

The Hidden Legacy. Byzantine Seals of the Exarchal Age in Italian Museum Collections: a Digital Approach with SigiDoc

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Abstract

Byzantine sigillography is an interdisciplinary field of study that examines seals once affixed to official documents within the Eastern Roman Empire and its provinces, including Italy during the so-called Exarchal period (584–751 AD). These objects offer valuable insights into various aspects of Late Antique and Medieval Mediterranean history and culture, including language (Greek and Latin), palaeography, administrative history, onomastics and prosopography, religious history, and iconography. Most scholarly editions of Byzantine seals remain in print format, often scattered into journals and miscellaneous volumes, while editions of comprehensive corpora are still limited. This project aims to conduct a systematic study and compilation of the Byzantine sigillographic heritage from the late sixth to the first half of the eighth century, focusing on material discovered in Italy or preserved in Italian museum collections. A key objective is the digitization of these objects, accompanied by the creation of metadata in accordance with the SigiDoc standard for Byzantine seals. Developed over the past decade by researchers in Paris and Cologne, SigiDoc is poised to play a crucial role in enhancing the accessibility and analysis of this rich cultural heritage. By employing SigiDoc, the project aligns with the principles of accessibility, interoperability, and reusability as defined by Digital Humanities (DH) standards. This research is supported by the CHANGES partnership, which seeks to "Cultivate Cultural Heritage Active Innovation for Next-Generation Sustainable Society."

CCS Concepts

• Information System → Data management systems; • Applied computing → Arts and Humanities; • Applied computing → Document management and text processing → Document preparation → Markup languages → Extensible Markup Language (XML)

1. Introduction

Byzantine sigillography is an interdisciplinary field of study that examines seals once affixed to official documents within the Eastern Roman Empire and its provinces, including Italy during the so-called Exarchal period. The establishment of the exarchate in Italy dates back to around 584 AD, following the reconquest of the peninsula's territories by the Eastern Roman Emperor Justinian I of the mid-sixth century. It was a territorial and administrative unit of the Byzantine province under the command of the exarch, a magistrate holding both military and civil powers, created primarily to contain the expansion of the Lombards in Italy from around 568 onward. The authority of the exarch depended on the central administration of the empire in Constantinople therefore he

was an imperial official heading the institutions of the Byzantine government in Italy in the period between 584 to 751 AD.

The Byzantine society made extensive use of seals for daily administration or private correspondence. Most of Byzantine seals are made of lead and are constituted of two sides, each featuring inscriptions and/or iconographies. Their inscriptions usually reveal not only the name of the owner but also his titles and his administrative, religious, civil or military function. Consequently, these objects offer valuable insights into various aspects of Late Antique and Medieval Mediterranean history and culture, including language (Greek and Latin), palaeography, administrative history, onomastics and prosopography, religious history and iconography. It is evident that they also serve as a significant source of our knowledge regarding the bureaucratic and

social system of Byzantine Italy between Late Antiquity and the early Middle Ages.

2. Background and Objectives

The dissemination of these significant material evidences pertaining to Byzantine society has hitherto been reserved to limited-edition corpora and specialised academic journals [Lau62, NO91, ZV72, Zac84]. Moreover, most of these Byzantine seal editions are still extant in paper format, often scattered into journals and miscellaneous volumes. In addition, the absence of widely shared standards for their publication further complicates their searchability and study. The only digital edition of the Byzantine sigillographic evidences is represented by the ongoing online catalogue of the Dumbarton Oaks Research Library and Collection in Washington DC, which holds around 17000 specimens (<https://www.doaks.org/resources/seals>). Given the current absence of other existing digitised collections of Byzantine seals on the web, this project aims to study, analyse and digitise all Byzantine sigillographic heritage discovered in Italy or preserved in Italian museum collections related to the exarchal period, spanning from the late sixth to the first half of the eighth century. This period, in fact, is characterised by an absolute paucity of written documentation, so the creation of a systematic digital collection of its sigillographic evidence represents a significant contribution to historical research focused on the study of Byzantine institutions and officials active in Italy, as well as their relations with the central government in Constantinople and other Byzantine institutions in the provinces.

This project could also relate to broader international initiatives focused on the publication, sharing, and reuse of cultural heritage data, such as those promoted by the International GLAM Labs community, the Collections as Data principles, and the AI4LAM network, aligning the project with broader efforts in cultural data reuse.

3. Methodology: Digital Edition with Sigidoc

In order to achieve this goal, however, a more innovative encoding system in the field of Digital Humanities has been employed for the edition of Byzantine seals, namely the SigiDoc standard [SFS20, NBC*24]. Developed over the past decade by researchers in Paris and Cologne, SigiDoc is poised to play a crucial role in improving the accessibility and analysis of this rich and interdisciplinary cultural heritage. Following the ongoing experience of EpiDoc, this system has been developed to be an XML-based and TEI-compliant providing standard, guidelines and tools for creating and encoding scholarly editions of ancient texts and documents produced on various text-bearing objects. It is largely based on EFES, a delivery, search and browse platform that can be set up and customized for an individual EpiDoc XML-based project, requiring only minimal training and technical expertise from the project team [BY20].

SigiDoc is a scheme compatible with EpiDoc and in general with all TEI schemas. It has been configured as a template of edition structure, as a stylesheet for HTML transformation, as a set of stylesheets for scholarly editions of the seal inscriptions, as a highly customized version of EFES, as a set of encoding guidelines, and as a set of files to be shared in the next future [SFS20]. In relation to the seal as an object, the metadata provided by SigiDoc concern the physical description of the seal (metal, diameter, state of preservation, etc.), its dating and dating criteria, the history related to its issuer and its conservative history, a description of its iconography (if applicable) and a bibliography of references to the seal and to its parallels (if applicable) [SFS20, NBC*24]. Since seals are text-bearing objects, SigiDoc provides the edition of their legends in diplomatic and interpretative form by two different tabs in EFES visualization, while the XML markup of the legend is available in a third tab. In the diplomatic edition of the seal legend great attention is given to the lettering criteria with the use of a special font, Athena Ruby, which optimises the visual rendering of the seal inscription [SFS20].

4. Evaluation

This approach has the effect of increasing the searchability of the text-lettering and facilitating the analysis of the evolution of the sigillographic epigraphy, which is one of the most important criteria for dating the seal. For instance, in an exarchal specimen found in Italy (Hermitage, M-7847, Lichačev collection), the Latin uncial letter *d* exhibits a shape with the peduncle extended to the left. This visual configuration is more prevalent in the West from the mid-seventh century onwards, as evidenced by the coin inscription and certain stone inscriptions [Mor92]. Furthermore, another bilingual (Latin and Greek) specimen, preserved in the National Museum of Ravenna (MNR 509/2019), could pertain to the same individual since the name, title, provenance and dating criteria of lettering support this hypothesis. This information is shared through SigiDoc, making the dating methodology explicit and fostering scholarly discussion, review, and correction, thus promoting best practices in collaborative research. In the context of the interpretative edition of seal legend, SigiDoc promotes the spread of the well-established Leiden conventions, which represent non-verbal information such as lacunae, abbreviations, errors, etc. in the inscriptions. This ensures effective interoperability and facilitates easier searchability across corpora.

Particular attention is also given to the quality assurance of the data, including consistency in metadata standards, clear criteria for palaeographic dating, and adherence to best practices in epigraphic encoding. This rigorous approach aligns with the consolidation of FAIR (Findable, Accessible, Interoperable, Reusable) data principles, ensuring both scholarly reliability and the long-term sustainability and reusability of the digital outputs.

Following recent advances in the SigiDoc framework, efforts are underway to establish links with external Linked Open Data repositories such as Wikidata and GeoNames, with the goal of improving discoverability, semantic interoperability, and integration with broader digital ecosystems [NBC*24].

5. Conclusion and Future Developments

Since 2021, a GitHub repository has hosted an in-progress version of the code, while the [SigiDoc 1.1](#) website provides documentation, guidelines, and general information about the project, including a test corpus based on a digitally enhanced version of a previously published article.

In the longer term, the project also considers alignment with European infrastructures for cultural heritage data, such as the European Open Science Cloud and the forthcoming Collaborative Cloud for Cultural Heritage, relying on a consolidated internal data model and aiming at ensuring FAIR data principles and integration into broader digital ecosystems.

Finally, a forthcoming centralised search interface will allow for a virtual unification of all the corpora datasets encoded in SigiDoc [NBC*24], including the exarchal age seals in Italian Museum collections project. This will make all its data accessible and interoperable, thereby providing a valuable resource for the historical study of the functioning of the Byzantine administrative machine and its historical protagonists in the context of the Italian peninsula in the early Middle Age.

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