INTERNATIONAL STANDARD

ISO/IEC 23000-17

First edition
2018-10

Information technology — Multimedia application format (MPEG-A) —

Part 17: Multiple sensorial media application format

Technologies de l'information — Format pour application multimédia (MPEG-A) —

Partie 17: Format pour application multimédia sensorielle

Reference number
ISO/IEC 23000-17:2018(E)

© ISO/IEC 2018



COPYRIGHT PROTECTED DOCUMENT

© ISO/IEC 2018

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

Foreword ..... **iv**
Introduction ..... **v**
1 Scope **1**
2 Normative references **1**
3 Terms and definitions **1**
4 Abbreviations **1**
5 Overview **2**
5.1 Overview of sensory effect metadata (SEM) 2
5.2 Fragmentation of SEM 3
5.2.1 SEM streaming instruction 3
5.2.2 Properties related to the fragmentation 4
5.2.3 Properties related to time information 4
5.2.4 Fragmenter 5
5.2.5 Fragmenting SEM example 6
5.3 Encoding process units and packaging multiple sensorial media application format 13
6 Components of multiple sensorial media application format **13**
6.1 Supported components 13
7 MSMAF file structures **14**
7.1 Table for boxes 14
7.2 File structures of multiple sensorial media application format 15
8 Syntax and semantics of the MSMAF boxes **16**
8.1 File Type box 16
8.1.1 Definition 16
8.1.2 Syntax 16
8.2 Sync Sample box 17
8.2.1 Definition 17
8.2.2 Syntax 17
8.3 Decoding Time to Sample box 17
8.3.1 Definition 17
8.3.2 Syntax 17
8.4 Sample Size boxes 18
8.4.1 Definition 18
8.4.2 Syntax 18
Bibliography **19**

© ISO/IEC 2018 – All rights reserved

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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of 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.

This document was prepared by Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information*.

A list of all parts in the ISO/IEC 23000 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.

© ISO/IEC 2018 – All rights reserved

Introduction

Along with the sensation associated with the 3D film industry, the development of MulSeMedia (multiple sensorial media), or 4D media, has received much attention from the public. 4D movies generally add sensory effects to 3D and/or IMAX movies, allowing audiences to immerse themselves more deeply in the movie viewing experience. Along with the two human senses of sight and hearing, sensory effects such as wind, vibration, scent and others can stimulate other senses, such as the tactile and olfaction senses.

The multiple sensorial media application format (MSMAF) defines a file format for multiple sensorial media services. It specifies core structures of multiple sensorial media application format being organized by the combination of related information for multiple sensorial media applications.

Services using the MSMAF can be realized in two ways: offline and online. The offline services include DVDs and movie plays in theatres, whereas the online services include streaming services on IP-TV or broadcasting with MPEG-2 transport streams.

© ISO/IEC 2018 – All rights reserved

Information technology — Multimedia application format (MPEG-A) —

Part 17: Multiple sensorial media application format

1 Scope

This document specifies a file format which is capable of storage, interchange, management, editing and presentation of multiple sensorial media contents based on the ISO base media file format. The file format provides the overall structure for storing multiple sensorial media contents.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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

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

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

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

3.1
sensory effect metadata
record that defines the description schemes and descriptors to represent sensory effects

3.2
sensory effect
effect to augment perception by stimulating human senses in a particular scene of a multimedia application

Note 1 to entry: Combinations of tactile display may also provide directional, shape information.

EXAMPLE Scent, wind, light, haptic (kinesthetic-force, stiffness, weight, friction, texture, widget (button, slider, joystick), tactile: air-jet, suction pressure, thermal, current and vibration.

4 Abbreviations

BiM binary MPEG format for XML (ISO/IEC 23001-1)

DIA digital item adaptation (ISO/IEC 21000-7)

MPEG-21 multimedia framework (ISO/IEC 21000)

MPEG-7 multimedia content description interface (ISO/IEC 15938)

SEDL sensory effects description language (ISO/IEC 23005-3)

© ISO/IEC 2018 – All rights reserved