



## DRAFT INTERNATIONAL STANDARD ISO/IEC 14297

Attributed to ISO/IEC JTC 1 by the Central Secretariat (see page iii)

Voting begins on  
2009-10-21

Voting terminates on  
2010-04-21

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION  
INTERNATIONAL ELECTROTECHNICAL COMMISSION • МЕЖДУНАРОДНАЯ ЭЛЕКТРОТЕХНИЧЕСКАЯ КОММИСИЯ • COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE

**PUBLICLY AVAILABLE SPECIFICATION PROCEDURE**

## Information technology — UOML (Unstructured Operation Markup Language) Part 1 Version 1.0

*Technologies de l'information — UOML (Langage de balisage à opération non structurée) Partie 1 Version 1.0*

ICS 35.060; 35.240.30

### iTeh STANDARD PREVIEW (standards.iteh.ai)

[ISO/IEC DIS 14297](https://standards.iteh.ai/catalog/standards/sist/f962984b-c2f3-45e6-bc47-494e0f572d84/iso-iec-dis-14297)

<https://standards.iteh.ai/catalog/standards/sist/f962984b-c2f3-45e6-bc47-494e0f572d84/iso-iec-dis-14297>

**In accordance with the provisions of Council Resolution 21/1986 this DIS is circulated in the English language only.**

**Conformément aux dispositions de la Résolution du Conseil 21/1986, ce DIS est distribué en version anglaise seulement.**

**This Publicly Available Specification (PAS) is being submitted for Fast-track processing in accordance with the provisions of ISO/IEC JTC 1 Directives.**

THIS DOCUMENT IS A DRAFT CIRCULATED FOR COMMENT AND APPROVAL. IT IS THEREFORE SUBJECT TO CHANGE AND MAY NOT BE REFERRED TO AS AN INTERNATIONAL STANDARD UNTIL PUBLISHED AS SUCH.

IN ADDITION TO THEIR EVALUATION AS BEING ACCEPTABLE FOR INDUSTRIAL, TECHNOLOGICAL, COMMERCIAL AND USER PURPOSES, DRAFT INTERNATIONAL STANDARDS MAY ON OCCASION HAVE TO BE CONSIDERED IN THE LIGHT OF THEIR POTENTIAL TO BECOME STANDARDS TO WHICH REFERENCE MAY BE MADE IN NATIONAL REGULATIONS.

RECIPIENTS OF THIS DRAFT ARE INVITED TO SUBMIT, WITH THEIR COMMENTS, NOTIFICATION OF ANY RELEVANT PATENT RIGHTS OF WHICH THEY ARE AWARE AND TO PROVIDE SUPPORTING DOCUMENTATION.

**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.

**iTeh STANDARD PREVIEW  
(standards.iteh.ai)**

[ISO/IEC DIS 14297](https://standards.iteh.ai/catalog/standards/sist/f962984b-c2f3-45e6-bc47-494e0f572d84/iso-iec-dis-14297)

<https://standards.iteh.ai/catalog/standards/sist/f962984b-c2f3-45e6-bc47-494e0f572d84/iso-iec-dis-14297>

**Copyright notice**

This ISO document is a Draft International Standard and is copyright-protected by ISO. Except as permitted under the applicable laws of the user's country, neither this ISO draft nor any extract from it may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, photocopying, recording or otherwise, without prior written permission being secured.

Requests for permission to reproduce should be addressed to 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](mailto:copyright@iso.org)  
Web [www.iso.org](http://www.iso.org)

Reproduction may be subject to royalty payments or a licensing agreement.

Violators may be prosecuted.

## NOTE FROM ITTF

The ballot on the transposition of a PAS into an international standard follows the JTC 1 PAS procedures contained in the JTC 1 Directives Section 14.

In the PAS process, the JTC 1 secretariat will inform JTC 1 National Bodies and Liaison Organisations, and those organisations authorised to be PAS submitters, of the initiation of the PAS ballot, the result of the ballot, and the identity of the JTC 1 committee which will be responsible for any future work.

For ballot, JTC 1 National Bodies and the PAS submitter will receive both the PAS to be transposed and the accompanying Explanatory Report. During the ballot JTC 1 members may propose changes to the PAS. These can be resolved with the PAS Submitter after completion of the ballot.

The period for combined DIS voting shall be six months. In order to be accepted the DIS must be supported by 75 % of the votes cast (abstention is not counted as a vote) and by two-thirds of the P-members voting of JTC 1.

In the case of a failure of the ballot, JTC 1 will make known to the Submitter the reasons which have led to the negative result. Based on this information, the Submitter may choose to re-submit the specification after modification.

Once the Draft International Standard has been approved by JTC 1 as an IS, it will be published.

## iTeh STANDARD PREVIEW (standards.iteh.ai)

[ISO/IEC DIS 14297](https://standards.iteh.ai/catalog/standards/sist/f962984b-c2f3-45e6-bc47-494e0f572d84/iso-iec-dis-14297)

<https://standards.iteh.ai/catalog/standards/sist/f962984b-c2f3-45e6-bc47-494e0f572d84/iso-iec-dis-14297>

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

ISO/IEC DIS 14297

<https://standards.iteh.ai/catalog/standards/sist/f962984b-c2f3-45e6-bc47-494e0f572d84/iso-iec-dis-14297>



# UOML (Unstructured Operation Markup Language) Part 1 Version 1.0

OASIS Standard

10 October 2008

## Specification URIs:

### This Version:

<http://docs.oasis-open.org/uoml-x/v1.0/os/uoml-part1-v1.0-os.pdf> (Authoritative)  
<http://docs.oasis-open.org/uoml-x/v1.0/os/uoml-part1-v1.0-os.odt>  
<http://docs.oasis-open.org/uoml-x/v1.0/os/uoml-part1-v1.0-os.html>

### Previous Version:

<http://docs.oasis-open.org/uoml-x/v1.0/cs01/uoml-part1-v1.0-cs01.pdf>  
<http://docs.oasis-open.org/uoml-x/v1.0/cs01/uoml-part1-v1.0-cs01.odt> (Authoritative)  
<http://docs.oasis-open.org/uoml-x/v1.0/cs01/uoml-part1-v1.0-cs01.html>

**iTeh STANDARD PREVIEW**  
 (standards.iteh.ai)  
 ISO/IEC DIS 14297  
<https://standards.iteh.ai/catalog/standards/sist/f962984b-c2f3-45e6-bc47-494e0f572d84/iso-iec-dis-14297>

### Latest Version:

<http://docs.oasis-open.org/uoml-x/v1.0/uoml-part1-v1.0.odt>  
<http://docs.oasis-open.org/uoml-x/v1.0/uoml-part1-v1.0.html>  
<http://docs.oasis-open.org/uoml-x/v1.0/uoml-part1-v1.0.pdf>

## Technical Committee:

OASIS Unstructured Operation Markup Language Extended (UOML-X) Technical Committee

### Chair(s):

Alex Wang, Sursen Corp <[alexwang@sursen.com](mailto:alexwang@sursen.com)>  
 Bo Yan, Sursen Corp <[yanbo@sursen.com](mailto:yanbo@sursen.com)> (until September 2007)  
 Allison Shi, Sursen Corp <[allison\\_shi@sursen.com](mailto:allison_shi@sursen.com)> (since September 2007)

### Editor(s):

Guo Xu, Sursen Corp. <[guoxu@sursen.com](mailto:guoxu@sursen.com)>  
 Allison Shi, Sursen Corp. <[allison\\_shi@sursen.com](mailto:allison_shi@sursen.com)>  
 Pine Zhang, UOML Alliance <[pine\\_zhang@sursen.com](mailto:pine_zhang@sursen.com)>

### Related work:

[N/A]

### Declared XML Namespace(s):

urn:oasis:names:tc:uoml:xmlns:uoml-x:1.0 (prefix: uoml)

### Abstract:

This document defines a markup language for unstructured document operation, including the

definitions of abstract document model and document operating instructions to the abstract document model.

**Status:**

This document was last revised or approved by the OASIS Unstructured Operation Markup Language eXtended (UOML-X) Technical Committee on the above date. The level of approval is also listed above. Check the "Latest Version" or "Latest Approved Version" location noted above for possible later revisions of this document.

Technical Committee members should send comments on this specification to the Technical Committee's email list. Others should send comments to the Technical Committee by using the "Send A Comment" button on the Technical Committee's web page at <http://www.oasis-open.org/committees/uoml-x/>.

For information on whether any patents have been disclosed that may be essential to implementing this specification, and any offers of patent licensing terms, please refer to the Intellectual Property Rights section of the Technical Committee web page <http://www.oasis-open.org/committees/uoml-x/ipr.php>.

The non-normative errata page for this specification is located at <http://www.oasis-open.org/committees/uoml-x/>.

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

ISO/IEC DIS 14297

<https://standards.iteh.ai/catalog/standards/sist/f962984b-c2f3-45e6-bc47-494e0f572d84/iso-iec-dis-14297>

D  
R  
A  
F  
T

## Notices

Copyright © OASIS® 2008. All Rights Reserved.

All capitalized terms in the following text have the meanings assigned to them in the OASIS Intellectual Property Rights Policy (the "OASIS IPR Policy"). The full Policy may be found at the OASIS website.

This document and translations of it may be copied and furnished to others, and derivative works that comment on or otherwise explain it or assist in its implementation may be prepared, copied, published, and distributed, in whole or in part, without restriction of any kind, provided that the above copyright notice and this section are included on all such copies and derivative works. However, this document itself may not be modified in any way, including by removing the copyright notice or references to OASIS, except as needed for the purpose of developing any document or deliverable produced by an OASIS Technical Committee (in which case the rules applicable to copyrights, as set forth in the OASIS IPR Policy, must be followed) or as required to translate it into languages other than English.

The limited permissions granted above are perpetual and will not be revoked by OASIS or its successors or assigns.

This document and the information contained herein is provided on an "AS IS" basis and OASIS DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY WARRANTY THAT THE USE OF THE INFORMATION HEREIN WILL NOT INFRINGE ANY OWNERSHIP RIGHTS OR ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

OASIS requests that any OASIS Party or any other party that believes it has patent claims that would necessarily be infringed by implementations of this OASIS Committee Specification or OASIS Standard, to notify OASIS TC Administrator and provide an indication of its willingness to grant patent licenses to such patent claims in a manner consistent with the IPR Mode of the OASIS Technical Committee that produced this specification.

OASIS invites any party to contact the OASIS TC Administrator if it is aware of a claim of ownership of any patent claims that would necessarily be infringed by implementations of this specification by a patent holder that is not willing to provide a license to such patent claims in a manner consistent with the IPR Mode of the OASIS Technical Committee that produced this specification. OASIS may include such claims on its website, but disclaims any obligation to do so.

OASIS takes no position regarding the validity or scope of any intellectual property or other rights that might be claimed to pertain to the implementation or use of the technology described in this document or the extent to which any license under such rights might or might not be available; neither does it represent that it has made any effort to identify any such rights. Information on OASIS' procedures with respect to rights in any document or deliverable produced by an OASIS Technical Committee can be found on the OASIS website. Copies of claims of rights made available for publication and any assurances of licenses to be made available, or the result of an attempt made to obtain a general license or permission for the use of such proprietary rights by implementers or users of this OASIS Committee Specification or OASIS Standard, can be obtained from the OASIS TC Administrator. OASIS makes no representation that any information or list of intellectual property rights will at any time be complete, or that any claims in such list are, in fact, Essential Claims.

The names "OASIS" and "UOML" are trademarks of OASIS, the owner and developer of this specification, and should be used only to refer to the organization and its official outputs. OASIS welcomes reference to, and implementation and use of, specifications, while reserving the right to enforce its marks against misleading uses. Please see <http://www.oasis-open.org/who/trademark.php> for above guidance.

# Table of Contents

<b>1. Introduction.....</b>	<b>7</b>
1.1.Terminology.....	7
1.2.Overview.....	7
1.3.Normative References .....	8
1.4.Non-Normative References.....	8
<b>2.UOML Document Structure.....</b>	<b>9</b>
2.1.Document Architecture.....	9
2.1.1.DOCBASE.....	9
2.1.2. DOCSET.....	10
2.1.3. DOC.....	10
2.2.Internal Structure of Document.....	10
2.3. Document Global Data.....	11
2.3.1.Metadata .....	11
2.3.1.1.METALIST.....	11
2.3.1.2. META.....	11
2.3.2.Font Definition .....	12
2.3.2.1. FONTLIST.....	12
2.3.2.2. FONTMAP.....	12
2.3.2.3. EMBEDFONT.....	12
2.4.Page Data.....	12
2.4.1. PAGE.....	12
2.4.2.LAYER.....	13
2.4.3.OBJSTREAM.....	13
2.4.4.Page Rendering Models.....	13
2.5.Graphics Objects.....	13
2.5.1. ARC.....	13
2.5.2. BEZIER.....	14
2.5.3. CIRCLE.....	14
2.5.4. ELLIPSE.....	14
2.5.5. IMAGE.....	15
2.5.6. LINE.....	15
2.5.7. RECT.....	15
2.5.8.ROUNDRECT.....	16
2.5.9. SUBPATH.....	16
2.5.10. PATH.....	16
2.5.11. TEXT.....	17
2.5.12. The Coordinate and Path Encoding Rules.....	17
2.5.13. Definition of Referenced Type.....	18
2.5.13.1.COLOR_RGB.....	18
2.5.13.2. MATRIX.....	18

**ITeh STANDARD PREVIEW**  
(standards.iteh.ai)

ISO/IEC DIS 14297  
<https://standards.iteh.ai/catalog/standards/sist/d62984b-c29-45e6-bc47-494e1f572d84/iso-iec-dis-14297>



2.6.Command Objects.....	19
2.6.1.CMD.....	19
2.6.2.CMD's name property values .....	20
2.6.2.1. COLOR_LINE.....	20
2.6.2.2. COLOR_FILL.....	20
2.6.2.3. COLOR_SHADOW.....	20
2.6.2.4. COLOR_OUTLINE.....	20
2.6.2.5. COLOR_TEXT.....	21
2.6.2.6. LINE_WIDTH.....	21
2.6.2.7. LINE_CAP.....	21
2.6.2.8. LINE_JOIN.....	21
2.6.2.9. MITER_LIMIT.....	22
2.6.2.10. FILL_RULE.....	23
2.6.2.11. RENDER_MODE.....	24
2.6.2.12. RASTER_OP.....	24
2.6.2.13. TEXT_DIR.....	25
2.6.2.14. CHAR_DIR.....	25
2.6.2.15. CHAR_ROTATE.....	25
2.6.2.16. CHAR_SLANT.....	26
2.6.2.17. CHAR_SIZE.....	26
2.6.2.18. CHAR_WEIGHT.....	26
2.6.2.19. CHAR_STYLE.....	26
2.6.2.20. TEXT_MATRIX.....	27
2.6.2.21. IMAGE_MATRIX.....	27
2.6.2.22. GRAPH_MATRIX.....	28
2.6.2.23. EXT_MATRIX.....	28
2.6.2.24. PUSH_GS.....	28
2.6.2.25. POP_GS.....	28
2.6.2.26. SHADOW_WIDTH.....	28
2.6.2.27. SHADOW_LEN.....	28
2.6.2.28. SHADOW_DIR.....	29
2.6.2.29. SHADOW_ATL.....	30
2.6.2.30. SHADOW_NEG.....	30
2.6.2.31. CLIP_AREA.....	31
2.6.2.32. FONT.....	31
2.6.2.33. OUTLINE_BORDER.....	31
2.6.2.34. OUTLINE_WIDTH.....	31
2.6.2.35. HOLLOW_BORDER.....	32
2.7.Default Value of Graphics State.....	32
<b>3.UOML Instructions.....</b>	<b>34</b>
3.1.OPEN.....	34
3.2.CLOSE.....	34
3.3.USE.....	35
3.4.GET.....	35
3.5.SET.....	36
3.6.INSERT.....	37
3.7.DELETE.....	38

3.8.SYSTEM.....	38
3.9.RET.....	39
3.10.Definition of Referenced Type.....	40
<b>4.Conformance.....</b>	<b>43</b>
<b>Appendix A. Acknowledgments.....</b>	<b>44</b>

2009

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

ISO/IEC DIS 14297  
<https://standards.iteh.ai/catalog/standards/sist/f962984b-c2f3-45e6-bc47-494e0f572d84/iso-iec-dis-14297>

DRAFT

# 1. Introduction

## 1.1. Terminology

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC2119].

### Keywords:

**UOML:** short for "Unstructured Operation Markup Language".

**Docbase:** comes from "Database", means document base, is the container of mass documents; it is the root level of the UOML document structure.

**DoCbase Management System:** the software which implements the function defined by UOML, short as DCMS.

**Docset:** a set of documents, like directory in file system.

**Layer:** a page is composed of one or more layers, each layer has the same size as the page, and the visual appearance of the page is added up by these layers.

**Path:** refers to the open or closed region collection, which consists of one or multiple line/curve segment(s), its first letter should always be uppercase. In this document, we also use 'path' (all lowercase) to refer to filename, location of Docbase or image file, it is different from 'Path'.

<https://standards.iteh.ai/catalog/standards/sist/f962984b-c2f3-45e6-bc47->

**Graphics Object:** refers to the objects that could make render engine to draw, it is used to describe the appearance of a page. It includes: text, image, Path, etc.

**Command Object:** uses for modifying the current graphics state that holds current graphics control parameters, such as text size, typeface and color.

**Object Stream:** a sequence of graphics objects and command objects.

**Sub-object:** in a tree structure, the upper level object is called parent object, and its' connected lower level object is called sub-object. One parent object can connect multiple sub-objects, but one sub-object can only have one parent object. Sub-object is created by INSERT instruction.

## 1.2. Overview

UOML is interface standard to process unstructured document; it plays the similar role as SQL (Structured Query Language) to structured data. UOML is expressed with standard XML, featuring compatibility and openness

UOML deals with layout-based document and its related information (such as metadata, rights, etc.) Layout-based document is two dimensional, static paging information, i.e. information can be recorded on traditional paper. The software which implements the UOML defined function, is called DCMS, applications can process the document by sending UOML instructions to DCMS.

UOML first defines abstract document model, then operations to the model. Those operations include read/write, edit, display/print, query, security control; it covers the operations which required by all different kinds of application software to process documents. UOML is based on XML description, and is platform-independent, application-independent, programming language-independent, and vendor neutral. This standard will not restrict manufacturers to implement DCMS in their own specific way.

This specification is the 1<sup>st</sup> part of UOML, which defines the operations used for read/write, edit, and display/print layout-based document.

This specification defines UOML objects and UOML instructions as following.

### 1.3. Normative References

**[XML1.0]** Tim Bray, Jean Paoli, C. M. Sperberg-McQueen, Eve Maler, François Yergeau, Extensible Markup Language (XML) 1.0 (Third Edition), <http://www.w3.org/TR/2004/REC-xml-20040204>, W3C, 2004.

**[xml-names]** Tim Bray, Dave Hollander, Andrew Layman, Namespaces in XML, <http://www.w3.org/TR/REC-xml-names/>, W3C, 1999.

**[xmldom]** W3C XML Schema Definition Language (XSDL) 1.1 Part 1: Structures <http://www.w3.org/TR/xmldom11-1/>

**[xmldom]** Paul V. Biron, Ashok Malhotra, XML Schema Part 2: Datatypes Second Edition, <http://www.w3.org/TR/2004/REC-xmldom-2-20041028/>, W3C, 2004.

**[RFC2119]** S. Bradner, *Key words for use in RFCs to Indicate Requirement Levels*, <http://www.ietf.org/rfc/rfc2119.txt>, IETF RFC 2119, March 1997.

**[PNG]** ISO/IEC 15948:2004 Portable Network Graphics (PNG): Functional specification [http://www.iso.org/iso/iso\\_catalogue/catalogue\\_tc/catalogue\\_detail.htm?csnumber=29581](http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=29581).

**[JBIG]** ISO/IEC 11544, Coded representation of picture and audio information -- Progressive bi-level image compression

**[JPEG]** ISO/IEC 10918, Digital compression and coding of continuous-tone still images

**[OpenFont]** ISO/IEC 14496-22:2007, "Open Font Format Specification" [http://www.iso.org/iso/iso\\_catalogue/catalogue\\_tc/catalogue\\_detail.htm?csnumber=43466](http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=43466)

### 1.4. Non-Normative References

**[PDF]** ISO/IEC FDIS 32000, Portable Document Format based on PDF1.7: Part 1

## 2. UOML Document Structure

UOML works on abstract document model. The abstract document model can be regarded as a hierarchy of objects, the UOML instructions deal with these objects. This chapter specifies what kinds of objects are included in abstract document model, and also addresses the detailed description of each object.

This chapter covers the following issues:

- Document Architecture: the relationships among DOCTYPE, DOCSET and DOC
- Internal Structure of Document: Global Data and Page Data
- Document Global Data: Metadata and Font
- Page Data
- Graphics Objects
- Command Objects
- Default Value of Graphics State

### 2.1. Document Architecture

Documents are organized with Docbase, Docset and Document. Within one Docbase, it must have one and only one Docset, as the root Docset, which is the collection and entrance for all the documents, similar to the root directory of a file system. As the container for Document, Docset can be embedded, which means it may contain sub-Docset. Therefore, Docbase, Docset and Document can construct a multiple level tree structure, just like the file system.

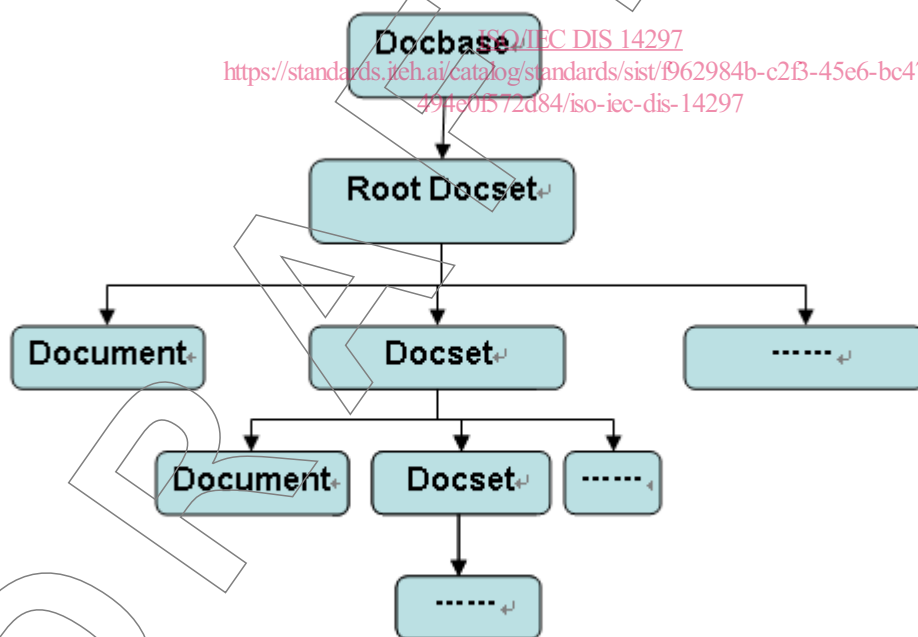


Figure 1. UOML Abstract Document Model 1

#### 2.1.1. DOCTYPE