Sustainability of Digital Formats: Planning for Library of Congress Collections

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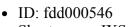Format Description Categories >> Browse Alphabetical List

JPEG XS File Format

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Format Description Properties ⓘ

- ID: fdd000546
- Short name: JXS
- Content categories: still-image
- Format Category: file-format
- Other facets: unitary, binary, sampled
- Last significant FDD update: 2022-07-12
- Draft status: Preliminary

Identification and description ⓘ

Full name	JPEG XS File Format [From ISO/IEC 21122-3 Information technology — JPEG XS low-latency lightweight image coding system — Part 3: Transport and container]
Description	JPEG XS is a file format for storing single images. Per intoPIX, lead developer of the codec, "XS" of the JPEG XS codec stands for "extra small" and "extra speed" to reflect compression efficiency. The JPEG XS file format supports high dynamic range (HDR), high bit depth, and visually lossless quality. See JPEG XS Encoding for more information on the JPEG XS coding system. Comments welcome.
Production phase	Used most often for middle- and final-state archiving or end-user delivery. Comments welcome.
Relationship to other formats	
Subtype of	ISO_BMFF, ISO Base Media File Format
Contains	JPEG_XS, JPEG XS Encoding

Local use ⓘ

LC experience or existing holdings	The Library of Congress does not have any JXS files inventoried in its collections.
LC preference	The Library of Congress has not yet expressed any format preference for JPEG XS encoding or JPEG XS file formats in the Recommended Formats Statement for Still Image in its collections.

Sustainability factors ⓘ

Disclosure	Fully disclosed. This is an ISO published standard, specified in the ISO/IEC 21122-3: Information technology — JPEG XS low-latency lightweight image coding system — Part 3: Transport and container.
Documentation	As of May 2022, this standard is in published status. The ISO/IEC 21122-1 format specification is broken down into four parts. Parts 1 through 3 released updated versions of their specifications in 2022. The 2022 versions of Parts 4 and 5 remain in development, but the 2019 versions remain available.
	Part 1 carries the running title, Part 1: Core coding system, which "Defines the JPEG XL codestream and decoder, which can be used for lossy encoding, lossless encoding, and lossless re-compression of existing JPEG images."
	Part 2 carries the running title, Part 2: Profiles and buffer models. Part 2, "specifies an extensible box-based file format which adds support for metadata (e.g. Exif and JUMBF) and legacy JPEG bitstream reconstruction data."
	Part 3 carries the running title, Part 3: Transport and container. Part 3 defines how to embed the codestream into a more descriptive file format and "contains all definitions are that necessary to transport a codestream."
	Part 4 carries the running title: Part 4, Conformance testing, which defines the conformance testing for JPEG XS. A second edition is under development that permits faster decoder implementations.
	Part 5 carries the running title: Part 5, Reference software. This outlines the JPEG XS reference software.
Adoption	The JPEG XS Use Cases and Requirements details the applications and real-time implementations of JPEG XS.
	• Medical imaging • Mobile device displays
	In a 2018 interview, Antonin Descampe, one of the lead engineers and co-founders of intoPIX, stated that, "the purposes of the JPEG XS standard is not to replace the JPEG. It is rather in specific areas that we want to intervene, such as proposing a standard that compresses very slightly without visual loss for existing infrastructure."
	Comments welcome.
Licensing and patents	See JPEG XS.
Transparency	See JPEG XS.
Self-documentation	ISO/IEC 21122-3 defines metadata information such as: color spaces, mastering display metadata (MDM), as well as EXIF metadata to facilitate transport, editing, and presentation.
External dependencies	None.

Technical protection considerations	None.

Quality and functionality factors ⓘ

Still Image	
Normal rendering	See [JPEG XS](#).
Clarity (high image resolution)	See [JPEG XS](#).
Color maintenance	See [JPEG XS](#).
Support for vector graphics, including graphic effects and typography	See [JPEG XS](#).
Support for multispectral bands	See [JPEG XS](#).
Functionality beyond normal rendering	See [JPEG XS](#).

File type signifiers and format identifiers ⓘ

Tag	Value	Note
Filename extension	jxs	
Internet Media Type	image/jxs	See IANA registration. https://www.iana.org/assignments/media-types/image/jxs.
Magic numbers	0x0000 000C 4A58 5320 0D0A 870A	Via IANA, see https://www.iana.org/assignments/media-types/image/jxs. Specified in ISO/IEC 21122-3. [Comments welcome](#).
Wikidata Title ID	See note.	Wikidata has no corresponding entry for the JPEG XS file format. See https://www.wikidata.org/wiki/Q60776453 for the Wikidata entry for the JPEG XS encoding.
Pronom PUID	See Note.	There is no PRONOM PUID for the JPEG XS codec at this time.

Notes ⓘ

General	
History	See [JPEG XS](#).

Format specifications ⓘ

- [ISO/IEC 21122-3 Information technology — JPEG XS low-latency lightweight image coding system — Part 3: Transport and container formats](#) (https://www.iso.org/standard/81553.html). Status: Published March 2022.

Useful references

URLs

- JPEG Sources

- Overview of JPEG XS. (https://jpeg.org/jpegxs/index.html).
    - JPEG White paper: JPEG XS, a new standard for visually lossless low-latency lightweight image coding system. (https://ds.jpeg.org/whitepapers/jpeg-xs-whitepaper.pdf).
    - Use Cases and Requirements for JPEG XS v3.1. (https://ds.jpeg.org/documents/jpegxs/wg1n100090-094-REQ-Use_Cases_and_Requirements_for_JPEG_XS_v3.1.pdf).
- intoPIX
    - https://www.intopix.com/blogs/post/what-does-JPEGXS-mean JPEG XS…What Does it Mean?
- Wikipedia
    - Wikipedia entry for JPEG XS. (https://en.wikipedia.org/wiki/JPEG_XS#MPEG-TS_for_JPEG_XS).

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