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Part 2: Control information

Technologies de l'information — Contrôle et contexte de supports —

Partie 2: Informations de contrôle

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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 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 the following URL: 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*.

This fourth edition cancels and replaces the third edition (ISO/IEC 23005-2:2016), which has been technically revised.

The main changes compared to the previous edition are the addition of:

— device capabilities for a 3D printer, an arryed light, and a sound displayer;

— sensor capabilities for a radar, an array camera, an E-Nose, and a microphone;

— user preferences for a 3D printing, a 3D printing colour reproduction, an arrayed light effect, and a sound display;

— sensor adaptation preferences for a radar and an arrayed camera.

A list of all parts in the ISO/IEC 23005 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 ISO/IEC 23005 series provides an architecture and specifies information representation of data flowing in and out of the real world and virtual worlds.

The data for the real world are communicated through sensors and actuators. The data for virtual worlds consist of properties of virtual objects and multi-sensorial data embedded in audio-visual content. MPEG-V specifies data formats for sensors, actuators, virtual objects, and audio-visual content.

Data captured from the real world may need to be adapted for use in a virtual world and data from virtual worlds may also need to be adapted for use in the real world. The ISO/IEC 23005 series does not specify how the adaptation is carried out but only specifies the interfaces.

Data for sensors are sensor capabilities, sensed data, and sensor adaptation preferences.

Data for actuators are sensory device capabilities, sensory device commands, and sensory effect preferences.

Data for virtual objects are characteristics of avatars and virtual world objects.

Sensory effect may be needed to enrich audio-visual contents.

The system architecture of the ISO/IEC 23005 series is depicted in Figure 1 and the scope of this document is highlighted in yellow. The information representation that acts as control information; user's sensor and actuation preferences, actuator capabilities, and sensor capabilities – as defined in ISO/IEC 23005-1 – is specified in this document.

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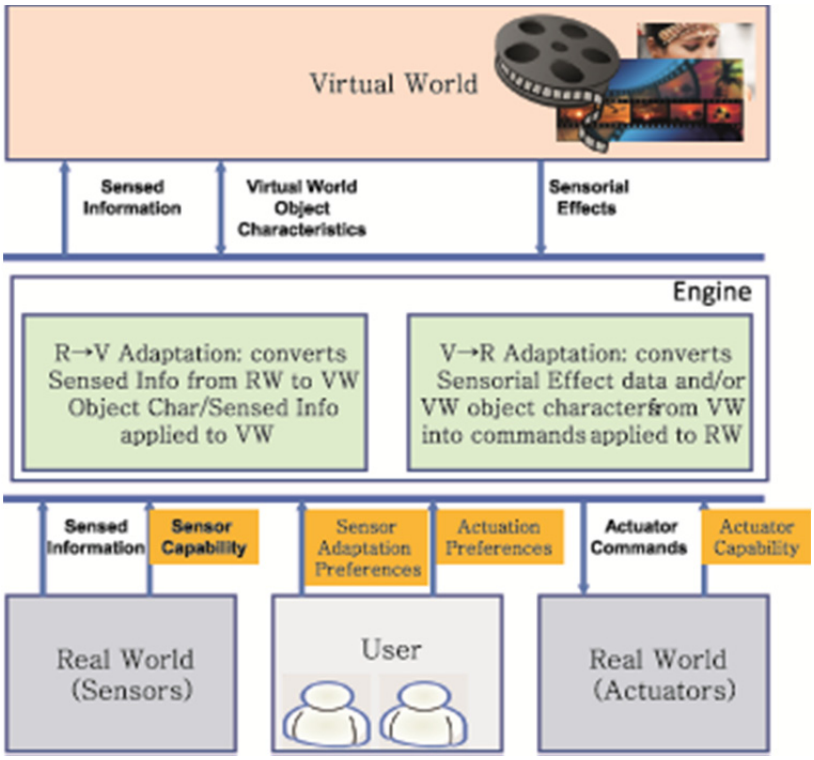


Figure 1 — Scope of the ISO/IEC 23005 series (showing this document in yellow)

This document contains the tools of the control information for the sensors and actuators. It addresses the normative aspects of the control information including device (sensors or sensory devices) capability description, user preference information (for sensor adaption or sensory effect adaptation), and also illustrates some non-normative examples.

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Information technology — Media context and control —

Part 2:
Control information

1 Scope

The technologies of this document specified are:

— description languages and vocabularies to characterize devices and users;

— control information to fine tune the sensed information and the actuator command for the control of virtual/real worlds, i.e., user's actuation preference information, user's sensor preference information, actuator capability description, and sensor capability description

The adaptation engine is not within the scope of this document.

This document specifies syntax and semantics of the tools required to provide interoperability in controlling devices (actuators and sensors) in real as well as virtual worlds:

— Control Information Description Language (CIDL) as an XML schema-based language which enables one to describe a basic structure of control information.

— Device Capability Description Vocabulary (DCDV), an XML representation for describing capabilities of actuators such as lamps, fans, vibrators, motion chairs, scent generators, etc.

— Sensor Capability Description Vocabulary (SCDV), interfaces for describing capabilities of sensors such as a light sensor, a temperature sensor, a velocity sensor, a global position sensor, an intelligent camera sensor, etc.

— Sensory Effect Preference Vocabulary (SEPV), interfaces for describing preferences of individual user on specific sensorial effects such as light, wind, scent, vibration, etc.

— Sensor Adaptation Preference Vocabulary (SAPV), interfaces for describing preferences on a sensor of an individual user on each type of sensed information.

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.

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ISO/IEC 15938-5:2003, *Information technology — Multimedia content description interface — Part 5: Multimedia description schemes*

ISO/IEC 23005-6: —,[1] *Information technology — Media context and control — Part 6: Common types and tools*

ISO/IEC 21000-7, *Information technology — Multimedia framework (MPEG-21) — Part 7: Digital Item Adaptation*

3 Terms, definitions, abbreviated terms, schema documents and prefixes

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 23005-6 apply.

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

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

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

3.2 Abbreviated terms

DIA	digital item adaptation (see ISO/IEC 21000-7)
MPEG-21	multimedia framework (ISO/IEC 21000-5)
CIDL	control information description language
DCDV	device capability description vocabulary
SCDV	sensor capability description vocabulary
SEPV	sensory effect preference vocabulary
SAPV	sensor adaptation preference vocabulary
XML	extensible mark-up language

3.3 Schema documents

In the main text of this document, the syntax of description schemes and descriptors is provided whenever possible as a single schema document.

In some cases, though, and in particular for Clauses 5, 6, 7 and 8, the syntax of description schemes and descriptors is provided as a collection of schema snippets imbricated with other text. In order to form a valid schema document, these schema components should be gathered in a same document with the schema wrapper provided at the head of the clause. For better readability, the relevant schema documents are provided in Annex B.

[1] Under preparation. Stage at time of publication: ISO/IEC DIS 23005-6:2017.

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