

Digital Object Authenticity Working Group **White Paper**

Results of the 2025 Imaging Process Survey

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Introduction

The Digital Object Authenticity Working Group (DOAWG) asked members of the cultural heritage community to share the current state of still image workflows, including software and hardware used, metadata capture, measurement and evaluation, and image quality communication. The [Google survey](#) was live from June - October 2025 and gathered sixty-two responses from practitioners around the world representing cultural heritage institutions, such as university libraries, museums, and government agencies. Here are the key takeaways.

Key Findings

Software and Hardware

The majority of respondents report outsourcing digitization projects to vendors, although all respondents indicated that digitization projects are also handled internally. The respondents who said “no” come from museums, national libraries, and independent businesses.

Does your imaging program ever outsource digitization projects to vendors?

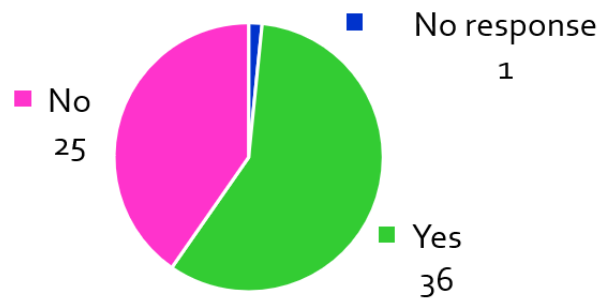


Figure Caption: Pie chart describing the responses to the question, “Does your imaging program ever outsource digitization projects to vendors?” 36 respondents said yes, 25 said no, and 1 did not respond.

The most frequently reported image processing software were Capture One products (e.g., Capture One CH, Capture One Pro), Adobe products (e.g., Adobe Photoshop, Adobe Bridge, Adobe Lightroom), equipment-specific software (e.g., EpsonScan, Canon Digital Photo Professional), or process-specific software (e.g., Metashape).

The most frequently used hardware were heritage-specific cameras, followed by general cameras, then scanners. Most respondents that reported using a heritage-specific camera also reported using it very frequently, whereas the usage of general cameras and flatbed scanners was more varied. Most respondents reported never using overhead scanners, 3D scanners, or photogrammetry. Those who did use 3D methods mostly reported using them with low frequency. The most commonly reported hardware brands, in order of decreasing frequency, are PhaseOne, Epson, Canon, Nikon, FujiFilm, Sony, and Hasselblad.

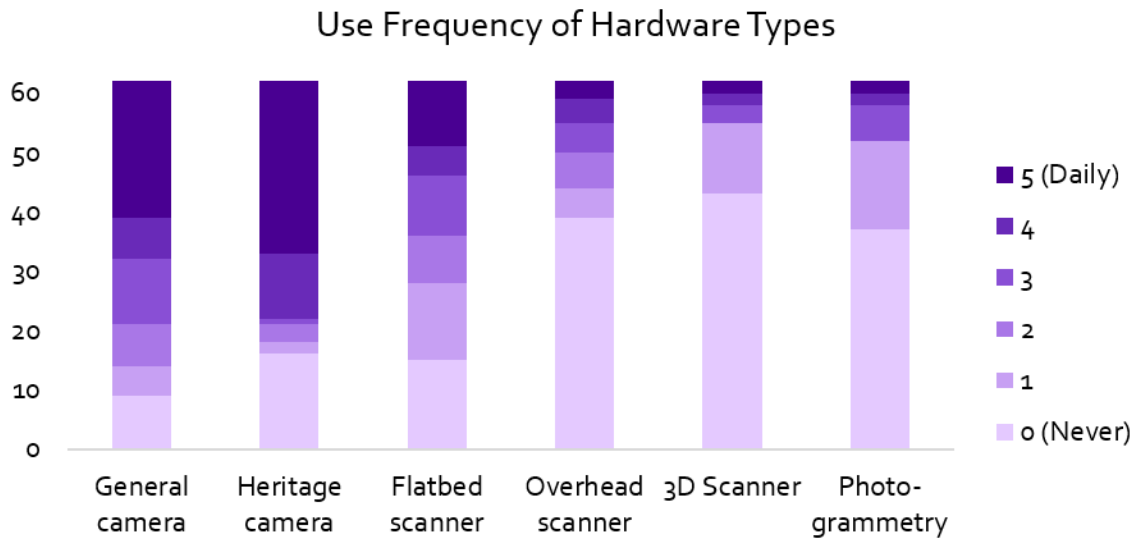


Figure Caption: Stacked bar chart showing the reported frequency of usage for different types of capture hardware, including general cameras, heritage-specific cameras, flatbed scanners, overhead scanners, 3D scanners, and photogrammetry.

Metadata

The six most cited embedded fields were rights, creator, title, source, caption, and keywords. Some of the other common fields included a reference to the institution's record number, credit line, date created, geographic information, or photographer. "Rights" fields were sometimes broken out into additional fields like "Copyright Notice," "Rights Usage Terms," "Copyright Status," or "Credit line."



Figure Caption: Cirrus cloud visual showing the top six most answered embedded image metadata fields by size. Created with [Voyant](#). Alt text: Six words arranged vertically and

horizontally in various extreme sizes that spell out (in order of size): rights, creator, title, source, caption, keywords.

In terms of documenting standards, few individuals reported that they embedded paradata (e.g. camera capture data) and only five individuals answered they use the IPTC Photo Metadata Standard for embedding metadata in the image file. Interestingly, one person said they use IPTC-PLUS fields (e.g. Image Supplier, Image Supplier Image ID). The inconsistent categorization of what counts as “descriptive” metadata versus administrative or technical is also reflected in their answers.

For those that did not respond or explicitly said they do not embed metadata, their reasons varied:

“Our files are linked to metadata through our custom built tracking system and catalogue. If we do not have metadata in the system, we create an xml file within the system. How all this works comes to us by our IT person.”

“All metadata is in the dams or cms, not embedded in the file.”

“No, aside from answering direct queries and making archival images (which include a GoldenThread target) available.”

Standards and Guidelines

Most respondents reported using a field-wide set of standards or guidelines to measure and evaluate their imaging systems and workflows. The vast majority use the Federal Agency Digitization Guidelines Initiative (FADGI guidelines), though other commonly listed evaluation tools were ISO 19264 and Metamorphoze. A few respondents specifically mentioned also using institution-specific or more purpose-driven standards such as the American Institute of Conservation’s (AIC) Guide to Conservation Documentation, though these usually appeared in conjunction with the FADGI Guidelines or ISO standard. However, around 18% of respondents reported that they do not use field-wide standards or guidelines to measure their imaging systems and workflows.

Many programs who implement measurement and evaluation standards also use an evaluation software to computationally measure elements such as

color accuracy, resolution and sharpness, tonal response, and illumination uniformity among other metrics. Though over 82% of respondents reported following field standards or guidelines, just under 37% do not use any kind of software to measure these metrics, instead relying on human review alone. Of respondents that do use evaluation software, Golden Thread was listed as the most common, though several also used NimbusQA and OpenDICE. Smaller numbers of respondents mentioned ImageZebra or hardware-specific evaluation tools.

Communicating Image Quality

Respondents were asked if and how they communicate image quality to users. Only about one third of respondents said that they had some way of doing so, while half indicated that this is not a current practice. However, several respondents indicated that their institutions are currently in the process of developing protocols that would allow them to do so. Of the institutions that are already communicating image quality, several indicated that this information is only available internally.

Do you currently have a way of communicating image quality to users?

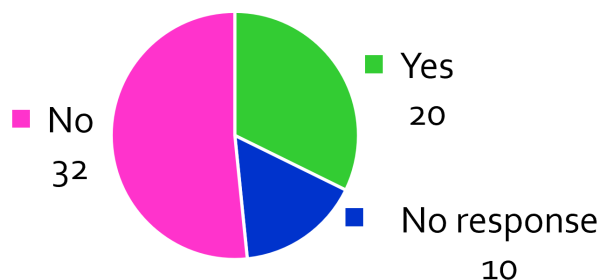


Figure Caption: Pie chart describing the responses to the question, "Do you currently have a way of communicating image quality to users?" 20 respondents said yes, 32 said no, and 10 did not respond.

The respondents who said yes provided further information on their protocols. The most commonly reported methods for communicating image quality include archiving an image of a target or using a rating, which is commonly included in the image metadata and/or stored in the DAMs.

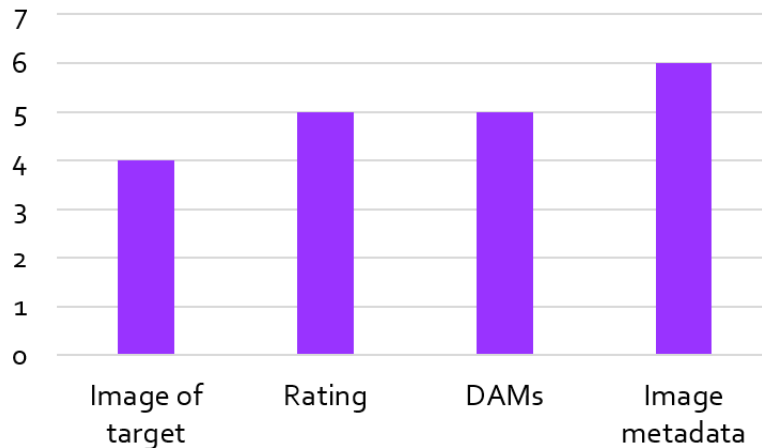


Figure Caption: Bar chart summarizing how image quality is communicated. 4 respondents indicated that image quality can be determined from an archived target image, 5 use ratings, 5 indicated that the image quality information can be found in the DAMs, and 6 store the information in the image metadata.

Opinions about what image quality information should be made available varied widely. Most commonly, respondents referred to rating systems (e.g., the FADGI star system). Many respondents were concerned about providing technical metadata that would inform the user about the processes and standards that were used. There was also a general concern about providing information that the user can understand. Some respondents indicated that communicating image quality is not a current priority, or falls outside the scope of their position. Below are some example responses.

"We need detailed metadata that persists through upload to public-facing and download."

"Post-processing would be most important to me: stitching, flipping of negatives, enhancement using AI software like On1."

"It is crucial for users to understand whether or not the digital representation is good enough for their use case, which may require providing basic information about the quality level at least in metadata."

"I am not sure how interested our general audience would be in knowing the image quality or other technical metadata."

“Honestly, I have never really thought about informing users about image quality. It isn't something that has ever been requested by our users. Our descriptive metadata is more important to us right now.”

“Communicating image quality should be at least a national-level solution.”

Conclusion

The main goal of this survey was to gain a broad understanding of the way cultural heritage imaging programs are currently capturing physical materials in still image workflows, and to what degree those workflows are similar or different. We wanted to know how ubiquitous particular capture technologies were, if similar kinds of metadata were being embedded across programs and disciplines, how quality assurance is being managed, and if any of this information is being relayed to end users of these image files. By understanding more about these areas of imaging program workflows, we hope to better focus on the main needs and desires imaging programs have to track and communicate about the ways their work contributes to the practice of verifying authenticity.

We discovered that the individuals who responded to this survey mostly work in programs embedded in museums, universities, and government agencies, though we had a fair number of service providers respond as well. Many programs use a range of equipment for image capture, from specialized heritage-focused camera systems to flatbed scanners. Most incorporate some form of measurement and evaluation, usually utilizing software but sometimes solely relying on human judgment and expertise. Many are tasked with embedding metadata into image files, though the amount of fields and their use varies quite broadly. Of respondents that do not embed metadata, many would prefer to incorporate this practice into their workflows but have not yet done so.

Respondents were divided on how best to communicate image quality information. While there is disagreement about what kind of information is most relevant to users and how best to communicate it, the respondents agreed it should be simple and provide just enough information to interpret the image and help users determine appropriate uses.

Potential areas for follow-up:

- We did not ask how frequently respondents did measurement and evaluation (e.g., Daily per system? Is every image measured? A subset of images?), or to what level in the respective guidelines they typically aim for in imaging workflows. It may be worth asking about this in follow-up interviews.
- While a few metadata fields were fairly common (e.g., rights, creator, and source), there seems to be no standardized practice followed by a majority of respondents. We did not explicitly ask about paradata, though it did come up in some responses, indicating that this is a productive area to explore further.
- Explore how institutions might be deploying generative Artificial Intelligence (AI) or other types of AI for image workflows.
- Many respondents said they do not currently have a way of communicating image quality to users. We could explore the institutional context of why that is (e.g., legacy metadata practices? Departmental silos?) and if certain cultural heritage institutions tend to communicate image quality over others. Also, who is considered a “user” in these conversations? Do staff count? Does it matter if it’s staff in-house or at peer institutions, especially for institutions that share metadata through APIs or other open access initiatives?

For more analysis, view the [full anonymized survey results](#).