INTERNATIONAL STANDARD

ISO/IEC 23005-5

Fourth edition
2019-02

Information technology — Media context and control —

Part 5: Data formats for interaction devices

Technologies de l'information — Contrôle et contexte de supports —
Partie 5: Formats des données pour dispositifs d'interaction

Reference number
ISO/IEC 23005-5:2019(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

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).

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 fourth edition cancels and replaces the third edition (ISO/IEC 23005-5:2016), which has been technically revised.

The main changes compared to the previous edition are as follows:

— added new device command type of ThreeDPrinterType;

— added new device command type of SoundDisplaySettingType;

— added new device command type of ThreeDPrintingColorReproductionType;

— added new device command type of ArrayLightType;

— added new sensed information type of RADARSensorType;

— added new sensed information type of RADARSensorType;

— added new sensed information type of ArrayCameraType;

— added new sensed information type of MicrophoneSensorType;

— added new sensed information type of E-NoseSensorType.

A list of all parts in the ISO 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.

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. The ISO/IEC 23005 series 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 standard 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.

Data for audio-visual content are sensory effects.

This document contains the tools for exchanging information for interaction devices. To be specific, it specifies normative command formats for controlling actuators (e.g., actuator commands for sensory devices) and data formats for receiving information from sensors (e.g., sensed information from sensors) as illustrated as the yellow boxes in Figure 1. It also specifies some non-normative examples. The adaptation engine is not within the scope.

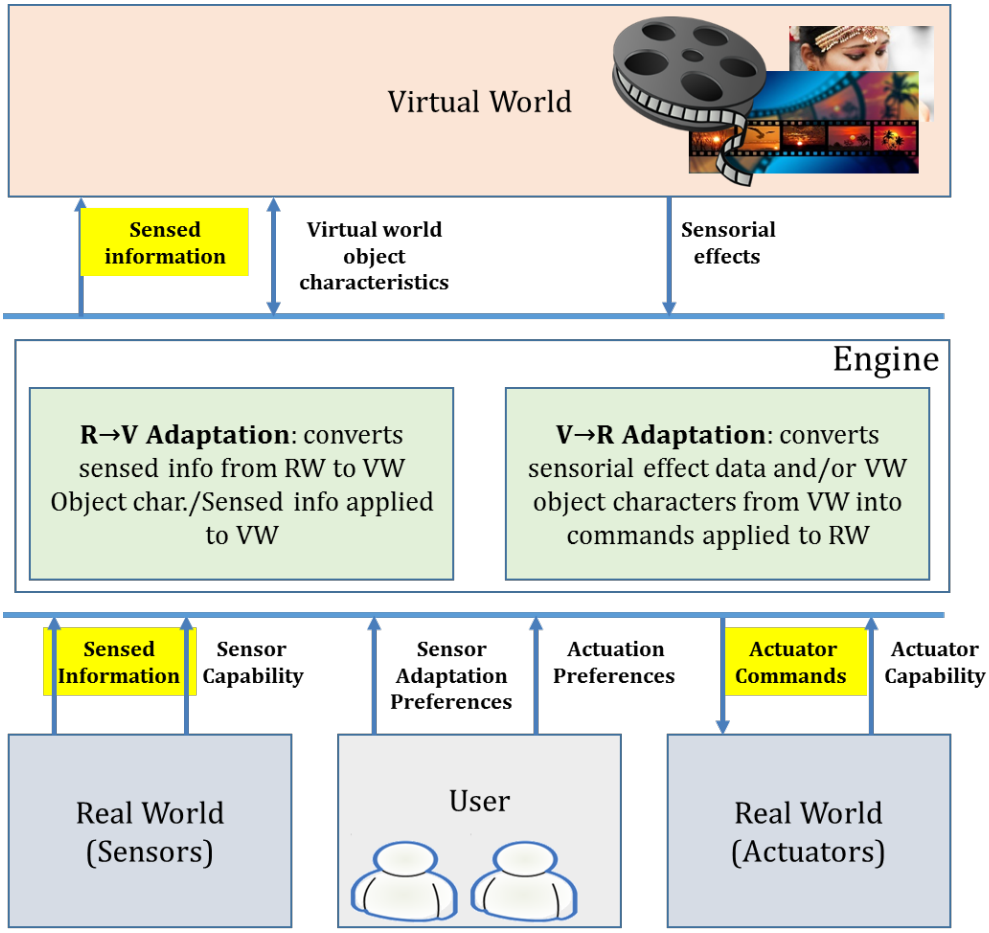

Figure 1 — Scope of the data formats for interaction devices

When this document is used, the adaptation engine (RV or VR engine), which is not within the scope of standardization, performs bi-directional communications using data formats specified in this document. The adaptation engine can also utilize other tools defined in ISO/IEC 23005-2, which are user's sensory preferences (USP), sensory device capabilities (SDC), sensor capabilities (SC), and sensor adaptation preferences (SAP) for fine controlling devices in both real and virtual worlds.

The International Organization for Standardization (ISO) and the 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 the IEC take no position concerning the evidence, validity and scope of these patent rights. The holders of these patent rights have assured ISO and the 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 the IEC. Information may be obtained from the companies listed below.

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

ISO (www.iso.org/patents) and IEC (http://patents.iec.ch) maintain online databases of patents relevant to their standards. Users are encouraged to consult the databases for the most up to date information concerning patents.

Company	Address
Samsung Electronics Co.Ltd.	416, Maetan-dong, Yeongtong-gu, Suwon-si, Gyeonggi-do, 152-848, Korea
Gwangju Institute of Science and Technology	261 Cheomdan - gwagiro (Oryong-dong), Buk-gu, Gwangju 500-712, Korea
Electronics and Telecommunications Research Institute (ETRI)	218 Gajeongno, Yuseong-gu, Daejeon, 305-700, Korea
Konkuk University	1 Hwayang-dong, Gwangjin-gu, Seoul, 143-701, Korea

Information technology — Media context and control —

Part 5:
Data formats for interaction devices

1 Scope

This document specifies syntax and semantics of the data formats for interaction devices by providing a standardized format for interfacing actuators and sensors by defining XML schema-based language named Interaction Information Description Language (IIDL). IIDL provides a basic structure with common information for communication with various actuators and sensors in consistency. Device Command Vocabulary (DCV) is defined to provide a standardized format for commanding individual actuator, and Sensed Information Vocabulary (SIV) is defined to provide a standardized format for holding information from individual sensors either to get environmental information from real world or to influence virtual world objects using the acquired information on the basis of IIDL.

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

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

ISO/IEC 10646, *Information technology — Universal Coded Character Set (UCS)*

3 Terms, definitions and abbreviated terms

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

CS classification scheme (see ISO/IEC 15938-5)

DAC digital-to-analog conversion

[1] Fourth Edition under preparation. Stage at time of publication: ISO/IEC FDIS 23005-6:2018.