

# **Disclosing information on knowledge**

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**Working Paper**

**May 2003 no. 08**

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## Abstract

This working paper discusses whether the Danish intellectual capital statement guideline is a useful framework for providing value-relevant information about companies' intellectual capital. Disclosing information about intellectual capital is reporting about a company's knowledge management strategy, which involves the creation, diffusion and exploitation of knowledge. The guideline focuses on knowledge resources and not directly on knowledge itself. If knowledge is the most important asset for companies today, it can be argued that the guideline does not directly promote disclosure of value-relevant information. The paper concludes that a new framework is needed if intellectual capital statements shall provide value relevant information about the management of knowledge assets.

## Introduction

Several Danish companies have been reporting and measuring intellectual capital since the late nineties. Disclosing information about intangibles has been implemented in the Danish Financial Statements Act (of 7 June 2001) indicating that the number of Danish companies reporting their intellectual capital will increase. Here it is stated that corporations<sup>1</sup> must describe their "intellectual assets" if they are of special importance for future profitability (§ 13,3) (§99,2) (KPMG, 2002).

Knowledge is a crucial resource and the ability to leverage this knowledge into competitive advantages is fundamental for companies today (EFS, 2000; Boisot, 1998; Drücker, 1993; Nonaka, Takeuchi & Umemoto, 1996; Castells, 2000). In this respect most companies are likely to possess intellectual assets, which are of special importance for future profitability. The companies are therefore required to account for these assets.

The most applied framework for intellectual capital statements in Denmark is a guideline developed by the Danish Agency for Trade and Industry (now the Danish Commerce and Companies Agency).

To measure and disclose information about intellectual capital is a challenge because of its intangible characteristics. Intellectual capital is not directly visible in the same way as companies' tangible resources such as raw materials and inventory (Ministry of Science, Technology and Innovation, 2003). This issue is important however. *"If we are going to know what are high return activities, and we want our resources to be allocated towards high-return activities, we need to have accurate ways of*

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<sup>1</sup> This is only required by listed companies and state-owned enterprises irrespective of size (Class D) and large and medium-sized enterprises (Class C) (KPMG 2002).

*measuring what these activities are*". (Blair and Wallman, 2003 p. 461). This working paper discusses whether the Danish intellectual capital statement guideline provides value-relevant information about companies intellectual capital. According to the guideline reporting intellectual capital is reporting about a company's knowledge management. This leads to the main thesis of this paper:

**Does the Danish intellectual capital statement guideline facilitate the disclosure of value-relevant information about how knowledge is managed in a company?**

**A growing information asymmetry**

Researchers and organizations have proposed numerous definitions and classifications of intangibles in the last decade (Johanson et al., 2001). The main driver behind this development is the trend that "*...in the new economy the value derives more from [companies'] intangibles – its human capital, intellectual property, brainpower, and heart*" (Al Gore, Microsoft CEO<sup>2</sup>).

A broad definition of intangibles is "*...nonphysical factors that contribute to, or are used in, the production of goods or the provision of services and that are expected to generate future productive benefits to individuals or to firms that control their use*" (Blair and Wallman, 2003 p. 451). According to Lev intangibles are related to innovation, organizational practices and human resources and they are linked to the future profitability of the firm. In fact an investment in intangibles is seen as the primary driver for innovation (Lev, 2001).

Employees and especially managers of a company have access to much more information about the well being of a company than outsiders such as shareholders, governments etc. This is referred to as information asymmetry (Hickman et al., 1996). To promote a level playing field where all stakeholders have access to relevant information, companies are required to present an audited financial statement disclosing value relevant information. However, information asymmetry in markets is inevitable, but increasing precision of disclosure should reduce information asymmetries between insiders and outsiders (Leuz, 2003).

The usefulness of financial information in explaining the profitability of firms has been deteriorating in the last 20 years (Lev & Zarowin, 1999). What lacks is information about intangibles (Johanson et a., 2001).

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<sup>2</sup> Vice president Al Gore, Microsoft CEO summit, May 8 1997 (Bond & Cummins, 2003).

This creates a challenge for financial accounting classifications to cope with a world that seems to be getting more and more immaterial (Gröjer, 2001). The problem is that “...our economic and business measurement systems [...] are tracking a smaller and smaller proportion of the real economy” (Eustace, 2000: 5). This information deficiency is creating a growing information asymmetry.

Akerlof showed that information asymmetries can have severe effects on the market mechanism. In markets characterized by asymmetric information between buyers and sellers, or insiders and outsiders, adverse selection is likely to arise. In the used car market it is often impossible for potential buyers to tell the difference between good cars and “lemons” – cars of bad quality. If one cannot tell the difference in quality between two products uniform pricing are likely to occur. The sellers of good cars cannot get a better price than the sellers of lemons and are therefore likely to leave the market keeping their old cars. What remains is a market of lemons (Akerlof, 1970)

The same applies to the investment market. If there are no requirements for reporting intangibles, shareholders and markets will have little insight into intangibles except for what there is disclosed in the traditional financial statements or from secondary sources. For companies where tangibles are predominant the traditional financial statement might be a fair predictor of future performance and including intangibles would not be relevant. The problem is substantially higher for R&D intensive companies and companies where intangibles are predominant. If investors cannot tell the difference between companies with valuable intangibles and the “lemons” adverse selection is likely to occur. The promising R&D intensive companies will be valued lower than their intangibles justify (Lev, 2001). Evidence suggests that R&D intensive firms have a larger bid-ask spread (the difference between the current bid and the current ask of a given share). A high bid-ask spread indicates less liquid markets for the company’s shares. Market liquidity would improve if the disclosed statements included more comprehensive information about companies’ intangibles such as R&D (Boone & Raman, 2001).

## **Intellectual Capital**

An approach to measuring and disclosing information about intangibles is “*Intellectual Capital*” (IC). Edvinsson and Malone define IC as the difference between the book value of companies (what is measured by traditional accounting statements) and the market value. IC is a combination of human, customer and organizational capital (Edvinsson & Malone, 1997). Human capital is knowledge, competences and values possessed by employees. Customer capital is customer

relations, position on the market, brands etc. Organizational capital is processes, products, innovation, patents, IT etc.

The argument stating that the value of intellectual capital is decided by the book value of a company is problematic. Intellectual capital must be defined by its own terms and not as a spin-off of something else (Bukh et al., 2001). However, it illustrates that we are dealing with something, which is not included in the normal accounting statements that are used to estimate a company's book value.

A different definition of IC is "... *knowledge that transforms raw material and makes them more valuable*" (Stewart, 2001: 12). IC and the concept "knowledge" are related in the sense that managing IC is essentially managing a company's knowledge resources. The Danish intellectual capital statement guideline is based on this approach. Disclosing information about IC is in fact reporting a company's knowledge management activities. "*IC statements report on firms' knowledge management activities – neither the value of knowledge, the amount of knowledge, nor on the departments involved in producing knowledge. They report on organization-wide knowledge resources that in combination are capabilities which makes it possible for the firm to act*" (Mouritsen et al., 2002: 12).<sup>3</sup>

### **The Danish Intellectual Capital Statement Guideline**

The guideline was developed by the Danish Agency for Trade and Industry (now The Danish Commerce and Companies Agency (DCCA) in corporation with researchers from Copenhagen Business School and The Aarhus School of Business. 17 Danish companies were involved in developing the guideline and in making the first intellectual capital statements based on the guideline (Ministry of Science, Technology and Innovation, 2001, 2003). For more information about the specific intellectual capital statements see Ministry of Science, Technology and Innovation (2002).

The guideline serves two purposes. It measures the intellectual capital in an organization. It is not a quest to measure IC in economic terms but rather the "*objectives, initiatives and results in the composition, application and development of the company's knowledge resources*" (Ministry of Science, Technology and

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<sup>3</sup> Intellectual capital is related to the resource-based view of the firm, which states that to achieve durable competitive advantages companies should focus on building and maintaining its resources and competencies (Grant, 1991). The central issue is building idiosyncratic core competences or central capabilities that can provide value to customers, can be converted into superior products and are hard to imitate for competitors (Prahalad & Hamel, 1990). It is also related to the knowledge based theory of the firm, which states that knowledge is the only resource that provides sustainable competitive advantages, and that focus should be pointed at knowledge and the competitive capabilities derived from it (Grant, 1996).

Innovation, 2003: 7). Furthermore it is a strategic knowledge management tool focusing on gaining future results through developing the company's knowledge resources.

The intellectual capital statement guideline is based on four linked elements, which together express the company's knowledge management.

1. The *knowledge narrative* expresses the value users receive from a company's products or services, and the knowledge resources the company needs in order to provide value to the users. The concept resembles a company's vision.
2. The *Knowledge management challenge* represents the strategic challenges the company face in order to meet the knowledge narrative.
3. The *initiatives* are the answer to how the Knowledge management challenge will be met in the company. It describes the company's knowledge management initiatives.
4. To measure whether the management challenges are being met the company needs to identify indicators that make the initiatives both visible and measurable.

The four elements show how the strategy of a company is being implemented and measures the effect of the initiatives.

According to the guideline accounting for knowledge is difficult because of the intangible characteristics of knowledge. Because of this, knowledge needs to be "translated" into knowledge resources that can be described, measured and managed. These knowledge resources are classified as employees, customers, processes and technologies (Ministry of Science, Technology and Innovation, 2003). The guideline does not provide accepted definitions or methods on how firms can report their intellectual capital. The guideline is an open invitation to all kinds of measurements regarding intellectual capital (Mouritsen, 1998).

The question remains whether the guideline facilitates a level playing field. Does it minimize the information asymmetry between insiders and outsiders by providing value relevant information about a company's knowledge management strategy? I will discuss this by looking deeper into classification and knowledge management.

## **A classification of intellectual capital**

A *classification* is a "heuristic" device, a means of facilitating and promoting understanding (Gröjer, 2001). Classification is the "backbone" of accounting as it

enables readers to understand business results. If you cannot understand events, it is difficult to mobilize the appropriate action. A good classification regarding intellectual capital enables the readers to understand and react upon the knowledge management activities in a company. This should affect the consequences caused by asymmetric information in the sense that it promotes understanding the value of intangibles.

According to Gröjer (2001) a good classification is simple, exclusive and exhaustive.

### **Simplicity**

By describing the world in simple terms we make it easier to understand. The purpose of a classification is to simplify the universe of discourse. Before you simplify something you need a device for sorting out the relevant categories. This device consists of assumptions about how the world is perceived and which categories are considered relevant. The concept of "utility" or "usefulness" is such an assumption. The classification has to be useful. But in order to make sense we have to define what "being useful" implies. "Useful" can be defined as their (IC) value-relevance in explaining business success. *"Information is relevant if it has the capacity to confirm or change a decision-maker's expectations. Thus, the value-relevance of a financial statement is its ability to confirm or change investors' expectations of value"* (Joachim Hoegh-Krohn & Knivsflaa, 2000: 255).

Critics have stated that the current accounting classifications do not fully explain business success (Lev & Zarowin, 1998; Johanson et al., 2001; Gröjer, 2001; Eustace, 2000), which is why there is a need for a more value-relevant accounting classification.

### **Exclusive and exhaustive**

Exclusivity means that classes in the classification do not overlap and the single items can be placed into only one category. If the classes in the classification are exhaustive they must include all possible items. Exclusivity is important for two reasons. First of all it provides consistency, which refers to using the same accounting procedures from period to period with the use of similar measurement concepts. If a particular item can be accounted for in different classes from period to period it will counteract consistency. Secondly it will become difficult to compare companies' statements even though they use the same classification. This is referred to as "uniformity". Good classification is based on the idea of "rigid" uniformity, which implies that only one method can be applied to similar transactions, even though relevant circumstances exist. The existence of relevant circumstances indicates the need for a new classification.

If the classification is non-exhaustive, and there are intangibles that does not fit into the classifications you end up having "residual classes" that are not related to other classes, or part of an actual classification.

If intellectual capital statements shall provide relevant information about a company's knowledge management strategy a value-relevant classification of knowledge management that is exclusive and exhaustive is needed.

## **Knowledge management**

Managing knowledge involves the construction of knowledge, the embodiment of knowledge into artifacts, the diffusion of knowledge and finally the use of the diffused knowledge (Demarest, 1997). These processes are interrelated and facilitate a continuously renewal of the company's knowledge and a transformation of knowledge into business value (Boisot, 1998).

But what is actually managed? According to Boisot (Boisot, 1995) knowledge is closely related to the concepts data and information. Essentially knowledge is a product of the data that surrounds us. Data are the inputs we continuously receive about the reality we live in. Every known phenomena consists of data, otherwise we could not describe it. *"Data is an energetic phenomena that links us in our capacity of knowing subjects to an external physical world"* (Boisot, 1995: 22).

Before we can create sense from data some sort of filtering is necessary. Humans are not capable of grasping and understand the seemingly unlimited amount of data which surrounds us. We need to economize on the amount of data, by creating patterns and structure in the data, in order to create sense. By doing this we create information. The creation of meaningful information implies a "human processing agent". In other words human intervention is needed. Information is visible and can be stored and diffused (McDermott, 1999).

Knowledge is not visible in the same way as information. Knowledge is a human possession that enables us to act and minimize our use of resources by changing and organizing them. Knowledge always implies a person that knows. Knowledge is obtained by individuals through the absorption of information and combining this with what the individuals already know. Knowledge cannot be stored and shared in the same way as information. It is only visible in our actions and in what we communicate. Knowledge is not always possible to communicate to others. Knowledge can be tacit (Nonaka, Takeushi & Umemoto, 1996), and context specific (McDermott, 1999) and therefore difficult to share.

Our ability to use and develop knowledge has been important since the dawn of civilization. However, our possibilities for doing this have changed fundamentally in recent time. Traditionally the technology largely determined our possibilities for using our knowledge. The achievements in information technology (IT) differ from earlier technological advancements in the sense that it directly supports using, sharing and developing knowledge rather than determining the knowledge we need (Castells, 2000). At the same time firms experience an increasing competition brought by the globalization in trade and the global deregulation of markets (Lev 2001, Castells, 2000). This creates a demand for better products in shorter time. The result is that knowledge is the most important resource for companies today (Boisot, 1998; Drücker, 1993; Nonaka, Takeuchi & Umemoto, 1996; Castells, 2000; Grant, 1996).

## **Knowledge assets**

The great challenge when managing knowledge and accounting for it, is the intangible characteristics of knowledge. For this reason it makes sense that the guideline does not focus on knowledge alone, but rather on the resources related to knowledge. A knowledge resource is broadly defined as one that contains or embodies knowledge (Boisot, 1998). The guideline classifies knowledge resources as employees, customers, processes and technologies.

The knowledge embodied in a valuable resource, for example an employee or a process, is an asset to the company. The concept "asset" has two interesting meanings. An asset is something that can be possessed and which brings value to the user. An asset is also characterized as possessing value on its own<sup>4</sup>. A knowledge asset is a possession of knowledge, which is valuable and can be utilized to generate further value.

Knowledge assets are the knowledge regarding markets, products, technologies and organizations, that a business owns or needs to own and which enable its business processes to add value and generate profits (Boisot 1995, 1998; Mackintosh et al, 1999)

In other words knowledge assets are the *knowledge part* of resources or competences that adds value to companies. Knowledge assets are "stocks rather than flows of knowledge" (Boisot 1998) and provide a stream of services (Boisot 1998). As mentioned earlier knowledge is what enables an individual to act. This underlines the importance of knowledge assets. It is the central part of a company's resource base, which enables the employees to react, innovate, change etc.

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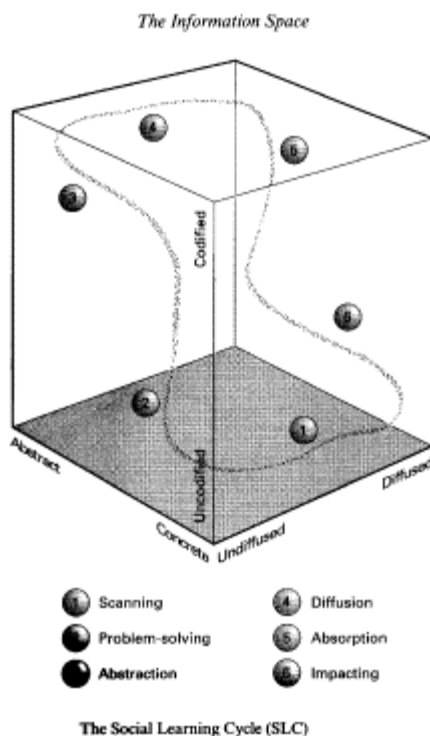
<sup>4</sup> Encarta® World English Dictionary © & (P) 1999,2000 Microsoft Corporation.

Knowledge management is essentially about managing knowledge assets and the processes that act upon the assets. It involves the identification of knowledge assets, the identification on the knowledge related-processes and finally the use of these assets in order to get maximum return (Mackintosh et al, 1999). The knowledge related processes are developing knowledge, preserving knowledge, using knowledge, and sharing knowledge.

## Managing knowledge assets

The mechanism behind knowledge management and the evolution of knowledge assets can be illustrated by Boisot's social learning cycle (SLC). The SLC illustrates the cyclic movement through which knowledge is created, shared and applied *in* and *by* a given population (Boisot, 1998, 1995). The SLC is made of six consecutive phases: Scanning, problem solving, abstraction, diffusion, absorption and impacting.

The first three phases are related to creating knowledge.



*Scanning* is identifying possibilities and patterns in surrounding data. Scanning is making sense in the impressions we continuously receive. Scanning which is done in data rich material, such as the reality that surrounds us, is more time consuming and random. Scanning which is done in more codified information, where irrelevant data has been removed, is quicker because it is more manageable. If one looks for a solution to a practical problem, the internet would provide quick answers. Just looking at the problem and solving it with no other help than the tool box in front of you is more time consuming. It is more information efficient to use the internet, but solving it from scratch might lead to more fundamental innovations.

*Problem solving* is to codify the insights generated by the scanning process. Codification is a matter of reducing the amount of data needed to understand information. As mentioned earlier information is created through a data filtering process where less relevant data is removed. Tacit knowledge is typically very rich in data, and therefore not very codified. E-mail, on the other side, is typically very codified. Codification is important for the knowledge sharing. If you want knowledge sharing to work the

information need to be codified in a way the potential receiver will understand.

*Abstraction* is making information useful and understandable for a wider population. A very technical document might be codified, but not understandable for more than a few technicians and is referred to as concrete information. The same document in a “for dummies” version will be more abstract in the sense that more people can understand it.

The last three phases are related to sharing and using knowledge.

*Diffusion* is sharing information and knowledge. An employee can publish a document on the intranet in a company and the whole company will have access to this information. This information will be more diffused than if the employee mailed it to a colleague.

When receiving and *absorbing* new information it becomes individualized. It is understood in a special way and related to the receivers’ own context. Absorption is decoding the codified information and making it personal.

*Impacting* is using the absorbed information in praxis. Before this is possible it needs to be adapted to the specific purpose. Absorption and Impacting are related and are the processes that transform information into knowledge. This is done by reading new information, learning by using the acquired information and linking it with what the individual already knows about this subject. New knowledge will lead to new possibilities for seeing ideas and patterns in the surrounding data. A new cycle can begin.

This process goes on all the time and is the mechanism driving the evolution of knowledge assets (Boisot, 1998). It illustrates the coherence in knowledge management involving the construction of knowledge, the embodiment of knowledge into artifacts, the diffusion of knowledge and finally the use of the diffused knowledge (Demarest, 1997). According to Boisot organizational and technological innovations are the “fruits” of this cyclic movement (Boisot 1998).

## **The guideline revisited**

When reading Danish intellectual capital statements one notices the variety of companies’ knowledge resources and how they measure these. The guideline is an open invitation to all kinds of measurements, which results in this variety. However, what the intellectual capital statements have in common is a focus on the resources in which knowledge is embodied rather than the knowledge assets themselves. The

employees are counted, measured in age and education. The use of information technology is accounted for in bits and bytes. The customer and employee satisfaction is described.

### **A good classification?**

Information about satisfied employees and customers, the number of R&D projects and other knowledge resources is interesting for the stakeholders, provided that the information is reliable and useful. Usefulness is related to the classification in use. A good classification enables understanding and reacting upon the statements (Gröjer, 2001)

According to the guideline knowledge resources are classified as employees, customers, processes and technologies. It can be discussed whether the boundaries between the classes are clear, so that single items cannot be placed in more than one class. Technologies can support processes and innovation involves employees and processes. The categorization is exclusive, but only on a very overall level. The classification is very broad, and there are no subclasses. The subclasses disclosed in the intellectual capital statements and the measurement methods are not defined by the guideline but by the companies using the guideline. The guideline is an "*open invitation to all kinds of measurements regarding intellectual capital*" (Mouritsen 1998: 10). Intellectual capital statements support a "*broad story about the identity of the firm*" (Bukh et al 2001: 99). The guideline is more focused on capturing the individuality of companies than on creating a standardized approach. This approach makes sense according to the resource-based view of the firm, which states that firms resource base are unique and path dependent (Grant, 1991). It is difficult to find a set of standard resources and classes of resources that most firms would consider value-relevant for their business success.

The result is a great variety in the Intellectual Capital Statements produced by firms. One obvious consequence is that it makes it very difficult to compare companies' Intellectual Capital Statements. Another consequence is that since the companies decide what to include in the intellectual capital statement, they also decide what to leave out. The former Danish taxation minister Carsten Koch has stated that there is a promising future for intellectual capital statements but there is a need for standards. The reason for this is a strong bias towards only including the things the companies are good at (Dagbladet Børsen, 31. oktober 2002). This is a problem if the intellectual capital statements are to minimize the information asymmetry. If there is no guarantee that what is disclosed is value-relevant and not subjective publicity material, then it will not be viewed as a reliable and useful signal of private information to outside stakeholders.

A solution is to develop a more comprehensive classification that makes it easier to compare companies' intellectual capital statements. The problem is that this might make it more difficult to show the uniqueness of companies.

### **Value-relevance?**

There is a trade off between relevance and reliability when accounting for intangibles (Joachim Hoegh-Krohn & Knivsflaa, 2000). Measuring knowledge is difficult because of its non-physical, often tacit and context-specific characteristics. If emphasis is placed on achieving reliability, which is important bearing in mind that we are dealing with public disclosure of information, then translating knowledge to resources that can be measured reliably is important. The result is that focus shifts from knowledge to resources and the management of these.

*"Intellectual capital statements are not about knowledge per se. They are about the actions and activities that managers put in place in the name of knowledge"* (Mouritsen et al., 2001, 740).

But does this promote relevance? In other words, are the disclosed information about the knowledge resources and the relevant knowledge management actions value-relevant for explaining business success?

Yes and no.

The employees are a central knowledge resource, and the initiatives related to educating and keeping them are important for the business success of companies. Information about such activities is therefore relevant for the stakeholders. In this sense information about the knowledge resources and activities related to the knowledge resources is value-relevant – but only indirectly.

If knowledge is the most important asset for today's companies, then disclosing information about a company's knowledge asset is important and must be considered value-relevant. The guideline does this indirectly by focusing on the resources embodying knowledge and how they are managed. It does not identify the knowledge assets and measure how these are managed. Managing knowledge assets involves development, preservation, diffusion and construction of knowledge (Boisot, 1998, Demarest, 1997). Focusing on knowledge resources, such as the employees, and how these are managed (e.g. their education) does not reveal which knowledge assets the company possesses and how these are managed. This would require the identification of the knowledge assets, such as the knowledge about a critical skill, possessed by the employees, and how this knowledge is developed, preserved, diffused and created.

## **A new framework**

Accounting for intangibles is a new and growing research field. The guideline is one step toward new accounting standards, but further development is needed.

If knowledge is the central part of a company's resource base, and it enables the company to react, innovate, change etc, then disclosing information about knowledge is value-relevant.

I propose a new point of departure<sup>5</sup>.

First of all intellectual capital statements should focus on identifying which knowledge assets are important for the company rather than focusing on knowledge resources. Knowledge is essentially a human possession, which is why an identification of knowledge assets should focus on which knowledge the employees need to generate value for the company. Since knowledge assets are embedded in resources and competences a useful starting point is focusing on the company's central competences or resources. The next step should involve the identification on which knowledge is important regarding the use and development of these resources and competences.

A company's knowledge assets are unique for the company. Focusing on knowledge assets will not solve the problem with the great variance in what is measured in the intellectual capital statement. What can be standardized however is how they are measured. According to Boisot management of knowledge assets involves 6 phases; scanning, problem solving, abstraction, diffusion, absorption and impacting (the social learning cycle). If these processes can be measured, it would be possible to identify how employees create, share and exploit knowledge assets. This approach has the potential to be valuable for companies since it enables them to evaluate their knowledge management strategies directly, and indicates whether the company has the potential to be innovative. Disclosing information about the companies ability to innovate is important for investors, because it indicates the future potential of the company and must be regarded as value-relevant information.

The author has developed a "beta" framework involving the identification of knowledge assets and the measurement of the social learning cycles related to each knowledge assets, together with Nicolaj N. Petersen and Charlotte Søggaard from the IT-University of Copenhagen (Petersen, Røhme & Søggaard, 2002). This approach still needs further development.

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<sup>5</sup> The idea was developed by the author together with cand.it. Nicolaj N. Petersen and cand.it. Charlotte Søggaard.

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