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Information technology — MPEG systems technologies

Part 12: Sample Variants in the ISO base media file format

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National foreword

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Part 12: Sample Variants in the ISO base media file format

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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. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

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 meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/IEC JTC 1, *Information technology*, SC 29, *Coding of audio, picture, multimedia and hypermedia information*.

ISO/IEC 23001 consists of the following parts, under the general title *Information technology — MPEG systems technologies*:

— *Part 1: Binary MPEG format for XML*

— *Part 2: Fragment request units*

— *Part 3: XML IPMP messages*

— *Part 4: Codec configuration representation*

— *Part 5: Bitstream Syntax Description Language (BSDL)*

— *Part 7: Common encryption in ISO base media file format files*

— *Part 8: Coding-independent code points*

— *Part 9: Common encryption of MPEG-2 transport streams*

— *Part 10: Carriage of timed metadata metrics of media in ISO base media file format*

— *Part 11: Energy-efficient media consumption (green metadata)*

— *Part 12: Sample Variants in the ISO base media file format*

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Information technology — MPEG systems technologies —

Part 12: Sample Variants in the ISO base media file format

1 Scope

This part of ISO/IEC 23001 defines the carriage of Sample Variants in the ISO base media file format (ISO/IEC 14496-12).

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 14496-12:2015[1)], *Information technology — Coding of audio-visual objects — Part 12: ISO base media file format*

ISO/IEC 23001-7:2015, *Information technology — MPEG systems technologies — Part 7: Common encryption in ISO base media file format files*

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

3.1.1
Double Encrypted
Sample Variant byte range data encrypted by first a Media Key (as part of the encryption of the complete Sample Variant) and then second a Variant Byte Range key

Note 1 to entry: See 6.1.

3.1.2
Media Key
encryption key associated with one or more media samples

3.1.3
Media KID
encryption KID associated with one or more media samples

3.1.4
Sample Variant
assembled media sample replacing an original sample

3.1.5
Variant Byte Range
location of a sequence of bytes that might constitute a portion of a Sample Variant

1) ISO/IEC 14496-12 is technically identical to ISO/IEC 15444-12.

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3.1.6
Variant Constructor
Sample Variant metadata that defines how to assemble an individual Sample Variant

3.1.7
Variant Media Data
media data used to construct a Sample Variant, some of which may come from the original sample media data

3.1.8
Variant Processor
logical module that performs the processing steps that implement the process of assembling Sample Variants

3.2 Abbreviated terms

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

CENC Common ENCryption (as specified by ISO/IEC 23001-7:2015)

DRM Digital Rights Management

ISOBMFF ISO Base Media File Format (as specified by ISO/IEC 14496-12:2015)

IV Initialization Vector

KID Key Identifier

4 Overview (informative)

This part of ISO/IEC 23001 defines a framework for the carriage of Sample Variants in the ISOBMFF. Sample Variants are typically used to provide forensic information in the rendered sample data that can, e.g. identify the DRM client. This variant framework is intended to be fully compatible with ISOBMFF and CENC, and agnostic to the particular forensic marking system used.

The Sample Variant framework uses three core constructs to define and carry Sample Variant data in ISOBMFF: Variant Constructors, Variant Byte Ranges and Variant Samples.

NOTE The Variant Process Model described in Clause 9 can also assist in introducing the concepts.

Figure 1 shows a scenario where a sample (Sample 2) has a number of Sample Variants. Figure 1 shows 3 samples in a series left to right, the middle of which has variants. The top row is a conceptual depiction of what is encoded using ISOBMFF and the bottom row shows what is output after Sample Variant processing. Access to samples is under the control of KIDs as depicted in the top row of in Figure 1. For Sample Variants, a hierarchy of KIDs is used to provide access to data, with the higher level KIDs providing access to Sample Variant Metadata and the lower level KIDs providing access to media data.

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