair for the WG who will see the existing register versions through their ballot process. The status on the following registers was also updated:

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

Status: The RP 210v14 draft will be posted for 2-week pre-FCD-ballot review.

DG Project: Update Metadata Labels Register Contents (RP224)

Status: The RP 224v13 draft will be posted for 2-week pre-FCD-ballot review.

DG 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 (its controlling document).

Status: A draft of the Groups register will proceed to DG review. The format will conform to the revised ST 395. It is expected that the review will be completed at the end of 2014-01, allowing a 2-week pre-FCD ballot review to take place early in 2014-02.

DG 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: A draft of the Types register will proceed to DG review. It is expected that the review will be completed at the end of 2014-01, allowing a 2-week pre-FCD ballot review to take place early in 2014-02.

DG Project: Create and Update Essence Element Register Contents

The group will create a register of SMPTE ULs for use as essence keys and process requests for register additions, modifications and deprecations.

Status: WD in preparation

Other TC-30MR Business

1-Year and 5-Year Document Reviews

ST 2045: Register Interchange Format (RIF) will be reviewed for revision.
ST 336 was reviewed and a project will be set up for revision.

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: 31FS Publications in last quarter

ST 381-3:2013, Material Exchange Format—Mapping AVC Streams into the MXF Generic Container

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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. Some define new MXF features / applications, others revise existing documents for better interoperability.

Business Impact of all MXF-related work items: Interoperability between systems in file-based production

DG 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: The document passed a second FCD ballot on 2013-11-17 with 70 comments. The DG Chair reported that FCD ballot comment resolution is progressing.

DG 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 draft revision has been recirculated for additional review in the DG prior to pre-FCD ballot review.

DG Project: Revision ST 380: MXF – Descriptive Metadata Scheme-1

Status: This revision completed a pre-FCD ballot review on 2013-12-10 and will proceed to FCD ballot.

DG Project: Revision EG 42: MXF Descriptive Metadata
Changes that arose during the ST 380 revision have been incorporated in the EG 42 draft.

Status: This revision completed a pre-FCD ballot review and will proceed to FCD ballot.

DG Project: Draft ST 2042-4: Wrapping VC-2 Video Essence in the MXF Generic Container

Status: This document failed FCD ballot (closed on 2013-05-23) with 43 comments to resolve. 9 comments remain to be resolved. All requested ULs have been confirmed by TC-30MR. A second FCD ballot is required.

DG Project: Draft ST 2070: 3D in MXF Operations
The project deals with "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: Parts 1-3 passed FCD ballot 2013-07-26. The DG Chair reported that all comments have been resolved and the required ULs have been supplied. The DG will be asked for consensus to proceed to pre-DP ballot review.
Part 4 has not been started yet.

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

Status: This revision is in the publication queue.

RDD **Project : RDD 25 – AVC MXF Proxies**
This RDD defines an MXF Application Profile for AVC proxies with MPEG-2 AAC audio per Operational pattern 1A (OP1a).

Status: The document closed RDD ballot on 2013-07-26 with 21 comments. Proponents indicated that comment resolution is close to complete. This project prompted a new project on MXF wrapping of AAC audio; see below.

DG Project: Revision ST 436: MXF Mappings for VBI Lines and Ancillary Data Packets
It has been decided that this project will create ST 436-1 (compatible with current ST 436) and will compile a list of topics for a separate project, ST 436-2, which will add new features or constraints that are possibly incompatible with ST 436-1.

Status: This revised document is being prepared for publication.

DG Project: Revision ST 2019-4: Mapping VC-3 Coding Units into the MXF Generic Container
Five new Compression IDs need to be added (triggered by changes to ST 2019-1 in TC-10E), plus a cleanup of normative references as necessary.

Status: This document passed FCD ballot on 2013-03-13 with 9 comments. All comments are resolved and a revised draft has been produced for a DP ballot.

DG Project: MXF Wrapping of AAC audio family of formats
A new MXF mapping document is proposed that will cover all the variants of AAC that are used in broadcast applications.

Status: The DG met during the Atlanta round and will now start its analysis work.

RDD Project: MXF OP-1b RDD for AVC with chunk audio
This RDD will specify constraints on OP-1b to facilitate interoperability for tape-less camera recording.

Status: The project is about to start.

SG Project: MXF Timecode Mapping and Labeling
It has been identified that a number of topics on the use of timecodes in MXF require additional guidance or definition. This project will review requirements, existing techniques and documents, and if necessary propose revision or new documents.

Status: The SG held its first meeting during the Atlanta round.

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. Part 2 will cover "External Uses of XML Schema". A new Part 3 is expected to be an RP on applying AXF to the various media types.

Status: The draft Part 1 document passed FCD ballot on 2013-12-02 with 270 comments to resolve. Work has started on a project to draft Part 2.

Business Impact: Interoperability and more cost effective handling of technology migration issues in archives

DG Project: Draft ST 2001: XML Representation of SMPTE-registered Data (Reg-XML)
ST 2001 is about representing instances 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 document is being prepared for publication.
Part 2 is undergoing pre-DP ballot review.

DG Project: XML Schema for Audio and Related Metadata
This DG will develop an XML Schema for audio and related metadata focusing on the technical aspects and harmonizing the work with existing SMPTE audio metadata efforts.

Status: WD development is in progress. The DG will coordinate the response of TC 31FS to an EBU liaison on EBU liaison statement on audio modelling.

Other TC-31FS Business

5-Year Review of ST 268: File Format for Digital Moving-Picture Exchange (DPX)
An administrative vote will be held to approve a roll-up including the 2012 amendment (for ACES application). Another vote will then be held, proposing that the rolled-up document be made stable.

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.

Topic: 32NF Publications in last quarter

EG 2069:2012, SMPTE ST 297 Optical SDI Networks

WG Project: SDI Interfaces

This Working Group (32NF40) was combined from the Mappings WG and the Interfaces WG just before the 2013-12 meeting round. Its new scope is:

Manage Engineering Documents dealing with electrical and optical SDI interfaces with nominal link rates up to 3Gb/s as well as the 10Gb/s and 25Gb/s optical interfaces including the mapping of essence, data, and metadata and the details of the physical interfaces.

The **business impact** of all WG work items concerns interoperability between systems.

DG Project: UHDTV Multi-link 10Gb/s interfaces

The project tasks are:

- Create a new document for the new mapping method to transport UHDTV-1 and UHDTV-2 images as specified in ST 2036-1:2013 including the frame rate of 120fps by using the 12-bit-width container.
- Revise the existing UHDTV interface document, ST 2036-3, and ST 352, for better harmonization with ST 2036-1:2013 and the new interface document.

Proposed changes:

- Adding indicator for colorimetry in Payload ID
- Basic container to support 120p and 12 bit/word
- Connector and cable to be specified

DG 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.

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) on the point of publication
- ST 425-4 (3D images that fit in two 3 Gb/s links), now published
- ST 425-5 (4K images that fit in four 3Gb/s links)
- ST 425-6 (3D images that fit in four 3Gb/s links)

Status: The ST 425-5 document passed DP ballot 2013-11-11.
The ST 425-6 document was elevated to DP by TC vote at the meeting.
A ballot comment on ST 425-6 highlighted an issue with ST 425-5 and ST 425-3 and a new project will be started to amend these documents to:

(1) Fix UHDTV Signaling in Payload ID in both
(2) Address 4:2:0 issue in ST 425-3
(3) Fix wording of payload ID in ST 425-5

DG Project: Document suite 2076: Stereoscopic 3D (S3D) Production Timing and Synchronization

This group is developing a document suite on 3D timing and sync for:
Part 1: (ST) Camera Systems
Part 2: (ST) Live Production Systems
Part 3: (ST) Physical Layer for Video Transport

Part 4: (EG) Physical Layer and System Guidance

Status: The four documents closed FCD ballot 2013-09-10. Comments received were: Part 1 - 38; Part 2 - 32; Part 3 - 15; Part 4 - 5. The DG is working on comment resolution and revised drafts are expected shortly.

DG Project: SDI Audio Track Allocation Signaling
This project will define a signaling mechanism, likely to be carried in Vertical Ancillary Data Space, that provides serial digital interfaces with a means to clearly identify the configuration parameters of any given SMPTE ST 299-1 or -2 embedded audio track.

Status: The DG continues to analyze existing (and proposed) audio metadata developed in other work activities - work in 31FS, IMF and two EBU groups has been identified. It is expected that the group's focus will move to documenting "how to carry audio metadata" in VANC and MPEG-2 TS.

DG 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 passed FCD reballot on 2012-08-22. Draft ST 2062-1 had 36 comments to resolve, draft ST 2062-2 had 13 comments to resolve.
The documents are still in comment resolution. Some comments related to payload ID have been resolved. The WG decided that the DG should meet to address the outstanding comments and make a consensus recommendation regarding whether a 3rd FCD ballot of Part 1 is required.

DG Project: Revision RP 184: Specification of Jitter in Bit-Serial Digital Systems and Revision RP 192: Jitter Measurement Procedures in Bit-Serial Digital Interfaces

Status: Some small editorial issues and an update to references are required before RP 184 is ready for pre ballot review. For RP 192, bi-weekly meetings up to the March plenary will be set up to do the revision work.

DG Project: Revision EG 34: Pathological Conditions in Serial Digital Video Systems and Revision RP 198: Bit-Serial Digital Checkfield for Use in High-Definition Interfaces

Status: There has been no progress for several meeting cycles; it may be necessary to consider a new plan to resume progress.

DG Project: EG on SDI Interfaces
This group will draft EGs to provide an overview of the many SMPTE SDI interface standards and technologies, including how they relate to each other, what image formats are carried, performance. An initial idea is to expand the existing EG 2069 document on optical networks into a document suite:
Part 1 – Overview of SDI interface standards

Part 2 – Copper SDI networks
Part 3 – Optical SDI networks

Status: A new Chair has been appointed to lead this work.

WG Project: Video Over IP
This Working Group (32NF60) was established to handle projects related to IP transport of media; this is the ST2022 family of documents currently comprising 6 published Parts.

DG Project: ST 2022-7: 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: The document passed ST Audit 2013-10-10 and will be prepared for publication.

DG Project: Amendment ST 2022-6: Mapping of High Bit Rate Media Signals on IP Networks
Interoperability tests have revealed minor variations and a two-sentence amendment is proposed to improve clarity. An amendment project has been set up.

Status: There was no report

WG Project: Ultra HD SDI Interfaces
This Working Group (32NF70) was established to create a hierarchy of single-link, dual-link and quad-link electrical and optical SDI interfaces with nominal link rates of 6Gb/s, 12Gb/s and 24Gb/s.

Status: The group held a meeting during the Atlanta round. The next steps for both DG's below will be to write the 2- and 4- link and stereoscopic mapping documents.

DG Project: 6Gb/s Ultra HD SDI Interfaces
This project will:
- Develop a 1,2 and 4-link 6G SDI standard document suite including electrical and optical physical layer, mapping and image format structures (including stereoscopic) as necessary.
- Document transport of multi-stream 1.5G and 3G links on a 6G SDI interface.

Documents underway: ST 2081-1 (electrical), ST 2081-2 (optical), ST 2081-10 (single-link mapping)

Status: The 3 documents listed above were submitted to the TC for a 3-week pre-FCD ballot review.

DG Project: 12Gb/s Ultra HD SDI Interfaces
This project will:

- Develop a 1,2 and 4-link 12G SDI standard document suite including electrical and optical physical layer, mapping and image format structures as necessary that builds on the hierarchy and mapping structures defined by the UHD SDI 6G drafting group.
- Document transport of multi-stream 1.5G, 3G and 6G links on a 12G SDI interface

Documents underway: ST 2082-1 (electrical), ST 2082-2 (optical), ST 2082-10 (single-link mapping)

Status: The 3 documents listed above were submitted to the TC for a 3-week pre-FCD ballot review.

SG Project: Media Production System Network Architecture

There are several SMPTE standards projects that involve IP networks. This SG was formed to identify parameters to consider in network design for professional media production.

Status: The group met during the Atlanta round. It has completed initial work on the Introduction, Scope, Use Cases, and Media Production System characteristics / user expectations. Drafting is 95% complete on Section 5 that addresses network technologies and tools in terms of risks and benefits as they are used in Professional Media Systems.
Work has started on the final section that contains conclusions and recommendations.
SG telecons are held every 2 weeks.

DG Project: Code-point Extension Mechanism for the ST 337 family

This is an "umbrella project" to manage individual DG projects for each document. There are no free code points left in ST 338 for identifying non-linear PCM formats in AES-3.
The extension mechanism will be documented in ST 337: Format for Non-PCM Audio and Data in an AES3 Serial Digital Audio Interface and the extended data types will be documented in ST 338: Format for Non-PCM Audio and Data in AES3 — Data Types. The DG will revise any other documents in the family that are impacted by the change.

Status: Substantial progress has been made on the ST 337 revision. Work will now start on ST 338 revision. The two documents will probably go to ballot together.

SG Project: Study Group on Embedded Audio

The group will study the support that SDI infrastructure provides for single link 3Gb/s, multi-link 3Gb/s and how much of that supports the full 32-channels of audio per link. It will recommend any standardization work that it finds necessary.

Status: The survey was extended in the light of comments received and there have been additional suggestions since. It is hoped that the survey can go out early 2014-01.

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Time Labeling and Synchronization Committee (33TS) chaired by 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.

Topic: 33TS Publications in last quarter

3 amendments supporting 48 FPS (nominal) image formats:

ST 12-1:2008 Am1:2013, Time and Control Code — Amendment 1
ST 12-2:2008 Am1:2013, Transmission of Time Code in the Ancillary Data Space — Amendment 1
ST 2051:2010 AM1:2013, Two-Frame Marker for 50-Hz and 60(/1.001)-Hz Progressive Digital Video Signals on 1.5 Gb/s and 3 Gb/s Interfaces — Amendment 1

Topic: Time Label and Synchronization WGs

The Synch WG (33TS.20) held meetings over 3 days, 2013-11-04 to 2013-11-06 at the EBU, Geneva. It was decided that further work in both WG's would be done by telecons rather than face-to-face meetings.

Business impact of 33TS WG work items: Network-based synchronization schemes and new functionalities on time labeling.

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, and off-speed acquisition.

Status: A review of the contributed proposals for containers and/or complete labels has started. A design based on one of the extensible coding models (or multiple labels) needs to be selected. The drafts in hand are being reorganized into a better document structure.

WG Project: Synchronization

This WG (33TS-20) will define a media synchronization system that can be distributed over standard IP networks. In 2013-08 an AHG was formed to work on simulation of the synchronization standard equations. AHG work includes: Documentation on the simulation framework; Input & output test case file formats; Reference test case and "golden" results; Validation of the equations in the standard.

Status: Following the Geneva meetings, the WG held one telecon. A Synchronizing System Introduction WD (EG 2059-10) is being reviewed in the WG. A need for additional EG and RP documents has been identified.

DG Project: Draft ST 2059-1: The SMPTE Epoch and generation and alignment of interface signals
This document contains:
Definition of epoch used for synchronization system
Alignment of video and audio signals at the epoch
Formulas for generating video, audio, ST 12 time code and ST 309 date from TAI time and additional metadata

Status: The document passed FCD-ballot on 2013-09-26 with 142 comments to resolve. Comment resolution is underway.
Status of the Simulation work: The AHG has: Finalized the input file format; Created draft versions of the output file formats; Started developing reference test cases; Started implementations to validate the equations; Identified some issues in AES and timecode date formulas. ST 2059-1 will be updated based on issues found in the formulas.

DG Project: Draft ST 2059-2: Precision Time Protocol SMPTE profile for time and frequency synchronization in a professional broadcast environment
This document defines the IEEE 1588 PTP profile for the SMPTE synchronization system.

Status: The document passed FCD-ballot on 2013-09-26 with 45 comments to resolve. Comment resolution is underway.

DG Project: Amend ST 12-1: Time and Control Code and Amend ST 12-2: Transmission of Time Code in the Ancillary Data Space
These amendments add information for handling 48 frames-per-second rate in the same way as the document currently handles 50 and 60 fps (includes /1.001 rates).

Status: The amendments are published. A roll-up of the amendment into the standards has been reviewed by the TC and an administrative vote to publish these documents was successful.

DG 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
This amendment adds information for handling the 48 frames-per-second rate in the same way as the document currently handles 50 and 60 fps (including /1.001 rates).

Status: The amendments are published. A roll-up of the amendment into the standard has been reviewed by the TC and an administrative vote to publish these documents was successful.

DG Project: Revise ST 318: Synchronization of 59.94-Hz or 50-Hz Related Video and Audio Systems in Analog and Digital Areas – Reference Signals
A new project has been set up to add alignment information for ST 2051-1 and general editorial cleanup.

Status: Project approved and Kavi group set up. There has been limited progress this quarter due to pressure of other work.

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.

Topic: BXF Suite of Documents

This TC is responsible for the suite of documents defining the Broadcast Exchange Format, comprising:

ST 2021-1: General Information and Informative Notes
ST 2021-2: Protocol
EG 2021-3: Use Cases
EG 2021-4: Schema Documentation
RP 2021-5: Ad-ID / EIDR in BXF (new document for BXF 3.0)
RP 2021-9: Implementing BXF

It is primarily an XML-based system that standardizes exchange of Schedule, As-run and Content-related metadata.
Features are steadily being added to BXF and these are batched into versions. The current published version is BXF 3.0.

WG Project: BXF 4.0
Some topics initially slated for BXF 4.0 are: trading partner registry; MVPD route data; live schedule files (a la OATC); BXF/MXF mapping; PMCP support; time code in and out support; alternate captioning support

Status: The WG has solicited input on potential new items and has received 10-11 proposals. The plan is to devote telecons to each topic to maintain subject focus.

DG Project: Media Device Control over IP
This project will produce a suite of documents:
ST 2071 Part 1: Media Device Control Framework - Now Published

ST 2071 Part 2: Wire Level Protocol - Now Published
ST 2071 Part 3: Discovery (describes how various existing Service Discovery Protocols work with the Media Device Control Framework, including a "zero configuration" mode)
ST 2071 Part 4: Core Capability Interfaces

Status: Part 3 passed ST Audit on 2013-10-23. Publication will be held until revisions to Parts 1 and 2 have themselves passed ST Audit.
Parts 1 and 2 revision has incorporated some improvements that have come to light during the development of Part 3. They are both at FCD ballot, closing 2014-01-09.

Business Impact: Interoperable Media Device Control

RDD Project: RDD 24: FIMS 1.0 - Framework for Interoperable Media Services
This project is for the submission, review, and acceptance of the Framework for Interoperable Media Services (FIMS) specification as a SMPTE RDD.

Status: The RDD passed ST Audit 2013-09-10. Publication is expected shortly.

Business Impact: Interoperability between software systems in digital workflows.

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.

Business Impact: Interoperability between systems, cost effective exchange of master formats in file form and new functionalities.

WG Project: 2067 Document Suite: Interoperable Master Format (IMF)
This Working Group (35PM-50) co-ordinates the activities of a number of DGs defining various aspects of IMF. IMF comprises a master set of file-based elements for any downstream distribution using multiple composition playlists. The master set of files will be used as the input to subsequent processing that will create deliverables.
Published IMF documents:
ST 2067-3: Interoperable Master Format – Composition Playlist
ST 2067-5: Interoperable Master Format – Essence Component

Status: The WG held one telecon in the last quarter. Four IMF documents have passed ST Audit (see -2, -8, -20, -30 below); however, they have been held due to dependencies on publication of TC-31FS

documents ST 422 (revision) and ST 2001.
In particular, ST 2067-2 "Core Constraints" has been held because it contains a normative reference to SMPTE ST 2001-2 which has not yet achieved DP. However, ST 2067-2 no longer has a dependency on ST 2001-2. Therefore, the TC agreed that the reference could be editorially removed from the standard, provided the Standards Committee agrees. This will allow ST 2067-2 to proceed to publication.

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

Status: Passed ST Audit 2013-08-28.

DG Project: Draft ST 2067-30: IMF Application #3, MPEG-4 Visual Simple Studio Profile (SStP)

Status: Passed ST Audit 2013-08-28.

DG Project: Draft ST 2067-2: IMF Core Constraints

Status: Passed ST Audit 2013-08-28. Now released for publication following decision noted above.

DG Project: IMF CPL and OPL
This group is drafting ST 2067-4: Output Profile List (OPL)

Status: Work has started on the OPL document and the group has strawman drafts for Audio Routing, Image Fill and Crop, Scaling. Work on Overlays is underway.

DG Project: IMF Wrapping, Security & Packaging
This group has developed ST 2067-5: Interoperable Master Format – Essence Component

Status: ST 2067-5 is published.

DG Project: IMF Data (Text) Essence

Status: Mapping from ST428-7: D-Cinema Subtitle to SMPTE-TT is currently under way in TC-24TB.

DG Project: IMF Audio
Project: ST 2067-8: IMF Common Audio Labels.

Status: Passed ST Audit 2013-08-28. A separate document on audio metadata requirements has been prepared for passage to TC-31FS which has work on this subject.

AHG Project: IMF Sample Material Interchange

This group has been set up to facilitate interoperability testing by making sample material available online.

Status: Work is underway on Application #2 (JPEG2000) files. 6 manufacturers took part on the last call and some inconsistencies have emerged.

DG Project: Draft ST 2067-21: Extensions to IMF Application #2, JPEG 2000
This extension is proposed to support higher specifications including resolution, frame rates and multiple color space encodings.

Status: No report this time.

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The "Users Have Your Say" Session

If you are a member of the SMPTE Standards Community, you can obtain all of the presentations for this session here: https://kws.smpte.org/kws/groups/stds_comm/documents
The set of documents have upload dates 2013-12-11 and 2013-12-12 and the filenames should be recognizable using the details below:

A presentation from Guitammer "Recommendation to Establish a Tactile - Haptic Broadcasting Transmission and Transport Standard" is included with the set. This presentation was given before the Users session and the tactile technology is proposed for standardization.

User Organization and Presenter	Notes
CNN /Turner M. Koetter	"Approaching media content as Structured Data". Put forward 4 things we need: Enterprise Meta Model>Media Meta Model>Repository Meta Model>Unbundled "Atomic" Storage May need regional models (IRT, DPP), but could use a toolkit.
JTF on Networked Media - Brad Gilmer	This is the EBU / SMPTE / VSF Joint Task Force. Its "gap analysis" report was scheduled for release the following week. Download here.
ESPN Ted Szypulski	"Media Identity Domains". How to identify specific essence and track through workflow; goes beyond UMID concepts Another topic: Improved communication between SDOs etc.
COX broadcast group - Dave Siegler	Standards slow - industry moving fast. Example of SMPTE-TT success. Some discussions on quality (some say less important, some say more)
BBC - Phil Tudor	Main topic: "Elemental Content: Sources, Flows and Grains". Keep elements separated.
Agile methods - Michael Koetter	An introduction to "Scrum" methodology and its possible application to standards development.
Library of Congress - James Snyder	"The Library of Congress, Media Archiving & Standards: Forward Look". Current standards involvement: AS-07, SMPTE 2034, SMPTE Core metadata. Need high resolution capture standards for 4:3 and 1:1 film.
NBC Universal - Thomas Bause Mason	Many topics: UHDTV / World Broadcasting Standard / RT Interfaces / Content Identification / Interactivity Triggers / File Formats / Closed Captioning & Subtitles
NBC Universal - Thomas Bause Mason HBO - Andres Colpa	"NABA TECHNOLOGY COMMITTEE REPORT: Issues in file based interoperability and watermarking". Also, NABA File Transfer Task Force - report on survey. Need for Persistent Metadata end-to-end in workflow.
PBS - Steven D. Wynn	Topics: SMPTE 436 / Closed Captioning topic. Ease of modification. Web playout via SMPTE-TT
WWE - Jonathan Solomon	"WWE Internal Acquisition And International Distribution" Main theme: Chaos with formats and transcoding. Frame rates / file types / image formats / …
MovieLabs - Jim Helman	Many topics: EIDR Unique Identifiers / Metadata / TTML Harmonization / Next Generation Video (HDR Mastering and Home Entertainment)

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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. TC's are set up by the Standards Vice President (**SVP**) and are overseen by the Standards Committee (**ST**).*

The standards process operates under the SMPTE Standards Operations Manual .

*Within Technology Committees, there may also be Working Groups (**WGs**), Study Groups (**SGs**) Drafting Groups (**DGs**) and Ad-Hoc Groups (**AHGs**).*
*'Standards Community' (**SC**) is an "umbrella group" that includes 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*

SMPTE document review

The SMPTE Operations Manual calls for review of published documents:
One Year after original publication - to check whether comments have been received during initial implementations and revise as required
At Five Year intervals after original publication - to check whether the provisions need to be revised
There may be proposals to Revise or Amend documents, or they may be reaffirmed, made stable or withdrawn.

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 **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 is via a hyperlink in the **Project** word in the title.*

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2013 Documents Published in the Digital Library

	Document No.	Title	Date Added to DL
1	SMPTE RP 291-2:2013	Ancillary Data Space Use – 4:2:2 SDTV and HDTV Component Systems and 4:2:2 2048x1080 Production Image Formats	6/20/2013
2	SMPTE 352:2013 (Rev. of SMPTE ST 352:2011)	Payload Identification Codes for Serial Digital Interfaces	6/20/2013
3	SMPTE EG 377-3:2013	Material Exchange Format (MXF) – Engineering Guideline	6/20/2013
4	Amendment 2:2013 to SMPTE ST 382:2007	Material Exchange Format – Mapping AES3 and Broadcast Wave Audio into the MXF Generic Container – Amendment 2	6/20/2013
5	SMPTE ST 392:2013 (Rev. of SMPTE 392M-2004)	Material Exchange Format (MXF) – Operational Pattern 2A (Play-List Items, Single Package)	6/20/2013
6	SMPTE ST 428-12:2013	D-Cinema Distribution Master Common Audio Channels and Soundfield Groups	6/20/2013
7	Amendment 1:2013 to SMPTE ST 429-2:2011	D-Cinema Packaging – DCP Operational Constraints – Amendment 1	6/20/2013
8	SMPTE ST 2022-5:2013 (Rev. of SMPTE ST 2022-5:2012)	Forward Error Correction for Transport of High Bit Rate Media Signals over IP Networks (HBRMT)	6/20/2013
9	Amendment 1:2013 to SMPTE RP 2057:2011	Text Based Metadata Carriage in MXF – Amendment 1	6/20/2013
10	SMPTE RDD 9:2013 (Rev. of RDD 9-2009)	MXF Interoperability Specification of Sony MPEG Long GOP Products	7/25/2013
11	SMPTE ST 2065-4:2013	ACES Image Container File Layout	7/25/2013
12	SMPTE ST 2067-3:2013	Interoperable Master Format – Composition Playlist	7/25/2013
13	SMPTE ST 2067-5:2013	Interoperable Master Format – Essence Component	7/25/2013
14	SMPTE ST 2071-2:2013	Media Device Control – Part 2: Protocol (MDCP)	7/25/2013
15	SMPTE ST 2075:2013	Mapping EBU TECH 3264 (STL) into the MXF Generic Stream Container	7/25/2013
16	SMPTE ST 381-3:2013 (Rev. of RP 2008-2008)	Material Exchange Format – Mapping AVC Streams into the MXF Generic Container	10/7/2013
17	SMPTE ST 428-11:2013 (Rev. of SMPTE 428-11-2009)	Additional Frame Rates for D-Cinema	10/7/2013
18	SMPTE ST 2036-0:2013 (Rev. of SMPTE 2036-0:2012)	Ultra High Definition Television - Roadmap	10/7/2013
19	SMPTE ST 2036-1:2013 (Rev. of SMPTE 2036-1-2009)	Ultra High Definition Television – Image Parameter Values for Program Production	10/7/2013
20	SMPTE 2052-0:2013 (Rev. of SMPTE 2052-0:2010)	SMPTE-TT and Format Translation – Roadmap for the 2052 Document Suite	10/7/2013
21	SMPTE ST 2052-1:2013 (Rev. SMPTE ST 2052:1-2010)	Time Text Format (SMPTE-TT)	10/7/2013
22	SMPTE RP 2052-10:2013 (Rev. of RP 2052-10:2012)	Conversion from CEA-608 Data to SMPTE-TT	10/7/2013

23	SMPTE RP 2052-11:2013	Conversion from CEA-708 Caption Data to SMPTE-TT	10/7/2013
24	SMPTE ST 2068:2013	Stereoscopic 3D Frame Compatible Packing and Signaling for HDTV	10/7/2013
25	SMPTE EG 2074:2013	SMPTE Metadata Naming Guidelines	10/7/2013
26	Amendment 1:2013 to SMPTE ST 12-1:2008	Time and Control Code – Amendment 1	10/7/2013
27	Amendment 1:2013 to SMPTE ST 12-2:2008	Transmission of Time Code in the Ancillary Data Space – Amendment 1	10/7/2013