

File Structures (31FS) **Ernesto Santos, Chair; Ann Marie Rohaly, Co-chair**

OVERVIEW

The technical committee on File Structures (31FS) addresses the definition of common wrapper structures for storage, transmission, and use in the carriage of all forms of digital content components. DPX, GXF, MXF, AAF and XML are examples of the technologies that provide the foundation for the work developed in this committee, including maintenance of related SMPTE specifications and development of new standards, based on input from the field.

WORK IN PROGRESS

Current projects in progress include those presented in the following sections.

Revision of SMPTE 377M: MXF File Format (Hontsch)

The revision of the SMPTE 377 document was published in June 2009. The revision included clarification of text without changing technical meaning and further definition of constraints of existing provisions to promote interoperability. A key aspect of this work was the definition of expected behavior of decoders when handling legacy files compliant with the previous version of this standard (SMPTE 377M-2004).

The maintenance of the SMPTE 377 MXF file format standard is a continued effort in the 31FS group. Therefore, a study group on additional clarifications to the standard was set-up in late 2008 and reported additional items that require clarification. Work on those items are in progress and is expected to be published in the form of amendments to SMPTE 377-2009.

Working Group on Test Materials (Dolan)

To promote MXF interoperability in the field, this new working group was formed to develop bitstreams and reference decoder software with the goal of providing full functional coverage of SMPTE 377-1 2009 (MXF File Format standard).

SMPTE 379M: MXF Generic Essence Container (Brunhoff and Edge)

The SMPTE 379 revision was carried out in parallel with the SMPTE 377 revision. Two documents resulted from this work and are expected to be published in 2009.

SMPTE 379-1 corresponds to the original SMPTE 379 document with revised conformance language and clarifications of text added, resulting from input received from the field.

SMPTE 379-2, although also based on the original SMPTE 379 document, enhances it with new features and provisions that are expected to enable a new set of applications in the field.

SMPTE 381M: MPEG Mapping in MXF (Brunhoff)

The SMPTE 381 document was already the subject of extensive study by the group. The bulk of the work in this document re-

quired several of the clarifications that were added to SMPTE 377-1 2009, now published. Work on SMPTE 381 revision is expected to resume in the fourth quarter of 2009.

SMPTE 422M: JPEG 2000 Mapping in MXF (Wilkinson)

Resulting from the study of the SMPTE 422-2006 document, it was found that only editorial changes were required, with no impact in applications in the field. Such changes have already been applied on the published version.

Carriage of Event-Oriented Essence in MXF (Tudor)

Standard mechanisms are being defined for the carriage of event-oriented essence in MXF. Examples of such essence are W3C Timed Text data, selected subtitle formats, and application data such as MHP.

Description of Multichannel Audio in MXF (Morgan)

Definition of standard mechanisms for the identification of audio channels and related metadata accommodation, in scenarios in which multichannel audio is conveyed using the MXF file format. Both television and digital cinema applications are being considered as sources of requirements.

MXF KLV Encoded Extension Syntax (Carignan)

Building on the KLV structure of SMPTE 377M-2004, this project is intended to provide additional extension definitions by rigorous KLV encoding of a dictionary and meta-dictionary with clear identification of legacy behavior.

MXF Generic Streams Indexing

This project is intended to define standard mechanisms that can be used by compliant decoders to increase performance of random access to data stored in MXF Partitions. Because of the lack of resources, no further progress was made on this subject recently. The group is actively seeking a new chair for this work item.

AAF Object Model Specification (Tudor)

In the scope of this project, the Advanced Authoring Format (AAF) data model is being documented as a proposed SMPTE standard. This work item includes the definition of AAF classes for interchanging metadata and essence, the definition of AAF dictionary metadata classes, and the definition of AAF meta-dictionary data structures, as well as associated rules for defining valid data models.

XML Representation of SMPTE Registered Data (Tudor)

Definition of a standardized XML-based format for representation of instances of SMPTE registered data and other user data. The format is intended as a data interchange format between systems and will be suitable for a wide range of data and data models.



Revision of SMPTE 360M-2004 - GXF (Edge)

The revision of SMPTE 360M for clarification of packing model for both MPEG video streams and audio streams was completed. The document is now published as SMPTE 360-2009.

Revision of SMPTE 268M: DPX (Bancroft)

Besides the analysis of the current text of this standard to identify any issues that may require correction, this project will also consid-

er addition of new features such as floating point pixel representation and multiframe capability. A first working draft of the revision is expected in the third quarter of 2009, to start the document development process internal to the 31FS committee. Meanwhile, the group is gathering feedback from the motion pictures community to establish guidelines for this development.



Ernesto Santos is co-founder and head of marketing and sales at MOG Solutions, a leading provider of MXF-based solutions. He is currently Chair of SMPTE TC 31FS, following his experience from 2005 to 2008 as Chair of SMPTE W25.10, the MXF Implementers Working Group. His contribution to standardization goes back several years to MPEG (ISO/IEC JTC1/SC29/WG11), where he was active in the development of MPEG-7 and MPEG-21, and among other contributions, including co-editor of MPEG-21 part 2. Until early 2008, Santos was head of engineering at MOG Solutions, having managed MXF-based projects and product lines since the early days of MXF. He currently works closely with partner companies around the world, setting up projects and new products that are taking IT to the next level in the professional media market.



Ann Marie Rohaly is a senior program manager in the Entertainment and Devices Division at Microsoft, responsible for media standards and interoperability. Before joining Microsoft in 2003, she spent five years at Tektronix, Inc., in several senior positions, including strategic technology manager for the Video Product Line. Rohaly has been an active participant in the International Telecommunication Union (ITU), serving as editor-in-chief of the Video Quality Experts Group's Phase I Final Report on the Validation of Objective Models of Video Quality Assessment and leading the standardization of Tektronix's Emmy award-winning PQA300 picture quality measurement technology. More recently, she played a lead role in the standardization of VC-1 as SMPTE 421M and served as Chair of the former C24-10 VC-1 Implementers Working Group. Rohaly holds a B.E.S. degree in biomedical engineering from Johns Hopkins University and a Ph.D. in bioengineering from the University of Pennsylvania.

Network/Facilities Infrastructure (32NF)

Christopher Lennon, Chair; Alan Lamshead, Co-chair

OVERVIEW

The technology committee on Network/Facilities Infrastructure is concerned with matters 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.

ORGANIZATION

The 32NF committee is divided into three standing working groups, one dealing with electrical interface technologies, another dealing with optical interface technologies, and the third dealing with extension and maintenance of the BXF protocol. Both the Electrical and optical Interfaces Working Groups are responsible for channel coding and physical interfaces (cable and connectors).