

The Evolutionary Design of a Community Information Service Knowledge Network

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ABSTRACT

Knowledge Management (KM) and knowledge sharing are important factors that support community lifelong learning. The concept of a Community Information Service (CIS) (Kempson, 2000) is attractive in drawing together people whose work shares similar aspects, and consideration is given here to how technology can be used to develop and support such a community. In this paper, concepts from the Community Information Service literature are used to consider the development of a software environment for people working as a community in the area of lifelong learning. The intention was to design the system in an evolutionary way, using a minimal set of essential elements which would be elaborated according to user feedback. Three key design questions are considered: Who can contribute resources to such a system? What happens to existing practices? How is the community engaged?

Keywords

Community Information Service (CIS), Community Information Service Knowledge Network (CIS Knowledge Network), Penang State Library (PSL).

1.0 INTRODUCTION

Background

The Penang State Library (PSL) has been serving information to the Penang public communities for 67 years. Information is so essential that it has become part of every human being. All human beings have information need, either individual or collective. Information is that basic need of life, which helps in the proper fulfillment of other needs such as food; shelter etc. for its survival and growth. Hence it can be rightly said that without information, survival and development of any community is not possible. Therefore, it is the basic responsibility of any Public Library to provide information services to communities. In addition, the Public libraries, being the library of communities can play important role in providing effective Community Information Service (CIS).

Given the quantity of information that the PCL has increasing collected in the form of books, magazines, reports, digital materials and papers, computing systems are an obvious support tool to help staff work their way to provide CIS through the resources. PCL is well aware, though, that community does not want only to obtain and read formal documents—they want to know what colleagues are currently thinking, what methods and approaches are currently being used; and they want the opportunity to discuss ideas with colleagues across the boundary. But no one has time to attend workshops or other face-to-face events to facilitate these needs.

In response to this situation, in December 2005, members of PSL, assisted by two consultants formed a team to develop a Community Information Service Knowledge Network (CIS Knowledge Network). The title was intended to be ambiguous—the software system itself was a network, as were the groups of people it was intended to support. The goals were to expand social interaction, decreased transaction cost, increase information exchange, increase knowledge of community, increased access to quality information, ability to identify/share trusted information. The CIS Knowledge Network team realised that if the system were to be accepted, they would have to stay as responsive and flexible as possible in order to convince users that their needs were paramount, rather than the needs of either the system itself, or the management concerns of PSL.

2.0 COMMUNITY INFORMATION SERVICE (CIS)

Community Information (CI) is the combination of two terms i.e. Community and Information. The term “Information” is used to identify many concepts; hence it is extremely difficult to define it precisely. Normally, information is a message, communicated by a communicator to a receiver. It is the product of human action in mind, which may be abstract or concrete. Therefore it is the raw material that is used in knowing, making decisions, taking actions, thinking and learning.

Reid (1977) defines information as “a process rather than as material. Data only becomes information by the act of imparting it.” Information can be regarded as data, which can be transmitted between individuals, and each individual can make use of it in whatever form he/she wants. When information becomes publicly recorded, it becomes objective knowledge available to all. Community is a body of people in the same locality or a body of people leading a common life or a group of people having common rights or a group of people having a common possession or enjoyment.

Giggey (1988) defines community as “a group of people who have something common. This can be their age, education, religion, interest, political affiliation, activities, work, possession or a combination of two or more of these.” Similarly Usherwood (1977) defines community in a comprehensive way that “any geographical community or neighborhood will be made up of a number of communities definable by race, social class, or income group, employment, leisure interest, religion and so on, each with its own informal information network that has grown up without the help of librarians or any other information advice workers.” Thus community in general indicates towards a group of people having common interests. However, neither they can be assumed nor they can be created to legitimate a political programme or to support a plan for action. In the context of librarianship, it is a group of people with shared meaning and shared communication.

Community Information (CI) is the information for the survival and growth of the community or it is that information which is required by the member of the community to make effective use of the available resources around them. In this context Kempson (1986) has rightly defined CI as “information of self-reliance and self-determination”. Thus CI is that information which helps to solve their day to day problems related to survival such as health, education, housing, legal protection, sound economic development, political rights etc and also to participate in social, political, cultural, legal and economic progress of the society either individually or collectively. The information services through which community information (CI) is provided to communities is called Community Information Service (CIS).

3.0 THE CIS KNOWLEDGE NETWORK

In addition to the CIS literature, the design process was also informed by Activity Theory (Engeström, 1987) and a psychological perspective (Aczel, 1998) drawing from the classic approach of Karl Popper. The initial Activity Theory framework has been set out elsewhere (McAndrew & Taylor, 2000). These more theoretical concerns are beyond the scope of this paper and may form the basis of future papers. As the CIS Knowledge Network team considered this flexible approach to design and tried to identify what the needs of the community

might be, it became clear that three key questions required attention. Both from the point of view of potential users and, from the point of view of the institution: (*Refer to figure 1 for CIS Knowledge Network framework*)

1. Who can contribute to the knowledge in the system?
2. What happens to existing practices?
3. How is the community engaged to participate in knowledge sharing?

The CIS Knowledge Network, then, was initially conceived of as a set of tools along the lines of those suggested by Wenger *et al* (2002) developed to meet the needs of overlapping sets of people engaged in lifelong learning, as both deliverers of courses and learners themselves. The design was to be informed by explicit decisions on the three questions set out above:

1. Who can contribute?

The list of tools suggested by the CIS literature includes many that potentially allow members of the community to contribute. It would seem obvious, and it seems to be a tacit assumption in the literature, that providing the widest possible opportunity for discussion, iteration and feedback would be best, but practical constraints can mitigate against this—discussions can lose focus, issues become attenuated with too many concerns, and so on. Furthermore, from an institutional perspective, there are potential risks in allowing anyone to contribute. Who would operate a quality assurance process for knowledge being circulated?

Nevertheless, the CIS Knowledge Network development team took the decision that the system should provide a straightforward means by which any member of the communities could publish materials and respond to material published by others, with no editorial control or moderation of contribution. This would also avoid the potential bottleneck that an approval process would necessarily impose, thereby enabling a more rapid build-up of resource. This decision ‘anyone can publish’ was in agreement with the principle that KM tools only achieve high levels of acceptance, trust and productive usage if they fit easily into everyday working practices. It was also thought that the professional members of the community would have no difficulty in identifying weak material, and that it would simply drop out of circulation in due course.

2. What happens to existing practices?

Fundamental to the CIS literature is a respect for the existing knowledge-sharing practices of a community. Obviously, if a set of tools is being introduced there must be some desire to enhance or change existing practices. The second key decision is the degree to which existing practices are supported or supplanted. Rather than seeking to supplant existing practices immediately, the development team decided to support existing practices in

the community. This required a system that could search multiple websites and data sources simultaneously, to enable those who wished to share their data to do so according to the practices to which they were already accustomed. There were, therefore, no constraints on data sources in the system information could be found from many sources. These two decisions ‘anyone can publish’ and ‘let a hundred data sources bloom’ constitute a distributed publishing model.

3. How is the community engaged?

No matter how good a set of tools are, though, there is no guarantee that they will be spontaneously taken up and used by the community. The development team decided to follow the evolutionary design-and-test development process set out above in order to engage the community in the Knowledge Network, and its development. In parallel, time was set aside prior to the creation of the system for engaging particular communities in thinking about how they wanted to disseminate their work using electronic methods. This ‘hearts-and-minds’ work was aimed at ensuring that by the time the first full version of the system arrived, not only would the dissemination mechanisms have been shaped by the deliberation, but that the knowledge cultures of the various communities would have changed from one of hoarding (because ‘knowledge is power’) to one of sharing (because shared knowledge leads to better, more useful knowledge). This shift in knowledge culture was necessary if the strategy of distributed publishing was to work.

3.1 Supporting and enhancing existing practices

Having worked alongside the community, the CIS Knowledge Network team had identified that the clear focus of their activities was access to existing and new materials, a task in which they were often frustrated. The strategy to tackle this problem is to collect the materials in an easy-to-search data store. The tool used was a browser-based front-end to a database organised so that the database appears to be a single dataset to end-users, though the search engine is actually seamlessly searching a range of data sources behind the scenes. Furthermore, materials are automatically cross-referenced, so that users can see which other materials relate to the item they are viewing. The ‘anyone can publish’ decision enabled a rapid transfer of existing documents to the system, and coupled with the decision on supporting existing practices and the ‘hearts and minds’ work resulted in a rapid take-up of this facility. A formative evaluation (Twining & Rico, 2002) found that the majority of users using the Knowledge Network were using it to locate documents. Moreover, this database function of the Knowledge Network appeared to constitute a large part of its perceived value: the study found that the CIS Knowledge Network saved users’ time looking for materials, helped them locate people with the knowledge they required, and helped them find information.

Within a year, around 30 per cent of the community was using the CIS Knowledge Network; and within two years, around 60 cent of the community was using it. Interview evidence suggested that locating information was the main purpose of users as a whole, and that they were mainly successful. The experience of this case study would suggest that, despite it being much less glamorous than other e-learning tools, a shared database combining an uncomplicated, familiar interface with a powerful search engine and rich content is arguably one of the most useful knowledge management tools one can provide for the community.

3.2 Sharing materials

Participants in the evaluation a year after launch (Twining & Rico, 2002) consistently reported that the Knowledge Network helped them disseminate their work and to manage their own documents. ‘Early adopters’ of the system might tend to be more tolerant, and more likely to be involved in publishing than other users, so an initial large overlap between publishers and accessors was expected. Data from two years after launch suggests that this overlap had decreased.

The development of the CIS Knowledge Network demonstrates that a distributed publishing strategy can enable the targeted community to access knowledge that was previously hard to access. More research is needed on this important aspect of KM for communities. A priori, one would expect that simply working towards a goal of putting work into a form that can be shared with colleagues would have value and, more so, if discussions of that work follow.

4.0 CONCLUSIONS

This case study has shown that the original design decisions, based upon the simple 3-issue model, were sufficient to support communities within an organisational context. The tools were found to be useful and uptake was surprisingly high given that the only incentive was the tool itself—there was no requirement for anyone to use the system. Interestingly, the response of the larger organisation was mixed. The local content of the library was supportive of the development of the CIS Knowledge Network, as its staff had long appreciated the need for effective communication and sharing with the communities. However, in the wider context of the community, the CIS Knowledge Network was viewed as an anarchic threat to other new systems of document management. The very features that were most prized in the CIS Knowledge Network (the ability for anyone to publish, the absence of editorial control, the freedom to exchange with many different kinds of users) were seen as its biggest flaws. A considerable amount of the CIS Knowledge Network team’s time was spent in promoting the difference between the CIS Knowledge Network and formal methods of document storage—the

CIS Knowledge Network team wanted to preserve the dynamic flexibility inherent in sharing, rather than construct the definitive body of knowledge that could be codified.

In this paper we have considered the growing use of knowledge management in support of the knowledge sharing process in the community, and the use of a software system to support CIS through CIS Knowledge Network. In doing so, we have understood more about the power of the concept, that is, that knowledge sharing is a key component of the formation of operation of users as a community—and we have illustrated particular methods to achieve the sharing. The characteristics that have enabled the success we have achieved with the CIS Knowledge Network are centered on ease of use and integration with an environment: the tools need to lower the barrier towards sharing rather than become an end in themselves. Of greater importance than the tools, though, is the link to patterns of working and the care with which the concepts are introduced.

Our three key design questions were: Who can contribute resources to such a system? What happens to existing practices? How is the community engaged? These proved sufficient to drive a development process, both in terms of software development, and in terms of the activities of our target users, that has resulted in a rich working environment to share knowledge and experience. Resisting organisational pressure to formalize the system and its processes also has demonstrated to the user community that the developers were anxious to respond to their actual needs, rather than impose methods on them. This has led to a sense of closer community amongst the groups using the CIS Knowledge Network, and underlines the value of keeping tightly focused on the needs of the users.

In conclusion, the final success of any project has to be measured against whether the project met the original goals, budget and time constraints, in other words, a deliverable that was accepted to the client, was handed over on time and support the the-to-day business operations. For PCL by utilizing the CIS Knowledge Network has helps them along the way to become the one stop center of Community Information Service (CIS) to the whole provinces in Penang as a success story.

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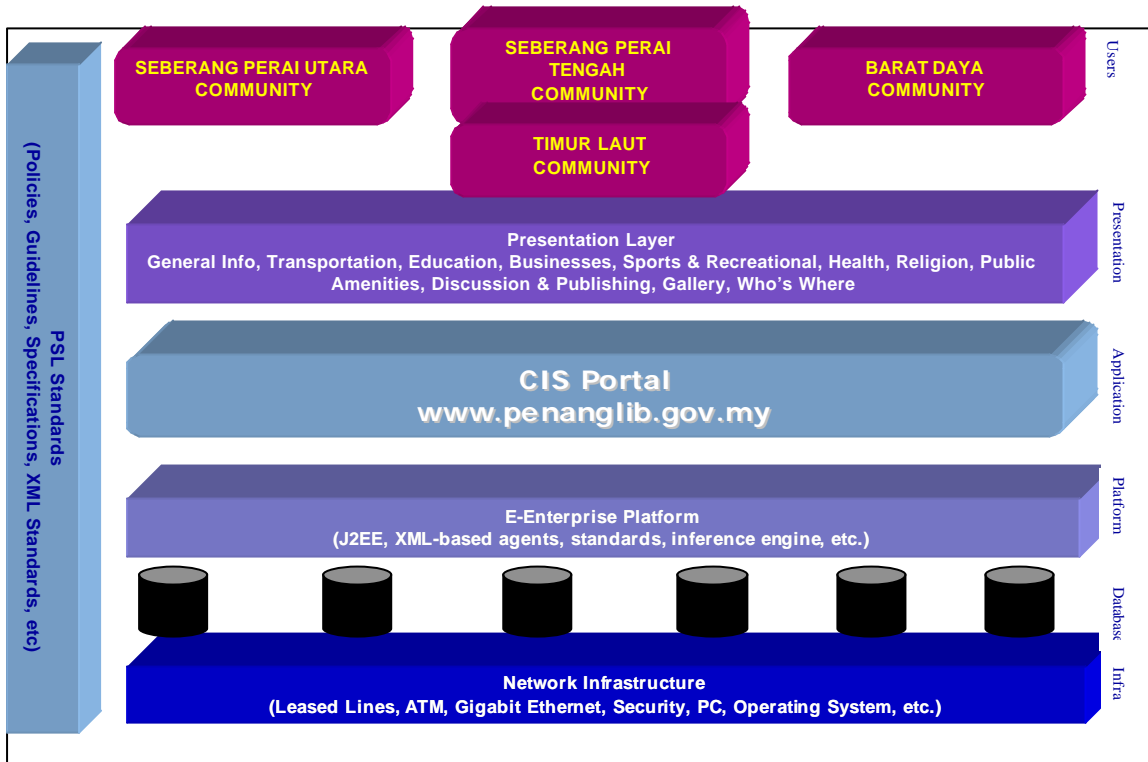


Figure 1: CIS Knowledge Network Framework