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MAX-PLANCK-INSTITUT
FÜR KUNSTGESCHICHTE

[KG]^2

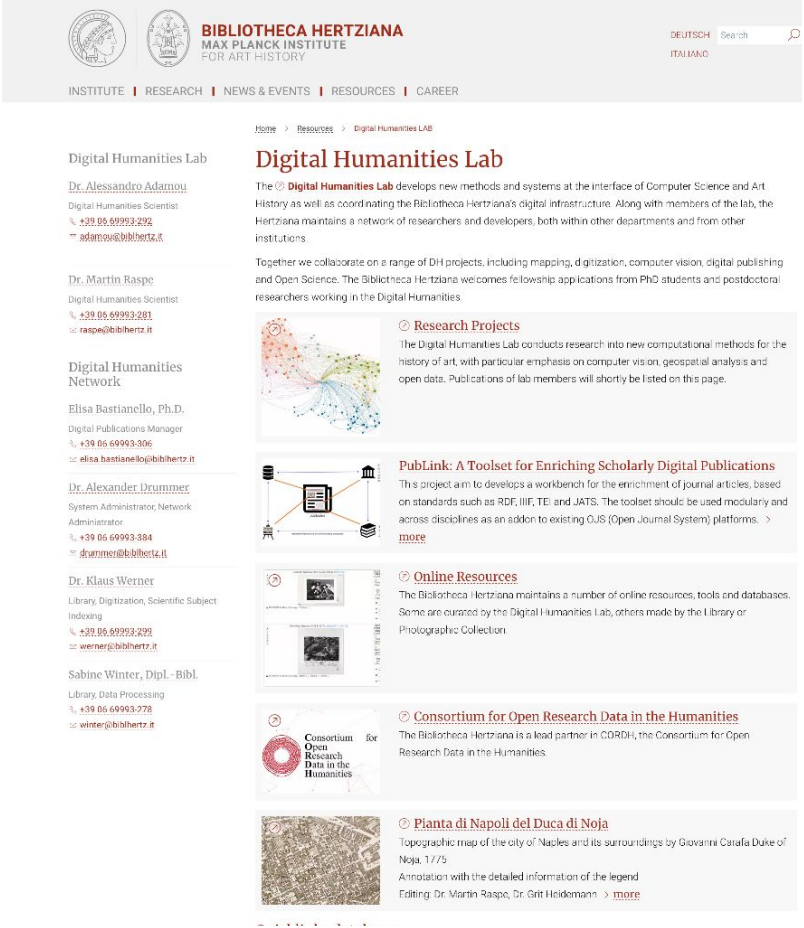
A WIP holistic Knowledge Graph to support FAIR Art History research

Alessandro Adamou

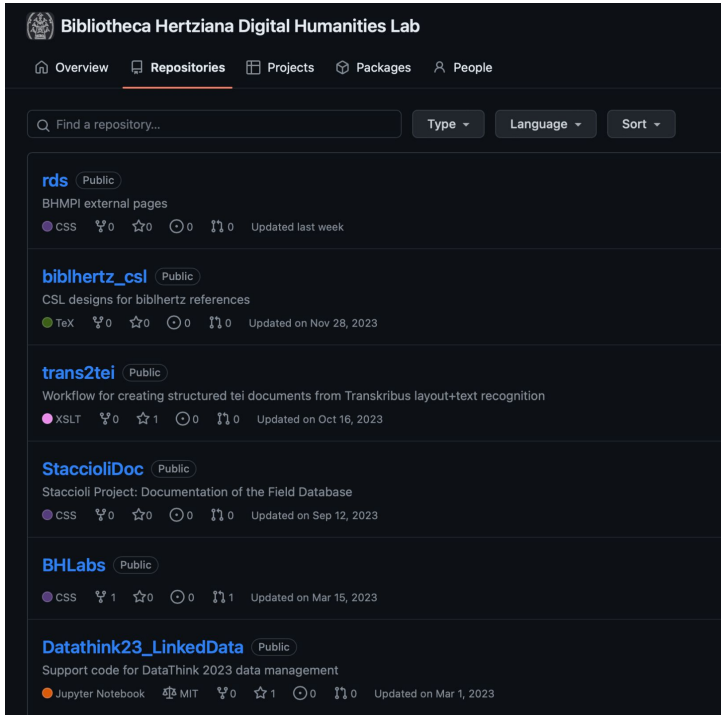
Bibliotheca Hertziana - Digital Humanities Lab

29th January, 2024

Digital Humanities Lab



Born out of the Max Planck Society's acknowledgment of a mission to support Digital Art History as part of Digital Humanities.



New application domain, old problems

- Multiple Art History projects with tech stacks unrelated to one another
  - Either not leaving a structured data trace, or
  - Operating in isolation from other projects at the Hertziana or the Art Historical discipline at large
- Data silos, exacerbated by:
  - Linking with authority files, which does occur but is not standardised
  - Lack of data literacy affecting the choice of usage rights that apply

Challenges

Art History ≠ Cultural Heritage

Challenges

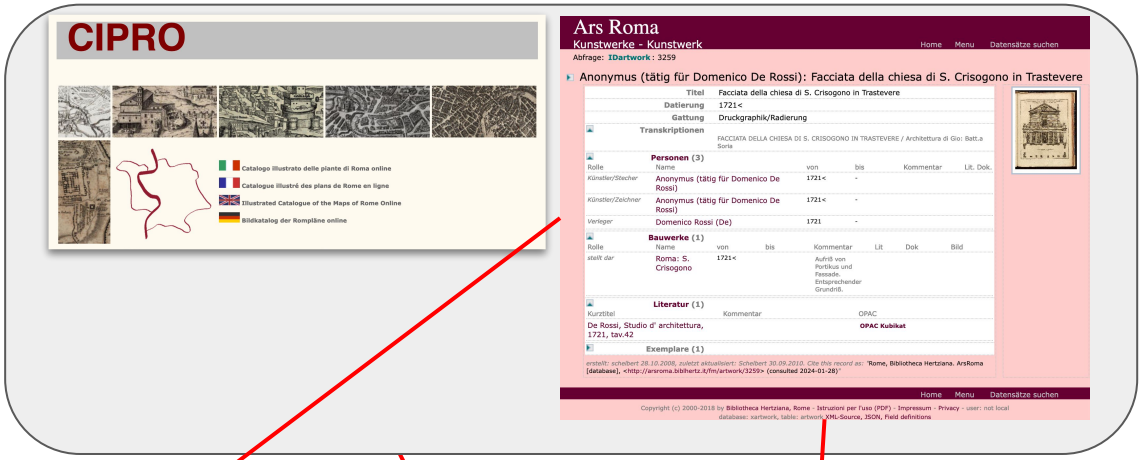
Art History $\notin$ Cultural Heritage ?

CIDOC-CRM / FRBR ontologies are widely adopted in the field, but

Too simplistic for art historians, too complicated for cultural heritage initiatives

Leading direction is to recommend knowledge patterns for CIDOC-CRM

- e.g. Linked.Art, SARI Reference Data Model



Some in-house database emerging as authoritative data sources e.g.

- Zuccaro art catalogue
- Kubikat Library OPAC

```
<poi>
   <title>San Crisogono</title>
   <notes>TCI 561-562</notes>
   <equivalent domain="zuccaro">
      <title>S. Crisogono</title>
      <id>1235</id>
   </equivalent>
   <equivalent domain="gnd">
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      <id>4461207-2</id>
   </equivalent>
 </poi>
```

Numero della legenda della pianta di Nolli	Numero nella banca dati Zuccaro	Link alla piat
218		collegio-degli-a
558	671	san-biagio-della
1143	1235	san-crisogono
65	71	san-francesco-c

```
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  <a5108>Rom</a5108>
  <a5202>San Crisogono</a5202>
  <aob30>Umbau
    <a3100>Soria, Giovanni Battista</a3100>
    <a3475>Architekt</a3475>
    <a3496>1620-1622</a3496>
    <a30gn>ulan500020294 | gnd118886339</a30gn>
  </aob30>
</obj>
```

GND DEUTSCHE NATIONAL BIBLIOTHEK ULAN GETTY AKL DE G WIKI

Linked Open [Usable] Data

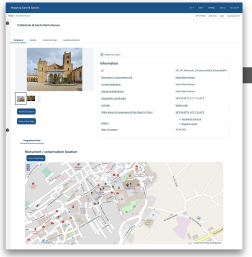
- Leading implementation of FAIR principles in Digital Humanities
  - and the most “open” since OAI-PMH
- Realises the 5-star Open Data guidelines
- The only set of W3C open standards for publishing Knowledge Graphs
- Additional usability recommendations from Art History research:
  - ★ **The right abstraction for the audience**
  - ★ **Few barriers to entry**
  - ★ **Comprehensible by introspection**
  - ★ **Documentation with working examples**
  - ★ **Few exceptions, many consistent patterns**

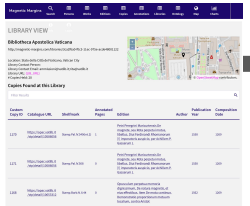
Designated integration node + 3 approaches to FAIRness

Query service

URI Dereferencing

Linked Data native project with own query services



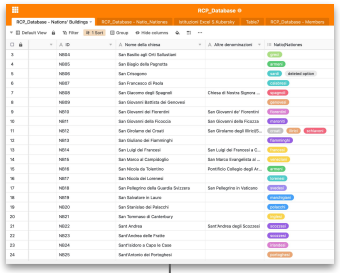


Unified Query engine

Data integration logic (custom or off-the-shelf)

Transformation logic (e.g. SPARQL-based)

Running projects with bespoke tech stacks



```
CONSTRUCT {
  ?x rdfs:label ?title
    ; a crm:E22_Human-Made_Object , gndo:BuildingOr
    ; skos:altLabel ?altLabel
    ; crm:P53_has_former_or_current_location ?loc
    ; owl:sameAs ?zuccaro , ?gnd
  .
  ?loc a crm:E53_Place
    ; crm:P168_place_is_defined_by ?wkt
} WHERE {
```

Dedicated Triplestore / Graph DB
(not mandatory unless ETL is in place)

data.biblhertz.it

API SPARQL

Bibliotheca Hertziana - Knowledge Graph toolkit

This space is intended to become a hub for datasets, data services and other related resources provided by the Bibliotheca Hertziana and its projects.

Resources

Entity Resolution

bernini

esolved into their RDF descriptions

Casa Bernini - work (zuccaro)

Palazzo Bernini - work (zuccaro)

Vigna Bernini - work (zuccaro)

Palazzo Bernini, Rom - work (fotothek)

Palazzo Manfroni-Bernini - work (zuccaro)

Teatro di Bernini - work (zuccaro)

Search for a person, work, material...

the interactive documentation.

hing below.

SPARQL Endpoint

Query the knowledge graph to its full capability using the standard SPARQL language.

Rights of use

Important: At the moment, the service is in Alpha preview and **all the data that can be obtained through any of the above services are available on an *All rights reserved* basis** until further notice. Licenses of the data on their original sources do not apply here unless they are released under a Share-Alike policy. Thank you for understanding.

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API SPARQL

Query +

```
PREFIX crm: <http://www.cidoc-crm.org/cidoc-crm/>
PREFIX owl: <http://www.w3.org/2002/07/owl#>

SELECT DISTINCT ?p ?y WHERE {
  ?x (owl:sameAs|^owl:sameAs)+ <https://d-nb.info/gnd/4302056-2>
    ; ?p ?y .
} ORDER BY ?p
```

Table Response 28 results in 0.105 seconds Filter query results Page size: 50

	p	y
1	<http://data.biblhertz.it/romacommunispatria/term/had_or_has_Christian_denom...	<http://data.biblhertz.it/romacommunispatria/rito/latin>
2	<http://data.biblhertz.it/term/temp/altLabels>	Tempio di Bacco;Tempio di Fauno (Celio)
3	<http://data.biblhertz.it/term/temp/notes>	TCI 516;Coarelli 258-259;http://it.wikipedia.org/wiki/Basilica_di_Santo_Stefano_Rotondo_al_Celio
4	crm:108i_was_produced_by	<http://data.biblhertz.it/builtwork/zuccaro/100/rel/10249>
5	crm:108i_was_produced_by	<http://data.biblhertz.it/builtwork/zuccaro/100/rel/10250>
6	crm:108i_was_produced_by	<http://data.biblhertz.it/builtwork/zuccaro/100/rel/10252>
7	crm:108i_was_produced_by	<http://data.biblhertz.it/builtwork/zuccaro/100/rel/12008>
8	crm:108i_was_produced_by	<http://data.biblhertz.it/builtwork/zuccaro/100/rel/7790>
9	crm:P1_is_identified_by	<http://data.biblhertz.it/romacommunispatria/id/santo-stefano-rotondo>
10	crm:P1_is_identified_by	<http://data.biblhertz.it/builtwork/zuccaro/100/name/1>
11	crm:P1_is_identified_by	<http://data.biblhertz.it/id/zuccaro/100>
12	crm:P2_has_type	<https://d-nb.info/standards/elementset/gnd#BuildingOrMemorial>

Schemas

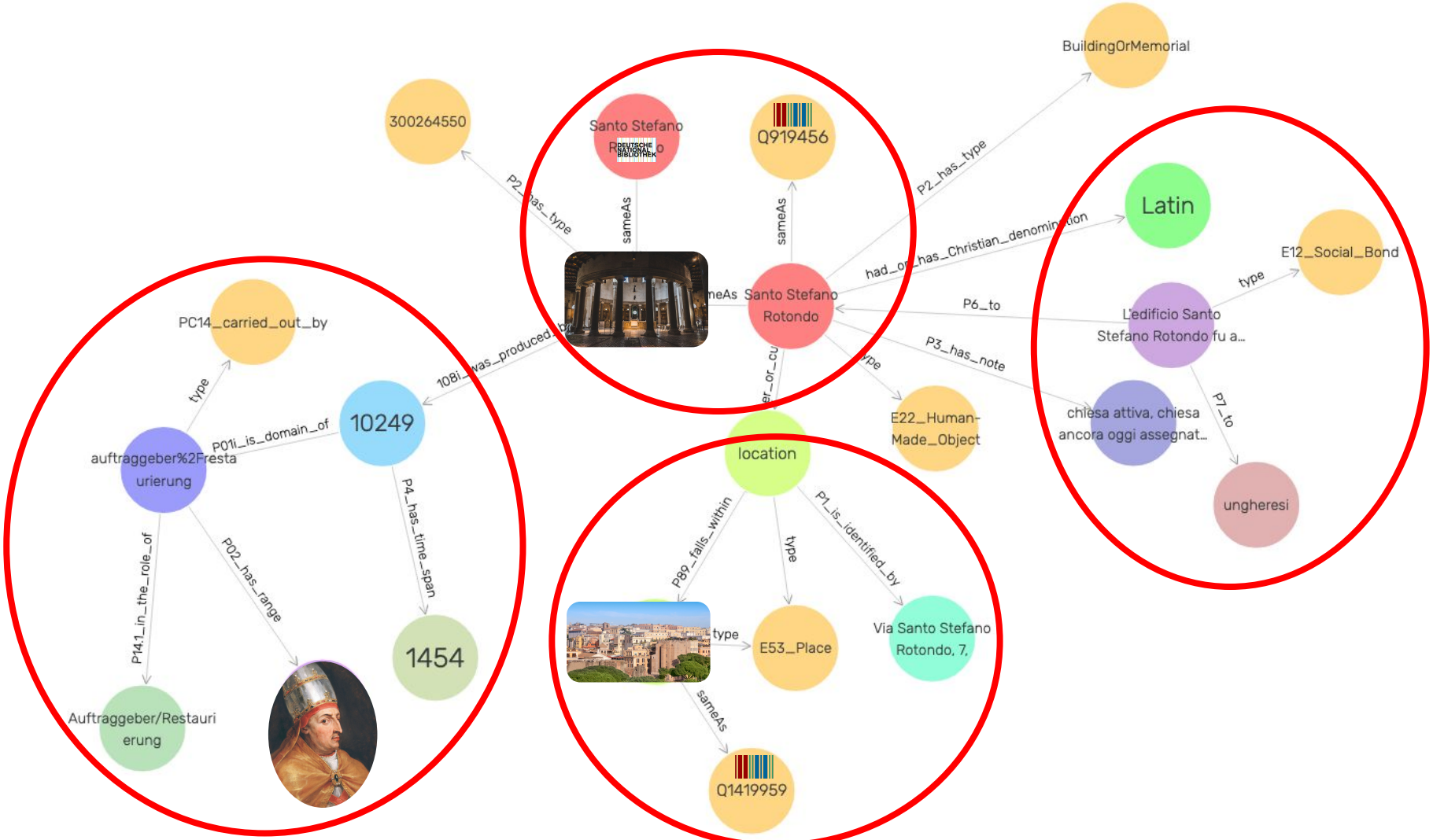
- Primarily CIDOC-CRM and FRBR[oo]
- CIDOC-CRM extensions e.g. CRMsci, CRMgeo
- SKOS for topics approximate alignments
- ArCo for specifics such as Intangible Heritage
- Schema.org for SEO annotations
- Fallback to bespoke custom terminology (in OWL, based on foundational ont.)

External linking:

- GND, Getty (AAT, TGN, ULAN), Wikidata, DeGruyter (AKL)

Initial Features

1. Datasets organised as multigraph (~9m triples)
2. Support for CIDOC-CRM reasoning (~30m inferred triples)
3. Full support for SPARQL 1.1 querying
4. Search and Feed APIs to support third-party lookups
5. Data dumps being progressively made available


BuildingOrMemorial
300264550
Santo Stefano
Q919456
P2_has_type
sameAs
sameAs
P2_has_type
Latin
had_or_has_Christian_denomination
E12_Social_Bond
type
Santo Stefano Rotondo
P6_to
L'edificio Santo Stefano Rotondo fu a...
P3_has_note
PC14_carried_out_by
type
10249
P01i_is_domain_of
auftraggeber%2Frestaurierung
E22_Human-Made_Object
chiesa attiva, chiesa ancora oggi assegnat...
P7_to
ungheresi
location
P99_falls_within
type
P1_is_identified_by
type
E53_Place
Via Santo Stefano Rotondo, 7,
P14.1_in_the_role_of
P02_has_range
P4_has_time_span
1454
Auftraggeber/Restaurierung
sameAs
Q1419959

https://edmond.mpg.de/

Search Help Support Log In

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Author Organization

Bibliotheca Hertziana – Max Planck Institute for Art History (5) ✖
Bibliothek für Bildungsgeschichtliche Forschung (1)
Digital Scholarship Developer (1)
Exist Solutions GmbH (1)
Goethe University Frankfurt (1)

More...

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Bartsch, Tatjana (1)
Bastianello, Elisa (1)

More...

Keyword Term

AAT (1)
CIDOC-CRM (1)
Contemporary Art (1)
Digital Humanities (1)
Digital Publishing (1)

More...

Subject

Humanities (5)
Computer Science, Systems and Electrical Engineering (1)

Study Type

Fotothek Bibliotheca Hertziana Max-Planck-Institut für Kunstgeschichte 320px static derivates research dataset

Sep 28, 2022

Röll, Johannes; Bartsch, Tatjana; Liuzzo, Pietro Maria, 2022, "Fotothek Bibliotheca Hertziana Max-Planck-Institut für Kunstgeschichte 320px static derivates research dataset", https://doi.org/10.17617/3.SVH2BT, Edmond, V1

Pre-filtered Dataset of static derivate images. Contains only images - catalogued in the Fototeca - marked as "freigegeben" Files are jpg with a maximum h/w of 320px. A list of all available catalogued foto identifiers is also provided in a csv file. Digital photos in source arch...

Digital Publishing for the Humanities - New Technologies and Ideas

Nov 4, 2022

Bastianello, Elisa; Adamou, Alessandro; Grundig, Christine; Gabay, Simon; Phillip Benjamin Ströbel, Phillip; Kupreyev, Maxim N.; Solonets, Polina; Thoden, Klaus; Agostini, Giorgia; Cowey, James M.S.; Mühlberger, Günter; Mansutti, Sara; Kampkaspar, Dario; Chestnova, Elena; Degl'Innocenti, Emiliano; Di Meo, Carmen; Spadi, Alessia; Spinelli, Federica; Coradeschi, Francesco; Sanesi, Maurizio; Canova, Leonardo; Delle Fave, Damiano; Peroni, Silvio; Baumgartner, Reto; Meier, Wolfgang; Sander, Christoph; Bennett, Mike; Turska, Magdalena, 2022, "Digital Publishing for the Humanities - New Technologies and Ideas", https://doi.org/10.17617/3.PEJU8B, Edmond, V1

Slides presented by the speakers at the International Conference "Digital Publishing for the Humanities - Nw Technologies and Ideas" - Rome, Biblioteca Hertziana - Max Planck Institute for Art History 18-19 October 2022

Gemalde selection (thumbnails)

Nov 28, 2023

Liuzzo, Pietro Maria, 2023, "Gemalde selection (thumbnails)", https://doi.org/10.17617/3.W3VHTC, Edmond, V1

A selection of images from https://foto.biblhertz.it/. Term and conditions apply for the use of each image in a larger format than the one provided. Please always refer to terms and conditions of use on the website. See the Custom Terms. The dataset selection includes catalogued...

Combined XML MIDAS export Fotothek Bibliotheca Hertziana

Dec 11, 2023

Liuzzo, Pietro Maria, 2023, "Combined XML MIDAS export Fotothek Bibliotheca Hertziana", https://doi.org/10.17617/3.8GPSDJ, Edmond, V1

The export of all MIDAS documents curated by the Fotothek of the Bibliotheca Hertziana in MIDAS, using the APS database.

Staccioli Digital Archive metadata

Jan 26, 2024

Adamou, Alessandro; Werner, Klaus E.; MARTINELLI, Caterina; Liuzzo, Pietro Maria; Semeniuk , Sophie, 2024, "Staccioli Digital Archive metadata", https://doi.org/10.17617/3.NANN0G, Edmond, V1

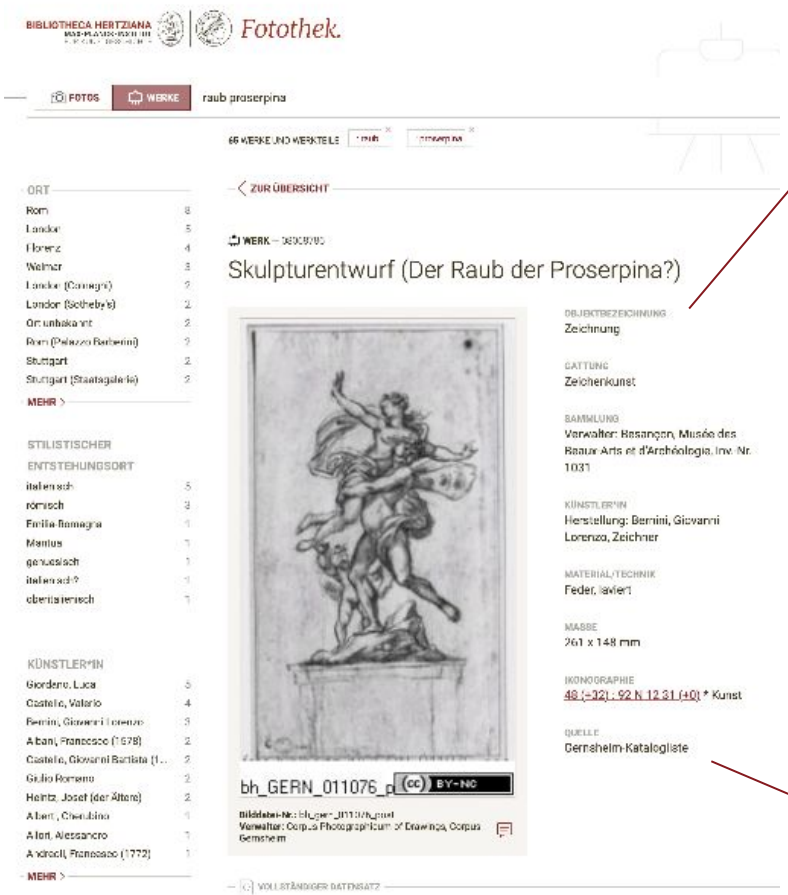
This dataset contains the entire metadata export of the Staccioli Digital Archive, a contemporary art catalogue that documents the life and works of Italian contemporary sculptor Mauro Staccioli. It does not contain scanned images nor direct references thereto. The dataset is ava...

Dataset overview

```
@prefix bhmpi: <http://data.biblhertz.it/ctx/>
```

bhmpi:zuccaro	Information system on Italian art history	CC BY-SA
bhmpi:fotothek	Metadata of our photographic archive	TBD (CC BY?)
bhmpi:noack	Artist catalogue by Friedrich Noack	CC BY-SA
bhmpi:staccioli	Mauro Staccioli Digital Archive metadata	CC BY-NC-SA
bhmpi:echaurren	Pablo Echaurren Counterculture Archive	TBD
bhmpi:romacommunispatria	Census of National Churches in Rome	RV-EZ
bhmpi:lvpa	Mentions of Italian historical locations in rare books digitised at BHMPI	CC BY-SA

Fototeca in NFDI Culture Graph Interchange Format (CGIF)




```
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  "schema:license" : "http://www.deutsche-digitale-bibliothek.de/lizenzen/rv-ez/",
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  } ],
  "schema:creditText" : {
    "@language" : "de",
    "@value" : "Skulpturentwurf (Der Raub der Proserpina?) | Corpus Photographicum of
Drawings, Corpus Gernsheim. Verfügbarkeit: . Bilddatei-nummer: bh_gern_011076_post."
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  }, {
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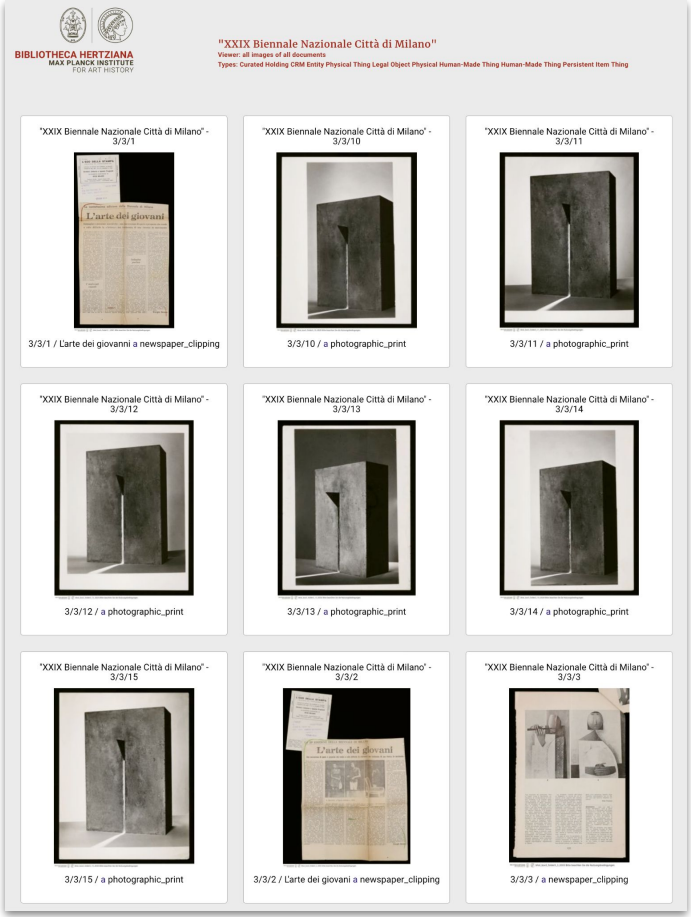
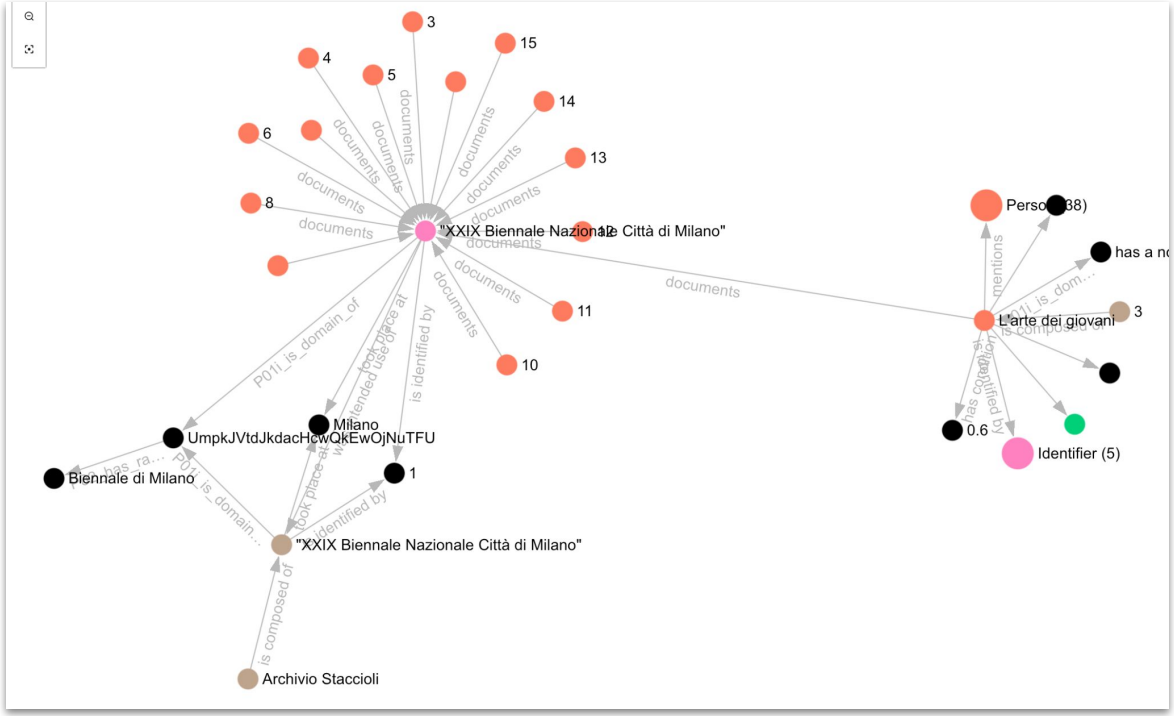
Problem I: Data literacy is heterogeneous and hampers licensing

- Understanding intellectual claims over structured metadata
  - (we have no open science officer!)
  - Fallback to guidelines of the RDM
- Art History institutes feel responsible for protecting the rights of foundations and galleries providing the content to be digitised
- Even extremely “liberal” views on data openness is a double-edged sword, as it may belittle the very need to agree on a license without pondering external factors.

Cohabiting Art History catalogues and digital exhibitions



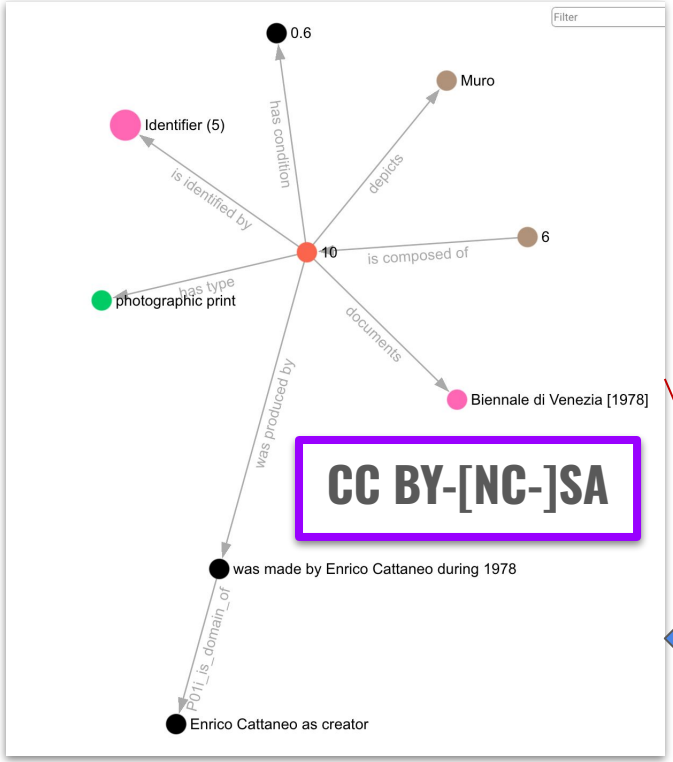
https://staccioli.biblhertz.it/



http://hdl.handle.net/21.11153/biblhertz_staccioli_box_3_folder_3_unit_7

Problem II: rights on visual material may entail stringency

Stop-gap: decouple IIIF generation (and access to images) from metadata management



CC BY-[NC-]SA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logo:
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    format:             "image/jpg"
    service:
      0:
        id:             "https://hertz-foto-osl.biblhertz.it/iiif/3/BH_LOGO_DE_3C_P_QRIZ.png"
        type:           "ImageService3"
items:
  0:
    id:                 "https://gn.biblhertz.it/iiif/3/bhst_box6C_folder6_10_0010/Canvas/MD76991N1"
    type:               "Canvas"
    label:              "Biennale di Venezia [1978] - photographic_print (Box 6C Folder 6 Unit 10) Credits: Associazione Archivio Mauro Staccioli / Fotografia Bibliotheca Hertziana – Max-Planck-Institut für Kunstgeschichte, Roma."
    height:             3646
    width:              4890
    items:
      0:
        @context:       "http://iiif.io/api/presentation/3/context.json"
        id:             "https://gn.biblhertz.it/iiif/3/bhst_box6C_folder6_10_0010/AnnotationPage/"
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          0:
            id:         "https://gn.biblhertz.it/iiif/3/bhst_box6C_folder6_10_0010/AnnotationPage//a1"
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            target:     "https://gn.biblhertz.it/iiif/3/bhst_box6C_folder6_10_0010/Canvas/MD76991N1"
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              service:  […]
    annotations:
      0:
        id:             "https://annotot.biblhertz.it/pages?uri=https://gn.biblhertz.it/iiif/3/bhst_box6C_folder6_10_0010/Canvas/MD76991N1"
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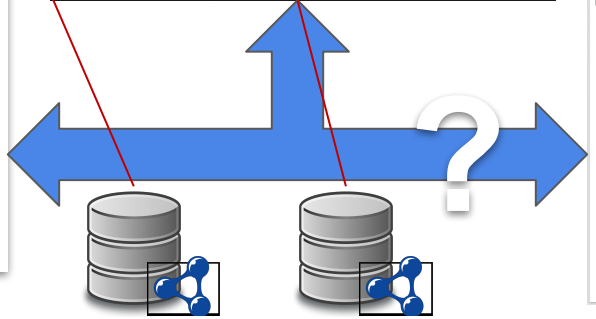
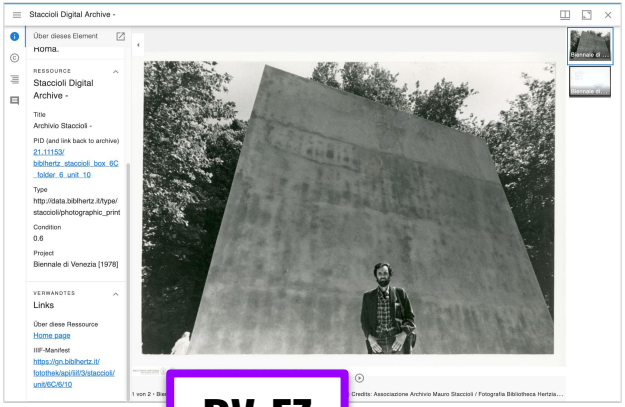
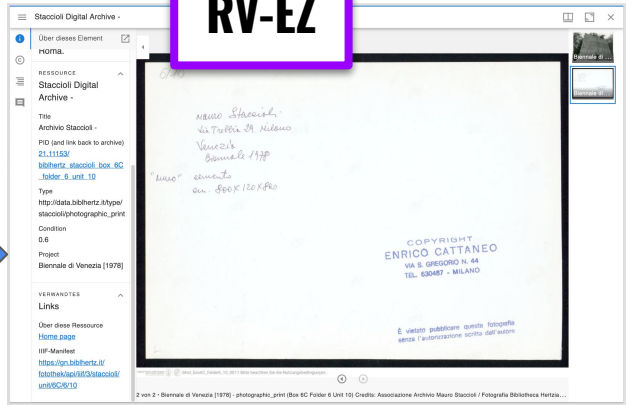




RV-EZ



Problem III: Lack of narrative in data cataloguing

- Cultural Heritage specialist need an understanding of the research questions of art historians to tailor knowledge organisation - Diachronicity etc.
- Yet being able to integrate data, especially external (ow allowing others to integrate your data), is an enabler for constructing narratives.
- Not strictly and issue with data openness (yet with LOUD)

Future directions

Resource identity resolution

- Present users with only the ID of one authoritative source (e.g. Zuccaro)

Virtual/Mediated data integration

- Let various instances of ResearchSpace manage their datasets natively
- Use data.biblhertz.it endpoint to federate onto them in real time

Role of LLMs to support construction of exhibition narratives

- e.g. to describe artwork clusters and hand-picked sets
- Research on effective prompt engineering for art historians

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Thank You

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Alessandro Adamou

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29th January, 2024