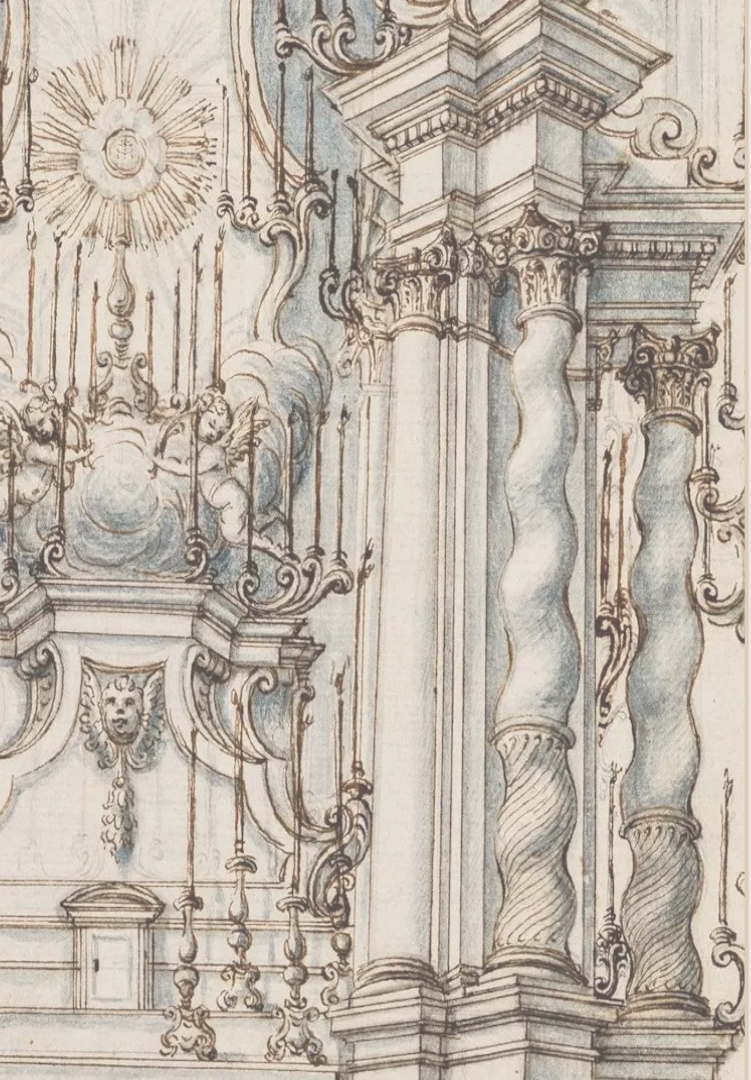

Eurogloss: Live Demo

Exploring the Prototype and Shaping the Development

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Introduction

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Research interest: Computer Graphics and Human-machine interaction

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Towards EUROGLOSS: an Interoperable Knowledge Infrastructure for Built Heritage

Goal: Presenting a systematic analysis of prominent case studies within the field of digital heritage to identify the methodological and technical foundations of the EUROGLOSS platform.

Cannavò, A., Lucarini, C., Dominik, P., Volkan, A., Munteanu, N., & Burgassi, V. (2026). **Towards EUROGLOSS: an Interoperable Knowledge Infrastructure for Built Heritage.** *In 2026 IEEE 5th International Conference on Intelligent Reality (ICIR 2026). IEEE.*

Towards EUROGLOSS: an Interoperable Knowledge Infrastructure for Built Heritage*

Alberto Cannavò, *Member, IEEE*, Costanza Lucarini, Dominik Palla, Volkan Arslan, Nicolae Munteanu, and Valentina Burgassi

***Abstract*—This paper presents the methodological and technical requirements of EUROGLOSS, a digital platform designed to host a multi-layered repository of construction documents related to Modern Age European Royal Residences. By aligning with the FAIR principles, EUROGLOSS aims to establish an interoperable framework where standardized construction terminology is transformed from heterogeneous archival sources into ontological entities, serving as a functional tool for real-time intelligent services. Given that Modern Intelligent Reality (IR) applications require high-fidelity data to bridge the gap between physical architectural assets and their historical evolution, the EUROGLOSS repository can act as a semantic backbone for Knowledge Digital Twins, able to provide practitioners and conservation authorities with actionable historical evidence. To ensure a robust framework, a comparative analysis of representative global digital platforms was conducted, evaluating metadata schemas and system architectures.**

***Index Terms*—digital heritage, systematic analysis, comparative evaluation, knowledge infrastructure, EUROGLOSS**

I. Introduction

The digital transition in Cultural Heritage is moving beyond simple archiving toward the creation of Intelligent Reality (IR) ecosystems [1] In this context, Digital Humanities (DH) are no longer a separate domain but provide the essential semantic backbone for context-aware systems [2]. By integrating high-level humanistic knowledge with AI-driven perception [3], Knowledge Digital Twins of the built environment can be developed so that they are not only accurate but also rich in historical and terminological depth [4].

This vision is operationalized through the EUROGLOSS COST Action (CA24102)[1], an on-going European-wide initiative aimed at overcoming the current fragmentation of technical and lexicographical data related to the built heritage of the Modern Age [5]. Specifically, the project focuses on the construction history of European Court Residencies, a field characterized by a large but dispersed corpus of archival documents, including construction site records, architectural drawings, and administrative accounts [6].

Despite this fragmentation, recent studies have demonstrated that a comparative analysis of different contexts reveals a long-term refinement of local construction techniques and traditions, which evolved in synergy with the expertise of the leading figures of Savoyard architecture [7].

To transform this fragmented landscape into a scalable digital asset, EUROGLOSS is engineering an Open Access Common Repository. This infrastructure is designed as a high-interoperability data layer for historical technical knowledge and its primary output consists of a glossary of technical terms used in the construction processes of 17th- and 18th-century European Court Residences, with a particular focus on documents and drawings produced by artisans and craftsmen. Drawing inspiration from established initiatives such as the glossary of Les Cours de Desgodets[2] and the Getty Research Institute Vocabularies[3], EUROGLOSS digital platform intends to go beyond simple digitization: it seeks to harmonize technical terminology across diverse languages and historical periods. By adopting the FAIR principles (Findability, Accessibility, Interoperability, and Reuse) [8], the project establishes a standardized framework where heterogeneous archival sources become machine-readable. In this perspective, EUROGLOSS proposes a cross-lingual format ontology mapping, providing semantic foundations to an infrastructure that allows for cross-contextual querying and inference. Moreover, to ensure long-term viability and scalability, EUROGLOSS is designed to adopt an extensible modular approach to ontology development. Rather than relying solely on manual curation, the intended infrastructure aims to leverage AI-driven methods for knowledge discovery and semi-automated mapping. By employing machine learning algorithms to analyze heterogeneous archival corpora, the proposed system is intended to help researchers identify new terminological clusters and map them to existing ontological nodes. This AI-augmented framework is designed to not only accelerate the growth of the repository but also ensure that the architecture remains flexible, allowing for the seamless integration of diverse datasets as the European network expands. Such architectural adaptability is planned to ensure both compliance with international interoperability standards and the precision required to capture the nuanced

* This article is based upon work from COST Action "A Glossary of Technical Construction Vocabulary in 17th-18th Century European Court Residences (EUROGLOSS)", CA24102, supported by COST (European Cooperation in Science and Technology).

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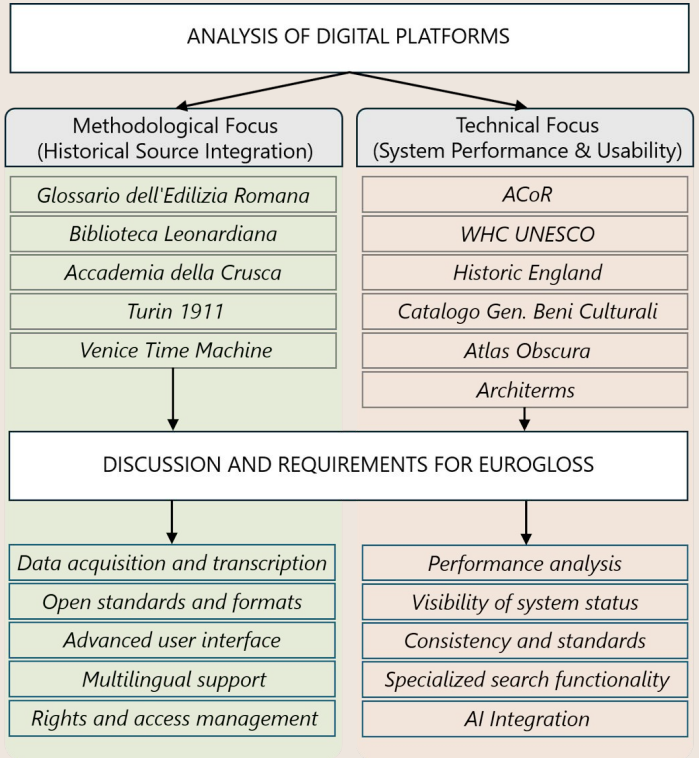
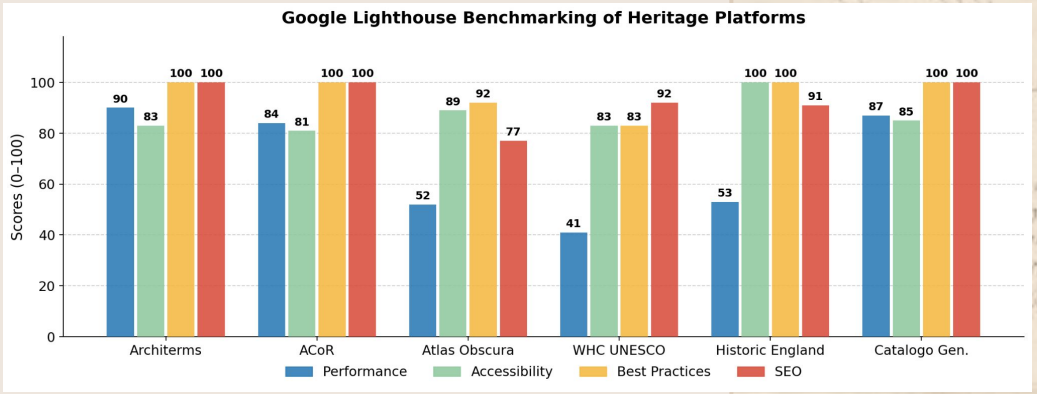
[1]EUROGLOSS COST Action: https://www.cost.eu/actions/CA24102/

[2]Les Cours de Desgodets, http://www.desgodets.ne/glossaire

[3]Getty Vocabularieshttps://tinyurl.com/mrdc7tw4

Preliminary outcomes





Beside Methodological and Technical requirements challenges concern:

- Scalability;
- Data Management.

Solutions proposed at data and interface levels.

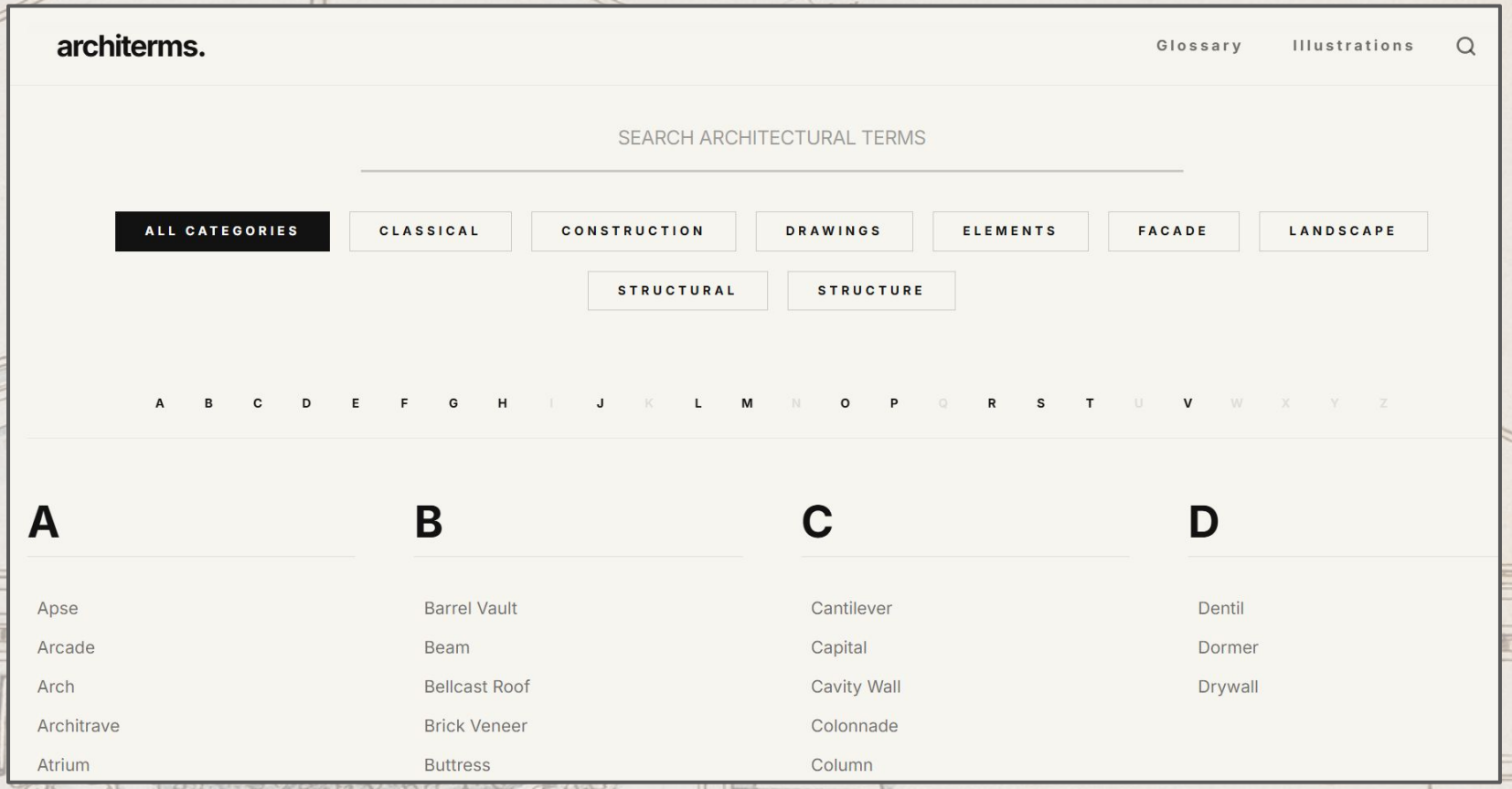
Structure & Architecture of the Web Platform

- **Next.js** as a full-stack general framework, with code is written in TypeScript;
- **PostgreSQL** as a relational database for storing the data structures and the actual documents and images;
- **Resend** for email verification, password change, registration;
- **MapLibreGL JS** with **OpenFreeMap**, **OpenMapTiles** and **OpenStreetMap**;
- **NextAuthJS** for Authentication,

Design

- **Romie Font** chosen by the Design team;
- **Black and White** colors to evoke the feeling of printed paper;
- **Page Frames**;
- **XVII Maps**;

Design Influence - Glossary



Design Influence - Entry

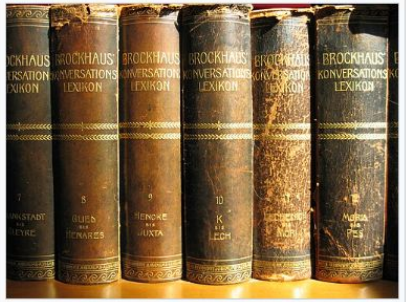
Enciclopedia

221 lingue

Voce Discussione Leggi Modifica Modifica wikitesto Cronologia Strumenti

*Disambiguazione – Se stai cercando il concetto di "enciclopedia" in linguistica, vedi **Enciclopedia (linguistica)**.*

L'**enciclopedia** è un'opera letteraria di consultazione che raccoglie voci informative o critiche «secondo un sistema logico, o anche sotto forma di voci singole distribuite in ordine alfabetico»,[1] riguardanti l'intero campo della conoscenza umana o un suo determinato ambito.[2]

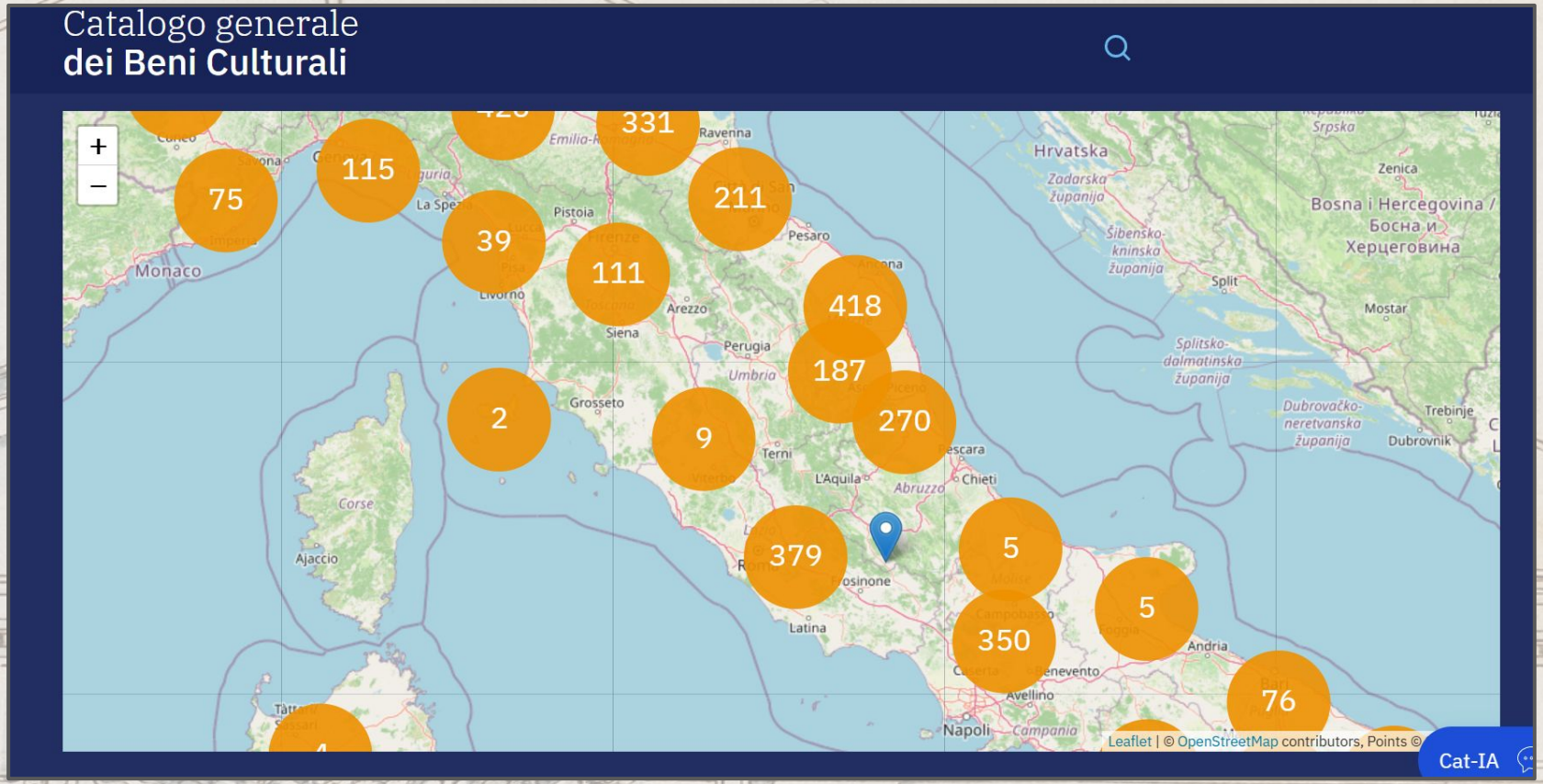


Alcuni dei volumi del *Brockhaus Konversations-Lexikon*, 1902

Il termine latino rinascimentale *encyclopædia* deriva dall'espressione greca di Plinio il Vecchio ἐγκύκλιος παιδεία (*enkýklios paidéia*),[3] letteralmente "istruzione circolare", ossia completa, in grado di comprendere tutte le discipline.[2] Tale espressione fu successivamente ripresa in latino da Quintiliano nella *Institutio oratoria*[4] e compare nel senso moderno del termine per la prima volta nella *Encyclopaedia Cursus Philosophici septem tomis distincta* (1630) di Johann Heinrich Alsted.[5]

Le opere enciclopediche esistono da circa 2 000 anni: la più antica che si è tramandata, la *Naturalis historia*, fu scritta nel I secolo da Plinio il Vecchio. L'enciclopedia moderna si è evoluta dai dizionari

Design Influence - Map



Desktop vs. Mobile

The mobile version of the website has some differences to the desktop version, in order to adapt to the different screen size. The timeline and map have different proportions, and the navigation bar is different - there's a button to display/hide it.

Interchangeability of Glossary, Map, Timeline

In order to enhance the website's rhizomatic quality, particular attention was given to the possibility of switching from one data view to the other, while maintaining the same filters applied.

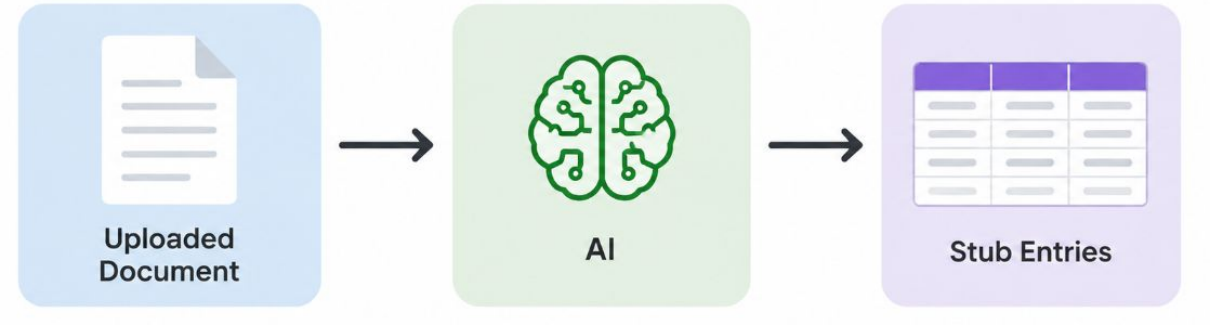
User Types

As of right now, three user types exist:

- **Normal user**: the default user that gets created by registering; can save favourite entries and documents to their account;
- **Researcher account**: created by the Admin; can add and modify entries, and upload documents;
- **Admin**: can create researcher accounts;

AI Integration

In collaboration with the AI team, we are going to integrate a microservice to the website that, upon upload of a new document, will use AI to analyze the file and give as an output a JSON list of stub entries to populate the website.



Clarifications Before the Live Demo

This is **not** to be intended as a working/usable/final version of the website, but more of a demo prototype. The uploads, accounts and entries created during this live demo will be deleted afterwards. The document and entry metadata is still incomplete and the website is not yet ready for use.

Live demo

Scan the QR code to join the live demo

eurogloss.vercel.app

Homepage

EUROGLOSS is a Glossary of Technical Construction Vocabulary in XVII-XVIII Century European Court Residences containing Workmanship, Craftsmen, Tools, Materials and more ordered by Time and Space through the Support of AI, out of a sample of 12 Court Specifications. A project funded by COST-European Cooperation in Science and Technology led by Valentina Burgassi and involving an International Team of Experts.

Navigation Bar

- **Home** is always reachable by clicking on the Eurogloss logo;
- **Glossary** contains the entries in alphabetical order;
- **Map** contains a geographical view of the entries, based on the position of the source they come from;
- **Timeline** contains a temporal view of the entries, based on the time of writing of the source they come from;
- **Documents** contains the documents uploaded by the researchers and used by the AI;
- **About** contains information about the website;
- **Login** permits login and registration - turns to "**Account**" after login.

Live Demo Link at: eurogloss.vercel.app

1. Filter the **Glossary** entries for terms found in the year range “1600-1610”, then change the view to **Timeline** while keeping the same filter.

2. Log in as a **researcher**, upload a new document, save it to favourites and check that it appears in your favourites list.

3. Log in as a **researcher**, create a new entry and try editing it.

To log in as a researcher, use these credentials:

Username:
researcher@gmail.com

Password:
Pass1234#

THANK YOU
Q&A

Please provide feedback at:
https://forms.gle/2ZYBRCvMQsmxYJb6A

For further comments feel free to write to us:
alberto.cannavo@polito.it
nicolae.munteanu@studenti.polito.it