Disseminating Knowledge throughout the Organization:
A Best Practice from Siemens

Sven C. Voelpel[1]
Harvard University
Harvard Business School
Soldiers Field
Boston, MA 02163, USA

Malte Dous*

Lutz M. Kolbe*

Walter Brenner
*University of St. Gallen
Institute of Information Management
Mueller-Friedberg-Strasse 8
CH -9000 St. Gallen, Switzerland

Sven C. Voelpel is a Visiting Fellow at Harvard Business School, Harvard University. He is a Professor at the Norwegian School of Economics and Business Administration and at the Business School Netherlands International. Contact: svoelpel@fas.harvard.edu.

Malte Dous is a Research Associate at the Institute of Information Management at the University of St. Gallen, Switzerland. Contact: malte.dous@unisg.ch.

Lutz M. Kolbe is a Research Head at the Institute of Information Management at the University of St. Gallen, Switzerland. Contact: lutz.kolbe@unisg.ch.

Walter Brenner is a Professor and Director at the Institute of Information Management at the University of St. Gallen, Switzerland. Contact: walter.brenner@unisg.ch.

---

[1] Corresponding author. Please correspond by email solely.
****
Professor Sven C. Voelpel
Siemens Visiting Fellow
Harvard University
Harvard Business School
Soldiers Field Park
Boston, MA 02163
e-mail: svoelpel@post.harvard.edu
****

Abstract

This contribution illustrates how Siemens, a major company in the electronics industry, established a sustainable, global knowledge-sharing system. Besides the description of the technical platform used for the transfer of knowledge, we elaborate on how Siemens addressed those crucial aspects that are required to anchor a knowledge-sharing initiative within an organization. These issues mainly comprise the global involvement of major stakeholders during the development, the introduction of an effective incentive system and the consideration of different knowledge cultures in the various business units. The case study culminates in six key learnings for Knowledge Management practitioners on how to support the global transfer of knowledge by establishing a knowledge culture within the organization.

Keywords: Knowledge sharing, Organizational knowledge-culture

Introduction

During the late 1990s Knowledge Management as a topic had been widely discussed in management theory. Consequently, the majority of global companies were attempting to put at least some of the most promising concepts into practice at the turn of the millennium. Although a number of approaches have proven to be successful, many of these initiatives failed because they did not consider the particular organizational environment or knowledge culture necessary to embed the initiative effectively.

An outstanding example of an organization successfully enabling the global transfer of knowledge is that of Siemens AG. Siemens, one of the world's largest private organizations (Siemens 2004b)[2] with 415,000 employees in 196 countries, is on its way to transforming into a knowledge-networked company. An important building block in the transformation process was the implementation of ShareNet, a global knowledge-sharing network.

In this case study we describe how ShareNet was established as a system with which to share knowledge globally within Siemens ICN (Information and Communication Networks), a major division within the company with 33,000 employees (Siemens 2004a).

Subsequent to the ShareNet case description we derive key recommendations for the edification of global companies wishing to learn from Siemens' experiences with the ShareNet implementation. Although the technical reliability and usability of a knowledge-

---

[2] Siemens is one of the largest private organizations in terms of number of employees.

sharing system are basic prerequisites for its success, this contribution focuses on how Siemens dealt with organizational and cultural particularities of the initiative.

A seven-year research study involving in-depth expert interviews with leading authorities in knowledge-intensive companies from which we identified Siemens ShareNet as a best practice knowledge management system fashioned the first stage of the research approach that we used to derive conclusions and insights from the Siemens ShareNet case. From this research we identified Siemens ShareNet as a best practice knowledge management system (Davenport and Voelpel 2001)[3]. In the second stage we focused predominantly on Siemens ShareNet, exploring its implementation process and global establishment in detail. Between 2001 and 2004 we conducted 23 semi-structured interviews on global knowledge management with executives, general managers, and line managers within different Siemens units worldwide. We also used participant and direct observation as a primary data source. Secondary data such as internal documents, project manuals, presentations, annual reports, and internal company presentations were revised to support our research.

A Global Knowledge Network Solution: Siemens ShareNet

In 1998 the telecommunications industry shifted significantly. The deregulation of that industry, especially in Germany, Siemens' core market, confronted Siemens with fierce competition and the challenge to transform from a "simple" product-oriented manufacturer to a complex, customer-oriented organization that could provide customized solutions and service globally. New competencies had to be established and this impelled Siemens to carry out a comprehensive restructuring. As part of this restructuring, Information and Communication Networks (ICN) was one of the newly named groups which united Siemens' telecom networks' carrier and the enterprise branches. The new group encompassed the Wireline Networks Group, Communications on Air, IP/Data Networks, Transport Networks, Manufacturing and Logistics, and Service and Carrier Networks. In 1999, ICN had 65,000 employees – of which 17,000 were sales and marketing personnel – in more than 84 countries (Siemens 1999).

As a long-time leader in this industry, the group understood that it needed to locate, share and leverage its large number of employees' expertise in order to put their comprehensive knowledge to work.

---

[3] The companies we investigated are headquartered in North America (including Accenture, The Boston Consulting Group, Cap Gemini Ernst & Young, DHL, McKinsey), Europe (Bayer, DaimlerChrysler, Infineon, Novartis, Roche, Siemens) and Asia (Motorola, NTT DoCoMo, Sony).

Conceptualizing a knowledge-sharing initiative beyond that of a mere data repository.

The President of Group Strategy at Siemens ICN, Joachim Döring, and his team decided to establish a knowledge initiative for ICN's Sales and Marketing organization. A knowledge management system that would connect the 17,000 sales and marketing staff had to be developed. This would enable a Sales and Marketing team in a local company to capitalize on an ICN team in another country or region's experience whenever the local team encountered a similar deal. The goal was to increase the speed and quality of the knowledge-receiving team's bid.

Subsequently, Döring assembled ICN's most successful sales persons to outline the solution-selling process that covered everything from general business development to the preparation of individual bids as well as the creation of specific solutions. This team had to analyze and determine the broad classifications of knowledge as well as the questions relevant to each step in order to establish a structure for organizing the knowledge content (see Figure 1).
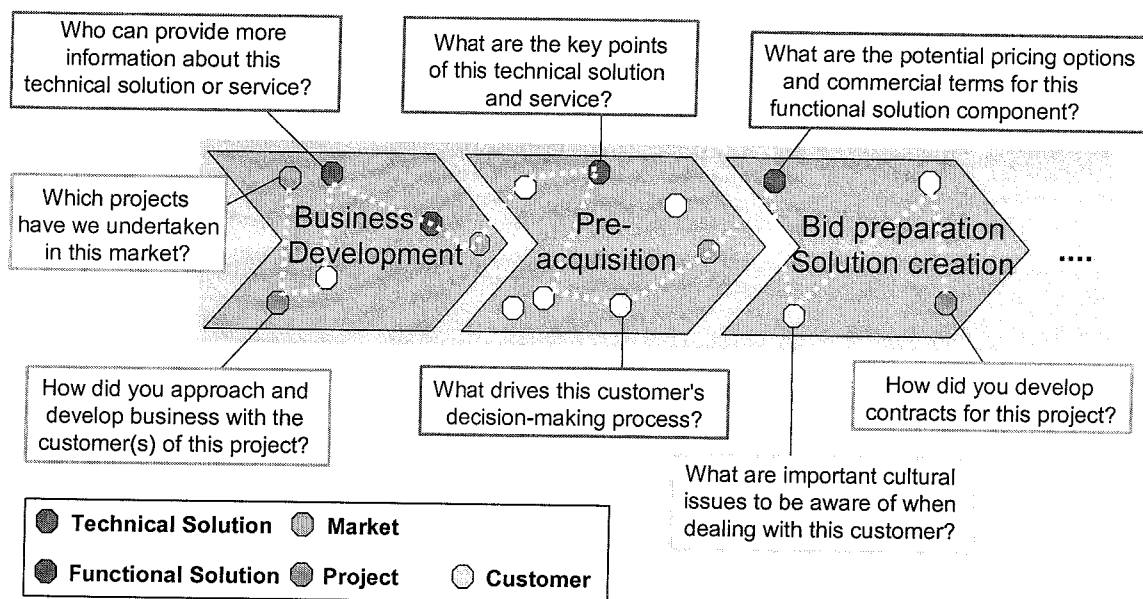

Figure 1: Solution selling process and examples of questions[4]

The design of the new system had to integrate components such as a knowledge library, a forum for urgent requests, and platforms for knowledge sharing that would allow the knowledge transmission channels to accommodate a higher degree of "richness" than that of traditional, repository-based knowledge management systems. The platforms had to comprise community news bulletin boards, discussion groups for certain topics and live chat rooms. The resulting product was called ShareNet.

The knowledge library would be the heart of the initiative and be comprised of knowledge bids constructed so that they would categorize the experience gained from ongoing and completed projects. Project team participants would enter the details of each bid by means of web-based entry forms. The questionnaire-type design was important; Andreas Manuth, ShareNet manager at ICN, remarked: "We knew we needed to capture some of the 'tacit' knowledge managers had in their heads – the 'real life' tested pros and cons of a solution. We had to ask questions that managers wouldn't necessarily think about after just completing a bid or project document."

The "urgent request" platform would offer an opportunity to enter urgent questions for answer by other users who would regularly scan through this forum to check if they had answers to questions such as: "Does anyone have a list of recent network projects by this competitor?", or "My customer needs a business case to implement this new router technology by next Thursday. Can anyone help?" In practice this component revealed its value when, for example, for insurance purposes an ICN project manager in South America tried to ascertain the problems associated with the laying of cables in the Amazon rainforest. He posted an urgent request asking help from anyone with a similar project in a similar environment. A project manager in Senegal responded almost immediately. Obtaining the right information before the cables went underground saved Siemens a considerable amount of money.

The initial gathering of the ShareNet initiators was followed by ten more meetings before the end of 1998. Döring used this time to gather competent and motivated members for his ShareNet core team who would map out the detailed plan of how the system's technological and managerial processes would operate.

Pilot projects were subsequently conducted in Australia, China, Malaysia, and Portugal from April to August 1999. The projects provided insights from those users who were far from the Siemens headquarters in Munich and would have to rely on the system the most. The ShareNet team therefore wanted to avoid the usual, and not always successful, Siemens practice of rolling out initiatives from Munich to the rest of the company across the globe.

In July 1999 Döring gathered 60 managers - from every country in which ICN was represented - in a boot camp to elaborate on the operational procedure that they would have to follow. A ShareNet committee of 11 members - mainly users from different regions, but one from ICN's board, and two from ICN's Group Strategy board - was responsible for ShareNet's further strategic direction. The opportunity to consider the views of both the

---

[4] Source: Siemens ICN.

managers and employees from all the countries where ShareNet would be launched proved to be crucial to the subsequent global launch of the initiative.

Launching a knowledge initiative in a globally dispersed organization.

When the first version of ShareNet was released in 39 countries, the first challenge was to get people to use the system. As Manuth said: "The only way the urgent request concept would succeed was if we had a high number of users on board. At first the core ShareNet team fielded these problems themselves. They combed their personal networks of contacts to find solutions to posted urgent requests. They then connected their contact with the question poser themselves, sometimes offline. The system had no value until the database was populated and urgent requests were answered."

The central challenge, which was closely related to the issue of getting enough users on board, was how to tackle ShareNet's global character. The ShareNet team's Munich-based headquarters could definitely not manage the launch and the supervision that ShareNet would thereafter require in all 39 countries on their own. Siemens decided to address the global integration and local responsiveness as follows: While the headquarters and the local branches would jointly define ShareNet's strategic direction, it would be centrally maintained at the Munich headquarters. The joint definition and the system's central strategic maintenance would then revert to the local companies. ShareNet managers were therefore appointed to the local subsidiaries to help the initiative access the culturally embedded knowledge there.

Andreas Manuth described this approach to diffusing ShareNet to ICN's worldwide subsidiaries as follows: "To jump-start the network, we held two- to three-day workshops in the local countries to get each local company on board, to get them used to the system and interface, and to convince them of its value. We had an exercise we'd run at every workshop. At the beginning of the sessions, we'd ask them: 'You must have some problem that isn't solved – that you left sitting on your desk before you came here. Put that up on the system as an urgent request.' Without fail, by the end of the day, that posting would get at least one reply, and inevitably, the effect was that the person who had posted it would be stunned. And everyone else in the room would see the effect too. So they'd go home convinced."

Additionally, those ShareNet managers who would represent their local company and promote the initiative within their regions were handpicked. These were people who were intrinsically motivated by the idea that a knowledge-sharing system would be beneficial. They were responsible for supervising local level usage, but also handled many of the urgent requests at the start of the initiative. This international group of ShareNet managers was a

major cornerstone for implementing the knowledge-sharing idea globally. They served as the nucleus in their local organizations to convince people who did not recognize the value of sharing their knowledge.

During the following months the attention to detail and strenuous efforts prior to the start of the project began to pay off. Every local workshop was followed by an increase in the urgent request postings from that country and introduced a flow of knowledge bids. As anticipated, the benefits became obvious almost immediately, especially in ICN's more remote regions. Towards the end of 1999 ShareNet had about 4,000 registered users. Manuth remembered, "For example, we had an official hotline for engineers in the field to call in to get technical help for one of our switches. If someone in Vietnam had a problem with the switch, they were supposed to call the hotline. Over and over again, we heard 'No one ever calls me back. We're too small.' But with urgent requests, ShareNet gave them access to other people struggling with switch problems out in the field – people who would call them back or at least drop them an email."

Important to note is that the ICN headquarters fully funded the ShareNet initiative. ICN's product divisions and local companies offered the service for free therefore users could simply log on and start utilizing the system. Manuth noticed the immense benefits of this approach: "Nobody has to obtain a signature to spend money to use ShareNet. For example, in Brunei there is just one technical sales person. Via ShareNet, he is connected to all the other ICN technical sales people, which would not be possible if we billed him for system use."

Getting people to collaborate by using incentives judiciously.

Motivating Siemens people to cooperate with one another, and thus to continually contribute to and rely on ShareNet for solutions, was a significant challenge. The ShareNet management team injected energy and resources into getting people to use the system. They soon realized that Siemens needed to substantially change its organizational and individual knowledge-sharing culture if the exercise were to be a resounding success. Siemens' corporate structure could not be used as a foundation for this change, as the single business units were separated instead of networked and the leading paradigm regarding governance mainly relied on hierarchy instead of cross-unit collaboration.

The Director of the Center of Competence Europe and Middle East at ICN Carrier Sales, Gerhard Hirschler, who was one of ShareNet's first chosen managers, recalled that "[…] there were always excuses. People said, 'I don't have the time to spend on this.' Others were reluctant to share. The network consultants, for example, said 'Sure, we have knowledge, but

it's for sale, it's not for free.' Still others said 'Everyone has certain clarity about their own projects in their heads, but it won't translate well for others.'" The ShareNet team was also concerned about managing people's expectations - employees might be disappointed with their first interactions and not use ShareNet. This also implied the need to change people's opinion regarding the negative perception of "re-use" by actively encouraging them to use – or copy – the knowledge that was offered by ShareNet.

In order to achieve a quick motivational boost in participation, the ShareNet team decided to introduce incentives that would motivate the employees to use the virtual knowledge network. The first system was called "Bonus-On-Top". It provided incentives for local country managers, and rewarded a country's overall participation in knowledge sharing. If a country's sales team managed to secure a certain amount of business with the help of international knowledge sharing, they received a bonus. The bonus was applicable to both the country that had contributed the knowledge and the country that used it (Voelpel, Kugler and Gibbert 2002).[5]

By introducing this kind of incentive, Siemens made a significant investment in ShareNet. Nevertheless, although a considerable number of country managers did receive the bonus, there was no guarantee that ShareNet would ultimately benefit from this reward system. ShareNet managers recognized that direct recognition of how much their daily job is appreciated motivates employees far more than receiving some reward. The managers consequently decided to focus more on the users themselves. This was realized by means of a web-based incentive system in early 2000. Users received ShareNet "shares", which were, in fact, bonus points as in an airline mileage system, for a valuable contribution. Contributors gained shares for entering knowledge bids into the library, for reusing knowledge, for responding to urgent requests and for appraising one another's contributions. Users earned, for example, ten shares for technology, market or customer bids. For a project, technical solution or service, or a functional solution component as well as for contributing a success story, twice the number of shares was allocated. For answering an urgent request they gained three shares. Later an award system was introduced in which shares could be redeemed for various gifts and prizes, such as textbooks, Siemens mobile phones, or even trips to knowledge exchange partners.

Even though the scheme had accelerated the growth in quantity of contributions significantly, quality problems started to occur, which compelled the ShareNet team to establish a rating

method. This meant that the users had to evaluate the contributions, with the number of stars allocated reflecting the contributions' usefulness. The rating of contributions was also rewarded with shares to encourage users to evaluate the bids that they had utilized. Moreover, whenever a user wanted to redeem his shares, members of the ShareNet team would first approve his contributions and ratings before authorizing an appropriate award.

The effect of the ShareNet "Shares" program was that during July 2001, more than 2,000 contributions were posted in contrast with the slightly more than 600 the previous October. Likewise, around four times more shares were gained in this month compared to the 20,000 the previous October. Despite accumulating large numbers of shares, however, few users ever converted them into prizes. ShareNet managers speculated that the knowledge had become its own reward, and that users did not want to relinquish the status associated with having a high share total by redeeming them.

Before the end of 2001, ShareNet had 18,200 registered users. These users would, in an average month, answer many hundreds of urgent requests, in addition to posting approximately 300-400 new knowledge bids. Success stories started to emerge and accumulate, signifying the system's value. In Switzerland, e.g., although certain managers' bid was 30 percent above a competitor's, they landed a contract to build a telecommunications network for two hospitals. This was possible because ShareNet colleagues in the Netherlands had provided technical data that supported the sales representatives' contention that the network Siemens offered would be more reliable. Another example is provided by a project to build a pilot broadband network in Malaysia that was obtained with the help of ShareNet. In their bid, the local team was required to provide a reference customer. Via ShareNet they found a team in Denmark that had accomplished a similar undertaking. With the help of the Danish group's experience, the team in Malaysia obtained the contract.

Transferring a successful initiative to further domains.

At ICN the success of knowledge sharing via a virtual platform had extended beyond the marketing and sales department by 2001. Like Joachim Döring a few years before, the head of the Wireline Network Development Group at Siemens ICN, Jürgen Klunker, recognized ShareNet's potential and introduced the idea of using the system in his research and development (R&D) division as well.

The Wireline Network product development was run by 3,000 employees at Siemens' headquarters in Munich. The unit focused on developing core platforms for telephony and data network switching systems. At Regional Development Centers (RDC) these platforms

were adapted to local market needs for each of 300 customers in more than 100 countries. Situated in countries such as Belgium, Brazil, Greece, Hungary, India, Portugal, Russia, Slovenia, South Africa, and Thailand, these RDCs employed approximately 460 employees, mostly regional engineers.

For its introduction at ICN R&D, ShareNet was adapted from its original Sales and Marketing version. The structure of the knowledge library architecture remained almost unchanged, although it had to be adapted to mirror a knowledge base appropriate for R&D, which mainly meant a change in the relevant criteria and parameters when contributing a knowledge object. This adaptation acknowledged the fact that R&D knowledge is more specific and complex than that in other organizational units, which is also a reason for its more problematic transfer ability (Simonin 1999).

When the inaugural version of R&D ShareNet was launched in February 2002, there had been no prior marketing campaign, as the R&D ShareNet team wanted to proceed carefully. The team was therefore simultaneously presented with the major challenge of encouraging people to contribute to this 'little known' system. The results were dismal - by May 2002 only 50 knowledge bids had been posted. A more intense effort would be required to encourage contributions. The scant participation might have been due to the lack of marketing effort, but was more probably due to the ShareNet team being confronted with a different context in the R&D department. This issue is also known in theory, with the literature explaining that protectiveness and "shielding mechanisms" by the source of knowledge can hinder the knowledge flow between different R&D units (Simonin 1999).

The ShareNet team furthermore had to cope with an organizational culture at ICN R&D that was less supportive of knowledge sharing than at the Sales and Marketing department. It was more or less a question of lack of "care" within the R&D organization; "care", according to von Krogh, consists of values like trust, empathy, help, lenient judgment and courage that will allow a knowledge-friendly organizational culture to evolve (von Krogh 1998).

At the R&D division, these cultural barriers within the organization were harder to overcome than geographical or language barriers. The most important object to achieve was to get the knowledge that was concentrated in the headquarters in Munich to those engineers who needed that knowledge. The people in the labs – in Klunker's group, for example – already had their own informal information networks established and already belonged to communities of experts. The ShareNet team had to communicate knowledge-oriented cultural values, such as openness and trust, as well as the personal benefit that could be achieved

through knowledge sharing to ICN R&D's engineers. Klunker argued: "The developers are the owners of the knowledge, and, for the most part, they are not aware that others might need some part of this knowledge. We had to convince them that even though writing an answer to a question doesn't seem to yield any immediate return, it's worth to participate and to be part of the community. This is not an advantage that counts in the next quarter of an hour, but it will definitely pay off after a certain length of time."

Remarkable, however, is that the engineers located outside the Munich headquarters recognized the system's strengths far better. They depended on knowledge from outside and therefore had to be less intensively convinced to use the system than the engineers in Munich. In the end, this observation contributed to the insight that there is hardly any better incentive to bring knowledge transfer into action than its value for the knowledge receiver.

Implications for Knowledge Management Practitioners

The ShareNet case study we described in this contribution illustrates how Siemens managed to address the various aspects and challenges of an organizational and knowledge-sharing culture when establishing a global knowledge-sharing system. The development of ShareNet is closely associated with the six key insights that are summarized in Table 1 and outlined below.

How to overcome barriers and increase knowledge sharing
▪ Choose a fertile ground in which to start knowledge-sharing initiatives
▪ Integrate the needs of the addressees
▪ Employ a creative leader and driver for change
▪ Pool knowledge resources globally while preserving local strengths
▪ Install an incentive system that fosters peer motivation for knowledge sharing
▪ Consider different knowledge-sharing cultures within the organization

Table 1: Managerial Implications for knowledge-sharing initiatives

These insights regarding organizational issues that influenced the knowledge-sharing culture at Siemens could serve as a guideline for other companies that intend to establish a knowledge-sharing system in a global environment.

- **Choose a fertile ground in which to start knowledge-sharing initiatives.** In departments such as sales and marketing the results from knowledge-sharing become immediately visible in the form of a gained customer, or an avoided mistake when moving into unknown markets. These "quick wins" are needed to promote the system within the organization.

- **Integrate the needs of the addressees.** Significant for ShareNet's success was the inclusion of the views of managers and employees in all the countries where ShareNet would be launched. Siemens realized that global user acceptance of the system required a global procedure for its development. In a strongly headquarter-centered organizational culture like Siemens, it was perceived as a signal that different views and opinions from global subsidiaries were taken serious and resulted in a joint approach.

- **Employ a creative leader and driver for change.** At ShareNet, Joachim Döring and his management team possessed the enthusiasm that was necessary to serve as the project's nucleus. An initiative whose success and benefit is hard to predict and to quantify requires a creative leader that will convince those responsible for budget allocations, the project team as well as the heads of departments in which the implementation will be piloted, of the project's potential value from the very beginning.

- **Pool knowledge resources globally while preserving local strengths.** At Siemens, a decentralized solution with elements such as the local ShareNet managers or local training takes cultural particularities and attitudes towards knowledge sharing into consideration. Above all it was the ShareNet managers' personal contribution that served as "glue", thus helping the company to better access context-specific knowledge worldwide and to actually take the system to its users. Regular global meetings between the Munich-based ShareNet team and the local ShareNet managers help to supervise the strategic direction and keep the personal contact between the dispersed organizations alive.

- **Install an incentive system that fosters peer motivation for knowledge sharing.** Having seen the first incentive program "Bonus-On-Top" fail because it only rewarded the local company heads with abstract premiums, Siemens introduced the ShareNet Shares scheme to reward knowledge contributors individually. The program itself, however, only reached its full potential in combination with a rating system that ensured the contributions' quality. The main observation regarding the "shares" incentive program, however, was the comparatively small number of shares redeemed for premiums. The insight was that peer comparison and recognition may be far better motivators than material rewards. Furthermore, transparency regarding the number

and quality of contributions can reveal contributors' "expert status", thus putting peer motivation to work.

- **Consider different knowledge-sharing cultures.** At Siemens, the R&D unit responded differently to knowledge sharing than the marketing department, and required other terminologies. Taking the differing contexts into consideration was not only necessary on a semantic level of terms and definitions, but also in a cultural sense. In fact, in R&D the knowledge-sharing culture was far less strong than in other departments like marketing and was characterized by protectiveness and "shielding mechanisms". On introducing ShareNet, it took far more effort to convince the R&D workers that sharing their knowledge would benefit them more than protecting it. Marketing efforts at the R&D department turned out to be a very personal business, with many meetings and workshops. Moreover, the use of successful cases as well as the good reputation that ShareNet had gained during its inauguration in the marketing and sales department helped to promote the initiative at R&D.

Of course, knowledge management practitioners intending to start a ShareNet-like project have to keep in mind that the environmental conditions with which a knowledge-sharing initiative is confronted play an important role. It is obvious that the launch of an entirely new project would have been difficult to accomplish during economically bad times. In fact, the knowledge management "hype" at the end of the 1990s provided ShareNet with favorable times during which it was comparatively easy to dedicate resources to boost the system. The learning here is that profiting from such an enabling context and anchoring the system within the organization are necessary actions if an initiative is to survive when contrary winds are encountered. Without references and success cases that demonstrate the value of a knowledge-sharing initiative, its survival might be endangered as well. However, if substance can be achieved, the chances that those responsible for budgets will be willing to maintain the initiative until times turn more favorable are considerably enhanced.

Another insight from the ShareNet case is that virtual media have limitations when it comes to the sharing of tacit knowledge. The personal interaction that might be necessary for the knowledge receiver to understand the knowledge source's context can only be promoted by a system, but not guaranteed. Tacit knowledge, however, is one of the most important drivers of innovation, as is demonstrated by various academic concepts (e.g. Nonaka 1994, Davenport and Prusak 1998 and Von Krogh, Ichijo and Nonaka 2000). Approaches to tackling the problem of enhancing innovation through global knowledge transfer and creation have been

introduced in the management literature, some of which can already be found in practice (e.g. Von Krogh, Ichijo and Nonaka 2000).

Fostering the dissemination of tacit knowledge, and thereby enabling collaboration and innovation, is another of Siemens' objectives. The company is currently developing PeopleShareNet, a system that will serve as a virtual expert marketplace for worldwide project staffing. This system will in turn act as enabling technology for teams that are formed according to each member's specific knowledge and competency. Such interdisciplinary teams or "knowledge networks" may help to foster the "social glue" that is necessary to anchor knowledge management within the organization, thereby bringing a knowledge-sharing corporate culture to its people.

References

Davenport, T. and Prusak, L. (1998), *Working Knowledge*, Boston: Harvard Business School Press.

Davenport, T. and Voelpel, S. (2001), The Rise of Knowledge towards Attention Management, *Journal of Knowledge Management*, Vol. 5, No. 3, pp. 212-221.

Nonaka, I. (1994), A Dynamic Theory of Organizational Knowledge Creation, *Organization Science*, Vol. 5, No. 1, pp. 14-37.

Siemens (1999), "*Siemens Annual Report 1999* – Count on us...", Berlin, Muenchen, Siemens AG.

Siemens (2004a), "*Siemens Annual Report 2003* – Go for Profit and Growth", Berlin, Muenchen, Siemens AG.

Siemens (2004b), Siemens Interim Report for the first half of the fiscal year 2004, Berlin, Muenchen, Siemens AG.

Simonin, B.L. (1999), Ambiguity and the process of knowledge transfer in strategic alliances, *Strategic Management Journal*, Vol. 20, pp. 595-623.

Voelpel, S., Kugler, P. and Gibbert, M. (2002). Siemens Premium-on-Top: Measuring knowledge management with a bonus system for fostering innovation, *University of St. Gallen Case*, European Case Clearing House 902-012-1: 14.

Von Krogh, G. (1998), Care in Knowledge Creation, *California Management Review*, Vol. 40, No. 3, pp. 133-153.

Von Krogh, G., Ichijo, K. and Nonaka, I. (2000), *Enabling Knowledge Creation*, New York: Oxford University Press.