TECHNICAL REPORT

ISO/TR 19263-1

First edition
2017-03

Photography — Archiving systems —

Part 1: Best practices for digital image capture of cultural heritage material

Photographie — Systèmes d'archivage —

Partie 1: Meilleures pratiques pour la capture d'images numériques du matériel de patrimoine culturel

Reference number
ISO/TR 19263-1:2017(E)

functions (untagged). Colour encoding should be of sufficient gamut to encompass the gamut of the original.

4.3.3 Exposure readouts

The display of scene-referred image values converted to CIE *L*a*b** values in the imaging system histogram is preferred. If an imaging system is not able to display scene referred *L*a*b** values, RGB values are acceptable as long as they are clearly defined i.e. source or output encoding, see ISO/TR 17321-3.

4.3.4 Raw processor readouts and controls

If raw image processing software is part of the imaging workflow, the software should be able to read/display scene referred data and have the ability to disable output rendering and should also honor recorded scene adopted white chromaticity (see 4.3.2), User readouts and representation of exposure should operate as described in 4.3.3, see also ISO/TR 17321-3.

4.3.5 Other user controls

The ability for users to create, modify or disable image enhancement functions is helpful when using ISO 19264-1 for imaging system performance optimization. User access to generate custom flat-field corrections and lens corrections can help improve uniformity and minimize geometric distortion when using DSC systems. For scanners and turnkey systems these corrections may not be necessary. Image sharpening and other enhancements require careful attention and are generally discouraged. If and when modifications are made to user controls, for imaging system performance optimization, adjustments need to be documented.

4.3.6 Unwanted data modification

Imaging systems increasingly rely on proprietary image enhancement technologies. In some cases these enhancements can improve ISO 19264-1 results. For example: a DCS or Scanner may employ preset corrections for uniformity (vignetting correction) or geometric distortion, however other enhancements can cause problems. Variable or local image processing enhancements such as near neutral colour optimization, local or single colour improvements or local contrast optimization functions must be avoided. Ideally imaging systems that employ these enhancements should allow the user to disable the functions.

4.4 Master images and derivatives

4.4.1 General

Once an imaging system has been configured to meet the quality criteria as outlined in ISO 19264-1 the resulting images are typically saved as 8 bit or 16 bit RGB Tiff files. Tiff files should include either an embedded device ICC profile, or should be rendered to a standard RGB encoding space with sufficient colour gamut to contain the colour gamut of the originals being digitized. While not a part of ISO 19262 terminology, it is common to refer to these images as master image files.

Any number of derivatives may be created from the master image. A common derivative would be a rendition that is typically down sampled, converted to an appropriate output referred colour encoding space (sRGB) in a JPEG compressed file format. Another derivative may be a set of thumbnail or preview images for a DAM, CMS or other information system. It is important to note that in order to display correctly, careful attention should be given to the proper use of embedded ICC colour profiles and colour management configuration through the entire workflow including web browsers and mobile devices.

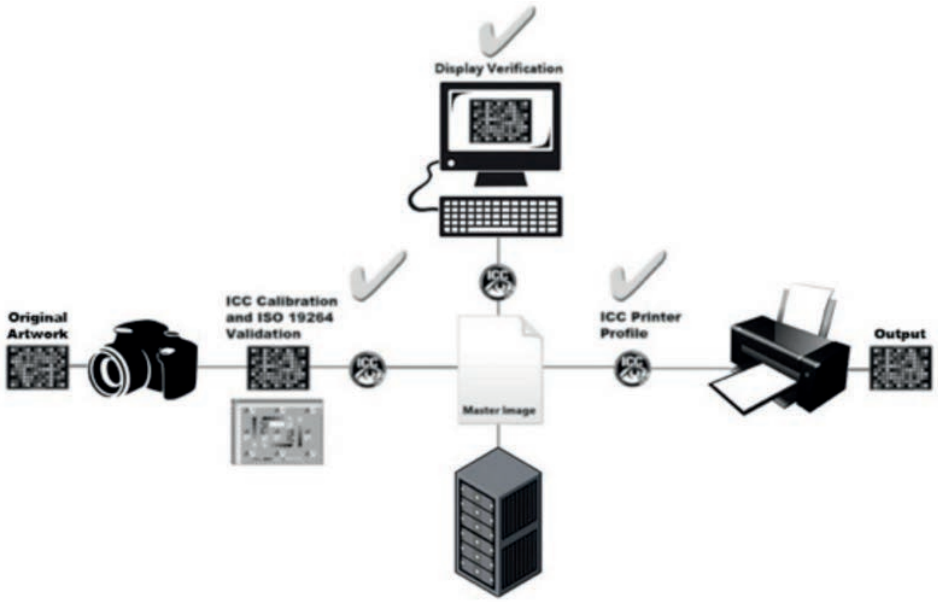
4.4.2 Raw image files

A raw image file is often the starting point in the imaging process, and is typically the source for rendition to an image master Tiff image that can be analysed using ISO 19264-1. Raw image data and raw

processing software tools are not standardized; therefore results can be highly variable. For example: the same raw image data and accompanying adjustments processed through one raw processor will not necessarily match when processed through another raw processor. Due to the variability of raw data formats and processing software raw images are outside the scope of this document and ISO 19264-1.

4.4.3 Artwork reproduction cycle

Creating a scene referred digital master image file is the first step in the larger reproduction cycle. Best practice in artwork reproduction relies on a fully colour managed workflow where each device is characterized via an ICC colour profile. While the scope of this document is limited to the creation of well-formed scene referred digital master images, it is useful to visualize where these images fit into the larger context. The diagram in Figure 9 illustrates a typical colour managed reproduction workflow. ISO 19264-1 applies only to the highlighted area.



NOTE An excellent reference is the benchmarking art interchange cycles final report

Figure 9 — Typical colour managed reproduction workflow

Creating and archiving scene-referred masters does not guarantee that the data will automatically translate to a faithful visual match upon display or hardcopy output. A number of factors including limitations of current technology, accuracy of charts, reliability of reference data and differences in observers and light sources (Metameric) factor into the reproduction workflow. The phenomenon whereby originals with different spectral reflection features provide different colour accuracy is called Metamerism. An imaging system configured using an ICC colour correction profile based upon a specific colour target such as the Digital ColourChecker SG can result in very low delta E values however, this does not necessarily communicate the specific colour accuracy of the originals with spectral reflection qualities other than the Digital ColourChecker SG. See also ISO 19262:2015, 3.160.

It is important to note that a scene-referred image is not expected to result in an exact facsimile of an original, but rather a digital master that can serve as a consistent, predictable source for future conversion/optimization. From this source image asset any number of optimized derivatives can be generated (manually or automatically) to satisfy reproduction via current and future output technologies. Understanding the variables in play, from the auditing of material to be digitized to the selection and configuration of appropriate equipment, is critical to success. The use of ICC colour management across the entire workflow is essential for successful image reproduction.