

2007

Strategic Knowledge Management Issues when Designing Knowledge Repositories

Lena Aggestam

University of Skövde, lena.agggestam@his.se

Per Backlund

University of Skovde, per.backlund@his.se

Follow this and additional works at: <http://aisel.aisnet.org/ecis2007>

Recommended Citation

Aggestam, Lena and Backlund, Per, "Strategic Knowledge Management Issues when Designing Knowledge Repositories" (2007). *ECIS 2007 Proceedings*. 41.

<http://aisel.aisnet.org/ecis2007/41>

This material is brought to you by the European Conference on Information Systems (ECIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in ECIS 2007 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.

STRATEGIC KNOWLEDGE MANAGEMENT ISSUES WHEN DESIGNING KNOWLEDGE REPOSITORIES

Aggestam, Lena, University of Skövde, P.O. Box 408, SE-541 28 Skövde, Sweden,
lena.agggestam@his.se

Backlund, Per, University of Skövde, P.O. Box 408, SE-541 28 Skövde, Sweden,
per.backlund@his.se

Abstract

Knowledge forms an important asset in modern organisations. In order to gain and sustain competitive advantage knowledge has to be managed. One aspect of doing this is to build knowledge repositories. In this paper we extend the strategic knowledge management framework to better suit the process of constructing knowledge repositories. The extended framework highlights, for example, the impact of organizational culture and the importance of distinguishing between the individual and organizational knowledge processes and relating them to each other. The application of the extended framework to analyze a case in the public health care sector revealed a number of important aspects in the preparation and implementation of a knowledge management project. In particular we highlight the importance of having a strategic vision and making the dual relationship between usage and design explicit when implementing a knowledge repository.

Keywords: knowledge repository, knowledge sharing, knowledge management, knowledge management framework, case study

1 INTRODUCTION

To gain and sustain competitive advantage organizations must manage their knowledge resources, which is referred to as knowledge management (KM). There are different types of KM with regard to how organizations accumulate knowledge, insights, and valuable expertise over time (Wiig 1994). However, regardless of type, the goal for KM is to support learning. KM includes both knowledge reuse and knowledge creation (Davenport et al. 1996), and the organization must support and stimulate the knowledge-creating activities of individuals (Nonaka and Takeuchi 1995). Thus, it is required to find effective ways to link KM processes and organizational processes to each other.

Employees' knowledge is a valuable asset, and knowledge sharing between them can be modelled as a network of relationships (Remko and Buijsroggee 2006). Based on the assumption that networks should be the context for strategic KM, Carlsson (2001) proposes the Strategic Knowledge Management (SKM) framework, which is conceptualized from the resource-based and knowledge-based view of the firm. When applying SKM to a case Backlund and Strand (2002) identify evaluation aspects that need to be developed. Our impression is that these aspects show the need to adapt and extend SKM to different types of KM in order to make it useful on the operational level, where value is created and where the advantages of knowledge management may contribute. To incorporate knowledge sharing in the organizational culture is perhaps the most important factor for successful KM system implementation (O'Donovan et al. 2006) and this is what developing knowledge repositories is about. The importance of the network context is obvious, as well as the emphasis of knowledge creation. From a Resource-Based View (RBV), this refers mainly to the change of strategy that Blodgood and Salisbury (2001) call "Reconfiguring new resources". This paper focuses on knowledge reuse in the form of building IT-supported knowledge repositories and then disseminating the knowledge by using some form of Internet technology.

The goal of the paper is to extend the SKM framework in order to take a step further towards its goal to "... guide an organization in designing and developing critically strategic knowledge processes" (Carlsson 2001, p. 624). *To achieve this goal we make a theoretical analysis in order to extend SKM. Then we apply the extended SKM to analyze a case in order to establish its usefulness.* Thus, this paper has two contributions: The extended framework and lessons learnt, both from the theoretical study and from applying SKM to the case.

The paper is structured as follows: Our points of departure are described in Section 2. The theoretical analysis and the extended SKM is presented in Section 3. Section 4 describes how the extended SKM has been applied to the case. We close the paper by a set of lessons learnt from this work.

2 POINTS OF DEPARTURE

The setting of the paper is KM. In 2.1 we define some concepts and give an overview of KM. In 2.2 we discuss knowledge repositories more carefully, and 2.3 presents SKM.

2.1 Knowledge Management – an Overview

Knowledge Management aims to create value for the organization by enabling learning. Even if learning and accumulation of (new) knowledge always start from the perspective of an individual (Jensen 2005), there are different types of KM. Knowledge repositories refer to KM that accumulates knowledge outside people in order to disseminate knowledge to support learning (Wiig 1994). Repositories aim to enable both individual and organizational learning, and as such they support the other two types of KM identified by Wiig (1994): to accumulate knowledge inside people and to embed knowledge in processes, routines etc. Furthermore, the development process of knowledge repositories contributes to organizational knowledge, e.g., by embedding knowledge in the technology

and in work processes for using the repository. From the perspective of Binney's (2001) six elements, developing knowledge repositories includes both a product and a process perspective. There must be processes associated with the management of the knowledge repository and improvements of work processes in order to support different types of knowledge conversions as described by Nonaka and Takeuchi (1995). The application of technology when building the repository embeds knowledge in the application and the use of it. Binney (2001) terms this transactional KM, which is a side-effect of building knowledge repositories. Figure 1 summarizes this discussion.

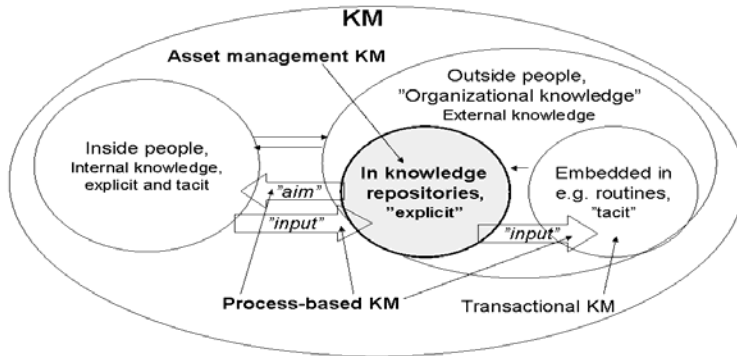


Figure 1 Different types of KM and their relations (From Aggestam 2006)

There are different types of knowledge. Wiig (1993) terms knowledge that people hold in their minds internal knowledge. Knowledge in e.g. books and IT systems is referred to as external knowledge, (or information, our remark). From the perspective of an employee, external knowledge is organizational knowledge, i.e. knowledge that remains in the organization even if employees quit. Another common distinction in the literature is between tacit and explicit knowledge (see e.g. Gore and Gore 1999, Loermans 1993, Nonaka and Takeuchi 1995, Wiig 1993). Tacit knowledge is hard to identify and to express since it is highly personal and concerns insights and intuition (e.g. Nonaka and Takeuchi 1995, Blodgood and Salisbury 2001). Explicit knowledge is easier to express and can, in contrast to tacit knowledge, also be processed by a computer (Blodgood and Salisbury 2001, Nonaka and Takeuchi 1995). The knowledge stored in a repository is explicit from an organizational perspective.

IT is a prerequisite for effective KM (e.g. Loermans 2002, Scriber et al. 2000, Wong and Aspinwall 2004), and KM therefore involves a combination of technical and human elements (e.g. Davenport and Prusak 1998, Bubenko jr et al. 2001, Wong and Aspinwall 2004). However, with respect to knowledge type, IT has different capabilities (e.g. Hansen et al. 1999, Blodgood and Salisbury 2001, Nonaka and Takeuchi 1995). Hansen et al. (1999) claim that IT has two generic capabilities: codifying knowledge and creating networks. Codifying and storing knowledge is more appropriate for explicit knowledge. Creating networks in order to enable people to share knowledge directly is more appropriate for tacit knowledge (e.g. Davenport and Prusak 1998, Blodgood and Salisbury 2001).

This paper focuses on organizational knowledge stored in an IT-supported knowledge repository which is disseminated by using some form of internet technology. From the Resource-Based View Blodgood and Salisbury (2001) identify 4 change strategies and how each of them emphasize different types of knowledge and focus on different knowledge strategies as well as their typical IT use. We focus on Reconfiguring new resources. This implies focusing mainly on knowledge creation, but also on transfer and protection, emphasising both tacit and explicit knowledge and using IT for both codifying knowledge and creating networks. In 2.2 we further discuss this type of KM.

2.2 IT-supported Knowledge Repositories

A knowledge repository requires capturing, packaging and storing relevant knowledge. These activities takes place both when a knowledge repository is created for the first time in a KM implementation project, and every time new knowledge that has potential relevance for incorporation

in an existing knowledge repository is generated. The latter is critical for having updated knowledge repositories and furthermore to maintain usefulness and trust in the repository over time.

The Framework for IT-supported KM (FIT-KM), see Figure 2, describes IT-supported KM from the perspective of knowledge repositories (Aggestam, 2006a).

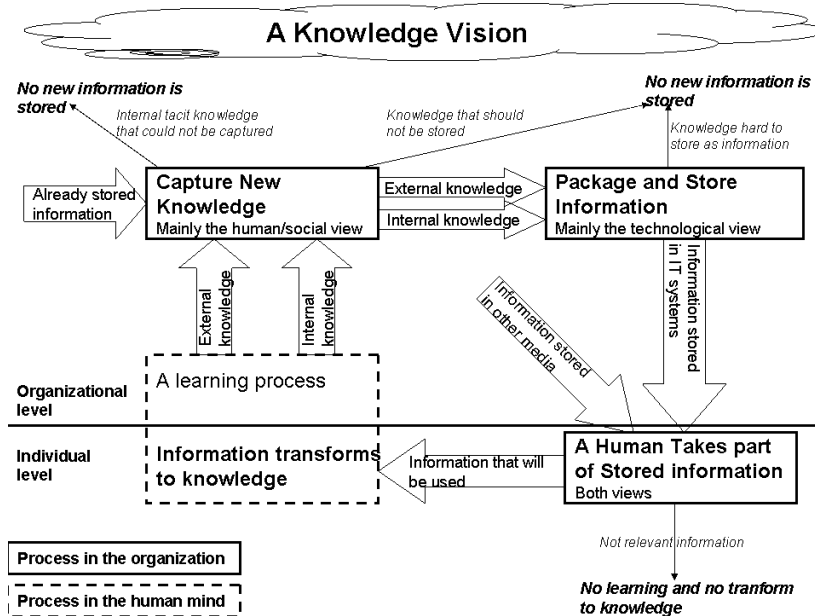


Figure 2 A Framework for IT-supported KM (Aggestam 2006a)

One way to start KM work is to review already stored information (Gore and Gore 1999), and FIT-KM clearly indicates that this is an entrance to the process *Capture new knowledge*. The Capturing process together with packaging and storing are the organizational processes in FIT-KM. *Capture New Knowledge* uses external and internal knowledge and already stored information as input. It aims to capture new knowledge, new from the perspective of the IT-system and/or in the consciousness of the humans in the organization. There are knowledge losses in the form of tacit knowledge that could not be captured as well as captured knowledge that should not be stored. *Package and Store Information* uses the output from the former process as input. It aims to package and store information in such a way that it is easy to find, share, use and complement. Some knowledge is hard to store in the repository, i.e. there is a knowledge loss. As opposed to the capturing process, the technological perspective is dominating when packaging and storing information. The stored information is the input at the individual level. If an employee finds the stored information relevant according to both task and earlier knowledge the information will be used. If the created knowledge is new, it is a potential to the repository.

2.3 The Strategic Knowledge Management Framework

Based on the resource-based view (RBV) Carlsson (2001) proposes a framework for Strategic Knowledge Management (SKM). In SKM it is suggested that gaining and sustaining a competitive advantage through knowledge and knowledge processes consists of three phases and six tasks. Figure 3 describes SKM. Our interpretation is that the arrows in SKM show how the six tasks influence each other.

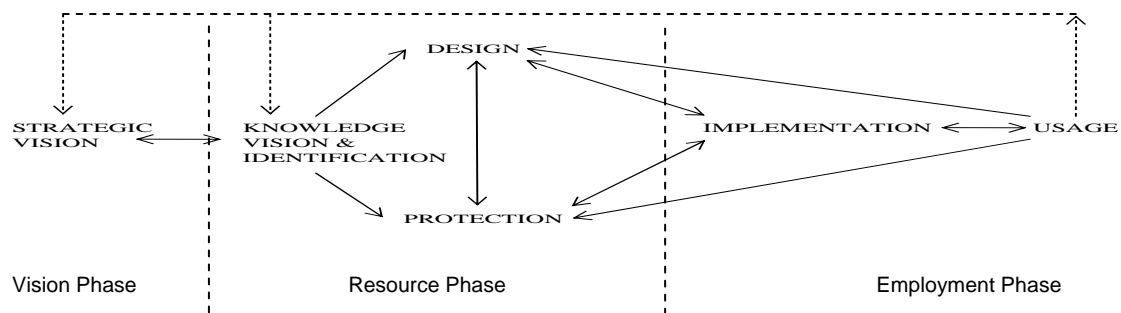


Figure 3 A model of the strategic knowledge management process (From Carlsson 2001)

In the following paragraphs we present a brief description of each task. Readers willing to extend their knowledge of the framework and its tasks are referred to Carlsson (2001)

Strategic vision. As the name implies, this task is focused on identifying the purposes for incorporating knowledge management into the business, as a means for gaining and sustaining competitive advantage. The purposes must be made available in the strategic vision of the organizations, but the form in which it is made available is of secondary importance.

Knowledge vision and identification of key knowledge-related resources. This task is focused on identifying the KM resources in which the organization must invest, in order to gain competitive advantage. The importance of aligning the knowledge vision to the strategic vision is also pinpointed. Furthermore, the knowledge vision is also to consider as guidance to the types of KM resources needed, but it does not specifically describe how these resources are to be acquired, designed, implemented, and used.

Design. This task addresses how the requirements stated in the knowledge vision can be accomplished. The core of this task is to develop strategic knowledge architectures, i.e. combining the knowledge resources, in order to put the knowledge vision into effect.

Knowledge protection. This task can be divided into two broad categories. Firstly, protecting the knowledge and the (network-based) processes from being imitated by competitors and secondly, protecting the knowledge from value erosion. Carlsson (2001) also exemplifies on so called isolation mechanisms to protect the knowledge and its sources. The mechanisms are, besides legal and contractual measures: 1) Ambiguity, 2) Complexity, and 3) Time advantage.

Implementation. This task concerns how to promote the knowledge management activities and support to the organization. This task concerns different tactics to implement the knowledge-related resources. Focus is laid on their competitive implications and economic performance.

Usage. This task concerns the organizational usage of the knowledge-related resources. For this task, the general questions may be directly applied to evaluate the usage of the knowledge-related resources. The outcome of such evaluation may in turn affect the strategic vision and knowledge vision.

3 THE EXTENDED STRATEGIC KNOWLEDGE MANAGEMENT FRAMEWORK

The SKM framework (Carlsson 2001) covers all type of strategic KM. In this paper we focus on developing knowledge repositories. We have analyzed Carlsson's (2001) framework from this perspective (3.1). Based on this analysis we extended the SKM framework (3.2). In order to enhance traceability we have numbered each identified extension (Figure 4).

3.1 Theoretical Analysis

The analysis is performed in two steps: Firstly, we analyze the framework with respect to how knowledge repositories relate to KM in general (Figure 1), and secondly with respect to the perspective of knowledge repositories (Figure 2).

Step 1: SKM for knowledge repositories from a holistic perspective (based on Figure 1)

The requirements formulated in the *knowledge vision* result in a *design* decision to develop an IT-supported knowledge repository. The *design* task should consider how knowledge repositories relate to KM work in general. Accumulating knowledge in a knowledge repository aims to enhance learning, i.e. accumulating knowledge inside people. The repository's design must be adapted to the users since it influences usage. This is covered in SKM. The *design* will also influence the usage and is a valuable tool for *how* the repository will be used. Therefore, the arrow between design and usage in the SKM framework should be double headed (1) to indicate mutual influence.

The knowledge created by an employee in a learning situation is a potential input to the repository. The need to link this individual process to a general processes is important (2). This, in turn, requires a separation between the organizational and individual levels, which lacks in the SKM framework (2). Developing repositories also contributes to embedded knowledge, which in turn is a way to protect it. This relationship is highlighted by the arrow from *Implementation* to *Protection*.

Both content and process are included in the *Design* task (Carlsson 2001). Our analysis shows the importance of differing between processes to manage the repository, i.e. "Asset management KM" and the processes for improving work processes, i.e. "Process-based KM". From our point of view, *Usage* refers to the individual use in daily work, which should be a part of everyone's job (e.g. Davenport and Prusak 1998), and *Implementation* refers to organizational processes for managing the repository. Daily use is a valuable input to manage the content of the repository, e.g. when it is updated. Again, we emphasize the importance to link individual processes to organizational ones (2)

Step 2: SKM for knowledge repositories from a specific perspective (based on Figure 2)

In comparison to FIT-KM the SKM framework lacks separation between organizational and individual levels as well as between processes on a more operational level. The lack of separation between the organizational and individual levels was revealed in step 1. With respect to FIT-KM we claim that *Usage* is the only task in the SKM framework which resides on the individual level. *Usage* in the meaning of using information in the repository includes (on an operational level) an individual taking part of the information as well as transforming it to knowledge, i.e. learning. *Implementation* is about capturing new knowledge, as well as packaging and storing it (Figure 2). The process A Human Takes part of Stored information and Information transforms to knowledge are individual processes on an operational level, and Capture New Knowledge and Package and Store Knowledge are organizational processes on an operational level. The SKM framework needs to be extended with these operational processes (3) and the separation between individual and organizational levels (2).

Both FIT-KM and the SKM framework visualize that *Usage* and *Implementation* influence each others. After complementing these tasks with the operational processes, and the separation between individual and organizational levels, this influence can be shown on a more detailed level. The stored knowledge is the information that can be used for knowledge creation, and this newly created knowledge provides potential input to the capturing process (6). These two arrows (6) replace the double headed one between *Usage* and *Implementation*. The individual usage is carried out within the limits of organizational processes. This discussion also highlights the importance of how knowledge is stored with respect to how it is used (1).

FIT-KM highlights knowledge losses. Some knowledge losses are desired, one such loss is information that not is supported by the knowledge vision. Or as it was put by a HR manager in Sweden: "It's difficult to make people remember that they don't need to store everything." (Our

translation). Therefore, we claim that there is a connection between *Knowledge vision and identification* to *Implementation* (4) that should be made explicit. It is important to have a clear notion of the degree to which certain knowledge is crucial for the competitive advantage of the organisation and if plagiarism by other organisations could jeopardize this competitive advantage (Blodgood and Salisbury 2001). This can also result in a desired knowledge loss, which from our point of view is covered by the *Protection* task. *Protection* influences what to store. However, there may exist knowledge which we want to store but which can not be stored with regard to the design choices, e.g. an open network, even if it is in line with the knowledge vision. Backlund and Strand (2002) identified situations where the participants in an inter organizational network considered some knowledge not shareable due to company policies. This can affect the *Design* as well as the *Knowledge vision and identification*. Therefore, we argue, that the relationship between *Knowledge vision and identification* and *Protection* must be mutual (7).

Another distinction made in FIT-KM as opposed to the SKM framework, is between the technological and the social/human view. We refer to the social/human view in terms of the organizational culture, which importance is well stated in literature (e.g. Busch and Richards 2004, Chua and Lam 2005, Davenport and Prusak 1998, Hung et al. 2005, Park et al. 2004, Sandelands 1999, Sun and Scot 2004). IT enables knowledge reuse, but the real KM is carried out by people (e.g. Bubenko jr et al. 2001, Jennex and Olfman 2006). Culture influences all knowledge work processes more or less. Its consequences are most notable in *Usage*. However the work to affect organizational culture has a long time perspective and must hence be a part of all tasks in the framework. For example, the design of reward systems to encourage employees to knowledge sharing and knowledge reuse, but must be a result of a strategic decision. Culture is made explicit in the extended SKM framework (5).

3.2 The extended SKM Framework

The SKM framework has been extended to guide an organization in designing and developing an IT-supported knowledge repository, in accordance with the analysis in 3.1, see Figure 4. Each extension is numbered, and explained in 3.1. In the following section we will apply the extended SKM framework to reanalyze a case in order to better understand how to implement KM and if the extended SKM framework has potential for being useful.

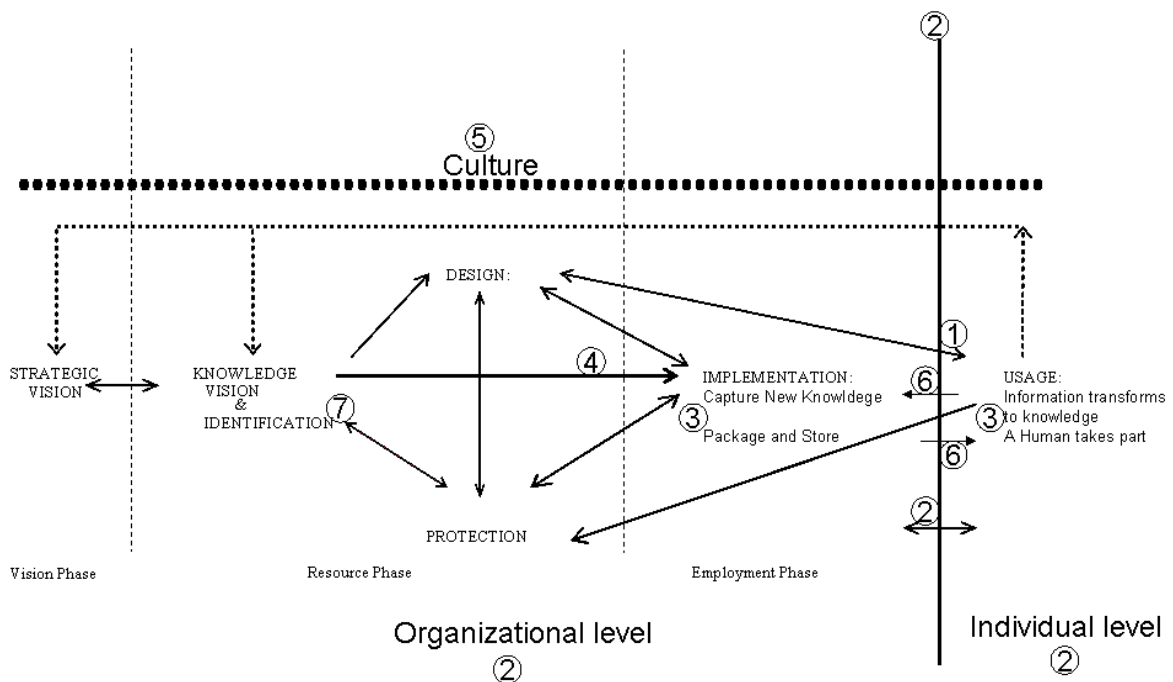


Figure 4 The extended SKM framework

4 APPLYING THE EXTENDED SKM FRAMEWORK TO A CASE

We have applied the extended SKM to reanalyze data from a KM implementation project called Efficient Knowledge Management and Learning in Knowledge Intensive Organisations (EKLär)¹. In 4.1 we describe the EKLär project, and in 4.2 we present the result of applying the extended SKM framework to EKLär. .

4.1 The Case

The project EKLär is in the area of health care, more precisely focusing on the treatment of leg ulcers. EKLär aims to develop an IT-supported knowledge repository for learning and sharing of best practices with respect to treatment and prevention methods for leg ulcers². The approach used in EKLär, Enterprise Knowledge Patterns (EKP), combines Enterprise Modelling (EM) with organisational patterns (Stirna, Persson and Aggestam 2002). It is characterized by a strong emphasis on stakeholder participation and the use of Organizational Patterns in order to identify possible knowledge chunks and their content.

The project is carried out in three main phases: preparation, implementation, and evaluation, where implementation and evaluation is still on-going in parallel. **The preparation phase** continued for approximately six months, and aimed to collect knowledge about the domain, and gain approval for the main purpose of the project. Data were collected during 19 interviews and 2 observations.

The implementation phase continued for approximately fifteen months. It included daily works to develop the repository, as well as hands-on-learning to teach the stakeholders how to manage knowledge. Data were mainly collected during project meetings. An average of one meeting a month lasted a half to a whole day. The meetings were documented through models and patterns developed, and also by detailed notes. The notes for each meeting were summarized and sent to the participants. Further collected data include relevant documents as well as similar projects from other hospitals. The aim of the initial meetings was to identify which knowledge area to focus on. The result was a compromise between the identified needs in the preparation phase and what the hospital staff regarded to be the most important knowledge to be taught. On this basis, the work proceeded to capture relevant knowledge, and package and store it. As work proceeded the nurses became increasingly autonomous and carried out more and more work between our meetings. One important issue was to decide which technical tool to use. The project decided to use an existing technical solution, which the hospital had already decided to invest in. A critical step is making the result survive after the project is finished. In EKLär this requires that the repository it is kept up-to-date. This work is still progressing, parallel with the evaluation phase.

The evaluation phase has been going on for 4 months. So far, we have made 4 observations using “think aloud” protocols. The observations were taped and transcribed. In relation to the observation we asked questions based on Jennex and Olfman (2006) KM success model in order to identify the potential for the repository to being successful.

4.2 Applying the extended SKM framework

While applying the extended SKM framework we have reanalyzed the data collected in EKLär. The following description is structured in accordance to the three phases of the project. To enhance traceability we present tasks and concepts from the framework in italic, as well as including the numbers referring to our extensions.

¹ EKLär is supported by Vinnova, The Swedish Governmental Agency for Innovation Systems.

² The link to the developed repository is www.vgregion.se/skassarwebben

The preparation phase focuses the users in a preparation view. The framework itself has more of an implementation view. However, preparation must take important tasks into consideration and prepare for these, and by applying the extended SKM we learnt things relevant for the preparation phase:

- *Usage*: Wanting to use the repository requires motivation, i.e. to think that it contributes to daily work. The preparation process contributes to this, and makes the future users feel they are involved from the beginning and that their opinions are important.
- *Design*: What content do the users want to find? What type of language should be used? How should information be presented and disseminated to fit the daily work? (In our case this means concise and precise information.) Observations from the case highlight the importance of users' influence on design. This is strengthened in the evaluation phase. This is in accordance with Carlsson's (2001) relation between *Usage* and *Design*.
- *Culture (5)*: In the case we observe that users had no problems to learn from people who have the same education as themselves. We interpret this as a part of a knowledge sharing culture. The extent to which IT is a part of each individual's daily work varies. Both reflections add to the body of knowledge concerning the importance of taking organizational culture into account.
- *Link individual processes to organizational processes (2)*. The case highlights the importance of connecting individual work processes to organizational ones. From the users' perspective there must, for example, be time for using the repository as well as having access to computers and the Internet. The case can be regarded as a virtual organization, and there can be different cultures and processes in different parts of it. Hence it remains to be shown whether SKM covers virtual organizations.
- (6) The interviews reveal the importance of this, and questions about how new knowledge created in e.g. primary care can be captured in the hospital and stored in the repository were raised. This also relate to the fact that the case can be regarded as a virtual organization (see the former point).

The implementation phase is about developing the repository, and all tasks except *Usage* should be involved.

- *Strategic Vision*: In our interpretation of the case it is hard to discern the strategic vision from the knowledge vision. This is perhaps due to the fact that the strategic level for the whole hospital has not been explicitly present in EKLär. One reason for this may be that top management for the whole hospital has not been involved. However, the need for a strategic vision became clear later in the process, mainly in *Design*.
- *Knowledge Vision and Identification*: It is not clear to us whether this refers to the knowledge vision in general or to the specific project. We interpret this task not to be project specific, and as a consequence, we miss the project goal in the framework. From our point of view this task concerns the KM strategy; and its importance became more and more clear as the project proceeded. Questions such as: "What is the knowledge vision? What is the strategy? How do we want to use the knowledge resource for the whole hospital?" were asked. To our opinion, these are questions about the knowledge strategy. Taking the perspective of Blodgood and Salisbury (2001) it was not clear if knowledge creation or knowledge transfer should be emphasized. From a RBV perspective organizations have four choices (Blodgood and Salisbury 2001) and these are two of them. With respect to the fact that SKM has its origin in RBV it is not strange that this was noticed. However, it also shows the importance to explicitly discuss and decide the organizational change strategy; does it concern creation, transfer or protection of knowledge?
- *A knowledge Goal is missing*: In the case we observe the importance of asking questions such as: "Which knowledge do we want to disseminate in order to reach the project goal? What do

we want to teach the personnel?” The importance of the knowledge goal is obvious. The knowledge goal must be in line with the former one about the knowledge vision and identification. As we see it the knowledge goal is missing in the framework, or is this what the former one is about? The first meetings aimed to identify a starting point, which became a compromise between the results from the preparation phase and the initial results of the implementation phase. This strengthens the fact that the preparation phase needs to be an integral part of the extended SKM.

- *Design*: From the perspective of this task the importance of a well stated and clear project goal is further stressed. Design should include repository content and structure. That is, what pieces of knowledge should be included and how should they be related in order to reach the business goal (4)? Furthermore, issues concerning the type of network, i.e. open or closed, must be resolved. If there are no legal aspects such as confidentiality an open network may be considered. It is important to identify the connection points between the individual and organizational processes (2). Presently, this is mostly done from the suppliers’ perspective. However, in order to become useful the repository must be aligned to fit both end-users’ and repository managers’ needs. Notably, in EkLär neither group has a high level of IT maturity. Finally, information stored must be concise, since no user has the possibility to spend much time browsing it, and preferably utilizing multi media and pictures.
- *Protection*: According to Carlsson’s (2001) definition protection is not a key issue in this project. This is due to project’s goal and the type of organization involved. There is no knowledge to protect since it is a goal for everyone involved to reach as many users as possible. Another aspect of protection, to our knowledge not regarded in SKM, is knowledge that others want to protect, e.g. legal aspects. This was obvious in EkLär, probably with regard to the fact that it is in the area of health care. As we see this important aspect should be included in this task.
- *Implementation* concerns capturing knowledge, and packaging and storing information (3). The project constantly revisited the knowledge goal (4) when evaluating whether new knowledge should be incorporated in the repository or not. The fact that the same stakeholders (i.e. the domain experts) capture and package the knowledge provided valuable input concerning the links between the patterns stored.
- *Culture*: The case indicates a knowledge sharing culture where the existing knowledge sharing habits could be utilized in the project (5).

In **The evaluation phase** *Usage* is in focus. The importance of how the repository has been designed is obvious:

- The main purpose was to guide the nurses to do a preliminary appraisal before identifying leg ulcer type and design how to treat it. The design was based on this aim. From the observations we see that this focus lead to design trade-offs impacting usage. Information regarding this aim is easy to find, while other information requires more habit to the repository and its structure and content. How the repository is used depends on the design (1)

One important contribution to the subject domain from the project under study is the analysis of which knowledge chunks to incorporate, what they should include and how they should relate to each other. The importance of using a tool like e.g. EKP is highlighted and we argue that the need to have a method/tool which supports the structure part in the design task must be emphasized. Furthermore, attitudes towards computers and the repository form an important success factor. This is a part of the culture (5), and highlights the importance to anchor and motivate the project in a preparation phase. As indicated in the SKM framework (Carlsson 2001) the importance of the IT architecture in *Design* was obvious, but with regard to and the nature of the case (public health care with limited competition) only a subset of the analysis questions are relevant. From an updating perspective it is important to separate between Knowledge generating processes and organizational. Here we also see a further

aspect of connecting individual processes to organizational processes (2). It is not only about *Usage*, it is also about implementation, i.e. how in daily work identify capturing points? One important aspect was found to be how the IT architecture fits the work processes (2). From this we conclude that the IT infrastructure must be an explicit issue in *Design*.

5 CONCLUSION

The case study underlines the importance and the applicability of the extensions of the SKM framework. All extensions, except number 7, is explicitly observable in EKLär. The goal for the paper is to extend the SKM framework in order to take a step further towards the goal to "... guide an organization in designing and developing critically strategic knowledge processes" (Carlsson 2001, p. 624). We utilized a theoretical analysis to extend the SKM framework and a case analysis to validate the extension. This method results in two contributions: The developed framework and a set of lessons learnt from the case.

The most important lessons learnt from applying the extended SKM to a health care domain case are summarized as follows.

- The importance of identifying explicit goals on different levels (*Strategic Vision*, *Knowledge Vision* and *Knowledge Goal*), and aligning them to each other.
- The importance of the design, i.e. repository structure, for how the repository is used.
- Project preparation must be an integrated part of implementation work.
- The importance to link individual processes to organizational processes, both from *Usage* and *Implementation* in the Strategic Knowledge Management framework.
- Legal aspects are to be perceived as another facet of *Protection* in the Strategic Knowledge Management framework.

Thus, we argue that the made extensions are important and helps to better understand and implement KM in the form of developing knowledge repositories. The case has also shown the framework's potential for being useful. Future work will consist of further validating the extended framework as well as adapt SKM to other types of KM. Furthermore, the issue whether the Strategic Knowledge Management framework is applicable to virtual organizations remains to be solved.

References

- Aggestam, L. (2006) *Towards the Learning Organization – the Role of Knowledge Management* Licentiate Thesis, Department of Computer and System Sciences, Stockholm University, ISSN 1101-8526
- Aggestam, L. (2006a). *Wanted: A Framework for IT-supported KM* Proceedings of the 17:th Information Resources Management Association (IRMA), 21-24 May 2006, Washington, USA, pp.46-49
- Backlund, P. and Strand, M. (2002) *Evaluating knowledge management in network contexts – applying the strategic knowledge management framework*. In Proceedings of the 10th European Conference on Information Systems (ECIS'02), 6-8 June, Gdansk, Poland
- Binney, D. (2001) *The knowledge management spectrum – understanding the KM landscape* Journal of Knowledge Management, Volume 5, Number 1, pp 33-42
- Blodgood, J.M. and Salisbury, W.D. (2001) *Understanding the influence of organizational change strategies on information technology and knowledge management strategies* Decision Support Systems 31, pp. 55-69

- Bubenko jr, J. Persson, A. and Stirna, J (2001) *HyperKnowledge IST-2000-28401 D3 User Guide of the Knowledge Management approach using Enterprise Knowledge Patterns* Project funded by the European Community under the “Information Society Technology” Programme (1998-2002)
- Busch, P and Richards, D (2004) *Tacit knowledge and culture* The Proceedings of the First International Conference on Knowledge Management (ICKM'04), 13-15 December 2004, Singapore
- Carlsson, S, A. (2001) *Knowledge Management in Network Context* in the Proceedings of the Ninth Conference on Information Systems, 2001, Bled, Slovenia, June 27-29, 2001
- Chua, A. and Lam, W. (2005) *Why KM projects fail: a multi-case analysis* Journal of Knowledge Management, Vol. 9, No. 3, 2005, pp. 6-17
- Davenport, T.H. & Prusak, L. (1998) *Working Knowledge* Harvard Business School Press Boston
- Davenport, T.H. Jarvenpaa, S.L. and Beers, M.C. (1996) *Improving knowledge work processes* Sloan Management Review, 37, 4 (Summer 1996) pp. 53-65
- Gore, C. and Gore, E. (1999) *Knowledge management: The way forward* Total Quality Management 10 (4,5), pp. 554-560
- Hansen, M.T. Ireland, R.D. and Hoskisson, R.E. (1999) *Strategic Competitiveness and Globalization* South-Western College Publishing, Cincinnati, OH
- Hung, Y, Huang, S, Lin, Q and Tsai, M (2005) *Critical factors in adopting a knowledge management system for the pharmaceutical industry* Industrial Management & Data Systems, Vol. 105, No. 2, 2005, pp. 164-183
- Jennex, M. E. and Olfman, L (2006) *A model of Knowledge Management Success* International Journal of Knowledge Management, 2 (3), 51-68, July-September, 2006
- Jensen, P.E. (2005) *A Contextual Theory of Learning and the Learning Organization* Knowledge and Process Management Vol. 12, No. 1, pp. 53-64
- Loermans J. (2002) *Synergizing the learning organization* Journal of Knowledge Management, Vol. 6, No. 3, pp. 285-294
- Nonaka I. and Takeuchi, H (1995) *The Knowledge-creating Company* Oxford University Press 1995
- O'Donovan, F. Heavin, C. and Butler, T. (2006) *Towards a model for understanding the key factors in KMS implementation* in the Proceedings of the 14:th Conference on Information Systems, 2006, Gothenburg, Sweden, June 12-14, 2006
- Park, H. Ribière, V. and Schulte Jr, W.D. (2004) *Critical attributes of organizational culture that promote knowledge management technology implementation success* Journal of Knowledge Management, Vol. 8, No. 3, pp. 106-117
- Remko, H. and Buijsrogge, K. (2006) *Application of knowledge networks analysis to identify knowledge sharing bottlenecks at an engineering firm* In the Proceedings of the 14:th Conference on Information Systems, 2006, Gothenburg, Sweden, June 12-14, 2006
- Sandelands, E. (1999) *Learning organizations: a review of the literature relating to strategies, building blocks and barriers* Management Literature in Review, Vol 1, 1999
- Schreiber, G. Akkermans, H. Anjewierden, A. de Hoog, R. Shadbolt, N. Van de Velde, W. and Wielinga, B. (2000) *Knowledge Engineering and Management The CommonKADS Methodology* Massachusetts Institute of Technology ISBN: 0-262-19300-0
- Stirna, J. Persson, A. and Aggestam, L. (2006) *Building knowledge repositories with enterprise modelling and patterns – from theory to practice* in the Proceedings of the 14:th Conference on Information Systems, 2006, Gothenburg, Sweden, June 12-14, 2006
- Sun Yih-Tong, P. and Scot, J. L. (2005) *An investigation of barriers to knowledge transfer* Journal of Management Vol. 9, No 2, 2005, pp. 75-90
- Wiig, K.M. (1993) *Knowledge Management Foundations – Thinking About Thinking – How People and Organizations Create, Represent, and use Knowledge* Schema Press LTD
- Wiig, K.M. (1994) *Knowledge Management The Central Management Focus for Intelligent-Acting Organizations* Schema Press LTD
- Wong, K.Y. and Aspinwall, E. (2004) *Knowledge Management Implementation Frameworks: A Review* Knowledge and Process Management, Vol. 11, No. 2, pp. 93-104