

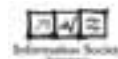


DigiCULT .Info

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INTRODUCTION

The acceptance of *DigiCULT.Info* as a voice for the sector is once again illustrated in this issue, not only in the large number of contributions received but also in the quality and diversity of themes presented. This introduction lifts the veil on only a sample of the wealth of knowledge waiting inside *DigiCULT.Info Issue 9*.

According to Guntram Geser of Salzburg Research, e-culture will be based on technologies that enhance the creation, management and provision of attractive cultural content and engaging interactions on a variety of platforms. His article poignantly addresses the endeav-

ours of small heritage institutions to prepare themselves for e-culture, while facing the 'trilemma' of lacking human resources, lacking funds, lacking technical skills. Based on an 'e-readiness check', the paper assesses 20 technologies especially from the perspective of smaller institutions.

These technologies have been monitored in the DigiCULT Forum project. Although some of the technologies may be used by smaller institutions, the article concludes that these institutions may only become 'e-ready'

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for, and benefit from, most of the technologies within a framework of larger cultural heritage initiatives. In such initiatives, funded mechanisms such as cultural networks/service centres enable smaller institutions to keep their costs and risks manageable while not being excluded from new technological developments.

Following are short excerpts of the five events reported on in this issue. They range from issues of digitisation to artificial intelligence and knowledge representation.

The ERPANET Preservation of Born-digital Art Workshop held on 8 October provided the opportunity for representatives from a selection of German, Dutch and Hungarian organisations to disseminate aspects of their policies, approaches research, and case studies regarding digital art works and projects to a UK audience. This is part of an effort to initiate wider discussion within the artistic, academic, museums, communities in Britain on how museums document and archive digital artworks so they remain accessible for the long term?

The International Seminar on Digitisation, held at the National Library of Portugal (<http://www.bn.pt/>) in Lisbon on 11 May 2004, was promoted as an initiative of the MINERVA project. The main purpose of the event was to promote the idea that digitisation of cultural and scientific artefacts is both desirable and useful for the future of the sector.

The European Workshop on Culture and Technology aimed to provide delegates from the EVA Florence 2004 conference with an opportunity to further explore some of the major issues surrounding 3D digitisation and distribution. Over the course of two days, group discussions and workshop activities revealed that more work must be done on fundamental research and on the establishment of industry standards.



Renovations for the new SalzburgMuseum, Mozartplatz 1. Image shot in the context of the symposium „eCulture Horizons: From Digitisation to Creating Cultural Experiences“ (27–28 September 2004), organised by the eCulture Group of Salzburg Research. See page 43 for further information on this conference.

The conference; Towards a continuum of digital heritage, Strategies for a European Area of Digital Cultural Resources, held in The Hague on 15 and 16 September, was devoted to the concept of a European Area of digital cultural resources. Organised under the Netherlands EU Presidency, the conference marks a turning point in the ‘Lund Action Plan’. The Dutch Deputy Minister for Culture, Medy van der Laan, underlined the importance of the vision of a shared area of digital cultural resources during the Netherlands EU Presidency, and assured continuing support for the development of this vision.

The Eighth International Conference of the International Society for Knowledge Organization took place on 13–16 July 2004, at the University College London. The Conference was hosted by the School of Library, Archive & Information Studies, and its theme this year was ‘Knowledge

organisation and the global information society’. The main conference programme was divided into a number of themes, including theoretical foundations of knowledge organisation, linguistic and cultural approaches, artificial intelligence and knowledge representation, and applications of knowledge organisation. Individual sessions also dealt with knowledge organisation of non-textual media, problems of specific subject fields, the use of thesauri, and recent developments in the large systems of classification.

John Pereira, the DigiCULT project manager in *On the Radar: eCulture Experiences*, makes the point that massive distributed and embedded computing, smart networked devices, novel interfaces, positioning and context-awareness technologies, etc. will over the coming years be delivered by the industry. However, when it comes to digital cultural experiences, he claims that, new forms of collaboration and true interdisciplinary efforts will be

needed. The key word here is experience prototyping, and cultural hotspots such as historic city centres, museums, science centres or heritage sites should be strongly involved in this.

In March 2004 the new **EPOCH** network started its activities. Tjil Vereenooghe provides us with a unique look into this new initiative and the way forward in meeting their overall objective "...to bring together the combined expertise and resources of technologists, heritage administrators, heritage professionals and communication experts concerned with the effective and sustainable application of digital technology to archaeological research and cultural heritage presentation at museums, monuments and historic sites."

Eva Müller from the Uppsala University, reports on the **DiVA** publishing sys-

tem which has been in full operation since January 2003 and is used by a number of universities in Nordic countries. She notes that the "DiVA system has been designed to follow workflow models that are practical for both authors and production staff. This concept helps to achieve efficiency and reduce costs, as well as benefiting authors. The efficiency that we have achieved and the recognition we have received from authors and research communities demonstrate how powerful technology can be when it is integrated with user-friendly and (semi)automated workflows".

Andreas Strasser from Salzburg Research presents the **Austrian Digital Heritage Initiative** which with its Web site is the national reference point on Austrian digitisation policies and projects. Launched in November 2003, the Digital

Heritage initiative is an ongoing activity carried out by Salzburg Research on behalf of the Federal Ministry for Education, Science and Culture.

News from DigiCULT's Regional Correspondents in this issue includes Bulgaria, Greece, Ireland, Lithuania, The Netherlands, Poland, and Turkey. We would like to take this opportunity to thank our network of correspondents for their valuable work in ensuring that the news and knowledge of the sector reaches a wider audience.

Seamus Ross & John Pereira
Editors, *DigiCULT.Info*

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THE DIGITAL MATRIX: GREEK MASKS IN 3D

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The masks of Greek New Comedy are a vital and neglected part of European cultural heritage. They are witnesses to a prolonged fascination with masks, for they were made and reproduced across the ancient world for over five hundred years. The plays they relate to were immensely popular also: Menander was writing in the 4th century BC, but his plays were still being read in Egypt nine hundred years later. Plautus and Terence made adaptations for the Romans, and through them New Comedy influenced the Western tradition from *Commedia dell'arte* to the comedies of Shakespeare and modern sitcom. Apart from *Commedia*, the mask has rarely been used in Western theatre: it is thus even more important to recover the performance tradition of New Comedy.

None of the masks used on the ancient Greek stage have been preserved – they are assumed to have been made in a perishable material such as a linen maché. What have survived are miniature masks and statuettes of actors, mostly in terracotta, but sometimes in stone, bronze or other media (see Figures 1a & 1b). The popularity of these artefacts is remarkable: far more common than masks of tragedy, they are represented in museums throughout Europe. Their sophistication is also extremely remarkable. Based on subtle observation of character and physiognomy, they have built into them the qualities that make a mask powerful and lifelike, such as asymmetries, the flow of lines, and above all the different ‘aspects’ of character that a good mask presents from different angles, which make it seem to change expression as it moves. The

potential of a mask is only sensed properly when it is worn; hence the aim of the New Comedy in Performance project (<http://www.iah.arts.gla.ac.uk/masks/>), funded by the UK Arts and Humanities Research Board (<http://www.ahrb.ac.uk/>) and based at the Institute of Art History at the University of Glasgow (<http://www.iah.arts.gla.ac.uk/>), has been not only to digitise these artefacts, but to conduct practice-based research with masks that are objectively scaled up from the 3-dimensional data.

New technologies for 3D scanning and rapid prototyping have been critical for this work, first to model a virtual artefact at high resolution, and then to replicate the object at artefact or full life-size.¹ The ability to scale a mask objectively from the captured data has distinguished the project from previous attempts to investigate ancient (generally tragic) masks, informative though these have been. Additionally, the ‘payload’ of 3D imaging is still greater here than for other genres of sculpture. Not only can it help unlock the secrets of the mask-maker’s art, it highlights issues of human perception of faces and their visual cues that go beyond the discipline of theatre studies.

Among the finest examples of the masks are those found on the island of Lipari, off the northern coast of Sicily, a number of which are in the collections of the Kelvingrove Art Gallery and Museum, Glasgow.² In the late 19th century a Scottish mining magnate and philanthropist, James Stevenson, purchased the bulk of the island of Vulcano, adjacent to Lipari, with a view to processing its sulphurous rocks. He also acquired the masks, statuettes and other antiquities that had been found in some of the first excava-



Figure 1a. Terracotta mask miniature of a youth, late 4th/early 3rd century B.C. 1903.70.dt.4. Art Gallery and Museum, Kelvingrove, Glasgow



Figure 1b. Terracotta mask miniature of a young woman, late 4th/early 3rd century B.C. 1903.70.dt.8. Art Gallery and Museum, Kelvingrove, Glasgow

tions on Lipari, and left these to the City of Glasgow upon his death in 1903. Over the past 50 years the entire necropolis of Lipari has been excavated and another 300 or so masks found, which are now displayed in the Aeolian Museum on Lipari. Work that has been carried out by the Project, with reconstructions of these masks and with selected examples from other locations, confirms that the miniatures, although typically a third of the size of the human head, possess when scaled up all the qualities of a performable mask, as well as fitting close-

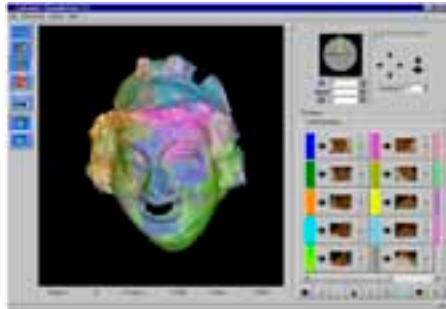
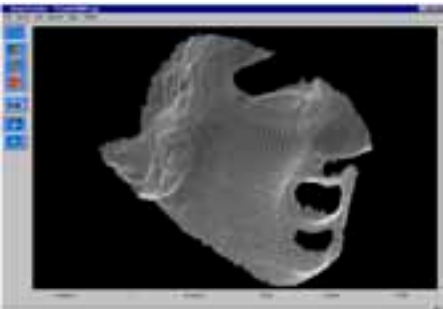
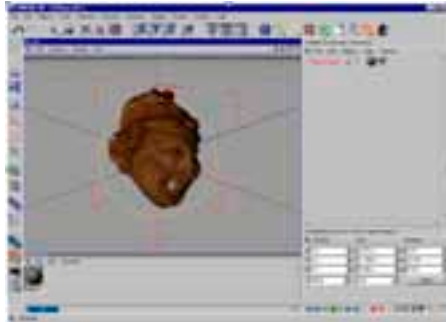
¹ Previous issues of *DigiCULT.Info* have dealt with the possibilities offered by 3D replication of artefacts. A detailed account of the techniques involved in producing 3D replicas can be found in “La Dama De Elche: Digital Technology in Conservation” in *DigiCULT.Info*, Issue 7, April 2004, p. 5 <http://www.digicult.info/pages/newsletter.php> Future issues will continue this theme.

² For more on the Kelvingrove Museum, see <http://www.glasgowmuseums.com/venue/index.cfm?venueid=4>



© Richard Williams, 2004

Lipari, seen from the island of Vulcano



© Richard Williams, 2004

Modelling a patch in Shapenatcher

Blending patches in Shapenatcher and importing the finished model into Cinema 4D

ly to the face – this in turn reinforces the hypothesis that they functioned not only as representations, but as a means of transmitting the 3D information around the ancient Mediterranean world.

Using a commercial non-contact photogrammetric system (Eyetrionics *Shapenatcher* <http://www.eyetrionics.com/>),³ the artefacts (typically 6–8 cm height) are captured and modelled to around 100,000

polygons, with a texture file of up to 4,098 pixels width. Because the objects do not necessarily respect the forms of ‘real’ faces, they can be challenging to model: the mask system of New Comedy divides into high-status figures (free men and women) with idealised more neutral features, and those of slaves and old women, with caricatured grotesque shapes and folds of flesh (see Figure 2).

Manipulating the digital model in a 3D world can be far more informative than confronting the original object. Absent paintwork can be digitally restored; the marking in of the pupils, for example, transforms the reading of a face. But it is also instructive to view the model without the texture file and to apprehend the form, and the effects of lighting upon it. It is advantageous to render the model with strong directional light from above and to one side (unlike the lighting requirements of archaeological publication – see Figure 3). The human brain is adapted to read and recognise faces best when they are lit from above, and the masks can be seen to have been deliberately sculpted to exploit these lighting conditions (which were of course those of ancient outdoor theatres), not least with the pronounced roll of hair above the brow of the young men, creating a play of shadow and highlights that gives scope to depict the nobility introspection and idealism that is characteristic of them in the plays.

Rapid prototyping of replica objects has been undertaken by the Rapid Design and Manufacture Centre (<http://www.strath.ac.uk/Departments/rdm/>), using a Z-corporation 3-dimensional printer (Figure 4). Artefact-size replicas made

³ Eyetrionics’ online article presenting their work within the context of this project is available at <http://www.eyetrionics.com/eyewitness2003/04/glasgow.php>



Figure 2. 3D model of a terracotta mask of a woman, 3rd-2nd century B.C. Ashmolean Museum of Art and Archaeology, Oxford, 1872.1276



Figure 3. 3D render of model a fragmentary terracotta mask of a woman, 4th/early 3rd century B.C. Art Gallery and Museum, Kelvingrove, Glasgow, 1903.70.dt.16

in this fashion are lighter and more resilient than conventional plaster casts, and are highly suitable as handling objects (see Figure 5). In the exhibition *Behind the Mask* (Banbury Museum, 2003), co-curated by the Project, visitors were invited to discover a range of specimens representative of the diversity of the ancient material. This interaction has far more value than with most other museum objects, for the originals, it must be presumed, were in many cases intended to be held in the hand and moved, so as to re-experience the life and transformative power of the masks as seen in the theatre. The reproduction process also encourages users to escape from the primacy of the 'original object'. The Lipari miniatures were produced in a range of sizes from moulds that shrank from repeated use. Often the largest examples of a type are known only from fragments, or may be presumed lost – an enlarged replica is in this case to some extent the truest specimen, and still more so a life-size enlargement which replicates the original mask or sculpture from which the miniatures have been scaled down. (It is often noticeable that certain details in a sculpture communicate much more strongly when the sculpture is enlarged to life-size, indicating that this may have been its original dimension.)

The construction and decoration of the finished masks for theatre research has been carried out by Malcolm Knight, Director of the Scottish Mask and Puppet Centre (<http://www.scottishmaskandpuppetcentre.co.uk/>). Generally, the method has been to take a plaster cast of the shell, and build into the negative mould with celastic, a light and rigid material favoured by mask-makers. As an experiment, we also produced masks by printing the shell at a minimal thickness of 1.5 mm, lining the inside with celastic, and using the shell itself as the surface of the mask, so that no definition could be lost in the casting process. Both acrylic and oil paints were used for decoration, following the colour scheme of the original where it survives, or of comparable specimens.



Figure 4. 3D printed replica of a mask of a youth, late 4th/early 3rd century B.C. Art Gallery and Museum Kelvingrove, Glasgow, 1903.70.dt.6



Figure 5. 3D printed replicas of masks from Lipari preserved at the Art Gallery and Museum, Kelvingrove, Glasgow, displayed in the exhibition *Behind the Mask* (Banbury Museum 2003).



Figures 6 and 7: Menander's *Epitrepontes*, Act 4, Actors Angelo Crotti and Romans-Soarez-Pazos, Director Adriano Iurissevich



The practice-based research with these masks, conducted by Adriano Iurissevich, Director of Venezia INscena: Centro di Formazione Teatrale (<http://www.provincia.venezia.it/veneziainscena/>), began with a process of empirical discovery of the fundamental inherent properties of the masks: aspects, dominant emotional states, and the appropriate physicality, movement and gesture qualities, taking account of relevant ancient iconography (for example, statuettes, mosaics and paintings). The next phase was to work with the texts, to explore how they are constructed to exploit the resources of the masks. Menander's plays, it was quickly apparent, are an excellent 'notation' for masked performance. The units of the text are short and clearly articulated, facilitating the precise movements that maskwork requires. They foreground the thought processes and perception of the characters, utilising the potential of these masks to register absorption, introspection, and contrasting emotional states.

In September 2003 the Project organised the performance of a complete play, Menander's *Arbitration*, in Lecce and Siracusa. The production, which was filmed in the Roman theatre in Lecce (see Figures 6 & 7, and a video of the performance can be viewed online at <http://www.iah.arts.gla.ac.uk/masks/astutal.htm>), can claim to be the first to use both objectively reconstructed masks, and an authentically small cast of male actors, sharing the different masks and roles. Apart from this programme of work with mask professionals, training workshops were also organised as part of *Prima del teatro 2002: scuola europea per l'arte dell'attore*; thus students of different European drama academies were able to share in the rediscovery of this tradition, and of the subtle and sophisticated masks that belong to it.

More information is available in video documentary format online. Four separate videos can be viewed from

<http://www.iah.arts.gla.ac.uk/masks/menscpt2.htm>

ACKNOWLEDGEMENTS

The project, directed by Professor E. Moignard, has been funded by the Arts and Humanities Research Board. We gratefully acknowledge the contribution of Malcolm Knight, Adriano Iurissevich and the actors who have participated in this work. We are most grateful also for the help of staff of collaborating museums, in particular Simon Eccles (Art Gallery and Museum Kelvingrove), Dr Madaleine Cavalier (Museo Eoliano Luigi Bernabo Brea, Lipari), Dr Lucilla Burn (Fitzwilliam Museum, Cambridge), Professor Michael Vickers (Ashmolean Museum of Art and Archaeology, Oxford), Andrew Parkin (Shefton Museum, University of Newcastle upon Tyne) and Sally MacDonald (Petrie Museum of Egyptian Archaeology).



ASSESSING THE READINESS OF SMALL HERITAGE INSTITUTIONS FOR E-CULTURE TECHNOLOGIES

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Dr Guntram Geser, MTM

ABSTRACT

As we progress towards a knowledge-based information society, a digital culture is emerging. This e-culture will be based on technologies that enhance the creation, management and provision of attractive cultural content and engaging interactions on a variety of platforms. This article addresses the endeavours of small heritage institutions to prepare themselves for e-culture, while facing the 'trilemma' of lacking human resources, lacking funds, lacking technical skills. It concentrates on the question: Which current and emerging technologies are most likely to find a broader adoption by large, medium and small institutions? It provides a classification of these sizes based on empirical data, and points out key issues that heritage institutions will need to consider when assessing the feasibility of adopting a certain technology. Based on this 'e-readiness check', the paper assesses 20 technologies especially from the perspective of smaller institutions. These technologies have been monitored in the DigiCULT Forum

project, and include, for example, virtual reality, agents and avatars, digital asset management, mobile technologies, RFID technology, customer relationship management, virtual community and collaboration technologies. Although some of the technologies may be used by smaller institutions, the article concludes that these institutions may only become 'e-ready' for, and benefit from, most of the technologies within a framework of larger cultural heritage initiatives. In such initiatives, funded mechanisms such as cultural networks/service centres enable smaller institutions to keep their costs and risks manageable while not being excluded from new technological developments.

READY FOR E-CULTURE?

In recent years, substantial progress has been made in the access to digitised and born-digital resources held by cultural heritage organisations. As we progress towards a knowledge-based information society, a digital culture is emerging. This culture will be based on technologies that enhance the creation, management and provision of attractive cultural content and engaging interactions on a variety of platforms. This includes, to name but a few end-user oriented technologies, new displays and human interfaces, mobile access to heritage information, location-based services, virtual communities, 3D games and learning environments, agents and avatars, and Semantic Web applications. Yet, there is a growing risk that small cultural heritage institutions will be left behind as the main focus of information and communication technology (ICT) development in the heritage sector concentrates on medium to larger institutions. The reasons for this unfavourable development are not primarily tech-

nological in nature but organisational. They can be summarised as the institutional 'trilemma' of lacking human resources, lacking funds, lacking technical skills, which will be discussed below. A much broader perspective is given in the DigiCULT Report (2002)⁴, which addresses key issues of political frameworks, organisational change, exploitation, and existing and emerging technologies. Valuable further recommendations that concentrate mainly on improvements for smaller institutions may be found in a recent report on an *eEurope agenda for local services* by the PULMAN Network of Excellence (PULMAN, 2003)⁵.

The 'trilemma' of small CH institutions: lack of human resources, lack of funds, lack of technical skills

Frequently, small cultural heritage institutions function as shoestring operations that exist and live on due only to the enthusiasm, endurance and creativity of key individuals who manage them. These cultural enthusiasts spend not only their leisure time but often also their own funds to keep the institution running and to provide similar services to the local community to those provided by larger institutions. Yet, when it comes to making use and taking advantage of new technologies, these organisations reach their limits especially with regard to qualified personnel and funding resources.

The most pressing factor that hampers small institutions in their efforts to

⁴ DigiCULT (2002): *The DigiCULT Report. Technological Landscapes for tomorrow's cultural economy – Unlocking the value of cultural heritage*, available for download at: <http://www.digicult.info/pages/report.php>

⁵ PULMAN (2003), *Public Libraries, Museums and Archives: the eEurope Agenda for Local Services. Final Report of the PULMAN Network of Excellence*. Edited by Rob Davies (Luxembourg: European Commission, Directorate-General Information).



participate in the information society is the lack of staff. A typical small institution will have fewer than five full-time equivalents, with only a fraction being professional staff concerned with the institution's core business (e.g. curators, librarians, archivists, pedagogues), while the others are support staff (e.g. administration, security, supervisors, janitors). A common problem in small institutions is that the limited number of professional staff available may simply be able to ensure that the institution can provide its core services, but will not find the time to track down the necessary funds that would allow them to finance any ICT venture.

The second restricting factor for small cultural heritage institutions in following up a new technology venture is the limited financial leeway. A typical small institution will work on an operational budget that does not exceed €100,000, while a medium-sized institution may have up to €1 million at its disposal. Needless to say, these budgets leave scarcely any room to finance ICT projects out of the operational financial resources. Consequently, institutions that are interested in developing and realising technology projects need to look for additional funding elsewhere. However, for many institutions, applying for project grants demands stretching already limited personnel resources not only during the planning phase but also during the implementation phase of a project.

Furthermore, experience from many initiatives shows that projects harbour the risk of 'distracting' institutions from their core business, and imposing new activities that most often prove to be unsustainable beyond the funding period. Critics further point out that the majority of such projects favour financing the technological infrastructure, i.e. the hard- and software equipment, over the development of the 'wetware', i.e. the technical skills of the human beings (programmers, operators, system administrators) 'attached' to a computer system. The cost of ownership for the tech-

nological infrastructure is usually underestimated or not even considered. As small institutions are usually not in the position to hire dedicated personnel to take care of their computer infrastructure, there is an urgent need for ICT training programmes to train non-technical staff on how to handle new technologies. Finally, developing an understanding for ICT through such programmes will help to ensure that the institutions better utilise the full potential of the technologies.

Size matters: A classification of heritage institutions

In order to establish quantitative reference points for our discussion, we gathered data on the varying sizes of heritage institutions. As we did not find a widely used and empirically based scheme, we compared available data from statistically relevant surveys and other sources. The table below summarises the results in a scheme that may be elaborated further, but is sufficiently detailed for the present purpose.

	Small	Medium	Large
Annual operational budget (in €)	< 100,000	100,000- 1 million	> 1 million
Staff in full-time equivalents (FTEs) (professional, support); volunteers not included	< 5 FTEs	5-10 FTEs	> 10 FTEs
Number of collection objects	< 10,000	10,000-100,000	> 100,000
Number of annual visitors: museums	< 7,000	7,000-30,000	> 30,000

We will not discuss this scheme in detail, but add some short explanations and interesting observations. Our focus here is on better understanding what distinguishes small from larger-size institutions quantitatively. Therefore, we did not, for example, include a category 'very large' or 'major' institutions, which may have an annual operation budget of over €10 million.

Operation budget:

In the USA and Canada, an operation budget of less than \$100,000 [about

120,000] is very often used to characterise small institutions (Alliance for the Arts, 2002⁶; ExhibitsUSA, 2000⁷). The Canadian Heritage Information Network's surveys (CHIN 1999⁸, 2004⁹) report that 60% of the participating institutions fell within this operation budget category. The National Audit of Scotland's Museums and Galleries (Scottish Museums Council, 2002¹⁰) reports that the majority of the institutions had an annual budget of £50,000 [about €75,000] or less.

Staff in full-time equivalents (FTEs):

The analysis of the UK Museums Retrospective Statistics (LISU, 2001¹¹) for 1999 gives mean numbers of 11 FTEs for permanent staff (median: 2!) and 2 FTEs for temporary staff. CHIN (2004) reports that about 42% of their survey respondents said their organisation had from 2 to 5 full-time employees and 36% from 2 to 5 part-time employees; roughly 38% had either no or one full-time or part-time employee (about 75% of members had 6 or more volunteers).

6 Alliance for the Arts (2002), Who pays for the arts? 15 February 2002. Available at: http://www.allianceforarts.org/Who_Pays_report/who_pays.htm

7 ExhibitsUSA (2000), *Museum study on behalf of the National Endowment for the Humanities*, 2 October 2000. Available at: <http://www.usregionalarts.org/docs/research/MAAA-NEH%20Mus%20Rsch%20Exec%20Smry.pdf>

8 CHIN - Canadian Heritage Information Network (1999), *Information Technology in Canadian Museums*. Available at: http://www.chin.gc.ca/English/Reference_Library/Information_Technology/

9 CHIN - Canadian Heritage Information Network (2004), *CHIN 2004 National Membership Study. Summary Report*. Available at: http://www.chin.gc.ca/English/Members/Rreports/Membership_Survey/index.html

10 Scottish Museums Council (2002), *National Audit of Scotland's Museums and Galleries*. Available at: <http://www.scottishmuseums.org.uk/audit/index.asp>

11 LISU - Library and Information Statistics Unit at Loughborough University (2001), *UK Museums Retrospective Statistics Projects*, December 2001. Available at: http://www.mla.gov.uk/documents/ev_domus1.pdf



Number of collection objects:

The CHIN survey (1999) provides detailed information on collection sizes. About 70% of the participating institutions had fewer than 10,000, 25% had 10,000–99,999, and 5% had more than 100,000 objects/specimens.

Number of annual (museum) visitors:

The UK Museums Retrospective Statistics (LISU, 2001) found that, based on their available data, the best option was to define the institution size by the number of visits, as shown above.

An illustrative example

The Museum in der Fronfeste, a small regional museum in Neumarkt am Wallersee in the State of Salzburg with about 4,600 objects, typifies a European cultural heritage institution facing the institutional ‘trilemma’ of lacking personnel, lacking funds and lacking technical skills. It has a staff of six people, most of them employed temporarily (about three FTEs). Only two of them, the director/custodian and the archaeologist/museum pedagogue – both functioning in a double role – are professional staff. The others are responsible for administrative and care-taking work (accountant, supervisor, janitor and cleaner). In addition, seven volunteers support the efforts of the museum staff.

The museum attracts about 3,000 visitors each year during its six months’ opening period (from May until end of October). In 2003, entrance fees and shop sales accounted for about 11 per cent of the operating budget of €57,444. Another 19 per cent of this budget was financed by the State of Salzburg, with the remaining 70 per cent contributed by the town of Neumarkt am Wallersee, in recognition of the museum’s role in promoting a local sense of identity.

Although the museum is constrained by limited financial flexibility, it is very active and innovative. Thanks to the enthusiasm of the museum’s custodian, this small institution is successful in attract-

ing grants, especially from the EU-funded Interreg III programme. Over recent years, the museum initiated and co-ordinated five such projects, which totalled €278,000. In 2004, one such project, which developed a regional cultural trail, was recognised with a special award by the State of Salzburg.

The ICT infrastructure of the museum includes three personal computers (1 i-mac G4 powerbook, 1 Power PC and 1 PC Windows) for collection management and administrative tasks.

Recent educational work involving local schools provided students with the opportunity to plan and realise their own exhibitions via ICT and the release of an audio-guide for children on CD-ROM.

Further information (in German) is available on the museum’s Web site, <http://www.fronfeste.at>, which also offers 360-degree panoramic views of the exhibition rooms with zooms for some groups of objects and accompanying short descriptions.

E-READINESS CHECK

Why should small cultural heritage institutions that are obviously not in the best position to manage the complexity of ICT take the risks? What are the chief incentives and benefits for small institutions in adopting advanced technologies? From the institution’s point of view, there are essentially two arguments for the adoption of ICT: first, employing technologies may help to cut the internal costs by streamlining work flows and improving internal business processes; and, secondly, ICT can help to increase an institution’s visibility and presence, and thus attract new users. There is a certain immediacy with the latter, as changing expectations from younger, technology-literate users place increased pressure on heritage institutions to be creative, innovative and experimental in the use of new technologies. An institution’s Web presence will need to mature beyond the static one-way communication format of most present-day Web sites.

Before looking at a broad panorama of relevant technologies, we would like to point

out some key issues that heritage institutions will need to consider when assessing the feasibility of adopting a certain technology. We will later make use of this ‘e-readiness check’ when assessing the technologies present on the panorama.

When is a technology ready for the institutions?

Our first point relates to the maturity of a technology, and the key question here is whether the technology is immediately applicable. To assess this question, we will consider the standard model of how technologies develop and gain a broader level of use (Moore, 1991¹²): The process starts once technological research and development has reached a functioning and tested (prototype) solution, which is adopted by an innovative company in search of a competitive edge. Then, an industry solution appears which usually targets larger organisations, and finds some early adopters, based on a more stable and scalable solution.

Next, competing industry solutions appear which may also target smaller organisations, and are adopted by a much broader group of organisations, the so-called ‘early majority’. Then, the mature and well-serviced technical solution will find a large, perhaps industry-wide ‘late majority’. Finally, even the most confirmed sceptics will decide to use it.

The recommendation for small institutions, of course, is to wait until there is a robust ‘off-the-shelf’ product available, which adheres to open standards, is easy to use, well serviced, and is likely to receive only incremental upgrades. When considering employing a certain technology, the institutions should investigate whether there are examples of comparable institutions that already use the technology, report favourably on having the technology in place, and may be asked to give some valuable advice.

¹² Geoffrey Moore (1991), *Crossing the Chasm. Marketing and Selling High-Tech Products to Mainstream Customers* (New York: HarperBusiness).

Measurable benefits

When an institution considers making a major investment in a new technology, the decision-makers and financial stakeholders (e.g. public and/or private funding bodies, sponsors, etc.) will ask for the expected and measurable benefits. There are two main categories of benefits: lowering costs for institutional core functions through improved institutional processes and workflows (mainly internal view), and enhancing attraction and service provision to customers (mainly external view). An institution can only afford to invest in a technology if it can reasonably expect to achieve a clear and sustainable benefit. This must be assessed taking into account the type and size of the institution, the institutional function that would be enhanced (e.g. collection management or exhibition), and the ratio of costs of using the technology vs cost savings through improved processes and/or additional revenues through, for example, more paying visitors, shop items sold, licensing fees, subscriptions. For the many institutions for which the latter economic benefits will not be feasible, cost savings and other measurable benefits such as increased use of online and/or in-house services (e.g. download of study or learning material, increased user satisfaction, etc.) should constitute the business case.

Total cost of ownership

Here we cannot address the many important issues involved in cost/benefit assessments. However, for the present purpose it should suffice to note that the total cost of ownership includes the initial investment for developing and implementing a technological application as well as all further costs of running the application/service on a regular basis (e.g. during the opening time of the institution or 24 hours/7 days a week), including technical administration, upgrades, etc. as well as staff training and other organisational costs.



A PANORAMA OF TECHNOLOGIES

Which technologies that go beyond, for example, a simple Web presence or a low-cost collection management application are suitable for small cultural heritage institutions without their running the risk of adopting technologies that become unsustainable and unmanageable? With digital technologies developing rapidly, the heritage sector needs some mechanism to be able to identify those technologies that will bring benefits and provide a certain amount of sustainability over a reasonable time horizon. Since March 2002, this has been one of the tasks of DigiCULT.

The project has identified and evaluated over 20 (families of) technologies, proven ones as well as currently developing and newly emerging technologies, with respect to their benefit, potential, and appropriateness to the cultural heritage sector. One of the evaluation criteria has been the question of whether a featured technology could be exploited by different types and sizes of organisations and if it can be brought to use easily and is stable enough to run. In the monitoring process, the term 'technology' has been understood and used in its broadest sense to cover methods, standards, hardware, software applications, as well as interesting concepts (e.g. Learning Objects) and service models (e.g. ASP).

In the diagram above, the technologies are clustered according to two dimensions: the size of the institutions likely to adopt certain technologies, and the time-frame for this adoption.

All of the 'technologies' included in the diagram are covered in a chapter of one of the *DigiCULT Technology Watch Reports* (2003, 2004¹³) and/or a *DigiCULT Thematic Issue* (2002-2004¹⁴), which are already or will shortly become available (free of charge). The publications contain case studies of interesting projects, and the Reports also provide many scenarios of how institutions in different domains (i.e. archives, libraries, museums, galleries and cultural sites) and of different size may implement and use the technologies.

The following tables provide an overview of a technology analysis that looked into the following questions: Which technologies monitored by DigiCULT will most likely find broader adoption by institutions of different sizes, why (benefits/TCO), and in what time span? We do not present a detailed benefit/risk analysis, which may be found in the DigiCULT publications mentioned above. However, we will assess the technologies from the perspective of smaller institutions.

13 DigiCULT (2003-2004), *DigiCULT Technology Watch Reports*, 1 + 2 [+ 3]. Available for download from: <http://www.digicult.info/pages/techwatch.php> [note: *Technology Watch Report 3* will become available at the end of 2004].

14 DigiCULT (2002-2004), *DigiCULT Thematic Issues*, 1-6. Available at: <http://www.digicult.info/pages/Themiss.php>



Table 1: Adoption by large institutions; longer-term: 6 years and more

Technologies	Benefits	From the perspective of smaller institutions
Game technology	Attracting on-site and online visitors through more compelling interactive and/or immersive ways of mediating cultural knowledge and experiences, addressing intellectual and emotional dimensions of cultural heritage.	These technologies will most likely remain beyond the reach of small and most medium-sized institutions. They will need to follow other strategies of attracting on-site and online visitors, such as (virtual) community projects, regional history or creativity workshops.
Virtual Reality (VR) technologies		
Cultural Agents and Avatars		
New Human Interfaces (e.g. multimodal)		
Haptics and Robotics		
Mobile Technologies & Location Based Services	Providing information to tourists (e.g. location-based services) and other visitors, for example, on nearby exhibitions, events or buildings and objects at cultural sites or areas (e.g. historic city centre, archaeological excavation area).	Relevant if driven by a cultural network/service centre in the framework of a larger initiative.
Natural Language Processing	Applications that have high accuracy in speech recognition or/and automatic translation can enhance service provision.	Small to medium-size institutions may also benefit from such technologies when low-cost applications become available.
Semantic Web technologies	Allow for creating distributed databases of semantically marked-up information, maintaining them, and reasoning over them assisted by Semantic Web services.	Relevant only in a long-term perspective.

Table 1: Short e-readiness check: In our check we only consider the first group of technologies. We regard the initial investment for state-of-the-art applications as well as the further costs of running the application on a regular basis (i.e. the total cost of ownership) as prohibitive for most institutions. There may be scope for simple, low-cost Web-

based applications (e.g. games, VR); however, these are unlikely to become strong and longer-term attractions.

Table 2: Short e-readiness check: For the technologies below, smaller institutions themselves will not find a business case, as they do not, for example, hold an appropriate volume of marketable collection objects. They

may only become 'e-ready' for, and benefit from, these technologies within a framework of larger heritage initiatives. In such initiatives, funded mechanisms such as cultural networks/service centres enable smaller institutions to keep their costs and risks manageable while not being excluded from new technological developments.

Table 2: Adoption medium to large-size institutions; medium-term: c.

Technologies	Benefits	From the perspective of smaller institutions
Digital Asset Management systems	Enhancing the creation, management and Web-based or other publication of assets; better exploitation of assets, e.g. through re-use, re-purposing, licensing, etc.	Relevant if collections are digitised in the framework of a national or larger regional initiative, and the <i>digital</i> assets, rights, and related transactions are then managed by a cultural network/service centre.
Digital Rights Management systems	Improving management of copyrights with respect to collection objects and intellectual property rights, e.g. in licensing of images, learning objects, etc.	
Automatic payment systems	Outsourcing of financial transactions to a service provider, e.g. for licensing, subscriptions or online museum shop sales.	
Electronic programming guides	Relevant mainly for organisations with certain content and services, e.g. streaming media.	
Resource Discovery & Information Retrieval technologies	Search & retrieval is part of many information systems (e.g. content management). Here we particularly consider systems that allow for an efficient and effective way of metadata exposure and exchange such as metadata harvesting and discovery services.	Collection metadata of smaller institutions may become included in resource discovery networks in the framework of national or larger regional initiatives.
Smart labels and tags/RFID technology	Improving handling, control and inventory of objects; with more advanced technology also relevant for applications such as museum tours.	Although in the longer term the technology may become affordable for smaller institutions also, broader adoption seems unlikely.



Table 3: Adoption by small to large-size institutions; near-term: c. 2 years

Technologies	Benefits	From the perspective of smaller institutions
XML family of technologies	XML is an established non-system and non-application specific data exchange standard.	All major software suppliers support XML, so smaller institutions may expect a 'trickle down effect'.
Application Service Provider (ASP) model	Outsourcing of application management, better control of costs and risks.	Should definitely be considered by smaller institutions. Ideally, a regional cultural network/service centre would provide such a service at low cost.
Open Source & Free Software	This concept and movement is producing considerable gains in efficiency, cost savings and quality, as well as radically changing the way software is developed and marketed.	Relevant applications are rapidly increasing in number and type, and are often developed with smaller organisations in mind.
Customer Relationship Management systems	More efficient and effective management, thereby strengthening relationships with customers.	Some low-cost and simple-to-use technologies are available.
Virtual Community technologies	Stronger liaison with users and professional colleagues.	Some low-cost and simple-to-use technologies are available.
Collaboration technologies	Opportunities for remote collaboration on projects with professional colleagues.	Relevant if driven by a cultural network and/or professional association.
Learning Objects	Better servicing learning communities.	Relevant in the framework of a national or larger regional e-learning initiative.
Display technologies	Opportunity to present exhibition information, (more) collection items, and previous exhibitions in an interactive way.	Feasible for some smaller institutions that concentrate on the exhibition function.
Visualisation of Data	Visualising datasets enhances the understanding of historical and contemporary cultural developments. More advanced applications include interactive maps and timelines.	Some low-cost and simple to use technologies are available.

Table 3: Short e-readiness check: The above table contains an assortment of ready-to-use technological applications or models that may be used by institutions of all sizes. They allow for a considerable leverage of the e-readiness of smaller institutions, and are related to different key areas such as reduction of costs and risks, community building, and education. However, to benefit from the concept of learning objects as well as collaboration technologies it will be vital for cultural networks/service centres to take the lead.

CONCLUDING REMARKS

We started off by pointing out the 'trilemma' of small cultural heritage institutions of lacking human resources, lacking funds, lacking technical skills. Although there are encouraging examples of highly creative small institutions such as the *Museum in der Fronfeste*, we do not expect that the overall unfavourable situation of small institutions will change considerably over the coming years.

As stressed in our assessment, the benefits of most of the technologies in the above portfolio for small institutions will need to be realised within the context of national or major regional initiatives. In such initiatives the leading role will require to be played by cultural networks/service centres. The various CultureNets initiatives in the Nordic countries are innovative and inspiring examples. However, we see the need for much stronger e-culture strategies on the regional level throughout Europe.

The small institutions, in parallel to locking into such regional initiatives, face further challenges. They will need to ensure that they are embedded in their regional communities (e.g. regional history circles, schools, tourist organisations, folk music associations, creative industry), serve vital needs and become highly community-driven rather than concentrating on collection-related tasks.

Publication note

This article originally appeared in *Proceedings of ICHIM Berlin 04. Digital Culture and Heritage*, CD-ROM, September 2004, under the title "Are small heritage institutions ready for e-culture?" To order the proceedings see: <http://www.archimuse.com/publishing/museums.html#ichim04>

BRIDGING THE GAP BETWEEN TECHNOLOGY AND CULTURAL HERITAGE

TIJL VEREENOGHE, EPOCH

In March 2004 the new EPOCH network started its activities. EPOCH is a European Research Network on Excellence in Processing Open Cultural Heritage (<http://www.epoch-net.org>), funded by the European Commission under the Community's Sixth Framework Programme.

Computers have been used in cultural heritage for many years, and have now become an almost universal tool for heritage professionals. In the last 10-15 years there has been a proliferation of organisations and projects applying ICT solutions to cultural heritage applications. On the one hand this has grown from groups of technologists examining computationally interesting problems and requiring data of real cultural heritage artefacts and sites in order to demonstrate results. On the other hand groups of cultural heritage professionals have found computational tools that allow exploring their data and new opportunities to communicate results. Both groups have acted at least initially with little reference to the other and to an extent this process continues as the fields reach ever more professionals working in each area, each of which begin to experiment for themselves.

The restrictions and potential of computers and the needs and intentions of system developers and users have produced an ongoing dialectic over many years. Yet, there is much evidence of a lack of co-ordination

'Our overall objective is to bring together the combined expertise and resources of technologists, heritage administrators, heritage professionals and communication experts concerned with the effective and sustainable application of digital technology to archaeological research and cultural heritage presentation at museums, monuments and historic sites.'



© EPOCH, 2004
A virtual model of a medieval ivory artefact, used to create a new multimedial visitor interface

between the disciplines. Well-known iconic cultural heritage sites (e.g. the Colosseum in Rome, Pompeii, the Parthenon) become the subject of repeated projects. Less well-known sites, which may be in danger, receive little or no attention because the importance of prioritising effort is not recognised in the technologists' community. Similarly individual culture heritage professionals struggle to find the best technical solutions to their requirements because there are all too few sources of professional advice of which they are aware. Consequently energy is lost or disbelief in the potential of technology sets in, at the same time, effort is duplicated and, often, digitised data sets are not suited to the longer-term objectives for which they were intended. However, it would be unforgivable to simply reject new tools just because they are still costly, difficult to use, and do not match current working practice. Moreover, scientists working in the digital fields are eager to help heritage professionals to apply their research, because the problems cultural heritage is actually facing are often not encountered in other fields. This fact can open doors on new fields of research for both communities.

Now, roughly one hundred European cultural institutions are joining their efforts in the new EPOCH network, in order to improve the quality and effectiveness of the use of Information and Communication Technology for cultural heritage. A primary strategic objective of the project is to integrate the currently fragmented efforts in research. EPOCH will promote interdisciplinary integration by initiating and supporting a wide range of activities. These include activities to create an integrated information base on the current and potential use of ICT in cultural heritage. Obstacles to progress in terms of both technology and socio-economic factors are to be identified. Existing resources need to be enhanced. Furthermore, EPOCH will perform research to complete the toolkit for creating cultural heritage applications and create an integrated infrastructure. The network will strengthen the interdisciplinary cohesion through projects, skills brokerage, dissemination, education and training, as well as online resources and events.

Professor David Arnold (Dean of the Faculty of Management and



Information Sciences at the University of Brighton: <http://www.brighton.ac.uk/mis/>), the co-ordinator of the network, explains: 'Our network wants to provide a clear organisational and disciplinary framework. Like this, we want to increase the effectiveness of work at the interface between technology and the cultural heritage of human experience represented in monuments, sites and museums. This framework will encompass all the various work processes and flows of information from archaeological discovery to education and dissemination. It will allow identification of where the bottlenecks in the end-to-end process are currently located and this in turn will allow prioritisation of the research themes.'



The virtual model of the abbey complex at Ename (Belgium) superimposed on the current setting

☛ EPOCH is designed to serve as a centre of gravity both for its members and for other research groups with interests and background in this area. We will provide a holistic interdisciplinary view of the research agenda for future developments of the technologies that support cultural heritage applications. By doing so, EPOCH wants to act as a mechanism to bring cohesion to the efforts of network members in forming a European Research Area.'

Five vital subfields form the core of these integrating activities:

1. Field recording and data capture
2. Data organisation, provenance and standards
3. Reconstruction and visualisation
4. Heritage education and communication
5. Planning for sustainability of heritage projects.

The EPOCH 'Joint Program of Activities' has been structured around four large work packages, each of which will contribute to progress related to a number of major application areas. One of them concentrates on the so-called 'Integrating activities'. The network's vision is of a multi-disciplinary team working within a framework that encapsulates the

holistic view of the problems to be solved. In this vision the goal is that all parts of the pipeline from data collection and historic discovery through to real-time visitor experiences and scholastic communication of heritage visualisations, work in balance so as to make progress towards a complete system rather than a partial solution to narrow research problems.

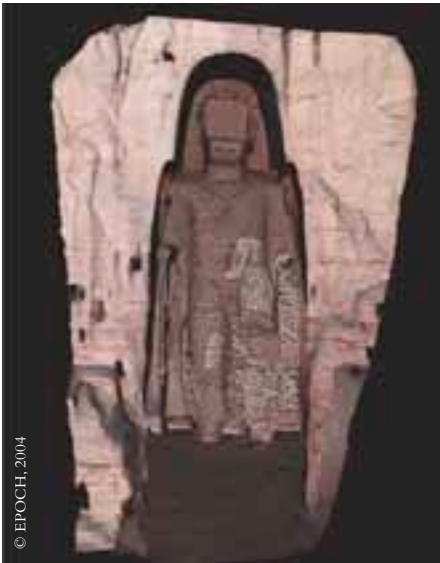
Daniël Pletinckx, co-ordinator of New Technologies at the Ename Center for Public Archaeology and Heritage Presentation in Belgium (<http://www.enamecenter.org>), explains: 'The first task in obtaining such a common research agenda is to create an inventory of the needs of all stakeholders. As these needs are very diverse, it is important to create a detailed inventory per stakeholder class that is supported by a significant and representative cross-section of that stakeholder class.'

A second task is to create the inventory of IT technologies that are already used in cultural heritage or are in development for the domain. 'By determining the factors affecting the success or failure of a technology and its application, and mapping out the overlap, synergies and opportunities, we will formulate an integration

roadmap on the further evolution of IT in cultural heritage,' says Pletinckx. 'At the same time we will evaluate new technologies outside the cultural heritage domain for their potential use.'

Another work package, 'Jointly executed research', will guide and cross-fertilise the research activities of the partners in the network – and hopefully of others – in order to ensure maximal relevance for the cultural heritage domain, high quality as well as cohesion and complementarity among these activities. By establishing a so-called 'common infrastructure', the goal is the creation of an integrated pipeline for producing applications involving digital versions of tangible heritage.

☛ We will develop new tools to fill the gaps in this pipeline, or to create alternative technologies that are better suited for the cultural heritage domain,' explains Professor Luc Van Gool (K.U. Leuven, Belgium (<http://www.kuleuven.ac.be/>) and ETH Zürich, Switzerland (<http://www.ethz.ch/>)). 'Based on the definition of the research agenda, we expect our jointly executed research to involve a mixture of integration of existing components and development of new tools to fill gaps in the



© EPOCH, 2004
The virtual reconstruction of the Buddha statue in Bamiyan (Afghanistan), destroyed by the Taliban



© EPOCH, 2004
The virtual model of the abbey complex at Enane (Belgium) superimposed on the current setting

integrated pipeline or improve functionality at specific bottlenecks.’

Through standardisation activities and Open Source solutions the impact of research will be improved. The role of the network will be in two main areas of standards development and use. The first is the dissemination of the use of standards through presentations, training courses, seminars and workshops. The second is by providing a user community that can be effectively consulted as part of the standards development process.

Moreover, the network aims to act as a catalyst to involve SMEs and other industrial partners by using virtual clusters to help create mutual support and a critical mass of widely accessible commercial activity. The network’s brokerage system will encourage new associations between technologists with capacity and cultural heritage professionals with requirements.

The final work package ‘Spreading Excellence’ is concerned with taking the experience acquired by partners in the network and sharing it with others, both inside the Network community and with the wider audience of interest profession-

als and the public. Franco Niccolucci (PIN, Italy): ‘Actually this work package holds the key for the success of the entire network.

Effective communication is a key factor to overcome fragmentation. Under this work package our network will run events, maintain a Web site with both public and restricted areas and disseminate to a wider public. Most importantly it is in this work package that the cumulative experience of our multidisciplinary network consortium will grow a skills base through education, training and staff mobility.’

In summary, a substantial component of the project concerns the quality of cultural communication. There can be no good cultural communication if the recipient is unaware of quality issues and cannot distinguish between ‘good’ and ‘bad’ practices. EPOCH will be producing several outputs designed for public consumption. One of these is a public ‘Citizen’s charter’ to explain the project and why it is a worthwhile investment of public funds. Another EPOCH ‘product’ is the publication of the annual ‘State of the Union’ report, intended to give a high-level overview of the current state of the industry and future directions for development. Finally the public exhibition of

showcases will help raise public awareness as well as the awareness of different stakeholder groups.

It has historically been difficult for those working in domains where IT has not been greatly used to appreciate and express the potential for applying technology in their domain. Daniël Pletinckx: ‘To address this difficulty, we will create a series of showcases to stimulate the imagination and provide experience of current results. These showcases will be embedded within courses and workshops, and will be presented at major conferences and meetings, of which the first one will be the VAST2004 conference in December (<http://www.vast2004.org>).¹⁵ These showcases will thus provide practical and appealing demonstrations of integrated technology. They will highlight their concepts and advantages and stimulate a creative adoption of that technology. Finally, we want to use them to provoke feedback from the cultural heritage domain, from user to decision maker.’

¹⁵ See DigiCULT’s events page for more details on this and other conferences: <http://www.digicult.info/pages/events.php>

UNCOVERING KNOWLEDGE ACQUISITION BEHIND DIGITAL CONTEXTUALISATION

SÉVERINE LETALLEUR, UNIVERSITÉ PARIS IV-SORBONNE

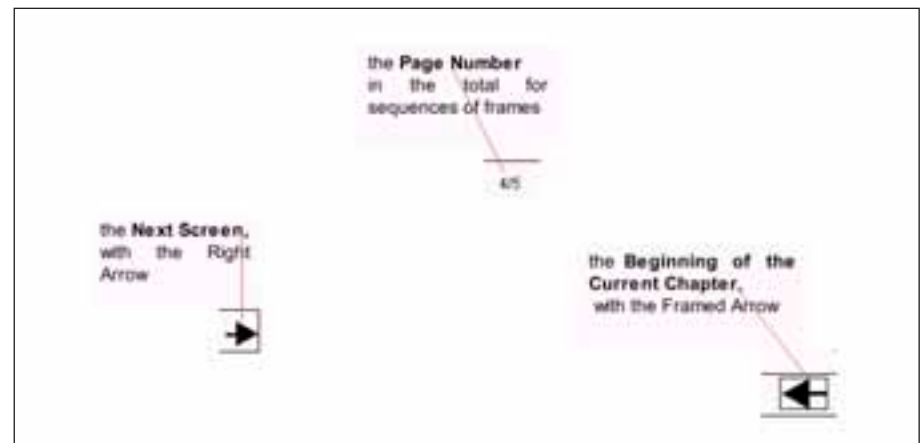
ICTs have become the ideal tool for displaying documents in their context. They provide the finest technological solution available today if one aims to represent human knowledge without artificially restricting it to one specific field. Furthermore, interactivity prompts an ever-increasing awareness of what steers curiosity and our desire to learn, sketching out a representation of what we know through how we know it.¹⁶

The main object of this electronic essay is to show in what respect hypermedia encourage multi-disciplinary approaches, and also to provide evidence suggesting that this presentational format is just as essential to knowledge acquisition as more traditional ones (i.e. those that deliver data in one specific field along one linear path).

The present study is the outcome of an experiment led during two main doctorate sessions by Dr Denis Lagae, a lecturer at Paris IV-Sorbonne (<http://www.paris4.sorbonne.fr/fr/>), and myself in the Spring of 2004. During the experiment, participants consisting of both students and scholars specialising in English Studies were asked to stress the differences they felt existed when studying a literary excerpt taken from *The Expedition of Humphry Clinker*¹⁷ – the eighteenth-century epistolary novel by Tobias Smollett – first in its paper format and, second, in its hypermedia version on a computer screen with hyperlinks and browsing tools; this version is available on a CD-ROM entitled *Georgian Cities*.¹⁸ The literary excerpt itself is a letter in which the narrator, Matthew Bramble, a snobbish



All screen copies are extracted from the CD-ROM designed by Liliane Gallet-Blanchard & Marie-Madeleine Martinet. *Georgian Cities*. C.A.T.I. Paris : Presses de l'Université Paris-Sorbonne, 2000.



Welshman, recounts his first impressions on entering Edinburgh. All participants were filmed while exploring the CD-ROM.

Before starting the analysis proper, it might be of importance to add one thing. The fact that the very format of this electronic article also happens to be an integral part of the topic under discussion ought to be brought to attention; indeed, the adequate display of computer screens and the possibility of accessing a video extract of one of the interviews by just clicking on this link – <http://www.cati.paris4.sorbonne.fr/evenements/enhancing.php> – is a perfect opportunity to further our demonstration while making things less abstract.

FROM CONTRIVED PROGRESSION TO ERRATIC DIGRESSION

When first examining the video recordings, one may come across a somewhat striking feature: the browsing procedures that scholars and students choose to adopt differ significantly.

Indeed, while some scholars first tend to demonstrate little curiosity for things that are remote from their own field of

¹⁶ Willard McCarty, "We Would Know How We Know What We Know" in *Responding to the Computational Transformation of the Humanities*. <http://www.kcl.ac.uk/humanities/cch/wlm/essays/know/know.html> (31.10.2002).

¹⁷ Tobias Smollett, *The Expedition of Humphrey Clinker* (Oxford: OUP, 1998, 217-219).

¹⁸ Liliane Gallet-Blanchard & Marie-Madeleine Martinet, *Georgian Cities* (C.A.T.I. Paris: Presses de l'Université Paris-Sorbonne, 2000). CD-ROM.



study and focus on what they already know, they usually also prove to be fairly disciplined in their digital exploration (perhaps because of their very status as academics in front of the camera). Such behaviour is in keeping with the three dominant search patterns characterised by Martin Dodge himself, quoting Tauscher and Greenberg:

- **Hub & Spoke:** *people visit a central page and navigate the many links to a new page and back again.* Here, the hub can be either the index, a map, the excerpt under study itself, or the menu according to each participant's personal preference.
- **Guided Tour:** *some page sets include structured links (e.g. 'next page') and people can choose to follow these.* Here the structured links materialise in the form of arrows located at the bottom of the screen, on which one can click.
- **Depth-First Search:** *people follow links deeply before returning to a central page, if at all* ¹⁹

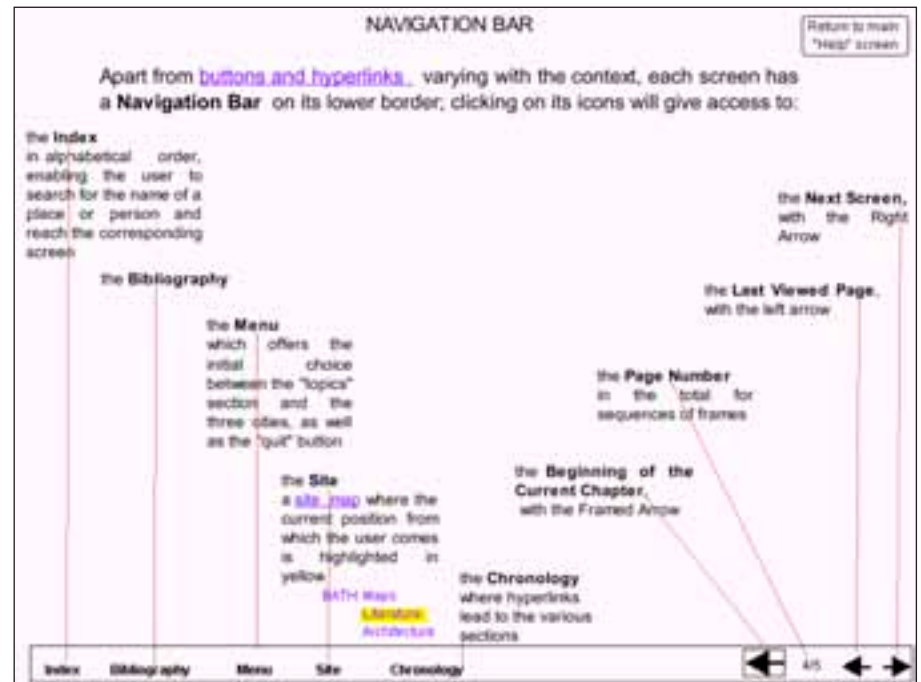
Conversely, students are normally more responsive to the recreational and digressive aspects of the device (perhaps because they were not interviewed separately and therefore less scrutinised by the camera); as if their first incentive was to investigate the tool's level of sophistication, its degree of diversity, in terms of documents put at their disposal – texts, films, animations, music, photographs and so on.

Students' strategies could be typified by the terms also suggested by Martin Dodge:

- **Scanning:** covering a large area without depth
- **Wandering:** unstructured search²⁰

Quite obviously, the differences rest in the opposition between the tracking of a single, fixed goal on the one hand and a more digressive exploration on the other hand – though, of course, the distinction isn't as clear-cut as that and some students

An overall view of the contents may be found in the [Site maps](#)
 Navigation between the screens is done through the [Navigation bar](#)
 or through the [Buttons and hyperlinks](#)



may have proved to be more methodical than certain scholars who may also have fallen into the gimmick trap. This all tends to show that CD-ROMs meant as pedagogical devices require careful and rigorous handling and discipline; one has to examine the navigation tools, buttons and hyperlinks or, in other words, the perspective chosen by the designers, in order to make the most of the digital data displayed. These options are usually made explicit in the CD-ROM itself and should be the first elements to look for and thoroughly examine when browsing.

Just as lecturers explain to their students the subtleties of literary or historic text commentary, they should teach students to follow fixed methodological criteria when tackling a new digital document (a series of questions need to be answered before starting the analysis proper). Students cannot

simply go through the CD-ROM randomly with no set purpose, at least if they are to use it in order to improve their skills in a respective field. Lecturers have to provide them with the tools that will help them understand that the new format is not just a more or less arbitrary compilation of elements, but rather a homogeneous integration through a rational grid. ²¹

Yet, in order to do so, lecturers must of course acknowledge this as well! They must be more supple in terms of acceptance of new digital settings and development, while remaining just as rigorous as their pedagogical training has

¹⁹ Martin Dodge & Rob Kitchin, *Mapping Cyberspace* (London: Routledge, 2001, p. 177).

²⁰ *Ibid.*, pp. 176-177: [...] hypertext is structured in a rhizomic fashion, in which any point may be connected to any other point.

²¹ Gallet-Blanchard Liliane & Marie-Madeleine Martinet, "Hypermedia and Urban Culture: a Presentation on the CD-Rom Georgian Cities" in *Jahrbuch für Computerphilologie*, no. 4, 2002, p. 117; <http://computerphilologie.uni-muenchen.de/jg02/gallet-martinet.html>

taught them to be. In other words, they must be both scrupulous teachers and enthusiastic learners.

DIGITAL CONTEXTUALISATION AND THE RISING CONSCIOUSNESS OF KNOWLEDGE ACQUISITION

The fact that most participants criticise the multimedia format as not letting them explore notions at leisure and the elements they are interested in at will is of high importance; indeed, participants often feel sorry that choices have been made for them, or that there are not enough links. What they seem to forget (or not appreciate) is that, whatever the support, choices are always set up beforehand by the designer (be it by the writer, the cartographer, the photographer or the painter) except that, in these more traditional modes of representation, such choices are simply not made plain. They are implicit and concealed, thereby causing confusion, blurred boundaries between the actual representation and what it refers to, between different levels of subjectivity and objectivity – all being relative and not absolute. Thus, no matter how scientific, maps are also highly symbolic tools. Pictures show a single point of view while also referring to the period in which they were made (for example: a nineteenth-century romantic representation of a medieval building); films are modern fictions even when reconstructing the past; texts, whether taken from novels or historical compilations, always point to their writers' conceptions and perspectives.

An illustration of this kind of blurring phenomenon between representations and their objects lies in the following fact: when participants read the text describing Matthew Bramble's stroll through Edinburgh, many of them believed that the narrator was meandering through the city in a more or less erratic fashion, whereas, when looking at the maps on the CD-ROM, activating the animation that propped it up and re-reading the text, the same participants soon realised that his path



was absolutely straight. From a topographical viewpoint, he was simply going straight along the Royal Mile.

Therefore the literary rendition of a straight path impressed us as referring to a random stroll through the city; this is due to the very structure of the letter made of subtly intertwined impressions, as seemingly chaotic as if we were in Bramble's horse-drawn carriage trotting on the town's cobblestones. We had been fooled by Smollett's prose but the CD-ROM aptly put things back into perspective thanks to the inclusion of other documents on the same topic (such as maps and animations); thus contextualisation not only added to the overall comprehension of town planning issues but it also provided students with a better understanding of literary mechanisms.

Indeed, even for scholars well trained to spot *literarity* when it occurs, it is sometimes difficult to pinpoint exactly what makes literature what it is. Everyone I asked gave me a different definition, or rather impression, even those specialised in literature; some found for instance that the text

was obviously a piece of literature whereas others thought it was far from being that clear.

For that reason, digital contextualisation may enhance our own understanding of literature's specific nature from the outside, by outlining its contours rather than trying to reach the more obscure core. Consequently, by juxtaposing or hyper-linking literature to what it isn't, one may bring to light what is literary in documents that are not meant to be literary and, vice versa, what is non-literary in documents that are meant to be, thus shedding light on a process which is otherwise difficult to teach. Indeed, one can teach the history of literature, of writing, or figures of speech but how can one teach literary sensitivity? This, I believe, is a good introductory method. Conversely, if we go back to the literary excerpt at stake and avoid looking at it through the distorting lens of literary fiction, but merely in terms of what the excerpt can add to our knowledge of eighteenth-century Edinburgh (i.e. in terms of Cultural Studies), again the issue of trans-disciplinarity clearly surfaces. Students will gradually understand that, in a literary



Highways in Edinburgh



First half of the 18th Century

In the first half of the 18th century, Scottish towns were not pleasant sights for foreign eyes. The stink of certain alleys, the decrepit fronts of numerous residences, the rascaling streets given off from rubbish strewn over the ground, filled them with disgust. Even Edinburgh, renowned for the beauty of its buildings and its High Street, was the object of sharp criticism from certain visitors, who were so offended by such dirty streets. The Englishman Joseph Taylor lambasted this in his book *A Journey to Edinborough in Scotland in 1705* (Edinburgh, 1705, rpt. Edinburgh, 1933):

Every street shows the nastiness of the inhabitants, the excrement in it stinks.

... In a Morning the stent was so offensive, that we were forc'd to hold our noses as we past the Streets, and take care where we trod for fear of disfiguring our shoes, and to walk in the middle of night, for fear of an accident to our heads. (170)

What Joseph Taylor feared to receive on the head while walking in the streets of Edinburgh at night or in the early morning was the contents of a chamber-pot emptied unceremoniously from the window of an honest citizen of this town, after having nevertheless taken care to cry out *gardie*.

"wynd" = a narrow lane or street
 "tolze" = a narrow alley
 (Chambers Scots Dictionary)

"gardie koo" = "gardie à l'eau": warning cry about dirty water thrown from windows or to the streets (Chamber's Scots Dictionary)

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some actual testimonies contradicted him, notably that of the Englishman Joseph Taylor.²²

DIGITAL METONYMY AND KNOWLEDGE ACQUISITION

The fact that at first participants may disapprove of blue hyperlinks and thumbnails is also of major significance. It stresses the difficulty encountered by users when having to deal with three partially discrepant stances: their own, that of the designer and that of the author of the document.

Due to our natural propensity to immerse ourselves into what we read or contemplate, blue hyperlinks are not very welcome; they point to the designers' annoying presence while reducing the range of options available. Users feel as if they are being intruded upon. Yet this feeling of interference by a third party paradoxically makes them more aware of the document's own bias. In fact, thanks to the overt intercession of the designer, we can actually click on a hyperlinked word, once indistinct among many others and now the centre of all attention. All of a sudden the sign turns into a signal, setting off a change in perspective which unveils the mechanisms of knowledge acquisition. Transposed on a wider scale, the phenomenon reminds us that texts are also pretexts and contexts.

Smollett's *Thompson's Clerk*: Edinburgh

Matthew Bramble

Edinburgh, from this ascent is not seen to much advantage - We had only an imperfect view of the **Castle** and upper parts of the town, which varied incessantly according to the inflexions of the road, and exhibited the appearance of detached spires and towers, belonging to some magnificent edifice in ruins. The palace of Holyrood house stands on the left, as you enter the Canon-gate - This is a street continued from hence to the gate called **Heather Bow**, which is now taken away; so that there is no interruption for a long **mile**, when the bottom is the top of the hill on which the castle stands in a most important situation. **Considering its full extent**, by width, and the lofty houses on each side, this would be undoubtedly one of the widest streets in Europe, if an ugly mass of mean buildings, called the **Locken-Bowths**, had not thrust itself, by what accident I know not, into the middle of the way, like Middle-row in Holborn. The city stands upon two hills, and the bottom between them; and, with all its defects, may very well pass for the capital of a moderate kingdom - It is full of people, and continually resounds with the noise of coaches and other carriages, for luxury as well as commerce. As far as I can perceive, here is no want of provisions - The beef and mutton are as delicate here as in Wales, the sea affords plenty of good fish, the bread is remarkably fine, and the water is excellent, though I'm afraid not in sufficient quantity to answer all the purposes of cleanliness and convenience, articles in which, it must be allowed, our fellow-subjects are a little defective - The water is brought in leaden pipes from a mountain in the neighbourhood, to a cistern on the Castle-hill, from whence it is distributed to public conduits in different parts of the city - From these it is carried in barrells, on the backs of male and female porters, up two, three, four, five, six, seven, and eight pairs of stairs for the use of particular families - Every story is a complete **house**, occupied by a separate family, and the stair being common to them all, is generally left in a very filthy condition, a man must tread with great circumspection to get safe housed

Matthew Bramble's *Ascent through Edinburgh*

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Because we have to click to move on, we cannot ignore the fact that a selection was made. This can be referred to as the complex of forking paths.²³ When paths fork, one must take a decision in order to move ahead. The notion of *complex* relates back to that of intricacy but not only this; it also bears a psychological dimension hinting at one's own feeling of inadequacy or ignorance. Such choice makes us more sensi-

genre such as the eighteenth-century epistolary novel, there is no clear-cut separation between fields of knowledge. In travel narratives, whether it is a literary approach that is favoured or a more historical one, there is data for everyone to feed on. For example, they might equally well be used by tourists in order to prepare their journey or get an interesting idea of what the town was like 250 years ago. As a matter of

fact, as they were reading the excerpt in its paper format, those among the participants who were more specialised in literature and favoured stylistic and fiction analyses took for granted that the data provided were obviously distorted by Bramble's prejudiced perception of things. Yet, by way of digital juxtaposition of testimonies, they realised that there was some truth in Bramble's sayings, albeit fiction, despite the fact that

22 Cf. Joseph Taylor's testimony, an excerpt taken from *A Journey to Edinborough in Scotland in 1705*, in Liliane Gallet-Blanchard & Marie-Madeleine Martinet, *Georgian Cities* (C.A.T.I. Paris: Presses de l'Université Paris-Sorbonne, 2000). CD-ROM.

23 The metaphor of the forking paths is often evoked when discussing hyperlinks; originally it is borrowed from the title of a short story by Jorge Luis Borges, "The Garden of Forking Paths", in the book entitled *Fictions* (London: Penguin, 2000).



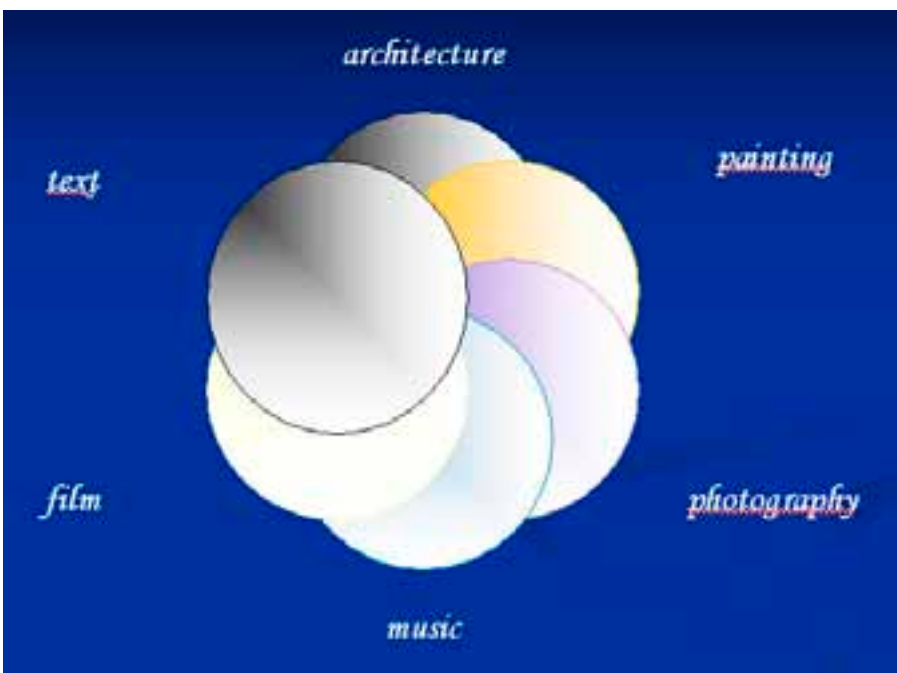
tive to the fact that, as we move virtually through the CD-ROM, we generate our own cognitive trail, which in turn increases our awareness of the things we learn through how we learn them.

Thus, learning processes in a contextualised digital environment resemble a diagram made of different fields of knowledge, at the centre of which lies an ever-shifting hot spot where author, designer and user meet. More specifically, the fact that representations tend to overlap naturally is reminiscent of a Venn diagram structure, an apt illustration of the metonymical mechanisms that govern knowledge acquisition. Hence, multimedia, because of their intrinsic dynamism in which documents are in turn central or peripheral, pre-text, text or context, only put into light the pre-existing cognitive shifts in perspective required to learn and understand things properly. A configuration in which parts convey wholes and then become parts *ad infinitum*. Subsequently, CD-ROMs which gather idiosyncratic standpoints also bring to light the limitations of human knowledge, assembled from bits and pieces, sometimes the only remnants of the past; if you can't click on everything, it's perhaps because not everything is available. Therefore the overt lack of choice prompts the user's better understanding of data gathering processes, while drawing attention to their metonymical dimension. Sometimes, metonymy, instead of enabling the synthesis of the available data, compensates for what is missing.

EXPERIENCING DIGITAL AESTHETICS²⁴

To finish with, we may ponder on the unique aesthetics of digital resources that act as a complement to paper format rather than as a replacement. CD-ROMs often stage reality in an environment that has very little in common with what it is meant to represent, what one could refer to as *digital utopia*, i.e. a perfect, idealised virtual world remote from its actual sub-

²⁴ An expression borrowed from the title of the book by Sean Cubitt, *Digital Aesthetics* (London: Sage, 1998).



ject _ especially in the Smollet example described above: a CD-ROM on cities in a past century. Eighteenth-century Britain is represented in an extremely modern digital frame, an environment which points to its own *systemacity*. Like any other mode of representation, the multimedia format is self-referential. Again this is important to bear in mind for both scholars and students.

Finally, it appears essential to mention the pleasure participants have derived from multimedia exploration. Very often they would express surprise and admiration at the wonders digital presentations could accomplish. Indeed, if most of the students and scholars have access to written documents when it comes to eighteenth-century culture, it is very seldom that they can simultaneously listen to music or contemplate paintings from this era; in this respect, multimedia enables the modern recreation of an atmosphere that has long since vanished.

CONCLUSION

The results of this study can be summarised as follows. First, to make the most of digital environments one needs to master their design. Secondly, the digital contextualisation exemplified in *Georgian Cities* enhances scholars' and students' awareness of data gathering and processing on CD-ROMs but also in more traditional modes of representation, taken individually; additionally, when juxtaposed, the same modes of representation shed light on each other. Thirdly, digital contextualisation in the humanities sheds light on the metonymical dimension of knowledge acquisition, when users' and designers' overlapping perspectives are made plain, when disciplines echo one another, thus stressing the importance of trans-disciplinary approaches, and when contextualisation compensates for the lack of data available. Beyond this, new learning pleasures can be derived from digital aesthetics. In other words, because they aptly increase our awareness of knowledge's intrinsic complexity, multimedia enhance pedagogical techniques.

DiVA - ACADEMIC ARCHIVE ONLINE



EVA MÜLLER, UPPSALA UNIVERSITY

Uppsala University Library - the oldest Nordic research library with both cultural heritage collections and innovative technological solutions.

INTRODUCTION

The DiVA²⁵ publishing system enables publishing in XML, treating the electronic copy of the document as the 'digital master' for both the electronic and print versions. It was developed and is maintained within the DiVA project based at Uppsala University, Sweden (<http://www.uu.se/>). The DiVA system has been in full operation since January 2003 and is used by a number of universities in Nordic countries.

Technologies that support the long-term preservation of digitally stored documents are a part of the system solutions. Each document is assigned a persistent identifier, is stored (along with checksums to verify integrity) in the live repository, and the archive copy is stored in a local depository (the DiVA Archive). The copy is also transmitted to the relevant national library digital archive.²⁶ The system incorporates standards, recommendations, and new XML technologies. The metadata are stored in the DiVA Document Format, a rich, locally developed and XML-based schema. The transformation of this schema enables the provision of various metadata services, such as harvesting via OAI-

PMH, or automatic generation of catalogue records for local and national catalogues.²⁷

All documents published by local DiVA systems can be searched and browsed using a common interface known as the DiVA – Academic Archive Online portal (<http://www.diva-portal.org>). This allows an enormous increase in the visibility of the published documents.

This article presents a brief introduction to the DiVA system, focusing on present functionality, ongoing development activities, and co-operation.

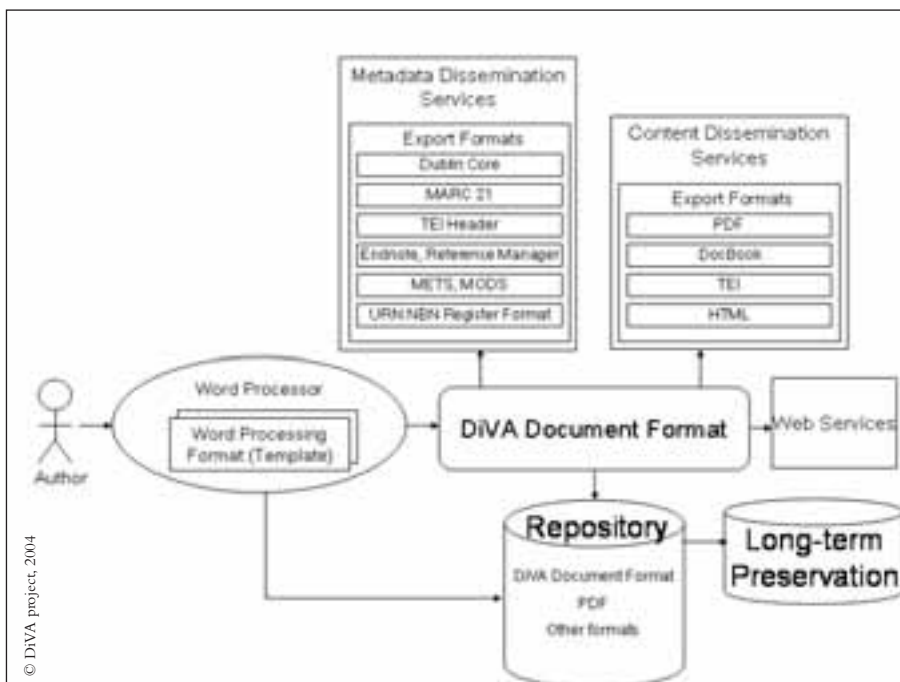
THE DIVA PROJECT

The DiVA project team is based at the Electronic Publishing Centre (EPC) at Uppsala University Library (<http://publications.uu.se/epcentre/>). The Centre has

²⁵ DiVA – Digitala Vetenskapliga Arkivet in Swedish, DiVA – Academic Archive Online in English

²⁶ See E. Müller *et al.*, "Archiving Workflow between a Local Repository and the National Archive Experiences from the DiVA Project" in *Proceedings of the Third ECCL Workshop on Web Archives*, in conjunction with the 7th European Conference on Research and Advanced Technologies for Digital Libraries in Trondheim, Norway, 21 August 2003. <http://bibnum.bnf.fr/eccl/2003/>

²⁷ For a comprehensive description of the DiVA system and the DiVA project, see E. Müller *et al.*, "The DiVA Project-Development of an Electronic Publishing System" in *D-Lib Magazine*, vol. 9, no. 11, 2003. <http://www.dlib.org/dlib/november03/muller/11muller.html>



Current functionality

The DiVA Publishing System makes it possible to:

- reuse and enhance data from source documents originally created by authors – both the digital master for electronic and printed versions, and its associated metadata;
- convert all metadata and (if possible) contents of the documents to a uniform XML-based format (the DiVA Document Format);
- assign a persistent identifier, checksum all files, and store them in a local repository (and an additional copy in the local archive);
- send a copy accompanied by metadata and bundled into an Information Package to the national library archives;
- disseminate metadata (e.g. OAI-MHP, catalogue records in MARC, or RSS feed);
- search and browse all items through a local user interface;
- search and browse all items through the federate search interface – the DiVA-portal;
- manage the system through an administrative interface.

been operating since 2000 and its overall mission is to improve ways of disseminating the research results of researchers and students based at Uppsala University. Issues related to long-term access and preservation of documents stored digitally are another part of its mission, as well as serving as a knowledge centre within the university. Staff at EPC also assist other projects related to the digital library in such issues as interoperability and standards, usability, and compatibility between the various technical solutions used.

DiVA was the very first project realised within the Centre and its objectives include the development of generalised technical solutions and workflows supporting full text publishing, storage, and dissemination of locally produced documents. The tasks of exploring methods for ensuring access, and using and understanding digital objects into the future, were also part of the project team's assignments.

THE DIVA PUBLISHING SYSTEM

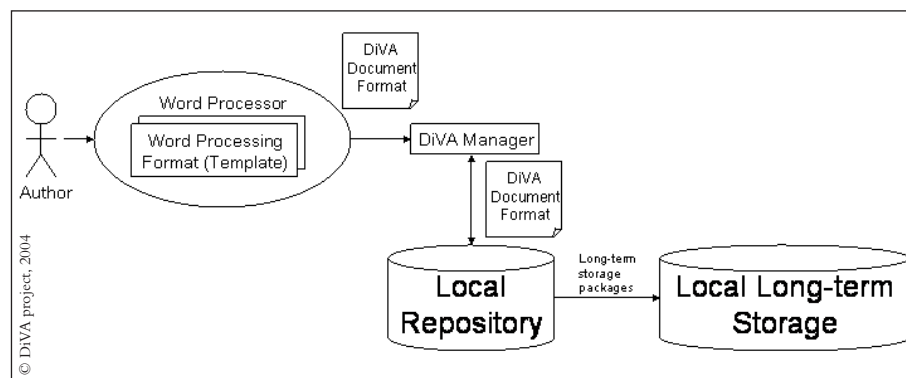
The DiVA publishing system was developed with a focus on how to achieve rational and convenient publishing work-

flows for both authors and administrative staff working in the publishing process and simultaneously increase efficiency and reduce costs. A significant effort has been made to develop practical solutions to support longevity of the electronic documents and to ensure access in the long term. The resulting workflows are based on the reuse, in many different contexts, of the structured information originally created by authors. From a system architecture point of view, DiVA is built using a component-based design methodology; components can be reused in a different context, and also seamlessly replaced with improved versions.

The system is based on current standards and recommendations and is implemented using Java and XML technologies.

As mentioned earlier, the metadata and, in an increasing number of cases, even the content of the document are stored in XML. In order to support this a local document format was developed – the DiVA document format (DDF).²⁸ DDF is a gen-

²⁸ For details, see the DiVA Document Format specification: <http://publications.uu.se/schema/1.0/diva.xsd>.



eral XML document type especially developed for, but not limited to, academic publications. The format is also essential in the DiVA long-term preservation strategy; using XML increases the potential longevity of the objects published by the DiVA system. DDF has a key role in the context of services provided by DiVA. The level of enabled services depends on the granularity level of structure of the data stored within the system.

DDF is produced by converting original documents created directly by authors. For this reason templates for word processors (MS Word, Open Office, Star Office, and LaTeX) were developed and authors used them when preparing documents for publishing. This publishing workflow makes it possible to capture data at a deep level of granularity. Because of the high granularity – 99 metadata elements – and the ability to express relationships and hierarchical structures, it is possible to transform the DiVA Document Format into quite complex metadata formats like MARC-XML or TEI-Header. Some of the other XML-based formats that are provid-

ed include METS, MODS and a number of service-specific formats. Of course, simple formats such as Dublin Core (DC), qualified DC, Reference Manager Format and EndNote are also provided. By taking advantage of the DDF capabilities, many features and services could be developed and integrated into the DiVA system.

ONGOING DEVELOPMENT

As the DiVA was put into operation, development of the new, advanced version of the system has started. As mentioned earlier, a component-based system development methodology was used and that, in combination with well defined interfaces, makes it possible to replace components with more advanced versions, or even to add new ones. In this way the developers of the DiVA system can continuously add new functionality and make improvements. During the past two years a number of innovative wishes and demands for the system were raised, which, in some cases, it is necessary to mirror in the format. Therefore, the format is currently being examined with a view to implementing some of these future changes. It is a con-

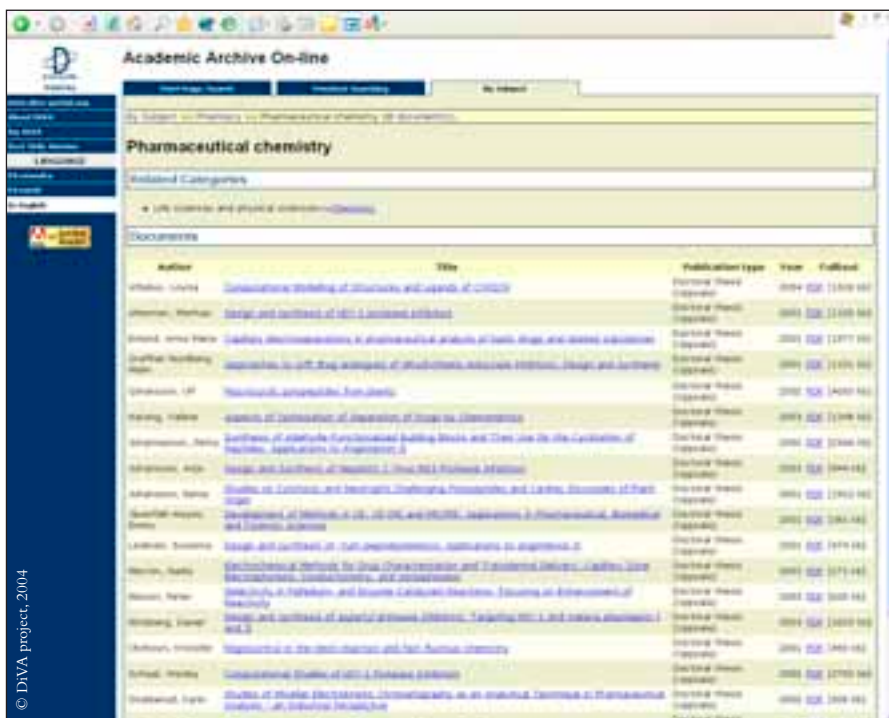
siderable advantage that the format was designed to be extensible. The upcoming version will contain extended rights and preservation metadata and give possibilities for basic semantic content markup, among other features. The release of a new version of the system is planned for January 2005.

Some examples of future functionality are:

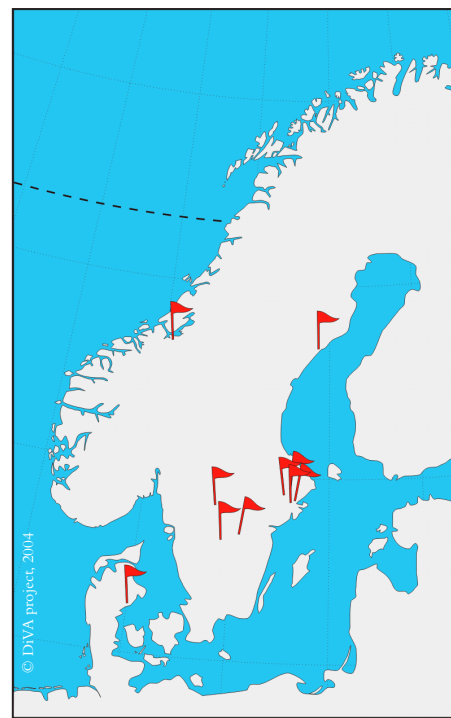
- extended rights and preservation metadata;
- enhanced and more flexible submission workflows;
- an advanced security module;
- sophisticated search and browsing at the document level;
- an advanced module for ordering of printed versions based on print on demand technology.

CO-OPERATION WITHIN THREE COUNTRIES

As mentioned earlier, the DiVA project was initiated at Uppsala University in 2000. The work done in Uppsala has been met with positive interest from universities both within Sweden and in other countries. In 2002, a consortium was formed



Screenshot of the DiVA portal



Map of Scandinavia with pointers to DiVA-consortium universities



Users of the DiVA Academic archive Online portal at Uppsala University Library

and there are now eleven universities in this network.²⁹ Co-operation on the DiVA project is open to all universities and publicly financed research departments and the number of consortia members is constantly increasing.

The founding idea of the consortium is not only to share products and technical solutions developed within the DiVA project, but to exchange the experiences of people working with individual implementations of the system and electronic publishing in general. Questions of common interest are discussed on a regular basis and a number of agreements supporting interoperability have been achieved within the consortium. For example, the participating universities have agreed upon a common document format (the DiVA Document Format) and a list of subject terms. This made it possible to build the DiVA portal at <http://www.diva-portal.org> as a common interface to local repositories. Other issues important for long-term access and preservation (persistent identifiers, storage formats, and metadata) are also addressed within the consortium.

Although, the component-based system development methodology has been used as the system has been built, the model of the further development of DiVA supports a co-operative effort. It also offers a great advantage – the components can be developed with simple functionality that is sufficient for the dedicated function and, as

more resources and new demands arise, a single component can be replaced by a more advanced one. Hopefully we will see more of such co-operative development of DiVA in the future.

CONCLUSIONS

Building an infrastructure supporting the publishing and dissemination of research results is a complex process and many factors have to be taken into con-

sideration when system choices are made. The DiVA system is an example of a practical and operational solution that incorporates current standards and at the same time makes it possible to implement upcoming standards relatively easily and to add innovative functionality. Additionally, the great advantage of the system is its facility for publishing full-text in XML and supporting long-term access and preservation. The central issues are workflows, formats and persistent identifiers. The format issues are not only important in the context of metadata and long-term preservation of content, but also in the context of the development of the DiVA system. The benefit of a well-structured and well-defined XML-based format is to provide clear system interfaces as well as advanced services. The DiVA system has been designed to follow workflow models that are practical for both authors and production staff. This concept helps to achieve efficiency and reduce costs, as well as benefiting authors. The efficiency that we have achieved and the recognition we have received from authors and research communities demonstrate how powerful technology can be when it is integrated with user-friendly and (semi)automated workflows.

29 DiVA consortium members are:- Aarhus University, Denmark; NTNU – Norwegian University of Science and Technology, Norway; Jönköping University, Linköping University; The Royal Institute of Technology in Stockholm, Stockholm University, Södertörns College, Umeå University, Uppsala University, and Örebro University, Sweden.

ERPANET PRESERVATION OF BORN-DIGITAL ART WORKSHOP

THE FIRST WORD

TINA FISKE, HISTORY OF ART, UNIVERSITY OF GLASGOW
([HTTP://WWW.ARTHIST.ARTS.GLA.AC.UK/](http://www.arthist.arts.gla.ac.uk/))

Digital artworks and projects pose numerous challenges to the collecting, classificatory, documentation and preservation practices typical to the museum world, and the notion of the fixed, materially unique, original artwork that it prioritises. Digital artworks are typically processural or temporal rather than fixed, and are variously characterised as ephemeral, unstable or variable. They may explore open or multiple authorship, be interactive, participatory or 'live'. They may take the form of a networked installation; a digital environment; a Web site or Web broadcast; a hypertext story; custom and manipulable software; a computer game; or an attachment to an email. Frequently, they are context-specific, or temporary in their realisation. If they are re-installed or re-created at a later date, or made available elsewhere, they might be re-versioned. Undoubtedly, they will be subject to variability and change in terms of their content, context and constitution / through the manipulation or interaction of a user; content modifications or updates by the author(s); but also by the ongoing upgrades and developments in digital media.

A key question for us today is whether or not our museum collections should be looking to collect, and thus to preserve for posterity, digital art? Can those institu-



tions – founded as bearers of our material heritage – provide an appropriate context for our growing virtual one? It is a dilemma. Our representative collections function on the principle that they acquire (and then conserve) ‘actual’ examples of the best of artistic practice, so that future audiences may enjoy and experience them as near as possible to how the artist intended. What constitutes an ‘actual’ work, and what constitutes ‘documentation’, for instance? Can such distinctions and definitions validly be applied to digital artworks? Do we forsake the works, or the definitions? And so, *what* should we collect? What *can* we collect?

When should we collect it, and, of course, *how*? How do museums document and archive digital artworks so that they remain perhaps physically, but certainly intellectually, accessible for the long term?

In Europe, Australia and particularly the US, these issues are gaining a noticeable momentum and support among museums, art historians, new media curators and organisations. Several institutions have begun to address the question of acquisition. Accordingly, numerous international projects and networks such as *Archiving the Avant-garde* (http://www.bampfa.berkeley.edu/about_bampfa/avantgarde.html), the *Variable Media Network* (<http://variablemedia.net/>), *Capturing Unstable Media* (<http://www.v2.nl/Projects/capturing/>), and *PANIC* (<http://metadata.net/panic/>), and symposia such as 404: *Object Not Found* held in Dortmund during June 2003 (http://www.404project.net/impressum/index_e.html) have brought issues of how to accession, record and preserve longer-term access to digital artworks very much to bear. So far, there has been little broad-based opportunity in the UK to take stock of those efforts, or to address or contribute to them in any kind of dedicated fashion. In part, that lack of opportunity is due, for instance, to the fact that for the majority of British public collections the acquisition of digital artworks remains tentative at best and highly selective. Indeed, a total

of six digital artworks currently reside in collections – three in the Arts Council Collection, one in the Tate and another in Aberdeen City Art Gallery. None of these are artworks with a network dependency however; instead, they are stand-alone items. Taken collectively, they do, of course, represent a beginning, a first word, and it is very much in that spirit that ERPANET (<http://www.erpanet.org/>) and the Centre for Contemporary Arts in Glasgow (<http://www.cca-glasgow.com/>) co-hosted a seminar focused on the collection, archiving, documenting and preservation of digital artworks.

Taking on this occasion an unapologetically European perspective, the event, which took place on 8 October, provided the first invitation for five representatives from a selection of German, Dutch and Hungarian organisations to disseminate aspects of their policies, approaches, research, and case studies regarding digital art works and projects to a UK audience. Hans Dieter Huber provided an excellent and thought-provoking overview of the numerous dilemmas that attend the collection and conservation of Internet art, while Oliver Grau, Sandra Fauconnier and Peter Cornwall elaborated the applied efforts of projects such as *The Database of Virtual Art* (<http://www2.hu-berlin.de/grau/database.htm>) and *Capturing Unstable Media*, and institutions such as ZKM (<http://www.zkm.de/>) in Karlsruhe. Nikolett Eross from C3 in Budapest (<http://www.c3.hu/>) related a particular instance where they commissioned a programmer to recreate a work by artist Zoltan Zgedey Mostak from documentation alone.

One of the day’s aims was to initiate wider discussion within the artistic, academic, museums communities in Britain, and to invite them to contribute their own experience and expertise, levels of ambition and viewpoints in relation to notions of collection, documentation, archiving and preservation. The three British-based

speakers – Simon Faithfull, Peter Ride and Susan Collins – gave topical, discursive presentations on how factors such as scale and scope, and the context in which they come into being, can make the archiving of project and artworks difficult. Faithfull and Collins, both artists, focused on issues such as re-versioning, and raised the matter of not only upgrading but also downgrading.

It is hoped that the seminar could be the first of several such panels to be held in the UK, to which other individuals committed to the exploration and development of these issues might be invited to contribute.

PERSPECTIVES ON DIGITAL ART



© Richard Rinehart & Shawn Brixey, 2000
Chimera Obscura, 2000, Richard Rinehart & Shawn Brixey. A tele-robotic internet / installation.

Like many alternative art forms (conceptual, installation, performance) before it, digital art challenges the art world not just with new content, but with new forms.

This round peg is not intended to fit into that square hole easily. In the arena of preservation, alternative art forms like digital art defy museological methods traditionally concerned with artefacts and original form. Digital art is born variable, ephemeral, technical, and multi-part. It is often as performative as it is artifactual. How digital art



behaves is as important as what it looks like or what it is made of. It begs the fundamental questions of preservation, "What is important to remember?" and "How should we remember?" The project *Archiving the Avant-Garde* (http://www.bampfa.berkeley.edu/ciao/avant_garde.html) explores the artistic, museological and technical implications posed by the challenge of preserving digital art.'

Richard Rinehart, Director of Digital Media, Berkeley Art Museum/Pacific Film Archive (<http://www.bampfa.berkeley.edu/>)

☞ Due to the fact that [virtual] art depends entirely on digital technology, its storage methods, and operating systems, which are in a constant state of change and development, it is severely at risk. Many artworks, for example, that are not even ten years old can no longer be shown. **Emulation**, the transfer or copying over of old software onto new systems, or **Re-creation**, the new construction of an HTML site on the basis of the most up-to-date technology, have only limited suitability for communicating at a future point in time the spatial character of virtual art installations or the seminal importance of the interface. As strategies for preserving digital art, their use is also limited for they can only be used, with certain restrictions, for Net Art; for virtual artworks, other, more ambitious strategies will have to be developed. Time is pressing and measures must be taken if we do not want to lose two decades' worth of media art. As reliable documentation is an essential prerequisite for the conservation and collection of artworks, our work as art historians at the Database of Virtual Art is to accompany this process and provide the documentation, which is still the basis of research in our discipline.'

Oliver Grau, Database of Virtual Art (<http://virtualart.hu-berlin.de>), Humboldt University



Oliver Grau

☞ The most radical preservation strategy is to reinterpret the work each time it is re-created. ... Reinterpretation is a dangerous technique when not warranted by the artist, but it may be the only way to re-create performance, installation, or networked art designed to vary with context.'

Jon Ippolito, Guggenheim (<http://www.guggenheim.org/>), New York³⁰

☞ It is obvious that not everything that exists in the Internet should be preserved for posterity. So it is necessary to actively select from the bandwidth of net.art in order to draw an exemplary picture of it. The selected objects to be preserved for posterity are not chosen as material pieces of evidence of Internet reality as it was at a certain time in the past, but rather as examples, documents and exponents of certain aesthetic, cultural, social, economical or political attitudes. The active selection of works of net.art is the first step to preserving them. From the manifold diversity of Internet art, those works should be chosen that represent important socio-cultural values, whose preservation and memory are in the interest of our society.

☞ The collecting institution has the task of documenting, presenting and preserving the collected works as objects of aesthetic, cultural, social, economical, technological and political significance. It is therefore not enough to store or exhibit merely the original components, objects and materials. Only by means of a detailed documentation of the original context, by transporting and presenting the work as an authentic, representative and typical sign of a certain cultural or social situation, can a contemporary object become a historical, authentic art work preserved for posterity.

☞ In the case of net.art the two conflicting demands [of preservation and access] do not exist. As long as net.art is hosted on a server and is accessible online, it is best conserved and publicly exhibited at the same time.

☞ The difference between the physical code and the various appearances of a work of net.art in different hardware and software systems [allows us to] recognise that there is not *one* appearance of net.art, but that there are many. As we cannot determine which is *the* correct re-interpretation of a net.art work, every re-interpretation is equally justified.'

Hans Dieter Huber, State Academy of Visual Arts (<http://www.abk-stuttgart.de/>), Stuttgart

ERPANET would like to thank Tina Fiske and Chiara Grella (HATII Research Assistant) for their work in planning and delivering this workshop.

³⁰ See *DigiCULT.Info*, Issue 2, for DigiCULT's previous interview with John Ippolito on this subject. <http://www.digicult.info/pages/newsletter.php>

DIGITAL RESOURCES FOR THE HUMANITIES 2004

DAISY ABBOTT & MARTIN DONNELLY,
DIGICULT



Once again, the creators, custodians and users of Humanities digital resources gathered together to address both the well-established and emerging themes of the sector in the four-day Digital Resources for the Humanities annual conference. DigiCULT's third DRH was held at the University of Newcastle (<http://www.ncl.ac.uk/>), which, being the home of The Digital Centre of Excellence (now re-branded CODEWORKS: <http://www.ncl.ac.uk/coe/digitaltechnology.phtml>), The Newcastle Institute for the Arts, Social Sciences and Humanities (NIASSH: <http://www.ncl.ac.uk/niassh/>), Culture Lab (<http://www.ncl.ac.uk/niassh/culturelab/index.htm>), and the Structural Images North East project (SINE: <http://sine.ncl.ac.uk/>), seemed well equipped to handle the questions, challenges and issues posed by around 150 conference attendees.

The key themes for DRH 2004 included:

- Methods in humanities computing;
- Cross-sector exchange between heritage, national and local government, and education bodies;
- Broadening the humanities computing base;
- New forms of scholarly publication.



Benedetto Benedetti of the Scuola Normale Superiore di Pisa, speaking on The Pompeii project (<http://pompei.sns.it>)

Typically for DRH, a wide range of papers and projects were presented, thematically grouped into parallel sessions. In addition to the papers on encoding issues, preservation techniques, distributed resources, the visualisation and presentation of content, content retrieval, ICT support, cross-sector and -domain collaboration, access and publication, there were a number of panel discussions: 'Humanities Computing – Mapping the Field'; 'Including the Arts and Humanities in the

E-Science Agenda'; 'Effective E-Learning'; and 'A Generic Approach to Markup for Complex Scholarly Materials'. These panels were particularly interesting, in terms of both the presentations of the speakers and the responses of the audience. The plenary sessions helped to contextualise issues on a large scale – in Monday's plenary, The Right Honourable Chris Patten gave an entertaining and insightful speech entitled 'Digital Europe: a key to the competitiveness of the EU'.

In addition to the scheduled events, there was the opportunity for delegates to examine the wealth of posters and exhibitions around the conference hall, ranging from large organisations providing gateways to resources (e.g. Artifact: <http://www.artifact.ac.uk/>, the Arts and Humanities Data Service: <http://www.ahds.ac.uk/>, Humbul Humanities Hub: <http://www.humbul.ac.uk/>, and the Online Computer Libraries Center: <http://www.oclc.org/>) to small-scale university-based projects, such as Cistercians in Yorkshire (already covered in *DigiCULT.Info* Issue 6: <http://www.digicult.info/pages/newsletter.php>). This year, the exhibitors included the DigiCULT Forum, and we were pleased to demonstrate our publications and services to the delegates face to face.



Daisy Abbott and Martin Donnelly present the DigiCULT poster

But of course there is more to DRH than plenary sessions and poster pres-



DIGITAL ACADEMIC LIBRARY REPORT



Delegates meet the Mayor and Mayoress at the Civic Hall reception

A recent study examined digital library production centres and collection development policies at various universities around North America. It found that ways are being sought for digital libraries to become both more self-supporting (usually by leasing software or services to other libraries), and better integrated into the traditional library environment. Obviously, specific aims vary widely between institutions, but the main areas of focus were found to be content development and manipulation of both content and library processes.



The Hatton Gallery, University of Newcastle

ers got a taste of the city's fervour for football as well – every pub in the vicinity seemed well decorated with Magpies memorabilia, and there was no shortage of fans willing and able to give their opinions on the recent sacking of Toon manager Bobby Robson. Few could have predicted the arrival of NUFC-brand wine on our tables along with the starters, but fewer still refrained from sampling it. After a hugely enjoyable evening, some hailed taxis and headed for home, while others continued late into the night. Commiserations, finally, to those rudely awoken by a fire alarm at dawn the next morning!

It was also found that many people wished to encourage open access publishing in academic libraries themselves, using the infrastructure developed for digital libraries. This would further integrate the use of these technologies into the work of an institution.

A hard copy of this entire report can be purchased from <http://www.researchandmarkets.com/reports/c4700/> priced at €75.

entations. Newcastle's reputation as a party town was not lost on the delegates, many of whom took the opportunity of their rare spare time to explore the pubs, clubs and restaurants of areas like the Bigg Market and the town's famous Quayside.

After we had sampled the delights of the Hatton Gallery, and the Mayor's Civic Hall in previous social events, the conference's closing dinner took place in the function suite of Newcastle United FC's landmark stadium, St James's Park, with early-bird delegates being treated to a tour of the historic ground and trophy room. In truth, most of the latecom-

Papers from previous DRH conferences have been published in a number of volumes by the Office for Humanities Communication (<http://www.kcl.ac.uk/humanities/cch/ohc/books.html>), and also in *Literary and Linguistic Computing* (<http://www3.oup.co.uk/litlin/>). DRH 2004 papers are likely to be available in mid-2005.

DRH 2005 will take place from 4-8 September 2005 at the University of Lancaster (<http://www.lancs.ac.uk/>).

NEWS FROM DIGICULT'S REGIONAL CORRESPONDENTS

BULGARIA



**DR NIKOLA IKONOMOV, ASSOCIATE PROFESSOR
KT-DIGICULT-BG PROJECT QUALITY MANAGER**

International seminar 'Digitisation of cultural and scientific heritage'

The international seminar 'Digitisation of cultural and scientific heritage' accompanying the first meeting of the KT-DigiCULT-BG project was held at the Congress Centre of Bulgaria Hotel, Bansko, Bulgaria, from 27 August to 3 September 2004. The event attracted some 50 participants from 15 countries: Bulgaria, Czech Republic, Germany, Denmark, France, the Former Yugoslavian Republic of Macedonia, Greece, Ireland, Italy, Malta, the Netherlands, Serbia and Montenegro, Turkey, UK and the USA. Project partners, international guests, and representatives of cultural and scientific heritage institutions from Bulgaria took part in the event.

The programme of the event combined presentations and visits to cultural/scientific heritage sites in South Western Bulgaria. The sessions of the event were grouped in two basic tracks:

- Sessions related to KT-DigiCULT-BG (Knowledge Transfer for Digitisation of Cultural and Scientific Heritage in

Bulgaria), a four-year project, supported by the Transfer of Knowledge action of the Marie Curie programme of FP6;

- Discussions on general issues in the field of digitisation of cultural and scientific heritage.

The kick-off meeting of the KT-DigiCULT-BG project aimed to acquaint project partners with general guidelines for administrative, financial and quality management issues. The project coordinator, Associate Professor Dr Milena Dobreva, presented its basic characteristics and goals and expressed her strong belief that it will strengthen the experience gained by the host institution – the Institute of Mathematics and Informatics (<http://www.math.bas.bg/>) – in the digitisation field and develop it further for the benefit of high-quality presentation of Bulgarian legacy in collaboration with national institutions from the cultural and scientific heritage sector. The representatives of the four partner institutions: Det Arnsmagnæanske Institut, Københavns Universitet, Denmark (<http://www.hum.ku.dk/ami/>), Trinity College, Dublin, Ireland (<http://www.tcd.ie/>), Charles University, Prague, Czech Republic (<http://www.cuni.cz/>), the National Center for Scientific Research 'Demokritos', Athens, Greece (<http://www.demokritos.gr/>), and the host institution (the Institute for Mathematics and Informatics) discussed their specific roles within the project.

The international seminar consisted of three basic tracks:

- Presentations of partner institutions and foreign guests;
- Presentations of Bulgarian institutions;
- Reports and Demonstrations

Within the first track various presentations were delivered, most of them dedicated to specific national experience in the field of digitisation of cultural and scientific heritage. In particular, Giuliana De Francesco (Ministero per i beni e le attività culturali, Rome, Italy) gave detailed information on the MINERVA project, Prof. Dr Bernd Wegner (Technical University, Berlin) raised some important topics of the digitisation of mathematical heritage and the DML, ERAM and EMANI³¹ international projects, Prof. Yasar Tonta (Hacettepe University, Ankara, Turkey) interpreted the difference between integrated and personalised digital information services, and Boris Shishkov (Delft University of Technology, The Netherlands) expounded ideas on the application of electronic brokers in the cultural heritage sector.

Within the second track, Bulgarian institutions involved with cultural and scientific heritage issues and potential project partners were presented: The National Archives, the National Library, the Institute for Bulgarian Language (<http://www.ibl.bas.bg/>), the Institute for Information Technologies (<http://www.iinf.bas.bg/>), the Institute of Literature (<http://www.cl.bas.bg/BAS/directory/humanies/il.htm>), the Faculty of Mathematics and Informatics, Sofia University (<http://www.euroeducation.net/un/bg/bg00111.htm>), and the Central Library of BAS (<http://www.cl.bas.bg/>). As well as the activities within this track two reports on book scanning equipment (by Dr Nikola Ikonov) and cataloguing manuscripts in XML (by Dr Milena Dobreva and Pavel Pavlov), were presented, while Dr Kiril Ribarov (Charles University, Prague) offered a demonstration

31 See <http://www.library.cornell.edu/dmlib/>, http://www.loc.gov/rr/ElectronicResources/full_description.php?MainID=884, <http://www.emani.org/> and http://rcdl2002.jinr.ru/Reports/Vol_2/vol2_71-83.pdf for more information.



© Kf-DigiCULT-Bg project, 2004
During the visit to an 11th Century church in Dobursko, participants in the seminar were acquainted with Bulgarian folk customs.

on manuscript annotation and manuscript content presentation.

The final discussion, entitled 'Current Demands and Future Supply in the Field of Digitisation of Cultural and Scientific Heritage in South-Eastern Europe', once again raised specific issues. All participants agreed to continue their efforts to mobilise the human and material resources in the region and to exchange and disseminate scientific information as well as the results of research. Participation in joint projects, future events and initiatives were discussed.

The seminar participants enjoyed a rich cultural programme, which included an opening concert of old Bulgarian and Slavonic religious chants at the local church, Bansko and Melnik sightseeing, visits of Rozhen and Rila monasteries, and visits to Gotze Delchev's ethnographic museum and the 11th Century church in Dobursko.

The next major regional event will be the conference of SEEDI (South Eastern European Digitisation Initiative), which will take place in August and September 2005 in Ohrid, Macedonia.

GREECE



Sixteen cultural heritage projects to be funded under the Operational Programme for the Information Society

Following the priorities of the Operational Programme for the Information Society (Hellenic Ministry of Economy and Finance, Secretariat for the Information Society: <http://www.infosociety.gr/>) for the promotion of the rich Hellenic Cultural Heritage using new technologies, sixteen cultural actions totalling

a €8.52M budget have been selected for funding under Invitation 65 for Culture.

These cultural actions aim to:

- create the necessary infrastructure for the digitisation and scientific documentation of Hellenic Cultural Heritage, as well as modern and contemporary cultural creations;
- make the in situ use of new technologies in museums and archaeological sites possible, with the development of public information kiosks and cultural information portals;
- promote multilingual electronic publications pertaining to the Hellenic Cultural Heritage and the Hellenic language.

The new actions, gradually getting under way in Autumn 2004, involve the following institutions: the Hellenic Literary and Historical Archive (<http://www.elia.org.gr/>), the Nicholas P. Goulandris Foundation and the Museum of Cycladic Art (<http://www.cycladic-m.gr/>), the Foundation of the Hellenic World (<http://www.ime.gr/>), the Institute for Research on Music and Acoustics (<http://www.iema.gr/>), the Holy Metropolis of Thessaloniki (<http://www.imth.gr/>), the Goulandris Natural History Museum (<http://www.ekby.gr/>), the National Hellenic Research Foundation (<http://www.eie.gr/>), the Greek Film Archives (<http://www.tte.gr/>), the Hellenic Open University (<http://www.eap.gr/>), the Lambrakis Research Foundation (<http://www.lrf.gr/>), the Cultural and Educational Technology Institute (<http://www.ceti.gr/>), the University of Patras (<http://www.upatras.gr/>), the Benaki Museum (<http://www.benaki.gr/>), the Institute of Computer Science of the Foundation for Research and Technology – Hellas (<http://www.ics.forth.gr/>), and the Foundation of Mount Sina.

IRELAND



An introduction to digitisation of cultural heritage material in the Republic of Ireland

Cultural Heritage in Ireland is the responsibility of three main Government departments:

- The Department of Arts, Sports and Tourism (<http://www.arts-sport-tourism.gov.ie/>), through its Cultural Institution Division, provides the legal and policy framework and the Exchequer funding for the operation of Ireland's national cultural institutions. It promotes the development of these institutions through many initiatives including digitisation programmes.
- The Department of Environment, Heritage and Local Government (<http://www.environ.ie>), which has responsibility for the natural and built heritage.
- The Department of Education (<http://www.education.ie>), which has responsibility for academic libraries including third-level institutions.

In 1999 the *Branching Out report*³² produced a number of recommendations for cultural heritage policy in the library sector, including substantial coverage of digitisation aspects. The three main departments above provided the membership of the Branching Out Steering Committee, which is responsible for the implementation of the recommendations of the report. In 2002 the Committee established the Cultural

Heritage Panel, a body with the brief to examine and produce recommendations for a national funding programme in the area of digitisation and digital preservation.

As indicated by the slower-than-expected take-up of new delivery mechanisms such as ADSL and Wireless Broadband, Irish Internet use appears to have reached a plateau. It is reasonable to assume that the people interested in the Internet for its own sake are already online, and that this market has reached near-saturation. This also implies that a significant proportion of people do not consider the Internet as relevant. Therefore, the creation of cultural content that is local in nature is viewed as an important stimulus to attract new users to the online medium. The widespread digitisation of local cultural content will provide this relevant online material and will have a significant impact on the national take-up of the Information Society.

To achieve these aims, the Cultural Heritage Panel established the **Cultural Heritage Project** (described below), a six-month pilot project managed by An Chomhairle Leabharlanna (The Library Council, <http://www.librarycouncil.ie>), an advisory body on public library policy and development to national and local government. Pintail Ltd (<http://www.pintailservices.com>) and Digital Media Centre of Dublin Institute of Technology (<http://www.dmc.dit.ie/>) provided the technical partnership for the project. The Cultural Heritage Project sought to establish national nodes of expertise in the digitisation of diverse forms of cultural content, 'a national thematic network', and databases relevant to digitisation. The project team also sought to produce best practice guidelines in the area of digitisation and a set of recommendations to be published in the project team's final report for a national digitisation funding programme.

The national digitisation strategy is being implemented by a national digitisation programme – a network of autonomous digitisation projects on the history and culture of their area with links to a programme portal, which will present aspects of the history and culture of Ireland.

As a contribution to the Irish Presidency, Ireland is co-operating with Italy on a mid-term assessment of the 'Coordinating Digitisation in Europe' initiative. The assessment is managed by an assessment steering group, comprised of representatives of the previous (Italian), current (Irish) and subsequent (Netherlands) presidencies of the European Commission. The focus of the assessment and analysis will be on concrete results, which have a demonstrable impact on the cultural landscape and which underline the effect of the work of the initiative on the development of eContent and the contribution of cultural heritage to eEurope. The draft report was circulated for discussion at the NRG³³ meeting in Parma (November 2003).

Projects in brief:

Cultural Heritage Project

The objectives of the Cultural Heritage Project Phase I were to create a portal, showcase and resource of digitised material from the local history collections of the public libraries and local museums and archives across Ireland, and to create a level of digitisation expertise within these institutions. It was intended that this project would also facilitate greater access to the collections housed in these institutions, both online and in terms of an increase in actual visits to the libraries, museums and archives. Finally it was envisaged that, by populating the site with such relevant local material, a greater degree of Internet take-up in Ireland would be encouraged.

³² For more information, see <http://www.librarycouncil.ie/public/branching.shtml>

³³ The NRG is made up of officially nominated experts from each member state, and was established jointly by the Member States and by the Commission within the framework of the eEurope Action Plan, supported by the MINERVA project (<http://www.minervaeurope.org>).



In order to fulfil these objectives Phase I of this project created:

- The Ask About Ireland portal site (<http://www.askaboutireland.ie>) containing links to 30 content sites produced by individual public authorities, local museums and archives and based around a single theme: *The Big House and Landed Estate Life in Ireland*;
- A database resource of over 300 digitised items, many of which were previously unpublished;
- Guidelines and Standards for best practice digitisation of multimedia items;
- A national profile of digitisation activity in Ireland and a database of Irish digitisation initiatives;
- The publication of the report of the project, *Our Cultural Heritage: A strategy for action for public libraries*.³⁴

Cultural Heritage Project Phase II

Following the success of the first phase of the Cultural Heritage Project it was decided to expand the scope of the Ask About Ireland portal site. The content of the site was expanded to include ten extra topics: Architecture, Flora & Fauna, Irish Language and Legends, Irish Writers, Island Life, Pages in History, Poor Law Union Records, Sport, The Virtual Museum, and Transport. Content was also provided for this phase of the project by The National Museum of Ireland (<http://www.museum.ie/>). The project team and its technical partners reworked the site incorporating a more sophisticated yet user-friendly structure and design. The Ask About Ireland Web site is not yet live; however, in advance of its official launch in September the portal site was displayed to the delegates at the recent International Digitisation Conference in Dublin Castle, an event staged as part of the Irish Presidency of the European Union.

The National Museum

The National Museum of Ireland (<http://www.museum.ie>) was a participant in the IST-funded, Fifth Framework

ORION project (<http://www.orion-net.org/>). The project was completed in 2003, producing a Research Roadmap that addressed a wide variety of 3D research areas according to the results of a user requirement survey within the ORION consortium and beyond.³⁵

A number of other national institutions such as The National Library (<http://www.nli.ie>), The National Archives (<http://www.nationalarchives.ie>) and The National Gallery (<http://www.nationalgallery.ie>) continue to instigate and develop digitisation initiatives.

More information on Ask About Ireland and new initiatives will be available in future issues of *DigiCULT.Info*.

LITHUANIA



A usability workshop took place in Vilnius on 2-3 July 2004. This event was intended to validate and comment on the first draft of desktop research entitled *Usability of ICT-based systems: a state-of-the-art review* undertaken by Vilnius University Communication Faculty (<http://www.vu.lt/english/menu/depar/commu.htm>) and to promote further discussions on usability issues in memory institutions.

Usability of ICT-based Systems research is a part of the CALIMERA (Cultural Applications: Local Institutions Mediating Electronic Resource Access, <http://www.calimera.org>) project, funded by the European Commission's FP6 Information Society Technologies pro-



gramme. CALIMERA is a co-ordination action, aiming to assist and promote innovative application and development of ICT in local libraries, museums and archives across Europe, enabling them to provide quality access to electronic resources for the benefit of all citizens. Research is performed under *Workpackage 3: The end-user experience: a usable community memory* and is intended to contribute to the integration of cultural heritage sector technological solutions with the needs and requirements of end-users by providing review and recommendations of current usability theory and practice.

The main goal of the report on usability of ICT-based systems was to define the main tools, methods and underlying factors that are prerequisites for effective, efficient and satisfactory use of technology or, in other words, usability. Usability is a field of the Human Computer Interaction discipline which emerged with widespread usage of computer-based systems. It provides necessary tools and approaches for the development, exploitation and evaluation of technologies underlying community memory services. In accordance with the main goals, the report addressed the following issues:

1. The concept of usability and its core elements, taking into account different approaches and interpretations;
2. Usability methods, tools and evaluation

³⁴ This report can be viewed online at http://www.askaboutireland.ie/Our_Cultural_Heritage_Report.pdf

³⁵ See also "Archaeology Museums & 3D in the 21st Century" in *DigiCULT.Info*, Issue 4, August 2003, available online at <http://www.digicult.info/pages/newsletter.php>



THE NETHERLANDS



MultimediaN research project

Increasingly, the digital data stream is composed of multimedia elements: combinations of pictorial, auditory and linguistic data. Multimedia handling and retrieval is becoming an integral part of the information workflow in archives in various economic sectors such as museums, publishers and production companies. The MultimediaN project (<http://www.multimedien.nl/>) aims to support these sectors by:

- building an outstanding science core and a virtual multimedia lab with strong industry participation;
- transferring fundamental applied science and know-how to the ICT world, generating a transparent view on technology by means of demonstrator development and field tests.

The project runs from 2004 to 2008 and has an estimated budget of €32 million, of which half is funded within the Dutch Bsik programme.³⁷

Software development, where possible in the Open Source domain, is considered an important means for consolidation of scientific results. Interdisciplinary pilot application projects will be set up for surveillance, learning, entertainment, and

³⁶ More information is available from Kahn & Associates' Web site: <http://www.kahnplus.com/>

³⁷ For more information on Bsik, visit <http://www.ctit.utwente.nl/research/projects/bsik/>

- techniques embedded in industrial, ISO standards, and research projects;
3. User features involving social, demographic, cultural and other factors crucial for usability of technology-based services;
 4. Finally, usability awareness, current usability standards, and techniques used in the professional community of memory institutions.

The two-day event was attended by 18 usability experts from 11 European countries who shared their knowledge in presentations and discussions. In order to make the dialogue more productive, group discussions focused on important strategic issues covering the need for European usability consultancy networks for memory institutions, the scope of main usability knowledge, and the content of possible guidelines. Participants emphasised the importance of accessibility issues for memory institutions because of their social mission and responsibility to provide quality services for all users despite their education, age, gender, culture and race.

During the workshop several presentations and some accompanying demonstrations revealed current usability experience in diverse European institutions. On behalf of the Communication Faculty,

Zinaida Manzuch presented a theoretical overview of usability issues covered by the report, Irini Courzakis (Germany, Zentral- und Landesbibliothek Berlin, <http://www.zlb.de/>) provided recommendations on how to improve usability of library Web sites, Andrea Bernardini (Italy, Fondazione Ugo Bordoni, <http://www.fub.it/>) presented Italian initiatives on improving Web accessibility with accompanying demonstrations, Paul Kahn (Kahn & Associates, Paris, <http://www.kahnplus.com/>) shared his experience of a recent project analysing public Web sites undertaken by Kahn & Associates,³⁶ László Buday (Hungary) and Henryk Rybinski (Poland) provided practical demonstrations of current applications associated with usability. Workshop materials and presentations are available from the CALIMERA Web site <http://www.calimera.org>.

DIGICULT REGIONAL CORRESPONDENTS

- Bulgaria** | Milena Dobreva
Greece | Efthimios Mavrikas
Ireland | Domitilla Fagan
Lithuania | Zinaida Manzuchukh
The Netherlands | Eelco Bruinsma & Johan Oomen
Poland | Maria Sliwinska
Turkey | Bekir Kemal Ataman



information management. Also envisaged is the presentation of art collections in a 'digital time machine', suited for librarians and consumers, built on a multimedia temporal and spatial database, enhanced with systems for automated analysis of audiovisual content, multimodal interaction, and context-aware, flexible and reliable content delivery.

Among the partners are: UvA, CWI, TUDelft, TNO, CTIT-UTwente, Telematics Institute, Philips, IBM, LogicaCMG, VU, UU, V2_, Waag Society, Netherlands Institute for Sound and Vision, the Dutch Forensic Institute, DBNL, De Politie, NOC-NSF, DBNL, and Van Dale Lexicografie. Collaboration is foreseen with EU projects and networks such as AMI, PrestoSpace and DELOS.

DARE Digital Academic Repositories

The SURF programme Digital Academic Repositories (DARE: <http://www.darenet.nl>) is a joint initiative of the Dutch universities to make all of their research results digitally accessible. The National Library (<http://www.kb.nl>), the Royal Netherlands Academy of Arts and Sciences (<http://www.knaw.nl/>) and the Netherlands Organisation for Scientific Research (<http://www.nwo.nl>) are also co-operating in this unique project. The programme has been given financial support by the government with a fund of €2 million for the period 2003-2006. With this grant the Dutch government is giving a strong boost to innovation in the provision of academic information in the Netherlands.

The first year of DARE focused on implementing the basic infrastructure by setting up and linking the repositories. More important, however, is the submission of scientific content to the repositories. Every year projects are funded to stimulate the development of services based on the research information made available through the infrastructure. Also, initiating and promoting the submission to and use

of scientific content from the repositories is an important focus point of the DARE programme.

As of January 2004 DAREnet has been demonstrating the network of the local collections held by all the Dutch universities and related institutions, presenting them to the user in a consistent form. This makes it possible to search one or more of the repositories concerned. No other nation in the world offers such easy access to its academic research output in digital form.

Creative Commons Licences

The Dutch Creative Commons licences were officially launched this June. Lawrence Lessig, the Creative Commons chairman and a Professor of Information Law at Stanford University, was present during the launch event in Amsterdam and gave an inspiring speech on the concept of Free Culture. The Creative Commons is an American initiative to optimally stimulate the Internet distribution of copyright-protected works of literature, photography, music, film and learning without infringing these copyrights. By following a number of steps on a simple Web application, makers can assign their works one of the CC licences such as 'some rights reserved' or 'mash me'. More than one-and-a-half million works have been licensed in this way since the Creative Commons were set up in 2002. The Dutch translation of the Creative Commons licences will enable artists and academics to adjust the traditional copyright in such a way that it does justice to contemporary creation methods. The translation is a DISC initiative (a co-production of Waag Society and Nederland Kennisland) in co-operation with the University of Amsterdam's Institute for Information Law (<http://www.ivir.nl/>).

More information can be found at <http://www.disc.nl>.

Science communication through the Internet

The Web site Museumkennis (<http://www.museumkennis.nl>) was recently launched. Museumkennis (Museum Knowledge) is the jointly operated educational information site of the Dutch state museums of Antiquities, Ethnology and Natural History. The difference between Museumkennis and more traditional joint projects can be identified in these three aims:

- exploration of new organisational methods for real fusion of several organisations' information services in different knowledge domains;
- experimentation with information retrieval;
- and research into the means of visitor involvement and 'question driven' access to collections.

Traditional 'Googling' methods of information retrieval are not sufficient to provide users with a meaningful guide through online collections of cultural heritage as they lack the wider context in which an object resides. The Museum Knowledge project started with a vision of information enrichment, supporting users finding their way through the collections. For example, 'When you search for the topic "gold", how interesting would it be to be informed not only about the mineral but also on its use for payment in ancient Rome and on its use in the arts and crafts of Middle Meso America?' In setting up the project it became apparent that a jointly operated online question and answering service would be highly appreciated by users. Research into different ways to provide meaningful access to the virtual collection is to be continued.

Secondary school students are the main focus of the project in terms of end-users. After elaborate visitor evaluation, the site has recently been launched. Preliminary conclusions are:

1. Collaboration between different institu-



tions proved time consuming, but is worthwhile doing;

2. Visitors are enthusiastic about the enriched information and how it is presented. Also, the number of questions received is considerable.

Rijksmuseum Web site relaunched

The most renowned Dutch museum, the Rijksmuseum (<http://www.rijksmuseum.nl/>), has launched its completely revamped Web site. Visitors are able to access the vast databases of the museum, together with the more general information that was already available. The online databases include the Adlib collection management system (<http://www.adlibsoft.com/>), the Aria database with educational information and the library catalogue.

An XML layer links all these various resources. The user-friendly WYSIWYG XML-editor Xopus from Q42 (<http://xopus.com/>) is used to manage this process. A flexible and layered information architecture has been designed, enabling the easy rendering of dynamic presentations in pre-defined formats. The architecture consists of several layers: the objects, the selection of objects, formats structuring the selections and presentations. Types of presentations that can be rendered include printed leaflets and also formats for mobile devices such as PDAs.

The information architecture complies with open standards such as Dublin Core, OAI and XML, enabling future collaboration with other organisations. Open Source software was used in developing the system wherever possible. The aim of the Rijksmuseum is to distribute the system to other cultural heritage institutions in an Open Source scenario. An advisory board will be set up in collaboration with the DEN organisation and the Mondriaan Foundation (<http://www.mondriaanfoundation.nl>) to define which scenario is most applicable. The Web site and Web infrastructure were developed by designers from

Fabrique (<http://www.fabrique.nl>) and application developers from Q42 (<http://q42.nl/>).

POLAND



In Search of Polish Cultural Web site Quality

WITOSLAW PIOTR RYSZEWSKI & MARIA SLIWINSKA

A growing number of cultural heritage institutions are presenting their activities on the Internet and among these are Polish cultural institutions. According to recent available statistics³⁸ institutions currently registered in Poland include:

- 33,632 libraries (1,180 research, 8,700 public, 20,879 schools,³⁹ 350 pedagogical, and 2,523 special)
- 196 archives (28 state, 18 of central institutions, 150 other)
- 665 museums
- 281 galleries.

A survey was conducted, based on a couple of printed guides and an Internet survey by the Google and Onet.pl browsers due to the large numbers of institutions. This survey can be treated as a first attempt at evaluating Polish cultural heritage institutions' Web sites.

In general, libraries were the first cultural institutions to build their own

Web sites. Our search identified 50 scientific and about 800 public library Web sites. All libraries present broadly similar information: current events, addresses, resources, structure, and library policy. Larger libraries also provide information about their history, publications, exhibitions and other events, and what is of the utmost importance for their users – they offer online catalogues. Three of them also allow users to order books using these facilities. The information layout is usually coherent and fairly easy to use. Only 28 multilingual Web sites were identified (18 run by scientific and 10 by public libraries). Twenty-four of them are in English, two in French, one in German, and one in Russian. Approximately 70 per cent of information is translated into a foreign language. Graphic design is generally not imaginative; most of the libraries present only pictures of their buildings, and only a few current pictures of recently purchased books. Fifteen libraries have already started with digitisation of their most interesting collections.

Sixty-six galleries had created their own Web sites – and this was a group of sites with very diverse content. All of them publish the address and general characteristic of the gallery: for example, its history, activities and resources. Some provide information about the artists whose work they exhibit, their policy regarding picture sales, and current images of artworks. Seventeen galleries have multilingual Web sites, most of them in English (16), but also four in German, one in Czech, and one in Spanish. Four galleries have more than one foreign language version, with around 60 per cent of information being translated.

There are 20 state archive Web sites available, but only ten of them have foreign versions – seven in English, two in German, and one each in Russian and Ukrainian. Like library Web sites, the for-

38 Electronic *Statistical Yearbook of Poland 2004*, www.stat.gov.pl/serwis/polska/2004/, units: Education and Upbringing; Science and Technology; Culture, Tourism and Sport.

39 See *Rocznik Statystyczny 1991* (Warszawa 1992).



foreign versions are usually limited to around 70 per cent of the information from the Polish language page. A little poorer are Web pages of church archives. Only five archdiocesan and 15 diocesan archives exist on the Internet; just one has a multilingual Web site – in English and German. Only five university archives have their own Web sites, three of them in English. Just four central archives have Web sites, none of them including a foreign language version. All archives have Web sites of similar quality. The arrangement of information is most often coherent, and content is similar, such as information about organisation, resources, access policy, and current events. Some of the sites provide information about publications and archival services.

About 500 Polish museums have Web sites; among them are seven national museums, 14 district museums and 22 regional museums. About 450 are state, city or small local museums, managed by societies, private citizens, or churches. Again, information presented on these sites tends to be similar. Visitors can find out when a museum is open, the ticket costs, policy, and current exhibitions. More elaborate pages present the museum history and educational, publishing or research activities. One museum has incorporated attractive visualisation techniques within their site; however, most simply present pictures of their most precious artefacts. About 60 museums have foreign versions of their Web pages, with 20 catering to more than one European language: 55 in English, 20 in German, five in French and one in Italian. Again, it was found that foreign language pages hardly ever include all of the information on the original Polish language page; more often it is around 80 per cent.

This simple analysis of the Web sites of Polish libraries, galleries, archives and museums leads to a few conclusions. First, the quality of the Web pages of a cultural institution depends on its institutional activities. Secondly, museums are more

active on the Internet than other institutions, since 80 per cent of all Polish museums have Web sites. Thirdly, the state institutions tend to have more professional-looking pages, as their better financial situation permits the appointment of specialists and the implementation of more advanced technologies. Fourthly, most of the institutions are not prepared for contact with non-Polish speaking users, as only 7 per cent of them have multilingual versions. Finally, a standard is lacking in Web site design; however, a logical arrangement and a convenient search mechanism are the most important advantages of Web pages. Search mechanisms can be found only in ten of the Web sites surveyed (mostly a simple free-text search). Just three Web sites used controlled vocabulary search through keywords, thematic phrases, and lexicon.

To address some of these issues and improve Web site design, in 2003 the Polish Library Association established a competition for the best library Web site. The first competition had no specific rules, but for this year's competition a list of mandatory component qualities has been established including formal information (institution name and address, Webmaster and editor names), as well as information about updates. Layout and graphics are evaluated, along with completeness of information and its relevance, editorial issues such as grammar and information style, and fonts. A couple of technical issues, for example, interface, navigation, search mechanisms, user-friendliness, online catalogues, multilinguality, help mechanisms, and communication with users are also assessed. Other issues concerning the Web sites such as portal or gateway elements and educational possibilities are welcome and yield additional points during evaluation. Even though the agreed competition rules are not always coherent and often give too much flexibility to the evaluators, it is a big step forward towards assuring the quality of cultural institution Web sites.

The possibility of improving cultural institution Web sites through the establishment of a European Certificate for good quality Web sites that meet the agreed criteria has also been discussed with the Ministry of Culture. Such criteria should be based on those presented by the Quality Principles group of the MINERVA consortium. The Certificate would be of the highest value for the cultural institution if awarded jointly by the MINERVA⁴⁰ consortium in the name of the European Commission. Such an action would certainly improve the quality of electronic images of all cultural heritage institutions, and would encourage others to build their own Web sites. For those without appropriate staff and technology, ICIMSS (<http://www.icimss.edu/>) could build a standard Web site, including translation into a few of the major foreign languages, and co-operate with those institutions on maintaining and updating their information.

TURKEY



This is the first Regional Correspondent's report from Turkey; therefore, it will summarise what has been achieved in the last few years in the digital culture arena in Turkey.

DIGITAL APPLICATIONS IN THE HERITAGE SECTOR

With an estimated 150 million documents dating from the imperial period, Turkish archives are one of the rich-

40 See http://www.minervaeurope.org/publications/qualitycommentary_en.htm for a commentary on the ten Quality Principles.



est in the world. The State Archives have been gradually automating all of their finding aids for the last decade.⁴¹ Last year they took a major step by publishing all of their automated finding aids over the Internet,⁴² and major work to digitise popular fonds is also under way. The digitised collections are available for consulting over the Archives' intranet via terminals in reading rooms.

A major digitisation effort is also under way at Suleymaniye Library of Manuscripts, which holds about 70,000 manuscript books and about 10,000 rare books printed with the stone press technique. Similar digitisation efforts are being carried out in Kastamonu, where more than 7,000 manuscript books are located, in Sivas, also on a collection of around 7,000 objects, and in Konya, for about 5,000 manuscript books.

Housing the oldest settlements in the world, Catalhoyuk and Hacilar, which go back to as early as 9000 BC, Turkey can be likened to a huge archaeological site spanning over 750,000 square kilometres. For the last few decades, major research has been conducted in order to make an inventory of all archaeological sites in Turkey, resulting in the TAY project (<http://tay-project.org/>). One of the goals of the project was to store data in a database and publish it over the Internet, making it internationally accessible. This major achievement, which has created a lot of interest worldwide, went into a second phase last year, by visiting the same sites, with the aim of seeing the level of destruction present in the archaeological sites. Unfortunately the findings are very saddening. The full database and the destruction report are available in English online at <http://www.tayproject.org/raporeng.html>

Collaboration and Virtual Communities

Regarding Turkish activities on the theme of *DigiCULT Thematic Issue 5, Virtual Communities and Collaboration*, there have been several examples of mailing lists being created on any subject imaginable,

as in most other countries. In the heritage area, there are two that are particularly noteworthy. The first of these is KUTUPL, the librarians' list, which has been active since the mid-nineties, and the second is ARCHITURK, the archivists' and records managers' list, which has been active since the late nineties. However, the more interesting dimension to this was created via a research project, carried out by myself (Bekir Kemal Ataman), which looks into mailing lists on archives and records management worldwide as a technological means of communication and collaboration. Regarding the lists from a different perspective from that in *DigiCULT Thematic Issue 5*, the study ascertains that mailing lists can become a virtual college for professionals, binding them together to develop the field.⁴³ Furthermore, although the published research limits itself to archives and records management, the data collected for this purpose, consisting of about 30 questions for each list, cover the museum sector as well.⁴⁴

Legislation

With regard to digital heritage, two major laws have been passed in Turkey recently. The first of these was the law on Digital Signatures, passed on 15 January 2004, and the second was the legislation on Freedom of Information, passed on 27 April. These governmental changes have put Turkey among the first thirty countries worldwide to officially accept and address such a concept.

E-government applications

Over the last decade, several e-government projects have been under way in Turkey. The biggest of these was to create a unique Citizen's ID number for every Turkish citizen, similar to the social security number in the United States. This project has been in effect for some time now and has been widely used by several government offices, such as the Central University Entrance Exam, for example. Another major achievement was accomplished by the Social Insurance Organisation (SSK), when they

made available their entire social security database over the Internet (<http://www.ssk.gov.tr>). A similar facility is presented by tax offices to tax payers, and is under way at the Ministry of Judicial Affairs in relation to judicial records. All three projects are planned for unification under the Citizen's ID in the long run.

The Prime Ministry has run a project to make all current legislation available over the Internet, as well as decisions of the Supreme Court, which are binding in cases where legislation is not clear. Both sites have been active for some time now.

Another interesting automation project came from the Greater Istanbul Council at their Disaster Coordination Centre (AKOM),⁴⁵ an office formed after the major earthquake catastrophe in 1999, bringing together information about the city that might be needed at the time of a potential disaster. However, because of its sensitive nature, the data brought together at this centre are not available to the public.

Finally, all e-government sites on the Internet are made available via a single e-government portal at <http://www.turkiye.gov.tr/>

Education

In parallel to all this e-government activity, it is inevitable that we will face problems relating to management of electronic records. To cater for this need I created a course in Information Engineering for senior students of computer engineering at Marmara University (<http://www.marmara.edu.tr/>). More details about this course are available

⁴¹ More information is available from <http://www.byegm.gov.tr/statearchives/index.htm>

⁴² These findings are available at <http://www.devetlarsivleri.gov.tr/> (in Turkish).

⁴³ The study was published with the title "Technological Means of Communication and Collaboration in Archives and Records Management" in *Journal of Information Science*, vol. 30, no. 1, 2004: 30-40, by the Chartered Institute of Library and Information Professionals (CILIP). An electronic copy is available via the author's Web site: <http://www.archimac.org/BKACV/Articles/TechMeans.shtml>

⁴⁴ The full list of mailing lists on museums, archives and records management, together with the related questionnaires, can be consulted at <http://www.archimac.org/Profession/Lists/index.shtml>

⁴⁵ See also <http://www.cendim.boun.edu.tr/publicrelations.html>



CONFERENCE REPORT: "TOWARDS A CONTINUUM OF DIGITAL HERITAGE, STRATEGIES FOR A EUROPEAN AREA OF DIGITAL CULTURAL RESOURCES"

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This conference, which was held in The Hague on 15 and 16 September, was devoted to the concept of a European Area of digital cultural resources. Organised under the Netherlands EU Presidency, the conference marks a turning point in the 'Lund Action Plan', an initiative of a number of EU member states to share knowledge, experience and resources to arrive at a more unified and co-ordinated approach to the digitisation of cultural heritage information and resources.

This initiative, departing from the Lund Principles that describe the potential of digital cultural heritage resources and identify most impediments and problems, called for the rapid deployment of national steering groups that co-ordinate the development of national policy profiles, assigned experts to working groups dedicated to certain identified problem areas, and also nominated national representatives to form the National Representatives Group (NRG). This NRG traditionally convenes in the country that holds the EU Presidency to set and follow a revolving agenda. The meeting of the NRG is nearly always combined with a conference on an appropriate subject.

Speakers at the conference were selected with an eye for the contribution they could make to the subject of a European Area of Digital Cultural Resources. This

area must be seen as a virtual infrastructure that leaves national digitisation efforts and existing digitisation programmes intact, but, by intelligent application of the right resource discovery technologies and application of the right tools, has the power to pull together relevant, meaningful and high-quality material, drawn from distributed resources, and to deliver this material into the working space of the individual, whatever this working space may be, wherever and wherever the individual may be.

Keynote presentations⁴⁶ by Brewster Kahle, director of the Internet Archive, Paul Miller, director of the Common Information Environment, and David Bearman, director of Archives and Museum Informatics, traced a large conceptual circle around the main theme of the conference. Marius Snyders (Dutch Ministry of Culture), Arjo Klamer (Erasmus University) and Seamus Ross (HATII & DigiCULT, University of Glasgow) treated the political, economic and broader cultural perspectives. Daniel Malbert (French Ministry of Culture) and Nigel Pittmann (Department of Culture, Media and Sport, UK) sketched the broader European context of the Lund Action Plan and the way an individual member state is implementing its digitisation strategies through national programmes and projects. James Michalko, president of the Research Libraries Group, painted the American canvas in which public funding for digitisation plays a very insignificant role, and hence the quite different dynamics of institutional policy and private funding schemes which define the playing ground. Maurizio Lunghi, co-ordi-

nator of the 'Firenze Agenda' on long-term preservation, dealt with the complex issue of preservation of digital resources, which, for all its technical complexity, is at this stage also a question of creating awareness.

In general, the speakers were not afraid to adopt a critical stance, but in doing so creatively elaborated aspects of a shared vision, which was quickly picked up and appreciated by the audience. The Dutch Deputy Minister for Culture, Medy van der Laan, underlined the importance of the vision of a shared area of digital cultural resources during the Netherlands EU Presidency, and assured continuing support for the development of this vision.

The pragmatic and unproblematic view on mass digitisation put forward by Brewster Kahle met with an amused audience. He convincingly calculated and demonstrated the feasibility of digitising all the documents that make up our cultural heritage, and hence the possibility of creating access to 'all human knowledge'. An elegant and simple print-on-demand scheme, which could create that much needed access to the world's cultural riches in places where it really matters, showed that we should not be blinded by a future where all access means digital access. Whether this strategy of digitisation will happen on a large scale or not, the approach demonstrated by the Internet Archive (<http://www.archive.org/>) aroused the interest of many collection owners.

⁴⁶ Most papers and presentations are available on the Web at: <http://www.digitaliseringfergoed.nl/cultuurtechnologie/cultuurtechnologie/i000264.html>



The concept of a European area of digital cultural resources stimulated the critical faculties of David Bearman; his paper stressed the need for an anthropologic approach to the user of heritage information in the knowledge society. European policy makers should observe the way people use the network and emergent technologies. This use is never planned, and always a surprise. He also stressed the importance of the fact that human-to-human contact is, and ever will be, an essential aspect, even more so in a radically networked society. He opposed 'central planning' and features like a 'universal ontology, or thesaurus'. However, new thought on European digital cultural policy by nature assumes some sort of co-ordinated approach by European member states. In the case of the Lund Action Plan, there is no tendency towards centralisation, rather the reverse, nor is there any wish to create a central ontology. It is exactly the vision of creating a medium where citizens can share their wealth of experience, augmented only by the presence of material from heritage institutions, enhanced by the possibility of peer-to-peer exchange, and enrichment of extant material by peers, that characterises this new strand of thought.

Paul Miller took a different route to arrive at the same position. In his view heritage organisations should relinquish not the ownership of their digital holdings but the built-in insularity that makes it very cumbersome to find relevant and meaningful information about cultural heritage. This insularity is not a technical problem, but most often the result of a conscious policy to put the institution before the content. He argues that content should be part of a much larger whole; it should be linked up, and information on Web sites should reflect the information needs of the user instead of the internal structure of the organisation. Miller stated very acutely the need for a coherent distributed infrastructure.

The idea of an infrastructure that transcends institutional and even national borders calls for international co-ordination. Digitisation as a process is not the central problem; storage, ownership, retrieval, preservation, linking and sustainability are – as is the position of collection owners when we ask them to relinquish the more obvious manifestations of institutional identity in favour of greater accessibility and interoperability of content. These problems, organised around the themes of 'content owners and collections', 'intermediaries and services' and 'enrichment', were addressed by groups of experts in parallel forums. The central question was clear: 'What will happen when we create one "basin", or area, of digital cultural resources?' Institutional justification and survival often depends on the economics of discrete and easily identifiable projects. The conflict between ownership of resources, of services, of enrichment, and the necessity to connect everything in a collective approach will remain unresolved as long as networked digital heritage will depend upon an economy of fragmentation.

Seamus Ross encouraged a more integrated approach; less focused on the production of discrete resources, and stressed the colossal value of renewable and networked digital cultural resources for all areas of society. In his eyes, however, the Lund Action Plan has not lived up to its expectations. Marius Snyders stresses the need for co-ordination, for 'shared principles that enable us to characterise the whole of a process, without specifying every last detail of the digitisation machinery' and places part of this responsibility with the governments of European member states. With respect to the Lund Action Plan he confirms the conclusion of Seamus Ross, the NRG in its current form, working processes and mandate has not been able to implement the full width of the Lund Principles and the vision behind them. While the European Commission has the responsibility to support, foster and stimulate the process of co-ordination and

the development of a unified area of digital cultural resources, member states and cultural heritage institutions are not entirely free from responsibility. Snyders, consistent with the other speakers, perceives a fundamental unwillingness in many institutions to co-operate, to create networks of content, and to include the user in the information loop.

The conference stirred the imagination of many people, not by pointing the attention to new digital gadgetry or the latest virtual museum with a 3D tour-de-force, but by simply stating that information is not yet at our fingertips. Coming from different angles nearly every speaker arrived at some point at the same conclusion, that this is more a question of mentality, culture and vision than of technology.

DSpace TRIAL AT ANU: INTERVIEW WITH DR BRIAN MOLINARI



Dr. Brian Molinari

¶ The Department of Education, Science and Training within the Australian government (<http://www.dest.gov.au/>) set up a two-year study in order to analyse and improve our national research infrastructure. Focusing on issues at a national level



naturally means that there may be a risk of duplicated effort at an institutional level, so we began a networking initiative to cover e-science, digital libraries, and repositories. It was clear that collaboration was necessary to best tackle these issues and several proposals were formulated in August 2003, focusing on different areas such as digital theses, middleware, a document repository, a broader repository.

The Australian Partnership for Sustainable Resources (APSR, <http://sts.anu.edu.au/aprs/>), modelled on the Australian Partnership for Advanced Computing (<http://www.apac.edu.au/>), is a partnership between the National Library of Australia (<http://www.nla.gov.au/>), the Universities of Sydney (<http://www.usyd.edu.au/>) and Queensland (<http://www.uq.edu.au/>), and the Australian National University (<http://www.anu.edu.au/>). APSR is funded for three years (2004–2007) and over this period will address sustainability issues such as file formats and standards. The role of the Australian National University (ANU) within this partnership is to run a DSpace (<http://www.dspace.org/>) test-bed project, which will identify issues at the consortium level that will then be tested at university level.

My own background is in computer science with a focus on teaching and learning technologies. DSpace was chosen for several reasons: first, an Open Source solution was a requirement – there was simply not enough money to develop a bespoke technology; secondly, DSpace is particularly appropriate to our needs and, finally, I personally understood this technology and was satisfied that it was the best solution. We are implementing this DSpace prototype partly as a learning exercise.

Requirements of the APSR system were garnered from teaching and research groups on campus, meaning that it is user- rather than document-centric.⁴⁷ It was also important to reflect the differ-

ent needs of different user groups across campus; for instance, the School of Music may need resources to be made available in various formats, including audio, and Art History has image collections. It must be borne in mind, however, that many of the valuable learning resources held in universities are not yet digitised – the accessibility of high-quality learning collections through DSpace may well drive the digitisation of other collections in the long term.

We developed a strategy to accommodate all of the needs of users at an institutional level, which will be put into practice at ANU as a precursor to APSR, developing and providing the framework to share this work with other institutions. Our long-term plan is to provide the facility to run a federated search across all resources held across all geographical locations. In order to achieve this ideal, it will be necessary to resolve the tensions between what can be achieved institutionally and generalising this model for national access. It is very important to us that the materials are openly accessible to all, not just researchers at ANU and making research materials open and available has been our guiding theme throughout the project.

In terms of implementing this solution we had to tackle the dilemma of identifying and breaking down specific yearly tasks and goals, on a year-by-year basis. The current ePrints service at ANU is relatively well known. We will maintain this resource, but implemented through DSpace. We have already tried transferring the material into the new system and it is working without error in a test environment. We hope to use the DSpace platform to enable us to converge earlier services. Whilst we have already achieved this with ePrints, there is still much work to be done to fulfil our aims for the long term.

More information about APSR and its aims can be found from our Web site at <http://sts.anu.edu.au/aprs/>

ISKO 8 CONFERENCE REPORT

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The Eighth International Conference of the International Society for Knowledge Organization took place on 13–16 July 2004, at University College London. The Conference was hosted by the School of Library, Archive & Information Studies (<http://www.ucl.ac.uk/slais/>), and its theme this year was ‘Knowledge organisation and the global information society’. Over 100 delegates from Europe, North America, Africa and Asia gathered to listen to approximately 60 papers on a variety of knowledge organisation themes.

The keynote address was given by Clifford Lynch, Director of the Coalition for Networked Information (<http://www.cni.org/>), who gave a compelling speech on a range of topics related to knowledge organisation in a technological environment to an enthusiastic and appreciative audience.

The main conference programme was divided into a number of themes, including theoretical foundations of knowledge organisation, linguistic and cultural approaches, artificial intelligence and knowledge representation, and applications of knowledge organisation. Individual sessions also dealt with knowledge organisation of non-textual media, problems of specific subject fields, the use of thesauri, and recent developments in the large systems of classification.

⁴⁷ This approach is covered by solutions such as ePrints.



Noticeable themes pervading the conference papers this year included information retrieval from the World Wide Web,⁴⁸ automatic indexing (papers by Carol Bean, Fidelia Ibekwe-San Juan & Eric San Juan, Iolo Jones, Chew-Hung Lee et al., Jin-Cheon Na *et al.*, Shiyao Ou *et al.*, and Diane Vizine-Goetz), the use of linguistic analysis and other language-related issues in knowledge organisation (Rebecca Green & Lydia Fraser, Barbara Kwasnik & You-Lee Chen, Daniel O'Keefe, Graciela Rosemblat, and Matjaz Zalokar) and, perhaps not surprisingly in London, the use of facet analysis in indexing and retrieval. This was in addition to the main session on the faceted approach with offerings delivered by Ceri Binding representing the FACET project at the University of Glamorgan (http://www.glam.ac.uk/soc/research/hypermedia/facet_proj/), Vanda Broughton, speaking about the FATKS project at University College London (<http://www.ucl.ac.uk/fatks/>), and Kathryn LaBarre looking at instances of faceted classification on the Web. There were strong advocates of faceted classification in other sessions, such as Grant Campbell's paper on information access to gay and lesbian literature, and a presentation on database management for faceted schemes from Aida Slavic & Ines Cordeiro.

There was a strong emphasis on user needs and how these affected knowledge organisation, whether arising from political correctness, user behaviour in searching, or the importance of matching indexer activity to end-user demand. Examples of papers in this area include Jens Erik Mai (on the theory of indexing), Terence Smith & Marcia Zeng (semantic tools for undergraduate teaching), Hur-Li Lee & Jennifer Clyde (undergraduate searching patterns), Ali Shiri & Crawford Revie (end-user interaction with thesauri), Anita Coleman (information seeking behaviour of engineering students), papers by Wouter Schallier and Danielle Miller on search interfaces, and a selection of items on the needs of specific communities from

Grant Campbell (gay community), Jonathan Furner & Anthony Dunbar (mixed race community) and Chern Li Liew (Maori cultural heritage).

Full details of the papers, abstracts and PowerPoint presentations can be found on the Conference Web site at: <http://www.ucl.ac.uk/isko2004/programme.htm>. The complete conference papers are also available as a printed volume: McIlwaine, I. C. (ed.), "Advances in knowledge organization" in *Knowledge organization and the global information society*, vol. 9, July 2004, Ergon Verlag.

Instead of the usual panel session reviewing the main themes of the conference, the concluding session consisted of a survey of knowledge organisation past, present and future. Martin van der Walt considered the development of KO systems from ancient times, and identified trends in the recent history of systems: the move towards standardisation; a shift towards universal tools and the convergence of practice; the increasing dependence on automation and the consequent decline in intellectual input; a preference for indexing (word based) over classification (systematic); the importance of faceted techniques; and an increasing need for specificity in indexing. Rebecca Green's masterly statistical analysis of recent papers in KO identified the changing trends in the discipline at the present time; she found that topics currently declining in interest included theoretical foundations, the construction and maintenance of individual systems, and the problems of KO in particular subject areas, and that all of these aspects had suffered a drop in research publications. Topics of increasing interest included automatic language processing, multilinguality, the problems of non-book materials, queries and searching in online systems, and, perhaps surprisingly, bibliographic control. Of these, the last three areas were the fastest growing. The session ended with Joe Tennis's speculations about the future of KO; he remained assured that

knowledge organisation would continue to be of relevance in the machine age, and that the intellectual foundations of the discipline would still be of importance.

On the last afternoon of the conference we were joined by two honoured guests, Eric Coates and Jack Mills, pioneers of UK classification theory in the 20th century, and now both well into their eighties, but still working on classification on a daily basis. Their presence allowed the taking of a historic group photograph featuring the editors of the Broad System of Ordering, the Bliss Bibliographic Classification (BC2), the Dewey Decimal Classification, and the Universal Decimal Classification.

The social aspects of the conference should not be overlooked. Despite the construction work that seems to be a permanent feature of life at UCL, delegates enjoyed the historic aspects of University College, one eminent US librarian remarking on the 'wonderful ambience' of the place, something usually overlooked by those of us who spend every day there. The older parts of the College accommodated the main conference programme, and the conference dinner was preceded by drinks on the Portico (known to a wider audience for its convincing portrayal of the British Museum in *The Mummy Returns*). Overall the conference was a wonderful opportunity to renew old acquaintances, make new friendships, and to forge new research collaborations.⁴⁹

⁴⁸ For more on Information Retrieval, see DigiCULT's upcoming *Technology Watch Report 3*, due in late 2004.

⁴⁹ There was a particular feeling among the British participants that there should be a more active KO group in the UK. If you agree with this feeling, please get in touch by emailing v.broughton@ucl.ac.uk and perhaps a community can be formed to maintain consideration of these issues into the future.



ON THE RADAR: eCULTURE EXPERIENCES

AN INTERVIEW WITH JOHN PEREIRA, SALZBURG RESEARCH, AUSTRIA

([HTTP://WWW.SALZBURGRESEARCH.AT](http://www.salzburgresearch.at))

ECULTURE HORIZONS: FROM DIGITISATION TO CREATING CULTURAL EXPERIENCES

The upcoming issue of *Ariadne* will include a report on this year's Salzburg Research symposium 'eCulture Horizons: From Digitisation to Creating Cultural Experiences', held in Salzburg from 27-28 September 2004. Organised by the eCulture Group of Salzburg Research, the event represents the annual gathering of leading thinkers in Salzburg to tackle specific themes in the area of research and technology development for the cultural heritage application field. This year's symposium provided the audience with a fascinating view on the transition from digitisation to eCulture experiences.

ESYMPOSIUM 2004 HIGHLIGHTS

Marc Federman, Chief Strategist of the McLuhan Program in Culture and Technology of the University of Toronto⁵⁰, as keynote speaker drew the audience's attention to his observations on what he called the rise of an ephemeral culture.

Gail Durbin, head of the Victoria and Albert's On-Line Museum⁵¹, presented the museum's ongoing efforts to place visitors at the centre of a creative and meaningful museum experience.

Abdelaziz Abid and **Shinji Matsumoto** from UNESCO⁵² encouraged the audience to exploit the organisation's Charters and guidelines in the promotion of digital preservation at the national and regional level. This tied in excellently with the fact that many partners in the MINERVA Europe initiative, in particular from the new EU member states, used the symposium as an opportunity to meet and exchange opinions on digitisation practices.

The presentations and workshops looked at how cultural institutions can better plan, manage and finance digitisation projects, and how to take the next step towards creating meaningful cultural experiences.

Along with developments towards a theoretical framework for eCulture experiences, the symposium showcased applications at the leading edge of today's eCulture technologies such as the Semantic Web, augmented reality, and novel adaptive interfaces.

LINKS

The complete eSymposium 2004 event report will be published in *Ariadne*, Issue 41, <http://www.ariadne.ac.uk/>

eCulture Symposium Web site: <http://eculture.salzburgresearch.at/>

John Pereira discusses the rationale behind this symposium.

This is now the second eSymposium event organised by Salzburg Research. Can you briefly explain the motivation behind the launch of this initiative, and why you emphasise the theme cultural experiences?

Well, first of all, Salzburg Research is a research and technology development company that has a track record in the field of cultural heritage applications. In the field of RTD, we see an emerging research agenda that concentrates on smart applications able to handle increasingly complex digital environments and information resources. These applications, environments and resources will morph into a digital heritage space.

This development is partially in response to the recognition of the evolutionary process being 'lived through' by the heritage institutions themselves, at least those who have succeeded in providing access to digitised or born-digital resources.

These larger institutions as well as the major cultural networks have begun to understand that 'access' alone is not enough, maybe even the wrong mind-set and approach being applied. Students & teachers and lifelong learners – i.e. everybody with an interest in cultural history, the

⁵⁰ See: <http://www.mcluhan.utoronto.ca/>

⁵¹ See: <http://www.vam.ac.uk/>

⁵² See: <http://portal.unesco.org/>



arts, etc. – do not really benefit from simply accessing online collections. There is no ‘real’ experience in gazing at images online – most of us still prefer to visit an art exhibition with a friend – and there is also little mediation of cultural knowledge when reading the descriptive metadata attached to images, etc.

However, there are millions of Euros being spent on digitising heritage resources, partly in response to a mix of educational and commercial ideas that may not deliver, because the next step towards creating engaging cultural experiences with these resources is not being considered.

If we stick for a moment with the RTD agenda you mentioned, where is this heading, and have you been able to identify specific goals yet?

Generally, the goals are to drive technologies that drive cultural industries as well as enhanced services of the cultural and memory organisations. However, we have entered the age of the experience economy, as described by the marketing experts Pine & Gilmore. Consumers today take service for granted; what they are seeking are unique, meaningful and memorable experiences. So the next wave in applications for digital culture and heritage should bring considerable enhancements in interactions that are engaging and immersive: you experience something, you achieve something, you learn something. So it’s about the individual experience, achievement, even transformation through inspiration. Of course, experiences are often shared within groups, so novel applications will also include, for example, virtual game-like environments involving like-minded users.

How does this relate to the vision of Ambient intelligence that strongly underpins the Information Society Technologies programme?

Right, a major challenge for the cultural and heritage organisations is to realise or, rather, strongly connect to this vision, and make it work for them and their customers. The necessary massive distributed and embedded computing, smart networked devices, novel interfaces, positioning and context-awareness technologies, etc. will over the coming years be delivered by the industry. However, when it comes to the experiences I mentioned, new forms of collaboration and true interdisciplinary efforts will be needed. The key word here is experience prototyping, and cultural hotspots such as historic city centres, museums, science centres or heritage sites should be strongly involved in this.

Finally, what can we look forward to at next year’s symposium?

Let us first not forget that many of the concepts we have discussed today are seldom heard of in the day-to-day activities of heritage institutions and, given the very experimental nature of most of these technologies demonstrated, rightly so. Therefore, next year’s event will continue to look at promising technologies that are refining our research agenda, but we will also look at near-to-market applications, to identify the cultural heritage sector’s unique transformation needs so as to ensure early take-up.

Also, to help us understand the impact of the emerging digital heritage space there is a need to extend the application backdrop of our investigation, so you can expect demonstrations and application scenarios of cultural hotspots with tourism and learning add-ons.

From the perspective of Salzburg Research, we would also like to see sessions dedicated to cultural experience prototyping as well as new architectures that support the morphing of applications, environments and cultural resources into an intelligent digital space.

TWO GUIDES TO DIGITISATION: AN ARCHIVAL PERSPECTIVE

The NINCH Guide to Good Practice in the Digital Representation and Management of Cultural Heritage Materials, 2003, available at <http://www.nyu.edu/its/humanities/ninchguide/>

Technical Guidelines for Digital Content Creation Programmes, working draft version 0.06, 2003, available at <http://www.minervaeurope.org>

Michael Moss, a Research Professor in Archival Studies based at the Humanities Advanced Technology and Information Institute (<http://www.hatii.arts.gla.ac.uk/>) at the University of Glasgow, presents his reaction to two digitisation guides for the heritage sector and the future of archivists in the digital information age.⁵³

It is difficult to know how to report on these two guides – manuals of which every archivist in North America and Europe should be aware. It is like being asked to say which car owner’s handbook is the best. I was recently being driven in heavy rain by my brother in my sister’s car in deluging rain in southwest Scotland when we followed a lorry into a flood. The car stalled and I plunged into the flood and pushed it out. ‘Where is the handbook?’ my brother demanded, ‘What does it say about inundation?’ As inventive as we could be in the use of the index, we could, of course, find nothing, except to consult a recognised

⁵³ This review was delivered at the ICA Congress in Vienna in the digitisation workshop. For more information about this event, see <http://www.wien2004.ica.org>, and to search DigiCULT’s database of future cultural and scientific heritage events, please visit <http://www.digicult.info/pages/events.php>. It should be emphasised that, although the NINCH guide was authored in HATII, Professor Moss had no connection with it.



car dealer, which was of little or no use to us, stuck on a forest track miles from anywhere and with no signal on our mobile telephones, the limitation of the digital. My sister had to take a lift in the offending lorry to a neighbouring cottage and resort to the analogue. There is a lesson here. When help arrived, the motor mechanic shook his head and said, 'Oh dear, this is going to be expensive, cam shaft's gone, I shouldn't wonder'. He later turned out to be a British security services expert in retrieving bodies and objects (including documents) from deep water!

One thing that distinguishes these two essential manuals is the continual reminder in the NINCH guide that every choice involves costs of the 'Good heavens, I had no idea it would be so expensive' variety, just like getting your cam shafts fixed. For archivists accustomed to tight budgets and accompanying scrimping and saving, these are salutary warnings. What neither guide does, probably because it was not in their brief, is to address the question of why we should drive into the flood in the first place and incur all this expense. It is a poor excuse to say we were simply following someone else. This in a sense is what both manuals set out to do either implicitly or explicitly and I would recommend that they be consulted by every archivist before being seduced into digitisation projects.

We do well to remind ourselves that these publications were not addressed to archivists alone but to all those wishing to make analogue assets from the heritage community in the widest sense available on the Web, largely to tap into its supposed effectiveness as a distribution channel. This is a worthy goal but raises important, if unspoken, issues about the role of archivists as information providers. Although both guides confuse online catalogues with the creation of digital surrogates from analogue assets, neither confronts the question of how mediation is to be achieved. Curators of heritage assets differ in their approach

in the analogue world. Museum curators, because their main means of distribution has been through exhibitions, are well versed in the mediation of knowledge and are comfortable with the use of experts in helping to write catalogues and selecting objects for inclusion. Librarians are aware of what is involved in the privileging (some might call it censorship) of their holdings, although they are not generally as good at retaining audit trails of their decision making. You have only to think of Library of Congress Subject Headings (LCSH),⁵⁴ which are regularly updated and amplified without any record being kept of the dynamics of the process.

Archivists are, on the whole, uncomfortable with such overt mediation of individual objects in their care but it is implicit in everything they do from appraisal to cataloguing and curation. Under withering criticism they have tried (not very satisfactorily in my view) to justify appraisal techniques where they consider themselves to be the sole arbiters, a defence as they see it against the 'keep everything' mentality. If archivists move beyond the appraisal and cataloguing of objects in their custody, where there are problems enough, they can become disconcerted and disorientated. Some archival commentators, such as Sir Hilary Jenkinson, would regard such mediation as *ultra vires*, not what archivists are here to do.⁵⁵ They would argue that such mediation through the further selection of objects can raise questions about their fiduciary role and must inevitably involve user constituencies, taking archivists into the wider community of heritage curators. I have no problem with this but such a change in professional behaviour needs to be underpinned by debate and discussion before our metaphorical engines seize up under the digital flood and resources are diverted from collecting and cataloguing. The question is: do archivists use the power of the Internet as a distribution network to provide access by means of improved deeper catalogues (our traditional analogue role) or do we follow

the digitisation lorry or seek to find hybrids whereby digital assets are linked to online finding aids? All of these approaches are more demanding and expensive than analogue equivalents.

There are other issues bound up with all this which neither set of guidelines attempts to resolve, although the NINCH guide does hint that external funding streams may dictate which assets are digitised. Until now few projects have been a digital equivalent of analogue microfilming – a conservation perspective, largely because digital preservation is still an unknown quantity. There are some notable exceptions, such as the Prerogative Court of Canterbury wills project at the United Kingdom National Archives (<http://www.documentsonline.nationalarchives.gov.uk/>) and ScottishDocuments online (Scottish testaments and inventories) at the National Archives of Scotland (<http://www.scotishdocuments.com>).⁵⁶ Most projects address wider agendas, usually educational, and are linked to government programmes often to extend participation in the use of heritage assets. This in turn demands the selection and digitisation of assets of interest to a diverse customer base, most commonly in the world of archives in western cultures, genealogists, and to a lesser extent those interested in local history and the Nazi regime. This is why the two United Kingdom wills projects have been funded. The pursuit of such agendas does raise issues about just what it is that archivists do that distinguishes them from others engaged in the curation of heritage assets.

Just as problematic for archivists is the exposure of archival assets by enthusiasts across the Internet, which observe few if any of the procedures and protocols rec-

⁵⁴ More information and resources can be found at <http://www.loc.gov/catdir/cpsol/cpsol.html#subjects>

⁵⁵ More on Sir Hilary Jenkinson can be discovered from <http://www.archiveshub.ac.uk/news/hjenkinson.html>

⁵⁶ Interestingly the content of neither of these projects is completely exposed to the Internet as both guides recommend, making for less elaborate metadata and lower costs but limited distribution. The National Archives (<http://www.nationalarchives.gov.uk>) is understood to be considering such an advance.



ommended in these manuals. Retrieval of content may be sub-optimal but digital assets can be discovered by the ingenious searcher in much the same way that uncatalogued or poorly catalogued documents can be retrieved in the analogue. Such exposure will continue and multiply and rightly so. Curators of heritage assets will be powerless to stop it even if there has been an apparent breach of copyright. They should encourage it, but it is doubtful if they could insist on all the bells and whistles recommended by the two digitisation manuals. Rather we should view the exposure of assets on the Web in much the same way as publishing in the analogue domain: a continuum from the popular to the fully referenced 'scholarly' work. As we know, the content of the popular can be just as rigorous as the scholarly but lacks its critical apparatus. What we must not do is deter the enthusiast from participating in what for the genealogist and local historian is truly a revolution. For all our ISAD(G)s, ISAARs and EADs, we are not in the business of creating deterministic universes – if we think we are we have not paid enough attention to our critics.

However, for archivists and librarians (and to a lesser extent museum curators), there is a good deal more to it than this. Although we might resist following the lorry in the creation of digital surrogates and all that entails, we cannot avoid it when contemplating the future collection of traditional assets. Both guides shy away from stating explicitly that, like it or not, this is the way the world is going to be. Nonetheless they can both be read as guides as to how to manage *all* digital assets from creation to curation. This presents archivists with formidable challenges, not just in how to address the question but perhaps more fundamentally in where their profession sits, if it sits at all, in the information domain. When it comes to digital preservation, neither manual says 'if in doubt, call an archivist'. Digital creation and curation is not something peculiar to archivists. The old simplistic argument that archivists dealt in unique objects and librarians

dealt in multiple copies no longer holds any water. Archivists have to address the fundamental question: 'What do archivists bring to the digital table?' For my money it is about fiduciary responsibility, which we will come to share with librarians (like it or not) and preserving a balanced historical record as far as we are able (which emphatically we will not share with librarians). I believe that as a consequence we will have to give up our cherished role of having the final say in appraisal and that the supposed continuum between records management, with its implicit risk assessment, is no longer tenable. In the light of what has emerged about government record-keeping in the wake of 9/11 and the war in Iraq these are vital questions which the profession must address or it will be side-lined. If we honestly believe that what we do is intrinsically bound up with accountability, we should be telling the world that if you entrust unique objects to archivists we can guarantee their authenticity and reliability as evidence.

In doing so in the digital domain, the costs of the digital, explicit in the NINCH guide and implicit in MINERVA's document, take archivists into a totally new ball game. Instead of playing 'catch as catch can', we have not only to buy racquets but a great deal of expensive gear. Archivists, with the exception of those who work in well-endowed library manuscript departments, have rarely been able to afford the luxury of cataloguing and indexing individual objects and yet that is what the digital demands. Digital objects enjoy an independence that most analogue objects do not. They do not easily have an association with another object. More often than not in the analogue world documents were associated with several objects, and this was resolved by binding them together, making copies or in some cases by elaborate cross-referencing which was nearly always subject to external audit. This can only be resolved in the digital world by the careful construction of metadata. Creators will only be persuaded to follow such guidelines if they perceive that

there is genuine added value from their perspective, or there are penalties in not doing it, or both. Since penalties consequent on either legislation or regulation are differential in their impact, the principal inducement has to be value-added. This may sound easy, but in practice demands considerable business process re-engineering (or, in other words, in the way we do things) not just externally but within the archive and other information professions themselves. As I have already hinted, this demands a clear articulation of the core values of the archive profession.

Unless this happens, I am convinced that archivists will be forced by budgetary pressures to align themselves much more closely with other information providers. Our death knell is sounded at the end of both these manuals when they consider long-term curation. This is an unknown, as they both rightly point out. The only thing that is known is that it will be expensive and, as we all know, expense means collaboration if not forced mergers with librarians. Here, I believe, we have a great deal to offer which distances us from mediation and takes us back to our core value of the fiduciary curation of historical memory, albeit drawn far more widely thanks to developments in the humanist and social sciences. The word archives is redolent of western values; its etymology speaks of holding precious, even sacred, documents in an ark or strong box, surrounded by processes built up over generations that guaranteed that the contents could not have been tampered with and were what they purported to be. I have no doubt that all societies have a need to develop systems that ensure the unambiguous credentials of their memory. This for me is the paramount duty of the archivist, placing them in a quasi-judicial role, which those in 'free societies' who question their appraisal criteria need to understand. We must defend it, articulate it, and debate it so that we can earn a seat at the virtual table and not simply spend our time following lorries into floods and repeatedly having to get our legs wet and our cam shafts fixed at great expense.

INTERNATIONAL SEMINAR ON DIGITISATION: EXPERIENCE AND TECHNOLOGY

JOSÉ BORBINHA,
NATIONAL LIBRARY OF PORTUGAL

The International Seminar on Digitisation, held at the National Library of Portugal (<http://www.bn.pt/>) in Lisbon on 11 May 2004, was promoted as an initiative of the MINERVA project. MINERVA is 'a network of Member States' Ministries to discuss, correlate and harmonise activities carried out in digitisation of cultural and scientific content for creating an agreed European common platform, recommendations and guidelines about digitisation, metadata, long-term accessibility and preservation'.⁵⁷

This Seminar (<http://bnd.bn.pt/agenda/sdigit/>) was organised by the National Library of Portugal (a partner of MINERVA-PLUS, a project associated with MINERVA), the General Office of the Ministry of Culture (the Portuguese National Representative in MINERVA), and the Portuguese Operational Programme for Culture.

The main purpose of the event was to promote the idea that digitisation of cultural and scientific artefacts is both desirable and useful for the future of the sector. This highly successful event involved 250 participants (the maximum capacity of the venue – as the requests for registration exceeded 500!). The audience was composed of representatives of libraries, museums and archives from all over Portugal and from several other European institutions, in addition to members of Portuguese governmental bodies and other relevant institutions and private companies.

The programme included the following presentations:

- Digitisation of Cultural Artefacts – Claude Poliart (European Commission – DG Information Society)
- The European Project MINERVA – Rossella Caffo (Ministero per i Beni e le Attività Culturali, Italia), Pier Giacomo Sola (Consortium Amitié)
- Digitisation in Bulgaria: a look from inside and outside – Milena Dobrova (KT-DigiCult-BG)
- Project EnrichUK (United Kingdom) – Peter Dowdell (UKOLN, the UK Office for Library and Information Networking)
- The Digitisation Centre of the Göttingen University (Germany) – Andrea Rapp (Göttinger Digitalisierungszentrum)
- The TASI Service (United Kingdom) – Edmund I. Bremner (TASI – Technical Advisory Service for Images – University of Bristol)
- The National Digital Library Initiative – José Borbinha (National Library of Portugal)
- Digitisation of the National Museological Patrimony: an integrated project – Paulo Ferreira da Costa (Portuguese Institute for Museums)
- Parliamentary Debates Online – Rui Costa (Portuguese Parliament), Joaquim Sousa Pinto (University of Aveiro)
- Project for the Digitisation of the Archive of Images of the IPCR – Rui Ferreira da Silva (Portuguese Institute for Preservation)
- Project PrIM – Maria Emília Melo, Dr Frederico Rosa (Humberto Delgado Foundation)
- Digital Archive of Portuguese Art – Maria Inês Cordeiro (Calouste Gulbenkian Foundation)
- Citizenship Contents in the Internet – Alfredo Caldeira (Mário Soares Foundation)

The seminar received the special support of many other organisations, with a special acknowledgement from the British Council, the Goethe-Institut, FCCN (the Portuguese academic Internet Provider) and BAD (the Portuguese Association of Librarians, Archivists and Documentalists).

The slides of these wide-ranging presentations are available online from the Portuguese and English Web site at <http://bnd.bn.pt/agenda/sdigit/programa-en.html>. Making the most of modern technology to reach as many people as possible, the seminar was transmitted over the Internet in real time, where it reached a wide audience. The sessions were also recorded, which will result in a DVD being made available (it is currently in production). This DVD will include the recordings and slides of the presentations in addition to complementary material developed by the National Library of Portugal, comprising examples of digitised works and the tools developed as part of the scope of the National Digital Library Initiative (<http://bnd.bn.pt>). Most of this technology is being released by the National Library of Portugal and its partners as Open Source tools to benefit the sector as much as possible.

⁵⁷ See MINERVA's Web site at <http://www.minervaeurope.org/>

WORKSHOP ON CULTURE AND TECHNOLOGY CONFERENCE REPORT

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PISTOIA WORKSHOP ON CULTURE AND TECHNOLOGY, FATTORIA DI CELLE, PISTOIA, 3-4 APRIL 2004

The European Workshop on Culture and Technology aimed to provide delegates from the EVA Florence 2004⁵⁸ conference with an opportunity to further explore some of the major issues surrounding 3D digitisation and distribution. Over the course of two days, group discussions and workshop activities revealed that more work must be done on fundamental research and on the establishment of industry standards. Industry standards will be especially crucial with regards to hardware for high-quality digitisation, software for image analysis, viewers with specific functions, formats, compression algorithms and colour accuracy. The eradication of 'soft barriers' and the commitment of stakeholders outside the cultural heritage sector were also seen as major hurdles to be overcome. The workshop has led directly to the formation of new co-operative efforts between many of the workshop participants.

Two main levels of current activity were identified throughout the course of the workshop:

- Development and research into hardware, software, conservation, history of art, restoration and preservation of 3D virtual models.
- Awareness activities to disseminate the

results of research activities. The majority of participants at this workshop are involved in this area of activity.

INTRODUCTION

Sponsored by Fondazione Cassa di Risparmio di Pistoia e Pescia, the European Workshop on Culture and Technology: 3D Content Digitisation and Distribution was held at Fattoria di Celle, Pistoia (<http://www.provincia.pistoia.it/CULTURA/FattoriaCelle/Celle.htm>), from 3-4 April 2004. This stunning open-air museum of modern art is set on a hill overlooking the Tuscan plain outside Pistoia and was generously provided as the setting for the workshop by Dr Giuliano Gori. Gori began developing his outdoor collection of installation art at Fattoria di Celle in the early 1980s and now has over 60 completed works by selected international artists.

The workshop was chaired by Professor Vito Cappellini, Dipartimento di Elettronica e Telecomunicazioni Università di Firenze (<http://www.det.unifi.it/>) and co-Chairman for EVA 2004 Florence, and Claude Poliart, Principal Administrator DG INFSO E5 Preservation and Enhancement of Cultural Heritage, European Commission. The goal of the workshop was to discuss the state of the art and to identify future trends in the field of 3D digitisation and distribution. Representatives from several European projects attended the workshop including BRICKS,⁵⁹ CALIMERA,⁶⁰ ERPANET,⁶¹ EPOCH,⁶² MINERVA,⁶³ ORION,⁶⁴ SCULPTEUR,⁶⁵ ARTISTE,⁶⁶ and CRISATEL.⁶⁷ The workshop opened with general discussions followed by a breakout session and concluded with feedback from the breakout groups.

Cappellini opened the workshop by stressing the important role that information technology plays in improving the understanding, preservation and dissemination of cultural heritage information. Cappellini anticipated that this meeting would lead to new collaborations, and indeed stated that this was a key goal. He insisted that co-operation across sectors and disciplines would be necessary to push 3D digitisation and distribution forward in the cultural heritage sector.

Poliart drew attention to the fact that cultural heritage objectives will not be covered by the third Call of the Sixth Framework Programme. The Commission has started a consultation process to update the 2005-2006 work programme and Poliart described a questionnaire that has been developed to help reinforce the commitment to cultural heritage in future Calls. The fourth Call will take place in early 2005 and the results of the questionnaire will contribute to shaping the research agenda. The questionnaire is available on the European Commission Web site.⁶⁸

58 The Electronic Imaging & the Visual Arts (EVA) 2004 conference was held at the Palazzo degli Affari in Florence from 29 March to 2 April 2004 <http://www.eva-conferences.com/>

59 Building Resources for Integrated Cultural Knowledge Services (BRICKS). For a project description, see <http://www.minervaeurope.org/events/parma/poster/VIpq.pdf>

60 Cultural Applications: Local Institutions Mediating Electronic Resource Access (CALIMERA). For a project description, see <http://www.minervaeurope.org/events/parma/poster/VIpq.pdf>

61 Electronic Resource Preservation and Access Network (ERPANET) <http://www.erpanet.org>

62 Excellence in Processing Open Cultural Heritage (EPOCH). For a project description, see <http://www.minervaeurope.org/events/parma/poster/VIpq.pdf>

63 Ministerial Network for Valorising Activities in Digitisation Plus (MINERVA Plus) <http://www.minervaeurope.org/>

64 Object Rich Information Network (ORION) <http://www.orion-net.org/index.asp>

65 SCULPTEUR (Semantic and content-based multimedia exploitation for European benefit) <http://www.sculpteurweb.org/>

66 ARTISTE <http://www.artisteweb.org/>

67 Conservation Restoration Innovation Systems for Image Capture and Digital Archiving to Enhance Training Education and Lifelong Learning <http://www.crisatel.jussieu.fr/>

68 Questionnaire <http://www.cordis.lu/ist/workprogramme/wp0506-consultation.htm>



GENERAL DISCUSSIONS

Participants were invited to offer any general comments with regard to the workshop theme and objectives. They identified a wide range of issues that will affect the progress of 3D digitisation and distribution in the cultural heritage sector. The key issues are described below.

Networks of Excellence

Networks of Excellence (NoEs) are 'designed to strengthen scientific and technological excellence on a particular research topic. They aim to overcome the fragmentation of European research by:

- networking together the critical mass of resources;
- networking the expertise needed to provide European leadership.

NoEs will also have a mandate to spread excellence beyond the boundaries of their partnership'.⁶⁹

All of the participants felt that Networks of Excellence for research on 3D modelling and free distribution for research results would be essential for the cultural heritage sector to make the best use of established and emerging 3D tech-

nology. It was also suggested that close collaboration with the Network of Excellence for virtual reality would be of great benefit.

COLLABORATION AND COOPERATION

Greater collaboration and co-operation is needed with those who are leading research activities for 3D digitisation and distribution. The industrial design, health and military sectors were identified as leaders in this field. The Cultural Heritage sector has the chance of playing a more significant role in the future, developing 3D digitisation of museum objects. Increased communication between content creators and service providers will be useful in developing the sector.

USABILITY

By considering the external users and diffusion 'scenario', participants felt that 3D virtual models should generate a new understanding or create new knowledge about the items they represent to justify the expenditure associated with their creation. Experiencing very high-quality ('true') 3D is achieved only through the use of specialised display technologies. Currently, few end-users would have the necessary display technology to view true

3D virtual models. European efforts to date have focused largely on creating the effect of 3D on a 2D computer screen. This is known as 2.5D. Many participants questioned whether providing 'true' 3D would be any more beneficial to end-users than 2.5D. What added value can 'true' 3D virtual models offer compared with the added expenses their generation and display would incur? Participants also argued that, until attractive and easy-to-use applications exist, the demand by end-users for 'true' 3D or even 2.5D virtual models in the cultural heritage sector would remain low.


INTELLECTUAL PROPERTY RIGHTS (IPR)

It was generally agreed that safeguarding IPR for 3D virtual models would be challenging due to their complex nature and their wide range of potential uses and end-users. Producing suitable licensing agreements to cover all possible uses and users will require greater co-operation between the varied stakeholders. However, at the moment, while IPR watermarking techniques are available for 2D objects, further research is required to define efficient 3D watermarking techniques. This IPR investigation can be developed in parallel with the research on 3D modelling and digitisation.

STANDARDS

All participants agreed that industry standards are needed with regard to formats, compression algorithms and colour accuracy. Adhering to technical standards will be of vital importance in facilitating the interoperability, reusability and long-term preservation of 3D virtual models generated by the cultural heritage sector. Standard policies and guidelines must be drafted to assist the cultural heritage sector in their 3D virtual modelling efforts. However, it was recognised that it is difficult to define standards when the technology is still developing. Many different high-quality technical models must be pro-

⁶⁹ Definition of Network Of Excellence from CORDIS FP6 Instruments http://www.cordis.lu/fp6/instr_noe.htm



duced and investigated to determine which offers the most promise for acceptance as a standard for facilitating widespread use and long-term preservation.

BREAKOUT SESSION

Following these general discussions, a breakout session allowed participants to explore 3D digitisation and distribution with regard to three specific topics: methodology and technology led by David Dawson, MINERVA and the Museums, Libraries and Archives Council (MLA: <http://www.mla.gov.uk/>); content and users led by David Clarke, ORION and National Museums of Scotland (<http://www.nms.ac.uk>), and business models led by Dario Avallone, BRICKS and Engineering, Ingegneria Informatica SpA (<http://www.eng.it/>). The results of the breakout session are outlined below.

Methodology and Technology

Existing hardware and software solutions are not adequate. The group felt that a thorough examination of existing tools should be undertaken to identify what works and what does not.⁷⁰ The group cited the concept of a 3D network of excellence – which was also mentioned during the opening session – as something that could greatly assist in this task.

Participants identified several ‘soft barriers’ that would perhaps be more difficult to overcome than any technical problems in the creation and distribution of 3D virtual models in the cultural heritage sector. These ‘soft barriers’ reflect perceptions regarding the overall quality of 3D virtual models, a questioning of the value that 3D virtual models can offer the cultural heritage sector, and lack of specialised technical skills among cultural heritage staff. To help identify the value of 3D virtual models versus the costs associated with creating them (costs can vary from €10 to €4000 per image depending on quality), the group suggested that an evaluation

of user impact be carried out.⁷¹ The group acknowledged that the current costs of display technology might deter many from undertaking 3D digitisation activities. Even in Hollywood, where virtual reality and 3D have been hailed for years as ‘the next big thing’, little impact has been made. The video game market appears to have had the largest success with 3D digitisation and distribution.

The group believed that active curation of the 3D virtual model over its entire lifespan would be of vital importance. This would help to ensure continued accessibility, authenticity and reusability of the item. The application of appropriate metadata will also be essential to meet the needs of a variety of end-users as well as curation requirements.⁷²

Participants felt that the cultural heritage sector would benefit from improving and increasing communication and cooperation among all stakeholders. Indeed, this belief was reiterated throughout the discussions within each breakout group.

CONTENT AND USERS

Participants began by questioning whether end-users actually require 3D virtual models or if 2.5D is more than adequate for the general end-user of cultural heritage images. Apart from the ‘wow factor’, the group questioned the current value of 3D virtual models to the general user. The group were also doubtful whether the general user would have the necessary technology to access and view these 3D resources. It was felt that, until 3D digitisation and distribution becomes commonplace in society in general via television, mobile phones and film companies, the demand for 3D virtual models in the cultural heritage sector would remain low. The group also acknowledged that, as costs decreased in the technology for displaying 3D virtual models, the general public would increase their demand for such resources. Research into the development

of the Cultural Patrimony Domain was identified as important, especially regarding the implementation of a large repository for dissemination and commercial applications.

It was felt that 3D virtual models could be of the greatest benefit to the intermediate user at this point. For instance, the use of 3D virtual models in museums could potentially lead to increased efficiency in collections management activities. This is due to the fact that museums generate several images for any given object ranging from images for registration, loans, conservation and insurance purposes. One high-quality 3D virtual model could hypothetically replace all of these images and save the museum time and money.

The group cited the lack of industry standards as a major problem in the creation and distribution of 3D virtual models for the cultural heritage sector and saw this as an area where more research is required. The group also felt that more research into user needs would be necessary to ensure that adequate tools for capture, display and reuse could be developed.

BUSINESS MODELS

At present, 3D cultural heritage models are not being fully exploited for their business value. The end-user community is simply too limited. Before any real progress can be made regarding the commercial value of the digitisation and distribution of 3D cultural heritage models, the target audience must be broadened considerably. Economic sustainability for 3D virtual models was seen as key to their creation and use. To ensure this, the cultural heritage sector must look beyond the use for which the image was originally created and encourage reuse in other sectors.

⁷⁰ This is currently being developed in the SCULPTEUR Project <http://www.sculpteurweb.org/>

⁷¹ Work is being carried out at the Petrie Museum on this type of evaluation. <http://www.petrie.ucl.ac.uk/>

⁷² See ERPANET Preservation of Born-digital Art Workshop, also in this issue.



TE ARA – A DIGITAL ENCYCLOPEDIA ONLINE IN NEW ZEALAND

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The real business potential for the use of 3D cultural heritage models may lie in their use outside the cultural heritage sector. The group pointed to their potential use in the cultural tourism market and agreed that this may be an extremely lucrative market for 3D cultural heritage virtual models. For this market to be tapped, the cultural heritage sector must begin creating synergies with other disciplines. Like the others, this group felt that increased co-operation and improved communication between all stakeholders would be essential for the full business value of 3D cultural heritage models to be realised.

CONCLUSIONS

Over the course of the two days, the workshop highlighted that the challenges presented by 3D digitisation and distribution provide an opportunity to integrate previously disparate groups. Increased co-operation between the cultural heritage sector and other stakeholders will be key in the sustainable development of cultural heritage 3D digitisation and distribution. The workshop has led directly to new co-operative efforts between many of the participants. For example, MINERVA and BRICKS plan to work together in the near future. There are also plans to establish a Virtual Heritage Centre (VHC) in

Rome. Much work remains to be done on the establishment of industry standards with regard to formats, compression algorithms and colour accuracy. Collaboration with software and hardware developers will be crucial in this endeavour. Co-operative efforts will also be necessary for eradicating the 'soft barriers' identified as impeding the development of 3D digitisation and distribution among the cultural heritage sector. This workshop proved to be extremely valuable as a means of identifying the current state of the art and future trends in the field of 3D digitisation and distribution. As 3D technology advances, it will be essential that the lines of communication remain open between the various stakeholders. To that end, planning has already begun on the next European Workshop on Culture and Technology: 3D Content Digitisation and Distribution, to be held in the framework of EVA 2005 Florence.⁷³

THE VISION AND THE GOAL

Since July 2002, a team at the Ministry for Culture and Heritage in Wellington, New Zealand, has been engaged in the challenge of creating a new, born-digital, online Encyclopedia of New Zealand.

The project, dubbed 'Te Ara', Maori for 'the pathway', will run for about 10 years in total, publishing a comprehensive guide to the natural environment, history, culture, economics, institutions, peoples and social development of the country. An important feature of the encyclopedia will be its Maori content. The Web site, <http://www.TeAra.govt.nz/>, will go live in December 2004 (a public launch will take place in February 2005), with its first theme, New Zealanders, presenting 100 entries about the indigenous and immigrant groups making up the present-day New Zealand population. In addition, a series of overview entries, New Zealand in Brief, will provide succinct summaries of topics to be treated in greater detail in subsequent releases. Ultimately the site will include some 2,000 entries; about 2.5 mil-

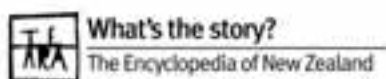
⁷³ For more details of this and other events, see DigiCULT's events database at <http://www.digicult.info/pages/events.php>

lion words in total, accompanied by up to 20,000 non-text illustrative resources.

The new project was launched following the successful reinvention of the *Dictionary of New Zealand Biography* in 2002 as a bilingual online resource (<http://www.dnzb.govt.nz/>), and encouraged by the popularity of the Ministry's <http://www.nzhistory.net.nz/> Web site. The Te Ara project is led by Jock Phillips, formerly Chief Historian for the Ministry's History Group (which commissions, manages and writes monographs on institutional and public history topics), and curator of the history exhibitions in New Zealand's highly successful national museum, Te Papa Tongarewa (<http://www.tepapa.govt.nz/>). A relatively small team of writers, editors, illustrations researchers and production staff has been recruited, to prepare some of the material and to commission and review content provided by external experts and other authors. While state-funded, this encyclopedia will not be a Soviet-style compendium of official information, but will draw on up-to-date and lively contributions from a wide range of writers and researchers.

THE TE ARA BRAND

While the term 'encyclopedia', however it is spelled (and there has been lively debate within the project about this), carries a connotation of seriousness and repute, this long word with its elastic orthography seemed unlikely to enthuse the youthful audience the project wanted to reach. The project sought a name that expressed some flavour of New Zealand including its Maori aspects, and that would be easy to remember and quick to type into a Web browser address bar. The name 'Te Ara', accompanied by the explanatory phrase 'Encyclopedia of New Zealand' and the tagline 'What's the story?', seemed to us to signal the significant Maori dimension to the project as well as a sense of Kiwi informality.



The new encyclopedia's brand. Variants of this visual design will be used throughout the Web site. © Te Ara, 2004

RESOURCES AND PARTNERSHIPS

Although Te Ara will have a core of text, it will be rich in other media. As it has been designed from scratch to take advantage of hypertext and the multimedia potential of the Web, it will include photographs and other images, sound, moving images, supplementary documents, graphs and maps. Users will have the choice of navigating through an entry via the text, or along a 'trail' of captioned images and other media.

By combining short essays with a variety of multimedia additions in an exciting, entertaining and instructive way, Te Ara will provide pathways to external digital collections in libraries, archives and museums around the country. While New Zealand's digital infrastructure is not yet in a position to provide a truly distributed solution, it is hoped that the project will encourage digitisation projects nationally.

The encyclopedia project team has been active in promoting the work of New Zealand's National Digital Forum (<http://ndf.natlib.govt.nz/>). The National Library of New Zealand (<http://www.natlib.govt.nz/>) will provide a repository for the high-resolution digital files on which Te Ara will draw to provide derivatives for online publication. This is a significant partnership, which recognises the role of the National Library as an appropriate and secure storehouse for the source materials from which further derivatives may be generated according to requirements that may develop over the course of the project.

The *Dictionary of New Zealand Biography* Web site will provide an external resource for the biographical component of the Te Ara Web site. Contextual captions

placing the biographies within the content of an encyclopedia entry and a thumbnail portrait will link to the full biography of the *Dictionary* site. Closer integration with Te Ara is a priority for the next stage of the project, when the *Dictionary's* commissioning of new biographies, currently in recess, will be revived and entries updated.



A mock-up of a typical entry home page for the new online encyclopedia. © Te Ara, 2004

PREPARING FOR THE FUTURE

Progressive publication online allows for the updating of entries and renewal of its design and presentation as circumstances allow. It will be a challenge for the site to remain fresh, up-to-date and novel to an increasingly critical audience. Access to the Web site will be free of charge. A print publication or publications may also be produced during the time-span currently allotted to the project.

Just as what can be achieved on the Internet today was inconceivable to all but a few seers eight years ago, it is immensely difficult to imagine what might be eight years ahead of us. However, the project has adopted open standards to underpin its development wherever possible, to allow for future extensibility. Content is kept separate from presentation aspects and source documents use XML markup throughout. The presentation layers are based on HTML templates and Cascading Style Sheets (CSS).

74 A. H. McLintock (ed.), *An Encyclopaedia of New Zealand*, 3 vols (Wellington: Government Printer, 1966).



The 1966 encyclopedia of New Zealand: now digitised and to be presented as part of Te Ara.



A Web page presenting content from the 1966 encyclopedia of New Zealand.

EMBRACING A PRECURSOR

New Zealand's previous government-funded encyclopedia was published in 1966.⁷⁴ It was an immediate success, a blockbuster in New Zealand publishing terms, and has never been reprinted or updated in any way. There has been no successor or anything approaching its scale or its reliability.

As Te Ara was committed to a publishing schedule that would mean the paradox of an only partial encyclopedia on the Web for a number of years, the 1966 compilation has been digitised and will be presented on the Te Ara site in its entirety, including its hundreds of fine black-and-white illustrations, with links to current articles added as they are published. In conjunction with the New Zealand Electronic Text Centre (<http://www.nzetc.org/>),⁷⁵ the text was captured and marked up using TEI-conformant XML (<http://www.tei-c.org/>). The XML was then mapped and transformed to Te Ara's XML schema for upload to the project's content management system.

The few corrigenda published with the original volumes have been incorporated into the text, and some longer entries have been restructured to improve Web usa-

bility, but otherwise the 1966 encyclopedia has not been updated. The 1966 entries will serve as a back-up to some topics and a stop-gap for others, and, while some of its content is now dated, for many subjects it remains a valuable source. It has been given a distinctive design and will maintain its authenticity and integrity, while allowing Te Ara a little playfulness through a 'Blast from the Past' feature presenting selected entries of particular interest or amusement. The NZ Electronic Text Centre also has the opportunity to present an unreconstructed version of the 1966 encyclopedia as part of its e-text corpus.

XML

The need for authoritative source files which would enable Te Ara to maintain and adapt its content over a long period of inevitable technologi-

cal change prompted the choice of XML as the format for storing and manipulating textual content. XML encoding also manages the linkages between entries and the relationship between the text, its illustrations in all media, and the descriptive and contextual captions for each non-textual resource. XML source files are stored in a document repository external to the Web site's production engine, its content management system. XML will also allow for the creation of new derivatives for different delivery channels, including print.

Unsurprisingly, writers find XML's explicit markup a significant barrier to reading and editing, and at present a transformation process using an extensible stylesheet transformation (XSLT) developed by the NZETC enables us to continue to write and edit using standard word-processing tools, to save the files including word-processing markup, and then to convert this to Te Ara XML. The XML files are then used for production, including the management of site page design and navigation. This solution means that updates to the text simply require a reiteration of the transformation process. The weak link in the chain is the original styling of the document, and we



Text and illustrations are decided at lively meetings where the options for illustrating an online entry are thrashed out.

⁷⁵ See *DigiCULT.Info*, Issue 6: <http://www.digicult.info/pages/newsletter.php>



Editor Fiona Oliver works on adapting the XML code of the 1966 encyclopedia for the new website.



Designer Helene Coulson works on one of the many new maps that will be used to illustrate the encyclopedia.

look forward to the day when all editing will be performed on native XML files, using an interface that does not distract writers and copy editors from the content.

DIGITISATION AND DELIVERY

The search for digital or digitisable resources for the project has extended to libraries, museums and other repositories through New Zealand and beyond. Calls for contributions on particular topics have gone out to the community. New maps and graphs are created by a Web designer in house and a Te Ara visual house style has been developed for these. Members of the project's Resources Team have attended the training course in digitisation held in New Zealand in 2003 by Seamus Ross of HATII (<http://www.hatii.arts.gla.ac.uk/>). This background has helped to prepare them to apply best practices in gathering and digitising material, and to provide sound advice to institutions and individuals. Besides co-ordinating orders from the conventional metropolitan storehouses of artefacts, members of the team travel around New Zealand with a portable flatbed scanner and digital camera to capture unique resources. The optimisation of over 2,000 items in all media for publication with the first theme is a major current activity. An audio-visual player has been designed for the site, and will present high- and low-bandwidth delivery

options to the user through a single interface. Macromedia Flash was chosen for this mechanism due to its wide uptake, the small size of the resulting files, and its ability to interface with XML.

STANDARDS FOR INTEROPERABILITY

To assist resource discovery and to enable potential interoperability with other projects, including the National Digital Forum's Matapihi distributed resource access initiative (<http://www.matapihi.org.nz/>), the site will include Dublin Core metadata elements describing every entry. An appropriate keyword vocabulary will be used to describe entries and enhance searchability and the relevance of search results. While the initial release of Te Ara will be relatively constrained and manageable, as the site grows in volume and complexity these factors will be of increasing importance. The site will be fully compliant with the New Zealand e-government guidelines for Web site best practice and accessibility. We hope that the standards underpinning our technical choices will enable the flexibility and extensibility a project of this kind will require over the long term.

More information about the project is available on the Ministry for Culture and Heritage's Web site at <http://www.mch.govt.nz/ref/enz/>.

THE AUSTRIAN DIGITAL HERITAGE INITIATIVE – DIGITISING AUSTRIA'S CULTURAL AND SCIENTIFIC HERITAGE

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Our cultural and scientific heritage is a unique public asset that provides an exceptional resource pool for the development of the knowledge society. To make these resources accessible and to contribute to the conservation and preservation of our cultural and scientific patrimony, digitisation is an essential first step.

The European Digitising Content Together Initiative was launched in 2001 as a joint initiative of member states and the European Commission to co-ordinate digitisation activities at the European level. It involved building a platform for enhanced collaboration between the countries to share their expertise, best practices and standards and to develop a common view on European cultural and scientific heritage.



The Austrian city of Bad Ischl with the Kalvarienberg
Rudolf von Alt, around 1830, aquarelle drawing

The Austrian Digital Heritage Initiative has been established in the context of this international framework, and its Web site⁷⁶ is the national reference point on Austrian digitisation policies and projects. Launched in November 2003, the Digital Heritage initiative is an ongoing activity carried out by Salzburg Research on behalf of the Federal Ministry for Education, Science and Culture.

The strategic objectives of the initiative are to:

- raise awareness for the European co-ordination effort and the Lund Principles within the cultural heritage community;
- stimulate and foster information transfer on digitisation activities from the European to the national and regional level - and vice versa;
- simplify cross-European resource discovery;
- promote the use of standards and good practice among cultural heritage institutions;
- make available best practice guidelines, standards and quality criteria for cultural heritage institutions.

THE EUROPEAN FRAMEWORK: FROM eEUROPE TO LUND

The Austrian Digital Heritage Initiative is in accordance with the European programmes, which not only provide the framework for digitisation and preservation activities in Europe but are also anchored within the wider aim of making Europe the most competitive knowledge-based economy by 2010, as it was formulated by the European Council in the eEurope initiative and its related eEurope Action Plan⁷⁸.

More specifically, the Austrian Digital Heritage initiative follows the Lund Principles, which aim at supporting cultural heritage institutions. The Lund principles were agreed on 4 April 2001 by representatives of the cultural ministries of the member states. They set the following strategic goals:

- to establish an ongoing forum for co-ordination of policies for digitisation;
- to support the development of a European view on policies and programmes;
- to exchange and promote good practices, guidelines and consistency of practice

and skills development;

- to accelerate transfer and uptake of good practices;
- to enhance the visibility and accessibility of the digitised cultural and scientific content in Europe.

Based on these principles, the subsequent Lund Action Plan⁸⁰ has identified four areas of concrete action: Improvement of policies and programmes through co-operation and benchmarking, discovery of digitised resources, promotion of good practice, and definition of a content framework.

Following the Lund meeting, a National Representatives Group (NRG)⁸¹, comprising officially nominated experts from each EU Member State, was established to monitor the progress towards achieving the Lund objectives to create a common platform for co-operation and co-ordination of national digitisation activities.

The Austrian representation within the NRG is split among three entities: the Federal Ministry for Education, Science and Culture⁸² (strategic and financing level), the Austrian National Library⁸³ (consultancy level), and Salzburg Research⁸⁴ (operational level).

The MINERVA project⁸⁵, a Network of Excellence funded under the European Union's IST Programme and managed by the Italian Ministry of Culture, provides operational support for the NRG and national initiatives. MINERVA also

76 See: <http://www.digital-heritage.at>

77 See: ftp://ftp.cordis.lu/pub/ist/docs/digicult/lund_principles-en.pdf

78 See: http://www.europa.eu.int/information_society/europe/2005/index_en.htm

79 See also in this issue "Towards a continuum of digital heritage, Strategies for a European Area of Digital Cultural Resources" for current opinion on the Lund Action Plan.

80 See: ftp://ftp.cordis.lu/pub/ist/docs/digicult/lund_action_plan-en.pdf

81 See: http://www.cordis.lu/ist/directorate_e/digicult/t_reference.htm

82 See: <http://www.bmbwk.gv.at>

83 See: <http://www.onb.ac.at>

84 See: <http://www.salzburgresearch.at>

85 See: <http://www.minervaeurope.org>

co-ordinates five expert groups on benchmarking digitisation activities, metadata and resource discovery, interoperability, good practice and competence centres, as well as the issues of accessibility and quality of cultural Web sites. It addresses the issue of long-term preservation of digital heritage and provides recommendations, guidelines, quality criteria and best practice models relevant to the sector.

MINERVA Plus considerably extends the existing network. Starting in January 2004, Austria, which so far was only represented in the National Representatives Group, joined the MINERVA network as an official member. For MINERVA Plus, the following activities are planned:

- provide the political and technical framework for improving digitisation activities of cultural and scientific content;
- facilitate adoption of the Lund principles;
- support and foster collaboration in the cultural heritage sector;
- exchange information about the national policy profiles on digitisation;
- implement user requirements for accessibility and usability of cultural heritage Web sites, implement the existing benchmarking framework on digitisation and promote dissemination and training - activities at national level.

Membership of the MINERVA Network means that Austrian experts can now participate actively in the thematic working groups of MINERVA and benefit from information exchange with experts from other European countries.

DIGITISATION IN AUSTRIA: POLITICAL STRUCTURE AND EMERGING ISSUES

Political structure and responsibilities

One of the primary objectives of the Austrian Digital Heritage Initiative is to make available to Austrian cultural heritage organisations the results of this common effort to develop a collaborative policy framework for digital cultural heritage on the European level.

In Austria, the situation is highly fragmented as responsibility for cultural and scientific heritage is split between federal and state authorities. Although there is sufficient awareness about the urgency of the issue of long-term preservation of our scientific and cultural heritage, there is no explicit policy or strategy to take on this challenge.

Nevertheless, by launching the Austrian Digital Heritage Initiative, the Austrian Federal Ministry for Education, Science and Culture took a first major step towards a systematic and co-ordinated approach for digitisation policies and initiatives in Austria by deciding on and implementing the operational structures to co-ordinate future digitisation policies, programmes and initiatives to ensure the preservation of Austria's cultural and scientific heritage.

Emerging Issues: Long-term Preservation and Lack of Resources

Austria's cultural institutions are aware of the need for digitising their collections. Institutions at federal and state level, however, usually find it easier to come up with appropriate measures as they are technically more advanced and mostly have the financial and human resources available for the necessary activities. Yet, for smaller cultural institutions at the local and regional level, the situation looks quite different. Many smaller institutions do not possess

the infrastructure to digitise, or even document, their cultural artefacts. In many cases, these regional and local museums are shoe-string operations run by cultural enthusiasts who not only spend their leisure time but also their private money to keep their institutions accessible to the public. Therefore, for small and regional cultural institutions, the essential question often is not a technological one, but one of lacking the staff, the skills and the training.

What can be generally recognised, however, is a growing awareness within the state authorities that small and local institutions need external support to manage the introduction of new media technologies into their organisations.



Reichspost (Imperial Post)
ANNO - AustriaN Newspapers Online



THE APPROACH OF THE AUSTRIAN DIGITAL HERITAGE INITIATIVE

Structure of Digital Heritage Austria

The Austrian co-ordination mechanism for digitisation comprises three actors, fulfilling specific roles within the Digital Heritage initiative: the Austrian Federal Ministry for Education, Science and Culture (strategic and funding level), a domain expert from the Austrian National Library, one of the key institutions carrying out extensive digitisation projects (professional expertise), and Salzburg Research, an independent research unit that is well situated within the European research community for cultural and scientific heritage (operational level).

The three-step approach of Digital Heritage Austria

The roll-out of the Austrian cultural heritage initiative to co-ordinate national digitisation activities in accordance with the Lund Principles, as mentioned above, will be realised in three phases:

In a first phase, the primary objective is to identify and collect data on regional and national digitisation projects in Austria and to raise awareness for the Lund principles, the National Representatives Group and the MINERVA activities.

The Austrian Digital Heritage Initiative has identified digitisation projects and got them registered in a national digitisation inventory on the Web. It has also identified Good Practice digitisation projects. The inventory will help both to obtain a clear picture on the state-of-affairs of digitisation in Austria (actors, projects and digital resources available) and to establish a communication channel with the base, i.e. the Austrian cultural and scientific heritage institutions at national, regional and local level. Translating the essential documents and publishing the best practice guidelines as developed and recommended by MINERVA will help to support these insti-

tutions in their current and future digitisation activities.

But activities and events that address and inform cultural institutions and that help to establish networks are also part of this phase. Hence, in October 2003, Salzburg Research held its first eCulture Symposium⁸⁶ in Salzburg on the Semantic Web for cultural and scientific content. The event was targeted at offering an opportunity for local and regional institutions to get first-hand information on recent developments in cultural heritage research technologies and to encourage know-how transfer from both academic and commercial actors to the institutions.

The second symposium, held from 27-28 September 2004, served as an awareness and knowledge transfer event aimed at local and regional cultural heritage organisations. Focusing on the digitisation process for cultural and scientific heritage content, the event promoted the MINERVA criteria and best practice guidelines to help develop – in accordance with the Lund Action Plan – a shared vision for a European Cultural Area by offering hands-on workshops especially for small institutions. Keynote speeches, presentations and workshops looked at how cultural institutions can better plan, manage and finance digitisation projects, and add value to their communities by creating digital cultural experiences. Promising new technologies and interfaces to enable and enhance these experiences were at the centre of discussion.

Planned activities and a future outlook

In a second phase, an agenda for an Austrian digitisation platform should be established that will encompass a digitisation platform, a research platform and a business platform. Therefore, the primary objective of phase two should be to further extend the existing informal expert network and to establish a national network of

cultural heritage institutions and experts on an institutionalised basis.

Finally, in the long term, national competence centres to foster and streamline digitisation activities at various levels should be identified and set up. For this, not only co-operation between Austrian institutions but also international co-operation is highly desirable.

At the moment, however, funding has only been secured for phase one. To realise phases two and three, the Austrian Digital Heritage Initiative needs further strategic and financial support.

NEW DPC REPORT

The Digital Preservation Coalition (<http://www.dpconline.org>) has prepared the latest in a series of reports that aim to provide practical guidance for institutions undertaking digitisation activities. The new report, entitled *Contracting Out for Digital Preservation Services*, deals with the issues attached to outsourcing, which can be a more attractive and realistic option for digitisation carried out by small organisations. The leaflet gives help on the potential hazards of outsourcing and how to draw up a contract for these services. It is intended to complement the *Directory of Digital Preservation Repositories and Services in the UK* published earlier this year. Both publications are available from: <http://www.dpconline.org/graphics/guides/index.html>

⁸⁶ aSee: http://eculture.salzburgresearch.at/index_e.html