



**Information Society
Technologies**

IST-2002- 507382

EPOCH

**Excellence in Processing Open
Cultural Heritage**

Network of Excellence

Information Society Technologies

**D.2.10 Sustainability of Enterprises
Working with Physical Cultural Heritage**

Authors: Jim McLoughlin, Jaime Kaminski, Despina Kannellou

Date of document: 12th May 2006

Start date of project: 15 March 2004

Duration: 4 Years

Project co-funded by the European Commission within the Sixth Framework Programme (2002-2006)		
Dissemination Level		
PU	Public	
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Internal Confidential, ONLY for members of WP1 Management Committee and EPOCH Executive (not for transmission to the Commission Services)	

Table of Contents

Table of Contents	2
Table of Figures.....	4
1 Executive summary report for Deliverable 2.10	5
1.1 Introduction	5
1.2 Network value creation in Workpackage 2	6
1.3 Activity 2.6 (Socio-economic impact)	8
1.3.1 Objectives.....	8
1.3.2 Introduction	8
1.3.3 Process.....	8
1.3.4 Holistic site impact model.....	8
1.3.5 Holistic ICT investment and appraisal model	9
1.3.6 The site appraisal toolkit	10
1.3.7 Overview	11
1.3.8 Sustainability for Activity 2.6	11
1.3.9 Future directions.....	13
1.4 Activity 2.8 (Encouragement of SME involvement).....	14
1.4.1 Introduction	14
1.4.2 The EPOCH approach for SME encouragement.....	14
1.4.3 Elements of sustainability	15
1.4.4 Implementation Strategy for the development of a Network of Expertise Centers in cultural heritage	17
1.4.5 Future Plans.....	18
2 Appendix 1 (Activity 2.6): Understanding socio-economic impact using a holistic analytical model for cultural heritage sites	21
2.1 Introduction	21
2.2 A holistic analytical impact model for cultural heritage sites	21
2.2.1 The impact context.....	22
2.2.2 Mission and objectives	26
2.2.3 Strategic choice and implementation	26
2.2.4 Management decision making.....	26
2.2.5 Stakeholders	27
2.3 Socio-economic impacts and outcomes.....	28
2.4 Conclusions	29
3 Appendix 2 (Activity 2.6): Understanding what influences socio-economic impact of ICT at heritage sites	31
3.1 Introduction	31
3.1.1 The technology impact context	32
3.1.2 Strategic rationale for technology investment.....	33
3.1.3 Management decision making.....	34
3.1.4 Specific objectives and appraisal of the technology investment	36
3.1.5 Socio-economic impact of technology investment	36
3.2 The strategic context for effective deployment of technology	37
3.2.1 Heritage systems analysis.....	38
4 Appendix 3 (Activity 2.6): Using the models as a basis for impact studies at heritage sites .	39
4.1 Introduction	39
4.1.1 Site technology impact context	40
4.1.2 Strategic rationale for technology investment.....	40
4.1.3 Management decision making.....	40
4.1.4 Specific objectives/appraisal of technological investment.....	41

4.1.5	Socio-economic impacts of technological investment	41
5	Appendix 5 (Activity 2.6): Socio-economic impacts.....	42
5.1	A socio-economic impact framework.....	44
5.1.1	Individual impacts and benefits.....	44
5.1.2	Economic impacts and benefits.....	45
5.1.3	Social impacts and benefits	46
5.1.4	Environmental impacts and benefits	47
6	Appendix 6 (Activity 2.6): Cultural Heritage Of St Albans (CHOSA).....	51
7	Appendix 7 (Activity 2.6): Research Processes and Activity Report for Activity 2.6.....	52
7.1	April to March 2006	52
7.2	Summary Progress report: April to May 2005	53
7.3	Summary Progress report: June to July 2005	53
7.4	Summary Progress report: August to September 2005	54
7.5	Summary Progress report: October to November 2005	55
7.6	Summary Progress report: December to January 2005	55
7.7	Summary Progress report: February to March 2006	57
8	Appendix 7 (Activity 2.6): Case studies in progress	59
9	Appendix I (Activity 2.8): Launching Event of the EPOCH Network of Expertise Centres in Culture and Heritage.....	61
10	Appendix II: (Activity 2.8): Profile of EPOCH Expertise Centres.....	67
11	Appendix III (Activity 2.8): NoECs.....	74
12	Appendix IV (Activity 2.8): Activities at The Forum Trust, Norwich Member of NoECs and “Satellite” Learning Group	107

Table of Figures

Figure 1: Network value creation in Workpackage 2 (Deliverable 2.10).....	5
Figure 2: A dynamic holistic impact model for cultural heritage sites (CHS)	9
Figure 3: A holistic investment contingency model for technology impact evaluation at cultural heritage sites (CHS).....	10
Figure 4: The relationship between the holistic impact models and impact/outcomes	11
Figure 5: A sustainability model for Activity 2.6	12
Figure 6: An overview of the NoECs	15
Figure 7: Activities, transformations and structures of the NoECs	16
Figure 8: A dynamic holistic impact model for cultural heritage sites (CHS)	22
Figure 9: A socio-economic benefit and impact model	29
Figure 10: A holistic investment contingency model for technology impact evaluation at cultural heritage sites (CHS).....	32
Figure 11: A socio-economic benefit and impact model	37
Figure 12: The ‘strategy triangle’ in the holistic ICT decision-making model	38
Figure 13: The heritage site impact assessment toolkit	39
Figure 14: Data acquisition methods	40
Figure 15: A socio-economic benefit and impact model	43
Figure 16: Advantages and disadvantages of various impacts	47
Figure 17: A socio-economic benefit/impact framework	50
Figure 18: Activity 2.6 case studies in progress	59

1 Executive summary report for Deliverable 2.10

1.1 Introduction

Within Workpackage 2 Activities 2.6 (socio-economic impact), 2.7 (brokerage schemes), and 2.8 (encouragement of SME involvement) are part of EPOCH's commitment to enhancing enterprises involved in cultural heritage and their management processes and the role that ICT can play in this. The results of these Activities have been brought together in this deliverable, which provides, in a single resource, the overview of how an enterprise can both understand how and where it fits in the broader cultural heritage sector and how it can engage in EPOCH's activities to lead to self improvement of the enterprise and development of the sector. Thus this deliverable, as a whole, describes enterprise development and network mechanisms (and models) that can drive technological innovation, knowledge creation and transfer, value creation and holistic socio-economic impact evaluation. The combination of these activities is developing networks and strategies designed to provide sustainable support for the cultural heritage sector.

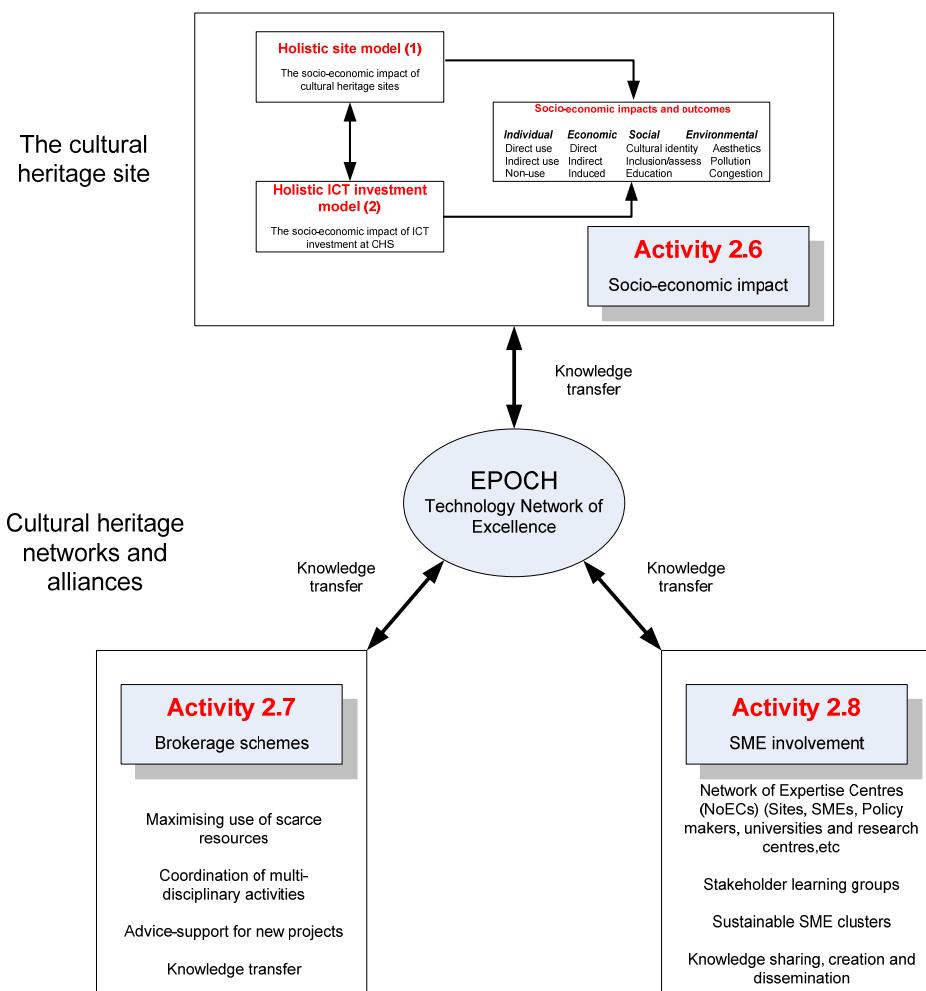


Figure 1: Network value creation in Workpackage 2 (Deliverable 2.10)

Figure 1 summarises how the Activities described in this deliverable are interlinked and, through the network of expertise centres and their associated clusters, add value to the cultural heritage sector.

The different Activities have differing objectives. Activity 2.6 (Socio-economic impact) will provide the sector with understanding of:

- how the components of the heritage system ‘work’
- how investment decisions and business processes affect impact of the enterprise
- how decisions in ICT investments can be informed and affect cultural heritage enterprises
- A typology of socio economic impacts (and impact methods).

This information will be used to understand the site level initially, and then extend this understanding to the wider heritage sector.

The objectives of Activity 2.8 (Encouragement of SME involvement) in the EPOCH project are to generate and deploy a strategy to develop a virtual cluster in order to:

- Provide mutual support
- Identify opportunities for development and collaboration
- Define a program of education and training in support of the development
- Provide targeted direct support to allow representatives of SMEs to be more
- involved in priority activities in the Network.

The key objective of the cluster development programme is to provide an opportunity for companies to reflect deeply on their current and forecast competitive position and consider whether to revise their company’s or the cluster’s strategy.

Activity 2.7 (Brokerage schemes) has the following objectives:

- To maximise the use of scarce resources
- To ensure that the skills, systems and datasets generated by EPOCH are as widely used as possible
- To reinforce interdisciplinary collaborations
- To ensure timely professional intervention and support.

At a later date brokerage activities are expected to become part of the EPOCH network of expertise centres

1.2 Network value creation in Workpackage 2

The Activities all aim to facilitate the creation and addition of value to the cultural heritage sector. This is achieved through networks and alliances, amongst the EPOCH partners and within the wider heritage sector.

The various activities are closely related, providing a different perspective on the same issues in the sector – localisation, complementarity, fragmentation and mutual inter-reliance. For example, the holistic models generated by the Activity 2.6 research will enhance understanding of the business and management processes associated with heritage sites, the deployment of ICT at those sites and the resulting socio-economic impacts. These models are designed to lead to practical tools for heritage managers and to help policy makers capture the wider picture of socio-economic impact from technology investment in the cultural heritage sector. These socio economic impact models can be disseminated using a number of traditional methods (literature, courses, conferences etc), but will be greatly enhanced by utilising the Expertise Centres (and the brokerage activity) as a dissemination

means. The experience from their use within the expertise centres can then feed back into further refinement of the models.

Understanding enterprise processes, brokerage of expertise and advice, and the development of Networks of Expertise Centres all have the potential to release and add value for the cultural heritage sector. This sector, as with many not-for-profit activities, is facing ever-increasing pressure to improve professionalisation and sustainability with diminishing overt “subsidy”, which needs to be rather more rationalised as an investment in an activity which is more than capable of demonstrating a return to the investors. This return needs to be demonstrated in terms of meeting the investors’ objectives rather than a purely financial return.

The initial research that EPOCH has conducted has revealed that the skills and understanding required to appreciate the strategic role of individual enterprises, the processes of managing their development and the broader importance of the cultural heritage sector, are in short supply. These EPOCH activities will:

- Increase understanding of how the heritage “system” works and the dynamic nature of its socio-economic impact.
- Exploit this knowledge to make resources go further and help support new projects.
- Disseminate this knowledge to the sector.
- Develop mechanisms for knowledge creation and transfer.
- Enable the sector to use these mechanisms to help create a self sustaining infrastructure for mutual support, skills enhancement and problem solving.

The ‘Joint Value Creation’ in Workpackage 2 has a real potential to make a long-lasting contribution to the strategic direction of the cultural heritage sector.

The following sections of this report review the individual activities’ contributions towards these broader goals and the report concludes by assessing progress and further development required. As part of these conclusions the mechanism required to monitor and demonstrate effectiveness of the approaches advocated are also considered.

1.3 Activity 2.6 (Socio-economic impact)

1.3.1 Objectives

The objectives of Activity 2.6 as stated in the EPOCH contract Attachment I (2003: 40) are to develop “models suitable to assist owners and managers of monuments, sites and museums to make business decisions on technological investments and to improve policy makers understanding of the necessary conditions for successful investment.

The Activity is related to that undertaken in Activity 2.8 where the emphasis is on the perspective of the commercial organisations seeking to make a commercial success over involvement in the sector.” The following summary shows how these objectives are being achieved in Activity 2.6.

1.3.2 Introduction

The study of socio-economic impact at cultural heritage sites is complex and requires a robust methodological framework for its understanding. The initial focus of the research conducted by Activity 2.6 has been the development of just such a methodological framework and models that can act as a platform for the study of the impact of information and communications technologies (ICT) at cultural heritage sites. The models have been developed through extensive, in-depth interviews with stakeholders at many cultural heritage sites across Europe.

1.3.3 Process

An overview of the process that has led to the creation of the models can be found in Appendix 6. During the first year of the EPOCH project Activity 2.6:

- Established an understanding of the methodologies that could be used to measure socio-economic impact.
- Developed an understanding of the issues and challenges facing site managers through interviews and case study analysis.
- Using the data gathered a model conceptualising heritage site business processes at the site level was developed.

During year two:

- The holistic site model was tested at EPOCH’s Heritage Impact conference
- This first holistic model was tested with heritage site managers
- Data was gathered relating to ICT investment decisions.
- An ICT investment appraisal model was developed
- Initial testing was begun on the ICT model.

1.3.4 Holistic site impact model

The impact of ICT on heritage sites and their visitors is an *incremental* impact. That is to say it is an impact that occurs in addition to, and as part of the wider impact of the site. Therefore, changes to the dynamics of the site could affect the impact that an ICT deployment has. It is immediately apparent that the incremental impact of an ICT deployment cannot be viewed in isolation from the non-ICT context associated with a particular heritage site.

This is why the first model that has been developed (see Figure 2) towards the close of year one. The holistic site model seeks to understand and conceptualise the dynamics of the heritage site being

studied. Hitherto, most impact studies have been conducted on a piecemeal basis, often focusing on one impact domain, employing a specific methodology. There seemed to be a lack of an overall impact model in the literature. The Activity 2.6 research forwards a coherent model for analysing socio-economic impact that hopefully will help heritage managers to frame their thinking about appropriate impact studies. This attempts to capture the complex, multi-dimensional nature of impact, the multiple influences on impact, and offers a guide to which impacts should be examined, given the specific circumstances of a cultural heritage site. In this way it also shows impact as a dynamic rather than static concept by highlighting management decision making and the impact context as drivers of differential impact. In this sense impact can be seen as an ongoing process as well as a set of outcomes.

In the model four elements are considered to influence the impacts and outcomes of a heritage site. These are the site context, the vision and objectives, stakeholders and the management and decision making context. Each of these primary elements comprises a number of sub-components. This model can be used by heritage site managers (and consultants and SMEs providing services to the sector) as a decision-making framework. It can be used by site managers as a stand-alone model to conceptualise their specific site and it provides a site ‘context’ for the second model which has been specifically oriented towards the deployment of ICT.

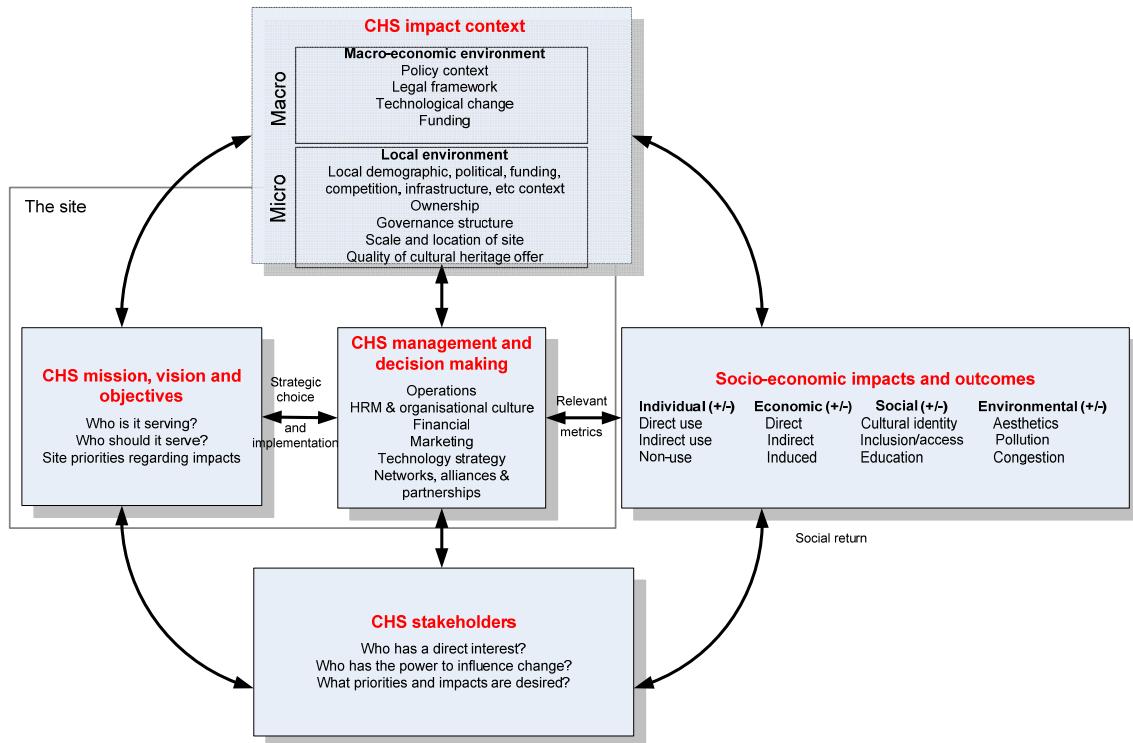


Figure 2: A dynamic holistic impact model for cultural heritage sites (CHS)

1.3.5 Holistic ICT investment and appraisal model

The second model proposed is the holistic ICT investment appraisal and deployment model (see Figure 3). This model considers what factors are likely influence impacts and outcomes associated with the deployment of technology at heritage sites. It is immediately apparent from this model that assumptions about impacts associated with specific types of ICT deployments are simplistic. The type of technology deployed is one of a number of factors that lead to impacts. It is this combination of the technology type deployed and the contextual factors that leads to the impacts. One cannot exist without the other. Therefore, those in the heritage sector who wish to influence the impacts and

outcomes associated with an ICT deployment need to consider far more than just the technology type deployed. This is where the ICT deployment model will be of benefit to the cultural heritage sector.

In the Holistic ICT Investment Contingency Model four elements considered to influence impacts and outcomes. These are the technology context, the strategic rationale for technology investment, the specific objectives and appraisal of the technological investment, and the management decision-making context. As with the holistic site model this model can be used as a decision-making framework by heritage site managers, and all those providing consultancy and services to the sector. As in the ‘real world’ these models are not linear but fully interactive.

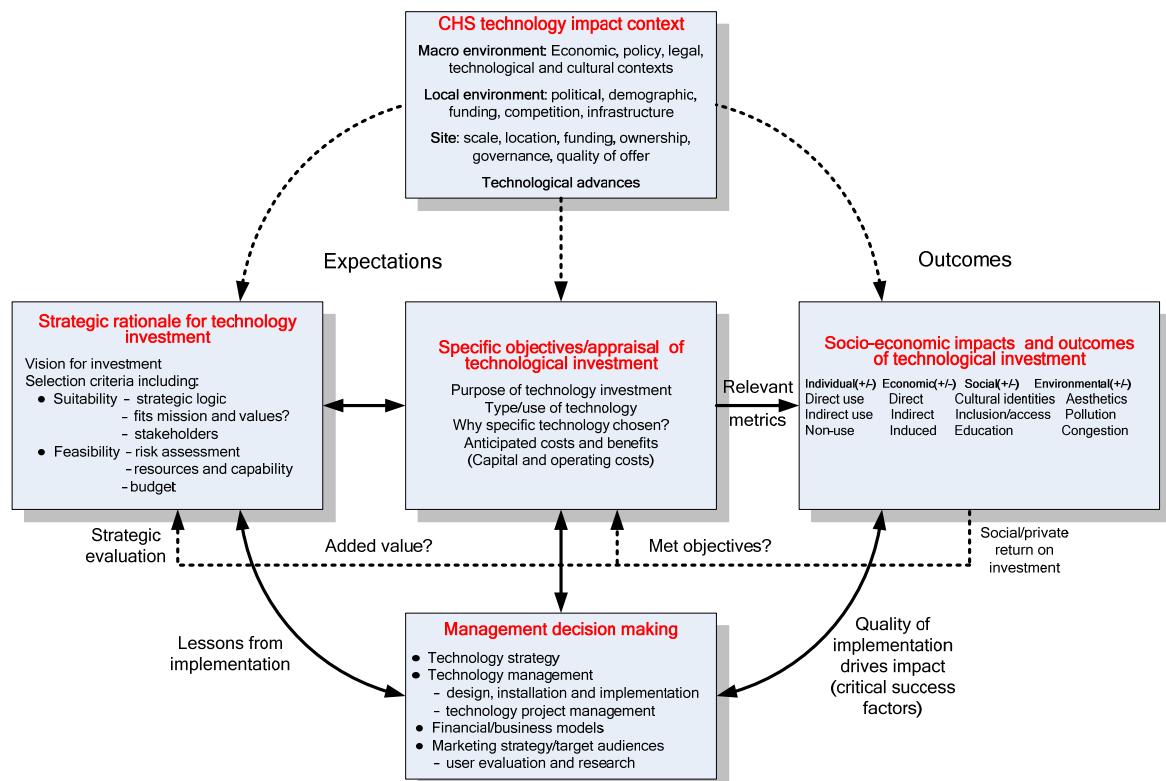


Figure 3: A holistic investment contingency model for technology impact evaluation at cultural heritage sites (CHS)

The models revolve around the concept of what we call ‘dynamic impact’. The holistic models consider how multiple variables can potentially affect the impact of a site. For example, an analysis of how information technology affects the impact of a site would also look at other variables (such as marketing, implementation, human resources, stakeholders, etc) to consider if changes to these processes have contributed to impact. Impact studies currently do not usually account for changes in multiple variables. There is an assumption in many impact studies that the other elements of the heritage system have remained static. This type of assumption cannot be relied upon – the site needs to be conceptualised within a standardised manner so that impacts at different sites can be compared in a consistent manner.

1.3.6 The site appraisal toolkit

The models also provide a framework which can be used to hang other tools for valuation and impact assessment (see appendix 3). Activity 2.6 has begun work on linking the ICT investment contingency model with potential methodologies and techniques to aid valuation and impact assessment during and after the deployment. This could provide another useful tool for heritage site managers. It is also a tool that could be automated.

1.3.7 Overview

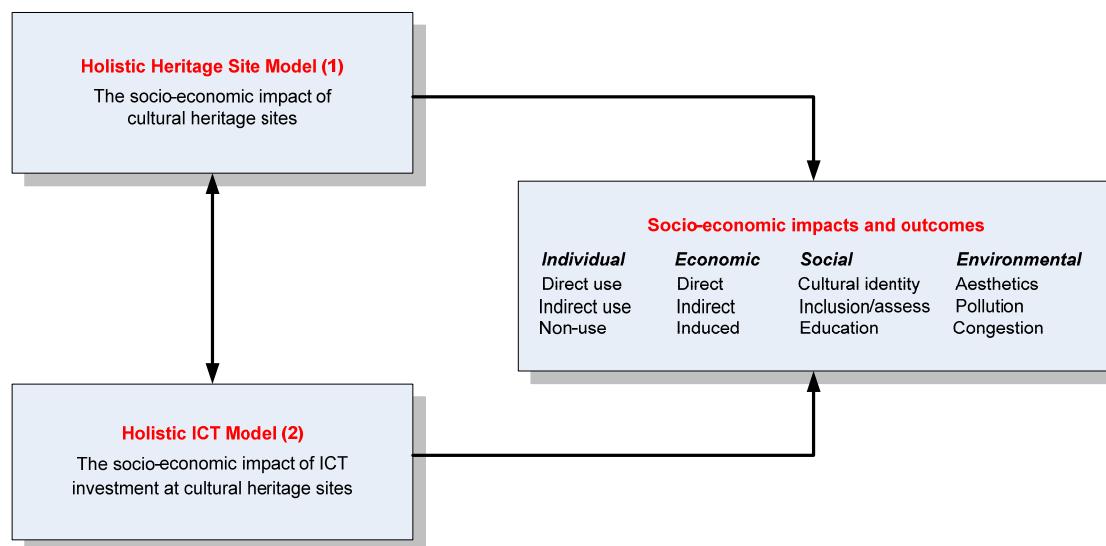


Figure 4: The relationship between the holistic impact models and impact/outcomes

The models fit together in the way shown in Figure 4: the holistic site model (see Appendix 1) exists at the highest level; the ICT investment appraisal model (see Appendix 2) can exist as a self-sufficient entity but is best used in conjunction with the contextual results derived from the application of the holistic site model. Both models lead to socio-economic impacts and outcomes (see Appendix 5). A number of case studies are in progress which highlight the use of the models at heritage sites (see Appendix 7).

The models have been extensively tested at heritage sites and are considered to be both academically robust and practically applicable to the end users in the sector. These models will be of benefit, not only to those with a specific interest in the application of ICT to heritage but to a much wider audience of heritage professionals (i.e. heritage site managers, curators and directors who have to pursue heritage site strategy, and those providing outside consultancy to sites).

To-date, *all* heritage site managers questioned have felt that the sector lacks sufficient business skills. With adequate dissemination (such as through the Activity 2.8 Expertise Centres, as well as summer schools, and other courses) it is felt that the EPOCH models will play a role in the professionalisation of the heritage sector. This we feel is crucial for the sector – there has been considerable research conducted in the academic arena that has not been applied to the sector.

The research is moving beyond the measurement of impact to the ‘understanding’ of impact. If the sector can begin to understand the processes involved in impact then sites will be in a better position to influence positive outcomes. If we can provide evidence of ‘why’ certain technologies are successful, in certain situations, then this information can be used directly by the sector and can be used to influence decisions both at the site level and policy level.

1.3.8 Sustainability for Activity 2.6

Crucially this research has revealed that across Europe the cultural heritage sector currently suffers from a widespread lack of business and technology skills. A number of reasons exist for the state of affairs, but the principal reasons are:

- Salaries in the heritage sector are usually too low to attract people with these sought-after skill-sets.

- The sector tends to have very ‘traditional’ origins with most staff tending to come from social science/liberal arts backgrounds. Those leaving university with qualifications in business and IT do not tend to see the heritage sector as a potential avenue for career development.

This is where we feel Activity can make a contribution to the sector. By increasing the sector’s awareness and understanding of business and ICT processes through the dissemination of the results of the research in a variety of formats such as Activity 2.8 Centres of Excellence, Masters-level courses, and summer schools.

The Activities have developed sustainability models that will allow the work to continue beyond the lifespan of EPOCH.

The following sustainability model has been developed over the course of the EPOCH project (see Figure 5).

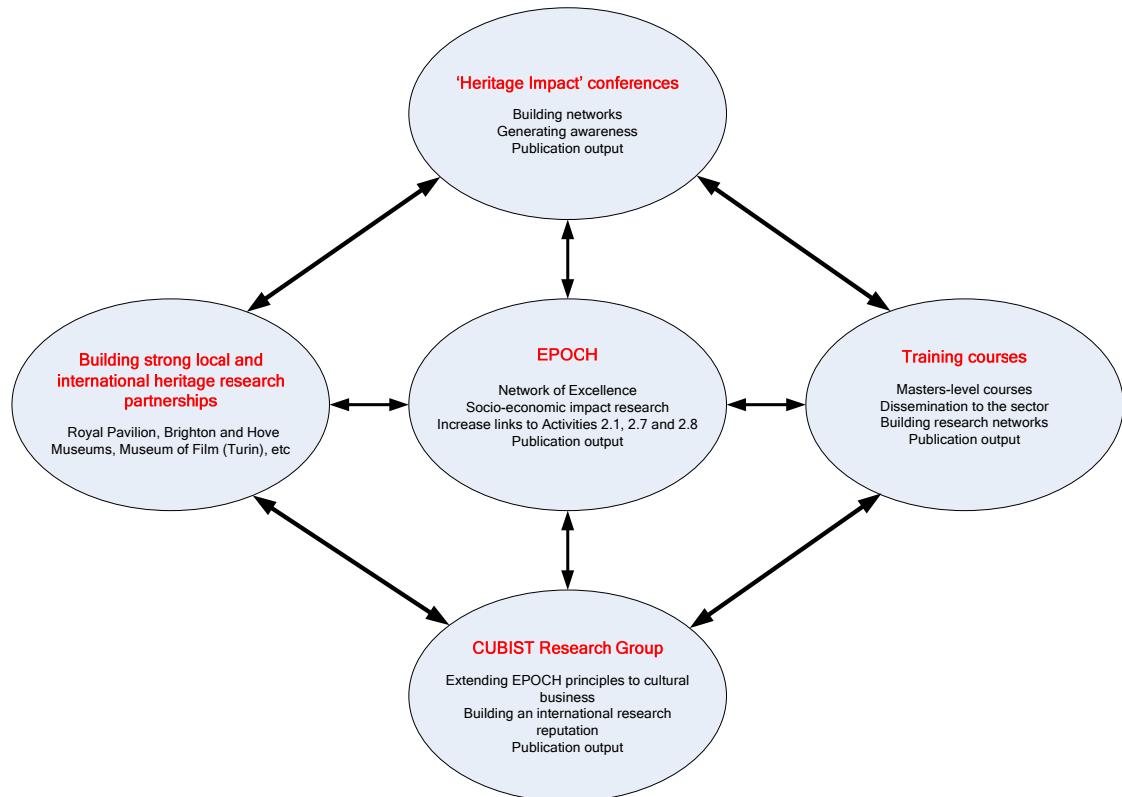


Figure 5: A sustainability model for Activity 2.6

It comprises four elements:

- Heritage Impact***: The ‘Heritage Impact’ conferences now provide a mechanism for practitioners and researchers interested in socio-economic impact in heritage to share ideas on the latest directions in impact research. Because this has a wider business perspective this conference has the potential to generate awareness of EPOCH far beyond the traditional ICT research community.
- CUBIST Research***: The creation of the CUBIST (Cultural Business: Impact Strategy and Technology) research group by Activity 2.6 allows the EPOCH research principles to be extended into the wider cultural business field. Again this has the potential to generate increased awareness of the project in sectors beyond the traditional ICT research communities.

- *Training*: The forthcoming training will fulfill the key criteria of EPOCH's research – to disseminate the information to those in the heritage sector who need it. So much information generated by research projects is produced by academics for academics. The cultural heritage sector is facing major challenges now. Issues of diminishing funding, and the need for professionalisation of the sector all need to be addressed today. Rather than assuming that those in the heritage sector will actually go and find the research output in academic journals and literature, a proactive approach using a variety of dissemination methods is envisaged. A range of teaching and training formats will complement the traditional publication outputs. These could include Masters Courses in Cultural Heritage Management, training at the 'regional centres of excellence' being created by WP 2.8, and summer schools.
- *International research partnerships*: One of the key principles of a 'Network of Excellence' is the creation of research partnerships. The Activity 2.6 research, the Heritage Impact conferences, and the CUBIST research group all generate new and innovative research partnerships (as will the forthcoming training) – currently Activity 2.6 has key research partners (excluding the group members) in France, Spain, Belgium, Italy, and the UK.

It is apparent that all the elements in the model have the potential to:

- Generate awareness of EPOCH
- Disseminate the WP 2.6 research and help the cultural heritage sector
- Generate new research.

1.3.9 Future directions

The following future directions are envisaged subject to funding:

- Continued refinement, testing and adaptation of the models
- Development of further methodological models
- Extend the focus to the role of technology in heritage-led cultural tourism and economic regeneration
- Develop user-friendly software to encapsulate the principles of some of the models
- Test and write up further cases using the holistic models
- Continue to explore links with Activities 2.1, 2.7 and 2.8

1.4 Activity 2.8 (Encouragement of SME involvement)

1.4.1 Introduction

EPOCH has the aim of having a lasting effect on the Cultural Heritage domain, and therefore wants to establish structures that continue the work started with EU financial support under the EPOCH project. One of the main objectives is to create a structure to support, encourage and train SMEs involved in the cultural heritage sector to improve the workings of the labour market with a view to growth, employment and the competitiveness of companies. A core principle of the Programme is to transfer innovation and share experience and best practices, improving the quality and creating standards for the cultural heritage domain.

From the Stakeholder Needs analysis within EPOCH, it is clear that there is a major gap between the Cultural Heritage (CH) world and the Information and Communication Technology (ICT) world, which is slowing down the successful use and implementation of ICT technologies. On top of that, there is a lack of knowledge on the needs and behaviour of the users of cultural heritage technology, creating frustration and lack of success for cultural heritage institutions as well as for ICT companies involved.

To meet these perceived challenges, last year the concept and the methodology of the Network of Expertise Centers (NoECs) was developed. The major goal of the NoEC is to overcome this gap by understanding both worlds, providing training and facilitating knowledge acquisition of the domain from all perspectives, improving methodologies and techniques to fit better with the needs of the users, and debating new ways to introduce and use technology in cultural heritage that fits with the needs of the cultural heritage institutions.

The creation of the Network of Expertise Centers is based on a tried and tested methodology that comprises the blending of action learning with the network approach and produces a very powerful mechanism for sharing knowledge between different organisations. This structure has become known more widely as a *Learning Network*. Learning Networks employed in other sectors have generated unique results of learning and upgrading, not only in terms of the skills of the involved individuals, but also in terms of the processes of the relevant organisations. The objective of this report is to summarise the development as well as the implementation process of the Network of Expertise Centres since last year.

1.4.2 The EPOCH approach for SME encouragement

Most of the companies active in Cultural Heritage are SMEs as the use of technology in Cultural Heritage is quite new, and the market is still in a pioneering phase, only transiting now towards full development. The idea of clusters is widely used in a variety of sectors to support groups of small companies with overlapping interests by creating a critical mass and allowing them to respond to challenges, have a wider knowledge base, improve the knowledge of and impact on the market etc. However, creating a virtual cluster of companies active in Cultural Heritage, – as was stated as an objective in the first ANNEX of the EPOCH project – while necessary, was not in itself enough. The EPOCH strategy for SME encouragement which was developed over the last two years goes a step further and aims to develop collaborative learning communities by developing an infrastructure, the Network of Expertise Centers (NoEC), that supports shared learning on a regular and sustainable basis.

The EPOCH approach is modular and distributed, but, nevertheless, is structured on a global scale in order to fit with the specific needs and the highly regulated environment of the cultural heritage sector. The distributed nature means that each center will have to rely on local funding, to link with the local decision making and to deal with the local issues; the global nature allows the collective

NoEC to have major impact on the domain, to unite the available know how, to tap into the ongoing research worldwide and to provide a platform for seeking funding internationally as well.

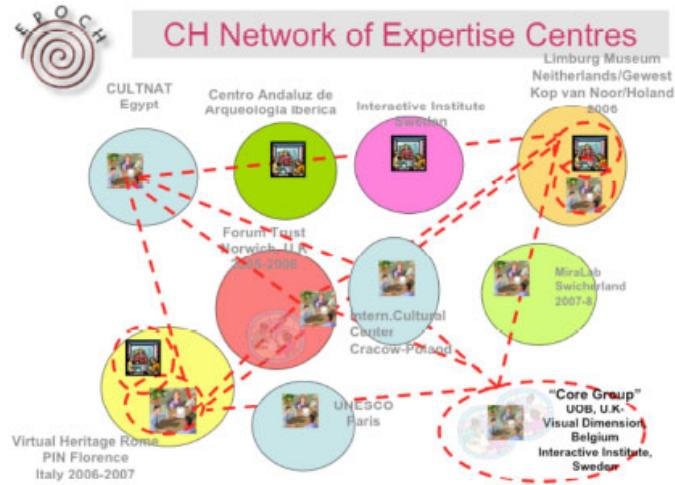


Figure 6: An overview of the NoECs

The EPOCH vision is to create a Network of Expertise Centers that have a regional mission and are organized in a Europe-wide or even worldwide network. Each Centre should be a not-for-profit organization belonging to or closely linked to the local governmental level. A cluster of companies that are active in the cultural heritage domain as well as a number of cultural heritage institutions surrounds each Center, and is called the “satellite” learning group. This structure brings the Center close enough to the decision-making and implementation process in cultural heritage to deal with the local differences in laws, policies, culture and governmental structure. Those Centers will share knowledge and best practices and will play a key role in the improvement of the cohesion of the Cultural Heritage sector by being the bridge between research, government, suppliers, buyers and users.

1.4.3 Elements of sustainability

However, it should be recognized that to build sustainable structures for knowledge creation and sharing between different organizations is a difficult task. The methodology behind this approach is based in the concept of Learning Networks, which has been adapted to the specificities of the cultural heritage domain. Learning Networks:

- Involve representatives of different organisations, which include 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
- Can assess the learning outcomes that feed back to the operation of the network.

The formal character of the 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. More significantly, the lasting character of membership in learning networks facilitates the development of trust relationships among learners.

In the cultural heritage sector, among the elements needed by the organisations of all sizes for a sustainable process of engaging with technological developments are standards and best practices, coherent and common digital architectures, and ongoing means for creating and sharing a knowledge base. The creation of a *central distributed “knowledge bank”* for technical information, technological developments and specific applications, as well as knowledge of which companies/research institutes develop them, would be ideal because it would allow access to information about the state of the art of any number of technical matters and applications.

Furthermore, a centralized way of listing and providing access to information about *what* other cultural heritage organizations are doing, in *which* applications they are interested and *who* is implementing which application – as well as *how* they fund and organize their new activities – would be an invaluable resource for any organization seeking a successful transformation to the digital era.

EPOCH’s partners are a valuable resource of all those kinds of information both on technical as well as on organizational aspects. During the first four meetings of the NoEC, the members agreed that a “knowledge bank” that would record the existence of technological applications and supply information about the underlying source materials, and specifications in the forms of a “Scenario Template” would be a good place to start. They have also agreed to work on their own *organisational structures* preparing and sharing their business plan regarding technological adaptation and strategic plan regarding their transformation to an Expertise Centre in CH. The general vision of the various activities, transformations and structures of the NoECs is encapsulated in the following figure.



Figure 7: Activities, transformations and structures of the NoECs

However, the biggest challenge is the creation of *alternative business models* specifically because existing economic models together with the cultural and legal policies are crafted to a different, pre-digital, era when cultural heritage services were mission-related (ethnical, cultural, national, regional etc) and heavily subsidized. As ICTs introduce different ways of preservation, interpretation, presentation and documentation the current restricted model of time and space (for example) in which a museum could offer its services to the public could be just one of many business options.

It is exactly at this point that partnerships and understanding of the different and complimentary roles of private (companies) and public organisations (CH institutes, regional policy-making agencies, universities etc.) will play an important role. Both communities need to learn from each other in order to develop complementary business models. We can report two indications of this trend:

- The first “satellite” learning group has been established in Norwich and the surprising result from the 2 focus groups that took place in Norwich on the 9&10/2/2006 was that SMEs wanted to establish a learning group together with cultural heritage institutions and not to establish an SME group which would invite cultural heritage institutions as guest /speakers .
- A significant number of SME companies engaged in EPOCH as members or as members of the learning group activities in the NoECs are “spin offs” from University and /or Research departments in IT and CH.

1.4.4 Implementation Strategy for the development of a Network of Expertise Centers in cultural heritage

As we have already said the main goal of this activity is to start up a Network of Expertise Centers with their connected SME clusters and cultural heritage stakeholders learning groups, and establish it on a viable, sustainable basis by the end of the EPOCH project.

In this section of the report we summarise the development as well as the implementation process of the Network of Expertise Centres so far. During the first period of the EPOCH project together with our partners, we:

- Established a better understanding of the needs and challenges faced by stakeholders involved in the cultural heritage domain;
- Developed the idea of a Learning Network of Expertise Centers in cultural heritage as well as a strategy on how to encourage SMEs participation in the learning network (cluster);
- Tested the ideas in a workshop during the 2004 VAST Conference, as well as with a focus group of SMEs
- Developed a first set of methodological guidelines for the implementation of this strategy

During the second period of the EPOCH project we started the implementation process of our strategy and we:

- Interviewed internationally 18 potential Expertise Centers, from many countries;
- Organized two workshops targeted specifically on the engagement of International cultural heritage Organisations, active in technology, with the objective of discussing the idea of a Learning group of Expertise Centers. The first workshop took place during the 11th International Conference on Virtual Systems and Multimedia VSMM 2005, Gent 3-7 October 2005 and the second during the VAST 2005 Conference in Pisa.
- Organised the Launch Event of the NoEC’s Learning Group where we invited SMEs and potential Expertise Centers to a networking event with the general theme of “Discussing a Technological Pipeline in CH” – Brighton 12-13 January 2006 (Appendix I)
- Trained 4 Facilitators for the Learning Groups activities
- Organised 4 – up to April 2006 – Learning Group sessions for the NoEC, one each month. The NoEC’s Learning Group consists of representatives of 11 international Organisations – Expertise Centers – active in CH. In Appendix II we present the profile and activities of the members’ organizations and in Appendix III we include templates, case studies and minutes of the workshops.
- We had two Focus groups in Norwich with SMEs, and other CH Institutions, in order to establish a first “satellite” – learning group – around the Norwich Forum Trust, which is member of the NoEC.

- This “satellite” commenced operations on the 5 April 2006, meeting on a monthly basis. The group consists of 18 members, equally split between SMEs and cultural heritage organizations (Appendix IV).

Although this year has been extremely busy with the implementation process of starting to build the NoEC, involving SMEs and other organizations active in CH, the most important achievement we can report so far is *the restructuring process that has already started in the organizations*, members of the NoEC Learning Group. Each of these centers has a different background, a regional scope (as well as an international connections), and together they represent a vast resource of knowledge in cultural heritage from technological, cultural, and regulatory, as well as project management points of view. However, their activities are fragmented and would gain in excellence by restructuring. All the participants intend to undertake a major effort *to re-structure and re-organise their institutions as well as establish a durable structure in order to communicate and share their knowledge base*.

During the first meetings the members discussed in depth the concept of “Expertise Centre in CH”, and together we have produced a “Template” with activities that Expertise Centers ought to have. Every month one member presents their activities and core competencies as well as a strategy of restructuring their organization in order to diversify and become an Expertise Centre in their area. This process started with CultNat, Egypt, where the specific actions for improvements suggested by the group have been communicated and discussed in the management board of the organization, and CultNat will report on the progress.

Another concept discussed in depth has been the concept of the “Technological Pipeline in CH”, specifically in the context of creating a knowledge bank used and shared by all the NoEC. We are in the process of creating templates for different kind of “scenarios” from users’ as well as from producers’ points of view (Appendix III)

1.4.5 Future Plans

In the short term one more “satellite” Learning group is planned to start during autumn 2006. In January 2007 we will evaluate the whole process in order to address two main components:

- The satisfaction of the members from the on-going process of learning networks and sessions, and
- The impact that this programme has had on the participating cultural heritage organisations and companies.

This evaluation will give the chance to the core group (University of Brighton-UK, Visual Dimension-Belgium, Interactive Institute-Sweden), to evaluate the potential of the programme for each learning group. Depending on our funding and the results of the evaluation, and in partnership with the NoEC group we will decide:

- To change and/or improve the process
- To virtualise some or most of the sessions
- To open up the group to other members
- To start up new “satellites”.

The strategy we are following has as its main objective the sustainable development of the clustering activity in the cultural heritage industry. This is the main reason behind the idea of Expertise Centers, which will be the main nodes for concentrated knowledge on what is happening in the cultural heritage sector in their geographic area. They will also have in depth knowledge of the other European /International Centres of Expertise and what is happening there. They will be trained to facilitate the dissemination of this knowledge to other regional organizations (companies and other satellite members) through the learning network’s training and networking activities, and they will

feed back the participants' needs and frustrations to the NoEC. This is a long-term process, and will need to continue and expand over time.

The motivation and enthusiasm of the NoEC Learning network members has led us to start searching for further funding through EPOCH, as well as other EU programs, and/or UNESCO, National and Regional funding bodies. One important early outcome to note, which was included in the first feedback from the SME participation in the Norwich Learning group, was their need to learn more about funding opportunities, as well as standards and sustainability issues.



IST-2002-507382

EPOCH

**Excellence in Processing Open
Cultural Heritage**



**Information Society
Technologies**

Deliverable 2.10

APPENDICES

2 Appendix 1 (Activity 2.6): Understanding socio-economic impact using a holistic analytical model for cultural heritage sites

2.1 Introduction

The impact of ICT on heritage sites and their visitors can normally be considered an *incremental impact*¹. That is to say it is an impact that occurs in addition to, and as part of the wider impact of the site. The socio-economic impact of ICT at cultural heritage sites cannot be studied in isolation from the wider impact of a heritage site. A series of models have therefore been developed and extensively tested with heritage practitioners (including managers, curators and technologists).

The first (holistic model) can be used by heritage site managers to conceptualise the factors that influence the wider impact that a site could have. Using the contextual information derived from the use of the holistic model the second model considers how a heritage site manager can assess a technology investment decision. Finally, using the analysis of impact and valuation methodologies produced for the first EPOCH 2004/5 deliverable (McLoughlin, Sodagar, and Kaminski 2005) and its subsequent refinement (McLoughlin, Sodagar, and Kaminski 2006), the ICT investment model is married up to appropriate valuation and impact assessment methodologies.

A series of case studies are being conducted to highlight how the models can be applied to cultural heritage sites across Europe. Through the case study research the models are being refined, and tested for applicability to different contexts. These can range from:

- different countries
- different site sizes, locations, and significance
- different types and use of technology
- the difference between one-off exhibitions to permanent additions to a site, etc.

These case studies are in progress (see Appendix 7).

2.2 A holistic analytical impact model for cultural heritage sites

Most impact studies undertaken to-date have usually focused on a single impact dimension at one moment in time. This research takes a broader view of impact through the use of a holistic analytical model (see Figure 8). This attempts to capture the complex, multi-dimensional nature of impact, the multiple influences on impact, and offers a guide to which impacts should be examined, given the specific circumstances of a cultural heritage site. This is not an exhaustive account of all the influences that affect impact at heritage sites but a thematic overview of such influences.

Socio-economic impact embraces many possible impact dimensions (e.g. economic, individual, social, environmental, etc). Within each dimension (e.g. economic) there are a number of possible methodologies which can be employed to identify and ‘measure’ impact, each method having advantages and disadvantages.

¹ An ICT deployment would be considered incremental if it is a specific investment rather than an integral part of the heritage site. Most established heritage sites would add ICT to their visitor offering. However, in some instances new heritage establishments may have ICT as an integral part of their offering (the newly opened National Waterfront Museum, in Swansea, Wales is just such an example, as would be the Constitution Centre in Philadelphia, USA).

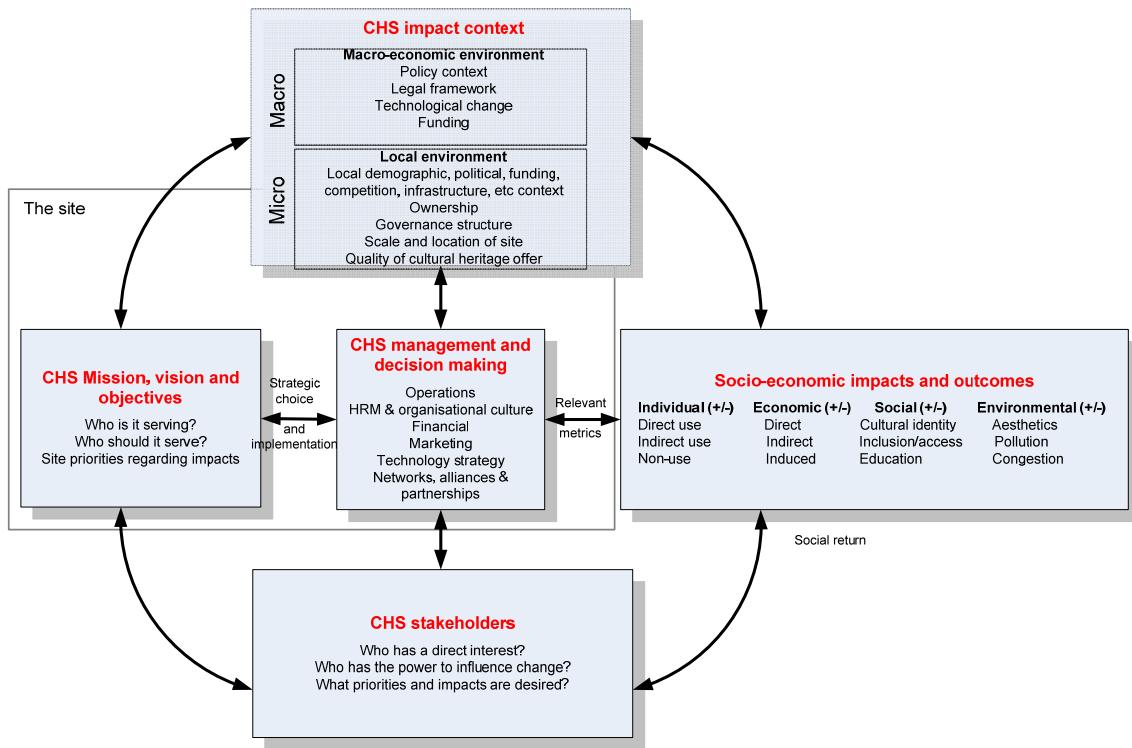


Figure 8: A dynamic holistic impact model for cultural heritage sites (CHS)

The holistic impact model consists of five elements: the cultural heritage site (CHS) impact context, the site mission and objectives, the site stakeholders, and the site management and decision making context, which all influence and contribute to the potential socio-economic impacts of a heritage site. The different components of the holistic framework model and its relationship to impact evaluation are examined below.

2.2.1 The impact context

The impact context is interpreted broadly as the specific macro-contextual influences and micro-contextual (such as organisational) influences on a cultural heritage site. Macro contextual influences can include:

- Macro-economic environment
- Policy context
- Legal framework
- Cultural context and values
- Technological context.

The micro-contextual influences exist at two levels; the local environment and the site. These influences can include²:

- *Local environment:* economic, political, funding, demographic, legal, competition, infrastructure, etc

² Of course, some elements within the impact context (such as policy, funding and legal frameworks) can straddle the border between macro and micro influences.

- *The site*: funding, ownership, governance structure, scale and location.

For heritage managers the impact context creates opportunities and threats for their organisations and can impose constraints on decision making. Most of these factors are beyond the direct control of cultural heritage managers, but nevertheless affect heritage site strategies and final impacts and outcomes. Furthermore, many of the factors are inter-related and so for example, local economy could affect heritage site funding or the policy context could affect the legal framework.

The macro context

Each site operates in a macro-national context (and wider European and global context). A number of influences from this context affect heritage sites, these include:

- *Macro-economy*: The macro-economy (regional, national and international) affects, for instance, tax revenues, disposable income, and policy funding priorities. The macro-economy has a major influence on the heritage sector.
- *Policy context*: The macro-policy context is another important determinant for potential outcomes and impacts at heritage sites. Policy is fundamental to understanding impact; it influences heritage sites at multiple levels. It determines what gains funding and what does not, what is conserved and what it is not, it influences local authority policy, and it can also affect national legal structures which influence the heritage sector, etc. (Mignosa and Rizzo 2004, Rizzo and Mignosa 2006).
- *Cultural context and values*: The ‘cultural context’ and values of a society in supporting heritage, will in turn affect practical policy and funding priorities. For example, the cultural context helps define heritage. As Ashworth and Howard (1999: 11) note “Heritage is whatever people want to conserve, preserve, protect, or collect”. As such, definitions of what should be preserved can differ between countries (i.e. market squares in Germany, country houses in the UK, or heritage coastlines in France). Furthermore, the definition of what constitutes ‘heritage’ is not static but dynamic. In the developed world the definition of heritage has broadened considerably in the later half of the twentieth century³. It is important to acknowledge that as time passes the definition of heritage will continue to change according to different political aspirations, and the increasing input of communities and groups outside of the traditional field of ‘experts’.
- *Technological context*: It is important to consider technological developments and how these might affect the visitor experience. New ICT hardware, software and their associated standards are being developed continually. The applicability of these technologies and standards to the heritage sector is dependent on economic and social factors such as cost and user acceptance. (e.g. in the last fifteen years websites have become an integral part of heritage marketing and presentation, this has only become possible through the global advances in ICT and the acceptance and penetration of the PC and Web use in households across Europe).

In a dynamic model such as this some allowance must be given to the ability of a heritage site to influence the impact context. However, much of the macro context is beyond the sphere of influence of cultural heritage sites. Such sites are unable to exert any influence on the regional, national and international economies.

³ Early definitions of cultural heritage that encompassed the monumental remnants of cultures were gradually extended to include new elements from non-artistic sectors of activity such as industrial heritage, or from specific contexts such as the underwater heritage. Today, the notion of heritage is much more open, and is used to reflect living culture rather than just our past. UNESCO now includes in its' definition of cultural heritage historic cities, cultural landscapes, natural sacred sites, underwater cultural heritage, museums, movable cultural heritage, handicrafts, documentary and digital heritage, cinematographic heritage, oral traditions, languages, festive events, rites and beliefs, music and song, the performing arts, traditional medicine, literature, traditional sports and games, and culinary traditions.

Individual sites are also unlikely to exert any significant influence on national policy decisions although groups of heritage sites can work together for the purposes of lobbying. For example, in the UK the Museums and Libraries Association (MLA)⁴ acts as a voice for the sector to try to influence change at policy level, as well as providing advice and assistance to its members. As a general rule, this sort of concerted and unified effort between individual sites is rare.

Similarly, the development of technology such as ICT takes place outside of the cultural heritage sphere (usually in the commercial or military sectors) and gradually migrates to the heritage sphere.

The micro context

The micro context can be classified at two levels the local environment and the site:

The local environment

Micro factors⁵ would include the local economy and local policy and political context. For example, numerous local authorities and governments have developed strategies, with accompanying funding, targeting heritage as a key element in regeneration programmes (e.g. Woolwich Arsenal, Hadrian's Wall, and the Brighton Cultural Quarter).

In heritage sites with a strong orientation towards tourism, a principal element of a site's economic impact will depend on the total visitor experience which itself is dependent on numerous off-site factors (e.g. coordinated local tourism strategy, the presence of other visitor attractions, quality of facilities such as transport, restaurants, hotels, etc). It is rare for a heritage site to be immune to these factors.

Competition or complementarity: The degree of competition or complementarity with other attractions can also influence impact. For example, a heritage site within a historic urban centre (such as Rome, Venice or Paris) could face competition from numerous alternative heritage attractions; however, the nucleation of heritage sites within a town or city can act as a stimulus to attract visitors. In such cases the visitors would be more likely to be interested in heritage tourism. Such situations have been given the label 'co-opetition'. Of course, the competition is not limited to other heritage sites, any attraction which could divert tourist money away from heritage represents potential competition, but the creation of a diverse tourist product offering is likely to be beneficial for attracting a more diverse range of visitors.

The site – organisational context

Organisational context is central to understanding impact. The impact of any site is heavily dependent on its location, quality, significance and the scale of the heritage site itself. As sites vary in their local, regional, national and global significance then so will their relative impacts. Some factors to consider include:

Ownership: The ownership of heritage sites is a principal determinant of the impact that a site will have. Ownership influences funding sources, governance structures, objectives, etc. However, ownership of heritage sites is not static. For example, because cultural heritage sites can have high maintenance costs – especially in countries with strictly enforced legislation regarding the upkeep of such sites. There is a tendency in such countries to see the movement of ownership from private to public hands. (Although, there are limits to the size of the public purse and without sustainability it is questionable as to how long the transfer of assets from private to public hands can take place).

⁴ The Museums, Libraries and Archives Council (MLA) was launched in April 2000 and is the UK's strategic body representing museums, archives, and libraries (www.mla.gov.uk).

⁵ The term 'micro' has a differing meanings in business and economics. In the context of the above model it is used to indicate two levels the 'local' socio-political environment and the site itself.

Corporate governance: Heritage sites can have a wide range of governance structures ranging from private and public, to not-for-profit and charities. Each of these will influence the impacts and outcomes of a heritage site. While it would be simplistic to assume that all sites under private ownership have a greater profit motivation than sites in public ownership there is a trend towards this scenario that cannot be ignored.

Location: Location is paramount for the impact of a cultural heritage site. The location determines factors such as accessibility to transport networks, proximity to population centres links with other potential attractions. Surprisingly, location can be a dynamic entity. Although cultural heritage sites are fixed entities within the landscape or urban fabric the significance of the surrounding locality can change over time. A rundown part of an urban centre can become a popular tourist zone increasing the potential of the heritage sites within that area (such as the Gothic quarter – Barri Gòtic – in Barcelona, preserved through neglect and now one of the principal tourist magnets in the city). Alternatively, the creation of new transport links such as low cost airline routes, or motorway and train-links can radically change the accessibility of a heritage site.

Quality of the cultural offer: This exists at two levels. The significance of the site to society, and the quality of the ‘visitor offer’.

Significance: The significance and importance of a site is a difficult entity to define. Sites have significance at multiple levels such as local, aesthetic, regional, and national. Of course, as with so many elements of the dynamic impact context the significance of cultural heritage sites is not a static element, it can change over time. It can change because of changes in the political system, technology, etc. Even at a single point in time a site may hold alternative significance to different elements of the population – this can determine who visits a particular site. For example, in Wales the World Heritage site at Caernarfon Castle is seen by many as a well preserved example of a castle from the reign of Edward I, but is dismissed by many Welsh as a symbol of English oppression. The post-World War II cultural heritage from Eastern Europe is seen by many from the old Communist Bloc countries as symbols of Communist oppression and is being rapidly destroyed and erased from the cultural landscape. To many academics especially, this rapidly vanishing heritage is an important historical resource that requires preservation.

Quality of the visitor offer: The quality of the visitor offer at a heritage site or experience can be determined by a number of factors such as the level of preservation, which lies outside the scope of the heritage site, however, site maintenance, level of restoration and visitor facilities tend to fall within the potential control of a site, finance depending, as can the actual or perceived authenticity of the site.

Scale: Scale can act as a guide to the potential impact of a cultural heritage site (although, no more than a guide). Larger sites have the potential to induce a greater impact than smaller sites, because of their ability to support a greater throughput of visitors, sustain larger potential capital costs, higher staff requirements and other running costs. Of course, concentrations of smaller heritage sites can have a similar effect.

These factors have a strong influence on the site – and feed into the management decision-making context. Furthermore, it is argued that contextual factors are immensely important determinants of the socio-economic impact of heritage sites. Placing a heritage site in context will guide what impacts that should be evaluated. For instance, there would be little point in doing a full, and often costly, economic impact analysis of a small museum based in a large city that was designed to serve the local community and foster local cultural identity. In such a context impact assessment should be aimed at issues of community integration and social inclusion, etc.

In the dynamic model there is the potential for sites at the micro-contextual level to have some influence over the ‘impact context’. Cultural heritage sites have a greater potential to influence and have an impact on the micro context compared to the macro context. Some heritage sites can make a

(sometimes significant) contribution to the local economy through increased visitor numbers, capital expenditures, or brand value.

2.2.2 Mission and objectives

The mission can be thought of as a heritage site's overriding purpose. It is an expression of its *raison d'être*. This can include:

- What is the site there for?
- Whom is it serving?
- Who should it serve?
- Why is it being funded?

All heritage sites have a sense of their mission, either explicitly or implicitly, which partly reflect the impact context (the culture, the national system, and corporate governance and legal system) and also the power and interest of the stakeholders. As a process, not least to guide an impact evaluation, it is useful to know who decides the mission and how it is decided.

Objectives maybe seen as more of a heritage management tool, being statements of specific outcomes to be achieved which may or may not be measurable. For example, in the UK there is a national benchmarking process for museums which offers comparisons against certain prescribed criteria. There are also performance indicators being employed by various museums. Despite the growing targets/objectives culture in the public sector of the UK there is a need to be sceptical of their role and aware of the potentially distorting effects in delivering a service.

One role of a socio-economic impact analysis would be to evaluate the extent to which the mission and objectives are being achieved. Are the intended outcomes being delivered? Should the mission and objectives be revised? Which impacts should be evaluated?

2.2.3 Strategic choice and implementation

The quality of leadership and strategic thinking not only defines the mission and objectives but sets the visions, makes the key directional choices and innovations, and implements and manages strategic change. The key questions to any heritage site needs to answer are:

- Where is the site positioned now?
- Where does the site want to be positioned? and
- How can that be achieved?

This last question is where management decision-making comes to the forefront of site strategy.

2.2.4 Management decision making

The quality of the heritage management decision making will have a strong influence on final impacts. Many impacts studies either ignore this or treat it as a black box. The principal elements in the management decision making element include:

- Operations
- Financial
- Marketing
- Human resource management and organisational culture
- Technology strategy.

Operations: Operations management considers how resources such as capital, people, information and materials are converted into outputs such as services, and information (products). Cultural heritage site operations management is made more complex by the lack of funds.

Financial: The cultural heritage sector is perennially short of funds. Increasing competition for central funds, increasing operational costs, and an increasing number of heritage sites makes this situation unlikely to change. The management of financial resources within heritage sites is crucial.

Human resources: The effective management, training and motivation of personnel within heritage sites are other factors that can influence impact. This affects all levels within a site from management to voluntary staff. The drive and determination of heritage site managers is crucial to the long-term success of sites. With funding being such an issue in the sector, financial incentives for high-end managers are poor and considerable reliance is placed on the dedication, and devotion of managers in the sector. Correspondingly, heritage sites often have highly qualified staff with postgraduate qualifications who are paid correspondingly less than in other sectors. This situation requires careful management. Furthermore, many heritage site increasingly use voluntary labour to support many functions in the day-to-day running of sites. This also requires careful management. Human resource management issues also exist beyond the level of the site. For example, the decline in skilled crafts persons capable of maintaining and preserving heritage sites could have long-term implications for the sustainability of some sites⁶.

Marketing: The marketing strategy will influence the number and type of visitors which determines key final economic impacts. With often limited marketing budgets, a key marketing strategy will be the extent that sites can leverage advertising and promotion by combining with other interested partners in joint marketing campaigns.

The increasing number of undergraduate and post-graduate courses, and academic books devoted to heritage marketing suggests that there is a growing awareness of the critical nature of marketing in the cultural heritage sector. Furthermore, the growing number of heritage special interest groups in the marketing sector further reinforces this trend.

This raises the need for regular impact reports based on efficient accumulation of relevant data to feed back into strategic decision making and influencing future investment decisions. For example, few sites have a *detailed* breakdown of their visitor profile. Not only is this useful impact data but it can enable more targeted marketing strategies to take place – further enhancing desired impact. This presents socio-economic impact as a dynamic rather than static notion.

Technology strategy: For an extensive review of technology strategy at heritage sites see next appendix.

2.2.5 Stakeholders

The holistic model places stakeholders as a separate dimension of impact because they are a key consideration for all the other components of the model as they either directly or indirectly influence final impacts⁷.

Many heritage sites are publicly financed and are required to be accountable to a range of stakeholders. When difficult strategic or investment decision are being considered it can be useful to

⁶ There is a widespread lack of traditional craft skills in certain parts of Europe. The increasing use of modern building techniques and materials has reduced the need for traditional craft people such as stone masons, thatchers, plasterers, etc. And it is not only ancient buildings that are affected by lack of relevant skills. The Big Pit mining museum in the Blaenavon World Heritage site in South Wales is having to consider how the underground mine workings that closed in the mid-1980s will be maintained in the future. This is because collapse of the coal mining industry in the UK has resulted in a lack of properly trained mining engineers in the UK.

⁷ Of course, stakeholders are not separate entities they are integral to all the components of the framework from management decision making, mission and objectives, to impact context.

map stakeholders in terms of their power and interest in the outcomes of a decision to aid the political process of the decision making. Stakeholder analysis can take on a variety of forms and different stakeholders will vary in power and interest depending on a decision to be taken. Relevant issues here would be;

- Who and how do they influence the impact context (e.g. corporate governance)?
- Who and how do they influence the mission and objectives?
- Who and how do they influence management decision making?

Perhaps a more novel use of stakeholder analysis would be to use it directly for generating preliminary impact findings in their own right. The authors tested this approach on Brighton's Royal Pavilion Palace heritage site. Various stakeholders were interviewed to identify the key impacts that they perceived from the heritage site and they supplied relative weightings to their stated impacts. This approach helps to identify priority impacts for evaluation. Initial results showed that a number of different impacts were revealed that would not have been captured in a conventional impact study. From an economic perspective it also showed that standard economic measures driven by visitor figures/average spend failed to capture the significance of the full economic impact. It also posed new challenges in terms of measuring impact, such as how to measure a site that is an iconic brand for a city.

2.3 Socio-economic impacts and outcomes

The socio-economic framework developed for the EPOCH 2004/5 deliverable is shown in Appendix 5 (see also McLoughlin, Sodagar, and Kaminski 2006) and is summarised in Figure 9 below.

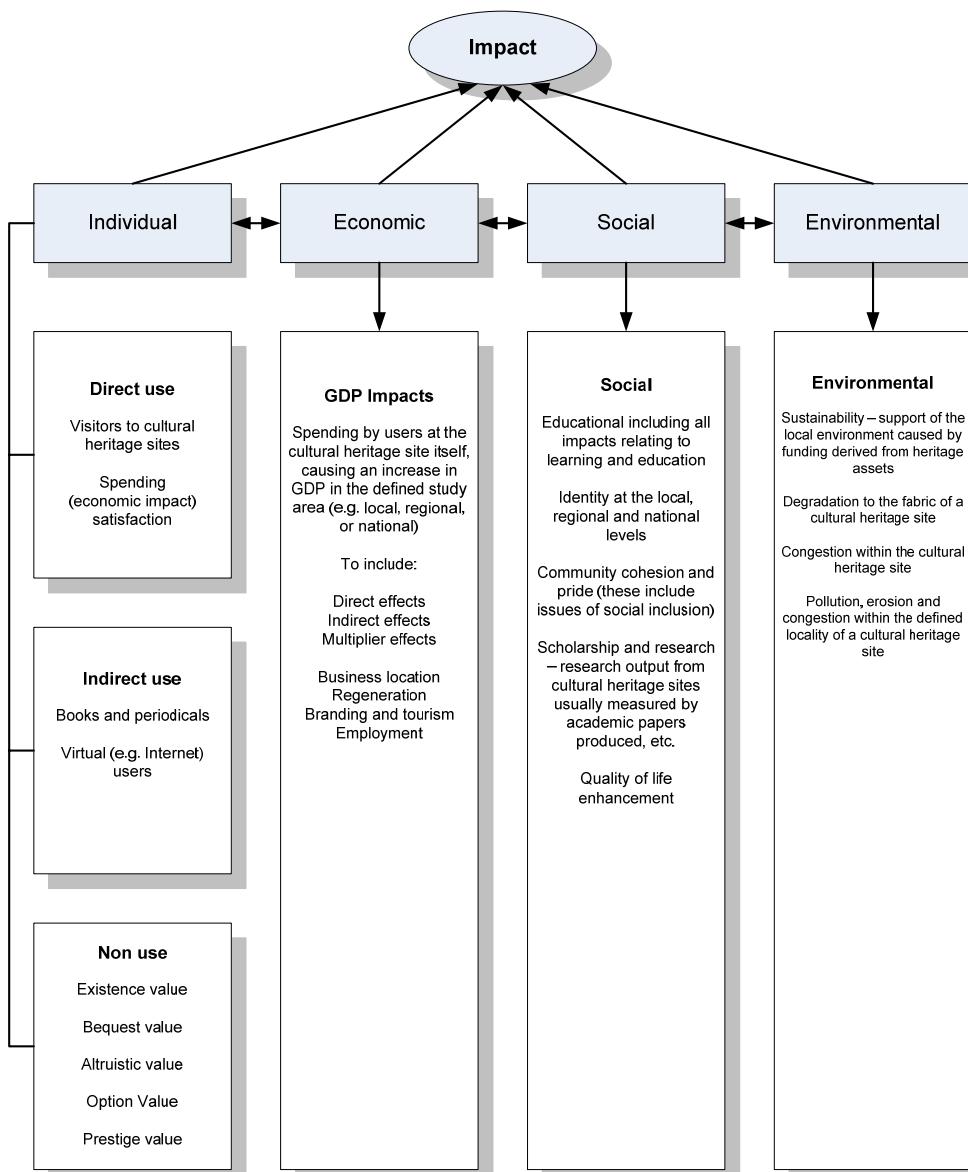


Figure 9: A socio-economic benefit and impact model (modified from The Outspan Group 1999: 7)

2.4 Conclusions

Although an increasing number of socio-economic studies are being conducted at cultural heritage sites, these tend to focus on specific impact dimensions. This model offers a holistic framework for analysing socio-economic impact of heritage sites. It presents impact as a dynamic concept and provides a typological basis for analysing impacts. There are a number of uses for this model:

- Such a holistic approach will provide a useful basis from which heritage managers can conceptualise socio-economic impact.
- If managers can begin to see how various elements come together to influence impact they can increase their understanding of heritage impact and this could form the platform from which site managers can influence positive outcomes.

- By looking at sites using the same criteria the models allow managers to compare sites.

Most importantly the results from the holistic site model can be used to provide contextual data to feed into the ICT model shown in Appendix 2.

3 Appendix 2 (Activity 2.6): Understanding what influences socio-economic impact of ICT at heritage sites

3.1 Introduction

The following methodological model can be used as a platform for the study of the impact of information and communications technologies (ICT) at cultural heritage sites. The model has been developed through extensive, in-depth interviews with curators, directors and stakeholders at many cultural heritage sites across Europe.⁸

The previous holistic heritage site-level model provided a wider context for the impacts and outcomes associated with cultural heritage sites. The impact of an ICT deployment on heritage sites and their visitors is an *incremental* impact. That is to say it is an impact that occurs in addition to, and as part of the wider impact of the site. Therefore, any changes to the dynamics of the site could affect the impact that an ICT deployment has.

ICT does not exist in a vacuum divorced from the heritage system. ICT is part of that system. The incremental impact of an ICT deployment cannot be viewed in isolation from the non-ICT impacts and outcomes associated with a particular heritage site.

The success or failure of a particular ICT project is, more often than not, a function of factors outside of the realm of IT. Politics, design, and location amongst others play an important role in the success and failure of an ICT deployment. The success or failure of a project determines its socio-economic impact as much as the technology itself. It would be a gross simplification to think that technologies can be studied in isolation from these external factors.

This is why the first model that has been developed (the holistic model) seeks to understand and conceptualise the dynamics of the heritage site being studied. This model provides a site ‘context’ for the following model which is specifically oriented towards the deployment of ICT (see Figure 10)⁹.

Also, when studying the ‘impact of technology’ it becomes apparent that any analysis is meaningless without consideration of what makes each site unique. Different sites have different strengths and weaknesses – strong brands, exceptional collections, extensive financial resources, etc. Different sites also have different rationales and objectives for deployment. If the ‘impact’ of ICT is divorced from these contextual factors then the result of a study lose their meaning. This is why the model is so essential. It allows those studying sites to place them in the same conceptual framework.

This research is based not only on examples of ‘best practice’ but the analysis of examples of failure. As much, or more, information can be derived from technology failure as from the examples of success¹⁰.

⁸ The key study sites include the British Museum, London; the Royal Pavilion Palace, Brighton; Brighton Museum and Art Gallery; Brighton Fishing Museum; Nymans Gardens, Sussex; the Chateau Museum, Dieppe; The National Museum of Cinema, Turin; The Enam Centre for public archaeology and the Provincial Archaeological Museum, Belgium; and the Blaenavon World Heritage site, Wales. In addition to these principal study sites many others have been questioned regarding specific elements of the models and frameworks.

⁹ The two frameworks are best used in conjunction with each other.

¹⁰ Of course, examples of failure are more difficult to acquire because those involved are less likely to want the information disseminated because it could reflect badly on them or their organisation. In contrast, examples of success are widely disseminated in the literature, at conferences, etc.

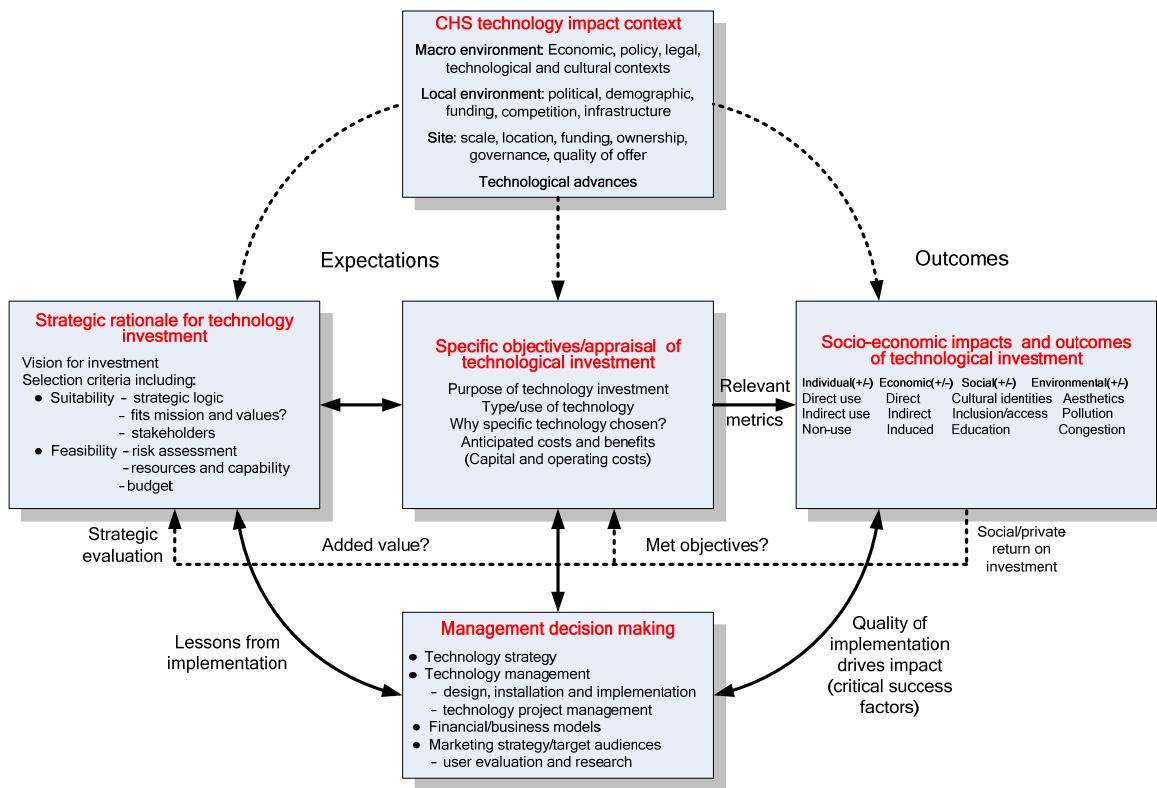


Figure 10: A holistic investment contingency model for technology impact evaluation at cultural heritage sites (CHS)

3.1.1 The technology impact context

Changes to the non-technology elements of the heritage site and its wider context can have wide ranging effects on the impact and outcomes of an ICT deployment. Considerable resources are devoted in the holistic site model toward determining the wider impact context that a heritage site exists in. The information derived from the holistic site model can be applied to this element of the ICT model. In this element the ‘macro technological’ context is also studied in order to establish how this affects the deployment of ICT. A number of factors affect the technological impact context, including:

- *Development of ICTs*: the ICT deployment in heritage sites exists within a wider ‘ICT and technology’ context. At the most fundamental level, what ICT is available is dictated by developments in the spheres of science, industry and commerce. Heritage sites do not have the resources or expertise to drive change in ICT. But the availability of ICT is the principal determinant of what can be achieved.
- *Cost of technology*: global economic forces have acted to drive down the price of ICT hardware and software. This contextual factor affects both heritage sites and their visitors:
 - Lower costs have made ICT technology more accessible to heritage sites which do not tend to have buoyant finances (the increasing use of touch-screens and large LCD screens at heritage sites is an obvious manifestation of this).
 - ICT has become a commodity item in society. As more consumers have opportunity to have increasingly sophisticated ICT in their homes, more people are becoming familiar with technology. Furthermore, many visitors will have access to technology in their workplaces. Visitors are therefore becoming increasingly familiar with ICT and so the accessibility has

increased. This can also lead to increased acceptance of technology (see below). The visiting public are driving demand.

- *The acceptance of technology:* the acceptance of technology is determined by socio-economic factors. The widespread use of ICT is the result of complex interactions between economic forces and user needs. Acceptance of such technology is often dictated by the penetration of ICTs in society (the internet, digital TV, mobile phones, PDAs). Acceptance of technology is relevant to both the site visitors and the site interpreters.
- *Reliance on existing technology solutions:* Some ICT technologies and standards are well-established (the Internet, PC hardware, HTML, XML, etc), but others are still in the process of gaining market acceptance. Sites with potential ICT deployments that rely on cutting edge/bleeding edge technologies/standards could run the risk of the technologies used failing to gain long-term market success (i.e. VRML), however, if successful these sites could have a market leading advantage. Deploying technological solutions at the appropriate time is crucial (see Appendix 6).

3.1.2 Strategic rationale for technology investment

There has to be a strategic rationale for technology investment. This is usually closely linked to the mission and vision for the site. Strategy needs to underpin the management decision making at a heritage site. Two principal components are suitability and feasibility:

Vision

Vision for investment: All investment decisions usually involve some intended innovation to enhance the cultural product offer. The vision is eventually a strategic view of where the site should be and what it should offer. Once this is clearly defined the exploration of the appropriate ICT for the vision can take place.

Suitability

- *Strategic logic:* there must be a strategic logic for the deployment of ICT. At its simplest a heritage site's strategy revolves around three questions: where is the site positioned now, where does it want to be positioned and how will it achieve that goal. An ICT-based solution may, or may not, be the most effective use of resources for achieving that goal. There have been many examples of technology-led solutions that have been deployed at heritage sites for no other reason than the technology was available.
- *Site mission:* another key question is does the particular use of ICT fit with the mission and values of the site? It is crucial that the deployment fits the mission and values of the site. For example, the type of ICT deployed at a site whose primary aim is education might differ from one where visitor numbers are required to support the revenue stream.
- *Stakeholders:* all investments involve opportunity costs. The potential funds that may be devoted to an ICT project can alternative uses. It is therefore essential that stakeholders support the deployment of resources.

Feasibility

- *Risk assessment:* The installation of ICT can hold considerable risk for heritage sites. For many it is an area beyond their traditional sphere of experience so they are reliant upon external sources of consultancy and services. A typical risk factor is cost outweighing the benefits

- *Budget*: Sites have to consider if they have the budget for ICT installation and maintenance and/or the resources and capability to support such an installation. Bespoke ICT projects can run over budget (i.e. the British Museum's The Mummy: the inside story exhibition).
- *Resources and capability*: The introduction of ICT requires numerous new skills. Heritage sites need to establish what resources and capabilities they have for such a deployment. Do they have any skills in house or will the entire project (or part of the project) need to be outsourced? Furthermore, ICT requires maintenance. Hardware which require a high level of manual interaction such as touch-screens, trackballs, and keyboards all require upkeep. Purely electronic hardware such as processors, motherboard batteries, disk drives, can all fail. Bespoke software may have bugs. Sites have to allow for these contingencies and set aside resources at the outset for maintenance.

3.1.3 Management decision making

The management decision-making element is another key component that influences impact. There are three components within this element; technology management, the financial and business models, and the marketing strategy.

Technology strategy

Cultural heritage sites should have a continuous review of technology strategy (e.g. Web) that can support the cultural offer.

Technology management

Technology management is a multi-faceted area:

- *Technology project management*: there are numerous considerations to be made when managing a technology project. For example does the project meet the vision. Is there a clear specification, as Soren (2005: 143) notes “Clear objectives and values help curators take ownership of a project, and feel responsible for whether it succeeds or fails”. It is necessary to liaise with external partners and with internal players (i.e. using human resource management for managing change). Not all heritage sites have the luxury of having full-time staff devoted to ICT management. Some have to share IT staff between sites or have staff who do IT-related tasks in addition to other jobs. These sites may have to purchase these skills from outside consultants. If the heritage site is for some reason unable or unwilling to maintain their ICT deployment then its impact may change from a positive to a negative. Furthermore, deploying ICT at a heritage site is not the end of the story. Information technology, as with all technology requires maintenance. Many sites do not have the skills to keep ICT projects running if the technology breaks down. This of course then requires external consultancy to fix any problems – but, needs to be factored into the running costs of the original business and sustainability model. The following factors are also integral with technology management:
 - *Management 'buy-in'*: Much work has been conducted in the commercial business sector that shows that the lack of senior management buy-in is one of the biggest reasons for the failure of technology projects. This is extremely important in the cultural heritage sector because there can still be reticence to the use of information technology in what is still a sector with traditional origins. Without management buy-in projects could fail before deployment or could have insufficient resources for successful deployment, leading to negative impressions by visitors.
 - *Leadership*: Closely related to the above is leadership. Leadership for an ICT deployment at a heritage site exists at two levels; the strategic leadership that drives the overall

conceptualisation, and the IT project leadership that manages the actual day-to-day running of the project. Strong strategic and project leadership can greatly enhance its chances of success.

- *Design, installation and implementation:* When visitors come face-to-face with front-of-house ICT at heritage sites their first impression is a function of the design, implementation and installation of the technology. The design of ICT applications is a complex area that is usually beyond the experience of heritage site personnel because so many different skill-sets are required (ICT development, graphic design, ergonomics, etc). As heritage sites have become more likely to deploy ICT to enhance the visitor experience this has created a market opportunity for organisations who design and install ICT solutions (and those who co-ordinate the various project specialists). Although, even today few enterprises can rely solely on the heritage sector for their business. Still heritage sites deploying ICT are now making a contribution to the business sector.
- *The quality of the implementation drives the potential impacts:* An exceptional use of technology can be let down by poor design, location, and implementation. Alternatively, lack of funding may result in poor design because shortcuts were made. This is important because considerable evidence points to cultural tourists as being increasingly sophisticated visitors. This does not imply that all visitors to heritage sites are classified as cultural tourists, but there is a tendency for museum and heritage site visitors to come from higher education backgrounds.

Financial and business models

- *Financial/business models:* in the past many heritage sites have been caught out by the lack of coherent, sustainable business models. Capital funds and grants have been devoted to projects but less consideration has been devoted to the sustainability of the project. There is evidence that this is slowly beginning to change – many funding bodies now require evidence of sustainability and business planning before they grant capital funds to projects. In the UK funders such as the Heritage Lottery Fund and English Heritage now require sustainability plans for the projects they fund. There are numerous considerations for financial and business models, such as charging for specific exhibitions, developing exhibitions with the potential to tour and so gain extra revenue, or more imaginative models such as sharing development costs in return for a percentage of the revenue.

Marketing strategy and target audiences

- *Marketing strategy:* ICT deployments do not exist outside of a business system. If visitors are not motivated to go to the physical or virtual heritage site in the first place then the impact of the ICT deployments can be reduced. A significant investment in ICT might form the basis of a marketing campaign. At the British Museum the special exhibition the ‘Mummy: the inside story’ was accompanied by a strategic marketing campaign. This certainly increased the awareness and therefore had a considerable influence on the scale of the impacts and outcomes.
- *User evaluation and research:* heritage sites have a long tradition of conducting research on their visitors to determine user satisfaction. Visitor surveys or interviews are well understood by heritage sites. There is also considerable external consultancy available to sites¹¹. There is therefore a well-established mechanism that heritage sites can use to determine the socio-economic impact of technology at heritage sites. Furthermore, user evaluation can be used to support marketing research.

¹¹ Although, to date very few sites have targeted the incremental contribution to the user/visitor experience caused by the use of ICT.

3.1.4 Specific objectives and appraisal of the technology investment

Purpose of technology investment: This is often key for understanding the impact of ICT. ICT investment reflects cultural product innovation and can provide a basis for a ‘new offer’. There can be a wide range of reasons for the deployment of visitor-facing ICT at heritage sites. These can include:

- Enhancing the user’s experience
- Increase visitor numbers
- Increasing accessibility
- Enhancing educational impact, or
- Some combination of the above.

A key question that sites often want answered is ‘has the investment achieved this aim?’ The objectives of a project are key to determining what impacts should be assessed.

Type/use of technology: the purpose for a technology investment is a key determinant for why a specific technology is chosen? This of course is tempered by the anticipated costs and benefits of such a deployment.

The type of technology chosen is key for impact assessment. Different technologies have different potentials for impacts and outcomes. Technology that is connected to the internet may have a greater impact because of the potential for access to a larger number of people. Visualisations at heritage sites may have a considerable impact to the visitors, but this may not be translated to a broader impact because of the localised nature of the impact.

Anticipated costs and benefits: this is the essence of appraisal. The initial capital cost outlay can be estimated as can the potential social returns and benefits. The anticipated costs may be assessed through the use of Return on investment (ROI), and Net Present Value (NPV) calculations. It is essential to consider both the capital and operating costs for a deployment. These assessments can then be compared to the potential anticipated benefits that the use of ICT may entail. Once a project is running the impact measures can be used to provide data on the actual return.

3.1.5 Socio-economic impact of technology investment

In this model the measurement of socio-economic impacts is not just something that is necessary to fulfil funding obligations, but is an essential part of the management decision-making process of a heritage site. The measurement of impacts is key to validating the heritage site strategy (see Appendix 5, see also McLoughlin, Sodagar, and Kaminski 2006). and is summarised in Figure 11 below.

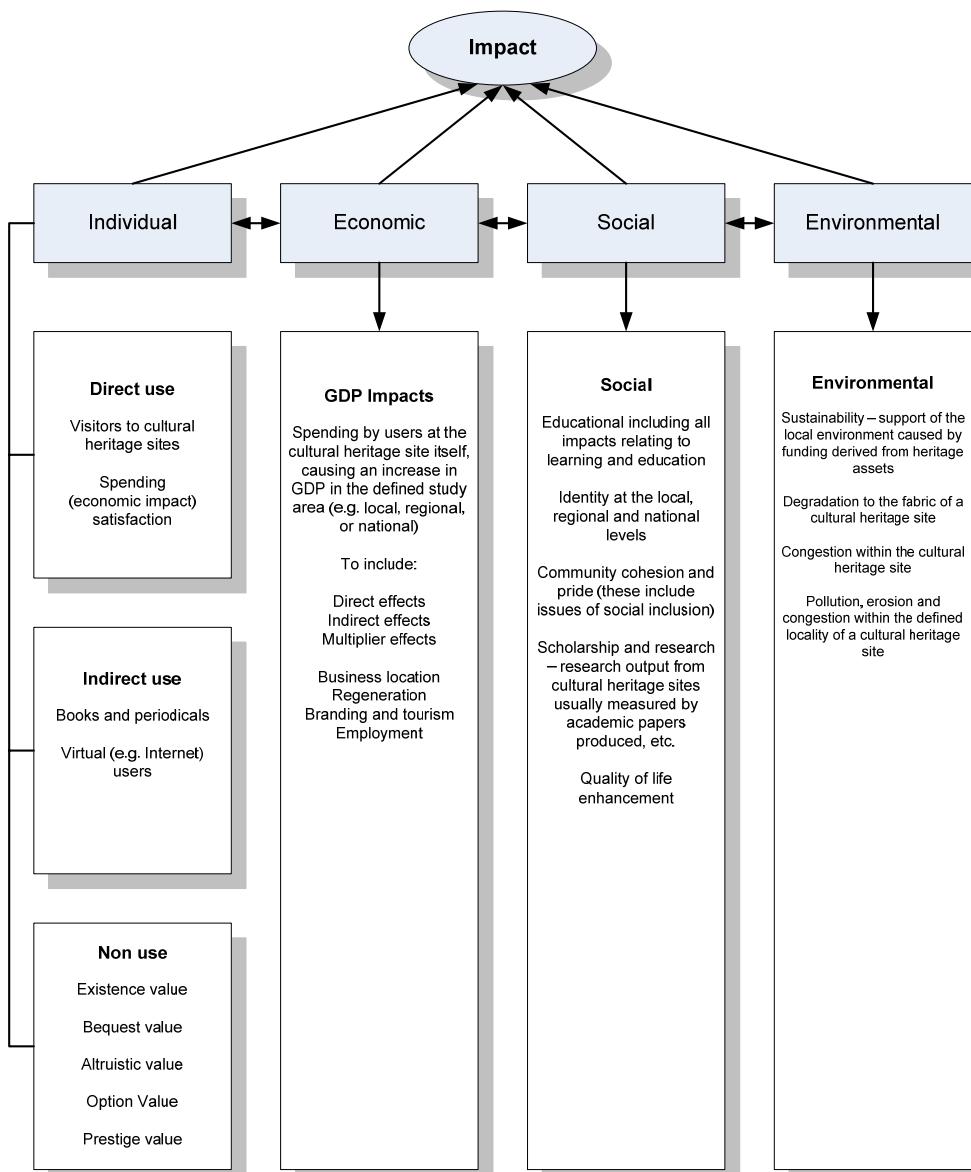


Figure 11: A socio-economic benefit and impact model (modified from The Outspan Group 1999: 7)

3.2 The strategic context for effective deployment of technology

Strategic decision making and effective implementation drives a heritage organisation to achieve its mission, objectives and its desired impacts. The following conceptualisation of the model shows how the three elements of heritage site strategy are encapsulated within the model – leading to the creation of a heritage strategy triangle (see Figure 12).

- The ‘site impact context’ provides information on where the site is currently positioned.
- The ‘strategic rationale for the investment’ in technology is the key indicator of what the site wants to achieve.
- The objectives and the management decision-making are the areas where sites can work on achieving their goals.

In this strategic context the socio-economic impacts and outcomes validate the strategic decision-making framework for the heritage site. These impacts can be used to verify if the objectives of a strategic change have been met. They are integral part of a holistic management information system which can be used to determine which strategies work and which do not in the heritage site context.

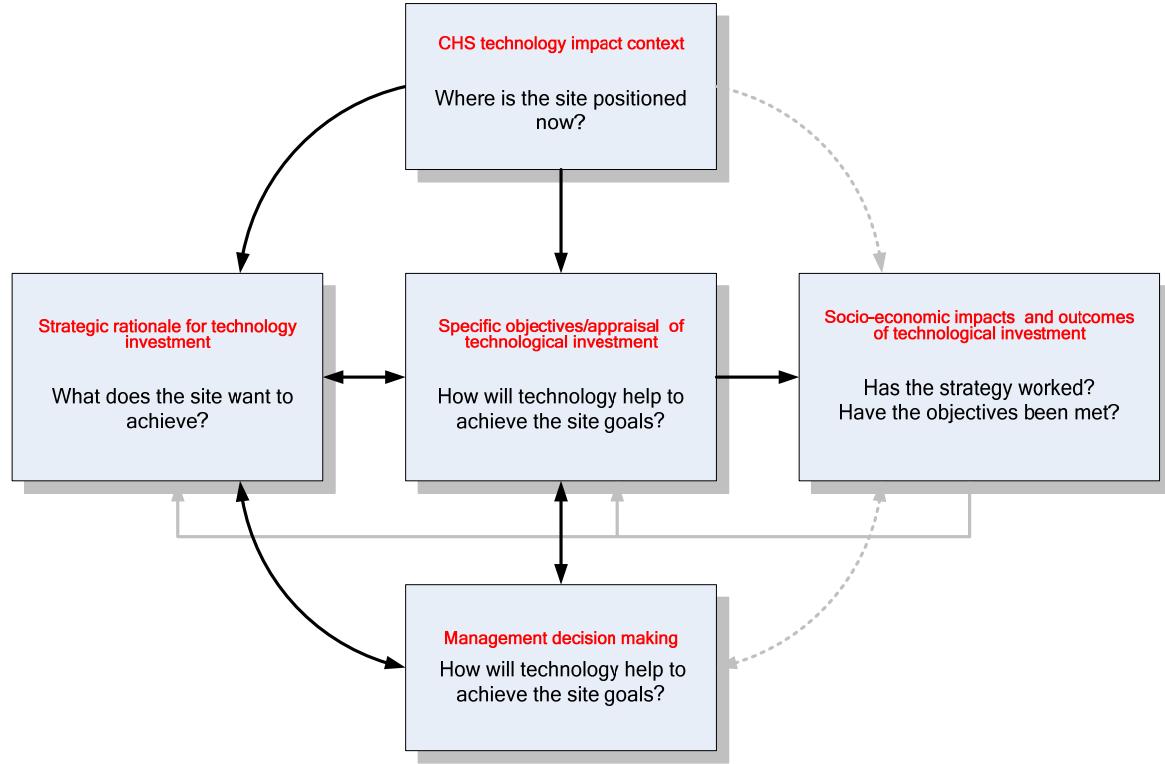


Figure 12: The ‘strategy triangle’ in the holistic ICT decision-making model

3.2.1 Heritage systems analysis

This new area of study could be called ‘heritage systems analysis’. This is a consistent theoretical model for heritage sites that allows the internal and external factors that influence impact to be conceptualised. If the heritage sector were to understand how various components of the system are interlinked and affect impacts and outcomes then this could become the basis for understanding impact. In this context understanding impact becomes the basis for positively influencing impact.

4 Appendix 3 (Activity 2.6): Using the models as a basis for impact studies at heritage sites

4.1 Introduction

In the first EPOCH 2.6 deliverable (McLoughlin, Sodagar and Kaminski 2005) considerable effort was devoted to the study of methodologies that could be used to assess the impacts and outcomes of cultural heritage sites. The following toolkit places those, and other assessment techniques into the ICT investment model (see Figure 13). This model has a number of purposes:

- It allows heritage site managers to review what potential methodologies could be used to assess the impacts and outcomes of a technology investment
- It provides heritage site managers with a number of methodologies that could be used to help assess if investments in ICT are likely to be successful
- The model is also designed to be used by those providing consultancy and services to the heritage sector. Hence, some of the methodologies will be more relevant to those working outside the organisation rather than those inside it.

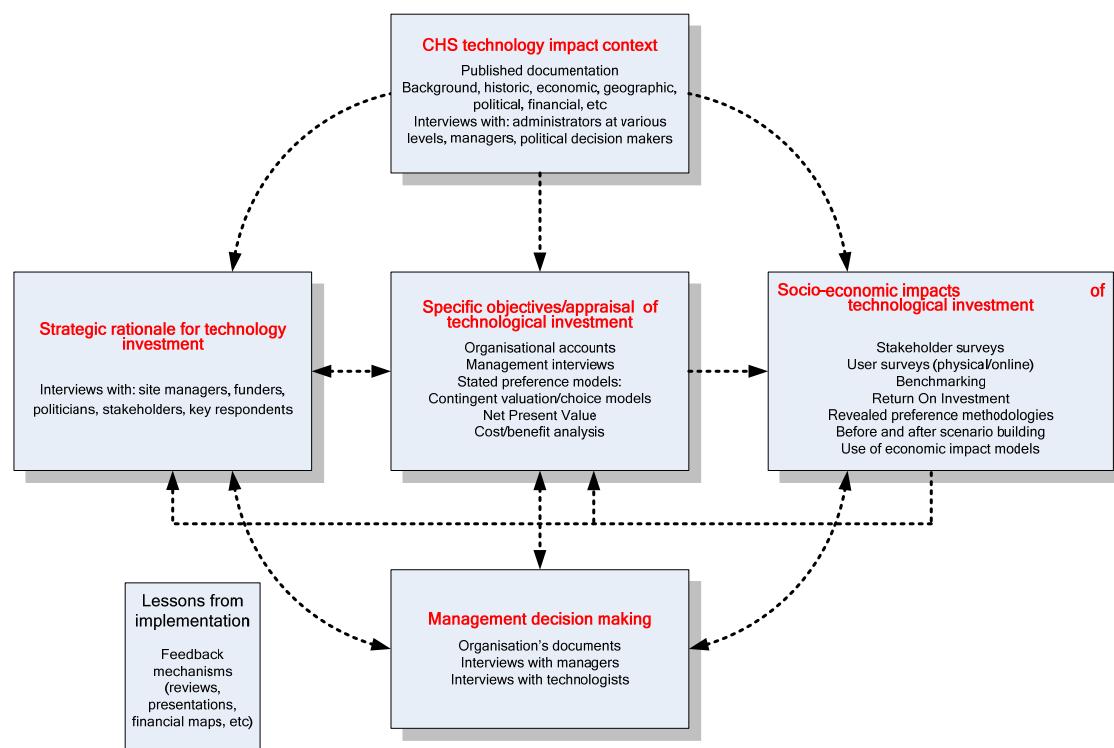


Figure 13: The heritage site impact assessment toolkit

The following methods can be used acquire *data* about ICT impacts and outcomes at heritage sites (see Figure 14).

Information sources	Advantages	Disadvantages
Questionnaires	These are well understood by heritage sites and have been the traditional method of data gathering for visitor analysis. There are also numerous ways of acquiring data such as face-to-face, paper-based or online.	It is not possible to obtain more detail than that asked for in the questionnaire.
Interviews	Interviewing key respondents provides a rich source of information from those directly involved in ICT deployments or the end users.	Interviewing can be both time and resource intensive.
Documentation	All organisations generate documentation about their activities. These can range from company accounts, to marketing literature.	There may be considerable amounts of documentation. It may be difficult to locate and/or be poorly indexed.
Participant observation	A technique widely used in fields such as anthropology. Observation of visitor's interactions with ICT can yield high quality data.	Care has to be taken that the observer does not influence the visitors.
Electronic sources	Electronic harvesting of usage and activity logs from ICT deployments can yield important information. As can information from mailing lists, 'blogs', and other online sources.	Considerable quantities of data may be generated which needs to be analysed.

Figure 14: Data acquisition methods

4.1.1 Site technology impact context

Information regarding the technology impact context can be obtained from the following sources:

- Published documentation: which can provide historical, economic, geographic, political, financial, and macro-technological background, etc.
- Interviews with: administrators at various levels, managers, and political decision makers.

4.1.2 Strategic rationale for technology investment

The strategic rationale for a technology investment can be derived from interviews with:

- site managers
- funders
- stakeholders
- politicians
- key respondents.

These methodologies relate to the decision process and are more appropriate for those outside a heritage site rather than the site managers who *should* already know the rationale for investment.

4.1.3 Management decision making

The management decision-making context can be determined using the following methodologies (again these methodologies are more appropriate for those providing services from outside a heritage organisation rather than the site managers):

- Analysis of an organisation's documents

- Interviews with managers
- Interviews with technologists.

4.1.4 Specific objectives/appraisal of technological investment

The specific objectives and appraisal of a technology investment can be derived from the following sources (these methodologies are appropriate for both those working outside a heritage site and the site managers):

- Analysis of organisational accounts
- Management interviews
- Stated preference models: Contingent valuation and choice modeling
- Net Present Value (NPV)
- Cost/benefit analysis.

4.1.5 Socio-economic impacts of technological investment

Assessing socio-economic impacts and outcomes is a complex multi-faceted area of study (see Appendix 5). However, the following techniques and methods can be used by those inside and outside the organisation to begin research.

- Stakeholder surveys and interviews
- User surveys and interviews (physical and online)
- Benchmarking
- Return On Investment (ROI)
- Revealed preference methodologies (travel cost method, hedonic price analysis)
- Before and after scenario building
- Use of economic impact models.

5 Appendix 5 (Activity 2.6): Socio-economic impacts

Having identified from the holistic model several influences on the socio-economic impact of cultural heritage sites, we will turn to the various possible impacts themselves and the process of undertaking and framing an impact evaluation. The impact component of the holistic model is further developed in Figure 6 below.

Although it is beyond the scope of this paper to evaluate different impact methodologies each impact category (e.g. economic, social, environmental, etc) poses complex methodological problems in capturing and measuring impact. For example, with economic impact one can choose from a wide menu of methodologies including conventional visitor expenditure analysis, econometric modelling (to capture indirect and multiplier effects), cost-benefit analysis, contingent valuation techniques (CVM), contingent choice, hedonic pricing, travel cost methods, and benefit transfer. Naturally each methodology has strengths and weaknesses and very different resource implications for heritage sites as well as requiring different levels of expertise to carry out the impact analysis. As this problem applies to all impact dimensions (i.e. social, educational, etc) it is important that a heritage site manager is clear on impact measurement priorities and the purpose of the study. If the primary purpose of a heritage site is to deliver educational benefits and community learning it is unlikely that a full economic impact study would be needed. The mission and objectives of the heritage site and the priorities of relevant stakeholders (e.g. criteria for releasing finance from funding bodies) would be main pointers for the appropriate type of impact evaluation to be undertaken.

Current market conditions now dictate that few decisions are taken in the field of cultural heritage without considering economic questions. This has caused unease with many in the cultural heritage field. Many commentators in the cultural heritage field have expressed concern that the increasing use of economics as the *lingua franca* of heritage conservation could undermine the ‘cultural’ rationales for conservation in favour of purely economic arguments. There has been a call from many in the cultural heritage field for a better balance between “economic, cultural and other values” (de la Torre and Mason 1999: 3). A model such as the one shown below has the advantage of allowing all potential impacts of a cultural heritage site to be expressed.

The study of economics revolves around the concept of value. According to socio-economic theory, cultural heritage is a consumable good. It is also a public good or quasi-public good. Public goods are defined using the following two characteristics:

- *Non-exclusive*: These are goods where a user cannot be stopped from ‘consuming’ that good.
- *Non-rival*: Goods where the quality of consumption by one user is not reduced by other users enjoying it simultaneously.

There is a traditional tendency to undersupply this type of good, because the benefits are not captured through conventional market mechanisms.

In reality, many cultural heritage sites are *quasi-public* goods, because access to some heritage buildings and museums is restricted. Furthermore, cultural heritage sites are non-rival to varying degrees. For example, some cultural heritage buildings and sites can become overcrowded and congested, thereby reducing the user satisfaction of visitors (i.e. Maddison and Foster 2001).

It is immediately clear, when assessing the sector that a wide range of values can be attributed to cultural heritage sites. These can be precise values, such as the cost of admission to a site, or the cost of a book in the gift shop. These sorts of values are easily accessible to traditional economic modelling techniques. There is also a class of more amorphous values (non-market or non-monetary values), such as the ‘satisfaction’ derived from visiting a cultural heritage site, or the aesthetic value of a cultural heritage site to a local community.

Because cultural heritage goods and services are not usually traded in conventional markets, the benefits derived from these goods and services are ‘external’ to the market. The economic valuation of non-market cultural heritage goods and services attempts to ‘measure’ individual’s preferences for non-market goods and services. If monetary estimates are made of an individual’s preferences for such goods and services, these can be integrated into an economic format comparable to conventional economic costs and benefits. This will enable impacts generated in the sector to be accounted for in policy and decision making processes.

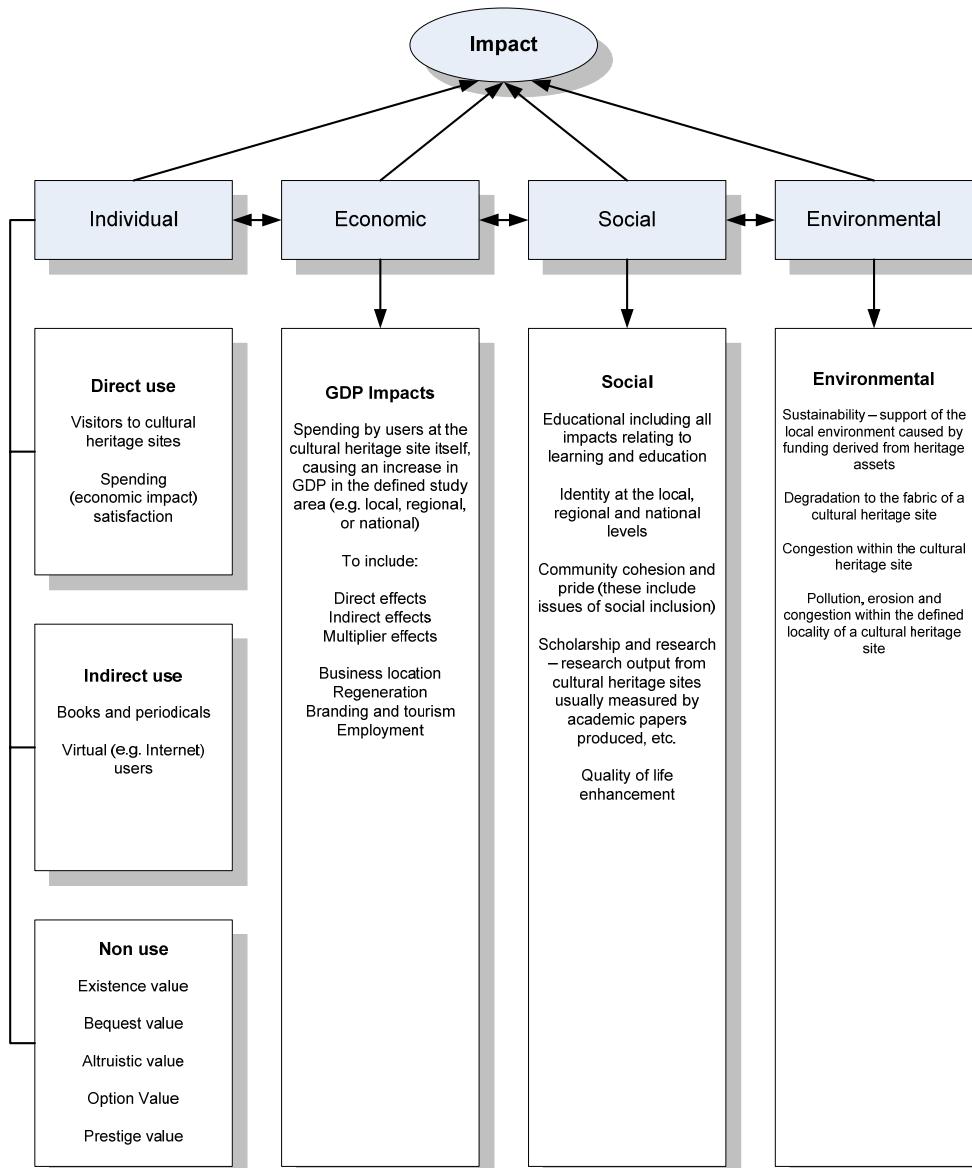


Figure 15: A socio-economic benefit and impact model (modified from The Outspan Group 1999: 7)

Because these values are not captured in traditional economic markets, and individuals do not pay money to acquire them, they are considerably more difficult to define and quantify, but they are part of the overall value of a cultural heritage site. The challenge of quantifying the socio-economic impact of cultural heritage sites emanates from the need to incorporate all these quantitative and qualitative values in its results.

5.1 A socio-economic impact framework

It is clear that, despite advances in the use of non-market valuation techniques in the last two decades, there is still a lack of coordination regarding how to classify the benefits of cultural heritage sites. There is increasing agreement on the types of values associated with cultural heritage sites, but there is no widely-used typology or classification system that can be applied to these impacts.

In Canada, considerable work has been devoted to developing just such a framework – one that can integrate the various forms of economic and social values derived from cultural heritage sites (The Outspan Group 1999). Using this work as a basis, the socio-economic framework seen in Figure 15 can be applied to the cultural heritage sector. The framework allocates the impacts of cultural heritage sites to four different groups. These groups are the individual stakeholders, businesses, society in general, and the environment. The framework includes traditional economic impact analyses which cover consumption and investment expenditure and the multiplier effects, and direct user benefits (e.g. existence benefits), and societal benefits (e.g. cultural identity and educational benefits). Because of this, almost all of the impacts associated with cultural heritage sites can be inserted within one of the categories. This type of framework has been widely applied to various cultural goods in North America (The Outspan Group 1996, 1998a, and 1998b).

However, the framework was developed to be applied broadly to the arts and culture sector. The authors note that “while the concepts presented in the benefits framework can apply to the entire sector, there is also a recognition that individual sub-sectors will require more detailed specification of the framework or its adaptation in order for it to function effectively” (The Outspan Group 1999: 11). The following application of the framework has been modified specifically for the cultural heritage sector.

5.1.1 Individual impacts and benefits

The individual stakeholders have an impact on the cultural heritage sites through their use of the site.

Use value

These use benefits and impacts can be direct, indirect, and future use.

- *Direct use impacts:* Are those created by individuals using cultural heritage sites (these would be called ‘consumers’ in traditional economic theory). A visit to the Parthenon, in Athens, would be an example of a direct use of a cultural heritage site. Such direct use values may be accessible to market analyses such as visitor numbers or ticket sales. Direct impacts in the technological field could include interaction with technology at a site such, as touch-screen displays and other audio-visual technology.
- *Indirect use impacts:* Are those derived from individuals making an indirect use of a cultural heritage site. As such these impacts do not require an individual to physically visit a site. Reading a book about the Parthenon would be an example of indirect use. Indirect impacts in the technological field could include viewing Web sites for cultural heritage sites.
- *Future use impacts:* Are derived from individuals who know that they will be visiting cultural heritage sites in the future. These values have different implications depending on the perspective. An individual may gain a degree of satisfaction from the knowledge that they will visit a site, but the sites themselves will also gain future visitors, or future use. These sorts of values can only be determined through surveying a population.

The differences between direct and indirect impacts are not always clear-cut, and are often dependent on the perspective taken. For example, reading a book about the Parthenon could be an indirect use of the cultural heritage site, but could be a direct use of a heritage publishing house, or a cultural heritage

industry. This could lead to double counting of duplicated direct and indirect benefits. This has led many to ignore these indirect values in summary frameworks (The Outspan Group 1999).

Non-use value

Non-use values refer to benefits to a person who has not visited a site but still values its preservation. Frey and Pommerehne (1989) identified a number of non-use values that individuals may attach to cultural heritage. These include option, existence, bequest, prestige, education, and altruistic benefits.

- *Existence value*: is valuing the site for preservation even if no one visits it. Existence benefits are derived from individuals who are content that cultural heritage sites are available for others to enjoy.
- *Bequest value*: benefits are derived from individuals who gain value from the fact that cultural heritage sites will continue to exist for future generations to appreciate.
- *Altruistic value*: closely related to existence and bequest values, Ready and Navrud (2002a: 7) add another value called altruistic value, where an individual or group gains value from a site in knowing others can enjoy it.
- *Option value*: option benefits are derived by individuals who gain value from the fact that cultural heritage sites are available for potential future use.
- *Prestige value*: refers to the prestige a community derives from the site.

5.1.2 Economic impacts and benefits

Economic assessment of business benefits has been the traditional method used to support the need for funding cultural heritage institutions. These benefits are the result of spending within the cultural heritage environment which would not have occurred had the site not been there.

These are the changes in a defined community that are caused by spending attributed to a cultural heritage site or event. In the defined study economy the value of imported goods and services, and payments which do not remain within the defined economy are removed. Net economic impacts tend to result in smaller ‘multiplier’ values. This value is the actual value added that is kept by the defined economy. The net economic impacts derived from expenditure impacts:

- Spending by visitors or users, who are not from the study area, in the cultural heritage site.
- Spending by the cultural heritage site that uses funds which originated outside the study area.

The increased business benefits can include:

- Numbers of visitors and tourists
- More guest house and hotel rooms occupied
- Retail sales
- Restaurant use
- Use of public transport
- Employment.

These business benefits can be captured using surveys of users, visitors, etc, in conjunction with financial data about funding and expenditure at the site. The type of economic impact model deployed will be crucial for the determination of net impacts. Various economic impact models calculate different impacts – it is important to consider the methodology used and its comparability

with other economic models. For example, while most consider direct and indirect impacts, some also consider induced impacts.

5.1.3 Social impacts and benefits

There is considerable debate as to whether the benefits to society can and should be quantified in monetary terms. Commentators such as de la Torre and Mason (1999: 2) have expressed concern that “by focusing narrowly on money, price and financial returns on investment, we lose sight of a whole universe of values that should be important to us, as members of society and as individuals.” This sense of unease is shared by Smith (2002: 16) who wonders “Can we put a price or assign a number to memory, identity, a sense of place, or cohesive communities?”

Impacts	Advantages	Limitations
Educational	Users can learn about their own past and the heritage of other communities.	Some users feel excluded by perceptions of elitism. Museums have traditionally fallen into this category, although much has changed in this sector in the last decade (Stott 1998).
Identity	Cultural heritage sites are frequently viewed as a source of identity, at an individual, local regional and national level.	However, most European countries have cultural heritage sites that do not unify but repel elements of the community. The site of the battle of Culloden, in Scotland or the Auschwitz-Berkenau concentration camps fall into the category of 'dissonant heritage' (Tunbridge and Ashworth 1996).
Heritage revitalisation	The location of many cultural heritage sites in the downtown core has in many cases led to heritage revitalisation.	The gentrification of some regions has increased property prices, forcing out poorer members of the community and preventing all but the wealthy from moving in.
Quality of life	Cultural heritage sites can increase the quality of life by providing cultural venues for the population.	Increased quality of life could indirectly lead to the gentrification issues seen above.
Employment	The cultural heritage sector is highly labour-intensive. This is because it is both a service sector, and contains infrastructure that often requires regular maintenance, unlike many industrial sectors which can increase output with reduced workforce.	
Skill retention	Cultural heritage sites help preserve specialist skill sets. The need for specialist stone masons to repair and maintain cathedrals and other heritage sites across Europe that have been damaged by air pollution is helping maintain a skill that is rapidly declining.	
Business location decisions	Businesses have been known to locate premises in the vicinity of cultural heritage sites in order to gain advantage from the users of that heritage.	
Industry benefits	Cultural heritage sites are widely used as sets for the film and television industry, as well as for photographic backgrounds for the magazine and media industries. Many companies use cultural heritage sites to organise PR events, receptions, conferences, and weddings. Cultural industries include film, broadcasting, music, written media, and new media.	

Figure 16: Advantages and disadvantages of various impacts

The benefits of cultural heritage sites to society are considerable, but not all of these benefits have associated methodologies for their measurement. Of course, in some cases heritage sites may have a negative impact (see Figure 16).

5.1.4 Environmental impacts and benefits

Few such frameworks have tried to include environmental impacts in the assessment. A point brought home by Klamer and Zuidhof (1999: 33) who note that:

"studies tend to overestimate the economic impact, since they usually leave out the negative effects of cultural projects (traffic congestion, the loss of economic value due to regulation) ..."

Environmental impacts are an important area to study for any impact analysis even though many of these impacts are potentially negative. Environmental impacts can be evident either within a cultural heritage site (intra-site impacts) or in its immediate locality (inter-site impacts). These include:

Personal Values and impacts	Definition	Measurements
Direct use value	Personal visits to the institution for education, leisure, or research.	Visitor numbers. Visitor demographics. Visitor spending. Visitor consumer surplus. Visitor satisfaction.
Indirect use value	Use and enjoyment of the site not achieved through visiting. This includes use of Web sites, reading books, watching television programmes about the site, and 'consuming' site merchandise.	User numbers. User characteristics. User spending. Indirect user consumer surplus.
Existence value	Personal satisfaction in the value of maintaining the existence of a site or institution.	Number of users who derive this value. Estimations of this personal value.
Bequest value	Personal satisfaction in the value of maintaining the existence of a site or institution for future generations.	Number of users who derive this value. Estimations of this personal value.
Option value	Personal satisfaction in the value of maintaining the existence of a site or institution for potential future use.	Number of users who derive this value. Estimations of this personal value.
Economic Values and impacts	Definition	Measurements
GDP impacts	Spending by users and the site itself causing an increase in GDP within the study area.	User spending (direct spending effects) attributable to the site (e.g. travel costs). Institutional spending: capital expenditures, operations, maintenance and repairs. Indirect spending associated with a visit. Multiplier effects.
Social Values and impacts	Definition	Measurements
Community pride and cohesion	Cultural heritage sites can provide a backdrop to common interests and identities.	Community-based surveys and interviews.
Business location value	Value derived from businesses deciding to locate in an area because of the presence of cultural heritage sites.	Numbers of businesses. Reasons for business location. The importance of cultural heritage sites for location decisions.
Identity	Benefits associated with sites enhancing feelings of identity. These can be locally, regionally, nationally, culturally, ethnically, etc).	Studies on the impact of heritage sites on peoples perceptions of community and society. Studies of how sites can promote individual, local, regional, and national identity.
Social inclusion	Benefits associated with cultural heritage acting as a glue to include disparate groups within society.	Community-based surveys and interviews.
Educational	All the impacts associated with educational impacts (school curricula related impacts).	Increased attainment in related school activities.
Scholarship and research	Scholastic and research outputs including academic papers, new technologies and methodologies.	Output of academic papers. Output of new technologies and methodologies.
Environmental Values and impacts	Definition	Measurements

Pollution	Increases in visitors to a site can cause increased pollution because of the greater volume of traffic needed to bring the visitors to the site.	Studies of air quality. Studies of building soiling.
Site degradation	Increased visitor numbers can cause stress on the very fabric of the cultural heritage site itself.	Site monitoring and assessment.
Congestion	Increased visitor numbers can cause congestion within a cultural heritage site.	Site monitoring and assessment

Figure 17: A socio-economic benefit/impact framework (adapted from the Outspan Group 1999)

Intra-site impacts

- *Site degradation:* Too many visitors can cause physical damage to the fabric of a site because of erosion through excessive foot traffic or changes to humidity caused by visitor's breath (e.g. the prehistoric caves at Lascaux, France and Altamira, Spain).
- *Site congestion:* Too many visitors can cause congestion within a cultural heritage site, reducing the quality of the experience that is provided because of queuing, noise, and inability to view the exhibits, etc (Maddison and Foster 2001).

Inter-site impacts

- *Pollution:* Increased visitor numbers can cause wider pollution through increased transport use to gain access the site.
- *Congestion:* Increased visitor numbers can also lead to congestion in the locality of cultural heritage sites which can affect the quality of life of local residents.
- *Sustainability:* In some cases heritage sites can have a beneficial impact on the environment, where induced economic impacts cause an improvement in the environment and facilities in the locality of the cultural heritage site.

Environmental impacts can be measured and costed. These costs can then be integrated with the other impacts from the individual, economic, and social domains.

6 Appendix 6 (Activity 2.6): Cultural Heritage Of St Albans (CHOSA)

CHOSA (Cultural Heritage Of St Albans) was developed as part of an EC-funded IST project which aimed to improve access to the archaeological resources in St. Albans. The modern town of St Albans has grown up on the site of the Roman city of Verulamium. The town started life in the later Iron Age as a major trading and social centre for the Catuvellauni, after the Roman conquest it became one of the principal towns in Roman Britain. Visitor surveys conducted at the Verulamium and St Albans' museums indicated that many visitors were interested in understanding the remains of the Roman city. However, as an archaeological site the Roman city of Verulamium has a number of drawbacks:

- Most of it is buried under the modern town of St Albans
- It is located outside the confines of the museum, and
- Visitors need help in interpreting the site.

In St. Albans ICT was used as the means to increase access and interpretation of the archaeological site by providing a wireless tour of the Roman city of Verulamium (there is also a children's game on-line.) The CHOSA application uses Bluetooth-enabled wireless technology, to allow visitors to walk around the city and acquire and interact with information using their mobile phone or PDA. Bluetooth wireless technology and GIS links were the basis for supporting the text and/or audio tour (with graphics and video clips). The advantage of such a portable format is that allows visitors to use their own phones/PDAs to take information with them upon leaving the museum, and so extend the learning experience beyond the duration of the physical visit (Tariffi *et al.* 2004: 21-24).

The benefits of the system ranged from:

- improved learning and enjoyment of the resources
- a reduced need printed material
- potential 24 hour access to the archaeological site
- delivery of up-to-date, targeted, interactive information
- Increased access to new audiences especially in the younger age group

CHOSA provided much information that could be applied to future applications at other heritage sites.

However, the external technology context played a major role in the poor take-up and therefore, the impact of the project. The problem is that take-up has been limited because comparatively few visitors currently have PDAs, and the then entry-level mobile phone handsets made “interfacing with information more problematic than useful.” (Pers comm. Alison Coles: CHOSA Project coordinator). In consequence, the guided tour has not become a permanent part of the Museum¹². This is a key example of contextual technology factors affecting impacts and outcomes.

¹² Because PDAs are not currently a widely-used technology in the UK the project was not an immediate success. This is a situation that is predicted to change in the future but there is still going to be a period when the system is underutilised because it is cutting edge.

7 Appendix 7 (Activity 2.6): Research Processes and Activity Report for Activity 2.6

7.1 April to March 2006

Key milestones:

- Report to EC reviewers on Outputs completed in April 2005
- Emerging new holistic impact methodology that captures the technology impact on cultural heritage
- Case research – testing methodologies
- Cultural Heritage Impact Conference
- Edited book produced from last year's conference: Heritage Impact 2005

Summary points on progress:

Deliverables

- Developing analytical frameworks that will aid heritage managers evaluate the impact of technology on heritage.
- Progression of tools for analysis from Year 1, which developed and tested a new generic holistic socio-economic impact model, to Year 2 (to Dec 2005) which has focused on developing a specific technology impact model which is logically derived from the generic holistic model.
- The partners in Activity 2.6 are all engaged in testing out methodologies with different heritage sites in different contexts. The Activity 2.6 team have all agreed targets and research outputs designed to meet the contracted deliverables.
- Special effort has been made to develop cases in different country contexts (hence the new cases in Turin, Italy and Dieppe France) to add to the Belgium Ename case study and the British test cases.
- Efforts are being made to integrate across Workpackage 2 to build synergies.

Dissemination:

- The Heritage Impact conference will be repeated in 2006 as it provides an excellent basis for dissemination of information and raising the profile of EPOCH plus delivers published results.
- Several publications are planned over the next two years.

Sustainability/future plans

- The decision to explore a new Masters course in Cultural Heritage Management will help to create a sustainable model resulting from the EPOCH support. The degree will have strong socio-economic impact and technology dimensions and will help to create a close link between learning and heritage practitioners, and will foster mutually beneficial ties between research and teaching.
- To organise an annual heritage impact conference
- To offer consultancy and training to the Cultural heritage sector. For example through the Activity 2.8 Network of Expertise Centres (NoECs).
- Future book and journal articles planned.

Below is a more detailed breakdown of activities

Detailed two monthly research process/activity reports

7.2 Summary Progress report: April to May 2005

Progress on Work Package 2.6. includes:

- Research meetings are held every week with EPOCH Impact team.
- Ongoing critical review of impact methodologies.
- Continuing development of analytical impact frameworks.
- Test site: Brighton Pavilion cultural heritage site case study (a pre-use of technology test site) – ongoing research and data collection.
- 28 April Meeting with Pauline Scott Garrett, Director of the Pavilion
- Test site: Ename Cultural heritage site (a technology-focused test site) – ongoing research and data collection.
- 6 May – Stakeholder meeting with Roger French Director of Brighton and Hove Bus Company
- 19 April Potential test site: Meeting at the British Museum. Potentially excellent test site of use of technology for an exhibition – awaiting approval.
- Planning Heritage Impact 2005 Symposium – a focused conference on socio-economic impact, with a technology impact dimension.
- Writing papers for the symposium
- Helped at a stand at the ‘Museums and Heritage Show’ in Earl’s Court, London. The opportunity was used to disseminate information about the activities of Activity 2.6.
- A study visit was conducted at Ename, Belgium in order to undertake field research for the case studies for the next deliverable.
- 26-28 May – Attended the ‘New Policies for Cultural Tourism’ conference and professional meeting in Barcelona. This has helped to disseminate awareness about EPOCH to a wider audience, as well as providing material for inclusion in the future reports.
- University of Brighton Service Sector Management. Review of European literature from Directorate-General for Enterprise (Tourism Unit) to contextualise EPOCH within the enterprise and SME field by SSM University of Brighton
- 19-20 May - UOB SSM Field visit to Ename. Based on this field visit a tentative, hybrid methodology was developed ready for testing to research social impacts of cultural heritage sites in a given locale,

7.3 Summary Progress report: June to July 2005

Progress on Work Package 2.6. includes:

- Research meetings are held every week with EPOCH impact research group.
- Ongoing critical review of impact methodologies.
- Continuing development of analytical impact frameworks.
- Report supplied to EC – Comprehensive review of socio-economic impact and the use of technology.

- Planning and preparation for the Epoch annual review
- June 1-3, Annual review, Prato – presented progress on Activity 2.6
- Test site: Brighton Pavilion cultural heritage site case study (a pre-use of technology test site) – Ongoing research and data collection.
- 17 June – Stake holder Meeting Clifford Conway President of Brighton and Hove Chamber of Commerce.
- Test site: Ename Cultural heritage site (a technology-focused test site) – ongoing research and data collection.
- The ‘Heritage Impact 2005’ Symposium was delivered 7-8 July – considerable resources of the Impact research group were devoted to: Planning, Writing/editing papers for the symposium, Hosting the conference.
- 7/8 July ‘Heritage Impact 2005’ Symposium: Some key Outcomes include:
- Attracted numerous heritage experts and technology experts from all over Europe to focus on impact.
- Forum to test EPOCH impact research to-date.
- Produced publication of Symposium proceedings, covering technology impact dimensions and how it links to the wider context.
- Effective forum for dissemination of impact knowledge.
- Widened the network of experts.
- Effectively promoted the name EPOCH and its mission to a wider European audience.
- Advances the research agenda on technology impact research in Europe.
- Excellent feedback received.
- Plans to produce a book for dissemination of information.
- UOB SSM Based around trends in European heritage tourism, preparation of single-authored paper (Cultural heritage and the emerging experience economy) for EPOCH Heritage Impact Conference 7-8 July
- University of Surrey (UniS) – Preparation for socio-economic impact project
- UniS - Review of work completed for Activity 2.1 to be used for Activity 2.6

7.4 Summary Progress report: August to September 2005

Progress on Work Package 2.6. includes:

- Research meetings are held every week with EPOCH Impact research group.
- Ongoing critical review of impact methodologies.
- Continuing development of analytical impact frameworks.
- Activity 2.6 research review and planning meeting – agreed priorities/timetable and outcomes for the March 2006 deadline, 15th September 2005 Present Peter Burns, Ruth Owen, Dimitrious Buhalis, Jim McLoughlin, Babak Sodagar, Jaime Kaminski.
- Pavilion case study, meeting with Head of the Pavilion

- UniS – Revised data request sheet designed by University of Brighton
- 7 September – Meeting with the head of Brighton Museums
- 14 September – Attended the ‘Pleasures and pressures of income generation’ in London– organised by the campaign for museums. – insights into dynamic impact and role of technology.

7.5 Summary Progress report: October to November 2005

Progress on Work Package 2.6. includes:

- Research meetings are held every week with EPOCH Impact research group.
- Ongoing critical review of impact methodologies.
- Continuing development of analytical impact frameworks.
- 3-4 November – Preliminary meeting with the head of the museum and castle site in Dieppe (Mr Ickowicz) France – to explore and develop the French context for Impact evaluation.
- 2 October – Ran a socio-economic impact workshop at the VSMM 2005 conference in Ghent (JK).
- 10 October – Meeting with the head of Brighton museums
- 8-11 November – Attended VAST 2005 in Pisa, Italy (JK)
- 8 November – UniS: Presented data request sheet to EPOCH workshop attendees at VAST 2005, Pisa.
- UniS – Revised data request sheet designed by University of Brighton
- 11 November UniS – Meeting took place between Dimitrios Buhalis, Ruth Owen and Jaime Kaminski, at VAST at Pisa to discuss structure of project
- UOB SSM: Conducting literature-research into the links between cultural heritage, sustainable tourism, and social identity in specific communities. Initial finding indicating the definitional paradoxes associated with the triadic relationship between culture-heritage-tourism.

7.6 Summary Progress report: December to January 2005

In the last three months the activity in Workpackage 2.6 has been oriented towards:

- Further developing the theoretical foundations of the holistic business models
- Developing long-term case studies outside of the UK
- Generating awareness of the EPOCH project to a wider audience
- Long-term sustainability of the project

Progress on Work Package 2.6. includes:

- Research meetings are held every week with EPOCH Impact research group.
- Ongoing critical review of impact methodologies.
- Continuing development of analytical impact frameworks.

- 29-30 November – Turin, Italy, a new case study for researching impact was agreed with at the National Museum of cinema in Turin by JM – (a presentation from the museum is intended for Heritage Impact 2006). This focuses on technology and educational impact.
- Ongoing communication and research with Turin museum this offers the Italian context for socio-economic impact.
- 14-15 December – Dieppe: A case study has been agreed for development in Dieppe visited by JM/JK (a presentation from the curator of the museum is intended for Heritage Impact 2006).
- 9 December – British Museum, further work has been undertaken on the British Museum looking at the Mummy: the inside story exhibition (visited by JM/JK).
- 9 December – Links have been made with a young researcher from Spain (Begoña Sanchez Royo) this meeting looked at the potential of developing Spanish case studies. Future research collaboration is anticipated here.
- December – UOB SSM + UOB BBS - meetings to discuss possibility of integrating EPOCH's objectives/deliverables with a PhD researcher.
- Agreement made that synergies lie between the two, and mutually beneficial to EPOCH requirements and the objectives of PhD student's thesis 'The consumption of heritage tourism and its material culture'.
- UOB BBS + SSM Meeting Jan. 19/06 - Meeting to discuss next steps in deliverables for EC report. Mary Beth agrees to research the social impacts of cultural heritage (specific to consuming industrial heritage) as to meet requirements of the EPOCH objectives in the holistic framework.
- 23-24 January - Site visit to Big Pit Coal Mining Museum in Blaenavon,
- South Wales (designated World Heritage site in 2001 due to role in Industrial Revolution). Scope out site for collection of data, as to research social impacts of significant sites such as this.
- 11 January – Meeting with Daniel Pletinckx re progress and planning for Activity 2.6
- UOB BBS exploring the possibility of a new course called MBA (Cultural Heritage Management) to be promoted and supported by EPOCH. The course will have strong technology management and socio-economic impact dimensions drawing on the strengths from the network's research. Plus will help to create sustainability.
- 11 January – Meeting with Daniel Pletinckx re progress and planning for Activity 2.6. Workpackage 2 leader (DP) supports the MBA development.
- 12 January – meeting with Franco Niccolucci. To recommend that the proposed MBA course be supported under Workpackage 4 regarding potential educational and dissemination benefits.
- 12 January – attended meeting to re Activity 2.8 – re horizontal integration objectives on Workpackage 2.
- 31 January – meeting at the Brighton Fishing museum – planning a project to install technology to enhance the visitor experience. UOB BBS to participate in the whole project as further case study research.
- Weekly meetings with the head of the Royal Pavilion and Brighton museums.
- UniS – Obtaining permissions to interview staff at two cultural heritage sites
- UniS – Literature Review for 2.6. Case study methodologies etc.
- UniS – Organisation of primary interviews for case studies

- UniS – Draft report for Activity 2.6
- UOB BBS coordinated interim report on progress 2005/06

7.7 Summary Progress report: February to March 2006

Progress on Work Package 2.6. includes:

- Research meetings are held every week with EPOCH impact research group.
- Testing of technology socio-economic impact model and ongoing refinement of the holistic site impact model (the former derives from the latter).
- Write up of EC Activity 2.6 deliverable report (i.e. outcomes) for end of March 2006.
- UOB BBS coordinates Activity 2.6 partners and write up report of annual input activity progress 2005/06.
- 6 February – Meeting with Daniel Pletinckx, in Brussels, regarding Activity 2.6
- 10 February: Dieppe case study – briefing meeting for the parameters of the research and for initial conference paper – dependant on EPOCH finance for years 3 and 4 - bid to executive committee submitted.
- 13 February – Meeting in Paris with Bernadette Goldstein – Directorate of Museums in France – testing the holistic models, plus agreed for a presentation at the Heritage impact conference and exploring collaboration testing the holistic to a new technology project.
- 21 February Meeting with Daniel Pletinckx, In Brussels, regarding Activity 2.6 progress and planning for year 3 and 4.
- 22 February Workpackage 2 horizontal integration with representatives from all of Workpackage 2 Activities – exploring links with WP 2.8 and WP 2.1.
- 2 March WP 2.6 internal review of progress by the representatives of the EPOCH executive Board
- 3 March – meeting with Prof Waelkins to establish a potential new context for testing the holistic models – Sagalossos in Turkey. Agreement to proceed in principle depending on approval of funds – target research dates June 2006 to April 2008.
- 8-9 March – Follow up meeting with Turin National Museum of Cinema – gathering data and testing the holistic models.
- 8-10 March – conducted a study visit to the Blaenavon World Heritage site in South Wales with Mary Beth Gouthro (Peter Burn's PhD student). Developed very strong links there – they plan to deploy a PDA-based system in a year to help visitors understand the landscape. Also visited the National Waterside Museum in Swansea. This has a vast deployment of ICT.
- 10-14 March – Cultural Identity Impact research: Onsite interviews conducted at Big Pit Museum with visitors. Series of questions are asked regarding social impacts and technological representation of industrial heritage onsite. Findings compiled.
- 14 March – Attended the Third Annual Heritage funding conference at the National Portrait Gallery in London. Used for providing context for the frameworks we are developing.
- 22 March – First draft of Social Impacts literature review compiled; copy shared with JK. for feedback/comments.

- 29 March - Preserving our past workshop – Birmingham – organised by English Heritage and four other research funding bodies in the UK – Access to the workshop was by invitation only.
- UOB BBS testing the market for the potential new MBA (Cultural Heritage Management) to be promoted and supported by EPOCH. The course will have strong technology management and socio-economic impact dimensions drawing on the strengths from the network's research. Plus will help to create sustainability.
- Weekly meetings continue with the head of the Royal Pavilion and Brighton Museums – testing out models and notions of heritage strategy and dynamic.
- Write up and review work on the Bath case study and the use of technology (UniS).

8 Appendix 7 (Activity 2.6): Case studies in progress

CHS	Site cultural offer	Technology used	Research
Ename, Belgium	Archaeological museum and park	Web Touchscreen kiosks Visualisations	Testing the holistic models Educational impact Role of the visitors
British Museum, UK	Focus: 'The Mummy: the inside story exhibition' 2005	3D visualisation	Testing the holistic models Testing the issues of culture change in management and the role this has on ICT deployment The visitor impact and economics
Museum of Cinema, Turino, Italy	A leading museum of cinema and the making of films	Web	Testing the holistic models Marketing and strategy impact Educational impact
Brighton Museum, UK	Museum considering the history of Brighton in the grounds of the Royal Pavilion	Touchscreen kiosk	Testing the holistic models Educational impact Usability
Nymans Gardens, UK	Historic Gardens and stately home in Sussex	Touchscreen kiosk	Testing the holistic models Usability
The Roman Baths at Bath, UK	Well-preserved Roman bath complex	Audio tour	Impact on visitors Usability
The Big Pit, Wales	World Heritage site, looking at industrial heritage	Audio visual display	Testing the holistic models Assessing issues of social identity

Figure 18: Activity 2.6 case studies in progress

References

- Ashworth, G. and Howard, P. (1999) *European heritage planning and management*. Intellect: Exeter.
- de la Torre, M. and Mason, R. (1999) *Economics and heritage conservation: issues and ideas on valuing heritage*. Getty Conservation Institute: Los Angeles.
- Frey, B. S. and Pommerehne, W. W. (1989) *Muses and markets: exploration in the economics of the arts*. Blackwell: Oxford.
- Klamer, A. and Zuidhof, P. (1999) The values of cultural heritage: merging economic and cultural appraisals. In Mason, R. (ed.) *Economics and heritage conservation: concepts, values and agendas for research*. Getty Conservation Institute: Los Angeles, 23-54.
- Maddison, D. and Foster, T. (2001) *Valuing congestion costs in the British Museum*. Seventh draft: www.cserge.ucl.ac.uk/British_Museum.pdf
- McLoughlin, J., Sodagar, B., and Kaminski, J. (2005) *The socio-economic impact of cultural heritage sites*. First interim activity report. EPOCH: Brighton
- McLoughlin, J., Sodagar, B., and Kaminski, J. (2006) Economic valuation methodologies and their application to cultural heritage, in McLoughlin, J., Kaminski, J. and Sodagar, B. (eds.) *Heritage Impact 2005: proceedings of the first international symposium on the socio-economic impact of cultural heritage*, Archaeolingua: Budapest, 8-27.
- Mignosa, A. and Rizzo, R. (2004) Heritage and information, in Cain, K., Chrysanthou, Y., Niccolucci, F., Pletinckx and Silberman, N. (eds.) *Interdisciplinarity or the best of both worlds – the grand challenge for cultural heritage informatics in the 21st century*, Selected papers from VAST 2004, Archaeolingua: Budapest.
- Mignosa, A. and Rizzo, R. (2006) Policy decisions and cultural heritage impact, in McLoughlin, J., Kaminski, J. and Sodagar, B. (eds.) *Heritage Impact 2005: proceedings of the first international symposium on the socio-economic impact of cultural heritage*, Archaeolingua: Budapest, 58-68.
- Ready, R. C. and Navrud, S. (2002a) Why value cultural heritage? in Navrud, S. and Ready, R. C. (eds.) *Valuing cultural heritage: applying environmental valuation techniques to historic building, monuments and artefacts*. Edward Elgar: Cheltenham, 3-9.
- Smith, J. A. (2002) *Myths, philanthropy, and culture: new data and trends*. The Getty Leadership Institute: Los Angeles.
- Soren, B. J. (2005) Best practices in creating quality online experiences for museum users. *Museum management and curatorship* 20, 131–148.
- The Outspan Group (1996) *Benefits and economic impacts associated with the Canadian heritage river system*. The Canadian Heritage Rivers Board: Ottawa.
- The Outspan Group (1998a) *Economic benefits of provincial parks in Ontario: a case study approach, Ontario Parks*. Ontario Ministry of Natural Resources: Toronto.
- The Outspan Group (1998b) *Gatineau Park: economic impacts of visitor spending*. The National Capital Commission: Ottawa.
- The Outspan Group (1999) *Socio-economic benefits model: cultural sector*. Department of Canadian Heritage discussion paper. The Outspan Group: Amherst Island.
- Tunbridge J. E. and Ashworth G. (1996) *Dissonant heritage: the management of the past as a resource in conflict*. Wiley: London.

9 Appendix I (Activity 2.8): Launching Event of the EPOCH Network of Expertise Centres in Culture and Heritage

12-13/01/2006

AGENDA

- 4.00 pm Registration and Coffee
- 4.15pm «GreetingLine» Introduction and aims of the day
- 4.20pm Professor David Arnold introduces the launch event – overview of EPOCH
- 4.30pm Professor Howie Rush – CENTRIM overview
- 4.40pm George Tsekouras –Network of Expertise and SME encouragement in Culture and Heritage



4.50pm Paul Levy -Meeting exercise



5.20pm Daniel Pletinckx presents the EPOCH “pipeline”

5.30pm Paul Levy– critical questions and issues (in 3 groups)

5.55pm Facilitated Fishbowl in groups

7.00pm Dinner and networking

Where are you on the pipeline?

SME	description	classification
Planetek, Italy	GIS, satellite images, mapping, cartography	structuring visualisation
Imagination, Austria	VR services in research, design, engineering, production, training, marketing spin-off of Technical University Vienna motion capture, 3D scanning, optical tracking, consulting, 3D graphics, interactive applications/installations	recording visualisation
Vartec, Belgium	document & content management, visualisation, 3D	structuring visualisation
Visual Acuity, UK	consulting for creation of high end visualisation spaces & systems (expert advice, services and software to the fast growing number of applications and users of large scale visualization devices)	visualisation
Muuritutkimus ky, Finland	archaeological company - excavations, 3D/4D modeling & visualisation	recording visualisation
Ducati Sistemi, Italy	Location-based systems for museums and sites (also toll systems, vehicle access control, ticketing, signalling equipment, emergency call systems, energy equipment, variable message signs, videosurveillance)	communication
Hooox, Belgium	architectural 3D, historical reconstruction, 3D animations, applied interactivity, video & special effects, web & online development	visualisation communication
KF Productions, Netherlands	interactive systems for museums and sites	communication

ACS, Italy	technologies and systems for remote sensing data exploitations.	structuring
Visual Dimension	consulting and systems for museums, monuments and sites	visualisation
pipeline :	recording -> structuring -> visualisation -> communication	communication

Participants from Expertise Centers

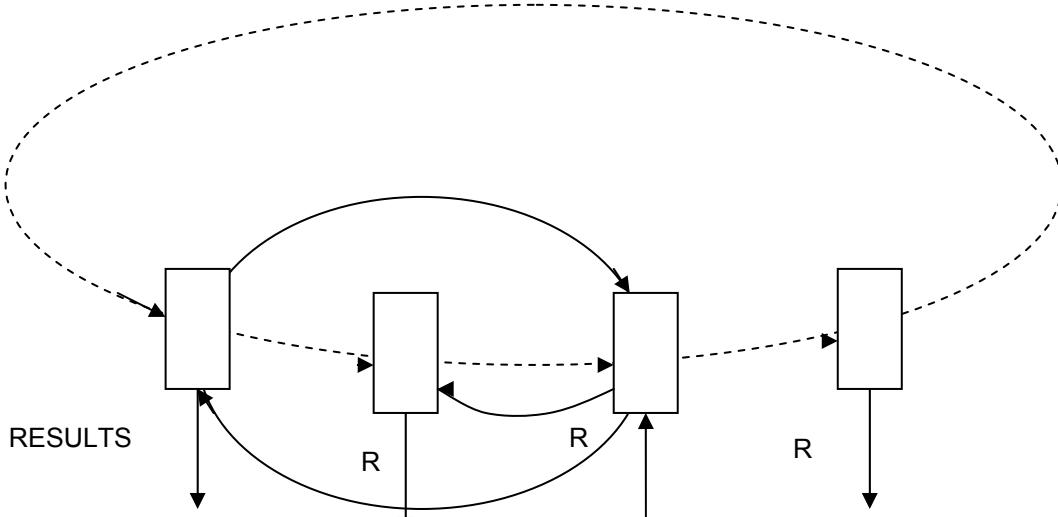
name	organisation
Maurizio Forte	Virtual Heritage Centre, Rome, Italy
John Smith	The Forum, Norwich, UK
Bryn Davies	The Forum, Norwich, UK
Franco Niccolucci	PIN, Prato, Italy
Sandro Saccenti	PIN, Prato, Italy
Parkin Blair	Visual Acuity, Brighton, UK
Jan Stobbe	Kop van Noord-Holland
Alonzo C. Addison	UNESCO
Halina Gottlieb	The Interactive Institute
HyungSeok Kim	Miralab

ELEMENTS OF THE DISCUSSION ON THE PIPELINE

- Level of discomfort with the pipeline model
 - Technology-driven nature of the pipeline
 - Creating common language between different stakeholders
 - Profile in different sectors
-

- Does the pipeline model lack a ‘business process’?
 - Lack of commonality and system connectivity
 - Even within institutions
-

DATA CAPTURE



Production Process

STANDARD

- Data Flow
 - Control Flow
 - Space Knowledge flows incrementally?
-

- VIEWS / many pipelines
 - ICT
 - C + H
 - Media creation
- Lack of common language
(≠ traditional museum design)
- Lack - penetration | of ICT
- education |

Critical Questions

- Economical models for collaboration ICT – CH
 - Company vs Profit
 - Who is setting the Budget
 - Multilinguality
 - Common language
-

What are your critical questions in doing the work you are doing and achieving your objectives?

- Show me the money
 - Funding, where to get money from
 - Getting audiences in
 - Lack of political support
 - Lack of tools tailored to this area
 - Problem of storing research
 - Lack of standards
 - Communication problems
-

10 Appendix II: (Activity 2.8): Profile of EPOCH Expertise Centres

Forum Trust, Norwich, UK

- John Smith (john.smith@theforumnorwich.co.uk)
- Bryn Davies (bryn.davies@theforumnorwich.co.uk)
- website : <http://www.theforumnorwich.co.uk/>
- EPOCH Affiliated Partner

The Forum is a Millennium Commission Lottery Project. It is a unique landmark building situated within the heart of the cosmopolitan city of Norwich. It was built to house a new state-of-the-art library replacing Norwich's central library that tragically burnt down in 1994. It is now a dynamic and exciting centre for information, learning and entertainment. It is the 'hub' of lifelong learning in Norfolk, a 'gateway' to Norfolk and Norwich and much, much more...

The Forum is a £63 million project and was funded by a £31.5 million grant from the Millennium Commission with matching support from Norfolk County Council, Norwich City Council and the business community.

The Forum Trust is a charitable organisation established to manage both the building of The Forum (the capital project) and to manage, develop and co-ordinate the building and its services for 125 years from the date of completion of the capital project.

In addition, the Trust will seek to encourage opportunities for personal development and life long learning through the provision of facilities for study, learning and training including the establishment of the hub of a developing network in Norfolk and beyond for the dissemination of knowledge.

The Trust receives no subsidy of revenue funding. It therefore operates commercially in order to meet its objectives in such areas as building maintenance and refreshment of the visitor attraction, Origins.

The Trust directly manages the Origins attraction, shop and the car park. It is developing a cultural and recreational amenity for the community through an entertainment and activity programme in the atrium and on Millennium Plain, and to the extent that it can add value to customers of The Forum, it will also co-ordinate the activities of its tenants.

CultNat, Giza, Egypt

- Director : Fathi Saleh (fsaleh@mcit.gov.eg)
- Ranya Boraie (rborai@mcit.gov.eg)
- Websites : <http://www.cultnat.org> (see also <http://www.ternalegypt.org>)
- to become EPOCH Partner

The Egyptian Cultural Heritage is of a worldwide interest and importance due to its continuity over a period of more than seven thousand years. It started since prehistoric

times and flourished during the Pharaonic, Greco-roman, Coptic and Islamic periods. That is why it encompasses various aspects of human civilization, monitors the development of human heritage and represents a cultural heritage of national and international value. Moreover, the material culture associated with the archaeological sites in Egypt amounts to a considerable percentage of the world cultural heritage. There is an increasing need to take measures towards the documentation and preservation of this unique cultural heritage.

On the other hand, Egypt possesses a wide variety of natural resources representing various habitats and a wealth of animal, bird and plant species. Some of these sites and organisms are already protected while others suffer from various dangers and threats. They all need to be accurately and purposefully documented.

In addition to the documentation of the tangible and intangible (arts and folklore) cultural and natural heritage of the country, the Center has set for itself the following objectives:

- The implementation of the national plan of action towards the documentation program, making use of the most up-to-date information technology in collaboration with the national and international specialized organizations.
- Increasing public awareness of the cultural and natural heritage using all available media.
- Capacity building of professionals in the fields of conservation and documentation of cultural and natural heritage.

Development as an Expertise Center

CultNat has reached a point whereby it is considered as an "expert" in the field of documenting heritage and the Center participates as consultants in this field in many local and international projects. Additionally, the Center is developing its expertise in the area of offering training modules in specific fields such as Geographical Information Systems (GIS) in Archaeology and Information Technology in Museum Management; other modules planned are short courses in archaeology, Cultural Heritage Management, Documentation of Monuments, Conservation Philosophies and Policies in the Arab States and Under Water Heritage. CultNat aims to broaden its scope to include "research" and thus in the long run be viewed as a "Cultural Academy".

Heritage Lab - PIN, Firenze, Italy

- director : Franco Niccolucci (niccolucci@unifi.it)
- Sandro Saccenti (sandro.sacenti@gmail.com)
- website : <http://www.pin.unifi.it/>
- EPOCH Coordinating Partner

PIN scrl was founded in 1992 as a non-profit organisation owned by the University of Florence (still its major shareholder), the Municipality of Prato, the Province of Prato and other local institutions (as the Chamber of Commerce, etc.) to provide local high education services, promote and organize research.

It started its activities in the present venue of Piazza Ciardi 25 in Prato, recently enlarged and refurbished with the construction of a new wing. Its activities started since the beginning with the management of several de-centralized university courses

in Engineering, scientifically depending from the University of Florence with which PIN maintains tight connections. The course offer has substantially increased since then, reaching now 4 faculties (the fifth is due on next academic year) and 14 graduate and postgraduate courses (Laurea, Laurea Specialistica and Master according to Italian official definitions).

PIN's activity is twofold:

- Management of university courses in collaboration and under the scientific supervision of the University of Florence, which maintains the responsibility for academic staff selection and curricula development. There are several degrees from the Faculties of Engineering, Economy and Commerce, Political Sciences, Letters.
- Management of research, controlled by the internal Scientific Committee (formed by professors, scientist and experts appointed by the Board of Directors) and performed through internal laboratories. These include:
 - several Engineering labs, among others on telecommunications, on the environment, cooperating with the Italian Space Agency, and on civil engineering, with a wind gallery for testing built structures (recently they tested the model of the planned bridge to Sicily, which will be one of the longest in the world);
 - a Political Science lab, working on labour and negotiation;
 - a Social lab, working on social problems as less-favored groups (women, minors, immigrants);
 - a Heritage lab, which will be in charge of the EPOCH project, working on IT applications to Cultural Heritage.

All these labs are supervised by a professor of the University of Florence, develop applied research and work on a self-funded basis, that is public donors and funding agencies, while PIN provides basic infrastructure and administrative services. Researchers are employees of the University of Florence or have temporary contracts with PIN.

Virtual Heritage Centre, Rome, Italy

- Maurizio Forte (Maurizio.forte@itabc.cnr.it)
- director : Lucrezia Ungaro (museofori@libero.it)
- website : <http://www.romabeniculturali.it/mercatitraiane/>
- to become EPOCH partner

The Virtual Heritage Centre will be an organisation with two departments, a museum and a research centre. The museum hopes to open in October 2007 and will be located at the Trajanum Market. The VHC is supported by the City of Rome and CNR.

Centro Andaluz de Arqueología Ibérica, Jaén, Spain

- Alberto Sanchez Vizcaino (vizcaino@ujaen.es)
- director : Arturo Ruiz (arruiz@ujaen.es)
- website : <http://www.ujaen.es/centros/caai/>
- EPOCH Full Partner

The Centro Andaluz de Arqueología Ibérica was founded in 1998 in the framework of the II Research Programme of the Regional Council (II Plan Andaluz de

Investigación), following the agreement between the regional Education and Science Authority (Consejería de Educación y Ciencia de la Junta de Andalucía) and the University of Jaén.

This research centre has as its major aims:

- i) to promote and carry out research in the field of Iberian culture;
- ii) to provide the necessary conditions for appropriate preservation of Iberian heritage, and
- iii) to transfer to society the achievements of the first two aims, research and preservation.

Taking these general objectives as a starting point, the CAAI is currently following several research lines: The dialectic relationships between landscape and territory; between the past and the present; and interdisciplinary research.

Currently, the CAAI is formed by 7 researchers (all lecturers at the University of Jaén), 6 researchers working in specific research projects, 4 researchers outside the University working in Public Administration in projects related to the management and diffusion of historical heritage, and 2 administrative and technical staff. The CAAI has recently taken possession of new premises, greatly facilitating the work of the Centre.

The Interactive Institute - Visions for Museums, Stockholm, Sweden

- Halina Gottlieb (halina.gottlieb@tii.se)
- website : <http://www.tii.se/v4m/>
- EPOCH Full Member

Interactive Institute is an experimental IT-research institute which creates results through combining art, design and technology. The institute consists of different research groups, which is called studios. Each studio has a unique orientation, where the fundamental idea is that a mix of different disciplines will create new results and new ways of working. Examples of orientations are: games, smart products, sound, energy, trends and learning.

Interactive Institute is a research organisation aiming at conducting and publishing research of the very best quality. At the same time the institute is innovation-oriented and focuses on creating concepts for new digital products, services and businesses. The ultimate goal is to develop people, increase their skills and visions of the future and thereby their abilities to build these visions into results of public utility.

Visions for Museums is a II Studio and explores the ways which digital technologies may develop and enhance visitor interaction within museums of art, culture, history and science, as well as at heritage sites and attractions. V4M aims at being a centre of interdisciplinary research and practice regarding visitor-oriented new media in museums.

The Swedish Institute of Computer Science (SICS) owns the Interactive Institute (II). The Foundation for Strategic Research, previous owners of II, is still a funder of the institute. SICS also owns two other IT research institutes: Santa Anna in Linköping and the Victoria Institute in Gothenburg (91%). The ownership of SICS is held by the Swedish ICT Research, an organization owned by the Swedish government and industry.

UNESCO World Heritage Centre, Paris

- Lon Addison (a.addison@unesco.org)
- website : <http://whc.unesco.org/>
- To become EPOCH member

Lon Addison, responsible for technology in the UNESCO World Heritage Centre, is creating a new expertise centre in Los Angeles, California, USA.

Region Kop van Noord-Holland, Schagen, Netherlands

- Jan Stobbe (jstobbe@gewestkvn.n)
- website : <http://www.gewestkvn.n/>
- EPOCH Full Partner

Gewest Kop van Noord-Holland, located about 50 miles North of Amsterdam, is a regional public authority. Its policies originate in and are transferred by the local municipalities in the region, Texel, Den Helder, Wieringen, Wieringermeer, Zijpe, Schagen, Niedorp, Harenkarspel and Anna Paulowna. Main policies within a broad scope of activities within regional development are sustainable tourism and cultural heritage. In the action programme Kop en Munt, run by the RDA, Gewest, municipalities, county council, Department of Defence, the agricultural sector and some companies are defining and supporting feasible projects and opportunities, a lot of these in tourism.

Although quite small, the region is very rich in cultural heritage, with highlights as the largest settlements dating to the Neolithic Single Grave Culture, the oldest and largest enclosure dike in the world, a unique ring of High Medieval defensive structures, tangible and intangible Napoleonic heritage (a unique ring of fortresses and battlefields) and last but not least Viking treasures. The area has two parts that are on the tentative UNESCO World Heritage List (Groetpolder-De Gouw and Western Wadden Sea).

Developing cultural heritage in the North of North Holland initially is a bottom up process. Local initiatives are brought further and supported by the RPA., thus giving way to socio-economic development and impact. The marketing strategy defines four themes of international CH/cultural tourism importance : Neolithic, Normans (as a synonym for Vikings), Nuwendoorn (high MA) and Napoleon. Linking these themes, the monuments and the intangible heritage, all municipalities in the region are likely to profit.

In development, Gewest Kop van Noord-Holland and its subdivisions like the Bedrijfsregio, which manages to be a platform of public and private enterprises and matchings, already worked on stakeholder needs (EPOCH 2.1) and experienced learning with ICT in the 5th Framework CHIMER project. Relative outsiders, working together with and in the region are the Dutch Viking Foundation, part of the international Destination Viking cooperation (about 30 sites and museums from Canada to St. Petersburg and from Iceland to Sicily) and the Association of Museums (20; the collections varying from local to international importance). On an international level, there is an established cooperation between the region and Ename, Norfolk Museums Service in Norwich, and between the region, the county council of North Holland and the county council of Norfolk. There is ample knowledge of tourism and cultural heritage, as well as employment, education, fundraising and European affairs, but in fact hardly any match between the CH / tourism sectors and the SME / ICT companies.

Gewest Kop van Noord-Holland may be developed as a hub, with a lot of satellites around it. Some satellites are enclosed in the nucleus, which is important for political support and funding. County and national organizations are likely to participate,

which expands the limits of the region. The main focus will be on tourism and cultural heritage combining this with special ICT needs.

Limburs Museum, Venlo, Netherlands

- Floris De Jonge (f.dejonge@limburgsmuseum.nl)
- director : Wim Hupperetz (w.hupperetz@limburgsmuseum.nl)
- website : <http://www.limburgsmuseum.nl/>
- To become EPOCH member

The Limburg Museum created a project and support department that creates and supports projects on archaeology, monument care and cultural heritage education, with a staff of 7 people. This functionality has been commisioned by the Provincial Government of Limburg.

MiraLab, Geneva, Switzerland

- Nedjma Cadi (cadi@mralab.unige.ch)
- director : Nadia Magnenat-Thalmann (thalmann@mralab.unige.ch)
- website : <http://www2.mralab.unige.ch/>
- EPOCH Full Partner

MIRALab was founded in 1989 by Professor Nadia Magnenat-Thalmann and is composed of more than 30 researchers coming from many different fields, such as computer science, mathematics, medical field, design, architecture, fashion design, cognitive science, etc. The group is truly interdisciplinary, working in the field of computer graphics, computer animation and virtual worlds. Since 1992 the group has participated in more than 45 European Projects. International conferences are often organised in Switzerland by MIRALab. Moreover, MIRALab participates in different manifestation such as fashion defiles with virtual models and clothes.

The group has produced more than 300 papers, 50 books and a dozen of PhD thesis. Former PhDs have become Professor in renown Institutes like Indian Institute of Technology, University of Zagreb, for example or working in renown companies like Alias-Wavefront in Toronto, Softimage in Montreal, PDI Dreamworks in California, Samsung in Korea, IBM Switzerland or BUF Compagnie in France.

International Cultural Centre, Krakow, Poland

- Agata Wąsowska-Pawlak (wasowska@mck.krakow.pl)
- Zoltán Gyalókay (zoltang@mck.krakow.pl)
- website : <http://www.mck.krakow.pl/ang/frames.htm>
- to become EPOCH member

The International Cultural Centre is a specialist research institution that also has a role in education and promotion of culture and the arts in terms of all aspects of Europe's cultural heritage. It is open to co-operation on a regional and international scale, and attempts to respond to both the interests of elite groups and the needs of the general public. The International Cultural Centre is divided into three units:

- The Centre for the Promotion of the Arts and Sciences
- The Research Institute of European Heritage
- The College for New Europe

The Research Institute of European Heritage is mainly concerned with studying and preserving European heritage. Chief among its fields of interest are:

- the development of a new methodology of research on heritage;
- the recognition, scientific development and valuation of the heritage of Central and Eastern Europe;
- the development of heritage management strategies for historic cities;
- studying the problems of cultural regions and culture-inspiring activity of national minorities and borderland cultures;
- the recognition of Polish heritage abroad.

The RIEH implements this programme through conferences, seminars, research projects, educational work, publications, exchange of experiences and promotion of European cultural heritage studies. The Institute attaches great weight to promoting the exchange of experiences and to the interdisciplinary approach to European heritage issues.

Essential to the implementation of these programmes are Polish and foreign experts cooperating with the Institute. The projects undertaken provide model solutions that can be applied in studying and preserving the heritage of two- and multicultural regions in Europe.

In the field of bilateral relations, the Research Institute of European Heritage places special emphasis on cooperating with the countries neighbouring Poland.

In 2001 the International Cultural Centre and the Malopolska School of Public Administration at the University of Economics in Cracow brought into being a course for postgraduate students – the Academy of Heritage . The objective of the Academy is to educate specialists who could effectively meet the challenges of the modern heritage preservation.

Education in the area of heritage resources management has become more and more important in recent years. Free market laws, transformation of social structures and systems of values, economic and political reforms, European integration, progressive globalisation – all these problems put cultural heritage in a new situation. This is the reason why the Academy programme includes the issues of the contemporary theory of heritage, history of culture, law, economy, marketing and managing, regional policy and development, and cultural policy.

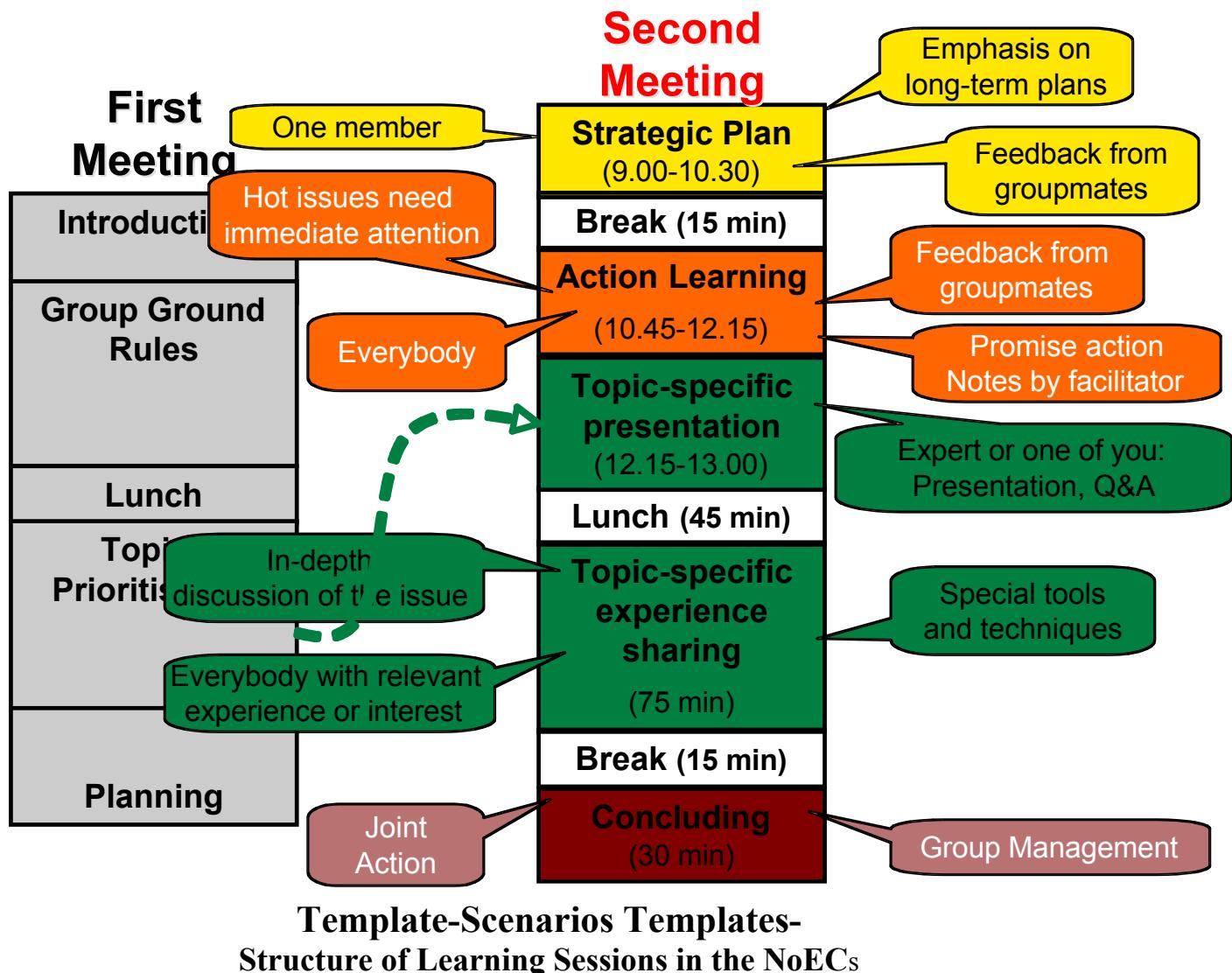
This offer is aimed at monument preservation service personnel, local and public administration workers, civil servants, museum, university and cultural institution employees, teachers, and investors.

In the autumn of 2003, the first edition of the course came to a close, and recruitment for a new edition started, aimed first and foremost at teachers. They have to meet the challenges connected with the reform of the education system. The new system includes the creation of “heritage classes”, the introduction of the philosophy of open regionalism into teaching programmes, and adjustment to educational standards in force in the countries of the European Union.

Workshops will constitute a part of particular importance in the course. They are to acquaint students with modern and attractive forms of disseminating the knowledge about cultural heritage preservation and its role in new reality of market economy.

11 Appendix III (Activity 2.8): NoECs

Meeting Structure- Minutes from Meetings –Activities



2ND MEETING OF THE NETWORK OF CENTRES OF EXPERTISE

NOTES

The Freeman centre, Falmer, UK
21, February 2006

Attendees

Jan Stobbe, email: jstobbe@gewestkvn.nl
John Smith, email: john.smith@theforumnorwich.co.uk
Bryn Davies: bryn.davies@theforumnorwich.co.uk
Franco Niccolucci, email: niccolucci@unifi.it
Sandro Saccenti sandro.saccenti@gmail.com
Ranya Boraie email: rborae@mcit.gov.eg
Nedjma Cadi-Yazli, email: cadi@miralab.unige.ch
Maurizio Forte, email: Maurizio.forte@itabc.cnr.it
Alberto Sanchez Vizcaino, email: vizcaino@ujaen.es
Halina Gottlieb, email: halina.gottlieb@tii.se
Lon Addison, email: addison@unesco.org
Wim Hupperetz, email: w.hupperetz@limburgsmuseum.nl
Floris de Jonge, email f.dejonge@limburgsmuseum.nl
Agata Wąsowska-Pawlak, email: wasowska@mck.krakow.pl
Daniel Pletinckx, email: daniel.pletinckx@visualdimension.be
Despina Kannellou email: d.kannellou@brighton.ac.uk
Karina Rodriguez, email: K.Rodriguez@brighton.ac.uk

I. Introduction

Daniel Pletinckx introduced what has happened since the last meeting:

- Focus Group meeting in Norwich with local representatives
- Regional meeting in Krakow
- Daniel is leaving Ename on the 15th of March but his work will continue, although Ename will not be anymore involved in the centres of expertise.
- By the next meeting the group will be finalised. Daniel is looking into bringing an expertise centre from Flanders, which will make the total of 12 centres in the group.
- This group will work like this for another year, before going into an evaluation of the group.
- During the last meeting was decided to have: full and associated members.
(Action) By next meeting it should be decided who wants to be full/associated members of the network.
- For those who are not full members of EPOCH, it would be useful to become one: either full or associated member.

II. New Members

1. The Limburg Museum

Wim Hupperetz and Floris de Jonge introduced the museum which is in Venlo, Netherlands. They introduced the organisation of the centre and the heritage department, which is the one they belong to. This museum is quite unique in its nature, as it includes projects and support for the community.

During 98-2000 they produced 15 interactive computer programs, which content has not changed in 5 years. These programs are currently being renovated. They also presented an educational website with objects of the museum and their information. The collaboration for this system with the schools was not always easy as they had to find teachers which were open to new ways of teaching. Although this project is finished, they are inviting more partners to extend the software. The agenda for 2006-2009 includes a renewed multimedia theatre, the renewal of interactive programs, and the increase of projects in the region as well as the digitalisation of the collection.

The museum collaborates with 2 or 3 small multimedia companies which focus in cultural heritage for the production of the computer applications. The funding they receive is mainly from the province of Limburg.

2. Centro Andaluz de Arqueología Iberica

Alberto Sanchez introduced this research centre, which was originated from an agreement between the regional office and the University of Jaen. The area of research is mainly Andalusia and they focus primarily to the Iberian culture. They work together with universities, such as University of Malaga, University of Cordoba and University of Jaen. The activities of the research centre include: research, services and dissemination activities. The research is mainly developed by means of European, national, regional and local projects. The centre collaborates with the museums mainly for scientific advice or expertise.

3. International Cultural Centre

Agata Wąsowska-Pawlak introduced this state funded institution. It was funded at the beginning of the 90's. They do not have technology development, but instead focus on the educational aspect, including conferences, publications, an information portal, regional events and postgraduate's degrees. They cooperate internationally, which is quite unique in their country.

4. MIRALab

Nedjma introduced this research centre funded by the University of Geneva. The main goal of the centre is the multidisciplinary work on simulating realistic virtual humans, including areas such as facial animations, hair simulation, cloths simulation, motion capture, virtual heritage. They have participated in different EU and national projects, in which they have collaborated with private companies.

III. Code of conduct

Despina Kanellou introduced everybody the draft of the code of conduct for the network. Jan mentioned whether it will be important to establish this was not a legal document, to which Despina explained it was just a document of what everybody thought the group was. Other comments included:

- If members cannot make it for more than 3 meetings they should be associated members,
- The need to specify SMEs and CH institutions
- Mixed feelings about whether quality assurance and labelling was a task of the group
- It was proposed to keep a repository with the content produced within the network. This will include demos or showcases of the expertise centres. Halina

mentioned the exhibition which is being planed for the Museum of Stockholm Interactive Salon which will show demos produced within EPOCH.

- Other aims of the network should be durable integration; however this document specifies only the aims for the first year.
- The long term vision of establishing a permanent group, perhaps a legal body, with more partners and to establish centres within the EU and perhaps outside.

(Action) partners will come back to Despina within the next 5 days with comments.

Daniel facilitated a discussion regarding what is an expertise centre, this included issues such as:

- Are the centres specialised or general in their focus?
- Does the group has a commercial function
- How much independency (political and financial) the group needs. Which are the advantages and disadvantages?
- Which is the target audience?
- Is the expertise centre doing applied research?
- What kind of activities is the centre doing:
 - Independent project management,
 - There is a lack of good documentation which can provide guidelines for managing ICT (Information and Communication Technology) projects for CH (Cultural Heritage).
 - The centre could produce templates, which will accumulate knowledge with the guidelines for managing projects (requesting a job, planning, contracting, tendering, etc). These can later be disseminated. Although documents have to be local, global guidelines could be produced as a start.
 - The aim of the group should be to professionalize the sector.
- **(Action?) It was suggested that each centre could produce a template and propose it to the group, which could later improve in several iterations.**
- Will the expertise centre take into account the integration of activities which go behind the acquisition of technology (i.e. data storage, management, exploitation)? This will be the foundation for using digital workflows. For this, training will be important for companies and CH institutions.
- It was suggested that the list of activities were production oriented, and they also needed to focus on marketing and selling ICT solutions, which sometimes is about reaching people.

IV. Action Learning

John Smith presented the process of establishing the 1st “satellite” learning group in Norwich. They described the process they went through, starting in November 2005 deciding who to involve, and then meeting everybody individually up to having 2 focus groups in February. He described how it was very important not to make the people threatened by what they intended to do, so they consider extremely important meeting individually with everybody involved previous to the meeting. The focus group was facilitated by George Tsekouras from CENTRIM. This gave a very good impression as he showed that there is a very solid research base.

Issues which rose from the meeting:

- Geographical spread of the centre. The attendees to the focus group came within 30 miles. Geographically, they think the area of 6 counties is too big and almost impossible.
- Balance of companies and stakeholders.
- Aim of Centre of expertise, they emphasised that the centre was to enable and facilitate so people will not feel threatened.
- Level of seniority of attendees as the communication might be difficult if the seniority is very different. It should be as equal as possible so nobody feels threatened. In this case all the attendees were decision makers, except of 1 or 2.
- Who to exclude and how to handle it when there are difficult relationships/histories. Several alternatives were discussed, such as letting the group decide, ignoring them, or explaining the facts to the excluded. It was agreed that if the people in this case were not directly involved in ICT for CH then they did not fit the background of the centre. Despina further suggested announcing the centre in a local newspaper so nobody feels excluded.
- How to handle hybrids companies.
- Role of the facilitating organisation
- Gender and class representation of the 14 people that meet, as they were all men/middle class. It seems strange for them that women didn't attend even when some were invited.

Experiences from the meeting:

- The discussion was focused towards engagement and the activities the centre will carry out.
- There were concerns on commitment and level of disclosure.
- Involving policy makers was not difficult as they agreed on the opportunity this centre provides to improve ICT on CH.
- They think that people genuinely believe in the network of centres and were keen on it.
- The reputation of the Forum Trust was important as they are known to take an impartial stand.
- By June the members of this centre of expertise will be defined for the initial 6 months.

V. Creativity Workshop – Part A

Franco Niccolucci presented a survey of Italian heritage market. The figures of the visitors by region indicate that mainly 3 regions are making money from their visitors. The top 30 museums in Italy have 90% of the market, while the top 10 have the 70%. Positive factors of multimedia exhibitions included novelty; interactivity and language while negative were wearable interfaces.

Franco also presented an experience in developing a system for the Labyrinth of Chusi. They made a game with an open source game engine which could be used during the visit or school kids to the site; but it was never selected. This is a common story of multimedia applications which never gets budget to finish it.

Others also reported sites having the same problem where content is lost as projects are done by university students or people who leave the applications behind. There is

never enough budget or people who will take the source code and continue or maintain it.

Others reported problems to install the solutions even if they are given for free, as there is not enough budget to have an adequate space for the installation in terms of infrastructure (e.g. guards, cameras, sensors, etc).

The problem of budget reportedly can be because politicians and other decisions makers do not see the value of investing in these applications. This might be because marketing of this technologies have not reached them.

VI. Creativity Workshop – Part B

Some management issues were raised at the beginning of this workshop, with some actions to take:

- (Action) For next meetings everybody should book their own flight in advance.
- (Action) Send Hillary Williams (H.C.Williams@brighton.ac.uk) receipts of flight for this meeting

The dates for the next meetings are:

- March 20-21 Cairo, Egypt
- April 27 Crete
- May 22-23 Rome
- June 19-20 Stockholm
- August 28-29 Norwich
- September 25-26 Paris
- October 30 Cyprus
- November 27-28 Spain
- December Noord-Holland

Continuing with the workflows MIRALab presented theirs which typically include data acquisition, data modelling, visualisation and communication. They presented three case studies: on site AR expertise (re-enacting virtual life from frescos of the Vetitus Placidus Tavern), museum VR exhibition (4 digital screens with interactive interface to visualise clothes in different countries) and swiss fashion museum of Yverdon les brains (re-enacting clothes of famous designers).

Some of the lessons learned included:

- Technology needed improvements
- People were afraid to use some of the technologies
- There were problems with budgets of the museums, so the production has to be adapted to the budget available.

The content which was produced from these exhibitions is easily reused. The museums marketed the content on a book, interviews in TV and a DVD application. Alonso Addison presented the following digital pipeline for tangible CH:

	What	How			Why
		Input	Synthesis	Output	
	Reality	Data capture (recording)	Data synthesis (integration)	Data presentation (dissemination)	Purpose

IT View	Raw data	Digital sensors Visuals Photo 2D scanning Location GPS Dimensional Photogrammetry 3D scanning Surveying Environmental	Drafting Modelling Rendering Assembly Data optimisation Animations Avatars Digital Reconstruction Enhancements Structural Scenarios/hypothesis testing	2D (video, slide, print, CD, web, etc) 3D (milling, stereo-lithography) 4D (flythrough, interactive mm, video, film, web, CD)	Challenging problem domain for algorithm and technology testing
CH View	Archaeological site Monument / building 3D artefact 2D (photo, print)				Preservation (archiving) Restoration/ Reconstruction Education Tourism Cultural Identity Entertainment

This matrix can help to make the showcases by expanding it and making workflows. It was suggested perhaps to start from the right of the table, so they present a solution for a specific purpose (preservation, restoration, etc.). This could explain how museums could make collections more interesting and they can see the value of the technologies.

Technologists start from the left of the table, so it is important to explain in more detail to SMEs different types of technologies for them to be aware of them. Other issues such as attaching metadata to the digital assets also need to be addressed.

It was discussed that people have a big resistance and are afraid of interfaces as they are not familiar with them. It was suggested that a human face should always be available to help and explain the technology. Museums on the other hand are not educated on the field, so they do not know what is available and they have problems defining what they want. That is why there are problems conceiving the project from the beginning.

Making showcases of different technologies with hours, technologies and approximate costs might help to disseminate some knowledge.

Another issue is the training for directors. The possibility of presenting EPOCH solutions in universities teaching cultural heritage management could be explored. For example, UNESCO trained heritage management of the Arab regions in technologies, such as scanning, etc.

Other experiences with disseminating integration of ICT in CH include:

- In the regional meeting in Krakow, people were very interested and wanting to know more about the project
- Dissemination should create certain awareness, not necessarily present a final project. Workflows and case studies could help on this.

- Regional meetings are a starting point for CH institutions.
- The EPOCH webpage is being reconstructed so it can communicate better what EPOCH can do for CH institutions. Technologies such as RSS feeds of events could be implemented.

VII. Concluding

For next meeting:

- (Action) Continue working on the workflows, some practical examples using the matrix of Alonso.
- (Action) Look into the description of organisation Daniel sent.
- (Action) Start thinking how can each develop on an expertise centre.

3RD MEETING OF THE NETWORK OF CENTRES OF EXPERTISE

NOTES

CULTNAT, Cairo EGYPT
20th and 21st of March 2006

Attendees

Halina Gottlieb, email: halina.gottlieb@tii.se

Jan Stobbe, email: jstobbe@gewestkvn.n.l

Ranya Boraie email: rborae@mcit.gov.eg

Nedjma Cadi-Yazli, email: cadi@mralab.unige.ch

Floris de Jonge, email: f.dejonge@limburgmuseum.nl

Despina Kanellou, email: D.Kanellou@brighton.ac.uk

Karina Rodriguez, email: K.Rodriguez@brighton.ac.uk

Sofia Pescarin, email: sofia.pescarin@itabc.cnr.it

Bryn Davies, email: bryn.davies@theforumnorwich.co.uk

Fathi Saleh

I. First day presentation: Centre for documentation of cultural and natural heritage (Dr Fathi Saleh)

CULTNAT is affiliated to the library of Alexandria and supported by the ministry of communication and information technology. Webpage: www.cultnat.org, www.ternalegypt.org (developed with the cooperation of IBM).

1. Background of Egypt heritage

Egypt history extends long period of 7,000 years: Predynastic, Pharaonic, Ptolemaic, Byzantine / Coptic, Islamic, Modern. Few countries have such a geography which borders have stayed stable for 5000 years. In this, heritage is scattered geographically.

Heritage is classified as:

- Cultural (man made)
 - Tangible (museums, archeologically sites archaeological heritage, etc.)
 - Intangible (music, folklore, arts, etc.)
- Natural

The information technology which CULTNAT uses for documenting cultural and natural heritage is: DBMS, Multimedia, GIS, GPS, Photogrammetry, 3D Modelling, Virtual Reality.

2. The Centre:

January 2000 CULTNAT was created. Their current facilities include: offices, meeting rooms, libraries, auditorium, and cafeteria-gallery. Other facilities: Micro gallery (showcase of applications), Star Riders, Culturama - Interactive projection room.

Mission: documentation of heritage as an essential step in the national strategy for cultural heritage management. Using the latest technology for the documentation of heritage: tangible and intangible

Aim: Dissemination of information about this heritage through the production of cultural heritage publications.

3. The Projects:

- For tangible heritage: archaeological map of Egypt, archaeological heritage of Cairo, Scientific Islamic manuscripts.
- For intangible heritage: the musical heritage program, the photographic memory of Egypt, the Egyptian folklore
- Natural heritage: the natural heritage program, studies and reports, as well as programs of cooperation with international relations.

Some of the prizes include: Stockholm challenge, world summit award 2003, and world best content 2005.

Apart from the mainline work, the centre is currently working on other documentation projects, such as: geographical information, presidential palaces, etc. Using their expertise in the field of documenting heritage, the centre participates as a consultant in local and international projects. In addition, they provide knowledge transfer by offering training modules. Currently, CULTNAT aims to broaden its scope to include research thus in the long run could be viewed as a cultural academy. Some ideas about the future include:

- Different cultural buildings: CULTURAMA, 3D projection, Mastaba (big room with projection from outside the wall for tombs), Star Riders and a planetarium.
- Little Egypt with different components from Alexandria, Cairo, Luxor, Upper Egypt, Nubia, Pyramids.

Some of the thoughts discussed after the presentation were:

- When thinking about the **target audience**, this seems to be of a very different nature. Firstly, the government is the main audience, as they do an official inventory of cultural heritage. Second, researchers are a target audience to provide them the information they require. Third, the public is a target audience when visiting publications and websites. Finally, the centre is working on education (e-learning) by developing courses for universities so they can be used in the teaching.
- **Independent organisation?** The funds come directly from the government, as they are part of the library of Alexandria. The research is not in partnership with the universities, but they do use the professors or experts as individuals to work with the centre.
- The **challenges** in going from a centre for documentation to a centre for communication probably include changing the profile of the centre which should be visible to reflect the active role of disseminating information efficiently.
- They **sell their products** to other international organisations. For example, they have agreements for selling some of their publications abroad.

- They are starting a **spin-off company** for developing technology such as virtual reality centres. This will allow them to sell their products and systems, such as CUTURAMA. The income of selling these products will be for funding.
- They only have **links with SMEs** when buying products or services from them, such as the production of a CD ROM. As far as they are aware, there are not companies in Egypt which produce cultural heritage applications of Egypt.
- The **data resides** within the institutions but they can share it with other organisation within the government or for small requests. Databases and other high quality data, such as images are planned to be sold.
- They are not part of the **ministry of culture** but they do try to involve them as much as they can when doing work for them. There is a lot of politics for getting their applications within the Egyptian Museum, so they try by putting their applications first in other museums, such as the one in Alexandria.
- **Marketing** of the centre is missing sometimes and is being improved.

Second day presentation:

Introduction

Despina Kanellou facilitates the discussion. Up to now there are 11 expertise centres and the network is closed. Since last month these are the main updates:

Bryn Davies mentioned that the feedback on the first initial seminar in Norwich was very positive. Next meeting planned for April the 6th with at least 12 people, including: 5 stakeholders and 5 SMEs.

Halina Gottlieb presented a proposal from the Vision from Museums, which are opening an interactive salon for visual and interactive technologies (Multimodal Interfaces for Cultural Heritage) in the Stockholm City museum. She invited the network to propose projects or showcases for exhibition. The salon will serve both as exhibition and as a usability laboratory by inviting masters and PhD students for making studies of showcases. The exhibition is opening around the autumn time and the centres' of expertise meeting in Stockholm is being planned for November.

- **(Action):** Halina will send to all one page with invitation for the Interactive salon.

Jan Stobbe, mentioned that the objectives for the new program of European funding is being discussed. He proposed that EPOCH and the network will apply for some funding for projects on the 7th framework. Despina mentioned that with some of this funding you can only get 50%, which is just enough to build the satellites around the centres but not enough money for new research.

- **(Action):** Jan will contact Daniel to see opportunities for post-EPOCH opportunities.

Karina Rodriguez will be the responsible for gathering case studies according to the technological pipeline.

From the actions of last meeting, the one of deciding who will be full or associated member will be postponed for next meeting when all members are present. Jan came back with some comments for the code of conduct and everybody else seemed to be happy so now should be fine as it is. This code was useful for discussing and thinking the functions of the network of expertise centres and its vision.

- **(Action):** All should build centre's profiles according to the template.

II. Strategic Plan

1 Vision of the NoEC

Halina presented the template for the vision of NoEC, which starting point is the integration of the following elements: CH Stakeholders, SMEs, ICT industry, research and media creators.

As the first ICT projects for CH appeared on the market (i.e. national gallery in London sponsored by American express), all the other application tried to unsuccessfully replicate these efforts. The problem was that the initiative came from ICT industry and the CH sector was not prepared for business models of using new technology. ICT companies are sceptical when they are approached by CH, as they are not ready to discuss business process and economical models with CH stakeholders. For this reason we need to create models for this collaboration, so the different stakeholders are able to work in an interdisciplinary process from the beginning. For the discussion of business models, it is necessary to have successful showcases.

The template presented showed the different parts of a centre of expertise, including:

- The core group CENTRIM (Despina and George) has expertise in building learning networks. Together with Halina and Daniel, they will make a structure for the network, but it has to be on the group's own ideas of what the network should do.
- The EPOCH's partners which have expertise and concrete cases of technologies could provide knowledge and input for further activities.
- The partners input will be on what they are interested in doing: showcases, training, etc.

It is important that the network is self sustainable. For example, CULTNAT started small and without an official structure. After several problems, the centre has now a good pyramid structure so if anybody disappears the structure will still remain. They are keen to have political status and an internal administrative structure which is solid. Other successful business model is the metropolitan museum. CULTNAT is also developing a business model for having a spin off of the research centre. This is common for research centres who want to sell their technology.

Self sustainability is very difficult, as even successful models are not completely self sustainable. The best approach is to minimize the governmental contributions but not to eliminate them.

II.2 Workshop

Members split in two groups in order to discuss in detail CULTNat activities according to NoECs Template. The idea is to give a feedback and discuss further Actions. From the groups discussion about CULTNAT activities, some of the comments of the team were discussed as follows:

Public activities

- It would be good to share expertise by doing more lectures and conferences. Dr Fathi explained that there are public lectures inside the centre for the personnel,

with other specialised public invited sometimes. Lectures and outside presentations are not done very often. Invitation is not open to all public, because of: i) the size of the auditorium and ii) they are in a remote area so not everybody can come.

- The centre also liked the idea of creating exhibition which are mobile.

Training

- Halina agreed to send some material from Sweden for training courses.

Research

- There was surprise that they do not included ICT research as one of their activities in the list they made.
- It would be good if the centre publishes not only the projects results but also the research done in scientific publications and conferences. At least once a year they could produce scientific publications, which is good for documentation of research work. Some international conferences, such as EVA, VSMM, were suggested as opportunities to publish their research work. For this, they should encourage researchers to write papers.
- In order not to reinvent the wheel all the time, they are aware of new technological developments from conferences and other international contacts. However, it was suggested that they should also be aware of the research being conducted by research institutes and universities.

Development of prototypes and products

- CULTNAT does extremely well which is reflected by the organisation being a successful showcase.
- It was also suggested that e-learning as part of an educational program could be developed more. E-learning is new in Egypt and encouraged by the ICT ministry in other fields. So CULTNAT is keen on experimenting with their applications and perhaps next year extending the capabilities once they have developed the structure and have the expertise.
- Interoperability of the databases was also considered important not only for the future but for the interaction of other organisations with their data. Dr Fathi mentioned that one of the targets for this year is to make databases available on the website. However, they cannot put database accessible if the data is not authenticated and revised ensuring its quality control.
- The applications developed at the centre create an interface for the visitors of the vast amounts of CH contents.
- Another issues highlighted was the interpretation aspect in the ICT applications.

Knowledge bank

- The lessons learned from projects should be captured in a knowledge bank. For example, in the UK, there is a project management documentation methodology called PRINCE 2 which is valuable in large projects.
- A lesson learned from CULTNAT, is that when management is not working perhaps is better to build a new sustainable structure.

Other activities

- The legal aspect of software development could be improved. IBM developed a system for watermarking their images and content. In addition, they are currently working on patenting its own design of hardware and software.

Liason/ Consultation/ Observation

- The use of external organisations, such as SMEs and universities could make them aware of other types of software such as open source software. Dr Fathi mentioned that open source software is not encouraged as they cannot guarantee the sustainability or patent of the final product. Even though they are currently participating in a Mediterranean project for building a platform that can talk to different databases developed in different countries by different means. In doing this, they are using open source software and addressing the issue of interoperability between databases.
- This is a unique organisation as it has direct access to funds. They are strong in an international level and they could be stronger on a local level. It was felt that the centre should attempt to liaise more with SMEs in the region. Dr Fathi explained that they have just taken the decision to stop making CDs and outsource it and they are finding potential collaborators. This will allow them to concentrate in the CULTURAMA system. They also accepted that they work in a different way than the country. But, recently they appointed somebody to try to promote more the organisation within the locality.
- It was suggested that this centre could fit a particular model for a satellite of companies around the centre. By creating a sustainable model that other could catch, the centre could gain recognition and SMEs will be educated to improve the collaboration and cooperation. This model will involve CULTNAT being at the very heart and an authority within the network.
- It was also suggested to collaborate with educational departments according to pedagogical courses for school teaching. The problem in Egypt is that the public school do not have IT infrastructure.
- It was encouraged that CULTNAT should build international cooperation with archaeologist which have mission in Egypt, as it seems to be a good starting point for accessing information and it will also benefit the centre by acquiring more information.
- Other possible collaborations are between CULTNAT and organisations which require content.

Despina requested some actions which CULTNAT might want to follow up from this feedback.

- **(Action):** Rayna will send the set of issues the centre would like to address.

CULTNAT's most important activities in few words by the network members:

- ICT development,
- Integration of different source of data,
- Interesting adaptation of content to the tools,
- Institute with a quality label for digitalising cultural heritage,
- Potential of their resources,
- Successful showcase of how to present material with a wide range of presentation tools – from old media to the newest one,
- Good quality standards and huge potential,
- Cross sectional approaches,

- Type of organisation, importance of the decision to grow and direction.

III. Action Learning / Sharing – Part A

After discussion, every centre presented briefly the activities they foresee to be involved with.

1. Norwich Forum Trust

They are at the centre of a local network. So as an organisation, they will be involved in coordinating other partners within the network, which could potentially do most activities in the list, such as organise conference, courses and also participate in European projects. They see themselves with a strong role in the knowledge bank as coordinator of a network and disseminating lessons learned for the benefit of the network (Liaison and consultation).

2. CNR

This will be a distributed network with connections with institutions, SMEs and museums at a national level with three main activities: Public exhibitions, training and research.

3. MIRALAB

The activities will include: creating applications for exhibitions (local museums), organising conferences and publications. They can use their experience for a knowledge bank in the field of virtual reality and simulation.

4. Limburgs Museum

They focus mainly in exhibitions and also carry out pilot projects in the field. Other possibilities: training, ICT support, sector representation, and lobbying. As well as liaise between cultural heritage and research institutes stakeholders on a local level. They can also act as a showcase and create concepts for using new media in exhibitions.

5. Vision for museums

They want to be a centre (Swedish or Scandinavian) which will provide input on all the activities.

6. Stichting Bedrijfsregio Kop van Noord-Holland

They are a regional public authority and sometimes an initiator, coordinator or facilitator for projects. They have a cross section approach for marketing knowledge, tourism related to cultural heritage and education, feasibility studies, fund raising as well as legal matters. They also have research of Cultural Heritage related to economic and regional development. Activities will be public activities including open days, training people from small museums and organising short courses. Other activities include: development of prototype and products, national and European research and other projects, publications in tourism and ICT support.

- **(Action):** All will send centre's profiles to Halina, Despina and Daniel (aprox. 2 pages) in one week time

IV. Action Learning / Sharing – Part B

The objective of this activity is to build a knowledge base based on a technological pipeline from the different sector's points of view. This will allow the network to disseminate the work of every centre and capture best practices.

IV.1 Laser Scanning Workflow

Mohamed Farouk presented the laser scanning process for CULTNAT. He mentioned it requires manpower and expensive equipment so they just use it when they really need it: virtual restoration of objects, simulation, objects in original environment or for research (analysis of surface for physical restoration). The workflow consists of: selection, calibration, scanning, post processing, editing, restoration and presentation. There are some challenges in the process, such as the big contrasts of colours, getting the exact power of the laser for textures, rounded objects, objects with hidden geometry, semi transparent objects, large or too small objects. Some practical cases were presented.

Discussion in their workflow included the need for mesh simplification, which they do not require for the type of applications they produce. There was also a suggestion for solving some of the problems when scanning by using slicing techniques instead of rotational ones. It was suggested the importance of taking into account the public for which this presentations are targeted and involving them from the beginning of the project. At the moment, the target audience is the general public as these presentations are used for the webpage.

IV.2 ICT Pipeline for cultural heritage

Karina Rodriguez presented a pipeline which was extended from Lon's proposed pipeline. The main aim is to view and analyse ICT applications starting from their purpose and sector within which they are created. As such, for every type of application there is a technology view, cultural heritage view, educational, tourism and entertainment views. The pipelines could be formalised in a process pipeline to identify required resources, expertise, timelines and costs. This pipeline could be integrated to a complete business process.

An idea of using space on the EPOCH website to place resources for the NoEC was discussed.

- (Action): Despina will discuss with Achille at PIN timelines for implementing the NoEC space in the website.

V. Conclusions

Some of the feedback from the meeting experiences include: sub group are very useful when a discussion is required. In general the members seemed to be satisfied with how they are conducted.

There was a request to get the report and papers for forthcoming meetings earlier so people can prepare

- (Action): The core group will prepare documents at least one week in advance for next meetings.

Daniel is organising next meeting in Crete on Thursday the 27th of April. Anybody interested can attend the workshop the whole week.

- **(Action):** Floris and Jan will try to work on a joint proposal for creating a satellite. If they are not able to meet they will let Despina know.

Hillary will send a template for sending information for next meetings. Everybody should remember to book the tickets as soon as possible and try to find the cheapest options as the budget is limited and it is important that everybody attends all the meetings. Once the details of the hotel are sent, the group should reply within two days confirming who is attending and providing other travelling details. Most information for next meeting is in the document about the workshop.

- **(Action): Everybody will make an estimation until the end of the year how much the travelling will cost and will try to book two months in advance for the meetings.**

So, the draft-calendar for the next meetings looks like this at the moment:

- April 27 Crete
- May 18-19 Rome
- June (Sweden) is trying to change for November with Spain but more information soon. CENTRIM would be the second option
- August 29-30 Norwich (Bryn should confirm the dates of this meeting)
- September 25-26 Paris
- October 30 Cyprus
- November 27-28 Spain
- December Noord-Holland

4th MEETING OF THE NETWORK OF CENTRES OF EXPERTISE

NOTES

VISUAL DIMENSION, Oudenaard, Belgium
27th of April 2006

Attendees

Agata Wąsowska-Pawlik, email: wasowska@mck.krakow.pl
Nedjma Cadi-Yazli, email: cadi@miralab.unige.ch
Wim Hupperetz, email: w.hupperetz@limburgsmuseum.nl
Jan Stobbe, email: jstobbe@gewestkvhnl.nl
Bryn Davies, email: bryn.davies@theforumnorwich.co.uk
Despina Kanellou, email: D.Kanellou@brighton.ac.uk
Karina Rodriguez, email: K.Rodriguez@brighton.ac.uk
Daniel Pletinckx, email: daniel.pletinckx@visualdimension.be
Franco Niccolucci, email: niccolucci@unifi.it
Sandro Saccenti sandro.saccenti@gmail.com

Apologies from Lon, Fathi, Ranya, Sofia and Halina.

I. Welcome and update since the last meeting

The next meetings are planned as follows:

- May 18 – 19 Rome
- June 26 – 27 Norwich (26 starts at 2:00 pm, 27)
- No meeting in July and August for holidays.
- Stockholm will be in November to coincide with Interactive Saloon exhibition.
- Meeting in Jaen will be changed for January perhaps.
- Nedjma also proposed to have a meeting in January or February in Miralab.

Since last month these are the main updates:

Next EPOCH JPA3 (Joint Program of Activities) will be finalised by the end of May and approved around September. If approved; there will be a raise on the budget for work package 2.8, although it is not certain the amount. This will mean that the NoEC can continue working as currently and there will be the possibility to open other couple of clusters; as well as having more candidates for expertise centres who can be taken on board for next year.

Daniel spoke to a centre in Belgium called Cultural Biography who is interested in participating in the CoE. For the moment, they will be invited mainly to introduce themselves as more members cannot be accepted until next year. They are established in Antwerp, publicly funded and provide consultancy and expertise. They are a good example of a non-technical organisation which brings together technological solutions and users.

Bryn made a request regarding the receipts' originals, which need to be submitted both to his organisation and to the University of Brighton. Despina proposed as a solution only to submit the receipts to the University of Brighton and claim the expenses directly from them.

Daniel plans to consultate with the commission which is preparing the 7th framework, to ensure this type of activities is considered within the new framework. There were also suggestions to look for national sources of funding as well as programs such as eContent Plus and eTen.

- (Action No.1): Jan and Daniel will meet to discuss sources of funding and the different programs to see which are the most adequate

II. Vision of the Network of EC

Actions taken since the last meeting:

Halina will send the invitation of the Interactive Saloon soon, as she will be back to work. She has been unwell for the last weeks.

Everybody discussed briefly regarding their centre's profile:

- **Centro Andaluz de Arqueología Iberica:** Alberto mentioned he can see the centre as beginners in technology functions. Their expertise relies mainly in liaisons and consultation activities.

Despina mentioned that the intention is that different partners have complementary expertises. One of the objectives of the network is to build a knowledge bank, which brings together the expertise of both archaeologists and technologists. Hence, whenever a centre requires expertise outside their domain, they should be able to find it from other partners or from somebody outside the network if necessary. Daniel added that he had discussions with a possible technological partner (Fraunhofer) who might be interested in the NoEC.

- **Stichting Bedrijfsregio Kop van Noord-Holland:** Jan already presented his template last meeting.
- **Norwich Forum Trust:** Bryn presented his template in last meeting and as a cluster they will cover most of the activities. He will have his strategy plan ready for the next meeting in Rome.
- **CNR:** Franco presented CNR plans to create a virtual cluster of museums with support from companies and universities as experts, which will provide tools and consultancy. They have discussed several sources of funding. They want to involve a new museum from the Imperial Forum, which will be inaugurated in a year time and which director has a strong commitment for new technology. This museum might lead the other museums in a light organisational structure. An idea is to create a format that can be replicated with other museums.
- **PIN:** Franco presented his idea for PIN which is more business oriented, by building a centre which can provide expertise and support for smaller companies. Hence, the expertise centre could provide services, technologies and foster the creation of new companies. The idea of a spin off company could be a model for the creation of smaller companies which are more business oriented. They are working on the methodology for doing this and the process will start on the 3rd of May. He also mentioned they will like to hear success stories of other small companies as well as marketing studies. An example of a successful story is Visual Acuity of Blair Parkin in Brighton, who started working from Barco and started a consulting company which works in high end visualisation environments.

The company now acts as a connection bridge between museums, curators and technical people.

- **International Cultural Centre:** Agata discussed some uncertainty regarding which functions they want to achieve as a centre. She cannot express to her organisation the concept of a centre of expertise and convince them to do one as she is lacking the ICT literacy and knowledge. Cultural heritage professionals need examples, which she does not have. She is also experimenting communication problem as different departments within the organisation propose different functions (conferences, exhibitions) which provides them with enough funding, but there is a lack of an innovative, clear and visionary direction. Perhaps it is better to be only an associated member at the moment.

Bryn commented that this is the nature of the NoEC at the moment as all members are in different positions to start a cluster. Thus, some can learn from the experiences of the others. It was also mentioned that all centres would get support to go through this process.

- (Action No. 2): Agata will fill the template for her organisation

There was further discussion regarding the traditional isolation of the Cultural Heritage sector, as archaeologists and historians were not used to collaborate with professionals of other subjects fields such as technology. This is the reason why the market was very fragmented; although it is slowly changing towards a more multi-disciplinary view. Tourism is another case of a subject field which was traditionally seen by heritage professionals with disregard. Therefore, tourism industries used heritage without a real connection to history.

Ranya sent the items which CULTNAT will like to address, from the feedback which was given to them in the last meeting. She will present these in the next meeting.

- (Action No. 3): Bryn will send information about travelling to Norwich

III. Presentation and activities and strategic plan of Visual Dimension

Daniel made a presentation of the company Visual Dimension. He presented different projects in which the company is involved at the moment:

- *Wijnendale project:* this is an inhabited castle in the West Flanders, which is also open to the public. One part is romantically rebuilt in the 19th century, while others are from around the 15th century. New technologies are being used for the museum of the castle, including multimedia to support guides as most of the people come with a guide. They are also considering people who might not have a guide by providing information in PDAs. The multimedia will include: touch screens with video fragments of the people living in the castle, audio with memoirs as well as big screen. The stories are short and include multimedia with photos and other information, such as film. There will also be a 60 inches touch screen making a book accessible, where they have maps and links with today's landscape can be seen. In addition, there will be a 3D model of the castle, as a historical reconstruction. There is also introductory information for visitors without knowledge in the area. The funding for this project comes from

INTERREG with funds of 750,000 euros; which involves several companies and historians in a temporary consortium.

- *Valkenburg project*: this is a castle in ruins where he has a proposal to construct sound based presentations with historical figures and facts. As well as to use augmented reality telescopes. For this an architectural structure will be required in the site.
- *Master plan for city of Middelkerke*: landscape with historical relieves, and the project will make the park more accessible to the public.
- *Born castle*: ruined by a fire in 1930 and the idea is to use multimedia in front of the castle with 3D reconstructions
- *Thematic bicycle routs with GPS*: this is a tourism organisation (which belongs to the provincial government of west Flanders) who wants to bring historical content to their routes. In this case, Visual Dimensions is doing some consultancy, to not reinvent the wheel, as they do not have very clear the solution they want. Some of the recommendations include: to not keep it local but in a Flanders level, to take into account multilingualism (using 4 languages instead of only Dutch).

IV. Discussion on Visual Dimension strategic plan

Daniel explained that independent and well founded advice is very much required for heritage organisations which do not have clear what they want to develop. In some cases, giving advice to organisations is more difficult as there is not a museum director or curator who can take the ultimate decision. Instead they have working groups with different people and interests.

Business models for centres of expertise

The organisation of the bicycle routes project is a new model because the commercial business is part of the provincial government. Hence the same organisation can realise and develop projects at the same time. This has highlighted the need for independency, meaning an expertise centre should not be involved in projects, but only if this is very well defined from the beginning. However, some of these organisations are large; hence, they require projects to sustain their human resources.

It was mentioned that CULTNAT appear to have a similar situation, which they are solving through the creation of a spin-off. By doing this, they can develop projects with the expertise and resources they have acquired through governmental funding. Thus, they will be able to contribute to the funding of their human resources which are now around 200 people. This is a valid model for organisations that have a knowledge base which they want to exploit in a business oriented manner.

The **spin-off model** could work for organisations which grow faster at the beginning when there is funding available to develop projects. Once a foundation of knowledge, expertise and resources is built, it is possible to set up a spin off to sell the expertise of the organisation and to generate more funding for this foundation. Other possible model is that of a **non-profit organisation**. As an expertise centre, the idea is not to compete with the companies which are your partners.

Spin-offs not only come from knowledge centres such as universities or research centres, but some of them come from big companies of ICT that decide to specialise in the Cultural Heritage field. Heritage departments in larger companies want to produce and sell their own products, so they are not as open for cooperation. Another

type of spin off is those companies doing work in the editorial sector (i.e art or photography) and that have experience in working in Cultural Heritage. These companies might evolve to provide new digital services.

Project coordination

Another concern which was highlighted in technological projects for Cultural Heritage is the lack of good independent project coordination between all the partners involved in projects. There is a real need to have an independent party, which also acts as a communication medium. It was added that there is also a lack of knowledge regarding project definition procedures, including tendering. Governmental bodies have experience in tendering for projects such as city infrastructure (i.e building streets) but they have no experience on how to tender for technological projects.

An issue was raised that there are non project managers or coordinators for this type of interdisciplinary projects. Hence, another possible model is to provide the expertise centre with an **independent authority status which can coordinate** and overlook to the communication as well as the financial and legal aspects from the early stages of a project. It is critical to aim for authority, as it is the only way to enforce the successful results and their quality. The challenge in this model is to find the funding to finance the coordination and remain an independent authority. However, there should not be a problem that some of the organisation funding comes from projects done by the organisation; if these projects are innovative research and development projects in order to maintain the status of authority in the field. These projects could culminate in prototypes which later could be developed by companies for commercial benefit. There is also the need to find out the best legal mechanism to do this.

Financial models

Franco expressed his concerns regarding the lack of a clear **financial model** for the different types of centres of expertise. The need for retribution is clear but how much should be from research and development, from companies paying for consulting services, as well as from government or from public institutions. Although some see difficulty in the idea of getting funding from the local government, they recognise the interest in stimulating creative industries. Expertise centres could play a role of enabling and fostering these types of industries, as well as being the bridge between different stakeholders.

Future vision of the centres of expertise

It was also mentioned that in 10 years centres of expertise will work in a lower format as the industry will have changed and the companies will have overcome the lack of expertise that they are now experiencing. It was suggested that perhaps the functions of the centre will be to incorporate other type of stakeholders or will perform different functions. However, the focus now is within a 10 years vision line.

Quality assurance

Another functions that centres of expertise can provide is that of quality assurance and being an auditing and certification as well as policy making organisation. However this will imply that expertise centres have to be truly independent authorities, which can perform quality labelling impartially. It was thought that addressing these issues will be the next step after the centres of expertise are established. Organisation such as ICOMOS, European Commission as well as UNESCO could also play a role in

quality assurance. An idea for this is that centres of expertise create certification mechanisms and make them ISO standardisation and certification quality systems. In this case, centres of expertise could provide consultancy for certification.

Data ownership

Another concern discussed was data ownership. Organisation commissioning ICT work for cultural heritage focus on deploying technology and communication mechanisms and not always pay attention to providing the adequate content. Although they have content, this is not necessarily in digital form. In this case there are further problems with data ownership and legal rights to copy, digitalise or commercially exploit the data, as the organisation might not know who owns the data. Historical routes are more intellectual property. There were no clear ideas of how to solve these issues at the moment.

Some **questions** which were raised to Visual Dimension where:

- How they get projects as a small company: mainly by networking as this is one of the main mechanisms for ICT companies working for the Cultural Heritage sector. Daniel mentioned his company acts as a bridge between different stakeholders, such as technology, heritage and tourism.
- The way to get partnerships is by building trust with the people that he works with. It is a virtual network, as they work within an informal consortium based mainly on trust.
- In this area of Belgium, ICT companies which are not related to Cultural Heritage are in a difficult position as they do not belong to this network. In this case expertise centres should bring them to the network. Commonly, ICT companies are successful in the Cultural Heritage field because they are specialised in their product or services.
- The competition for Visual Dimension is little as his company can also do consultancy and advice in the selection of technologies for Cultural Heritage. The situation in Belgium is that consulting companies usually fall short when it comes to the technical part of the project realisation so they have to leave as the project starts. For this reason, there is a perfect opportunity for centre of expertise to acts as project managers which have a responsibility for the realisation of the project.

Education and training

At the moment, the situation for ICT companies in the Cultural Heritage fields is seen as: lacking funding, lacking skills and experience (both of museums and companies). To address this, the centres of expertise should stimulate investment and bring down barriers, such as the lack of skills. For this, they need to communicate to universities so they develop the adequate skills. Other idea will be to provide training themselves. There is an example of this in the Netherlands, where supporting units in Limburg provide skills required by digging companies which require a certification for working in archaeology.

- **(Action No.4):** All will think about activities they can support of a training program for museums or policy makers. This might be modules, which can be combined.

Agata mentioned they created an academy of heritage, which provided a career in heritage instead of just museology; combining different sectors in cooperation with

Krakow University of Economy. They could not realise the postgraduate as they need to grant qualifications and the program was too long.

Franco added some other practical experience in doing courses which highlighted other problems, such as people being too busy, or courses not being profitable. He still has documentation for modules for archaeological sites, landscapes, museums. A reason why people do not participate is because these qualifications do not count when they apply for job. Credits are also an issue, as employees being trained require credits which could enter into the competence portfolio of the employee for escalating in job positions. There is no knowledge of how to achieve this. Private companies simply pay for people with skills and competences but public companies do not have the same system as people will not pay for education.

Other issues raised regarding education include:

- The problem of having students educated in several competences with no real experience and in the other side having specialists which have good practical competences but do not have a broader view.
- The issue of whether education should be postgraduate or vocational.
- How long the courses should be, this also depends of the students' age: vocational studies are more suitable for older people with more commitments and postgraduates are studied more by graduates after their university.
- Among governments there is no awareness that the public Cultural Heritage sector needs to be educated. Although, in Belgium there are organisations, such as "Cultural Biography" who provide short courses, workshops and symposia.

V. Presentation from Kop van Noord Holland

Jan presented the Kop van Noord Holland, which is a government organisation between the county councils 60 miles north of Amsterdam. The main focus is tourism and regional development. They have quite a substantial tourism in the area, but not necessarily people which is interested in Cultural Heritage. They have a cross sectional approach, so they not only focus in Cultural Heritage, but also tourism, educational as well as other purposes. Most of the initiatives concerning Cultural Heritage use a bottom up approach, so the centre support local people with own initiatives of development.

As a government organisation they need to market and justify their projects with the inhabitants, municipality and politicians in terms of visitors for the region, which are understandable and can show results. They involve all the municipalities as well as the tourism board. The latter requires information from the centre when they want to develop new tourist products. The director of the tourism board appreciates the importance of Cultural Heritage and he is open to new products so there is a good collaboration. In this case, there is not the typical competition of tourism against heritage.

They have produced an inventory of stakeholder needs, and it is available if anybody wants it.

They have changed their focus since they started in the mid 90 as they were focused on Cultural Heritage, and now is changing towards attracting customers or visitors to the region. For their marketing strategy, they have selected four themes:

- Norsemen (Vikings hoards and trade): for this they have information and have made a visitor centre.
- Neolithic (single grave culture): this is very rare in European scale, only Poland and Switzerland have some. Only in this region of Holland there are about 100. It is tentatively a world heritage site.
- Nuwendoorn (Holland as a major European power in the 13th century): Holland was one of the four European powers along with England, Flanders, France, and England. They want to establish this theme further.
- Napoleon Era: during this era there was the invasion of the anglo-russian troops.

One of the reasons for selecting these themes is that the centre could easily established cooperation in an international level. At the moment, two visitors have been established for the first two themes. They have also produced several publications, including routes and books. In addition, they produced an e-cultural route for Franca-Media with the collaboration of Ename.

As an inventory of their skills, they do not have much expertise in the ICT area. However, ICT is a priority in the tourism industry and as a media of communication. Hence, they would like to see their presentations, for example for the first theme, using information and communication technologies. For the Napoleonic heritage, they lack digitalisation of the battle scenes and are trying to realise the Napoleonic route by discussing at a European level to link French with Dutch in order to make a west-east line. For the Neolithic theme, they also need a timeframe, online visualisation and interactive presentations. The expertises they have in the centre are in archaeology, cultural heritage and special planning. The centre is also good for the municipalities as they have a complete overview of what is happening over all of them.

For funding, they work in Norsemen with INTERREG programs. The regional public authority are also interested and keen to join the centre and they are thinking as well to cluster their region with Norfolk.

At the moment they have 4 or 5 centres and all of them are based on voluntary work. Typically, the tourists come for information and they buy some heritage products. Tourists usually come from Germany, Belgium and Scandinavia.

This formula is recommended but is difficult to make it work. It is recommended to start in a low level and then expand. Although, they cannot compete with bigger centres such as the Amsterdam tourism board; sometimes this centre requests information for attracting visitors to the northern regions. PIN mentioned that they might be in a similar position as they also compete with stronger and bigger areas such as Florence. Finally, Jan mentioned that the success of the formula as usual depends on the funding activity. In this case, the province works together and they provide funding if projects are sustainable and benefit the region.

VI. Presentation of Limburg Museum

Wim presented the Limburg Museum as a centre of expertise. They have content and usually translate this knowledge of Cultural Heritage into goods and products for visitors. In doing this, ICT is an instrument. They are a complementary centre to Kop van Noord Holland. In this case, the two visions can match with each other and

perhaps they can combine their clusters by drawing some common lines and making some common meetings.

Wim presented a list of possible partners for his proposed network. These partners are people that he knows and have worked before. They are also looking across the borders as they are now working with a German museum. Most of the partners in the list work nationally.

Despina mentioned that depending on the budget, later this year it will be possible to develop more clusters. Wim agreed to start preparing the strategic plan and structure for his cluster, so once the decision is taken he can start getting support to set it up. For example, in Norwich, policymakers and companies are working together. Although, this was not the original plan it is possible to experiment putting them together or having two clusters, one with companies and one with policymakers.

Wim mentioned they can propose this cluster to the government. He sees difficult to get funds from them; however, it will be possible to make a request but it will take time. He proposes as a timeline, to present his strategic plan in the meeting in Norwich in June or in Paris in September.

Jan added that both centres might collaborate in a larger scale so they can expand their expertise and influence in the region. The tourism board will also be interested in the linkage between these two areas.

To the question of whether other provinces in Holland might be interested in the cluster; Wim mentioned that others might be interested but he needs to have a strategic plan before contacting them. In addition, he explained about the new heritage houses in Holland, which have been working since half a year ago. Each province has a heritage house where archaeological museum and educational knowledge is centred and will plan a new role in the policy making of the Netherlands.

Franco made a request for measurable success factors of centres, as he needs information which can be used to measure success or demonstrate the success of a centre. Jan has a questionnaire created to measure success and he can send it.

- (Action No. 5): Jan will send a questionnaire created for measuring success in a centre.

VII. Update on Norwich Cluster

Bryn gave an overview of the 2nd meeting of the Norwich cluster, which was on the 9th of April. They had less people than in the first one as they had the meeting during the holiday season. Some of the themes which everybody was interested in discussing were funding, market research, sustainability, affordability as well as evaluation techniques.

The next meeting is on the 11th of May and the University of East Anglia will propose their business plan as well as their vision of how they fit within the group. They are a spin off of the university (so they are both policy makers and an SME) which has expertise in 3D reconstructions and modelling. They hope to get the regional development agency for the 4th meeting, which will discuss possible regional sources

of funding. He also mentioned that currently the cluster of centre of expertise has a mix of 50% SMEs and policy makers; although, some can fall into the two categories.

VIII. Presentation of knowledge bank for the centres of expertise

Karina gave a presentation about the knowledge bank which will be a repository of knowledge and information which brings together the expertise from the CoE. There will also be a public promotional area in the EPOCH webpage for information of the CoE. There was an idea to have both private and public area as well as perhaps next year to use the collaboration tools for virtual meetings.

Franco showed an online database with the information regarding the expertise of the partners in EPOCH. The interface could be improved to make it more user-friendly.

- **(Action No. 6):** Karina will request the update of the partner's information in the database.
- **(Action No. 7):** Karina will send the template for scenarios, so everybody can produce their scenarios.

To a request of replicating the space in the web for other clusters of NoEC, it was decided that this will be considered later on.

- **(Action No. 8):** Karina and Despina will set an agenda for the website and knowledge bank and send it to Achille for next meeting.

IX. Presentation of a workflow of visualisation of archaeological sites

Daniel presented a scenario of conservation of heritage spaces. In this case, the space was below sea level so there was a lot of effort on making it visible. An alternative solutions for that is as done in the Netherlands, where they cover the spaces after having excavated and documented them (an example of a chapel dating the mid-eight century was shown).

Daniel mentioned possible alternatives for these sites; for example, taking pictures for making digital visualisations both for documentation and presentation. He presented some examples of these techniques, which is currently being improved as part of one of the NEWTON projects in EPOCH. From this example, Daniel proposed this as a workflow in order to gives access to archaeological sites virtually. This will aid sites which need to be covered after the excavation both for documentation and presentation of the interpretation of the place. This technique will also allow interactive explorations of sites including objects and archaeological features which cannot be preserved. Although, it is not an expensive technique it is more suitable only for documentation and visualisation but not for restoration.

Alberto mentioned the importance to have a scientific base when documenting archaeological sites, as sometimes excavations are done very fast without careful consideration to the documentation. He also mentioned, the difference of showing the visitors a virtual reconstructions or the real archaeological site. For physical reconstructions it has to be made clear when something is not the original artefact. It

was recognised that a virtual reconstruction will never replace the original but it can offer additional information or put the artefacts into context.

Despina also mentioned the idea of using this scenario for historical routes, so is possible to present information of sites which are not visible anymore. These are interesting from an educational point of view and they bring tourism and cultural heritage together.

4th Meeting ACTION LIST

Num	Action	Responsible	Progress
1	Meet to discuss sources of funding and the different programs to see which are the most adequate	Jan and Daniel	
2	Fill the template for ICC organisation	Agata	
3	Send information regarding travelling to Norwich	Bryn	
4	Think about activities of a training program for museums or policy makers which centres can support	All	
5	Send a questionnaire created for measuring success in a centre	Jan	
6	Request the update of the partners information in the EPOCH database	Karina	
7	Send the template for scenarios	Karina	
8	Set an agenda for the website and knowledge bank and send it to Achille	Karina and Despina	

NETWORK OF EXPERTISE CENTERS TEMPLATES

Network of Expertise Centres: Partners' Template



WHICH ACTIVITIES COULD YOUR CENTRE ATTRIBUTE WITH?

Public activities

- Exhibitions
- Lectures
- Conferences
- Others
-

Training

- Courses
 - successful implementation of ICT projects
 - scenarios
 - best practices/testimonies
 - tendering / legal aspects
 - change management when introducing ICT
- Others

Research

- ICT
- CH
- Scientific Publications
- Others

Development of prototypes and products

- Carry out pilot projects in the field
- do national & European Research projects

Knowledge bank

- type of archives
 - project descriptions
 - project evaluations
 - ongoing projects
 - ongoing research projects
 - ICT industry offering
- distributed database
- Others

Other activities

- Publications

- Quality Assurance & Quality label
- Sector representation & lobbying
- ICT support for CH partners

Liaison/Consultation/Observation

- Liaise between cultural heritage stake holders and ICT companies on a local level
- Liaise between research institutes and cultural heritage stakeholders on a local level
- Stimulate technology transfer from Research Institutes to ICT companies
- Gather and disseminate information on ICT in CH (Sector Watch)
- Act as a “show case” for different applications produced by the EPOCH partners
- Management services and Project Coordination for CH and ICT related projects to other partners
- First line consulting for projects (=make proposals for funded projects together with CH and ICT partners)
- Create concepts for using new media in exhibitions
 - Pedagogical concepts
 - Interpretative concepts
 - Work on interpretative tools
 - Work on socio-economic impact studies
- Others

Vision of Network of Expertise Centres



TOURISM

Virtual town tour with a multilingual guide



PURPOSE:

The purpose of this application is to inform the tourists of the history and the stories behind the buildings in a town.

DESCRIPTION:

Buildings in the city and town are reconstructed from photographs and 3D modelling techniques. Later on, they are integrated with virtual characters in the scene. By using multilingual technologies, the history of the town and the stories behind the buildings are captured in a repository of information. This later is used for driving a virtual guide, who drives the visitors in the city and explains to them the history of the town in multiple languages.

BENEFITS:

- Multiple languages
- Contains information of the most representative buildings
- Recreates the city in a specific period in time.

PUBLIC TARGETED:

- Public all ages
- Multiple languages
- Multiple levels of knowledge of the history of the city

TECHNOLOGIES:

- Virtual reality reconstructions
- Virtual Avatars
- Multilingual Natural Language Technologies

CULTURAL HERITAGE

Virtual town reconstruction



PURPOSE:

The purpose of this application is to present to the public a reconstructed town and its stories behind the buildings.

DESCRIPTION:

Buildings in the town are reconstructed using different techniques. Later on, they are integrated with virtual characters in the scene. By using multilingual technologies, the history of the town and the stories behind the buildings are captured in a repository of information. This later is used for driving a virtual guide, who drives the visitors in the city and explains to them the history of the town in multiple languages.

BENEFITS:

- Multiple languages
- Contains information of the most representative buildings
- Recreates the city in a specific period in time.

PUBLIC TARGETED:

- Public all ages
- Multiple languages
- Multiple levels of knowledge of the history of the city

TECHNOLOGIES:

- Virtual reality reconstructions
- Virtual Avatars
- Multilingual Natural Language Technologies



EPOCH is funded by the European Commission under the Community's Sixth Framework Programme, contract no. IST -2002-507382



EPOCH is funded by the European Commission under the Community's Sixth Framework Programme, contract no. IST -2002-507382

EXAMPLE OF SCENARIO TEMPLATE

12 Appendix IV (Activity 2.8): Activities at The Forum Trust, Norwich Member of NoECs and “Satellite” Learning Group

The Forum Trust Board has strongly supported the proposal to become a member in the NoEC in CH in EPOCH. The Forum Trust, as a member of the NoECs in CE commits the following operational functions:

A. ‘Observatory’ function

Gather and disseminate information on ICT and cultural heritage

B. ‘Project’ function

Carry out projects in the field

C. ‘Liaison’ function

Liaise between cultural heritage stakeholders and ICT companies

D. ‘Learning’ function

Operate a ‘learning group’ and contribute to the European Network

The function D (Learning) that mainly involves operation of the Learning Group and contribution to the Network of Centres of Excellence will be the responsibility of the two facilitators who will be Bryn Davies and John Smith. The Forum Trust is prepared to commit, within contract limits, to maintaining these same two people for the duration of the EPOCH project.

The timetable:

- At Brighton University/CENTRIM (to be attended by Bryn Davies & John Smith):
 - 12 January 0900 – 1700 facilitator training (pt 1) + evening NoEC meeting.
 - 13 January NoEC meeting
- By the end of January: Forum provided a list of five ICT companies and five cultural heritage stakeholders for focus groups.
- At The Forum:
 - 9 February facilitators’ training and Focus Group 1.
 - 10 February Focus Group 2.
 - 5 April 1st session of Satellite LG
 - 11 May 2nd session

Issues concerning the facilitator’s of the Norwich group

- Geographical spread
- Balance of companies/stakeholders
- Aim of CoE: network vs takeover
- Seniority of attendees
- Who to exclude
- Difficult relationships/historiesalic
- “Hybrids”-University/CH organization spin off companies

CENTRIM/UOB delivered both facilitator-training sessions, run the Focus Group meetings in Norwich and attend Norwich to support the first two Learning Group meetings from March onwards.

The Focus Group Sessions reduce the risk of failure while helping to recruit firms from the area. The underlying rationale of these focus groups is

- to deploy the involved practitioners as ‘ambassadors’ of the project to their peers networks and communities. This has been identified as a successful means of recruitment compared to more conventional marketing techniques like advertising in mass media. Moreover these focus groups offer the opportunity to convince and recruit sector champions who will enable greater take up of the programme.
- to provide feedback to the facilitators to understand some of the needs of their sector group and how the meetings are run before they are asked to run the first actual session with their groups.

After the Focus Group meetings, the Facilitators J.Smith and B.Davies were pleased to report

a very productive meetings locally with stakeholders and companies and that the concept of a

Centre of Expertise in CH appeared to be received enthusiastically. The “Satellite” Learning

group at Norwich has met twice and six areas were discussed and prioritised. In order of priority they were:

- Funding opportunities
- Market Research/User requirements
- Standards
- Evaluation of Projects
- Sustainability
- Affordability

The facilitator have identified, with members of the group, key personnel to be invited to future meetings. They include representatives from the Regional Development Agency, The Heritage Lottery Fund and English Heritage.

Current delegates attending Norfolk Seminars

Bryn Davies	The Forum Trust
Andrea Cox	The Forum Trust
Brian Ayers	County Archaeologist, Norfolk Museums & Archaeology Service
Dr John Alban	County Archivist, Norfolk Record Office
Professor John Glauert	School of Computing, UEA
Tim Bishop	Head of Regional and Local Programmes, BBC
Saul Penfold	Education Officer, Norwich Cathedral
Richard Taylor	Director, East Anglia Film Archive, Norwich
Victor Keller	Managing Director, Model Marque and Industria Project, Norwich
Martin Ayres	Head of Education, Screen East, Norwich
Mike Loveday	HEART, Norwich
Jo Warr	Hub Manager, East of England Museum Hub
Rupert Dick	UK Villages, Cambridge

Ronnie Zadeh	Norfolk Design Company, Norwich
Bernard Godding	Media Projects East, Norwich
Jeff Hume	A Recipe for Success, Ipswich
David Casal	Luminas, Norwich
Andrew Savory	Luminas, Norwich
Kate Allsopp	COVER - Community & Voluntary Forum: Eastern Region, Cambridge
John Smith	The Forum Trust, Norwich