



**IST-2002- 507382**

**EPOCH**

**Excellence in Processing Open  
Cultural Heritage**

Network of Excellence

Information Society Technologies

**D.1.2.4 – v6      Periodic Activity Report**

Due date of deliverable v1: 29 April 2005

Actual submission date: 28 April 2005

Start date of project: 15 March 2004

Duration: 4 Years

<b>Project co-funded by the European Commission within the Sixth Framework Programme (2002-2006)</b>		
<b>Dissemination Level</b>		
<b>PU</b>	Public	
<b>PP</b>	Restricted to other programme participants (including the Commission Services)	
<b>RE</b>	Restricted to a group specified by the consortium (including the Commission Services)	
<b>CO</b>	Confidential, only for members of the consortium (including the Commission Services)	X

# Contents

<b>Contents .....</b>	<b>2</b>
Publishable Executive Summary .....	3
Consortium Membership .....	4
<b>1 Section 1 – Project objectives and major achievements during the reporting period .....</b>	<b>5</b>
<b>Management Overview.....</b>	<b>5</b>
1.1 Workpackage objectives and starting point of work at beginning of reporting period.....	6
1.2 Progress towards objectives – tasks worked on and achievements made with reference to planned objectives, identify contractors involved .....	6
1.3 Deviations from the project workprogramme, and corrective actions taken/suggested: identify the nature and the reason for the problem, identify contractors involved.....	7
1.3.1 Overall momentum .....	7
1.3.2 Deviations by workpackage.....	8
1.4 List of deliverables, including due date and actual / foreseen submission date.....	9
1.5 List of milestones, including due date and actual / foreseen achievement date.....	9
<b>2 Workpackage 2.....</b>	<b>10</b>
2.1 Workpackage 2: Integrating activities .....	10
2.1.1 Activity 2.1 Stake-holder needs.....	11
2.1.2 Activity 2.2 Vertical Integration .....	12
2.1.3 Activity 2.3 Horizontal Integration.....	13
2.1.4 Activity 2.4 Showcase Integration .....	13
2.1.5 Activity 2.5 Develop Research Agenda.....	18
2.1.6 Activity 2.6 Socio-economic impact.....	18
2.1.7 Activity 2.7 Brokerage.....	19
2.1.8 Activity 2.8 Encouragement of SMEs’ participation.....	20
<b>3 Workpackage 3.....</b>	<b>21</b>
3.1 Workpackage 3: Jointly Executed Research .....	21
3.1.1 Activity 3.1 Coordinate research activities .....	21
3.1.2 Activity 3.2 Development of New Tools.....	24
3.1.3 Activity 3.3 Common Infrastructure.....	26
<b>4 Workpackage 4.....</b>	<b>29</b>
4.1 Workpackage 4: Spreading Excellence.....	29
4.1.1 Activity 4.1 – Website .....	29
4.1.2 Activity 4.2 Standards.....	31
4.1.3 Activity 4.3 Bursaries and mobility .....	31
4.1.4 Activity 4.4 Education and Training.....	33
4.1.5 Activity 4.5 Dissemination .....	34
4.1.6 Activity 4.6 Showcase Dissemination .....	35
<b>Annex - Plan for using and disseminating the knowledge.....</b>	<b>42</b>
<b>Appendix 1a: EPOCH: Potential Directions for Development.....</b>	<b>43</b>
<b>Appendix 1b – Second Version of JPA2 Editing Instructions .....</b>	<b>53</b>
<b>Appendix 2 Response to comments relating to EPOCH Polls.....</b>	<b>84</b>
<b>Appendix 3 Partner Participation at EPOCH Events.....</b>	<b>87</b>
<b>Appendix 4 Affiliate participants in EPOCH.....</b>	<b>99</b>
<b>Appendix 5: Interpreting “Durable Integration” for EPOCH.....</b>	<b>102</b>
<b>1 Background.....</b>	<b>102</b>
<b>2 The EPOCH proposal and technical annex .....</b>	<b>102</b>
<b>3 Commission Guidelines.....</b>	<b>102</b>
<b>4 Interpreting the standard criteria for EPOCH .....</b>	<b>107</b>

# Periodic Activity Report

## Publishable Executive Summary

The overall objective of EPOCH is to improve interdisciplinary interaction at the interface between technology and the cultural heritage of human experience. EPOCH combines 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. The work is targeted at increasing the effective use of technology at every stage of processing or potential processing of digital data concerned with cultural heritage. The network promotes the integration of research efforts in five vital subfields:

- Field Recording and Data Capture
- Data Organisation, Provenance and Standards
- Reconstruction and Visualisation
- Heritage Education and Communication
- Planning for sustainability of heritage projects

EPOCH's objectives are best served by making effective technology available as cheaply as possible (preferably freely available) and then using the technology in conjunction with cultural assets to produce sustainable and economically viable digital assets. Thus the consortium (which in technological terms is concerned primarily with the design of tools rather than the provision of digital content) does not seek to create a commercial market for the tools. This philosophy is encapsulated in the consortium agreement and is reflected in the Network's plans - the exploitation will happen because the knowledge is disseminated, not because of patent activity.

The Consortium comprises 83 partners listed below and the work is organised in four major work packages, including Management; Integrating Activities; Jointly Executed Research and: Spreading Excellence.

During the first year of its operation EPOCH has established much of the underpinning on which to build future development. It has surveyed the current state of the application of technologies to cultural heritage and of the needs that cultural heritage professionals have for technology and for novel solutions. From this exercise and with feedback from many diverse groups the Network has produced the first iteration of an agreed research agenda for future research topics to move the Network's objectives forward.

One of the mechanisms used to glean feedback from user communities which traditionally have a somewhat restricted view of the potential of technology in the area, has been to build some showcases which integrate different technologies to produce embryonic applications as a vehicle to discussing future potential with different potential user groups. In this way it has been possible to get somewhat traditional professionals to "think outside the box" and share ideas of potential future uses of technology.

The Network has produced 8 of these showcases addressing different elements of the processes involved in discovery, documentation, use and dissemination of cultural heritage information and digital artefacts.

EPOCH has also initiated actions to understand and enhance the relationships between SMEs and the world of cultural heritage and to assist policy makers in their understanding of the socio-economic impact and potential impact of investments in cultural heritage. These activities have

uncovered a considerable expansion of related research activities each covering different aspect of a complex mosaic of techniques and tools for assessing impact in different circumstances. Given the current fragmentation of research activity in the area EPOCH has decided to bring experts in different aspects together for a Symposium designed to synthesise a broader understanding of the issues and of the potential ways forward. The Symposium will be held in Brighton in July of this year.

The other area of business development being undertaken is the encouragement of appropriate SMEs to be successful in becoming involved in the Cultural Heritage sector. To this end EPOCH is implementing plans for a network of centres of expertise which will be able to provide support to SMEs that are unable to cover the full range of specialisations required, so that the companies will be able to be mutually supportive and to draw on the expertise of the centres.

In the jointly executed research activity EPOCH has surveyed current technological research across the range of topics and has defined a set of priorities for a supporting common infrastructure for applications in this field. In addition a set of priorities has been defined for filling gaps in the available technologies and for integrating different technologies into a common framework. A call for proposals to meet these needs has been conducted and the next phase of the NoE operation will implement tools to address these needs.

The Project website has been implemented ([www.epoch-net.org](http://www.epoch-net.org)) and provides information both for the public and for the consortium members. An extensive range of services is now available to consortium members and the volume of data in the various digital asset libraries is expanding rapidly. This includes repositories of documents and software, pointers to other resources, calendar, work areas for different activities, voting mechanisms for consortium consultations and other facilities.

Project partners continue to contribute to standards work, most notably in the adoption of CIDOC CRM for documentation of collections. In addition the Ename Charter for communicating cultural heritage has been adopted extensively world wide – including by the global organisation, ICOMOS.

The consortium has also been successful in initiating a number of programs designed to promote human resource development in support of cultural heritage development, implementing courses, bursary schemes, staff mobility opportunities and events, as well as a range of in-house and other publication activities.

In conclusion the first year of EPOCH has been very successful in establishing the basis of activities for future years and in forming the new partnership and cooperations that will take EPOCH forward and build the European Research Area for the intelligent use of technology in support of cultural heritage applications.

## Consortium Membership

The Consortium Coordinator is the University of Brighton, UK, backed by a group of three other core partners – PIN srl – Servizi didattici e scientifici per l'Università di Firenze, Italy; Ename Center for Public Archaeology and Heritage Presentation, Belgium; and Katholieke Universiteit Leuven, Belgium;

The other partners in the consortium are: Technische Universitaet Graz, Austria; Technische Universitaet Wien, Austria; Leopold Franzens Universitaet Innsbruck, Austria; Instituut voor het Archeologisch Patrimonium, Belgium; Virtual and Augmented Reality Technologies NV, Belgium; Axell Communication srl, Belgium; New Bulgarian University, Bulgaria; Gastiburu SL, Spain;

MAP - CNRS, France; Université de Toulon et de Var , France; Albert-Ludwigs-Universitaet Freiburg, Germany; Technische Universitaet Braunschweig-Institut fur Computergraphik, Germany; Fraunhofer Gesellschaft zur Forderung der Angewandten Forschung E.V., Germany; Rheinische Friedrich-Wilhelms Universität Bonn, Germany; University of Tübingen, Germany; Foundation of the Hellenic World, Greece; INTRACOM SA Hellenic Telecommunications and Electronics Industry, Greece; GeoAnalysis sa, Greece; Technical University of Crete , Greece; Synthesis & Research Ltd, Greece; Advanced Computer Systems A.C.S. – S.P.A., Italy; Politecnico di Milano, Italy; Alma Mater Studiorum - Università di Bologna, Italy; Università degli Studi di Genova, Italy; Ducati Sistemi S.P.A., Italy; Consiglio Nazionale Delle Ricerche, Italy; 4site srl, Italy; HeritageSolutions, Netherlands; Hogeschool van Utrecht, Netherlands; Universitetet i Oslo, Norway; Insitituto Polytecnico de Tomar, Portugal; Universitat Autònoma de Barcelona, Spain; Universitat de València. Estudi General, Spain; Universidad de Jaén, Spain; Diputación Provincial de Jaén, Spain; Universidad Politecnica de Madrid, Spain; The Interactive Institute II AB, Sweden; Karlstad University, Sweden; Eidgenossische Technische Hochschule Zurich, Switzerland; Université de Geneve, Switzerland; Ecole Polytechnique Fédérale de Lausanne, Switzerland; University of Kent, UK; University of York, UK; University of Bristol, UK; Brunel University, UK; University of East Anglia, UK; The University of Surrey, UK; The University of Warwick, UK; The University of Sussex, UK; Paveprime Ltd, UK; Planetek Italia S.R.L., Italy; Instituto Superior Tecnico, Portugal; Kungliga Tekniska Högskolan , Sweden; Oxford ArchDigital Ltd, UK; Istituto per i Beni Artistica, Culturali e Naturali della Regione Emilia Romagna, Italy; Archaeolingua Alapítvány, Hungary; The European Academy of Sciences and Arts, Austria; Institutul de Memorie Culturala, Romania; Ministerie van de Vlaamse Gemeenschap, Belgium; UniRel srl, Italy; Tekniska museet (National Museum of Science and Technology), Sweden; Stichting Bedrijfsregio Kop van Noord-Holland, Netherlands; Ciência Viva – Agência Nacional para a Cultura Científica e Tecnológica , Portugal; Georg-August-University Göttingen, Germany; Scientific Research Centre of the Slovenian Academy of Sciences and Arts, Slovenia; Rijksuniversiteit Groningen, Netherlands; Département des Recherches Archéologiques Subaquatiques et Sous-Marines, France; The University of Hull, UK; University of Patras, Greece; Imagination Computer Services GesmbH, Austria; Instituto Tecnológico de Informática, Spain; National Museums of Scotland, UK; University of Cape Town, South Africa; Culture, Heritage & Development - International, Belgium; Conseil Général de la Côte d'Or (Parc Archéologique d'Alésia), France; Università della Svizzera Italiana (USI), Switzerland; Visual Acuity Limited, UK; Università degli Studi di Napoli - L'Orientale, Italy; European Association for Historic Towns and Regions , UK;

## **1 Section 1 – Project objectives and major achievements during the reporting period**

### **Management Overview**

The progress, activities and experiences of managing the project's operations are documented in Section 3 of the report (below). This section seeks to provide an informed and condensed management overview of progress to date.

## **1.1 Workpackage objectives and starting point of work at beginning of reporting period**

The EPOCH proposal consortium was called for contract negotiation in July of 2003 which was the start of prolonged negotiation. This process appeared on track to terminate in September 2003 (indeed a kick-off meeting was planned for VAST in Nov 2003 and had to be re-designated as a planning meeting), but in the end the final version of the technical annex was not agreed until December 2003. There was then a further significant delay before the go-ahead was received to start work in mid-March 2004.

Bearing in mind that many of the core technical teams involved were bringing together tools and expertise developed under FP5 projects which finished in 2002, it was extremely difficult to maintain the engagement (and indeed employment) of all the partners and research teams through this period. Individuals had been reassigned to other projects and some had moved on from the original partner (some being re-employed elsewhere in the consortium).

## **1.2 Progress towards objectives – tasks worked on and achievements made with reference to planned objectives, identify contractors involved**

Sections below give detailed commentary on each workpackages' progress. This section comments on overall progress and factors affecting it. Detailed commentary to give context to the deliverables being reviewed is included in the separate "reading notes" document.

At the top level the objective of an NoE is "integration" but there are multiple interpretations of this objective. The first IST Call for Proposals under FP6 outlined the objectives of NoEs with regard to creating "durable integration", which included the notion of "Creating the ERA". The EPOCH proposal responded to this and made some statements interpreting the notion of "durable integration," which were largely confirmed in the Technical Annex to the contract. Since the start of the contract the Commission has produced guidelines on assessing integration in NoEs with some draft milestones for each period (of 5 years). These guidelines have, to an extent, re-interpreted the concept of durable integration, but recognise the need for further interpretation in the context of each NoEs mission.

If an interpretation of the Commission's standard guidelines for measures is to be used to assess EPOCH's progress in developing durable integration in the future then it is essential that the interpretation of these measures is agreed. Appendix 5 describes both the Commission's new guidelines and a possible interpretation for EPOCH.

The first year of the EPOCH NoE's funding has been a period of generating momentum following the gap in funding between FP5 and FP6, the prolonged contract negotiation and then the further ~4 month delay in actuating the contract. The fundamental redesign and re-casting of the proposed activities, meant that the elation of the successful bid was followed by substantial renegotiation with partners who had committed originally to a different workplan at a time when funding from previous FP5 projects had finished. The uncertainty generated by this meant that many partners were unable to start committing existing staff, or hiring additional staff, until after the contract officially started. This affected particularly those partners on AC cost models – the substantial majority of the partners receiving funding in the initial planning. There was therefore a significant delay (which was not uniformly felt across all activities and partners) in ramping up activity.

The start date of the 15<sup>th</sup> March, coupled with increasingly stringent equal opportunities and employment laws around Europe, meant that many partners hiring staff had to extend the process

into the summer, which is a bad period for recruitment, and a significant number were still staffing their project teams in the autumn.

The profile of activities reflects this pattern, with significant delays in starting most activities followed by a strong growth in staffing, resources used and activities progressed in the second 6 month period. Some activities were able to start almost as planned and produced early results. These of necessity tended to be those involving fewer partners and operating in a more localised area, operationally and geographically.

Many of the activities included in the JPA are ongoing work over the 4 year funded period. The initial work on these needs to be viewed as a staging point no more than a quarter of the way through the overall plan and often significantly less. The work in these cases has been a mixture of fleshing out a framework to which the four year results will relate and starting to work in a limited subset of the overall remit. This might include working in a subset of geographic areas, or working on a subset of potential tools/applications, or at less depth across a broader range. Which avenue to take has been a matter of tactical decisions by local managers, often based on criteria of availability of effort as staffing has ramped up. In no case however should the result of the first year be measured against criteria for the “completed” task.

### **1.3 Deviations from the project workprogramme, and corrective actions taken/suggested: identify the nature and the reason for the problem, identify contractors involved**

Section 3 contains some detailed deviations (contractors disengaging from the project, reassigned responsibilities, extension of the Executive Committee, and similar detailed items). The Periodic Management Report (D1.3.1-v4) contains an overview of deviations from planned resource deployment. The proposed JPA2 has a covering note (based on the summary of changes in the start of Section 9 of JPA2) which provides an overview of the deviations and corrective actions proposed in carrying the work forward. In each case the detail identifies the individual contractors.

This section deals with significant deviations in broad areas particularly in terms of variations on the timing of the activities where corrective actions have been taken during the year or where there are implications for progress and corrective action in the second year.

#### **1.3.1 Overall momentum**

The first semester was essentially a ramping up of activities. The project was probably, on average, three months behind planned developments over the first 6 months. As can be seen from the deliverables list everything was delivered on time (in one or two cases as place-holders rather than completed pieces of work). In some cases partners were able to commit additional resources in the second semester to recover some lost ground and in almost all cases the rate of applying resources had reached the planned rate by the end of the year.

By the time the project meetings took place at VAST in December 2004 a real momentum had been established and the activities were progressing well. The Executive had determined that following VAST the process of JPA revision would have to be started if partners were to be fully consulted and a revised JPA established in time for delivery at the end of the project year. An extensive consultation was undertaken (which is documented in Appendix 1a and 1b to this document, and the detailed description of activity 3.1 below). Whilst this extensive process was a useful start in cementing engagement from a broader range of partners, the raised momentum followed by the extensive review processes gives a stop-start lurch to the overall project momentum which is likely

to impact on year 2 progress. It is to be hoped that in future years the processes can be streamlined to smooth out the rate of progress.

One consequence of the late start has been that to meet deadlines for deliverables has required working right up to deadlines with the inevitable impact on the production quality at times. In some areas the deliverables are in any case part of on-going activity, so the impact has been more in terms of the coverage that has been achievable within time.

### **1.3.2 Deviations by workpackage**

In WP1 it took around 3 months to recruit and develop the core administration team from the team which had been in place during contract negotiation. This placed significant strains on the team during the initial contract accession and distribution of advances phase, and delayed some of the work on the policy and procedures development. A significant factor in complicating the administration of the project has been the evolving requirements and understanding as the new instrument is implemented for the first time. This has manifested itself in late changes to reporting requirements and some ambiguity in the expectations of the nature of integration expected. The use of the review college whilst significant, has taken longer to bed into the routine procedures of the Network.

In WP2 there has also been some ramping up of activity. The showcase teams which had been planned to be available as continuations of previous projects (EU and others) had in fact lost staff to other activities (and sometimes other organisations) in order to bridge the funding gaps. The integration activities between different previously existing systems which each showcase was designed to provide, required additional effort in some cases to compensate for loss of institutional knowledge of the original systems, as well as the movement to interoperable interfaces between previously distinct projects. For the research agenda work, excellent progress in formulating the agenda based on a wide variety of inputs was not documented as fast as the consortium would have liked although the information gathered was applied to formulating priorities. Activities on more business orientated areas (socio-economic impact, brokerage and encouragement of SMEs) were all somewhat delayed in the initial period but recovered to be running well (if slightly delayed) by the end of the year.

In WP3 there was a similar delay in starting work in the infrastructure area and with a great deal of unchargeable effort from senior staff in AC partners as the planning and coordination of the activities was re-kindled. This was a very similar effect to that experienced in ramping up activity in the showcases (unsurprising since a similar range of partners are involved). By the end of the year a good rate of progress was being achieved and a great deal of enthusiasm for the proposed jointly executed research planned in JPA2.

In WP4 the most significant initial work was in establishing the services of the website and beginning the job of populating it with data. Work in the standards area was patchy (and on closer examination of the planned effort some of this might have been predicted). The most successful early work has been achieved in the area of good practice guides, charters etc (particularly the close cooperation between Ename and ICOMOS over the Ename charter, and the work of UNISI and others in the area of evaluation and design methodologies). There was also significant specific work connected with CIDOC-CRM and experience and feedback on the use of OpenSG, but in documentation and technical standards rather less general review and feedback to standards organisations than had been envisaged. Activities in dissemination, training, events and publications had all been very successfully grown over the first semester and were running at a high level by the end of the first year.



#### 1.4 List of deliverables, including due date and actual / foreseen submission date

Del. no.	Deliverable name	Work-package no.	Date due	Actual/Forecast delivery date	Estimated indicative person-months *)	Used indicative person-months *)	Lead contractor
D.1.1.1	Citizens' Charter	1	6	Within 45 days	0.5	1	1
D.1.2.1	1 <sup>st</sup> Periodic Activity Report	1	6	Within 45 days	3	2	1
D.1.2.2	Draft Plan for Using and Disseminating Knowledge	1	6	Within 45 days	2.5	2	1
D.1.4.1	Establishment of the Review college	1	8	Within 45 days	3	5	1
D.1.1.2	Policies and Procedures Manual - v 1	1	12	Within 45 days	3.5	2.5	1
D.1.2.3	1st Annual Report of the Board	1	12	Within 45 days	5	1	1
D.1.2.4	2nd Periodic Activity Report	1	12	Within 45 days	4	4	1
D.1.3.1	1st annual accounts and audit report	1	12	Within 45 days	9	6	1

#### 1.5 List of milestones, including due date and actual / foreseen achievement date

Milestone no.	Milestone name	Workpackage no.	Date due	Actual / Forecast delivery date	Lead contractor
M1.1.1	Publication of Invitation to Nominate members of the Review College	1	Month 1	08/04/2004	1
M1.1.2	Publication of Draft Policies and Procedures Manual including sections on:	1			1
	Operational Procedures for Network Governance	1	Draft Month 1	Month 3	1
	Approval processes for use of Network grant for integration.	1	Draft Month 1	Month 3	1
	Policy on approval of changes in membership of the Consortium.	1	Draft Month 2	Month 3	1
	Managing Working Group and Task Force formation and reporting.	1	Draft Month 4	Month 14	1
	Defining priorities In developing JPA and Plan of Activities.	1	Draft Month 2	Month 8	1
	Allocation of support for brokerage arrangements.	1	Draft Month 2	Month 3	1
	Selection and monitoring of Staff exchanges and Bursaries for Education and Training.	1	Draft Month 2	Month 3	1

	Selection of Events for support, collaboration, cooperation and recognition.	1	Draft Month 1	Month 3	1
	Establishment of EPOCH positions on standards and appointment of representatives.	1	Draft Month 3	Month 11	1
	Establishment of EPOCH liaisons and appointment of representatives	1	Draft Month 2	Month 7	1
	Dissemination, including publications, presentations, public relations and media.	1	Draft Month 3	Month 3	1
	Encouraging SME involvement in EPOCH activities.	1	Draft Month 6	Month 8	1
	Structure and format for documentation, reports and deliverables.	1	Draft Month 1	Month 3	1
	Open systems, common data formats, and use of repositories.	1	Draft Month 8	Month 13	1
	Quality assurance for reports, deliverables and periodic reviews.	1	Draft Month 2	Month 3	1
	Privacy and freedom of information.	1	Draft Month 6	Month 11	1
	IPR and copyright.	1	Draft Month 6	Month 13	1
	Equal opportunities, disability and other access issues	1	Draft Month 6	Month 13	1
M1.2.1	Inaugural Meeting of the Board	1	Month 2	15 April 2004	1
M1.2.2	Adoption of Annual Report	1	Month 12	Month 14	1
M1.3.1	Adoption of 1 <sup>st</sup> Year accounts	1	Month 14	Month 14	1
M1.4.1	Formation of Review College	1	Month 4	29/07/2004	1

## 2 Workpackage 2

### 2.1 Workpackage 2: Integrating activities

The various activities in this workpackage share a theme of bringing different communities together to define an agenda for integration. Each activity brings a different piece of the puzzle together so that overall a holistic view of issues and priorities can be built. Work in this first period has concentrated on:

- defining the methodologies to be used to gather data and analyse it,
- analysing existing survey results for information,
- plan the actions required to complete understanding of the existing situations, and
- beginning actions to collect additional results.

Activities 2.1, 2.2 and 2.3 are designed to collect data from existing communities. Activities 2.4, 2.6, 2.7 and 2.8 are pro-active in stimulating situations where potential future directions can be debated and the results used to help define the 'direction of travel' for technological developments intended to address the needs of monuments sites and museums.

Activity 2.5, which formulates an agreed research agenda used to define revision to the JPA for future periods, brings together the conclusions of the above mentioned activities and formulates the priorities and actions to be taken.

### **2.1.1 Activity 2.1 Stake-holder needs**

A number of meetings have been held between the main partners engaged in this activity (Ename Center, Centre for e-Tourism Research (UNIS), department Monuments & Landscapes (AML), Regio Kop van Noord-Holland (BEDRIJFSREGIO), CHEDI, European Association of Historic Towns and Regions (EAHTR), Conseil Général de la Côte-d'Or) and the proposed methodology was refined. Additional meetings have been held as follows:

- Meeting in Jaén with Diputation of Jaén and Archaeological Center (involved partners without budget).
- Meeting with Secretary of State of Culture and ICT of the Netherlands.
- Several meetings with representatives of museum, governmental and educational interests in Brussels, Belgium.
- Meeting with local cultural heritage representatives of Noord-Holland in Schagen, Netherlands.

Visits to some representatives of these groups have been used to refine the initial thinking on the appropriate format of interviews and questionnaires with stakeholders. Initial assessment of current knowledge had indicated that better assessment of the quality of the definitions of the stakeholder needs were required and it was felt that these qualitative judgements would be best addressed by holding a workshop of informed representatives of stakeholder constituencies. Therefore, the data collection process was altered to a combination of a workshop and targeted interviews/questionnaires.

A preparation meeting for the workshop was held in Brussels on 12th July, 2004 and a selection of stakeholder representatives for the Stakeholder Needs Workshop was made, with active support of all activity partners. Extra support for the activity has been received from the University of Lugano and Polytechnic of Milan. The EPOCH Stakeholder Needs workshop took place with an invited audience representing all major constituencies of stakeholders, on October 8-9, 2004, in Brussels. The workshop was preceded by a meeting on October 7, 2004 of all partners involved in the activity.

An intermediate Stakeholder Needs report was presented at the VAST2004 conference on December 6, 2004, and was published in the EPOCH documentation volume of the conference. After the conference, this intermediate report was made available on the EPOCH website for comments.

The opportunity was also taken at the annual meeting of the European Association of Historic Towns and Regions (EAHTR) in Norwich in September to establish links to several key members of the Association. Written definition of stakeholder needs have been solicited from selected specialists.

The Bedrijfsregio Kop van Noord-Holland has organised interviews with local authorities in Noord-Holland to discuss and analyse their needs, and has made a detailed report on this. The Conseil Général de la Côte-d'Or has provided detailed reports on the use of technology in museum context. CHEDI has organised several meetings with representatives from museums, archaeology, and governmental organisations and has produced a detailed report on the recorded needs. The Ename Center organised several meetings with educational representatives.

All these inputs have been collated to the Stakeholder Needs report of the first year.

A team from the HEREIN network was established to help gather stakeholder needs from that community through questionnaires (also covering questions about Vertical Integration issues, activity 2.2). These questionnaires are ready and will be distributed to the national representatives of HEREIN, who will further distribute this to the relevant specialists in each country. The results of these inquiries will be processed in the second year.

The Bedrijfsregio Kop van Noord-Holland is setting up a local network of cultural heritage organisations to investigate the use of ICT in the local heritage presentation.

The activity was also presented at the VSMM2004 conference in Ogika, Japan, where the link was made to further involve this (mainly Asian and American) community and the Virtual Heritage Network. The VSMM2005 conference will be organised by the Ename Center in Ghent, Belgium and during an EPOCH workshop, the conclusions of the Stakeholder Needs activity will be presented and discussed.

#### **2.1.1.1 Deviations from plans and corrective actions**

Extra support for the activity has been received from the University of Lugano and Polytechnic Milan. The Stakeholder Needs Workshop might be considered a technical deviation from plans although consultation through other means than questionnaires and interviews had been envisaged.

#### **2.1.2 Activity 2.2 Vertical Integration**

In this activity EPOCH is surveying the ways in which technology has been used in monuments, sites and museums to date, and the implications upstream and downstream in the complete pipeline from data acquisition to the various target audiences and applications for dissemination. Several meetings between the University of Surrey and Ename (the two partners involved in this activity) were held to plan this activity.

An explicit study of authoring systems for interactive storytelling systems has been undertaken. As part of this, two tests on the creation of a presentation system (Tervuren and Sagalassos) by archaeologists were finalised, which was used to determine how successful the application is in terms of uptake and sustainability.

Several museums/sites in Belgium were visited and the appropriate people were interviewed as a test phase (Brugge, Ieper, Oostende) and the methodology was developed and tested. After this test period, several other museums were visited or verified on line.

An analysis of existing technologies was made through consulting previous studies (esp. DigiCULT) and relevant conference proceedings. The main conclusion of this study and the visits was that existing studies focus too much on technological aspects, not on aspects of successful uptake, maintenance, and sustainability. The EPOCH study has not only focused on the technologies that have been used but also on the factors which determine whether the use was successful. . The study traces also the methodology used to integrate the technology and tries to describe this process based upon the EPOCH pipeline model.

An extensive search has been made to find CH related European and national projects, and assess these projects in terms of technologies and application domain.

A database has been designed to store the acquired data, and data entry is in process. Meetings were made with the EPOCH website team to ensure that the data will be available for online use.

The activity has been represented at the following relevant meetings and conferences, as part of surveying the current state of the field:

- TILE exhibition (Maastricht).
- Meeting with UNESCO (including discussion of World Heritage Sites - Lon Addison).
- Archaeological conference (Louvain la Neuve –September 28-29, 2004).
- ICHIM04 (Berlin – 31st August – 2nd September 2004).
- EAHTR Symposium (Norwich –Sept 9-10, 2004).
- Cultuurnet exhibition (Gent - 13th September 2004).
- ECSITE Annual Conference 2004 (Barcelona – Nov 4-6, 2004).
- VSMM2004 (Ogaka, Japan – Nov 17-19, 2004).

The results of the activity have been presented at VAST2004 in two papers – one reviewing existing technologies and one on the use of authoring systems. In addition, an EPOCH workshop was proposed at VAST2004 to allow presentation and debate of the results of the surveys, and to determine the implications for future research as represented by the common Research Agenda.

### **2.1.2.1 Deviations from plans and corrective actions**

The cost for analysing the use of ICT in cultural heritage by visiting is substantial and even prohibitive. Therefore, EPOCH members will be solicited for input and regional meetings in major countries will be organised from the second year onwards to ensure better coverage of Europe.

### **2.1.3 Activity 2.3 Horizontal Integration**

This activity is where EPOCH keeps track of developments in different related applications areas and technological fields in order to learn from the best of novel practice elsewhere. There is a clear relationship to Activity 2.2 and close liaison between them.

Liaisons established with other European projects (ProLearn, CHIMER, DELOS, KALIMERA, ...) have been initiated and additional liaisons established with companies in the visualisation industry (Barco). The DigiCULT technology watch report has been analysed and from these various inputs it has been decided to use a thematic analysis of several technologies as the basis for ongoing monitoring. The themes of developments in other fields are:

- user interaction
- access and personalisation
- sound
- games
- visualisation.

As part of the work in this area the activity was represented at the CASA conference (July 7-9, 2004).

A joint workshop with Activity 2.2 has taken place at VAST2004 and an interim report was published in the VAST2004 EPOCH documentation. A blog concerning the above mentioned technologies has started on the EPOCH website.

#### **2.1.3.1 Deviations from plans and corrective actions**

It was not evident to create interest in this activity from the membership and the industry. Also, the distinction between horizontal and vertical integration is not always clear, and more emphasis needs to be put on matching between stakeholder needs and the available or emerging technologies. From year 2 onwards, we will group the Stakeholder Needs and Vertical and Horizontal Integration activities into a Sector Watch activity that provides a solution to these problems.

### **2.1.4 Activity 2.4 Showcase Integration**

The showcase activities were probably the most ambitious set of plans for the early days of EPOCH. Each showcase is designed to demonstrate the integration of novel technologies into systems which show potentially interesting and novel ways of disseminating cultural heritage experiences. The planned timescales had been designed to try and release some showcases in initial form at the CAA2004 event in Prato, but the delays in final approval of the contract meant that this would have been at the end of month 1 and completely impossible to achieve or even plan with certainty. The proposed timelines for all showcases have therefore been harmonised and redesigned with:

- Initial publicity and interim results shown at the EAHTR Symposium on “Heritage for the Future - realising the economic and social potential of a key asset”, which was held in Norwich, UK on 9th – 10th September 2004 (month 6).
- Initial versions of all showcases shown at VAST2004 (month 9).
- Final versions of all showcases ready and demonstrated at CAA 2005 (month 12).
- Other venues have been defined to continue to demonstrate and promote these showcases (see Activity 4.6 – Showcase Dissemination).

Ultimately, there was no space for showcase stands and equipment to be set up at EAHTR, but EPOCH speakers were invited to present two talks. The first was a general one about the work and objectives of

EPOCH, given by the coordinator; the second, given by Andrew Day of UEA, Norwich, gave an insight into the urban modelling aspects of showcase 4. These presentations were well received and drew significant debate. Publicity flyers of the showcases were produced and handed out to the delegates.

Initial releases of all showcases were shown at VAST2004 in December. Live demonstrations in the exhibition space for two days of the symposium were provided, as well as a parallel stream during those two days to allow each showcase to make a detailed presentation and give the opportunity for discussion and feedback on the potential usefulness of the technologies integrated and showcased.

Final versions of the showcases were shown at the CAA2005 conference in Tomar, Portugal, in March 2005, through a common 'Innovate' presentation and a hands on demonstration of all showcases.

Two showcases had changes in the partnership and needed reorientation (see below).

The showcase activity will not continue in the second year as all showcases are finalised. All effort now will be concentrated on the wide dissemination of these showcases on conferences, meetings and symposia (see Activity 4.6 on showcase dissemination).

#### **2.1.4.1 Showcase 1 'On Site Reconstruction Experience'**

In this showcase, ARCHEOGUIDE AR tools, developed by Fraunhofer IGD, are combined with 3D modeling methods developed in MURALE by ETH and the University of Leuven, Belgium. This allows the integration of real and virtual scene elements on a head-mounted display and facilitates the comprehension of the site being visited. The showcase was ready for initial use at VAST2004 and also shown at the CeBIT exhibition (March 10-16, 2005, Hannover) where it was demonstrated on a new telescope-like device.

#### **2.1.4.2 Showcase 2 'Multimodal Interface for Safe Presentation of Valuable Objects'**

The application is based upon the ARCO software of the University of Sussex, and a concept developed by the Ename Center. The replica is made through stereo-lithography of a 3D model of a valuable museum object, acquired by laser scanning. EPFL and the Ename Center created the 3D stories with virtual reconstruction of the Ename abbey and its inhabitants, and a digital restoration of the object. The visualisation of the object is achieved through manipulating and touching the replica.

Based upon an existing virtual model of the Ename abbey, the inside of the abbey church was created. The monks and the abbot were created as virtual humans. A digital restoration of the object was created to show the original state and use of the object. Utmost attention was given to the scientific accuracy of the virtual models and humans. The storylines were developed, the technical aspects of the interactive replica and the interface with the software were sorted out. The application was ported to a light version of ARCO where the SQL database had been replaced by XML structures.

Preparations are made to install the showcase in a slightly redesigned form in the Ename museum, where the original object is on display, so that this showcase can be tested against the general public.

The showcase was shown in an initial form at VAST2004 and shown in its final form at CAA2005.

#### **2.1.4.3 Showcase 3 'Tool for Stratigraphic Data Recording'**

At Brunel University, software was written to generate an XML file of the STRAT tool data model (from 3D Murale), and the Jnet scheme (University of Kent) and the Map Force tool were studied and tested. An initial mapping between the STRAT tool and Jnet schema was made using Map Force, and the STRAT tool was installed on new workstations through an Open Inventor license.

As the stakeholder needs are considered of utmost importance in the EPOCH network, the archaeologists at K.U.Leuven drafted a document listing the user requirements for the new stratigraphic tool. These requirements were extensively discussed with the technologists at Brunel and Canterbury.

As one intended to collect stratigraphic data for the showcase during the summer campaign at Sagalassos, one of the K.U.Leuven archaeologists was trained to make 3D recordings of stratigraphic layers, using the passive "shape-from-stills" technique. He was also trained to process the recordings with the software developed by ESAT (K.U.Leuven).

For the preparation of the showcase one needed to obtain real archaeological data. These were collected during the 2004 excavation campaign at Sagalassos (Turkey), in July and August. As a test case for this tool

we chose the test soundings near the sanctuary of Hadrian and Antoninus Pius. The first trench was chosen in order to collect three-dimensional data to be used in the new tool for stratigraphic visualisation and analysis. Using the "shape-from-stills" technique developed by ESAT, all excavated layers and features were recorded for 3D visualization. Processing of these recordings was already done in the field, and later on in Leuven. At the same time the stratigraphic relations of the layers and features in the test trench were meticulously registered in order to obtain a complete Harris matrix for the excavation.

Brunel University and University of Kent provided XSLT transformation files for transforming between STRAT and Jnet schemas. A similar method was written to export STRAT data as an XML file and to invoke the XSLT transformation and import XML data to the STRAT tool. A similar method was written to export Jnet data as an XML file and invoke the XSLT transformation.

A leaflet with a concise description of the functionalities was prepared and the showcase was presented and demonstrated at the VAST2004 and CAA2005 conferences.

#### **2.1.4.4 Showcase 4 'Multilingual Avatars'**

Cities and towns around the world have a huge wealth of historically significant and culturally important material in the form of buildings and events. In this showcase, EPOCH is integrating a toolkit of applications specifically to enable this information to be recreated as virtual reality worlds for visitors to see for themselves how buildings once looked; to hear from virtual guides the history of significant buildings and events; to explore locations unavailable to them.

A showcase involving a virtual guide to the World Heritage City of Wolfenbüttel was developed using the OpenSource Scenograph OpenSG with custom add-ons for rendering speed-up techniques including subdivision surface work from Braunschweig University. The system is being designed to use models generated with the CHARISMATIC modeller developed by UEA, Norwich, under the 5th Framework. ITRI (Brighton) systems are used to represent the knowledge base and generate natural language responses to questions from the visitor, in the appropriate language. These are then converted to speech using a high-quality text -to-speech system.

Both modelling and rendering packages are designed for mid- to high-end consumer PCs with support for multi-channel big screen theatres.

A number of coordination and planning meetings have been held between partners, where possible linked to other business, in Norwich (April, Sept, Nov), Braunschweig (May) and Brighton (July) to plan progress. Design issues which have been considered include the major decisions about the level of language and conversational capability that is attempted in a limited showcase. This includes planning a staged development of increasing sophistication of the level of knowledge assimilated by the avatar and the variability of response. To decide this, other factors have had to be considered – the richness of the experience in terms of the range of information about the environment which can be interrogated; the size of the virtual environment which it is possible to visit in the course of a showcase; the paradigm of interaction; and the nature of the script.

UEA, Norwich have been working in two areas. Firstly, they have converted the modelling and basic rendering software developed under the FP5 CHARISMATIC project so as to run on an OpenSG standard, open-source platform. This has involved learning about the OpenSG system and discovering that some of the more cleverly implemented features in the original software do not map easily to the new environment. This has particularly affected some of the rendering speed-ups which were so important for gaining performance improvements in the previous system.

Secondly, UEA has been developing the Avatar Research Platform capabilities and integrating these with other aspects of the software and with the University of Brighton's multilingual systems.

ITRI, Brighton had some delay in recruiting the staff required to progress the showcase contributions, but has been working on the knowledge base and scripting of the experience with which the visitor will interact. This requires careful definition of the interrogation protocol for controlling the path through the experience and the state of the avatars 'knowledge' and reactions to a range of inputs and situations at any time.

TU-Braunschweig has been providing technical support on the OpenSG aspects as well as extending the Wolfenbüttel model to incorporate better modelling and a wider range of the monuments in the town than had been available previously.

The initial version of the showcase was demonstrated and presented at VAST2004 in December. Significant improvements were done after VAST, particularly to address some of the difficulties in meshing OpenSG with the more advanced graphics techniques which had been used in CHARISMATIC. The final version of the showcase was presented at CAA2005 in March (a technical problem prevented a full blown demonstration, but animations were available as backup).

#### **2.1.4.5 Showcase 5 'E-tourism through Cultural Routes'**

This showcase was designed to integrate technologies in order to show how a portal and a network of local presentation systems could support thematically based tourism in an international context. Tourists would be able to visit dispersed sites and nevertheless experience the cultural links existing between them. Visits could be done in any order and at a pace determined by the visitors themselves. The presentation will automatically adapt to such choices and also to the personal interests of the visitors. Rather than focusing on the replacement of on-site visits by virtual web presentations, the focus is on IT enriched site visits, linked with e-business (digital souvenirs), and supported by a portal for pre-visit and post-visit support.

Several meetings have been organised with the involved partners (Ename Center, University of Surrey, Hogeschool, Utrecht) in Ename, Utrecht and Brighton to discuss the structure and implementation of the cultural route system. Extensive research has been made concerning the functionality and structure of existing cultural routes, the Iberical route of the Archaeological Centre in Jaén, Spain (EPOCH partner) has been visited, and related projects have been analysed and discussions with tourism and heritage specialists have been held.

A detailed concept was made on the technical structure of the portal, central database and the local systems, the networking and implementation aspects, and the integration in existing routes and tourist context.

The technologies to be integrated here consist of visitor identification and networked knowledge bases, such that visits at one site are logged and used to guide the visitor at subsequent visits to this or other related sites along the route. The networked system is fully distributed and supported locally, hence does not need any major central organisation to supervise and maintain it. In other words, the cultural route consists of micro-routes, locally managed by a local authority or tourism organisation, and supervised by a central organisation through a very light structure, as most of the updating of the portal happens automatically. The structure also has been designed in such a way that existing routes, sites and tourist offering can be smoothly integrated. The distributed aspect and integration of existing elements are instrumental for the feasibility, cost efficiency and sustainability of the system.

This showcase has been badly affected by the withdrawal at the very last minute of IBM (Belgium) from the network at start-up. The original showcase plan had been predicated on the belief that IBM would be partners, and would bring in specialist knowledge in personalisation, portals and RFID. Their withdrawal has left a significant problem. Planning for a different way of addressing the same showcase objectives has been somewhat delayed. As the implementation of the planned features would require tendering for replacement services, the showcase was limited to the design and concept of the cultural route, the implementation of a local route system in Oudenaarde, Belgium and a test implementation in Wieringen, the Netherlands.

A research article concerning international cultural routes was presented at VAST2004, where a presentation of the concept of the cultural route and a demonstration of the Wieringen test implementation were made. At CAA2005, a first version of the local route system was available.

In cooperation with the Archaeological Center in Jaén, Spain, a paper was presented at VAST2004 on the work of an EPOCH bursary to start up a cultural route system on the Iberical Route in Spain.

#### **2.1.4.6 Showcase 6 'Avatar based Interactive Storytelling'**

Storytelling is a familiar and effective way to convey information to a general audience, especially in the field of Cultural Heritage. Yet with the increasing use of standardized interactive applications in museums and historic sites, it is difficult to appeal to a wide range of visitor interests. This problem can be solved through the use of interactive storytelling, which allows the visitor to choose from a large selection of subjects and themes to create a personalized 'story', appropriate to his or her interests and the time available for the visit.

The showcase explores the possibilities of using an avatar as a storyteller, linked to synthetic speech. The stories contain virtual reconstructions of an archaeological site, populated with virtual humans. The text-to-



speech software was intended to be provided by IBM, but was replaced by ScanSoft software. The synchronised avatars are a development of the Computer Vision Lab of ETH Zürich, and use standardised emotions. The virtual humans in the stories are created and animated by MIRALab. The stories explore issues of virtual reconstruction, scientific uncertainty and communication with the user. Two avatar technologies were explored. The first technology uses a 3D avatar that is driven by phonemes, so that synthetic speech (generated from the story database) can be synchronised with the lip movements and facial expression. The second approach uses 2D morphing of images, driven by external speech (coming from an actor or a text-to-speech system). This system has proved to be very effective to make portraits or statues come alive, and is easy to integrate in HTML and XML based applications.

This showcase has also been affected by partner changes with the withdrawal of IBM and the change in the way the archaeological services due to be provided by SYNTRES have in the end been organised. As no cooperation could be established with the archaeological site of Akrotiri, existing data of the abbey of Enane has been used to create new reconstructions of interiors of the abbey. An initial implementation of the showcase was demonstrated at VAST2004 with a final version at CAA2005.

#### **2.1.4.7 Showcase 7 ‘Archaeological Documentation for the Semantic Web’**

Archaeological documentation is definitely going digital, but this trend may not be able to solve the problems arising when it is desired to perform a cross-archive search. What is in theory made possible by the support of IT, namely the possibility of managing effectively huge and diverse data archives, is often frustrated by the different structure such archives were given by their creators. This showcase is showing that such integration is in fact possible, using technology which is already available and which substantially improves the way digital archaeological data have been handled as yet. The showcase also considers existing paper documentation, and has been integrated with digital archives.

The showcase has been applied to the excavation database of Cumae, a Classical site in Southern Italy, and to a set of excavation databases and excavation diaries from a Medieval site. Digitization and encoding of nineteenth and early twentieth century reports of archaeological collections and sporadic finds in Florence has been successfully tested as well, while the encoding of data on collections of Norwegian archaeological museums, is being mapped to this new system. The case studies total more than 10,000 records.

The showcase is integrating existing open-source systems for archive of collections with a system for handling excavation data being developed by the University of Kent. Archives are encoded using an XML CIDOC/CRM compliant structure. Existing databases may be easily converted with no loss of information. The search engine is based on eXist, an Open Source native XML DBMS. Data are organized in collections (corresponding to individual archives) with a hierarchical structure, and each collection may be searched separately or at any chosen aggregation level: e.g. all collections pertaining to a site may be grouped together in a super-collection while archives maintain their individuality, with a directory-like structure.

The initial version of the showcase was demonstrated and presented at VAST2004 with a final version at CAA2005. A meeting with all involved and interested EPOCH partners was held at VAST2004.

#### **2.1.4.8 Showcase 8 ‘Image-Based Modeling’**

The image based modelling showcase is based on integrating technologies for:

- The calibration and orientation of the images.
- The manual or automatic image matching for 3D point cloud and surface generation.
- The texture mapping of the 3D model for photo-realistic visualization.

The 3D model of the Great Buddha in Bamiyan and its empty niche have been reconstructed with a relative accuracy of ca 1-2 cm while the digital terrain model has an overall accuracy of ca 1.5 pixel (ca 3.5 m). The generated digital models are now used for the documentation and visualization of the destroyed monument, for virtual flights over the cultural heritage site, for animations as well as for the setup of a tourist information system.

Katholieke Universiteit Leuven have added image-based rendering component to the case studies reported in the showcase. Together with the Enane Center, a landscape reconstruction system was developed where oblique aerial views (taken from a helicopter) are used to make an interactive visualisation of the landscape. The use of image-based rendering allows not only to produce a smoothly behaving interactive landscape

object (which is not feasible through straight forward aerial photography) but also to visualise virtual reconstructions of historical periods of the landscape, perfectly in line with landscape images of today. This allows for the creation of augmented reality versions of the landscape, where virtual historical buildings can be put back on their archaeological remains, or where landscape features of today can be seen in evolution through time.

This successful use of image-based modelling technology has already led to additional enquiries to the Ename Center from other sites, to have similar work done there. A paper on this approach was presented at VAST 2004.

The showcase was presented and demonstrated at VAST2004 and CAA2005.

#### **2.1.4.9 Deviations from plans and corrective actions**

Apart from the timing difficulties noted in the introduction description of showcase activities, a number of difficulties with individual partners have arisen. The two most obvious have been the impact of the withdrawal of IBM (Belgium) who had been a partner in two of the showcases (5 and 6). In addition, showcase 6 has also been hit by the changes in involvement of SYNTRES (as reported above).

Apart from the delayed start date relative to the planned dates for the showcases, some partners have experienced difficulties in staffing, as staff were lost during the period between final documentation in late 2003 and activation in March 2004, or where recruitment was delayed until funds were confirmed as in place. For these reasons timescales, in this area have been reorganised as described in the introduction to the activity above.

#### **2.1.5 Activity 2.5 Develop Research Agenda**

The Research Agenda summarises the conclusions from different EPOCH activities, to create the priorities of the Network for its work in particular, and for the Cultural Heritage sector in general. A Research Agenda workshop had been planned to take place at the VAST conference.

A related development which has taken place has been the eCulture symposium held in Graz in May, at which the EPOCH coordinator was an invited keynote speaker and from which a paper was produced summarising the results of the event. The theme of the symposium was “European Cultural Heritage: RTD Challenges Ahead” and a book from the event is expected to be published soon.

Activity 2.5 was scheduled to start in the second half of the second semester but has been suffering from the somewhat late delivery of results from the contributing activities (2.1 to 2.4). Therefore, priority was given to the JPA revision and the technical aspects of the Research Agenda, as they were needed to start the NEWTONs in the second year.

Originally, this Research Agenda workshop was planned to take place at the VAST2004 conference. Due to the delayed start of EPOCH, the VAST conference came too early in the process. Therefore, a Research Agenda workshop was organised in Leuven on February 17-18, 2005. At this workshop, 22 specialists were invited, most of them from the EPOCH network and the Review College. After the workshop, some additional meetings with external CH specialists took place. The conclusions of this workshop, together with additional inputs from the activities and external specialists, were summarised in a first draft report.

##### **2.1.5.1 Deviations from plans and corrective actions**

A slight delay in most of the workpackages has caused that most results were coming quite late. Therefore the process of finalising the report, organise feedback from the Review College and Board of Directors, and approval by the Board of Directors has been somewhat delayed. The process will follow its normal course and provide a final report shortly after the end of the first year.

#### **2.1.6 Activity 2.6 Socio-economic impact**

An initial meeting of partners involved in this activity was held at CAA in Prato as part of the kick-off meeting. This resulted in some refinement of the methodology to be used in assessing socio-economic impact and an initial specification of the work to be undertaken. The initial specification was used and further refined at an exploratory meeting with a real site – held in Ename on 24th May. A follow-up meeting was then held in Brighton on 24th June when a related activity being initiated at the University of Brighton

attempting to assess social impact was presented. Some initial literature searches were also completed in this period at the University of Brighton.

At the same time there was one false start in efforts to recruit a suitable researcher to support the area, which delayed a full advertising to the extent that it was felt better to advertise and recruit immediately after the summer vacation period. The process was completed successfully and a lead researcher started in October 2004 with a clear plan of action. The analysis of the Ename site was started as a first case study.

A workshop session at the VAST2004 conference in December 2004 was organised, and an initial report in this area was prepared and published in the VAST2004 EPOCH documentation. Work is expected to continue into the third semester in order to implement suitable modelling tools for distribution via the EPOCH website. Further analysis of the Ename site is foreseen in May 2005. Other sites will be chosen for analysis during the coming year.

#### **2.1.6.1 Deviations from plans and corrective actions**

Due to a late recruitment, the activity was somewhat delayed, but current work is catching up and the activity will continue as scheduled.

#### **2.1.7 Activity 2.7 Brokerage**

Before the start of the funded period a great deal of information had been gathered from partners concerning the facilities, skills, datasets, and systems that they would be prepared to bring into a brokerage scheme. The plans for brokerage envisaged an on-line database and search facility along with specific calls for proposals to which EPOCH might contribute partial support.

By the time the funded period started much of the information which had been returned was over a year old and it was felt that before the information went live it should be validated by the partners concerned with minimum effort. It has therefore been decided that the data had to be available through an on-line database with on-line update by partners in the restricted area of the site. The data entry had been undertaken through the fall and is online, with partners updating the information.

Several offers were made to the brokerage service of new high end infrastructure that became available at EPOCH partners (such as for example motion-capture equipment). On the other hand, very few demands for use of equipment, infrastructure, skills, ... came along. This is to our opinion due to the new nature of the service, so that partners do not always realise the opportunities created by the brokerage service. The use by companies doing cultural heritage projects was not present yet, as a structured interface to the companies (see Activity 2.8) is still in development.

Several EPOCH related projects were submitted under the Marie-Curie and INTERREG 3 programmes. One Marie-Curie project (CHIRON) was approved, and at this moment, there is no decision yet on the others. The consortia consisted mainly of EPOCH partners, with some additional partners.

To support actions about endangered sites, discussions were made with UNESCO to link with the database of experts that are called upon for fast interventions at endangered sites. Technically this is far from easy and would require substantial funding to develop the necessary interfaces.

Further discussions were made to make archaeological reference collections available for the EPOCH community. The necessary steps in this process will be studied in the second year, to make these collections available online. Also other datasets (for example multiple resolution versions of laser scan data of archaeological objects) were prepared for download.

The activity remained open to approaches for responsive mode actions and one project has been approved for implementation. This involved a liaison between two EPOCH partners, one with scanning technology and providing the archaeological research and support for an endangered rock art site in South Africa. The data needed extensive post-processing (stitching over a hundred data scans) and will be made available via the website for other researchers to use for research purposes.

#### **2.1.7.1 Deviations from plans and corrective actions**

The brokerage definition needs some refinement, as the service did not have the anticipated success. Voting by the membership has proven that some reorientation was necessary. Nevertheless, this action has built a full blown partner database, that will remain a cornerstone of further integration.

Brokerage in the coming years will concentrate on active creation of projects and on support of project proposals. It will continue to provide datasets and software for download.

The active creation of projects will solicit projects ideas within the membership that have a high priority to be developed (see Research Agenda), and find partners (from the membership where possible) to make a project proposal, and find appropriate funding. Searches on the partner database and ongoing contacts within the membership will make this possible.

Existing project proposals within the membership can get support for improving and testing the concepts and feasibility of the proposal, yielding a higher quality of projects and a higher success rate when applying for funding.

### **2.1.8 Activity 2.8 Encouragement of SMEs' participation**

Several meetings have been held in Ename and Brighton to refine the strategy to create a sustainable encouragement of Small and Medium sized Enterprises (SMEs). This strategy is based upon multiple discussions with organisations active in the implementation of ICT in heritage, and with several EPOCH partners.

The notion of a virtual cluster has been refined to a network of expertise centres, linked with local clusters, acting as learning networks.

Learning networks do not refer to networks of organisations where learning simply happens –as it is the case with every network- but to inter-organisational networks where structures have been established with the primary purpose of increasing the participants' knowledge. These networks:

- involve representatives of different organisations, mainly but not exclusively, private firms,
- are formally established with clear and defined boundaries for participation,
- have an explicit structure for operation with regular processes that can be mapped to the learning cycle,
- have a primary learning target – some specific learning/knowledge which the network is going to enable, and
- can assess the learning outcomes which feed back to the operation of the network.

The formal character of the learning network provides an 'institutionalised organizational platform' which represents a permanent structure for identifying knowledge gaps and satisfying knowledge needs, allows evaluation and accumulates experience regarding the support required by learners. The challenge presented to learning networks is to develop the managerial capabilities required for sustaining and improvising these activities on a long-term basis. In other words, the challenge for learning networks is to develop the organisational processes and the managerial capabilities which allow the systematic emergence and development of communities of practice between different firms. A critical enabler of this strategy is the appointment of a dedicated facilitator to assist the groups practitioners in their structured reflection. The facilitators should go through special training (e.g. how to enhance group dynamics, how to tackle disagreement between members) and accumulate relevant experience over time. The learning groups receive further support by the network i.e. a wider organisation which includes all group members as well as those which are not in any group at a certain time.

Expertise Centres on the other hand are non profit organisations belonging to or closely linked to the local governmental level. It is advisable that Expertise Centres are existing organisations that have already a role within the CH domain (archaeological research centre, support organisation for monuments and sites, CH research centre, etc), hence have existing activities in which the expertise centre function can be imbedded. The vision is that these centres will act as an intermediate between the different CH players, such as academic research, policy makers, local authorities, and improve substantially the cohesion of the sector.

The strategy adopted by Activity 2.8 is to establish a number of expertise centres and their connected learning networks in different locations across Europe. Seven EPOCH partners have expressed interest to become such an expertise centre.

In particular, the strategy is to provide the required resources and training to a local expertise centre and EPOCH partner which is then going to take the lead in setting-up and operating a learning network. Local companies and other organisations with an expertise in issues of cultural heritage will be invited to

participate, in order to share knowledge, exchange experience and learn from each other. These local learning networks will then be connected to a wider European meta-network to discuss issues and share knowledge related to the development of IT in cultural heritage, to the implementation of cultural heritage policies, to information providing to local authorities and other users of IT, and to technology transfer from research to the companies. Local differences in law, governmental structure, policies, culture and customs and doing business will also be taken into account in each network.

Past experience with clusters of SMEs in industry sectors suggests that the learning network is a necessary first stage to gaining trust and creating further collaboration. The learning networks are designed to grow trust and encourage a number of other benefits in terms of shared operations between SMEs and greater involvement in other aspects of Network operations – for example, joint marketing, collaborative work with complementary skills, handling peaks in demand through sub-contracting, shared specialist staff, secondments and mobility.

### **Deviations from plans and corrective actions**

Through many discussions within the cultural heritage domain, it became obvious that a two level network structure, with local clusters of companies, linked to expertise centres that have a bridge function, is a refinement of the original plan. To support the foreseen activities and start-up efforts, extra budget has been foreseen in the JPA18 of the second period.

## **3 Workpackage 3**

### **3.1 Workpackage 3: Jointly Executed Research**

Also here, the report will describe the work at the level of the three activities of this WP:

- 3.1 – Coordination of Research Activities
- 3.2 – Development of New Tools
- 3.3 – Common Infrastructure

#### **3.1.1 Activity 3.1 Coordinate research activities**

##### **Objectives**

1. Organising regular consultation with Stakeholder Need (WP2.1) and Research Agenda (WP2.5) teams and giving feedback on technical feasibility and progress on the Common Infrastructure, in order to align technical and non-technical agendas.
2. Organisation of WP3-JER Concertation Meetings.
3. Creating links with other research projects – European and others – not funded through the Network, in a further effort to create critical mass. Similarly, acting proactively by assisting partners of the network in the bidding for research grants, at the European and national level

##### **Starting point**

At the start of this activity, only the general principles behind the Common Infrastructure (CI) and the New Tools Needed projects (so-called NEWTONs) had been outlined in the JPA18. These had to be elaborated in more detail. Originally, the Common Infrastructure was thought of as a ‘pipeline’, for instance. In the meantime, this vision on the CI has changed substantially. Also, at the start, a number of tools were known to the partnership, as several had been involved in national and European projects. This knowledge was dispersed among the partnership, however, and still needed to be collected. Also, it was not clear what the spectrum of required components actually was, and which components are available vs. still need to be developed. The focus of this first year therefore was on the collection of information, in agreement with the Technical Annex.

## Progress and achievements

Workpackage 3 coordinator Sagalassos Division (a mixed team of archaeologists and engineers) of the University of Leuven has undertaken the following activities, helped by the other WP3 partners:

1. Organisation of several Activity 3.3 meetings, to define the principles governing the EPOCH Common Infrastructure, as well as the more detailed architecture thereof. (5th July 2004 in Leuven, 6th December 2004 at VAST04 in Brussels, 17th February in Leuven, 23rd March at CAA05 in Tomar, Portugal)
2. A roadmap was drafted for the organisation of the Newton calls, as well as for the reviewing and selection process. (NEWTONs are the internal efforts for the creation of “New Tools that are Needed” within the realm of CH. They are meant as completions to the Common Infrastructure (Activity 3.3)). This roadmap was proposed to the Executive Board at its 2nd August 2004 meeting in Brussels.
3. In order to better draw on the experience of the different technical expert groups within the EPOCH community, an activity 3.3 Management Committee was created, which in the meantime also plays the role of WP3 Management Committee. Coordinators specific to the 7 sub-domains or ‘subareas’ proposed in the TA and confirmed at the kick-off meeting of 5th July were proposed by the WP3 coordinator, were discussed and accepted at the Executive Committee meeting of 2nd August, and were confirmed at the subsequent Board of Director meeting. These coordinators are:
  - David Arnold (University Brighton, ad interim): Multi-lingual and semantic data processing.
  - Achille Felicetti (PIN): Databases and knowledge management.
  - Nick Ryan (University of Kent): Mobile-wearable-ambient systems.
  - Paolo Cignoni (CNR): Recording and data representation.
  - Sven Havemann (University of Braunschweig): Visualisation and rendering.
  - Torbjorn Johansson (TII, but post vacant again now): Multi-modal interfaces.
  - John Glauert (University of East Anglia): Virtual humans and avatars.

Additionally, Professor Luc Van Eycken (University of Leuven) was appointed as overall Activity 3.3 coordinator.

4. A list of priorities was drafted for the Research Agenda, with the help of the Activity 3.3 subarea coordinators (i.e. the Management Committee). This list of priorities was adapted to the Stakeholder Needs, identified under WP2 (the WP3 coordinator had appointed Tijn Vereenoghe – archaeologist – to keep in close touch with the Enam Center, coordinator of WP2, where he has been working for several weeks for this purpose). The resulting priority list was presented to the EPOCH Assembly and partners were invited to select items that would be either topics for the Common Infrastructure or for the NEWTONs. In this poll, partners also expressed the level of importance of each priority. This ensured that all constituencies had a direct influence on the technical work to be carried out, not leaving such decisions at the hands of technologists only. The poll started just before Christmas 2004 and was coordinated by the EPOCH coordinator (University of Brighton). The corresponding web service was organised by the coordinator of WP4 (PIN).
5. Based on the list of priorities selected to be handled through NEWTONs, a call for Newton proposals was drafted and launched on 11th January 2005. A preferred structure of the proposals was sent out together with the call, as well as the criteria that reviewers would be asked to take into account when assessing the quality of the proposals. Project proposals were required to be sent in by February 9th, 2005. As this time was short, proposals could be kept quite short. The response was excellent. Fifteen high quality proposals were received, covering the priorities very well. Only one proposal was rather weak and did not comply with the guidelines. It was immediately clear that the reviewing process would have to be very selective, as the budget was oversubscribed by a factor of about 3.
6. At the Activity 3.3 Management Board meeting in Leuven on February 7th 2005, 5 reviewers were selected for every proposal, from the Review College and based on their expertise. Care was taken that a proposal would be reviewed by members of the different constituencies. Experts involved in a proposal were excluded to guarantee that no conflicts of interest would emerge. Reviews were asked to

be ready by the 2nd of March 2005. Reviewers were given a list of criteria to be kept in mind, which was also in agreement with the related specifications in the Technical Annex.

7. Based on these submissions, a summary report was drafted and finalised on 7th march 2005, giving an overview of the reviews, the requested budgets, and a proposed outcome of the review (conclusions drawn by the WP3 coordinator based on the reviews). This outcome was by and large accepted by the Executive Committee in its meeting on 10th march 2005, and later by the Board of Directors on the 21st of March. Four projects were accepted, and three sets of two projects were asked to merge. All budgets were reduced (but the reduction wasn't flat). One project was basically turned down, but the partners were offered funding to write a report that would help them to submit to another call (2nd Newton call or otherwise). This report should also clarify the potential offered by gaming technology to CH. The EPOCH consortium is rather lukewarm to venture in that direction (result of the poll), but the WP3 coordinator and Executive Committee felt that having such report drafted would at least clarify some issues, as it seems unwise to discard this ever more powerful market and technology sector altogether. The other projects were rejected.
8. These decisions were first communicated to the partners at the EPOCH General Assembly meeting on March 24th (at CAA05, Tomar). The week after, a mail was sent to the partners who submitted a proposal about the detailed background for the decisions regarding their proposal. Those involved in a successful bid were asked whether they wanted to go ahead irrespective of the budget cuts, and what parts of the projects they would possibly propose to be eliminated or reduced. For the project mergers, in each of the three cases a coordinator for the merger has been appointed. The partners' response has been very positive. All accepted to go ahead. Most teams wanted to go ahead without any major change to their project and where mergers were proposed, partners welcomed such move.
9. The deliverable D3.1.1 was produced, which describes IT technologies from a CH perspective, and lists relevant projects, with emphasis on the EU and its member states. The WP3 coordinator compiled the lists of projects and contributed parts on 3D acquisition, databases, multi-modal interfaces, and content-based image retrieval. The subarea coordinators contributed several additional overviews of the state of technology in their respective areas (University of Brighton: multi-lingual technologies and multi-modal interfaces, University of Braunschweig: visualisation and rendering, University of Kent: archaeological recording tools and mobile technology, CNR: standards and formats for 3D – part of this was integrated into the D3.3.2 deliverable, UEA: avatars, etc.).
10. Helped to organise courses, with contributions by partners on MPEG (University of Leuven), OpenSG (University of Braunschweig), and CIDOC-CRM (PavePrime). This was in collaboration with WP4.
11. Took on some of the liaison activities with respect to other 6FP projects (ProLearn, WalkonWeb, Pascal, Cyberwalk, UPenn project on GPR-based 3D reconstruction, etc.). These activities can be expected to be intensified further as soon as development work has generated the first tools and CH data processing pipelines. EPOCH will then have more to offer. The WP3 coordinator also established contacts with the DigiCult partners, via contributions of WP3 partners to the DigiCult reports. Especially ties with Salzburg Research were forged, which has led to the inclusion of this core DigiCult partner into the EPOCH consortium. This has further strengthened our overview of past and ongoing activities and of the Stakeholder Needs. Harnessing the excellent work of DigiCult and ensuring that the conclusions that can be drawn from it flow into the Jointly Executed Research activities is considered important. Guntram Geser of Salzburg Research attended (e.g. the Wp3.3 and Research Agenda meeting on 17th February in Leuven), and has since also been involved in the drafting of other documents for JPA2.

### **Deviations and corrective actions**

Originally, the WP3 coordinating person (Luc Van Gool) was supposed to also coordinate the Activities 3.2 and 3.3. Especially at peak moments, the workload was quite intense, however.

As a corrective action, Professor Luc Van Eycken has joined in (also at University of Leuven), to help with the coordination of Activity 3.3 in particular. Thus, at the WP3 coordinator's site, two permanent staff members are now involved.

The NEWTON selection process as described in the JPA18 differed in some respects from the process that has eventually been implemented. With the aforementioned process, the same guarantees for a fair and

careful selection can be given, but the process avoided having so many iterations, in order for it to be more efficient.

#### *List of deliverables*

D3.1.1: Overview of CH related IT research, related to stake-holder needs and the position of Europe therein (month 12) was ready and delivered on time.

#### *List of milestones*

M3.1.1: CAA04: 1st WP3 Concertation Meeting and report (month 4) – milestone was met.

M3.1.2: VAST04: 2nd WP3 Concertation Meeting (month 10) – milestone was met.

M3.1.3: CAA05: 3rd WP3 Concertation Meeting (month 13) – milestone was met.

### **3.1.2 Activity 3.2 Development of New Tools**

#### **Objectives and starting point**

##### **Objectives**

Objectives in JPA18:

1. To commission the initial set of new tools projects
2. To begin work on the initial set of new tools projects

The work on New Tools was not supposed to start during the first year, not even most of the preparations thereof. Actually, based on coordination work reported under Activity 3.1, several milestones were shifted forward and a number of New Tool projects (so-called NEWTONs) are lined up already, and will be ready to start at month 19 now. Without these shifts, most NEWTONs would have had a later start. That then brings us back in line with the original objectives beyond month 18, as specified in the original TA.

##### **Starting point**

At the start of the work, there was not a clear picture of what should be the priority areas where new tools had to be developed. Obviously, it was even less clear which teams of partners would work on those tools.

##### **Progress and achievements**

This actual work under this activity is about to start only in year 2. Nevertheless, as the section on Activity 3.1 explains, the Network has made swift advances in the preparation of this activity, and a series of Newton projects (NEWTON – NEW Tools Needed) have already been lined up. As already mentioned (Activity 3.1), the call for proposals was based on topics that the consortium had selected as priority areas where new tools had to be developed. These topics were:

1. semi-automatic mapping to CIDOC (JER subarea 2).
2. two-way communication (JER sub area 2).
3. mobile applications from data capture to public dissemination (JER subarea 3).
4. versatile 3D acquisition (JER subarea 4).
5. underwater data collection and photogrammetry (JER subarea 4).
6. recording of archaeological excavations (JER subarea 4).
7. authoring tools for 3D experiences (JER subarea 5).
8. web tool for joint experiences (JER subarea 5).
9. populating 3D environments (JER subarea 7).

A more detailed description of these topics can be found in the document describing the Priorities for the Research Agenda.



In the coming months, more detailed work plans (incl. milestones and deliverables) will be discussed with the corresponding partners. The Newton projects are planned to start in month 19. Here is a short overview of the planned projects:

#### 3DKIOSK:

Consortium: partners 4, 19, 21, and 33

Total budget: 140k Euro

Duration: 18 months

The project covers the entire chain of steps in 3D processing, from different techniques to capture 3D data, over ways to clean up these data and integrate the results into models, up to ways of visualising these models (VR scenarios).

#### AMA:

Consortium: partners 2, 10, 39, 52, 53, 61, 67, 74, 76, and 98.

Total budget: 115k Euro

Duration: 18 months

The AMA project will provide a flexible Open Source tool support for mapping existing datasets, such as archaeological excavation data or museum collections, to a CDOC-CRM compatible form, suitable for data interchange and to aid interoperability between existing and future repositories.

#### CIMAD:

Consortium: partners 29, 30, 32, 52, and 68.

Total budget: 90k Euro

Duration: 15 months

The goal of the project is the implementation of a configurable framework for smart CH environments supporting distributed and mobile on-site applications, from data capture to public dissemination.

#### IMODELASER:

Consortium: partner 48

Total budget: 50k Euro

Duration: 18 months

The project will integrate the use of laser scanners and imaging devices for 3D modelling, both at the sensor and data integration levels, exploiting their complementary strengths.

#### UPGRADE:

Consortium: partners 7, 16, 31, 65, 81, 85, and 86

Total budget: 120k Euro

Duration: 24 months

The project objective is the development of a software suite, together with a set of best practice recommendations, for the integration and fusion of acoustical, optical and platform navigation data in the exploration and mapping of underwater archaeological sites.

## VIRTUMAN:

Consortium: partners 1, 49, 50, and 56

Total budget: 100k Euro

Duration: 18 months

The project will create a Scene Population Toolkit to place intelligent, multilingual avatars into virtual scenes, which have been created using the partners' avatar creation software and which are powered by speech synthesis. The toolkit will feature intelligent navigation.

In addition, partners POLIMI and UNISI have been invited to draft a report on the potential of gaming technologies and shared, web-based environments. The Executive Committee plans to invite additional authors, who are well acquainted with the fast developments in the gaming area.

A comparison to the list of topic nominated by the partner poll to become priorities for NEWTONs (see section 6.9.3 in the JPA30 proposal) shows that these projects do indeed all cover one or multiple topics on that list. In fact the coverage is excellent.

### **Deviations and corrective actions**

The call for Newton projects and the processing of the results has been shifted forward. This has been done to ensure a timely start of these projects.

JPA30 has been adapted accordingly, as the main 'corrective' action. We believe such faster progress towards the actual start of the Newton project is advantageous.

In the original TA (JPA18), too little time was foreseen to discuss the detailed research plans with the partners who would take on the NEWTON work. Most of the time was planned for the issuing of the call and the review process. Yet, as could be expected and as was also borne out by the actual NEWTON selection process that has already taken place, several modifications had to be requested, mainly in the form of mergers, budget reductions, and the seeking of further guarantees that results would be accessible to the partnership and beyond, and that due account would be taken of standardisation issues (sustainability issues). Under these conditions, a careful negotiation process with the different NEWTON consortia had to be possible. This process has started in the meantime, but will take 2 or so more months.

Also moving the reported NEWTON planning forward, allowed the Executive Committee to include NEWTON consortia and budgets into the JPA30, allowing the EC and reviewers to have a clearer idea of the plans. The NEWTONs are indeed to play an important role in the future development of the Network.

#### *List of deliverables*

None.

#### *List of milestones*

M3.2.1: 1st call for Newton proposals distributed (Month 13 – shifted to month 10).

M3.2.2: Newton proposals collected (Month 15 – shifted to month 11).

M3.2.3: 1st Newton proposals selected (Month 17 – shifted to month 12).

All milestones were reached according to the novel, more demanding timing.

### **3.1.3 Activity 3.3 Common Infrastructure**

Objectives and starting point

#### **Objectives**

Objectives in JPA18:

- To define the overall architecture and constituent components of the common infrastructure.
- To evaluate existing tools as constituent components.

- To identify (with Activity 4.2) the standards to which the common infrastructure should conform and in particular required data types, formats and interfaces to existing systems to which the components should interface

## Starting point

At the start of this activity, an overview of existing tools was lacking, and the partnership didn't have a vision that was elaborated enough to structure work by partners on the creation of such an infrastructure.

## Progress and achievements

The EPOCH Common Infrastructure (CI) has to deliver a substrate on which CH applications can be built. In the first year, no actual implementations were planned, but rather activities aiming at getting an overview of the current situation and at designing an architecture for such CI.

An initial survey of current technologies and tools were undertaken by the WP coordinator and his collaborators, and was presented to an initial meeting of participants in Leuven on 5th July 2004. These kick-off activities also included the drafting of summaries by the WP3 coordinator of several DigiCULT reports (on IT for cultural heritage, but with less emphasis on the technical issues than was intended under WP3), so that partners could get an overview of their content in a very efficient way. These were subsequently placed on a private area of the EPOCH web-site for comments and additions. Unfortunately, a number of partners participating in Activity 3.3 have been delayed in hiring staff and the level of comments through the summer months was disappointing. Later input by the partners started to pick up.

The kick-off meeting also discussed the architecture of the Common Infrastructure (CI) and it was agreed that it was best viewed as a collection of tools which performed operations on common and coordinated data formats. These tools would in general refine the data under scrutiny, which may or may not then be suitable as input to further processing by other tools. In some cases the order of processing by the tools would be non-commutative (producing differing effects if executed in different orders) and in other cases the output from one tool might no longer be suitable for input to another (although this situation should be avoided where an order of operating tools was in fact useful). The meeting re-affirmed the basic subareas of technology envisaged in the original Technical Annex. An initial architecture deliverable (D3.3.1) was produced, and was latter refined (D3.3.2), based on subsequent Activity 3.3 meetings (6th December 2004 at VAST04 in Brussels, 17th February 2005 in Leuven, 23rd March 2005 at CAA05 in Tomar). The CI architecture and design also benefit from and are discussed in collaboration with the partners working on standardisation (Activity 4.2).

The consortium's current thinking on the structure, standardisation, evaluation, and interoperability issues related to the Common Infrastructure is summarised in the deliverable D3.3.2. Moreover, an overview of technologies and related projects (past and present) is given in deliverable D3.1.1. In the latter document, for several technologies, also evaluation criteria are specified, viewed from a Cultural Heritage perspective. The network has carried fewer tool evaluations than originally anticipated, the reasons being manifold. First and foremost, it came out to be difficult to compare tools if their functionalities did not precisely overlap. An example was the planned benchmarking of archaeological recording tools (which would all be tested on the basis of the Sagalassos excavation campaign in the summer of 2005; this was not possible the year before, as the time for planning was too short). Yet, upon closer inspection, there were too large differences in the functionalities of the tools to get much further than listing and comparing such functionalities (e.g. Harris matrix support or not). This has been done, but genuine benchmarking calls for running the same experiments on the same data, which proved difficult. For other tools, like 3D scanning devices, more thorough benchmarking is possible, but recent reports were found where such benchmarking results had already been published (e.g. the SparView reports in this case). Another issue is liability, mainly in the case of commercial systems. Benchmarking is delicate, unless the companies are offered the possibility to operate the systems with their own experts. Otherwise, inferior results can easily be claimed to be due to improper or suboptimal use. This would increase the price and in the case where we tried to arrange such a comparison even for modest subtasks, as in the case of archaeological recording tools (the intended test was 3D stratigraphy recording and bringing in finds), some companies were very reluctant or insisted to await the availability of an upcoming, enhanced product.

In order to get prepared for the actual implementation of the CI (starting at the beginning of year 2) a list of priorities selected for CI implementation was decided on. Based on the priorities on the first version of the

Research Agenda and the subsequent poll among partners about the best strategy to achieve them, the following topics were selected for development under the Common Infrastructure:

1. tools for conversion of existing catalogues (JER subarea 1)
2. multilingual systems for collection interrogation (JER subarea 1)
3. link repository for 3D primary data (JER subarea 2)
4. multi-modal data retrieval (JER subarea 2)
5. integrity management of presentation data (JER subarea 2)
6. internet portals based on distributed systems (JER subarea 2)
7. contextual cultural information (JER subarea 3)
8. supportive measures for mobile applications (JER subarea 3)
9. 3D file format compendium (JER subarea 4)
10. large cultural and natural heritage sites (JER subarea 4)
11. unified framework for 3D applications (JER subarea 5)
12. avatar standards for cultural heritage (JER subarea 7).

For each a more detailed description is available in the document on priorities for the Research Agenda. Based on this list, a distribution of work among the Activity 3.3 partners was prepared. This distribution of work is also described in more detail in Section 9.6.3 of JPA30. Here only a sketchy summary is given, as this work is only to start at the beginning of year 2:

- Partner 1 (University of Brighton): will continue to work in three technical areas. (1) *Data query tools*, (2) *A framework for 3D applications*, and (3) *acting as Activity 3.3 – activity 4.2 go-between*.
- Partner 2 (PIN): will focus on data and knowledge management, and especially on the following issues: (1) *A turnkey installation wizard*, (2) *the analysis of usability and impact*, and (3) *Image- and 3D-based databases*.
- Partner 3 (Ename): knowledge management in an archaeological and historical context, with focus on (1) *Sustainability and updating representations*, (2) *Information integration and updating*, and (3) *Linking interpretation and presentation*.
- Partner 4 (University of Leuven): a web-based tool to upload images and get 3D models from a server installed at the partner 4's site, consisting of (1) *An upload tool*, (2) *The server software*, and (3) *Building a 3D model repository*.
- Partner 19 (University of Braunschweig): will work on different aspects of 3D modelling and visualisation. In particular, on (1) *The establishment of OpenSG + GML as standards*, and (2) *New house representations*, and (3) *A new city modelling application*.
- Partner 20 (IGD) and Partner 46 (TII): will continue to monitor developments in the VR/AR, and (multi-modal) interfacing and human-machine interaction domains, and will adapt the related survey report accordingly, thereby keeping it up-to-date (see e.g. part on these topics in the D3.1.1 deliverable). In the future reporting also more emphasis will be put on the CH-specific aspects of these technologies.
- Partner 30 (University of Bologna): Work will continue in the Mobile/Wearable/Ambient area: (1) *Quality vs. power consumption*, (2) *head-up and head-worn displays*, and (3) *context management frameworks*.
- Partner 33 (CNR-ISTI): brings in tools for the processing of 3D data: (1) *3D data editing suite* and (2) *visualisation of huge data sets*.
- Partner 48 (ETH): Create a grammar-based framework to automatically generate buildings of a prescribed architectural style and tallying with prescribed constraints: (1) *Sources of possible constraints*, (2) *The shape grammar rules*, and (3) *Completing the mode with tools for streets and vegetation*.

- Partner 49 (University of Geneva) and Partner 50 (EPFL): Both partners enter into Activity 3.3 at the start of year two. They will join UEA in investigating and implementing the CI aspects that relate to avatars and virtual human. They will work on (1) *Tool inventory completion*, (2) *Formats and standards*, and (3) *Technical benchmarking*.
- Partner 52 (University of Kent): The Common Infrastructure work will continue to focus on two strands: (1) *Creating a flexible excavation recording tool* and (2) *the mobile / Wearable, ambient area*.
- Partner 56 (University of East Anglia): For the avatar creation and deployment pipeline, the following contributions will be made. (1) *tools for Avatar creation*, (2) *Rendering and animation*, and (3) *Interaction with the user*.

The coverage of topics selected by the partner poll for CI development is good. For a list of these topics we again refer to Section 9.6.3 of the JPA30 proposal.

### **Deviations and corrective actions**

This activity has known a rather slow start. Delays in the hiring were part of the cause (the exact starting date of the project has remained rather unclear until very close to the actual start).

As corrective action, the WP coordinator has invited the aforementioned subarea experts to help coordinate the corresponding activities. This has helped to increase the response from these different communities.

Originally, more tool evaluation was planned. This proved more difficult than anticipated, as explained earlier.

Instead, several alternative actions were provided. For several of the technology areas in deliverable D3.1.1, selection criteria for tools were specified, to help CH stakeholders to make a good choice. This in part fulfils the same goals as evaluation studies would have. As said, for tool families that are easier to evaluate, existing evaluation reports were collected.

#### *List of deliverables*

D3.3.1: 1st 6-monthly EPOCH Common Infrastructure Description: including 1st technology inventory, and outline specification of agreed list of design alternatives for overall schematic architecture to be evaluated (month 6).

D3.3.2: 2nd 6-monthly EPOCH CI Description: agreed definition of the overall architecture of the common infrastructure, including overview of related formats and standards. Overview of related formats and standard reports, and updated inventory and component benchmark results, (month 12).

Both deliverables were ready and delivered in time

#### *List of milestones*

M3.3.1: First draft technology inventories (Month 4).

M3.3.2 Agreement on the Common Infrastructure Architecture and Components (Month 6).

M3.3.3: Common infrastructure architecture design and benchmarking methodology workshop at VAST2004 (month 11 – shifted to month 10).

All milestones were met at the intended time

## **4 Workpackage 4**

### **4.1 Workpackage 4: Spreading Excellence**

#### **4.1.1 Activity 4.1 – Website**

Early work concentrated on making available a description of the Network's activities and contact points. This was followed by a detailed analysis of the various data types and services that had been discussed for inclusion in the web-site, and a schedule of delivering the services was defined. Service implementation has

taken progressively place and the web site is now fully functional, while new services are being planned. The graphic appearance has been completely redesigned to achieve a better look.

As a consequence of the progress in the network activity, repositories have become to grow and related services to be used, as it may be seen from the download statistics.

Private access to a part of the site was implemented whereby each partner received an organisational user ID and password, and individual users have their own. Progressively, organisational passwords are being dismissed to improve security. Voting passwords are different, and are re-issued for every poll and communicated to the official contact person by e-mail.

In order to provide a full range of services for running the network a complex set of private access permissions have been established. With over 400 registered researchers distributed over 21 activities and multiple consultation exercises a sophisticated access system has had to be defined. The principles of this have now been conclusively defined and implemented:

- An individual user profile based on user appartenance to workgroups within project areas, which define the user's individual access rights to private areas
- A private areas corresponding to each work project area (e.g. individuals working on, for example, standards have wider access grants on the standards private area than normal partners; the same persons may have lower level access grants in a different area where they are not directly involved; there may be several standards projects in train with the user having different access rights to each).
- Some activities or sub-sets of activities are identified as domains e.g. executive.epoch-net.org defines the area for executive committee members, where they have access to draft minutes and documents that are to become accessible to other partners when finalised.

Several databases have been created. They concern:

- Funded research, with a database of all EU funded projects (FP5, FP6, Culture2000, EuroMed, etc.) concerning intelligent IT use for CH. Such a database is presently unavailable at a EU level. The database is being extended to include national funded projects on the related issues; data gathering has started for selected countries, and has been concluded for others. Such data have been used for the SOTU report.
- Relevant training offerings, with all the relevant academic courses/diplomas in the inter-disciplinary field, including courses in sub-fields so long as they are directed with appropriate focus. The database is being completed.
- Partners' skills, competences, facilities and equipment, for the brokerage database. This database is now operational and partners are updating the information concerning them.
- Repositories have started offering valuable content to users and access statistics confirm their usefulness. This is also the opinion of partners as expressed in the January polls. Here partners ranked the availability of documentation for download as the first priority among the web site services.

The search engine (an XML-native Open Source DBMS, provided and maintained by the Apache Foundation) allows searching of the archives at any level, under the user's control. The databases are made open to the public when a critical mass of useful information is included to make them usable with the search system in use. The web site has also a global search function based on htdig, an Open Source search engine.

The general information pages have been translated into other languages. The translation concerns very general information presumed to have a very slow change rate during operations, while for more detailed information (including the rapidly changing one) and web services the user is invited to visit the English version. Translations into Italian, French and Hungarian have been completed and published. Spanish, German, Romanian and Dutch versions are in hand. Other languages are planned to follow in short time, including – more as a marketing device than in answer to a specific need – a translation of selected pages into Latin. The goal of translations into national languages is to favour access to the site for people not knowing English, typically elder heritage professionals, and to be indexed by search engines according to words in national languages; at the same time, to provide an image of multi-cultural attention,

The Executive Committee has been seeking to improve distributed working in the running of the network; however, the level of use of such tools is still low. The voting system has been set-up and used several times

after VAST. Polls have concerned the priorities for the research agenda, the areas on which calls for NEWTONs would be issued and the admission of new partners. The average level of participation is over 70% and often voters add comments to explain their choice.

Statistics software for measuring site usage levels has been set up and is now fully operational. It is based on logs and offers a detailed view of the web site usage since its start. Due to a warning concerning a security hole in the on-line system, the software now runs off-line and updates every 10 minutes the related static pages, accessible from the home page, which present a wide range of access statistics by month, day and day of the week, including user provenance and pages visited.

News and Event Calendar services are operational are regularly fed by the web team and following users' suggestions. The Event Calendar interface is now offering a new interface and has a search-by-type function.

Reviewers not involved in the web site development and maintenance have been appointed, to provide confidential reports to network management on desirable improvements to the site. A preliminary set of suggestions for managing repositories of very large files has been submitted by them in February.

#### 4.1.2 Activity 4.2 Standards

Partners continue to be active in the CIDOC CRM activity and a number of presentations and courses have been run on this, including one at CAA2004 and one at VAST2004. Other courses have been planned, but sign-up rates have been patchy and the Network will be seeking to improve on publicity processes in the next semester and, above all, to link the standard issue to more operational themes as documentation and file management.

Some early feedback from the integration efforts in the showcases has been passed back to technical standardisation projects; most notably the experience from implementing showcase 4 has provided input to the OpenSG standard project. A tutorial on technical standards was held at VAST2004. More feedback from the showcases is expected as the integration exercises continue. This will be augmented by the experience gained in the Newton projects as they come on stream in the third semester.

One of the NEWTONs, named AMA, addresses issues tightly related to standards. AMA will focus on mapping national 'standards' to CIDOC-CRM and involves several partners already active in the standards area, including national antiquity authorities.

Usability and accessibility were the object of a report and an on-line survey is being performed.

First year experience has shown the necessity of a stronger commitment in standards, in particular sustaining activity on technical standards and quality issues as dealt with in the Ename Charter. For this reason, an increase of budget for the area is envisaged for the following years.

#### 4.1.3 Activity 4.3 Bursaries and mobility

##### 4.1.3.1 Course bursaries

The breakdown of candidates for EPOCH bursaries on the approved courses was as follows:

#	Course title	Organizer	Country	Participants (approx.)	Foreign	Bids	Accepted
1	Managing digital archives	U. of York	UK	~25	3	0	0
2	Museums and the Internet Presenting Cultural Heritage Resources on-line	CIMEC	RO	~30	8	7	7
3	Archaeological and Cultural Heritage Preservation within the Light of New Technologies	Archaeolingua	HU	~25	5	8	5
4	Think globally, act locally	U. of York	UK	~30	0	0	0
5	Standardization	KU Leuven	BE	(cancelled)			
6	Creating and	U. of York	UK	~25	0	0	0

managing resources	digital						
--------------------	---------	--	--	--	--	--	--

The reasons for rejection of the bursary bids for course 3 was the ineligibility of candidates: they came from countries outside the FP6 eligible countries and were outside the target experience groups (i.e. graduated by more than 4 years and were not PhD candidates).

Fellowship distribution by gender is the following:

Candidates		Fellows	
Male	Female	Male	Female
6	9	5	7

The following table summarizes the countries of origin for fellows bidding for EPOCH support:

Country	No. of bids	Accepted	Rejected	Reason of rejection
Bulgaria	3	3	0	
Czech Republic	1	0	1	Experience limit
Finland	1	1	0	
Georgia	2	0	2	Outside FP6-EU + experience limit
Germany	2	2	0	
Greece	1	1	0	
Hungary	1	1	0	
Israel	2	2	0	
Romania	2	2	0	
Total	15	12	3	
<i>Eastern Europe</i>		6		

It was also agreed that courses 2 and 3 should be provided with some support for course and training materials preparation, in English and the local language (resp. Hungarian and Romanian).

On detailed analysis of bursary bids, it emerged that in several cases candidates' affiliation were not full partners of EPOCH but 'affiliated', i.e. they participate in the activity from the outside, with no budget. Therefore it was decided by the Executive Committee that after satisfying bids from inside the full partnership, the remaining budget would be allocated to students from such enlarged partnership, i.e. from institutions affiliated to EPOCH. It is suggested that such an affiliation should be formalized and an explicit procedure defined for it, involving the affiliate getting support from a full partner (usually the partner running the course).

Also some candidates were PhD students undertaking such academic degree after an interruption. It was therefore decided that those candidates having started a PhD since less than 4 years were eligible, without examining in detail the exemption reasons (military service, children care, etc.) usually accepted in EU training programmes.

A survey was carried out with EPOCH fellows, to analyze their degree of satisfaction, feedback on course content and other suggestions. The results confirm the high level of satisfaction for attendance at EPOCH courses.

The two courses with EPOCH scholarships have been visited by the EPOCH Workpackage Leader responsible for training and a confidential report was compiled. Feedback from attendants was also collected.

#### 4.1.3.2 Secondments

One secondment has been activated for a member of staff not employed in a partner receiving support for showcase development to participate in a showcase development. The secondment produced a joint paper presented at VAST2004. Several (4-5) secondments are planned for the first months of year 2, indicating that this opportunity is slowly but steadily entering into partners' habits.

#### 4.1.3.3 Mobility

No staff mobility request has been submitted for the first semester. Inquiries have however been received, leading to a short mobility appointment in October. A report on it was submitted at the end of the mobility, showing an improvement of the co-operation between the two institutions, eventually leading to the submission of a joint (successful) proposal for a Newton.



## 4.1.4 Activity 4.4 Education and Training

### 4.1.4.1 Course Approvals

Due to late announcement, almost all the supported EPOCH courses took place in the month of September 2004 and all but the first has actually been planned to run in the second semester. The activity in the first period has therefore been to call for proposed courses and plan the available bursaries. The feedback by attendants has shown their satisfaction. The conclusions of this analysis are reported below

There were 5 courses proposed for the EPOCH summer plan.

#	Course title	Organizer	Country	Start date	End date
1	Managing digital archives	U. of York	UK	24/6/2004	26/6/2004
2	Museums and the Internet Presenting Cultural Heritage Resources on-line	CIMEC	RO	20/9/2004	25/9/2004
3	Archaeological and Cultural Heritage Preservation within the Light of New Technologies	Archaeolingua	HU	27/9/2004	2/10/2004
4	Think globally, act locally	U. of York	UK	24/9/2004	27/9/2004
5	Standardization	KU Leuven	BE	30/9/2004	31/9/2004
6	Managing digital archives	U. of York	UK	24/1/2005	26/1/2005

Two forms of support were available to eligible courses:

- Support for the course itself (e.g. in preparation of materials, which might subsequently be used on additional courses)
- Support for individuals in attending approved courses (strictly speaking such attendance is funded as a bursary under Activity 4.3)

As shown in the table, one of the courses started in June and due to short notice it was clear that notwithstanding the interesting content it was unlikely that it could benefit from EPOCH support. In fact, 3 foreign participants who could have received an EPOCH bursary had already registered and there was no time for submitting a bid for bursaries. Another course (No. 5) was cancelled for not reaching the minimum number of participants.

It must be noted two of the course organizers (CIMEC and York) had zero budget within the initial allocations in EPOCH and hence this represents direct financial support to partners even though they had originally no financial support identified in the contract.

In January 2005 new courses were approved for the first semester of year 2. These include a course at Ename due in the second half of March 2005, an introduction to cultural heritage principles and practices for technologists; a course at Busteni (May 2005) on the use of IT for landscape study; and one at PIN (June 2005) on archaeological documentation. Courses tend to concentrate in the Spring-Summer period when both teachers and students are free from other commitments.

## Conclusions

To summarise, the training and bursaries interim plans have proven to be satisfactory, with some improvements to be made in operating the activity in the second semester:

- Partners have complained that the rules for course approval, bursary bid etc. are too complex and bureaucratic; it is not so, because just one simple form has to be submitted. It is proposed to confirm the procedure for bidding.
- Bids for bursaries, as already noted, come also from students related to institutions which are not full partners. It was suggested to make a rule of the interim decision taken in the 1st semester – that is to give priority to partners' bids, then to accept bids from affiliates if budget is available. Bids from outside will be decided on a case by case rule. Also the 4 years-from-graduation rule will be extended to include all PhD students.
- It is necessary to activate a bursary committee evaluating candidates' CVs and choosing fellows. In the 1st year the bids were considered directly by the Executive Committee, and there have been no problems because the requests did not cover all the budget availability, but in the future there may be more competition and requests will probably need to be ranked.

- It is suggested to have a continuous submission scheme for mobility and secondments, with monthly evaluation and budget allocation as long as funds are available.
- It is also suggested to allow internally the re-allocation of funds if not completely absorbed by bids and issue a second call with delayed deadline. This problem did not arise in year 1.
- It is proposed to rearrange the workpackage structure joining the activities which are related to training and the events activity, in order to put together all Human Resource related activities for better planning and management.

A call for the second semester was issued concerning courses starting on or after 15/1/2005 and ending by June 2005. The results have already been reported.

Bids for secondments and mobility will be invited as continuous submission, with evaluation at the end of each month.

#### 4.1.4.2 Advertising

The first bid was advertised by means of a circular e-mail and publication on the web site. Once approved, courses have been advertised in the same way, but it is probable that most of the information was rather late in reaching potential beneficiaries and would have been received first in other ways as the call for proposals was relatively late in the period. It is expected that earlier agreement on course eligibility, greater use of the web site by partners and the availability of the planned EPOCH newsletter will improve information about EPOCH supported courses.

#### 4.1.5 Activity 4.5 Dissemination

##### 4.1.5.1 EPOCH events

The Network will continue to focus a large amount of effort in the dissemination and networking at the annual VAST and CAA events. These give concentrated opportunities to discuss the best outputs from EPOCH and compare them with benchmarks elsewhere.

EPOCH will also take the opportunity to meet with others working in cognate areas and to ensure that the work of EPOCH is known to influential groups as part of the dissemination and exploitation plans of the Network. To this end further opportunities to make invited presentations and to display showcases will be sought in the next semester.

A process is being established to allow those planning events to apply for “in cooperation” recognition by EPOCH and to use the EPOCH logo in publicity/web-sites etc. Potentially this recognition will be related to other aspects of EPOCH operations – for example, including the potential of partners to apply for bursaries to allow suitably qualified people to attend the courses programs associated with good quality conferences.

During the first semester, support for events has been limited to distribution of the proceedings of VAST2003 to all partners, extensive participation in CAA2004 and the planning of VAST2004. The VAST2004 support has included distribution of Calls for participation at SIGGRAPH (including during the presentation made by the coordinator – see below) and EUROGRAPHICS.

Two stands have been designed and built to allow EPOCH to be represented at other events. These stands have been used as shown below, and will normally be present when EPOCH showcases are being exhibited or in other major exhibitions.

##### 4.1.5.2 List of presentations

The following EPOCH presentations were made during the first semester:

#	Name	Date	Kind of event	Place	State	Activity
1	Euroindia2004	24-26/3/2004	Exhibition	New Delhi	IN	Stand + presentation
2	EVA Florence	29/3 – 2/4/2004	Scientific Conf.	Firenze	IT	Presentation
3	Minerva meeting (within EVA Florence)	2/4/2004	Minerva project meeting	Firenze	IT	Presentation & activity organization
4	Presentation of	6/4/2004	Press Conference	Prato	IT	Presentation of the project

	CAA2004					
5	CAA2004	13-17/4/2004	Scientific Conf.	Prato	IT	Presentation + Cocktail
6	eCulture Workshop	30/5/2004	Scientific Policy Conference	Graz	A	Keynote Presentation (David Arnold)
7	HEREIN meeting	2-5/6/2004	HEREIN meeting	Berlin	DE	Presentation
8	Presentation of EPOCH	09/06/2004	Press Conference	Ename	BE	Presentation
9	EVA London	26-30/7/2004	Scientific Conf.	London	UK	Presentation
10	SIGGRAPH	5-8/8/2004	Scientific Conf.	Los Angeles	US	Panel Session
11	EAA	6-10/9/2004	Scientific Conf.	Lyon	FR	Stand + material + presentation
12	EAHTR	9-10/9/2004	Meeting of the Association	Norwich	UK	Stand + material + presentation
13	WTFC	12/9/2004	Meeting of the walled towns	Chichester	UK	Printed material
14	Meeting	8/10/2004	Meeting	Tel Aviv	IL	Presentation
15	EVA Jerusalem	11-12/10/2004	Conference	Jerusalem	IL	Sessions
16	Meeting	30/10/2004	Meeting	Sibiu	RO	Presentation
17	EU IST event	15-17/11/2004	Conference	Den Haag	NL	Presentation
18	VAST2004	6-10/12/2004	EPOCH Conference	Bruxelles	BE	EPOCH event
19	EVA Florence	9/12/2004	Conference	Firenze	IT	Presentation

In addition, it is clear that many partners have been working on reporting their progress in the form of papers at VAST2004, which were due for submission before the end of the first semester. See D4.5.2 Plan for dissemination and use of knowledge for more information.

#### 4.1.5.3 Publications

A series of EPOCH publications have begun to appear. The series will include proceedings of conferences, technical manuals, user manuals, lecture notes for the EPOCH courses and reports. The handbooks for the courses held in Romania and Hungary are in press. The Training Needs and Offering and the SOTU report will follow in May 2005. The first volume of the EPOCH series is the publication for selected papers from VAST2004.

#### 4.1.6 Activity 4.6 Showcase Dissemination

As noted previously flyers have been produced for almost all the showcases and are planned for the remainder. These will be used to accompany the EPOCH stands and any EPOCH showcase dissemination events in the next semester – possibly updating as needed.

Showcase dissemination has taken place at most of the above events, with a peak at VAST2004 where sessions and workshops on showcases have taken place during all the Conference. Moreover, an exhibition room on showcases was set up in the Conference venue with space dedicated to each showcase. Plans for future activity include attendance at exhibitions with the stand, printed promotional material and videos illustrating the showcases.

### Section 3 – Consortium Management

#### Objectives of Management Workpackage (from section 9.6.1 of JPA18):

- To ensure effective use of NoE resources in achieving objectives whilst implementing the obligations of the NoE under the contract.
- To make available suitable management and financial information to expedite effective decision making
- To secure agreements on implementable policies and procedures for running the Network
- To monitor and evaluate the quality of work and deliverables with an internal quality control process as independent of the implementation activity as possible.

Significant progress has been made on all the above objectives. The EPOCH administrative support staff have been recruited – although the speed of getting people into post was slower than planned or hoped for. This delay in starting meant that some of the objectives were also delayed. However obligations under the contract are believed to have been met, subject to interpretation of the various new processes associated with the new instrument.

- The Administrative Team have supported the operations of the Executive Committee and Board of Directors. The Executive has met approximately every month (either in-person or by recorded conference call) and the Board has met twice in the year (and once in month 13). This has involved liaison with the organisers of a number of international events (CAA04, VAST04, EAHTR04, CAA05 (in month 13)).
- All accession forms of the partners who acceded to the contract were processed in a timely manner.
- Advances were dispatched well within the allowed lead time from accession to the contract to payment, with an average time to action payment of around a week.
- All deliverables have been processed within the allowed time frames, with the exception of those for which alternative arrangements had to be made to accommodate the later than anticipated start date for the project. This particularly influenced the deliverables for Activity 2.4 where draft deliverables were delivered to the original timescales and followed by the final deliverables at year end.
- The review college formation was initiated on time, but the amount of chasing to ensure responses from partners and from the nominees once invited has meant that the mechanisms were not in place early enough to be used consistently to date. However the major area of concern at this time, the processing and refereeing of the proposals for NEWTONs under activities 3.1 and 3.2, made extensive use of Review College members with very encouraging results, both in terms of the quality of review and the resulting commentary on the quality of the work of the network.
- The first round of cost claims and audit certification has been conducted and many of the difficulties of undertaking work under a new instrument have been addressed. A full report of the status of the financial claim is included in the management report.
- Voting and comment mechanisms have been established on-line through the website and have been used for consultations on future directions, on changes to the consortium agreement and on potential accession of new partners.

In some cases slow starts elsewhere have affected the potential work in WP1. For example the as operations have started in the bursaries area it has proved necessary and desirable to amend policies and procedures. These amendments have led to a delay in finalising the manual, so that although a manual has been produced it is probably more likely to continue to evolve in JPA2 than we had originally anticipated at this point in the project.

Experience in operating the new instruments has also led to changing some plans. In order to have a solid review process for the proposed NEWTONs projects, before the drafting of JPA2, the schedule for the call for proposals and review of the responses was brought forward by about 4 months. This has allowed the revised JPA to incorporate descriptions of the work the Network tends to undertake, but the implementation is unlikely to be begun much before the original timescales envisaged (from Month 19 onwards).

At the same time an extensive consultation was conducted on the structure and priorities of the Networks operations. The documentation for this is attached as Appendices to this report.

The delayed start and resulting difficulties in timing recruiting (coinciding in some cases with recruiting during normally slack periods) has led to some deviations in plan in terms of the

timescales for “full” establishment of services. This phenomenon has affected many partners and has thus reduced the time available to meet deliverable deadlines during the course of the year. This in turn has meant that in order to achieve on-time delivery of documents to the Commission the internal reviewing process has not been as exhaustive as originally anticipated. Reviewing has still been undertaken but more often than we would like this has been internal reviewing (eg between workpackages) rather than independent review. The Network remains pleased at the quality of deliverables but during JPA2 we intend to implement a more systematic review process. To this end we have built into planning for the next six months the instigation of a formalised secure and anonymised on-line review system, to be implemented through the Technical University of Braunschweig’s MCP system.

Other aspects that have had slow starts include establishing the liaisons and embedding routine reporting of activities occurring elsewhere. Liaisons have been sought with the list of organisation in Section 8.10.2 of the Technical Annex and indeed there has been much interaction with those organisations, but the activity is again not yet routinely embedded in operations. This is expected to improve significantly under JPA2 as the EPOCH Network becomes known.

Some area of significant concern/deviation where JPA2 is seeking to learn from the experience to date, are:

- a. the need to broaden the basis of the Executive Committee so that the load and risk is spread. The new Executive membership is proposed to involve 7 people. (Section 8.2 of JPA2)
- b. It is proposed to implement the Application Task Forces as a constituency within the Review College. Having an orthogonal independent mechanism has led to a great deal of concern as to how several parallel mechanisms would be synchronised (Review College, Applications’ Task Forces, Partnership consultations, Board of Directors consultations) and how the results of such consultations would be brought together to give coherent guidance on future directions. The proposals will make the consultation/guidance operations much cleaner to implement. (Section 8.4.1 of JPA2)
- c. It is proposed to bring together the coordination and direction of data collection for monitoring integration progress, out of the individual Activities and into Activity 1.4. (Section 7.2 of JPA2).
- d. It is proposed to introduce the formal concept of the Affiliated Participant to spread the potential involvement (particularly of SMEs and other applications-orientated organisations) (section 8.11 of JPA2 – see Appendix 4)

## **Contractors**

Three partners declined to join the contract

- a. Partner 71 IBM, Declined to join after concerns about the new instruments conditions on PEKH. They had been due to undertake duties in three areas – 2 showcases under activity 2.4 and in Activity 3.3 Multi-lingual technologies. The showcase obligations were handled through partner 3 who was leading work on those showcases. The obligations under activity 3.3 were in covered by a combination of partner 1 and 4 although some of the work in this area will require further effort and planning is in place for this in JPA2.
- b. Partner 63 CYBERNETICS had been part of a consortium interested in underwater archaeology – an area which had proved impossible to support directly in the re-working of the proposal to reach the final contract. In these circumstances they felt they should drop out of the consortium. However they will be re-approached to see whether they would be prepared to assume “affiliated participant” status when this is established.
- c. Partner 80 COMEX – also involved in underwater archaeology and the same comments apply.

In addition some duties were re-allocated between partners

- a. SYNTRES (Partner 27) had been intended to provide some assistance with one of the two showcases affected by IBMs withdrawal. In the end they requested that those duties be moved elsewhere and returned the advance they had received. This was subsequently released to Partner 3 (Ename) as part of the implementation of that showcase.
- b. Due to the late recruitment of technical staff at Partner 1 (Brighton) some of the duties and funding (~11K) were moved to Partner 56 (UEA) in order to allow earlier progression of work on the showcase.

EPOCH's JPA is structured to include funding for "scalable activities" (see section 8.5.2 of the Technical Annex). The management of the Network has monitored the allocation of funds under this scheme and implemented transfers as the funds are authorised for particular activities. These activities are documented under the individual activities responsible for the funds.



Workpackage	Activity	Sub-Activity	Y1Q1			Y1Q2			Y1Q3			Y1Q4			Y2Q1			Y2Q2			Y2Q3			Y2Q4					
			M1	M2	M3	M4	M5	M6	M7	M8	M9	M1C	M11	M12	M1	M2	M3	M4	M5	M6	M7	M8	M9	M1C	M11	M12			
WP2 Integrating Activities	2.1 Stake-holder needs	Stakeholder needs Reports																											
		E-consultation/vote on adoption															✓												
	2.2 Vertical Integration	report on vertical integration inventory - 2004																											
		E-consultation/vote on adoption															✓												
	2.3 Horizontal Integration	report on horizontal integration inventory - 2004																											
		E-consultation/vote on adoption															✓												
	2.4 Showcase Integration	1 "On Site Reconstruction Experience"																											
		2 "Multimodal Interface Safe Presentation of																											
		3 "Tool for Stratigraphic Data Recording"																											
		4 "Multilingual Avatars"																											
		5 "E-tourism through Cultural Routes"																											
		6 "Avatar based Interactive Storytelling"																											
		7 "Archaeological Documentation for the Semantic																											
		8 "Image-Based Modeling"																											
		Annual report on showcases																											
		E-consultation/vote on adoption																✓											
	2.5 Develop Research Agenda	Draft Common Research Agenda																											
		Workshop on Research Agenda																											
		Publication of Common Research Agenda																											
		E-consultation/vote on adoption																✓											
		First successful bids by EPOCH consortia																											
	2.6 Socio-Economic Impact	Annual report on socio-economic impact																											
		Develop economic impact models for website																											
		E-consultation/vote on adoption of report																✓											
	2.7 Brokerage	First EPOCH brokerage arrangements made																											
		Annual report on brokerage.																											
		E-consultation/vote on adoption of report																✓											
	2.8 Encouragement of SME Participation	Def'n of Value Chain for Technology/CH SMEs																											
Launch of Virtual Cluster Scheme																	✓												
Annual report on encouraging SMEs																													
E-consultation/vote on adoption of report																	✓												



Workpackage	Activity	Sub-Activity	Y1Q1			Y1Q2			Y1Q3			Y1Q4			Y2Q1			Y2Q2			Y2Q3			Y2Q4		
			M1	M2	M3	M4	M5	M6	M7	M8	M9	M1C	M11	M12	M1	M2	M3	M4	M5	M6	M7	M8	M9	M1C	M11	M12
WP3 Jointly Executed Research	3.1 Coordinate research activities	Concertation Meetings																								
		Report on CH related IT research																								
		Reports on Concertation Meetings																								
	3.2 New tools	Newton CFPs distributed																								
		Newton proposals collected																								
		Newton proposals selected																	x	✓						
		Briefing meeting for Newton Teams																								
		Report on CFPs for Newton projects																								
		Delivery of Tools (To be scheduled)																								
	3.3 Common Infrastructure	Draft technology inventories																								
		6-monthly EPOCH Pipeline Description																								
		E-vote on Architecture and Components																								
		Design and benchmarking workshop																								
		Technical benchmarking review meeting																								
First set of open software tools																										
WP4 Spreading Excellence	4.1 Web site	Opening of the web site with services																								
		Full functionality of the web site																								
		Web-site Operations and Maintenance																								
		report on web site																								
	4.2 Standards and evaluation	Submission of annual reports on standards activities																								
		Participation in standards projects																								
		report on evaluation & design methodologies																								
		report on standards																								
	4.3 Staff Mobility and Bursaries	EPOCH interim young researcher bursaries					✓																			
		Definitive bursary plan approved																								
		Call for bursaries																								
		Bursary scheme operations																								
		report on mobility and bursaries																								
	4.4 Education and Training	First courses start																								
		training needs and offer report																								
		Publication of first version of the EPOCH training																								
		Education and training operations																								
		Report on training activity																								
	4.5 Dissemination	special session at CAA2004																								
		Contributions to EC's web site and newsletter																								
		Project Presentation																								
		organization of VAST																								
		Report on the State-of-the-Union																								
		report on events/publications																								
submission of report on events/publications																										
public presentation of the State-of-the-Union report																										
4.6 Showcase Dissemination	report on showcase dissemination																									
	Showcases used at VAST																									

## **Annex - Plan for using and disseminating the knowledge**

**For Strategy and Plans for future Use and Dissemination see D1.2.2 (Rev)**

**For a summary of past dissemination activities see section on Workpackage 4 in the main document above**

**For a full description of past use and dissemination activities see D4.4.2 Report on Training Activities and D4.5.2 Report on Events and Publications.**

# Appendix 1a: EPOCH: Potential Directions for Development.

## EPOCH Executive Committee.

### Introduction.

This document sets out options for a broadly based set of developments for the work of the EPOCH NoE. This is a descriptive document and should be read alongside the accompanying voting/feedback form. It is intended to help partners in the consortium take a considered view of alternative emphases on the future development and to advise the executive on the balance of priorities to seek in revising the JPA.. These considerations need to take into account a number of constraints – most notably the constraints that are built into the current contract and the existing, ratified, consortium agreement.

Within these constraints the Executive Committee has sought to quantify options to take into account:

- a) Experience in operationalising the NoE under the current contract
- b) The need to adapt to new Commission advice on NoE reporting
- c) The need to foresee future sustainability of integration beyond the four year funded period
- d) Additional opportunities for activities in support of the strategic objectives of the NoE
- e) Opportunities to streamline organisation of the workplan to achieve greater efficiency in delivering current objectives.
- f) Needs to improve performance in some areas, or to increase the pace of development, of NoE activities already envisaged in the current workplan.

The result is a set of options for restructuring the JPA, and increasing or decreasing the emphasis placed on particular activities. Whilst the JPA for months 19-30 is only defined in outline in the current contract, it should also be borne in mind that around half the partners in the Network already have varying levels of activities and budget provisionally agreed for this period and may have made commitments against expectation of income. The Executive therefore believe that the consortium should avoid destabilisation of the NoE by wholesale reconfiguration of the JPA from that envisaged and should instead concentrate on:

- a) Interpreting the original contract in the best way to ensure efficient delivery and success in refined objectives to match current circumstances
- b) Setting priorities for decision making over the application of budgets currently allocated to activities but not to partners. These funds are referred to as “unallocated” in the Technical Annex and here, but they are allocated currently to activities.

Where partners have provisionally-agreed budgets and activities listed in the contract, the executive believes that:

- i) Development of priorities for the activities envisaged in the original contract should, in the first attempt, be implemented as further refinement of the provisional activities for the partners originally involved, and
- ii) Only in cases where the result of changed NoE priorities is mutually agreed between the partner and the executive as not within the capacity or interest of the partner would partner budgets be reduced in planning details of JPA19-30. However partners with budget should expect to need to negotiate details of their work to fit collective objectives agreed in this exercise, subject to existing contractual obligations.
- iii) Where delays in starting activities have led to reduced spending in the current JPA to date, the activities should be expected to continue to the originally planned elapsed time, unless the priorities or delivery envisaged are so changed as to render the original plan a low priority. Again this should be the subject of additional mutual agreement as envisaged above.

## 1 Current JPA structure

The existing structure of the JPA described in the technical annex with a summary in section 6 (pp23-30) which describes the four workpackages: WP1 Management; WP2 Integrating Activities; WP3 Jointly Executed Research; and WP4 Spreading Excellence. These are the standard workpackage titles in the Commission Guidance on NoEs and no structural alteration is proposed at this level. However the executive has obviously needed to undertake a detailed review of the activities included in each work package.

The current contract emphasises EPOCH's brief as the physical cultural heritage of monuments, sites and museums, but those partners present at VAST will have witnessed the lively debate about the inseparability of intangible heritage from representation and consideration of physical heritage. EPOCH is contractually obliged to represent specifically expressed types of venue and heritage, and will continue to have responsibilities to do this. However where choices have to be made, priorities will be needed to inform them. Partners are therefore also asked to consider the relative importance of areas of Cultural Heritage which should influence priorities.

- Monuments
- Sites
- Museums and collections

As part of this some sub-divisions have been used to label specific types of work and the executive would like to try and gauge the relative interest that partners place on these:

- Archaeological excavations
- Underwater Archaeological
- Rock art sites
- Landscape archaeology
- Urban Heritage
- Industrial heritage
- Historical objects and study

- Social cultural history
- Intangible cultural history (as it relates to monuments sites and museums)
- Others that partners feel are important

Other areas to consider are the relative importance of the target uses of data, since this will influence priority on different data formats and standards. The following application domains are listed in the technical annex:

1. Tourism
2. Education
3. e-applications (ie Internet delivery in, for example Tourism)
4. Academic research for Cultural Heritage Professionals
5. Edutainment (including for example home delivery, interactive TV, games)
6. Security concerns (including technologies for safeguarding, copyright etc)

## 2 Activity 2 : Integration

### **Act. 2.1 Stakeholder Needs; Act. 2.2 Vertical Integration and Act. 2.3 Horizontal Integration.**

**Current Unallocated funds: Zero**

**Issues to be addressed:**

- a) Need to address geographic and sectoral differences (e.g. industrial heritage museums).
- b) Activities are closely linked, and need to be closely coordinated.
- c) Planning transition away from EPOCH funding, since at some time user requirements knowledge will no longer be able to influence NoE work during the funding period.

**Proposals:**

- (i) Amalgamate the three activities into a single “Sector Watch” activity.
- (ii) Plan to focus on geographic and sectoral differences in JPA13-30.
- (iii) Plan, as currently, reduced NoE funding in later years
- (iv) Plan to create structures to maintain this Sector Watch permanently, including investigating potential for a funded subscription service as a long-term sustainable impact
- (v) Add usability studies of existing and new technologies to evaluate the effectiveness of these technologies

### **Act. 2.4 Showcases**

**Current Unallocated funds: 136KEuros evenly spread by year**

**Issues to be addressed:**

The showcase activity was the area in JPA18 which involved the greatest number of partners with funding. With such a complex set of activities it was always likely that there would be some which did not start as fast as others. All showcases are currently planned to complete by March 05. In the current JPA they continue to be used for dissemination (under WP4.6) to allow discussion of future possibilities with stakeholders. Budgets for years 2-4 are currently unallocated (44KEuros p.a.).

**Proposals:**

The Executive has discussed alternatives and believes two types of showcase activity should be considered under 2.4 for the application of “unallocated” funds.

- (i) Specific addition to the development of NEWTON tools under activity 3.2 to ensure that the tools work is properly showcased, disseminated and promoted.
- (ii) Development of showcases as “seedcorn” in planning applications for funding from sources external to the NoE, and thus promote new collaborations of partners. Such proposed collaborations would be subject to calls for proposals issued every period and reviewed. This would be part of ensuring sustainable integration of partners within the NoE beyond the funding period and of creating the European Research Area which is supposed to be one objective of an NoE.

The third alternative would be to cease showcase activity after JPA18 to free up unallocated funds for use elsewhere.

**Act. 2.5 Research Agenda****Current Unallocated funds: Zero****Issues to be addressed:**

Work within EPOCH in this activity is only just getting underway, as planned in the JPA18. A workshop is being planned for February 2005 to bring together the results of activities 2.1-2.4 with research priorities defined under agendas elsewhere (FP6 5<sup>th</sup> call, FP7, other results). Annual revision of the agenda is planned in the current JPA and an agreed agenda is felt to be an important part of fostering collaborative research within the NoE. A major aspect for the activity in the current semester is to propose priorities for the NoE partners in pursuing development of STREPS in the 5<sup>th</sup> call for FP6. Similar actions are envisaged as the JPA develops further. The executive believes it would be wrong to propose a reduction in this area at this time, but one option would be to increase priority for this area, by moving some unallocated funds into the activity, for example to create a regular and direct input of EPOCH members through regular workshops. However the executive believes current levels are appropriate.

**Act. 2.6 Socio-economic Impact Assessment****Current Unallocated funds: Zero****Issues to be addressed:**

This was planned as a predominantly year 1 activity to build some methodologies and tools to help sites and policy makers think about the impact of investment. The work was late starting, due to difficulties recruiting staff, but early results (as discussed at VAST) have revealed both great interest and a lot of potential in this area. The executive believes that the work should be followed up strongly and that emphasis should if anything increase in this area. Indeed several partners in EPOCH have submitted a bid for additional funding in this area under the Marie Curie scheme, the results of which should be known before JPA19-30 is finalised. The proposal is therefore to leave the activity at its current level, but depending upon the results of the Marie Curie proposal and progress on the activity, an increase of support might be advisable in the future. The detailed planning of the activity is being revisited as a result of the initial experiences within EPOCH and elsewhere.

## **Act. 2.7 Brokerage**

**Current Unallocated funds: 36KEuros over years 1-3 (some already used)**

### **Issues to be addressed:**

2.7 is an activity in which EPOCH can:

- a) Provide limited support to sites-in-danger
- b) Pump-prime new project proposals and consortia
- c) Provide infra-structure to allow partners to create new collaborations.

The major issue for brokerage is to balance these within a very limited budget and the unallocated funds are too small to provide a major source for sites-in-danger.

### **Proposals:**

The potential changes of emphasis would be:

- (i) To develop a pro-active service to actively match partners into new complementary collaborations
- (ii) To allow partner identification for new collaborations to become a purely service function within the website and not be a priority for funds allocated under this activity.
- (iii) To use unallocated funds to leverage other funds by enabling new collaborations to provide support for sites in danger
- (iv) To give priority so that this also serves to demonstrate EPOCH technologies and methodologies in the field (e.g. Newtons or EPOCH supported standards).

## **Act. 2.8 Encouragement of SMEs**

**Current Unallocated funds: 38KEuros over years 2-4**

### **Issues to be addressed:**

2.8 has been slow starting but the concepts are well founded in other sectors and the work initiated at VAST well received. The detail has moved the proposed emphasis of the work slightly, from virtual clusters to geographic clusters linked together and the detailed activity planning is needed to reflect this. In the longer term for the work to be seen to be effective we need to ensure that a funding basis for the clusters is developed which will survive beyond the 4 year funding period. During the funding period, the activities of the clusters need to be developed and validated.

### **Proposals:**

The executive believes that:

- (i) We should roll the activity forward and make the clusters happen.
- (ii) The basis for funding the proposed exemplar geographic clusters should be refined from the current partner base in 2.8 and by planned application of the unallocated funds.
- (iii) Priority should be given to development planned on the basis of transitioning to funding from external sources to support the clusters during year 4 and beyond.

### **3 Activity 3 : Jointly Executed Research**

WP3 is the workpackage where the concept of a shared technical infrastructure is developed for EPOCH related applications. Conceptually activity 3.3 develops an underpinning infrastructure to ensure interoperability, whilst 3.2 develops tools to integrate with the infrastructure and improve functionality or address gaps. The original concept was of data refinement as digital cultural heritage artefacts and/or information about monuments, sites and museums, including individual artefacts and related collections, ontologies etc. progress down a pipeline from data capture to eventual dissemination, through a number of intermediate states. Work to date has determined that the pipeline concept of ordered processing is less appropriate than ensuring that all tools operate on a range of underlying data formats. The activity in 3.3 needs re-interpreting and refining in the light of this change, but the basic concept of underpinning infrastructure and new tools interfacing to it, continues to be relevant.

As indicated at the EPOCH general meeting in December specific consideration of whether New Tools for Underwater Archaeology should become a sub-area of the common infrastructure will be undertaken with the NEWTONs vote. Should partners decide that such tools are a priority then some provision will be needed to interface those tools to the common infrastructure under 3.3, since that will be required to ensure interoperability for any new tools developed. Industrial heritage is also within the remit of monuments, sites and museums but currently not well represented in the work of the consortium. This should also be considered as part of setting priorities.

#### **Act. 3.1 Coordination**

**Current Unallocated funds: Zero**

**Issues to be addressed:**

This is the largest WP in terms of overall budget, number of partners and complexity of organisation of technical work. It is clear that the coordination of the work will not diminish as the work progresses and the NEWTON projects are evaluated, initiated and tested under 3.2 and interlinked with interoperable baseline technologies as planned under 3.3. 3.1 is therefore an activity where our contractual obligations are such that it is inconceivable that a reduction in activity could be contemplated, although operational approaches have been and will continue to be reviewed and re-evaluated.

**Proposals:**

The executive believes that this activity should be maintained at its current level.

#### **Act. 3.2 New tools**

**Current Unallocated funds: 817K (roughly evenly spread over 30 months from month 13)**

**Issues to be addressed:**

Funded work in this area is not due to start until Month 13. (All activities in planning the NEWTONS call etc is being undertaken under 3.1). A separate document concerning the suggestions for the broad areas of NEWTONs and for the partners to vote on prioritisation of those topics is being prepared in parallel to this one. The current JPA reflects the considered judgement of the Executive in negotiating the contract 12 months ago. Elsewhere in this document partners are asked to consider priorities to which the executive will respond. However partners should be aware that the largest single unallocated budget is that in activity 3.2 so that if priorities are raised elsewhere a natural conclusion might be to diminish the budget available in this area. For the purposes of this exercise partners should therefore



consider whether the budget allocation to NEWTONs demonstrates the correct balance relative to that in other areas of EPOCH activity.

**Proposal:**

The executive proposes that partners vote on whether the current JPA places the right balance between this activity and other areas of the JPA.

**Act. 3.3 Common infrastructure**

**Current Unallocated funds: 78K (over years 1-3)**

**Issues to be addressed:**

As indicated above the detail of implementation in this area will need reworking with this round of JPA revision. However the principles of interoperability and the areas of technology proposed in the original workplan have been re-affirmed by the work to date. It had been envisaged that the current unallocated budget would be used to provide software licensing or to buy in specific expertise from outside the range of partners currently include in the infrastructure team. The seven areas of technology currently included are:

1. multi-lingual and semantic data processing,
2. databases and technology management,
3. mobile-wearable-ambient systems,
4. recording and data representation aspects,
5. visualisation and rendering (modelling for reconstruction is considered to be visualisation),
6. multi-modal interfaces
7. virtual human and other avatar technologies

The present project documentation (including consortium agreement) makes it clear that the basic philosophy used to date includes open-source tools and applications, targeting low cost systems (particularly PC based hardware). However the interoperability approach can be supported in theory via the use of any tools on any hardware so long as the data formats produced are standardised and data costs are kept under control. In some respects this may be related to whether the need is for low cost tools for in house use or low cost services, potentially to be used as remote bureaux services. Advice is therefore sought on the priorities between these.

**Proposals:**

The executive propose to continue with the areas of technology and seeks advice on the relative balance in the accompanying voting form, which includes space for other areas of technology to be listed. Similar guidance is sought on the open-source, tools and services issues.

## 4 Activity 4 : Spreading Excellence

### Act. 4.1 The Website

**Current Unallocated funds: Zero**

**Issues to be addressed:**

The website has been undergoing development since the start of the project and services are gradually being added. For example, voting and commenting for this exercise is being undertaken through the website and the news and calendar services are gradually being developed. In some areas services to do with running the network (e.g. the work areas for each activity) are more used than others.

Some partner training in the services already provided has begun (e.g. at VAST) and this will continue until the services are fully embedded in the NoE operations.

**Proposals:**

The Executive propose that:

- a) The brokerage service of partner matching be incorporated as a web-based search facility on the web-site and discontinued from any relation to Activity 2.7
- b) A task force be established to evaluate, monitor and oversee development and use of the site both for operational and design considerations (e.g. EPOCH branding)
- c) Partners should rank the services provided according to potential usefulness if and when implemented in order to inform priorities in site development. The following services are currently proposed and/or implemented:
  - (i) Repositories of items available to partners through EPOCH for non-commercial use:
    - Software (to include NEWTONS for example)
    - Data sets (e.g. for algorithm testing, interoperability assessment etc)
    - Documentation (e.g. EPOCH publications or links to EPOCH publications, information about standards)
  - (ii) Brokerage information by partner:
    - Specific skills available
    - Scarce facilities
    - Large scale installations
    - Service for stolen, looted or disputed artefacts
  - (iii) Calendar of relevant events
  - (iv) News service
  - (v) Operational areas for:
    - Assembly
    - Board of Directors
    - Each Activity

### Act. 4.2 Standards

**Current Unallocated funds: Zero**

**Issues to be addressed:**

To date the standardisation activities in EPOCH have focused on CIDOC-CRM and on experiments with OpenSG, some developments in operational charters, and some standards related tutorials. There are three distinct areas of standardisation identified in the technical annex:

- a) Documentation standards (e.g. CIDOC-CRM)

- b) Technical standards to support the common infrastructure (e.g. OpenSG or MPEG)
- c) Operational Standards (e.g. related to the Ename Charter)

**Proposal:**

The executive propose that

- (i) That 4.2 should relate to work on the contribution of experience to standardisation activities and the dissemination and education in standards should be included in the education and training activity
- (ii) that work in the three sub-areas above should also represent about equal effort and budget

**Act. 4.3 Staff mobility and bursaries; Act. 4.4 Education and training; Act. 4.5 Dissemination and; Act. 4.6 Showcase Dissemination**

**Current Unallocated funds:**

**4.3 146K (Some used allocated approximately evenly)**

**4.4 245K (mainly in years 2 and 3 to allow for some course development in response to stakeholder and training needs)**

**4.5 120K (approximately evenly spread)**

**4.6 65K (mainly in JPA18)**

**Issues to be addressed:**

4.3 and 4.4 are very inter-related and the executive believe we should try and clarify the different support types available here within a single activity, taking into account the needs for support of standards dissemination. Some overlap exists also exists with 4.5 where events are currently supported since tutorials running at events can be considered education/training. 4.6 funding was concentrated in JPA18 to accompany the showcase front-loading in 2.4.

**Proposals:**

The executive propose to rationalise the four activities into one with three sub-areas (targeted at three distinct categories of support: those receiving knowledge; experts disseminating knowledge; and event managers organising opportunities for disseminating knowledge to EPOCH partners):

- (i) A sub-area concerned with moving people to receive educational experience in some form – including in-house experience with another partner (mobility); attendance at courses (education); attendance at events (bursaries for conference attendance for example)
- (ii) A sub-area concerned with preparation and delivery of material for dissemination and education – including commissioned course production, delivery expenses/subsistence for tutors where appropriate, and potentially EPOCH experts from partners not funded by standards to participate in standardisation activities.
- (iii) A sub-area to allow sponsorship of events so that EPOCH partners can attend at subsidised rates or receive other benefits (e.g. production of additional proceedings copies for distribution to partners)

If accepted then the sub-areas will be organised to include calls for proposals issued at least once for each of these sub-areas in each semester. The balance between areas would be shaped by the review of the quality of proposals, by demand and by priorities for that period. Due to the lead time of planning course or events some commitments might need to be made against budgets for the following semester.

One additional activity may need to be separately recognised as EPOCH is committed to the production of a number of publications, both in support of events (which might fall under sub-area (iii) above) and independently of any event which may need a separate activity.

## **5 Activity 1 : Management**

### **1.1 Policies and Procedures**

### **1.2 Network Governance**

### **1.3 Budgeting and Finance**

### **1.4 Quality Assurance (including Review College Support)**

**Current Unallocated funds: Zero**

**Issues to be addressed:**

The whole area of network management is complex, and each of these activities interacts with the others in this workpackage and, of course, with all other activities. In operationalising the NoE the balance between activities will change as we discover efficient ways of operating and as other areas evolve. It is proposed that there be no restructuring in WP1 although the evolving management processes will be more fully quantified in the revised JPA

**Proposal:**

No major restructuring

# **Appendix 1b – Second Version of JPA2 Editing Instructions**

## **EPOCH: Potential Directions for Development.**

### **Editing Instructions from 1<sup>st</sup> Poll of partners**

EPOCH Executive Committee.

#### **Introduction.**

In December 04 the EPOCH Executive Committee produced a document setting out options for a broadly based set of developments for the work of the EPOCH NoE. This was issued to all partners with an accompanying voting/feedback form on the EPOCH website and partners voted over a period of almost 4 weeks. This document provides feedback on the voting patterns, on the Executive Committee's interpretation of them and the resulting proposals for developing the EPOCH Joint Program of Activities through to the next phase of the project. These developments need to take full account of the obligations that are built into the current contract and of the existing, ratified, consortium agreement.

Within these constraints in the earlier document the Executive Committee sought to quantify options to take into account:

- g) Experience in operationalising the NoE under the current contract
- h) The need to adapt to new Commission advice on NoE reporting
- i) The need to foresee future sustainability of integration beyond the four year funded period
- j) Additional opportunities for activities in support of the strategic objectives of the NoE
- k) Opportunities to streamline organisation of the workplan to achieve greater efficiency in delivering current objectives.
- l) Needs to improve performance in some areas, or to increase the pace of development, of NoE activities already envisaged in the current workplan.

The result was a set of options for restructuring the JPA, and increasing or decreasing the emphasis placed on particular activities. In this document the Executive Committee reports on the consortium's expressed opinion between the options and on the consequent proposed editing instructions for updating from JPA18 to JPA19-30

The Executive introduced the prioritisation exercise with the belief that the consortium should avoid destabilisation of the NoE by wholesale reconfiguration of the JPA from that envisaged and should instead concentrate on:

- c) Interpreting the original contract in the best way to ensure efficient delivery and success in refined objectives to match current circumstances
- d) Setting priorities for decision making over the application of budgets currently allocated to activities but not to partners. These funds are referred to as "unallocated" in the Technical Annex and here, but they are allocated currently to activities.

# 1 Current JPA structure

The existing JPA is described in terms of four workpackages: WP1 Management; WP2 Integrating Activities; WP3 Jointly Executed Research: and WP4 Spreading Excellence. These are the standard workpackage titles in the Commission Guidance on NoEs and no structural alteration is proposed at this level. However the executive believes that some structuring below the overarching workpackage is desirable and this desire was backed by the feedback from partners.

The current contract emphasises EPOCH's brief as the physical cultural heritage of monuments, sites and museums, but those partners present at VAST2004 will have witnessed the lively debate about the inseparability of intangible heritage from representation and consideration of physical heritage. EPOCH is contractually obliged to be the NoE where physical cultural heritage issues for these venues are represented. We will continue to have responsibilities to do this. However where choices have to be made, priorities will be needed to inform them. Partners were therefore asked to consider relative priorities. The voting scored the three major areas with the following relative importance

Sites	8.92
Monuments	7.34
Museums and collections	7.15

As part of this some sub-divisions have been used to label specific types of work and the executive wanted to try and gauge the relative interest that partners placed on these. The rank voting here came out as follows:

Archaeological excavations	7.18
Urban Heritage	6.73
Landscape archaeology	6.32
Underwater Archaeological	5.87
Historical objects and study	5.78
Industrial heritage	5.25
Social cultural history	5.08
Intangible cultural history	5.05
Others	3.79
Rock art sites	3.74

## Partner Comments on other types of work

“Other types of work : memory and identity (how does the past shape the present), open access to CH (discover and understand the past), sustainable heritage & preservation, economic and non-economic values of heritage”

“Others: Musik; Navigation History (Ships, routes, etc); History of Science”

“Others: music, navigation, science history”

“Others: archives of archaeological activities (1800-1950)”

“More emphasis on cultural heritage research humanities (i.e. spiritual culture), not only archaeological types of work”

Other areas to consider are the relative importance of the target uses of data, since this will influence priority on different data formats and standards. The following application domains are listed in the technical annex:

Education	8.10
Academic Research for CH Profs	7.65
Tourism	6.89
e-applications	6.19
Edutainment	5.90
Security concerns	5.38

**Executive’s comments on the poll:**

- a. Relative importance.  
There is clear emphasis in the membership of the network on the archaeological sites, research about them and tools to support that research and the presentation and explanation of results of the research. What was noticeable was that some topics were very evenly spread in terms of the partners’ expressed importance, whilst others were bimodal – of no importance to a significant fraction of the voters and very important to another significant fraction.
- b. “Other” topics.  
This topic scored at the low end overall because of the number of partners stating that there were no other topics of interest. Because of the timing of the voting and comments it was not possible to relay information about suggested “other” topics to all partners in time to allow them to express opinions. What it is possible to conclude is that the topics that were suggested were important to the partner(s) suggesting them.
- c. Coverage  
The Executive needs to be mindful of the difference between the interests of the current constitution of the EPOCH consortium and the balance of topics represented in the definition of the EPOCH contract. In some senses high importance in the voting can be seen as “well catered for in the current EPOCH membership” whilst low importance in the vote may equate to either “needing more effort” or intrinsically “of lower interest in the domains in which EPOCH works.” Those topics which score lower with a voting profile that indicates all voters attaching some importance might be considered well represented but of lower importance. Those where there is a bimodal distribution might be considered as important but under-represented in the consortium.
- d. Budget  
The recommendations have in general been to increase effort in most areas rather than decrease anywhere. Whilst this is perhaps unsurprising, the overall budget envelope of EC contribution is of course fixed and hence any genuine increase overall would have to be funded by increased contribution by partners or via other external sources. In these circumstances a vote for a small increase might result in a decrease of effort if other areas were more strongly supported for an increase within a fixed budget envelope.

The Executive is mindful that network operations were slower in starting than had been anticipated in the technical annex, partly through the delays in ramping up staffing profiles and partly with the timing of organisations’ summer breaks which were roughly in months 4 and 5 and hence at critical time in assimilation of new staff and emerging activities. The net effect is that the budget spend is behind the original planning and hence partners may be commenting that activities that were still ramping up needed increasing.

The Executive believes that the Network operations are still not fully established and that it was always going to take some time for the partnership to learn to work together smoothly and communicate well. In some very significant areas work was not planned to start until Month 7 or 12 (e.g. the “formulation of the common research agenda” (activity 2.5) and the NEWTONs implementation (activity 3.2), respectively). The current exercise of reshaping the JPA is also an essential part of growing the community and is expected to enhance integration in itself.

### **Editing recommendations**

- 1) EPOCH’s domain remains monuments sites and museums and all scored highly in the polling. The differences of interests expressed by the partners, might suggest that additional input is required from those with interests in monuments, museums and collections management.
- 2) These patterns are also backed up by the voting on the sub-areas, but here there are some issues to be addressed. Industrial heritage is included in the domain of monuments, sites and museums, but voting suggests it is less well represented in the partnership. Underwater archaeology is better represented in the partnership and, as voting on the technical areas has shown, rated highly enough to have a presence in the topics for jointly executed technological research. Interests in social and intangible cultural history were more broadly spread and the lower scores seem to indicate less confidence in the degree to which these concerns were inseparable in understanding the significance of tangible heritage. Some of the commenting in “other” demonstrates this uncertainty with topics such as “music” or “navigation” interpretable at multiple levels. The physical artefacts which populate the history of these areas (e.g. musical or navigational instruments) clearly all fall within the remit of museums and collections management, but the topics clear span into intangible heritage (e.g. performance or the events of specific journeys). The topic of “Rock Art sites” was included as a separate one since it appears to attract a lot of interest in electronic media. The topic clearly falls within the full range of sites when generic site-orientated tools are being developed, but the voting suggests that rock art should not have a higher profile than other types of site, with EPOCH and is probably a low priority where specific tools are being prioritised.
- 3) The voting here will inform priorities, but is unlikely to impact significantly the structure of the JPA or the generic activities undertaken. Where the influence should be felt is in setting the priorities and considering application of proposals received for development of tools, content, etc. and in the selection of exemplars for showcases, courses, etc.



## 2 Activity 2 : Integration

### Act. 2.1 Stakeholder Needs; Act. 2.2 Vertical Integration and Act. 2.3 Horizontal Integration.

**Current Unallocated funds: Zero**

#### **Issues to be addressed:**

- d) Need to address geographic and sectoral differences (e.g. industrial heritage museums).
- e) Activities are closely linked, and need to be closely coordinated.
- f) Planning transition away from EPOCH funding, since at some time user requirements knowledge will no longer be able to influence NoE work during the funding period.

#### **Proposals:**

- (vi) Amalgamate into a single “Sector Watch” activity. (75% Yes)
- (vii) Plan to focus on geographic and sectoral differences in JPA13-30. (59% Yes)
- (viii) Plan, as currently, reduced NoE funding in later years (Neutral – no change proposed)
- (ix) Plan to create structures to maintain this Sector Watch permanently, including investigating potential for a funded subscription service as a long-term sustainable impact (60% Yes)
- (x) Add usability studies of existing and new technologies to evaluate the effectiveness of these technologies (75% Yes)

#### **1<sup>st</sup> Round Voting Summary and Analysis:**

##### Partner Comments

- “Usability studies should be concentrated on specific experiences and tools rather than generic technologies”
- “Amalgamation is a managerial issue: it is not clear how it may affect the WP work - Sector watch is probably a reductive term (I expect we deal with "understanding" and not only with "watching") Suggestions: - Increase the focus and effort on understanding and systematize user needs in a broad sense (from professionals to end users) - Increase the effort for on-the-field Case-studies, best practices, methods and tools for usability and acceptability of technologies and applications”
- “my personal visibility level is not deep enough to vote on this point”
- “Proposal: Power analysis and impact assessment of EPOCH stakeholders”
- “It is crucial to maintain the momentum generated by Epoch for the long term to ensure work carried out in the next few years is not simply shelved as so much has been in the past. Long term continuation is the only thing which will ensure that this work is taken seriously and the community as a whole can benefit from the outcomes.”
- “Increase the focus and effort on understanding and systematize user needs in a broad sense (from professionals to end users)”
- “It seems to me that the vertical and horizontal integration are more technical issues while the stakeholder needs are content-driven. After the first year the stakeholder needs are certainly not yet properly defined and need to be more elaborated and analysed before different focus can be considered. The funding of the (study of) the stakeholder needs in later years depends on the future evolution of the NoE. If a permanent structure is considered, a further funding is necessary to accompany these structures. At this stage it is

impossible to evaluate the consequences of 'permanent structures' and insufficient information is given to provide a decent answer.”

- “We support the idea of a "sector watch", but through better coordination and not amalgamating the 3 dimensions. We support as well to create structures to maintain it permanently, but with an additional budget. We support "Plan to focus on sectoral differences in JPA13-30" but not Plan to focus on "geographic differences".”
- “How can amalgamation affect the WP work? It seems more like a managerial issue... We are interested in understanding the sector, not only in "watching" it. We feel the need to better understand user and stakeholder needs and to focus on best practices and case studies about methods and tools for usability and acceptability of technologies and applications.”

#### **Executive’s comments on the poll:**

All areas where yes/no voting was requested were strongly supported with a minimum of 59% and up to 75% of those expressing opinions voting “yes”. In particular the proposals were strongly supported to create a single “sector watch” activity and to incorporate technology usability studies (with some details of what this means still to be considered).

The comments that the activity should be targeted at enhancing understanding rather than just watching are, of course, accepted. “Watch” in this context includes analysis, whilst seeking not to promote a specific agenda in conducting the activity. The “Watch” should take a neutral stance in understanding the sector’s real behaviour. WP4 (“Spreading excellence”) should seek to influence that behaviour.

The issue of reducing support from the activity over time seems to have been misunderstood in the polling. After 4 years NoE funding from the EC will cease under any foreseen circumstances and services which are considered desirable on a continuing basis will require support from other sources. Recognising this and believing that Sector Watch was a candidate for continuation beyond the funded period of EPOCH, the EXC sought opinions as to whether this transition to other funding should be anticipating rather than seeking a sudden switch to as yet unidentified support mechanisms at the end of the 4 years of EPOCH. Voting suggests that there is no mandate to change the approach taken in the current Technical Annex, where the profile of support where NoE funding reduces considerably in year 4, on the assumption that some support will be sought from elsewhere and that work undertaken in year 4 will be useful to partners in supporting directions of development in years 5 and beyond.

#### **Editing recommendations:**

In response to the comments the executive will proceed on the basis of creating a single sector watch activity, believing that the amalgamation will enhance the cross-fertilisation and integration of the work of the three areas and simplify implementation. It is expected that this will in turn improve efficiency and effectiveness of the Sector Watch. Maintain profile of funding in current the Technical Annex.

## **Act. 2.4 Showcases**

**Current Unallocated funds: 136KEuros evenly spread by year**

### **Issues to be addressed:**

The showcase activity was the area in JPA18 which involved the greatest number of partners with funding. With such a complex set of activities it was always likely that there would be some which did not start as fast as others. All showcases are currently planned to complete by March 05. In the current JPA they continue to be used for dissemination (under WP4.6) to allow discussion of future possibilities with stakeholders. Budgets for years 2-4 are currently unallocated (44KEuros p.a.).

### **Proposals:**

The Executive has discussed alternatives and believes two types of showcase activity should be considered under 2.4 for the application of “unallocated” funds.

- (iii) Specific addition to the development of NEWTON tools under activity 3.2 to ensure that the tools work is properly showcased, disseminated and promoted.
- (iv) Development of showcases as “seedcorn” in planning applications for funding from sources external to the NoE, and thus promote new collaborations of partners. Such proposed collaborations would be subject to calls for proposals issued every period and reviewed. This would be part of ensuring sustainable integration of partners within the NoE beyond the funding period and of creating the European Research Area which is supposed to be one objective of an NoE.

The third alternative would be to cease showcase activity after JPA18 to free up unallocated funds for use elsewhere.

### **1<sup>st</sup> Round Voting Summary and Analysis:**

There was strong support for producing showcases for the NEWTONs with 85% of those expressing opinions voting in favour. This support was slightly contrasted with the 65% voting in favour of ceasing funding for showcase work after JPA18.

The voting on using showcase funding as seedcorn to allow novel concepts to be shown to potential funders received a mixed response. The votes cast show that the proposal has substantial support from about half those voting. The average score of 5.35 was achieved with a bimodal distribution where the upper half median was 8 and the lower half median was 0.

#### **Partner Comments**

- The meaning three proposals are not totally clear from the doc. And they do not seem to be mutually alternative. Our opinion is:
  - 1) show cases have demonstration purposes by their very nature - they should convince someone of the effectiveness and utility of an approach or tech solution in some specific domain;
  - 2) as such: 2.1 the completion of the show-cases development might not be charged on the NoE; 2.2) they have a significant role to demonstrate the effectiveness of the tools developed under 3.2;
  - 3) their funding could be moved to 3.2, and tool oriented showcase development should be required in 3.2
- Seedcorn showcases are an important Direction for Development, as suggested by the Executive Committee New tools should be demonstrated by showcases
- The advantage of showcasing is it does raise the profile of the work being done - the disadvantage of showcasing is that it could stifle creativity by having a significant influential effect on how future funding is allocated.

- We didn't fully understand the meaning of these proposals. Anyway, we would like to stress the fact that: - the completion of the show-cases development might not be charged on the NoE; - since they have a significant role to demonstrate the effectiveness of the tools developed under 3.2, their funding could be moved to 3.2, and tool oriented showcase development should be required in 3.2

**Executive's comments on the poll:**

The EXC believes that the vote to support NEWTONs, but discontinue showcase activity, taken together, should be interpreted as meaning that the showcase activity for NEWTONs should be administered under Activity 3.2 as a requirement there rather than as a separate activity. The EXC accepts that this may be more effective and economic than continuing under 2.4.

The EXC believes that the seedcorn vote should be interpreted in the same way as voting on sub-areas of the domain for EPOCH. This activity was important to some in the same way that Industrial Heritage was important to some. The EXC believes that activities which are valid under any area of EPOCH work, and are also targeted at potential funders of continuing EPOCH-related activities, should receive a measure of priority over those which do not seek to establish additional funding.

**Editing recommendations:**

Include obligation for showcasing NEWTONs to 3.2 and set budgets there within other NoE priorities to reflect that obligation. Use "the ability to leverage other funds" as one of the assessment/prioritisation criteria in deciding on application of EPOCH funds. Discontinue Activity 2.4 as a separate activity when current obligations are completed. Dissemination of completed showcases should be moved to Activity 4.6 (Showcase Dissemination) and the current showcase materials should be considered EPOCH assets for use in spreading excellence, informing debate etc. administered through 4.6

## **Act. 2.5 Research Agenda**

**Current Unallocated funds: Zero**

### **Issues to be addressed:**

Work within EPOCH in this activity is only just getting underway, as planned in the JPA18. A workshop is being planned for February 2005 to bring together the results of activities 2.1-2.4 with research priorities defined under agendas elsewhere (FP6 5<sup>th</sup> call, FP7, other results). Annual revision of the agenda is planned in the current JPA and an agreed agenda is felt to be an important part of fostering collaborative research within the NoE. A major aspect for the activity in the current semester is to propose priorities for the NoE partners in pursuing development of STREPS in the 5<sup>th</sup> call for FP6. Similar actions are envisaged as the JPA develops further. The executive believes it would be wrong to propose a reduction in this area at this time, but one option would be to increase priority for this area, by moving some unallocated funds into the activity, for example to create a regular and direct input of EPOCH members through regular workshops. However the executive believes current levels are appropriate.

### **1<sup>st</sup> Round Voting Summary and Analysis:**

Significant opinion in favour of a modest increase in funding for this exercise – in particular to spread funding wider and (based on the free text comments) involve more partners.

#### **Partner Comments**

- Increase of the funding would allow a wider collection of input and creation of involvement by partners (mostly through regular workshops), which will improve network cohesion
- Increase budget to involve a larger set of partners, especially from cultural institutions, in order to collect a wider spectrum of contributions and research requirements
- Several partners are already contributing unofficially to the RA
- While the research agenda could help provide some coherence in the work being conducted by the partners - it is crucial that items outside the agenda should also be considered depending on their merit.
- Increase budget to involve a larger set of partners, especially from cultural institutions, in order to collect a wider range of contributions and research requirements
- Recommendation to have some money available in order to develop research activities outside of the present list, taking into account the proposals submitted during the December Workshop (See "EPOCH WP 2.1. Stakeholder needs - Interim report November 2004, ex. : Economic sustainability, legal issues...etc.)
- We feel a lack of contributions from cultural institutions; our opinion is that an increase of the budget may be considered to involve a larger set of partners.

### **Executive's comments on the poll:**

The results of the poll are slightly surprising given that the poll was taken before the scheduled start of the activity and the results suggest increasing the budget before any funded activities have taken place. In these circumstances it would seem advisable to make sure that the opportunity is maintained for wide consultation of, and participation by, partners.

### **Editing recommendations:**

To continue with current budgeting levels but to ensure wide spread consultation with partners. To monitor expenditure closely and if necessary to contemplate additional funding in future years if early results appear to justify the investment.

## **Act. 2.6 Socio-economic Impact Assessment**

**Current Unallocated funds: Zero**

### **Issues to be addressed:**

This was planned as a predominantly year 1 activity to build some methodologies and tools to help sites and policy makers think about the impact of investment. The work was late starting, due to difficulties recruiting staff, but early results (as discussed at VAST) have revealed both great interest and a lot of potential in this area. The executive believes that the work should be followed up strongly and that emphasis should if anything increase in this area. Indeed several partners in EPOCH have submitted a bid for additional funding in this area under the Marie Curie scheme, the results of which should be known before JPA19-30 is finalised. The proposal is therefore to leave the activity at its current level, but depending upon the results of the Marie Curie proposal and progress on the activity, an increase of support might be advisable in the future. The detailed planning of the activity is being revisited as a result of the initial experiences within EPOCH and elsewhere.

### **1<sup>st</sup> Round Voting Summary and Analysis:**

Voting supported the idea of leaving the funding as at present with a virtually symmetric pattern of partners supporting revisions of the budget upwards or downwards.

#### **Partner Comments**

- The early work in this has shown that the time is ripe to develop the area. If funding is not secured elsewhere then this should be boosted in EPOCH in order to maintain current sector impact of EPOCH's work.
- Increasing the funding would allow to study better and more sites so that the socio-economic impact assessment can be seen a major world class tool, allowing authorities to spend money on CH in a well understood way
- To evaluate returns on investments. We suggest allocating some effort to 2 specific aspects of "social impact": 1) educational benefits: the use of technology-based CH activities (both at school and in CH settings such as museums, archaeological sites, etc.) has the potential to increase the CH related. 2) Social benefits for elder or retired people who represent a significant percentage of "fruitors" of CH events
- As we are not at all involved in this activity so that it is difficult for us to estimate the funding... We do not understand this voting system! It is necessary to better explain the coordination and the connexion between all the activities implemented by the different partners in order to win coherence and a global view of the common objectives of the EPOCH.
- Some effort should be allocated for educational purposes (attract and educate young people to CH-related issues through technology-based activities) and for other social purposes (in particular for elder or retired people who are the main "consumers" of CH events.

### **Executive's comments on the poll:**

The voting could not be clearer in terms of maintaining the current proposals. Education is already considered a major beneficiary of the impact of technology in cultural heritage dissemination and is explicitly listed as the subject of separate attention in the current technical annex. Whilst the impact in terms of educational aspects and value of investment can be assessed in specific circumstances for individual cultural heritage sites this activity is concerned with building generalised models. However before models of specific activities can be developed the broader methodology of impact to be assessed needs to be defined in terms of both economic and social factors.

**Editing recommendations:**

Maintain currently planned patterns of expenditure.

## **Act. 2.7 Brokerage**

**Current Unallocated funds: 36KEuros over years 1-3 (some already used)**

### **Issues to be addressed:**

2.7 is an activity in which EPOCH can:

- a) Provide limited support to sites-in-danger
- b) Pump-prime new project proposals and consortia
- c) Provide infra-structure to allow partners to create new collaborations.

The major issue for brokerage is to balance these within a very limited budget and the unallocated funds are too small to provide a major source for sites-in-danger.

### **Proposals:**

The potential changes of emphasis would be:

- (v) To develop a pro-active service to actively match partners into new complementary collaborations (66.7% Yes)
- (vi) To allow partner identification for new collaborations to become a purely service function within the website and not be a priority for funds allocated under this activity. (Mild support in favour.)
- (vii) To use unallocated funds to leverage other funds by enabling new collaborations to provide support for sites in danger (mildly against)
- (viii) To give priority so that this also serves to demonstrate EPOCH technologies and methodologies in the field (e.g. Newtons or EPOCH supported standards). (Neutral vote).

### **1<sup>st</sup> Round Voting Summary and Analysis:**

There was strong support for a pro-active service with 2/3rds of those voting in favour of a proactive service with more variation/uncertainty.

#### **Partner Comments**

I would prioritise demonstrations that serve to leverage other funds as this will lead to identifiable sustainability and integration of partners

The meaning of the second question is UNCLEAR The "pro-active" service should not only be devoted to pattern matching (who may help whom may need what) but also to financially support partners who may be able to provide "consultancy" and side-by side support to other partners. More precisely, to sponsor effective support actions on horizontal by competent partners on transversal themes (e.g., design and evaluation methodologies)

Sites at risk should certainly have a very high priority and Epoch should play a strong role to ensure partners are matched together to provide the support a site may need.

Within a network of excellence brokerage remains, to me, a difficult theme. The network should remain focused on coordinating/stimulating the research activities and stay with its core business.

We didn't fully understand the second point: this kind of service should include financial support to support actions performed by partners (expert in a particular topic) to other partners.

### **Executive's comments on the poll:**

No clear direction in voting since the vote in favour of a pro-active service conflicts somewhat with the notion of a web-only service unless a range of intelligent search and brokerage-push tools are implemented

### **Editing recommendations:**



Ensure that the brokerage service is implemented with a range of online tools to allow partners to maintain their entries and to allow searching for appropriate skills and facilities on line. See activity 4.1 for more details.

## **Act. 2.8 Encouragement of SMEs**

**Current Unallocated funds: 38KEuros over years 2-4**

### **Issues to be addressed:**

2.8 has been slow starting but the concepts are well founded in other sectors and the work initiated at VAST well received. The detail has moved the proposed emphasis of the work slightly, from virtual clusters to geographic clusters linked together and the detailed activity planning is needed to reflect this. In the longer term for the work to be seen to be effective we need to ensure that a funding basis for the clusters is developed which will survive beyond the 4 year funding period. During the funding period, the activities of the clusters need to be developed and validated.

### **Proposals (with voting scores):**

The executive believes that:

- (iv) We should roll the activity forward and make the clusters happen. (85% of votes in favour)
- (v) The basis for funding the proposed exemplar geographic clusters should be refined from the current partner base in 2.8 and by planned application of the unallocated funds. (Significant vote in favour)
- (vi) Priority should be given to development planned on the basis of transitioning to funding from external sources to support the clusters during year 4 and beyond. (significant vote in favour)

### **1<sup>st</sup> Round Voting Summary and Analysis:**

All the proposals were supported by the voting pattern.

#### Partner Comments

- The sentence "Give priority to development" and its explanation in the full doc are OBSCURE!!!! I voted NEUTRAL just because I do not understand what I'm voting about
- I do not know if there is any incoming cluster among the partners at the moment
- The third sentence is unclear.
- While SMEs could encourage further investment in the field - there is the risk that certain sites may be excluded from help due to increased financial costs from a commercial venture.
- The third is quite obscure
- As we are not at all involved in this activity it is difficult for us to estimate that... We do not understand this voting system! It is necessary to better explain the coordination and the connexion between all the activities implemented by the different partners in order to win coherence and a global view of the common objectives of the EPOCH.

### **Executive's comments on the poll:**

A number of partners were clearly puzzled by the voting options for which the authors apologise. The wording of the third proposal was intending to make it plain that if the clusters approach is to become established as a mutual support mechanism in the longer term then a funding base will need to be established.

### **Editing recommendations:**

Continue to develop the training clusters as proposed at VAST2004. Plan that in the later alternative basis for funding will be sought.

### 3 Activity 3: Jointly Executed Research

WP3 is the workpackage where the concept of a shared technical infrastructure is developed for EPOCH related applications. Conceptually activity 3.3 develops an underpinning infrastructure to ensure interoperability, whilst 3.2 develops tools to integrate with the infrastructure and improve functionality or address gaps. The original concept was of data refinement as digital cultural heritage artefacts and/or information about monuments, sites and museums, including individual artefacts and related collections, ontologies etc. progress down a pipeline from data capture to eventual dissemination, through a number of intermediate states. Work to date has determined that the pipeline concept of ordered processing is less appropriate than ensuring that all tools operate on a range of underlying data formats. The activity in 3.3 needs re-interpreting and refining in the light of this change, but the basic concept of underpinning infrastructure and new tools interfacing to it, continues to be relevant.

As indicated at the EPOCH general meeting in December specific consideration of whether New Tools for Underwater Archaeology should become a sub-area of the common infrastructure will be undertaken with the NEWTONs vote. Should partners decide that such tools are a priority then some provision will be needed to interface those tools to the common infrastructure under 3.3, since that will be required to ensure interoperability for any new tools developed. Industrial heritage is also within the remit of monuments, sites and museums but currently not well represented in the work of the consortium. This should also be considered as part of setting priorities.

#### **Act. 3.1 Coordination**

**Current Unallocated funds: Zero**

##### **Issues to be addressed:**

This is the largest WP in terms of overall budget, number of partners and complexity of organisation of technical work. It is clear that the coordination of the work will not diminish as the work progresses and the NEWTON projects are evaluated, initiated and tested under 3.2 and interlinked with interoperable baseline technologies as planned under 3.3. 3.1 is therefore an activity where our contractual obligations are such that it is inconceivable that a reduction in activity could be contemplated, although operational approaches have been and will continue to be reviewed and re-evaluated.

##### **Proposals:**

The executive believes that this activity should be maintained at its current level.

##### **1<sup>st</sup> Round Voting Summary and Analysis:**

Despite a spread of voting the overall effect was fairly balanced with support for maintaining or modestly increasing the effort.

##### **Partner Comments**

- I think we need to boost the effectiveness of integration/coordination of actions - there are too many people operating independently and not clearly in line with the Technical Annex
- A large network like EPOCH requires a huge coordination effort. A lot of energy has been spent so far by coordinators. Still, my impressions is that the coordination has not been as effective as expected from the financial investment on this task. In particular communication - the elementary basis for coordination - has been weak. Maybe, different coordination models should be investigated, e.g., decentralizing coordination resources and

assigning specific coordination responsibility, tasks and funding to clusters of partners at a finer grained level

- I see the risk that focus on the incoming NEWTON "clusters" may decrease the network potential if the coordination effort is not strong enough
- Coordination should be improved.
- Scale up, especially on objective 3 (Widening the network's impact).
- General We feel that nobody is coordinated with us
- Activity could be decreased, too much administration effort
- I think the key role Epoch is playing is to coordinate activity in this field.
- Decrease
- Coordination must be strongly improved. A large network like EPOCH implies a huge coordination effort. We recognise the effort done so far by coordinators, but we suggest to experiment with different coordination models.
- In our opinion more coordination is needed, especially between partners that are not directly connected to archaeology (dealing with other fields of CH).
- As we are not at all involved in this activity it is difficult for us to estimate that... We do not understand this voting system! It is necessary to better explain the coordination and the connexion between all the activities carried out by the different partners in order to win coherence and a global view of the common objectives of the EPOCH.
- We feel that coordination is still a big problem in such a large network. Maybe a more decentralized coordination and communication model should be adopted.

#### **Executive's comments on the poll:**

There is clearly some concern amongst partners about coordination here, but also some divergence between partners wanting to see "more" coordination (perhaps implying an increase in resources) and partners wanting to see things differently coordinated with more partners involved. The Executive believes that coordination of development of the common infrastructure does need to be spread with individuals taking responsibility in identifiably different areas. For this reason different individuals have been identified to lead in each of the technical areas listed in the technical annex. These individuals will be named in the revised JPA and the interfacing between the different areas will also be documented, as part of the refinement of the integrated infrastructure as reported in D3.1.1 and D3.1.2. This structure is taking effect and the common infrastructure work is currently moving from review and analysis of existing technologies to integration and implementation based on a common set of existing tools and the upcoming selection of NEWTONs combined and interfaced using defined, standardised formats.

#### **Editing recommendations:**

Maintain current resourcing levels, and document the revised common infrastructure and make the coordination responsibilities more explicit. Identify an overall chief system designer whose role will be to ensure coordination between the different technology areas and define an explicit project plan to advance the implementation of the common infrastructure. Make explicit link to standards activities in appropriate areas of functionality.

## **Act. 3.2 New tools**

**Current Unallocated funds: 817K (roughly evenly spread over 30 months from month 13)**

### **Issues to be addressed:**

Funded work in this area is not due to start until Month 13. (All activities in planning the NEWTONS call etc is being undertaken under 3.1). A separate document concerning the suggestions for the broad areas of NEWTONs and for the partners to vote on prioritisation of those topics was prepared in parallel. The current JPA reflects the considered judgement of the Executive in negotiating the contract 12 months ago. Elsewhere in this document partners are asked to consider priorities to which the executive will respond. However partners should be aware that the largest single unallocated budget is that in activity 3.2 so that if priorities are raised elsewhere a natural conclusion might be to diminish the budget available in this area. For the purposes of this exercise partners should therefore consider whether the budget allocation to NEWTONs demonstrates the correct balance relative to that in other areas of EPOCH activity.

### **Proposal:**

The executive proposes that partners vote on whether the current JPA places the right balance between this activity and other areas of the JPA.

### **1<sup>st</sup> Round Voting Summary and Analysis:**

#### **Partner Comments**

- It is essential that the common infrastructure funds are being justified by those getting funding under 3.3. This is not optional - groups should only be funded here in 3.2 if they have clear plans for applying their 3.3 funds to common infrastructure in ways that satisfy the reviewers of the NEWTON bids
- A request of increase is motivated by the need of considering two crucial phases of tools development: requirements elicitation and user validation. They should be added to any "project" of new tool, and consistently funded. This approach is also a way to give a stronger role to cultural institutions in the new tools development - to both better understanding the requirements and evaluate the results (in terms of usability, acceptability etc.). In addition, the spectrum of tools should be enlarged, to include support tools for methodologies.
- If we are successful, we shall have a much stronger potential for focused and conforming developments by next Newton call
- New tools could significantly increase the efficiency of the huge amount of work that is needed in this field and will hopefully significantly improve recording and access to this material.
- Increase but under the conditions that cultural heritage and research institutions are stronger involved in tools requirements and tools validation.
- As we are not at all involved in this activity it is difficult for us to estimate that... We do not understand this voting system! It is necessary to better explain the coordination and the connection between all the activities carried out by the different partners in order to win coherence and a global view of the common objectives of the EPOCH.
- We consider as crucial including goals and requirements analysis, usability and accessibility evaluations as main phases of a tool development, adding support tools for methodologies to the spectrum of tools considered.

### **Executive's comments on the poll:**

There are a number of threads emerging in the comments. Firstly the need for integration of user views in the development of tools is accepted. Secondly there is a strong thread of the need for usability testing of the tools being developed and in order to understand general principles.

The process of reviewing the NEWTON bids is designed to include explicitly opinions from experienced and respected practitioners and representatives of user communities. In addition developments will be required to include usability testing within the development cycle and to report on the results of these tests. Tools that are developed as part of the common infrastructure will become available to partners and their use there will also provide feedback on desirable characteristics for successful adoption.

The brief for reviewing NEWTON bids also attaches importance to open access to the results of the work in the form of open source/open licensing of resulting tools. This is specifically to encourage other groups in the partnership to pick up and experiment with the techniques implemented within EPOCH.

The final range of comments relates to the need to be sure that the right tools are developed and the feeling that decisions will be better if they are delayed. There are obviously judgements to be made about the level of confidence in the right tools being commissioned and the executive is sensitive to this issue. However there is also a need to maintain impetus in developing the integrated technical environment and the reverse concern is to make sure that the tools are available for long enough whilst the network is receiving funded support so that partners develop skills and experience in using the infrastructure whilst support is provided. This will both enhance integration of the partners and provide practise-based feedback to next stages of tools development.

**Editing recommendations:**

The Executive intends to fully imbed the first round of the successful NEWTON bids within the revised technical annex. However the review process is still in process so the details of which tools will be included cannot be described here.

### **Act. 3.3 Common infrastructure**

**Current Unallocated funds: 78K (over years 1-3)**

**Issues to be addressed:**

As indicated above the detail of implementation in this area will need reworking with this round of JPA revision. However the principles of interoperability and the areas of technology proposed in the original workplan have been re-affirmed by the work to date. It had been envisaged that the current unallocated budget would be used to provide software licensing or to buy in specific expertise from outside the range of partners currently include in the infrastructure team. The seven areas of technology originally included are:

8. multi-lingual and semantic data processing,
9. databases and technology management,
10. mobile-wearable-ambient systems,
11. recording and data representation aspects,
12. visualisation and rendering (modelling for reconstruction is considered to be visualisation),
13. multi-modal interfaces
14. virtual human and other avatar technologies

The present project documentation (including consortium agreement) makes it clear that the basic philosophy used to date includes open-source tools and applications, targeting low cost systems (particularly PC based hardware). However the interoperability approach can be supported in theory via the use of any tools on any hardware so long as the data formats produced are standardised and data costs are kept under control. In some respects this may be related to whether the need is for low cost tools for in house use or low cost services, potentially to be used as remote bureaux services. Advice was therefore sought on the priorities between these, but in the end relatively little was received.

**Proposals:**

The executive propose to continue with the original seven areas of technology and had sought advice on the relative balance in the accompanying voting form, adding in an eighth area of “Games and Edutainment” in response to perceived needs from talking to others in the consortium and outside. Similar guidance was sought on the open-source, tools and services issues, but no specific vote was taken and little comment received.

**1<sup>st</sup> Round Voting Summary and Analysis:**

Recording/representation	6.66
Databases and Knowledge Mgmt	6.62
Visualisation and Rendering	6.46
Multi-lingual systems	5.74
Multi-modal interaction	5.03
Mobile/wearable technologies	4.62
Games and Edutainment	3.84
Virtual Humans/Avatars	3.65

**Partner Comments**

- The open source issue should be discussed, to define proper licensing policies, in order to open the way to a successful market growth in technology enhanced access to CH
- 1. Institutional capacity & social capital (geo-cultural analysis). 2. Political perceptions and attitudes (geo-politically).

- Sorry, but I DO NOT UNDERSTAND WHY I SHOULD VOTE ON GENERAL THEMES AND NOT ON SPECIFIC SUBTOPICS - AS WE DID IN THE PRIORITY LIST AT THE BEGINNING OF THIS VOTING PROCESS. IN MANY CASES, I STRONGLY DISAGREE ON A SPECIF SUB-TOPIC AND STRONGLY AGREE ON ANOTHER SUB-TOPIC UNDER THE SAME THEME. IN THIS CASE, SHOULD I SCORE THE AVERAGE? I DO PROPOSE THAT THIS SECTION OF VOTES IS \*NOT TAKEN IN CONSIDERATION\* FOR FURTHER DECISIONS, BEING METHODOLOGICALLY WRONG
- We would rank multi-modal interfaces higher if less focused on agent technologies
- ...but is quite strange to vote on general themes and not on specific subtopics.
- The content of the 'Epoch supported services' is not clear to me...
- We do not have enough technical knowledge or background to decide on this issue.... We do not understand this voting system!
- We are abstaining the vote for this section because our opinion on each macro-topic is inhomogeneous. In the first two sections of vote, we expressed strongly different opinions for different sub-topics related to the main macro-topic, so we cannot express a univocal vote for a single topic in this list.

#### **Executive's comments on the poll:**

The rankings demonstrate a clear banding which ranks the core technologies of data recording and analysis/visualisation tools as most frequently critical to partners (unsurprisingly). This implies that the infrastructure support in areas such as virtual humans and games/edutainment systems should be kept as a thin layer to ensure that any NEWTONs approved in this technology can interface and that basic level functionality can be integrated by those partners (about 30% of voters) who thought this was an important technology for their work. Similar priority setting should be undertaken elsewhere.

The comments make it clear that there was some confusion about the opinions being requested here relative to that included in the NEWTONs call. Part of this was that the two calls went out at the same time, but equally the comments seem to be mainly from less technologically-orientated partners who appear to have required more explanation about the distinctions between NEWTONs and infrastructure work in 3.2 and 3.3 respectively. This resulted in a higher number of abstentions than in some of the other votes (about 10-12% here compared to about 3-5% as a typical abstention rate), but there were still enough partners expressing opinions to be meaningful.

For any of the NEWTON work to integrate with the common infrastructure there needs to be at least a thin interface layer to support that area of technology – this might take the form of interfacing data formats or a stronger form of support, providing libraries of functionality. Voters were being asked here to express opinions about how rich the functionality provided as a starting point should be in each area as a relative priority.

There are also one or two other comments here – for example the comment about the need to formulate a good open source/licensing policy is well taken. The Consortium agreement makes it clear that to open up the tools at as low cost as is achievable and preferably at no cost is an underlying principle of the network, but the policy still needs to be more fully quantified.

#### **Editing recommendations:**



The revised JPA needs to be developed in the light of the current review of the NEWTONs proposals which includes a review of the plans for the work in the infrastructure area. The rankings above split into a number of areas, with core technologies at the heart of archaeological work (recording, archiving, analysing and disseminating) all achieving high marks. Multilingual systems were also rated fairly highly and perhaps understandably the more unusual technologies in multimodal interfaces, mobile technologies and virtual humans scoring progressively less highly. In all cases however the technologies were important to a significant of those voting implying that they should be part of the JPA, with perhaps lower emphasis (but a definite place) when deciding on resource allocations.

## 4 Activity 4 : Spreading Excellence

### Act. 4.1 The Website

**Current Unallocated funds: Zero**

**Issues to be addressed:**

The website has been undergoing development since the start of the project and services are gradually being added. For example, voting and commenting for this exercise is being undertaken through the website and the news and calendar services are gradually being developed. In some areas services to do with running the network (e.g. the work areas for each activity) are more used than others.

Some partner training in the services already provided has begun (e.g. at VAST) and this will continue until the services are fully embedded in the NoE operations.

**Proposals:**

The Executive propose that:

- d) The brokerage service of partner matching be incorporated as a web-based search facility on the web-site and discontinued from any relation to Activity 2.7
- e) A task force be established to evaluate, monitor and oversee development and use of the site both for operational and design considerations (e.g. EPOCH branding)
- f) Partners should rank the services provided according to potential usefulness if and when implemented in order to inform priorities in site development. The following services are currently proposed and/or implemented:
  - (vi) Repositories of items available to partners through EPOCH for non-commercial use:
    - Software (to include NEWTONS for example)
    - Data sets (e.g. for algorithm testing, interoperability assessment etc)
    - Documentation (e.g. EPOCH publications or links to EPOCH publications, information about standards)
  - (vii) Brokerage information by partner:
    - Specific skills available
    - Scarce facilities
    - Large scale installations
    - Service for stolen, looted or disputed artefacts
  - (viii) Calendar of relevant events
  - (ix) News service
  - (x) Operational areas for:
    - Assembly
    - Board of Directors
    - Each Activity

## 1<sup>st</sup> Round Voting Summary and Analysis:

<b>Move Brokerage</b>	<b>81% Yes</b>
<b>Form Task Force</b>	<b>74% Yes</b>
<b>Area of Service</b>	<b>Ave Score</b>
<b>Repositories</b>	<b>7.94</b>
Documentation	8.34
Data sets	7.76
Software	7.71
<b>Brokerage</b>	<b>5.29</b>
Skills	6.32
Scarce Facilities	5.97
Large Scale Facilities	5.00
Stolen/looted artefacts	3.78
<b>Events and News</b>	<b>7.95</b>
Events	8.15
News	7.76
<b>Work areas</b>	<b>7.41</b>
Activity ops	8.10
Assembly ops	7.33
BoD ops	6.71

### **Partner Feedback on website functionality:**

- We should invest our funds on more productive issues
- Distinguish between official needs (policy info) and public needs. The difference requires 2 websites, using same core database.
- The website should be monitored to ensure it is effective in disseminating information.
- Every website needs a good follow up. The option on brokerage service depends on the development (or not) of the brokerage service (cf. other part of the poll)

### **Partner Comments on ranking website services:**

- Operational areas must be usable for direct online control by the persons responsible for the activity
- The ABSTAIN vote has been assigned to the topics that are unclear
- The Epoch website should be the FIRST place partners look for help for a forthcoming project or information about what current activity is!
- Some topics are obscure
- We are abstaining the vote for the unclear topics.

### **Executive's comments on the poll:**

Voting here seems clear and helpful, although a few partners were unclear on specific items. It should be noted that there are distinct partner and public areas of the site. The comment that the priority of a service depends on effort being put into supplying data and using it is accepted.

### **Editing recommendations:**

Use the recorded priorities in describing the next stages of development of the site. Form the task force to monitor site-usage and advise on further development. Develop tailored search tools to assist with typical brokerage operations.

## **Act. 4.2 Standards**

**Current Unallocated funds: Zero**

### **Issues to be addressed:**

To date the standardisation activities in EPOCH have focused on CIDOC-CRM and on experiments with OpenSG, some developments in operational charters, and some standards related tutorials. There are three distinct areas of standardisation identified in the technical annex:

- d) Documentation standards (e.g. CIDOC-CRM)
- e) Technical standards to support the common infrastructure (e.g. OpenSG or MPEG)
- f) Operational Standards (e.g. related to the Ename Charter)

### **Proposal:**

The executive propose that

- (iii) That 4.2 should relate to work on the contribution of experience to standardisation activities and the dissemination and education in standards should be included in the education and training activity
- (iv) that work in the three sub-areas above should also represent about equal effort and budget

### **1<sup>st</sup> Round Voting Summary and Analysis:**

There was strong support for both proposals above ((i) 79.3% Yes; (ii) 85.7% Yes) and it is clear that the updated JPA should reflect these stances.

#### **Partner Comments:**

- The second vote here is difficult to choose. I think the current budgets would be right if we were seeing the activities but the effort being reported to date doesn't seem to match the budgets. I might revise this opinion if I saw more reporting
- Second question should be an Agree/Disagree question, not an Increase/Decrease question
- The increase of budget (since budget increase-decrease is apparently what question 2 asks us to reply about :-)) is motivated by the need to including other issues that may be related to "standards" in a more general sense - meaning guidelines, best practices, methods, etc. in field such as design, usability, accessibility, interoperability etc. These topics are related both to methodological issues and support tools - think for example of the W3C tools for accessibility check and "transformation". But if they do not find a place in other WPs, they should definitively play a role in this WP- with an appropriate budget
- More effort should be addressed to issues related to "customer satisfaction", where the customer is the tourist (usability, user needs, etc.)
- Information about standards should be much more accessible - and a way found to encourage all partners to (attempt) to adhere to them. A way should be found to overcome the "boredom" factor associated with standards and make them continually be consulted in all work.
- The answer alternatives to question 2 are unclear
- The increase of budget is motivated by the need to including other issues that may be related to "standards" in a more general sense: guidelines in field as usability, accessibility, and so on
- With the vote at the point 2, we express the need of an increase of budget for this area to include guidelines, best practices, methods, etc. in field such as design, usability, accessibility, interoperability etc.

### **Executive’s comments on the poll:**

The voting here reflects the desire to see more visible work in the area of guidelines, best practice etc. To date the visible work reported in this area has mainly related to the Ename Charter. In fact when the budgets currently assigned to partners working in these areas are analysed, the following breakdown by year and area is currently included in the JPA:

#### **4.2 Breakdown (in KEuros)**

	<b>Doc</b>	<b>Tech</b>	<b>Guide</b>	<b>Total</b>
<b>Yr 1</b>	70	30	74	174
<b>Yr 2</b>	60	0	86	146
<b>Yr 3</b>	72	0	74	146
<b>Yr 4</b>	30	0	50	80
<b>Total</b>	232	30	284	546

The budget included under the technical column was specifically given to partners involved in showcases with an element of standardisation, to indicate a requirement to report back the experience of using standards and the impact on CH work. Since the planned showcase activity was front loaded, so is the associated standards activity. In order to continue the same approach it will be necessary to consider the roles of partners involved in NEWTONs (Activity 3.2) and in technical infrastructure (Activity 3.3). Since all partners are required to report on their work and integration using standards is an essential part of the design approach being taken, then an option to be seen to be continuing to technical standards activity under 4.2 would be to report the standards elements of WP3 activity explicitly under 4.2. This would imply reporting about 5-10% of budgets allocated under 3.2 and 3.3 as being associated with work on standards under activity 4.2.

Since partners believe there is insufficient activity under the guidelines area of 4.2, it seems that there are two possible scenarios:

- a) The activity is being supported at too low a level
- b) The level of support is sufficient but the activity is not visible enough to other partners – perhaps following a slower-than-planned start-up of the activity

### **Editing recommendations:**

Redraft the activity to make the three sub-areas more visible with their own reporting structures. Shift 5-10% of WP3.2 and 3.3 budgets into the technical standards area to make partners obligations to engage in reporting the experience with standards to the appropriate standardisation authorities and to comment on proposed standards or revisions of existing standards. Ensure that standards training is an explicit area under education and training and consider further the partners’ roles in education and training in the areas covered by work in 4.2. This may imply a rebalancing of budgets and activities between 4.2 and the revised areas of education/dissemination.

Several partners commented that CIDOC-CRM was not the only documentation standard that the consortium should be contributing to, so the work in this area should also be revisited to re-affirm priorities.

Consideration should be given to building in flexibility into the resources in this area in order to ensure that the work is responsive. In particular, there should be some unallocated budgets to:

- i. allow for partners not currently directly involved to participate and represent EPOCH at appropriate standards meetings (although this might occur in the second area below) and

- ii. Permit flexibility in the workplan for later years as standards projects complete and priorities develop in new areas

**Act. 4.3 Staff mobility and bursaries; Act. 4.4 Education and training; Act. 4.5 Dissemination and; Act. 4.6 Showcase Dissemination**

**Current Unallocated funds:**

**4.3 146K (Some used allocated approximately evenly)**

**4.4 245K (mainly in years 2 and 3 to allow for some course development in response to stakeholder and training needs)**

**4.5 120K (approximately evenly spread)**

**4.6 65K (mainly in JPA18)**

**Issues to be addressed:**

4.3 and 4.4 are very inter-related and the executive believe we should try and clarify the different support types available here within a single activity, taking into account the needs for support of standards dissemination. Some overlap exists also exists with 4.5 where events are currently supported since tutorials running at events can be considered education/training. 4.6 funding was concentrated in JPA18 to accompany the showcase front-loading in 2.4.

**Proposals:**

The executive propose to rationalise the four activities into one with three sub-areas (targeted at three distinct categories of support: those receiving knowledge; experts disseminating knowledge; and event managers organising opportunities for disseminating knowledge to EPOCH partners):

- (iv) A sub-area concerned with moving people to receive educational experience in some form – including in-house experience with another partner (mobility); attendance at courses (education); attendance at events (bursaries for conference attendance for example)
- (v) A sub-area concerned with preparation and delivery of material for dissemination and education – including commissioned course production, delivery expenses/subsistence for tutors where appropriate, and potentially EPOCH experts from partners not funded by standards to participate in standardisation activities.
- (vi) A sub-area to allow sponsorship of events so that EPOCH partners can attend at subsidised rates or receive other benefits (e.g. production of additional proceedings copies for distribution to partners)

If accepted then the sub-areas will be organised to include calls for proposals issued at least once for each of these sub-areas in each semester. The balance between areas would be shaped by the review of the quality of proposals, by demand and by priorities for that period. Due to the lead time of planning course or events some commitments might need to be made against budgets for the following semester.

One additional activity may need to be separately recognised as EPOCH is committed to the production of a number of publications, both in support of events (which might fall under sub-area (iii) above) and independently of any event which may need a separate activity.

**1<sup>st</sup> Round Voting Summary and Analysis:**

There was strong support for re-presenting the work in these areas in terms of the target users as described above, with 84% of those voting in favour. There was a similar vote in favour of a separate “EPOCH publications” activity.

Partners attached the following importance levels to the different sub-areas:

<b>(ii) Education and Dissemination</b>	<b>8.36</b>
<b>(i) Mobility</b>	<b>6.66</b>

**Partner Comments**

- A Network is primarily a mobility catalyst ----- Excellence at the network level can only be reached through education and assessed through showcase dissemination
- Epoch should help facilitate wide participation at major multi-disciplinary events. For example to enable more archaeologists to attend VAST. Also helping students spend short times at different partner institutions.
- It is not clear in what way the merge of the four activities into one is a rationalisation. The main focus should be put on the dissemination of the results of the activities of the network.
- Need of coordination between news sub-areas. What about the allocated budget for the activities 4.3. 4.4.4.5. 4.6.? There will be a new distribution of the budget? Could any other EPOCH partner be involved in these activities?

**Executive's comments on the poll:**

All of these activities are present in the JPA currently so the exercise will be one of clarifying presentation to ensure that potential applicants for support are clearer about how to make proposals and to whom. These activities are very open to new partner involvement and in fact specifically targeted at spreading excellence through to partners needing to broaden expertise by involvement in new areas.

To reflect the partner's voting on relative importance, it is proposed that although the three areas will be amalgamated as a single activity with sub-areas, in operational terms the activity management will monitor the application of the funds and seek to set priorities for allocation of unallocated funds which match these priorities and will report to the Assembly and on-going analysis of the expenditure under these headings.

**Editing recommendations:**

Proceed in line with the original recommendation. Reduce the four activities originally included to two: the first with the three sub-areas listed and the second to cover EPOCH publications. The relationship of the publications area to the area of generating and delivery education materials, and to running events, will need to be clarified explicitly. In general it should be anticipated that courses and events will need to include provision for the materials used at the venue(s), but that additional production and distribution would be an area for the publications activity.



## 5 Activity 1 : Management

### 1.5 Policies and Procedures

### 1.6 Network Governance

### 1.7 Budgeting and Finance

### 1.8 Quality Assurance (including Review College Support)

**Current Unallocated funds: Zero**

**Issues to be addressed:**

The whole area of network management is complex, and each of these activities interacts with the others in this workpackage and, of course, with all other activities. In operationalising the NoE the balance between activities will change as we discover efficient ways of operating and as other areas evolve. It is proposed that there be no restructuring in WP1 although the evolving management processes will be more fully quantified in the revised JPA

**Proposal:**

No major restructuring

**1<sup>st</sup> Round Voting Summary and Analysis:**

Strong support for avoiding major re-structuring, with 72% voting in favour of no major change

**Partner Comments**

- Improve communication with partners and profiling as a network
- BUT ... The communication process within the consortium should be definitively improved and a larger effort should be devoted to all communication aspects It is not a major restructuring BUT it is something to put a larger attention on (please! :-)
- Thanks for your effort.....
- Communication within the consortium should be improved.
- The existing management structure provides inadequate representation of the views of existing institutional stakeholders (at governmental and quasi-governmental level) within the Cultural Heritage sector, and favours technologists. It also ignores the imp....  
*(Comment terminates here on the voting record)*
- I think there should be at least one elected partner as a member of the management board so the partners can feel they can contribute to the progress of Epoch. This should be for a relatively short single term (eg 1 year) to enable others to also get "involved"!
- Under the condition that the communication process within the consortium should be improved and a larger effort should be devoted to alla communication aspects.
- Even if the task is complex because of the number and the diversity of the involved partners, it is important to improve the network Governance, coordination and management. The vote has been done in a very hurried way. It is difficult to understand the connexion between the different level of partners and activities. It is necessary to improve the communication.
- See the observations in "Coordination".*(Assumed to be a cross- reference to the comments under 3.1 Coordination of Jointly Executed Research)*

### **Executive's comments on the poll:**

The executive agrees whole heartedly that communication needs to be improved. This needs to happen at a variety of levels and is two way!

The Coordinator accepts the mission of improving communications at a managerial level and has been recruiting staff to ease these problems for the entire year. We continue to recruit and hope for success in the near future.

The first edition of the EPOCH newsletter was produced early in the second semester and the second edition is being finalised now. We anticipate that this will be issued at least quarterly and give an over-view of the Network's activities and news, for consumption both by partners and further afield. The web-site news service is developing and the site is also used for announcements about partnership opportunities (for example, calls for scholarships and bursaries, mobility grants etc are always announced on the home page, and/or partner area top level page).

Finally the executive would note that two-way communication also implies that partners respond to requests for opinions and/or information, and this has not always been the case.

The comment that the process of voting has been rushed is noted. In many ways we are constrained by timescales outside of our control, and part of the "rush" is that partners are not all very familiar with the evolution of the JPA to date and hence there is a need to allow time to educate partners. We hope this will reduce with time as partners become more engaged. However it should be noted that the process of preparing to revise the JPA was begun (with internal planning in the Executive) in early November 04 for a revision that will take effect in September 05. The NoE side of this work needs to be completed by April 28<sup>th</sup> including redrafting approximately 400 pages of the technical annex, which then has to be negotiated and approved with the Commission. Negotiating the first JPA took from June 2003 until we started operations on March 15<sup>th</sup> 2004. Whilst we hope to get more efficient and better informed as the NoE evolves, it seems difficult to imagine that we would want more lead time on the process, as we are already almost permanently in "revision mode" and this impacts substantial on our ability to undertake the work of the JPA.

The Technical Annex does envisage a potential turnover in directors although on a basis of 2-year initial appointments. We suggest taking the suggestion on elected Directors seriously, starting with discussion at the Board meeting in Tomar.

Since the last document two additional areas of proposed change have been discussed in the executive in the following areas:

- a. the executive have decided to recommend that an unallocated contingency budget be held under Activity 1.3 to be used at the discretion of the executive and reported to the board, with justification, retrospectively. The proposed level of this contingency would be 25KEuros p.a. for years 2-4, a total of 75KEuros.
- b. At a meeting of FP6 NoE coordinators it became apparent that different NoEs are functioning differently with regard to having categories of affiliated members. Partners will recall discussions during contract negotiation about the role of Associate partners and the EPOCH associates were in the end only included as "potential sub-contractors". The executive wishes to reopen discussions about a potential different category of Affiliate partner to encompass different rights and obligations to full partnership. We have begun discussion with the Commission to

investigate options here, although there is some doubt that this can conclude in time for our submission to the annual review.

**Editing recommendations:**

Revisions will be needed to address at least the following:

- (i) a revised reporting structure to reflect changes recommended elsewhere in this document
- (ii) revisions to the operations of Board of Directors, Assembly, voting procedures etc. as discussed at the Prato meeting
- (iii) inclusion of the contingency budget
- (iv) Incorporation of new reporting “guidelines” from the commission
- (v) Budget changes
- (vi) Changes to partnership
- (vii) Potentially a revised or re-constituted affiliate category of membership and relationship of this to full membership and potential sub-contractors.

## Appendix 2

### Response to comments relating to EPOCH Polls below:

1. Proposed Change to Consortium Agreement Article 24: Budgeting specific costs
2. Proposal to permit SME partners to claim 100% Travel Costs.

A few comments were received (see below) during the recent poll from partners who were concerned that the suggested change to the Consortium Agreement (and in fact the current wording) was in conflict with the Core Contract.

'Annex II, Article 25 - Reimbursement rates' of the Core Contract states that the **maximum** reimbursement rates of eligible costs for Networks of Excellence are as follows:

Management of the consortium activities: 100% (up to 7% of the contribution) (AC: eligible direct costs).

Other specific activities (for Network of Excellence: Joint Programme of Activities, except management of the consortium activities): 100%.

'Article 24: Budgeting specific costs' of the EPOCH Consortium Agreement states that within this maximum rate:

(3) (i) Parties identifying eligible costs under the FC or FCF cost models shall be able to reclaim up to 50% of eligible costs.

(ii) Parties identifying eligible costs under the AC cost model shall be able to reclaim up to 100% of eligible costs.

And the Assembly have voted in favour of changing this to:

(3) (i) Parties identifying eligible costs under the FC cost model shall be able to reclaim up to 50% of eligible costs.

(ii) Parties identifying eligible costs under the FCF cost model shall be able to reclaim up to 75% of eligible costs.

(iii) Parties identifying eligible costs under the AC cost model shall be able to reclaim up to 100% of eligible costs.

The Executive Committee believes that there is no conflict between the Consortium Agreement and the Core Contract in this case as the contract indicates a maximum reimbursement rate and the EPOCH Consortium have agreed to limit this to the rates above.

To reiterate, neither agreed proposal will lead to any changes in the budgeted contribution available to partners from EPOCH.

## Comments received

### 1. Proposed Change to Consortium Agreement Article 24: Budgeting specific costs

“The reason for "no" is as follows:

The request for modification and the current wording of Art. 24 (3) as well are both in conflict with the EC Contract and its Annex II. With respect to Networks of Excellence, Art. 25 of Annex II provides that regardless of the cost model used by the respective party (FC, FCF, AC model) up to 100 % of the eligible cost can be requested from the Commission. This is the general rule taking into account that the contribution of a Network of Excellence is a "Grant for Integration". Art. 24 of Annex II, stating the individual percentage of any contribution (35 %, 50 % or 100 %) does not apply to Networks of Excellence.

In conclusion it is necessary to differentiate between the external handling of costs towards the European Commission on the one side and the internal issue of how to share the funding granted by the Commission. The external handling and the stating of costs must be done in accordance with the EC Contract, in particular in accordance with Art. 25 of Annex II. Therefore, Art. 24 (3) should be modified as follows:

"All other costs are to be handled within the budget line of the Plan of Activities concerned. The Parties agree that eligible costs shall be reclaimable from the available Epoch Network Budget in accordance with Art. 25 of Annex II of the Contract. Irrespectively from the specific cost model used by a Party, each Party shall be able to reclaim up to 100 % of its relevant eligible costs."

“In our opinion it is impossible to change the rules explicitly stated by the EU in the document "Cost Models for the Sixth Framework Programme", published on 10 March 2003.”

“Basically, I think FC and FCF should be treated in the same way.

Confirming my "Abstain" vote, I have a  
Question

Why is there a table in the financial guide showing that in a NoE the eligible costs are reimbursed at 100% also in the FC cost model?

Where is my misunderstanding?”

“I am agreeable in principle but this agreement should come from the Central Research office of the University and therefore I will refer the matter to [...]”

So ABSTAIN for the time being

### 3. Proposal to permit SME partners to claim 100% Travel Costs.

“The intended 100 % reimbursement of travel costs for SME is in accordance with Art. 25 of Annex II and will therefore not be challenged by [...]. However, please note that the 100 % reimbursement of travel costs is the general rule for all kind of Parties (see the explanations regarding the first poll) and would not necessarily be addressed to SME's only. In conclusion we assume that travel costs of all Parties will be reimbursed in accordance with Art. 25 of

Annex II up to 100 %, provided that this 100 % reimbursement is covered by the internal sharing of funding.”

“EU documents ("Cost Models for the Sixths Framework Programme", published on 10 March 2003) clearly state that eligible costs (Travel costs are with no doubt eligible costs)are reimbursed according to the standard scheme (AC: 100%, FC/FCF: 50%,)with no regard to the condition of SME. We think that a change to this FP6 general rule would be impossible.”

“The network should strongly support mobility, when mobility is recommended. For a SME travelling represent a cost that may easily be not sustainable. Obviously the budget for the SME should not change because this would impact the entire partners set balance. “

“I agree we should be encouraging small SMEs to be involved. I presume these travel costs will be agreed by EPOCH prior to any travel actually occurring?”

## **Appendix 3 Partner Participation at EPOCH Events**

### **Board of Directors Meetings Attendance**

**Thursday 15 April 2004,  
Location CAA, Prato, Italy**

- David Arnold
- Franco Nicolucci
- Daniel Pletinckx
- Luc van Gool
- Andrea Caiti
- Franca Garzotto
- Maria Pia Guermandi
- Elisabeth Jerem
- Irina Oberlander-Tarnoveanu
- Nick Ryan
- Stephen Stead
- Paul van Lindt
  
- Julie Kentsley-Holt

**6 December, 2004  
VAST 2004**

- Lon Addison
- David Arnold
- Andrea Caiti
- Dieter Fellner
- Franca Garzotto
- Maria Pia Guermandi
- Elisabeth Jerem
- Anne-Louise Kemdal
- Franco Nicolucci
- Irina Oberlander-Tarnoveanu
- Daniel Pletinckx
- Nick Ryan
- Brian Smith
- Stephen Stead
- Luc van Gool
- Paul van Lindt
- Vassilios Vlahakis
  
- John Clinton

**21 March, 2005  
CAA, Tomar, Portugal**

- David Arnold
- Dieter Fellner

- Elisabeth Jerem
- Anne-Louise Kemdal
- Franco Nicolucci
- Irina Oberlander-Tarnoveanu
- Daniel Pletinckx
- Nick Ryan
- Stephen Stead
- Luc van Gool
  
- John Clinton



## Assembly Meetings Attendance:

### Kick Off Meeting

CAA 2004, 16 April 2004, at PIN, Prato, Italy

Part. No.	Organisation	First Name	Surname
99	European Association for Historic Towns and Regions		
20	Fraunhofer Gesellschaft Zur Forderung Der Angewandten Forschung E.V.	Daniel	Holweg
37	Hogeschool van Utrecht	Dick	Swart
70	Archaeolingua Alapítvány	Elisabeth	Jerem
29	Politecnico di Milano	Franca	Garzotto
90	Instituto Tecnológico de Informática	Francesc Daniel	Muñoz i Escóí
43	Universidad de Jaen	Francisca	Hornos
37	Hogeschool van Utrecht	Geeske	Baker
83	Scientific Research Centre of the Slovenian Academy of Sciences and Arts	Gregor	Strle
74	Institutul De Memorie Culturala	Irina	Oberlander-Tarnoveanu
14	Gastiburu SL	Isabel	Arenal
41	Universitat Autonoma de Barcelona	Joan Anton	Barcelo Alvarez
56	University of East Anglia	John	Glauert
48	Eidgenossische Technische Hochschule Zurich	Karsten	Lambers
14	Gastiburu SL	Luis	Valdes
96	Università Della Svizzera Italiana	Marco	Speroni
84	Rijksuniversiteit Groningen	Martijn	Van Leusen
45	Universidad Politecnica de Madrid	Mercedes	Farjas
55	Brunel University	no	
97	Visual Acuity Limited	No	
64	Planetek Italia S.R.L.	Paolo	Manunta
22	University of Tübingen	Peter	Jablonka
24	Intracom	Vassilios	Vlahakis

**VAST 2004****9 December 2004, Town Hall, Oudenaarde, Belgium**

<u>Name</u>	<u>First name</u>	<u>Institute</u>
Ashley	Michael	AAI/CHI - UC Berkeley Director of Cultural Heritage Education
Ameloot	Els	The 8ighth Day
Ameye	Karel	SHE Consultancy Managing Director
Andreassen	Ingvild S.	Cultural Historical Museum University of Oslo Senior Executive Officer
Arnold	David	University of Brighton Faculty of Management and Information Sciences Dean
Bakker	Geeske	Hogeschool van Utrecht Researcher
Bendels	Gerhard	Institute of Computer Science II Research Assistent
Bolchini	Davide	University of Lugano
Bounia	Alexandra	University of the Aegean Assistant Professor
Buhalis	Dimitrios	University of Surrey Senior Lecturer
Cain	Kevin	The Institute for Study and Implementation of Graphical Heritage Techniques (INSIGHT) Director
Caiti	Andrea	
Carrozzino	Marcello	Percro Scuola Superiore Sant'Anna Phd Student
Chalmers	Alan	University of Bristol Professor
Chapman	Paul	Hull University, Dept. of Computer Science Lecturer
Chrysanthou	Yiorgos	University of Cyprus Dept. of Computer Science Assistant Professor
Ch'ng	Eugene	University of Birmingham, EECE Research Student

Cignoni	Paolo	ISTI-CNR Researcher
Claessens	Guido	Provincie Limburg Project Manager
Clark	Jeffrey T.	North Dakota State University Professor
Clinton	John	University of Brighton Senior Research Administrator
Cohen	Jonathan	Johns Hopkins University Computer Science Assistant Professor
Cox	Andrea	The Forum Trust Limited Researcher
Cripps	Paul	University of Southampton, Department of Archaeology Postgraduate Research Student
Dakic	Predrag	Center for Digital Archaeology Research Fellow
Damala	Areti	FranceTelecomRD Rennes, Université de Rennes 1 PhD Student
Day	Andrew	University of East Anglia Reader
Day	Wendy	Brunel University Department of Electronic and Computer Engineering Research Student
De Boever	Wim	Serial Vision
de Heras	Pablo	EPFL, VR-Lab PHD Student
De Knuydt	Bert	PSI-Leuven
de Looij	Timo	Hogeschool van Utrecht Student
Drettakis	George	Inria Researcher
Druez	Philippe	The 8ighth Day
Dutr�	Philip	Katholieke Universiteit Leuven Dept. Computer Science Professor

D'Andrea	Andrea	Centro Interdipartimentale di Servizi di Archeologia Universita degli Studi di Napoli l'orientale Researcher
Earl	Graeme	University of Southampton, Research Fellow
Elliott	Ralph	University of East Anglia
Felicetti	Achille	
Fellner	Dieter	Techn. Universität Braunschweig Institut für Computer Graphik Professor
Flack	Phil	University of East Anglia Research Assistant
Fleet	Kim	The Forum Trust Limited Researcher
Förster	Kris	Centrum voor Ruimtelijke Kwaliteit Consultant Heritage Presentation
Fünzig	Christoph	Techn. Universität Braunschweig Institut für Computer Graphik Research Assistant
Gaitatzes	Athanasios	Foundation of the Hellenic World Virtual Reality Department Manager
Garzotto	Franca	HOC-Politecnico di Milano Professor
Généreux	Michel	ITRI, University of Brighton Research fellow
Gobbetti	Daniele	University of Lugano
Gruen	Armin	ETH Zurich Professor
Gudmundsson	Rögnvaldur	Tourism Research & Consulting Managing Director
Guermanti	Maria Pia	Istituto Beni Culturali della Regione Emilia Romagna Chief Editor of Website
Haimila	Miikka	National Board of Antiquities Planner
Hamza	Malika	Ename Center for Public Archaeology and Heritage Presentation Tourism and European Projects Coordinator

Havemann	Sven	Techn. Universität Braunschweig Institut für Computer Graphik Dipl. Informatiker
Haytsma	Arne	Rijksdienst voor het Oudheidkundig Bodemonderzoek Senior-adviser
Hermon	Sorin	PIN Researcher
Herranz Sánchez	Ana	Centro Andaluz de Arqueologia Iberica Universidad de Jaén
Holmen	Jon	University of Oslo Unit for Digital Documentation Senior System Developer
Hoorens	Jan	European Commission DG Information Society Principal Administrator
Hörsell	Ann	National Heritage Board of Sweden Head of Archives, PhD
Hugi	Marc	University of Berne Research Assitant
Ioannides	Marinos	CIPA-Cyprus
Jacobs	Bart	Provinciebestuur Antwerpen Dienst Cultureel Erfgoed Archaeologist
Jerem	Elisabeth	Archaeolingua Foundation Director
Jevremovic	Vitomir	Center for Digital Archaeology Executive Director
Jobst	Markus	Institute of Gi and Cartography Assistant Researcher
Jordal	Ellen	The Museum Project University of Oslo System Developer
Källman	Rolf	National Heritage Board of Sweden Project Manager
Kaminski	Jaime	University of Brighton Faculty of Management and Information Sciences Research Officer - EPOCH
Kampel	Martin	Vienna University of Technology Ass. Prof.
Kanellou	Despina	CENTRIM, UOB Research Fellow
Kavakli	Evangelia	University of the Aegean Lecturer

Kemdal	Anne-Louise	Tekniska museet - National Museum of Science and technology Museumdirector
Keu Cheung	Kuan	Hogeschool van Utrecht Student
Kilbride	William	Archaeology Data Service University of York Assistant Director
Kok	Patrick	Hogeschool van Utrecht Student
Koogje	Vincent	Hogeschool van Utrecht Student
Ladeira	Ilda	Collaborative Visual Computing Lab University of Cape Town Masters Student
Lambers	Karsten	ETH Zurich, Institute of Geodesy and Photogrammetry Researcher
Lang	Ruth	ZAIK, University of Cologne Software Developer
Laugerotte	Cedric	Université Libre de Bruxelles Student
Léon Lazano	Consuelo	CHEDI
Liarokapis	Fotis	City University London Information Science Research Fellow
Linaza Saldana	Maria Teresa	Vicomtech
Loscos	Celine	VEGC Lab, Computer Science Department University College London Lecturer
Lutz	Bernd	Fraunhofer IGD
Marbach	Joël	University of Bern Student
Mavrikas	Efthimios	University of the Aegean Dept. of Cultural Technology and Communication CILAB Researcher/PhD Candidate
McLoughlin	Jim	University of Brighton P. Lecturer
Mignosa	Anna	University of Catania Dept. Of Economic and Quantative Studies PhD Student
Niccolucci	Franco	PIN Head
Nienhaus	Marc	University of Potsdam Hasso Plattner Institute Research Assistant

Nikolaidou Chrysoula	Ekaterini	Museum of Byzantine Culture Archaeologist-Museologist
Nikolakis	Georgios	Iti-Certh Researcher
Oberlander-Tarnoveanu	Irina	CIMEC Institute for Cultural Memory Deputy Director
Oosterlynck	Dirk	Ename Center for Public Archaeology and Heritage Presentation EPOCH Project Manager
Owen	Ruth	University of Surrey Researcher
Paliou	Eleftheria	University of Southampton Msc, Mphil/PhD Candidate
Pansiot	Julien	Hull University, Dept. of Computer Science Student
Paolini	Paolo	Politecnico di Milano Dipartimento de Electronica Professor
Patel	Mantula	Ukoln, University of Bath Research Officer
Petridis	Panagiotis	University of Sussex Research Student
Pian	Donatella	DARFICLET University of Genoa Joint work for 'Agamemnon Project'
Pletinckx	Daniel	Ename Center for Public Archaeology and Heritage Presentation Coordinator of New Technologies
Raffa	Giuseppe	ARCES University of Bologna Doctoral Student
Ricciardi	Stefano	Dip. Di Matematica e Informatica Researcher
Rizzo	Romilda	University of Catania Dept. Of Economic and Quantative Studies Full Professor
Rodriguez	Karina	University of Brighton Research Officer
Roels	Eva	Ename Center for Public Archaeology and Heritage Presentation Administrator
Ryan	Nick	University of Kent Computing Laboratory Lecturer
Ryder	Greg D.G.	School of Computer Science, UEA Student
Salmon Cinotti	Tullio	ARCES University of Bologna Associate professor

Sauerbier	Martin	Institute of Geodesy and Photogrammetry, ETH Zurich Researcher, PhD Student
Savage	Eric	CAVES Scenario Developer
Schaller	Kurt	Forschungsgesellschaft Wiener Stadt Archaologie IT/Projekt-koordination
Scopigno	Roberto	ISTI-CNR Senior Researcher
Semal	Patrick	Lab of Anthropology and Prehistory Royal Belgian Institute of Natural Sciences Senior Researcher
Shirley	Peter	University of Utah Associate Professor
Sifniotis	Maria	University of Sussex Research Student
Silberman	Neil	Ename Center for Public Archaeology and Heritage Presentation Coordinator of International Programs
Snel	Martijn	Heritage Solutions Advisor
Sodagar	Babak	University of Brighton S. Lecturer
Söderlund	Aaro	Helsinki University Post-graduate Student
Solari	Federica	DARFICLET University of Genoa
Stead	Stephen	Paveprime Ltd Director
Stobbe	Jan	Gewest Kop van Noord-Holland/Bedrijfsregio Head
Strle	Gregor	ZRC SAZU Researcher
Tency	Heidi	Ename Center for Public Archaeology and Heritage Presentation Project Collaborator
Tonner	Tobias	Giza Plateau Mapping Project Database Developer
Triacca	Luca	University of Lugano
Tsekouras	George	CENTRIM, UOB Research Fellow
Uleberg	Espen	Cultural Historical Museum University of Oslo Database Administrator
Uotila	Kari	Muuritutkimus ky PhD / Senior Lecturer
Valdes	Luis	Gastiburu s.l. Director
Vandamme	Mike	VARTEC NV
Van Der Waal	GerhardMark	Heritage Solutions Owner



Van Gool	Luc	Katholieke Universiteit Leuven Professor
Vannieuwkerke	Dirk	VARTEC NV Manager Sales & Marketing
Van Raalte	Susanne	Chalmers University of Technology Dep. Of Architecture
van Reimersdahl	Thomas	Institute for Computer Science University of Cologne Researcher, Computer Scientist
Vereenooghe	Tijl	Sagalassos Archaeological Research Project Katholieke Universiteit Leuven Doctoral Student
Vergauwen	Maarten	Katholieke Universiteit Leuven PhD Student
Vlahakis	Vassilios	INTRACOM sa Project Coordinator
Wahl	Roland	Institute of Computer Science II Research Assistent
Wallace	Timothy R.	University of Maastricht PhD Student
Warzée	Nadine	Université Libre de Bruxelles Professor
White	Martin	University of Sussex Department of Informatics Reader in Computer Science
Wikman	Thomas	Department of Information Science Uppsala University Coordinator
Wilkinson	Nicholas	University of East Anglia, Research Associate
Willemsens	Chris	Mimesis Exhibition Design Architect
Winer	Dov	The Jewish Agency Director
Zanyi	Eva	Albert-Ludwigs-Universität Freiburg Dept. of Physical Geography Researcher

**CAA 2005,  
24 March 2005, Tomar**

**Partnr Name**

- 2. Franco Nicolucci,
- 2. Sorin Hermon,
- 3. Eva Roels,
- 13. Petko Staynov,
- 39. Oyuind Eide,
- 41. Juan A Barcelo
- 45. Mercedes Farjas Abadia
- 48. ?

52	Nick Ryan
55	John Cosmas
61	Stephen Stead
67	?
70	Elisabeth Jerem
74	Irina Oberlander-Tarnoveanu
78	Anne Louise Kemdal
83	Gregor Strle
84	Martijn van Leusen
	Andrea d' Andrea (CISA)

## Appendix 4

### Affiliate participants in EPOCH

The original proposal for EPOCH enjoyed a great deal of support from a large number of organisations, not all of whom were full partners in the consortium. In the end the only place that could be found for such organisations in the final contract was as “potential subcontractors”. There were almost 50 organisations in this category – a number of whom have continued to be active at EPOCH events and in other activities.

All of these organisations had previously signed letters of agreement and cooperation with EPOCH. In addition the EPOCH consortium continues to be approached by organisations undertaking related work in technology and cultural heritage who would like to be involved. These organisations have been informed of the public activities of EPOCH but it has been unfortunate that there has been no formal mechanism to involve them more actively, or to get their formal commitment to engage in and respond to consultation exercises, etc. Frequently such organisations may be involved in application areas or be users of applications and have value insight into user requirements or useful contributions to make to design issues for particular application areas, but little capacity to engage in research or development *per se*.

In parallel to this there have been some practical difficulties in getting full commitment from partners in the consortium who have no budget (around half of the partners). Many of these have taken active roles, with over half participating in the recent voting and around three quarters nominating experts for the review college. At the same time some of the more detailed advice and quantification of expectations on reporting being received from the Commission will increase the load on such partners without providing additional resources to support the effort. Two particular developments may make it difficult for some partners to continue to support full membership of the partnership without specific budgets:

- a. The new guidance on reporting makes it clear that every partner will have to complete two deliverables individually – these being the on-line report of the implementation of the gender action plan and the interim socio-economic reporting questionnaire.
- b. The implementation of the audit certification required is gradually becoming clearer, in particular the possibility that audit certificates may be required annually even where partners have small budgets and the costs of certification represent a large proportion of total budget. Whilst clarification is being sought to ensure that economic sense prevails, this could potentially add an unacceptable additional cost to full membership of the consortium.
- c. The periodic management reports include a requirement on all partners, even those without budget, to report effort expended on NoE activities. This applies also to partners on AC funding basis who are also required to estimate their non-eligible costs.

EPOCH has a strong commitment to spreading excellence and influencing the development of an integrated European Research Area. For this to become a reality it will inevitably extend well beyond the 40 or so partners currently budgeted to receive funding directly from EPOCH. There are a number of areas where EPOCH as an activity can lead, but where consultation, participation, adoption of common standards and tools, spreading excellence and above all commitment to engage with a common agenda for the ERA, will rely on engagement with a much wider community. It is important to engage as actively as possible with SMEs, user groups and application specialists even where these organisations may not be involved in IST research or development. Finally for Europe to strongly influence take up of common standards, best practices and tools in the rest of world a healthy engagement of organisations elsewhere is also important. A number of the original signatories to the Associate Partner category in the EPOCH proposal were from the wider worldwide community.

It is in order to colonise this space that the EPOCH consortium proposes to introduce concept of the affiliated participant. Similar participant roles have been adopted elsewhere in FP6 where similar conditions exist – most notably by the PROLEARN NoE.

Furthermore, integration and interaction with industrial participants is an increasingly important aspect of the EPOCH network SMEs, in particular, who are specifically being encouraged to become involved in EPOCH related activities through Activity 2.8 and its emphasis on Learning Networks, have found the overhead of the formal processes involved in full partnership participation in an FP6 consortium to be sufficiently onerous as to discourage participation. The affiliated participant status is designed to allow a lower entry point for SMEs to engage with, influence and commit to develop, the values and agenda for the ERA. EPOCH already has a number of full participants from industry, but the affiliated participant route will improve the potential to engage others, particularly through Activity 2.8.

Industrial participants and other organisations active in cultural heritage who are not full partners in the EPOCH consortium will nevertheless draw significant benefits from being Affiliate Participants in EPOCH. The major benefits are:

- Early adopter privileges in terms of research results, best practice guides, open source products etc. (no fee levied but registration necessary).
- Easy access to the large, European- and world wide pool of researchers organised in EPOCH (consortium members and affiliated participants).
- Easy access to the large, European-wide group of other suppliers of services and products to cultural heritage (the group of industry participants) and to end users.
- Participation in EPOCH training programmes, workshops and conferences.
- Opportunities to contribute to influencing political stakeholders on the topic of technological applications to monuments, sites and museums in Europe.
- Opportunities to contribute to development of the EPOCH Research agenda and to influence and assist in harmonizing European research on technology enhanced access to cultural heritage.
- Participation in events of the EPOCH Centres of Expertise and virtual clusters.
- Opportunities to nominate Experts for the EPOCH Review College.
- Easy access to services and facilities provided by EPOCH partners and affiliates through the brokerage service.
- Access to all areas of the repositories on the website (unless items are specifically restricted by the ‘donor’ partner).
- Privileged access to most areas of the website.

All organisations listed in Appendix 2 of the JPA18 as potential subcontractors have signed up to the original EPOCH proposal. Some of these organisations have already identified specific EPOCH activities where they are willing to contribute to the work of the NoE. The original EPOCH technical annex makes it clear that researchers from organisations who are not full partners can nevertheless receive certain types of support so long as their participation is sponsored (i.e. supported) by a full partner. The allocation would typically be reported and audited through the sponsoring partner. The support is restricted in that no labour costs can be incurred via this route – an agreed subcontract from a full partner would be required to permit staff from affiliated participants to be funded from EPOCH, through the partner concerned.

As an additional mechanism of integration, EPOCH will use its Review College mechanism as an important feedback and consulting instrument for the network, especially regarding future directions and quality assurance of the NoE’s activities and results.

## New Affiliated Participants

EPOCH's JPA makes it clear that the Network is open to new participants joining as full partners of the consortium and a procedure for this is defined in the Consortium Agreement. New partners are expected to make a full commitment to the work program, but this is rarely if ever expected to be accompanied by an allocation of budget. In many cases organisations seeking to join EPOCH would be more appropriately accommodated with the range of benefits listed above for Affiliated Participants.

New participants are expected to be companies, user groups (with a legal identity), academic organisations or research institutions that will provide substantial contributions to any of the goals of the network, aimed at forming, strengthening and extending the European research area. EPOCH will also be open for further industrial affiliated participants who can provide substantial contributions to the NoE goals. Best-practice cases, interesting applications, brokerage offerings, training courses, deployed applications, lessons learned in the application of technology to cultural heritage, and in participating in the virtual clusters and centre of expertise, etc., are all good examples of the contributions that might be expected from affiliate participants. Industry participants will also support EPOCH in standardisation efforts by providing their knowledge, experience, feedback and insight about standardisation projects and procedures.

In order to be able to accept new Affiliate Participants in the network a clear protocol has to be followed, which describes the information to be provided. The decision to accept the application will be taken by the EPOCH Assembly based on the advice of the recommendation of the Executive Committee by means of an electronic vote amongst consortium partners conducted through the website

The candidate must provide the following information:

- A brief partner profile including contact addresses, etc.
- A brief description of the partners projects and their relevance to the activities of EPOCH and confirming no conflict of interest resulting from those other activities.
- A declaration agreeing to uphold the values of the Network and abide by the Network's policies and procedures.
- A brief description of the participating researchers and respective publications/expertise.

The candidate would also be expected to declare the areas of their interest in participating in EPOCH.

The EPOCH network intends to use a layered organisation, with core partners, who are responsible for running the network as Executive Officers, and a Board of Directors to whom they report. The larger set of partners receiving funding from the Network undertake the activities with the assistance (currently) of a number of full partners not receiving budgeted contributions. The Network will now develop a (larger) set of affiliated participants who will not be formally part of the consortium, but will participate in the network activities in support of the EPOCH strategic goals and potentially contribute to work packages as defined in the joint programme of activities, under the oversight of full partners.

Once accepted, the new affiliated participants would have to sign up to an Affiliate's version of the Consortium Agreement.

Researchers from affiliate participants will be eligible for bursaries, scholarships and mobility grants to one of the full partner institutions (administered through the network), in line with the EPOCH JPA. The exact budget for each activity and participant will be decided by the Assembly on the recommendation of the Board of Directors at each revision of the Joint Programme of Activities. Affiliated participants will not have a direct allocation of budget – all budgets will be administered through full partners.

# Appendix 5: Interpreting “Durable Integration” for EPOCH

## 1 Background

The first IST Call for Proposals under FP6 outlined the objectives of NoEs with regard to creating “durable integration”, which included the notion of “Creating the ERA”. The EPOCH proposal responded to this and made some statements interpreting the notion of “durable integration,” which were largely confirmed in the Technical Annex to the contract. Since the start of the contract the Commission has produced guidelines on assessing integration in NoEs with some draft milestones for each period (of 5 years). These guidelines have, to an extent, re-interpreted the concept of durable integration, but recognise the need for further interpretation in the context of each NoEs mission.

## 2 The EPOCH proposal and technical annex

EPOCH starts from the premise that the cultural heritage domain is multi-disciplinary, but has to date not managed to create a sufficiently integrated inter-disciplinary view. Integration exists at a number of levels and from a number of perspectives. Each has a variety of potential qualitative indicators of progressing integration and each has a range of measures whose trends will help assess progress in achieving that integration.

EPOCH’s perspectives on integration were presented in the proposal and restated in the Technical Annex. The following needs for integration were identified, in order to establish the basis of the European Research Area:

- Integrating the disciplines themselves to create a solid interdisciplinary field.
- Integrated research agendas to provide an agreed set of priorities for future developments
- Integrating the Cultural Heritage “sector” to bring the business perspectives together
- Integrating the technological underpinning so that tools developed in one context may more easily be integrated into the operations of other organisations
- Data and data format integration so that data collected for one purpose may be re-purposed for other contexts and integrated with existing datasets and data collected in other exercises.

## 3 Commission Guidelines

During the first year of EPOCH the Commission produced draft guidelines, which provided a tabulation of a number of measures of integration along with milestones signalling progress with integration for each measure. The draft guidelines also stated that “The actual contents of the table have to be defined according to the network’s specificity and starting situation.”

Six major topic areas were included in the Commission measures, each with some sub-areas:

- Communications inside the network
- Sharing and common management of equipment, installations, infrastructure
- Common management of human resources
- Common knowledge management
- Network management
- Continuity of the Network

The tables giving these measures are reproduced below.

Expected Results			Intermediate steps (milestones)				
			Period 1	Period 2	Period 3	Period 4	Period 5
1		<b>Communications inside the network</b>					
	1.1	Fast performing communications	Inventory of material, speeding of connections ...	Inventory of weak connections, inventory of possible incompatibilities...	Setting up of new connections	Development/ purchase of new tools in view of complete compatibility	Optimisation of connections frequency and rhythm
	1.2	Compatible and harmonised informatics tools	Inventory of the informatics tools of participants.....	Inventory of "incompatibilities"	Harmonisation of informatics tools/ negotiation of directives for future acquisitions	Development/ purchase of new tools	Optimisation of use of all informatics tools
	1.3	Common classification methodology		Inventory of various nomenclatures used by participants	Harmonisation of nomenclatures	Establishment of a common nomenclature	Implementation of the common nomenclature by all participants
	1.4	Common codification		Inventory of various codifications used by participants	Harmonisation of codifications	Establishment of a common codification scheme	Implementation of the common codification by all participants
	1.5	Common data base accessible to all participants	Inventory of existing data base among participants	Identification of missing data, possible incompatibilities	Elaboration of a scheme for the future common data base	Agreements among participants for common use	Launching of the common data base, optimisation of use...

Expected Results			Intermediate steps (milestones)				
			Period 1	Period 2	Period 3	Period 4	Period 5
2		<b>Sharing and common management of equipment, installations, infrastructure</b>					
	2.1	Installations, infrastructure, equipment commonly owned or under shared use	Inventory of equipment, installations, infrastructure at the disposal of the network	Identification of too-shorts, inventory of obstacles to shared use...	Further acquisitions/developments (if necessary) in common ownership or Shared use	Agreements for common/shared use	Optimisation of shared/common use
	2.2	Agreements for use of the equipment, installations, infrastructures		Negotiation and conclusion of agreements for use	Implementation of these agreements by participants	Optimisation of implementation of the agreements	
	2.3	Common rules on utilisation	Preparation of the future common rules	Negotiation and conclusion of agreements on the common rules	Implementation of the common rules	Possible review of the common rules in the light of the experience	Final optimisation of common rules and survey of the implementation
	2.4	Conditions for use	Negotiation and conclusion of agreements for use	Implementation of the conditions	Identification of possible difficulties, optimisation of implementation	Possible review of the conditions in the light of the experience	Final optimisation of conditions and survey of the implementation



Expected Results			Intermediate steps (milestones)				
			Period 1	Period 2	Period 3	Period 4	Period 5
<b>3</b>		<b>Common management of human resources</b>					
	<b>3.1</b>	Short/long term mobility programmes	Setting up of the "frame" of the mobility programmes	Setting up of mobility programme for the period	Implementation of the mobility programmes by all participants	Assessment of the application of mobility programmes and possible review	Survey and optimisation of application
	<b>3.1</b>	Common training programme		Inventory of weaknesses in terms of skills/ of the skills necessary	Setting up and negotiation of the content of the common training programme	First implementation, experimental CV	Stabilisation of implementation of CV
	<b>3.3</b>	Harmonised working conditions		Survey of the working conditions inside all participating organisations	Inventory of the working conditions to be harmonised/ setting up of various salaries tables	Negotiation of the conditions to be harmonised	Establishment of common Tables and regulations

Expected Results			Intermediate steps (milestones)				
			Period 1	Period 2	Period 3	Period 4	Period 5
<b>4</b>		<b>Common knowledge management</b>					
	<b>4.1</b>	Sharing of the pre-existing knowledge	Inventory of pre-existing know-how (further to what is already foreseen by the consortium agreement)	Possible re-negotiation of the protected pre-existing know how	Negotiation of the various conditions for access and use of preexisting know how	Implementation of the agreements	Survey of the implementation of the agreements and optimisation
	<b>4.2</b>	Distribution of the intellectual property rights inside the network;	Detailed inventory of IPR distribution inside the network	Identification of possible gaps or inequalities	Negotiation of redistribution of IPR on a more equal basis	Implementation of the redistribution	Survey and possible review of the re-distribution
	<b>4.3</b>	Common patents <u>etc.</u>		Inventory of the possible obstacles to common patents	Identification of the necessary steps for the removal of such obstacles (legal, administrative, linguistic...)	Proposal of an approach for common patenting	Implementation (if possible) of the approach

Expected Results			Intermediate steps (milestones)				
			Period 1	Period 2	Period 3	Period 4	Period 5
5		<b>Network management</b>					
	5.1	Legal structure representing participants and network as such		First inventory of the possible legal structures to be envisaged at term	Determination of the selected form of legal structure by all participants	Negotiation of the statutes for legal structure	Setting up of the structure
	5.2	Decisional procedure based on majority					Setting up of a decisional structure involving all participating organisations
	5.3	Participation of all involved organisations	Designation of the representative of each of the participating organisations	Survey of the level of representation of each participant, identification of a common level within all participating organisations.	If needed re-negotiation of representation of each organisation	Harmonisation of the level of representation of all organisations involved"	Designation of representatives of the adequate level by all organisations
	5.4	Steering Committee (governing board)	Identification of the main functioning rules governing the steering committee/governing board	Setting up of the internal regulation of the Steering Committee o representation of the organisations distribution of voting rights	First survey of the operation of the structure, identification of possible gaps or problems	Review of the internal rules, re-negotiation of internal regulation	Implementation of revised regulation

Expected Results			Intermediate steps (milestones)				
			Period 1	Period 2	Period 3	Period 4	Period 5
6		<b>Continuity of the Network</b>					
	6.1	Search for external funding	Inventory of possible funding sources	Setting up of a common cell for search of external funding o personnel o mission	First cell activity report operations o possible external funding sources identified	Second cell activity report	Identification of external and operational funding sources
	6.2	Portfolio of common projects			Identification of possible topics for common projects	Setting up of a development plan for these topics amongst the participants	Preparation of future common Projects (protocols of research...)
	6.3	Decreasing dependence on Community funding	<ul style="list-style-type: none"> <li>o Evolution of the yearly Community contribution: decreasing trend, at least the two last years, in dependently of the expenses linked to the JPA</li> <li>o Creation of an "external funding sources search" function of increasing importance</li> </ul>				

## 4 Interpreting the standard criteria for EPOCH

The EPOCH NoE differs in a number of important respects from the “Standard” NoE, which have been reported as 12-20 partners, with the network JPA funded for up to five years. EPOCH is a very large NoE of full partners (a situation which might change slightly with the introduction of the proposed Affiliated Participant status, but where the number of full partners is very unlikely to fall below 50). These partners bring a very wide range of skills and roles into the partnerships, with partners ranging from museums to technologists, archaeologists and local and national authorities.

The latest Commission guidelines appear to move the central integration purpose from placing priority on creating a European Research Area to forming a single market leading operational business. The EPOCH consortium is not suitable as the basis for forming a single business operation for a number of reasons. Firstly the geographical and juridical spread of the partners would make some of the statements about harmonisation of working conditions impractical.

However perhaps more importantly the EPOCH consortium came together with a common purpose of spreading expertise and facilities, not just within the consortium but beyond it, with the intent of influencing the thousands of organisations with interests and some expertise in the use of technology in the tangible cultural heritage of monuments, sites and museums. This places priorities on policies such as open source/licensing; publication; providing training both inside and outside the consortium, etc.

There are a number of activities within EPOCH which offer opportunities for continuing self-sustaining operations beyond the funded period. Some of these may require identification of other funding sources, rather than becoming a conventional business operation. We believe the concept of a network of Centres of Expertise and associated clusters of businesses, being developed under Activity 2.8 is one which offers a potential mechanism for real businesses, based on a mixture of subscriptions, commercial services, royalties and other support. The model of open source implementation is demonstrating in other fields that communities require services in support, which is in itself an opportunity for individual partners or groups of partners, particularly associated with the Common Infrastructure development.

The work in the EPOCH activity on socio-economic impact is demonstrating the wide range of benefits that a healthy cultural heritage sector can bring. This work may also suggest new business models, but overall it is very unlikely that the work of EPOCH will result in extensive patenting opportunities.

The following tables interpret the Commission’s standard guidelines for integration measures in the EPOCH context. If an interpretation of the Commission’s standard guidelines for measures is to be used to assess EPOCH’s progress in developing durable integration in the future then it is essential that the interpretation of these measures is agreed.

Expected Results			Intermediate steps (milestones)				
			Period 1	Period 2	Period 3	Period 4	Period 5
1		<b>Communications inside the network</b>					
	1.1	Fast performing communications	Inventory of material, speeding of connections ...	Inventory of weak connections, inventory of possible incompatibilities...	Setting up of new connections	Development/ purchase of new tools in view of complete compatibility	Optimisation of connections frequency and rhythm
		EPOCH version	All individuals associated with EPOCH have individual secure access to shared website areas	Website functionality tested in real use and workplan established to improve performance	Re-evaluated to take into account increasingly populated repositories	Business model for sustained access by all partners to continuing resource has been established	
	1.2	Compatible and harmonised informatics tools	Inventory of the informatics tools of participants.....	Inventory of "incompatibilities"	Harmonisation of informatics tools/ negotiation of directives for future acquisitions	Development/ purchase of new tools	Optimisation of use of all informatics tools
		EPOCH version	Website services in support of EPOCH activities established	Management tools implemented and linked to EPOCH planning	Refine functionality and performance in the light of real usage needs	Establish sustainable basis for continuing operations of website	
	1.3	Common classification methodology		Inventory of various nomenclatures used by participants	Harmonisation of nomenclatures	Establishment of a common nomenclature	Implementation of the common nomenclature by all participants
		EPOCH version		Evaluate multi-lingual HEREIN thesaurus for EPOCH needs	Develop EPOCH thesaurus from other sources	Publish results for wider use	
	1.4	Common codification		Inventory of various codifications used by participants	Harmonisation of codifications	Establishment of a common codification scheme	Implementation of the common codification by all participants
		EPOCH version	Identify initial set of standards and best practice guides for EPOCH purposes	Define EPOCH profiles or subsets of the initial set	Investigate and identify interoperability issues in practice	Publish EPOCH guides and profiles	
	1.5	Common data base accessible to all participants	Inventory of existing data base among participants	Identification of missing data, possible incompatibilities	Elaboration of a scheme for the future common data base	Agreements among participants for common use	Launching of the common data base, optimisation of use...
		EPOCH version	Establish framework for repositories	Populate repositories and test for performance	Enhance volume and range of data types in repositories	Establish sustainable operations model for maintenance of assets	

Expected Results			Intermediate steps (milestones)				
			Period 1	Period 2	Period 3	Period 4	Period 5
2		<b>Sharing and common management of equipment, installations, infrastructure</b>					
	2.1	Installations, infrastructure, equipment commonly owned or under shared use	Inventory of equipment, installations, infrastructure at the disposal of the network	Identification of too-shorts, inventory of obstacles to shared use...	Further acquisitions/developments (if necessary) in common ownership or Shared use	Agreements for common/shared use	Optimisation of shared/common use
		EPOCH version	Define inventory of open and other available tools within EPOCH	Design initial set of NEWTON tools and common intra-structure (CI)	Complete first batch of NEWTONs integrated into the CI	2nd Batch of NEWTONs completed and integrated in the CI	
	2.2	Agreements for use of the equipment, installations, infrastructures		Negotiation and conclusion of agreements for use	Implementation of these agreements by participants	Optimisation of implementation of the agreements	
		EPOCH version	Define brokerage scheme for large scale and scarce resources	Establish areas of specialism for initial set of centres of expertise	Complete coverage of needs for expertise within the set of centres	Establish sustainable model for long-term operations of centres of expertise	
	2.3	Common rules on utilisation	Preparation of the future common rules	Negotiation and conclusion of agreements on the common rules	Implementation of the common rules	Possible review of the common rules in the light of the experience	Final optimisation of common rules and survey of the implementation
		EPOCH version	Open source and open licensing needs identified	Model licenses for NEWTONs and CI agreed	Licensing implemented for initial set of NEWTONs and CI	All partners agree arrangements for complete set of NEWTONs and CI	
	2.4	Conditions for use	Negotiation and conclusion of agreements for use	Implementation of the conditions	Identification of possible difficulties, optimisation of implementation	Possible review of the conditions in the light of the experience	Final optimisation of conditions and survey of the implementation
		EPOCH version	As for 2.3	As for 2.3	As for 2.3	As for 2.3	

Expected Results			Intermediate steps (milestones)				
			Period 1	Period 2	Period 3	Period 4	Period 5
3		<b>Common management of human resources</b>					
	3.1	Short/long term mobility programmes	Setting up of the "frame" of the mobility programmes	Setting up of mobility programme for the period	Implementation of the mobility programmes by all participants	Assessment of the application of mobility programmes and possible review	Survey and optimisation of application
		EPOCH version	Agreed schemes for mobility, bursaries etc	Plan in operation, monitor and improve for better coverage/ accessibility amongst partners	define longer term sustainable staff exchange scheme rules	Sustainable system in operation	
	3.1	Common training programme		Inventory of weaknesses in terms of skills/ of the skills necessary	Setting up and negotiation of the content of the common training programme	First implementation, experimental CV	Stabilisation of implementation of CV
		EPOCH version	Inventory of training needs and offerings amongst EPOCH partners	Define HR tailored development program for EPOCH partners activities	Roll out program to identified partners	Link program delivery to business model of Centres of Expertise	
	3.3	Harmonised working conditions		Survey of the working conditions inside all participating organisations	Inventory of the working conditions to be harmonised/ setting up of various salaries tables	Negotiation of the conditions to be harmonised	Establishment of common Tables and regulations
		EPOCH version			Identify specific roles in EPOCH project teams and HR development plans	Establish recognition by partners of agreed training programs delivered through Centres	

Expected Results		Intermediate steps (milestones)					
		Period 1	Period 2	Period 3	Period 4	Period 5	
<b>4</b>	<b>Common knowledge management</b>						
	<b>4.1</b> Sharing of the pre-existing knowledge	Inventory of pre-existing know-how (further to what is already foreseen by the consortium agreement)	Possible re-negotiation of the protected pre-existing know how	Negotiation of the various conditions for access and use of preexisting know how	Implementation of the agreements	Survey of the implementation of the agreements and optimisation	
	EPOCH version	Identify Additional PEKH being brought in via NEWTON teams	Agree NEWTONs functionality and rules for use by EPOCH partners	Implement agreement for an initial set of NEWTONs	Modify scheme in the light of experience and get all partners and NEWTON teams signed up for full implementation		
	<b>4.2</b> Distribution of the intellectual property rights inside the network;	Detailed inventory of IPR distribution inside the network	Identification of possible gaps or inequalities	Negotiation of redistribution of IPR on a more equal basis	Implementation of the redistribution	Survey and possible review of the re-distribution	
	EPOCH version	Identify open source and open licensing variants suitable for EPOCH	define sufficient minimum set of standard prototypical agreements	Identify and agree which EPOCH tools will use which standard agreements	Get all partners signed up for all EPOCH tools + CI		
	<b>4.3</b> Common patents etc.		Inventory of the possible obstacles to common patents	Identification of the necessary steps for the removal of such obstacles (legal, administrative, linguistic...)	Proposal of an approach for common patenting	Implementation (if possible) of the approach	
	EPOCH version	not expected to be relevant to EPOCH . Any patents arising will be treated similarly to 4.2					

Expected Results			Intermediate steps (milestones)				
			Period 1	Period 2	Period 3	Period 4	Period 5
5		<b>Network management</b>					
	5.1	Legal structure representing participants and network as such		First inventory of the possible legal structures to be envisaged at term	Determination of the selected form of legal structure by all participants	Negotiation of the statutes for legal structure	Setting up of the structure
		EPOCH version		Identify aspects of EPOCH business suitable for legal representation	Decide streamlined decision making process for some areas (particularly EPOCH Centres of Expertise)	Implement sustainable mechanism beyond NoE funded period	
	5.2	Decisional procedure based on majority					Setting up of a decisional structure involving all participating organisations
		EPOCH version	Majority voting in place for EPOCH business				
	5.3	Participation of all involved organisations	Designation of the representative of each of the participating organisations	Survey of the level of representation of each participant, identification of a common level within all participating organisations.	If needed re-negotiation of representation of each organisation	Harmonisation of the level of representation of all organisations involved"	Designation of representatives of the adequate level by all organisations
		EPOCH version	Nominated Assembly representatives for EPOCH partners already in place.				
	5.4	Steering Committee (governing board)	Identification of the main functioning rules governing the steering committee/ governing board	Setting up of the internal regulation of the Steering Committee o representation of the organisations distribution of voting rights	First survey of the operation of the structure, identification of possible gaps or problems	Review of the internal rules, re-negotiation of internal regulation	Implementation of revised regulation
		EPOCH version	Draft Policy and Procedures for governance already established	Review draft P&P and revise as necessary	Define sustainable strategy agreed by sample centres of expertise	Roll out to all EPOCH Centre of expertise	



Expected Results			Intermediate steps (milestones)				
			Period 1	Period 2	Period 3	Period 4	Period 5
6		<b>Continuity of the Network</b>					
	6.1	Search for external funding	Inventory of possible funding sources.	Setting up of a common cell for search of external funding o personnel o mission	First cell activity report operations o possible external funding sources identified	Second cell activity report	Identification of external and operational funding sources
		EPOCH version	Test sample of schemes by sub-groups of partners applying for awards. Use 1st DRAFT EPOCH research agenda to define priorities	Review quality control and support service to bids and agree additional services	Provide EPOCH mentoring services in applications to national schemes. Monitor success rates and review support to improve hit rate	Full implementation	
	6.2	Portfolio of common projects			Identification of possible topics for common projects	Setting up of a development plan for these topics amongst the participants	Preparation of future common Projects (protocols of research...)
		EPOCH version	Some already in place - CHIMERA Marie Curie award. Others submitted.	Monitor success rates in FP6 IST call 5 activities by partners. Define support mechanism for partners without extended provision	Implement support opportunities for partners. Identify new successes and publicise to the EPOCH partners		
	6.3	Decreasing dependence on Community funding	o Evolution of the yearly Community contribution: decreasing trend, at least the two last years, in dependently of the expenses linked to the JPA o Creation of an "external funding sources search" function of increasing importance				
		EPOCH version					