

Projektvorstellung aus:

Zeitschrift für digitale Geisteswissenschaften, Heft 11 (2026)

Titel:

The Photographic Collection of the Bibliotheca Hertziana – from Mass Digitization to Online Navigator

Autor*in:

Pietro Maria Liuzzo

Kontakt: pietro.liuzzo@biblhertz.it

Institution: Bibliotheca Hertziana – Max Planck Institute for Art History Rome

GND: 1058838180 ORCID: 0000-0001-5714-4011

Contribution (CRediT): [Conceptualization](#) | [Data curation](#) | [Methodology](#) | [Software](#) | [Validation](#) | [Visualization](#) | [Writing – original draft](#) | [Writing – review & editing](#)

DOI des Beitrags:

[10.17175/2026_013](https://doi.org/10.17175/2026_013)

Nachweis im OPAC der Herzog August Bibliothek:

[1974140571](#)

Erstveröffentlichung:

21.09.2026

Lizenz:

Sofern nicht anders angegeben 

Letzte Überprüfung aller Verweise:

30.06.2026

Format:

PDF ohne Paginierung, Lesefassung

GND-Verschlagwortung:

[Fotoarchiv](#) | [Bibliotheca Hertziana](#) | [Digitalisierung](#) | [Kunstgeschichte](#) | [Italien](#)

Empfohlene Zitierweise:

Pietro Maria Liuzzo: The Photographic Collection of the Bibliotheca Hertziana – from Mass Digitization to Online Navigator. In: Zeitschrift für digitale Geisteswissenschaften 11 (2026). 21.09.2026. HTML / XML / PDF. DOI: [10.17175/2026_013](https://doi.org/10.17175/2026_013)

Pietro Maria Liuzzo

The Photographic Collection of the Bibliotheca Hertziana – from Mass Digitization to Online Navigator

Abstract

This paper summarizes for Digital Humanities specialists and Data Humanists alike, how the Photographic Collection of the Bibliotheca Hertziana was digitized and made available to the public in a web application (<https://nav.biblhertz.it/>). In this creative process, things were kept simple and accessible while publishing in bulk as much data as possible and in the best quality possible. The paper addresses systematically why specific choices were made at each step with regard to organization of information, quality of available data and presentation. In doing so it compares the internal version with a larger scope and the version facing the public which limits the contents presented and gives priority to accessibility and usability.

Dieser Beitrag fasst für Digital-Humanities-Spezialist*innen und Data Humanists gleichermaßen zusammen, wie die Fotografische Sammlung der Bibliotheca Hertziana digitalisiert und der Öffentlichkeit in einer Webanwendung (<https://nav.biblhertz.it/>) zugänglich gemacht wurde. Dabei wurde ein kreativer Prozess verfolgt, der Einfachheit und Zugänglichkeit in den Vordergrund stellt und gleichzeitig so viele Daten wie möglich in bestmöglicher Qualität veröffentlicht. Der Beitrag behandelt systematisch, warum bei jedem Schritt spezifische Entscheidungen in Bezug auf die Informationsorganisation, die Qualität der verfügbaren Daten und die Präsentation getroffen wurden. Dabei wird die interne Version mit einem größeren Umfang mit der öffentlich zugänglichen Version verglichen, die die präsentierten Inhalte einschränkt und Zugänglichkeit und Benutzungsfreundlichkeit Vorrang einräumt.

1. Introduction

Anyone facing a mass digitization with partial or no metadata availability will have to make compromises and find solutions to provide access to assets, scale performance and keep users as happy as possible. In this paper I try to provide an experience-based account of how this process was carried out at the **Photographic Collection of the Bibliotheca Hertziana**¹ in the last years, moving from the stages of careful planning of the digitization to the realization of an application to navigate a large part of the produced assets. The application makes the photographs findable using the same structure of the collection instead of attempting a mass metadata generation. This is the most critical driving point of innovation the team had in mind, compared to the more usual process of publication of images in a scientific catalogue of the materials made available to the public, with a prevailing focus on the metadata, the classification and the structure of the data.² The paper presents step by step the entire process and its impact on the newly available resource nav.biblhertz.it comparing also the version available only internally with the newly published one, which is open to the world with an effort to remove as many barriers as possible. We tried to make the best use of existing and stable technologies to provide a reliable and long-lasting tool, instead of attempting technological innovations where these were not needed, thus trying to keep the focus of our effort on the documents and the ease of access to them by their potential users.³

[1]

¹ Cf. Schallert 2013; Schallert / Röhl 2014.

² The Catalogue of the Photographic Collection is foto.biblhertz.it. Scientifically catalogued images are visible also in the [Bildindex der Kunst & Architektur](#) and many other aggregators. In November the data was also published in the artresearch.net platform. The latter, and the Navigator are linked to the Catalogue in relevant places to allow further searches and expand results.

³ The project is the result of years of careful collaboration and work by the entire team of the Photographic Collection, which kept changing over many years and was led by Johannes Röhl and Tatjana Bartsch. The project was possible thanks to the financial and administrative support of the Bibliotheca Hertziana and the Max Planck Society.

2. The Photographic Collection

2.1 Contents

The Photographic Collection of the Bibliotheca Hertziana has grown over more than 120 years and includes negatives, positives, slides and digital photographs of various formats and makes, pertaining mainly to the art and architecture of Italy, but not limited to it. It is by no means limited to this area and is a growing collection where acquisitions of new photographs and campaigns are continuously carried out to expand the collection.⁴ This is a major distinction from static or closed collections which are unlikely to undergo changes over time. The Photographic Collection changes by the day both in the scope of its holdings and in amount of metadata provided for each photograph.

Cataloguing began long after the creation of the collection itself. While almost all the digitally acquired photographs have now been catalogued, most of the printed material freely available on the shelves of the collections is only partially catalogued and until 2023 there were no digital copies. Digitization campaigns were carried out early on for the negatives and parts of the collection but only a large dedicated project funded by the Max Planck Society allowed the preparation of the printed materials for mass quality digitization.

None of the different types of photographic material is completely catalogued and entirely digitized (cf. Fig. 1). Negatives are almost entirely digitized, with parts of the collection undergoing a process of re-digitization, and are partly catalogued. Analogue photographs are almost entirely digitally available and partially catalogued after the digitization project (see Section 3 below). Digitally produced photographs are almost entirely catalogued, but they were also printed out only until 2005. This means that both the physical collection and the catalogue had to be consulted at any time because digital images were not in the physical collection and, vice versa, the catalogued photographs were by far not all in the catalogue. While this is basically still true, a very large part of the non-catalogued analogue photographs is now also available online in the Navigator.

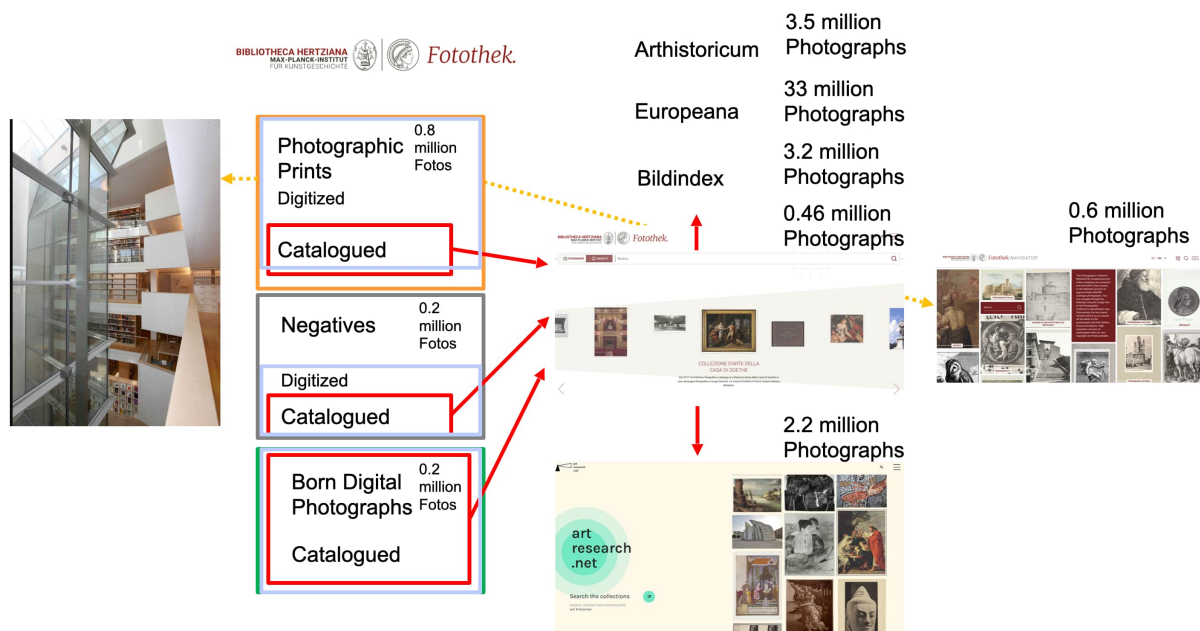


Figure 1: A roughly scaled Venn diagram representation of the holdings of the Photographic Collection and their availability. [Diagram: Pietro Maria Liuzzo 2026]

⁴ An idea of the constant growth can be obtained from the summary at https://www.rr25.biblhertz.it/59779/Statistics_-_Infographics and related data visualizations.

2.2 Structure

Limiting the description to the standard format printed material, the collection has several main parts which allow alternative archiving sequences and contexts. The »Artisti« section, for example, is ordered alphabetically by artist name, and contains for each artist, where available, photographs which are classified as documentation, photographs of paintings, sculpture, drawings by that author but also copies made by other artists of that artist's work. On the other hand, the »Topografia Italia« section of the collection, for example, starts from placenames in alphabetical order and shows for each location within a larger geographical unit its monuments and their parts and features. Within that system, a particularly large section is of course Rome, which becomes a section on its own, with parts grouping different types of architectural features (»Palazzi«, »Ville«, »Chiese«, etc.). Also within the topographic organization a special and separate section is reserved for the non-Italian locations, »Topografia Estera«. The main »Topografia Italia« section is organized in sub-sections for each of the regions in Italy. There are several other sections for drawings (»Disegni«, »Corpus Gernsheim«) and prints (»Incisioni«, »Bartsch«, »Le Blanc«) which follow their own system by author or by repository.⁵ This means that a simple search to find all material available about e.g. Caravaggio, will find photographs filed under »Artisti«, but also in »Roma«, and its part »Chiese« for the paintings in churches in Rome, but there may be relevant materials as well under »Topografia Estera« for the paintings in Malta, and in »Topografia Italia« for photos of artworks outside Rome, not to mention postcards (»Cartoline«) and other »Special Collections«.

[5]

The formats of the containers and printed material also vary although they are consistent within each part of the collection, including so-called standard cardboard supports and smaller »Bildkarten« as well as postcards. Most parts of the collection are mounted on paper support, but some parts are not. The collection also owns large and extra large formats of prints which were not addressed by the digitization project.

[6]

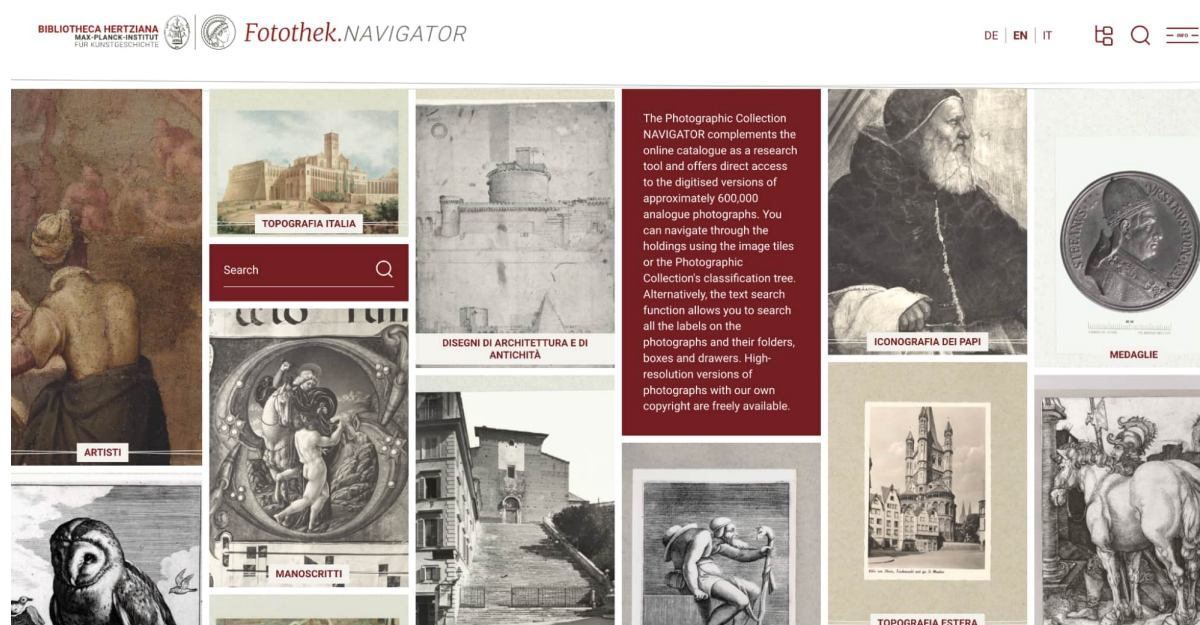


Figure 2: The homepage of the Navigator. [Screenshot: Pietro Maria Liuzzo 2026]

⁵ Only some of these are currently in the Navigator, »Incisioni« and »Corpus Gernsheim« are not yet included; neither is »Rara«. See the section of the help page [What is Included and What is Not](#).

This short introduction should serve as a rough overview of the composition and extent of the collection and the evident challenge in presenting the materials online. The homepage of the Navigator gives direct access to these main structures via the tiles corresponding to each available group (cf. Fig. 2). It is an open-ended homepage, and the application is built to be able to grow and expand with the collection and the availability of more sub-collections and their parts in the way required for presentation in the Navigator.⁶

[7]

2.3 Features and Issues

In an ideal world in which all photographs were catalogued, we would find all photos in the several portals presenting the data available with filters. This would still by far not be a complete coverage of any scope of interest. The Photographic Collection strives to serve the community of art historians in the best possible way: with an active involvement in many partnerships and working groups, it offers researchers larger interrelated collections with various approaches to search and presentation, in order to diversify the offer for as many users as possible (see section 6.4 below). The scientific cataloguing, however, is as much a necessary effort as it is a labor-intensive activity when done accurately. Large scale in terms of overall quantity and coverage of a variety of themes with high quality documentation photographs, classified within art-historically curated scientific records, are the distinctive value of photographic collections setting them apart from any other photographic repository which may as well have some metadata and nice pictures. However, even in resources which bring together many datasets there is virtually no realistic path to a comprehensive and complete cataloguing of all known individual historical photographs.⁷ Now that we can produce better photos, faster, photographic collections prioritize the cataloguing of more recent documentation material as it is in the interest of everyone. Therefore, approaching the digitization of not-yet-catalogued photographs, even with the long term aim of having them scientifically described and organized, requires to make do with what is available.

[8]

It has to be pointed out that the long history and constantly intensifying growth and development of the collection meant that changing decisions and approaches over time also impacted the collection and induced inconsistencies which never hindered the use of the collection as an active research tool. These inconsistencies are, however, a factor of no little importance for a systematic digitization effort, which necessarily relies on the stability of the structure of the collection and requires long-term commitment to adjustments and corrections. Even so, these should not be game stoppers when aiming at improving the documentation available to researchers worldwide.

[9]

3. Digitization of the Printed Positives

3.1 Preparatory Materials

The digitization project started with a systematic improvement of the organization of the printed materials. Previously, the containers had no identification but only a color coding and a letter and number system. Now, a QR code providing a unique and machine-readable code was associated with each existing container for the quick identification of the location of a photograph, and for its use and placement back in the collection thereafter. This preparatory process also produced lists of these containers and their labels and allowed for quantifications. Each photo had historically been assigned a consecutive number with the sequence suffering several alterations over the years due to events of various nature during the development of the collection,

[10]

⁶ The [help page](#) details which collections are not included but are going to be.

⁷ This does not mean that exploration of methods for AI-assisted cataloguing and description of photographic documentation are not pursued, it is just a matter-of-fact observation of the state of the art. Several initiatives pursue methods to facilitate and enhance this vital task for scientific research.

which made, as it is often the case, this number not reliable for a precise count. These lists turned out to be the missing documentation bit of vital importance for the Navigator, between the high level organization of the collection, and the individual photograph with its transcribed label.

3.2 Data Organization

While improving the management and organizing the collection for mass digitization, the curators of the Photographic Collection also made the useful decision to make the structure of the digitized assets reflect the codes assigned to the container and their placement. This decision allowed not only to know with exactness the number of photographs in each container at the time of scanning but also to have a structural backbone connecting the containers with the individual photographs, which would have been otherwise another bit of missing information. Of course the solution is not perfect, as it forces a dynamic and evolving collection to keep up with this alignment, which is an additional overhead, but a manageable one and in the interest of researchers using the collection.⁸

[11]

3.3 Infrastructure Setup

By late 2022 and early 2023, the Photographic Collection expected to receive several hundreds of thousands of digital files in various formats, organized reflecting the collection structure and the identified containers. This data amounting to a considerable size needed to be stored and archived. Using the [Max Planck Computing and Data Facility \(MPCDF\)](#) resources, the data was transferred to a cloud storage and to a long term archive as it was delivered.⁹ The data stored at MPCDF was also made IIIF server ready by transforming it to JPG2000 files and setting up a multi-server instance of [Cantaloupe image server](#) connected to an [Apache Jena](#) triplestore to retrieve access information (contained in the catalogue data) and actual location in the filesystem (known from the folders and files organization). This infrastructure migration occurring at the same time as the digitization project involved all digital assets already existing and allowed access to the images based on their unique identifiers with access control regulated by the image server for all clients, in order to allow consistency across multiple applications using the images.

[12]

The fact that access information, a feature dependent on rights and agreements, is summarized in two metadata information bits in the catalogue, means that practically all the non-catalogued images are not accessible from outside the Bibliotheca Hertziana in full resolution until they are catalogued and their status is researched and clarified. When the status of the image is declared accessible and marked as such, the image is obtainable in the best available format across all client applications. The digital assets as well as the printed photos are accessible without limitations within the premises and the network of the Bibliotheca Hertziana.

[13]

The necessity to have an ID-based access to digital images was determined by existing client applications, which could not know the location of the files or otherwise compute it. The limitations of access to a single folder with collections of static derivatives in stable formats became obvious as soon as the preexisting

[14]

⁸ A dedicated internal application was developed to record changes made to the collection daily (changes of label, changes of number on the photograph, changes in sequence, additions, removals of duplicates, etc.). Just to provide a figure of how many such changes can occur in the main printed sections of a photographic collection alone, 1,874 were recorded between June 2024 and December 2025, in a normal operation timeframe without major spatial organization changes, which occurred until early 2025. The same process allowed to find identifiers assigned multiple times on the analogue photographs, thus directly and positively impacting the data curation. These cases will be addressed in the near future.

⁹ No data transfer system proved viable for the amount of data to be transferred in a reasonable amount of time. Posting the hard disks was the fastest possible method and was chosen over other options. In total about 400 TB were transferred. The day-by-day increments and modifications are done via [Globus](#).

infrastructure using this method became inaccessible because of the impossibility to list its contents. The image server cache performs the same function in a more efficient and structured way, which is also reproducible and can be updated in case of errors.

4. The ›Internal‹ Navigator

4.1 Aims

The assets obtained from the digitization were used immediately to produce an application for internal use to solve two main issues: 1) finding a file, in a collection on a storage system too big to be efficiently indexed on a personal computer, and 2) having an overview of contents and a viewer more performant than the ones normally available on office computers. This application leveraged the available structure from the tables with the labels and QR codes and the file structure obtained from the digitization project in a browsable, although rudimentary application with respect to design. This application entered business as usual immediately after the completion of the digitization project, making it evident that despite the lack of precision of the textual information and the many errors and inaccuracies, the accessibility of the collection would have been greatly improved even if no catalogue data was available for many of the photos. [15]

4.2 Functionality

The ›internal‹ Navigator skips, by application design, at least one step at every access level. It shows the folders inside the drawers or the boxes (cf. Fig. 3), and it shows previews of the photos in each hanging folder directly inside the view of a drawer (cf. Fig. 4). Embracing all digital assets as well as negatives it has a systematic organization which is able to follow the ever-changing digital folder structure and search through that, by indexing folder and file names as text. [16]

Emilia Romagna

Emilia Romagna (schubladen: 25 hängemappen: 1.225)



Figure 3: A view of drawers and their hanging folders with labels. [Screenshot: Pietro Maria Liuzzo 2026]

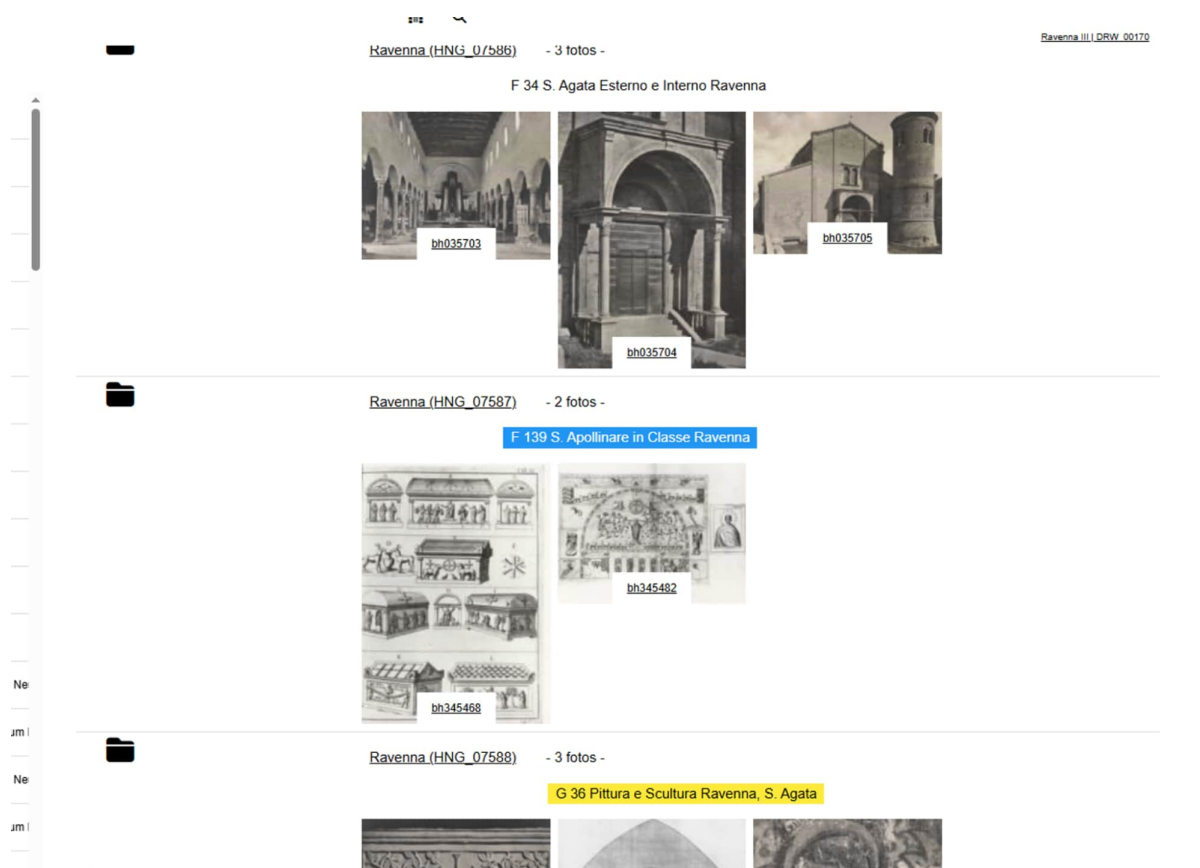


Figure 4: The preview of photos in each hanging folder of a drawer in the internal Navigator. [Screenshot: Pietro Maria Liuzzo 2026]

4.3 Features

Additionally the early internal version of the Navigator, still used for internal purposes, allows to download images, which are watermarked when this is necessary for distribution, and to associate existing negatives and their prints automatically where enough metadata is available. It links the ongoing campaigns documented in a dedicated application and the catalogue to provide enough resources to be able to track at any time the state of any material, container, campaign, photograph, or catalogue metadata (cf. Fig. 5). On top of this data an additional search application was built which searched structurally also in derivative files, former archives and backups, and lists and tables used for documentation, simplifying the cross searches and checks typical of the daily activity.

[17]



Negativ: U.PI. D 25173

Foto ID bh345482  Download (mit Wasserzeichen)

OCR verso: 7- '7/ AG- (Ap_ ' Ravenna S. Apollinare in Classe Arco trionfale catino dell'abside, mosaico da: Giov.Ciampini, Vetera monumenta, II, Roma tav. U.P1. BIBLIOTHECA HERTZIANA ' Ck feOMA] yQ ' 7 -r'

OCR recto: TAB.V MATHEW // 'o 1 ~ EM 3 Zi " - . X . - . - ;

Foto **bh345482** ist in Objekt 08079848 *Joannis Ciampini Romani, Vetera monumenta, in quibus praecipue musiva opera sacrarum, profanarumque aedium structura, ac nonnulli antiqui ritus dissertationibus, iconibusque illustrantur. Secunda pars: a sexto Christi saeculo ad decimum. Accesserunt notae, in quibus nonnulla post auctoris obitum immutata indicantur, Romae 1699. Ex typographia Bernabò, in Via Murattae* erfasst.



Joannis Ciampini Romani, Vetera monumenta, in quibus praecipue musiva opera sacrarum, profanarumque aedium structura, ac nonnulli antiqui ritus dissertationibus, iconibusque illustrantur. Secunda pars: a sexto Christi saeculo ad decimum. Accesserunt notae, in quibus nonnulla post auctoris obitum immutata indicantur, Romae 1699. Ex typographia Bernabò, in Via Murattae - Gesamtansicht, bh345482. 1984. 12. Bibliotheca Hertziana [Rechte Vorbehalten – Freier Zugang]

EPIC: https://hdl.handle.net/21.11153/bibl/hertz_fotothek_foto_bh345482

Figure 5: A photograph within a container viewed with all relevant available data in the internal version of the Navigator.
[Screenshot: Pietro Maria Liuzzo 2026]

5. The Navigator

The internal Navigator should have constituted the backbone for a more accessible and design-enhanced version, keeping the same backend, adapted for external users. It was not long after starting the development project in January 2025 that it became clear that an entirely different application was going to be produced both for the architecture and the functionality offered: simplified, split up, cleaned of redundancies and tailored for researchers to get to the photographs as straightforwardly as possible.¹⁰ Technical terms were reduced and digital quirks hidden to give full priority to photographs and their organized containers as a graphical navigation aid (cf. Fig. 6). Context was given priority and graphics were added to improve recognizability of contexts and possibilities for further exploration. Covers of the folders, digitized together with the photographs, were used to deliver the same immediate color-coded information they serve in the physical collection (cf. Fig. 7).

[18]

¹⁰ The design conception was done by Thomas Jung ([jung.digital](#)) and his ideas greatly contributed to making the Navigator a well-rounded product effective in doing what it was designed to do.

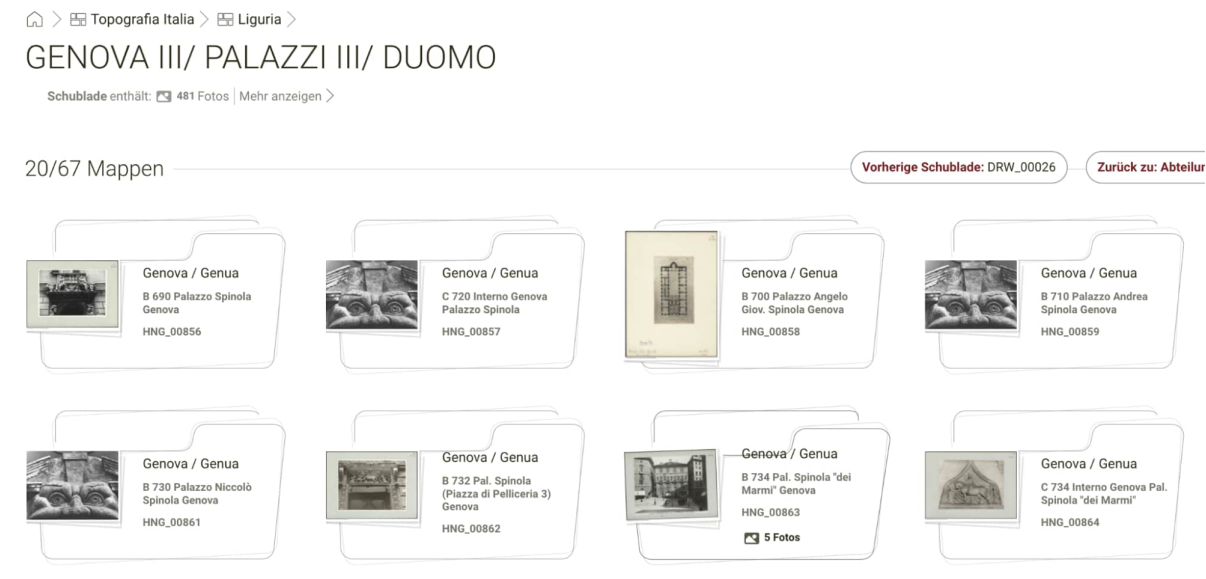


Figure 6: A drawer as presented in the Navigator with the list of hanging folders it contains. [Screenshot: Pietro Maria Liuzzo 2026]



Figure 7: A Box with the folders with distinctive colors in the Navigator, with handwritten folder covers transcribed using Chat AI. [Screenshot: Pietro Maria Liuzzo 2026]

5.1 Data

The tables with the labels and barcodes were stored and indexed following the MIDAS¹¹ model used also in the catalogue and indexed in XML. Not all labels had been transcribed entirely during the preparatory stages, so an integration and completion process is ongoing for this part of the available information. The labels of the hanging folders, not scanned and only partially transcribed, need to be copied manually, a process which in one year progressed by about 50 % of the total hanging folder labels (cf. Fig. 8 and Fig. 9).

[19]



Figure 8: A drawer in »Topografia Italia«. [Photograph: Pietro Maria Liuzzo 2026]

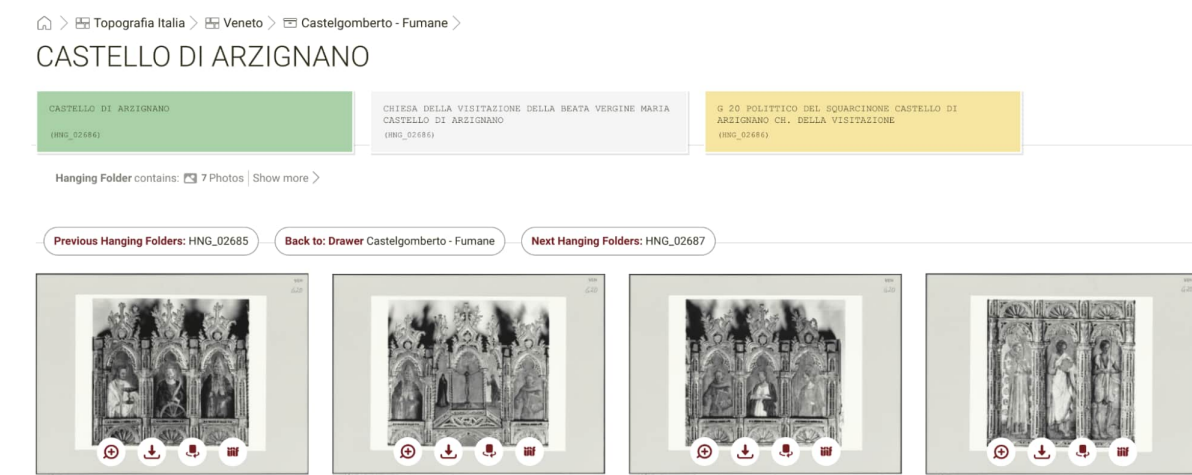


Figure 9: The first hanging folder of the drawer in Fig. 8 with hand-transcribed labels in the Navigator. [Screenshot: Pietro Maria Liuzzo 2026]

For the covers of folders within boxes OCR transcriptions were produced during digitization but some covers could be better transcribed with the assistance of the Chat AI API by GWDG using the Gemma (gemma-3-27b-it) model.¹² Uploading scanned covers with handwritten descriptions with a prompt to transcribe the content and return it as ALTO XML produced the required data for about 44,000 folders in a few days (cf. Fig. 7).

[20]

¹¹ Cf. Bove et al. 2001.

¹² The second axiom of Nygren / Drimmer 2023 has been considered carefully, and although the folder transcriptions are sometimes erroneous, they still support the access to images better than the previously available, unreadable OCR data. The known issues in those transcription are then taken care of continuously.

Although imperfect and in need of several steps of postprocessing, this was a usable and readable result, which could replace the ineffective OCR results from the digitization stage. This process was not used for those folder covers in print which the OCR already could satisfactorily read, although also needing correction. OCR results in ALTO XML were produced during digitization, reduced to a less verbose format and indexed with a minimal postprocessing. These are very seldom readable but sometimes provide matches for textual searches.

The folder and file structure was directly inherited from the filesystem in the standard XML output format from the Linux ›tree‹ command. The XML data thus available in MIDAS, ALTO XML and ›tree‹ output format was indexed together with the MIDAS data from the catalogue, indexed in eXist-db with field indexes based on the ›Fotogruppe‹ inside an object.

[21]

5.2 IIIF

The indexed data is served from the backend as IIIF Collections following the [IIIF Presentation API 3.0 Specification](#). Each container in the collection is either a Collection of Collections or a Collection of Manifests, one for each photograph at the deepest level of the structure. This means that the same browsing support is available in an entirely standard and interoperable format and can be viewed in any IIIF viewer. The API is [documented](#) separately and the links to the containers are not replicated in the user interface. Non-standard but equally openly accessible as JSON are the backend responses that produce the search results and the tree structure from the same data. This JSON data is used by the Navigator application serving the web pages, server-side. This is possible because both applications are hosted in the same container sharing a local network. However, they refer to images using the same central IIIF image server, set up as a result of the digitization project. This way the API and the Navigator use the very same service used by all other client applications. The Navigator web application consuming the IIIF Collections and the other API formats is a separate application and is kept as simple as possible, to defer to the IIIF presentation all that is data related and only focus on functional user interface features. Hopefully, this will enable us in the future to update the frontend and the data without having to rework the standard IIIF Collections layer between them. On the other side, the catalogue offers IIIF Manifests for each object and for each photograph, thus offering for the printed photographs which are also catalogued an additional complementary resource.¹³

[22]

5.3 Modular Placement with Respect to Other Resources

Although the relevance of the many images becoming accessible online for the first time and their lack of metadata was enough to justify a new application, its placement in the context of the other resources to make as clear as possible its coverage and limitations needed attention. While search in aggregators was already supported in several resources with different scopes and functionalities, the Navigator simply complements the catalogue and only provides interaction with that and no other resource, especially given that on the one hand, established data exchange pipelines need the structured data, and on the other hand, the continuous effort of cataloguing the photographs in the collection is not superseded by the digitization and presentation effort in the Navigator, which simply eases access to the not yet catalogued photographs. The mono-directional architecture should ensure that the addition to the resources available does not create unnecessary duplication and overlaps.

[23]

¹³ The API is also available for other third-party applications, some of which have already been implemented within the Bibliotheca Hertziana, like the integration in applications by the [Digital Humanities Lab](#).

6. Design Choices for Usability and Accessibility

6.1 Examples of Collections Online Taken into Consideration

The main example we looked at to develop the Navigator was the viewer of the **Photographic Collections** of The Courtauld, London, which provides a tree to browse the collection as well as a photo-first infinite scrolling functionality on top of the search. The Courtauld has metadata which are seemingly more consistent than what we have and a policy to allow access to photographs which also positively impacts their availability on the web. [24]

Furthermore, the **Foto arte minore collection**,¹⁴ also available with a container-based access together with metadata and search functionality, was another important example we looked at. [25]

The design of the Navigator matches the Catalogue and the Bibliotheca Hertziana style to provide an immediate feeling of coherence between the two resources. The approach to the user interface prioritized accessibility with added dynamic interactions to make it as straightforward as possible to always keep the navigation in context. This involves for example reactions on hovering and navigation buttons as well as breadcrumbs navigation in all views. [26]

6.2 Containers

Different types of containers are presented with specific graphic features but behave in the same way. The container is listed and its contents are grouped with labels and covers available for the viewer. The colors and codes of the collections' folder are preserved and explained as immediate navigation aids to encourage further exploration of the collection in the immediate proximities of any given current context. [27]

Although they may seem set in stone, containers and structures and their location are very volatile and constantly change due to external reasons (changes in rooms and premises, etc.) or because of new additions and internal reorganization. The data structure allows for these changes to be reflected so that changes in the physical organization of the collection can be always replicated and kept aligned. From the premises of the Photographic Collection, it is possible to scan a barcode to directly access a container which has been found on the shelves, and conversely the location of a given container is reported in the Navigator to allow access to the material copy. [28]

6.3 Photographs

While the order of the photographs in a catalogue record follows the structure of the object (following the rules of the MIDAS data model) and thus allows a direct navigation to the part or feature represented, the physical collection's hierarchy is a continuous sequence grouped and ordered in a specific way. Thus a photograph of the inner decoration of a part of a building will be associated with an appropriately nested object in the catalogue, but is presented in the collection and hence in the Navigator at an equally deep level of the collection in a sequence which can be interrupted by physically occurring boundaries. Thus for example photographs of the interior decoration of San Pellegrino at Bominaco can be found in the catalogue under the church (»Oratorium«, oratory) associated with its »Innenraum«¹⁵ (interior) and in the related object with the [29]

¹⁴ Foto Arte Minore; cf. Schallert 2011.

¹⁵ »San Pellegrino, Oratorio di San Pellegrino«, <https://foto.biblherztz.it/document/obj/08026827?part=2>.

fresco cycle.¹⁶ In the Navigator they are found in two boxes, one ending with the initial part of San Pellegrino and the following one which contains more photos of this artwork and continues with a different place in the topographic order of that part of the collection.¹⁷ The Catalogue includes recent color photographs digitally produced and archived, while the Navigator gives access to non-catalogued but ordered photographs with details. For a monument, for example, outside views will precede inner views, while features contained in a given architectural work may be classified in entirely different parts of the collection, e.g. in the collection by artists, with appropriate linking to the folders.

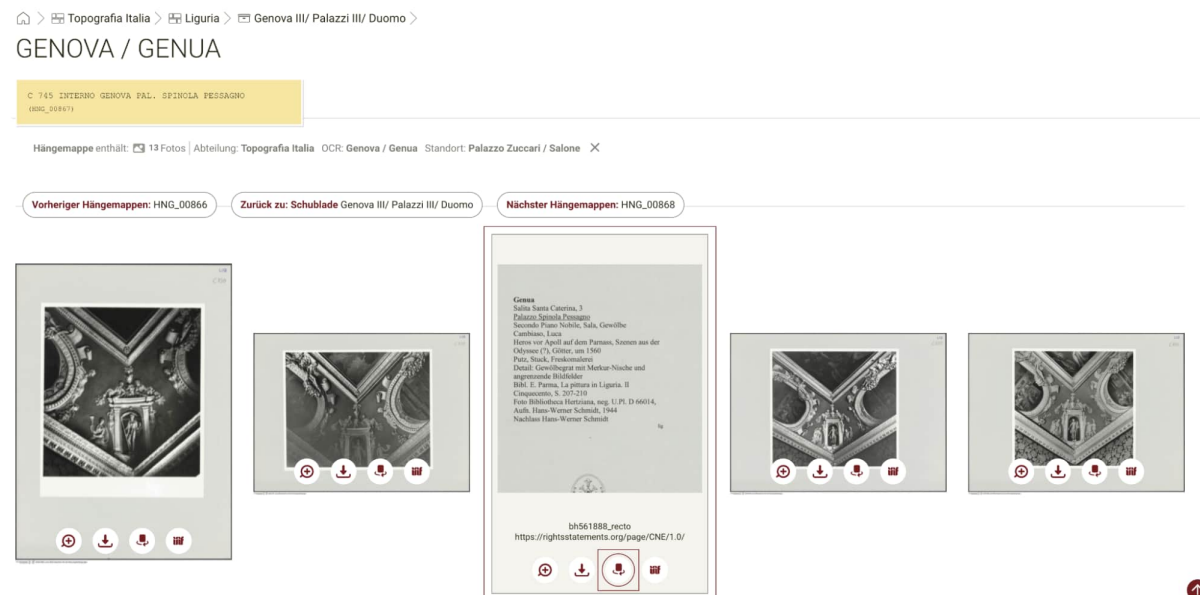


Figure 10: Turning an image to see the portion of the verso with its label. [Screenshot: Pietro Maria Liuzzo 2026]

In the Navigator the photographs are presented at the deepest level of the collection structure in unordered sequence and the user can immediately either rotate them to read the scan of the part of the verso where typically the label is placed (cf. Fig. 10), or opt for one of several options to enlarge the view in an internal light IIIF viewer, pulling metadata from the catalogue or in an external IIIF viewer, or simply download the image (if available). The internal viewer links to the catalogue if the image is present there as well and retrieves or registers an ePIC for citation and reference (cf. Fig. 11).¹⁸ The labels do not contain structured and parsable metadata, thus filtered searches are possible in the catalogue only.

[30]

¹⁶ »Szenen aus dem Leben Christi und des heiligen Pellegrinus sowie liturgischer Kalender, Propheten und Heilige«, <https://foto.biblherz.it/document/obj/08149812?part=0>.

¹⁷ »Bominaco (1)«, https://nav.biblhertz.it/browse/BOX_00914, and »Bominaco (2) – Calascio (1)«, https://nav.biblhertz.it/browse/BOX_00915.

¹⁸ The ePIC Resolver was implemented by Christopher Tomlinson for the Bibliotheca Hertziana. While [artresearch.net](#) implements URIs for every entity, being based on RDF, it does not provide additional permanent identifiers, which some other institutions do provide, like [Bildindex der Kunst & Architektur](#); see Meiners / Bulle 2025. Persistent identifiers are provided by the [Persistent Identifier Consortium for eResearch \(ePIC\)](#).

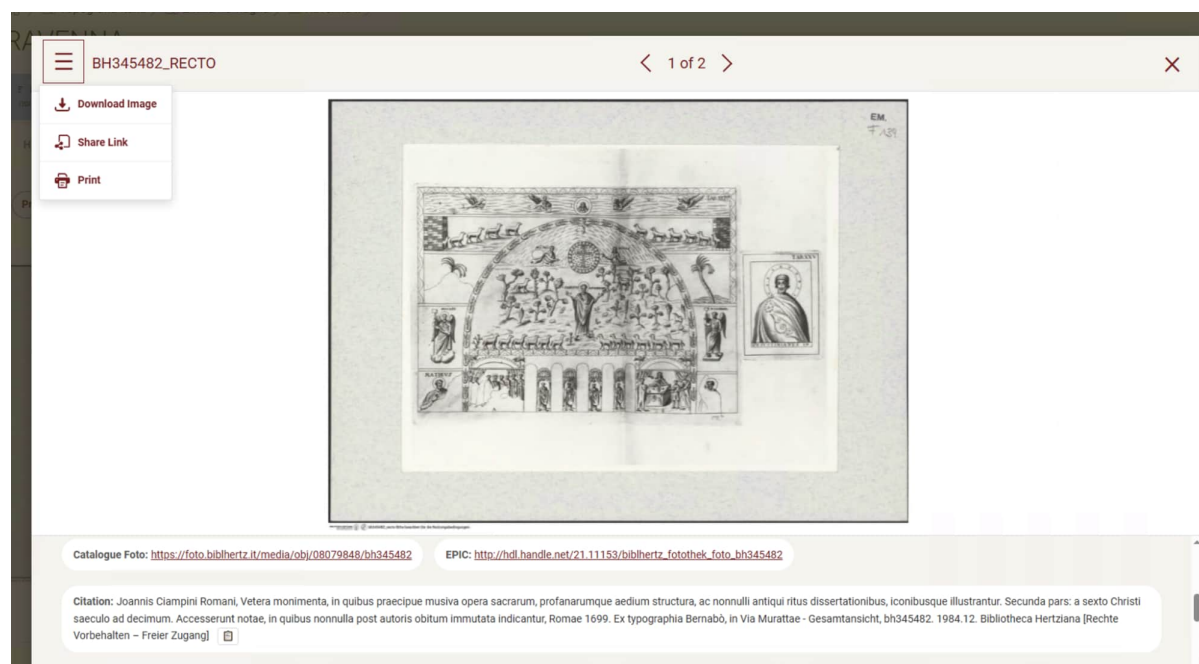


Figure 11: The same photograph as in Fig. 5, as shown individually in the Navigator. [Screenshot: Pietro Maria Liuzzo 2026]

6.4 Search

The search functionality of the Navigator offers an additional access tool without replicating existing ones. Searching the catalogue only focuses on results within that database, which can then be filtered in many ways and accessed from two different perspectives (the object and the photograph). The ongoing work on the catalogue, the main resources of the Photographic Collection, includes by now only a part of the printed photographs available in the collection together with born digital ones which have been catalogued, while the Navigator includes all printed photographs, catalogued and not-yet-catalogued. The same data present in the catalogue can be searched with AI-assisted tools in artresearch.net together with partially aligned and disambiguated data from several other international institutions. Similarly in arthistoricum.net and [Bildindex der Kunst & Architektur](https://bildindex.der-kunst-und-architektur.de) the data from the Photographic Collection Catalogue can be searched and filtered together with data organized in the same manner from other partner institutions.¹⁹ The search function in the Navigator app instead provides a very simple textual search which queries indexed data specific to the Navigator (cf. Fig. 12), i.e. the transcriptions of the containers labels and of the textual information on the supports for the printed photos. Together with this data it also searches an index reproducing all the relevant object information for each of the photographs in the catalogue. This means of course that there will be many different and sometimes duplicate results. A match for »Caravaggio« on the label of a box in »Artisti« will be listed, but also all and any of the folders therein and any photograph which has been transcribed to contain that string, as well as any photograph pertaining to an object where the string can be matched. Users will have to explore and find what they may be interested in. They are given access to all the data that is also available to the team of the Photographic Collection, limited to the collections which have been made available until now.

[31]

¹⁹ Cf. Arbeitsgemeinschaft kunsthistorischer Bildarchive und Fototheken (AKBF).

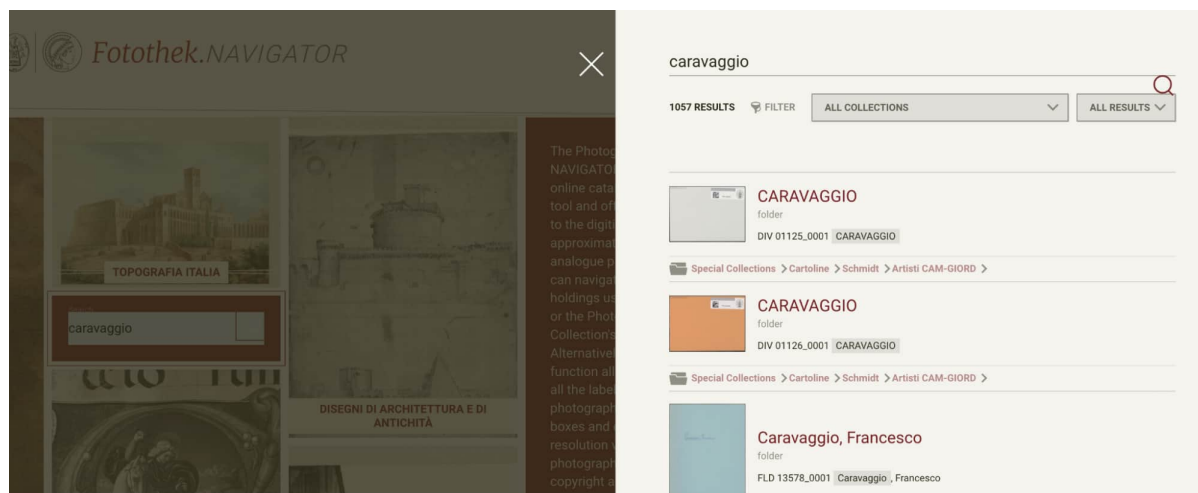


Figure 12: The search results. [Screenshot: Pietro Maria Liuzzo 2026]

7. Conclusions

While the organization of a website with a search function would have needed explanation and justification a few decades ago, when the normal and known unique systems of archives and collections were well known to their users, now that search engines and web technologies have developed further over at least three generations we are again in need to explain the system of a photographic collection. Hopefully, as the examples above show, the Navigator manages to make the two approaches (searching and browsing) coherent and complementary in the interest of the users and their ability to reach the best documentation possible as easily as possible.

[32]

Bibliography

Arbeitsgemeinschaft kunsthistorischer Bildarchive und Fototheken (AKBF). In: arthistoricum.net. Last accessed 04.02.2026. HTML. [\[online\]](#)

Jens Bove / Lutz Heusinger / Angela Kailus: Marburger Informations-, Dokumentations- und Administrations-System (MIDAS). Handbuch und CD (= Literatur und Archiv, 4). 4th edition. Munich 2001. DOI: [10.11588/artdok.00003770](#)

Foto Arte Minore. Max Hutzel Photographs of Art and Architecture in Italy. 1960–1990. In: Getty Research Collections. Last accessed 04.02.2026. HTML. [\[online\]](#)

Hanna-Lena Meiners / Klaus Bulle: Disrupting the Dust: Identifier Properties and the Future of Cultural Heritage Metadata in Wikidata. In: Journal of Open Humanities Data 11 (2025). DOI: [10.5334/johd.412](#)

Christopher Nygren / Sonja Drimmer: Art History and AI: Ten Axioms. In: International Journal for Digital Art History, no. 9 (2023). DOI: [10.11588/dah.2023.9.90400](#)

Regine Schallert: I tesori nascosti d'Italia: l'archivio dello studio *Foto Arte Minore* di Max Hutzel. In: Costanza Caraffa (ed.): Photo Archives and the Photographic Memory of Art History (= I Mandorli, 14; London / Florence, 16.–17.06.2009 / 29.–31.10.2009). Berlin 2011, pp. 335–346. [\[GVK record\]](#)

Regine Schallert: Die Fotothek. »...dass ein Forscher jedwedes Material hier einsehen kann«. In: Sybille Ebert-Schifferer (ed.): 100 Jahre Bibliotheca Hertziana. Max-Planck-Institut für Kunstgeschichte. Volume 1: Die Geschichte des Instituts 1913–2013. Munich 2013, pp. 226–245. [\[GVK record\]](#)

Regine Schallert / Johannes Röhl: La Fototeca della Bibliotheca Hertziana (Istituto Max Planck per la storia dell'arte). In: Barbara Fabjan (ed.): Immagini e memoria. Gli archivi fotografici di istituzioni culturali della città di Roma (Rome, 03.–04.12.2012). Rome 2014, pp. 169–182. [\[GVK record\]](#)

List of Figures

Figure 1: A roughly scaled Venn diagram representation of the holdings of the Photographic Collection and their availability. [Diagram: Pietro Maria Liuzzo 2026]

Figure 2: The homepage of the Navigator. [Screenshot: Pietro Maria Liuzzo 2026]

Figure 3: A view of drawers and their hanging folders with labels. [Screenshot: Pietro Maria Liuzzo 2026]

Figure 4: The preview of photos in each hanging folder of a drawer in the internal Navigator. [Screenshot: Pietro Maria Liuzzo 2026]

Figure 5: A photograph within a container viewed with all relevant available data in the internal version of the Navigator. [Screenshot: Pietro Maria Liuzzo 2026]

Figure 6: A drawer as presented in the Navigator with the list of hanging folders it contains. [Screenshot: Pietro Maria Liuzzo 2026]

Figure 7: A Box with the folders with distinctive colors in the Navigator, with handwritten folder covers transcribed using [Chat AI](#). [Screenshot: Pietro Maria Liuzzo 2026]

Figure 8: A drawer in »Topografia Italia«. [Photograph: Pietro Maria Liuzzo 2026]

Figure 9: The first hanging folder of the drawer in Fig. 8 with hand-transcribed labels in the Navigator. [Screenshot: Pietro Maria Liuzzo 2026]

Figure 10: Turning an image to see the portion of the verso with its label. [Screenshot: Pietro Maria Liuzzo 2026]

Figure 11: The same photograph as in Fig. 5, as shown individually in the Navigator. [Screenshot: Pietro Maria Liuzzo 2026]

Figure 12: The search results. [Screenshot: Pietro Maria Liuzzo 2026]