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

**Part 22:
User Description**

**AMENDMENT 1: Reference software for
MPEG-21 user description**

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

Partie 22: Description de l'utilisateur

*AMENDEMENT 1: Logiciel de référence pour MPEG-21 description de
l'utilisateur*



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This document was prepared by Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information*.

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Introduction

Add new text at the end of the Introduction:

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 a patent (US 14/668,073: Apparatus and method for recommending service).

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Clause 8

Add the following new clauses after Clause 8:

9 Reference software

9.1 General

This clause provides a specific implementation including MPEG-21 UD encoder, decoder and validator that behaves in a conformant manner.

9.2 Development environment

Item	Contents
Operating system	Windows 7 Professional 64bit
CPU	Intel Core i5-4570
Memory	8 GB
Development tools	Eclipse (Mars.1) JAXB (2.2.11)
Development language	JAVA 1.8

9.3 Structure of reference software

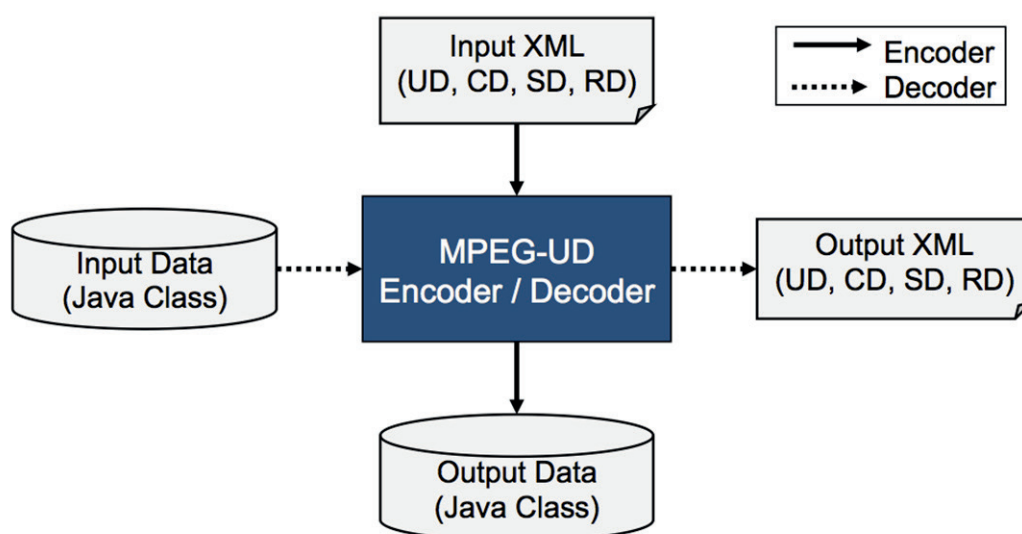


Figure 2 — Flow diagram of MPEG-21 UD reference software

9.4 Reference software classes and method

9.4.1 General

Figure 2 provides a flow diagram of the reference software, as referenced in Annex C, which is available at <http://standards.iso.org/iso-iec/21000-22/ed-1/en/amd/1>.

9.4.2 Encoder

The main functionality of the encoder is to generate a standard MPEG-21 UD XML data to an output stream or a file. The encoder is divided into two types of functions *New* and *Make*.

The *New* functions does not need any input parameters and it creates a java instance of requested description type. The return value can be UD, CD, SD and RD class by a new function.

The *Make* function has two input parameters; the first is a type of description instance and the second can be a type of OutputStream and/or File.

- **newUD()** – Create UserDescriptionType JAVA Instance
- **newCD()** – Create ContextDescriptionType JAVA Instance
- **newSD()** – Create ServiceDescriptionType JAVA Instance

- **newRD()** – Create RecommendationDescriptionType JAVA Instance
- **MakeXML(T c, OutputStream/File o)**
 - Parameters
 - c – The c parameter can be one of the following T types:
 - UserDescriptionType;
 - ContextDescriptionType;
 - ServiceDescriptionType;
 - RecommendationDescriptionType;
 - o – The o parameter is of the OutputStream type specifying the output stream for the XML data or file type specifying the location where the XML data is to be stored depending on the specified parameter type (OutputStream or File).

9.4.3 Decoder

The main functionality of the decoder is to extract the XML information (e.g., UD, CD, SD and RD). The decoder supports two different parsing methods, one is a URL and the other is a web address.

The first method is to decode UD, CD, SD and RD automatically by a given XML URL. The second method is to decode UD, CD, SD and RD using its *own* function.

- Decode(String pathToFile)
 - Parameters
 - pathToFile– The pathToFile is of String type and its specifies the location of the XML file to read XML data
 - Return Value – Mpeg-21 UD Class (included UD, CD, SD and RD Instance)
- DecodeUD(String pathToFile)
 - Parameters
 - pathToFile– The pathToFile is of String type and its specifies the location of the XML file to read XML data
 - Return Value – UserDescriptionType Class
- DecodeCD(String pathToFile)
 - Parameters
 - pathToFile– The pathToFile is of String type and its specifies the location of the XML file to read XML data
 - Return Value – ContextDescriptionType Class
- DecodeSD(String pathToFile)
 - Parameters
 - pathToFile– The pathToFile is of String type and its specifies the location of the XML file to read XML data
 - Return Value – ServiceDescriptionType Class
- DecodeRD(String pathToFile)
 - Parameters
 - pathToFile– The pathToFile is of String type and its specifies the location of the XML file to read XML data
 - Return Value – RecommendationDescriptionType Class

9.4.4 Validator

The validator is developed to check the validation of an input document. The validator only has one function: *ValidationCheck*. If the input document is invalid, the validator shows an error message on the display device.

- ValidationCheck(String pathToFile)
 - Parameters
 - pathToFile– The pathToFile is of String type and its specifies the location of the XML file to read XML data
 - Return Value – false(0) if the XML file is valid; otherwise, true(1)