

INTERNATIONAL
STANDARD

ISO/IEC
23001-1

First edition
2006-04-01

**Information technology — MPEG systems
technologies —**

**Part 1:
Binary MPEG format for XML**

*Technologies de l'information — Technologies des systèmes MPEG —
Partie 1: Format binaire de MPEG pour XML*

Reference number
ISO/IEC 23001-1:2006(E)



© ISO/IEC 2006

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

© ISO/IEC 2006

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

	Page
Foreword.....	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions.....	2
3.1 Conventions	2
3.2 Definitions	5
4 Symbols and abbreviated terms	11
4.1 Abbreviations	11
4.2 Mathematical operators.....	12
4.3 Mnemonics	14
5 System architecture.....	15
5.1 Terminal architecture	15
5.2 General characteristics of the decoder	15
5.3 Sequence of events during decoder initialisation.....	16
5.4 Decoder behaviour	18
5.5 Issues in encoding documents	19
5.6 Characteristics of the delivery layer	20
5.7 Decoding of Fragment References	21
6 Binary format- BiM.....	22
6.1 Overview	22
6.2 Binary DecoderInit.....	22
6.3 Binary Access Unit	31
6.4 Binary Fragment Update Unit.....	32
6.5 Binary Fragment Update Command	34
6.6 Binary Fragment Update Context.....	36
6.7 Binary Schema Update Unit.....	60
7 Binary Fragment Update Payload	81
7.1 Overview	81
7.2 Definitions	81
7.3 Fragment Update Payload syntax and semantics	82
7.4 Element syntax and semantics	84
7.5 Element Content decoding process	96
8 Advanced optimised decoders.....	113
8.1 Overview	113
8.2 Decoder behaviour	114
8.3 Advanced Optimised Decoder Initialization.....	116
8.4 Advanced Optimised Decoder Classification scheme.....	118
8.5 UniformQuantizer advanced optimised decoder.....	118
8.6 NonUniformQuantizer optimized decoder	120
8.7 Zlib advanced optimised decoder.....	122
Annex A (normative) MPEG-7 Specific Simple Type Codecs	125
Annex B (informative) Informative Examples	129
Annex C (informative) Patent Statements	132
Bibliography	133

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

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.

ISO/IEC 23001-1 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information*.

ISO/IEC 23001 consists of the following parts, under the general title *Information technology — MPEG systems technologies*:

— *Part 1: Binary MPEG format for XML*

Introduction

This International Standard provides a standardized set of generic technologies for encoding XML documents. It addresses a broad spectrum of applications and requirements by providing generic methods for transmitting and compressing XML documents.

Part 1 – Binary Format for XML: specifies the tools for preparing XML documents for efficient transport and storage and for compressing XML documents.

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.

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

The holder of this patent right has assured ISO and IEC that he is willing to negotiate licences under reasonable and non-discriminatory terms and conditions with applicants throughout the world. In this respect, the statement of the holder of this patent right is registered with the ISO and IEC. Information may be obtained from the companies listed in Annex C.

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 in Annex C. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

Information technology — MPEG systems technologies —

Part 1: Binary MPEG format for XML

1 Scope

This part of ISO/IEC 23001 provides a standardized set of technologies for encoding XML documents. It addresses a broad spectrum of applications and requirements by providing a generic method for transmitting and compressing XML documents.

This part of ISO/IEC 23001 specifies system level functionalities for the communication of XML documents. It provides a specification which will:

- enable the development of ISO/IEC 23001-1 receiving sub-systems, called ISO/IEC 23001-1 Terminal, or Terminal in short, to receive and assemble possibly partitioned and compressed XML documents
- provide rules for the preparation of XML documents for efficient transport and storage.

The decoding process within the ISO/IEC 23001-1 Terminal is normative. The rules mentioned provide guidance for the preparation and encoding of XML documents without leading to a unique encoded representation of such documents.

2 Normative references

The following referenced documents are indispensable for the application 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 10646:2003, *Information technology — Universal Multiple-Octet Coded Character Set (UCS)*

Note: The UTF-8 encoding scheme is described in Annex R of ISO/IEC 10646-1:1993, published as Amendment 2 of ISO/IEC 10646-1:1993.

- XML, *Extensible Markup Language (XML) 1.0*, October 2000.
- *XML Schema*, W3C Recommendation, 2 May 2001.
- *XML Schema Part 0: Primer*, W3C Recommendation, 2 May 2001.
- *XML Schema Part 1: Structures*, W3C Recommendation, 2 May 2001.
- *XML Schema Part 2: Datatypes*, W3C Recommendation 2 May 2001.
- XPath, *XML Path Language*, W3C Recommendation, 16 November 1999.
- *Namespaces in XML*, W3C Recommendation, 14 January 1999.

Note: These documents are maintained by the W3C (<http://www.w3.org>). The relevant documents can be obtained as follows:

- *Extensible Markup Language (XML) 1.0 (Second Edition)*, 6 October 2000,
<http://www.w3.org/TR/2000/REC-xml-20001006>
- *XML Schema: W3C Recommendation*, 2 May 2001, <http://www.w3.org/XML/Schema>
 - *XML Schema Part 0: Primer*, W3C Recommendation, 2 May 2001,
<http://www.w3.org/TR/xmlschema-0/>
 - *XML Schema Part 1: Structures*, W3C Recommendation, 2 May 2001,
<http://www.w3.org/TR/xmlschema-1/>
 - *XML Schema Part 2: Datatypes*, W3C Recommendation 2 May 2001,
<http://www.w3.org/TR/xmlschema-2/>
- *xPath, XML Path Language*, W3C Recommendation, 16 November 1999,
<http://www.w3.org/TR/1999/REC-xpath-19991116>
- *Namespaces in XML*, W3C Recommendation, 14 January 1999,
<http://www.w3.org/TR/1999/REC-xml-names-19990114>
- *RFC 2396, Uniform Resource Identifiers (URI): Generic Syntax*.
- *RFC 1950, ZLIB Compressed Data Format Specification version 3.3*.
- *IEEE Standard for Binary Floating-Point Arithmetic*, Std 754-1985 Reaffirmed 1990,
http://standards.ieee.org/reading/ieee/std_public/description/busarch/754-1985_desc.html