

FORUM: INTELLECTUAL CAPITAL

UNDERSTANDING INTELLECTUAL CAPITAL IN AN INNOVATIVE MEDIUM- SIZED FIRM: THE CASE OF MAXON TELECOM

It is difficult to define knowledge and to account for it. This is a problem for accounting in a “knowledge economy” or “knowledge society” where knowledge is believed to be a source of innovation (Drucker 1993, Larsen *et al* 1999) and a driver for growth. Accounting rules do not adequately recognise the value of knowledge even in its most clearly codified forms. It is, for instance, difficult to account for the value of a patent because the value depends on how the patent is used. It is virtually impossible to put investments in people on the balance sheet, while investments in research and development have to be accounted for conservatively. Knowledge — whether in the form of patents, investments in people or in research and development — poses a problem for financial valuation systems (Austin and Larkey 2002, Marr 2005) because their valuation of knowledge is fragile.

The purpose of this paper is to illustrate how intellectual capital statements may be able to provide another account of the value of knowledge, specifically in relation to innovation — that is, how intellectual capital is relevant to firms’ development of new processes and products. The account that comes out of the intellectual capital statement is different from, and complementary to, that found in annual financial statements. We suggest that intellectual capital statements can be management tools that enable firms to develop and communicate the effects of knowledge on innovation and can be used to represent the innovative capabilities of a firm.

INTELLECTUAL CAPITAL, KNOWLEDGE AND INNOVATIVENESS

Intellectual capital statements are supplementary to management or financial accounting statements and report on the development and application of corporate knowledge. They focus on new types of indicators and a narrative (an explanation) that accounts for innovative activities as a statement of how a network

In many firms and in many industrialised countries, innovation is regarded as fundamental to growth and wealth creation. However, it is not easy to define a measure of innovation that is a leading indicator for value creation. This would imply a linear model of knowledge as a simple input to value-creating processes. Instead, intellectual capital is suggested as an alternative, employing a (non-linear) narrative of how knowledge works. This is illustrated by the case of a medium-sized Danish firm which accounts for the relationship between knowledge and innovation by using a network of a knowledge narrative, management challenges, efforts and numbers.

of knowledge resources develops innovation useful to somebody (Mouritsen *et al* 2001c). This involves approaching the problem of counting knowledge from a relatively novel perspective; intellectual capital is concerned with illustrating how value is created through interplays between various knowledge resources.

Patents are clearly valuable as they are bought and sold, and firms with reputable patents have higher market value than firms without such patents (Lev 2001). Knowledge captured in patents is valuable to firms because it provides a head start towards innovation and thus revenue streams. This may explain why firms increasingly report on their investments in patents. The translation of the patents into stock prices is difficult, however, because even the best of patents has to be mobilised in complex business processes to generate revenue streams (Mouritsen and Koleva 2005). A patent is therefore only an option requiring incorporation into a broader network of activities, thus making the path from idea through production and sales activities into revenue streams problematic. The patent has a complex relationship to actual innovation. Knowledge — including patents — only works when it becomes part of a network of things that makes it relevant.

This is one conclusion that we have drawn from our studies of many firms' work to develop intellectual capital statements that report on firms' portfolios of knowledge resources, efforts to develop these resources and the consequences (Mouritsen *et al* 2001a, 2001b, 2003a, 2003b). Such a statement reports on a firm's knowledge management by developing it as a narrative. Knowledge is explained not only as a stock (for instance, a number of patents) but as a flow depicting the ability of knowledge to make a difference. In effect, when considering knowledge as a narrative, it is understood to be an explanation of how it can solve certain problems and how it has to be equipped to make this possible. This is why the intellectual capital statement helps to identify a firm's knowledge management strategy including its objectives and investments in knowledge resources (Mouritsen *et al* 2001c).

Innovativeness is part of intellectual capital (Edvinsson and Malone 1997, Roos *et al* 1997) and

was an objective of the firm Maxon Telecom when it decided to develop an intellectual capital statement. Maxon Telecom is a Danish subsidiary of the Korean technology firm Maxon, established to develop telecommunication technology for its global parent company. To account for innovation, Maxon Telecom describes the way that knowledge is developed and

applied in an organisational context. Rather than seeing innovation as a single indicator, Maxon Telecom believes that innovation is an organisation-wide phenomenon dependent on multiple relationships within the firm and with its users. Maxon Telecom uses an intellectual capital statement to show this, providing a tool to help management develop a knowledge strategy that enhances the firm's ability to be innovative.

The intellectual capital statement

Intellectual capital can be defined as consisting of human and structural capital. Structural capital can be decomposed into organisational and customer capital (Edvinsson and Malone 1997) or internal and external relations (Sveiby 1997). In this context, intellectual capital is the value generated from resources not conventionally found in the financial balance sheet.

Describing the firm using the three dimensions of human capital, organisational capital /internal relations and customer capital/external relations separates the three categories from each other and establishes their boundaries. However, these distinctions pose problems when firms use them as a starting point when working with intellectual capital. First, firms experience problems distinguishing clearly between the three categories. For example, it may be that investment in training activities is an investment in human resources and thus in human capital/internal relations, but if this training is about IT systems, it may be organisational capital/internal

relations. Further, if these IT systems relate to customer relationship management, the training activity may be about customer capital/external relations. Here, the categories only weakly capture the transaction they purport to explain. In addition, such a categorisation is unrelated to an account of how knowledge will work when it is realised that it is an option that has to be mobilised, as was suggested earlier in the case of patents.

MAXON TELECOM
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AND WITH
ITS USERS.

FIGURE 1: ELEMENTS OF AN INTELLECTUAL CAPITAL STATEMENT

1. **Knowledge narrative:** A narrative about the firm's ambition to create use-value for its customers and the types of knowledge resources required to accomplish this:
 - What product or service does the company provide?
 - How does it make a difference for the user?
 - What knowledge resources are necessary to be able to supply the product or service?
 - How does the constellation of knowledge resources produce the service/product?
2. **Management challenges:** The challenges posed by the role of knowledge resources in the firm's business model:
 - How are the knowledge resources related?
 - Which existing knowledge resources should be strengthened?
 - What new knowledge resources are needed?
3. **Efforts:** The initiatives to compose, develop and procure knowledge resources:
 - What initiatives, actual and potential, can be identified?
 - What initiatives should be given priority?
4. **Indicators:** The mechanisms of monitoring the portfolio, development and effects of knowledge resources:
 - Effects — how do activities work?
 - Activities — what does the firm do to upgrade knowledge resources?
 - Resource mix — what is the composition of knowledge resources?

Knowledge is not an entity by itself; it has to be connected with things, phenomena or relations. It is knowledge about something rather than knowledge *per se*. Therefore, knowledge must be explained by showing how its flow contributes to making something useful to somebody or something. The experience of Danish firms demonstrates that the process entails four elements: narrative, challenges, efforts and numbers (see Figure 1).¹ This model suggests that knowledge is a flow and that numbers are important in the account of how knowledge works in a firm. The flows between narrative, challenges, efforts and numbers constitute a connected network of heterogeneous elements that together explain how knowledge works in the firm (Mouritsen *et al* 2003a, 2003b).

Figure 1 identifies four interrelated elements. The knowledge narrative explains the flow between the firm's products/services and knowledge resources through a storyline about how it creates value to users. Management challenges identify a "business model" of knowledge where patterns of relations between knowledge resources found in customers, employees and processes are identified. Efforts are concrete initiatives and plans through which knowledge resources are developed, acquired and combined, and indicators focus on monitoring the efforts. These elements function together: the indicators illustrate the development and effects of efforts; efforts make changes to the constellation of knowledge resources; management challenges identify and explain the efforts and initiatives undertaken; the knowledge narrative summarises, communicates and points to what the company's know-how and capabilities do — or have to do — for the users.

To illustrate the complexities of developing and managing intellectual capital, particularly in an innovative medium-sized firm, we use the company Maxon Telecom's intellectual capital statement. We followed the development of the statement over a period of one year (around 2001), studying its formation and interviewing employees about its progress. We learned

about the motivations to engage with intellectual capital, how intellectual capital would help the firm develop, how Maxon Telecom looked at the effects of intellectual capital and how the company considered the intellectual capital statement as a management tool. This information enabled us to reconstruct some of the concerns that were put into the intellectual capital statement. It is interesting that in the process the intellectual capital statement became less of an imaginative statement of all that unconstrained innovation could do; it developed instead into a cautious statement about how the firm *economises, organises and modularises* knowledge because it realises that knowledge is expensive and creates uncertainty if left to unlimited expansion.

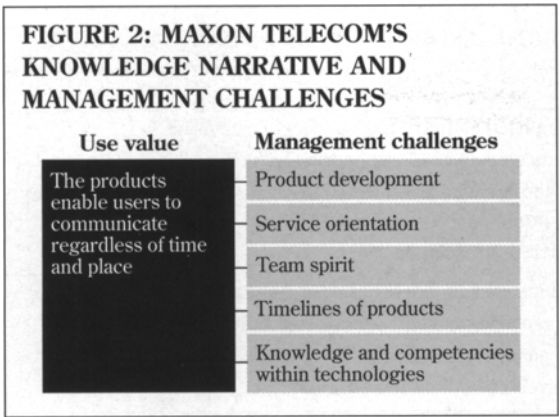
MANAGING INNOVATION IN MAXON TELECOM

Maxon, the Korean parent company, employs about 4,000 people worldwide and was, in 2001 (the year in which we followed the Danish subsidiary), the world's second-largest manufacturer of mobile phones, producing five million units a year. The company has production facilities in South Korea, the Philippines and Thailand as well as development and sales departments in the US, England, Japan, Hong Kong, Singapore, China, Greece, Australia, Spain, France and Denmark. The products are sold in more than 30 countries.

Maxon Telecom is located in Aalborg, Denmark, and it employs (in 2001) around 130 people of whom 85% are development engineers. The mobile phones developed by Maxon Telecom are sold either in Maxon's own name or in the name of other companies for which Maxon Telecom has developed the entire phone or individual components.

The purpose of knowledge in Maxon Telecom

Maxon Telecom distinguishes between different types of users. The company's direct customers are



manufacturers of mobile phones to which it sells production rights and technology. The manufacturers (mainly the parent company Maxon) resell the mobile phones to network operators such as British Telecom, South-Western Bell and General Electric. The network operators own the sales and distribution channels through which the mobile phones are delivered to the end users. This process thus defines three user groups: customer, customer's customer and end user.

Product requirements often differ from group to group. For example, end users require a telephone that is inexpensive to operate, whereas network operators are more likely to prefer products with features that will generate "mobile traffic". For some users, use-value is created by way of advanced mobile phones to be used in specific work situations, while for other users use-value is created by way of robust and reliable mobile phones to be used on building sites, on the beach or during exercise. Some users may prefer mobile phones that have a pleasing appearance. However, Maxon Telecom emphasises that the use-value of its products is that they are reliable and functional and formulates the use-value in this way: "Our products make users able to communicate regardless of time and place" (ICS, p. 10).

Creation of use-value places demands on knowledge resources which are defined by Maxon Telecom as competencies possessed by employees. When new mobile phones are developed, knowledge and competencies already existing in Maxon Telecom are re-used. Moreover, new products include features that require the employees to handle new technologies, knowledge and competencies. However, Maxon Telecom suggests that knowledge is not a goal in itself: "In the end, it is the results that matter. Thus, space for developing and training in the use of acquired new knowledge with the purpose of improving the behaviour of employees and management is needed" (ICS, p. 8).

Maxon Telecom's management challenges and initiatives

Maxon Telecom has formulated five management challenges where the specific elements can be explained as follows.

Product development — the mobile phones comply with user and customer requirements. Maxon Telecom is in close contact with users and customers

Product development entails a techno-commercial agenda in which the company must meet a market requirement that the mobile phones are developed in accordance with user and customer requirements. The response to this management challenge is to seek a form of product development that takes the customers' and end users' requirements into consideration. Initiatives taken:

- Develop customer and user satisfaction surveys
- Undertake market surveys

Service-orientation — the company is flexible and quick in adapting to customer requirements

Maxon Telecom's primary purpose is the development of mobile phones and technologies. However, the company also has to deliver excellent service to its customers. This requires, for example, flexibility in case the customer wants modifications to the mobile phone. "Service-oriented" means that the customers will be satisfied with the standard of product information, availability, response time and adaptability. In order to become more service-oriented and to obtain more knowledge about customer satisfaction, the company intends to send questionnaires to all customers and to invite employees' perceptions about the service the firm delivers. Initiatives taken:

- Customer satisfaction survey
- Owner satisfaction survey
- Employee opinion survey

Employee capabilities and team spirit — all employees must have expert competencies that are part of active knowledge sharing

Competency development and knowledge sharing must take place in an environment characterised by a deeply anchored team spirit, with all employees and managers working towards fulfilling Maxon Telecom's vision. "Team spirit" and "improved behaviour" are at the centre of a Maxon Telecom culture in which employees are offered continuing education courses, where the management carries out appraisal interviews and follow-ups, and where tutorial arrangements are available to employees. Initiatives taken:

- Appraisal interviews
- Employee opinion survey
- Education in and outside the company in new technologies
- Tutorial arrangements
- Competence development plans
- External management training courses (motivation)
- CASE training
- Management coaching

FIGURE 3: RELATIONS BETWEEN INITIATIVES AND INDICATORS IN MAXON TELECOM

Initiatives	Indicators
<ul style="list-style-type: none"> • Customer and user satisfaction surveys • Market surveys 	<ul style="list-style-type: none"> • Number of completed and ordered satisfaction surveys • Number of completed and ordered market surveys • Number of customers who are satisfied or very satisfied with the quality of the finished product • Number of ordered projects
<ul style="list-style-type: none"> • Customer satisfaction survey • Owner satisfaction survey • Employee opinion survey 	<ul style="list-style-type: none"> • Number of customers who are satisfied or very satisfied with <ul style="list-style-type: none"> – employees, response time and service respectively – our ability to adapt to their demands – the service level offered to the customers
<ul style="list-style-type: none"> • Appraisal interviews • Employee opinion survey • Education in and outside the company in new technologies • Tutor arrangements • Competence development plans • External management training courses (motivation) • CASE training • Management coaching 	<ul style="list-style-type: none"> • Completion rate of continuing education courses as outlined in the conclusions from the appraisal interviews • Number of employees who are satisfied or very satisfied with completed course/educational initiatives • Number of appraisal interviews held on time • Employee satisfaction • Employees' assessment of colleagues' cooperative skills and competencies • Employee turnover in percentage • Number of employees with competence development plan • Number of employees who are in job rotation, promoted or expatriated • Number of employees who assess that they can develop both expert and personal competencies in Maxon Telecom • Number of employees who find their immediate superior's ability to motivate them satisfactory or very satisfactory • Number of new appointees in relation to number of tutor arrangements
<ul style="list-style-type: none"> • Education in Microsoft Projects • Employee opinion survey • Small project groups and allocation of project rooms • Appraisal interviews • Team building process 	<ul style="list-style-type: none"> • Number of projects completed on time • Number of projects keeping the agreed project budget • Number of junior project managers recruited internally • Number of employees approved as project managers • Number of employees who find the allocation of responsibilities between individual departments and internally in departments satisfactory or very satisfactory • Number of employees who are satisfied with Maxon Telecom's ability to act sufficiently fast • Number of project groups with less than 16 persons • Number of project groups without own project room
<ul style="list-style-type: none"> • Ensure that the road map does not contain features such as software/hardware which are not supported by the road map • Road map for software and hardware 	<ul style="list-style-type: none"> • The road map does not contain features such as software/hardware which are not supported by the road map • Participation in technology exhibitions • Holding of coordinating working group meetings every fortnight • Number of department managers/technology scouts in networks with operators • Number of developers in networks with other development houses

Products on time through project management and communication throughout the duration of a project

“Products on time” means the successful completion of projects, adhering to budgets, time estimates and functionality requirements. In 2001, none of Maxon Telecom’s development projects was completed on time. The company responded with a plan to educate its employees in the project-management tool “Microsoft Projects” and to improve the physical facilities available to its employees. Initiatives taken:

- Education in Microsoft Projects
- Employee opinion survey

- Small project groups and allocation of project rooms
- Appraisal interviews
- Team-building process

Knowledge about competencies within existing and future technologies required for the development of new products

To develop planned products, Maxon Telecom needs knowledge and competencies for project initiation. The cause of many of its product development delays in 2001 was the need to acquire new competencies throughout the duration of the project. The company needs to familiarise itself with the latest technologies

FIGURE 4: THE STRUCTURE OF MAXON TELECOM'S INTELLECTUAL CAPITAL STATEMENT

The products enable users to communicate regardless of time and place	Product development	<ul style="list-style-type: none">• Customer and user satisfaction surveys• Market surveys	<ul style="list-style-type: none">• Number of completed and ordered satisfaction surveys• Number of completed and ordered market surveys• Number of customers who are satisfied or very satisfied with the quality of the finished product• Number of ordered projects
	Service-orientation	<ul style="list-style-type: none">• Customer satisfaction survey• Owner satisfaction survey• Employee opinion survey	<ul style="list-style-type: none">• Number of customers who are satisfied or very satisfied with<ul style="list-style-type: none">– employees, response time and service respectively– our ability to adapt to their demands– the service level offered to the customers
	Team spirit	<ul style="list-style-type: none">• Appraisal interviews• Employee opinion survey• Education in and outside the company in new technologies• Tutor arrangements• Employee competence development plans• External management training courses (motivation)• CASE training• Management coaching	<ul style="list-style-type: none">• Absence due to sickness• Completion rate of continuing education courses as outlined in the conclusions from the appraisal interviews• Number of employees who are satisfied or very satisfied with completed course/educational initiatives• Number of appraisal interviews held on time• Employee satisfaction• Employees' assessment of colleagues' cooperative skills and competencies• Personnel turnover in percentage• Number of employees with competence development plan• Number of employees who are in job rotation, promoted or expatriated respectively• Number of employees who assess that they can develop both expert and human competencies in Maxon Telecom• Number of employees who find their immediate superior's ability to motivate them satisfactory or very satisfactory• Number of new appointees in relation to number of tutor arrangements
	Timeliness of products	<ul style="list-style-type: none">• Education in Microsoft Projects• Employee opinion survey• Small project groups and allocation of project rooms• Appraisal interviews• Team building process	<ul style="list-style-type: none">• Number of projects completed on time• Number of projects keeping to the agreed budget• Number of junior project managers recruited internally• Number of employees approved as project managers• Number of employees who find the allocation of responsibilities between individual departments and internally in departments satisfactory or very satisfactory• Number of employees who are satisfied with Maxon Telecom's ability to act sufficiently fast• Number of project groups with less than 16 persons• Number of project groups without own project room
	Knowledge about and competencies within existing and future technologies	<ul style="list-style-type: none">• Ensure that the road map does not contain features such as software/hardware which are not supported by the road map• Road map for software and hardware	<ul style="list-style-type: none">• The road map does not contain features such as software/hardware which are not supported by road map• Participation in technology exhibitions• Holding of coordinating working group meetings every fortnight• Number of department managers/technology scouts in network with operators• Number of developers in networks with other development houses

through groups exchanging experiences, participating in trade fairs and developing the network of customers and competitors with a view to knowledge sharing. This is achieved through a “road map” that outlines the products the company plans to develop in the years ahead. Knowledge is obtained from established networks in which Maxon Telecom works with other firms on mobile technologies. Initiatives taken:

- Ensure that the road map does not contain features such as software or hardware that is incompatible with the objectives
- Road map for software or hardware

Maxon Telecom’s initiatives and indicators

As shown in Figure 3, each management challenge is related to a number of efforts and indicators.

These connections enable a more specific interpretation of what is meant by the efforts. The clarity created by the indicators also helps in defining the efforts. This point can be generalised. The efforts are not only a manifestation of the challenges; they also develop what the challenges are. The challenges not only fill out the narrative; they help define it.

ANALYSIS AND DISCUSSION

Maxon Telecom’s intellectual capital statement draws together the elements of intellectual capital and presents them as a flow between narrative, challenges, efforts and indicators (numbers) as described in Figure 1. This flow enables the statement to be read from any starting point. Any time an attempt is made to understand a proposition, it is necessary to consider the elements on each side of the element in question. For example, if we wish to understand effort, we have to consult challenges and indicators. The whole of the statement thus represents a knowledge process that shows how ordinary yet auditable numbers can stand for innovation, and how innovation can arise from a set of practices rather than a general statement that firms should invest more in knowledge.

Maxon Telecom’s numbers

Numbers in an intellectual capital statement can, like numbers in a financial statement, be organised according to the interests of either internal management or external readers. The financial statement talks generally about three things: the composition of assets and liabilities, investments and cashflows, and profitability. Numbers in an intellectual capital statement can explain the composition of knowledge resources, investments in upgrading knowledge resources and the effects of knowledge resources. Numbers in an intellectual capital statement can be organised according to these concerns. Over time, the indicators may reflect how the firm has developed and used intellectual capital in various knowledge resources. Figure 4 is the representation used by the firm where the ordering of the indicators is determined by company-specific management challenges. Figure 5, in contrast, does not directly reflect the com-

pany-specific challenges or the knowledge narrative and initiatives. Rather, it presents the intellectual capital statement indicators in a way that enables the reporting of firms to be compared.

Figure 5 shows that the numbers in Maxon Telecom’s intellectual capital statement generally refer to four types of knowledge resources: employees, customers, processes and (possibly) technology. Numbers may reflect on the portfolio of knowledge resources by showing the breakdown of employee capabilities (employees) and project organisation (processes). There are numbers on activities such as participation in job rotation and formal development of qualifications (employees) and collection of information about customers (customers). Numbers also talk about effects such as staff satisfaction and competence (employees), customer satisfaction (customers) and process effectiveness (processes). These numbers can be analysed over time to yield general statements relating to management concerns about the composition of assets, investments in assets and effects of assets.

Intellectual capital and knowledge management

Figure 5 describes Maxon Telecom’s management of its intellectual capital in terms a number of initiatives to support its employees. It is no surprise that the human resource manager was more involved in developing the intellectual capital statement than the financial manager. The company’s knowledge management strategy is based on people’s concerns and competencies. This reflects common findings in the organisational learning literature that the individual is the central element in knowledge creation (Nonaka 1994, Nonaka and Takeuchi 1991, 1995). Argyris and Schön (1996, p. 16), for example, give the following definition of organisational learning: “Organizational learning occurs when individuals within an organization experience a problematic situation and inquire into it on the organization’s behalf. They experience a surprising mismatch between expected and actual results of action and respond to that mismatch through a process of thought and further action that leads them to modify their images of organization or their understandings of organizational phenomena and to restructure their activities so as to bring outcomes and expectations into line thereby changing organizational theory-in-use.”

Here, individuals are the learning agents who experience issues and problems on behalf of the organisation. These individuals, through learning, develop solutions that can overcome the deficiencies of the current situation. Learning is largely the individual’s own experience, even if contextualised by the objectives and images of the organisation. This notion of organisation makes it a place where people can experience each other and typically act in the presence of others. Since formal organisation is an effect of learning opportunities executed by individuals, people engage in learning opportunities by knowing the “rules of the game” established in a culture or com-

FIGURE 5: TYPES OF NUMBERS IN MAXON'S INTELLECTUAL CAPITAL STATEMENT			
ICS 2001	Effects	Activities	Resources
Employees	<ul style="list-style-type: none"> • Absence due to sickness • Personnel turnover • Number of junior project managers recruited internally • Employee satisfaction • Number of employees who are satisfied or very satisfied with completed course/educational initiatives • Number of employees who assess that they can develop both expert and personal competencies in Maxon Telecom • Number of employees who find their immediate superior's ability to motivate them satisfactory • Employees' assessment of colleagues' cooperative skills and competencies • Number of employees who find the allocation of responsibilities between individual departments and internally in departments satisfactory or very satisfactory • Number of employees who are satisfied with Maxon Telecom's ability to act sufficiently fast 	<ul style="list-style-type: none"> • Number of appraisal interviews held • Number of appraisal interviews held on time • Number of educational wishes met as outlined in the conclusions from the appraisal interviews • Number of employees who are in job rotation, promoted or expatriated respectively • Number of new appointees who have completed tutor arrangements • Participation in technology exhibitions 	<ul style="list-style-type: none"> • Number of employees • Number of development engineers as percentage of total number of employees • Number of employees approved as project managers
Customers	<ul style="list-style-type: none"> • Number of employees who are satisfied or very satisfied with the service level offered to the customers • Number of ordered projects 	<ul style="list-style-type: none"> • Number of completed satisfaction surveys (market surveys) • Number of answers to customer surveys 	
Process	<ul style="list-style-type: none"> • Number of projects completed on time • Productive time in percentage 	<ul style="list-style-type: none"> • Number of ongoing projects 	<ul style="list-style-type: none"> • Number of project groups with less than 16 persons
Technology		<ul style="list-style-type: none"> • Number of project groups without own project room 	

munity of people, a point also made in some intellectual capital literature (Roberts 2003, Stewart 1997).

This idea that knowledge and learning is individual is also expressed in Maxon Telecom's intellectual capital statement, but more is at stake. The theory of intellectual capital presented above contrasts with theories of organisational learning because, rather than focusing on the individual employee, intellectual capital focuses on the user (and thus the product/service). The learning organisation's inquiring individual is placed in a context through intellectual capital, which helps to decide whether the individual is inquiring on behalf of the organisation. This is the case if the employee, as a knowledge resource in concert with other knowledge resources, contributes to increasing the value of the service to a user.

Maxon Telecom clearly gives attention to creative employees. However, debate is emerging about external technologies, the various users that may have different propositions of interest to Maxon Telecom, and about project management systems. The intellectual capital statement tells a story about how the individual is not a sole mover but is always equipped with organisational capabilities and always located in a network of other knowledge resources. It is not employees that create innovation; it is the network of employees, project management systems, segmentation of users and an abundance of potential technologies that together make innovation work. The individual cannot act simply by claiming knowledge to be a resource. Knowledge is a specific resource that has a particular distinction in the network of things that makes innovation visible and relevant. Intellectual capital therefore is not a set of discrete resources, but a flow between resources.

As a narrative, knowledge flows between employees, customers, processes and technologies, and the intellectual capital statement makes a claim as to how this may work. The person is important, but is not the only actor. The person is creative, but this creativity may need to be oriented towards something for it to be valuable to users and perhaps to the firm's financial position. This is relevant to knowledge in relation to customers, and to investments in internal knowledge. Several insights can be drawn from a further investigation of Maxon Telecom's intellectual capital statement.

First, it is interesting to note how little effort is devoted to making customers and users visible in numbers. There is only one customer in the intellectual capital statement — the parent company — and the knowledge narrative looks at this as a resource. However, it is also clear that the strong relationship with the parent company is a possible problem for Maxon Telecom's network of resources. This possibility was realised in the autumn of 2002 when the parent company went into bankruptcy and Maxon Telecom was forced abruptly to stop its activities. A few months later, Macon Telecom started under a new name, with its existing human and technological resources and also with the objective of making its customer base more heterogeneous. To make knowledge flow as a resource requires it to be able to attach to users and therefore "external" users have to be part of the "internal" network of knowledge resources.

Second, creativity is not unconditionally positive for the organisation. Creativity means new ideas, but new ideas may mean uncertainty, because for them to be valuable they have to transform the firm and its products. Creativity is therefore something to be managed if uncertainty is not to impede connectivity and cooperation. The intellectual capital statement will allow new ideas to surface in the management of knowledge; rather than merely saying that knowledge is good, it asks questions about economising, organising and modularising, all of which are concerned with countering the potential negative effects of the development of knowledge.

Economising deals with the rate of investments in knowledge. The intellectual capital statement can show whether efforts to develop knowledge are increasing or decreasing, and it is possible to see whether various effects are positive or otherwise. One concern is not to develop so much in one direction that it is difficult for other elements to align with this change. Therefore, economising asks how little knowledge development is appropriate, rather than how much can we invest. Training is important in Maxon Telecom, but how much money should be invested, and what types of returns are expected, are also important considerations. One effect is improved practices, but another is team spirit which is a much more general organisational competency.

Organising involves deciding where knowledge is to be placed. Is it to be in people? In IT systems? In project management systems? Maxon Telecom appears to emphasise the project management system so as to be able to combine various employees, users and technologies. Finally, modularising concerns knowledge re-use, particularly when creativity is not warranted. There is little debate about the types of technologies the industry is considering, and too radical advances would be impossible to absorb into the network of knowledge resources in Maxon Telecom. Too much innovation would be detrimental.

From this analysis it appears that numbers are involved in finding out what innovation is and how it

works, but typically the number is part of a network in which we also expect efforts, challenges, and narratives. Together, they may help a manager or an external user, including prospective employees and customers, to understand the direction of innovation. If this is the case, the descriptions found in intellectual capital statements may be inputs to decisions about the future of the firm.

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NOTE

- 1 The Danish Guidelines for Intellectual Capital Statements were issued in 2000 and tested by 80 Danish firms in a project organised by the Danish Ministry of Science, Technology and Innovation. Revised guidelines issued in 2002 propose that an intellectual capital statement consists of four elements — those discussed in this paper — which together express the company's strategy and practices in relation to knowledge management.

REFERENCES

- Austin, R., and P. Larkey, 2002, "The Future of Performance Measurement: Measuring Knowledge Work", in A. Neely (ed.), *Business Performance Measurement. Theory and Practice*, Cambridge University Press: 321–42.
- Argyris, C., and D. Schön, 1996, *Organizational Learning II. Theory, Method and Practice*, Addison-Wesley Publishing Company.
- Czarniawska, B., 1997, *Narrating the Organization. Dramas of Institutional Identity*, University of Chicago Press.
- Drucker, P., 1993, *Post-Capitalist Society*, Butterworth-Heinemann, Oxford.
- Edvinsson, L., and M.S. Malone, 1997, *Intellectual Capital*, Piatkus, London.
- Larsen, H.T., P.N. Bukh and J. Mouritsen, 1999, "Intellectual Capital and Knowledge Management", *Australian Accounting Review* 9, 3: 15–26.
- Lev, B., 2001, *Intangibles. Management, Measurement and Reporting*, The Brookings Institution, Washington.
- Marr, B. (ed.), 2005, *Perspectives on Intellectual Capital*, Butterworth-Heinemann.
- Mouritsen, J., and K. Flagstad, 2004, "Managing Learning and Intellectual Capital", *International Journal of Learning and Intellectual Capital* 1, 1: 72–90.
- Mouritsen, J., and G. Koleva, 2005, "Packing and Unpacking Knowledge: Patents and Intellectual Capital", *Journal of Intellectual Capital* (forthcoming).

- Mouritsen, J., H.T. Larsen and P.N. Bukh, 2001a, "Intellectual Capital and the 'Capable Firm': Narrating, Visualising and Numbering for Managing Knowledge", *Accounting, Organizations and Society* 26, 7: 735–62.
- Mouritsen, J., H.T. Larsen and P.N. Bukh, 2001b, "Valuing the Future: Intellectual Capital Supplements at Skandia", *Accounting, Auditing and Accountability Journal* 14, 14: 399–422.
- Mouritsen, J., H.T. Larsen and P.N. Bukh, 2001c, "Reading Intellectual Capital Statements: Describing and Prescribing Knowledge Management Strategies", *Journal of Intellectual Capital* 2, 4: 359–83.
- Mouritsen, J., P.N. Bukh et al, 2003a, *Intellectual Capital Statements — The New Guidelines*, Ministry of Science, Technology and Innovation, Copenhagen, www.vtu.dk/icaccounts.
- Mouritsen, J., P.N. Bukh et al, 2003b, *Analysing an Intellectual Capital Statement*, Ministry of Science, Technology and Innovation, Copenhagen, www.vtu.dk/icaccounts.
- Nonaka, I. 1994, "A Dynamic Theory of Organizational Knowledge Creation", *Organization Science* 5, 1.
- Nonaka, I., and H. Takeuchi, 1991, "The Knowledge-Creating Company", *Harvard Business Review* 69, 6: 96–105.
- Nonaka, I., and H. Takeuchi, 1995, *The Knowledge-Creating Company*, Oxford University Press.
- Roberts, H., 2003, "Management Accounting and the Knowledge Production Process", in A. Bhimani (ed.), *Management Accounting in the Digital Economy*, Oxford University Press.
- Roos, J., G. Roos, L. Edvinsson and N.C. Dragonetti, 1997, *Intellectual Capital: Navigating in the New Business Landscape*, Macmillan Business.
- Stewart, T.A., 1977, *Intellectual Capital*, Nicholas Brealey Publishing, London.
- Sveiby, K.E., 1997, *The New Organizational Wealth: Managing and Measuring Knowledge-based Assets*, Berrett-Koehler, San Francisco.