INTERNATIONAL STANDARD

ISO/IEC 15938-6

Second edition
2020-06

Information technology — Multimedia content description interface —

Part 6: Reference software

Technologies de l'information — Interface de description du contenu multimédia —

Partie 6: Logiciel de référence

Reference number
ISO/IEC 15938-6:2020(E)

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 Abbreviated terms ... **2**
5 Copyright disclaimer for software modules ... **2**
6 XM software architecture ... **2**
6.1 Block diagrams ... 2
6.2 Block descriptions ... 4
6.2.1 General ... 4
6.2.2 Media database ... 4
6.2.3 AV decoders ... 4
6.2.4 Media data ... 5
6.2.5 Extraction tools ... 5
6.2.6 Descriptors (Ds) and description schemes (DSs) ... 6
6.2.7 Coding schemes (CSs) ... 7
6.2.8 Search and matching tools ... 8
6.2.9 Media transcoders ... 10
6.2.10 Applications ... 10
6.2.11 Interface structure ... 10
7 Systems reference software (BiM) ... **11**
7.1 General ... 11
7.2 BiM reference software ... 11
7.2.1 General ... 11
7.2.2 Package content ... 11
7.2.3 Installation and execution ... 11
7.2.4 Software overview ... 12
7.2.5 Main packages ... 12
7.3 Access unit navigator ... 12
7.3.1 General ... 12
7.3.2 Textual access unit encoder module ... 13
7.3.3 Textual access unit decoder module ... 13
8 Description definition language (DDL) reference software ... **14**
9 Video reference software ... **14**
10 Audio reference software ... **15**
11 Multimedia description scheme reference software ... **17**
12 Compilation of the reference software ... **18**
13 Usage information for individual descriptors and description schemes ... **18**

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).

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) or the IEC list of patent declarations received (see http://patents.iec.ch).

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 Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information*.

This second edition cancels and replaces the first edition (ISO/IEC 15938-6:2003), which has been technically revised. It also incorporates the Amendments ISO/IEC 15938-6:2003/Amd.1:2006, ISO/IEC 15938-6:2003/Amd.1:2006/Cor.1:2007, ISO/IEC 15938-6:2003/Amd.2:2007, ISO/IEC 15938-6:2003/Amd.3:2010 and ISO/IEC 15938-6:2003/Amd.4:2011. The main changes compared to the previous edition are as follows:

— all previous Amendments have been incorporated and the electronic attachments have been updated;

— minor editorial corrections have been made throughout the document to fully align with ISO/IEC Directives.

A list of all parts in the ISO/IEC 15938 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.

Introduction

This document provides a standardized set of technologies for describing multimedia content. It addresses a broad spectrum of multimedia applications and requirements by providing a metadata system for describing the features of multimedia content.

The software is available at: https://standards.iso.org/iso-iec/15938/-6/ed-2/en.

The following are specified in this document:

Description schemes (DS) describe entities or relationships pertaining to multimedia content. Description schemes specify the structure and semantics of their components, which can be description schemes, descriptors, or datatypes.

Descriptors (D) describe features, attributes, or groups of attributes of multimedia content.

Datatypes are the basic reusable datatypes employed by description schemes and descriptors.

Systems tools support delivery of descriptions, multiplexing of descriptions with multimedia content, synchronization, file format, and so forth.

This document contains simulation software for tools defined in ISO/IEC 15938-1, ISO/IEC 15938-2, ISO/IEC 15938-3, ISO/IEC 15938-4 and ISO/IEC 15938-5. This software has been derived from the verification models used in the process of developing this series.

Where multimedia content extraction or multimedia content description software is provided, attention is called to the fact that these software modules are provided for the purpose of creating bitstreams of descriptors and description schemes with normative syntax. The performance of these software tools is not indicative of that which can be obtained from implementations where quality and computational optimization are given priority. The techniques used for extracting descriptors or deriving description schemes are not specified by this document. This information can be found in the corresponding Part of the ISO/IEC 15938 series.

The International Organization for Standardization (ISO) and International Electrotechnical Commission (IEC) draw attention to the fact that it is claimed that compliance with this document may involve the use of patents.

ISO and IEC take no position concerning the evidence, validity and scope of these patent rights.

The holders of these patent rights have assured ISO and IEC that they are willing to negotiate licences under reasonable and non-discriminatory terms and conditions with applicants throughout the world. In this respect, the statements of the holders of these patent rights are registered with ISO and IEC. Information may be obtained from the patent database available at www.iso.org/patents.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights other than those in the patent database. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

Information technology — Multimedia content description interface —

Part 6: Reference software

1 Scope

The ISO/IEC 15938 series operates on and generates conformant bitstreams. This document provides a specific implementation that behaves in a conformant manner.

NOTE 1 Other implementations that conform to the ISO/IEC 15938 series are possible, which do not necessarily use the algorithms or the programming techniques of the reference software.

The software contained in this document is known as eXperimentation Model (XM) and is divided into five categories:

a) Binary format for MPEG-7 (BiM). This software converts DDL (XML) based descriptions to binary format and vice versa as explained in Clause 5.

b) DDL parser and DDL validation parser. The components of this software module are specified in Clause 6.

c) Visual descriptors. This software creates standard visual descriptions from associated (visual) media content as explained in Clause 7.

NOTE 2 The techniques used for extracting descriptors are informative, and the quality and complexity of these extraction tools has not been optimized.

d) Audio descriptors. This software creates standard descriptions from associated (audio) media content as explained in Clause 8.

NOTE 3 The techniques used for extracting descriptors are informative, and the quality and complexity of these extraction tools has not been optimized.

e) Multimedia description schemes. This software modules provide standard descriptions of multimedia description schemes as specified in Clause 9.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

No terms and definitions are listed in this document.

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/