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Managing by Communication: The Danish Experience

By constructing an intellectual capital statement a knowledge management strategy is developed. It defines how knowledge resources are configured and developed. Experiences from Danish firms show that the intellectual capital statement functions both as a *management tool* used to systematize knowledge management activities and as a *communication tool* oriented towards employees, customers, partners, and investors.

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Introduction

Intellectual capital statement has been used – mainly in the Scandinavian countries – since the beginning of the 1990'es. The main idea is to create a report, often as a supplement to the annual report, where the firm's strategy for managing knowledge and the activities initiated to pursue the strategy is explained.

The report, that can be published as an internal or an external report, does not measure knowledge in monetary terms. Rather, it pays attention to the knowledge management initiatives and results. It shows whether a company has improved the development and management of its knowledge resources. At the same time it is an integrated part of the firm's company's knowledge management.

This article reports on experiences from Danish firms that have been developing intellectual capital reports. Since 1998 more than 100 Danish firms from the private and public sector have worked with knowledge based strategies based on methodologies developed by a team of researchers on behalf of the Danish Ministry of Research. The experiences, which have been collected systematically by the researchers, are reported in this article.

The first part of the article describes briefly the model which forms the basis of the intellectual capital report while the next part of the article illustrates the methodology with experiences from a Danish software firm, Systematic Software Engineering.

Why reporting on knowledge management?

There are several reasons why companies start working with intellectual capital statements. At the same time the report is a management tool developed primarily to fulfil internally oriented objectives and a communication tool produced to achieve externally oriented objectives.

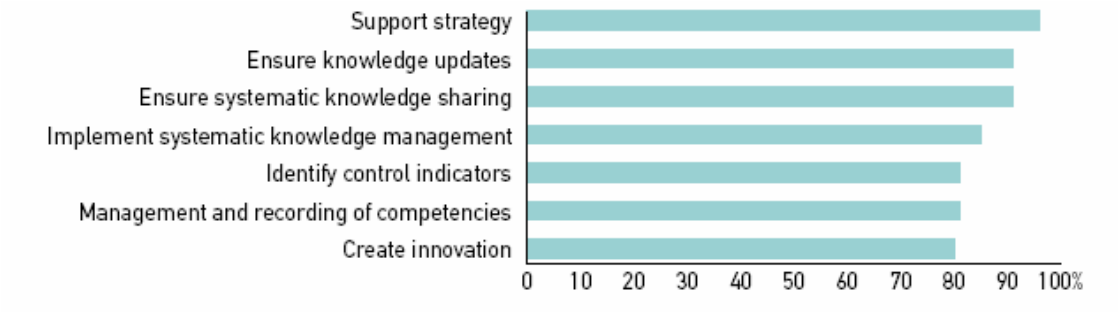
Internally oriented objectives

Some of the Danish firms, that started working with intellectual capital statements in the late 1990'es, were already experienced with knowledge management while others were just novices. To the latter, working with intellectual capital statement has been seen as a

catalyst to the work with knowledge management, as it is a part of the company's knowledge management *strategy.*

For firms where knowledge management activities were already undertaken, working with intellectual capital statements helped systematizing the activities, initiating more relevant initiatives and developing a coherent strategy for knowledge management. Many firms explained that they had exactly been looking for a systematic approach to managing and sharing knowledge and a methodology that linked knowledge management to the firm's overall strategies. See figure 1 where results from a questionnaire survey among firms using intellectual capital statements is shown. The figure shows which internally oriented objectives these firms had for developing intellectual capital reports.

Figure 1: Why intellectual capital statements? Internal objectives



(% of companies agreeing with the following intellectual capital statement objectives)

Source: Questionnaire survey of companies that have worked with intellectual capital statements

Externally oriented objectives

Intellectual capital statements can also be used to communicate how firms work with knowledge management – what are the aims of knowledge management activities, what initiatives does the firm have, and what are the effects. Figure 2 shows results from the same questionnaire survey this time where the firms were asked which externally oriented objectives they had with the development of an intellectual capital statement.

Figure 2: Why intellectual capital statements? External objectives

(% of companies agreeing with the following intellectual capital statement objectives)

Source: Questionnaire survey among companies that have worked with intellectual capital statements

When an intellectual capital statement is published it is clearly about communications to various parties:

- It communicates identity: Who 'we' are, and where are we heading?
- To potential employees it gives an impression of what it is like to be an employee including how their competences will be developed, what assignments they will get etc.
- To customers it communicates the competences in the company, and how they are developed to match the future needs of the customers.
- To partners it illustrates the capabilities and working methods of the company and how it matches partners.
- To investors it communicates the company's ability to compete based on its competencies, and how management develops the competencies of the firm.

Reporting on knowledge resources – not knowledge

An intellectual capital statement focuses on how the firm develops its knowledge resources. Intuitively knowledge is information, insight, thinking etc. either as personal insight or knowledge stored in books or IT systems. In a business context it is used to improve a firm's innovation, processes and performance.

However, knowledge is 'intangible', it cannot be seen and be described, changed, developed or evaluated. Therefore it has to be translated into knowledge resources that can be pointed at so as to say 'this is knowledge'! Knowledge resources can be described, developed, evaluated and combined in new ways. They can be managed, which means they can be described in an intellectual capital statement. Typically there are four types of knowledge resources, employees, customers, processes and technologies.

- Employees include employees' skills and personal competencies, experience, the combination of different types of employees and educations, employees' motivation, commitment, willingness to adapt etc.
- Customers include customer mix, relations to customers and users, their satisfaction and loyalty, their referral of the company, insight into users' and customers' needs and the degree of co-operation with customers and users in product and process development etc.
- Processes relate to the knowledge content embedded in the company's stable procedures and routines. These can be the company's innovation processes and quality procedures, management and control processes and mechanisms for handling information.
- Technologies refer to the technological support of the other three knowledge resources. Focus is usually on the company's IT systems (software and hardware) such as the intranet, IT intensity, IT competencies and IT usage.

A company's knowledge management is therefore about these four types of knowledge resources and their interaction.

The elements of the intellectual capital statement

The intellectual capital statement consists of four elements, which together express the company's knowledge management. The four elements link users of the company's goods or services with the company's need for knowledge resources. They include the establishment of the need for knowledge management, i.e. the knowledge narrative and the management challenges, a set of initiatives to improve knowledge management and a set of indicators to define, measure and follow up upon initiatives.

Knowledge narrative

The first element is the *knowledge narrative* that expresses the company's ambition to increase the value a user receives from a company's goods or services. This value can be called the use value and describes the difference the use of the product or service makes to the consumer. The knowledge narrative also shows which types of knowledge resources are required to create the use value the company wants to supply. This ambition establishes a narrative, because it merges the user's and the company's knowledge resources into a whole. The knowledge narrative argues for how knowledge is supposed to lead to improvements for the user.

Management challenges

The second element is a set of (knowledge) *management challenges* which highlight the knowledge resources that need to be strengthened through in-house development or through sourcing them externally. This can be achieved by intensifying co-operation with innovative customers, by developing greater expertise in specific fields or by acquiring better insight into the company's control processes. Management challenges such as these have a certain degree of permanence over time. They usually do not change every year as they are closely linked to the knowledge narrative and therefore to the individual knowledge resources within the company. The starting point for the management challenges could be to do something about the existing knowledge resources. But it could also be to introduce new types of knowledge resources that are currently not found within the company.

Knowledge management initiatives

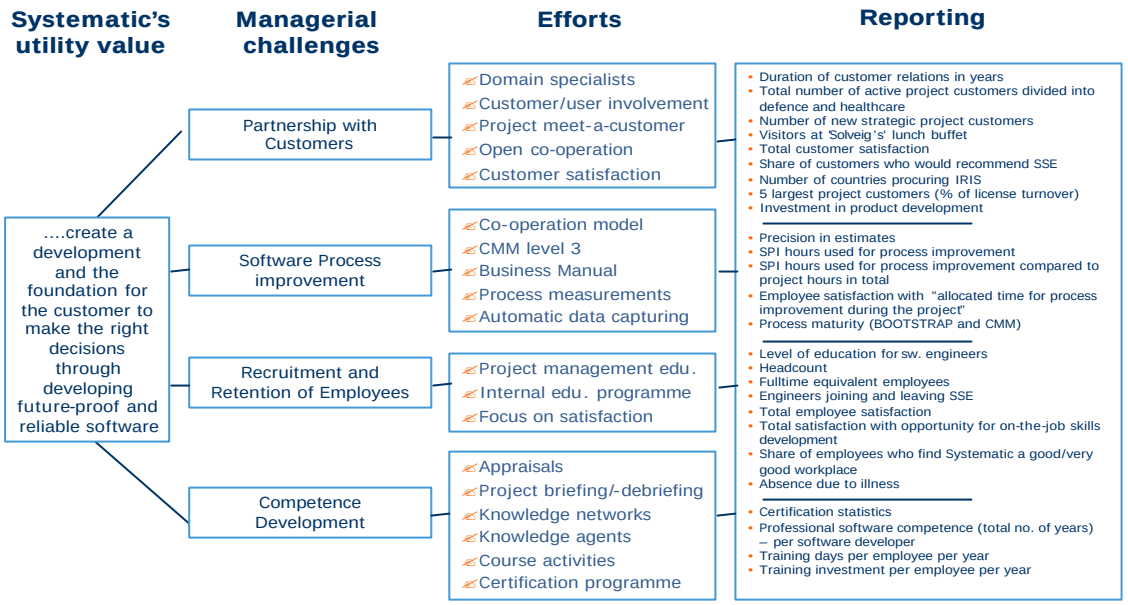
The third element is a set of *initiatives* initiated to address the management challenges. The initiatives are concerned with how to compose, develop and procure knowledge resources and how to monitor their extent and effects. This could be, for example, investing in IT, hiring more R&D consultants or software engineers or launching training programmes in company processes and procedures. Vocational and social activities can also be introduced to increase employee satisfaction. These are all, in principle, short-term actions. Comparing one year with the next, initiatives must be seen to work, even if specific types of initiatives are repeated over several years. These are specific initiatives which specific players are responsible for. Somebody hires personnel, somebody launches training initiatives, and somebody develops the required procedures and routines.

Key performance indicators

The fourth element is a set of *indicators* which make it possible to follow up whether the initiatives have been launched or whether the management challenges are being met. Indicators make initiatives visible by making them measurable. It is therefore possible to determine whether an initiative has been started, and what effect it has. Some indicators are directly related to specific initiatives such as 'training days' or 'amounts invested in IT'. Others are related only indirectly to specific initiatives such as 'number of R&D consultants' or 'newly appointed software engineers'.

It is important to emphasize that these elements are interrelated. The relevance of a single element only becomes clear when it is seen in relation to the other. The indicators can not be interpreted individually, and the knowledge narrative becomes 'free prose' if not illustrated by the indicators. In figure 3 the four elements are illustrated for the software firm Systematic Software Engineering. The model functions as an analytical framework identifying each of the four elements in the knowledge management strategy, and as a structure for the intellectual capital statement.

Figure 3: The key elements in Systematic's strategy for knowledge management



The indicators show how initiatives are launched and put into effect. The initiatives formalize the problems identified as management challenges. The challenges single out what has to be done, if knowledge resources are to be developed. The knowledge narrative also sums up, communicates and re-orientates what the company's skills and capacity do or must do for consumers, and which knowledge resources are needed within the company.

Systematic Software Engineering: reporting on knowledge

Systematic Software Engineering (Systematic) is a Danish software house that develops and sells technical system solutions, products and support primarily to ministries of defence but also increasingly to the public health care sector, and private transport and service companies. Systematic was founded in 1985, and has especially during the last three years grown rapidly from 130 employees in 1999 to 320 in 2003 including the subsidiaries in the UK and USA. In 2001/2002 the annual sales amounted to 25 million euro. It is the stated aim of Systematic to develop its core business areas from primarily being a supplier of defence systems to increasingly becoming a supplier also to civilian

markets. In recent years there has in fact been a steady increase in the proportion of civil contracts with Electronic Patient Journals and electronic trade and security systems being the core business areas.

Initiating knowledge management

The first steps towards publishing an intellectual capital statement was taken in 1998 at the same time as efforts were also made towards process improvements in software development. As a major achievement the company was in 2002 certified at level 3 according to the Capability Maturity Model (CMM) – an American quality model developed to systematically improve software development processes – and it is still investing heavily in this area where e.g. more than 9000 engineering hours were spent in a period of six months on enhancing efficiency and improving internal processes. It is the stated aim to obtain the level 4 certification in 2004, which will bring the company into the absolute European elite since only 10 European companies meet such documented quality and maturity standards.

Systematic's intellectual capital report is concerned with management's efforts to influence the structure of the firm's knowledge resources. The management sees the intellectual capital statement as an alternative to the traditional annual report, and most symbolically at the end of the intellectual capital statement, the reader will find a two-page version of the annual financial statement. In this way the financial statement is presented as a supplement to the intellectual capital statement, and compared with the financial statement, the intellectual capital statement is a colourful and an expressive form of communication.

Systematic's strategic goals are to be among the best in its fields of operation, and hence the company must continuously improve and innovate and at the same time keep attention to the day-to-day business. As an example of the projects carried out by this firm, Systematic was in March 2002 awarded a contract for more than € 16m for the delivery of a Mission Planning System that will form an essential part of the future NATO-wide Air Command and Control System (ACCS). The order was received after more than four years of sales effort. The firm explicitly state that one of the reasons that

they won the contract was due to their extensive capability in knowledge management. This achievement emphasises the need to maintain focus on knowledge management.

The intellectual capital report

Following the Danish guideline for intellectual capital reporting, Systematic identifies four managerial challenges to be addressed within knowledge management:

- Partnership with customers
- Software process improvement
- Recruitment and retention of employees
- Competence development

The red thread connecting the four management challenges is the software process improvement, which represents the common theme to every activity in the company. In the intellectual capital report all the management challenges are described in substantial details, but as an illustration the first, i.e. “Partnerships with customers”, will be mentioned here, since it illustrates how most of the Danish intellectual capital reports are designed with the creation of use value in focus.

The management challenge “Partnerships with customers” is also a headline for a set of activities initiated in order to enhance and create partnership relations with the customers. The activities are thoroughly described in the intellectual capital statement to illustrate to the reader the concrete actions the company takes to address this management challenge. The activities are all related to the use value the company endeavor to deliver to the users of the systems and the customers.

In software engineering and development user requirements are seldom adequately defined nor used in the system requirement specification, which is the foundation of the system’s architecture, design, coding and test activities. Systematic has adopted a number of procedures, techniques and ways-of-working in order to manage the critical interface between the firm and the users of the solutions, i.e. the user oriented knowledge management activities.

Systematic has e.g. chosen to employ a number of (non-software engineering) specialist with many years of operational experience in the fields of defense and healthcare. These employees contribute user specific expertise to the development of the system and thereby bridge the gap that often exists between the customer/end-users and the system engineers. Furthermore, customers – and preferably end users – are actively involved throughout the development process at human computer interaction workshops, development of prototypes, planning of test scenarios and in project and steering group meetings etc.

In order to increase the engineers' understanding of the customer's and end-user's environments, Systematic has implemented a project called 'Meet the Customer'. The objective is that all employees in Systematic meet and preferably visit a relevant customer or end-user at least once by the end of 2002, e.g. spending a day in a hospital ward, at an operational command unit etc.

Also, employees from Systematic participate regularly in national and international conferences and seminars, where trends and new opportunities can be observed. Focus on Customer Satisfaction is, like in many other firms, also seen as vital measure of the ability to create value for the customers and, as a result, generation of new sales opportunities. Every second year, Systematic assesses the customers' satisfaction with project and consulting performance. The survey is conducted by independent consultants in the form of interviews with key customer contacts.

Today, Systematic has published three intellectual capital statements. These reports illuminates via indicators and corresponding text and illustrations certain aspects of customer-relations, employee development and customer and employee satisfaction, the effectiveness of processes, and certain form of innovation in areas of product development and process improvement.

Concluding remarks

The experiences from Danish companies show that constructing and publishing intellectual capital statement can be an effective tool for systematizing the knowledge management activities already initiated and aligning them with the strategic objectives.

The purpose of the intellectual capital statement is often twofold, as it functions as a *management tool* used internally in the firm and as a *communication tool* used to communicate to employees, customers, co-operative partners and investors how the firm works with the development of knowledge resources in order to generate value.

Further readings

Danish Ministry of Sciences Technology and Innovation. Intellectual Capital Statements – the New Guideline. Report February Copenhagen 2003. Can be downloaded from ???

Bukh, Per Nikolaj, Mette Rosenkrands Johansen & Jan Mouritsen. 2002. Multiple Integrated Performance Management Systems: IC and BSC in a software company. I *Singapore Management Review* 24(3):21-33.

Mouritsen, Jan, Heine T. Larsen, Per Nikolaj Bukh & Mette Rosenkrands Johansen. 2001. Reading an Intellectual Capital Statement: Describing and prescribing knowledge management strategies. *Journal of Intellectual Capital* 2(4):359-383.

Systematic's intellectual capital statement 2002. Can be downloaded from http://www.systematic.dk/include/download/ICR/ICR2002.pdf.

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