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A framework for digital preservation of cinematographic works - The Cinema Preservation Package

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

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English Version

A framework for digital preservation of cinematographic works - The Cinema Preservation Package

Un cadre pour la conservation numérique des œuvres cinématographiques - Le paquetage de conservation cinéma

Ein Rahmenwerk für die digitale Erhaltung von kinematografischen Werken - Das Cinema Preservation Package

This European Standard was approved by CEN on 17 July 2022.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (EN 17650:2022) has been prepared by Technical Committee CEN/TC 457 “Digital preservation of cinematographic works”, the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by February 2023, and conflicting national standards shall be withdrawn at the latest by February 2023.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document is complemented by CEN/TR 17862:2022.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

Introduction

This document is part of a series of standards and technical recommendations for the digital preservation of cinematographic works. It gives European film archives and producers a guideline for storing and managing films in the digital age. The document references many existing formats and elements and serves as a super-format which includes other existing sub-formats like DCPs or IMPs for movies, XML-files for packing-lists or subtitles, AV files and metadata files. In addition, methods are defined to ensure data integrity and quality by calculating hash and fingerprinting-values.

This document reuses describing tools and archiving formats from the cinema archiving community as much as possible.

1 Scope

This document specifies the Cinema Preservation Package (CPP) to facilitate the digital preservation of cinematographic works. It specifies methods to describe the relationship of components of a cinematographic work and delivers a syntax to describe the package content. The document itself specifies the structure of the package and the constraints that are necessary to enable compliance and interoperability.

Versions of the content using different encoding formats can be preserved in a layered structure where the lowest level is describing the physical file. The files can carry data representing moving images, sound, metadata or ancillary information like quality control (QC) reports or film posters.

The Cinema Preservation Package also contains hash values on different levels to ensure data integrity and version control. The syntax for this description and the methods for the hash value generation are specified in this document. Various types of packages are described as reference for practical implementations.

The Cinema Preservation Package is designed to serve as a Submission Information Package (SIP) in an OAIS compliant preservation system, and it may be used as a self-contained exchange format between media archives (as Distribution Information Package DIP). Based on the requirements of an archive, it can also be used as complete Archival Information Package (AIP) if the constraints set out in this document for such use are adhered to.

A CPP does not necessarily contain a complete cinematographic work, it can also be used for the exchange of parts of a work.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 15744, *Film identification — Minimum set of metadata for cinematographic works*

EBU Tech 3264-E, *Specification of the EBU Subtitling data exchange format*

EBU Tech 3285, *Specification of the Broadcast Wave Format (BWF),* Geneva, May 2011

EBU Tech 3293[1], *EBU Core Metadata Set (EBUCore), Specification v. 1.10*, Geneva, April 2020

EBU Tech 3350, *EBU-TT, part 1 subtitling format definition*, Geneva, May 2017

ETSI TS 102 366, *Digital Audio Compression (AC-3, Enhanced AC-3) Standard, September 2017*

IEEE/Open Group 1003.1-2017, *IEEE Standard for Information Technology — Portable Operating System Interface (POSIX(TM)) Base Specifications, Issue 7*

IETF RFC 9043, *FFV1 Video Coding Format Versions 0, 1, and 3*

ISO 639-3:2007, *Codes for the representation of names of languages — Part 3: Alpha-3 code for comprehensive coverage of languages*

ISO 8601-1, *Date and time — Representations for information interchange — Part 1: Basic rules*

[1] Referred to as EBUCore throughout the text.

ISO 8601-2, *Date and time — Representations for information interchange — Part 2: Extensions*

ISO 12234-2, *Electronic still-picture imaging — Removable memory — Part 2: TIFF/EP image data format*

ISO 19005-1, *Document management — Electronic document file format for long-term preservation — Part 1: Use of PDF 1.4 (PDF/A-1)*

ISO 19005-2, *Document management — Electronic document file format for long-term preservation — Part 2: Use of ISO 32000-1 (PDF/A-2)*

ISO 19005-4, *Document management — Electronic document file format for long-term preservation — Part 4: Use of ISO 32000-2 (PDF/A-4)*

ISO 26429 (all parts), *Digital cinema (D-cinema) packaging*

ISO/IEC 9834-8, *Information technology — Procedures for the operation of object identifier registration authorities — Part 8: Generation of universally unique identifiers (UUIDs) and their use in object identifiers*

ISO/IEC 10646, *Information technology — Universal Coded Character Set (UCS)*

ISO/IEC 10918 (series), *Information technology — Digital compression and coding of continuous-tone still images*

ISO/IEC 13818-2, *Information technology — Generic coding of moving pictures and associated audio information — Part 2: Video*

ISO/IEC 13818-3, *Information technology — Generic coding of moving pictures and associated audio information — Part 3: Audio*

ISO/IEC 14496-3, *Information technology — Coding of audio-visual objects — Part 3: Audio*

ISO/IEC 14496-10, *Information technology — Coding of audio-visual objects — Part 10: Advanced Video Coding*

ISO/IEC 14496-12, *Information technology — Coding of audio-visual objects — Part 12: ISO base media file format*

ISO/IEC 14496-14, *Information technology — Coding of audio-visual objects — Part 14: MP4 file format*

ISO/IEC 15444-1, *Information technology — JPEG 2000 image coding system — Part 1: Core coding system*

ISO/IEC 15948, *Information technology — Computer graphics and image processing — Portable Network Graphics (PNG): Functional specification*

ISO/IEC 23091-3:2018, *Information technology — Coding-independent code points — Part 3: Audio*

ITU-T H.273:2021, *Coding-independent code points for video signal type identification*

ITU-R BS.1352-3, *File format for the exchange of audio programme materials with metadata on information technology media*

SMPTE ST 12-1, *SMPTE Standard — For Television — Time and Control Code*

SMPTE ST 268, *SMPTE Standard — File Format for Digital Moving-Picture Exchange (DPX)*

SMPTE ST 428-7, *SMPTE Standard — Digital Cinema Distribution Master — Subtitle*

SMPTE ST 429 (all parts), *SMPTE Standard - D-Cinema Packaging*

SMPTE ST 2019-1, *SMPTE Standard — VC-3 Picture Compression and Data Stream Format*

SMPTE ST 2065-4, *SMPTE Standard — ACES Image Container File Layout*

SMPTE ST 2067-3:2020, *SMPTE Standard — Interoperable Master Format — Composition Playlist*

SMPTE ST 2067-21, *SMPTE Standard — Interoperable Master Format — Application #2E*

SMPTE ST 2067-40, *SMPTE Standard — Interoperable Master Format — Application #4 Cinema Mezzanine*

SMPTE ST 2067-50, *SMPTE Standard — Interoperable Master Format — Application #5 ACES*

W3C - *TTML Profiles for Internet Media Subtitles and Captions 1.1*

Matroska MKV format specification. Available from: https://www.matroska.org

METS Metadata Encoding & Transmission Standard. Version 1.12.1. [online]. Library of Congress, 2019. Available from: https://www.loc.gov/standards/mets/

PREMIS Data Dictionary for Preservation Metadata. Version 3.0. [online]. Library of Congress, 2015. Available from: https://www.loc.gov/standards/premis/

SCHEMA P.R.E.M.I.S. 3.0 [online]. Library of Congress, 2015. Available from: https://www.loc.gov/standards/premis/v3/premis-v3-0.xsd

Xiph FLAC format specification. Available from: https://xiph.org/flac/format.html