Preservation Action Plan: Digital Still Image
National Archives and Records Administration (NARA)

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Digital Still Image

Digital still images are digitally encoded representations of the tonal and brightness information of a subject into a bitmap. Data from digital cameras and scanning devices record light characteristics as numerical values into a grid or raster of picture elements (pixels). There are two types of raster file digital image categories: Born-digital still photographs of natural, real-world scenes or subjects produced by digital cameras, and scanned images of textual documents, illustrations, posters, graphics, cartographic records, photographic prints, slides, and negatives. Image file formats are standardized means of organizing and storing rasterized data that can be used on a computer display or printer.

The term raster data is often contrasted with vector data, in which geometrical points, lines, curves, and shapes are based upon mathematical equations, thus creating an image without specific mapping of data to pixel. Bit-depth, spatial resolution, and color encoding, for example, are all important properties of still images. This document deals solely with raster data; information about vector data can be found in the Digital Design and Vector Graphics Preservation Action Plan.

Significant Properties of Digital Still Image

To render a digital photograph one must preserve the structural, technical, and descriptive metadata that allow certain appearance properties to persist. Many of the properties native to raster image file formats are the result of industry efforts to develop common standards and interoperability. Many file formats for digital photography and scanning are the same except that most digital cameras create native camera raw proprietary formats, JPEG, and/or DNG.

Appearance is a critical property for this category, given that the common purpose or use of this type of record is to depict scenic information or to render the informational and artifactual aspects of a scanned original. Tone fidelity, resolution, bit depth, color encoding as well as compression algorithms all contribute to the preservation of the file. There is widespread adoption of most formats for rendering on display devices. A unique property for scanned multi-page documents is descriptive and administrative metadata that may be held external to the electronic record and could be a risk for long term identification of the context.

Appearance

Name	Definition	Function Description
Size	Determined by bit-depth, spatial resolution, and compression.	
Color	Color mode, color space, and color encoding.	Mathematical representations of color information needed to encode and decode color information such as Hue, Chroma, lightness, white point.
Bit-depth	The number of bits used to indicate color and tone information of a pixel.	High or low bit depth contributes to the pleasing transformation of color accuracy, gradients, and tonal information. Also greatly affects issues such as signal clipping and transformative image editing.
Orientation	Portrait versus Landscape.	

Structure

Name	Definition	Function Description
Layout Structure	Embedded technical metadata captured at the time of creation describing, among other things: File format/encoding; Compression; Resolution; Bit depth; and EXIF (Exchangeable Image File Format) data.	

Behavior

Name	Definition	Function Description

Display	Image	The only significant behavior for a digital photograph is the ability to visually render it. Other functionality, such as photo enhancement or manipulation, may be available in the user's native software environment but is not inherent to the record.

Context

Name	Definition	Function Description
Metadata	May include administrative, descriptive, and/or technical metadata.	Metadata can be embedded or saved as a sidecar file. Examples of metadata fields include coding history, origination date, title, creator, collection, unique identifier, etc.

Current NARA Transfer Guidance for Digital Still Image

Bulletin 2014-04

NARA's Transfer Guidance separates formats belonging to Digital Still Images into three categories: Born-Digital Photographs, Digitized Paper, and Digitized Photographic Prints.

Born-Digital Photographs

- Preferred:
    - Tagged Image File Format (TIFF)

- Acceptable:
    - JPEG File Interchange Format (JFIF) with Joint Photographic Experts Group (JPEG) compression
    - Digital Negative (DNG)
    - Portable Network Graphics (PNG)
    - JPEG2000 (JP2)
    - National Imagery Transmission Format (NITF) 2.0 and 2.1

Digitized Paper

- Preferred:
    - None specified

- Acceptable:
    - Tagged Image File Format (TIFF)
    - JPEG2000 part 1
    - Portable network graphics (PNG)
    - PDF/A

Digitized Photographic Prints

- Preferred:
    - None specified

- **Acceptable:**
    - Tagged Image File Format (TIFF)
    - JPEG2000 part 1
    - Portable network graphics (PNG)

Current NARA Format(s) for Public Access and Reference for Digital Still Image

Formats for Public Access are those made available online through the National Archives Catalog. Formats for Reference are defined as those made available to researchers upon direct requests for digital copies.

Formats Available for Public Access: BMP, DNG, GIF, JP2, JPEG, PNG, TIFF. Other file formats may be present depending on when they were added to the Catalog.

Format(s) Available for Reference: BMP, DNG, GIF, JP2, JPEG, PNG, TIFF