REVISITING THE VALLETTA CONVENTION FOR THE DIGITAL AGE

Position statement on archiving primary archaeological data

Prepared by the 'Archaeological Archives' Working Group

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EXECUTIVE SUMMARY

There is a significant disparity in the value of archaeological data and their handling within heritage management practice. This imbalance threatens the preservation of cultural heritage being continuously removed from the landscape and transformed into archives of (digital) archaeological documentation. To mitigate the risks, systemic changes are necessary. These changes require political decision-making to provide the resources, a clear framework, and the tools to create a sustainable and meaningful environment for archaeological archiving, leading to the highest possible social benefit. We propose a set of basic principles for the handling of primary documentary archives and recommend practical measures to be taken in the legislative and organisational framework and derived archaeological practice. The proposed measures should be applied as widely as possible as a basic standard of care for archaeological cultural heritage.
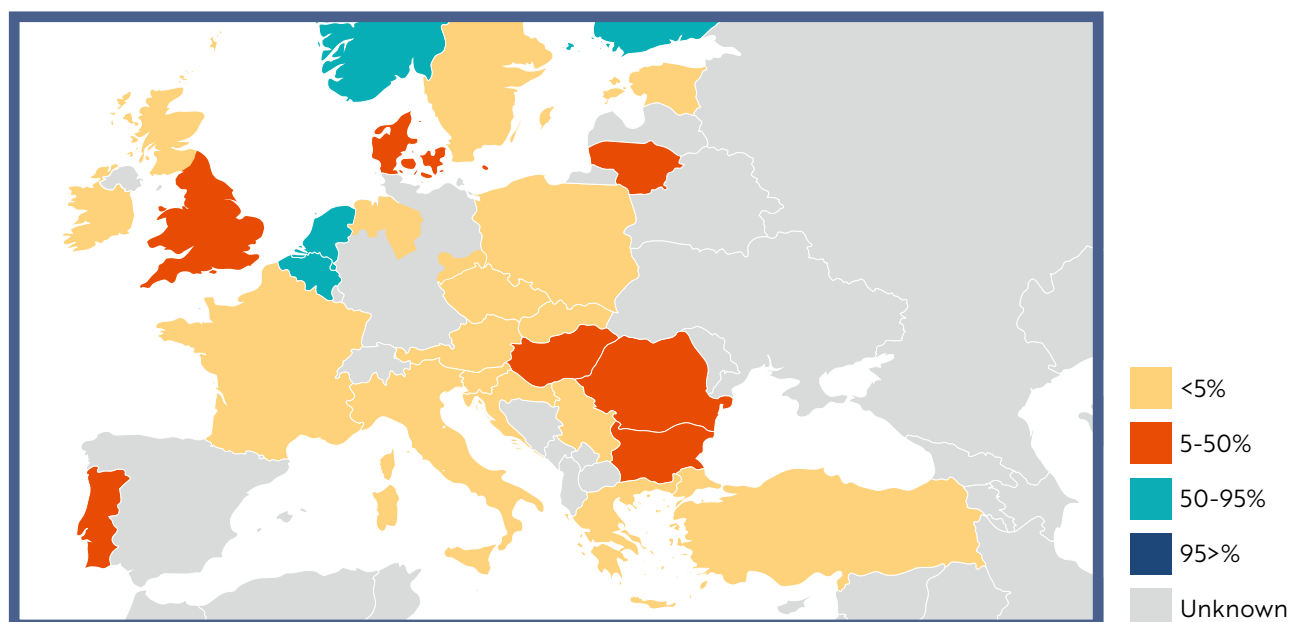
Spatial summary of responses to question "What portion of digital fieldwork data in your country/state is available online?". After Novák et al. 2023 (doi.org/10.11141/ia.63.7).

CULTURE HERITAGE UNDER DIRECT THREAT

"The advent of ubiquitous computing has created a golden age for archaeological researchers and participating publics, but the price is a digital resource, which is now in jeopardy. The archaeological record, in digital form, is at risk not simply from obsolescence and media failure, but the domain is also unable to fully participate in Open Data. Without swift and informed consensus and intervention, Archaeology will lose the majority of its research data legacy and capacity to a digital Dark Age." SEADDA

Sites in the landscape, including archaeological finds and contexts in their original locations, represent the sole direct source of primary archaeological data. It is widely agreed that the main focus of archaeological heritage management should be on the preservation and investigation of these sites, without direct destructive intervention. This approach is driven by the understanding that intentional or unintentional intrusions into archaeological sites are destructive and necessitate the creation of archaeological archives to replace disappearing heritage. Intervention is usually necessary due to loss caused by human activity (e.g. building development), environmental change, such as erosion or water table change, or it can be driven by research purposes. The primary objective of archaeological preservation is to minimise the loss of archaeological heritage and to conserve as much information as possible.

The excavation of archaeological sites, which involves the controlled destruction of their material form, is only justified if the site is excavated and documented thoroughly in accordance with the current archaeological methodology and in line with its significance, and if the resulting archive is going to be preserved. Because archaeological excavation is a non-repeatable event, the archaeological documentation is the only surviving record of the now-destroyed or damaged site. This also applies to finds and samples processed in destructive post-excavation analyses or to deselected finds (cf. Oniszczuk et al. 2021). As such, the archaeological heritage consists of three components: sites, recovered finds, and documentary archives, together forming an indivisible complex in which the still-existing sites are gradually converted into the remaining two components. In the context of archaeology, primary documentation is a direct constituent of cultural heritage, rather than an addition to it. This makes the primary data so important, and why their preservation and accessibility are prioritised in the following recommendations.

Upon analysing the situation (Novák et al. 2023), several recurring deficiencies in current practice have been identified. One of the main issues is the lack of recognition for the heritage value of archaeological data in legislation and regulations, regardless of their analogue or digital format. Typically, only the physical components of archaeological heritage, such as sites and artefacts, are subject to targeted protection and recording. Procedural steps concerning the creation, storage, and accessibility of primary documentation are undefined in many countries. Consequently, the preservation of archaeological data is left to the discretion of various stakeholders. Unclear or widely distributed system of responsibilities leads to inefficiency and a shortage of competent staff and resources for the proper care of archaeological data. Additionally, the interests of creators and custodians of archaeological documentation often take precedence over public interests and heritage management objectives.

The preservation of digital archaeological data presents a particular set of challenges due to their advanced nature and associated costs. The legal and administrative procedures in place do not always reflect the progress made in the digital workflows, and organisations responsible for the archives may lack the necessary knowledge and resources to manage them adequately (cf. Richards et al., 2021). Documentary archives are often dispersed and stored in unknown locations, where proper security and sustainability measures are not implemented. In many countries or regions, the lack of a centralised online catalogue of archaeological documentation makes it impossible to trace and reuse such data. This dispersion may result in the loss of proper linkage to material elements of the collected archives. Even in countries where data is relatively accessible, interoperability and reusability are often lacking due to inadequate data management. Consequently, a significant part of cultural heritage is at risk of complete and uncontrolled destruction.

In European practice, it is apparent that the long-term preservation of archaeological digital data is not assured in the absence of laws and infrastructure that guarantee their preservation. Similar to the preservation of material archaeological remains, preserving the heritage value of documentary archives requires sustainability. The difficulties encountered in data archiving lie in broader organisational and legal issues, which create unsustainable conditions for the management of archaeological heritage. The current definition of cultural monuments focuses exclusively on the material component and creates a misconception that preserving the physical sites and finds alone will yield satisfactory outcomes. However, the preservation of only these elements without adequate archaeological documentation would result in an incomplete representation of the European historical landscape. Crucial changes in conceptual, practical, and organisational terms are necessary to address the current challenges. It is essential to take concerted actions to implement these recommendations to prevent the loss of shared cultural heritage.

POLICY FRAMEWORK AND BACKGROUND

The Valletta Convention was adopted in 1992, before the emergence of digital and internet solutions, which are not addressed therefore. However, a doctrinal framework that can support the case for digital archaeology already exists. In 2003, UNESCO adopted the *Charter on the Preservation of Digital Heritage*, which recognizes the existence of digital heritage, whose "lasting value and significance" should "be protected and preserved for current and future generations" (Article 1). The purpose of preserving digital heritage is to ensure public accessibility (Article 2). The charter emphasises the need for action: "To preserve digital heritage, measures will need to be taken throughout the digital information life cycle, from creation to access. Long-term preservation of digital heritage begins with the design of reliable systems and procedures which will produce authentic and stable digital objects." (Article 5). In the two decades that followed, some of the measures specified in the charter were implemented. However, archaeological archives have been left behind, partly because they exist at the intersection of multiple domains, including heritage management, science, administration, and archiving. To be accessible and fully reusable, they require more attention than other digital resources.

Infrastructures for spatial information in public institutions were established across the European Union after the adoption of the INSPIRE directive, which aimed to facilitate informed environmental policy-making (Directive 2007/2/EC). However, this directive did not sufficiently address the needs of digital archaeological archives, which encompass a much broader scope of data than site location and basic metadata. Despite this, the implementation of the directive has ensured that each member state of the EU has a minimum spatial infrastructure that archaeological heritage managers can utilise as a foundation for further improvements.

The Council of Europe (CoE) recognized the right of everyone to benefit from cultural heritage and to contribute to its enrichment, while also acknowledging the responsibility to respect the heritage of others, in its *Framework Convention on the Value of Cultural Heritage for Society* (CETS No. 199, Article 4). The convention also emphasised the need to utilise digital technology to enhance access to cultural heritage and called for the exchange of information and internationally compatible standards (Article 14). The CoE's recommendations on the Internet of Citizens (CM/Rec(2016)2), Cultural Big Data (CM/Rec(2017)8), and the Internet as an emancipatory force (CM/Rec(2018)10) addressed more specific topics. These recommendations advocate for the development of strategies, policies, legal frameworks, and institutional frameworks to preserve the digital heritage of lasting cultural, scientific, or other value, as well as to assist cultural entities in archiving data for public interest and ensuring public access to this data (CM/Rec(2017)8, 6–9). The CoE calls "to promote and facilitate the search for diverse pluralistic information and knowledge" with the use of "open-source tools, commons and related open working methodologies for cultural and research activities by citizens and by the public sector and public service actors and institutions" (CM/Rec(2018)10, Appendix 1, 7–8).

Despite the existence of these international conventions and the need to share experiences and enhance the quality of data and repositories, the development of digital technologies in archaeology is not adequately reflected in the organisational, legislative, and political levels of individual countries. This results in an imbalance that limits the impact of emerging digital technologies in archaeology as a whole. While some parts of archaeology and institutions focused on scientific excellence are keeping up with the development, the primary focus of archaeology still lies in the management and research of archaeological heritage at the local level, which is operated by regional institutions or commercial companies. This work generates most of the primary data in archaeology, which is largely obtained through destructive methods and is non-reproducible and irreplaceable. However, the impact of digitization on this level of archaeological work has been limited.

The practice of digital archiving of archaeological data has been the subject of attention from both the European Archaeological Council (EAC) and the SEADDA project. In a special issue of the Internet Archaeology journal, the two entities brought together papers on digital archiving in more than two dozen countries (Richards et al. 2021). The analysis of published papers has revealed that the process of archaeological archiving in many countries does not always lead to the creation of an archaeological archive in the strictest sense, as defined by Perrin et al. (2014, 20). To complement the published studies with additional data that covers the entire European region, a questionnaire survey was conducted and evaluated (Novák et al. 2023). These materials form the basis of the following recommendations.

TERMINOLOGY

The *primary documentary archives* constitute the basic specificity of archaeology. They consist of:

- the documentation of contexts and sites dismantled during fieldwork,

- the documentation of analysed finds and samples, esp. those damaged or destroyed during analysis,

- the documentation of deselected finds or samples,

- the post-processing data that is indispensable for interpretation or cannot be replicated, and

- the *final report* (as set by national, regional or local standards and regulations).

The primary documentary archive forms the core of the *project documentary archive*, which also includes other accompanying or derived documentation. Although preserving all the archaeological data is an ultimate goal, the primary documentary archive is wholly exceptional and therefore has its irreplaceable heritage value. When digitised, documentary archives take the form of *digital archaeological archives*. Other types of archaeological data that stem from the re-use of archaeological archives, as well as other sources, can be regarded as secondary data. The creation of such data is linked to research procedures that are usually repeatable.

Research of the Žuráň barrow dating to the Migration Period, Podolí u Brna. Archive of the Institute of Archaeology of the Czech Academy of Sciences, Brno.

GUIDING PRINCIPLES OF ARCHIVING PRIMARY ARCHAEOLOGICAL DATA

01. Primary documentary archives collected on any site must be protected with the same level of importance as the assembled finds or the site itself; primary documentary archives are heritage and as such, they must be preserved.

02. At a minimum, the preserved archives must include all primary archaeological data alongside the final report, except for deliberately deselected items.

03. The archiving of primary archaeological data should be based on standard decision-making processes, research frameworks, and stable funding.

04. The transition to digital archiving is an essential and inevitable process that should include the digitization of both current and legacy archives, whether they are analogue or hybrid in nature.

05. The digital archaeological archives should be FAIR by default, stored in dedicated repositories, made as open as possible and as closed as necessary, and reusable under the public domain.

Image negatives on glass plates. Archive of the Institute of Archaeology of the Czech Academy of Sciences, Brno.

COMMENTS AND RECOMMENDATIONS

Primary documentary archives collected on any site must be protected with the same level of importance as the assembled finds or the site itself; primary documentary archives are heritage and as such, they must be preserved.

It is imperative to accord equal importance to the protection of all three components of archaeological heritage, namely, sites, finds, and documentation in the heritage legislation. Archaeological documentation is a principal component of archaeological research as it captures the results and interpretations of fieldwork events. Preserving documentation is equally critical as its creation, as it guarantees that the information is not lost over time. The legislative and policy frameworks must properly acknowledge the heritage value of primary documentary archives, including digital archaeological archives.

At a minimum, the preserved archives must include all primary archaeological data alongside the final report, except for deliberately deselected items.

Archiving should not be limited to final reports and include all primary documentation in preservable and reusable form. Standards recognized in legislation should be used to define the types of documents that must be created and the preservation methods that must be used. In all processing and deposition stages, using appropriate storage and management techniques to safeguard the documentation from loss or degradation and to maintain its authenticity should be considered obligatory. The regulations should only support selection strategies based in archaeological research frameworks and aimed at the preservation of value, purpose and significance of the resulting archive. Adherence to standards should be monitored and enforced, while primary documentary archives should be subject to independent validation and control mechanisms to ensure accuracy and freedom from errors and omissions.

The creation and preservation of secondary data enriches the heritage value of archaeological archives, however, a requirement for continual updating of primary documentary archives with new findings is untenable. Nevertheless, disciplinary standards should stipulate that when primary documentary archives are reused, links must be preserved using proper citations and persistent identifiers (PIDs).

The archiving of primary archaeological data should be based on standard decision-making processes, research frameworks, and stable funding.

Primary data archiving entails implementing protocols to ensure proper handling and monitoring throughout the entire data lifecycle. At the onset of the project, a specialised repository should be selected for future archiving, and its rules, standards, and workflows adhered to. Data creators should follow standardised data collection and handling procedures based in research frameworks and described by proper Data Management Plans and should use appropriate tools such as specialised software for archaeological data management. During archive compilation, organising and processing, a standardised methodology should also be followed. The project team should be professionally equipped to manage the complete archiving process. It is critical that compliance with basic workflow standards is required by legislation.

User-friendly digital workflows should be implemented that effectively guide archaeologists through the data lifecycle and ensure the archiving of all necessary outputs of archaeological projects. To ensure technical, personnel, and organisational capacity and proper data management, stable funding is crucial for organisations responsible for creating and curating primary archaeological data, regardless of their legal form. Therefore, at the onset of the fieldwork project, it is essential to identify the resources required for the creation and management of data, as well as for the preservation of the resulting archive.

The transition to digital archiving is an essential and inevitable process that should include the digitization of both current and legacy archives, whether they are analogue or hybrid in nature.

Digitisation of archaeological heritage management at both the workflow and data level is necessary to improve security, efficiency and transparency, and overcome the persistent fragmentation or regionalisation of archaeology. Standard solutions at the content and technical level should be encouraged during this process. The choice of documentation format depends on the particular requirements of the project, as well as the available technology and resources. At present, however, digital solutions should always be prioritised. The documentation being created should be digitised during the project so that the digital archive contains everything selected for preservation.

The first step in the full digital transition is to record, catalogue and persistently identify all primary documentary archives, regardless of their form, owner, or place of storage, in a central digital index. This system should allow researchers to find documentation easily, notwithstanding its location and format. It should be regularly updated to reflect changes in the available data, and metadata standards should be used to ensure that the data is findable and understandable. The need for ensuring the permanence and general accessibility of legacy archives makes digitization an indispensable preservation goal. The digitization process of historical records necessitates a substantial allocation of resources and, therefore, must be a deliberate and long-term undertaking, subjected to a clear strategy.

The digital archaeological archives should be FAIR by default, stored in dedicated repositories, made as open as possible and as closed as necessary, and reusable under the public domain.

Designing and maintaining a system of digital documentation is a complex effort that is more challenging than organising analogue documentation. It is advisable to entrust primary documentary archives solely to institutions that possess the necessary expertise, resources, and commitment to ensure long-term preservation and prevent the loss, damage, or degradation of data. To meet these requirements, it is essential to invest in specialised archaeological digital repositories. These institutions should demonstrate the ability to adapt to evolving technologies and standards, necessitating ongoing public support and sustainable funding models to nurture the data they manage, as well as the development of tools and a team that can provide guidance to depositors. The ultimate goal is to certify these repositories according to the Core Trust Seal or similar recognized certifications, guaranteeing that the archives remain compatible with advancing technologies and standards, thereby enhancing their long-term usability and value. Furthermore, these repositories should be provided as a public service free of charge.

To ensure all primary archaeological data is findable there must be a central (national), publicly accessible online index of archived data – whether born-digital, physical, or digitised – which links the archive to the related site and fieldwork event. Such a digital index should be FAIR by itself, with particular regard to interoperability, ensuring the use of community-based metadata standards, as well as the support of automated metadata exchange. Persistent identifiers should be used to identify primary documentary archives, to enhance their findability and enable cross-referencing and citing. To further enhance the accessibility and visibility of archives, they should be integrated into geographic information systems (GIS), which facilitates collaboration and data sharing across different projects, institutions and domains.

To enable the production of high-quality, interoperable data, it is essential to adopt open community-based standards that adhere to the FAIR principles, setting standardised language, ontologies and file formats. Data should be described with rich standardised metadata so that the data, vocabularies, methodologies and standards are reused, understood and trusted. Where possible common and future-proof file formats should be used to ensure longevity and reuse. This should be achieved by employing non-proprietary software, thereby facilitating preservation. It is imperative to identify gaps in the archaeological data standards, language, and preservation file formats and invest in the continuous improvement of related data management and preservation strategies.

Last but not least, all existing organisational barriers to access to primary documentary archives should be eliminated and digital open access to data should be mandatory. Restrictions on access (i.e., embargo periods) should be justified and guided only by national regulations and guidelines related to cultural heritage protection to prevent damage, looting, or unauthorised access to archaeological sites or finds. As heritage assets, primary documentary archives should be also free from copyright restrictions, making them easily reusable.

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