**Document Management — Defining extensions to PDF — Part 1: Overview**

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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

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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.

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](https://www.iso.org/members.html).

Introduction

The PDF specification (ISO 32000) is a very large and complex document, which has many individual features catering for a diverse range of industries and users. As a result, ISO 32000 is a difficult document to prepare, review and ensure that the highest possible technical scrutiny is applied to all aspects prior to publication. Throughout the history of PDF, a number of features have also been proposed which have never been widely adopted for various reasons – some technical, some related to business relevance, and some related to poor specification occurring before implementation. These lesser used features also increase the size and complexity of PDF implementations, and poor specifications lead to lower levels of interoperability.

To address these issues ISO/TC 171/SC 2/WG 8 has decided on a new process for the addition of new PDF features/capabilities. It is based on the collective experience of WG 8 Subject Matter Experts (SMEs) and aims to ensure better technical outcomes in a timely manner by relating specification development to implementation, while providing a pathway for new features to become part of future core PDF specifications (i.e., be included in future parts of ISO 32000).

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# Scope

The Portable Document Format (PDF) enables users to exchange and view electronic documents easily and reliably, independent of the environment in which they were created or the environment in which they are viewed or printed. Reliable interoperability of PDF is achieved through a common technical understanding of ISO 32000 (PDF) as realised as software implementations.

This document describes the process agreed and adopted by ISO/TC 171/SC 2/WG 8 for developing new features or capabilities (extensions) for PDF, as candidates for possible future adoption into future parts of PDF (ISO 32000). It is expected that PDF extension specifications will not be developed solely by ISO/TC 171/SC 2/WG 8, but instead by other groups where the relevant SMEs are present. However, the decision to include any PDF extension specification into a future part of ISO 32000 is based on resolution by ISO/TC 171/SC 2/WG 8.

# 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 *Document Management* *— Portable Document Format — Part 2: PDF 2.0*

*W3C World Wide Web Consortium Process Document -* <https://www.w3.org/2019/Process-20190301>

# Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 32000 and the following 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/>

3.1

PDF extension specification

ISO publication describing a new feature or capability that extends ISO 32000

# Defining extensions to PDF

## Process

This agreed process can be summarised as:

* New features / capabilities for PDF will be published as separate ISO documents using standard ISO processes (TR, TS, or IS, as decided on a case-by-case basis).
  + NOTE: These separate smaller PDF extension specifications allow a more focused technical review and a more streamlined publication process as only the new feature/capability and its impact on core PDF is under review.
* Each independent feature can be championed by a Subject Matter Expert (SME) as Project Leader (PL) and prepared on an independent timeline appropriate for its level of complexity and industry urgency.
* PDF Extensions cannot remove existing functionality from ISO 32000; however, they may suggest that existing features are deprecated. Note that ISO 32000-2 carefully defines deprecation in order to support backwards compatibility and legacy documents.
* PDF Extensions can modify existing functionality to ISO 32000, such as adding new values to an existing key (e.g. a new type of 3D stream or a new transparency blending mode).
* Each PDF extension specification needs to also provide at least two PDF files that include the documented functionality. These example files may be either hand-crafted or automatically generated but must be directly examinable by SMEs but need not be made available to the general public.
* Two (or more) independently developed processor implementations (i.e. Implementation Experience) that show sufficient functionality to demonstrate that a common technical understanding and interoperability is achieved from the PDF extension specification are required (See ‎4.3).

Since PDF extension specifications are ISO documents in their own right, they may also be normatively referenced by other ISO documents (such as PDF subset standards).

Once a business case is presented to ISO/TC 171/SC 2/WG 8 for a new feature/capability described in a published PDF extension specification, whether this be via proof of industry adoption or formal submission from industry bodies, the PDF extension specification may, at the discretion of ISO/TC 171/SC 2/WG 8, then be merged into the next part of ISO 32000 to become a core part of all future PDF specifications. When the future part of ISO 32000 is published, the related PDF extension specification document will then likely be withdrawn.

## Defining the extension

The content of these PDF extension specifications should mimic the style and formatting of ISO 32000, to permit future merging with very minimal changes, and should omit the type of material that is not typically found in ISO 32000 (such as extensive background or explanatory information or precise implementation details).

ISO 32000 defines a mechanism and process for the addition of new keys to PDF [Annex E, Extending PDF] and a way to document their usage in a PDF [7.12.2 & 7.12.3, Extensions dictionary]. As described in Annex E, second class names are used to support private workflows and proprietary data. Since documents developed according to this specification are for use in public workflows and will be developed as part of an international standardization process, first class names shall be used. These first-class names shall be reviewed and approved by ISO/TC 171/SC 2/WG 8. In addition, all extension documents shall include an extensions dictionary with a prefix listed in the specification.

Clause 12.11 of ISO 32000-2 discusses Document Requirements that can be specified in a document to inform a conforming processor whether the document should be processed given the functionality of the processor. It is recommended that all extension documents should include new requirement types (12.11.2, Table 275) for the new functionality they provide.

## Implementation Experience

Implementation experience is required to show that a specification is sufficiently clear and complete, to ensure that independent interoperable implementations of each feature of the specification will be realized. To ensure this, ISO/TC 171/SC 2/WG 8 will consider (though not be limited to) these questions from the W3C Process Document:

* is each feature of the current specification implemented, and how is this demonstrated?
* are there independent interoperable implementations of the current specification?
* are there implementations created by people other than the authors of the specification?
* is there implementation experience at all levels of the specification's ecosystem (authoring, consuming, publishing…)?
* are there reports of difficulties or problems with implementation?

Planning and accomplishing a demonstration of (interoperable) implementations can be very time consuming. It is recommended that a plan for how a specification will demonstrate interoperable implementations is determined early in the development process.

There are no detailed requirements imposed on such implementations – they may be proprietary, open- or closed-source, proof of concept level, plug-in based, etc. – but their output must be available for examination by SMEs to determine that they demonstrate sufficient interoperability.