INTERNATIONAL STANDARD

ISO/IEC 21000-8

Second edition
2008-03-01

AMENDMENT 1
2009-04-01

Information technology — Multimedia framework (MPEG-21) —

Part 8: Reference software

AMENDMENT 1: Extra reference software

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

Partie 8: Logiciel de référence

AMENDEMENT 1: Logiciel de référence extra

Reference number
ISO/IEC 21000-8:2008/Amd.1:2009(E)

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Foreword

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The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

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Amendment 1 to ISO/IEC 21000-8:2008 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information*.

This Amendment describes extra reference software for

— ISO/IEC 21000-5:2004/Amd.3:2008,

— ISO/IEC 21000-7:2007, and

— ISO/IEC 21000-18:2007

and utility software for

— ISO/IEC 21000-5:2004/Amd.3:2008 and

— ISO/IEC 21000-18.

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Information technology — Multimedia framework (MPEG-21) —

Part 8:
Reference software

AMENDMENT 1: Extra reference software

In 4.2, replace the paragraph on ISO/IEC 21000-5:2004:

— ISO/IEC 21000-5:2004, Information technology — Multimedia framework (MPEG-21) — Part 5: Rights Expression Language (REL): The corresponding reference software modules provide means for checking the validity of a REL license as well as the validity of an authorization request according to ISO/IEC 21000-5:2004. Furthermore, they allow for checking if an authorization story is an authorization proof for an authorization request. The reference software for ISO/IEC 21000-5:2004 is described in 5.5.1. Furthermore, reference software modules for ISO/IEC 21000-5:2004/Amd.1:2007, ISO/IEC 21000-5:2004/Amd.2:2007, and ISO/IEC 21000-5:2004/Amd.3:2007 are described in 5.8, 5.9, and 5.10.

In 4.2, add at the end:

— ISO/IEC 21000-18:2007, Information technology — Multimedia framework (MPEG-21) — Part 18: Digital Item Streaming: The corresponding reference software modules provide means to support streaming of Digital Items. The reference software for ISO/IEC 21000-18:2007 is described in 5.21.

In 4.3, replace the paragraph on ISO/IEC 21000-5:2004:

— ISO/IEC 21000-5:2004, Information technology — Multimedia framework (MPEG-21) — Part 5: Rights Expression Language: The corresponding utility software module provides a simple license interpreter module, a simple license creator module and a lightweight REL based DRM module implementing a lightweight REL parser system suitable for the use on mobile phones. The utility software for ISO/IEC 21000-5:2004 is described in A.4. Furthermore, utility software modules for ISO/IEC 21000-5:2004/Amd.1:2007 and ISO/IEC 21000-5:2004/Amd.3:2007 are described in A.5 and A.6.

In 4.3, add at the end:

— ISO/IEC 21000-18:2007, Information technology — Multimedia framework (MPEG-21) — Part 18: Digital Item Streaming: The corresponding utility software modules provide means for fragmenting and delivering an associated DIDL document. The utility software also includes a receiver that outputs received fragments to files and a GUI handler that displays fragments and re-assembled DIDL documents. The utility software for ISO/IEC 21000-18:2007 is described in A.10.

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Add 5.10:

5.10 ISO/IEC 21000-5:2004/Amd.3:2008

5.10.1 Schema checker for the OAC profile

Module Name: /21000-5_REL_Amd3/REL_Amd3-SchemaChecker-1_0_0.zip
Description
The Schema Checker validates if a license or a list of licenses are syntactically valid according to the schema of the MPEG-21 OAC Profile standard specification.
Input
A list of licenses and/or directories that contain licenses.
Output
Valid, not valid, reasons why, according to the XML schemas specified within the licenses.
Programming Language(s)
Java
Platform(s)
Any platform supported by Microsoft .Net framework. (e.g., Windows 98, 2000, NT, ME, XP).
Dependencies
Details
Architecture diagram:

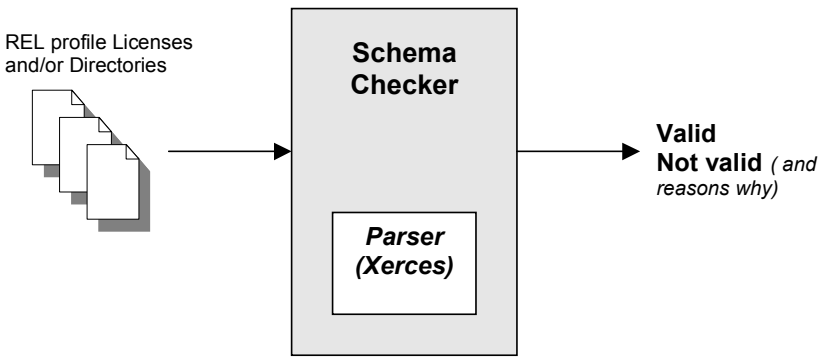

Figure 15 — Schema checker for the OAC profile diagram

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5.10.2 Interpreter for the OAC profile

Module Name: /21000-5_REL_Amd3/REL_Amd3-Interpreter-1_0_0.zip
Description
The MPEG-21 REL OAC Interpreter uses a REL License and a query as input. The software interprets the license for the given query and calculates the authorisation result.
Input
REL license file. Query file consisting of a principal, right, resource and context information.
Output
The authorization result: YES – Authorized but need to verify if issuer specified in the license is trusted. NO – Not authorized and why. MAYBE – One or more conditions could not be verified.
Programming Language(s)
Java
Platform(s)
Windows and Linux.
Dependencies
XML handling: JAXB 2.05 (Java Architecture for XML Binding, http://java.sun.com/webservices/jaxb/) XML Digital Signature API
Details
The following picture shows the high-level architecture of the REL OAC Interpreter and describes the steps during the interpretation process:

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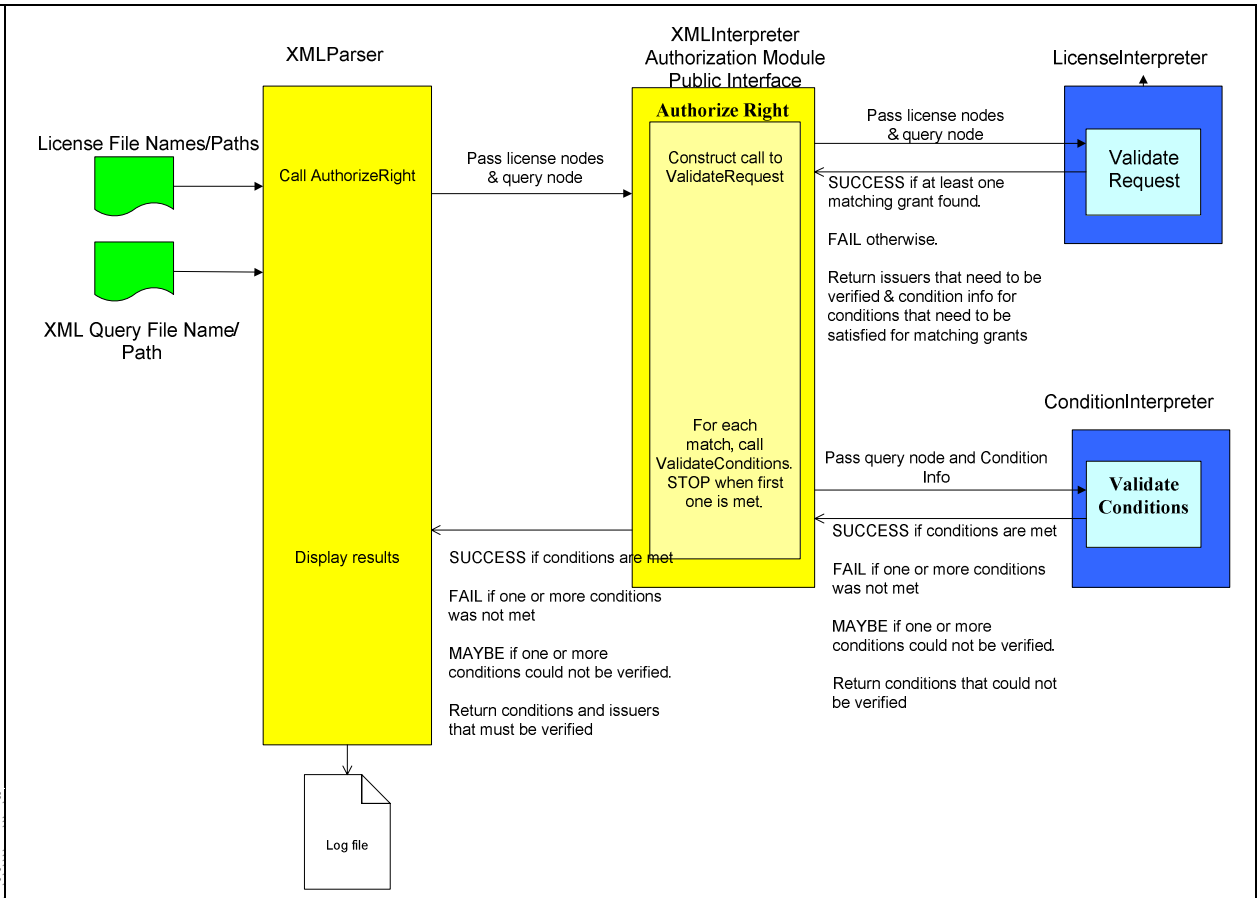

Figure 16 — REL Interpreter architecture

At first the License File and the Query File are validated semantically against the OAC profile and a DOM representation is generated. Then the license and the query are evaluated with the purpose of determining whether the license contains grants matching the query. If at least one matching grant is found, then a separate module will determine whether the conditions specified in the license are satisfied.

Java JDK/JRE 1.5.0_12 or later is required to run the software. Although the software may run on older version of the Java environment, tests have not been carried out.

Adjust numbering sections and adjust references to these sections accordingly:

"5.10 ISO/IEC 21000-6:2004" numbering change to "5.11 ISO/IEC 21000-6:2004" numbering.
"5.11 ISO/IEC 21000-7:2007" numbering change to "5.12 ISO/IEC 21000-7:2007" numbering.
"5.12 ISO/IEC 21000-9:2005" numbering change to "5.13 ISO/IEC 21000-9:2005" numbering.
"5.13 ISO/IEC 21000-10:2006" numbering change to "5.14 ISO/IEC 21000-10:2006" numbering.
"5.14 ISO/IEC 21000-10:2006/Amd.1:2006" numbering change to "5.15 ISO/IEC 21000-10:2006/Amd.1:2006" numbering.
"5.15 ISO/IEC 21000-12:2005" numbering change to "5.16 ISO/IEC 21000-12:2005" numbering.
"5.16 ISO/IEC 21000-14:2007" numbering change to "5.17 ISO/IEC 21000-14:2007" numbering.
"5.17 ISO/IEC 21000-15:2006" numbering change to "5.18 ISO/IEC 21000-15:2006" numbering.
"5.18 ISO/IEC 21000-16:2005" numbering change to "5.19 ISO/IEC 21000-16:2005" numbering.
"5.19 ISO/IEC 21000-17:2006" numbering change to "5.20 ISO/IEC 21000-17:2006" numbering.

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In renumbered 5.12.2 DIA reference software, update Table 1:

Table 1 — Common structure of MPEG-21 DIA API

Java package name	*Description*
org.iso.mpeg.mpeg21.dia	Defines the API of the DIA root elements.
org.iso.mpeg.mpeg21.dia.ued	Defines the API to the Usage Environment Description tool.
org.iso.mpeg.mpeg21.dia.ued.uc	Defines the API to the User Characteristics.
org.iso.mpeg.mpeg21.dia.ued.tc	Defines the API to the Terminal Characteristics tool.
org.iso.mpeg.mpeg21.dia.ued.nc	Defines the API to the Network Characteristics tool.
org.iso.mpeg.mpeg21.dia.ued.nec	Defines the API to the Natural Environment Characteristics tool.
org.iso.mpeg.mpeg21.dia.ucd|ucd_xmlpull	Defines the API to the Universal Constraint Description tool.
org.iso.mpeg.mpeg21.dia.gbsd	
org.iso.mpeg.mpeg21.dia.aqos|adaptationqos	Defines the API to the AdaptationQoS tool.
org.iso.mpeg.mpeg21.dia.ccqos	Defines the API to the CrossConversionQoS tool.
org.iso.mpeg.mpeg21.dia.bsdlink|bsdlink_xmlpull	Defines the API to the BSDLink tool.
org.iso.mpeg.mpeg21.dia.conversionlink	Defines the API to the ConversionLink tool.
org.iso.mpeg.mpeg21.dia.mda	Defines the API to the MetadataAdaptation tool.
org.iso.mpeg.mpeg21.dia.sm	Defines the API to the Session Mobility tool.
org.iso.mpeg.mpeg21.dia.diac	Defines the API to the DIA Configuration tool.
org.iso.mpeg.mpeg21.dia.datatypes	Defines the API to the low-level datatypes.
org.iso.mpeg.mpeg21.dia.utils	Defines the API to various auxiliary classes.
org.iso.mpeg.mpeg21.dia.base	Defines the API to the DIA Base types.
org.iso.mpeg.mpeg21.dia.base.sf	Defines the API to the DIA Stack Function tool.
org.iso.mpeg.mpeg21.dia.base.argumenttypes	Defines the API to the ArgumentType subtypes.
org.iso.mpeg.mpeg21.dia.exception	Defines the API to the exceptions used in DIA.
org.iso.mpeg.mpeg7	Defines an API to the MPEG-7 types used in DIA.
org.iso.mpeg.mpeg21.dia.demo	Defines the API to the demo programs which makes use of several reference software packages.

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In renumbered 5.12.2 DIA reference software, add module description box after the module description box for /21000-7_DIA/DIA-RefSW-A.zip:

Module Name: /21000-7_DIA/DIA-RefSW-B-1_1.zip
Description
This module provides an API as shown in Table 1 with the following functionality: — /21000-7_DIA/DIA-RefSW-A.zip — Internal Java object model reflects the type hierarchy in the MPEG-21 DIA standard and XML schemas — Java source code for parsing MPEG-21 DIDs containing valid DIA Usage Environment Descriptions, Universal Constraints Descriptions, AdaptationQoS, and/or BSDLink — Java API for manipulation of MPEG-21 DIA UED, UCD, AQoS, and/or BSDLink — Java source code for serializing MPEG-21 DIA UED/UCD/AQoS/BSDLink — Reads from any InputStream (file, socket)
Input
— `org.iso.mpeg.mpeg21.dia.{ued|ucd|ucd_xmlpull|aqos|adaptationqos|ccqos|gBSD|bsdlink|bsdlink_xmlpull|conversionlink|mda|sm|diac}`: a valid DIA description.
Output
— `org.iso.mpeg.mpeg21.dia.{ued|ucd|ucd_xmlpull|aqos|adaptationqos|ccqos|gBSD|bsdlink|bsdlink_xmlpull|conversionlink|mda|sm|diac}`: a valid, possibly modified, DIA description. — `org.iso.mpeg.mpeg21.dia.{ued|ucd|ucd_xmlpull|aqos|adaptationqos|ccqos|bsdlink|bsdlink_xmlpull|conversionlink|mda|sm|diac}`: Java objects in memory providing access to the information in the input DIA description. — `org.iso.mpeg.mpeg21.dia.gbsd.gBSDtoBin`: the (adapted) bitstream according to the (transformed) input BS Description. NOTE Optionally, the updated DIA description (i.e., UED, UCD, AQoS, BSD, BSDLink, and/or gBSD respectively) is provided.
Programming Language(s)
Java
Platform(s)
Any platform supported by the Java.

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Dependencies
— Java version "1.5" or later, which can be downloaded from http://java.sun.com/javase/downloads/index_jdk5.jsp. — Xerces2 Java Parser 2.6.2 or later, which can be downloaded from http://xml.apache.org/. — kXML 2 release 2.1.9 or later, which can be downloaded from http://www.xmlpull.org/. — Log4j version 1.2.8 or later, which can be downloaded from http://logging.apache.org/log4j/docs/. — Base64 encoding library from TU Darmstadt, which is supplied in the lib/ directory of this software package. — ant 1.6.2 or later, which can be downloaded from http://ant.apache.org/. — Jakarta Commons Logging, which can be downloaded from http://commons.apache.org/logging/.
Details

In Clause 5, insert 5.21:

5.21 ISO/IEC 21000-18:2007

Module Name: /21000-18_DIS/DIS-Reference_Software-1_0_0.zip
Description
The DIS reference software accepts as input a BBL Instance document and outputs digital item fragments to the appropriate handlers.
Input
A BBL Instance document
Output
Digital item fragments delivered via the appropriate handlers and received by the simple receiver or GUI receiver.
Programming Language(s)
Java
Platform(s)
Any platform supporting Java J2SE5 and the chosen handlers.
Dependencies
Apache Log4J 1.2.13 or later (http://logging.apache.org/log4j/) Apache Xerces-J 2.9.0 or later (http://xml.apache.org/xerces2-j/)

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Add A.6:

A.6 ISO/IEC 21000-5:2004/Amd.3:2008

Module Name: /21000_Utility/21000-5_REL_Amd3/REL_Amd3-LicenseCreator-1_0_0.zip
Description
The software is a simple implementation of an MPEG-21 REL OAC license creator. It can be used to create a REL license that is based on the MPEG-21 REL Open Access Content Profile. The software can create new licenses or edit existing licenses. The implementation is based on the Java Architecture for XML Binding (JAXB).
Input
— Right — Target principal — Resource — Conditions
Output
REL OAC profile license
Programming Language(s)
Java
Platform(s)
Windows and Linux
Dependencies
XML handling: JAXB 2.05 (Java Architecture for XML Binding, http://java.sun.com/webservices/jaxb/) XML Digital Signature API
Details
The following figure shows the high-level architecture of the REL OAC license creator and shows the steps of the creation of the license:

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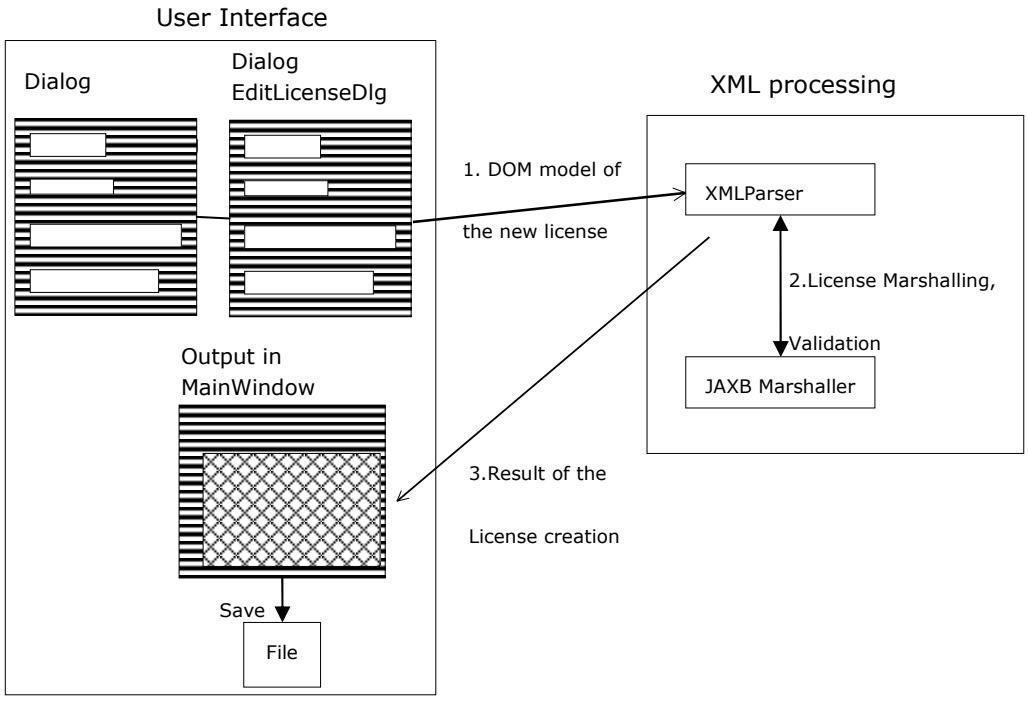

Figure A.9 — Simple REL license creator for the OAC profile diagram

The dialogs check, that all necessary information for the generation of a valid license s provided. After the information was entered, a DOM Model of the license is produced. This DOM Model contains all information to create the xml license. The DOM model is sent to the XML Parser, which uses JAXB to marshal the license into an xml string. This result is then displayed in the main window and it is saved into a file.

Java JDK/JRE 1.5.0_12 or later is required. Although the software may run on older version of the Java environment, tests have not been carried out.

Adjust numbering figure and adjust reference to this figure accordingly:

"Figure A.1 — ISO/IEC 21000-7:2007 processing" change to "Figure A.10 — ISO/IEC 21000-7:2007 processing"

Adjust numbering sections and adjust references to these subclauses accordingly:

"A.6 ISO/IEC 21000-6:2004" numbering change to "A.7 ISO/IEC 21000-6:2004" numbering.
"A.7 ISO/IEC 21000-7:2007" numbering change to "A.8 ISO/IEC 21000-7:2007" numbering.
"A.8 ISO/IEC 21000-10:2006/Amd.1:2006" numbering change to "A.9 ISO/IEC 21000-10:2006/Amd.1:2006" numbering.
"A.9 ISO/IEC 21000-12:2005" numbering change to "A.10 ISO/IEC 21000-12:2005" numbering.

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Add A.11:

A.11 ISO/IEC 21000-18:2007

A.11.1 Introduction

A.11 describes the utility software for ISO/IEC 21000-18.

Module Name: /21000_Utility/21000-18_DIS/DIS-Utility_Software-1_0_0.zip
Description
The DIS utility software accepts as input a BBL Instance document and outputs digital item fragments to the appropriate handlers. It includes an example BBL Instance document and associated DIDL document that is fragmented and delivered by an RTP handler. It also includes a simple receiver that simply outputs received fragments to files, and a GUI handler that displays fragments and a re-assembled DIDL.
Input
A BBL Instance document (and associated files, e.g., DIDL document)
Output
Digital item fragments delivered via the appropriate handlers.
Programming Language(s)
Java
Platform(s)
Any platform supporting Java J2SE5 and the chosen handlers.
Dependencies
Apache Log4J 1.2.13 or later (http://logging.apache.org/log4j/) Apache Xerces-J 2.9.0 or later (http://xml.apache.org/xerces2-j/) MPEG-21 DIS Reference Software and dependencies

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