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Information technology — Multimedia content description interface —

Part 16: Conformance and reference software for compact descriptors for video analysis

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

Partie 16: Conformité et logiciels de référence pour les descripteurs compacts pour l'analyse vidéo

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Foreword

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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 or www.iec.ch/members_experts/refdocs).

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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. In the IEC, see www.iec.ch/understanding-standards.

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*.

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 and www.iec.ch/national-committees.

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Introduction

ISO/IEC 15938 (all parts) 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 following are specified in ISO/IEC 15938 (all parts):

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.

Description definition language (DDL) defines description schemes, descriptors and datatypes by specifying their syntax, and allows their extension.

Systems tools support delivery of descriptions, multiplexing of descriptions with multimedia content, synchronization, file format, etc.

ISO/IEC 15938 (all parts) is subdivided into 16 published parts with further parts in development:

— **Part 1: Systems**: specifies the tools for preparing descriptions for efficient transport and storage, compressing descriptions, and allowing synchronization between content and descriptions.

— **Part 2: Description definition language**: specifies the language for defining the series set of description tools (DSs, Ds and datatypes) and for defining new description tools.

— **Part 3: Visual**: specifies the description tools pertaining to visual content.

— **Part 4: Audio**: specifies the description tools pertaining to audio content.

— **Part 5: Multimedia description schemes**: specifies the generic description tools pertaining to multimedia including audio and visual content.

— **Part 6: Reference software**: provides a software implementation of the series.

— **Part 7: Conformance testing**: specifies the guidelines and procedures for testing conformance of implementations of the series.

— **Part 8: Extraction and use of MPEG-7 descriptions**: provides guidelines and examples of the extraction and use of descriptions.

— **Part 9: Profiles and levels**: provides guidelines and standard profiles.

— **Part 10: Schema definition**: specifies the schema using description definition language.

— **Part 11: MPEG-7 profile schemas**: listing of profile schemas using description definition language.

— **Part 12: Query format**: contains the tools of the MPEG query format (MPQF).

— **Part 13: Compact descriptors for visual search**: specifies an image description tool for visual search applications.

— **Part 14: Reference software, conformance and usage guidelines for compact descriptors for visual search**: provides the reference software and guidelines, specifies the conformance testing.

— **Part 15: Compact descriptors for video analysis**: specifies a video description tool designed to enable efficient and interoperable video analysis applications, allowing visual content matching in videos.

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— **Part 16** (this document): **Conformance and reference software for compact descriptors for video analysis**: describes conformance testing of descriptors specified in ISO/IEC 15938-15, and provides the reference software for extracting and matching such descriptors.

The structure of this document is as follows:

— Clause 5 specifies conformance testing of descriptors.

— Clause 6 describes the reference software for extracting and matching descriptors. The deployment of the reference software using Docker containers is described in Annex A.

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Information technology — Multimedia content description interface —

Part 16: Conformance and reference software for compact descriptors for video analysis

1 Scope

This document specifies the assessment of conformance to ISO/IEC 15938-15 as well as the reference software.

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 15938-14, *Information technology — Multimedia content description interface — Part 14: Reference software, conformance and usage guidelines for compact descriptors for visual search*

ISO/IEC 15938-15, *Information technology — Multimedia content description interface — Part 15: Compact descriptors for video analysis*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 15938-15 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/

4 Abbreviated terms, relational operators, bitwise operators and functions

For the purposes of this document, the abbreviated terms, relational operators, bitwise operators and functions in ISO/IEC 15938-15 apply.

5 Conformance testing

5.1 Conformance video dataset and reference bitstreams

The CDVA conformance data set, containing 3 318 items, is used for conformance testing.

The data set is available at https://standards.iso.org/iso-iec/15938/-16/ed-1/en.

For deep feature descriptors, two levels of conformance are considered:

— Conformance using default neural network: This is a stricter level of conformance, which ensures that the bitstreams match those generated with the reference software as-is.

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