RECOMMENDATION ITU-R BT.1775

File format with editing capability, for the exchange of metadata, audio, video, data essence and ancillary data for use in broadcasting

(Question ITU-R 34/6)

(2006)

Scope

This Recommendation defines the file format for use in the broadcasting environment. The file format may be edited, streamed in real time or non-real time, and is agnostic to image formats and video compression.

The ITU Radiocommunication Assembly,

considering

a) that storage systems based on information technology, including data disks and data tapes have permeated all areas of the professional television environment; production, non-linear editing, play-out, post-production, distributed production, archiving, contribution and distribution;

b) that TV production environments now incorporate more and more systems from the IT world such as networks and server systems;

c) that contribution and distribution delivery applications for television broadcasting are being introduced based upon software platforms which handle content (metadata, audio, video, data essence and ancillary data) in file form;

d) that file exchange does not introduce additional picture and sound quality degradation if, for example, the compressed audio and video accommodated in the file body is transferred in its native, compressed form;

e) that file exchange can be adapted easily to the available channel bandwidth so that user can trade-off transfer-bandwidth versus transfer-time;

f) that television broadcasters are seeking interoperable and harmonised schema for the carriage of metadata, audio, video, data essence and ancillary data in a common file;

g) that metadata, audio, video, data essence and ancillary data can be stored and transferred as independent files with provision for later synchronization;

h) that systems can be built using generic computer equipment which adds economic benefits to the overall system;

j) that the technology of file formats and file exchange offers significant advantages in terms of operating flexibility, production flow, and station automation.

k) that television broadcasters in many administrations are seeking a migration path from videotape-based recording systems for production, post production and archiving to a file-based system with real time and non-real time capability.

l) that interchange between broadcasters, and between broadcasters and their suppliers or agencies, relies on file formats;

m) that the terminology and specifications for exchange of metadata, audio, video, data essence and ancillary data has been defined in a suite of related standards by SMPTE and has gained wide acceptance in broadcasting and associated industries;

n) that television broadcasting equipment manufacturers and software developers have established a series of implementations for the flexible and extensible exchange of files containing metadata, audio, video, data essence and ancillary data;

o) that these standards for file formats are under continuing development,

recommends

1 that the editable file format specification for use in broadcasting should comply with the file format described in Annex 1;

2 that the generic container specification should comply with the generic container described in Annex 2;

3 that any embedded dark metadata should not degrade or enhance the interoperability or performance of any MXF decoder.[1]

Annex 1

SMPTE 377M-2004*

MATERIAL EXCHANGE FORMAT (MXF) FILE FORMAT SPECIFICATION

Summary of SMPTE 377M-2004: Television – Material Exchange Format (MXF): File Format Specification (Standard)

This standard defines the data structure of the material exchange format (MXF) for the interchange of audiovisual material. It defines the data structure for network transport and may be used on storage media. This standard does not define internal storage formats for MXF compliant devices.

The standard defines all the components of the MXF file specification including all those in the file header, file body and file footer. It defines the application of partitions in the file that provide features such as the ability for an MXF file to serve many application requirements and recovery of partially received files. The document also defines key features of the file structure including the partition packs, the structural metadata, the primer pack, the random index pack and index tables.

The standard does not define either the essence container or the descriptive metadata. Instead, it defines the requirements for these components to be added as a plug-in to an MXF file.

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[1] MXF files may include specialized data encapsulated in KLV packets to which the keys of the KLV syntax are not specified in an MXF specification (known as dark metadata).

* See Appendix 1.

Annex 2

SMPTE 379M-2004**

MATERIAL EXCHANGE FORMAT (MXF)
MXF GENERIC CONTAINER

Summary of SMPTE 379M-2004: Television – Material Exchange Format (MXF): MXF Generic Container

This standard specifies the format of the MXF generic container. The MXF generic container is the native essence container of the material exchange format (MXF) file body. The MXF generic container is defined for the interchange of streamable audio-visual material.

This standard defines the data structure at the signal interfaces of networks or storage media. This standard does not define internal storage formats for MXF compliant devices.

Appropriate essence and metadata payloads that can be mapped into the MXF generic container are defined in other ITU Recommendations.

Appendix 1

Standards

SMPTE 377M-2004

SMPTE 379M-2004

** See Appendix 1.