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BSI Standards Publication

Document management — XML Forms Data Format

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

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National foreword

This British Standard is the UK implementation of ISO 19444-1:2019. It supersedes BS ISO 19444-1:2016, which is withdrawn.

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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)

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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).

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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.

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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.

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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.

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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.

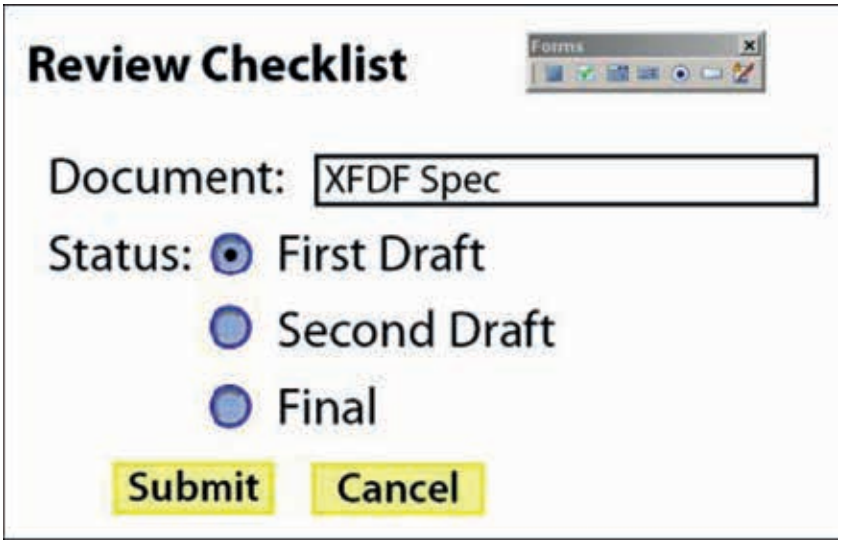

Figure 1 — Sample PDF utilising edit boxes, buttons and radio buttons

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.

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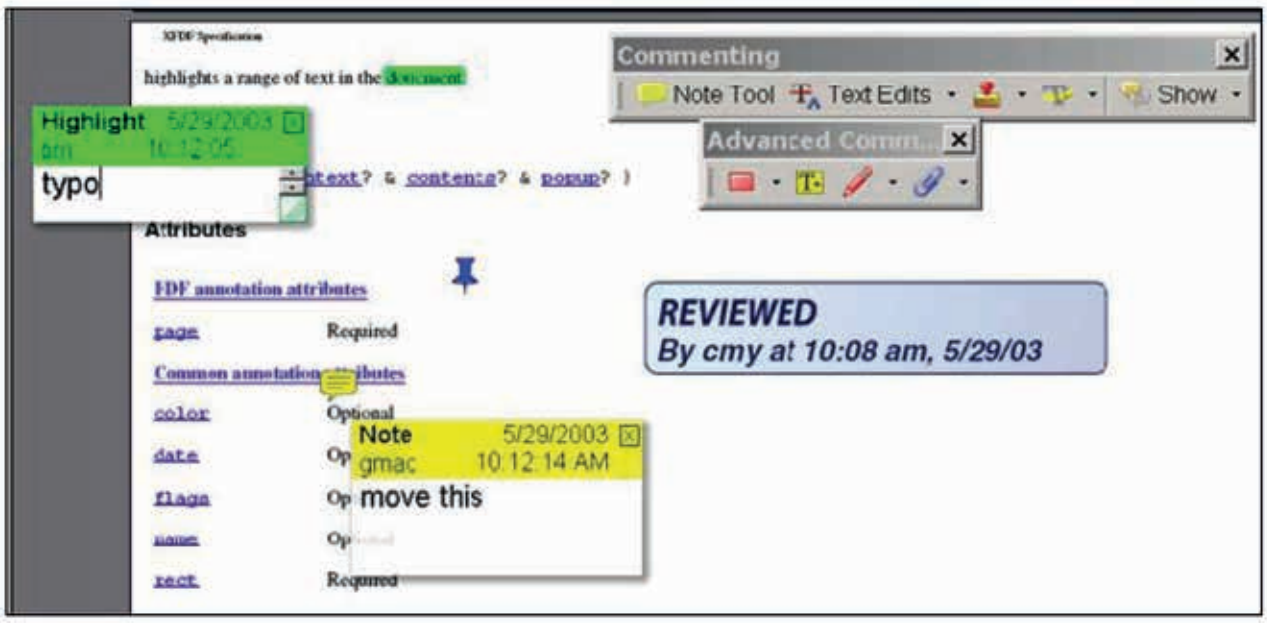

Figure 2 — Example PDF shown with text notes, highlights, stamps and file attachments

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

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.

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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:

```
/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

%âãÏÓ

1 0 obj

<< /FDF

<< /F (Document.pdf)

/ID [ <7a0631678ed475f0898815f0a818cfa1>

<bef7724317b311718e8675b677ef9b4e> ]

/Fields [
```


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```
<< /T (Street)
/V (345 Park Ave.) >>
<< /T (City) /V (San Jose)>>
] >>
>>
endobj
trailer
<< /Root 1 0 R >>
%%EOF
```

This is the XFDF version of the same form fields. The `fields` element contains two field elements with attribute name set to `Street` and `City`:

```
<?xml version="1.0" encoding="UTF-8"?>
<xfdf xmlns="http://ns.adobe.com/xfdf/" xml:space="preserve">
<f href="Document.pdf"/>
<ids original="7A0631678ED475F0898815F0A818CFA1"
modified="BEF7724317B311718E8675B677EF9B4E"/>
<fields>
<field name="Street">
<value>345 Park Ave.</value>
</field>
<field name="City">
<value>San Jose</value>
</field>
</fields>
</xfdf>
```

5.4.3 Sample annotation in FDF and XFDF

XFDF and FDF contain similar information but XFDF is represented in the XML format. This is a snippet of an FDF file containing a note annotation (line breaks added for readability):

```
%FDF-1.2
%âãÏÓ
1 0 obj
<< /FDF
<< /F (/C/Samples/Document.pdf)
/ID [ <7a0631678ed475f0898815f0a818cfa1>
```

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```
<bef7724317b311718e8675b677ef9b4e> ]
/Annots [4 0 R 3 0 R] >>
>>
endobj

3 0 obj
<< ... >>
endobj

4 0 obj
<< /F 28
/Page 0
...
/Type /Annot
/Subj (Note)
/Rect [271.850464 690.255371 291.850464 708.255371]
/CreationDate (D:20030425095243-07'00')
/NM (apYVRecPEj75sYIwSxME7C)
...
/Subtype /Text
... >>
endobj
trailer
<< /Root 1 0 R >>
%%EOF
```

This is the same data in XFDF format:

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


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```
<text flags="print,nozoom,norotate" page="0" subject="Note"
rect="271.850464,690.255371,291.850464,708.255371"
creationdate="D:20030425095243-07'00'"
name="apYVRecPEj75sYIwSxME7C" ...
>
...
<popup .../>
</text>
</annots>
</xfdf>
```

5.5 Writing XFDF

5.5.1 General

This section describes XML implementation details specific to XFDF.

5.5.2 Encoding and namespace

The encoding in the XFDF file shall be UTF-8. Each XFDF file shall begin with the line:

```
<?xml version="1.0" encoding="UTF-8"?>
```

The namespace for XFDF shall be:

```
http://ns.adobe.com/xfdf/
```

The XML shall always specify that space is preserved in the XFDF files as follows:

```
xml:space="preserve"
```

Therefore, an XFDF document shall always begin with the following two lines:

```
<?xml version="1.0" encoding="UTF-8"?>
<xfdf xmlns="http://ns.adobe.com/xfdf/" xml:space="preserve">
```

5.6 Understanding forms

5.6.1 General

An XFDF file with form data contains form field names and values. When importing XFDF into a PDF processor, the target PDF file shall already contain the form fields. Importing XFDF updates the form field values in the PDF file. Exporting to XFDF puts the current value of the field in the `value` element.

Using XFDF, it is not possible to create a new form field in a PDF document or change anything other than the value of an existing form field.

5.6.2 Simple XFDF form

Figure 3 depicts a simple PDF document representing an address label containing text box form fields named *Name*, *Street* and *CityState*.

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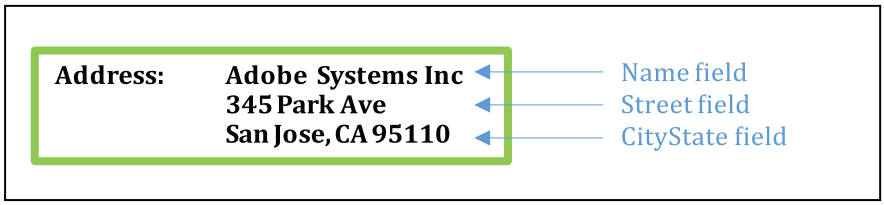

Figure 3 — A PDF representing an address label showing example form field names

In the example below, the `href` attribute on the f element points to the PDF document that contains the form fields. The `ids` element's original attribute contains a permanent identifier for the file, and the modified attribute contains an identifier that changes with each modification to the file. The `fields` element contains the three form fields and their respective values.

```
<?xml version="1.0" encoding="UTF-8"?>

<xfdf xmlns="http://ns.adobe.com/xfdf/" xml:space="preserve">

<f href="samples/AddressLabel.pdf"/>

<ids original="7A0631678ED475F0898815F0A818CFA1"

modified="BEF7724317B311718E8675B677EF9B4E"/>

<fields>

<field name="Name">

<value>Adobe Systems, Inc.</value>

</field>

<field name="Street">

<value>345 Park Ave.</value>

</field>

<field name="CityState">

<value>San Jose, CA 95110</value>

</field>

</fields>

</xfdf>
```

5.6.3 Hierarchical XFDF form

Hierarchical form fields are commonly represented using a dot notation. If *Name*, *Street* and *CityState* are part of an Address, the fields are named:

```
Address.Name Address.Street Address.CityState
```

Figure 4 shows the same PDF rendition as Figure 3, but the field names are changed to hierarchical form fields.

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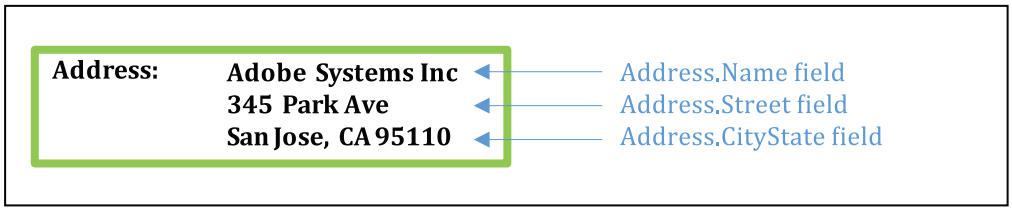

Figure 4 — A PDF representing an address label showing example hierarchical form field names

In XFDF exported from this PDF file, hierarchical form fields are represented using nested field elements. The Address field contains the Name, Street and CityState fields:

```
<?xml version="1.0" encoding="UTF-8"?>
<xfdf xmlns="http://ns.adobe.com/xfdf/" xml:space="preserve">
<fields>
<field name="Address">
<field name="Name">
<value>Adobe Systems, Inc.</value>
</field>
<field name="Street">
<value>345 Park Ave.</value>
</field>
<field name="CityState">
<value>San Jose, CA 95110</value>
</field>
</field>
</fields>
</xfdf>
```

5.7 Understanding annotations

5.7.1 General

XFDF annotations contain full information to recreate the annotation in a PDF document, including size and position on the page, the open or closed state of the annotation, colour and attached comments. Unlike forms, a new annotation can be created when XFDF is imported into a PDF file. However, this means that the XFDF for annotations is more complex than for forms.

Markup and **Popup** annotations are represented in XFDF; there are only eight annotations that are not represented in XFDF. Each annotation is represented by an element: for example, a **Text** annotation is represented by the `text` element, and a **Polygon** annotation is represented by the `polygon` element. Table 1 lists annotations that are supported and unsupported by XFDF.

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Table 1 — List of supported and unsupported annotations

Supported annotation types	Unsupported annotations
`Text`	`Movie`
`FreeText`	`Widget`
`Line`	`Screen`
`Square`	`PrinterMark`
`Circle`	`TrapNet`
`Polygon`	`RichMedia` (PDF 2.0)
`Polyline`	`3D` (PDF 2.0)
`Highlight`	`Watermark` (PDF 2.0)
`Underline`	
`Squiggly`	
`StrikeOut`	
`Stamp`	
`Caret`	
`Ink`	
`Popup`	
`FileAttachment`	
`Sound`	
`Link`	
`Redact`	
`Projection` (PDF 2.0)	

5.7.2 Simple XFDF annotation

Figure 5 shows an example where a stamp annotation has been applied to a page in a PDF file.

Figure 5 — Stamp annotation applied to a PDF file

In the example below, the `href` attribute on the `f` element contains the name of the PDF file that exported the annotations. The `ids` element's original attribute contains a permanent identifier for the file, and the modified attribute contains an identifier that changes with each modification to the file.

Next is the `annots` element, which contains all annotations in the document. In this case, there is only one `stamp` annotation. In contrast to forms, annotations have many attributes, such as `color` or `title`, that can be modified and imported back into the PDF file to change the look of the annotation.

The `stamp` element contains a `popup` element which corresponds to the popup window for adding comments that is attached to the annotation. In this example, the popup window is empty and closed (`open="no"`).

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```
<?xml version="1.0" encoding="UTF-8"?>
<xfdf xmlns="http://ns.adobe.com/xfdf/" xml:space="preserve">
<f href="SimpleAnnot.pdf"/>
<ids original="7A0631678ED475F0898815F0A818CFA1"
modified="BEF7724317B311718E8675B677EF9B4E"/>
<annots>
<stamp flags="print" page="0" subject="Approved"
rect="54.987381,671.039063,216.486893,718.539551"
creationdate="D:20030528192526-07'00'" name="jNrKlQf-J0kz3Y3a0cPjzA"
icon="SBApproved" color="#FF0000" date="D:20030528192529-07'00"
title="cmy">
<popup flags="print,nozoom,norotate" page="0"
rect="612.000000,619.065979,792.000000,739.065979"
open="no"/>
</stamp>
</annots>
</xfdf>
```

5.7.3 Annotation with popup text

Figure 6 shows an example of the rubber stamp annotation with an open popup note with text.

Figure 6 — Example of a rubber stamp annotation with an open popup note

In the exported XFDF for the stamp element, the text of the popup is contained in a `contents-richtext` element which contains elements that conform to a subset of the XFA Text Specification. These are commonly referred to as rich text strings. For more information on rich text strings see 5.8.3, "Rich text strings". Here is the new `stamp` element with some attributes removed for readability:

```
<?xml version="1.0" encoding="UTF-8"?>
<xfdf xmlns="http://ns.adobe.com/xfdf/" xml:space="preserve">
<stamp page="0" subject="Approved" icon="SBApproved" title="cmy">
```

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```
<contents-richtext>
<body xmlns="http://www.w3.org/1999/xhtml"
xmlns:xfa="http://www.xfa.org/schema/xfa-data/1.0/"
xfa:APIVersion="3.1.9078.0" xfa:spec="3.1">
<p>
<span style="font-size:10.0pt">Final and ready for
publishing.</span>
</p>
</body>
</contents-richtext>
<popup page="0"
rect="264.527802,648.970642,369.027802,715.470642"
open="yes"/>
</stamp>
</xfdf>
```

5.7.4 Annotation with comment

Annotations can have comments attached to them. In Figure 7, the rubber stamp annotation has one comment.

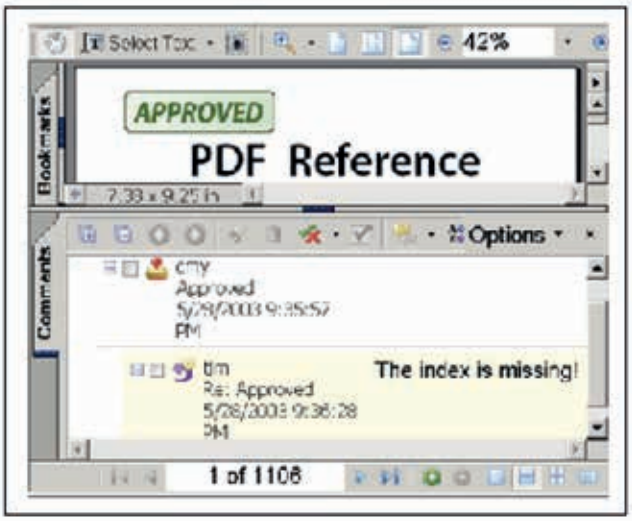

Figure 7 — Example of a rubber stamp annotation with one comment

The example below shows the `annots` element exported from the PDF file (attributes have been removed to improve readability). The comment is contained in the `text` element which is the second child of the `annots` element and follows the `stamp` element. The `text` element represents a comment because the value of the `inreplyto` attribute on `text` is identical to the value of the name attribute on stamp. The text of the annotation is contained in the `contents-richtext` element which is described in 5.8.3, Rich text strings.

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```
<?xml version="1.0" encoding="UTF-8"?>
<xfdf xmlns="http://ns.adobe.com/xfdf/" xml:space="preserve">
<annots>
<stamp subject="Approved" name="HLjJ_qj5BC9dU1yKDfFD6D"
icon="SBApproved"
title="cmy">
<popup open="no"/>
</stamp>
<text subject="Re: Approved" name="miAYuQ7A9JvIb3mFNkLjzC"
inreplyto="HLjJ_qj5BC9dU1yKDfFD6D" icon="Comment" title="tim">
<contents-richtext>
<body xmlns="http://www.w3.org/1999/xhtml"
xmlns:xfa="http://www.xfa.org/schema/xfa-data/1.0/"
xfa:APIVersion="3.1.9078.0" xfa:spec="3.1">
<p>
<span style="font-size:10.0pt">The index is
missing!</span>
</p>
</body>
</contents-richtext>
<popup open="no"/>
</text>
</annots>
</xfdf>
```

5.8 Implementation notes

5.8.1 General

This section contains useful information regarding processing of the XFDF, as well as understanding the notation used in Clause 6.

5.8.2 String encoding conventions

XML requires that all content be in some particular character encoding. Much of PDF also has this requirement, but there are some strings in PDF for which the encoding is not known. In PDF these strings are designated as “string” and are effectively byte strings without any particular character interpretation.

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The following convention is recommended for transforming these strings between PDF and XML:

— use ISO-Latin1 as the assumed encoding of the bytes in the PDF. For example, for the link annotation, this applies to the Named Destination name and the file `OriginalName`;

— escape any characters that are XML reserved or not legal code points in ISO-Latin1. Specifically, the escaping mechanism is:

  — if char is 0x0A, 0x0D or 0x09, emit

 or 	 respectively;

  — else if char < 0x20, emit escaped octal code (just like escaped sequences in PDF literal string). For example, code point 0x07 is emitted as \007;

  — else if char is 0x22, 0x26, 0x3C, 0x3E (XML delimiters), emit " & < or > respectively.

5.8.3 Rich text strings

Beginning with PDF 1.5, the text contents of variable text form fields and markup annotations can include formatting or style information. These rich text strings conform to a subset of the XFA Text Specification, which is itself a subset of the XHTML 1.0 specification, augmented with a restricted set of CSS2 style attributes. Rich text strings are fully described in ISO 32000-2.

Figure 8 shows a text field form that has a value formatted as rich text.

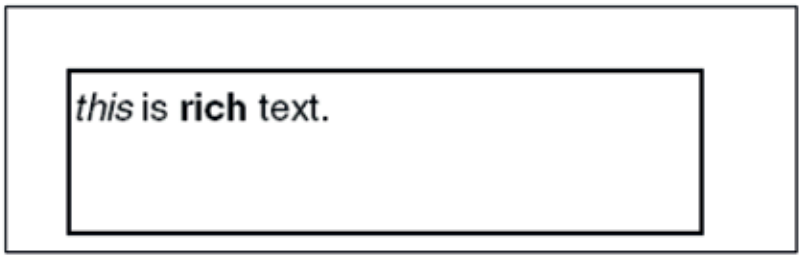

Figure 8 — Example of rich text

For example, the following text field form has a value formatted as rich text:

```
<?xml version="1.0" encoding="UTF-8"?>
<xfdf xmlns="http://ns.adobe.com/xfdf/" xml:space="preserve">
<field name="myfield">
<value-richtext>
<body xmlns="http://www.w3.org/1999/xhtml"
xmlns:xfa="http://www.xfa.org/schema/xfa-data/1.0/"
xfa:APIVersion="3.1.9078.0" xfa:spec="3.1">
<p>
<span style="font-size:10.0pt">
<i>this</i> is <b>rich</b> text.</span>
</p>
</body>
```


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```
</value-richtext>
</field>
</xfdf>
```

5.8.4 Stream encoding

The data of a stream is output to XML with two combinations of the mode and encoding attributes:

```
1. mode="filtered" encoding="ascii"
2. mode="raw" encoding="hex"
```

Method 1 may be used when the stream contains only printable ASCII characters, otherwise method 2 shall be used. Printable ASCII is where each byte of the stream when interpreted as an unsigned integer has a value less than 127 and greater than 32 or is a carriage return or linefeed. The XML control characters listed in Table 2 shall be converted (or filtered) to an entity.

Table 2 — XML control characters

Character	Entity
<	<
>	>
&	&
"	"

In method 2, the data is converted to a hexadecimal encoding where each byte is converted to a two character representation of the unsigned integer value, `[0-9A-F][0-9A-F]`. The high nibble shall always be first. For example, the ASCII space character is decimal 32 or hex 20.

5.8.5 XML content model syntax

5.8.5.1 Syntax overview

In the element reference (see 6.2, "XFDF elements"), a content model section is provided for each element. The content model defines the elements or types of text strings that can be contained by the element. For example, the content model for the `xfdf` element is:

```
( f? & ids? & fields? & annots? )
```

The content model is written using the symbols described in Table 1.

Table 3 — XML content model syntax

Symbol	Description
(	begin group
)	end group
,	followed by
&	and
|	or
?	0 or 1
+	1 or more
*	0 or more

The following are a few examples of content models:

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5.8.5.2 Example 1

If element `lunch` can contain `salad` or `soup`, followed by `sandwich`, followed by an optional `dessert`, the content model is:

```
( salad | soup ), sandwich, dessert?
```

The following are valid `lunch` menus:

```
<lunch><salad/><sandwich/></lunch>
```

```
<lunch><soup/><sandwich/><dessert/></lunch>
```

However, the following is not a valid `lunch` because you cannot have both `salad` and `soup`:

```
<lunch><salad/><soup/><sandwich/></lunch>
```

The following is not valid because you shall have `salad` or `soup` and you cannot have two `dessert` elements:

```
<lunch><sandwich/><dessert/><dessert/></lunch>
```

5.8.5.3 Example 2

If element `sandwich` can contain, in any order, an optional `tomato` and optional `lettuce` element, the content model is:

```
( tomato? & lettuce? )
```

These are valid `sandwich` elements:

```
<sandwich><tomato/><lettuce/></sandwich>
```

```
<sandwich><lettuce/><tomato/></sandwich>
```

```
<sandwich/>
```

```
<sandwich><lettuce/></sandwich>
```

```
<sandwich><tomato/></sandwich>
```

This `sandwich` is not valid because it contains an extra `tomato`:

```
<sandwich><tomato/><lettuce/><tomato/><sandwich/>
```

6 XFDF reference

6.1 General

The following subclauses define a written schema for the elements and attributes that shall be used to represent an XFDF document. A conformant XFDF document shall contain only elements defined within this document. Each element shall contain only those elements defined within its content model and only those attributes specified for that respective element. All attributes specified as required shall be present if that element is used in the document and shall conform to the data types identified for that attribute.

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6.2 XFDF elements

6.2.1 Elements

This subclause describes the top level `xfdf` element (6.2.2) and two of its children: (6.2.3) and ids (6.2.4).

6.2.2 xfdf

6.2.2.1 Overview

The `xfdf` element is the top level element in an XFDF document.

6.2.2.2 Content model

(f? & ids? & fields? & annots?)

6.2.2.3 Attributes

`xml:space` *Required*. Value shall be `preserve`. This attribute in the xml namespace indicates that whitespace is preserved.

6.2.3 f

6.2.3.1 Overview

The f element is a child of the `xfdf` element and corresponds to the **F** key in the FDF dictionary. Specifies the source file or target file: the PDF document that this XFDF file was exported from or is intended to be imported into.

6.2.3.2 Content model

Empty

6.2.3.3 Attributes

`href` *Required*. File specification (see ISO 32000-2:2017, 7.11, "File Specifications") pointing to the source file or target file.

6.2.4 ids

6.2.4.1 Overview

The `ids` element is a child of the `xfdf` element. The `ids` element corresponds to the **ID** Key in the FDF dictionary. The two attributes are file identifiers for the source or target file designated by the `f` element, taken from the **ID** entry in the PDF file's trailer dictionary.

6.2.4.2 Content model

Empty

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6.2.4.3 Attributes

`original` *Required*. This attribute corresponds to the permanent identifier which is based on the contents of the file at the time it was originally created. This value does not change when the file is incrementally updated.

The value shall be a hexadecimal number.

NOTE A common value for this is an MD5 checksum.

`modified` *Required*. The `modified` attribute contains a unique identifier for the modified version of the PDF and corresponding XFDF document. The `modified` attribute corresponds to the changing identifier that is based on the file's contents at the time it was last updated.

The value shall be a hexadecimal number.

NOTE A common value for this is an MD5 checksum.

6.3 Form field elements

6.3.1 Fields

6.3.1.1 Overview

The `fields` element is a child of the `xfdf` element and is the container for form `field` elements. The `fields` element corresponds to the **Fields** key in the FDF dictionary.

6.3.1.2 Content model

```
field*
```

6.3.1.3 Attributes

```
None
```

6.3.2 Field

6.3.2.1 Overview

The `field` element is a child of the `fields` and `field` elements. The `field` element corresponds to a form field.

6.3.2.2 Content model

```
( field* | value* | ( value? & value-richtext? ) )
```

6.3.2.3 Attributes

`name` *Required*. The name attribute corresponds to the **T** key in the FDF field dictionary.

In a hierarchical form field, the name is the partial field name.

6.3.2.4 Details

Hierarchical fields are represented by nesting `field` elements. In PDF, hierarchical fields are named with a dot notation: *phone.work* and *phone.home*. In XFDF, these are represented as:

```
<field name="phone">
```


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```
<field name="work"/>
<field name="home"/>
</field>
```

6.3.3 value

6.3.3.1 Overview

The `value` element is a child of the `field` element and contains the `field`'s value, for which the format may vary depending on the field type. The value corresponds to the **V** key in the FDF field dictionary.

A newline character in a PDF multi-line text field becomes a single line feed character in the contents of the value element.

Signature fields do not export a value.

6.3.3.2 Content model

Text string

6.3.3.3 Attributes

None

6.3.4 value-richtext

6.3.4.1 Overview

The `value-richtext` element is a child of the `field` element and contains the field's value formatted as a rich text string. This value corresponds to the **RV** key in the variable text field dictionary.

6.3.4.2 Content model

Text string or rich text string.

NOTE See 5.8.3, "Rich text strings".

6.3.4.3 Attributes

None

6.4 Annotation elements

6.4.1 annots

6.4.1.1 Overview

The `annots` element is a child of the `xfdf` element and serves as a container for annotation elements. The `annots` element corresponds to the **Annots** key in the FDF dictionary.

6.4.1.2 Content model

*(text | highlight | underline | strikeout | squiggly | line | circle | square | caret | polygon | polyline | stamp | ink | freetext | fileattachment | sound | link | redact | projection)**

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6.4.1.3 Attributes

None

6.4.2 text

6.4.2.1 Overview

The `text` element is a child of the `annots` element and corresponds to a text annotation. A text annotation represents a "sticky note" attached to a page in the PDF document.

6.4.2.2 Content model

(contents-richtext? & contents? & popup?)

6.4.2.3 Attributes

FDF annotation attributes

`page`	*Required*

Common annotation *attributes*

`color`	*Optional*
`date`	*Optional*
`flags`	*Optional*
`name`	*Optional*
`rect`	*Required*
`title`	*Optional*

Markup annotation attributes

`creationdate`	*Optional*
`opacity`	*Optional*
`subject`	*Optional*

Text annotation attributes

`icon`	*Optional*
`state`	*Optional*
`statemodel`	*Optional*
`inreplyto`	*Optional*
`replyType`	*Optional*

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6.4.3 highlight

6.4.3.1 Overview

The `highlight` element is a child of the `annots` element and corresponds to the highlight Text annotation. A highlight annotation highlights a range of text in the document.

6.4.3.2 Content model

(contents-richtext? & contents? & popup?)

6.4.3.3 Attributes

FDF annotation attributes

`page`	*Required*

Common annotation *attributes*

`color`	*Optional*
`date`	*Optional*
`flags`	*Optional*
`name`	*Optional*
`rect`	*Required*
`title`	*Optional*

Markup annotation attributes

`creationdate`	*Optional*
`opacity`	*Optional*
`subject`	*Optional*

Text annotation attributes

`coords`	*Required*

6.4.4 underline

6.4.4.1 Overview

The `underline` element is a child of the `annots` element and corresponds to the Underline Text Markup annotation. An Underline annotation appears as an underline in the text of the document.

6.4.4.2 Content model

(contents-richtext? & contents? & popup?)

6.4.4.3 Attributes

FDF annotation attributes

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`page`	*Required*

Common annotation *attributes*

`color`	*Optional*
`date`	*Optional*
`flags`	*Optional*
`name`	*Optional*
`rect`	*Required*
`title`	*Optional*

Markup annotation attributes

`creationdate`	*Optional*
`opacity`	*Optional*
`subject`	*Optional*

Text annotation attributes

`coords`	*Required*
`intent`	*Optional*

6.4.5 strikeout

6.4.5.1 Overview

The `strikeout` element is a child of the `annots` elements and corresponds to the Strikeout Text Markup annotation. A Strikeout annotation appears as a strikeout in the text of the document.

6.4.5.2 Content model

```
( contents-richtext? & contents? & popup? )
```

6.4.5.3 Attributes

FDF annotation attributes

`page`	*Required*

Common annotation *attributes*

`color`	*Optional*
`date`	*Optional*
`flags`	*Optional*
`name`	*Optional*
`rect`	*Required*
`title`	*Optional*

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Markup annotation attributes

`creationdate`	*Optional*
`opacity`	*Optional*
`subject`	*Optional*

Text annotation attributes

`coords`	*Required*

6.4.6 squiggly

6.4.6.1 Overview

The `squiggly` element is a child of the `annots` element and corresponds to the Squiggly Text Markup annotation. The Squiggly annotation appears as a jagged underline in the text of a document.

6.4.6.2 Content model

```
( contents-richtext? & contents? & popup? )
```

6.4.6.3 Attributes

FDF annotation attributes

`page`	*Required*

Common annotation *attributes*

`color`	*Optional*
`date`	*Optional*
`flags`	*Optional*
`name`	*Optional*
`rect`	*Required*
`title`	*Optional*

Markup annotation attributes

`creationdate`	*Optional*
`opacity`	*Optional*
`subject`	*Optional*

Text annotation attributes

`coords`	*Required*

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6.4.7 line

6.4.7.1 Overview

The `line` element is a child of the `annots` element and corresponds to the Line annotation. A Line annotation displays a single straight line on the page.

6.4.7.2 Content model

```
( contents-richtext? & contents? & popup? )
```

6.4.7.3 Attributes

FDF annotation attributes

`page`	*Required*

Common annotation *attributes*

`color`	*Optional*
`date`	*Optional*
`flags`	*Optional*
`name`	*Optional*
`rect`	*Required*
`title`	*Optional*

Markup annotation attributes

`creationdate`	*Optional*
`opacity`	*Optional*
`subject`	*Optional*

Text annotation attributes

`start`	*Required*
`end`	*Required*
`head`	*Optional*
`tail`	*Optional*
`interior-color`	*Optional*
`leaderLength`	*Optional*
`leaderExtended`	*Optional*
`caption`	*Optional*
`intent`	*Optional*
`leader-offset`	*Optional*

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`caption-style`	*Optional*
`caption-offset-h`	*Optional*
`caption-offset-v`	*Optional*

Border style attributes

`width`	*Optional*
`dashes`	*Optional*
`style`	*Optional*

6.4.8 circle

6.4.8.1 Overview

The `circle` element is a child of the `annots` element and corresponds to the Circle annotation. A Circle annotation displays an ellipse on the page.

6.4.8.2 Content model

```
( contents-richtext? & contents? & popup? )
```

6.4.8.3 Attributes

FDF annotation attributes

`page`	*Required*

Common annotation *attributes*

`color`	*Optional*
`date`	*Optional*
`flags`	*Optional*
`name`	*Optional*
`rect`	*Required*
`title`	*Optional*

Markup annotation attributes

`creationdate`	*Optional*
`opacity`	*Optional*
`subject`	*Optional*

Border style attributes

`width`	*Optional*
`dashes`	*Optional*
`style`	*Optional*

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Border effect attributes

`intensity`	*Optional*
`style`	*Optional*

Circle and Square annotation attributes

`interior-color`	*Optional*
`fringe`	*Optional*

6.4.9 square

6.4.9.1 Overview

The `square` element is a child of the `annots` element and corresponds to the Square annotation. A Square annotation displays a rectangle on the page.

6.4.9.2 Content model

```
( contents-richtext? & contents? & popup? )
```

6.4.9.3 Attributes

FDF annotation attributes

`page`	*Required*

Common annotation *attributes*

`color`	*Optional*
`date`	*Optional*
`flags`	*Optional*
`name`	*Optional*
`rect`	*Required*
`title`	*Optional*

Markup annotation attributes

`creationdate`	*Optional*
`opacity`	*Optional*
`subject`	*Optional*

Border style attributes

`width`	*Optional*
`dashes`	*Optional*
`style`	*Optional*

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Border effect attributes

`intensity`	*Optional*
`style`	*Optional*

Circle and Square annotation attributes

`interior-color`	*Optional*
`fringe`	*Optional*

6.4.10 caret

6.4.10.1 Overview

The `caret` element is a child of the `annots` element and corresponds to the Caret annotation. A Caret annotation is a visual symbol that indicates the presence of text edits.

6.4.10.2 Content model

```
( contents-richtext? & contents? & defaultappearance? & popup? )
```

6.4.10.3 Attributes

FDF annotation attributes

`page`	*Required*

Common annotation *attributes*

`color`	*Optional*
`date`	*Optional*
`flags`	*Optional*
`name`	*Optional*
`rect`	*Required*
`title`	*Optional*

Markup annotation attributes

`creationdate`	*Optional*
`opacity`	*Optional*
`subject`	*Optional*

Caret annotation attributes

`fringe`	*Optional*
`symbol`	*Optional*

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6.4.11 polygon

6.4.11.1 Overview

The `polygon` element is a child of the `annots` element and corresponds to the Polygon annotation. The Polygon annotation displays a closed polygon on the page.

6.4.11.2 Content model

```
( vertices & contents-richtext? & contents? & popup? )
```

6.4.11.3 Attributes

FDF annotation attributes

`page`	*Required*

Common annotation *attributes*

`color`	*Optional*
`date`	*Optional*
`flags`	*Optional*
`name`	*Optional*
`rect`	*Required*
`title`	*Optional*

Markup annotation attributes

`creationdate`	*Optional*
`opacity`	*Optional*
`subject`	*Optional*

Border style attributes

`width`	*Optional*
`dashes`	*Optional*
`style`	*Optional*

Border effect attributes

`intensity`	*Optional*
`style`	*Optional*

Polygon and Polyline annotation attributes

`interior-color`	*Optional*
`intent`	*Optional*

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6.4.12 polyline

6.4.12.1 Overview

The `polyline` element is a child of the `annots` element and corresponds to the Polyline annotation. The Polyline annotation is similar to the Polygon, but the first and last vertices are not connected. The polyline element has the same properties as polygon plus `LE` attributes.

6.4.12.2 Content model

```
( vertices & contents-richtext? & contents? & popup? )
```

6.4.12.3 Attributes

FDF annotation attributes

`page`	*Required*

Common annotation *attributes*

`color`	*Optional*
`date`	*Optional*
`flags`	*Optional*
`name`	*Optional*
`rect`	*Required*
`title`	*Optional*

Markup annotation attributes

`creationdate`	*Optional*
`opacity`	*Optional*
`subject`	*Optional*

Border style attributes

`width`	*Optional*
`dashes`	*Optional*
`style`	*Optional*

Polygon and Polyline annotation attributes

`interior-color`	*Optional*
`head`	*Optional*
`tail`	*Optional*
`intent`	*Optional*

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6.4.13 stamp

6.4.13.1 Overview

The `stamp` element is a child of the `annots` element and corresponds to the Rubber Stamp annotation. A Rubber Stamp annotation displays text or graphics intended to look as if they were stamped on the page with a rubber stamp.

If present, the `appearance` child element (the **AP** key in the annotation dictionary) shall take precedence over the icon attribute (**Name** key in the rubber stamp annotation dictionary).

6.4.13.2 Content model

```
( contents-richtext? & contents? & appearance? & popup? )
```

6.4.13.3 Attributes

FDF annotation attributes

`page`	*Required*

Common annotation *attributes*

`color`	*Optional*
`date`	*Optional*
`flags`	*Optional*
`name`	*Optional*
`rect`	*Required*
`title`	*Optional*

Markup annotation attributes

`creationdate`	*Optional*
`opacity`	*Optional*
`subject`	*Optional*

Stamp annotation attributes

`icon`	*Optional*
`rotation`	*Optional*

6.4.14 ink

6.4.14.1 Overview

The `ink` element is a child of the `annots` element and corresponds to the ink annotation. An ink annotation represents a freehand “scribble” composed of one or more disjoint paths.

6.4.14.2 Content model

```
( inklist & contents-richtext? & contents? & popup? )
```


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