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Partie 14: Format de fichier partiel

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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

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A list of all parts in the ISO 23001 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

The partial file format is designed to contain files partially received over a lossy link (with unreceived or corrupted sections), for further processing such as playback or repair. The file structure is object-oriented; a file can be decomposed into constituent objects very simply, and the structure of the objects inferred directly from their type. Files conforming to this format may be exchanged without losing information on losses, allowing redistribution (local gateways) or further repair processes.

The partial file format may be used to document reception of files, regardless of their bitstream format. For generic cases, it provides ways for file readers to resynchronize their parsing in case of byte losses. For cases where the documented file derives from ISO/IEC 14496-12, the partial file format provides additional tools, such as an index of the source file structures and data integrity information.

Annex A of this document defines the associated MIME type for files conformant to this document.

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Information technology — MPEG systems technologies —

Part 14:
Partial file format

1 Scope

This document specifies the partial file format, which is a generic format for describing file partially received over lossy communication channels. This format contains the correctly received data, missing block identification, and repair information such as location of the file or high-level original indexing information. This format can be used with any file formats, and provides additional helper tools for formats deriving from ISO/IEC 14496-12.

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.

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

IETF RFC 5905, *Network Time Protocol Version 4: Protocol and Algorithms Specification, Mills, D., et al, June 2010*

3 Terms, definitions, symbols, abbreviated terms and conventions

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1.1
chunk
addressable set of bytes of a partial segment

3.1.2
indexed box
box in the *source file* (3.1.5) indexed by a `BoxIndexBox` in the *partial file* (3.1.3)

3.1.3
partial file
name of the files conforming to the file format described in this document

3.1.4
partial segment
portion of the *partial file* (3.1.3) containing a single `PartialSegmentBox` and identifying its associated source data

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3.1.5
source file
file described and encapsulated by the *partial file* (3.1.3)

3.2 Abbreviated terms

For the purposes of this document, the following abbreviated terms apply.

MD5 Message Digest 5

FDT File Delivery Table

FEC Forward Error Correction

FLUTE File Delivery over Unidirectional Transport

IANA Internet Assigned Numbers Authority

IETF Internet Engineering Task Force

RFC Request for Comments

SHA Secure Hash Algorithm

4 Partial file organization

4.1 Object structure

A partially received file, hereinafter referred to as partial file, is represented as a sequence of partial segments, preceded by a header. The header and the partial segments are formed as a series of objects, called boxes, as defined in ISO/IEC 14496-12; files under this document are object-structured files as defined in ISO/IEC 14496-12.

All object-structured files conformant to Clause 4 shall contain a `FileTypeBox` as defined in ISO/IEC 14496-12. The `FileTypeBox` shall contain a compatible brand of type `'paff'` for partial files, and of type `'pmff'` for mixed partial files.

In this document, top-level boxes (boxes not contained in other boxes) are indicated as being at 'file' level, with the notation "Container: File".

The MIME type associated with a file conforming to this specification shall be formatted as defined in Annex A.

4.2 Design consideration

4.2.1 Features

The partial file format is intended to serve as a storage and exchange format for other file formats delivered over lossy channels. The format provides the following set of tools:

— Reception data, which provides means to store the received data and document transmission information such as received or lost byte ranges and whether the corrupted/lost bytes are present in the file.

— Repair information, such as location of the source file, possible byte offsets in that source, byte stream position at which a parser can try processing a corrupted file; depending on the communication channel, this information may be setup by the receiver or through out-of-band means.

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