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B.

SHARENET: GIVING A NUDGE TO A KNOWLEDGE-BASED BUSINESS MODEL AT SIEMENS ICN

CASE STUDY

Petra Kugler, Michael Gibbert, Dr. Claudia Jonczyk and Sven Völpel

*ShareNet is about collaboration beyond all existing organizational barriers.
Our future lies in the creation of a net of knowledge spanning between
all our employees.*

(Dr. Roland Koch, CEO of Siemens ICN)

1. BACKGROUND

1.1 AUTHORS

Petra Kugler is research associate at the University of St. Gallen and holds a Diploma Degree from the Augsburg University, Germany. Her current research interests are in the fields of strategic management, new organization models and innovation.

Michael Gibbert is interested in core business renewal and imaginative strategies in diversified firms. He is a PhD candidate at St. Gallen University and a research associate at INSEAD.

Dr. Claudia Jonczyk holds a PhD in Management from the University of Geneva and a master from the University of St. Gallen. As a visiting research fellow at the MIT Sloan School she worked on the topic of organizational learning in high-risk industries. She is currently leading a research project on the development of social capital at INSEAD.

Sven C. Völpe is a Visiting Fellow at Harvard University, the Graduate School of Arts and Sciences and the Harvard Business School, head of the Competence Center “Mobile People Management” at the Institute for Leadership and Human Resource Management at the University of St. Gallen (HSG) as well as a Business Transformation Partner within Siemens.

This case was written under supervision of Stefan Jenzowsky and Nicole Prummer.

1.2 CONTEXT OF THIS CASE STUDY

The following case is authentic in the sense that it is based on the real-life experiences of a major knowledge management initiative at Siemens Information and Communication Networks. It focuses on one key infrastructure for this project, namely the ShareNet application.

1.3 AIMS AND TARGET GROUPS

The case study is aimed at students and practitioners who would like to get an inside view on how a major knowledge management infrastructure can be successfully deployed in a large transnational company.

2. CURRENT SITUATION

Kuala Lumpur, Friday afternoon. Two intensive weeks of hard work awaited Martin Wong. As the Manager at Siemens ICN Malaysia, Martin Wong was responsible for the telecommunications business with Malaysia Telecom, one of Siemens' most important Asian clients. Martin needed to complete a comprehensive proposal for a voice-over IP network solution for Malaysia Telecom within two weeks. This was the first proposal of its kind for Siemens Malaysia's business unit.

While working on this proposal, Martin had to come up with answers to questions like:

- Which technical solution would suit this situation the best?
- Should Siemens immediately offer an existing service package?
- How exactly could he demonstrate to this specific customer that the Siemens solution would best fit his needs?
- Where could he get hold of a business plan, at short notice, that would show the customer how soon the Siemens solution would be profitable?

In the past, finding these answers alone might have taken him many weeks, or even months.

Today, the answers were just a mouse-click away for an expert salesman like Martin Wong: His company's intranet offered him access to the Siemens ICN ShareNet – a global knowledge database that provided him solutions to those tough questions and many more answers. In ShareNet he found similar customer solutions with their accompanying sales arguments, descriptions of successful projects, presentations, relevant business plans as well as several contact persons who could help him with questions on technical issues, or financial concepts. The crucial proposal could thus be compiled quickly enabling Martin to focus on his core competence – developing strategic solutions with the customer.

ShareNet was an example of how practical knowledge management within Siemens has had a substantial effect on its business success, and last but not least on the current business model. ShareNet linked the salespeople of Siemens Information and Communication Networks (ICN) worldwide, making each salesperson's accumulated learning experiences accessible to the entire sales force. This facilitated sales, helped to save valuable time and money, and led to increased revenue with higher profit margins. It also had fundamental implications for organizational structure, processes, culture, and even organizational boundaries as a new kind of doing one's business required an internal adaptation to the new situation. ShareNet therefore deeply impacted the way business was conducted at ICN.

With the telecommunication industry's strategic context characterized by great flux (as described later) the codifying and sharing of relevant knowledge through database-media had become much more difficult. Recognizing the risk of being saddled with

codified knowledge in obsolete data graveyards, ICN ShareNet went beyond the mere hoarding of information in data repositories. It focused on orchestrating an interactive web of knowledge and expert networks on a global scale to aim for a constant exchange and transfer of existing intellectual capital.

Yet, it had not always been so easy. Knowledge sharing did not occur naturally or by chance – especially not when it was on a global scale. Furthermore, collaboration between Siemens companies across countries posed quite a challenge. It led to many questions that needed answering by all contributing parties, like:

- How could knowledge management support an organization that traditionally built up competitive advantage in a stable environment to adapt to a new, highly volatile situation?
- To introduce some active knowledge management to a firm, was it enough to introduce a single knowledge tool?
- Which consequences **arose** for the organization's structure, for its incentive or leadership system and **consequently** the overall underlying business model?
- Did an IT-based knowledge management initiative capture all the relevant knowledge within an organization, which included tacit as well as explicit parts? And, most importantly,
- Why should employees make their knowledge available to other colleagues?

There were further challenges on the organizational, personal and cultural levels of the organization. It was therefore of the utmost importance that something was done to give knowledge sharing a nudge, but what?

The original stimulus for ShareNet was twofold. On the one hand, Siemens ICN had had to contend with a drastic shift in the business environment that had turned its rather straightforward business into a demanding, knowledge-intensive task. On the other hand, the innovative idea of international knowledge networking had become a strategic issue for ICN.

Let us take a closer look at these two factors that led to such radical change.

▣ 3. BUSINESS CONTEXT: FROM STABILITY TOWARDS VOLATILITY

A TRANSITORY COMPETITIVE LANDSCAPE

The company's traditional business used to be quite stable, as well as simple and straightforward. From the inception of the telephone service until the 1980s, customers of telecommunication equipment around the world had mostly been of one type: the monolithic, integrated telephone company. The entire range of activities involved in providing telephone and data services to the end-user, i.e. the entire value chain, starting with the

planning of the network to its implementation (including customer acquisition and care), was concentrated in a single, large entity. Customers wanted well-defined products that could be integrated into existing networks by the customers themselves. Manufacturers such as ICN were therefore asked to provide specified products.

Previously the main business of a telecommunications-equipment supplier, such as Siemens ICN, was to manage the long-term relationship with its customers and to supply a range of well-engineered equipment. Time-to-market was of secondary concern. Consequently, the telecommunication-equipment suppliers of the past came to mirror their monopolistic customers: They also became vertically integrated, less sensitive to costs and oriented to the needs of a few, stable customers. Decision-making was centralized which, in turn, resulted in the flow of information following suit.

However, over the last decade, a shift occurred in the company's environment. Technical progress, increasing global competition and deregulation of markets, among other factors, required a new type of telecommunication operator. Over the past two decades, governments worldwide have been deregulating the telecommunications-services market to provide consumers and end-users with more competitive pricing and better service. This led to the various telecommunication markets being at a different stage of their economic development. To complicate matters, technological advances in electronics and computer science led to an explosion of new products and services in the telecommunication services market. The end-result was a previously unknown diversity of telecommunication equipment demands from all over the world.

Another consequence of this worldwide deregulation of telecommunication was the unbundling of the integrated, monolithic telephone companies. The few large national monopolies were replaced by a variety of companies, often offering services in specialized market segments, such as telecommunication to certain foreign destinations, or specifically to business customers. The new, competitive landscape also led to the disintegration of traditional value chains. Once it was possible for a company to shift costs between services, for example by charging much more for long-distance calls that actually cost very little to supply, and using the margins on this lucrative service to subsidize residential services. Today, long-distance service companies with no residential business to subsidize could provide that same service much cheaper.

The change in the telecommunication industry led to a radical change in the nature of the telecommunications-equipment business. As a leading telecommunication-equipment provider, active in over 160 countries with 60,000 employees and a revenue of US\$ 13 billion, Siemens ICN had to anticipate the new rules of the game and serve a variety of customers with very different needs. The new entrants to the telecommunication market competed on grounds of costs and innovative services and were very sensitive to equipment prices. It was therefore of crucial importance that providers of such equipment brought new innovations to the market as quickly as possible.

The existing competitive structure, patterns of behavior and intensity of competition were constantly altering, making change a permanent state rather than a transitory phase. The result was a highly complex and competitive telecommunications-equipment sup-

ply business with all processes accelerated. This, in turn, required decentralized decision-making and a flow of globally networked knowledge. While this situation certainly threatened many incumbents, it represented vast opportunities for agile companies.

Martin Wong summarized the new challenge succinctly when he said:

"Account management means intense relationship and self management. We have to gain intimate knowledge, not only about our customer and his business, but also about our own capabilities and accumulated knowledge. It requires the reuse and development of existing ideas."

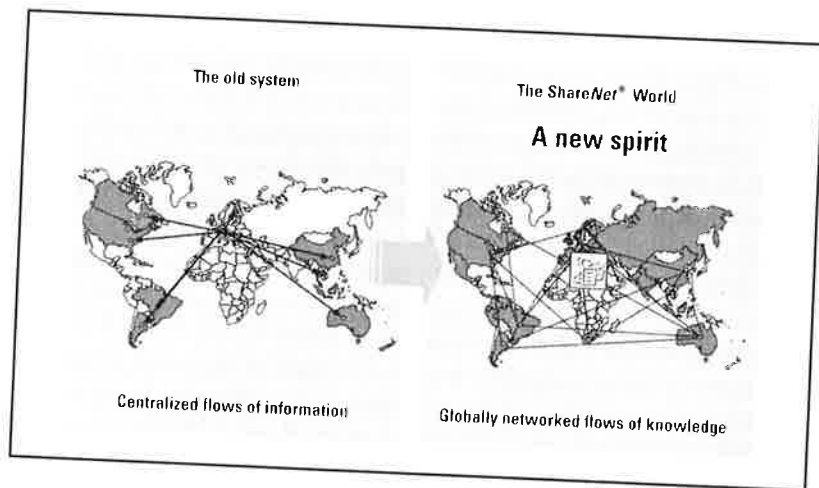


Figure 1 ■ Old system/new system

CHALLENGES AND NEW OPPORTUNITIES FOR BUSINESS

As Siemens ICN faced the tremendous increase in the complexity of its business, all telecommunication companies, both the new entrants to the changing telecommunications market, and the incumbents, brought new challenges. The emphasis was often on highly customized product and service packages. ICN therefore had to lower costs and develop innovative products and services simultaneously – at a pace not previously experienced.

Yet the new telecommunications landscape also brought opportunities: While the new reality threatened profit margins, it also opened up new businesses with higher profit margins for Siemens ICN. A case in point were the complex product and service packages that the new types of customers required. Additionally, they were often innovative and quite lean organizations with a relatively small technical staff and thus required more technical services. These ranged from systems integration and network

planning to the provision, integration, tuning, and implementation of services. The new entrants needed fresh business analysis and planning to accommodate the rapidly changing markets in which they operated but many did not have the resources or experience to handle this. Most of them were start-up ventures without sufficient capital to make cash equipment purchases, which led to their demand of new terms of financing and innovative contracts.

In the deregulated telecommunications market, a customer could therefore expect a supplier like ICN to provide most of the services involved in running a telecommunications-service business, including financing, business planning, engineering, and operation. These complex service and product packages that a telecommunications-services provider wished to sell to his end-user, had become known as "solutions". The high value-added aspect of the telecommunications-solution selling business contributed significantly to its importance, leading to solution creation and solution selling becoming key competitive levers for ICN. The individual conceptual elements constituting a solution are shown in Figure 2.

Naturally, the material components, such as switches or routers, still formed an important part of a solution. Another important part of a complete customer solution was the customization of the delivered components. Components, for example, often required country-specific, or customer-specific, customization for implementation in a network.

To meet the demands of these new customers, components offering the technical and functional know-how were highly important – and highly reusable as well. A so-called technical-solution component consisted of a service such as network planning, or performance optimization, and was, therefore, based on technical knowledge. Functional solutions included such components as leasing contracts, or the development of customer-specific business cases, and were often based on commercial practices, or knowledge about the customer's business.

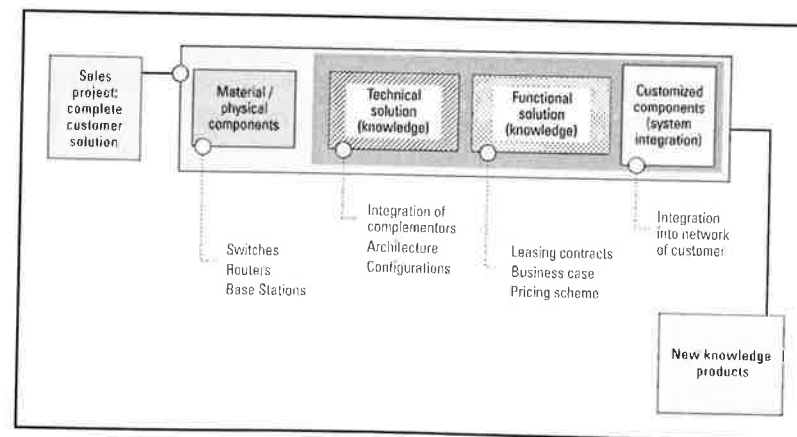


Figure 2 ■ Solution

H 4. KNOWLEDGE MANAGEMENT MEASURES AND RESULTS

THE NEED FOR NEW COMPETENCIES: FROM PRODUCT-TO SOLUTION KNOWLEDGE

The changing rules of the game in telecommunications had a significant impact on sales people like Martin Wong.

In the past, it had been the customer who formulated a demand that was then forwarded to the telecommunication supplier's ordering system by the salesperson. In the new landscape, Martin himself often had to proactively present a business idea to customers, helping them to develop innovative business strategies. His new clients did not want just a product, but complex solutions. There were no shortcuts to these solutions, as the customers often articulated their intentions and needs in broad terms only. It took time, meetings, and negotiations before a project aim and some milestones could be defined.

Martin and his sales colleagues all over the world had to face new challenges regarding competency development. The new demands, differing so entirely from those their customers had required in the "old days", required sales staff whose competency portfolios were aligned accordingly. Furthermore, the shifts in the competitive landscape had greatly increased most businesses' knowledge intensity. This means that sales personnel at ICN required comprehensive knowledge of both the individual components of solutions as well as the integration of these components. This again represented new challenges to be mastered.

One industrial relationship manager reasoned:

"We will have to unlearn thinking in packaged products and applications. The way we work together is the most important clue to success. Once we start negotiations about a new project with the customer, we have to immediately identify internal and external qualified people to build and operate these new businesses jointly with the customer. Because of the multifaceted knowledge needed, we have to learn how to provide our knowledge from convenient sources. We have to get used to integrating internal and external know-how."

It had been clear to Martin that he and his colleagues could no longer just rely on former product knowledge. Where, in the past, they had often anticipated customer needs even before they had been articulated, they now had to guess, try to assess and discuss the complex needs of the new entrants to the telecommunications market. By doing this proactively, the salesperson had to gather information about the new clients and develop in-depth knowledge about the customer's way of doing business – **beforehand**. Unlike their established customers who had placed orders in a relatively **predictable** way, these new customers had latent wishes, which had to be served.

The industrial relationship manager illustrated this as follows:

"What we need most is intimate customer knowledge, especially knowledge about the customer's economic branch. We have to make pro-active suggestions about where our customer's business may go and in which field he may be operating the next years. Up to now, we have only become involved in the sales process once it reached the stage of ordering products and applications. The challenge is to start discussions much earlier: We have to play the role of a strategy management consultant who is able to interpret trends and to design new business opportunities together with the customer."

Martin knew how time-consuming, difficult, and complicated this consulting role could be. Successful solutions selling required an organizational set-up which was geared towards the rapid, purposeful identifying and sharing of relevant information and knowledge, across markets around the world, and a continual refining of competencies, to keep pace with market developments. This implied identifying best practices quickly, sharing them on a global scale, and ensuring that they were reused for profit in similar settings. The objective was to detect local innovations and leverage them globally.

A prerequisite for this worldwide reuse of local innovations was the ability to share the explicit elements of knowledge that could be easily transferred and stored in databases, as well as the more tacit elements of knowledge that arose from joint business development with a customer. Each of these types of knowledge elements demanded a fundamentally different transfer and management mechanism. Personalized knowledge, bound to the individual mind, could not be shared easily without actually transferring the person. Knowledge codified in databases, manuals, and project debriefings, however, could be transferred with relative ease. And yet, both were needed to make true knowledge sharing happen on a global level. How could this gap be bridged?

BRIDGING THE GAP

The shift to solutions selling greatly increased the impact of knowledge on the competitive success of ICN. To succeed in providing solutions, the individual sales person had, in effect, to act like a consultant. He or she had to consider a wide array of aspects concerning the telecommunications-business offering, including financing, business analysis, and network planning. This included substantial amounts of tacit and, therefore, highly personalized knowledge together with important elements of codified, or explicit knowledge.

Tacit knowledge was usually transferred by people exchanging knowledge through social interaction, e.g. during meetings, videoconferences, or in discussion groups. Transferring explicit knowledge by means of a codification strategy was realized by capturing and storing knowledge in documents and transferring it via databases or similar means. Both types of knowledge had to be transferred to make true knowledge sharing happen.

An over-reliance on personalized knowledge at the expense of codified forms would sacrifice the leverage that could be gained from conveniently transferring explicit knowledge. Likewise, an overemphasis on codified knowledge could miss out on important tacit elements that constituted an integral component of the added value that solution selling provided.

Bridging this gap was often described as a dilemma, where the one could not be achieved without negatively affecting the other. And yet, the solution to this dilemma would be fundamental to the way in which ICN was to operate in a global environment – where added value emanated less from selling products than from providing complex integrated solutions.

The solution was found in the development of a tool and conceptual apparatus that provided the salesperson with convenient access to fundamental building blocks of all solutions. The orchestration of a global network of shared knowledge, using both a personalization and a codification strategy, has become the heart of ICN's competitive strategy.

ORCHESTRATING A GLOBAL NETWORK OF KNOWLEDGE SHARING

SHARENET – LEVERAGING LOCAL INNOVATIONS GLOBALLY

Dr. Roland Koch, CEO of Siemens ICN, was quick to recognize the opportunities that the reuse of knowledge would provide. Having decided to focus on the selling of complex solutions, ICN developed a practical approach that leveraged what had developed into a key factor in competitiveness in the new telecommunications landscape – sales knowledge and innovation. In order to stimulate and encourage empowerment, creativity, and innovation, Dr. Koch assigned the department Business Transformation Partners (BTP) the challenge of developing, rolling out and monitoring ICN ShareNet.

ShareNet was an interactive knowledge-management tool through which a global network of shared knowledge could be established. It was developed in close co-operation with the ICN board members with Joachim Doering, the head of BTP and ICN Vice President, actively promoting the initiative in the different local companies.

To ensure that ShareNet would be relevant to the day-to-day work of the sales people, the first step was to assemble a selection of the company's most successful sales people in a hands-on, knowledge-mapping process. Members of this core ShareNet team included sales representatives and local company heads from markets around the world, covering the full spectrum of business situations faced by the company. The question that this team addressed was "How do we sell solutions?"

The team developed a map of the solutions-selling process and identified broad categories of business-relevant knowledge for each aspect of this process. This rigorous approach also helped the sales people to realize how much they had to learn from one another. A key insight gained through this mapping process was that not only the software and hardware building blocks of different solutions, but virtually every activity enabling a telecommunication service for the end-user, constituted a potential solution element that could be leveraged and re-deployed.

It soon became clear that knowledge sharing between the local project teams within a country – focusing on the same market, facing the same competitors, and therefore challenged by the same problems – could lead to a substantial competitive advantage. This type of knowledge sharing is called leverage between local project teams (process 1).

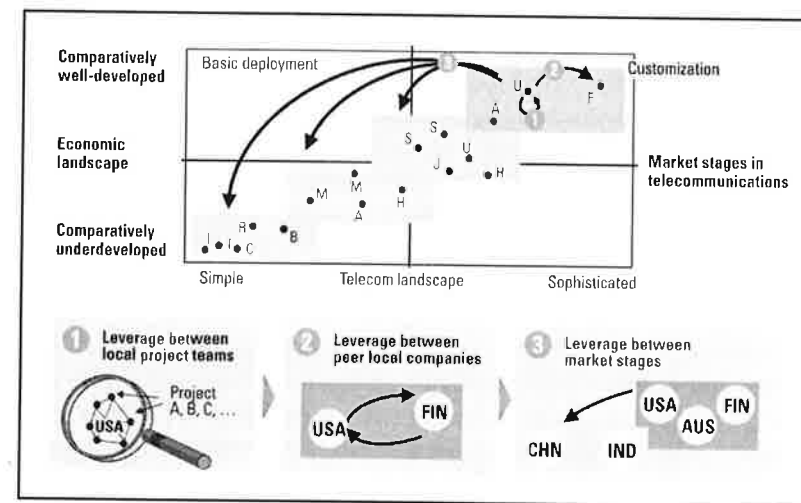


Figure 3 ■
Types
of sharing

However, a fundamental question still remained to be answered: What would be the benefit of leveraging knowledge globally? Telecommunications markets were in different stages of development, leading to differing demands in these markets. The market stage depended on a country's economic development, as well as on the development of the telecom landscape.

Each country could be positioned on a two-dimensional graph by determining:

- its economic development – ranging from comparatively underdeveloped to comparatively well-developed – by means of its GNP
- its telecom landscape development – ranging from a simple landscape to a sophisticated one – by means of the most important influencing factor, namely the degree of deregulation in the market.

Based on its position on this graph, a country's market stage in telecommunications could be determined. The market stage, in turn, determined the kinds of solutions demanded in the market.

Why then should solutions be leveraged across countries? The mapping of the sales process suggested that countries in the same market stage often addressed similar needs and therefore tended to seek similar solutions. By the same token, evolving telecommunication markets often encountered problems or upgrade pressures engendered by their more demanding end-users. These problems and upgrade pressures, again, tended to be similar to those previously encountered by markets that had now evolved to a more sophisticated stage.

This suggested that a solution sold in one country could be leveraged to another country at the same market stage, forming a so-called peer group. This type of knowledge sharing is called leverage between local peer companies (process 2).

As markets developed, solutions of the next market stage became more and more relevant to customers' market success. To allow customers to develop ahead of their competition, Siemens ICN leveraged solutions of higher market stages to those of the lower stages. This type of knowledge sharing is called leverage between market stages (process 3).

These three types of knowledge sharing did not require three types of systems. Leveraging between local project teams in itself leads to a significant competitive advantage, therefore installing a system to allow this kind of sharing should be profitable. If the same kind of system were installed all over the world, the system's interoperability would be guaranteed and knowledge would be reused. This would not only enable knowledge sharing between local project teams but also knowledge sharing between local peer companies and between market stages. By utilizing a single worldwide tool for knowledge sharing within one country (process 1), two additional byproducts were also obtained, virtually gratis – knowledge sharing between peer countries (process 2) and between market stages (process 3) – making it a very attractive prospect.

CRAFTING A BUSINESS APPLICATION SYSTEM

The knowledge management initiative ShareNet was launched early in 1999 to provide sales people, worldwide, with relevant knowledge about solutions and applications, sales processes, and projects. With its aim to leverage knowledge and innovation globally, it was explicitly designed to foster the emergence of best-practice sharing, thus enabling a powerful learning process.

In this context, ShareNet nurtured the changed role of local Siemens companies **throughout the world. In the face of new customer demands, these local companies evolved from mere outlets to companies with full responsibility for customer management. At the local-company level, the goal was to detect local innovations and leverage them on a global scale.**

ShareNet avoided the problem of too great emphasis being placed on information technology at the expense of in-depth business understanding that had proved to be a pitfall of many similar knowledge-management systems. Unlike traditional, often internet-based, knowledge-management systems that had primarily been conceived as "document repositories", ShareNet provided a network that has been explicitly designed as an interactive medium. Instead of functioning as an infrastructure that existed alongside people's actual work, ShareNet functioned as a business application, seamlessly dovetailing with employees' ways of solving customer problems. It covered both the explicit and tacit knowledge of the sales value-creation process, including project know-how, technical- and functional-solution components, and knowledge about the business environment (e.g. customer, competitor, market, technology, and partner knowledge). The emphasis here was on experience-based knowledge. As shown in Figure 4, knowledge about the different steps of the value-creation chain was transferred to ShareNet solution objects (e.g. technical- or functional-solution knowledge) and ShareNet environment objects (e.g. customer or market knowledge). ShareNet's focus was less on "brochureware", than on personal statements, comments, the "field experience" of sales employees, or the real-life tested pros and cons of a solution.

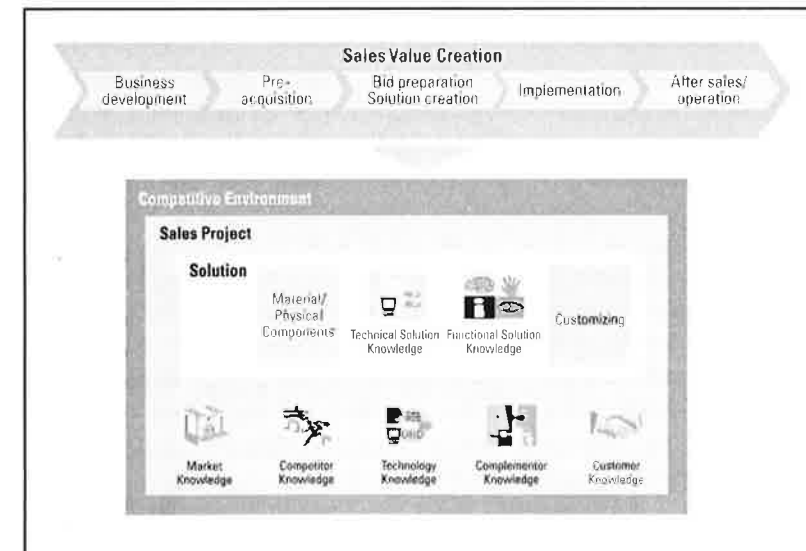


Figure 4 ■
Value creation
chain

In addition to structured "questionnaires" on the above-mentioned topics, ShareNet provided less structured spaces, such as chat rooms, community news, discussion groups on special issues, and so called urgent requests. Urgent requests were basically forums for asking all kinds of urgent questions, such as, "My customer needs a business case for implementing the new technology X by next Monday. Who can help me?" or "Does

anybody have a list of recent network projects by competitor Y?" These were, in other words, questions that did not have a defined organizational owner. As ShareNet worked independently of time zones and organizational boundaries, members usually received answers within hours. In many cases, the right answers were "harvested" and made available for later use in a FAQ (Frequently Asked Questions) section. Thus, unlike traditional knowledge-management systems, ShareNet was based on an interactive approach for mobilizing knowledge and innovation in sales.

5. IMPLEMENTATION ISSUES AND PROBLEMS: MOBILIZING FOR THE KNOWLEDGE-BASED WAY OF DOING BUSINESS

CHANGING THE PARADIGM TO LAY GROUND FOR NEW BUSINESS

An important concern in the development of ShareNet was the adequate positioning of the initiative as a true value-adder that helped to solve relevant problems in employees' day-to-day work. It was critical to emphasize this to prevent ShareNet from being portrayed as yet another headquarters project that would be demanding precious resources. This was the goal from the onset. It started with ShareNet's development as a joint effort of a core team of sales people from all over the world who recognized that local sales and marketing people felt that they, too had a vested interest in the development of such a system. This was mainly achieved by addressing four interrelated areas of intervention.

1. **Cognitive knowledge** – or know-what – is defined as basic technical mastery and is achieved through extensive training and certification. For ShareNet this meant technical knowledge, for example in the form of pricing concepts. Know-what represented an essential, but not complete, aspect to ensure commercial viability.
2. **Skills** – or know-how – refers to the effective execution and application of abstract rules and regulations in the real-world context. ShareNet achieved this through the feedback given by sales professionals in de-briefing projects.
3. **Systems understanding** – or know-why – refers to a deep understanding of cause-and-effect-relationships underlying an experience. In a global sales and marketing context it enabled professionals to anticipate subtle aspects in their interaction with a customer. This understanding was especially important in view of the increased complexity of the sales process. For example, an experienced key account manager will instinctively know which components of a solution could be developed further, be leveraged and re-deployed in other countries, or even re-invented to suit different requirements. The systems understanding therefore represented a particularly important area of intervention.

4. **Self-motivated creativity** – or care-why – refers to an active and caring involvement in a given cause. For ShareNet this meant systematically identifying and promoting highly motivated and creative groups of employees. Indeed, such groups often outperformed other groups with greater resources.

These four areas of intervention together ensured that a user-friendly, accessible tool with authentic added value was developed for the sales and marketing staff. In the words of a senior key account manager:

"Offering a user-friendly tool, which can be accessed via the Intranet is not enough. You have to care for the people who are actually using it. You need a deep understanding of their ways of doing business and the problems they encounter. Ultimately, this ensures that you get the right attention and co-operation."

KEY LEVERS FOR A NEW BUSINESS MODEL

Designing a user-friendly tool was one thing but what it would look like in practice was another. In order to make knowledge sharing happen on a world-wide level, potential barriers obstructing the free flow of knowledge within Siemens ICN had to be anticipated and systematically eliminated. Since it had not been single punctuated solutions that led Siemens ICN to succeed in the new environment, an overall change of how the enterprise did its business was required. Such an integrated approach consequently led to a completely new business model in which the design of different organizational building blocks had to be adapted to the environmental demands. Joachim Doering and his ShareNet team identified three critical success factors that had to be considered, namely (1) leadership and a viable business case, (2) organizational culture and structure, (3) motivation and reward systems.

LEADERSHIP AND A VIABLE BUSINESS CASE

Perhaps the most important critical success factor to making global knowledge sharing happen was the unconditional support of top management. In the words of Roland Koch, CEO of Siemens ICN:

"ShareNet is about collaboration beyond all existing organizational barriers. Our future lies in the creation of a net of knowledge spanning between all our employees."

The responsibility for the ShareNet initiative was given to the ShareNet Committee, the highest decision-making body of the unit. It was responsible for the strategic development of ShareNet worldwide. The committee was composed of eleven members: One member served on the ICN board, two members came from ICN Business Transforma-

tion Partners BTP, but the majority of the members were local company representatives. This guaranteed that the opinions of the local users of ShareNet would be heard and that they would be actively involved in the initiative. The size of the committee was deliberately kept small to enable its members to develop consistent decision-making competency and to react quickly to stimuli and suggestions from the field.

Top management's support enhanced the value and strategic quality of the knowledge-management initiative and sent a signal to channel organizational resources and individual commitment towards this initiative. Management helped to communicate the idea of ShareNet across organizational levels and functional departments to ensure its added value was understood and appreciated. An essential driver for such support by top management was a viable business case.

A viable business case was a key factor for a successful knowledge-sharing project. The implementation of an IT system, the motivation and reward system, the change of organizational structure and culture that elucidated in this section all contributed to making ICN's ShareNet very expensive. ShareNet, therefore, had to illustrate its benefits with a realistic business case to top management.

Of course a knowledge-sharing system was expensive – but so was the continual labor of rediscovering solutions. The costs of sharing knowledge were quite obvious, the benefits were less so. There were three types of more or less quantifiable ShareNet benefits:

1. The saving of costs, e.g. by re-using tenders or re-using knowledge on how to simplify processes.
2. Increased revenues, e.g. by increasing the quality of tenders, by re-using knowledge of the success factors of tenders, or by simply being faster than the competition by re-using documents.
3. The alignment with customer needs, by recognizing important trends and developments worldwide.

ORGANIZATIONAL CULTURE AND STRUCTURE

Organizational culture as a set of beliefs, attitudes, and assumptions is mainly concerned with the unwritten, less visible part of the organization. Symbols, ceremonies, office settings, and dress code are examples of organizational culture. Additionally, it determines the way in which people interact and work together, and also prescribes rules and regulations about what is considered acceptable or desirable.

Organizational culture had vast implications for the implementation of knowledge management at ICN. To a large extent, knowledge sharing depended on the quality of the relationship between employees, as well as their relationship with management. A culture of openness, trust and mutual respect was fundamental for fostering knowledge sharing.

A strong hierarchy often counteracted such an atmosphere since it promoted individual performance at the expense of team performance. Promoters of ShareNet, like Joachim Doering, worked hard to spread the ShareNet message that “unlike school, copying is not only allowed – it is required.” To make knowledge sharing happen, interactivity was required on an inter-departmental, inter-divisional, and inter-functional level. It was often difficult to accept and adopt another person's knowledge, especially if this person was from another division or department. An account manager at ICN commented on this “not invented here” syndrome:

“Sometimes knowledge, which has been brought in from external sources, such as another Siemens department or division, raises defense reactions. People often do not use it for the simple and stupid reason that they did not invent it. We have to develop people who can integrate suggestions from different origins and make a successful project out of it. In short, make things happen, even if a project is composed of external inputs only.”

As this statement indicates, the introduction of ShareNet required a shift in mindsets. This also implied for employees to recognize that asking for advice was okay and not a confession of stupidity.

Another barrier was that the strong hierarchy naturally directed responsibility towards the top, whereas a culture conducive to knowledge sharing was built on empowerment. A tool such as ShareNet that allowed and fostered interaction across all hierarchical levels evaded structural barriers of the organization. Communication became multi-leveled and parallel instead of centralized and channeled through hierarchy. This new type of communication meant a significant change in behavioral patterns and mental models about how the organization functioned.

MOTIVATION AND REWARD SYSTEM

It was necessary to systematically identify and eliminate any organizational structures or incentive systems that could prevent knowledge from being shared, leveraged, and enriched by different functions and departments – and across organizational levels. A critical success factor, therefore, was the establishment of a targeting and compensation system for top managers, called “Bonus-on-Top”. Bonus on Top was an incentive scheme for all ICN units within a local company.

Bonus-on-Top comprised two complementary parts. The first part, the ICN Management Premium-on-Top, rewarded a country's overall participation in global knowledge-sharing projects. In order to be considered for the bonus, the overall-achieved revenue through international collaboration had to total at least 5 per cent (not exceeding 30 per cent) of the local revenue. The management team was then awarded a bonus of approximately 10 per cent of their salary, payable in the local currency (see Figure 6).

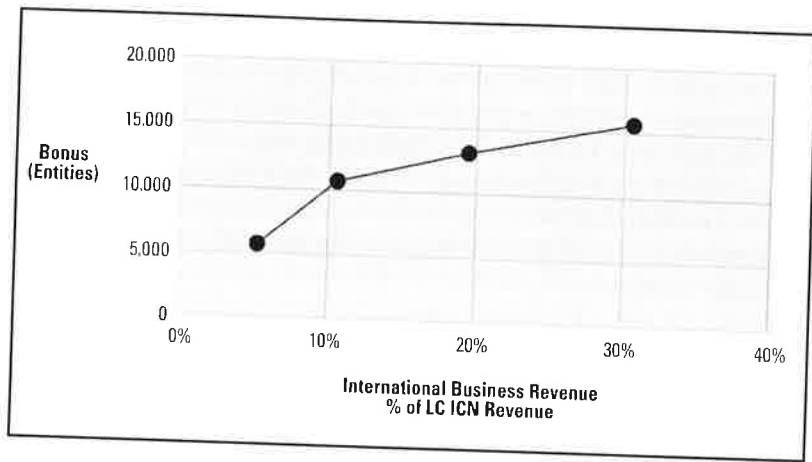


Figure 6 ■ Bonus-on-Top incentive system

A central review board had been set up to assess whether a company had achieved its goal and qualified for a Bonus-on-Top at the end of the fiscal year. As the assessment process required some clarification, each country had to describe its project participation, and the resulting knowledge impact, using a standardized report.

The special Bonus Award for the top five international Best-Practice projects formed the second part of Bonus-on-Top. This second award acted as an added incentive for companies to share their knowledge, since it rewarded creative and intelligent general ideas about global knowledge sharing and reuse. To heighten the whole ShareNet community's awareness of stimulating projects, an application for the Best-in-class award had to be nominated by the community itself. A decision committee then selected the five most striking projects of the past fiscal year. Unlike the ICN Management Premium-on-Top that was a revenue-based reward, these awards were of a special nature, like an executive management excursion. Receiving some management award naturally served as an incentive to sharing knowledge with colleagues worldwide, but it was not the most important aspect. One sales manager noted: "Getting direct recognition for how much our daily job is appreciated is the most important thing. That's what counts and motivates us to carry on."

But a targeting and compensation system for top managers was not enough. A motivation and reward system that removed the fears and anxieties that could prevent the exchange of knowledge across divisions and departments was needed on the level of the employees actually using ShareNet. Knowledge in general, and sales knowledge in particular, were bound to a person. This meant that it could not be shared with others against a person's will. This raised questions about motivating people to share their knowledge. Getting a person to enhance other people's knowledge by voluntarily contributing his or her own knowledge did not happen easily. A further constraint was that it was considered a time-consuming and tedious exercise. In fact, the individual contributor might wonder how he or she could possibly benefit. An important benefit for

the individual contributor was to portray himself/herself as an expert in a certain field. The drawback was that once this reputation had been gained, others might often solicit this expert's opinion, leading to time lost for the expert's own projects.

The need to motivate and reward such sharing was equally important for both the contributor (or "giver of knowledge"), and the re-user (or "taker of knowledge"). The contributor, who received no direct reward for making experiences available, had to be specifically rewarded for the time invested in sharing his or her knowledge. The main reward for the re-user was the knowledge itself, which facilitated daily work. Yet, rewarding individual performance could lead to another counter-productive result. During the ShareNet implementation people were reluctant to adopt knowledge from others. The "not invented here"-syndrome described in the chapter on organizational structure, was closely related to this. Yet, the willingness to re-use existing knowledge became crucial for this initiative to fully succeed.

For the re-user to benefit ShareNet had to ensure that the available knowledge was truly useful. This was done through stringent quality control. Nevertheless, a reward beyond that of gaining knowledge, significantly improved the re-user's motivation to re-use knowledge. The ICN ShareNet Quality Assurance and Reward System is designed analogous to frequent flyer mile systems used in the airline industry. As shown in Figure 7, contributing and re-using knowledge was rewarded by ShareNet "shares". Depending on the number of shares accumulated during a year, employees were awarded with several incentives, such as conferences or excursions. The number of shares given to the contributor depended on the re-use feedback of the taker of knowledge, thus rewarding the usefulness of the transferred knowledge. The higher the usefulness of the knowledge, the higher the reward was. The feedback mechanism was an important part of the quality-assurance system, too. The quality of available knowledge could be assessed through the re-use feedback from several knowledge re-users. Based on this feedback, knowledge of an inferior quality could be removed from ICN ShareNet, whereas high-quality knowledge could be identified and developed further. This would lead to a constant improvement of the quality of the available knowledge.

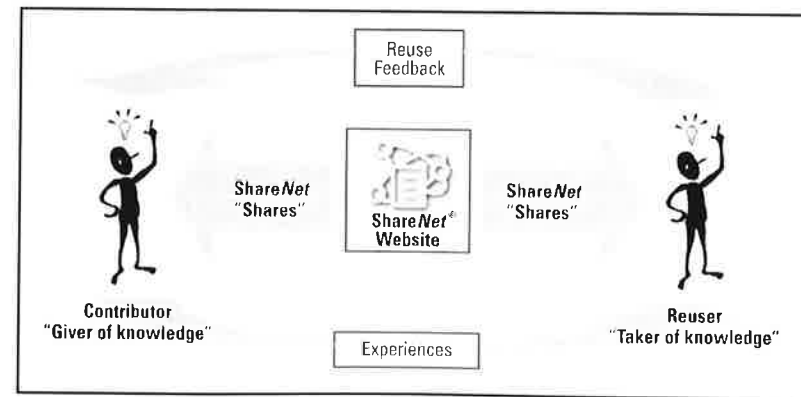


Figure 7 ■ Reward system

6. CONCLUSION AND PERSPECTIVES

Since the beginning of this millennium, ICN ShareNet had become an integral part of the strategy of Siemens ICN. Dr. Koch, CEO of Siemens ICN, remarked:

"This [ShareNet] network will be of key importance to the success of ICN's solutions business, because the company that can make use of existing experiences and competencies quickest has a distinct competitive edge over other players. We need to be among the first to realize this strategic competitive advantage through efficient knowledge management."

ICN knowledge managers were curious as to where global collaboration and knowledge sharing could lead. Their enthusiasm was reflected in Siemens' success as one of the leading knowledge-sharing companies in the world. Besides a hundred other KM initiatives, Bonus-on-Top yielded 250 Million DM in additional revenue during its first year – all initiated by international collaboration. ShareNet differed uniquely from KM projects of earlier years in that it was developed at a grassroots level. It was but one example of how KM was an operational answer to a fast-changing environment and how it led to the emergence of a new direction on a strategic level, affecting the entire company.

ShareNet could be improved further. With the community of 7,000 sales, marketing, and business-development people at Siemens ICN worldwide who actually comprised ShareNet, the use of ShareNet had reached a critical mass. Within its first year of existence, it had developed into a tool of practical knowledge management, enabling improved sales and marketing processes, faster action in the marketplace, and knowledge-based competition.

Joachim Doering, vice president of Siemens ICN, believed that ShareNet had an even greater potential to realize a measurable business impact through the creation of new business opportunities. As a next step, new communities, such as the worldwide service units and R&D, had to "come on board" to develop ShareNet into a knowledge portal that integrated the expertise of the whole enterprise in virtual workspaces.

Broadening the focus of ShareNet internally to include other functions was not the only task ahead. Joachim had a clear vision of what the next steps should be. He envisaged expanding ShareNet across organizational boundaries to integrate customer knowledge into the system. In this context, new questions arose, such as, "How could customers be motivated to participate in the ShareNet initiative?" "What exactly was the critical knowledge ICN expected to gain from its customers?" And last, but not least, the broadening of ShareNet across ICN boundaries gave rise to a whole range of completely new issues, such as security and confidentiality concerns.

Finding the answers to these questions was the key to leveraging the potential of ShareNet in particular, and Siemens ICN's future, in general.

...

Kuala Lumpur, Two weeks later. Martin Wong moved his chair back with a sigh of satisfaction. It had been an extremely long and exciting two weeks. ShareNet had not left him twiddling his thumbs, but it had made his job so much easier. After receiving input from around the globe, he was certain that the proposal which he had just completed would sweep the competition aside.

Martin wrote an ShareNet discussion group entry to Markus Schmid, a colleague from the Siemens headquarters in Germany with whom he had been regularly in touch during these two weeks.

*"Hi Markus,
Thanks again for your cooperation. I am already looking forward to our next common project! By the way, it looks as we could modify our voice over IP network solution for Malaysia Telecom to fit a similar request that I have outlined briefly in the attachment. Your comments would be most welcome."*

Another ShareNet discussion group entry came to Martin from Portugal:

*"Dear Mr. Wong,
I am urgently looking for some banking-reference solutions for a fast growing, innovative investment bank with a Hicom 300. This is for a good customer of ICN in Portugal, in the voice area of our business. We would very much like to get a foothold in voice-over IP network solutions, with a view to expanding our business. Our account team is looking for examples of Siemens expertise in this field. Your help would be much appreciated, Miguel Oliveira."*

These statements bore testimony that fostering a culture and environment where knowledge sharing and reuse was all part of a day's work, was the basis for true value creation, and an impetus for developing a new business model based on global knowledge networking. The willingness to share knowledge reduced costs and helped to secure new business opportunities, to the benefit of the global ICN organization. Management support of individual local companies was a key factor in facilitating this.



**SHARENET:
GIVING A NUDGE TO A KNOWLEDGE-BASED
BUSINESS MODEL AT SIEMENS ICN**

TEACHING NOTE

Petra Kugler, Michael Gibbert, Dr. Claudia Jonczyk and Sven Völpel

INTRODUCTION

The basic intention of the Siemens ICN case study is to raise issues on the management of knowledge in organizations as well as on organizational change management. However, the main concern is not on the management of knowledge in organizations per se. Instead, the case sets out to illustrate the effect of a transitional environment and knowledge management on established ways of doing business. It attempts to elucidate how the introduction of knowledge management systems on a **worldwide** basis impacts organizational routines, structures, support processes, and **culture**.

Due to this focus, the present case study can be used in knowledge management classes but lends itself equally well to classes in **organizational** transformation, **change** management, or strategic management. The present **teaching** note reflects this **broad** orientation. Its rationale is to introduce feasible avenues for inquiry and attempts to guide analysis in accordance with main issues of the case study. The Siemens ICN case study considers the following main issues:

- How can changes in a company's environment (globalization, deregulation, etc.) lead to **significant changes** within the firm **to ensure** its **long-term** survival?
- How can the **management** of knowledge **directly** lead **to benefits** and to an adaptation to a dynamic and ambiguous environment, which permanently demands innovative overall solutions?
- Building of competitive **advantages** in the knowledge economy requires not only single punctuated solutions **but** an integrated new business model. This includes organizational and cultural aspects as well as the overall reward system.
- How can the implementation of an **IT-based** **knowledge** management initiative which is sensitive to explicit and tacit **knowledge** **look** like?

For expository purposes, this teaching note first provides a brief case study synopsis. After this, suggestions for positioning the case study in class, **implications for management education**, and **pedagogical** objectives are provided. **Eventually, emphasis is put** on the **provision** of several **lessons** learned that emerged from **the case study material**.

CASE STUDY SYNOPSIS

Leveraging knowledge on a global basis is a major challenge of **big** **transnationals** **like** **Siemens**. Induced by **significant** changes within the international **telecommunication** **business**, **Siemens Information & Communication Networks (ICN)** faced a shift in competitive pressures that stressed the necessity for knowledge-based competition. The new situation required the manufacturer to fundamentally redefine its business which had

shifted from a stable and simple product business to complex customer-oriented services. These services also called "solutions" were very knowledge-intensive and required knowledge networking processes across countries. This raised broad implications for the established business model, its organizational structures and support process, organizational culture and incentive system at ICN. The case shows the process through which Siemens ICN laid the groundwork for a new business model based on intensive global collaboration and knowledge management. It outlines the role ShareNet, an IT-based business application system, played within this transformation and discusses the critical success factors involved. Specific emphasis is put on the implications for organizational structure, culture and reward systems that are needed to sustain knowledge-based business models.

POSITIONING IN COURSE, IMPLICATIONS FOR TEACHING

The Siemens ICN case study may be used for instructional purposes both in a post-graduate University setting as well as in management education. Its structure and approach makes it equally well suited for the illustration of the process of implementing knowledge management as well as for its implications for established business models.

To enhance an understanding of the issues at stake beyond the immediate context of the Siemens ICN case study, it could be fruitful to combine the study with similar case studies on change management and/or knowledge management. This could aid students develop a broader perspective on knowledge-based business models. Such emphasis could be particularly worthwhile in view of extant e-business transformation programs in many incumbent companies. The business model illustrated can therefore usefully be analyzed against the background of e-business transformation cases.

PEDAGOGICAL OBJECTIVES

The primary teaching objective is to sensitize the reader to the transformation of a business unit of a major German transnational. More specifically, the focus is on the role of a knowledge management system in this transformation process with particular emphasis on the alterations to the established business model that this system engenders. For students to best benefit from the case study, some prior knowledge of organization studies and strategic management realms is desirable.

The ultimate aim is to enhance an understanding of the implementation of change management processes in general beyond the confines of the present setting. Thus, on the basis of the present case study, key success factors that could assume generic relevance can be extrapolated:

- The case demonstrates the importance of finding the right balance between IT solutions for capturing explicit codified knowledge and leaving enough room to allow direct personal exchange of implicit knowledge.
- Knowledge-management initiatives have to be embedded within appropriate incentive systems, structural arrangements that facilitate knowledge sharing and an organizational culture that supports such an initiative.
- To ensure the global reach of the knowledge-management initiative, knowledge sharing has to take place on three levels: within one country, between peer countries and between market stages.
- Knowledge management on a global scale is likely to interact with variables of national culture, and knowledge management systems ideally need to cater for intercultural differences.

PREPARATION RECOMMENDATIONS

As a preparation for discussion of the Siemens ICN case study the following issues are suggested:

- How can explicit and tacit knowledge be characterized and what are adequate tools or modes which are likely to enable capturing or transferring these two types of organizational knowledge?
- **Organizational structure** can impede the flow of **knowledge** across functions and **hierarchies**. In **recognition** of the limitations of traditional organizational structure, **novel organizational designs have been proposed in the literature**, such as **communities of practice and networked organizational structures**. **Do these concepts turn traditional organizational forms obsolete? Discuss using the case study data.**
- Compare the challenges and opportunities of a multinational company in the stable situation of the 'old economy' to the new unstable, often ambiguous situation. This **analysis should be conducted** on the levels of the industry, the whole firm, of single **country organizations and individuals** within the organization. What are the **implications on each of these levels?**
- What different **types of incentives** do you know? What are the appropriate incentives to foster **knowledge sharing**? Specific attention could be put to the likely interaction of variables of national culture with the process of sharing knowledge on a global scale, and the impact of such cultural variables on the design of incentive schemes.
- Oftentimes, knowledge based business models engender fundamental challenge to cultural artifacts and communicative patterns in an organization. It has often been suggested that **knowledge management** can in fact function as an impetus to culture change. Critically analyze in **how far** ShareNet functions as an enabler for culture change.

DISCUSSION GUIDELINES

The following set of guiding questions can be used to assist students in focusing on key issues. The questions are not prescriptive. Instead, they are meant to provide suggestions for enhancing an appropriate understanding of the case study material and its broader applicability.

- What were the driving forces that lead Siemens ICN to envision becoming a solution provider and what role did knowledge play in this process?
- What are the additional variables that have to be considered for global knowledge-management initiatives when compared with local initiatives?
- What are the organizational factors that should be considered when designing and implementing a knowledge management initiative?
- How can you account for the phenomenal success of a system that initially posed a threat to employees? Critically discuss the motivations put forward in this case study for employees to participate in such a system.
- In your opinion, is it realistic to expect the success of such a system to continue or do you foresee the need of modifications to the system in the near future? Suggest possible improvements.
- What criteria would you suggest for evaluating contributions by employees to ShareNet? Motivate your answers.
- (For students with an interest in Human Resource Management). Do you anticipate that a system like ShareNet could potentially compensate for deficiencies in certain corporate structures (unrealistic production schedules, impersonal management styles, etc.) and emerge as a tool for recognition or have other similar benefits for the internal relations of an organization?
- One of the objectives of this system is to build knowledge-sharing into the workday of employees. Given that extra time is seen as a rare commodity, what steps/strategies could you suggest for reaching this objective?
- Can you think of other relevant stakeholders, other than employees, with which knowledge sharing would be fruitful?

TEACHING PLAN

The following teaching plan provides standardized answers to the most pertinent issues underlying the questions above. The plan is intended as a set of guidelines to give impetus to discussion and further reflection on the case study material, rather than as a conclusive analytical effort.

CATERING FOR EXPLICIT AND TACIT KNOWLEDGE AT THE SAME TIME

Explicit knowledge is easy to transfer using languages or texts. Knowledge about markets or customers and their preferences fall into this category. Explicit knowledge can be easily codified, therefore electronic forms of written media, like ShareNet, serve as an adequate means of storing or communication explicit knowledge. However, the transferred information and data need further explanation or interpretation to be fully understood. This builds the second category of knowledge: tacit, or implicit, knowledge. Tacit knowledge denotes knowledge that is subtler and is not easy to express in words. Michael Polanyi described it this way, "we know more than we know". Intuition, skills, or knowledge about sales processes are examples of tacit knowledge. The transfer of this kind of knowledge usually requires close personal contact and collaboration for the exchange of expertise to take place.

KNOWLEDGE BASED BUSINESS MODELS CHALLENGE ESTABLISHED ORGANIZATIONAL STRUCTURE AND CULTURE

Knowledge management tools and mechanisms such as ShareNet tend to foster a new way of collaborating, leading eventually to new business models. To the extent that established, typically centralized, organizational structures impede the flow of knowledge, an alternative model often emerges. Such, decentralized, networked organizational forms can be in direct opposition to the established pattern. To alleviate potential clashes, key success factors become culture change programs, appropriately designed incentive systems, and support from top management.

DECENTRALIZATION AND ACCOMMODATING VARIABLES OF NATIONAL CULTURE IN GLOBAL KNOWLEDGE NETWORKING

The current business environment witnesses a trend towards decentralization, which coincides with a tremendous surge in interest in knowledge management. In fact, recent empirical and conceptual evidence strongly points to a proportional relationship between the necessity of engaging in knowledge management activities and the decentralization of a company. Analogously, research suggests that the need for formal recognition of intercultural variables is, not surprisingly, proportional to the decentralization of corporate key functions across nations, i.e. to its globalization. By implication, it would appear that, to the extent to which knowledge-based companies become more and more global, and global companies become increasingly knowledge-based, the need for integration of knowledge management and intercultural awareness becomes evident. While intercultural awareness is generally seen as being of great practical importance to the global operations of companies in general, it seems especially crucial for the process of managing particularly tacit forms of knowledge across cultural boundaries. In fact, a

vocal chorus of observers claims that such tacit forms of knowledge, by virtue of their immobility, idiosyncrasy, and sustainability are harder to imitate than explicit knowledge and hence form the most sustainable source of competitive advantage. Yet, from a practical point of view, the flow of tacit knowledge requires the direct contact between people. Hence the need for intercultural awareness in networked business models.

WIDENING THE HORIZON OF KNOWLEDGE NETWORKING TO EMBRACE KNOWLEDGE FROM OUTSIDE CORPORATE BOUNDARIES

Knowledge management offers unprecedented opportunities for engaging in direct and in-depth dialogue with relevant knowledge agents besides the employee, in particular the customer. For a customer-centered company, a logical question is: How can new knowledge management approaches be creatively leveraged to share knowledge with organizational customers? In this manner, strong, two-way partnerships with customers, which will lead to authentic collaboration and knowledge sharing, rather than mere transaction can be fostered. This collaboration would mean sharing their knowledge with Siemens and vice versa. This represents a paradigm shift from established models of doing business, because it adopts the customer as a true partner in joint value creation, benefiting both the customer and Siemens. The notion of joint business development of Siemens' sales representatives with customers to the Web, can make business development easier, while simultaneously decreasing costs. For example, a wide array of aspects in the telecommunications-business offering, including financing, business analysis, and network planning has to be scrutinized for its applicability. Since these aspects of the value-creation chain in telecommunications include substantial amounts of tacit and, therefore, highly personalized knowledge, communicating this knowledge using ShareNet channels demands consideration of the unique characteristics of tacit knowledge.

LESSONS LEARNED

On the basis of the Siemens ICN case study, some generic lessons learned can be formulated. The following aspects seem to assume a relevance beyond the immediate context at Siemens ICN.

Customers and employees are first and foremost people and need to be treated as such. Throughout the conception, design, development and implementation of this system it was clear that systems and technology remain tools. They have to be designed, implemented and accepted by people. The success of this project is in large part due to the consideration of what people really need – both customers and employees. To ensure support of the actual user group it is crucial to integrate the users into the design of the initiative. An additional important factor in the implementation phase is a clear communication of the specific utility of the tool for a user group. An organization ne-

glects the human element at its own peril. This takes on special significance when there is a widespread perception of the world and global organization in particular, as being impersonal and remote.

Ongoing management support and feedback are essential throughout all the phases of implementation as well as for ensuring ongoing success of a knowledge-sharing system. Both explicit and implicit support from the top is crucial for the thorough and successful permeation of a new approach to sharing knowledge. The unspoken culture within an organization is a powerful tool for bringing about change, but the change of paradigm must be evident as emanating from the top. Besides, like in every change project, top management's commitment and the high priority of such a project have to be demonstrated to gain acceptance within the firm. A knowledge-friendly culture of mutual trust and openness among an organization's employees play a crucial role in supporting such a project or must be established in its course.

Increased contact networks, established for the purpose of exchanging knowledge, have the potential for more than just sharing knowledge. By facilitating personal contacts beyond the limits imposed by natural geographic and functional boundaries, an organization can potentially tap previously hidden human resources. In addition, employees have an opportunity of promoting their own knowledge and skills without the restrictions of the traditional channels. They can literally 'tell the world' about their capabilities. Furthermore, contacts which are crossing the borders of country organizations lead to a widening of their personal horizons. People see how other parts of the whole function, which leads to a broader overall understanding of the firm.

Systems like ShareNet introduce a new kind of meaning to the saying that "knowledge is power". By sharing knowledge and expertise on a global scale, a single solution could yield many times its worth in a single application setting. The enormous potential for doing more with less in terms of resources remains to be fully realized as the scheme unfolds. Furthermore, through the combination of already existing intellectual capital, the generation of new knowledge through innovations can be given a nudge.

CONCLUSION

The key features of the new knowledge-based business model can be delineated as leadership, a viable business case, organizational structure and culture, motivation and reward systems. Such a new knowledge-based business model follows a different logic than established organizational forms i.e. it is decentralized and features network structures. This design can be in opposition to established organizational structures, support processes and communicative patterns, thereby putting the old established model into question.

Knowledge management systems such as ShareNet are therefore not only tools supporting a global knowledge management initiative but represent at the same time drivers for organizational change. Knowledge management initiatives can thus function as stimuli for crafting and initiating new business models and transforming organizational culture.

ICN's ShareNet enabled knowledge management across national boundaries, yet staying within organizational boundaries. The next step to establish a world-wide web of knowledge sharing will be the integration of customers, partners and suppliers.