

Presenting research in an engaging way: digital exhibitions as a sustainable publication format

Introduction

There is a wide range of digital methods and tools available for presenting and publishing research in the humanities, from digital collections and research portals to digital working environments and digital exhibitions¹. In this article, we introduce the digital exhibition "Approaching Byzantium Through Seals", containing Byzantine lead seals, gathered from different collections around the world,² and discuss its potential as a publication format. Publications are a fundamental element of scientific work because they make research results comprehensible, citable and permanently accessible.³ The rapid development of digital technologies has contributed to the dissemination of research material, which now encompasses much more than traditional forms of publication, such as printed editions or bibliographies, as well as digital formats, such as databases or catalogues. Research results are increasingly disseminated via blogs, social media or TED Talks broadcast on YouTube, for example.⁴

Digital exhibitions

A prominent example for a DH-specific publication format are digital editions: they can be distinguished from other digital publication formats in their consequent use of data standards to make resources permanently and transparently accessible.⁵ A non-textual example is PURE3D, an infrastructure for the preservation and display of 3D editions. It "accepts projects which use 3D models as the central component for making a scholarly argument, developing hypotheses, or answering research questions".⁶

Another publication format that gained more interest recently are digital exhibitions. Unlike digital editions, they do not usually contain detailed scholarly analysis of textual sources or extensive annotations, and are not designed specifically for permanent citability or reusability in research. Their focus is on the visually appealing and often narrative presentation of selected objects or themes, and they usually aim at a broader audience.⁷

¹ The term "digital exhibition" (also known in specialist literature as virtual or web exhibition) is not easy to define due to its heterogeneous nature (Rettenwander, 2023, 233). According to Hendrikje Carius and Guido Fackler (2022a, 13), a digital exhibition "currently encompasses a variety of media forms that relate to the curated presentation of exhibits, collections and themes on the web".

² <https://byzantine-seals-exhibition.dibs.uni-koeln.de/>.

³ See Schirmbacher and Müller, 2009, 9-10.

⁴ See Ross-Hellauer et al., 2020.

⁵ See Sahle et al., 2014.

⁶ <https://pure3d.eu/submission-guidelines> (accessed: 26 November 2025).

⁷ See Spohr and Westermann, 2022, 90.

However, digital exhibitions can also be seen as independent scholarly publications and as research-related services.⁸ This ranges from the obvious advantages of digital media, such as greater visibility, to special added values such as linking to external offers, for example through persistent identifiers.⁹ Digital exhibitions often aim to draw attention to the entire collection by means of selected sample objects, which can contribute to greater visibility, networking and integration into research and teaching.¹⁰

Implementation of digital exhibitions

The implementation of digital exhibitions as research-related services¹¹ encompasses several areas of responsibility, depending on the size of the project.¹² Swantje Dogunke illustrates this in her *"Level model for the creation of virtual exhibitions"*,¹³ which clearly shows that the creation of a digital exhibition may require the involvement of experts from various fields.

The creation of digital exhibitions can be supported by using domain-specific tools. A well-known open-source software solutions for creating digital exhibitions is Omeka S,¹⁴ which, according to Swantje Dogunke, allows "a single person with basic knowledge of data standards and procedures at various levels [...] to achieve solid results".¹⁵

Besides using off-the-shelf solutions, digital exhibitions are often implemented individually. This usually allows for more possibilities regarding design and functionality, while at the same time allowing more control with regard to standardisation, curatorial freedom and independence from external infrastructures.¹⁶ However, individual solutions require a higher level of effort and expertise, as many components must be (re-)designed and (re-)built, whereas solutions like Omeka S, for example, provide various themes, templates and modules (such as maps, timelines, etc).

Digital exhibition of lead seals

The digital exhibition presented in this article can be described, according to Carius and Fackler (2022b), as a complementary¹⁷ exhibition in linear programming, which presents the content partly in a mosaic-like manner and partly in a reflective manner.¹⁸ The exhibition

⁸ See Carius and Fackler, 2022b, 26.

⁹ See Dogunke, 2022, 53.

¹⁰ See Eck and Kaiser, 2020, 389-391.

¹¹ This includes research data, as well as research output.

¹² See Dogunke, 2022, 55.

¹³ See *ibid.*, 2022, 55.

¹⁴ <https://omeka.org/s> (accessed: 26 November 2025).

¹⁵ See Dogunke, 2022, 58.

¹⁶ See Carius and Fackler, 2022b, 23; Carius and Fackler, 2022a, 85.

¹⁷ Carius and Fackler call a digital exhibition complementary, when it exists next and in addition to a physical exhibition (Carius and Fackler, 2022b, 17).

¹⁸ See Carius and Fackler, 2022b, 17-18.

features 34 Byzantine lead seals, accompanied by essays written by students and reviewed by experts as part of a seminar in Byzantine Studies.¹⁹

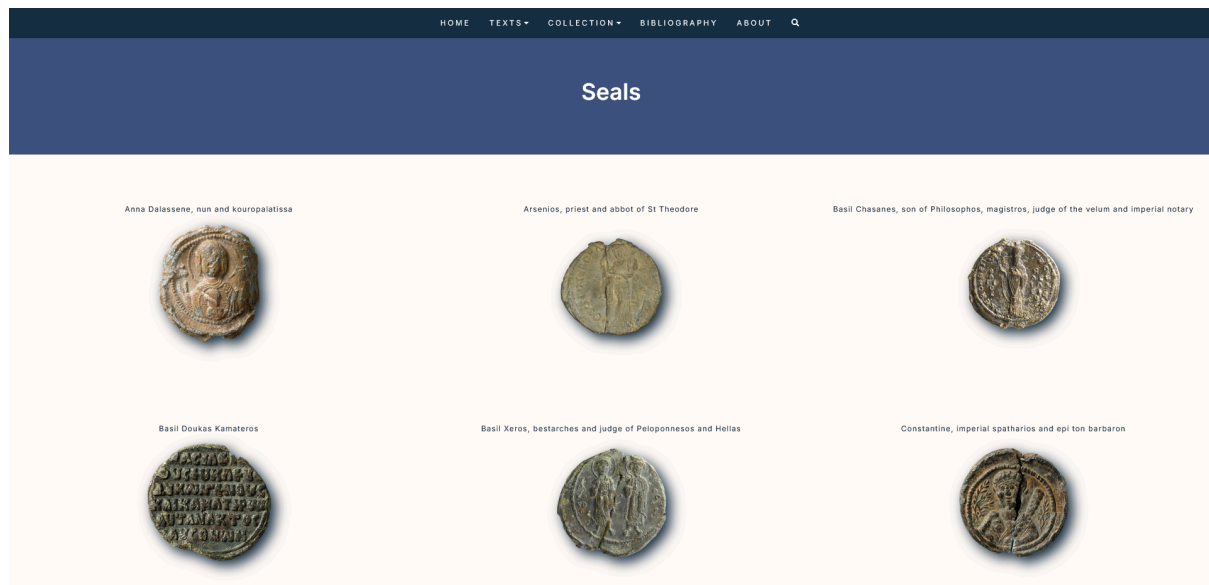


Figure 1: The overview page of all seals in the digital exhibition. It shows the seals with their title.

The exhibition allows users to explore the seals, starting from the overview page (Fig. 1), one by one via corresponding essays. It contains introductory texts on the Byzantine Empire and Byzantine sigillography, interactive explanations and a bibliography. In addition, the seals are presented on a timeline and linked to RTI²⁰ (Fig. 2) and 3D images where possible.

¹⁹ The seals were selected from various collections. The seminar focused on the social status of sealers, and how the Byzantines expressed their social and cultural identity through images and inscriptions on their seals.

²⁰ Reflectance Transformation Imaging: This is an imaging technology that allows images of small objects to be captured and displayed from different lighting perspectives.

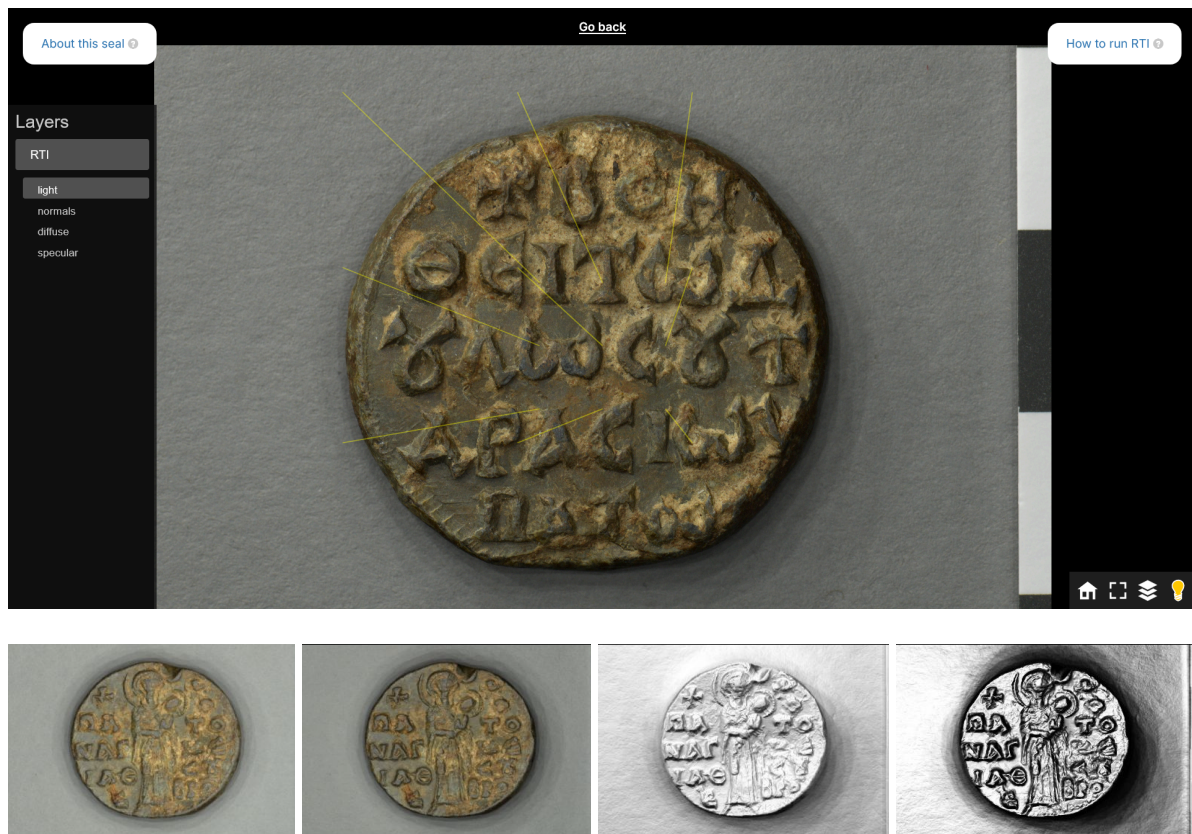


Figure 2: Image of the RTI-viewer (OpenLime Viewer). The lower part shows RTI images with different lightsources applied.

Common web technologies such as HTML, CSS, JavaScript and Bootstrap were used to develop the digital exhibition.²¹ The technical architecture was kept as simple as possible to ensure flexible adaptability and easy maintenance. The exhibition has undergone the final review and last corrections are in progress. It has already been assigned a persistent URL. For permanent and unique identification, it has been assigned a DOI and uploaded to Zenodo. The source code is stored on GitHub for versioning, and the conceptual and technical documentation has been made available.²²

Summary and outlook

Digital exhibitions have great potential as complementary research-related services and can serve as a sustainable publication format. To ensure that the digital exhibition meets the standards of a sustainable publication, several aspects had to be taken into account. The individual components of the digital exhibition (e.g. introductory texts, images, 3D models, and essays) had to be curated, visualized and stored sustainably by using appropriate standards and tools. Furthermore, the exhibition is permanently citable and accessible via

²¹ The following tools were also used: TimelineJS (<https://timeline.knightlab.com>), OpenLime Viewer (<https://github.com/cnr-isti-vclab/openlime>), Semantic Kompakkt (<https://semantic-kompakkt.de>), Minisearch (<https://github.com/lucaong/minisearch>), Openseadragon Viewer (<https://openseadragon.github.io>).

²² This refers to the consideration of research transparency, openness and accountability described by Sebastian Barzaghi et al in their article "Thinking Outside the Black Box: Insights from a Digital Exhibition in the Humanities."

persistent identifiers, such as DOIs while adequate documentation ensures reproducibility and transparency. We would like to discuss this digital exhibition with the DH Benelux community in terms of best practices in DH research (such as compliance with the FAIR principles²³) and its potential as a sustainable publication format. For future work, we would like to discuss the possibility of adding a stronger emphasis on integrating more elements of digital storytelling, e.g. in the form of a VR exhibition.

²³ Findable, Accessible, Interoperable, and Reusable, see <https://www.go-fair.org/fair-principles> (accessed: 26 November 2025).

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