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Bridging the Knowledge Gap between Cultural Heritage and Information and Communication Technologies Professionals: The Network of Expertise

Abstract: In order to overcome the major gap between the Cultural Heritage (CH) and the Information and Communication Technology (ICT) world, which is slowing down the successful use of ICT technologies, this paper presents the methodology behind the creation of the Network of Expertise. The main objective of this network is to support the understanding of both worlds, provide training and facilitate knowledge acquisition of the domain from all perspectives. The methodology known as Learning Network integrates action learning techniques with the network approach producing a very powerful mechanism for sharing knowledge between different organisations. The vision is to create a network of centres, organised in an Europe-wide network, integrating a number of local CH and ICT institutions, policymakers, companies, research institutions and other stakeholders with a regional mission to improve the sector. The paper will further discuss the lessons learned, successes and challenges encountered during the implementation of the network.

Introduction

Whilst technological advances continue to permeate into all areas of the heritage discipline, it is clear that there is still a major gap between the Cultural Heritage (CH) and the Information and Communication Technology (ICT) business sector which is slowing down the successful use and implementation of ICT technologies. This is due to the lack of knowledge about the needs and behaviours of the users of this technology, creating frustration and lack of success for CH institutions as well as for ICT companies involved.

The concept and methodology of the Network of Expertise Centres (NoECs) was developed and implemented within the EPOCH Network of Excellence funded by the European Commission under the Sixth Framework Programme (IST-2002-507382). The aim is to overcome the major knowledge gap between the CH and the ICT sector 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, while debating new ways to introduce and use technology in CH that fits with the needs of the CH institutions.

The vision is to create a Network of Centres integrating a number of local CH and ICT institutions, policymakers, Small and Medium Enterprises (SMEs), research institutions and other

stakeholders with a regional mission to improve the sector. This paper presents the concept and methodology behind this Network. The paper will discuss the first results as well as lessons learned, successes and challenges encountered during its implementation.

Concepts and Methodology

The objective of this work is to create a Network of Expertise Centres each with a regional mission to improve the sector. Each Centre is a not-for-profit organisation embedded in the regional governmental structure (for example, museums, galleries or cultural centres). A cluster of companies that are active – or aspire – in the CH and ICT domain surround each Centre. This structure enables participation in decision-making and implementation processes in CH whilst encapsulating local differences in laws, policies, culture and governmental structure. Expertise Centres, therefore, play a key role in the improvement of the cohesion of the CH sector acting as the bridge between research, government, buyers and users.

However, building sustainable structures for knowledge creation and sharing between different organisations is a difficult task. In this paper we demonstrate the utility of Learning Networks as a vehicle for building these sustainable structures. In

the next section we introduce this concept before discussing its implementation.

Learning Networks

A development of learning (COOK / BROWN 1999; WENGER 1998; STAMPS 2000; WENGER / SNYDER 2000; LAVE / WENGER 1991) and clustering (BECATTINI 1989; BECATTINI 1990; BESSANT / TSEKOURAS 2001; HUMPHREY / SCHMITZ 1996; SENGENBERGER / PYKE 1992) methodologies has been the realisation that significant knowledge benefits can be captured *when communities of practice develop across organisational boundaries*. Even large corporations with abundant resources turn to other organisations to satisfy new knowledge needs. Learning through networking gives the opportunity not only to share resources, but also more significantly, to listen to new ideas, challenge one's own assumptions and embrace new perspectives.

Knowledge interaction between different organisations is not a new phenomenon (VON HIPPEL 1988; NONAKA / TAKEUCHI 1995). The challenge is to set-up an infrastructure to support shared learning and to develop the capabilities required for sustaining and improvising these activities on a long-term basis, in order to allow the systematic emergence and development of communities of practice. To bring into operation this latent opportunity, the mechanism of *Learning Networks (LN)* has been developed. Learning Networks do not just refer to networks of organisations where learning simply happens, but rather to inter-organisational networks where structures have been established with the primary purpose of enhancing the knowledge of its members. These networks include representatives of different organisations and are formally established with clear and defined boundaries for participation. They have a primary learning target, which can be assessed by feed back about the operation of the network.

Types of Learning Networks

The Learning Networks are wide in scale and scope. Focus can be on: single issues (e.g. the British Quality Foundation), particular sectors (e.g. Industry Forum by the Society of Motor Manufacturers and Traders, CIRIA for the construction industry in UK), specific regions and particular sectors (e.g. AC Styria for the automotive sector in the Austrian region of Styria) or specific regions without any sector or topic focus (e.g. Plato network in Ireland).

According to Harland et al. (HARLAND / LAMMING / BESSANT 2000), it is possible to map these networks, and potentially other types of Learning Networks, on two dimensions, as shown in Fig. 1. These dimensions are:

- Degree of similarity/dissimilarity – how alike are the organisations or individuals joining the network,
- Degrees of focus/broad targets for learning – how specific are the learning objectives.

During the set-up stage, Learning Networks have a number of administrative and structural choices: decision-making structures must be established, learning processes need to be developed, and a dissemination policy should emerge.

The next stage is the operation stage in which the network formalises its structure, process and roles. The final stage is known as the maturity stage, which potentially suffers from the risk of organisational bureaucracy and rigidity. At this stage the formally established structures and procedures of the network can ossify and become a 'core rigidity' (LEONARD-BARTON 1992) rather than a constructive learning vehicle. At this stage the network has the options of regeneration through changing its operation mode or alternatively suspending its activities. Learning Networks need an evaluation process to identify the causes of problems and to define remedial action. Networks evolve and develop only if they deal with the challenges occurring between these stages.

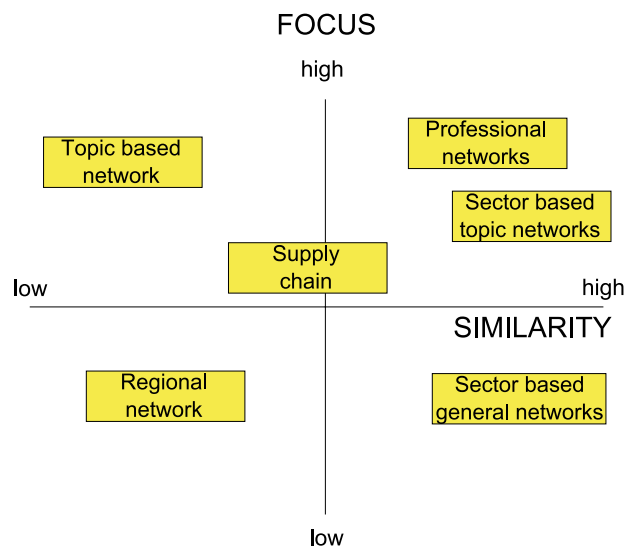


Fig. 1. Taxonomy of Learning Networks (HARLAND / LAMMING / BESSANT 2000).

The Key Elements of a Learning Network

Key elements of networks are *activities*, *actors*, *resources* and *processes* (Fig. 2). These four concepts are regarded as components of a relationship that are equally important and are dependent on each other.

In a Learning Network a set of typical actor roles is:

- *Learning Network moderators* manage and co-ordinate activities, people and time. They know how to match learning needs with knowledge resources, to detect process deviations, to monitor the relationships between members. Their knowledge tends to be tacit as it is experiential in nature.
- *Learning group facilitators* assist groups of practitioners in their structured reflection. The facilitators have gone through training and accumulated experience over time. The Learning Group facilitator works also very closely with the Learning Network moderators.
- *Network members* are individuals who represent an organisation in a Learning Network.
- *Guests and/or experts* are non-network members invited to participate for a specific reason (such as presentation of a topic) and for a defined period of time.

In the next section we present some dimensions of the operationalisation of this model in the EPOCH network. In the final section we relate these findings to the model articulated above.

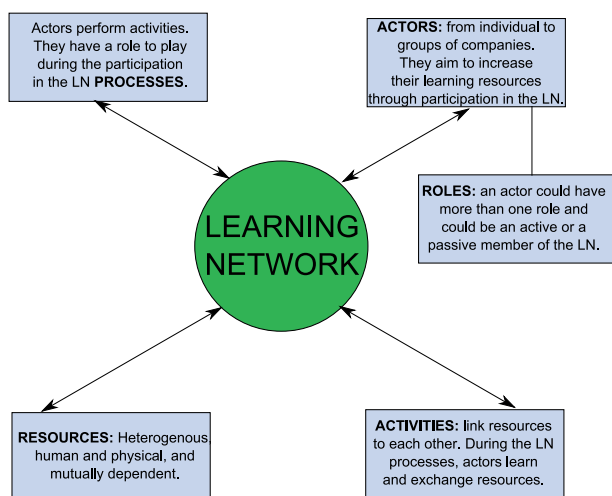


Fig. 2. Learning Network Model. Source: Adapted from HAKANSSON (1987).

Implementation of Expertise Centres

During the last two years, the methodology described in the last section has been implemented in order to create a Network of Expertise Centres. The set-up stage involved establishing a better understanding of the needs and challenges faced by stakeholders involved in the CH domain. Thereafter, the Learning Network methodology was adapted as well as a strategy on how to encourage SMEs' participation in the Learning Network.

The members of the Learning Group (LG) were drawn from a variety of organisations and countries. In half of the cases there were two members from each institution. The potential, therefore, was to have up to 15 members. However, generally, meetings were attended by between 10 and 15 people. Recruitment tended to be either internal to the EPOCH network or invitations were extended to known candidates whom the Moderators thought may benefit from the training and the networking experience. All had some interest in establishing Expertise Centres for which LGs are a core component and a qualification for such "accreditation".

The operation stage of the network was launched with a networking event with the general theme of "Discussing a Technological Pipeline in CH". SMEs and potential Expertise Centres were invited and the event took place in Brighton on the 13 January 2006. Since then, the Learning Group has typically met monthly for one year at a host organisation. Consequently, members were exposed to a wider range of ideas, institutions, artefacts and people. The data presented in this paper regarding the results of the network are based on interviews undertaken with the participants at LG meetings between November 2006 and February 2007. Additionally, members completed a questionnaire to capture satisfaction levels using 5 point Likert scales. This sample is made up of 10 responses.

For the purposes of this paper, we concentrate on three areas: facilitator training, knowledge and skills transferability and collaboration. We then present a short case illustrating the experience of one aspirant LG based in Stockholm.

Facilitators Training

Training for Learning Groups facilitators was provided to members of the Network. The efficacy of this training was tested amongst members of the learning group. We sought to establish the value

of the training and the extent to which the context had been understood. Notwithstanding the fact that this was a self-selected group open to the concept of a learning group and facilitation, the training was well received. One experienced facilitator (an education specialist) who went through the training expressed it thus:

If you are going to give someone the responsibility of running a group, then that person is responsible for the damage that can be done ... and the outcomes at a personal level. In order to deal with that, they have got to have been personally developed sufficiently and then they have got to have the tools to run the group. In that order [interview with authors, 7 December 2006].

By contrast – those from more natural science and positivistic backgrounds struggle with non-didactic learning:

To have a learning group without a defined teacher is not that easy ... It is difficult to measure the outcomes. It is probably me as an engineer. I enjoy it. It is beautiful. But you cannot measure beauty. I like to distinguish between measurable and not measurable [interview with authors, 29 November 2006].

The members were certainly exposed to an unfamiliar learning environment, and its intangibility should not be underestimated. In another case, a junior CH professional described how their own expectations were different from the reality and the problems this generated for their seniors with an interest in the outputs:

[The training is] completely different to what I expected. I understand a 'training course' [as] we go [somewhere] and we take notes. After each meeting we have some visits or we learn something. This was difficult to explain to my director. She was expecting some results. [She said] [y]ou went to this training course three times, what is the result? [interview with authors, 28 November 2006].

Networks are also dependent on their members being sufficiently empowered and motivated. We can demonstrate some cases where people have been 'nominated' which leads to what we might deem the 'wrong person' being involved. Fig. 3 below demonstrates the perceptions around empowerment. Whilst the sample is small, the learning group may not be as empowered as necessary with respect to acting upon outcomes from the LG when they return to their respective institutions. 60 per cent of learners sense that their learning partners may not be sufficiently empowered.

On this note, respondents were asked to rate the LG with respect to its role in achieving certain objectives. Fig. 4 below shows (where 1 is 'not at all' and 5 is 'substantially') that the LG scores highly with respect to developing strategic thinking, generating project ideas and improving knowledge about the CH/ICT interface (and to a lesser extent supporting change initiatives in the organisation).

Knowledge and Skills Transferability

Additionally, the lessons cannot always be transferred. Learners were exposed in one substantive session to a strategy model. This was widely embraced but its transferability to local or regional settings was not universally accepted. However, the interview hints that the problem may not be with transferability, but rather lack of familiarity with strategy approaches in the context of CH:

I had to take these 10 steps and tried to map our situation. I started but did not continue ... It is not fitting to our organisation. My director has changed her mind. At the beginning it was positive ... then they started asking questions about who is going to fund this ... I could not give the answers. I [have] stopped for the moment ... [w]e are not used to working with strategy/business plans [interview with authors, 28 November 2006].

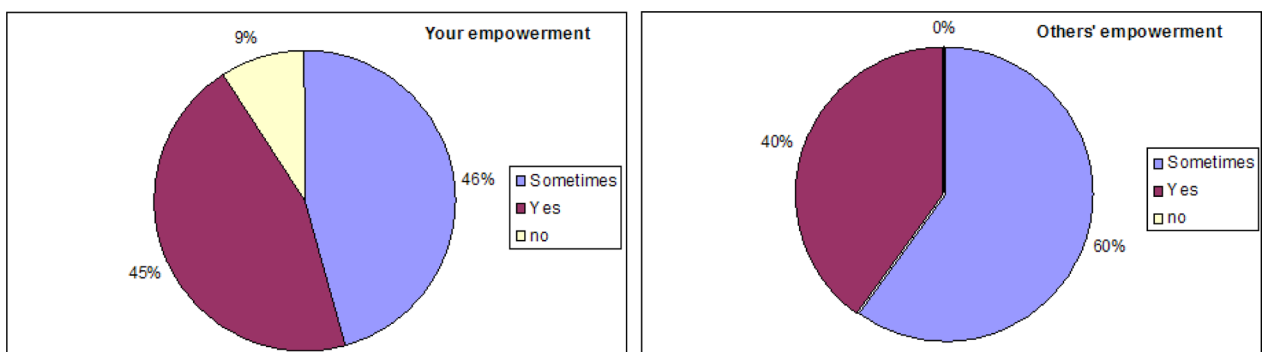


Fig. 3. Degrees of empowerment for members of the LG.

Learning group assist in...

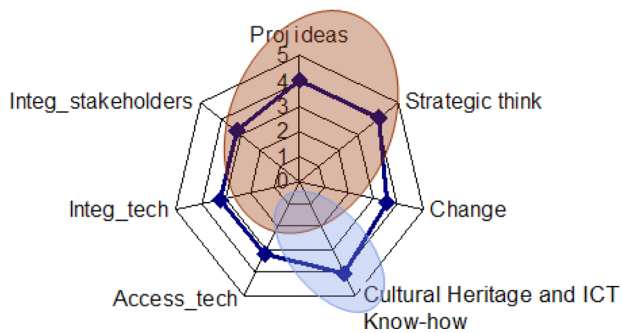


Fig. 4. LG assisting to integrate stakeholders and share knowledge on ICT and CH.

In our questionnaire we sought to quantify the value of these sessions. Noticeably listening and commenting on others' presentation was particularly valuable. They proved to be less good at providing ideas or strategies for releasing funds and in the value of received feedback. Consequently, we argue that there is something inherently valuable in the discipline associated with the exercise leading to a presentation, but there remained insufficient follow-through on critical components such as funding.

Skills transfer is perhaps an unintended consequence of the learning group. A CH professional recognised the wider value of the work:

[In a]nother project we are dealing with other participants such as theatre makers ... I noticed that I could use these facilitator qualities [interview with authors, 28 November 2006].

The nature of learning is also striking. One senior CH professional embraced the notion of action learning because it could enable organisational boundaries to be dissolved:

When you are an expert, everyone will shoot at you. When you say you want to learn, it is quite different [interview with authors, 28 November 2006].

All participants are unlikely to be satisfied, however. The facilitative model has weaknesses. Participants note that discussion can be overly long and pedantic because there is no one person with the authority to force a decision (as in conventional structures). Ironically, facilitators often break their own rules such as in timekeeping and honouring agendas. Equally, part of the problem is trying to demonstrate that a learning group can work. For one IT professional, the challenge is not *whether the tools work, but whether [we] can make them work. [It] would*

be very good if we could get a project off the ground using this group [interview with authors, 23 January 2007].

Collaboration

It is clear that collaboration has been made easier as competences and assets are rendered explicit by the learning process. For example, in cases where learners were previously known to one another the following is typical:

[We are doing] a project in [...] with the collaboration of [two members of the EPOCH consortium who] are partners. It's an innovation in collaboration. Within the framework of EPOCH we have more chance [of collaboration]. [interview with authors, 23 January 2007].

However, for less senior professionals, the following have some currency:

The most stimulating were the coffee breaks and the talking. In this day was born the idea of [...] and me to create a new group in this network called [...] which will be created for institutions in central Europe. It was really a big plus for this day [interview with authors, 28 November 2006].

In this paper we have tried to give a flavour of the LG, its activities, strengths and weaknesses. Whilst it is immanent in and of itself, a key function is to diffuse the model to regional and/or district-level institutions, the so-called Expertise Centres (EC). At the time of writing there are three centres functioning and four preparing to be launched. In the following we give a brief overview of one centre.

Results: New Expertise Centre: Swedish Forum for Cultural Heritage

Vision for Museums at the *Interactive Institute*, inspired and trained by the Learning Group, created its own Expertise Centre known as the *Swedish Forum for Cultural Heritage*. It has expanded stakeholders with members from the creative industries as well as researchers (GOTTLIEB 2006).

The *Swedish Forum for Cultural Heritage* has the following activities:

- The Interactive Salon is a touring exhibition and creative forum, focusing on the interdisciplinary collaboration forms between the CH communities, ICT developers, researchers and the creative industry. The exhibition is showcasing interactive installations from EPOCH, CultNat, the Interactive Institute, SICS and the Museum of Far Eastern Antiquities.

- NODEM is an ambulating international conference that provides an opportunity to exchange research results, experiences, ideas and current work with new technologies for CH. This conference forum also offers an award for the best digital museum application. The award looks for innovative and well-applied solutions enhancing interpretation of content, themes, objects or sites for the benefit of visitors.
 - An academic course 'Exhibitions and Digital Media' at the University College of Film, Radio, Television and Theatre in Stockholm. Each year a group of 15 professionals such as exhibition designers, museum employees and IT/multimedia producers, participate in the course.
 - Incubator offers a flexible and creative workspace where the incubator-SMEs grow and develop their business and have the opportunity to work on projects initiated by Incubator or external bodies. Incubator's mission is to support SMEs to become successful businesses within the field of digital media for CH. It achieves this by offering training, a shared space, professional assistance and workshops/seminars. All of this is done to provide a faster path for SMEs to establish themselves in an under-developed market.
 - The network has led to collaboration between members.
 - The concept of Learning Networks represents an unfamiliar learning environment, and its intangibility should not be underestimated. The context is very important and understanding why an individual is involved in the network and the opportunities that present themselves is important.
 - The role of the facilitators is critical; and hence facilitators' training is highly enabling.
- These results have demonstrated the utility of Learning Networks as a vehicle for building sustainable structures for creating trust and cohesion between the two distinct sectors. The first implementation of European clusters in UK, the Netherlands and Sweden will be followed by the realisation of other European centres. The methodology will be continuously developed and adapted to local circumstances. It is envisaged that this initial phase and their lessons will eventually lead to a wider European Network supporting the emergence of this new sector.

Conclusion

This paper has presented the concept and methodology of the Network of Expertise Centres (NoECs) as well as evaluative reflections on its implementation. The Network of Expertise Centre is based on the Learning Network model which incorporates a combination of knowledge management and in particular, tacit knowledge and clustering. The implementation of this methodology in the ICT and CH field within the EPOCH Network of Excellence has demonstrated that:

- Benefits to members include improving knowledge about the CH/ICT interface as well as enabling strategic thinking and generating project ideas. However, more work is needed to integrate stakeholders (particularly ICT SMEs) and access to ICTs.
- Skills and knowledge transfer have shown encouraging results, although, we noted that lessons learned cannot always be transferred without adaptation to regional circumstances. Hence the idea of creating clusters which have a local mission is critical.

References

- BECATTINI 1989
G. BECATTINI, Sectors and/or districts: some remarks on the conceptual foundations of industrial economics. In: E. GOODMAN / J. BAMFORD (eds.), *Small Firms and Industrial Districts in Italy* (London 1989).
- BECATTINI 1990
G. BECATTINI, The Marshallian industrial district as a socio-economic notion. In: F. PYKE / G. BECATTINI / W. SENGENBERGER (eds.), *Industrial Districts and Inter-Firm Cooperation in Italy* (Geneva 1990).
- BESSANT / TSEKOURAS 2001
J. BESSANT / G. TSEKOURAS, Developing Learning Networks. *AI and Society* 15,2, 2001, 82–98.
- BUCHTEL / RAUB 2002
B. BUCHEL / S. RAUB, Building Knowledge-creating Value Networks. *European Management Journal* 20,6, 2002, 587–96.
- COOK / BROWN 1999
S. COOK / J. BROWN, Bridging Epistemologies: The generative dance between organizational knowledge and organizational knowing. *Organizational Science* 10,4, 1999, 381–400.
- EHN 1988
P. EHN, *Work-oriented design of computer artefacts* (Stockholm 1988).

GOTTLIEB 2006

H. GOTTLIEB, Visitor focus in 21st century museums (Stockholm 2006).

GOTTLIEB in press

H. GOTTLIEB, Designing for Digital Cultural Heritage. SmartLab (Stockholm in press).

HARLAND / LAMMING / BESSANT 2000

C. HARLAND / R. LAMMING / J. BESSANT, Final Review Report of Project ION 2000.

VON HIPPEL 1988

E. VON HIPPEL, The sources of innovation (New York 1988).

HUMPHREY / SCHMITZ 1996

J. HUMPHREY / H. SCHMITZ, The Triple C Approach to Local Industrial Policy. *World Development* 24,12, 1996, 1859–77.

KANELLOU/ ANGEHRN / ECKERT 2004

D. KANELLOU / A. ANGEHRN / M. ECKERT, The KNOWLABORATION Practice Guide: Methodology Tools and Guidelines for virtualizing Learning Networks' activities. Final Report for the European Commission IST funded research project, KNOWLABORATION 2004.

LAVE / WENGER 1991

J. LAVE / E. WENGER, *Situated Learning: Legitimate Peripheral Participation* (Cambridge 1991).

LEONARD-BARTON 1992

D. LEONARD-BARTON, Core capabilities and core rigidities: a paradox in managing new product development. *Strategic Management Journal* 13, 1992, 111–125.

NONAKA / TAKEUCHI 1995

I. NONAKA / H. TAKEUCHI, *The Knowledge Creating Company* (Oxford 1995).

SENGENBERGER / PYKE 1992

W. SENGENBERGER / F. PYKE, Industrial Districts and local economic regeneration: Research and policy issues. In: F. PYKE / W. SENGENBERGER (eds.), *Industrial Districts and Local Economic Regeneration* (Geneva 1992) 1–30.

STAMPS 2000

D. STAMPS, Communities of Practice: Learning is Social. Training is Irrelevant. In: E. LESSER / M. FONTAINE / J. SLUSHER (eds.), *Knowledge and Communities* (Boston 2000) 53–64.

WENGER 1998

E. WENGER, Communities of Practice: The Key to Knowledge Strategy. In: E. LESSER / M. FONTAINE / J. SLUSHER (eds.), *Knowledge and Communities* (Boston 1998) 3–20.

WENGER / SNYDER 2000

E. WENGER / W. SNYDER, Communities of practice: the organisational frontier. *Harvard Business Review*, Jan./Feb. 2000, 139–145.

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