

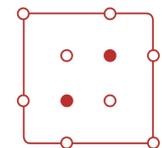
Digital Humanities at the University of Bologna

Silvio Peroni

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ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA
DEPARTMENT OF CLASSICAL PHILOLOGY
AND ITALIAN STUDIES

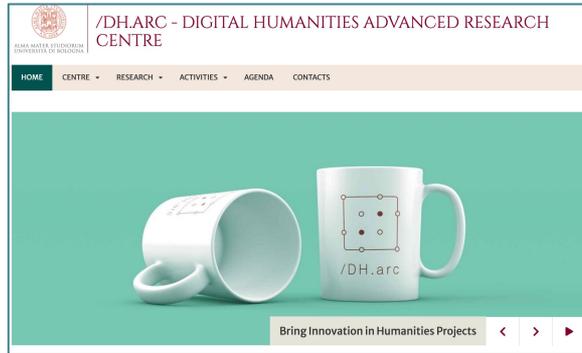


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Two sides of the same coin

Research Teaching



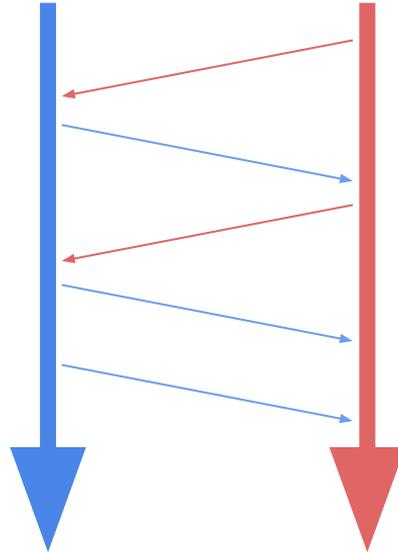
<http://dharc.unibo.it>



<https://corsi.unibo.it/2cycle/DigitalHumanitiesKnowledge>



<https://phd.unibo.it/chede/en>





ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA

SECOND CYCLE DEGREE/TWO YEAR MASTER IN DIGITAL HUMANITIES AND DIGITAL KNOWLEDGE

<https://corsi.unibo.it/2cycle/DigitalHumanitiesKnowledge>

The **international** degree programme in Digital Humanities and Digital Knowledge (DHDK) offers a **cross-disciplinary** curriculum designed to foster close connections between humanities and the sciences of representation and processing of information and knowledge

Three macro-areas of learning:

- **Computer Science**
- Literary, linguistic, historical/cultural and related to the arts in the digital context
- Complementary: economy, law and communication

Programming principles and languages
Data modelling and multimedia database design
Design and creation of web application and interface management
Extraction and representation of data
Production of multimedia applications in a cultural heritage context

E.g.: Computational Thinking and Programming

Goal: introducing essential and practical aspects of Informatics – namely **algorithms**, **data structures**, and **algorithmic techniques** – to students in the Humanities with **no prior knowledge** of them

Notions of Python are briefly introduced – however Python is not the main focus of the course: it is just a tool, i.e. a formal **language**, adopted to **communicate** with and **instruct** an information-processing agent

Learning a programming language is **like learning a new language**: students need to practice it (a lot) to master it properly

Concepts such as **abstraction**, **trial-and-error learning**, **prior experience**, deriving **general principles**, **practice**, are key factors when learning a new language

spot meetings (2 hour each) with tutors to address exercises from the theoretical part

basic course (15 lectures of 2 hours each) - mainly theoretical notions

laboratory (6 lectures of 2 hours each) - learning Python basics

workshop



Topics of the course

Basic notions

Abstraction
Algorithm
Computability
Programming language
Recursion

Data structures

Ordered structures
Unordered structures
Tree
Graph

Algorithmic techniques

Brute-force
Divide and conquer
Dynamic programming
Backtracking
Greedy

Each lecture includes a brief description of a “historic hero” who is functional to the lecture to show that essential aspects such as computation, data structures, recursion can be found in **everyday life** and in places in which they are not usually expected to be

Historic heroes in order of appearance

Noam Chomsky, Ada Lovelace, Alan Turing, Grace Hopper, Donald Knuth, Betty Holberton, Jorge Luis Borges, Douglas Hofstadter, John von Neumann, Leonardo da Pisa, Gabriel García Márquez, AlphaGo, Leonhard Euler, Evelyn Berezin

Project-oriented teaching

Almost all the courses in DHDK includes the development of projects, and some of them are collected in a particular service, i.e. DHDKKey

<https://projects.dharc.unibo.it/dhdkey/>

Select an Author



83 Items Found

Prev 1 2 3 ... 14 Next

Academic Year

- 2019/2020 (32)
- 2020/2021 (24)
- 2018/2019 (19)
- 2021/2022 (5)
- 2017/2018 (3)

Course

- Information Modelling And Web Technologies (15)
- Knowledge Organization And Cultural Heritage (11)
- Knowledge Organization And Digital Methods In The Cultural Heritage Domain (10)
- Knowledge Representation And Extraction (8)
- Museology, Museography And Virtual Environments (7)
- Scholarly Editing And Digital Approaches (6)
- Open Access And Digital Ethics (5)

Apollo 11 Moon LOnDing

Beattie, Rebecca Ghiotto, Maddalena Liviabella, Anita Pensalfini, Martina

Academic Year: 2021/2022

Course: [Knowledge Organization And Cultural Heritage](#)

Moon LOnDing is a Linked Open Data project which seeks to explore the organization and representation of knowledge connected to the Apollo 11 moon landing, focusing on three core narratives: the historic and era-defining nature of the achievement, the political background and the perduring doubts which surround the moon landing, manifest in the proliferation of conspiracy theories, despite physical evidence to the contrary.

- [Project Website](#)
- [Github Repository](#)

ITArtHistorians (ITAH)

Bordignon, Alice Cagnola, Federico Fiorenza, Gabriele

Academic Year: 2020/2021

Course: [Electronic Publishing And Digital Storytelling](#)

ITAH propose an analysis of art historians and the cultural institutions that preserve their collections. Our data sample is composed of the Italian art



ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA

PHD PROGRAMME

CULTURAL HERITAGE IN THE DIGITAL ECOSYSTEM

<https://phd.unibo.it/chede/en>

The aim of the PhD is to encourage the growth and development of new specialized skills in which **digital tools** produce renewed interpretative and analytical approaches in the direction of a **new and wider valorisation, dissemination and public use** of the heritage

12 departments involved

Interdisciplinary and international profile for:

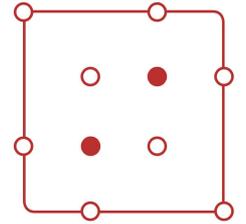
- Superintendencies, museums, libraries, archives, agencies and organization related to the study, management and conservation of cultural heritage
- Private companies that work in cultural heritage
- University research

/DH.arc

The Digital Humanities Advanced Research Centre (/DH.arc, <http://dharc.unibo.it>) is part of the Department of Classical Philology and Italian Studies (FICLIT)

It connects students, researchers, IT staff, and professors from FICLIT, the Department of Computer Science and Engineering (DISI) and affiliated structures, within the University of Bologna

Main aim: is to be a hub for researchers and agencies currently working in the field of DH, and to promote innovative projects in the Humanities

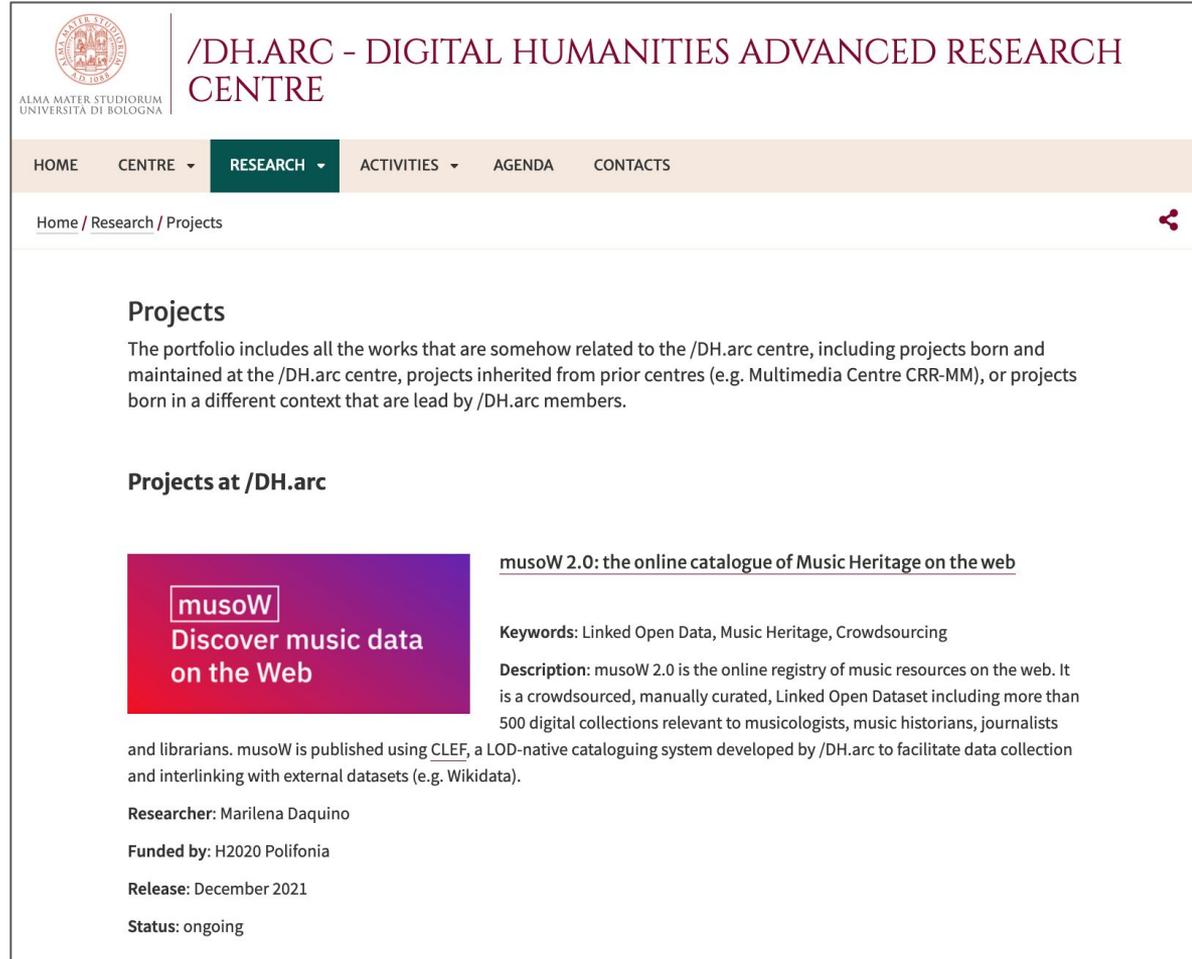


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DHARC Project

The portfolio includes all projects

- born and maintained at the /DH.arc centre
- inherited from prior centres (e.g. Multimedia Centre CRR-MM)
- born in a different context that are lead by /DH.arc members



ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA

/DH.ARC - DIGITAL HUMANITIES ADVANCED RESEARCH
CENTRE

HOME CENTRE ▾ RESEARCH ▾ ACTIVITIES ▾ AGENDA CONTACTS

Home / Research / Projects

Projects

The portfolio includes all the works that are somehow related to the /DH.arc centre, including projects born and maintained at the /DH.arc centre, projects inherited from prior centres (e.g. Multimedia Centre CRR-MM), or projects born in a different context that are lead by /DH.arc members.

Projects at /DH.arc



[musoW 2.0: the online catalogue of Music Heritage on the web](#)

Keywords: Linked Open Data, Music Heritage, Crowdsourcing

Description: musoW 2.0 is the online registry of music resources on the web. It is a crowdsourced, manually curated, Linked Open Dataset including more than 500 digital collections relevant to musicologists, music historians, journalists and librarians. musoW is published using CLEF, a LOD-native cataloguing system developed by /DH.arc to facilitate data collection and interlinking with external datasets (e.g. Wikidata).

Researcher: Marilena Daquino

Funded by: H2020 Polifonia

Release: December 2021

Status: ongoing

Digital Library FICLIT

The digital version of cultural archives and collection held and maintained by FICLIT

Continuous process of scanning and gathering metadata

DL FICLIT Home Index About

Search

Search within our Digital Library over 2400 items and 6 collections:

Search Search

by Authors | List of all Items

nti 1981-1991"
oscritto)

Dógali

Declamations maiores. Ed: Jacobus
Grasolarius

Sophocles The Plays and Fragments. Part
I. The Oedipus Tyrannus

<https://site.unibo.it/adlab>

<https://dl.ficlit.unibo.it>

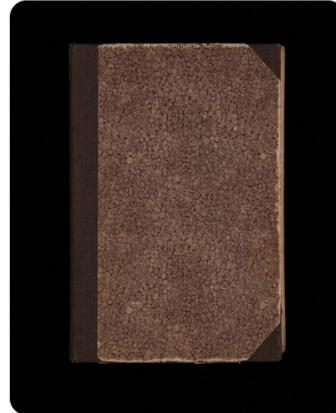
Paolo Bufalini, "Appunti 1981-1991" (quaderno manoscritto)

ITEM



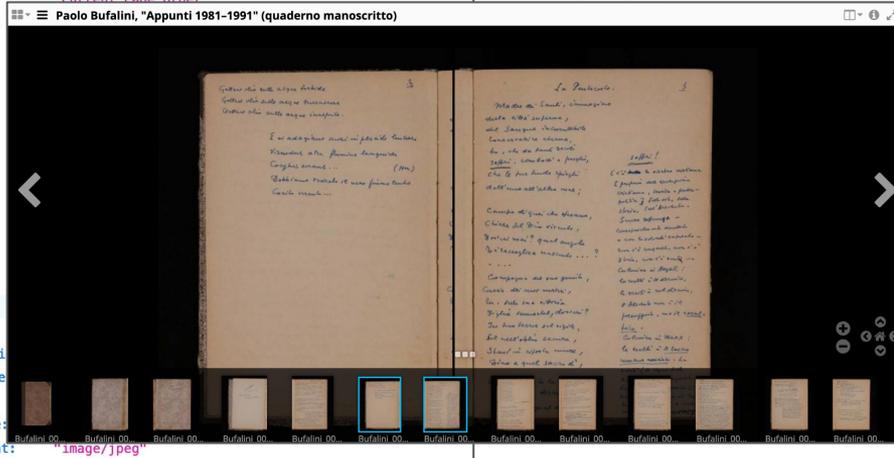
omeka

Technologies used



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▶ attribution: "Dipartimento di Filologi... - Università di Bologna"
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viewingHint:
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    @type:
    label:
    ▶ thumbnail:
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        ▼ resource
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          @type:
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```

Title

- it Paolo Bufalini, "Appunti 1981-1991" (quaderno manoscritto)
- en Paolo Bufalini, "Appunti 1981-1991" (manuscript notebook)

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- en University of Bologna. All rights reserved. Any other reproduction or distribution is prohibited

Type

- it quaderno
- en notebook

Creator

Paolo Bufalini

Date

1981-1991

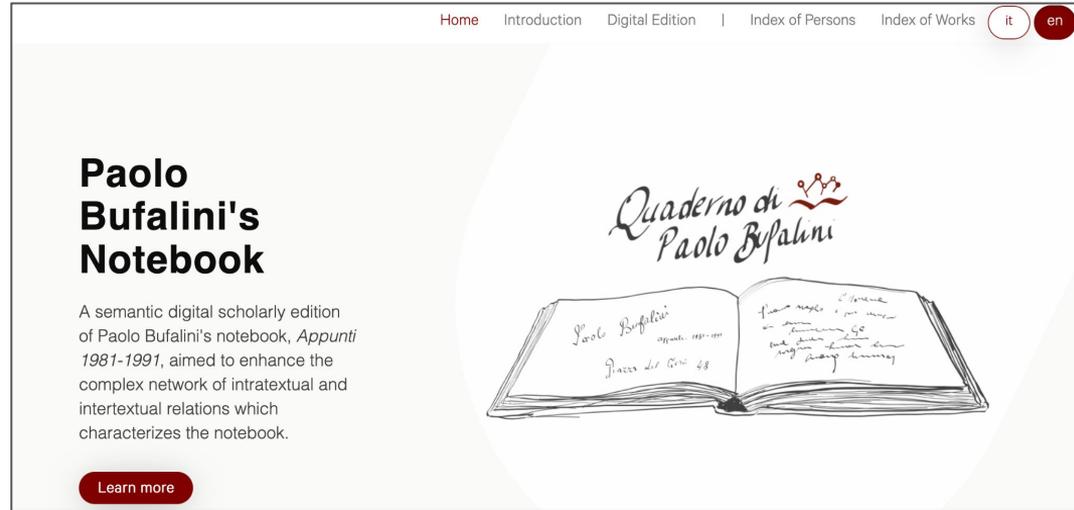
Description

it Paolo Bufalini (Roma, 1915-2001), politico e partigiano italiano, fu tra i massimi protagonisti della politica italiana del secondo dopoguerra. Laureato in giurisprudenza, ricoprì posizioni dirigenziali nel Partito Comunista Italiano, fu membro del Parlamento e Senatore della Repubblica ininterrottamente dal 1963 al 1992. Parallelamente alla carriera politica, Bufalini coltivò il proprio interesse per i classici e, soprattutto, per la letteratura latina. Particolarmente apprezzate sono le sue traduzioni delle odi di Orazio

Semantic Digital Edition of Bufalini's notebook

Between 1981 and 1991, Paolo Bufalini keeps a private notebook with his own thoughts and those of other writers

The Semantic Digital Edition (SDE) is an **extension** of the original digital edition (TEI/XML) with **RDF technologies**, to enrich available information with data extracted from external sources



The screenshot shows the website interface for the Semantic Digital Edition of Paolo Bufalini's notebook. At the top, there is a navigation menu with links for 'Home', 'Introduction', 'Digital Edition', 'Index of Persons', and 'Index of Works'. On the right side of the menu, there are two circular buttons labeled 'it' and 'en'. The main content area features the title 'Paolo Bufalini's Notebook' in a bold, black font. Below the title, a paragraph describes the project as a semantic digital scholarly edition of Paolo Bufalini's notebook, 'Appunti 1981-1991', aimed at enhancing the complex network of intratextual and intertextual relations. To the right of the text is a stylized illustration of an open notebook with handwritten text in red and black ink. At the bottom left of the main content area, there is a red button labeled 'Learn more'.

<http://projects.dharc.unibo.it/bufalini-notebook/>

A workflow for creating SDE

Data modeling

- Reuse of existing ontologies
- Provenance-aware approach

Provenance-aware RDF transformation

- Named graphs
- Nanopublication

Web application

- Serve and exploit RDF data
- Data-driven visualization

The screenshot displays a web application interface for digital manuscript analysis, featuring a sidebar with filters and two main content panels.

Filters:

- People:** A list of names with radio buttons for selection: Albin, Giuseppe; Alfieri, Vittorio; Alighieri, Dante; Antonio, Marco; Arzeni, Bruno; Augusto, Ottaviano; Augusto, Tiberio Giulio; Cesare; Aurelio, Marco; Autore non identificato; Belli, Giuseppe Gioachino; Bonfante, Pietro; Bruno, Giordano; Bruto, Marco Giunio; Campana, Dino.
- Works:** A dropdown menu.

Transcription Panel:

- Header: "Transcription" with a search icon and a close button.
- Text: "Secondo gli aforismi del superuomo, fuori dalla vita non ci sarebbe nessun punto fisso da cui poter riflettere sull'esistenza, nessun'istanza di cui la vita possa vergognarsi." followed by "Th. Mann: 'No, davvero? Eppure si ha il senso che ce ne sia una: se non la morale, è semplicemente lo spirito dell'uomo, l'umanità stessa come critica, ironia e libertà, e insieme come giudizio. «La vita non ha alcun giudice sopra di sé»»

Facsimile Panel:

- Header: "Facsimile" with a search icon and a close button.
- Image: A facsimile of a handwritten manuscript page with a light blue highlight on the text.
- Text: "quotation", "Testo citato", "La filosofia di Nietzsche alla luce della nostra esperienza, excerpt 1", "Thomas Mann", "entità citate", "Thomas Mann".

Zeri e LOD

Goal: to expose the vastness of one of the most important collections of European cultural heritage, the Zeri Photo Archive, as Linked Open Data (LOD)

Two ontologies for describing all issues not completely covered by existent models (the F Entry and the OA Entry Ontology)

Mapping the descriptive elements used in the current Zeri Photo Archive catalog into RDF, converting into CIDOC CRM and into the two new aforementioned ontologies



<http://data.fondazionezeri.unibo.it/>

Knowledge graph

FONDAZIONE FEDERICO ZERI
UNIVERSITÀ DI BOLOGNA

```
1 PREFIX zeri: <https://w3id.org/zericatalog/fentry/>
2 PREFIX fentry: <http://www.essepuntato.it/2014/03/fentry/>
3 PREFIX cidoc: <http://www.cidoc-crm.org/cidoc-crm/>
4 PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
5 PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
6 SELECT ?entity ?type ?title WHERE {
7   zeri:92520 fentry:describes ?entity .
8   ?entity rdf:type ?type ; rdfs:label ?title .
9   FILTER(!contains(str(?type), "/cidoc/")) .
10  FILTER(LANG(?title) = "en") .
11 }
```

Raw Response Table Pivot Table Show 50 entries

entity	type	title
https://w3id.org/zericatalog/photo/113202	fentry:Photograph	"Photograph "Brogi , Milano - Museo Poldi-Pezzoli - Ritratto di donna; Jacopo Palma il Vecchio."**@en
https://w3id.org/zericatalog/photo/113202/shot	fentry:Shot	"Shot of "Brogi , Milano - Museo Poldi-Pezzoli - Ritratto di donna; Jacopo Palma il Vecchio."**@en

Brogi — Milano - Museo Poldi-Pezzoli - Ritratto di donna; Jacopo Palma il Vecchio. ↵



...to the work of art entry

CLASSIFICATION

Inventory number	92520
Fototeca Zeri	
Pittura italiana	
428. Pittura italiana sec. XVI. Venezia 4	
2. Palma il Vecchio: soggetti profani	
PL_04282/49	

has portrayal

Scheda F "Brogi , Milano - Museo Poldi-Pezzoli - Ritratto di donna; Jacopo Palma il Vecchio."

<https://w3id.org/zericatalog/fentry/92520>

ENTITÀ DI TIPO: FEntry

rdfs:comment EN IT
Scheda F "Brogi , Milano - Museo Poldi-Pezzoli - Ritratto di donna; Jacopo Palma il Vecchio."

rdfs:label EN IT
Scheda F "Brogi , Milano - Museo Poldi-Pezzoli - Ritratto di donna; Jacopo Palma il Vecchio."

dcterms:description Brogi , Milano - Museo Poldi-Pezzoli - Ritratto di donna; Jacopo Palma il Vecchio.

rdf:type fentry:FEntry

fentry:describes <https://w3id.org/zericatalog/photo/113202>
↳ Fotografia "Brogi , Milano - Museo Poldi-Pezzoli - Ritratto di donna; Jacopo Palma il Vecchio."

<https://w3id.org/zericatalog/photo/113202/shot>
↳ Scatto (immagine) della fotografia "Brogi , Milano - Museo Poldi-Pezzoli - Ritratto di donna; Jacopo Palma il Vecchio."

<https://w3id.org/zericatalog/photo/113202/pos>
↳ Fotografia "Brogi , Milano - Museo Poldi-Pezzoli - Ritratto di donna; Jacopo Palma il Vecchio."

<https://w3id.org/zericatalog/photo/113202/pos>
↳ Fotografia "Brogi , Milano - Museo Poldi-Pezzoli - Ritratto di donna; Jacopo Palma il Vecchio."

describes

Fotografia "Brogi , Milano - Museo Poldi-Pezzoli - Ritratto di donna; Jacopo Palma il Vecchio."

<https://w3id.org/zericatalog/photo/113202>

ENTITÀ DI TIPO: Photograph

rdfs:comment EN IT
Fotografia "Brogi , Milano - Museo Poldi-Pezzoli - Ritratto di donna; Jacopo Palma il Vecchio."



rdfs:label EN IT
Fotografia "Brogi , Milano - Museo Poldi-Pezzoli - Ritratto di donna; Jacopo Palma il Vecchio."

rdf:type fentry:Photograph

crm:E28_Conceptual_Object

crm:P102_has_title <https://w3id.org/zericatalog/photo/113202/proprio-title>
↳ Titolo proprio "Milano - Museo Poldi-Pezzoli - Ritratto di donna; Jacopo Palma il Vecchio."

Brogi, fotografo della fotografia "Brogi , Milano - Museo Poldi-Pezzoli - Ritratto di donna; Jacopo Palma il Vecchio."

<https://w3id.org/zericatalog/photo/113202/photographer/brogi>

ENTITÀ DI TIPO: RoleInTime

photographer of

rdfs:label EN IT
Brogi, fotografo della fotografia "Brogi , Milano - Museo Poldi-Pezzoli - Ritratto di donna; Jacopo Palma il Vecchio."

rdf:type pro:RoleInTime

pro:withRole <https://w3id.org/zericatalog/role/photographer>
↳ Fotografo

pro:relatesToEntity <https://w3id.org/zericatalog/photo/113202>
↳ Fotografia "Brogi , Milano - Museo Poldi-Pezzoli - Ritratto di donna; Jacopo Palma il Vecchio."

OpenCitations

OpenCitations (<http://opencitations.net>) is an independent not-for-profit infrastructure organization dedicated to open scholarship and the publication of open bibliographic and citation data by the use of Semantic Web (Linked Open Data) technologies

It provides:

- a data model: the OpenCitations Data Model (more later)
- bibliographic and citation databases (CC0) – main collection is OpenCitations Indexes, including more than 1.29 billion citation links
- software available in GitHub repository (<https://github.com/opencitations>) released with open source licenses
- online services: REST APIs, SPARQL endpoints, dumps, interfaces

Provenance and change tracking of entities

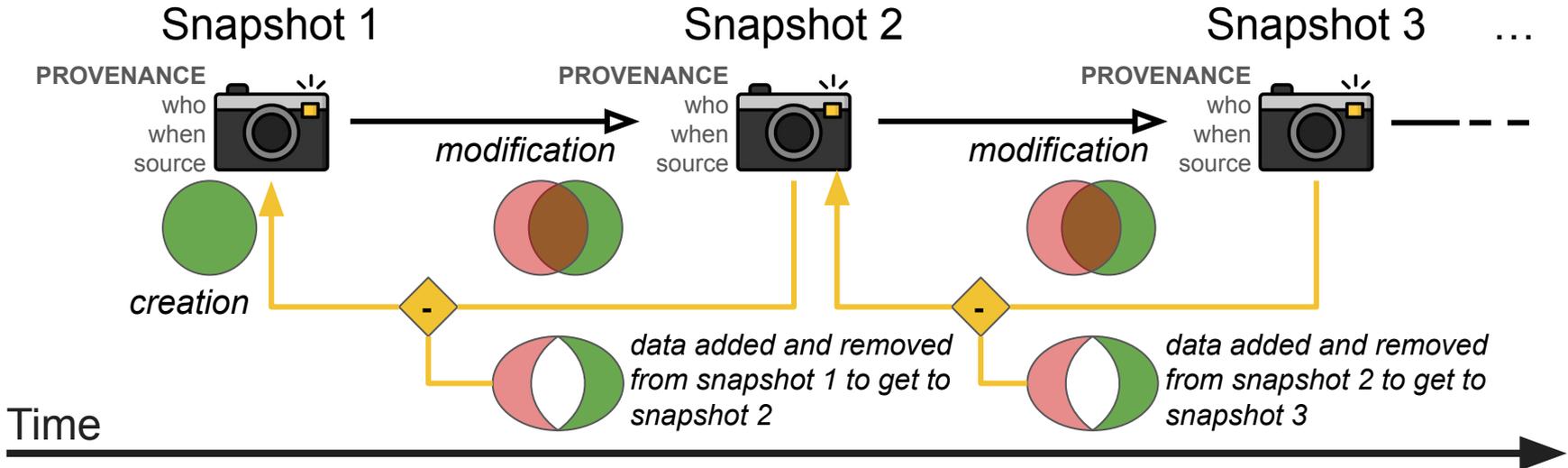
-  adding data
-  removing data
-  remaining data
-  delta:
data added & removed

 snapshot: all the data related to the entity at a given time



An entity
(e.g. a journal article)

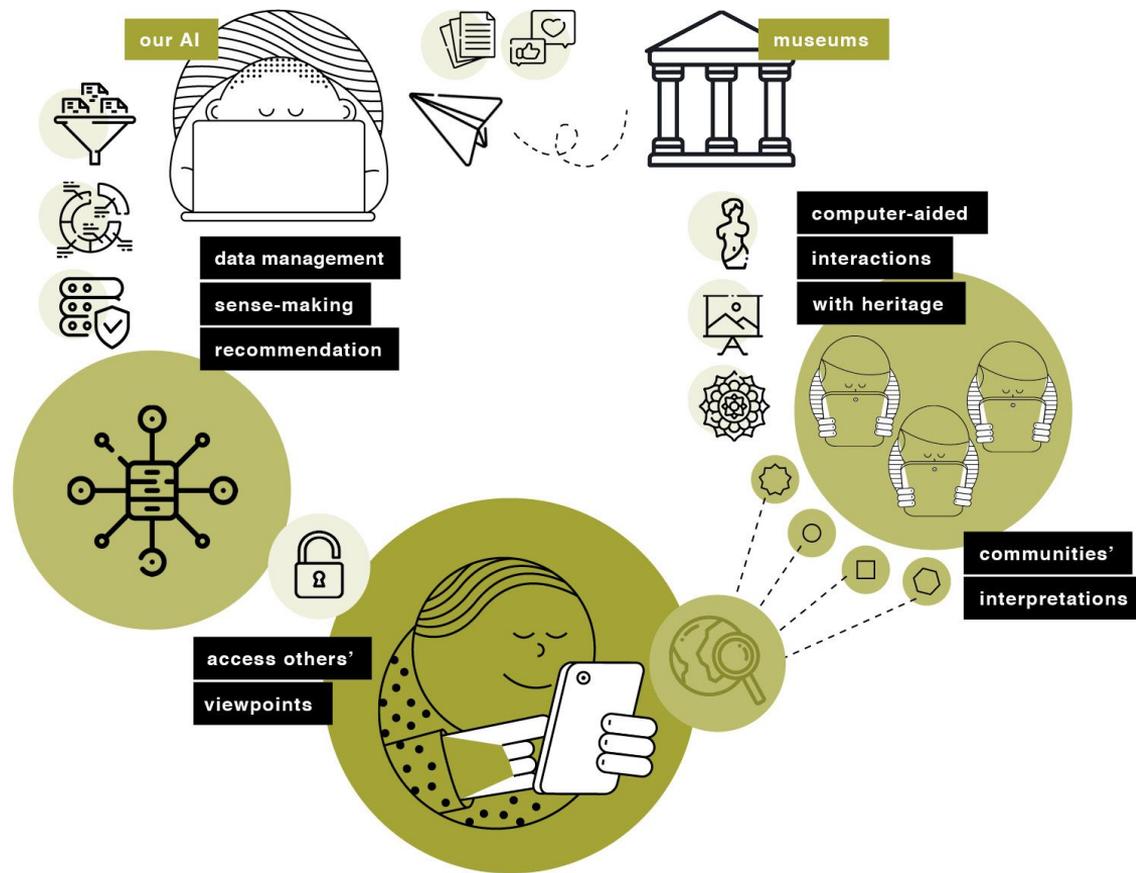
To keep track of the history of an entity we need to store all the data of its last snapshot plus all the deltas built by modifying the previous snapshots



SPICE

SPICE (Social cohesion, Participation, and Inclusion through Cultural Engagement) is an EU Horizon 2020 funded project

Goal: developing technologies that help communities select paintings, artefacts and other museum objects and share their interpretations with others → Citizen Curation

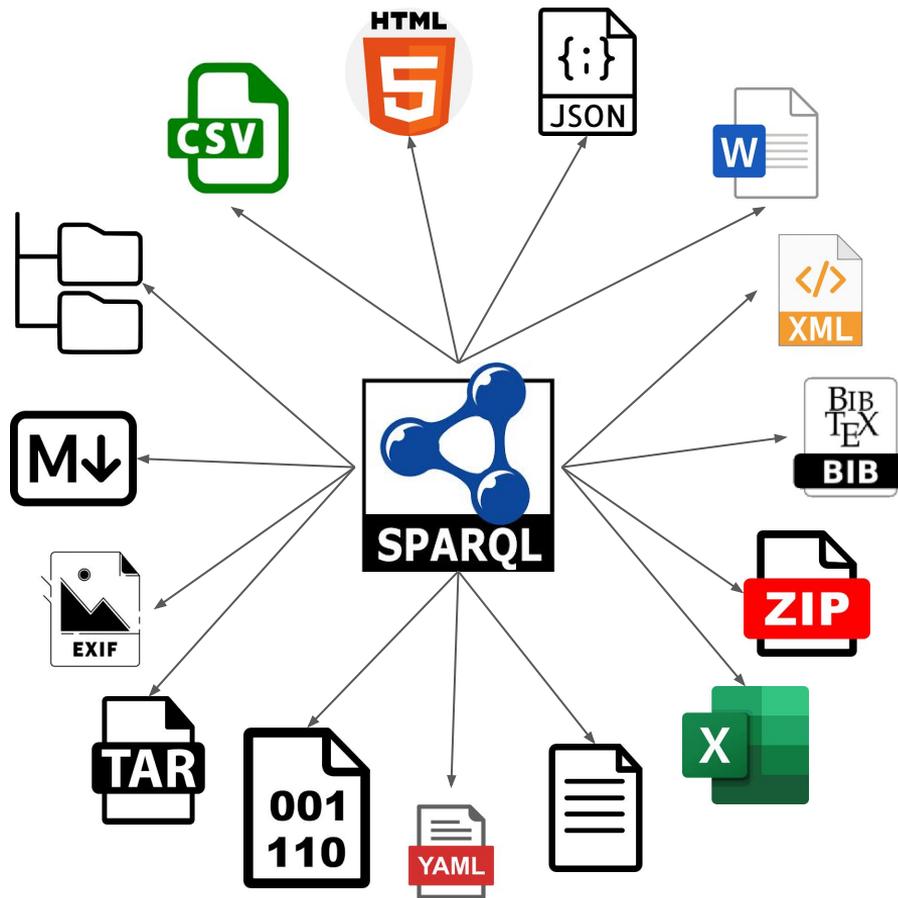


SPARQL Anything

SPARQL Anything is a system for Semantic Web re-engineering that allows users to query anything with SPARQL

- SELECT queries, to get some data out of the particular source
- CONSTRUCT queries, for data conversion into RDF data

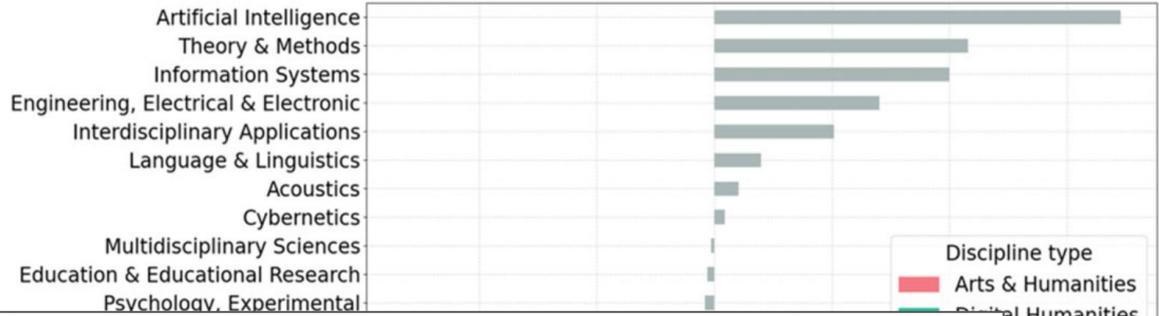
<https://github.com/SPARQL-Anything/sparql.anything>



What are DH?

A study to measure the coverage of DH publications in mainstream bibliographic data sources

DH publications act as a bridge between SSH disciplines – e.g. Linguistics, Psychology, and Pedagogical & Educational Research, that cite DH research – and Computer Science – that is cited mainly by DH research



Show 25 entries

Search:

ID	E_ISSN	P_ISSN	TITLE	URL	level	DH LEVEL	Iteration
1	2532-8816		Umanistica Digitale	https://umanisticadigitale.unibo.it/	1	Exclusively	1
2	2297-2668		Frontiers in Digital Humanities	https://www.frontiersin.org/journals/digital-humanities	1	Exclusively	1
3	2055-768X	2055-7671	Digital Scholarship in the Humanities (DSH)	https://academic.oup.com/dsh	1	Exclusively	1
4	1938-4122		Digital Humanities Quarterly (DHQ)	http://www.digitalhumanities.org/dhq/about/about.html	1	Exclusively	1
5	1918-3666		Digital Studies / Le champ numérique	https://www.digitalstudies.org/	1	Exclusively	1
6	2165-6673		Journal of Digital Humanities	http://journalofdigitalhumanities.org/	1	Exclusively	1
7	2371-4549		Journal of Cultural Analytics	https://culturalanalytics.org/	1	Exclusively	1
8	2616-5732		Journal of Digital Archives and Digital Humanities	http://www.ainoscopress.com/journal-of-digital-archives-and-digital-humanities.html	1	Exclusively	1
9	2630-9696		Digitális Bölcsészet / Digital Humanities	http://ojs.elte.hu/index.php/digitalisbolcseszet	1	Exclusively	1
10	2531-1786		Revista de humanidades digitales	http://revistas.uned.es/index.php/RHD/index	1	Exclusively	1

<https://dhjournals.github.io/list/>

Thank you for your attention

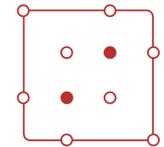
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