Archeologia e Calcolatori
35.2, 2024, 471-482
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A NEW WEBSITE FOR THE JOURNAL «ARCHEOLOGIA E CALCOLATORI»

1. Introduction

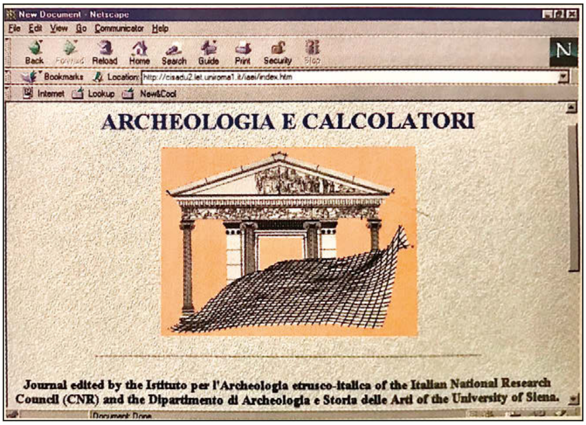
This paper describes the recent development of a new website for the journal «Archeologia e Calcolatori» (A&C), along with the implementation of new features for its OAI-PMH repository and the addition of a JSON REST API to improve data interoperability. The motivation for developing a new website was mainly due to the need to fully exploit the potential offered by the journal's relational database. This latter was introduced to provide a more reliable system for managing publication data and was originally populated by Salvatore Fiorino, migrating from the previous system based on XML and Microsoft Access (see §1.1). The database has since been continuously updated by inserting data via an administration frontend each time a new journal or supplement volume was published. This preliminary work proved to be essential in the developments that followed.

1.1 *Previous versions*

A very early implementation of A&C's website became available on the internet in 1996 at the address http://cisadu2.let.uniroma1.it/iaei/index.htm (Fig. 1), while the PDF versions of the journal's articles were first published online in 2005. At this latter stage, the website was hosted at http://soi.cnr.it/archcalc/ and it relied on OAISistema to provide open access metadata via the OAI-PMH protocol. The website itself consisted of an ASP codebase, which generated pages using data stored in a Microsoft Access database (Barchesi 2005, 2019). This database was also used to prepare XML files for the OAI-PMH repository (which served them statically via a third-party provider).

A major reworking of the website was then performed by Salvatore Fiorino with a complete rewrite of the source code in PHP, mainly motivated by the obsolescence of the (Classic) ASP language (Fiorino 2019). The website kept most of the existing styling – in terms of layout and page organization (Fig. 2) – and still relied on static XML files to generate article views from available data, which was accomplished by using XSLT. All other pages were written essentially as static HTML documents with PHP used mainly as a templating language (for example, to include common sections such as the sidebar menu). This is in contrast with the new version of the website, which uses routing and views to generate pages dynamically.

The OAI-PMH repository was also reimplemented in 2020 to move away from the third-party provider (and static files), using the relational database


New Document - Netscape
File Edit View Go Communicator Help
Back Forward Reload Home Search Guide Print Security Stop
Bookmarks Location: http://cisadu2.let.uniroma1.it/iaei/index.htm
Internet Lookup New&Cool
Document: Done

ARCHEOLOGIA E CALCOLATORI

Journal edited by the Istituto per l'Archeologia etrusco-italica of the Italian National Research Council (CNR) and the Dipartimento di Archeologia e Storia delle Arti of the University of Siena.

Fig. 1 – The original version of the journal's website, designed upon publication of the Proceedings of the 3rd International Symposium on Computing and Archaeology (Moscati 1996) and hosted by the Centro interdipartimentale di servizi per l'automazione nelle discipline umanistiche of the Sapienza University of Rome (CISADU), directed by Tito Orlandi (image: P. Moscati).

as the main source of data for serving XML responses dynamically according to the protocol's specification. This led to the inclusion of the repository in OpenAIRE as a data provider, via incremental harvesting of the metadata (Rossi, Paraciani 2021).

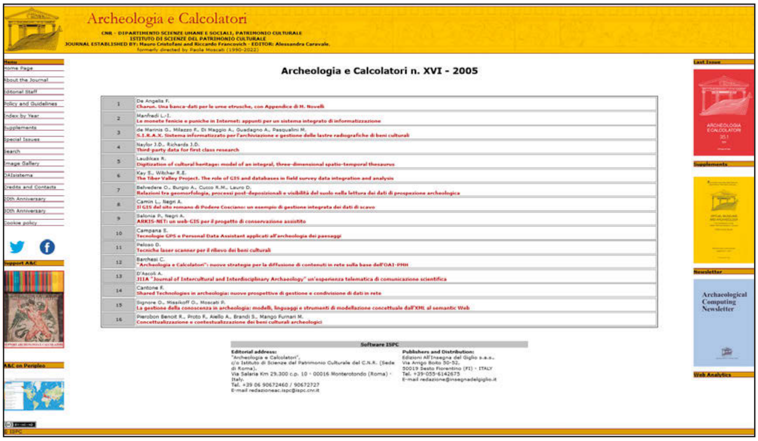
1.2 *Initial availability of visual resources*

In 2021, new features were added to the website in relation to the fruition of visual resources (Rossi, Paraciani 2021). These consisted of article figures presented both as a gallery of images in the article's page and as individual resources with their own URLs. The same approach was applied to 3D models related to articles, which were displayed in an interactive preview using the ATON framework (Fanini *et al.* 2021) as a web 3D viewer. Where applicable, the models could also be downloaded as GLTF/GLB files with an open access license chosen by the authors.

2. Description of the new website

2.1 *Reasons for technical choices*

When considering the choice of a web development language and framework for the new website, several possibilities were evaluated in terms of performance, package ecosystem and existing knowledge from previous


Archeologia e Calcolatori
CNR - DIPARTIMENTO SCIENZE UMANE E SOCIALI, PATRIMONIO CULTURALE
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JOURNAL ESTABLISHED BY: Mauro Cristofani and Riccardo Francovich - EDITOR: Alessandra Caravale.
formerly directed by Paola Moscati (1990-2022)
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Cookie policy
Support A&C
A&C on Periplo
Last Issue
Supplements
Newsletter
Archaeological Computing Newsletter
Web Analytics

Archeologia e Calcolatori n. XVI - 2005

1	De Angelis F. Charun. Una banca-dati per le urne etrusche, con Appendice di M. Novelli
2	Manfredi L.-I. Le monete fenicie e puniche in Internet: appunti per un sistema integrato di informatizzazione
3	de Marinis G., Milazzo F., Di Maggio A., Guadagno A., Pasqualini M. S.I.R.A.X. Sistema informatizzato per l'archiviazione e gestione delle lastre radiografiche di beni culturali
4	Naylor J.D., Richards J.D. Third-party data for first class research
5	Laužikas R. Digitization of cultural heritage: model of an integral, three-dimensional spatio-temporal thesaurus
6	Kay S., Witcher R.E. The Tiber Valley Project. The role of GIS and databases in field survey data integration and analysis
7	Belvedere O., Burgio A., Cucco R.M., Lauro D. Relazioni tra geomorfologia, processi post-deposizionali e visibilità del suolo nella lettura dei dati di prospezione archeologica
8	Camin L., Negri A. Il GIS del sito romano di Podere Cosciano: un esempio di gestione integrata dei dati di scavo
9	Salonia P., Negri A. ARKIS-NET: un web-GIS per il progetto di conservazione assistito
10	Campana S. Tecnologie GPS e Personal Data Assistant applicati all'archeologia dei paesaggi
11	Peloso D. Tecniche laser scanner per il rilievo dei beni culturali
12	Barchesi C. "Archeologia e Calcolatori": nuove strategie per la diffusione di contenuti in rete sulla base dell'OAI-PMH
13	D'Ascoli A. JIIA "Journal of Intercultural and Interdisciplinary Archaeology" un'esperienza telematica di comunicazione scientifica
14	Cantone F. Shared Technologies in archeologia: nuove prospettive di gestione e condivisione di dati in rete
15	Signore O., Missikoff O., Moscati P. La gestione della conoscenza in archeologia: modelli, linguaggi e strumenti di modellazione concettuale dall'XML al semantic Web
16	Pierobon Benoit R., Proto F., Aiello A., Brandi S., Mango Furnari M. Concettualizzazione e contestualizzazione dei beni culturali archeologici

Software ISPC

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Fig. 2 – A page from the previous version of the website (volume view).

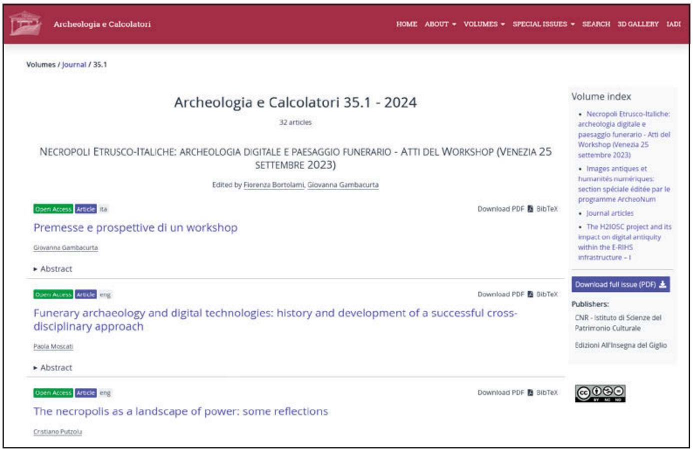
development work. The possibilities were mostly JavaScript with NodeJS, Python with a web framework (such as Django or Flask), and PHP, either with the Symfony framework or with individual components. This latter option was deemed the best final choice because of already established knowledge of the language and the possibility to reuse code from other projects.

The decision to implement a custom solution almost from scratch instead of relying on open-source CMS software, for example, or – better still – on the Open Journal System (OJS) platform, was taken because of two main reasons: 1) the existence of an already populated database holding 34 years of publications data; 2) the specific custom features that were to be transferred to the new website (mainly the management of visual resources). Reason 1) implied the need to manually insert the data for all volumes and articles into a system like OJS, which has its own database schema and is thus not compatible with the existing one. Reason 2), instead, meant that a CMS or OJS itself would have to be modified at source code level to implement custom features as needed. Since there was no sufficient pre-existing knowledge in this respect, a considerable amount of time would have to be spent in learning a new development environment and uploading data for about 1200 articles.

The fact that the new website is based on Symfony components makes it easily adaptable to the full Symfony framework, which could be beneficial in terms of stability and future updates.

2.2 *Database changes*

Some minor changes to the database structure were required in order to prepare the data for optimal usage by the website backend. A new entity



Volumes / Journal / 35.1

Archeologia e Calcolatori 35.1 - 2024

32 articles

NECROPOLI ETRUSCO-ITALICHE: ARCHEOLOGIA DIGITALE E PAESAGGIO FUNERARIO - ATTI DEL WORKSHOP (VENEZIA 25 SETTEMBRE 2023)

Edited by Fiorenza Bortolami, Giovanna Gambacurta

Open Access Article ita — Download PDF BibTeX

Premesse e prospettive di un workshop

Giovanna Gambacurta

▸ Abstract

Open Access Article eng — Download PDF BibTeX

Funerary archaeology and digital technologies: history and development of a successful cross-disciplinary approach

Paola Moscati

▸ Abstract

Open Access Article eng — Download PDF BibTeX

The necropolis as a landscape of power: some reflections

Cristiano Putzolu

Volume index

- Necropoli Etrusco-Italiche: archeologia digitale e paesaggio funerario - Atti del Workshop (Venezia 25 settembre 2023)
- Images antiques et humanités numériques: section spéciale éditée par le programme ArcheoNum
- Journal articles
- The H2IOSC project and its impact on digital antiquity within the E-RIHS infrastructure – I

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Fig. 3 – Volume view (partial) with linked section titles in the right-hand sidebar.

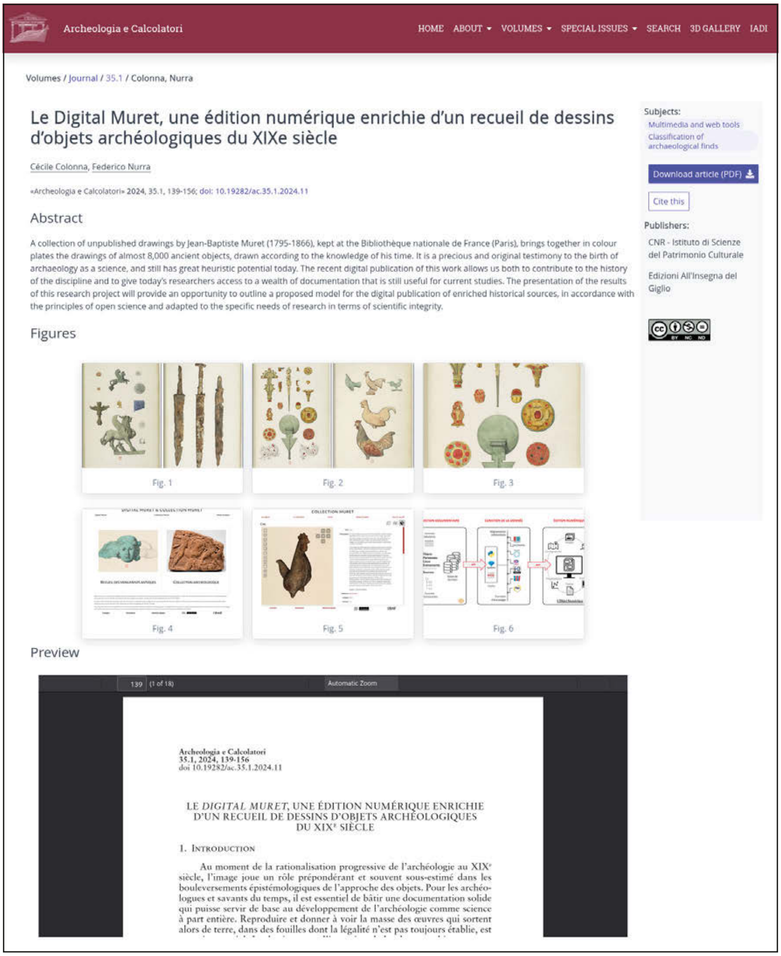
was added to model sections within volumes and relate them with the corresponding articles and curators. This allowed querying the database to obtain section titles with curators' names directly for a given volume, as well as the list of articles in each section. Previously, displaying section titles and their occurrence within the articles sequence of a volume was difficult due to the absence of a separate entity to hold this kind of data. The new model solves this problem. Sections, when present, are now displayed in the volume's table of contents with links for easier navigation (Fig. 3). These links can also work as permalinks pointing directly to a specific volume section.

A pivot, or relationship, table was also added to relate articles with Pleiades places (https://pleiades.stoa.org/) and implement geographical coverage. The table models a many-to-many relationship since a single article can be related to several Pleiades places and vice versa. This addition proved useful for data retrieved via the REST API as well (see §4.1).

2.3 *Backend implementation*

The website's backend is written in PHP 8.3 (latest stable version at the time of development) and adopts several modern features of the language, such as pattern matching, strict type checks, read-only class properties, etc. As mentioned above, the backend relies on some Symfony components that facilitate the implementation of the common Model-View-Controller (MVC) pattern for web application development and provide useful features in a reliable manner. The codebase adopts an Object-Oriented Programming style, with entities modelled as objects with methods to retrieve data from the database, which is queried using the Doctrine DBAL library (https://www.doctrine-project.org/projects/dbal.html). This data is itself mapped to so-called Data Transfer Objects (DTOs) that hold information in strictly typed read-only properties 'known' to the code editor (which can then show suggestions while typing), instead of relying on plain associative arrays with arbitrary column names mapped to string indexes.

Since images and their metadata are available in the website's database starting from 2021, in order to include them also for articles before that date, the backend interacts with IADI, the Atlas that hosts all images for the first



Volumes / Journal / 35.1 / Colonna, Nurra

Le Digital Muret, une édition numérique enrichie d'un recueil de dessins d'objets archéologiques du XIXe siècle

Cécile Colonna, Federico Nurra

«Archeologia e Calcolatori» 2024, 35.1, 139-156; doi: 10.19282/ac.35.1.2024.11

Abstract

A collection of unpublished drawings by Jean-Baptiste Muret (1795-1866), kept at the Bibliothèque nationale de France (Paris), brings together in colour plates the drawings of almost 8,000 ancient objects, drawn according to the knowledge of his time. It is a precious and original testimony to the birth of archaeology as a science, and still has great heuristic potential today. The recent digital publication of this work allows us both to contribute to the history of the discipline and to give today's researchers access to a wealth of documentation that is still useful for current studies. The presentation of the results of this research project will provide an opportunity to outline a proposed model for the digital publication of enriched historical sources, in accordance with the principles of open science and adapted to the specific needs of research in terms of scientific integrity.

Figures

Preview

Archeologia e Calcolatori
35.1, 2024, 139-156
doi 10.19282/ac.35.1.2024.11

LE *DIGITAL MURET*, UNE ÉDITION NUMÉRIQUE ENRICHIE D'UN RECUEIL DE DESSINS D'OBJETS ARCHÉOLOGIQUES DU XIX^e SIÈCLE

1. Introduction

Au moment de la rationalisation progressive de l'archéologie au XIX^e siècle, l'image joue un rôle prépondérant et souvent sous-estimé dans les bouleversements épistémologiques de l'approche des objets. Pour les archéologues et savants du temps, il est essentiel de bâtir une documentation solide qui puisse servir de base au développement de l'archéologie comme science à part entière. Reproduire et donner à voir la masse des œuvres qui sortent alors de terre, dans des fouilles dont la légalité n'est pas toujours établie, est

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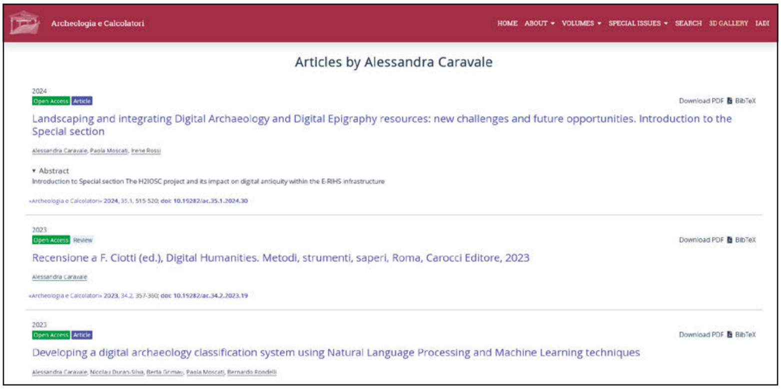
Fig. 4 – Article view with related images and PDF preview.

30 years of publications (Paraciani, Rossi 2023), forming a link that is displayed in the article view and directs to the corresponding page in IADI.

2.4 *User interface (frontend)*

The frontend or user interface presented by the website is generated mostly with views or templates, written using Plates (https://platesphp.com/), a templating library that employs native PHP capabilities. This library adds a 'lightweight' dependency and is easily extensible. In the future, however, the views could be ported to Twig, a templating engine with its own dedicated syntax and features that is perhaps more well-established. Minimal JavaScript is used for interactive features and AJAX calls to the REST API, mainly to retrieve citations for articles, which are available in three different styles: A&C,



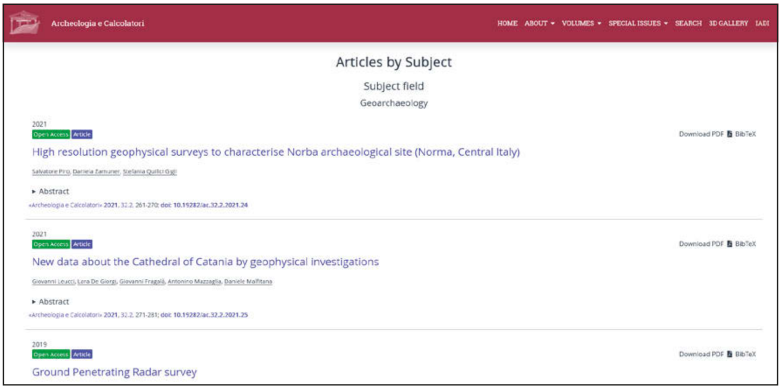
Articles by Alessandra Caravale

2024
Landscaping and integrating Digital Archaeology and Digital Epigraphy resources: new challenges and future opportunities. Introduction to the Special section
Alessandra Caravale, Paola Moscati, Irene Rossi
▾ Abstract
Introduction to Special section The H2IOSC project and its impact on digital antiquity within the E-RIHS infrastructure
«Archeologia e Calcolatori» 2024, 35.1, 515-520; doi: 10.19282/ac.35.1.2024.30

2023
Recensione a F. Ciotti (ed.), Digital Humanities. Metodi, strumenti, saperi, Roma, Carocci Editore, 2023
Alessandra Caravale
«Archeologia e Calcolatori» 2023, 34.2, 357-360; doi: 10.19282/ac.34.2.2023.19

2023
Developing a digital archaeology classification system using Natural Language Processing and Machine Learning techniques
Alessandra Caravale, Nicolau Duran-Silva, Berta Grimau, Paola Moscati, Bernardo Rondelli

Fig. 5 – List of articles by a single author (partial).



Articles by Subject

Subject field
Geoarchaeology

2021
High resolution geophysical surveys to characterise Norba archaeological site (Norma, Central Italy)
Salvatore Piro, Daniela Zamuner, Stefania Quilici Gigli
▸ Abstract
«Archeologia e Calcolatori» 2021, 32.2, 261-270; doi: 10.19282/ac.32.2.2021.24

2021
New data about the Cathedral of Catania by geophysical investigations
Giovanni Leucci, Lara De Giorgi, Giovanni Fragalà, Antonino Mazzaglia, Daniele Malfitana
▸ Abstract
«Archeologia e Calcolatori» 2021, 32.2, 271-281; doi: 10.19282/ac.32.2.2021.25

2019
Ground Penetrating Radar survey

Fig. 6 – Example view of all articles for a given subject (partial).

APA and Harvard (the latter two styles were added in the new version of the website). The citation can also be downloaded in the BibTeX format and then imported in a reference management software of choice, for example. The RIS file format for citations will most probably be added in the future. This feature is available in the article view (Fig. 4), which displays information for a single article along with any related images, 3D models and supplementary materials.

The names of authors are linked to (dynamic) individual pages with the list of all articles by a specific author (Fig. 5). Subjects in the right-hand sidebar of the article view are also linked to the corresponding list of articles (Fig. 6). Static pages, such as 'About', 'Credits and Contacts', 'Policy and Guidelines' etc., are generated from Markdown sources, instead of more complicated templates, which are parsed and rendered as HTML by a single controller. This makes it easier to add new static pages since Markdown is a very simple and minimalistic mark-up language.

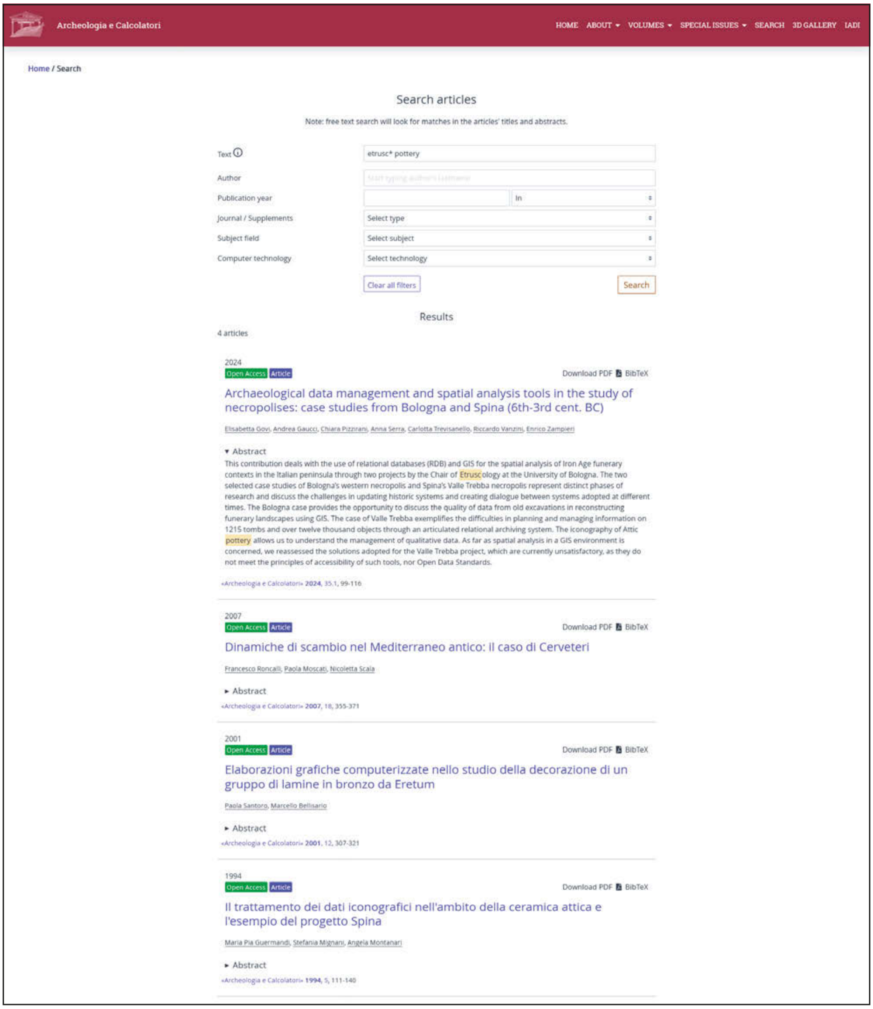
2.5 *Search feature*

The search feature has also been redesigned as a structured form with filters for text, author, publication year, publication type (journal or supplement), subject field and computer technology. The text filter allows searching for arbitrary keywords or sentences – enclosed in double quotes – and supports wildcards with the asterisk (*) symbol and the exclusion of words by prepending them with a minus (-) symbol. Keywords separated by a space are interpreted as concatenated by a logical AND operator. The text search is performed in the content of article titles and abstracts. The author filter has an autocomplete feature that shows possible author names during typing, while the subject field and computer technology filters are selections over the list of A&C subject terms. By default, a limit of 15 search results per page are shown, although this value can be parametrized (Fig. 7).

3. REST API implementation and OAI-PMH repository updates

The development of the new website offered the opportunity to add features and improve existing services, specifically the implementation of a REST Application Programming Interface (API)[1] and updates to the journal's OAI-PMH repository.

[1] The Representational State Transfer (REST) paradigm is a software development style which defines seven constraints to be respected when designing and developing web services, although technically it is not limited or bound to the web specifically. Without going into too much detail, we can say that the main requirements of this paradigm are that the client-server communication should be 'stateless' (the result of a client request depends only on the parameters passed to the server and has no effect on the server's state for subsequent requests), cacheable and with a uniform interface centred on resources (Richardson, Amundsen, Ruby 2013).



Search articles

Note: free text search will look for matches in the articles' titles and abstracts.

Text	etrusc* pottery
Author	Start typing author's Lastname
Publication year	In
Journal / Supplements	Select type
Subject field	Select subject
Computer technology	Select technology

Results

4 articles

2024
Open Access Article — Download PDF BibTeX

Archaeological data management and spatial analysis tools in the study of necropolises: case studies from Bologna and Spina (6th-3rd cent. BC)

Elisabetta Govi, Andrea Gaucci, Chiara Pizzirani, Anna Serra, Carlotta Trevisanello, Riccardo Vanzini, Enrico Zampieri

▾ Abstract

This contribution deals with the use of relational databases (RDB) and GIS for the spatial analysis of Iron Age funerary contexts in the Italian peninsula through two projects by the Chair of Etruscology at the University of Bologna. The two selected case studies of Bologna's western necropolis and Spina's Valle Trebba necropolis represent distinct phases of research and discuss the challenges in updating historic systems and creating dialogue between systems adopted at different times. The Bologna case provides the opportunity to discuss the quality of data from old excavations in reconstructing funerary landscapes using GIS. The case of Valle Trebba exemplifies the difficulties in planning and managing information on 1215 tombs and over twelve thousand objects through an articulated relational archiving system. The iconography of Attic pottery allows us to understand the management of qualitative data. As far as spatial analysis in a GIS environment is concerned, we reassessed the solutions adopted for the Valle Trebba project, which are currently unsatisfactory, as they do not meet the principles of accessibility of such tools, nor Open Data Standards.

«Archeologia e Calcolatori» **2024**, 35.1, 99-116

2007
Open Access Article — Download PDF BibTeX

Dinamiche di scambio nel Mediterraneo antico: il caso di Cerveteri

Francesco Roncalli, Paola Moscati, Nicoletta Scala

▸ Abstract

«Archeologia e Calcolatori» **2007**, 18, 355-371

2001
Open Access Article — Download PDF BibTeX

Elaborazioni grafiche computerizzate nello studio della decorazione di un gruppo di lamine in bronzo da Eretum

Paola Santoro, Marcello Bellisario

▸ Abstract

«Archeologia e Calcolatori» **2001**, 12, 307-321

1994
Open Access Article — Download PDF BibTeX

Il trattamento dei dati iconografici nell'ambito della ceramica attica e l'esempio del progetto Spina

Maria Pia Guermandi, Stefania Mignani, Angela Montanari

▸ Abstract

«Archeologia e Calcolatori» **1994**, 5, 111-140

Fig. 7 – The search form with results.

3.1 *The JSON REST API*

Given the increasing reliance on the JavaScript Object Notation (JSON) document format for the exchange of (meta)data among modern web services and applications, typically via a REST API (Serbout, Lauro, Pautasso 2022), it was decided to implement one for A&C, in addition to the OAI-PMH repository. Although the metadata related to A&C publications were already openly accessible via the repository, these are served as XML documents (required by the protocol), which can be cumbersome to parse for any third-party services that do not rely specifically on the OAI approach. The REST API offers an advantage in this case, since reading JSON documents programmatically is easier compared to XML, given the widespread support for this data exchange format in many programming languages. More specifically, the JSON document can be converted directly into a native data structure and can be manipulated comparatively easily and in a performant way, which is not always the case with XML (Vanura, Kriz 2018).

Currently, the beta version of the REST API consists of the following five endpoints (the last two are not JSON endpoints):

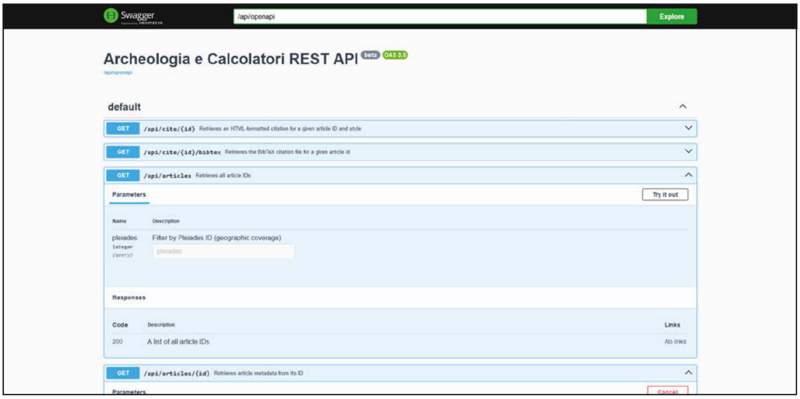
– /api/articles: Retrieves a list of the IDs of all articles found in the journal's database; it can be filtered by geographic place (Pleiades ID);
– /api/articles/{id}: Retrieves metadata for a single article based on its ID;
– /api/articles/range/{firstId}/{lastId}: Retrieves metadata of all articles included in a given range of IDs;
– /api/cite/{id}: Returns the citation for a given article formatted in HTML according to a citation style, controlled by a parameter;
– /api/cite/{id}/bibtex: Returns the citation for a given article as a BibTeX file download.

The REST API is documented with the OpenAPI (formerly 'Swagger') specification (https://www.openapis.org/), which offers a way to generate the documentation automatically along with a graphical testing interface for each endpoint (Fig. 8). The interface shows the HTTP method associated with the endpoint, the formal structure of the endpoint itself (URI with dynamic path parameters) and details about any required and optional parameters[2]. An HTML form allows testing the API directly in the browser. The results are formatted and displayed with colour-coded syntax.

The OpenAPI configuration is itself generated dynamically when a client sends a request to the '/api/openapi' endpoint and is served in JSON format. Configuration parameters are defined using PHP 8 attribute syntax, supported by the Swagger-PHP library (https://zircote.github.io/swagger-php/). Adopting this kind of (informally) standardized description makes it possible to offer a well-known and easily reusable documentation interface, which allows potential users to test the API endpoints directly.

The addition of this API also facilitated interoperability with the ArchaeoHub system, a hub for digital archaeology that is being developed within the framework of the H2IOSC project (Caravale, Moscati, Rossi 2024). In particular, the hub collects article data for topics related to geographic places

[2] Parameters embedded in the URI are called 'path parameters', while those appended to the URI via the HTTP query syntax (following a question mark) are called 'query parameters'.



Archeologia e Calcolatori REST API

/api/openapi

default

GET /api/cite/{id} Retrieves an HTML-formatted citation for a given article ID and style

GET /api/cite/{id}/bibtex Retrieves the BibTeX citation file for a given article id

GET /api/articles Retrieves all article IDs

Parameters

Name	Description
pleiades integer (query)	Filter by Pleiades ID (geographic coverage) pleiades

Responses

Code	Description	Links
200	A list of all article IDs	No links

GET /api/articles/{id} Retrieves article metadata from its ID

Parameters

Fig. 8 – The OpenAPI (Swagger) web interface for A&C's REST API.

by filtering relevant article IDs from the REST endpoint, using the Pleiades identification number of the place as a parameter.

3.2 *Updates to the OAI-PMH repository*

The backend code that generates the OAI-PMH repository was entirely rewritten since the existing one suffered from so-called 'technical debt' and wasn't suitable for the new codebase. Since managing and writing XML programmatically with default PHP libraries (specifically the DOM library) is somewhat cumbersome, a more flexible approach based on object serialization was adopted. Each metadata format served by the repository – i.e. Dublin Core, OpenAIRE and DataCite – is modelled as an object class implementing a common interface, which represents the OAI record in that specific format. The object is then serialized to XML based on the values of its (read-only) properties – initialized via database queries – and additional fields encoded in associative arrays. The actual serialization, that is the 'translation' of the object to a well-formed and formatted XML string, is performed with the aid of the Symfony Serializer component. This approach makes it easier to add new metadata formats to the repository, since it is a matter of modelling the format as an object class, implementing the base interface, and defining properties as necessary.

Pagination of records and identifiers was also added using the resumption token method, as required by the protocol. The resumption token is effectively a string that encodes a particular state of the request to the repository and is used to simplify harvesting when the list of records is large. Indeed, each request returns only a subset of records, with subsequent requests resuming from the last offset by means of the resumption token, until the end of the list is reached. The token string adopts a custom syntax – allowed by the protocol – to encode the state of the request, namely the total number of records in the list, the current offset, the token's expiration date, the values of the set and metadata format parameters, as well as any date-filtering parameters (from and/or until). The resumption token string is parsed and converted to an object with typed properties, which allows the backend to retrieve the proper set of records or identifiers for each request.

Finally, a new schema was adopted for the identifiers of articles, namely 'oai:www.archcalc.cnr.it:article:{id}', which is similar to the identifiers assigned to images and 3D models and is arguably more readable than 'oai:www.archcalc.cnr.it/oai/aec_oaipmh2.php:{id}', used in the previous version.

4. Future developments

An important future development is the conversion of the articles' full texts to structured HTML, which could then be displayed in the web page (article view), instead of the embedded PDF preview. The journal's publisher, Edizioni all'Insegna del Giglio, has already provided the Editorial Board with XML versions of all volumes from 1997 onwards. These XMLs, while being more useful than PDFs to extract content as plain text, were exported automatically from the corresponding PDF documents and are not structured in a way that can be easily converted to HTML as needed for the website. However, some parsing and string-manipulation techniques could be applied to retrieve content from the XMLs and then build the proper HTML documents. These could be then persisted in the database and displayed with the rest of the article's data. The obvious advantage of HTML is that it can be interactive, with links to references embedded in the text, for example, and a browsable table of contents, as is usually provided by many digital journals.

Furthermore, having the content of articles as text in the database would enable searching for keywords or free text in the entire article, instead of just in titles and abstracts.

Another foreseeable development is the use of geographical coverage in the form of Pleiades IDs to, e.g., display an embedded map with relevant places directly in article views and / or search content by geographic place. Finally, the REST API could be improved by adopting a more standardized format for the JSON data. For example, JSON-LD (Linked Data) could be used as a schema, instead of the current custom one, adopting Dublin Core (DC) terms as context for key names, which could be facilitated by the existing DC mapping of database entities used by the OAI-PMH repository.

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ABSTRACT

Over the course of 35 years since its foundation, the open access journal «Archeologia e Calcolatori» has been providing its publications online via the website, as well as open access metadata since 2005 through the OAI-PMH repository. In 2024, the website underwent a major update and restyling, including the addition of modern interoperability features, most notably the newly implemented JSON REST API. This paper is concerned with the technical description of the design and development of the new website and additional functionalities for «Archeologia e Calcolatori», while also giving a short overview of how the journal's online presence has evolved over time. The exchange of data between the journal's REST API and the Open Archaeology Hub (ArchaeoHub) currently being developed in the context of the H2IOSC project is described as well. Finally, some future perspectives for further improvement are presented.