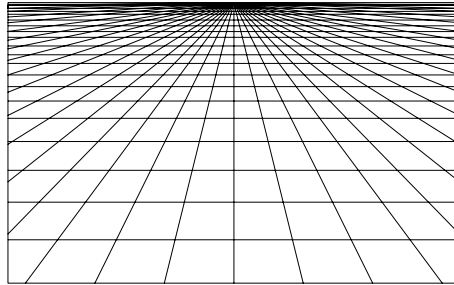




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The Process of Developing an Intellectual Capital Account: *The Case of Indra*

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Introduction

1 Purpose

This thesis is written as part of a case study in a Spanish information technology company, called Indra. The aim of the case study was to implement a method developed by the MERITUM (Measuring Intangibles to Understand and Improve Innovation Management), which would enable the company to identify and measure their intangibles. Jarle Hildrum conducted a case study of Indra in 1999, which resulted in the development of a methodology specified to Indra's needs, based on the MERITUM model. This firm specific method was the starting point for this case study and the development of an Intellectual Capital Account in Indra. This case study also aimed at producing a measurement system that could provide useful information to other companies developing Intellectual Capital Accounts.

2 The ESST-approach

The European Inter-University Association on Society, Science and Technology is an association of universities across Europe. The ESST-approach is the result of these universities' interest in the understanding of the relationship between society, science and technology. The approach is inter-disciplinary, and the focus is on critical investigations into science and technology issues. Traditional understanding of these subjects have to a large extent treated them as "black box" phenomena, whereas the ESST-approach views technological developments as the result of social activity and change.

Keeping a critical, social science perspective on science and technology, to provide foundations for policy making in Europe, have been one of the main goals of the

association. The inter-disciplinary approach opens up for investigations of science and technology in a number of areas. This way the ESST-approach is very broad and puts the subject rather than the discipline, at the centre of attention.

The Institute of Business Administration (IADE) of the Autonomous University of Madrid, is part of the ESST-association. The specialisation of this university is called Strategic Management of Technology and Innovation, and focuses on science and technology policies in companies. (ESST: 2000).

3 *Executive summary*

Theoretical discussion:

The theoretical framework starts with disclosing how the term “The Knowledge-based Economy” is being used to describe the modern economy. The arguments then focuses on what the characteristics are in this economic environment, and what challenges companies face, when adapting to these changes. The most important challenge is to get an understanding of how knowledge is generated and diffused in a company’s organisation. More specifically the main challenge is to identify the relationship between a company’s investments and stocks of knowledge. To do this, it is important to find ways to identify both static and dynamic indicators of the company’s knowledge base. This makes up the general framework of the thesis.

The consequences of these changes in the economic environment are then discussed, in order to identify what kind of companies these changes affects the most. A variety of conclusions have been drawn. The most radical ones argue that all companies are knowledge-based, and that the changes affect the whole social structure of modern

societies. As a consequence, all companies depend upon their employees knowledge-base in order to survive.

Because knowledge is being considered the main factor of value creation, there have been developed a variety of theories of what steps companies should take in order to manage their knowledge. These theories focus on the need to look at information, technology and learning in new ways. This will lead to new ways of organising companies, new management practices and new ways of using information and communication technology.

The main focus of the theoretical part of the thesis, lays on the possibilities and limitations of identifying and calculating companies' knowledge base. Knowledge is defined, and different aspects of knowledge is discussed. From the concept of knowledge, the challenge of identifying tacit knowledge is identified as the greatest challenge.

Attempts to identify and measure knowledge at company level, have also focused on the invisible knowledge as the most difficult to identify. These intangible values have also been identified as the most important to companies' value creation. Different ways of defining and categorising the term "intangibles" are also described.

The next step is then to look at different Knowledge Management practices. It becomes clear that finding operational concepts of knowledge is the main challenge, but they are seen as crucial since they can make identification and measurement of intangible values possible.

The development of different measurement methods for intangibles is described. These include The Balanced Scorecard, The Intangible Assets Monitor, and Edvinsson and Malone's model for developing an Intellectual Capital Account. Their strengths and weaknesses is discussed. Then the chapter concludes by describing the MERITUM model, as this is the method used in the case study. By describing the firm specific method developed in Indra in 1999, based on the MERITUM model, the theoretical part lays the theoretical foundation for the case study.

To conclude the theoretical part, some problems with measuring intangibles are discussed. There are both methodological and ethical objections towards developing Intellectual Capital Accounts. Especially the research criteria of validity is important to consider when measuring intangibles. It is also important to consider how an Intellectual Capital Account can be used in negative ways on individual employees.

The process and results of the case study

The context of the case study is made by describing how Indra is a knowledge-based company. Indra has developed several different Knowledge Management practices, and the development of an Intellectual Capital Account is seen in that context. Then the more detailed objectives Indra had for this project is described.

By describing the case study carried out in 1999 and Indra's role in the MERITUM program, this year's case study relation to other studies is established. The details in the methodology of the research project are then laid out, as it to a large extent builds on the experiences of former research projects.

The process of identifying the company's strategic objectives, core intangibles, indicators and related activities is described. The process in Indra followed to a large extent the common traits of companies developing an Intellectual Capital Account, identified by the MERITUM group.

Indra's strategic objectives are seen as sensitive information, and therefore the details of the different suggestions are not described. But all the core intangibles and variables are disclosed, and the indicators and activities related to one variable (Image) are shown to provide an example of the measurement system. The reason for not disclosing all the results is the size of the measurement system identified. If they were all to be included, this thesis would be 80 pages longer.

In the next step of the empirical part, the experiences made in this case study are described following the chronology of the process. Both recommendations directed at the future of the measurement system in Indra, and more general ideas about the process of developing an Intellectual Capital Account are discussed. This part of the thesis discusses what may be the most important result of the research project in Indra, namely the company's own approach on how to identify and measure intangibles. This is also in accordance with the conclusion part of this thesis.

Part 1: Theoretical framework

1 General framework: The knowledge-based economy

The goal of this general framework is to elaborate what is meant by the knowledge-based economy, and what challenges companies face in such an economy. Once the general framework is laid out, it is possible to investigate how companies best can face these challenges. That is the main focus of the rest of the theoretical framework.

“The OECD economies are increasingly based on knowledge and information. Knowledge is now recognised as the driver of productivity and economic growth, leading to a new focus on the role of information, technology and learning in economic performance. The term knowledge-based economy stems from this fuller recognition of the place of knowledge and technology in modern OECD economies”

(OECD: 1996, page 3).

This quote serves as an illustration of the new role knowledge is given in contemporary economic theories. It could be argued that the Knowledge-based Economy illustrates one of the aspects of what is called the New Economy. What The New Economy entails is beyond the scope of this thesis, although many arguments are related to our subject.

The OECD (Organisation for Economic Co-operation and Development) have identified an ongoing revision of economic theories, originating in the increasing influence the knowledge-intensive sectors have on the national economies within the OECD. Both the high-technology share of the OECD manufacturing production as well as the knowledge-intensive service sector, are growing faster than other sectors. These knowledge-based sectors make up more than 50% of the Gross Domestic Product

(GDP) in the major OECD economies. From these results the role of knowledge in value creation has been given increased attention in economic theories. Registration of knowledge investments, understanding how knowledge is distributed and finding good indicators for knowledge-related resources are some of the challenges facing contemporary economic theories. (OECD: 1996 and 1999).

Traditional economic theories held that innovation is a process of discovery which develops in a linear manner. Klein and Rosenberg's model of innovation as an interactive process, makes feedback mechanisms between the different actors in the process an important feature of innovation. This makes knowledge creation and diffusion in all parts of the process, important for successful innovations. This elaborated model has been widely accepted, and it illustrates the new role of knowledge in economic growth. (Kline and Rosenberg in OECD: 1996, page 15).

The direct and indirect results of the growth in the information and communication technology (ICT) sector, are often seen as the most important reason for the increased importance of knowledge.(OECD: 1999, page 19). Others argue that the increased importance of knowledge is affecting all sectors, and that the kind of knowledge needed will vary. (Tidd, Bessant and Pavitt: 1997 / SND:1998).

But the importance of financial assets should not be underestimated, venture capital has been identified by the OECD as a crucial factor for innovation and economic growth. The United States' venture capital market is by far the largest in the world, also seen in relation to its share of GDP. Its higher investment rate in start-up companies has been

described as one of the reasons for the United States' dominant role in getting innovations successfully commercialised. (OECD: 1999)

Calculating financial assets is however not a problem to the traditional economic theories. It is pinpointing knowledge as a factor in value creation, which constitutes a problem to the usage of these theories. This challenge has to be met by individuals, firms and governments, who are all parties in the process of creating value. The knowledge-based economy is a widely accepted perception of reality, which both micro and macro-economic theories attempt to encompass. (OECD:1996).

These theoretical considerations together with corporate management experiences in the last decade, give incentives to reconsider the traditional success factors for companies. Rajan, Lank and Chapple point out loss of corporate knowledge through downsizing, increasingly shorter product lifecycles and new opportunities for managing knowledge through information and communication technologies (ICT), as important changes in the 1980s and 1990s. In combination with increased trade liberalisation through the developments of the European Union and the establishment of the World Trade Organisation, the situation for companies have changed. To meet these challenges, business managers need to develop new management practices. (Rajan, Lank and Chapple: 1999).

2 *Knowledge-based companies*

The changes in the macro economic context are especially important for companies with an international profile and those in knowledge intensive sectors. Traditionally knowledge intensive companies are defined as those who depend upon having a high

ability to innovate. This can include a variety of sectors like Information and Communication Technology, Finance, Consulting, Pharmacy, Chemistry and Electronics. But some argue that the changes in the macro-economy make almost all companies into knowledge organisations. Kjell A. Nordstrøm and Jonas Ridderstråle argue in their book “*Funky Business*”, that all companies’ mentality on organisation needs to change, and that the survival of all organisations in the end depends upon the employees knowledge. (Nordstrøm and Ridderstråle: 1999).

But the conclusions drawn from these changes and experiences differ. Lundvall and Johnson point out that the process of innovation has changed, so that continuous incremental innovations depending on interactive learning are necessary for companies to survive in the knowledge-intensive sectors. They argue that knowledge is the most fundamental resource in contemporary economy and that learning therefore is the most important process. New way of organisation will be an important effect of these changes. (Lundvall and Johnson: 1994).

Tidd, Bessant and Pavitt also focus on the need for new organisational structures in companies. They argue that innovation is the most important activity for many different companies, and that they all therefore have to develop organisational structures accordingly. The knowledge a company possess depends to a large extent on the technological trajectory they have been following. Knowledge is in this way path-dependent. (Tidd, Bessant and Pavitt: 1997). As a result it must be important for companies to find ways to identify their specific knowledge base. A tool which could trace changes in these core competencies would make the management of them easier.

The OECD has identified that both producing and diffusing knowledge are important aspects of knowledge management. In both these processes, networking between firms, government agencies, research institutions, customers and suppliers is being considered an important activity in managing knowledge. (OECD: 1996).

Edvinsson and Malone put their focus on the need for new accounting practices. This is necessary in order to show the most important assets a company has for future success. The traditional method for showing a company's values is the presentation of financial assets in annual reports. It is calculated on the basis of traditional accounting practices, which means that only financial assets are being calculated. In a knowledge-based economy, the value a company possess in terms of knowledge is not being accounted for, because there has not been established an accounting norm for measuring these resources. There are many weaknesses to such a system, but the most important might be that a financial account illustrates accomplishments of the past but says little about potential for future success. This makes it difficult for managers to identify weaknesses and take action accordingly. For investors the increased difference between book value and market value, exposed when goodwill is calculated after mergers or buy ups, is a clear indicator of the need for new account practices. (Edvinsson and Malone: 1997 and Cañibano, Covarsi and Sánchez: 1999).

From these arguments we see that both organisational change, networking and new accounting practices have been identified as challenges to companies, operating in an economy increasingly based on the production and diffusion of knowledge.

3 The concept of knowledge

“Knowledge is the sum or range of what has been perceived, discovered or learned.”

(Encarta: 1997)

When looking at this definition it becomes clear that making an account of a person’s knowledge would be close to an impossible task. It is not only difficult to recall everything that can be covered by this definition, it is also difficult to find word to describe that knowledge. Trying to describe the sum of individual knowledge inside an organisation would be an even more complicated task. Could certain parts of an organisations knowledge be more linked to the organisation than to the individuals, and what part of the individuals knowledge is relevant to the organisation? These questions illustrate some of the problems with capturing and measuring knowledge.

But the challenge of identifying as much as possible of what we know is of economic interest to companies, as Lew Platt, Chief Executive Operator (C.E.O.) of Hewlett-Packard puts it: *“If HP knew what HP knows, we would be three times as profitable.”* (Rajan, Lank, Chapple: 1999).

The scientist Michael Polanyi made philosophical inquiries into the nature of human thought. In short he found that *“We can know more than we can tell”* (Polanyi in OECD: 1996). This is one of the fundamental methodological problems facing attempts to capture and measure knowledge.

The concept of knowledge also have an epistemological dimension. This scientific discipline considers what we can apprehend. This makes the attempts to capture knowledge even more complicated. Even if we managed to capture all the knowledge of

an organisation, questions could be asked if what we captured actually constituted knowledge. This is a theoretical debate where some argue that all knowledge is relative. (Barnes and Bloor: 1982). As a result, a decision maker's ability to obtain perfect information, can always be argued. To not get tangled into this debate, the following argument will deal with knowledge in terms of Ontology, the scientific-discipline of identifying reality.

Academic research projects of knowledge have for a long time been the concern of Psychology, Pedagogic and Sociology. To avoid some common pitfalls and to draw experiences from these disciplines, several research projects have been conducted to make the field of knowledge accessible to economists. When considering these findings, it is important to bear in mind that economists have to balance the concerns of validity and applicability, when developing methods for measuring knowledge. Interdisciplinary investigations could possibly give these compromises a stronger foundation.

Polanyi called the knowledge we are unable to describe with words, tacit knowledge. (Polanyi in OECD:1996). The knowledge which we are able to codify is often referred to as explicit. The distinction between these two types of knowledge has been given a lot of attention by different authors, like Alice Lam and Ikujiro Nonaka. Alice Lam also distinguishes between individual and organisational knowledge. The ability of a company to absorb capacity that is unique to the individual depends on how the organisation is organised. (Lam: 1999). Nonaka speaks of an organisational design that fosters continuous learning for both the individuals and the company. (Nonaka: 1998).

Some argue that the development of ICT has made it important to discover how knowledge can be codified and transferred. (OECD: 1996). But others, like Karl Erik Sveiby argue that knowledge is an activity and not an object and therefore has to be treated differently than information. (Sveiby: 2000). Nonaka argues that there are dimensions to knowledge which makes it distinct from information. *“Knowledge, he reminds us, is not as simple as information; it comes from the gut, and involves commitment and belief.”* (Nonaka: 1997)..

4 The concept of intangibles

There are many different views on how to measure and manage intangibles, and there are many different interpretations of what is covered by the concept “Intangibles”. Indra describe in their annual report, that their Intangibles consist of the assets: R&D costs, expenses incurred in the acquisition of software or licences, patents and options to buy tangible assets. (Indra: 1999). This interpretation is in accordance with traditional accounting practices as the intangibles’ financial value can be calculated.

Other interpretations, based on the assumption that new accounting practices are needed to encompass a company’s intangibles, include: Customer Matrices, Infrastructure, Readiness and Characteristics of the employees. (Edvinsson and Malone: 1997).

A recently conducted literature survey on intangibles, conducted by the Spanish MERITUM group, extracts the following common characteristics used on intangibles: *Intangibles may be either assets or liabilities (sources of probable future economic profits or losses); they lack physical substance, but are a fundamental part of the value of the firm; they may be financial or non-financial in nature; financial intangibles may*

either be investments (cash outlays) or deferred charges; firms may either acquire or produce them internally. (Cañibano, Covarsi and Sánchez: 1999).

Edvinsson and Malone do not use the term intangibles in their book *Intellectual Capital*. Their method encompasses all assets which are not captured by the traditional accounting practices, but are considered success factors to the company's performance. All these assets make up the company's Intellectual Capital Account.

There are also different practices of categorising the intangibles. The Swedish insurance and financial service company Skandia categorise intangibles IC into:

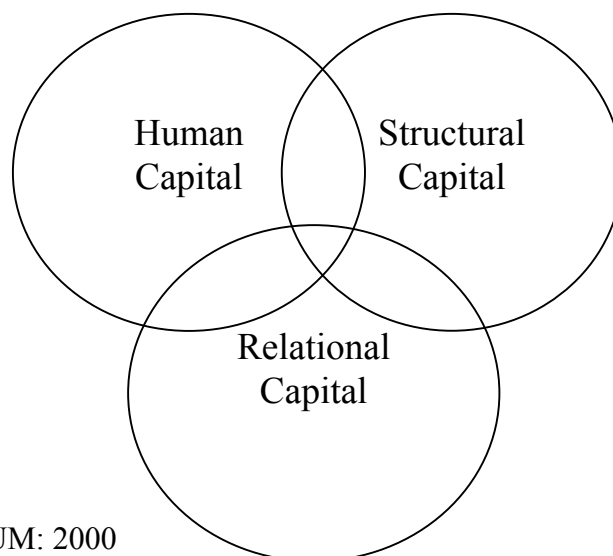
1. Human capital (HC). The combined knowledge, skills, innovative ability, and ability of the company's individual employees to meet the task at hand. It also includes the company's values, culture, and philosophy. Human capital cannot be owned by the company.
2. Structural capital (SC). The hardware, software, databases, organisational structure, patents, trademarks, and everything else of organisational capability that supports those employees' productivity - in a word, everything left at the office when the employees go home. Structural capital also includes customer capital, the relationships developed with key customers. Unlike human capital, structural capital can be owned and thereby traded.

(Edvinsson and Malone: 1997).

The model developed through the MERITUM program categorises intangibles into Human Capital, Structural Capital and Relational Capital.

- 1) Human Capital is defined as the knowledge the employee takes with him/her when the person leaves the firm at the end of the day. That includes expertise, educational level etc.
- 2) Structural Capital consists of the pool of knowledge that stays behind when the employees leave at the end of the day. This includes procedures inside the firm, databases, culture etc.
- 3) Relational Capital consists of external relationships of the firm, like marketing procedures.

The reason for this separation, is that the firms who participate in the program, felt that they could clearly distinguish between Human, Structural and Relational capital. But variables representing an intangible can be used in more than one category. One example is that the image can both be a resource categorised as Structural Capital, and an activity which increases a company's stock of Human Capital. The MERITUM illustrates these overlapping relationships in the following model.



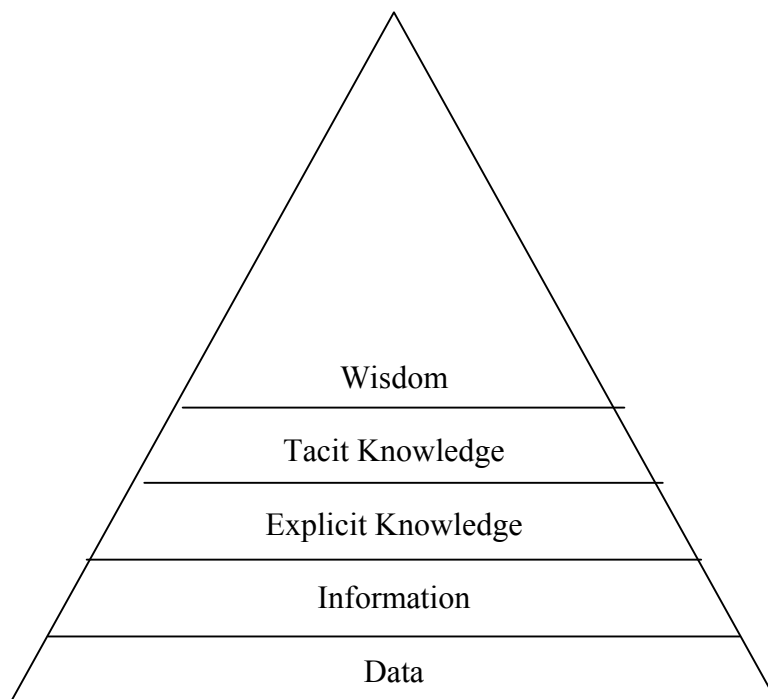
Source: MERITUM: 2000

The MERITUM has also found it useful to separate between general, industry specific and firm specific indicators. When firms identify their indicators the two first categorisations can provide helpful tips of previously used indicators. (MERITUM: 2000).

The categorisations made by the MERITUM will be the used in this thesis.

5 *Managing knowledge in companies*

Rajan, Lank and Chapple set up the following model in an attempt to differentiate the different aspects of knowledge, useful to a company:



Source: Rajan, Lank and Chapple: 1999.

They describe Data, Information and Explicit Knowledge as parts of a company's knowledge base that can be easily described and transmitted, whereas Wisdom and

Tacit Knowledge constitutes the parts of a company's knowledge that are highly embedded in the individual and therefore difficult to integrate into a formal structure. The challenge for the management is to convert these kinds of knowledge into Data, Information or Explicit Knowledge. This is referred to as what constitutes Knowledge Management (KM). Finding methods which make this possible can increase knowledge creation and diffusion throughout the company's organisation, and make the company less dependent on the knowledge embedded in individual employees. (Rajan, Lank and Chapple: 1999).

Nonaka describes the knowledge creating company, as an organisation where the knowledge is developed and diffused through a spiral of interactions. Tacit knowledge is transmitted to tacit knowledge by involvement in processes. Explicit knowledge is shared after being made available to the whole organisation. Tacit knowledge is made into explicit knowledge after it has been codified or embodied in technology and product. And explicit knowledge is transformed to new tacit knowledge as people interact with the codified material. He claims that Japanese knowledge-intensive firms are better at managing the last two processes of the spiral, than their Western counterparts, and that this is one of the keys to their success. (Nonaka: 1998).

With the increased use of information and communication technologies in companies, "e-learning" (electronic learning) has become a widely used term. It is being used to capture some of the processes which aim at developing and diffusing knowledge within and between companies. Designers and engineers use software which enables them to develop, test and change models with a speed surpassing traditional methods. Some companies like Data Power, specialise in what is called "hard skills", referring to

software which aims at mastering special techniques. This could be skills like flying an aeroplane or using a calculation program like Microsoft Excel. Other companies like Involve Learning, develop software which aim at developing “soft skills”, referring to social skills like treating customers or marketing brand names. These are examples of how companies tries to manage knowledge by the use of ICT. Whether these processes results in knowledge creation and diffusion or not, can be argued, but the fact is that large companies like Eriksson, ABB and Storebrand use these products as Knowledge Management tools. (Data Power: 2000 and Involve Learning: 2000).

Most projects whether they are business oriented or not, usually start with an idea or vision. The next step is normally to clarify these ideas by formulating goals. This makes it easier to communicate the ideas and to create agreement of what one wants to achieve. It also makes it easier to identify what is needed to achieve those goals.

When such strategies are being developed, the focus often is on the financial assets whereas a variety of intangible resources are being ignored because they are difficult to identify. The advocates for measuring companies’ intangible values and the development of Intellectual Capital accounts, argue that the non-financial resources and activities of companies are underestimated. Methods should therefore be developed to capture all the non-financial resources viewed as important by a company, and sum them up in an Intellectual Capital Account so they can be managed. (Edvinsson and Malone: 1997).

The concepts of tacit and explicit knowledge have been described earlier, and the relation between them is as we have seen a complex issue where researchers have different points of view. But if we accept that the relation between them is complex,

maybe they can be mapped independently? Then we can focus on activities to improve them, and find ways to manage them. With the identification of these resources it may be easier to encounter the challenges illustrated in Nonaka's model.

6 Measuring intangibles in companies

Firms need to manage and governments need to make policies according to the recent economic developments. Since intangible factors are becoming increasingly important in the economy, ways to identify and measure change in these are important both at the micro and macro level.

The problem of measuring knowledge also attains both the micro and macro level, and attempts have been made to overcome these shortcomings. The OECD has made several manuals for how to measure innovation during the 1990's, these are called *The Frascati Family*. The development has gone from only measuring R&D inputs, to measure a number of innovation activities described by the Oslo Manual of 1996 (Cañibano, Covarsi and Sánchez: 1999). The measurement methods in the manuals are still expanding, and in *OECD Science, Technology and Industry Scoreboard 1999*, intangible as well as tangible indicators are included.

For companies it is also the development of methods for measuring intangibles which have received most attention. No practice for measuring knowledge in companies have been benchmarked, and since there are more actors who have to agree on a standard, benchmarking might be an even more difficult than within an organisation for nations like the OECD. There are a lot of different methods being developed and explored, this makes setting a standard even more difficult. (Cañibano, Covarsi and Sánchez: 1999).

Companies measure their intangibles both for internal and external purposes. The external focus can be given through an account of the company's intangible resources, often referred to as an Intellectual Capital Account. This information is given out to get a more stable and correct value to the company's stocks, and to improve the company's image which again might attract employees and customers. But companies seldom disclose all their intangibles, and companies often measure intangibles primarily for internal purposes. This is done to provide the management with a Knowledge Management instrument. This tool would normally be useful in large companies with a high number of employees and complex value-chains, and who would consider themselves knowledge intensive organisations. (MERITUM: 2000).

Karl Erik Sveiby has described how two main methods of measuring intangibles developed in the beginning of the 1990's. One in the USA by Robert S. Kaplan and David P. Norton, called "The Balanced Scorecard (BSC)". The other was developed in Sweden by himself, called "The Intangible Assets Monitor (IAM)". There are some similarities between these methods. Both argue that non-financial indicators must complement financial indicators, and that they should be included in companies' strategic planning. The difference between them lies in that the BSC adds a stock of non-financial indicators next to the financial indicators, and argues that these intangibles indicates the future potential of the company. The IAM on the other hand separates the non-financial indicators from the financial indicators, as the interaction between stocks of intangible assets is the focus of this theory. This balance between stocks and flows of intangible assets has to be manage differently than the financial assets. According to the IAM, the key factor in this interaction is the employees. The BSC does not include such

a dynamic dimension, and the employees are as a result accounted for as a cost rather than as revenue creators. (Sveiby: 2000).

The Swedish finance and insurance company Skandia, started investigations into how to develop an Intellectual Capital Account in 1991. The project was led by Leif Edvinsson, and after initial investigations they came up with a system for identifying, measuring and managing intangibles. The system was named The Skandia Navigator and unite some of the aspects presented in the IAM and BSC. The project identified that it would be useful both to present the intangibles in an account, as well as to manage the interaction between the different elements. (Edvinsson and Malone: 1997, page 47).

The MERITUM is a research program funded by the TSER (Targeted Socio-Economic Research) Program of the European Union, and it was started in November 1998. The following six countries participate in this program: Finland, Denmark, Norway, Sweden, France and Spain. Spain is also the co-ordinator of the program. The general aim of the program is to give input to science and technology policy-makers in the European Union.

The MERITUM-group at the IADE at the Autonomous University of Madrid has identified characteristic traits of how their Spanish survey firms measure and manage their intangibles. The first conclusion is that firms are measuring their intangibles primarily for internal management purposes. The second is that the firms usually follow a common pattern when they develop an intellectual capital management system. It can be divided into three phases:

1) Identification of intangibles:

Identification of core competencies and strategic objectives, and the core intangibles related to these.

2) Measurement:

Identification of indicators related to these intangibles.

3) Management:

Identification of activities that might increase or decrease the level of the core intangibles.

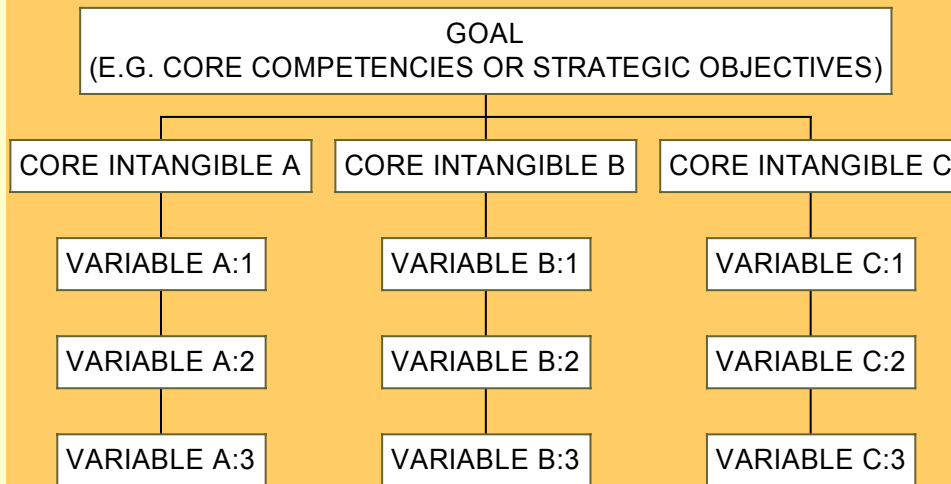
From these experiences the Spanish MERITUM group has developed a method for developing an Intellectual Capital Account in companies. This method is developed to accommodate the needs of companies who have little or no experience with measuring and managing intangibles.

Phase 1:

In the first phase, companies should identify their core competencies or formulate a strategic objective, depending on what the company want to have as the focus of their identifications. This is the starting point for the identification of the core intangible resources of the company. The core intangibles should be few and cover a broad area of resources.

INTELLECTUAL CAPITAL RESOURCES RELATED TO THE GOAL

PUTTING THE GOAL INTO A MATRIX



Source: MERITUM: 2000

This model illustrates phase 1 of the model. Either a strategic objective or core competencies form the basis for the identification of the company's core intangibles. These intangibles illustrate a static dimension of the model as they represent resources the company either possesses or has an ambition to obtain.

Phase 2:

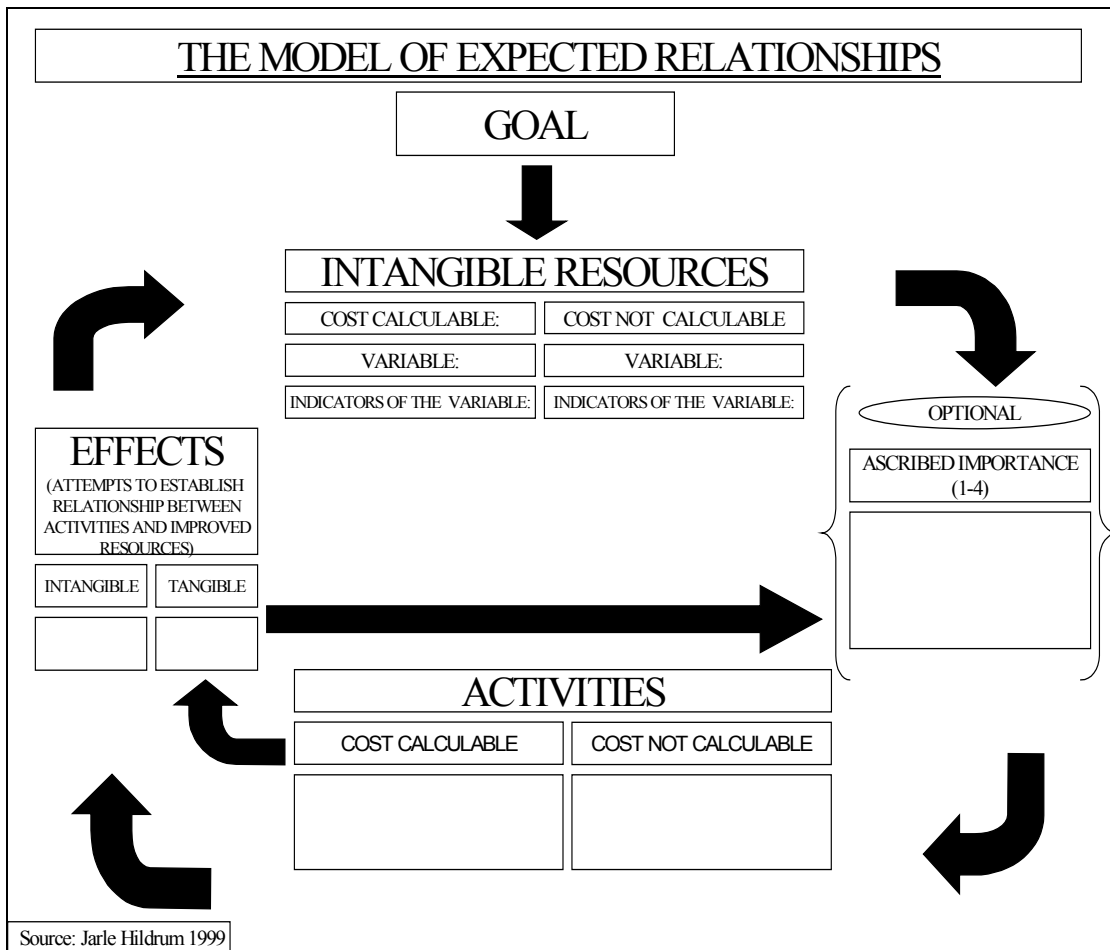
In the second phase, the company should identify the activities related to these resources. This is the dynamic dimension of the model, where both activities that affect the resources positively and negatively should be included.

Phase 3:

In this phase, a number of variables are identified for each core intangible and activity. For each variable a number of indicators are identified, according to the criteria of clarity, feasibility and usefulness to the company. They can be general, sector specific and firm specific, and the MERITUM has formulated a questionnaire to evaluate these characteristics of the indicators. Both financial and non-financial indicators should be included.

The MERITUM also suggests that indicators for measuring performance or effects should be identified, following the same criteria.

Jarle Hildrum developed a firm specific variant of this model in 1999 for Indra Espacio. This model formed the basis for the development of an intellectual Capital Account in Indra in the year 2000, as described in the case study part of this thesis.



The model is a way of presenting a hypothesis about relationships between resources, ascribed value, activities and effects. It functions as a mental model to understand the different parts identified with the MERITUM model. But as the number of variables and indicators are extensive, it can not be used to fill in all the findings, although examples can be used to illustrate the results of the identifications.

7 Problems with measuring intangibles

The development of an Intellectual Capital Account is an example of an area where scientific criteria and business interests can come in conflict. According to common research practices, a researcher should consider to what extent the variables and indicators chosen represent reality (validity). The researcher should also consider to

what extent the variables and indicators produce the same results on repeated trials (reliability). The reliability of a measurement system for intangibles depends on how the researcher formulates the indicators and how the researcher conducts the measurements.

The reliability of a measurement system for intangibles therefore depends to a large extent of the quality of the research work carried out, but the question of the validity of a measurement system can be more difficult. Which intangibles, variables and indicators represent the highest degree of the intangible values of a company? The weakness of the concept of measuring intangibles is that it attempts to capture the “invisible” values of a company by formulating indicators that can be measured. In contrast for example an anthropological investigation would have more room for including different aspects through illustrating these values in a text document.

Therefore it is crucial that researchers try to formulate a selection method that enables them to extract as much as possible out of the people in the company. This is common in most qualitative research practices, but it is especially important to make up for the flaws when measuring intangible. It can be argued that measurement systems for intangibles still will have low validity, but it would be better for a company to have some indications of their intangible values than none at all.

The question of costs is almost always a challenge when conducting research projects. This can be an even higher obstacle to the validity of a measurement system for intangibles, because a company might chose to exclude important indicators because the costs of measuring them will be higher than the profits. Naturally the demands for scientific sustainability will be very different between a company and an academic institution. (Hellevik: 1997).

When considering the use of the MERITUM model, it is important for companies to keep in these methodological flaws of measuring intangibles. To establish correlation between an activity and a resource takes a long time and is bound to have a low degree of certainty. This is also the case for the relationship between a resource and an effect. When looking for degree of correlation between financial input and output, it will have to be weak considering the room for spurious effects at both levels.

The approaches of SCOT (Social Construction of Technology) and ANT (Actor Network Theory) identify humans and technology as inter-related. This can be seen as an objection to the classifications of human, structural and relational capital. But as Edvinsson says: *“If there is one thing that the Navigator makes abundantly clear it is that the management of IC is more than just knowledge or intellectual property management. IC management is in fact the leveraging of human capital and structural capital in combination.”* (Edvinsson and Malone: 1997). The MERITUM also recognises this aspect in their dynamic approach, and the figure presented earlier also illustrates that there are no clear division between the categories. (MERITUM: 2000).

There are also ethical aspects to be considered when measuring intangibles. Can the results be used as a tool for furthering management control over employees. Sveiby argues that this depends on the method chosen. *“While the consultants implementing the BSC do it as yet another tool for control, I argue that measuring intangibles is not about adding another control instrument.”* (Sveiby: 2000). But this might also just be an argument to promote his own method. But by adding a dynamic dimension to the measurement system, where the employees are the key components, the measurement of intangibles can bring increased attention to the wellbeing of the employees. But the

increased focus on the individual employer can also have disadvantages. Companies can control their employees by measuring their individual performance. *“Most recently Skandia has begun to experiment with using the Navigator for individual performance appraisal and assessment.”* (Edvinsson and Malone: 1997, page 60). This should be carefully monitored by both trade unions and government agencies, as these results can easily be misused.

Others are more sceptical of governments interests in benchmarking a method for measuring intangibles. A venture capitalist named Tim Draper, describes in his article *“Intellectual Capital = Formula for Disaster”* how Intellectual Capital Accounts can become a tool for government to expand control. He is afraid that it will become a bureaucratic obstacle to both companies and capitalists, where they will be forced to develop Intellectual Capital Accounts and use them for setting the price on stocks.(Tim Draper: 1997).

Part 2: The case of Indra

1 The context of the case study

1.1 Presenting Indra

Indra is a multinational company with its headquarter and the main part of its workforce situated in Spain. The company has activities in over 40 countries world wide and more than 5000 employees, out of which 76% are highly specialised technical graduates. The main business areas are: Information Technologies (79,1%), Simulation and Automatic Maintenance Systems (6,9%) and Electronic Defence Equipment (14%). Indra provides a variety of products and services ranging from internet solutions for Volkswagen retailers to navigation equipment for the Eurofighter Consortium. The company is Spain's leader in the IT sector, and in the spring of 2000 Indra launched a new internet company, Indranet which is the ninth company belonging to Indra. Growth in the internet sector and in international markets are two main goals for the company. The company has increased their revenues from 364.6 million Euro in 1997, to 584.0 in 1999, and the profit has more than doubled in the same period. (Indra: Annual Report 1998 and 1999).

1.2 Indra's objectives

Indra's products and services are highly dependent on in-house developed technologies, and Indra invests 10 times the Spanish average on R&D. But the management are well aware of the complexity of the innovation process and are involving the whole organisation, universities and customers in the process. Almost all of Indra's products are custom made solutions. They also continuously seek to develop new business activities and markets.

To meet these challenges the company has implemented a variety of strategies: Customer Relationship Management, Supply Chain Management, Business Intelligence, e-Infrastructure and Management and more. A number of pamphlets describing these different strategies have been published, both for internal and external purposes. One of the challenges operating such a large company involved in so many different activities is identifying all the different success factors, and even more challenging, managing them. Another challenge is to visualise the non-financial values of the company, to ensure the loyalty both from the stock-holders and the employees. Indra follows a traditional accounting practice and their estimates on intangible values are only those with calculable costs like R&D, software and patents (Indra: Annual Report 1999, page 12). Both the problem of identifying the success factors and the challenge of showing the hidden values of the company, give Indra a great incentive to make investigations into intangibles and Intellectual Capital Accounts. (Indra: Annual Report 1998 and 1999, Indra: Information paper: *Technology that provides answers* 1998).

This study has mainly focused on the success factors and activities related to the Human Resources departments' responsibilities. As this department supports all the different business areas Indra is involved in, it might provide some indicators of whether an Intellectual Capital Account can be a productive management tool for such a complex organisation. If it falls short of such an ambition, it might anyway prove to be a sensitising instrument to discover and highlight resources and activities which could otherwise have been overlooked. This research in Indra's Human Resources Department, attempting to solve the two earlier mentioned challenges also has an interesting third aspect. The project uses the HR department's responsibilities in

connection with a high priority strategic goal Indra has adopted, as a starting point for the analysis. The project then also functions as a test of the possibilities an Intellectual Capital Account can bring to reach clearly defined commercial goals.

The main use of this pilot project are for internal management purposes, but working with IC is also regarded as having a very positive effect on a company's image. There are therefore dedicated two whole pages in the annual report, describing the importance Indra sees in developing an high quality IC account. (Indra: Annual Report 1999, page 22 and 23).

The project undertaken by Indra has a very ambitious agenda, which might make their results very interesting to other companies using intellectual capital management. They are looking for high correlation between the intangible activities and the tangible and intangible effects. This is one of the advantages by using the MERITUM model on a strategic objective. But this goal can become too ambitious if one expects highly credible scientific documentation of the results, as has been discussed earlier in the theoretical chapter.

2 Background for conducting this research project

Indra is one of the companies surveyed by the MERITUM program described earlier in this thesis. Indra is part of the MERITUM through their co-operation with IADE at Universidad Autonoma de Madrid. Through participating in this project, Indra receives the opportunity to share their experiences in developing an IC-account with other companies in the same situation throughout Europe. They also get access to information and advice concerning the latest developments within the field of IC, from the academic

specialists in the field at IADE. Indra is also a member of Club Intellect, a Spanish institution which co-operates with universities and companies in the development of methods for measuring intangibles.

Experimentation and enquiries into measurement of intangible resources in companies often originate in the HR departments, this was also the case in Indra. The Human Resources Department at Indra's headquarter, consists of more than 60 employees, working with strategies for Indra's entire organisation. In addition each of the nine companies belonging to Indra, have their own Human Resources (HR) departments. In the Spring of 1999 one of Indra's companies, Indra-Espacio, conducted a pilot project to find a method for measuring Intangibles. Paula Villegas was in charge of that project as the Manager of HR at Indra-Espacio. The project was carried out in co-operation with an internship, ESST-student Jarle Hildrum. The results of this work are described in Hildrum's ESST-master thesis (Hildrum: 1999).

The pilot project conducted in Indra-Espacio in 1999 had the following objectives:

- 1) To show why it is particularly important to measure intangibles in Indra-Espacio.
- 2) To reveal Indra-Espacio's current activities and future objectives in mapping and measuring intangibles.
- 3) To define a method for mapping and measuring intangibles that suits Indra.

(Hildrum: 1999, page 35).

After using detailed questionnaires and in dept interviews, Hildrum found that intangibles are considered important by the management and that they are primarily interesting for internal management purposes. The research also identified the reasons

Indra-Espacio had for identifying their intangibles. This was not an issue for this year's research, as the goal and strategy behind the research was developed before the it started.

“Mapping, measuring and managing intangibles are important concerns for Indra-Espacio”.

“More specifically, Indra's objectives are primarily internal management purposes, such as disclosure of critical intangible success factors and comparison of measurement results with desired results”. (Hildrum: 1999, page 44).

The last part of the research were devoted to the development of a measurement system for intangibles, suited especially to Indra-Espacio. The method developed here is discussed in the theoretical chapter.

As Indra was very pleased with the results of this project, they decided to test the method at the central HR department of the company. In the Spring of 2000, the responsibility for developing an Intellectual Capital Account was assigned to Paula Villegas, now Head of Special Human Resources at Indra's headquarter. Together with three other managers in the HRD, she formed a team to develop an IC account related to the HRD responsibilities. The team consisted of The Manager of Special Human Resources, The Manager for Compensation and Benefits, The Manager for Development and Training and The Manager of HR Information Systems. This team's job was to identify core intangibles, variables, indicators and activities related to the current strategic objective which was set by the top management. I was also a part of this team as this years ESST-student internship. This were to be viewed as a pilot

project based on the results from last years research. The goal was to asses the fruitfulness of such a management system for the whole organisation after testing it on the central HR department. The validity of our work were to be assessed by a group of 14 people working in the HR department, and one director from Indra's top management. This evaluation meeting was held after a complete measurement system had been developed.

3 Methodology

Paula Villegas experience from the 1999 project, and the results of that research described in Jarle Hildrum's thesis and MERITUM's paper summing up last years projects, were the methodological starting points for the team's work. These gave the team many clues of what the research should consist of, but very little on how to do it. This was also the case for most of the literature which were analysed. There have been developed many good models and categorisations, but it exists very little practical tips and guidelines on how to get into the process of developing an IC account.

The firm specific and relatively open model developed by the MERITUM program, gave the team more leeway and better examples from case studies than the other models that was considered. It was also a natural starting point, since most of the work already done in Indra were based on this model. Indra had also contributed to the development of the model through their participation in the MERITUM program. The basic principles of the model are well described in IADE's MERITUM paper for the 2nd POSTI meeting in year 2000 (MERITUM, IADE: 2000.). Many other models were taken into consideration, and many valuable tips were picked up from looking at different models. The two most influential where *Intellectual Capital* (Edvinsson and Malone: 1997) and *The Balanced Scorecard* (Kaplan and Norton: 1996). But a growing

number of different models and categorisations are actually contributing to the confusions which surrounds IC and intangibles today, since no method have been benchmarked. A lot of time and energy are being spent on considering all the different approaches. There have been made some good literature surveys, which may make the selection process a bit easier. One is done by Statens Nærings- og Distriktsutviklingsfond (SND: 1998) and another by Leandro Cañibano, Manuel Garcia-Ayuso Covarsi and M. Paloma Sánchez (MERITUM: 1999). Both of these were found very useful to this research project.

The MERITUM model illustrates how the relationships between intangible resources, activities and effects can be interrelated in a circular manner. In that way it illustrates hypothesis of causes and effects. But it also provided a starting point of how to categorise and identify intangibles. The validity of the model is largely dependent on which intangibles, variables and indicators which are put into it. This means that the way the selection of the intangibles, variables and indicators is carried out, is crucial to get a model that presents a useful illustration of reality. This is the most challenging part of the research, both for academic feasibility and business management.

The basic structure of the MERITUM model is elaborated in the theoretical framework of this thesis.

This research project's aim was to identify intangibles related to the strategic objectives for the whole company. But the management of the results were to be done by the HR department for a test period. The focus on of the intangibles to be identified, was therefore considering the HR departments responsibilities .This way Indra was

exploring the fruitfulness of Intellectual Capital management, before implementing into all levels of the organisation. Their focus on a specific strategic objective separated it from earlier use of IC management. But the MERITUM model makes room for a variety of objectives as a background for the survey, and this makes the model an instrument to be used on a variety of cases.

Both static resource-indicators and dynamic activities were to be identified. This is in accordance with both the second and third conclusion made by MERITUM. The management of the resources and activities are to begin after initial measurement data have been collected.

One of the disadvantages of this survey, by focusing strictly on the responsibilities of the HR department, is that it might miss some of the complex interactions between Human Capital, Structural Capital and Relational Capital. It is also quite possible that Human Capital is overemphasised in this survey, because of its main focus on the HR department's responsibilities.

The team used literature surveys and the internet to find the information that was needed, throughout the study. Internet also was used to find case studies or similar projects among Indra's competitors, as well as to find information about the newest ideas on the subject of Intellectual Capital. There were also close contact with last years ESST-student and intern in Indra, Jarle Hildrum. This contact enabled us to make a continuum in the methodological developments. Close contact with the University proved to be the most important source for operative and methodological advice.

On background of this situation and these ideas a general hypothesis was formulated.

“The management of a strategic objective can be improved through the identification and measurement of intangibles”

Looking back at what was accomplished, it is quite clear that this hypothesis was far too ambitious. It will not get strengthened or falsified until the results have been managed over a period of time, and the indicators have been measured at least two times. But it was based on and was in clear accordance with Indra’s ambitions for the project, and it helped the team to focus on that goal. The MERITUM group also assess that this hypothesis is underlying most attempts to measure intangibles.

Considering Indra’s objectives and this hypothesis, the following research questions were formulated:

- 1. What is Indra’s strategic objective?*
- 2. What are the consequences of that objective?*
- 3. What are the core intangibles related to obtaining that objective?*
- 4. What variables are connected to the intangibles?*
- 5. What indicators can be used to measure the variables?*
- 6. Is it possible to measure these indicators while I am in Indra?*
- 7. Is it possible to measure twice, and trace changes?*

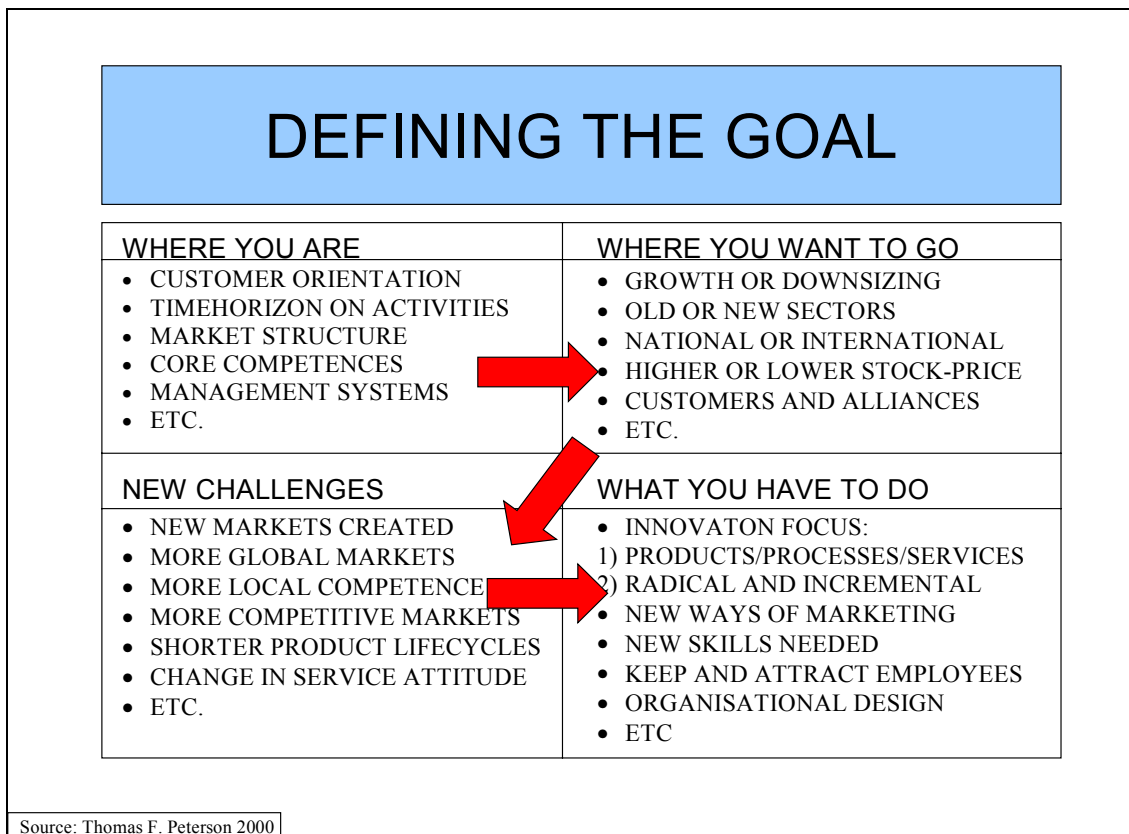
Questions 1 and 2 was formulated after the answers to them already had been found, but it became evident that they were a natural start to the research. These answers were needed before the team could start the identifications formulated through questions 3, 4 and 5. The last two questions (6 and 7) were more open questions to see how much

could be done, given the time limit of four months to this project. The answers to both these questions became negative, and even if our research had higher priority there would not have been time to measure the indicators even once. It was found that extensive tools for measurement had to be developed and a variety of information gathering procedures had to be implemented, before any first measurement could be carried out.

4 The process

4.1 Identification of strategic objectives

The main goal of the research project was set by Indra's top management, and the managers in the HR department chose a formulation of the strategic objective according to this. It was essential for the team to get a clear understanding of these strategic objectives, as they were the starting point for the rest of the investigation. The following model was therefore developed, and functioned as a guiding tool in interviews with managers with good knowledge of the strategic objectives of Indra.



The examples used in this figure, signifies the kind of information which was initially filled in the model. After the brainstorming sessions and interviews, the contents became more specific. The model functioned well, and gave the team a clear understanding of both the strategic objectives and the role the Intellectual Capital Account would play in reaching these objectives. These goals are viewed as sensitive information to Indra, and will therefore not be disclosed in detail in this thesis.

4.2 Identification of related intangibles and variables

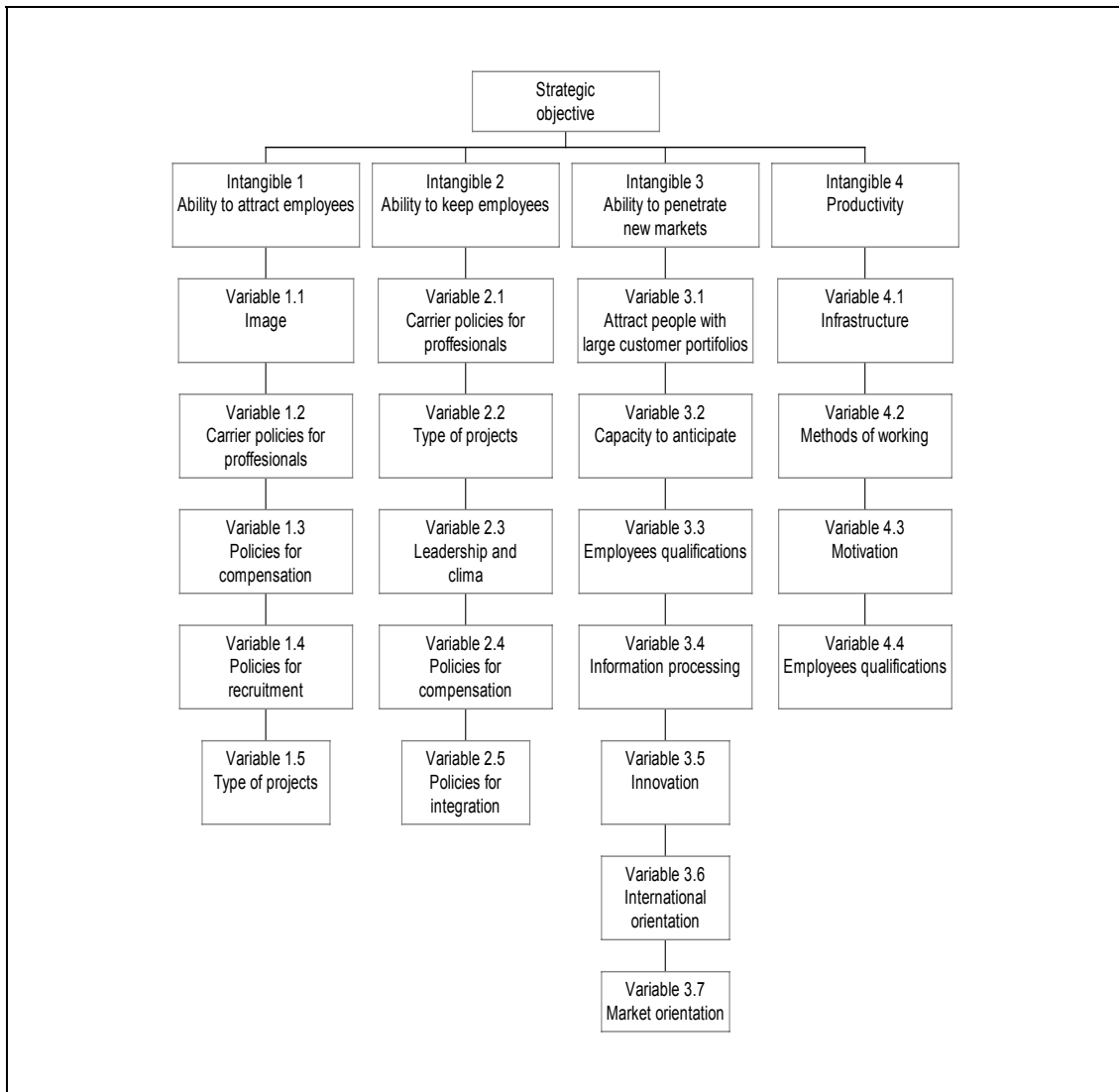
In the following description of discussions and selections made in Indra, only a few examples will be given. The reason for this is that the suggestions and how the analyses were conducted, are seen as sensitive information to Indra. Detailed descriptions might reveal to much of Indra's strategic objectives. results. A complete understanding of the

workload needed to make these identifications might therefore be limited by this description. It is therefore important to underline that the identification part is extensive, and should be planned accordingly by others who want to develop an IC account.

The team already had four suggestions for intangibles when the investigation started. What was meant by each intangible had also been specified. A set of variables defined each of them. Each intangible was in that way defined by five to six variables.

After carefully analysing the intangibles and variables already suggested, a total of six intangible resources needed to reach Indra's strategic objective were suggested. For each intangible, it had been identified from eight to twelve variables. They proved to be valuable inputs to the teams evaluation of the main responsibilities for the HR department. Changes and comments were made, and five intangibles each defined by around five variables were chosen. From these results new suggestions were made.

The team made a final selection of four intangibles, based on all the suggestions made in the process. They were defined by the variables illustrated in the following figure.



These core intangibles and variables formed the foundation for the rest of the research.

This first part of the process is quite similar to what was described earlier as step one of the MERITUM model.

4.3 Identification of indicators, activities and ways of measuring

The next step in the identification process also had to consider the dynamic aspects of these intangibles, which is labelled activities and effects. And the resources also needed to be specified further, by identifying indicators related to each of the variables.

After looking at the model and what was needed to be identified before the measurements could begin, we developed the following identification sheet (illustrated here with one example):

Level	Suggested indicators
<u>Intangible 3</u> <u>(resource):</u> Ability to penetrate new markets	<ul style="list-style-type: none"> • % of proposals to new clients accepted (per. New sector/Old sector/New territory). • Number of countries with business activity • Number of sectors with business activity • Share of customer base in countries and sectors • % of turnover from: New sectors/New territories/New customers
<u>Variable 3.1</u> <u>(resource):</u> Innovation	<ul style="list-style-type: none"> • Number of new successful patents/copyrights (profitable) • Number of new incremental innovations (products) • Number of new radical innovations (products) • Number of new applications of old products • Number of new incremental innovations (process) • Number of new radical innovations (process) • Number of new areas with use of old processes
<u>Activities:</u> (cost calculable)	<ul style="list-style-type: none"> • Investments in R&D • Courses for employees in market conditions in new territories and sectors. • Recruitment of employees with background in innovative firms or successful entrepreneurial results. • Awards for in-house innovations

<u>Activities:</u> (cost not calculable)	<ul style="list-style-type: none"> • Number of measures taken to improve communication between departments and people from: R&D – Production - Marketing – Sale and Customers. • % of people: A)from new sectors B)from new territory C)with an innovative profile
<u>Effects:</u> (tangible)	<ul style="list-style-type: none"> • Larger turnover in new markets • Increased number of employees with high qualifications • Decreasing costs of production
<u>Effects:</u> (intangible)	<ul style="list-style-type: none"> • Better communication between: R&D – Production - Marketing – Sale and Customers (shorter feedback loops on new processes/products) • More diverse workforce • Improved image • Better at attracting and keeping employees
Method for measuring	<ul style="list-style-type: none"> • Internal registration procedures • Open question on employee satisfaction survey

Source: Thomas F. Peterson and Paula Villegas: 2000, related to model by Jarle Hildrum and MERITUM 1999.

There were made identification sheets like this for each of the 25 variables, including sheets for each of the four core-intangibles. This was done to find indicators related directly to them, which in turn could make a more complete measurement of each crucial intangible resource possible.

The team decided that it would not be useful to identify “degree of importance” at this point, this point was therefore not included in these identification sheets. There were instead included a point about how these indicators could be measured, since both costs and realism would be points evaluated at the validation meeting. Except from these two changes, the sheets contained the same points/levels as identified Jarle Hildrum and MERITUM in 1999 (Hildrum: 1999, page 74).

The sheets were filled in by investigating Indra’s nine companies’ core business activities. After filling in all these sheets, they were evaluated by the team. The results from that meeting were re-evaluated, and a second identification was done, using the same formula for the sheets. But the points about tangible and intangible effects were taken out in this second round. It was decided that the identification of possible effects were to be done at a later stage in the process, when more information would be available. This will possibly be done after the results of the first collection of data have been analysed.

These suggestions for a measurement system identified by the team, were to be assessed by the validation team(14 members). To make these assessments an evaluation form developed by the MERITUM, was modified to Indra’s needs. Then all the suggestions were filled in to the form, ready to be evaluated. They were also translated to Spanish to make the indicators as specified as possible. The whole questionnaire became more than 80 pages long, and it was decided to be long to be filled out by the members of the validation team. Instead, it was presented as something the valuation team members should read through before the validation meeting.

The following figure illustrates how the suggestion for one variable (Image) looked in the questionnaire, before the validation meeting.

EVALUATION SHEET				
☆ THE INDICATORS:				
CORE INTANGIBLE:	(A:) ATTRACT EMPLOYEES			
VARIABLE:	(A: 1) IMAGE			
INDICATOR NR.	1			
DESCRIPTION OF THE INDICATOR:				
Definition	INTERNAL AND EXTERNAL KNOWLEDGE OF COMPANY			
Purpose	IDENTIFYING COMPANY'S SUCCESS IN INTERNAL AND EXTERNAL MARKETING AS EMPLOYER			
Key	N° OF PEOPLE WHO HAS GOOD KNOWLEDGE OF COMPANY'S COMPARATIVE ADVANTAGES			
ALTERNATIV DESCRIPTION:				
Definition				
Purpose				
Key				
EVALUATION: 1=worst, 4=best	1	2	3	4
Degree of interest the indicator has				
Results worth the cost of measuring				
Explanation strength of the indicator on the variable				
Publishable	Yes <input type="checkbox"/>		No <input type="checkbox"/>	
Source: MERITUM, adapted for Indra by Thomas F. Peterson 2000				

MEASUREMENT OF INDICATORS

HOW TO MEASURE THESE INDICATORS

- AS QUESTION ON INTERNAL SATISFACTION SURVEY
- AS QUESTION TO PEOPLE WHO APPLY FOR JOBS, ON EVALUATION FORM

OTHER SUGGESTIONS

--

Source: MERITUM, adapted for Indra by Thomas F. Peterson 2000

POOL OF ACTIVITIES RELATED TO THIS VARIABLE

ACTIVITIES INCREASING INTANGIBLE RESOURCES:

CORE INTANGIBLE: (A:) ATTRACT EMPLOYEES

VARIABLE: (A: 1) IMAGE

COSTS CALCULABLE	COSTS NOT CALCULABLE
<ul style="list-style-type: none"> • BEST RECRUITING PRACTICES VS. WHERE WE ARE → FILLING THE GAP • IMAGE CAMPAINS IN THE MEDIA (PRESS, INTERNET, TV) • CAMPAINS ON SCHOOLS FOR HIGHER EDUCATION • RECRUITMENT CAMPAINS • ENTREPRENEURIAL COMPETITIONS 	<ul style="list-style-type: none"> • PRESTIGIOUS PROJECTS
OTHER SUGGESTIONS	OTHER SUGGESTIONS

Source: MERITUM, adapted for Indra by Thomas F. Peterson 2000

The development of the questionnaire illustrated one of the key problems in developing an IC account. The nature of intangibles make them impossible to be selected solemnly by quantitative means, since they represent values not captured by traditional economic models. To have a sustainable qualitative selection process, it was needed to include as many options and as many people with deep knowledge of the subject, as possible. The balance between the number of options and the number of people involved, is a difficult one. But to get an IC account which reflects as much of a company's real intangible values as possible, we need to make both the selection process and the number of people involved as extensive as possible.

5 The results

Indra's central HR department now has a measurement system for intangibles, related to their responsibilities concerning the current strategic objectives. This measurement system forms the framework for finding the data needed to set up an IC account. For practical reasons considering the size of this thesis, Indra's complete measurement system will not be disclosed here. But the following overview gives an indication of the size of such a measurement system.

On the static dimension (resources) Indra selected: Four intangibles elaborated by 25 variables. To measure these variables 105 indicators have been selected. These are expected to represent a high proportion of Indra's most important non-financial resources.

On the dynamic dimension (activities) Indra selected: 101 indicators to measure activities where the costs can be calculated, and 56 indicators of activities where the costs are not possible to calculate. These activities are either already being conducted or

are planned to be put into practice soon, and they are expected to increase Indra's non-financial resources.

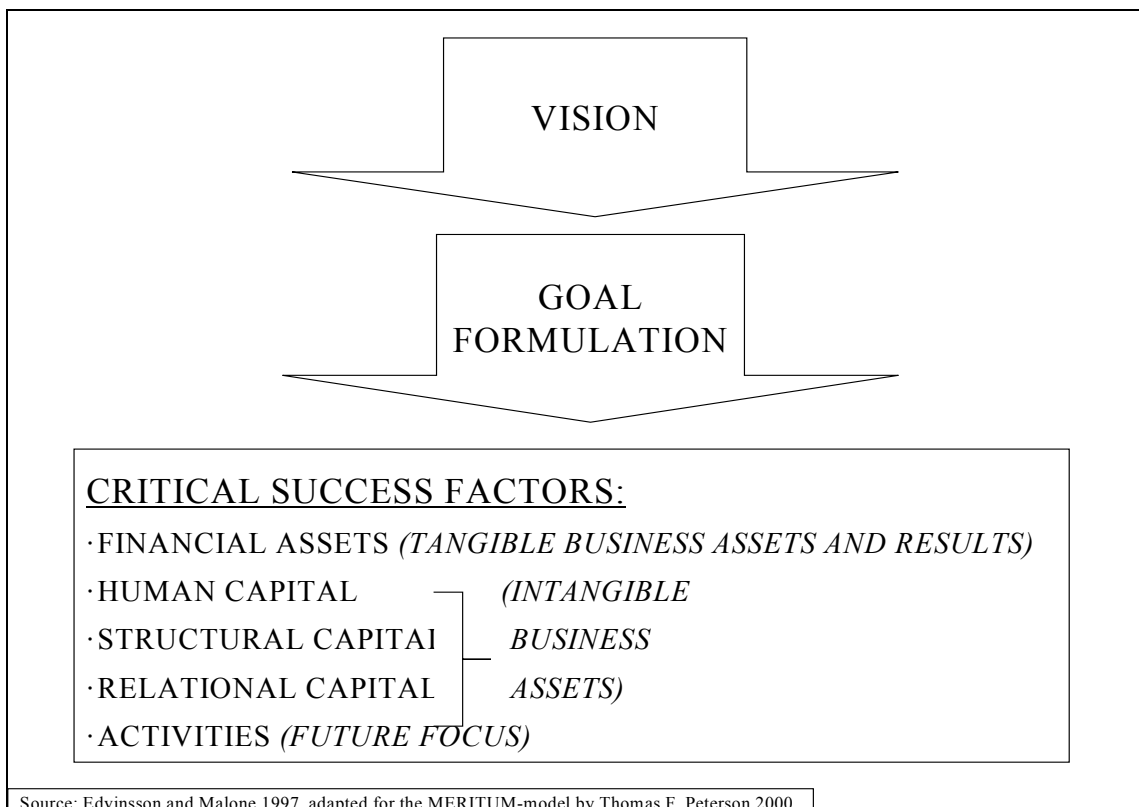
6 *Learning from this case study. Some recommendations*

The method looked a little different when the project was finished than when it started. Since many practical problems were solved during the process, the model that was used changed accordingly. The team encountered some obstacles who made it necessary to develop some research tools during the research. The methodology as it look at the end of the research, might be the most important result of the research project, since the measurement system has to be re-evaluated on a regular basis. The reason is that both Indra and its strategic objectives will change continuously. The value of it remains to be seen, as Indra uses it further and the MERITUM program compares it with other progresses.

The following is the approach developed and used by the Indra team. A coherent method crystallised itself after 4 months of trial and error. Rather than giving an account of all the discussions and the attempts that where carried out, a presentation of the main track discovered and followed will be presented here. Although this was developed as a firm specific method, it serves as an example and might provide some suggestions to the challenge of developing an IC-account. The model is being presented in a normative manner solemnly to illustrate the logic between the different stages in this approach. How the results coincides with the MERITUM approach remains to be seen, as these results are up for evaluation by the Spanish MERITUM group, Autumn 2000.

6.1 From vision to strategy

Most projects whether they are business oriented or not, usually starts with an idea or vision. The next step normally is to clarify these ideas by formulating goals. This makes it easier to communicate the ideas and to create agreement on what one wants to achieve. It also makes it easier to identify what is needed to achieve those goals. When such strategies are being developed, the focus often is on the financial assets whereas a variety of intangible resources are being ignored because they are difficult to identify. This has been discussed in the theoretical part. In all projects it is important to identify and manage as many success factors as possible to be manage effectively, but time and money must be taken into consideration. To illustrate this first part of a strategy development, the team developed the following model. Ideas were taken from Edvinsson and Malone's work to show where the intangible resources fits into a strategy (Edvinsson and Malone: 1997, page 17).



This part of the research is especially important to market the measurement of intangibles internally in the company. To get a representative measurement system, it is crucial that all the employees who provide information are aware of what they are part of. This was disclosed as one of the weaknesses of this investigation after it had been conducted. This is the reason for including this model.

6.2 Defining the goal

To reach a common understanding of an idea or a vision it is crucial to have people work effectively together, especially if they have to work together as a team. There are a number of ways to identify, develop or communicate such a goal. The model shown on page 36 is an example of one such method, which was found useful in our project.

It is however important to keep in mind that the goal does not have to be a strategic objective like it was in the case of Indra. Companies often decide to develop an IC account to manage their core competencies. Increase in image or higher stock market value are other possible reasons for developing an IC account. The goal identification model used in this study, could also be used as a tool to help formulating goals and strategies not related to the measurement of intangibles. The assumptions used in the model must merely be seen as suggestions, and their purpose are only to start a discussion. Such a list could never be complete, and for practical reasons it should not be too long.

6.3 Identification

When the decision has been made to develop an IC account and a goal has been formulated, an identification strategy must be developed.

- 1) First it must be decided how the initial identification and selection process should be carried out. Important considerations are what knowledge the people assigned to the task should have, and how they should make the selections. The selections can be done by looking at former research results, conducting surveys or by general situation analysis.

- 2) The results should be thoroughly evaluated to make them as accurate and credible as possible. This could be done by making evaluation meetings a regular part of the selection process. Another way is to present the findings and ask for corrections and suggestions through a questionnaire. In Indra, the team used evaluation meetings and a questionnaire for validation. The team also made the sheet shown at page 43 and in Appendix 1, for filling in suggestions which was used at evaluation meetings for the team. When developing these suggestions it would have been useful to have a stock selected from other case studies of previously used intangibles, variables, indicators, activities and methods for measuring. Such a stock is being developed by a Norwegian consulting company, called Human Kapital AS. (Human Kapital: 2000).

The MERITUM model suggests an evaluation questionnaire of the variables and indicators, and this was used in the Indra-Espacio pilot project (Hildrum: 1999, page 104). The team found it important to also evaluate the selected activities related to the variables and indicators. To make the measurement system as cost efficient and effective as possible, it also included evaluation of suggested methods for measurement, this would also capture data-gathering procedures already being

conducted in Indra. The team did not include any evaluation of suggested effects, as these were decided not to be identified in this research project. By using the MERITUM model and these additions, the team developed the questionnaire presented at page 46 and in Appendix 2.

- 3) The identification work in Indra was finished, after the suggestions in the evaluation sheet had been discussed at the validation meeting. The extent of such a measurement systems should be considered when planning a method for validation. To avoid this projects problem of having a quite uninformed group of people conducting the validation, one could keep a member of the top management informed throughout the process. This would make it easier to convey the importance of spending time on the questionnaire, before attending the validation meeting. The validation can be carried out in a variety of ways, but such an all encompassing tool should be evaluated by a wide scope of employees. This is especially important considering that the system tries to capture some of the aspects of the company that might not be captured by the regular procedures.

The working strategy should be planned before the identification begins, to make it more efficient, and it should be designed according to specific needs. The method chosen decides the quality, utility and feasibility of the results of the identification. This is especially important since the model makes predictions of the relationships between dynamic and static factors, as well as the relationship between these factors and the tangible results for the company. There will in most cases be made a compromise between realism and cost efficiency in the selection of indicators, and in many cases it will be difficult to identify indicators representing the most important resources. This is

the challenge of working with intangibles, and in most cases it is more relevant to talk about the “best” rather than the “right” indicator.

Finding a way to measure should be considered during the identifications, to make the measurement system cost efficient. Some aspects for data gathering are: Questionnaire, research in different statistics, and employee and customer satisfaction surveys.

It is important to notice that the indicators identified in this project, were not specified to the degree that they are ready for measurement. They will in most cases have to be modified and adapted to the most cost efficient and reasonable approach possible. Since there will be a wide range of departments and people involved in these measurement, the team did not consider this to be a weakness. There should be made room for adaptation, and a too rigid measurement system might easily become an obstacle in the collection of data.

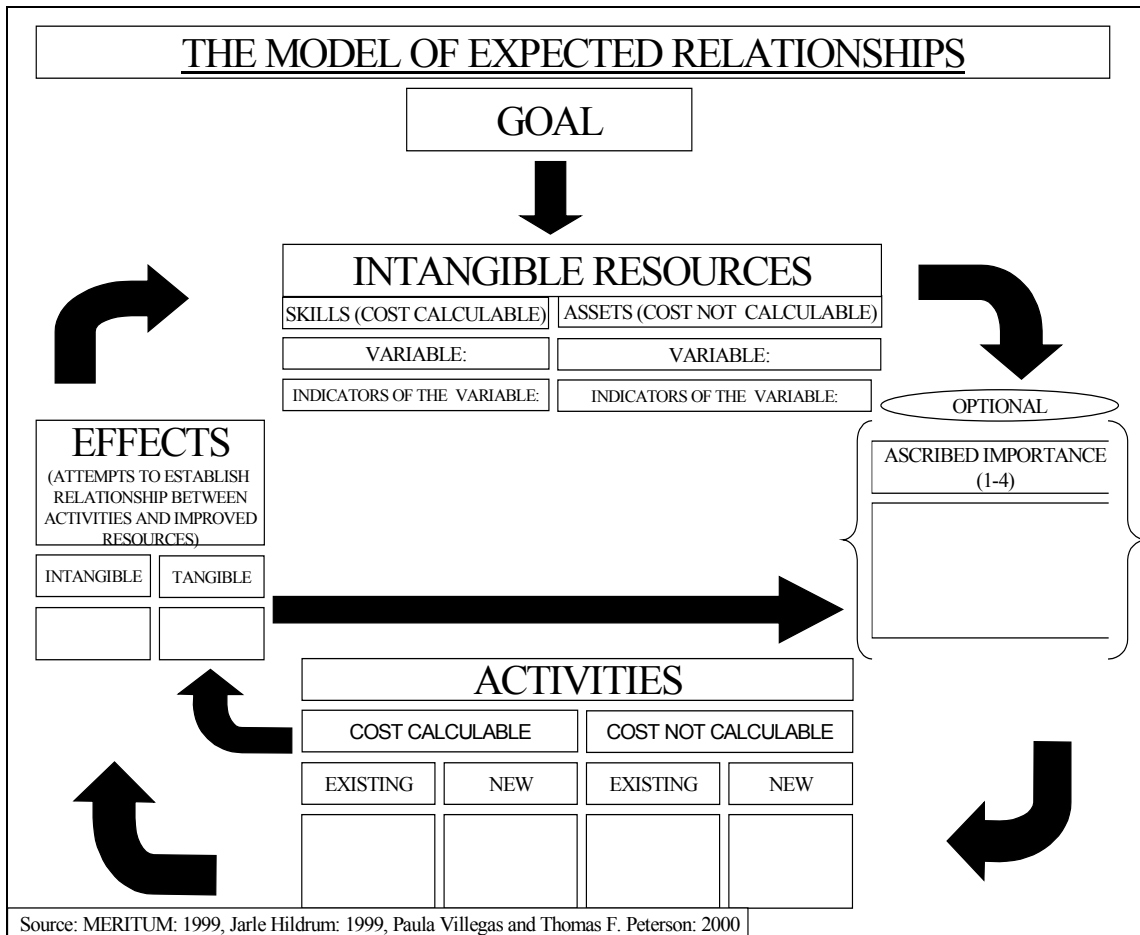
6.4 Predicting the relationship between activities and resources

After the goal has been formulated, and both tangible and intangible success factors have been identified, the dynamic aspect of the MERITUM model becomes important.

The MERITUM model’s focus on both the static and dynamic dimensions of intangibles, suggests that there is a relationship between activities and resources. It is important to try to establish this relationship between activities and resources, both when the effects are positive or negative. But it will in any case will only be predictions, especially in the initial stages when no measurement results are available to identify correlation. This was the case for the project in Indra. All identifications of activities must be seen as predictions of plausible correlation. The accuracy of these predictions

will probably improve, when the system is being used and measurement results are available to make corrections. The initial relationship suggested can be seen as an hypothesis of the correlation between resources and activities. The model used in this project identified activities for each variable, but it is also possible to categorise differently. The activities can be identified through looking at each indicator directly, or by only looking at the general aspects defined by each of the intangibles. In Indra it was found that looking at activities seen in relation to variables would be most effective, and since they were identified at the same questionnaire as the indicators, they would make them quite accurate. The model on page 56, illustrates the expected relationships between the static and dynamic factors. This way one can say that there was made something similar to an hypothesis for each variable in the identifications made in Indra.

When activities are being identified it can be useful to separate between ongoing and newly identified activities. This can be another aspect of activities, in addition to the separation between the activities where costs are calculable and those where costs are non-calculable, suggested in the MERITUM model. The following illustration of the MERITUM model which was developed last year for Indra, includes this addition.



6.5 Managing the results

After Indra has performed the first measurement of the identified indicators, the results must be organised to establish an account of the resources. They can be categorised in a variety of ways as described in the theoretical part. But we suggest that they are categorised according to the MERITUM approach, since this model has formed the basis of all the rest of the work. The resources will then be identified as Human Capital, Structural Capital or Relational Capital. Some of the major theoretical differences in the literature on intellectual capital is about whether the results should be numerated and balanced, or not. This is also a question of whether the benefit is worth the cost of making such calculations. It is however important to bear in mind that publishing such calculations can prove to give negative effects. They might be considered incorrect and

biased. It is also important to keep the focus on the complexity surrounding the indicators, and that making them numeric might distort some of these considerations. There can be dynamic relations between indicators of different categorisations, and some indicators can be considered HC in one company and SC in another. This illustrates some of the challenges met by the institutions attempting to benchmark a measurement system for intellectual capital.

There should be developed a strategy for how often the indicators should be measured, in order to trace changes. When developing this strategy it is important to decide the procedures for making changes to the system so that it improves, but also taking care that the validity of these changes are considered. When improving the measurement system some of the challenges could be to make it more efficient to carry out and the results easier to understand.

The results should be managed as a part of a total management strategy, since there are no clear divisions between intangible and tangible resources. The IC account can be used in a variety of ways, but as experience have shown it is most useful as a sensitising instrument to identify resources and activities that are easily ignored.

There can be developed different systems for categorisation, depending on whether the results are for internal or external usage. Some indicators can be considered secret whereas others are publishable. In that case it can be useful to have separate IC accounts. This should however be commented in the published version to avoid speculations of biased selection of results.

For Indra the greatest challenge now is for the HR department to present a successful IC account. This means accurate measurements and convincingly organised results. The project has to be sold internally to the rest of the company if an IC account are to be developed for the whole company. The development of a solid IC account is costly and like any other business activity, it has to prove that it adds value to the company. This is one of the greatest challenges for the expansion of the management system as long as no practice have been benchmarked or made compulsory by any authorities.

Part 3: Conclusion

The micro- and macro-economic contexts of the research project, and the investigations into knowledge and intangibles as key factors in value creation, have been described to illustrate how the identification and measurement of intangibles are instruments to open the “black box” of value creation in companies. This is in accordance with the focus of the ESST-approach.

It will be difficult to establish solid scientific evidence of the knowledge base of companies by measuring intangibles. Management decisions in competitive companies, must however often be made on the basis of the information available. Naturally the demands for scientific validity will be very different between a company and an academic institution. The practical problems for Indra in terms of scientific sustainability, is to identify increased turnover as a result of the management of intangibles.

An argument for still identifying and measuring intangibles, is that the method serves as

a sensitising instrument to find a company's resources and activities, which could otherwise easily have been overlooked.

Former research projects on intangibles have concluded that it is difficult to establish a common standard on what intangibles a company should measure. This assumption is strengthened by this case study. A firm specific approach will enable a company to formulate a measurement system closer to that company's reality. Together with an extensive selection and evaluation process, this approach can strengthen the validity and thereby the quality of the measurement system.

Appendix 1

Level	Suggested indicators
<u>Intangible</u> (resource):	
<u>Variable</u> (resource):	
<u>Activities:</u> (cost calculable)	
<u>Activities:</u> (cost not calculable)	
<u>Effects:</u> (tangible)	
<u>Effects:</u> (intangible)	
Method for measuring	

This sheet was made to fill in suggestions for indicators, and it is based on the MERITUM model. It functioned as a good tool to prepare the team members for

evaluation meetings. The final results of these evaluations were filled into the questionnaire presented in Appendix 2.

Appendix 2

CORE INTANGIBLE:	
VARIABLE:	
INDICATOR NR.	

DESCRIPTION:	
Definition	
Purpose	
Key	

ALTERNATIVE DESCRIPTION:	
Definition	
Purpose	
Key	

EVALUATION: 1=worst, 4=best	1	2	3	4
Degree of interest the indicator has				
Results worth the cost of measuring				
Explanation strength of the indicator on the variable				
Publishable	Yes <input type="checkbox"/>		No <input type="checkbox"/>	

HOW TO MEASURE THESE INDICATORS

OTHER SUGGESTIONS

ACTIVITIES INCREASING INTANGIBLE RESOURCES:	
CORE INTANGIBLE:	
VARIABLE:	
COSTS CALCULABLE	COSTS NOT CALCULABLE
OTHER SUGGESTIONS	OTHER SUGGESTIONS

This evaluation sheet was developed to accommodate the identifications made by the team in Indra. It was developed on the basis of the evaluation sheet used by Jarle Hildrum in Indra Espacio in 1999. This evaluation sheet was made by the Spanish MERITUM group. (Hildrum: 1999).

There were made 25 of these sheets, which presents the suggestion of 105 indicators for intangible resources and 157 indicators for related activities. This is not included because this would add more than 80 pages to this thesis.

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