



ARENA

Archaeological Records of Europe: Networked Access

Year One Report

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A project carried out with the support of the Culture 2000 programme of the European Union.



Year One Report of the ARENA Project 2001-2002

**A project carried out with the support of the Culture 2000 programme of
the European Union.**

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1. Introduction

This document is an overview of the first year activity of the ARENA (Archaeological Records of Europe: Networked Access) project, a three-year project carried out with the support of the Culture 2000 programme of the European Union.

The aim of the project is to develop a framework capable of protecting and promoting digital cultural archives of European significance relating to archaeology in six partner organisations.

The project is a partnership bringing together co-organisers from Denmark, Iceland, Norway, Poland, Romania and the United Kingdom. Each partner brings to the project particular skills and areas in which they would like to develop capabilities. The participating organisations are:

- cIMeC, The Institute for Cultural Memory, Romania.
- Poznań Archaeological Museum, Poland.
- The Museum Project, Norway.
- Kultur Ministeriet, The Danish Agency for Cultural Heritage.
- Fornleifastofnun Íslands, The Institute of Archaeology, Iceland.
- The Archaeology Data Service, University of York, United Kingdom.

The development of the above framework will be achieved by developing a web portal that will allow access to and cross searching of important archaeological archives from the partner organisations. The portal will make both summary Sites and Monument data and specific archaeological project archives available.

By developing the portal the ARENA partners will be both using new and innovative technologies in appropriate ways and developing skills. There are a number of challenges that will be faced by ARENA, for example language boundaries, different levels of experience and training, various levels of awareness of digital archive issues and the sometimes-ambivalent interpretation of archaeology as national heritage. It is also an important role of the project to disseminate the lessons learned confronting these problems to the wider cultural resource management and archaeological communities. Because the partners all bring their own areas of skill and expertise to the project the roundtables and workshops can also take a proactive role providing advice and training as well as provoking academic debate. This vital activity is already being carried out by the ARENA series of roundtables and workshops held at influential European conferences.

This report lists the meetings of the ARENA partners and papers and workshops given and organised by ARENA.

The report also outlines the progress made in the four areas of ARENA activity stated in the original project plan. Each of these activities will draw upon the building of a web portal as a test bed for innovative activity and as a source of inspiration for the dissemination of knowledge.

- Organisation of initiatives for exchange of experience and the further training of professionals.
- Promoting elements of the heritage concerned.

- The adapted and innovative use of new technologies, to the benefit of participants, users and the general public.
- Organising research projects, projects to raise the public's awareness and to teach and disseminate knowledge.

2. ARENA Meetings, Papers, Publications, Roundtables and Workshops.

2.1. Meetings of the ARENA Partners.

Since the creation of the ARENA project there have been three meetings of the partners:

- 2nd April 2002. Held at the Computer Applications in Archaeology (CAA) Conference. Held in Heraklion, Crete, Greece.
- 3rd & 4th June 2002. Held at the newly formed Danish National Agency for Cultural Heritage, Copenhagen.
- 25th September 2002. Held at the European Association of Archaeologists (EAA) Conference. Held in Thessaloniki, Greece.

2.2. Papers, Publications, Roundtables and Workshops.

Since the creation of ARENA the project has been publicised through a number of conference papers, workshops and published works:

CAA Conference, Heraklion (April 2002). Paper given by Dr Jonathan Kenny "Interoperability: European Heritage Infrastructures"? This paper has since been written up for publication as Kenny, J., Kilbride, W.G., and Richards, J.D. (forthcoming) "Enter the ARENA: preservation and access for Europe's archaeological archives".

ECAI Conference, Seoul (May 2002). Paper given by Dr William Kilbride "Towards a European information architecture for historic environment information resources".

The Danish National Agency for Cultural Heritage (June 2002). Paper given by Dr Jonathan Kenny "ARENA, Archaeological Records of Europe: Networked Access".

The following paper was published electronically: "Networked Access to Digital Archaeological Archives in the European ARENA" Kenny, J. and Kilbride, W.G. Published in the CSA Newsletter: Computer Technologies for Archaeologists & Architectural Historians. Vol XV No 2. Fall 2002.

Visit to the Data Services Unit at English Heritage in Swindon. This visit by Jonathan Kenny and Tony Austin allowed ARENA to be introduced to this key unit within the national heritage body in the UK. Issues regarding thesauri were discussed with members of the HEREIN project at the same time.

EAA Conference, Thessaloniki (September 2002). Roundtable organised by ARENA "Towards European Information Architectures for Archaeology". This roundtable brought together eight projects (6 of which are funded by the EU) with an interest in the creation of a European data network for cultural heritage.

EAA Conference, Thessaloniki (September 2002). Dr Jonathan Kenny was invited to represent ARENA at a roundtable session "New, Integrated Approaches to Cultural Heritage Communication: The TECHNE European Research Network".

Hansen, H. J. and Dam, C. 2002. "On-line management of cultural heritage cartography. An introduction to the Danish experience", in L. García Sanjuán and D.W. Wheatley (eds) Mapping the Future of the Past, p129-137.

Kilbride, W.G. 2002. "Mapping the Heritage Information landscape: Interoperability and Geo-Spatial Description in the Management of Europe's Historic Environment", in L. García Sanjuán and D.W. Wheatley (eds) Mapping the Future of the Past, p115-128.

Attendance at the ERPANET seminar on XML at Urbino University, Italy in September 2002. Jonathan Kenny attended this expert seminar to publicise the ARENA project and to participate in debate on the role of the XML mark up language as a preservation strategy.

Attendance at the ERPANET course on OAI, Copenhagen in November 2002. Dr Westcott from the ADS attended this course on behalf of the ARENA project. Dr Westcott will be an important member of the ADS technical team working on the ARENA portal that will utilise OAI protocols.

2.3 Other Publicity.

The ARENA project has been the subject of a number of press reports resulting from partner's press releases:

- The York Evening Press (local press in UK) ran a short article in June 2002
- Morgunlaðið (national press in Iceland) ran an article in January 2002 that is available online at:

http://www.mbl.is/mm/frettir/show_framed_news?cid=1&nid=772694

3. The Financial Operation of ARENA

3.1 Introduction

This section of the report relates to the financial reporting form submitted with the report to the EU at the end of operation of the first year.

The overall expenditure of the operation of the ARENA project in the first year amounted to €279,276.05. This represents an under spend of €43,853.95 or 13.57% and can be attributed to the slow start in operations described in section 4.1 below. This level of spending is within the tolerances allowed by the EU and is likely to be balanced out over the operation of the project in its second year as more technical work is undertaken to create the ARENA portal. The individual budget headings are reported below under the headings; staff, general expenditure, travel and subsistence costs, conferences and seminars and miscellaneous.

3.2 Staff

Staff costs for the operation of the ARENA project amounted to €226,368.65. This represents an under spend of €39,691.35 or 14.92%. This is within the acceptable tolerances allowed by the EU during operation of the project and is likely to be balanced out during operation in the second year, as noted above.

The ARENA project is pleased to note that 38 different members of staff have been employed in technical roles on the project for a variety of periods of time. This work has largely been involved in the preservation of archives in preparation for the creation of the ARENA portal.

Secretarial roles have been carried out by 6 different members of staff at the applicant organisation, but not in a full time capacity. Further activity in the second year of operation will see a considerable increase in spending on this key category.

3.3 General Expenditure

The costs for this budget heading are very close to budget, amounting to €13,945.33 or 3.36% under spent. Spending under this heading came up to speed quickly because these are items required for the operation of the project from the start.

3.4 Travel and Subsistence Costs

These costs incurred in the implementation of the project were over all €30,105.25 representing an under spend of 9.10%. The figures within the sub headings show an under spend on travel and an over spend on subsistence. This is the result of larger numbers of participants attending meetings at the beginning of the project to provide technical advice and training. Attendance of these meeting participants at conferences, which the ARENA project meetings precede, and at which the ARENA project holds roundtables or gives papers meant that subsistence costs were higher than anticipated.

3.5 Costs in Connection with Conferences and Seminars

Spending under this heading came to €7,381.43, an under spend of 7.96%.

3.6 Miscellaneous Costs

These costs amounted to €1,475.39 an under spend of only 1.6%. This cost represents the provision of essential computer infrastructure at the ADS, making it possible to deliver and preserve archives in the long term in particular server and back up costs.

4. The Work

This section reports the detailed activity of the project in its first year of operation. Work on all four of the ARENA areas of activity are under way; the first workshop in Thessaloniki was a success, archives have been selected and are currently being preserved, map-based searching is being developed for the portal and innovative approaches to the use of metadata, Z39.50 technology in combination with OAI and multilingual searching are all being developed.

4.1. Getting Started.

As noted in the section above, The Financial Operation of ARENA, the project made a slow start as notification was only received in December 2001 for a project that had to start operation in that year. Because the project was accepted to run from 2001 to 2004 it had to begin operation on the 1st December 2001. The result of this was a slow start whilst staff was put in place to begin full operation.

Dr Julian Richards and Dr William Kilbride carried out initial action before staff were put in place. The appointment of a full time project manager, Dr Jonathan Kenny, was made on 12th March 2002.

4.2. Organisation of initiatives for exchange of experience and the further training of professionals.

The ARENA partners recognised at the project design phase that there is an urgent need to raise awareness of the fragility of digital data and to promote the actions, which secure its long-term future amongst all European countries. The central activity intended to confront these issues are:

- Partners sharing and extending expertise and experience.
- To disseminate expertise and experience gained through the project to a wider European audience.
- To develop and promote standards in archive formats, metadata and communications protocols.
- To identify areas where there is a need for Guides to Good Practice, to translate existing guides where required and to develop future projects to create and promote new guides.

4.2.1. Sharing expertise amongst the partners.

As part of the web portal development partners have committed themselves to making available a number of key archaeological archives as a test-bed for the development of shared archiving and access techniques. Each archive is in a different state of digital preservation requiring the partners to work on the actual preservation of data ensuring that they work to acceptable format standards. In the first instance the standards published by the Archaeology Data Service have been adopted. Since the establishment of the ARENA project there have been three meetings of the partners. The second meeting held at Copenhagen included a set of

papers designed to outline issues specific to the development of the ARENA project ensuring that the partners were all aware of the relevant standards:

Dublin Core and Metadata (Julian Richards, ADS). An important issue for resource discovery, key problem area will be language. Dublin Core deals with this through key words consequently ARENA will have to develop a basic thesaurus.

OAI and Z39.50 Technologies (Tony Austin, ADS). Both technologies are available as freeware; other commercial technologies are very expensive. OAI is designed to be simple and is easier to install. Z39.50 is more flexible but requires more technical support. It is possible for OAI systems to sit within a Z framework, so ARENA could accommodate both as ADS has access to both.

XML (Øyvind Eide, Museum Project). XML as a language for marking up text that can be used as part of a preservation strategy. It may also be used as a means of accessing specific sections of text and as such may be useful for the presentation of ARENA archives.

4.2.2. Disseminating expertise and experience gained through the project to a wider European audience.

As the project develops so more initiatives to disseminate expertise and experience will develop. This is one of the key roles for the ARENA workshops and Roundtables. The first roundtable was hosted by ARENA at the EAA (European Association of Archaeologists) Conference held at Thessaloniki in September 2002.

The Thessaloniki roundtable was entitled "Towards European Information Architectures for Archaeology". The session considered the very idea of a European wide data architecture or network, seeking to answer a specific question:

"How do we move from disparate projects towards a European Information Architecture for Archaeology that achieves interoperability for knowledge sharing?"

The following European projects took part in the roundtable:

ARENA (Archaeological Resources of Europe: Networked Access): Julian Richards and Jon Kenny

AREA (Archives of European Archaeology): Nathan Schlanger and Alexandra Alexandri

ERPANET (Electronic Resource Preservation and Access Network): Niklaus Buetikofer

HEREIN and HEREIN2 (European HERitAGE Network) Irina Oberländer-Tarnoveanu ArchTerra (Extending the European Archaeology Web over Bulgaria, Romania and Poland): Martin van Leusen and Andrzej Prinke

CHIOS (the CIDOC Conceptual Reference Model planned standard): Martin Doerr

Pathways to Cultural Landscapes: Gerhard Ermischer

TECHNE (European Cultural Communication Network) Franco Niccolucci

All of the participants considered that making archaeological archives searchable across national boundaries was a goal with considerable advantages both in terms of the preservation of this fragile resource and for access to data for a number of user groups. The roundtable brought together projects all seek to achieve interoperability for knowledge sharing in different ways but the consensus was that the way forward

lay in drawing the work of projects such as ours together under larger and more influential projects like those proposed by the 6th Framework.

This was a well-attended roundtable that allowed considerable networking between EU supported projects that all work towards a similar goal in different ways. The subject allowed ARENA to disseminate knowledge at the same time as making an impact in its first roundtable session.

The next workshop is to be held at the CAA (Computer Applications in Archaeology) conference at Vienna in April 2003. This workshop will allow ARENA to disseminate knowledge in one of the partnership's strong areas of expertise, the preservation of digital data. The session will take the form of a practical demonstration of the process of data preservation, currently being carried out at each partner. A summary paper given in a separate session of the conference to spread the impact made by the workshop will follow this.

Following the ARENA workshop at Thessaloniki the project attracted a great deal of interest, particularly from the National Board of Antiquities in Finland and the State Service for the Archaeological Heritage in the Netherlands. Such interest has led the ARENA project to develop relations with other parties as part of its dissemination activity. Such relations are mutually beneficial and are already leading to the discussion of further international collaboration on archives of cultural significance, particularly reference collections of moveable heritage and historical archives.

4.2.3. Develop and promote standards in archive formats, metadata and communications protocols.

The promotion of preservation standards is currently being carried out amongst the ARENA partners as they prepare archives for the ARENA portal. So far the standards in archive formats adopted match those published by the ADS (the UK partner) in the Guides to Good Practice series.

4.2.4. To identify areas where there is a need for Guides to Good Practice, to translate existing guides where required and to develop future projects to create and promote new guides.

With the adoption of the ADS guides to good practice, one of the guides has been translated to Romanian and made available on licence from the ADS.

4.3. Promoting elements of the heritage concerned.

This activity of the ARENA project has three main objectives:

- To allow the partners to develop and share expertise in the protection and promotion of digital archives.
- To promote this expertise amongst other European agencies.
- To promote scholarly and public access to selected digital archive data sets and archaeological texts of international significance.

Each partner making key archives available through the ARENA portal will meet the above objectives. In the process of making archives available the ARENA partners

will have to deal with a number of data preservation issues. This work is currently underway at all partners and will culminate in archives on line (but as yet not part of the ARENA portal) by the CAA Vienna conference in April 2003. At this conference ARENA will be holding a workshop on the actual process of archive preservation. The workshop will draw on the experiences of the ARENA partners in preparing the archives and make an important contribution the promotion of digital archive preservation on a European scale.

The following table sets out the archives to be contributed:

Partner	Archives	Formats	To be ready by
ADS	Danebury Terraconensis Cottam	Variety of database, word processing, CAD and image formats. Currently being migrated into standard format versions. Some scanning to be done.	17 th Jan 2003
Danish Ministry for Culture	Vorbasse Dankirke Hjelm	All in digital format. In recent standard formats. GIS material available. May use a GIS interface	8 th February 2003
FSI Iceland	Hofstadir	Is all in digital format apart from images. May be able to provide selected digitised images.	8 th February 2003
Museum Project	A group of sites drawn from the Museum Project archaeology archive.	Archives have images and documents attached. May eventually provide a GIS interface.	8 th February 2003
Poznan Archaeological Museum	Kopolev Got cemetery site. Slavic Forts sites.	Kopolev has a digital archive including images. Slavic forts present a minimum level archive.	8 th February 2003
cIMec	Multiple site Historic Archive project for Lower Danube region.	Currently digitising.	8 th February 2003

4.4 The adapted and innovative use of new technologies, to the benefit of the participants, users and the general public.

This activity centres on the crucial development of map-based technologies to create a search facility for the ARENA portal. This spatial interface will be of benefit to all of the partners as well as those who use the portal.

This development is now underway but will require further time in the second year to be ready for the launch of the portal in September 2004. This delay is a direct result of the late start to the project and represents the under spend reported in the first year of operation. The application of more staff time to the map interface will bring it back onto schedule and will use up the budget surplus reported in year one.

4.5 Organising research projects, projects to raise the public's awareness and to teach and disseminate knowledge.

Several initiatives are now underway to investigate innovative approaches to the delivery of the ARENA portal. The dissemination of the results of these approaches will form the basis for later workshops. An ARENA website has been created to disseminate information about the ARENA project, the results of workshops and information about the technologies being used. The ARENA web site is found at <http://ads.ahds.ac.uk/arena/>.

4.5.1. Metadata Standards.

The ARENA partners, following a presentation by Dr Julian Richards from the ADS, have discussed Metadata standards and agreed to comply with the Dublin Core standard. A project is now being carried out to investigate the innovative use of Dublin Core metadata standards to develop layered metadata to index archives. The concept of layered metadata will allow the linking of interpretive aspects of each archive and the evidence used to generate the interpretation. Thus a thematic search can be carried out allowing for evidence-based use of the interpretive elements of individual archives or across many archives.

4.5.2. Multilingual Thesauri.

To enable a cross-searchable portal the ARENA project is investigating the use of multilingual elements in the search interface. This will allow the portal to be accessed in six different languages and searches to be made according to period, absolute date and archaeological theme. This is a key area of research for the project that has now been focussed to meet the needs of the portal.

4.5.3. Use of Protocols and XML.

The ARENA project has elected to use Z39.50 and OAI protocols to enable interoperability. This is an important area of investigation, as it will demonstrate the practical use of both technologies in the delivery of material through the same portal. Such experience will be particularly beneficial to the development of a framework for a European Archaeological Archives, drawing on the advantages of Z technology for those organisations large enough to manage the technology whilst allowing smaller organisations to participate using OAI.

4.5.4. The Creation of a framework for European Archaeological Archives web based portal.

The development of a web-based portal for the ARENA partners is now under way. It is clear that the experiences of the partners on the path to this goal will be of great interest to many other projects and organisations that are currently working towards a Europe wide network for archaeological archives. This interest has already been demonstrated by the first ARENA workshop at Thessaloniki outlined above.

5. Benefits to individual partners of participating in the ARENA project.

The ARENA partners have reported a number of internal activities and general benefits from participation in the project.

5.1 The Institute for Archaeology (FSI) in Iceland.

The FSI has carried out the following activities as a result of participation in the ARENA project:

- Initiated a programme of work to enhance the digital environment at the FSI, along with a increasing awareness of documentation, data standards and preservation of digital data.
- Development of links with other European countries involved in similar areas of work and fostering the exchange of ideas and experiences in digital data management through ARENA meetings.

Specific objectives achieved and created at the FSI:

- Greater awareness of digital data issues as a result of the ARENA project from the dissemination of knowledge through workshops for FSI staff.
- Creation of an Information Network of linking resources from a situation where sources of information were previously dispersed.
- Enhancement of data collection and data entry into databases by the need to document and use data standards.
- A much greater integration of data management in all aspects of the FSI's work from site preparation to final publication.

5.2 The Danish Agency for Cultural Heritage.

- The Cultural Heritage Agency is a new construct. One of its aims is to bring together all of the national heritage and art databases under one roof. This includes information on works of art, buildings worthy of preservation, protected sites and monuments still visible in the landscape today, prehistoric sites not visible on the surface and artefacts from historic periods. These are all stored in databases developed independently by different institutions and therefore on a variety of technical platforms and also in very different database structures.
- The aims of the ARENA project are very similar to the present situation of the Danish Agency for Cultural heritage. The goal is that national databases on different technical platforms and with very diverse data structures can be accessed through one interface with the search results being transparent to the user, i.e. it not being obvious, that the search is distributed and actually queries a number of different databases before an answer is provided.

- Because the common goal of ARENA is establishing a framework for a pan-European gateway to heritage information the project allows the Agency to develop experience extremely relevant to the present developments in heritage database development in Denmark. In particular the use of the DC metadata standard, XML and Z39.50 technologies, all areas where the Agency's experience is limited.
- The ARENA project also provides a pilot project for things to be implemented in the near future. Within the next few years it is planned that the Heritage Agency will archiving digital archives from archaeological excavations.

5.2 Archaeology Data Service (ADS) in the United Kingdom.

Participation in the ARENA project has allowed the ADS to undertake test-bed research in specific areas of activity:

- The innovative use of Dublin Core metadata standards in archiving and presenting archaeological excavation records.
- The combination of OAI and Z39.50 technologies as a hybrid system to facilitate interoperability between organisations with varying technical and financial resources.

Preparation of archives for use in the ARENA project have required the ADS to confront issues regarding the use of non standardised terms that frequently appear in index archives created before national standards were introduced.

Collaborative work with both ARENA partners and the non-participating 'outer circle' of contacts has raised the profile of the ADS and at the same time raised the awareness of the ADS of European issues. This is reflected in the ADS participation in development work on further projects of European significance.

One of the benefits of the test bed and research nature of the ARENA project has been the development of skills amongst the management and technical staff within the organisation, skills that can be disseminated through the ARENA workshops and roundtables as the project progresses.

The practical nature of the ARENA project not only allows for the dissemination of expertise but also the physical archiving of material of international importance. In the case of the ADS archive this is particularly true of the Danebury archive, a data set of European significance that may not have been conserved without the activity of the ARENA project.

5.3 The Museum Project in Norway

Participation in the ARENA project has allowed the Museum Project to raise its profile outside Norway. This is important as the project demonstrates its successes in developing common database systems for the management of collections for all the Norwegian university museums. It is also important to the Museum project that they have been able to make their expertise more widely useful to other partners in ARENA and to the wider archival community through the ARENA workshops.

The preparation of archives for use in the ARENA project has allowed the Museum project to consider particular issues faced in a multi national project,

particularly translation of terms and periods as well as the use of grid references in developing map based searching.

5.4 cIMeC, the Institute for Cultural Memory in Romania

cIMeC has benefited greatly in the early stages of the operation of ARENA by the preparation of archives for the portal. This includes the digital presentation of huge archives such as the Inventory of the National Museum of Antiquities. The importance of standards in creating such digital archives has led cIMeC to translating the ADS Guide to Good practice for Excavation and Fieldwork for use in Romania.

5.5 The Poznań Archaeological Museum in Poland

The initial operation of the ARENA project has allowed the museum to work on the preservation of key archives that have recently been published in hard copy. They have also allowed the development of the use of the AZP (sites and monuments register) as a resource available on a multi national scale.

6. Summary and Conclusions.

Despite the slow start to operations whilst staff were hired the ARENA project has made a successful beginning to its activities. The following key progress has been made:

- Three meetings of the ARENA partnership have been held allowing for the agreement of how the portal will appear and operate and for exchange of expertise in areas such as metadata standards, Dublin Core and XML.
- Key archives have been identified for use in the ARENA portal. These are both index records and complex archaeological excavation or historical archives.
- Dissemination activity is now underway, the first ARNEA workshop was held at Thessaloniki in September and a number of papers have been delivered at conferences of local, national and international importance.
- The practical development of the ARENA portal is now underway. This is a key feature of the project and provides a test bed for innovative use of metadata, communications protocols, multilingual thesauri, and cross-national searching by period.
- Some aspects of the practical portal development, in particular map based elements are underway but have only recently started. This is a result of the slow start to the operation of ARENA as a whole. This slow start in development has resulted in an under spend in assistance functions and secretarial costs for the first year. These funds will be required in the second year of operation to complete the map-based element of the portal.

The undersigned declare that this report is a true and accurate account of the operation of the ARENA project in its first year.

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Dr Julian Richards.
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Dr Jonathan Kenny.
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