
**Document management — XML Forms
Data Format —**

**Part 1:
Use of ISO 32000-2 (XFDF 3.0)**

*Gestion de documents — Format de Données des Formulaires XML —
Partie 1: Utilisation de l'ISO 32000-2 (XFDF 3.0)*

<https://standards.iteh.ai>
Document Preview

[ISO 19444-1:2019](https://standards.iteh.ai/catalog/standards/iso/50e30e91-d8ad-4641-ac81-f5962346eaaf/iso-19444-1-2019)

<https://standards.iteh.ai/catalog/standards/iso/50e30e91-d8ad-4641-ac81-f5962346eaaf/iso-19444-1-2019>



iTeh Standards
(<https://standards.iteh.ai>)
Document Preview

[ISO 19444-1:2019](https://standards.iteh.ai/catalog/standards/iso/50e30e91-d8ad-4641-ac81-f5962346eaaf/iso-19444-1-2019)

<https://standards.iteh.ai/catalog/standards/iso/50e30e91-d8ad-4641-ac81-f5962346eaaf/iso-19444-1-2019>



COPYRIGHT PROTECTED DOCUMENT

© ISO 2019

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

	Page
Foreword	viii
Introduction	ix
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Notation	1
5 Overview of XFDF	1
5.1 General.....	1
5.2 Forms data and annotations.....	2
5.3 How to use this specification.....	3
5.4 PDF, FDF and XFDF.....	3
5.4.1 General.....	3
5.4.2 Sample form in FDF and XFDF.....	4
5.4.3 Sample annotation in FDF and XFDF.....	5
5.5 Writing XFDF.....	7
5.5.1 General.....	7
5.5.2 Encoding and namespace.....	7
5.6 Understanding forms.....	7
5.6.1 General.....	7
5.6.2 Simple XFDF form.....	7
5.6.3 Hierarchical XFDF form.....	8
5.7 Understanding annotations.....	9
5.7.1 General.....	9
5.7.2 Simple XFDF annotation.....	10
5.7.3 Annotation with popup text.....	11
5.7.4 Annotation with comment.....	12
5.8 Implementation notes.....	13
5.8.1 General.....	13
5.8.2 String encoding conventions.....	13
5.8.3 Rich text strings.....	14
5.8.4 Stream encoding.....	15
5.8.5 XML content model syntax.....	15
6 XFDF reference	16
6.1 General.....	16
6.2 XFDF elements.....	16
6.2.1 Elements.....	16
6.2.2 xfdf.....	17
6.2.3 f.....	17
6.2.4 ids.....	17
6.3 Form field elements.....	18
6.3.1 Fields.....	18
6.3.2 Field.....	18
6.3.3 value.....	19
6.3.4 value-richtext.....	19
6.4 Annotation elements.....	19
6.4.1 annots.....	19
6.4.2 text.....	20
6.4.3 highlight.....	21
6.4.4 underline.....	21
6.4.5 strikeout.....	22
6.4.6 squiggly.....	23
6.4.7 line.....	24

6.4.8	circle	25
6.4.9	square	26
6.4.10	caret	27
6.4.11	polygon	28
6.4.12	polyline	29
6.4.13	stamp	30
6.4.14	ink	30
6.4.15	freetext	31
6.4.16	fileattachment	32
6.4.17	sound	33
6.4.18	link	34
6.4.19	redact	35
6.4.20	projection	35
6.5	Annotation sub-elements	36
6.5.1	Action	36
6.5.2	appearance	36
6.5.3	BorderStyleAlt	37
6.5.4	contents	37
6.5.5	contents-richtext	38
6.5.6	data	38
6.5.7	defaultappearance	39
6.5.8	defaultappearance	39
6.5.9	defaultstyle	39
6.5.10	Dest	39
6.5.11	File	40
6.5.12	gesture	40
6.5.13	Fit	41
6.5.14	FitB	41
6.5.15	FitBH	41
6.5.16	FitBV	42
6.5.17	FitH	42
6.5.18	FitR	43
6.5.19	FitV	43
6.5.20	GoTo	44
6.5.21	GoToR	44
6.5.22	inklist	44
6.5.23	Launch	45
6.5.24	Named	45
6.5.25	Named	45
6.5.26	OnActivation	45
6.5.27	overlayappearance	46
6.5.28	popup	46
6.5.29	resource	47
6.5.30	URI	47
6.5.31	vertices	48
6.5.32	XYZ	48
6.6	Annotation attributes	48
6.7	Mapping tables	67
6.7.1	PDF to XFDF	67
6.7.2	XFDF to PDF	71
7	Reference for 3D and RichMedia annotations	74
7.1	General	74
7.2	Various scenarios of comments on a 3D annotation	74
7.2.1	General	74
7.2.2	Example of a comment on a 3D annotation	75
7.3	The ex_data annotation subelement	76
7.3.1	ex_data	76
7.4	ex_data3d related elements	77

7.4.1	exdata3d	77
7.4.2	anno3dname	77
7.4.3	md5checksum	78
7.4.4	measurename	78
7.5	The view3d related elements	78
7.5.1	General	78
7.5.2	view3d	79
7.5.3	externalname	79
7.6	Camera related elements	79
7.6.1	General	79
7.6.2	cameraxform	80
7.6.3	u3dmatrixsource	80
7.6.4	targetdistance	80
7.7	View projection related elements	80
7.7.1	projection	80
7.7.2	fieldofview	81
7.7.3	viewplanesize	81
7.7.4	scalevalue	81
7.7.5	scaletype	82
7.7.6	clip	82
7.8	View background related elements	83
7.8.1	background	83
7.8.2	color	83
7.9	Model rendering related elements	83
7.9.1	renderinginfo	83
7.9.2	auxcolor	85
7.9.3	facecolor	85
7.9.4	opacity	85
7.9.5	creasevalue	85
7.10	Lighting related elements	86
7.10.1	lighting	86
7.11	Cross section related elements	87
7.11.1	General	87
7.11.2	crosssection	88
7.11.3	centerofrotation	88
7.11.4	planetilt1, planetilt2	88
7.11.5	alignment	89
7.11.6	planevisible	89
7.11.7	planeopacity	89
7.11.8	planeopacity	90
7.11.9	intersectionsvisible	90
7.11.10	intersectioncolor	90
7.12	View specific node control related elements	90
7.12.1	nodeparameter	90
7.12.2	nodeid	91
7.12.3	nodexform	91
7.12.4	opacity	91
7.12.5	noderendermode	92
7.13	Rich Media related elements	92
7.13.1	stateinfo	92
7.13.2	snapshot	92
7.14	Measurement related elements	93
7.14.1	measure	93
7.14.2	measurename	93
7.15	Linear dimension related elements	93
7.15.1	General	93
7.15.2	Linearmarkup	95
7.15.3	annoplane	95

7.15.4	anchor1	95
7.15.5	anchor1partname	96
7.15.6	anchor2	96
7.15.7	anchor2partname	96
7.15.8	textposition	96
7.15.9	textydirection	97
7.15.10	textsize	97
7.15.11	markupcolor	97
7.15.12	value	98
7.15.13	units	98
7.15.14	precision	98
7.15.15	usertext	98
7.16	Perpendicular dimension related elements	99
7.16.1	General	99
7.16.2	perpendicularmarkup	100
7.16.3	annoplane	101
7.16.4	anchor1	101
7.16.5	anchor1partname	101
7.16.6	anchor2	102
7.16.7	anchor2partname	102
7.16.8	leaderdirection	102
7.16.9	textposition	102
7.16.10	textydirection	103
7.16.11	textsize	103
7.16.12	markupcolor	103
7.16.13	value	103
7.16.14	units	104
7.16.15	precision	104
7.16.16	usertext	104
7.17	Angular dimension related elements	105
7.17.1	General	105
7.17.2	angularmarkup	107
7.17.3	annoplane	107
7.17.4	anchor1	107
7.17.5	anchor1partname	108
7.17.6	leaderdirection1	108
7.17.7	anchor2	108
7.17.8	anchor2partname	108
7.17.9	leaderdirection2	109
7.17.10	textposition	109
7.17.11	textdirection	109
7.17.12	textydirection	110
7.17.13	textsize	110
7.17.14	markupcolor	110
7.17.15	value	110
7.17.16	units	111
7.17.17	precision	111
7.17.18	usertext	111
7.18	Radial dimension related elements	111
7.18.1	General	111
7.18.2	radialmarkup	114
7.18.3	annoplane	115
7.18.4	circlecenter	115
7.18.5	pointoncircle	115
7.18.6	arcstart	116
7.18.7	arcend	116
7.18.8	anchorpartname	116
7.18.9	textposition	116

7.18.10	textdirection.....	117
7.18.11	textydirection.....	117
7.18.12	textsize.....	117
7.18.13	markupcolor.....	118
7.18.14	value.....	118
7.18.15	units.....	118
7.18.16	precision.....	118
7.18.17	usertext.....	119
7.18.18	extensionlength.....	119
7.19	3D comment related elements.....	119
7.19.1	General.....	119
7.19.2	comment3dmarkup.....	120
7.19.3	anchor.....	121
7.19.4	anchorpartname.....	121
7.19.5	textposition.....	121
7.19.6	textsize.....	121
7.19.7	markupcolor.....	122
7.19.8	textboxx.....	122
7.19.9	textboxy.....	122
7.19.10	usertext.....	122
	Bibliography.....	124

iTeh Standards
(<https://standards.iteh.ai>)
Document Preview

[ISO 19444-1:2019](https://standards.iteh.ai/catalog/standards/iso/50e30e91-d8ad-4641-ac81-f5962346eaaf/iso-19444-1-2019)

<https://standards.iteh.ai/catalog/standards/iso/50e30e91-d8ad-4641-ac81-f5962346eaaf/iso-19444-1-2019>

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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 ISO documents 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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO 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).

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 the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 171, *Document management applications*, Subcommittee SC 2, *Document file formats, EDMS systems and authenticity of information*.

This second edition cancels and replaces the first edition (ISO 19444-1:2016), which has been technically revised. The main changes compared to the previous edition are as follows:

- Addition of 3D comment related elements and attributes;
- Stream encoding information for XFDF.

A list of all parts in the ISO 19444 series can be found on the ISO website.

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.

Introduction

This document describes the XML Forms Data Format, which is used to represent form data from PDF (ISO 32000-2) in an XML tagset.

This format is derived from the forms data format in PDF and is intended to be a more interchangeable format for forms data.

iTeh Standards
(<https://standards.itih.ai>)
Document Preview

[ISO 19444-1:2019](https://standards.itih.ai/catalog/standards/iso/50e30e91-d8ad-4641-ac81-f5962346eaaf/iso-19444-1-2019)

<https://standards.itih.ai/catalog/standards/iso/50e30e91-d8ad-4641-ac81-f5962346eaaf/iso-19444-1-2019>

Document management — XML Forms Data Format —

Part 1: Use of ISO 32000-2 (XFDF 3.0)

1 Scope

This document specifies an XML format for representing forms data and annotations in the Portable Document Format, ISO 32000-2 (PDF 2.0).

This document does not change or add any definitions for any components of ISO 32000-2.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 32000-2:2017, *Document management — Portable Document Format — Part 2: PDF 2.0*

Extensible Markup Language (XML) 1.0. Fifth Edition. World Wide Web Consortium (W3C), November 2008

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 32000-2 apply.

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

— ISO Online browsing platform: available at <https://www.iso.org/obp>

— IEC Electropedia: available at <http://www.electropedia.org/>

4 Notation

All XFDF element names, XFDF attributes names and examples (XFDF and PDF) are written in fixed width font. All inline PDF and FDF operators, keywords and the names of keys in PDF dictionaries are written in bold font. All inline words that denote operands of PDF and FDF operators or values of PDF dictionary keys are written in italic sans serif font.

Ellipses (...) are used within XFDF examples to indicate omitted detail.

5 Overview of XFDF

5.1 General

XFDF (XML Forms Data Format) is a format for representing forms data and annotations in a PDF document. This specification describes XFDF compatible with ISO 32000-2. XFDF is the XML version of Forms Data Format (FDF), a simplified version of PDF for representing forms data and annotations.

5.2 Forms data and annotations

Form fields in a PDF document may include many interactive elements (see ISO 32000-2:2017, 12.7, Forms). [Figure 1](#) shows a sample PDF which uses edit boxes, buttons and radio buttons.

The image shows a screenshot of a PDF form titled "Review Checklist". At the top right, there is a small window titled "Forms" with various icons. Below the title, there is a text input field labeled "Document:" containing the text "XFDF Spec". Underneath, there is a "Status:" label followed by three radio button options: "First Draft" (which is selected), "Second Draft", and "Final". At the bottom of the form, there are two yellow buttons labeled "Submit" and "Cancel".

Figure 1 — Sample PDF utilising edit boxes, buttons and radio buttons

The XFDF exported from this PDF document might look like the following example:

```
<?xml version="1.0" encoding="UTF-8"?>
<xfdf xmlns="http://ns.adobe.com/xfdf/" xml:space="preserve">
  <f href="Checklist.pdf"/>
  <ids original="7A0631678ED475F0898815F0A818CFA1"
  modified="BEF7724317B311718E8675B677EF9B4E"/>
  <fields>
    ...
  </fields>
</xfdf>
```

XFDF is often used as the format to send and receive PDF form data from a server. Form data is submitted to a server, modifications are made and sent back; the new form data is imported into the interactive PDF form. XFDF is also often used as a format to export form data to stand-alone files that can be stored, transmitted electronically and imported back into the corresponding PDF interactive form.

Annotations (see ISO 32000-2:2017, 12.5, “Annotations”) are attached to a PDF document. [Figure 2](#) shows an example PDF, which includes text notes, highlights, stamps and file attachments.

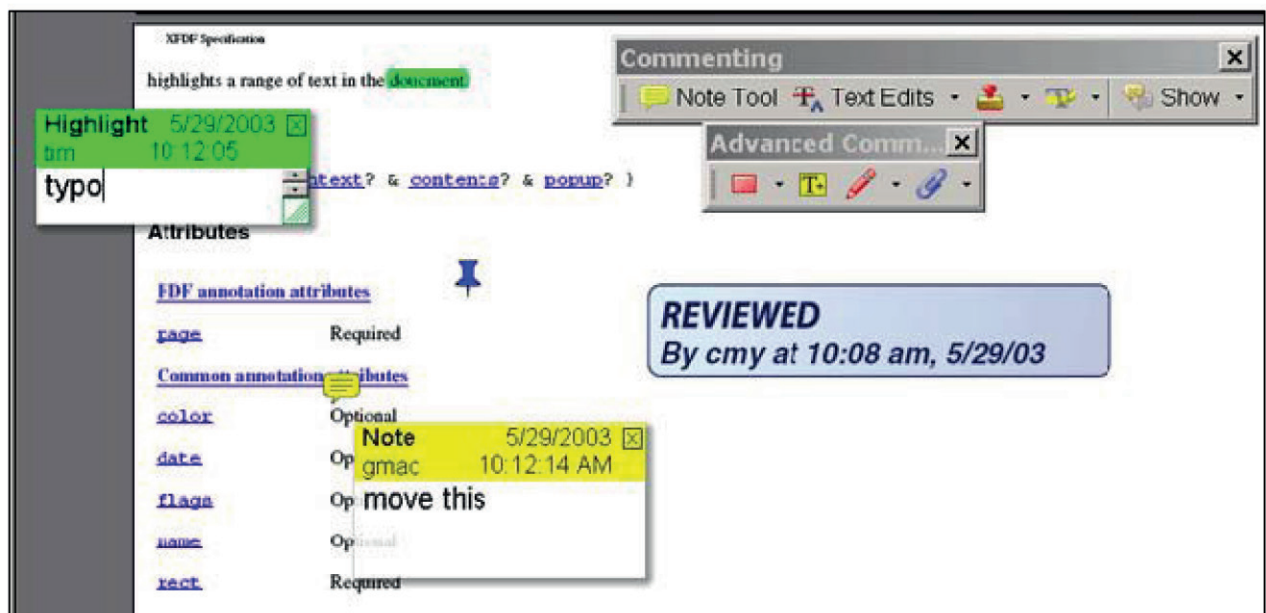


Figure 2 — Example PDF shown with text notes, highlights, stamps and file attachments

5.3 How to use this specification

This specification documents the correspondence between an XFDF element or attribute and its equivalent PDF dictionary and key. A short description is provided for each element and attribute; for complete information, see the description of the corresponding dictionary and key in ISO 32000-2. There are also a few attributes that do not correspond to a specific PDF dictionary and key.

5.4 PDF, FDF and XFDF

ISO 19444-1:2019

<https://standards.iteh.ai/catalog/standards/iso/50e30e91-d8ad-4641-ac81-f5962346eaaf/iso-19444-1-2019>

5.4.1 General

PDF, FDF and XFDF are related specifications with PDF as the parent format for representing documents, including interactive forms and annotations. FDF and XFDF contain the subset of a PDF document that describes interactive forms and annotations. Complete information on PDF and FDF can be found in ISO 32000-2.

FDF is a simplified version of PDF. PDF and FDF represent information with a key/value pair, also referred to as an entry. This example shows the **T** and **V** keys with values enclosed in parentheses:

```
/T (Street) /V (345 Park Ave.)
```

XFDF, on the other hand, represents an entry with an XML element/content or attribute/value pair, as shown in the corresponding XFDF:

```
<field name="Street">
  <value>345 Park Ave.</value>
</field>
```

XFDF implements a subset of FDF containing forms and annotations. There are XFDF equivalents for the **Annots**, **Fields**, **F** and **ID** keys of the FDF dictionary. There are no XFDF equivalents for the other entries in the FDF dictionary such as the **Status**, **Encoding**, **JavaScript**, **EmbeddedFDFs**, **Differences**, **Target** and **Pages** keys.

XFDF conforms to the XML standard.

ISO 19444-1:2019(E)

In the simplest case, an XFDF element or attribute maps directly to a key in a particular dictionary of PDF. For example, the `creationdate` attribute is documented as corresponding to the **CreationDate** key in the markup annotation dictionary. This specification provides a description of the `creationdate` attribute, but more detailed information can be found in ISO 32000-2.

An example `creationdate` attribute in XFDF:

```
creationdate="D:20030425095243-07'00"
```

An equivalent entry in PDF or FDF would look like:

```
/CreationDate (D:20030425095243-07'00)
```

In the above example the underlying data stored within XFDF or PDF is identical. However, in other cases, the name and value differ. For example, the `flags` attribute corresponds to the **F** key in the annotation dictionary. The value of the `flags` attribute is a comma-separated list of the descriptive names of the flags, while the value of the **F** key is an integer with each bit representing a flag.

This is the XFDF `flags` attribute:

```
flags="print,nozoom,norotate"
```

This is the equivalent **F** entry in PDF or FDF:

```
/F 28
```

Finally, an element with multiple attributes can map to a single key with multiple values. The `ids` element in XFDF has attributes `original` and `modified` that map to the **ID** key in the FDF dictionary.

Below is an example `ids` element in XFDF:

```
<ids original="7A0631678ED475F0898815F0A818CFA1"  
modified="BEF7724317B311718E8675B677EF9B4E" />
```

This is the corresponding **ID** entry in FDF:

[ISO 19444-1:2019](https://standards.iteh.ai/standards/iso/50e30e91-d8ad-4641-ac81-f5962346eaaf/iso-19444-1-2019)

<https://standards.iteh.ai/catalog/standards/iso/50e30e91-d8ad-4641-ac81-f5962346eaaf/iso-19444-1-2019>
/ID

```
[<7a0631678ed475f0898815f0a818cfa1><bef7724317b311718e8675b677ef9b4e  
>]
```

5.4.2 Sample form in FDF and XFDF

Both FDF and XFDF for forms contain the same information: field name and value. In this FDF example, with line returns added for readability, the **Fields** key contains two fields named *Street* and *City*:

```
%FDF-1.2  
%ääïÓ  
1 0 obj  
<< /FDF  
  << /F (Document.pdf)  
    /ID [ <7a0631678ed475f0898815f0a818cfa1>  
          <bef7724317b311718e8675b677ef9b4e> ]  
    /Fields [
```