STANDARDS QUARTERLY REPORT
June 2025

Result of SMPTE® Technology Committee Meetings (Hybrid, In-Person/Online)

Hosted by Imagica EMS, Tokyo

2nd to 3rd of June 2025

THE NEXT CENTURY

SMPTE® Standards Quarterly Report

This report comprises an Executive Summary followed by a detailed description of this round of Technical Committee meetings:

SMPTE Standards Committee Meetings 2 - 3 June 2025
Host: Imagica EMS Tokyo and SMPTE Teams Call

Executive Summary

This Executive Summary lists new project proposals this quarter and provides a high-level view of project developments. More information on the status of the active projects can be found in the detailed description that follows this summary.

Seven SMPTE Technology Committees (TCs) scheduled meetings at this round (the subgroups mostly develop their projects by telecons).

There were 91 registrations for attendance over the two days of in-person and remote hybrid meetings.

Documents published in the last quarter from the work of each TC are listed on this page.

Proposals for new SMPTE projects submitted in the last quarter			
Project Name	**Type**	**Technology Committee**	**Approval Period Ends**
RP 2144-100: Visible Difference Predictors: VIEW – Visual Investigation and Evaluation Workflows	New Recommended Practice	10E Essence	2025-05-20
ST 2144-20: Visible Difference Predictors: FovVideoVDP	New Standard	10E Essence	2025-05-20

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Professional Media over IP Projects

Professional Media over Managed IP Networks
This project group developed the ST 2110 suite that standardizes an interoperable system for professional media IP networks to transport separate video, audio, and associated data streams. Details Thirteen parts of the suite are published, including recent revisions. An application document for fast metadata transport of audio metadata is also published.

A 2110 document is in development on Timing Planes for 2110 Streams, a document on the co-existence of VPID data and SDP data, and a revision to correct a small error in the fast metadata document.

There are projects creating ten ST 2110 Protocol Implementation Conformance Statements (PICS) for most of the SMPTE 2110 suite documents with one document pending on a minor revision of the PCM Digital Audio part. Details

Network-Based Synchronization for the Professional Media Environment
The ST 2059 suite defines a synchronization system for media using precision time protocol (PTP) packets on an IT network. There are ongoing projects in support of this technology:

- The group that has organized ST 2059 "plug-fests" has expanded its scope to write "best practices" documents; the first is underway. Details.
- A revision of ST 2059-2 is being developed to reference — and harmonize with — the latest revision of the IEEE Precision Time Protocol standard. Details

A document on passing sync pulses over USB-C completed the Public CD period and started balloting in this quarter.

Interoperable Master Format (IMF)

IMF is a file-based framework designed to support multiple, high-quality content versions of a finished work destined for distribution channels worldwide. The suite currently comprises 22 published SMPTE Documents - Details.

The work on IMF Output Profile List standards is continuing — a revision and 3 new standards. Details

There is new work on several IMF topics; one new Application document, Audio with Metadata, Auxiliary Image Sequence, Event-based text-based Metadata, and Virtual Track Fingerprint. Details

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SMPTE Video Compression Standards
SMPTE has standardized six video compression standards – VC-1 to VC-6.

The only work currently in progress is revision to VC-3 documents. Details

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Cinema Projects

IMF, above, is also highly relevant to the Cinema community.
The Cinema Group (27C) is handling the following work

Cinema Sound Systems

This Working Group deals with improving the quality of sound in cinema presentations, through the standardization of technical practices from content creation dubbing stages to commercial outlets.

The TC has a working group on B-Chain Characteristics and Expectations, with drafting groups studying:

- Research on relevant Technical Documents
- In-situ Measurements and Testing (with sub-teams researching specific topics)
- Dialog Intelligibility

Details

Digital Cinema (D-Cinema)

This Group has published four large, multi-part document suites dealing with these topics:

- D-Cinema Distribution Master (428)
- D-Cinema Packaging (429)
- D-Cinema Operations (430)
- D-Cinema Quality (431)

Current projects include:

- Minimal Timed Text XML Requirements
- Japanese Subtitle Mastering
- Exhibition Display
- Digital Cinema Origins Report Archival

Details

DPX Projects

The HDR DPX standard was published in Q1 2019. There is ongoing work. Details

There is a standard in development on Mapping DPX Picture Sequences into the MXF Generic Container. Details

Material Exchange Format – MXF

This file-based media format continues to develop with projects adding features and mappings to the MXF suite of standards or creating constraints for improved interoperability in a variety of application areas. Details

There are currently 10 MXF-related projects in process:

- Text–based metadata carriage in MXF (revision)
- Mapping Audio Definition Model to MXF
- Mapping DPX files into the MXF Generic Container
- MXF Mappings for VI Lines and Ancillary Data Packets (revision)
- Extensible Time Label (TLX) in MXF
- AVC into MXF Generic Container (revision)
- Mapping Immersive Audio Bitstream into the MXF Generic Container
- Descriptive Metadata Scheme for Identity and Integrity
- Mapping Immersive Audio Bitstream into the MXF Generic Container (RDD)
- Mapping ARRICORE Bitstreams into the MXF Generic Container (RDD)

Media Microservices

This group has a project in the public Committee Draft stage - IMF Registration Service API. Its Status Reporting and Logging document has just completed ballot. There is a Job Processing Architecture document in development and a new suite of documents for the Catena control interface. Details

Extensible Time Label (TLX)

This group has developed a Standard suite for a time label that overcomes the shortcomings of SMPTE ST 12 (support for today's higher frame rates, time values greater than 24 hours) as well as supporting additional requirements of current systems and workflows such as a "Digital Birth Certificate" including a Source Ident. Details

A document to define KLV Encoding and MXF Mapping for TLX is underway. Details

Metadata and Registers

This TC (and its predecessor) has been maintaining metadata ULs on behalf of other SMPTE TCs and industry organizations for many years. Details

The registers and infrastructure systems were upgraded to use xml rather than spreadsheets, and an additional register was standardized for Essence elements keys. It has tools available to check the integrity of requests for new ULs.

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AI and ML in Media

A joint task force with the Entertainment Technology Center is studying this topic and its report, ER 1010, is now published here. The task force continues to meet to consider standardization requirements, and it has instigated three AI metadata projects. Details.

Sustainability in Media

A Study Group is working on topics regarding the sustainability of motion picture and television systems. The focus is to identify new or existing SMPTE Engineering Documents that could benefit systems directly, or systems with which they interact. Currently, the Study Group is seeking sustainability-related use cases, requirements, user stories, or improvements that might inform development or revision of SMPTE Engineering Documents regarding professional media, to encourage sustainability improvements in technology and processes.

Other Projects

A very large number of SMPTE Standards projects are active — too many to cover in an executive summary even though they may be important to implementers. SMPTE has a searchable, publicly available project summary page that should help locate topics of interest that can then be followed up in the main body of this report.

SMPTE® Standards Quarterly Report

Detailed Account

SMPTE Standards Committee Meetings 2 - 3 June 2025
Host: Imagica EMS Tokyo and SMPTE Teams Call

SMPTE® is a global leader in motion-imaging technology standards and education for the communications, media and entertainment industries — and the only organization to connect the areas of motion-imaging research, standardization, education, and business success.

This report is a snapshot in time and should not be regarded as formal minutes, a positioning statement or an analysis piece.

If you are interested in learning more about the SMPTE Standards program, or would like to submit comments, please see this website page or contact the Director of Standards Development.

Introduction

The quarterly SMPTE Standards meeting rounds are led by the SMPTE Standards Vice President (SVP), a volunteer post, and the SMPTE Director of Standards Development, a staff post. These posts are currently filled by Raymond Yeung and Thomas Bause Mason respectively.

There are four Standards Directors, currently Dean Bullock, Steve LLamb, Florian Schleich and Fred Walls.

Each round comprises meetings of Technology Committees (detail in the sections below) and any subgroups whose work requires face-to-face meetings. Subgroup work also proceeds continuously between the quarterly meetings using teleconferences.

If you need help getting started with the SMPTE Standards process and some of the conventions / acronyms used in this report, please take a look at the Annex.

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Future Meetings

Quarterly Standards meeting rounds are planned for:

Q3   2025 17-19 September; Warsaw, Poland

Q4   2025 December Online

Q1   2026 February/March Online

This Quarterly Report provides a detailed account of the meetings of the following SMPTE Standards TCs and their sub-groups:

Essence (10E)

Cinema (27C)

Metadata and Registers (30MR)

File Formats and Systems (31FS)

Network and Facilities Architecture (32NF)

Media Systems, Control and Services (34CS)

Media Packaging and Interchange (35PM)

Links to each TC report section are also provided in the footer of each page to assist with navigation. Documents published in the last quarter from the work of each TC are listed on this page.

In addition to the TC meetings, there was a Standards Community meeting that covered:
- SMPTE Standards Team
- 2025/2026 TC Meetings
- SMPTE Media Technology Summit 2025
- Study Group on Sustainability in Media Report
- Taskforce on AI in Media Report
- Standards Community Survey
- EBU ADM Implementation
- HTML Document Workflow

The SMPTE website now has a summary projects page publicly available.

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Details from each Technology Committee (TC) meeting

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

DG: Common LUT Format – ST 2136 suite

The Common LUT Format (CLF) can communicate an arbitrary chain of color operators (also called processing nodes) which are sequentially processed to achieve an end result.

The work will be based on an existing CLF specification developed by the Academy (AMPAS), available at https://docs.acescentral.com/clf/specification/.

Current project:

ST 2136-1: Common LUT Format

Status: Public CD (PCD) for dissemination and industry feedback has ended 2025-05-31, 10 issues were filed on GitHub (https://github.com/SMPTE/st2136-1). The next meeting will take place June 10 at 8 AM PT dedicated to addressing the Public CD issues.

DG: Measurement Methods for Resolution Characteristics of Camera Systems

Current project:

RP 2130 - Measurement Methods for Resolution Characteristics of Camera Systems

To facilitate the maintenance and operation of studio equipment, the purpose of this project is to document measurement methods for the spatial resolution characteristics of camera systems, specifically, to measure the Modulation Transfer Function (MTF).

Status: The DG Chair gave a presentation explaining techniques available and the DG's preference for a Wedge Edge Chart (with multiple wedge angles) and the process of deriving a figure for Modulation Transfer Function. The DG Chair reported sixteen two-hour work sessions in the quarter. There were significant additions and updates to the document.

DG: SMPTE 2080 Document Suite - Reference Display and Environment for Critical Viewing of Television Pictures

This group has a suite of documents dealing with the use of fixed pixel matrix reference displays. Published documents:

ST 2080-1: Reference White Luminance Level and Chromaticity (one-year review due)

RP 2080-2: Measurement and Calibration Procedure for HDTV Displays (deals with parameters that can be regularly adjusted)

ST 2080-3: Reference Viewing Environment Characteristics

Current projects:

RP 2080-4 - Measurement Procedures for Characterization of HDTV Displays

Defines the procedures, conditions and rules applicable for measuring the parameters of an HDTV Reference Display.

Status: The DG Chair reported that the comments for RP 2080-4 might require a second FCD ballot in order to advance the document.

RP 2080-2: Measurement and Calibration Procedure for HDTV Displays

During development of RP 2080-4, errors in the line numbers of the test patterns in RP 2080-2 were noticed. The patterns also need to be modified to add copyright notices and define risetimes. The specified alternate white point for certain regions (9300K) should be changed to D93 and the x,y coordinates changed.

Status: The DG Chair reported that the work needed on RP 2080-2 would be minimal.

DG: IPT-PQ

Prior to standardization of color representation ICtCp in ITU-R BT.2100, an alternative — IPT-PQ — was used by many major OTT distributors. It is important to these OTT distributors that these assets are labeled as utilizing the IPT-PQ color representation in two variants (scope now modified to only cover IPT-PQ-C2 and not IPT-PQ-C0), and that the characteristics are standardized.

Current project:

ST 2128 - IPT-PQ color representation.

Status: A package is being prepared by the DG for pre-DP ballot TC review.

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Revision: SMPTE 2046 Suite

Published Documents:

ST 2046-1:2009 - Specifications for Safe Action and Safe Title Areas for Television

RP 2046-2:2009 - Safe Areas for Protection of Alternate Aspect Ratios

EG 2046-3:2010 - Safe Areas for Television

Current projects:

ST 2046-1 - Specifications for Safe Action and Safe Title Areas for Television

Add Safe areas for UHD image formats. Update normative references.

RP 2046-2 - Safe Areas for Protection of Alternate Aspect Ratios

Add Safe areas for UHD image formats. Update normative references.

Status: The DG Chair reported that the UHD formats were to be added.

Revision: ST 96:2004 Scanned Image Area

Update to current practices for diagrams, graphics, file formats, and conformance language. In particular, SVG graphics are needed instead of the current, low-resolution images.

Status: There has been no progress to report on this project.

Image Line Numbering

This will be a new document, probably an Engineering Guideline, explaining SMPTE practice for line numbering for video formats. In analog standards, the first line was numbered 1. In digital standards, the first line is numbered 0.

Status: The group Chair reported that this EG would document SMPTE practice of numbering lines starting from the value of "1" for analog signals and starting from the value of "0" for digital signals.

Measurement of Video Display Reflectance

The text will be extracted from the present ST 2080-4 draft.

RP xxxx: Measurement of Video Display Reflectance

Status: The group Chair reported that this project has been approved but no progress has been made. It would involve extracting a section of RP 2080-4.

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ST 2016 Suite on Active Format Description

Published Documents:

ST 2016-1 - Format for Active Format Description and Bar Data

ST 2016-2 - Format for Pan-Scan Information

ST 2016-3 - Vertical Ancillary Data Mapping of Active Format Description and Bar Data

ST 2016-4 - Vertical Ancillary Data Mapping of Pan-Scan Information

ST 2016-5 - KLV Coding for Active Format Description, Bar Data and Pan-Scan Information (document withdrawn)

Current Projects:

ST 2016-1 - Format for Active Format Description and Bar Data

Add UHD formats to ST 2016-1

Status: Their group Chair reported that the document went out for ballot and the comments had mostly been resolved.

DG: ST 2094-50 DMCVT – Broadcast Application

This standard will enable a specialized application for content-dependent color volume transforms guided by metadata derived or set at mastering or during live capture. The collection of HDR reference white as an anchor and HDR headroom of content for precise control in the highlights, can provide optimal tone mapping when used in conjunction with the Metadata for Mastering Display Color Volume, i.e., SMPTE ST 2086. The HDR reference white and headroom metadata are also effective when compositing multiple sources of content.

Status: The DG Chair reported that the Working Draft document is heading towards the Public CD process as soon as consensus is achieved.

DG: VC-3 Revision

Current Projects:

Revision of ST 2019-1 VC-3 Improvements and New Profiles

There are 3 major areas where the VC-3 family of standards requires attention:

1. Recent work with a VC-3 implementation triggered a careful revision of the standard and produced a significant number of relevant improvements and clarifications that should be included in the standard, that have no backward-compatibility issues, but will improve interoperability.

2. Add two new profiles which will allow usage of RGB signals in other quality bitrates, such as HQ and SQ. This is a fully backward-compatible change.

3. Integrate Amd.1 into the document.

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Revision of RP 2019-2 VC-3 Reference Materials Update

As a result of the changes to SMPTE 2019-1 to Improve and add New Profiles, RP 2019-2 also needs to be updated, providing a fresh reference decoder and test materials.

Status (both): The DG Chair reported that the DG met twice since the last plenary. A pre-FCD ballot review package was prepared. The DG planned to submit a project proposal to TC 31FS for the necessary work on ST 2019-4 (MXF Mapping).

DG: Visible Difference Predictors

The Visible Difference Predictors (VDP) are a class of data-driven, white box, efficiently implemented image and video difference metrics. They model important aspects of perception like spatial and temporal vision, foveation, etc. and are calibrated on datasets relevant for display and graphics applications. Unlike other available metrics, VDPs are display geometry and photometry aware (especially important for specialized display modes, such as HDR, VR, and AR), and present an output scaled in perceptually relevant, just-objectionable-difference (JOD) units. Modern VDP metrics (including the foveated FovVideoVDP, and the color-aware ColorVideoVDP have been published and have datasets and reference code available on GitHub. This DG intends to lead the development and standardization of a practical guide for selecting the appropriate metric for specific engineering problems and discuss how metrics can be effectively combined with subjective testing for high-confidence assessments.

Current Projects:

ST 2044-1 Visible Difference Predictors: A Class of Perception-Based Metrics

This project will standardize the common elements of VDPs. Common components include the input (consisting of a reference and test), a model photometry, a model display geometry, a model of human vision, real-world image quality datasets for calibration, and perceptually meaningful units.

ST 2044-10 Visible Difference Predictors: ColorVideoVDP

This project will standardize the ColorVideoVDP metric.

1. Starting with input contributions from proponents, review and verify the efficacy of the CVVDP versus other approaches to reach consensus on the methodology and publish as a standard.
2. Repeat for the numerous artifact classes applicable to complex XR use cases.
3. Prepare reference source material/ test code for each VDP, document and publish in GitHub as a SMPTE reference.

ST 2044-20 Visible Difference Predictors: FovVideoVDP

This project will standardize the FovVideoVDP metric.

1. Starting with input contributions from proponents, review and verify the efficacy of the FovVVDP versus other approaches to reach consensus on the methodology and publish as a standard.
2. Repeat for the numerous artifact classes up to most complex XR use case.
3. Prepare reference source material/test code for each VDP, document and publish in GitHub as a SMPTE reference.

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RP 2044-100 Visible Difference Predictors: VIEW – Visual Investigation and Evaluation Workflows

This project will standardize a set of best practices for subjective evaluation that integrates with the VDP framework.

1. Starting with input contributions from proponents, review and verify the proposed subjective evaluation protocols. Consider specific examples and comparisons against other common approaches to reach consensus on the methodology and publish as a standard.
2. Repeat for most relevant use cases (e.g., full subjective study vs. golden eye evaluation)
3. Prepare reference source material/test code for each subjective study protocol, document and publish in GitHub as a SMPTE reference.

Status (both): The DG Editor presented a brief introduction to the subject of Visual Difference Predictors with an overview of the document suite structure. The DG Chair and Editor responded to questions from the TC members. The proponents will prepare input documents and kick off the work.

DG: ST 2094-60 Dyn Range Conversion Characterization Metadata

The Drafting Group will produce a standard for metadata to characterize conversions between high dynamic range (HDR) and standard dynamic range (SDR) images and video. Live production workflows, such as sports events, use diverse, complex pipelines to deliver HD, UHD, SDR, and HDR content. Diverse conversion tools are used in production to convert SDR content to HDR content, and HDR content to SDR content. The different solutions available in the market are all incompatible, in various aspects. A way to characterize and select conversions appropriately is needed to improve interoperability among the different technologies.

Current Project:

ST 2094-60 Dynamic Range Conversion Characterization Metadata

Provide metadata to allow characterization of HDR/SDR conversion. Specifically, SDR diffuse white level, SDR reference level, SDR maximum signal level, SDR minimum signal level, HDR diffuse white level, HDR reference level, HDR level for SDR nominal peak level, HDR level for SDR maximum signal level.

Status: The DG Chair reported that three meetings were held since the project was approved in March of 2025. The DG reviewed the reference documents and addressed comments from the project review. The DG plan to complete a walkthrough of the contributed draft.

The application of the general scope as it applies to theatrical distribution, reproduction and operations, both analog and digital.

WG: Document Maintenance (WG27C-10)

General document maintenance, document issue tracking, 1-year and 5-year reviews of documents, project proposals for revisions/amendments as required.

Status: The new Library App was tested with 1-year and 5-year document review status updates. All documents were completed with info merged into the library. The revision project submissions are being worked on.

Revision RP 200:2012 - Relative and Absolute Sound Pressure Levels for Motion-Picture Multichannel Sound Systems — Applicable for Analog Photographic Film Audio, Digital Photographic Film Audio and D-Cinema

Revision to include Immersive Audio – to Include D-Cinema immersive audio objects and bed channels in an unambiguous manner. This practice specifies a measurement method and wideband sound pressure levels for motion-picture dubbing theatres, review rooms, and indoor theaters using steady-state wideband pink noise methodology, aligned with ST 2095-1. Together with SMPTE ST 202, it is intended to assist in standardization of reproduction of motion-picture sound in such rooms.

Status: The group recovered from editorial losses due to versioning. The document will be worked on shortly towards pre-FCD TC review.

SG: D-Cinema Origins Study Group Final Report Archival Effort

Researchers of media and technology history need widely accessible primary source documents to reference in order to accurately recreate milestones in technology and to utilize them in the consideration of future requirements.

There was no published Final Report of the Digital Cinema Study Group, or any collected components of the work of the subcommittees, which should be available for reference and historical significance.

Status: The group sent out a last call to early SMPTE participants to ensure that the pre-DCI DC-28 Reports are the latest version. A proposal was presented for the archival project.

WG: Sound (WG27C-20)

Current WG project:

RP xxxx – B Chain Characteristics and Expectations

The Working Group output will be a Recommended Practice derived from the results of two DGs' efforts (see below). There is consideration of producing an Engineering Guideline as well.

The Drafting Groups are:

DG: In-situ Measurements and Testing

Re-examine the system parameters that need to be measured and develop new and easily accessible measurement techniques (emphasis on repeatability).

Status: Sub-Teams have been meeting on topics for development of Objective Metrics (all meet bi-weekly):

- *Linearity and coherence testing team – essential design of test routing complete for tones and noise patterns;*
- *Coverage, level, consistency, timbre team – literature review was completed as foundation work; data gathering continues in (benchmark, reference, standard) rooms for 5.1 and immersive; data has been collated for reporting*
- *Dialogue intelligibility team – continue developing tests (word lists, sentence lists, music and EFX beds); data collection and report system is needed; test planned with Linearity Group*
- *Clip Analysis team – Subjective listening testing of known, difficult-to-handle movie clips*

The DG reported on the tasks completed, impressions, sample data, and the tasks in progress.

DG: Technical Documents Research

DG is tasked with researching existing documents, standards and research papers pertaining to sound system performance and measurements — with the goal inherent within all DGs — of correlating Perception and Measurement with the potential of modern computers and algorithms.

Status: The group did not report on this area.

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SG: Exhibition Display

The study group shall investigate the needs and wants of the various concerned parties — e.g., DCI, Exhibitors, Manufacturers, Distribution Partners, Installers, QC Testers.

It will investigate Projection and LED displays that now reach into the ITU-R Rec BT.2020 color space and use ITU-R Rec BT.2100 transfer functions, and the implications of their use in various combinations in current and future infrastructures.

Status: The audio portion of emissive display completed a final editing passes and ready for a group review.

Current Document:

Engineering Report

The report will identify existing SMPTE documents that will need revision to include the new capabilities. It will recommend any further work to plug gaps.

DG: Stereoscopic Subtitling

Note: this DG also looks after non-stereoscopic subtitle projects.

Current Projects:

EG 428-23 Mastering Guideline for Japanese Timed Text DCDM

Creation of a guideline document for XML DCDM mastering of Japanese Timed Text to achieve desired results in current ST 428-7 renderers.

Status: Pre-FCD TC ended 2025-05-01. The comments were resolved and FCD ballot to end 2025-06-26.

RP 428-22 D-Cinema Distribution Master – Minimal Timed Text XML Requirements

A new recommended practice to create a "blank" ST 428-7 DCDM Subtitle file (Minimal Timed Text XML Requirements).

Status: DP ballot passed 2025-05-25. Late editorial comments were resolved. ST Audit to end 2025-06-12.

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Metadata and Registers Committee (30MR) Chairs: Bill Redmann

The application of the General Scope as it applies to the definition and implementation of the SMPTE Registration Authority, used to identify digital assets and associated metadata such as the definition of shared metadata semantics across multiple committees.

UMID Projects

The Chair of the following projects gave a status report.

SG: Application of the Unique Material Identifier (UMID)

The UMID is standardized in ST 330. RP 205 covers application of UMIDs in Production and Broadcast Environments. This SG studied ways to make the UMID more useful, resulting in a report available here. The SG remains open for assistance to the other UMID project groups and to review any new work items.

Status: The SG continues to explore how UMID can contribute to "material" identity and integrity (relates to DMS-II project in 31FS).

DG: UMID-related Standards

Current project:

Revision RP 205 – UMID Applications

This project will produce an updated version of RP 205 after its 1-year review and taking account of the most recent ST 330 update.

Status: The DG is preparing a Working Draft for the pre-FCD TC review towards a second FCD ballot. The DG will propose revisions to the "Terms and Definitions" clauses in both RP 205 and ST 330 to remove discrepancies.

SG: UUID File Naming

This project will explore ways to unify the application of UUIDs to files, primarily as file names, but respecting whatever UUIDs already have been assigned to files.

Status: The SG continues to hold bi-weekly telecons. Work on the draft report is continuing.

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DG: AI Model Metadata

This DG covers the scope of three projects based on the conclusion of a study conducted by a joint task force with the Entertainment Technology Center. The resulting report of this study ER 1010 is published here.

The drafting group will develop the following three standards:

ST 2041 Metadata Generated by LLMs: Contextual and Versioning Standards

This project seeks to establish a standardized set of metadata fields to ensure the reliability and maintenance of LLM-generated metadata. The project will define the necessary metadata fields for LLM-generated content, including context, model version, prompt, hyperparameters. It will also develop guidelines for capturing and storing this metadata to ensure traceability and reproducibility.

ST 2042 Embeddings as Metadata: Contextual and Non-Human Readable Fields

Embeddings are inherently non-interoperable and non-human readable, making them difficult to use effectively without additional context. This project aims to standardize the metadata required to ensure consistency, reliability and interoperability of embeddings:

1. define the metadata required for embeddings generation;
2. investigate methods to ensure interoperability of embeddings between different systems.

ST 2043 AI Model Metadata and Creation of a Centralized Model Registry

This project will develop a standardized metadata schema for AI models and establish an official, maintained database of registered models with the following tasks:

1. define a comprehensive set of metadata fields that cover various aspects of AI models;
2. create a centralized registry to store and manage this metadata, facilitating better discoverability, reproducibility, and management of AI models across the industry.

Status (all): The DG is holding meetings in regular cycle. The DG plans to identify relevant and priority use cases clearly. Then develops an initial metadata model based on the first selected use case. This process will iterate and expand the metadata model across additional identified media use cases.

WG 30MR10: Metadata Definition

This Working Group coordinates the process for adding or maintaining metadata items in registers. Registers are maintained and balloted in xml format. An online tool has been introduced to assist with the development of metadata entries and their validation and acceptance for batched ballots. The document is ST 2123 - SMPTE Metadata Registers. It contains a prose document and elements containing the individual registers in xml form. Requests for changes to the registers are processed and collected into batches for balloting. The current ST 2123 register release is available online here.

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Published Documents:

ST 335:2012 - SMPTE Standard - Metadata Element Dictionary Structure and Amendment 1 2019

ST 395:2014 - SMPTE Standard - Metadata Groups Register

ST 400:2012 - SMPTE Standard - SMPTE Labels Structure

ST 2003:2012 - SMPTE Standard - Types Dictionary Structure

ST 2088:2019 - SMPTE Standard - Essence Element Key Register Structure

ST 2123:2023-04 - SMPTE Standard - SMPTE Metadata Registers ("Jalapeno" release)

The Metadata Registers are publicly available here: https://registry.smpte-ra.org/pages/

Current projects:

Revision ST 2123 SMPTE Metadata Registers

Adding requested Universal Labels to the registers that comprise ST 2123 - SMPTE Metadata Registers.

Status: The ST 2123 "Balsamico" release was published on 2025-04-17, and the xml registers released to here on SMPTE-RA. Codenames for the next two releases are "Vegemite" and "Hoisin".
Requested UL additions are being processed for the Vegemite release.

There are WG projects to revise and simplify existing metadata Standards in line with administrative guideline AG-18 that defines the process for adding new UL definitions to the metadata registers.

Revision ST 335 Metadata Element Dictionary Structure

Normalize to AG-18

Revision ST 395 Metadata Groups Register Structure

Normalize to AG-18

Revision ST 400 SMPTE Labels Structure

Normalize to AG-18

Revision ST 2003 Types Dictionary Structure

Normalize to AG-18

Status: ST 335 FCD ballot passed 2022-07-18 with no comments and the document was automatically elevated to DP status. FCD ballot of the other three documents closed 2024-08-20. ST 395 had 53 comments, ST 400 had 2 comments, ST 2003 had 5 comments. Comment resolution is the next step. Many comments were editorial, and it was recognized that some apply to ST 335. Consequently, re-ballot of ST 335 is most likely. The editor made no progress on this project in the quarter.

File Formats and Systems Committee (31FS) Chair: Wolfgang Ruppel

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

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.

Revision: RP 2057 – Text-based metadata carriage in MXF

This is a constrained revision to roll up an amendment and check Normative References. However, the document is also being revised in line with AG24 – MXF Style Guide.

Status: No update was provided by the Group Chair.

DG: ST 2073-10 mapping ST 2073 into MXF

Current project:

Revision ST 2073-10 - Mapping VC-5 Video Essence into the MXF Generic Container

Current version omits capabilities from VC-5 document revisions that have been published after ST 2073-10 was published.

Status: Work on ST 2073-10 revision has bi-weekly meetings but communication has been over email. A nearly complete draft with a registry submission has been circulated to the DG for reviews and comments.

DG: TLX and TLC MXF mapping

Status: The DG has held 7 meetings in the last quarter and 48 in total.

Current Projects:

ST 2120-4 – Carriage of TLX in DMS-TLC (was Mapping TLX into MXF and KLV)

TLX is Extensible Time Label, ST 2120 parts 1-3 that have just completed FCD ballot in this TC-32NF DG. This document defines TLX-KLV elements in accordance with 377-1 to assure useability within MXF. The DG does not want a PCD phase for this document.

Status: There is no working draft yet as it has been waiting for ST 2120-2 in TC-32NF to progress in comment resolution and re-ballot. ST 2135 REG-JSON is expected as a reference.

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ST 2134: Descriptive Metadata Scheme for Compatible Time Labels (TLC)

Specify an architecture to support multiple schemes for time labels and for collections of time labels that is compatible with MXF and KLV and permits the representation and serialization of these labels in MXF, KLV, XML and JSON. Specify at least one such scheme (besides TLX).

Status: This document was published on the SMPTE Store 2025-05-28. This project is complete.

DG: ST 2131 - Mapping ADM to MXF

ADM = Audio Definition Model. Defines a means of mapping audio metadata RIFF chunks to MXF with specific consideration of the requirements related to ADM metadata – mapping ST 2067-204 to MXF in the same way that ST 2127 maps ST 2067-203 into MXF. There has been close collaboration and overlap with "35PM DG IMF Audio with Metadata".

Status: No update was provided by the Group.

WG: MXF-related Documents Maintenance

Formed at the 2021-08 meeting to manage maintenance of MXF documents.

Status: There was no objection to closing this group. Revisions will be handled by specifically targeted drafting groups. One- and five-year reviews will be discussed at the TC level.

Revision - ST-381-3-AVC into MXF Generic Container

Status: This document was published on the SMPTE Store 2025-03-20. This project is complete.

DG: Revision of ST 436-1 MXF Mappings for VI Lines and Ancillary Data Packets

Update the normative references and make any additional editorial adjustments required.

Status: The DG is preparing a package for pre-FCD review.

DG: Mapping DPX files into the MXF Generic Container

Project Scope: Specify mapping of a sequence of DPX pictures as defined by SMPTE ST 268-1 and SMPTE ST 268-2 into the MXF Generic Container. DPX sequence handling could be simpler if wrapped into a container and MXF is the container of choice. MXF+DPX solves many issues for both standards. Includes:

- Define frame/clip wrapping for SMPTE ST 268-1 & ST 268-2
- Define necessary SMPTE Registry ULs for DPX into MXF identification
- Define basic constraints on DPX sequences that can be mapped into MXF
- Allow future extensions and constraints for specific applications
- Support advanced colorimetry and bit depth as defined in ST 268-2

Status: The document editor reported no DG activity in the last quarter.

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RDD 60 - Mapping Immersive Audio Bitstream into the MXF Generic Container for Repository File Formats

Standards and guidance already exist for mapping Immersive Audio Bitstream essence into MXF for D-Cinema and IMF applications. *This document* defines a baseline method of mapping IAB essence to the MXF generic container in a manner compatible with requirements for broadcast in-house archival and repository file formats.

Status: This document is in the publication queue.

RDD 61 - Mapping ARRICORE Bitstreams into the MXF Generic Container

Maps new ARRICORE bitstreams into the MXF constrained Generic Container. Mapping is quite similar to that of RDD 54 ("RDD 54: MXF — Mapping ARRIRAW Bitstreams into the MXF Generic Container"), but the essence has a unique and non-raw structure. Leverages the same metadata RDD ("RDD 55: MXF — Carriage of ARRI Camera System Metadata") as RDD 54 does.

Status: This document is in the publication queue.

DG: Descriptive Metadata Scheme for Identity and Integrity

There is a current requirement for Identity and Integrity Metadata to be carried in professional media files throughout the production process. Professional media file formats include at least ST 377 MXF.

This metadata must be inserted as soon as it is available (as early as camera crew assignment) and must persist throughout the production chain - through Ingest, Editing, Packaging and Playout. At each stage of the production chain, media and metadata must be able to be augmented and modified.

Current Project:

ST 2140-1 Descriptive Metadata Scheme for Identity and Integrity

The DMS-II project will develop and document an architecture, a data model, and a detailed specification to carry Identity and Integrity metadata in ST 377 MXF files using the ST 336 KLV Protocol.

The data model and specification will include the categories listed above.

The specification for bindings will address MXF media structures including I frame and long GOP media and Frame wrapped, Clip wrapped and Partitioned files.

Status: The Group Chair reported that the proposed liaison to ISO has been withdrawn. The group is collecting vital new user stories from the community. The DG plans to resume the meetings.

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WG: Archive Exchange Format (AXF)

This Working Group (31FS-30) has defined an archive format that will promote interoperability between all forms of archive media.

Published document:

ST 2034-1 - Archive eXchange Format (AXF) - Part 1: Structure & Semantics (Rev. 1 published 2017)

Part 1 has also been published by ISO as a Publicly Available Specification; ISO/IEC DIS 12034-1.

Status: No overall updates were provided

Current projects:

Revision: ST 2034-1 - Archive eXchange Format (AXF) — Part 1: Structure & Semantics

This part creates "Wrapped" AXF Objects. Scope: Revise ST 2034-1 to correct syntax errors in XSD file, edit text document to support XSD changes, prepare a readme file to accompany the XSD file. It was intended to remove UML diagrams from the text document, but a means has been found to edit them.

Status: AXF Group has been working on converting the Part 1 document into HTML. The issue of visualizing XSD schema files as UML remains open. The Group Chair requested the group for help, in particular for recommendations on the tooling.

ST 2034-2 - Archive eXchange Format (AXF) - Part 2: External Uses of XML Schema

Part 2 covers the use of AXF Structures in "Unwrapped" form, enabling aggregation of files into a "Bundle". It is useful in workflows. The schema can serve as a manifest, and it can apply hierarchical structure to files. It is intended for use from file capture on set through to archive input. There was a strong end-user demand for this technique that gathers metadata as material passes along the workflow. Use of IMF metadata is being considered to avoid reinvention.

Status: No updates specific to Part 2 were provided.

AXFlib – Open-Source Toolkit for AXF

The availability of Open-Source Code should increase AXF Traction — Small Archives and Libraries cannot afford large-scale systems, but they are interested in applying AXF.

Wider availability of AXF systems helps large vendors, too; it increases confidence of long-term AXF support. It helps assure recoverability of large investments in libraries.

Issues such as ownership and licensing need to be decided (and could form a model for SMPTE)

Status: No updates specific to the AXF open-source toolkit were provided.

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DG: JSON Representation of SMPTE Registered Data (RegJSON)

Specify an isomorphic (reversible) mapping of SMPTE metadata to JSON, following the approach of defining mapping rules and normative schemas as employed for ST 2001 XML Representation of SMPTE Registered Data (Reg-XML). The public CD process will be used.

ST 2135 JSON Representation of SMPTE Registered Data

Status: The DG has restarted the work. ST 2001 html-pub private repository created to convert PDF publication to HTML and track changes. The DG meets every last Thursday of each month. Assets include sample files, drafts, meeting notes, action items and rule candidates, and WD ST 2001-202x.

DG: Constrained DPX for HDR

Published documents:

ST 268-2 - Constrained Application of Digital Moving-Picture Exchange (DPX) Format for High Dynamic Range (including Amendment 1, also published)

ST 268-3 Reference Materials for DPX V2.0 HDR Implementations

Current projects:

Revision RP 268-3 - Reference Materials for DPX V2.0 HDR Implementations

Project scope: A revision project has been initiated to support the newly-defined FP16 format from the ST 268-2 revision.

Status: No update was provided by the Group.

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Network and Facilities Architecture Committee (32NF) Chairs: Dean Bullock and Bruce Devlin

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, time labelling of essence, synchronization of systems, switching mechanisms, and physical networks that are both internal and external to the facility excluding unique final distribution methods.

WG: SDI Interfaces

The Working Group (32NF40) scope is:

Develop and maintain SMPTE documents related to electrical and optical SDI interfaces, including SDI, HD-SDI, and Ultra HD-SDI interfaces. Provide input on one- and five-year reviews, revise existing documents as directed, and develop new documents when needed.

Status: The WG does not have any current projects.

WG: Video Over IP

This Working Group (32NF60) handles projects related to IP transport of media.

DG: SMPTE 2110 suite - Professional Media over Managed IP Networks

This group is responsible for a suite of standards specifying the carriage, synchronization and description of separate elementary essence streams over IP for the purpose of live production and facility interconnects.

Published documents:

OV 2110-0 – Roadmap for the 2110 Document Suite

ST 2110-10 – System Timing and Definitions

ST 2110-20 – Uncompressed Active Video

ST 2110-21 – Traffic Shaping and Delivery Timing for Video

ST 2110-22 – Constant Bit Rate Compressed Video

RP 2110-23 – Single Video Essence Transport over Multiple ST 2110-20 Streams

RP 2110-24 – Standard Definition Video in ST 2110

RP 2110-25 – Measurement Practices (related to ST 2110 video, audio, ancillary data streams)

ST 2110-30 – PCM Digital Audio

ST 2110-31 – AES3 Transparent Transport

ST 2110-40 – SMPTE ST 291-1 Ancillary Data

ST 2110-41 – Fast Metadata eXpress (FMX)

ST 2110-43 – Timed Text Markup Language for Captions and Subtitles

ST 2127-2 – Mapping MGA Audio Metadata to ST 2110-41

Status of DG: Revisions to parts 10, 20, 21, 22, 24, 31, 40 have been published as well as publication of new documents RP 2110-25, ST 2110-41, and ST 2127-2.

Current projects:

RP 2110-11 – SMPTE 2110 System Timing Planes

This practice will specify additional behaviors of media devices using controls available in ST 2110-10. While 2110 suite documents describe device interfaces, some additional practices are required to address inter-essence timing alignment at a system level.

Status: Regular Project meetings underway.

Revision: ST 2110-30 – PCM Digital Audio

Scope-limited revision to update the reference to AES67-2018 to allow reference to the PICS contained in that revision of AES67. If other improvements are identified by the PICS team, they will be included.

Status: DP ballot opened 2025-05-23. This was asked by the PICS team to update the AES reference to AES68-2018.

ST 2110-41 – Fast Metadata eXpress (FMX)

An RTP Payload Format for general metadata objects. Intended for transporting any metadata that did not originate as ST 291 ancillary data. Each type of metadata needs a defining document (SMPTE or other).

Supports "tightly-bound" metadata (associated to an essence stream) as well as other metadata with no specific relationship to an essence stream.

Status: The document is published. However, an error in an Annex has been identified and a revision is underway. It will implement the recommendations contained in this advisory note. The revised document is ready for FCD ballot.
A register for ST 2110-41 Data Item Types has been set up here. A few register submissions were already published.

ST 2127-2 - Mapping MGA Audio Metadata to ST 2110-41

Provide a standard for mapping Metadata-Guided Audio (MGA) Audio Metadata, as defined in SMPTE ST 2127-1, to the SMPTE ST 2110-41 Fast Metadata framework.

Status: The document is published (kept here for its relationship to ST 2110-41). It also has a Data Item Type registration in the SMPTE ST 2110-41 register here.

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RP 2110-xx - VPID-SDP Interplay

Most SDI signals, by rule, include a VPID (Video Payload Identifier) within the ancillary data space. Within the ST 2110 system, information about the video signals is conveyed through management systems using SDP objects, and this information includes some of the data that also exists in the VPID. This document establishes recommended practices for the interplay of SDP and VPID information in ST 2110 systems.

Status: The project is underway with document drafting in progress.

DG: RP 2110-1xx's - Protocol Implementation Conformance Statements (PICSs) for ST 2110 Suite

A PICS functions like a conformance checklist that implementers can complete. Each PICS document is numbered 100 greater than the document it applies to — e.g., RP 2110-110 applies to ST 2110-10. The group provided feedback to the 2110 DG, which was processed as late comments in the one-year-review versions of these documents.

Status: Parts 110, 120, 121, 122, 130, 141 closed FCD ballot 2025-04-08 with comments. FCD ballot of parts 124, 131, 140, 143 closed 2023-11-29 with 4, 3, 3, 0 comments, respectively. The subject about using dated references vs. undated references is being evaluated.

WG: Time Labeling and Synchronization

This Working Group (32NF80) was established to handle projects for next-generation synchronization of systems using packetized networks and time labeling of essence.

Business impact of WG 32NF80 work items: Network-based facility synchronization and new functionalities for time labeling.

Published documents:

ST 2059-1 - Generation and Alignment of Interface Signals to the SMPTE Epoch

ST 2059-2 - SMPTE Profile for Use of IEEE-1588 Precision Time Protocol in Professional Broadcast Applications

EG 2059-10 - Introduction to the New Synchronization System (revision published in 2023)

RP 2059-15 - YANG Data Model for ST 2059-2 PTP Device Monitoring in Professional Broadcast Applications

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Current DGs and projects:

DG: ST 2059 Suite Revisions

The DG meets bi-weekly and currently has the following project:

Revision: ST 2059-2 - SMPTE Profile for Use of IEEE-1588 Precision Time Protocol in Professional Broadcast Applications

Investigate how ST 2059-2 could be made compatible with the 2019 version of IEEE 1588 without breaking existing implementations. Two issues have already been uncovered that impact ST 2059-2: Mixed unicast/multicast mode delay request message rate signaling and TLV messages.

Status: The objectives of the revision are:
- *Achieve compliance with IEEE Std 1588-2019 (PTP V2.1)*
- *Allow for backward compatibility with current version of ST 2059-2*
- *Allow installations to migrate gradually from current version of ST 2059-2 to new version*
- *Allow use of new features of PTP V2.1*

Revised ST 2059-2 document completed pre-FCD review in 2024-08-19, with all issues addressed.

This document is provided to the TC for public CD.

DG: ST 2059 PTP Interoperability and Best Practices

The purpose is to confirm that the provisions of the standards are unambiguous, and that the technology yields the intended results. The Interop DG itself is open to all SMPTE Standards Community members, but its Testing AHG and attendance at the interop meetings is subject to signing a non-disclosure agreement and memorandum of understanding.

There have been five rounds of testing, all hosted by FOX NE&O in Houston, TX, USA:

2015-11, 2016-06, 2017-03, 2018-02, 2019-02.

Reports (where available) are on this SMPTE website page.
The DG recently extended its scope to include documenting best practices.

Status: There was no overall DG report given at this meeting.

Current Projects:

RP 2059-14: PTP Best Practices for Professional Media Over Managed IP Networks

Status: The DG is working on the RP document as scoped. The DG meets about once per month and is making steady progress towards a WD for pre-FCD review.

DG: ST 2120: Extensible Time Label (TLX)

Create a basic Time Label with a defined mechanism for registration of additional fields. There is associated MXF work in this File Systems technology committee DG.

Current Projects:

ST 2120-1 – Extensible Time Label – TLX Structure

ST 2120-2 – Extensible Time Label – TLX Items (includes a JSON schema element ST 2120-2a)

RP 2120-3 – Extensible Time Label – TLX Profiles (includes a JSON schema element ST 2120-3a)

Status: The three documents above passed FCD ballot 2022-12-26.
Part 1 was re-balloted at FCD. It passed 2024-09-26 with 43 comments. 22 are editorial and have been addressed. The remaining 21 are substantive and comment resolution is underway.

Part 2 and Part 3 passed FCD ballot. Part 2 has 36 comments (11 addressed) and Part 3 has 25 comments including late comments (22 addressed). Substantive comment resolution awaits stabilization of Part 1 after re-ballot.

DG: UTC-aligned Timecode

Current Project:

ST 12-4 – UTC Aligned Timecode
Develop algorithms and methods to accurately relate the timecode date, time, and metadata to PTP referenced time for both integer and fraction frame rates.
Define the binary group coding of the date, UTC offset and optionally the rate and higher rate metadata utilizing ST 262 or ST 309.
Develop a new standard to document for the new timecode generation process

Status: The DG chair reported that five ballot comments were received. Estimated time to next review is mid-June.

DG: Signal Sync Alternate Mode

Current Project:

ST 2139 - Signal Sync Alternate Mode
Enable transport of timing signals using a USB-C Alt mode. This would enable devices that have only USBC connections to join systems that use, e.g., the sync signal defined in SMPTE 274:2008, Clause 10.

Status: The DG started on 2024-07-16. Public CD closed 2025-04-23 with four comments (https://github.com/SMPTE/st2139). All comments were integrated into the CD. FCD ballot opened 2025-05-22, closing 2025-06-26.

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WG: Data over AES3

This Working Group (32NF90) was established to handle projects that standardize AES3 carriage of data streams. These streams may be compressed audio, metadata – anything other than AES3 audio itself!

Status: A project proposal is awaited to restart development of ST 2041-4 – MPEG H Data in AES3. The 32NF document maintenance group has recommended an amendment roll-up for ST 338.

WG: 32NF Document Maintenance Group

This group holds bi-weekly meetings to address issues reported on GitHub and to make the process easier to use. It also works on one-year and five-year document reviews. There are 6 GitHub repos, and more are needed:

ST 299-1 GitHub	*ST 2022-1 GitHub*	*ST 2059-2 GitHub*	*ST 2110-10 GitHub*
RP 2110-23 GitHub	*ST 2110-30 GitHub*		

Status: The TC agreed to check for documents that must be withdrawn, then stabilize the rest of the list. If a document requires changes, a new project will be opened. The existing Document Maintenance Group (DMG) recommendations can be reviewed. The TC chair will post the DMG document review recommendations to the TC mailing list. No activities in the quarter were reported.

Media Systems, Control and Services Committee (34CS) Chair: Karyn Reid

The application of the General Scope as it applies 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.

DG: UMID Resolution Protocol

This project will draft a new SMPTE standard that specifies an industry-standard method for a given UMID to be converted into the corresponding URL of its audiovisual (AV) material.

Status: There has been no progress in the last quarter as the DG Chair has focused on associated TC 30MR UMID work. The work in TC 30MR will continue and the preparation of the SKN workspace is planned. The DG hopes to provide an initial draft.

DG: BXF Suite of Documents

Published documents:

OV 2021-0: Roadmap for the 2021 Document Suite

RP 2021-1: Requirements and Informative Notes

ST 2021-1: Requirements and Informative Notes

ST 2021-2: Protocol

EG 2021-3: SMPTE Engineering Guideline Use Cases

EG 2021-4: Schema Documentation

ST 2021-4: Schema Documentation

RP 2021-5: Using Ad-ID and EIDR as Alternate Identifiers in SMPTE BXF and ATSC PMCP

RP 2021-6: BXF SDK Documentation

RP 2021-9: Implementing Broadcast Exchange Format (BXF)

BXF is an XML-based system that standardizes exchange of Schedule, As-run, Content Transfer instructions, Content-related metadata, and Agency instructions.

BXF incremental development - New features are added to the suite at regular intervals, and these are batched into versions using a numeric version number – current published version is BXF 8.1.

Status: The group reported that currently there is no BXF activity.

SG: Required Application Protocol Standards for IP-Based Media Production

This group will explore prospective Media Industry layering models and standards requirements for interoperability of production applications running on IP-based media networks.

Status: During the final review of the report, it was identified that it is now outdated. The TC chair has not heard from the proponents. The TC agreed that this project will be removed from the agenda for future meetings.

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DG: Media Microservices

This group has been managing Microservices projects submitted to SMPTE from the Open Services Alliance (OSA). The OSA has been merged into the SMPTE RIS activity – Rapid Industry Solutions.

Status: Topics for future work are being developed in RIS-OSA. Currently they are: Best Practices for Live Stream Distribution, (followed by) Global Service Repository.

Projects currently underway:

ST 2125 – IMF Registration Service API

This project facilitates the use of IMF packages.

Status: Issued as Public CD document on this page. The DG plans to initiate a revision for the next Public CD. The JSON schema can be an informative reference. FCD ballot can proceed after the updates.

ST 2126 – Microservices Status Reporting and Logging

This project creates a standardized approach to implement status reporting to overcome the problem of multiple proprietary and non-interoperable protocols.

Status: This document completed the Public CD process on this page. The DG awaits the resolution of one comment before pre-DP vote TC review.

Media Microservices Terminology

Provides definitions for terminology used in the other Microservices documents.

Status: A prototype for the SMPTE website is posted.

ST 2133 - Job Processing Architecture

Aims to overcome variations in existing Job Processing Architectures that cause interoperability problems.

Status: This document has been posted as a public CD through July 3, 2026.

Catena Projects

Catena is a media resource control system. It will be a multi-part suite, with the following projects approved:

ST 2138-0 – Overview

ST 2138-10 – Catena Model

ST 2138-11 – Catena gRPC Connection

ST 2138-50 - Security

Status: The DG chair reported that the projects are progressing well with ST 2138-10, ST 2138-11 and ST 2138-50 ready for pre-FCD review. A SMPTE GitHub repo will be set up for the ST 2138-x documents. The proponent has a Catena GitHub repo at https://github.com/rossvideo

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ST 2138-12 – Catena REST Connection

ST 2138-13 – Catena WSS Connection

Status: The projects for SMPTE ST 2138-12 and SMPTE ST 2138-13 are approved. Waiting for draft document.

RP Best Practices for Live Stream Distribution

This project aims to establish best practices to simplify and secure the area of live stream distribution (B2B) between content producers/providers and streaming platforms.

Status: The DG chair reported that RP 2145 has been restructured. Significant work is needed before transitioning to TC 34CS.

Media Packaging and Interchange Committee (35PM) Chair: JoAnne Kim

The application of the General Scope as it applies 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, postproduction archiving, and related topics.

Interoperable Mastering Format (IMF)

IMF is a file-based framework designed to support multiple high-quality content versions of a finished work destined for distribution channels worldwide. It facilitates management and processing of these content versions, including playback, validation, and transformation to the various master formats used by each distribution channel. IMF is intended for international use in professional applications.

Business Impact: Interchange of file-based masters for current and next-generation audiovisual content, including wide-color gamut (WCG), high-dynamic range (HDR) imaging, and immersive audio.

DG (35PM-50): IMF Document Maintenance

Issues are continuously collected and discussed in SMPTE 35PM GitHub repository — https://github.com/SMPTE?q=2067 — and members contribute to revision work, for both bugs and improvement requests.

Current Projects:

Revision of ST 2067-21:2023 IMF – Application #2E

This revision will add support for image rasters up to 8192x6224. Various GitHub issues will also be addressed.

Status: This revision of the fifth edition. The pre-FCD ballot TC review resulted in two comments. The document is very close to ready for Public CD after the comments are resolved.

Revision of ST 2067-201:2021 IAB Level0 Plugin

The IAB Level 0 Plug-in defines wrapping of the Immersive Audio Bitstream in MXF. The encoded bitstream contains metadata about its contents, but this metadata is currently not accessible to MXF parsers without IAB decoding capabilities. This revision introduces new MXF-level sub-/descriptor items that allow carriage of IAB object and channel metadata information within the MXF metadata. By way of introducing metadata in MXF descriptors, it will also become available in the IMF CPL for easy access. This revision will introduce MXF Sub-/Descriptor definitions and items to support relevant IAB object/channel metadata. Bitstream constraints will be clarified and/or refined but not substantively changed.

Status: This document has completed pre-FCD review. The comments received are being addressed and resolved. An issue with a UL was discovered and the register submission was revised. The next step is FCD ballot.

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Published Interoperable Mastering Format documents:

OV 2067-0 - Interoperable Master Format

ST 2067-2 - Core Constraints

ST 2067-3 - Composition Playlist

ST 2067-5 - Essence Component

ST 2067-8 - Common Audio Labels

ST 2067-9 - Sidecar Composition Map

ST 2067-20 - Application #2 (Withdrawn)

ST 2067-21 - Application #2E

ST 2067-30 - Application #3

ST 2067-40 - Application #4 Cinema Mezzanine

ST 2067-50 - Application #5 ACES

ST 2067-60 - Application #6 UHDTV Program Workflow (AVC)

ST 2067-70 - Application SMPTE ST 2019-1 (VC-3)

ST 2067-71 - Application SMPTE ST 2117-1 (VC-6)

RDD 45 - Application ProRes

RDD 59-1 - Application Constraint DPP (ProRes)

ST 2067-100 - Output Profile List

ST 2067-101 - Output Profile List - Common Image Definitions and Macros

ST 2067-102 - Output Profile List - Common Image Pixel Color Schemes

ST 2067-103 - Output Profile List - Common Audio Definition and Macros

ST 2067-200 - Dynamic Metadata for Color Volume Transform (DMCVT) Plug-in

ST 2067-201 - Immersive Audio Bitstream Level 0 Plug-in

ST 2067-202 - Isochronous Stream of XML Documents (ISXD) Plug-in

ST 2067-203 - IMF Audio with Frame-based S-ADM Metadata Plug-in

DG: IMF Output Profile List

This group created Parts 100, 101, 102, 103 of the IMF suite. A decision has been made to convert to the HTML document development workflow for the four projects below.

Current projects:

Revision: ST 2067-101-OPL-Image Macros

Revision to clarify the handling of images that are: i) chroma-subsampled; ii) Interlaced; and iii) stereoscopic.

This project also adds new common image processing macros to ST 2067-101:2018, including 3x3 matrix, 1D LUT (Lookup Table), named transfer function decode/encode, and named color space conversion.

ST 2067-104 – OPL Composite and Blend Macros

This new document develops the processing macros for image composite and blending between a foreground and a background plate with an alpha (channel) image to control the operation. The macros are part of the IMF OPL framework defined by ST 2067-100.

ST 2067-105 – OPL Output Macros

This new document develops the image and audio output macros for the IMF OPL framework defined by ST 2067-100. This project will add a set of output macros based on the AMWA AS-11 in OPL report (SMPTE ER 1006) and IAB in OPL report (SMPTE ER 1005), including the generation of ISO BMFF (QuickTime), TTML, AMWA AS-11, PCM essence in ISO BMFF (QuickTime), and immersive audio in BWF+ADM files.

ST 2067-106 – OPL EssenceType Transform Macros

This new document develops the essence type transform macros for timed-text rasterization and immersive audio bitstream (IAB) conversion. The macros are part of the IMF OPL framework defined by ST 2067-100.

Status (all): The DG chair reported that there have been no drafting calls since the last plenary meeting. The revision of ST 2067-101 will proceed with a needed component maturing, i.e., the 10E ST 2136-1 Common LUT Format in Public CD. The remaining new standards will follow the revision project.

DG: IMF Application VC-5

IMF Application for VC-5 based on ST 2073-10 MXF Wrapper. This group documents an IMF Application for VC-5 based on SMPTE ST 2073-10 MXF Wrapper. The DG holds bi-weekly meetings.

Current Project:

ST 2067-72 - IMF Application VC-5

Completion of an IMF Application for VC-5 image essence limited to the capabilities of the VC-5 MXF wrapper specified in SMPTE ST 2073-10.

Status: The document completed Public CD process. The next step is FCD ballot.

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ST 2067-204 IMF Audio with ADM Metadata Plug-in

Develop a standard for an Interoperable Master Format (IMF) plug-in to allow ADM (Audio Definition Model, ITU-R BS.2076) metadata to be carried alongside PCM essence in IMF compositions, where the Track Files used are Audio Track Files (SMPTE ST 2067-2) augmented by ADM metadata.

Status: ST 2067-204 is posted for Public CD review here. The DG chair reported that there had been no activities in this quarter. The DG expects to move the Public CD document to pre-FCD review and subsequent FCD ballot very soon.

DG: IMF Aux Image Sequence Plug-in

This group documents the use of plug-in track for the IMF packaging framework to support additional image sequences beyond the main image virtual track.

Current Project:

ST 2067-205 IMF Auxiliary Image Sequence Plug-in

Specify Auxiliary Image Sequence Track File, Virtual Track for CPL, and any additional constraints. Sign language is an example use case.

Status: The source documents from the DPP (based on DPP006) are available and the DG has been in communication with the DPP regarding rights assurances. There had been no DG activities in this quarter. The DG hopes to start work next quarter with a Patent Statement (AG-08) from the DPP.

DG: Event-based Text Data Plug-in

This group is documenting the use of plug-in virtual tracks for the IMF packaging framework to support timed-based textual metadata. Such metadata presents event-based metadata in XML format.

Current Projects:

ST 2067-206 IMF Event-based, Text-based Metadata Plug-in

Develop a standard for an Interoperable Master Format (IMF) plug-in to add event-based, text-based metadata to IMF Compositions, including an optional XML/JSON scheme for generic, event-based metadata.

ST 2067-207 IMF – Event-based, Text-based Metadata: Video Viewports

Develop a standard that extends the "Interoperable Master Format — Event-based, Text-based Metadata Plug-in" for use in adding video viewports metadata (such as "pan and scan" metadata) to IMF Compositions.

Status (both): The DG chair reported one DG meeting in this quarter. The document drafting will progress as time permits.

ST 2067-4 IMF - Virtual Track Fingerprint

This project is managed under the TC by individuals without a group. The scope is to define a method for computing a unique identifier for the contents of a virtual track in an IMF Composition Playlist.

Status: The Project Chair reported that the draft document is ready for review by the proponents and editors. The pre-FCD review can start once the proponents and editors deem ready.

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SMPTE Standards Publications in the Last Quarter
Includes Revisions and Amendments

SMPTE introduced a new policy at the beginning of 2024 of making its standards available free of charge to SMPTE members. To support this, the standards (along with conference papers and the Motion Imaging Journal) are available on smpte.org – go to https://my.smpte.org/s/

10E Essence

27C Cinema

30MR Metadata & Registers

SMPTE ST 2123:2025-03, SMPTE Metadata Registers

31FS File Formats & Systems

SMPTE ST 381-3:2025, Material Exchange Format — Mapping AVC Streams into the MXF Generic Container

SMPTE ST 2134:2025, MXF Descriptive Metadata Scheme for Compatible Time Labels (DMS-TLC)

32NF Network & Facilities Architecture

34CS Media Systems, Control & Services

35PM Media Packaging & Interchange

SMPTE Public Committee Drafts
Link to current PCD page here

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Annex: Notes on this Report and the SMPTE Standards Process

SMPTE Technology Committees (TCs) are tasked with the development and ongoing maintenance of engineering documents concerning Television, Broadband, Cinema. TCs 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 (**OM**) All participants must abide by these provisions. A suite of Administrative Guidelines support the Standards OM.*

*Within Technology Committees, there may also be Working Groups (**WGs**), Study Groups (**SGs**) Drafting Groups (**DGs**) and Ad-Hoc Groups (**AHGs**).*

*The "Standards Community" (**SC**) is a "parent group" that encompasses all Technology Committees. Joining the SC requires a Standards Participation subscription that allows members to join all TCs and sub-groups that are of interest. An SC meeting is held during each meeting round to convey information that is relevant to all TCs, such as meeting logistics and registration information.*

SMPTE Document Development Process

The document stages are as follows:
__WD:__ Working Draft
*__CD:__ Committee Draft, including → **PCD:** Public Committee Draft option for early public exposure via GitHub*
__FCD:__ Final Committee Draft (has passed FCD ballot)
*__DP:__ Draft Publication, which initiates → **ST Audit:** A due-process check by the Standards Committee*

SMPTE Document-Type Prefixes

__ST:__ Standard   *__RP:__ Recommended Practice*   *__EG:__ Engineering Guideline*
__OV:__ Overview, usually used with multipart document suites to explain the structure
__RDD:__ Registered Disclosure Document   *__ER:__ Engineering Report (from Study Group or Task Force)*
__AN:__ Advisory Note   *__AG:__ Administrative Guideline*

SMPTE Document-Type Suffix

__Amendment__ = Amendment

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 to revise if required*
- *At Five Year intervals after original publication — to check whether the provisions need to be revised*

Options are as follows: Revise; Amend; Reaffirm; Stabilize; Withdraw.

A review may be conducted at any time to update specifications and/or to correct errors.

Other Notes

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