



At the ISO table

Update from TC 171 SC 2 and TC 130

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Recent changes at the PDF Association

In 2021 the PDF Association replaced the 3D PDF Consortium as the committee manager for ISO TC 171 SC 2, and promptly established new communities; the *3D PDF TWG* and the *3D PDF Users LWG*, to support development of 3D PDF.

Initiated a formal process to manage errata against ISO standards for PDF.

Published new guidance on object metadata streams and updated existing technical resources.

Contracted with the University of Illinois to initiate the EA-PDF (Email archiving in PDF) LWG to study email archiving using PDF.

At the ISO committee's request, initiated the PDF/UA Processor LWG to develop requirements for PDF/UA-consuming software.





Standards update

What's happened, what's coming

PDF/A-4 (published in 2020)

ISO number	ISO 19005-4
Type	Restricted subset of ISO 32000-2
Subject	Archival of documents in a single format with reliable rendering
Purpose	Requirements for self contained, consistent PDFs and their processing (rendering)
Key feature	Fully self-contained in all aspects (metadata, text/fonts, color, ...)
History	<ul style="list-style-type: none">● PDF/A-1 (2005) is still (most) frequently used, based on PDF 1.4● PDF/A-2 (2011) more PDF features, based on ISO 32000-1● PDF/A-3 (2012) arbitrary attachments - as a basis for other standards● PDF/A-4 (2020) more PDF features, based on ISO 32000-2



PDF/A-4 - progress

Major changes

Archival of ISO 32000-2 (PDF 2.0) files

Removed unnecessary requirements (XMP Extension Schemas, font subset glyph lists)

Specifies use of modern signature and encryption technologies for additional requirements (authenticity and integrity)

Eliminates legacy conformance levels; adds PDF/A-4e for engineering

Related sessions

Email Archiving in PDF (Prof. Chris Prom, Monday 13:30 CET)

10 Years of PDF/A-3 Based Electronic Invoicing (Bernd Wild, Monday 13:30 CET)

How to make your PDF/A conversion easier (Akash Choudhary, Monday 14:15 CET)

Getting involved

PDF Association's PDF/A TWG



PDF/X-6 (published in 2020)

ISO number	ISO 15930-9
Type	Restricted subset of ISO 32000-2
Subject	Blind data eXchange in high-end print from creators (customers) to printers (service providers)
Purpose	Reliable print production
Key feature	Complete, device independent files for offset, digital or other printing processes
History	<ul style="list-style-type: none">• The first subset standard PDF/X-1a was published in 1999• PDF/X-1a, PDF/X-3, PDF/X-4, PDF/X-5 are all still in use• PDF/X-6 (2020) is based on ISO 32000-2• Specifications building on PDF/X provide further details for the various printing processes (e.g. Ghent Workgroup)



PDF/X-6 - progress

Major changes Support for PDF 2.0 features such as DPart, Black Point Compensation, Page level Output Intents, ...

Annotations are considered as print content and therefore permitted.

Related sessions The Ghent Workgroup 2022 specifications
(David van Driessche, Tuesday 11:00 CET)

PDF in Variable Data Printing (Dietrich von Seggern, Tuesday 11:45 CET)

Getting involved PDF Association's PDF/VT TWG and
Print Product Metadata LWG



PDF/VT-3 (published in 2020)

ISO number	ISO 16612-3
Type	Restricted subset of PDF/X-6 (ISO 15930-9), itself a subset of ISO 32000-2
Subject	PDF in Variable data and Transactional print
Purpose	High speed print for variable data (direct mail, invoices etc.)
Key feature	Metadata with mail addresses for integrated print and distribution Metadata for identification of static vs. variable objects for high speed print
History	PDF/VT-1 and PDF/VT-2 published in 2010 PDF/VT Application Notes published by PDF Association in 2015 Best practice guides for variable data print published by PDF Association in 2022



PDF/VT - progress

Major changes Support for PDF/X-6

The document is shorter than its predecessor, as its core feature (DPart) is now part of ISO 32000-2

Related sessions PDF in Variable Data Printing (Dietrich von Seggern, Tuesday 11:45 CET)

Getting involved PDF Association's PDF/VT TWG and
Print Product Metadata LWG



Print product metadata (published in 2019)

ISO number	ISO 21812-1
Type	Standardized metadata in PDF
Subject	Print production intents and mail distribution
Purpose	Going beyond the print file itself by using standardized metadata to smooth production data exchange between print buyer and printer (e.g. binding, recipients)
Key feature	Metadata based on XJDF, a job-ticket format
History	Exchange Job Definition Format, XJDF (2018) is a successor of JDF (2000) Both are developed by the CIP4 consortium



Print product metadata - progress

Major changes None (new standard)

Related sessions (PDF in Variable Data Printing (Dietrich von Seggern, Tuesday 11:45 CET))

Getting involved Print Product Metadata LWG



PDF/UA-2 (in development, expected late 2023)

ISO number	ISO 14289-2
Type	Restricted subset of ISO 32000-2
Subject	Accessibility to users with disabilities
Purpose	Requirements for software that creates or edits accessible PDF documents.
Key feature	Tagged PDF (ISO 32000-2, 14.8)
History	PDF/UA-1 was last published in 2014. Work on PDF/UA-2 began in earnest in 2018 following the publication of PDF 2.0.



PDF/UA-2 - progress

- Major changes**
- Based on PDF 2.0
 - Fully re-organized and rewritten
 - Includes detailed provisions and examples for attributes
 - Includes detailed provisions for annotations
 - Does not include processor requirements; these to be developed elsewhere
- Related sessions**
- Aligning PDF 1.7 and 2.0 through ISO 32005 for Reflow, Reuse and Accessibility (Matthew Hardy, Monday 13:30 CET)
 - Tagged and Accessible PDF with LaTeX (Frank Mittelbach, Monday 16:15 CET)
- Getting involved**
- See next slide!



Accessibility is a major focus

PDF/UA TWG

Developing PDF/UA-2 as the editing committee for ISO TC 171 SC 2 WG 9

Reuse TWG

Developing a specification in parallel with PDF/UA-2 for deterministic reuse of content in PDF 2.0 files

PDF/UA Processor LWG

(new) Created in 2022 at the request of TC 171 SC 2 WG 9 to develop processor requirements for PDF/UA-2.

PDF Accessibility LWG

Developing “Techniques” (atomic test files) to eventually replace WCAG’s Techniques for PDF accessibility

LaTeX Project LWG

An interface for PDF and LaTeX developers working on native generation of tagged PDF from LaTeX.

PDF Accessibility Service Bureau WG

(on hiatus) Last activity: a study of AT support for tagged PDF.



PDF/R (published in 2020)

ISO number	ISO 23504-1
Type	Restricted subset of ISO 32000-1 and ISO 32000-2
Subject	Image capture to PDF
Purpose	Requirements for image-capture systems
Key feature	A PDF file simple enough to be created directly on an imaging device (such as a scanner or camera)
History	PDF/raster was published by the PDF Association in collaboration with the TWAIN WG. PDF/R is leveraged by TWAIN's mobile-ready royalty-free open standard protocol, <i>TWAIN Direct</i> .



PDF/R - future development

Proposals

Support for new codecs

Related sessions

How PDF/R helps transforming image capture for mobile and cloud
(Rene Rebe, Tuesday 16:15 CET)

Getting involved

PDF Association's PDF/R TWG



PDF Extensions: Crypto / Signatures

ISO numbers	ISO 32001, ISO 32002, ISO 32003, ISO 32004
Type	Extensions to ISO 32000-2:2020
Subject	Modernize crypto and signature technologies available in PDF
Purpose	Make PDF compatible with state of the art technology
Key feature	Various advanced crypto and signature technologies
History	Features that have in the past and probably always will be adjusted to developments outside of the PDF industry



PDF Extensions: Crypto / Signatures - key features (1)

Extension ISO 32001: Extensions to Hash Algorithm Support - **est. publication: 2022**

Key feature New hash algorithms for generating PDF digests for digital signatures:
Secure Hash Algorithm – 3 (SHA-3) and SHAKE256

Extension ISO 32002: Extensions to Digital Signatures - **est. publication: 2022**

Key feature Extend the use of elliptic curve algorithms for encoding the signature value
NIST P-curve, Brainpool family, ANSSI FRP256, Edwards Curve (EdDSA)
Ed448 and Ed25519



PDF Extensions: Crypto / Signatures - key features (2)

Extension ISO 32003: Adding support of AES-GCM - **draft**

Key feature High speed authenticated encryption and decryption for encrypted PDF - according to Advanced Encryption Standard with Galois Counter Mode

Extension ISO 32004: Integrity protection in encrypted documents - **draft**

Key feature Verify integrity of a received, encrypted PDF using a Message Authentication Code (MAC), i.e. symmetric cryptography
Alternative or complementary to (private - public key) signatures



Technical Specifications: STEP

ISO number	TS 24064
Type	Extension to ISO 32000-2:2020
Subject	AP242 3D (STEP) data in PDF files
Purpose	Broaden access to STEP assets, improved efficiency in engineering workflows
Key feature	Use of STEP data to drive PDF RichMedia annotations
History	This work was initiated by the engineering community of the 3D PDF Consortium and transferred to the PDF Association in 2021. The ISO ballot was approved without comment; publication is anticipated following the fall 2022 ISO meeting pending demonstration of 2 independent implementations.



Technical Specifications: glTF

ISO number	TS 32007
Type	Extension to ISO 32000-2:2020
Subject	3D glTF data in PDF files
Purpose	Broaden access to glTF assets, improved efficiency in engineering workflows
Key feature	Use of glTF data to drive PDF RichMedia annotations
History	The document was developed by the Khronos Group and introduced into the ISO process in 2022.
Getting involved	ISO TC 171 SC 2 WG 7, The PDF Association's 3D PDF TWG and 3D PDF Users LWG



PDF Extensions: Non-rectangular links

ISO number	DTS 24654
Type	Extension to ISO 32000-2:2020
Subject	Link annotations
Purpose	To provide for arbitrary-shaped links.
Key feature	A new “Path” key in a link’s annotation dictionary
History	The 2020 draft failed to cover some use cases. Project was restarted in May 2022 to make necessary changes.
Getting involved	PDF Association’s PDF TWG



ECMAScript in PDF (2020)

ISO number	ISO 21757-1
Type	Standardized API
Subject	ECMAScript (JavaScript) support in the PDF context
Purpose	API documentation
Key feature	JavaScript support in the PDF context
History	Originally published by Adobe, this ISO standard represents a subset of Adobe's API documentation.



ECMAScript in PDF - future development

- Proposals** Re-develop the content to improve quality and tightly integrate it with the PDF specification (ISO 32000-2).
- Related sessions** (none)
- Getting involved** The PDF Association's PDF TWG



Support for new 2D image codecs in PDF

ISO number	Early stages; not yet assigned
Type	Possible extension(s) to ISO 32000-2:2020
Subject	Support for new 2D image codecs
Purpose	Avoiding decoding/encoding for images with advanced features (High Dynamic Range, powerful compression algorithms)
Key feature	Support for “AVIF with AV1 compression” and “JPEG XL”
History	With the exception of JBIG2 (added in 2001) and JPEG 2000 (added in 2003), PDF’s image codec support remains as defined in PDF 1.0 (1993).



XMP serialization in JSON - published

ISO number	16684-3
Type	Metadata Standard
Subject	Serialization of XMP
Purpose	XMP as used in PDF is serialized in RDF/XML Modern interfaces often use JSON (JavaScript Object Notation)
Key feature	Standardized serialization of XMP in JSON-LD (Linked Data)
History	16684-1 (2011) is based on Adobe's XMP specifications that go back to 2001 16684-2 provides machine readable validation based on Relax NG 16684-4 ...



Use of XMP for semantic units - work in progress

ISO number	16684-4
Type	Metadata Standard
Subject	XMP for information that is not in a single document
Purpose	Extending XMP beyond a single document
Key feature	Uses the Web Annotation Data Model to reference and link documents
History	16684-1 (2011) is based on Adobe's XMP specifications that go back to 2001 16684-2 provides machine readable validation based on Relax NG 16684-3 standardizes serialization of XMP in JSON-LD



ISO 32000-2 errata

In 2021 PDF Association CTO Peter Wyatt launched **pdf-issues** on GitHub:

<https://github.com/pdf-association/pdf-issues>

This repo allows the global PDF developer community to communicate their questions, requests for clarification and reports of errors to the specialists who maintain and develop the PDF specification.

Resulting corrections are posted on pdfa.org:

<https://pdf-issues.pdfa.org>

...and subsequently enter the ISO publication process.



PDF Association: specifications & standards development

In 2022 the PDF Association performs *standards development* in its “industry” TWGs and LWGs while also managing the ANSI-accredited *ISO standards program* that operates ISO’s Technical Committee 171 Subcommittee 2.

- Specification development (**pre-ISO**)
 - Matterhorn Protocol
 - PDF/raster
 - Tagged PDF Best Practice Guide
 - Derivation algorithm
 - EA-PDF
 - Techniques for Accessibility
 - **UPCOMING:** PDF 2.x
- ISO standards program
 - Working Groups of TC 171 SC 2
 - ISO 32000
 - Existing & new ISO subsets
 - Errata
 - ISO Extensions & Technical Specifications
 - Review, renewal, maintenance, liaisons



ISO processes

Working Draft (WD) and Committee Draft (CD) are early and mid-cycle stages of ISO document development

Draft International Standard (DIS). A late stage in the standards-development lifecycle. PDF Association members may access ISO DIS documents at no cost.

International Standard (IS). Requires reconfirmation at 5 year intervals

Technical Specification (TS). 3 year lifespan, then dropped or converted to an IS.

“Extensions” New features for eventual inclusion in ISO 32000. Typically published as TS documents.

“ISO FastTrack” A rapid (<1 year) ISO document development track for mature specifications.

New standards-development efforts have a maximum 3 year cycle.

Most documents should only enter the ISO process once matured.



ISO-standardized extension of PDF

ISO TC 171 SC 2 WG 8 developed a white paper articulating the industry's agreement on qualifying new ISO-standardized Extensions to PDF.

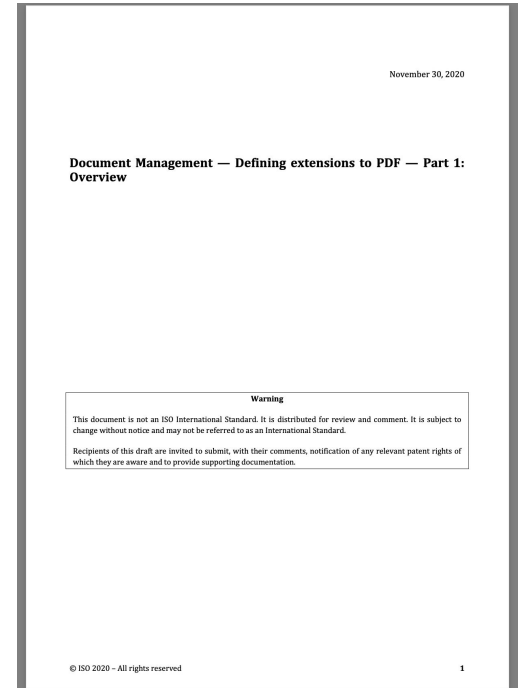
Published as Technical Specifications, such Extension documents can exist for 3 years, and thereafter must become a stand-alone ISO standard or be integrated into an existing ISO standard.

<https://committee.iso.org/home/tc171>

White paper: ISOExtensions.pdf

The fundamental requirement:

- Two independent interoperable implementations



How to get to the ISO table

“National Bodies”

Participating members

Australia	Japan
Belgium	Republic of Korea
Bulgaria	Netherlands
Canada	Russian Federation
China	Slovakia
Denmark	South Africa
France	Switzerland
Germany	Ukraine
Iran	United Kingdom
Italy	United States

“National Bodies”

Observing members

Argentina	Spain
Austria	
Belarus	
Brazil	
Croatia	
Estonia	
Norway	
Poland	
Portugal	
Romania	

OR



A “Category A” ISO
liaison organization
to ISO TC 171 SC 2

Global participation
before, during and after
ISO committee work



Thank you! How to get in touch...

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