

# ARCHTERRA: An EU project for enhancing the cultural co-operation between archaeological communities of East and West Europe

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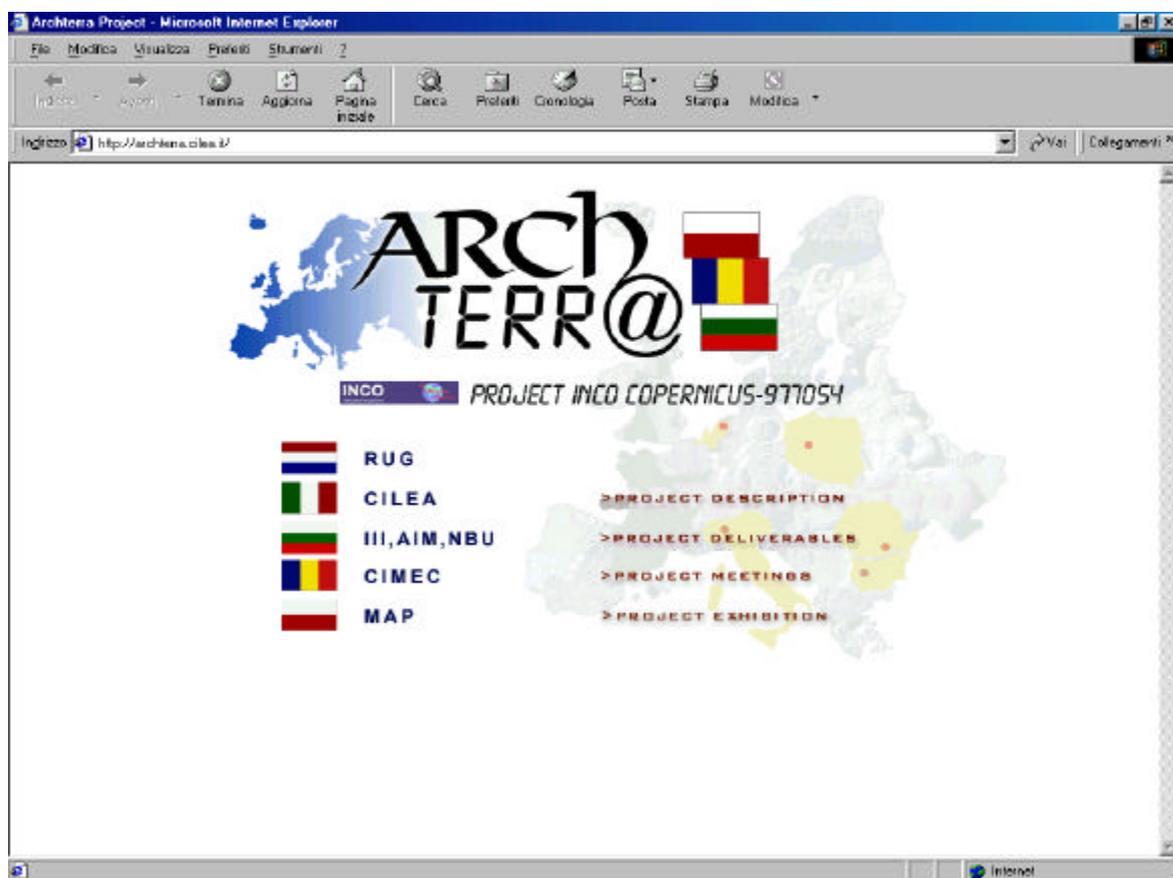
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## Abstract

With the last meeting in Bucarest the European Union Project Archterra has gone to its end. In this article we report the goals, the results reached and the dissemination-exploitation plan of the project.

**Keywords:** Social Science, Anthropology and Archaeology, Museums and Exhibits



## Foreword

The networking and internationalisation of existing academic resources, historical and cultural achievements, as well as the research efforts of the academic community in the field of Archaeology using computer, information and communication technologies is a recent trend with a rapidly growing impact on archaeological research, management and education. Since the mid-1990s, Internet

services have completely changed the way scientists work: e-mail, usenet, FTP and finally WWW architecture now allow scientists to collaborate on distributed resources, e.g. databases and exhibitions over the WWW. Although the countries of Eastern Europe have an important place in the historical and cultural development of Europe, they could not participate substantially in this process of intensifying information exchange, due to

their past closeness and current economic problems. There is thus the spectre of an ever widening 'information gap' between the affluent countries of Western Europe and those countries struggling at the margins.

The Copernicus project INCO 977054 Archterra has aimed to help redress the imbalances in access to European networking facilities for professional archaeologists from Bulgaria, Romania and Poland, and to provide the impetus for an active expansion of archaeological Internet communication and information services both within CEC (Bulgaria, Romania, Poland) and between EU and CEC. The project was implemented as a research network bringing together computer scientists and archaeologists from five EU countries and three CEC (Bulgaria, Romania and Poland), and encompasses tasks and objectives in four areas:

- technical installation (computer hardware and software, networking infrastructure)
- transfer of expertise (technical workshops, extended visits, discussion lists)
- creation of new content (WWW database and exhibition) and tools for the management of that content
- dissemination (international conference, printed guides, WWW hosts)

The partners of the project joined in a Consortium (Archterra Consortium): The partners of ArchTerra project were:

- Groningen Institute of Archaeology of the Rijks Universiteit Groningen (Holland) - RUG
- Consorzio Interuniversitario Lombardo per la Elaborazione Automatica (Italy) - CILEA
- Institute for Information Investigations of the New Bulgarian University (Bulgaria) - III NBU AIM
- Institutul de Memorie Culturala (Romania) - CIMEC
- Muzeum Archeologiczne w Poznaniu (Poland) - MAP

### The goals of the Archterra project

The main goals of Archterra are:

- To establish the technical infrastructure and software tools needed to allow researchers in the field of IT in Archaeology from CEC to join EAW (European Archaeology Web), in the form of national WWW hosts of the ArchWeb network in the three participating CEC.

These hosts were to be located at the main research organisations responsible for archiving, maintenance and supply of information in these countries.

- To provide practical demonstration of the trans-national nature and urgency of archaeological research and management, and the benefits and efficiencies of Internet use, to professional and general users alike. End users were to be able to access both the presently available on-line electronic resources and a core set of demonstration resources from CEC (including Web-pages, museum-databases, live presentations and virtual tours).
- To strengthen existing scientific relations between EU and CEC and to foster long-term joint initiatives for collaboration, demonstrating the richness and fragility of the European archaeological heritage, by bringing together partners and collections from across Europe. To this end, solutions to specific hurdles to international collaboration (translation schemes for languages with different alphabets, multilanguage and multicultural thesauri of terms and articles, international heritage legislation) were to be explored.

The subsidiary project objective has been to publish its activities and results as widely as possible, in order to enable all segments of the European archaeological community to sample the deliverables on offer. To this end, publication was to be web-based, by multimedia CD-ROM, and by scientific publication.

### Services provided

#### ARGE VLMS (version 3.0)

Under the ArchTerra contract, partner RUG developed a prototype online management system for virtual libraries (VLMS) based on the existing management system of the virtual library for European Archaeology ARGE (Archaeological Resource Guide for Europe <http://odur.let.rug.nl/arge>). This system was developed for use on a generic UNIX OS using Apache as the Internet server and the freeware mSQL as the database server.

ARGE VLMS received a number of web awards.

#### Mediolanvm

The Mediolanvm web service (<http://archterra.cilea.it/mediolanvm>) was created for ArchTerra by the Department of Antiquity

Sciences - Archaeological Section of the University of Milan and the Lombard Academic Computing Centre CILEA. Its goal is to facilitate international co-operation in the planning and execution of archaeological fieldwork throughout Europe. It does this mainly by maintaining an easy-to-use web site for information exchange between those who offer and search for fieldwork opportunities. An online database allows students and researchers to find out about, and take part in, archaeological fieldwork projects conducted all over Europe; conversely, it allows European universities and other organisations planning archaeological fieldwork to post full information on the Internet.

The name MEDIOLANVM expresses both its location in Milan and its mediating role in promoting archaeological fieldwork in Europe. The application is driven by an INFORMIX database, which serves and personalises the forms and navigation pages as the user travels through the web site. It has been designed to require minimum maintenance and to automate, as far as possible, communication with the user. A series of forms leads the user through the main steps involved in searching for, or submitting, information on archaeological fieldwork.

The MEDIOLANVM service aims to achieve three main results:

- To facilitate the participation of students and researchers in archaeological research projects in various European countries. The project originated from the need to put people interested directly in contact with European universities or other institutions that are conducting archaeological excavations or surveys.
- To enable those in charge of an archaeological excavation or survey to announce their project and insert it directly onto the Website, so as to offer students and researchers opportunities for jobs or to gain cultural and scientific experience by taking part in archaeological excavations or surveys.
- To place at the disposal of academics and site directors a special type of electronic bulletin board that facilitates communications among these persons and on which to post proposals, research, suggestions and exchange cultural and scientific information.

MEDIOLANVM offers the following choices:

- To search for archaeological field work using either a geographical search based on clickable maps, or a direct search on chronological period, project type, site type, field work director, teaching level, or project date;
- to apply to take part in a field work project by filling out a web form and sending to the project's director;
- to announce a new archaeological field work project and add it to the database, by filling out a series of forms;
- to exchange news and information regarding any aspect of European archaeological fieldwork on an electronic bulletin board.

#### **Glossaries and Thesauri**

One of the core objectives of the ArchTerra project has been to break down existent language barriers to the communication of archaeological information and resources. To this end a Multilingual Interfaces Workshop was held at the joint Computer Applications in Archaeology / Union Internationale des Sciences Prehistoriques et Protohistoriques Commission IV (CAA/UISPP) conference in April 2000.

The main goal of the multilingual glossary for Eastern European archaeology is to create an easier access of the users from different countries to the products created under the ArchTerra Project. The basic language of the glossary is English, followed by the native languages of the participants: Bulgarian, Polish, Italian and Romanian.

#### **The ArchWebs**

ArchWebs are national nodes for accessing archaeological web resources. Though no formal organisation exists, ArchWebs have been formed and maintained in a number of western European countries, and the ArchTerra project has set out to implement similar nodes for Romanian, Polish, and Bulgarian archaeology.

The HTML development tool of choice for the three ArchWebs was DreamWeaver 3. JavaScript applications were used for enhancing the interfaces with pull-down menus, hover buttons, and the like. PHP, ASP and CGI scripts were used for the creation of dynamic pages providing access to underlying MySQL, MS-SQLServer and MS-Access, and FoxPro databases containing information about persons, organisations, events, and

archaeological sites and objects. These tools can be adapted to the needs of further ArchWebs and other archaeological web sites, which are developing throughout Eastern Europe, and will be made available by the Consortium partners on request.

#### **ArchWeb-Bulgaria**

ArchWeb-BG follows the structural guidelines by the Consortium. It presents contemporary archaeological investigations in Bulgaria in a thematic manner and gives a concise overview of the major interdisciplinary domains and achievements. Its structure is subordinated to the archaeological periodization schemes used in Bulgarian archaeology. Our aim is to present, in a summary form, the basic development stages of Bulgarian archaeology as a profession. The panel of 15 academic contributors consists of the best known specialists in the respective domains and also includes foreign scientists that have worked or are currently working in Bulgaria. All approximately 100 pages of texts are richly illustrated and are hyperlinked throughout in order to allow fast 'vertical' and 'horizontal' switches within the frame of the presentation of Bulgarian archaeology.

The institutional aspect of Bulgarian archaeology is also presented. This section includes a brief history of archaeology in Bulgaria, a listing of archaeological museums, relevant legislation, current projects, and an overview of the organisation of education in archaeology. A special accent is put on the changes that have occurred in the structure of education in archaeology following the political changes of 1989 – e.g., the increasing number of academic archaeology departments in the country.

The leading archaeological periodicals and their addresses are also presented.

ArchWeb-BG also provides on-line means, on the principle of equal opportunity, to all professional archaeologists in Bulgaria to upload personal webpages presenting their individual interests and work. The same offer of hosting web pages has been extended to those archaeological organisations, which still do not have, or cannot afford, a well-developed Internet presence.

#### **ArchWeb-Poland**

ArchWeb-PL was also developed according to the guidelines for national archaeology gateways set out by the Consortium.

The on-line database of Polish archaeologists and archaeological institutions uses a specially designed textual data format with inserted HTML tags to make the data retrieval easier. Queries are entered from a web page using a form with a JavaScript driven system of menus where the user can restrict the query by institution type and/or administrative district. The request is sent to a script written in Perl, which searches the data according to criteria defined by the user, and returns a Web document with a list of entries found. Every item on the list shows the name of either an archaeologist or an institution (depending on the type of search) with all relevant information. In the case of individuals, the data displayed include his/her e-mail address and the name of the institution where he/she is employed.

Both are hyperlinks allowing the user to send a message directly to the person in question or to see the details of the institution. The latter is generated by another script which returns the name, postal address, e-mail and Web page (if any) for that institution. Clicking on the name link sends another request to still another script, which returns a list of all the people working for that institution.

If the initial search is performed on institutions, then the first Web page generated displays a list of all institution names containing the keyword or string entered in the query form (as restricted by type or area).

Full lists of people and institutions for a given area can also be accessed from a clickable map of Poland, linked to the same set of scripts.

Another form enables the user to add a new individual and/or institution to the database but the process is moderated by the administrator, so that only valid data can be entered.

#### **ArchWeb-Romania**

ArchWeb-RO was based on the pre-existing website of CIMEC, the Centre for the Cultural Heritage of the Romanian Ministry of Culture. As suggested by the Consortium guidelines, it has sections providing access to Romanian institutions, publications, and legislation, indexes of journals, and presentations of important archaeological sites: Targul de Floci, Histria, Targisor. The CIMEC databases of archaeological sites and of archaeological excavations in Romania 1983 – 2000 can also

be accessed from ArchWeb-RO. The current number of visits per month is nearing 1500.

### **Information System for Easter Europe Archaeological Museums**

One of the core objectives of the ArchTerra project has therefore been to supply a model information system for archaeological museums according to existing international standards, which could then be adapted to the needs of each individual museum and could be implemented at a relatively low cost. The data model developed under the project was initiated as an implementation of the CIDOC model of Information groups and Information categories. During the course of the work it was essentially enhanced in line with the CIDOC object-oriented data model recommendations as well as existing practice at the Archaeological Museum in Sofia, so as to fully match current practice. The result is a set of three models, which are fully CIDOC compliant and can be used for implementation of a broad range of museum information systems in Archaeology and other domains of cultural heritage:

- **Object-oriented museum data model.** This is developed in a standard subset of Universal Modelling Language (UML) and can be used for implementing either an object-relational or a standard relational database with museum information;
- **Procedural data processing model.** This is developed in a standard subset of a highly intuitive visual flowchart language and can be used as a technical reference specification for developing desktop, client/server and Internet/intranet information systems;
- **Set covering user profile.** This is developed as a list of overlapping role sets with attached functions and can be used for implementing flexible database access discipline and for database administration of different types of information systems.

From this model two different databases have been generated: an object-relational database for Oracle 8 RDBMS, and a standard relational database for Oracle/MS SQL Server RDBMS. In addition to these databases, three separate client/server development tools have been experimented with for actual implementation of the museum information system:

- **Oracle Developer** for implementation of both client/server and Internet/intranet

information systems using Oracle Designer generated Forms/PL/SQL code;

- **Oracle Jdeveloper** for implementation of both client/server and Internet/intranet information systems using visually programmed Java code;
- **Oracle WebDB** for implementation of a simple Internet/intranet information systems using visual templates.

From these experiments it became clear that the best combination would be to use a Developer generated forms application for local client/server operation together with visually programmed Java servlet applications for remote Internet access to the museum database (see also CILEA bulletin n. 69 Sep. '99).

### **Dissemination and Exploitation**

The goals of the ArchTerra project call for a continued activity of the Consortium partners after the formal end of the project. The partners' intentions to continue the work and exploit the results of the project may be grouped under the headings of maintenance of services, creation of additional content, further dissemination activities, and further development and enhancement of software products. These themes are set out in detail in the exploitation plan below. During the project's run-time, active dissemination has mainly been done through a series of papers presented at various international symposia, many of which have already been published or will be published in the near future. As passive means of dissemination, an extensive Internet presence has been established for the project (see the CILEA mirror site of the project: <http://archterra.cilea.it/>). The URL was submitted to several international search engines (e.g., Yahoo!, Google, DMOZ) in July 1999, and missing project details were added to the CORDIS database maintained by the EU in August 2000.

### **Maintenance of services**

Partners RUG and CILEA will maintain, respectively, the ARGE and MEDIOLANVM central services for a period of at least 3 years from the end of the contract.

Partners CIMEC, MAP, and NBU will maintain, respectively, the national ArchWeb sites of Romania, Poland, and Bulgaria.

Partners CIMEC, MAP, and AIM will maintain, respectively, their database information services.

Partner CILEA will continue to host and maintain the ArchTerra project web site and mirror sites of the three national ArchWebs of Romania, Poland, and Bulgaria for a period of at least 3 years from the end of the contract.

#### **Creation of additional content**

AIM – will continue the digitisation of its holdings within its MIS; it will add the following new sections to ArchWeb-BG: Archaeological sites excavated by AIM-BAS members, Contents of the AIM-BAS editions, Exhibition projects and descriptions, and New archaeological and museum projects.

MAP – will extend its web pages with the full contents of the Poznan Museum's yearbooks.

CIMEC, MAP, AIM – will use the "know-how" gained within the ArchTerra project for realising further virtual on-line exhibitions.

Other related activities include the publication in 2002 of a multimedia CD-ROM on Trajan's column as a result of the collaboration between partners CIMEC CILEA and III.

#### **Dissemination activities**

All partners will remain active in the promotion of access to Internet resources on European archaeology. Specifically, they will provide practical aid in setting up (and, where necessary, hosting) new ArchWeb nodes in other countries of Europe; and they will continue to disseminate leaflets on project deliverables.

CIMEC – will organise workshops on ArchWeb-RO at the Faculty of History of the University of Bucharest (special seminary for Methods in Archaeology) and at the Annual Meeting of Romanian Archaeologists (mid-summer 2001). It will also continue to provide its museum information system and conversion software to Romanian museums at low cost.

MAP – organised the XIII Report Conference on Archaeological Research in Greater Poland in 1998-2000 (April, 2001), during which the ArchTerra project will be the subject of the keynote speech, and the MAP and ArchWeb-PL web pages will be presented.

CILEA – will publish papers on the ArchTerra project and the Mediolanvm service in Italian language scientific journals.

AIM – organised a presentation of its MIS and the ArchWeb-BG web pages at a meeting of archaeologists from the regional archaeological museums of Bulgaria on the premises of AIM (February 2001).

NBU – organised a presentation of the ArchWeb-BG web pages during a special workshop to be organised by the Department of Archaeology of the NBU in March 2001.

III - will offer its implementation of the CIDOC data model developed under ArchTerra to CIDOC for the purposes of dissemination and further development.

#### **Development and enhancement of software products**

The partners will continue to work towards a joint ODBC database system for the storage of, and access to, national archaeological records (co-ordinated by CIMEC); and they will take part in a working party to plan for the establishment of an internet gateway to European Archaeology under the aegis of the European Association of Archaeologists (co-ordinated by RUG).

CILEA – will, in collaboration with the University of Milan and an Italian museum, implement another instance of the museum information system.

III - the CIDOC based MIS will be proposed to all museums in Bulgaria which are willing to implement/adapt it for their own use; a national information system for the most important objects and documents in Bulgarian museums and archives is already under development by III and the National Chamber of Museums in Bulgaria. It is based on the CIDOC compliant MIS developed by Dr. Vassilev.

RUG, CIMEC – will continue development of multilingual thesauri and glossaries, and disseminate these through ARGE.

NBU, MAP, CIMEC, CILEA - III will develop a MySQL/PHP-based directory application for inclusion in the national ArchWebs, which will contain details of people and organisations related to archaeology; the contents of the three will be made available as a merged directory application through the ArchTerra web site at CILEA (<http://archterra.cilea.it/>).