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IST-2001-37491

## European Network of Centres of Excellence for Research and Education in Digital Culture

# Final Progress Report

Review of Period: 01/06/2002-30/06/2003

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| <i>Abstract</i>                     | Report on activities in months 8.5-12 of thematic network (15 May-30 June 2003) and review of achievement's in the course of the past year.                        |
| <i>Keyword list</i>                 | Cultural heritage, Digital culture, digital libraries, digital memory preservation, e-learning, access, e-creativity   |

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## Executive Summary

E-Culture Net began on 1 July 2002 as a one-year thematic network. This resulted in 12 outcomes:

- 1) **Creation of Website** (designed by Lily Diaz and team) with vision and structure, rules for membership, plans for expansion to Mediterranean, NAS and internationally.
- 2) Preparatory steps for **Distributed European Electronic Resource (DEER)**:
  - a) Definition of **12 modules** for an initial prototype in FP6 NoE
  - b) **Framework** for DEER (S. Keene) with Virtual Reference Room and Virtual Agora.
  - c) Scenarios for Interfaces for DEER (Lily Diaz and team)
- 3) **Development of DACO<sup>1</sup> protocol** (M.Thaller) building on Open Archive Initiative (OAI) for access to regional and local databases.
- 4) **Demonstration of DACO protocol** using 1.5 million pages from 5 databases.
- 5) **Broadband Demo with national supercomputers** (A. Guidazzoli and team) at CINECA and Madrid using Digital Map of Bologna from Vatican.
- 6) Criteria/Description of 23 **Broadband Pilots** (A. Colorado) for prototype DEER.
- 7) **Criteria/Topics for European Masters and Doctorates** (B. Benedetti, F. Bocchi) to develop critical methods and thought using DEER.
- 8) **Demo of Research Matrices** to understand Knowledge Production Life Cycle and **Research Topics** to keep DEER updated.
- 9) Initial examples of **National Networks** (e.g. Spain) to provide content for DEER.
- 10) **Written agreements** with UNESCO, networks, consortia and potential IPS.
- 11) **Permanent home in European University of Culture** (J. Poulain).
- 12) **Proposal for FP6 NoE with 537 researchers.**

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<sup>1</sup> Distributed Autonomous Cultural Object.

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## Overall Assessment of Main Milestones Achieved

### Introduction

E-Culture Net began officially on 1 July 2002 as an one year thematic network with 29 members with the purpose of evolving into a Network of Centres of Excellence for Research and Education in Digital Culture in FP6. In the past twelve months, the network has clarified its vision and structure with clear plans for expansion in Europe, to the Newly Accessed States (NAS) and beyond. The network had three goals, which also defined its main milestones:

1. Research Matrices to understand the Knowledge Production Life Cycle
2. Requirements/Topics for European Masters/Doctorates
3. Distributed European Electronic Resource (DEER)

### Vision and Structure

These goals of the thematic network arose from three initial questions:


1. How can we understand of the digital knowledge production life-cycle?
2. How can we develop new critical methods and thought?
3. How can we access and share the enormous amounts of digital content in a long-term, secure, multilingual framework?

In the past year, a gradual shift in focus has reversed the order of these three questions and goals such that the goals of the NoE are now:

1. To share materials permanently via a DEER and networks
2. To develop critical methods and thought via European Masters and Doctorates
3. To understand the knowledge production life-cycle via research matrices in order to keep the DEER updated.

One of the fundamental challenges of a Network of Excellence is that it needs to be small enough to be manageable and yet large enough to be representative in some measure of Europe's unity of diversities.

To address this challenge we have developed a layered approach. The starting point is a co-ordinator, initially Laval Mayenne Technopole for the first year.

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A permanent home for E-Culture Net has been found at the new European University of Culture on the premises of the European parliament buildings in Strasbourg. This collocation with the premises of the Council of Europe (CoE) ensures a fitting and enduring home for the network.

As with other Networks, the co-ordinator will work with a small number of contractors (6) responsible for administering the financial dimensions with other members. Beyond this, the basic goals are broken into activities and these into components each of which is led by an already existing group, sometimes a consortium, sometimes an EoI. This has led to 24 main participants, who have attached to them 132 organisations with a total of 537 researchers. In effect, the NoE is a consortium of a number of smaller, specialised NoEs which, in isolation, lack the critical mass to achieve what is now possible. Formal agreements with UNESCO, a number of organisations and existing projects ensure that members will enter into a firm framework of co-operation.

Basic rules for membership (entry and exit), organisation and structure have been defined and are available online.


A permanent website at [www.eculturenet.org](http://www.eculturenet.org) has been secured.

## Expansion

### National Networks

A model of national networks ensures that E-Culture Net can expand to achieve a critical mass that is representative of Europe's enormous diversity. In the course of the first year Spain established a solid national network complete with its own website at <http://www.ucm.es/info/eculture/index.htm>. The goal of content pilots served as a motivation to integrate these efforts. In most European countries a permanent or temporary representative was found to lead the national network. Within the thematic network, membership expanded to 16 European countries, and 9 NAS countries.

National networks, with close links to the policy strands of national governments (e.g. via MINERVA) can address the challenges of subsidiarity and assure that local, regional and national interests become more visible and are fostered through a European E-Culture Net. The national networks can raise awareness of Europe's remarkable unity of diversities as emphasised by Giorgio Ruffolo (European Parliament) and thereby make a fundamental contribution to a new, emerging consciousness of what it means to be a European.

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### Newly Accessed States (NAS) and Beyond

Gerhard Budin (Vienna) identified NAS partners. Giorgio Giannoulis and Tonia Zervaki (Foundation of the Hellenic World, Athens) identified Mediterranean partners especially via the Medina Network. In Russia, thanks to the work of Nadezhda Brakker (Centre PIC, Moscow), 23 institutions signed letters of intent and A2 forms to join the NoE.

### Specialised Networks

One of the important conceptual innovations of E-Culture Net is to take up afresh the idea of a Network of Networks, which was introduced in 1989 by UNESCO through Culture Link<sup>1</sup> (Network of Networks for Research and Co-operation in Cultural Development) and CIRCLE (Cultural Information and research Centres Liaison in Europe).<sup>2</sup> Whereas the earlier effort was limited to a loose connection through a website with addresses, E-Culture Net foresees a more systematic co-operation by involving existing specialised networks in specific elements of the DEER vision. By joining these smaller networks in a common task, E-Culture Net achieves a new critical mass; at the same time it brings into new light (valorizing, in the language of Brussels) various excellent achievements such as the Inventaire, which were previously often unknown beyond their country of origin. Among the networks formally included to date are NEHRN, SCRAN, ORION and SIMILAR. Provisional links with MINERVA have been discussed.

### International Networks

In addition, a series of links with UNESCO and with other cultural networks have been initiated and strengthened. Here the efforts of Frederic Andres (Laval and NII) have been extremely helpful. These networks include:

|                |  |             |
|----------------|--|-------------|
| Canada         | Canadian Heritage Information Network                | (CHIN)      |
| China          | Chinese Cultural Heritage Network                    | (CCHN)      |
| Japan          | Asian Network of Excellence on Digital Silk Roads    | (ANoEDSR)   |
| Russia         | Russian Cultural Heritage Network                    | (RCHN)      |
| United States. | Nat. Sc. Foundation Digital Silk Roads Cultural Grid | (NSF DSRCG) |
| World          | UN Educational, Scientific and Cultural Organisation | (UNESCO).   |

**Milestone 1: Research Matrices to understand the Knowledge Production Life Cycle**

|                                     |                       |          |                       |            |
|-------------------------------------|-----------------------|----------|-----------------------|------------|
| <b>FILTERS:</b>                     |                       |          |                       |            |
| <b>Geographic Scope</b>             |                       |          |                       |            |
| -global-                            |                       |          |                       |            |
|                                     | Cultural Institutions | Industry | Research Institutions | Government |
| Technologies and Infrastructure     |                       |          |                       |            |
| Content Creation and Production     |                       |          |                       |            |
| Content Holder, Protector, Supplier |                       |          |                       |            |
| Content Broker                      |                       |          |                       |            |
| Context Creator                     |                       |          |                       |            |
| Communication                       |                       |          |                       |            |
| Societal Implication                |                       |          |                       |            |

Figure 1. Basic ingredients for the research matrices.

Traditionally the knowledge production life-cycle was different for each medium: i.e. the production of a manuscript in a scriptorium was very different than the production of a book in a printing press and publishing house. In analog mode, the person who produced the content in one medium was typically separate from those who developed its context and communication. Traditionally senses were also treated separately. Those concerned with visual media were separate from those who worked on tactile media.

In digital mode, all media and senses are potentially interlinked: Hence, the rise of terms such as multi-media, inter-media, trans-media and cross-media. There are also new links between content, context and communication, which leads to new interplay among cultural organisations, industry, research institutions and government. Needed are new overviews to understand these developments.

The first milestone was to develop a prototype for such research matrices. This began by identifying basic categories for a macro- and a micro-research matrix (cf. figure 1). Details are available on the website. Next, Alexander Bielowski and two student programmers developed a working model to which members can add content. The BRICKS IP plans to adopt this approach.

Netzspannung.org has been working on knowledge discovery tools with semantic maps and other features, which will in future enable users to walk through knowledge landscapes. A next stage will be to combine the research matrices with Netzspannung's approach to achieve new understanding of the digital knowledge production life-cycle. In the longer term the research matrices will become one of the dimensions of the Distributed European Electronic Resource (DEER, cf. figure 2 and milestone 3.1).

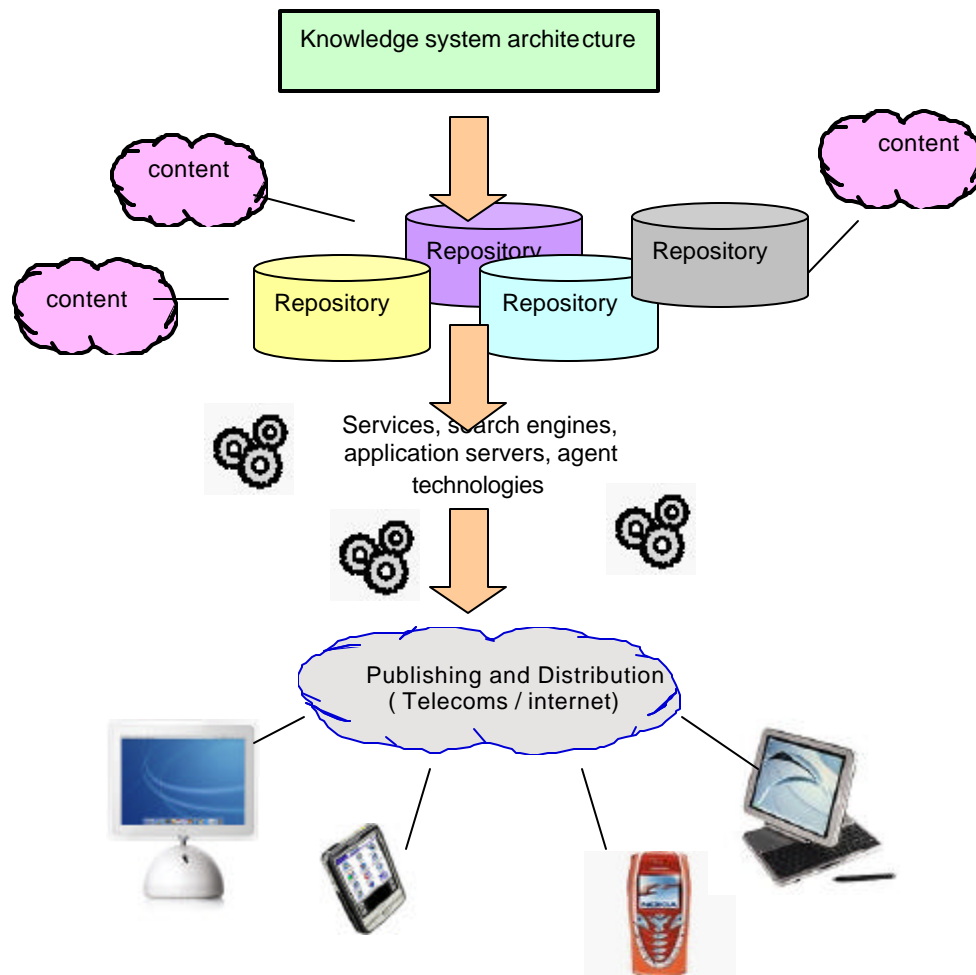



Figure 2. The process of cultural content management in the knowledge production life - cycle, from content acquisition and archiving down to its delivery to the end users (Keene/Monti, DEER Report, p. 37) which will be tracked using research matrices.

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## Milestone 2: Requirements/Topics for European Masters/Doctorates

### European Masters

Benedetto Benedetti (Scuola Normale, Pisa) has identified criteria and focal points for emerging European Masters degrees as well as an initial draft for course work, identifying three thematic cycles of courses:

- 1) Textual and Visual Databases
- 2) Databases Processing for Conservation Intervention on Monumental Complexes
- 3) Projecting (Planning) of Museum Communication.

In addition a team has been formed to develop further European Masters Courses in the realm of digital culture. These include representatives from the Politecnico di Milano, Complutense (Madrid), Sorbonne (Paris), UNESCO's World Heritage Studies Programme, and from the Northern European Historical Research Network (NEHRN). In addition, four representatives will reflect Masters Courses in Russia. A next step will be to develop a similar small group to represent the Mediterranean especially with respect to Greek, Hebrew and Arabic.


### European Doctorates

Francesca Bocchi (Università di Bologna) in consultation with Arturo Colorado (Universidad SEK de Segovia) has outlined basic principles for European Doctorates in light of the Bologna Convention. Again, a team has been formed to develop further such European doctorates which includes:

- 1) two key persons from the Sapienza (Anna Maria Silvana de Rosa and Serge Moscovici) who have developed the European Doctorate on Social Representations with a network of Universities throughout Europe and also the only network of Marie Curie Training Centres in the humanities.
- 2) a representative (Thomas Riis, Kiel) from the Northern European Historical Research Network (NEHRN) which has developed a Doctor Communis Europae (DCE) which was the first of its kind in the historical field.
- 3) the founder of the new European University of Culture (Jacques Poulain, Paris 8), which has as its specific mandate the development of European Masters and Doctorates and is thus ideally suited to co-ordinate the existing efforts.

A significant feature of both the European Masters and Doctorates is to integrate the sharing of networked digital resources using broadband for prototypes of the DEER.

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### **Milestone 3: Distributed European Electronic Resource (DEER)**

The main milestone of the year has been to develop the Distributed European Electronic Resource (DEER) from a general vision to a specific goal. This has been achieved by work on six fronts:

- 3.1. Research Topics
- 3.2. Eight Premises
- 3.3. Demonstrator
- 3.4. Broadband Topics/Projects
- 3.5. Framework
- 3.6. Research Topics re: Implications

#### **Milestone 3.1 Research Topics Leading to a DEER**

##### **Integration of Preservation, Access, Creation and Learning**

As noted above with respect to the research matrices, the knowledge production life cycle has traditionally been fragmented along the lines of specific media and senses. Research has also remained fragmented. As a result those concerned with preservation (conservators and restorers), with access (e.g. librarians), creation (e.g. authors) and learning (professors, teachers) typically worked in isolation.


With respect to digital culture, there are networks and projects for all four of these areas, e.g.:

|          |                                      |
|----------|--------------------------------------|
| Preserve | ERPANET, ECPA, INCCA                 |
| Access   | SEMKOS, AMP, DELOS                   |
| Creation | artnouveau                           |
| Learn    | Schoolnet, Scholnet, E-learning grid |

Networks such as ERPANET, which address both preservation and access, mark an important step in the needed direction whereby work on all four fronts is integrated. To achieve this, E-Culture Net proposes research into two basic areas, namely, access (and preservation) to Existing Cultural Knowledge and Production and Preservation of New Cultural Knowledge. These two areas generate four integrating themes for further research, namely:


- 1) multilingual, semantic access and knowledge organisation
- 2) spatio-temporal access with historical-cultural dimensions
- 3) collaborative creation with multimodal interfaces
- 4) personal and collaborative e-learning.

The report suggested IPS, which could be combined to address these topics.<sup>3</sup>

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**Milestone 3.2: Eight premises for the DEER:**

- 1) permanent, multilingual sharing of resources on a European scale will have important consequences for e-learning, the European Research Area (ERA) and the larger goals of E-Europe. Initially the JISC's Distributed National Electronic Resource (DNER) served as an example. We have since discovered that there are analogous developments especially in France, Germany and Spain.
- 2) this sharing of resources needs to be integrated into new European Masters and Doctorates.
- 3) prototypes should evolve in both:
  - a) an inductive, bottom-up fashion, using NoEs to provide concrete examples and challenges that reflect Europe's unity of diversities at the national, regional and local levels.
  - b) a deductive, top-down fashion using IPS to create overarching software which is able to integrate the above examples without compromising their diversity.
- 4) prototypes should be modular and each module should have a consortium or group as a champion (figure 3).
- 5) the modules of these prototypes develop in tandem. Indeed it is vital that virtual environments for collaboration are in place from the outset so that user needs and usability features are reflected properly for a joint, iterative design.
- 6) national networks are needed to link cultural organisations, research institutions and industry and to provide content that reflects national, regional and local diversity.
- 7) work is needed in the direction of a network of networks in order to create research matrices whereby the DEER can be updated.
- 8) while the DEER clearly needs a series of short-term milestones, whereby its progress can be measured and benchmarked, it also needs a long-term plan that goes far beyond the usual five year periods of European Commission's Framework Programmes. (The rise of printing in the West took almost two centuries from the time of Gutenberg in 1450s to the rise of scientific and academic publishing in the mid-seventeenth century).

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- |  |                                   |
|--|-----------------------------------|
| 1) Security                            | UCLouvain                         |
| 2) Legal Arrangements                  | Valencia Team                     |
| 3) Storage                             | UNESCO                            |
| 4) Multilingual Mapping                | AMP Consortium                    |
| 5) Semantic Mapping                    | SEMKOS Consortium                 |
| 6) Digital Autonomous Cultural Objects | University of Cologne/DFG         |
| 7) Interfaces                          | Intermedia/Interactive Institutes |
| 8) Multimodal Interfaces               | SIMILAR NoE                       |
| 9) Spatial                             | ORION TN                          |
| 10) Temporal-Spatial                   | Portsmouth EoI                    |
| 11) Virtual Environments               | CINECA                            |
| 12) Virtual Heritage Centres           | CNR-ITABC/VHN                     |

Figure 3. Twelve modules for a prototype DEED as a first step towards a DEER.


### Milestone 3.3: Demonstrator for the DEER.

Manfred Thaller and his team (Cologne) used their principle of Distributed Autonomous Cultural Objects (DACOs) to provide access to 1.5 million items (largely pages from books and images) from five heterogeneous, distributed databases. He also produced a DACO protocol, that sits on top of the Open Archive Initiative's (OAI's) approach, and offers access at much greater levels of granularity, namely individual images, pages or even paragraphs, without requiring a complete re-organisation of existing databases. As such Manfred Thaller's approach offers an European solution to the challenge of accessing national, regional and local diversity while maintaining a "unity of diversities" (Ruffolo). The initial demonstrator used 5 heterogeneous, distributed databases. It is planned that a next phase might involve 500 databases.

### Interfaces

Lily Diaz and her team (Media Lab, Helsinki) have produced initial scenarios for the challenges of interfaces in a product that does not yet exist. The most important outcome of this study has been to confirm that in a world of ambient intelligence with mobile and pervasive computing, a whole range of interfaces will be needed.

It was decided to call the initial prototypes a Distributed European Electronic Dynamic (DEED) tool or resources to distinguish it from the long-term DEER. Specific partners, frequently existing consortia, have been found for each of the modules (cf. figure 3). As a next step it was agreed to identify leaders for each of these who can then advance the needs of their particular module.

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### Milestone 3.4: Broadband Pilots

Arturo Colorado y Castellary (Universidad SEK de Segovia, Isidro Moreno (Universidad Complutense de Madrid) and their team developed a paradigmatical model for understanding new media developments and identified three integrating themes:

- 1) Intelligent Multimedia Museums
- 2) Hypermedia Online
- 3) Hypermedia E-Learning.

They used these integrating themes to define 23 projects to serve as near term inputs for prototypes for the DEER. A concrete example of work in progress includes a reconstruction of the Monastery of Santa Cruz (now the Universidad SEK), that uses Francesca Bocchi's NUME as a model and forms part of the Segovia in 4-D project.

A concrete demonstration of broadband transmission was achieved using the supercomputers at CINECA and the Universidad Complutense. Antonella Guidazzoli (CINECA) used images of a wall size fresco of a Map of Bologna in the Papal Apartments of the Vatican. Specifications of how subsets<sup>4</sup> of this map could be used over Internet on lines with less throughput were the subject of a *tesi di laurea* at CINECA by Valeria Cavallari. These examples are also concrete steps in the direction of Maurizio Forte's vision of Virtual Heritage Centres (VHCs).

Each of the above themes integrates a series of projects as part of the joint programme of activities leading to content trials. For instance, multidimensional museums, as an integrating topic, entails six subprojects. This led to a selection of eight content pilots to developed by the NoE in FP6 (figure 4).

Meanwhile, the work on Hypermedia E-Learning Online led to collaboration with the BELE Consortium and agreements to link learning and training networks especially in Spain, and France with existing satellite networks in South America and Russia with content, learning tools and new interfaces in an NoE.

|   | Content Pilots                        |                         |
|---|---------------------------------------|-------------------------|
| 1 | Multidimensional Museums              | Universidad Complutense |
| 2 | Historical European Cities            | Università di Bologna   |
| 3 | Cultural Tourism                      | Tourism-site.org        |
| 4 | Text, Image Databases, Online Slides  | UzK                     |
| 5 | Greek Culture                         | FHW                     |
| 6 | 3-D and Archaeology                   | ORION                   |
| 7 | Virtual Environments, V. Her. Centres | CINECA, CNR-ITABC       |
| 8 | Cultural Diversity                    | Paris 8                 |

Figure 4. Eight content pilots for FP6.

**Milestone 3.5: Framework for the DEER**

With respect to the long-term vision, Suzanne Keene (UCL), working with Alice Grant and Francesca Monti, produced a 93 page report outlining a foundation for the DEER (cf. table of contents in Appendix 1). Here the most important outcome is that the DEER is both a practical possibility and a need. Keene began with an overview of the DEER (p.12):

The DEER is envisaged as a unifying mechanism for European networked cultural content, with the long-term ambition of eventually embracing the whole digital cultural memory of Europe. The DEER will serve the function of facilitating access to our entire rich and varied cultural heritage, in the context of our multilingual and multicultural information environment.

An initial DEER will entail three main elements, namely, 1) a Forum for Collaborative Research/Creation; 2) a Distributed Repository which are accessed through 3) a Virtual Reference Room (figure 5). Each of these three elements deserves a brief excursus.

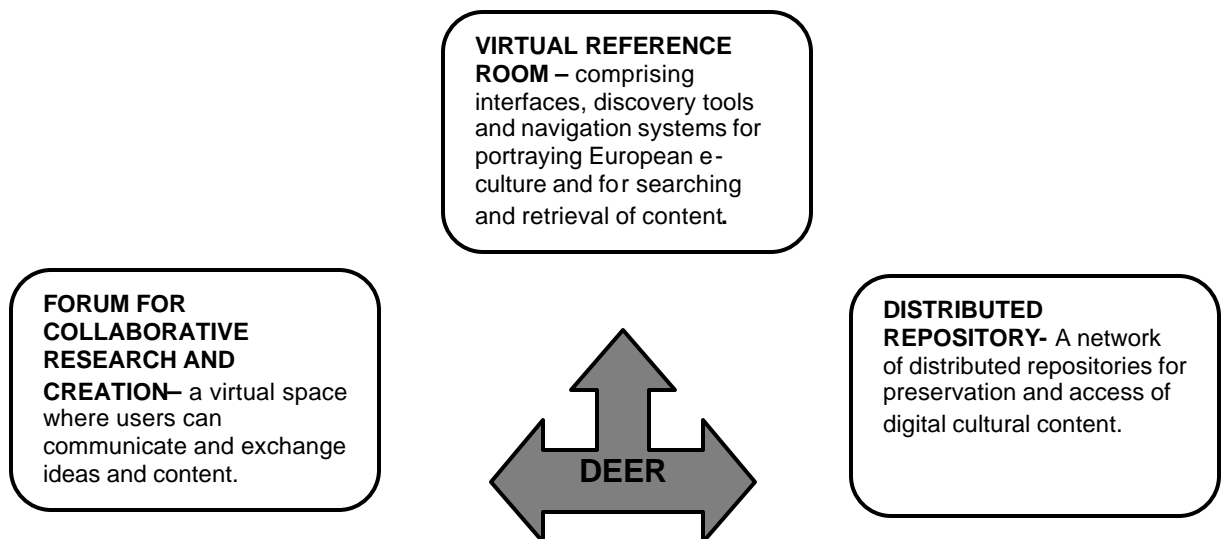


Figure 5. Main elements of the initial DEER (Keene, Monti Report, p. 12).

### Forum for Collaborative Research/Creation

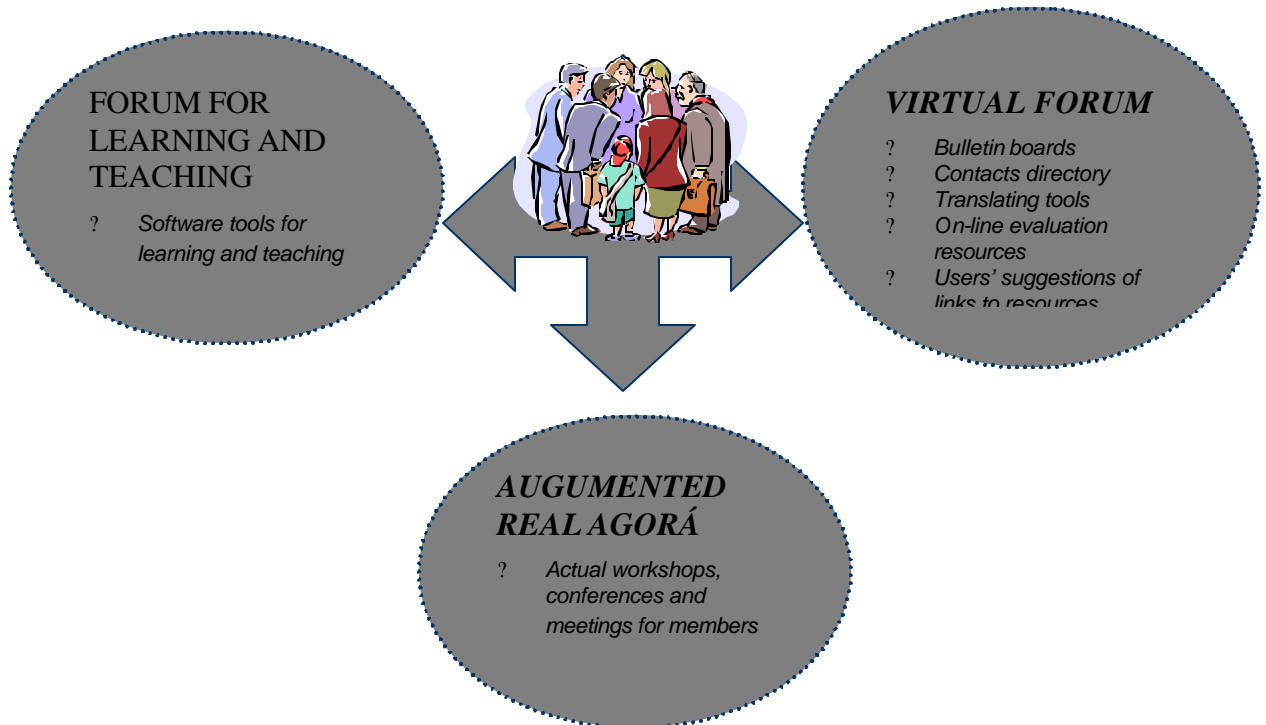



Figure 6. Components of the Agora (Keene, Monti Report, p. 28).

In a first instance, this element integrates a number of trends in e-learning whereby personal and collaborative learning are seen as complementary approaches in a world of continuous learning (figure 6). As such it brings together a number of tools and techniques, which have evolved over the past decades.

In a next instance, this forum can evolve into virtual environments for personal and collaborative design and co-creation. As such there will be synergies with the EU's work on grid infrastructures where there is a quest for generic griddleware (in the form of under-ware, middle-ware and upper-ware), whereby companies can design and create new products. A coupling of these industrial developments in the context of DG-INFOS F2 with e-culture and e-learning would enable the development of new e-creativity as foreseen by the artnouveau network particularly in the context of digital television and digital film, thus taking us closer also to Minister Oreja's vision of a European film and television network.

In the longer term this linking between new technical skills and academia can introduce a deeper dimension into the creative industries as well as providing new content for e-learning which helps bridge the chasm between polytechnics and universities. It can also transform collaborative work from a generic trend to one, which reflects different cultural traditions, thus reflecting Europe's unique unity of diversities.

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## Distributed Repository

The idea of a distributed repository integrates various elements, which are presently evolving on a number of fronts. Discussions in the context of MINERVA and specifically with respect to the Lund meeting brought into focus the problem of digital memory preservation and specifically the idea of European Digital Memory.

In December 2002, in the context of E-Culture Net, Christian Lahanier (C2RMF) outlined “the need for a European Open Source System based in a European Computer Centre for data Repository” in order to create “a prototype of the future European Mirrored Repository.” This idea was pursued and introduced to the highest levels of UNESCO where it resulted in an initial twelve year plan for an Project title: EU-UNESCO Digital Centre of Memory of Culture (DCMC) in the context of major European museums and art galleries. This initiative became the basis for the storage module of the DEED prototype.


In the United Kingdom, the JISC is working towards a Digital Curation Centre.<sup>5</sup> The Digital Preservation Coalition in conjunction with ERPANET is making a bid for this tender.

Meanwhile, the BRICKS IP explicitly “aims at establishing the organisational and technological foundations of a digital library at the level of a European Digital Memory.”

While recent groups such as MINERVA and ERPANET have rightly drawn attention to the need for policy concerning materials that are “born digital,” there is a danger of forgetting that problems of digital preservation including born digital materials are very actively being studied by major libraries such as the Bibliothèque Nationale de la France, institutions such as the Centre Pompidou (which have a joint committee on the problem), organisations such as the European Commission on Preservation and Access and networks such as the International Network for the Conservation of Contemporary Art (INCCA).<sup>6</sup>

It is important to recognize that these initiatives, which at first glance might seem to be in competition with one another, are all expressions of a larger *Zeitgeist* that need to be integrated in order to arrive at a useful solution on an European scale. The idea of a distributed repository/repositories in a quest leading to a DEER offers a vision to integrate these hitherto fragmented efforts into a coherent action plan, which can be further solidified through national policies.

Moreover, this approach integrates the quest to preserve with the quests to access, to learn and to create (cf. milestone 4 below).

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## Virtual Reference Room

Since the 1970s, there have been ongoing efforts to create electronic catalogues that serve as entry points to both (analog) physical and digital libraries. In the past decade, the number of reference materials available electronically has grown enormously to include classification systems, dictionaries, encyclopaedias, bibliographies, and book catalogues. This led to the idea of digital reference rooms<sup>7</sup> and more recently the idea of virtual reference rooms,<sup>8</sup> which is being explored in European projects such as IMASS.<sup>9</sup>

Conceptually virtual reference rooms have the advantage that they again integrate much of the previous work on digital libraries, while at the same time bridging analog physical and digital electronic libraries, static collections with mobile environments, linear sequences with dynamic presentations.

In the report, the forum for collaborative research/creation, the distributed repository and the virtual reference room comprise three<sup>10</sup> of eight necessary components of the DEER (p.13):

- 1) **Communication infrastructure**: to provide fast high bandwidth connections to all European countries. This implies co-ordination with the EU's work on infrastructures and GEANT networks.
- 2) **Content**: provided and distributed through participant organisations and member states. E-Culture Net content will be united and harmonised by means of terminology and discovery tools, interfaces and gateways, and adherence to interoperability standards. Here DACOs, AMP's multilingual work and national networks can play a role.
- 3) **Networked repositories**: to ensure the long-term preservation and availability of the DEER's digital content.
- 4) **Interfaces, navigation and delivery mechanisms**: with reference to metadata, interoperability standards, gateways, translating facilities, ability to use different languages and scripts.
- 5) **System management**: addressing issues of user authentication and identification, payment mechanisms, rights managements, data protection and accessibility of resources to all.
- 6) **Support services**: Advice in the use of data sets, training. Guidance on creation and preservation of digital assets. Guidance of use and application of E-Culture Net standards.

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- 7) **Research integration:** support for content creators in linking to and using novel methods developed in research by the Centres of Excellence.
- 8) **The Agorá:** an interactive platform offering a forum for communication, new technologies for researchers, and tools for collaborative working, learning and teaching.

### **Milestone 3.6. Research Topics re: Implications of DEER and New Media**

Whereas the initial research topics (milestone 3.1) outlined strategies to arrive at a DEER, these topics explore what will become possible once the DEER exists. Following a survey of 23 academic disciplines, two areas for long-term research are considered:

- 1) Dynamic Knowledge
- 2) New Models of Culture.

In addition five further implications are identified:

- 1) Massive new content
- 2) New methods of scholarship
- 3) Distributed multilingual vision to include diversity at the international, national, regional and local levels.
- 4) New fields of study
- 5) Changing boundaries of scholarship.


All of these pose important new areas for future research. They confirm that the so-called revolution in new media is much more fundamental than hype about more powerful computers linked by faster connections. It is changing the methods for creating, preserving, accessing, and learning (presenting) knowledge. It is changing the boundaries between disciplines and in many ways transforming the nature of knowledge itself.

### **Conclusions**

The thematic network's goals, have led to three concrete milestones:

1. Research Matrices to understand the Knowledge Production Life Cycle
2. Requirements/Topics for European Masters/Doctorates
3. Distributed European Electronic Resource (DEER)

These milestones offer roadmaps for research and education in digital culture. Next steps are a) NoE which integrates these goals through a prototype DEED, joint research and concrete pilots for e-learning (Appendix 1); b) concertation meetings to link the NoEs and the IPs and c) an accompanying measure which explores how the long term framework for the DEER (cf. Appendix 2) can be further operationalised.

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To provide consistent, ongoing and permanent access to creative expression and cultural heritage, the need for a Distributed European Electronic Resource (DEER) emerged. This need extends beyond Europe as can be seen from international cooperative agreements reached with UNESCO, the Digital Silk Roads Initiative (National Institute of Informatics, Japan) and the Digital Silk Roads Culture Grid (National Science Foundation, USA).

The DEER has three basic components: distributed repository, a virtual reference room and a forum for collaborative research. Its concept of research matrices enables new comprehension of and insights into evolving technological trends. The DEER is in fact a prerequisite to “valorizing” Europe’s most important asset: its cultures.

As outlined in the Research Topics, the DEER will foster research on dynamic knowledge and new models of culture and have at least five basic implications that will lead the 23 academic disciplines surveyed to experience fundamental transformation in their methodologies and approaches. An integral part of the vision is to use the resources of the DEER for European Masters, Doctorates and all levels of e-learning. In addition, the DEER has implications that reach far beyond facilitating and transforming research in the humanities:

Politically, it can foster European cultural identities in their distinctive regions, thereby overcoming nationalistic, xenophobic feelings with positive, inclusive feelings of belonging. Ultimately, the DEER supports European integration into a unity of well-understood and well-preserved diversities. Similarly, the DEER can help people outside of Europe to understand better our cultures and hence can improve international relations.

Economically, the availability of digital copies, surrogates and reconstructions can increase interest in seeing the original and hence lead to more cultural tourism, both among Europeans and those from other continents. In addition, the underlying vision of free access (in legal and economic terms) to cultural heritage will give rise to more versions, adaptations and augmentations thus strengthening Europe’s creative industries.

The E-Culture Net Thematic Network has identified the development of a Distributed European Electronic Resource as the single most important objective of research in culture and the humanities in FP6 and FP7 and provides the conceptual and organisational foundation of a NoE, rooted in a strong consortium of 132 organisations (representing 537 researchers) with the critical mass to develop this integration at the European level.

**Appendix 1.** Overview of the three objectives and integrating activities of NoE.

**Objective 1: Build DEED through integrating activities**

- 1.1. Security
- 1.2. Legal Agreements
- 1.3. Storage
- 1.4. Multilingual Mapping of Terminology
- 1.5. Semantic Mapping
- 1.6. Distributed Autonomous Cultural Objects (DACOs)
- 1.7. Interfaces
- 1.8. Multimodal Interfaces
- 1.9. Spatial Access (3D)
- 1.10. Spatio-Temporal Access
- 1.11. Virtual Environments
- 1.12. Virtual Heritage Centres

**Objective 2: Fill DEED through networks in each country**

- 2.1. Develop networks
- 2.2. Share research from national, regional local levels
- 2.3. Co-ordinate with national policies (MINERVA)

**Objective 3: Update DEED using Research Matrices**

- 3.1. Co-operation with other Networks
- 3.2. Adapt Netzspannung's Knowledge Discovery tool

**4. Joint Research**

- 4.1. Multidimensional Museums
- 4.2. Historical European Cities
- 4.3. Cultural Tourism
- 4.4. Text and Image Databases
- 4.5. Greek Culture
- 4.6. 3-D and Archaeology
- 4.7. Virtual Environments, Virtual Heritage Centres
- 4.8. Cultural Diversity

**5. Spread Excellence**

- 5.1. Hypermedia E-Learning
- 5.2. PRONOWnce user group
- 5.3. French Examples
- 5.4. Greek Examples
- 5.5. Restoration and Heritage
- 5.6. European Masters and Doctorates
- 5.7. Expand to NAS
- 5.8. International Dimensions
- 5.9. Training, Conferences

**Appendix 2. Suzanne Keene, Francesca Monti, DEER Report: Table of Contents**

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### Appendix 3. Dissemination activities:

One important method of dissemination lies in the website:

<http://www.eculturenet.org/FP5>.

Because E-Culture Net has been in a planning phase for the past years, publications and formal lectures on the idea go back at least one year. Those without a name are by the coordinator.

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##### VELTMAN

"Contemporary Global Issues in Cultural Diversity," *Diversité culturelle, mondialisations et globalization*, Université de la Mondialisation, Paris, Parc de la Villette, 4 June 2003, Paris: Université de mondialisation, 5pp. 2003 (in press).

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## Lectures


### DIAZ

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Paris, “Panel: Enjeux internationaux presents de la diversité culturelle,” *Diversité culturelle, mondialisations et globalization, Université de la Mondialisation*, Paris, Parc de la Villette, 4 June 2003.

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Feltre, “E-Culture, European Masters and European Doctorates in E-Culture,” UNESCO meeting, 12 November 2002.

Mont Tremblant City, “Closing Keynote: Les défis et les exigences de la culture pour les nouvelles technologies: Réflexions sur la cyberculture,” *ASTED 2002*, 9 Nov. 2002.


The Hague, “Envisioning our Digital Future,” *School for Scanning (SfS)* organized by NEDCC, Koninklijke Bibliotheek, 16 October 2002.

Catania, “Lo stato della arte e l'evoluzione delle tecnologie multimediali per la comunicazione del patrimonio culturale,” *Master (Recupero e valorizzazione dei BBCC) della Scuola Superiore di Catania*, 23 September, 2002.

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<http://www.eurochina2002.com/bandeau3.htm>

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Rotterdam, Chair: Tafelgesprekken: Ontsluiting, *Expert meeting copyright en digitale cultuur*, V2, Rotterdam, 13 March 2002. [www.virtueelplatform.nl](http://www.virtueelplatform.nl)

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Vienna, "Keynote: Medien, Sprachen und Integration von Kommunikations-prozessen," *Vielsprachigkeit. Transnationalität, Kulturwissenschaften, Research Institute for Austrian and International Literature and Cultural Studies (INST)*, Vienna, 7 December 2001. <http://www.inst.at/termine/saverne.htm>

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Copenhagen, "Workshop Speaker: Digital Communication of Cultural heritage and International Project Cooperation," Nordic Interactive Conference (NIC, 2001), Bella Conference Centre, 3 November 2001. See: <http://www.nordic-interactive.org/nic2001/>.

Kathmandu, "Culture and the Future of the Internet," Computer Association of Nepal, Russian Cultural Centre, 19 October 2001

Adelaide, "Art in the Age of Computers: How can Culture Survive Global Connectivity?" The Art Link Annual Public Lecture on Contemporary Art, Mercury Cinema, Adelaide, 7 October 2001.

Singapore, "Panel: Realising the Broadband Vision. Repositioning New Media and the Internet," *The 32<sup>nd</sup> Annual Conference of the International Institute of Communications: Governance and Cyberspace: The Substance after the Sizzle*, 1-4 October 2001.

Cortona, Seven Lectures, *Digital Systems for Publishing and Cultural Heritage Communications Course*, Cortona, 24-25 September 2001.

The Hague, "The Need for a Cultural Grid," *Eerste Nederlandse ICT-Kenniscongres*, 7 September 2001.

#### Related Work

##### DIAZ

Diaz-Kommonen, Lily, "Soft Ontologies and Similarity Cluster Tools to Facilitate Exploration and Discovery of Cultural Heritage." (See: <http://cipher.uiah.fi/> for CIPHER-Helsinki and <http://www.cipherweb.org/> for the general CIPHER project website.) This paper will also be presented by Jazmin Avilés Collao at the PEH 2003 workshop (Presenting and Exploring Heritage on the Web) to be held on Monday September 1 at the DEXA 2003 conference in Prague (See:

<http://www.dexa.org/dexa2003/index.php?include=program/ws2.html>).

The works presented are the results of continued efforts at UIAH's Media Lab, since 1996, to develop multidisciplinary research and education programs focused on the intersection between art and design, the humanities, and the information technology sector. (For more information see: <http://sysrep.uiah.fi/> and <http://www.mlab.uiah.fi>)

#### Notes

<sup>1</sup> <http://www.culturelink.org/>


<sup>2</sup> <http://www.circle-network.org/>

<sup>3</sup> Four such possible IPS were identified:

- i) DILIGEANT (Digital Libraries in a GEANT framework)
- ii) ACE (Augmented Cities and Environments)
- iii) CO-CREATE (Collaborative Creation)
- iv) PACE (Personal and Collaborative E-Learning).

<sup>4</sup> <http://www.cineca.it/test/ECultureNet/UltimaVersHome.html>

<sup>5</sup> [http://www.jisc.ac.uk/index.cfm?name=funding\\_7\\_02](http://www.jisc.ac.uk/index.cfm?name=funding_7_02)

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<sup>6</sup> <http://www.incca.org/>; cf. <http://www.cs.vu.nl/~eliens/onderwijs/multimedia/mmc/incca.html>

<sup>7</sup> See the author's *Frontiers in Conceptual Navigation for Cultural Heritage*, Toronto: Ontario Library Association, 1999.

<sup>8</sup> See the author's, *Understanding New Media. Augmented Knowledge and Culture*, 2001, Munich: Fink Verlag (in press).

<sup>9</sup> <http://www.i-massweb.org/>

<sup>10</sup> Namely, 8, 3 and 4 respectively.