
**Information technology — Multimedia
framework (MPEG-21) —**

**Part 22:
User description**

Technologies de l'information — Cadre multimédia (MPEG-21) —

Partie 22: Description de l'utilisateur

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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.

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).

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

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 third edition cancels and replaces the second edition (ISO/IEC 21000-22:2019), which has been technically revised.

The main changes are as follows:

- technologies related to vibro-haptic devices, that convey enriched information of consecutive vibrations to help elderly/fragilized persons, like load guidance or emergency warnings, for instance.

A list of all parts in the ISO/IEC 21000 series can be found on the ISO and IEC websites.

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.

Introduction

The four data formats standardized in this document are represented in [Figure 1](#): User Description (UD), Context Description (CD), Service Description (SD), and Recommendation Description (RD), where UD/CD/SD/RD indicate the formats specified by MPEG-21 User Description.

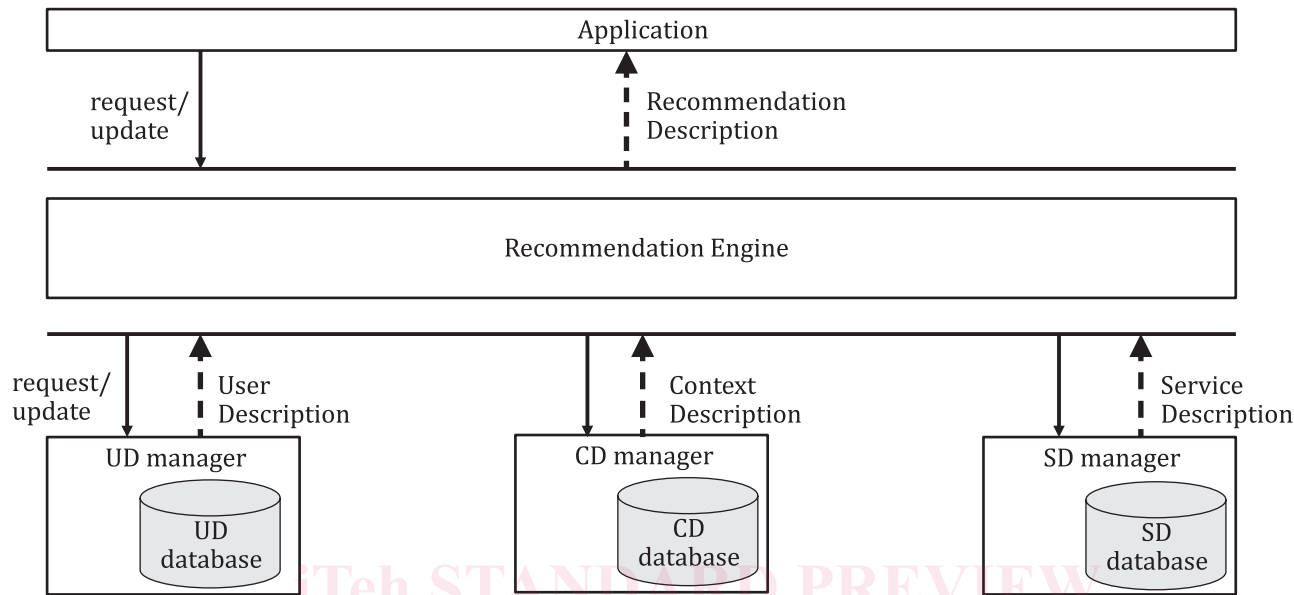


Figure 1 — Conceptual Model of MPEG-21 User Description

This document specifies User Description, Context Description, Service Description and Recommendation Description. Description Managers, Recommendation Engine and Application (in black in the figure) are outside of the scope of this document. The description managers of [figure 1](#) are in charge of:

- 1) Updating UD, CD and SD e.g. as a result of a User selection
- 2) Providing UD, CD and SD in response to requests coming from the Recommendation Engine.

Recommendation Engines process UD, CD and SD and provide Recommendations in the form of Recommendation Description (RD) typically to an Application.

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 a patent.

ISO and IEC take no position concerning the evidence, validity and scope of this patent right.

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Information technology — Multimedia framework (MPEG-21) —

Part 22: User description

1 Scope

This document specifies four data formats: User Description (UD), Context Description (CD), Service Description (SD), and Recommendation Description (RD). This document also specifies technologies related to consecutive vibration.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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

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

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1

MPEG-21 UD

four standard descriptions that contain information about user, context, service and recommendation

3.2

user description

UD

set of data which may contain static and/or dynamic information about the user

EXAMPLE Identity, interactions, preferences, security settings.

3.3

context description

CD

set of data that describes the context and environmental situation in which the user is located,

EXAMPLE Device in use, physical position, environmental variables (such as temperature and humidity), traffic conditions, security settings.

3.4

service description

SD

set of data containing pertinent information (including security settings) about services (or a set of sub-services)

3.5 recommendation description RD

set of recommendation data, containing subsets from *UD* (3.2), *CD* (3.3), *SD* (3.4) and additional logical relations and metadata related to the subsets

3.6 user

human or software agent, industrial process or device that is performing autonomous activities

3.7 service

independent, value-adding operation, which brings values to users, or applications providing benefits responding to user's needs

3.8 context

environmental situation for the user

EXAMPLE Device in use, physical location, etc.

3.9 application

entity in charge of responding to the users' requests

EXAMPLE An interface allowing users to choose their preferred programs on a smart TV.

3.10 manager

<UD/CD/SD> entities that provide functionalities of filtering, accessing, storing, editing, updating and securing *UD* (3.2), *CD* (3.3) and *SD* (3.4)

3.11 recommendation engine

process (or a set of processes) in charge of exploiting all available information contained in *UD* (3.2), *CD* (3.3) and *SD* (3.4) to produce a recommendation, i.e. *RD* (3.5), for an enriched user experience

4 General description

Clauses 5, 6, 7, 8 and 9 present the specification of the general description, and of the *UD*, *CD*, *SD* and *RD*, respectively. Schemes for all these descriptions shall be as provided in [Annex A](#). Classification schemes shall be as provided in [Annex B](#).

4.1 commonAttributes

This `commonAttributes` describes basic properties of each sub element for *UD*, *CD*, *SD* and *RD*.

4.1.1 Syntax

```
<attributeGroup name="commonAttributes">
  <attribute name="generatedTime" type="dateTime"/>
  <attribute name="descriptionID" type="anyURI" use="required"/>
</attributeGroup>
```

4.1.2 Semantics

Name	Definition
<code>commonAttributes</code>	Describes properties of each sub element for <i>UD</i> , <i>CD</i> , <i>SD</i> and <i>RD</i> .

Name	Definition
generatedTime	Specifies generated time of description.
descriptionID	Indicates the ID of the description. This information can be a combination of numbers, alphabets, etc. All description need to have the unique descriptionID.

4.1.3 Examples

```
<ud:UD generatedTime="2015-0-25T09:30:47Z" descriptionID="UD1234">
  <ud:UserID>ID_132534</ud:UserID>
</ud:UD>
```

4.2 ValueTypes

Several value types can be used to precisely express the data according to various conditions. These simple types define a basic scale type and specify the constraints and information.

4.2.1 Syntax

```
<simpleType name="valueByNominal">
  <restriction base="NMTOKEN"/>
</simpleType>
<simpleType name="valueByOrdinal">
  <restriction base="integer"/>
</simpleType>
<simpleType name="valueByInterval">
  <restriction base="float"/>
</simpleType>
<simpleType name="valueByRatio">
  <restriction base="float"/>
</simpleType>
<simpleType name="valueByAll">
  <union memberTypes="ct:valueByNominal ct:valueByOrdinal ct:valueByInterval
ct:valueByRatio"/>
</simpleType>
<simpleType name="ZeroToOneRatioType">
  <restriction base="ct:valueByRatio">
    <minInclusive value="0"/>
    <maxInclusive value="1.0"/>
  </restriction>
</simpleType>
<simpleType name="ZeroToOnehundredRatioType">
  <restriction base="ct:valueByRatio">
    <minInclusive value="0"/>
    <maxInclusive value="100.0"/>
  </restriction>
</simpleType>
<simpleType name="ZeroToTenOrdinalType">
  <restriction base="ct:valueByOrdinal">
    <minInclusive value="0"/>
    <maxInclusive value="10"/>
  </restriction>
</simpleType>
```