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**ALIGNING NETWORKS:  
IMPLEMENTING AN ENTERPRISE-WIDE  
INFORMATION SYSTEM INTO AN EVOLVING  
ORGANIZATION**

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## ABSTRACT

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Implementing an enterprise-wide information system into a large and diverse organization presents a variety of challenges. In addition to the problems of any information system (IS) implementation, such as the management of resources and timetables, ensuring the overall success of an enterprise-wide implementation poses some additional challenges. One such challenge is the variety of people and ways of working that exist in large enterprises, which can mean that an IS implementation might be very successful in one part of an enterprise and still fail in another.

This thesis looks at enterprise-wide IS implementations through a detailed case study of an implementation process in a rapidly expanding corporation. First hand experience of the implementation facilitates a detailed description of the implementation process, and provides an insight into how employees on various levels of the organization see the key events and phases of the implementation.

The case study showed that the diversity and the different organizational levels that exist within a large enterprise should be taken into consideration when implementing an enterprise-wide information system. A conceptual framework is introduced and used to discuss how this diversity can be harnessed to support the implementation process, instead of working against it.

Keywords: enterprise-wide, information system, implementation, actor-network theory, alignment, organizational change

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# 1 INTRODUCTION

“Only what moves is visible” (Czarniawska and Sevón 1996, 1). In the wilderness this lethal truth is vital for the multitude of tiny creatures trying to hide from predators looking for a tasty snack. In the field of IT, however, it is often the companies that don’t move that get eaten, not the other way around. IT companies today operate in an unpredictable environment, where the ability to adapt and change rapidly is vital. Companies must constantly strive to meet the changing desires of their customers and the IT field. Companies that sit still can quickly become unattractive to investors or go bankrupt, thus becoming just another tasty snack for predators looking for a snack.

As individual IT companies have been melded together through a variety of acquisitions or takeovers, the size and internal diversity of the companies have grown, and as a result, large, multi-national enterprises have emerged. In enterprises operating in a variety of different fields, in several countries across the globe, controlling the big picture becomes problematic. Larger enterprises can be seen as providing some stability against the rapid changes taking place in world. The enterprises, however, are not invulnerable to the effects of rapid changes around them. In some cases, if an enterprise fails to foresee and adapt to changes, it can have devastating results.

To meet this need to see the big picture, a type of information system (IS), called ERP, or Enterprise Resource Planning systems has evolved. ERPs aim to integrate all facets of the business, by making it possible to look at everything from high-level operations such as financial administration and human resources, to the day to day work of every employee within one, integrated solution. Embedded in ERPs is the provider’s vision of best business practices. These in-built business practices are rarely identical to those that exist in the businesses implement ERPs. As a result, either the ERP has to be customized to suit the business process of the company, or the company modifies its business processes to conform those embedded in the ERP. A common example of this is business process reengineering (BPR).

Implementing information systems is never an easy or straightforward process. A number of empirical surveys conducted have shown that half to two thirds of IS projects can be classified as failures (e.g. Lyytinen and Hirscheim 1987). When a large, complex IS such as an ERP is implemented into a rapidly changing organization, ensuring the success of the implementation becomes a formidable challenge. The integration of many different aspects of the business means that to succeed, all the individual bits and pieces must fall into place. In addition, as the organization into which the IS is being implemented constantly undergoes changes, the implementation process can be compared to shooting at a moving target, or in the worst case shooting at a moving target from a moving platform.

This study is built around the implementation process of the project management and reporting component of an ERP system into a single business area of a rapidly growing Finnish IT company. The reasons why I chose to only focus on a single element of the ERP system and a single business area of the company are two-fold. Firstly, as a researcher, it was a practical matter. Since I conducted the study alone and during a limited time period, following just one business area in the rapidly changing organization was very demanding. Secondly, I believe that the in-depth analysis of the implementation of a single component of the ERP system provides a detailed and vivid description of the true issues related to the implementation process, while still illustrating the problems arising from the interconnected nature of ERP components.

The whole study was intensely participative, and I was part of the daily operations of the company for the whole duration of the implementation process. I used action research as a framework for coordinating my participation. True to the nature of action research, I originally intended to focus on how the implementation of the ERP based project reporting system would affect the existing project processes of a business, but this focus changed as the implementation process continued. As the implementation went on, developments began taking place in the implementation process and my focus slowly shifted into looking at the implementation process itself. Being part of the implementing organization gave me a valuable insight into the various issues implementing such a large system into an evolving enterprise entails.



This study is divided into seven substantive chapters. First, in chapter 2, I look at the issues related to implementing ERPs and enterprise-wide information systems in general and introduce actor-network theory (ANT) and present how it can be used to interpret information systems implementations. Next, in chapter 3, I discuss participatory research, and present how I gathered and analysed data for the study. In chapter 4, I present Done, the corporation I studied, and look at the differences that exist within Done Information, a business area of Done I focus on. In addition, I give an overview of IFS, the ERP system chosen by Done. Chapter 5 is a description of the implementation process, presented as an unfolding tale that follows the implementation from the moment it began, to the moment my participation in the process ended. In chapter 6, I provide an analysis of the key events and actors of the implementation. In chapter 7, I describe how Done and Done Information changed during the implementation process and as a result of it. In chapter 8, discussion and conclusion, I present a tentative framework for explaining enterprise-wide IS implementations, based on my experience of the IFS implementation in Done, and on the central concepts of actor-network theory. In addition, I discuss my own role in the implementation and summarize what should be done to ensure successful enterprise-wide IS implementations.

## **2 IMPLEMENTING ENTERPRISE-WIDE INFORMATION SYSTEMS**

To look at what enterprise-wide information systems really are, we must first define what the enterprise refers to. The Oxford English dictionary defines an enterprise as "A commercial or industrial undertaking, *esp.* one involving risk; a firm, company, or business". From this definition and the way it is commonly used, I derive that the term enterprise-wide refers to something spanning the whole firm, company or business, with the emphasis on large companies or corporations. Despite criticism by Markus et al. (2000) concerning the use of the term 'enterprise-wide implementation' to describe information system implementation opposed to using the term multisite implementation, I choose the former, because it reflects the interconnections that exist between the different parts of the implementation, as well as between the different parts of the organization.

In this chapter I first introduce some "harsh facts" about IS implementations in general, I then look at ERP (enterprise resource planning), a typical enterprise-wide IS. To conclude, I look at what specific issues and challenges are related to enterprise-wide IS implementations.

### **2.1 Issues in implementing information systems**

#### *2.1.1 Estimating the success or failure of an IS implementation*

Implementing an information system (IS) of any proportion into an organization is far from an easy and straightforward process. Empirical surveys have shown that between half to two-thirds of IS projects fail (for example Lyytinen and Hirscheim 1987). These numbers seem very high when looked at without deeper analysis. It would mean that only as little as 25 % of all IS projects might be successful. When the high number of professionals needed to implement an IS and the resulting cost is considered, one could make the quick deduction that the risks associated to implementing an IS are too high. It is safer to not implement anything at all!

Luckily, the empirical surveys are much more eager to judge an IS to be a failure than companies in real life do. While surveys such as that conducted by Lyytinen and Hirscheim (1987) look at various areas in which the IS can be considered a failure (FIGURE 1), a company might consider an IS implementation a success, as I will later show, even if it is a partial failure.

1. **Correspondence failure** – where an IS does not match the specific planned objectives.
2. **Process failure** – where the IS implementation process is not completed within the planned time or with the expected expenses.
3. **Interaction failure** – where the IS is not used possibly due to negative user attitudes.
4. **Expectation failure** – where the IS does not match the expectations of users.

**FIGURE 1 Four types of IS failures (Lyytinen and Hirscheim 1987)**

Estimating the success of an IS project on a two-step scale of failure and success is limited and does not really help an organization to learn from past experiences. Analysing an entire project within the four types of failures described above also has its limitations. If an entire IS project is classified as a failure using this classification, it fails to take into consideration the diversity of an organization. In a large enterprise, the number and type of departments is considerable. When comparing the daily work carried out in departments such as accounting, marketing, R&D, manufacturing and information management, and how the people working in them differ in the education, opinions and needs they have, to name but a few differences, it is reasonable to argue that evaluating a large organization, such as an enterprise, as a whole, is a vast generalization to say the least. Thus, if an IS is implemented in each of these departments, then it is unlikely that the successes and failures encountered in departments around the organization will be identical.

### *2.1.2 Applying the same technology differently*

The field research conducted by Wanda Orlikowski (1993; 2000) provides good examples of how the implementation of the same IS into a diverse organization can

result in outstanding success in one part of an enterprise, while in another part of the same organization it is almost a complete failure. In her research, Orlikowski studied the implementation and resulting use of a Lotus Notes®. Notes is a groupware application development environment from the Lotus Corporation supporting communication, coordination, and collaboration within groups or organizations (Orlikowski 1993). She studied how the same Notes technology was implemented into three different companies, focusing on the differences in how each company utilized Notes. Orlikowski (2000) used the term “technology-in-practice” to describe the way the technology is used in real life, or “sets of rules and resources that are (re)constituted in people’s recurrent engagement with the technologies at hand.” (Orlikowski 2000, 407).

The examples I feel best illustrate the question of diversity within an organization took place in Alpha (pseudonym), a large, multi-national consulting firm with hundreds of offices around the world, employing thousands of consultants. In the study, Orlikowski identifies three technologies-in-practice in Alpha. Orlikowski (2000, 415-417) dubbed the first example "limited-use technology in practice", in which consultants made only very limited use of the possibilities and features offered by Notes. Orlikowski found that one reason for the limited use was the billing practices which existed at Alpha. For all the consultants except partners, an expectation existed that most, if not all hours should be invoiceable, that is, billed to clients and thus revenue-producing. And since many consultants did not see using Notes as an activity that could be billed, they did not use time to learn to use it, because this would have required them to incur nonchargeable hours or to give up some of their personal time.

The second example, dubbed "collective problem-solving technology-in-practice", by Orlikowski (2000, 415), is in sharp contrast to the first case. It took place in Alpha's technology group, which consisted of programmers and computer support staff who provided support to the company's consultants. The people working in the technology group were not regarded as consultants, and as a result were not required to bill their time to clients. As a result, this group made extensive use of the Notes technology in their work. Not being subject to the pressure of billable hours faced by the consultants,

the members of the group used many of the advanced features of Notes to facilitate their collective technical work, and other forms of collaboration.

In the third example, “individual productivity technology-in-practice” (Orlikowski 2000, 417-418), consultants used Notes to enhance their individual productivity by making use of its features in their daily work. This included for example using electronic documents instead of paper ones and sending email instead of voice mail. While these features benefited a larger group of people, the consultants saw that the main gains from Notes were really related to improving their personal productivity.

These examples of technologies-in-practice found by Orlikowski, especially the two described first, display how the implementing the same infrastructure for software applications can have very different results in different parts of an organization. However, while these examples address how the same infrastructure can at the same time be a success and a failure in different parts of an organization, it does not provide insight into how to estimate successes and failures of information systems that are so large that they are in reality a collection of smaller ISs which form a larger entity by working together. One widespread type of this kind of systems is ERPs.

## **2.2 ERPs and Enterprise-wide IS implementations**

### *2.2.1 E for enterprise*

Enterprise resource planning systems (ERP) are business management systems that integrate all facets of the business, including planning, manufacturing, sales, and finance so that they can become more closely coordinated by sharing information. ERP systems model and automate many basic processes, such as filling an order or scheduling a shipment, with the aim of integrating information across the company and eliminating complex, expensive links between computer systems in different areas of the business (Laudon and Laudon 2000, 22-23).

This way “ERP systems are instruments for improving business processes such as manufacturing, purchasing, or distribution” (Scheer and Haberman 2000, 59) by allowing “organizations to price their products, produce financial statements and manage the resources of people, materials and money” (Markus *et al.* 2000, 42).

ERP systems are not really a new thing, but more the current stage of a continuing evolution process. Kumar and Van Hillegersberg (2000) describe the evolution of ERP as an inside-out process of evolution which started from standard inventory control (IC) packages, then expanded to material requirements planning (MRP), then to manufacturing resource planning (MRP II), and then further expanding to include other enterprise processes such as sales and order management, marketing, purchasing, warehouse management, financial and managerial accounting (finance), and human resource management, taking on the form of the current ERPs. They Hillegersberg also describe the next step as “extended-ERP systems” (Kumar and Van Hillegersberg 2000, 24) which includes interorganizational processes such as customer and supplier relation management. They also predict that ERP is becoming a platform for a multitude of applications from executive information systems to data mining and supply chain management.

Before I look at the ERP market and the issues related to the implementation of ERPs and other enterprise-wide information systems, I would like to discuss the meaning of the word enterprise in ERP. Markus et al. (2000, 43) argue that the amount of technical and political autonomy of site is so great that the ERP implementation cannot be considered a single large implementation, but really a multisite implementation, where the implementation at each site is differs from the others in a number of ways. I choose to use the term enterprise-wide in this thesis, because I see that in the case study the implementation was not carried independently at each site, but instead all the different units and sites were part of the same implementation, and thus they went through thick and thin together, not as separate sites. However, comparing the differences of these two definitions will not yield much, since it is very possible that I myself and Markus et al. interpret the term ‘large organization’ differently.

### 2.2.2 The European ERP market

Van Everdingen et al. (2000) carried out a large-scale European multicountry/multi-industry survey in mid-1998. They found that the ERP market is likely to grow rapidly, but mainly in the market of midsize companies employing 50 to 1000 employees (see FIGURE 2 for projections). The reason for this seemed to be that the major ERP vendors (SAP, Oracle, Peoplesoft, JD Edwards, and Baan), until recently, had been mainly targeting large companies with more than 1,000 employees. They found that the large company market has become saturated, since many of those have already implemented an ERP solution. This forced the ERP vendors to turn to smaller companies. This survey is relevant since the company used in the study belongs to this European midsize-company market. Note especially the ERP penetration in Finland.

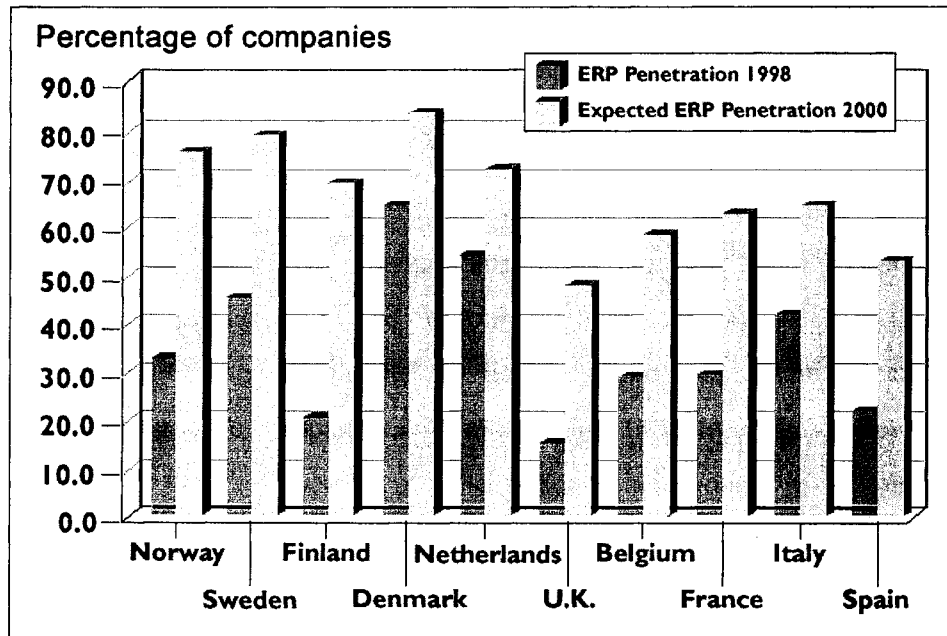


FIGURE 2 Current and projected percentages of companies in European countries using ERP solutions (Van Everdingen *et al.* 2000, 28)

### 2.2.3 Changing business processes

One of the distinguishing features of ERP systems is that they are usually packaged software solutions that are not created from scratch. This makes sense, since many of the basic business processes are similar in many companies. Kumar and Van Hillegersberg (2000) see that ERP systems are based on certain reference models which reflect the embedded business models. These, in turn, include underlying data and process models as well as organizational structures. The problem with these universal best business practices is that they often do not fit the business they should be making more efficient. Soh et al. (2000) call the gaps *misfits* that exist between the functionality offered by the ERP solution and that required by the organization. When these misfits are discovered, the management of the organization is faced with a choice: either they adjust the way the organization works to fit the business process models embedded into the system, or alternatively customize the ERP to suit the way the organization and its business operates. Soh et al. (2000) found three broad types of misfits: data, process and output and a spectrum of strategies to solve these misfits (pictured in FIGURE 3).

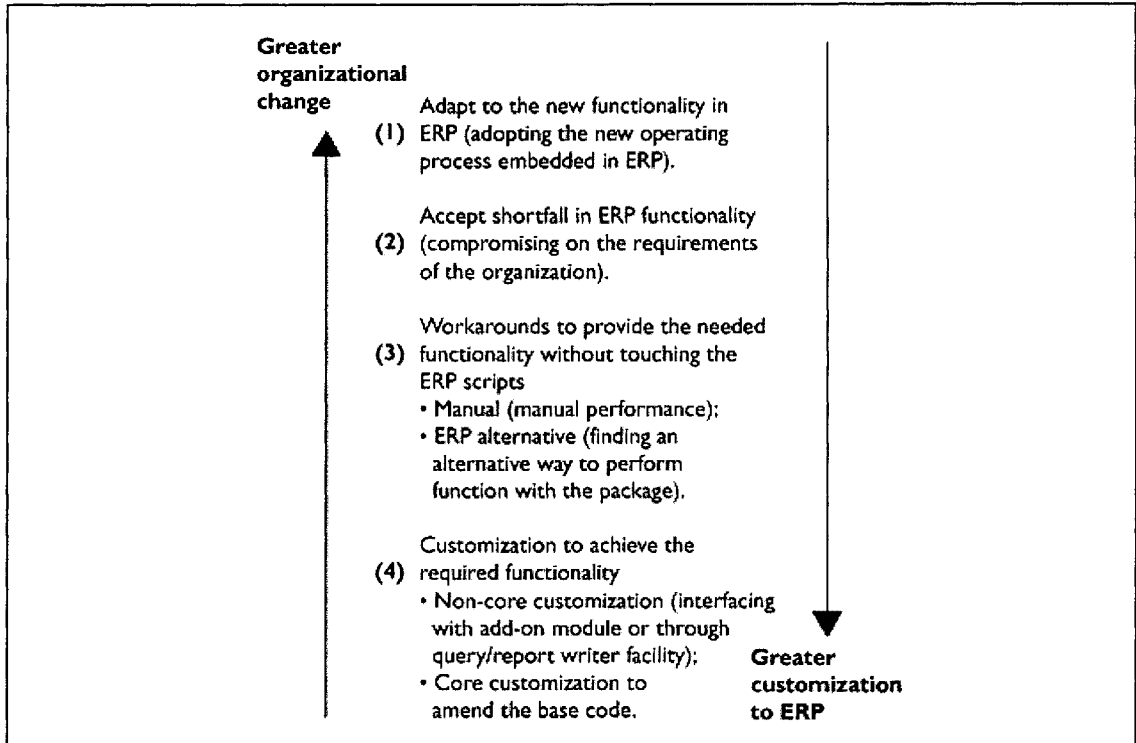


FIGURE 3 Spectrum of misfit resolution strategies (Source: Soh *et al.* 2000, 50)



The four general levels of misfit resolution strategies range from adapting the organization to way the ERP works to customising the ERP to achieve the functionality required by the organization.

To further complicate issues, due to the individual character of each organization, ERP implementations can involve, in addition to the normal difficulties relating to an IS implementation, many unique technical and managerial challenges (see Markus *et al.* 2000; Lozinsky 1988). Even though the problem of misfits is possible with any packaged software, it is made worse in ERP implementations by the complex cross-module integrations that exist between the business processes the ERP solutions attempt to combine (Soh *et al.* 2000). This integration and resulting dependencies between the modules is one of the key issues in ERP implementations (e.g. Hanseth and Braa 1998), and as I will later show in the case study, these dependencies mean that problems encountered with one module quickly result in problems in other modules also.

Implementing an enterprise-wide IS is in many ways more complicated than the implementation of an IS into just one part of the enterprise. The existing differences between the different parts of the organization mean that success in one part of the enterprise does not guarantee success in all other parts. With ERPs this problem is accentuated, because of the business models embedded into the system. Organizations implementing such systems must decide whether to customize the IS to suit the organization, or adapt to the way the ERP works.

## **2.3 Actor-network theory and enterprise-wide implementations**

### *2.3.1 Networks of humans and non-humans*

To enable me to analyse the enterprise-wide implementation process taking place in Done, I included Actor-Network Theory (ANT) as central part of my thesis. ANT looks at the world in terms of heterogeneous networks of actors, both human and non-human. This symmetrical treatment of both human and non-human actors allowed me to look at the implementation process as the meshing of humans and technology. In addition, the concepts related to it are flexible enough to facilitate both the analysis of individual

events as well as explaining the implementation process as a whole. Initially ANT was not a part of my research approach, but as I learnt more about it and at the same time followed the implementation progress, I found myself reflecting more and more in terms of ANT. Even though ANT has more traditions in explaining phenomena not related to IS (for example Callon 1986; Latour 1991; Law 1986), it has also been used in several IS studies, among the most relevant of which include those conducted by Monteiro and Hanseth (1995), Hanseth and Braa (1998), and Monteiro (2000), which use ANT as a framework for analysing the information infrastructures (INIs) of large organizations. These INIs are truly heterogeneous networks which act as the underlying structures for all information systems deployed in the organization, and thus share many properties with ERP. In general, ANT has been received well by the IS community (Karsten 2000, 39), even though Jones (1998, 294), for example, criticized ANT for attributing human capabilities to technology.

Another possible research approach I considered was structuration theory, but I chose ANT because firstly, I felt it offered a better framework for looking at the heterogeneous nature of an IS implementation, secondly because it had successfully been applied to similar research settings in the past, and thirdly, because I personally found the underlying theory to be interesting. Comparisons of and discussion about ANT and other theories suitable for IS research can be found for example in studies by Jones (1998) and Tatnall and Gilding (1999).

The reasoning offered by ANT for the symmetrical treatment of heterogeneous elements, is that in practice, there are virtually no conditions under which humans exist, except within networks of other humans and non-humans, with the debatable possibility of lovemaking (see Law 1992; Grint *et al.* 1996). Therefore both human and non-human actors should be evaluated as part of the same heterogeneous network instead of as separate networks. In the following I will look at the concepts of actors, networks, black boxes, translation, alignment, inscription and intermediaries, all of which are central to ANT.

Due to the freedom of interpretation ANT offers, it is far from exact and has continued to evolve since its inception by Callon and Latour in 1981. This evolution has continued to such an extent that even Latour, one of the founding fathers of ANT has criticized the “ridiculous poverty of the ANT vocabulary” (Latour 1999, 20). Even the definition of basic term “actor” is not clear-cut. The difference between an actor and a network seems simple at first, as a network made up of individual actors. However, when looked at in more detail, an actor itself can be considered a network or vice-versa.

Callon (1991, 141) illuminates this problem with the example of a nuclear power station. Is the power plant an actor or a network? The answer, ambiguously, is both. The power station is in itself a “monstrous group which regulates interaction between graphite rods, turbines, atoms, operators, control boards, flashing lights, concrete slabs and engineers”. This interplay of the different actors within it enables it to transform nuclear fission into electricity. This certainly qualifies it as a network. On the other hand if a serious meltdown takes place in the nuclear power plant and the resulting radioactive clouds spread over Lapland and contaminate the reindeer there, which then cause cancer in people that eat their contaminated meat, then the nuclear power can be considered more an actor in a network than a network in itself. Thus, a network can at the same time be a considered as an actor-network or as a single actor in another network. In theory, as each actor is a network, this dissecting of actors could continue to the sub-atomic level or as Law (1992, 384) puts it:

“thinking, acting, writing, loving, earning -- all the attributes that we normally ascribe to human beings, are generated in networks that pass through and ramify both within and beyond the body. Hence the term, actor-network -- an actor is also, always, a network.”

### 2.3.2 *Black boxes*

In practice opening up each and every actor in an actor-network and describing the network it contains, is not feasible or reasonable. One of the conceptual aids that has emerged to help maintain some kind of order is the concept of black boxes (Latour 1987; McMaster *et al.* 1997). A black box hides the internal complexity of a network and its behaviour can be predicted independently of its context by only looking at its inputs and outputs (Callon 1991).

The microcomputer industry, for example, may be treated as a black box for some purposes (Callon 1991, 153). It produces products with well-defined characteristics using specified inputs. However, since the actor-network making up the computer industry is far from simple, for other purposes it might be beneficial to consider it an actor-network. The question therefore is not of principle but of convenience, which black-boxes are opened and which are not (Hanseth and Monteiro 1997).

### *2.3.3 Translation and alignment*

Since the concept of networks of actors is central to ANT, I will look in more detail at the way ANT explains how these networks are formed and how they are held together. According to Monteiro and Hanseth (1995), ANT is based on the theory that society is made up of actors who pursue different interests. The question is how and why these actors then become part of the same network?

ANT uses the concepts of translation and alignment for explaining how and why actors become part of actor-networks and why the networks stay together and don't break up into smaller pieces, i.e. separate actors. To illustrate these concepts, let us conduct a mind game. Imagine we pick ten teenagers randomly from ten towns scattered around Finland. Our collection of teens would probably be quite an assortment of individuals. The group would consist of boys and girls, short and tall, small and large, each with different personal interests and hobbies. Some might be very keen on sports, others might enjoy computer games, and some might like reading. Say we then wanted to establish a baseball team out of this mixed group of teenagers, how could we do it? If we just gave each of the teens a bat and a glove and told them to start practising, nothing would probably happen.

However, if instead we explained to them why they should start playing baseball and why they should join the team, the results might be better. For even better results, considering the interests of each teenager and then trying to appeal to those interests might help. Adapting admittedly a common stereotype, think that one of the boys in the group of teens would like to become stronger. Explaining how playing baseball would

strengthen many of his muscles and showing him pictures of fit professional baseball players would probably have a good chance of getting him to join the team. Or if a lonely girl would like to have more friends, we could tell her about all the new people she would meet and how many new friends she would make.

Looking at the previous example of the baseball team in terms of ANT, we have an actor-network (baseball team) that we want the actors (teenagers) to join. Applying the translation process described by Callon (1986), to the example above, getting the teens to join the baseball team consists of four phases:

1. Problematization, or how to become indispensable (Callon 1986, 203)

The aim of this phase is to identify actors that can be considered key allies (the teens) in achieving an objective (forming a baseball team) and to show that the “program of action” (Latour 1991, 107) is an obligatory passage point (OPP) (Callon 1986, 205), meaning that becoming part of the team is a must for them to be able to achieve their own personal goals; getting stronger, making new friends etc.

2. Interessement

Callon (1986, p. 207-208) defines interessement as ”a group of actions by which an entity attempts to impose and stabilize the identity of the other actors it defines through problematization”. This is accomplished using devices of interessement to prevent actors becoming interested in other competing “anti-programs” (Latour 1991). In the case of the baseball team, other sport teams and TV programmes can be considered anti-programs.

3. Enrolment

Enrolment is the result of a successful interessement. During this phase the actors accept the roles defined for them by the party doing the interessement. In the example of a baseball team, enrolment takes place when the teens join the team and take up positions assigned to them: a batter, a pitcher etc.

and

#### 4. Mobilization

The mobilization phase is intersement carried out on a larger scale. Where the earlier steps can be used to persuade a limited number of individuals, the mobilization involves larger communities. In the baseball example above, one form of mobilization could be creating a baseball league by getting an other team to join.

Thus, in simple terms, actors who are part of a network, enrol other actors to the network through the phases of translation described above. The actors being enrolled are considered passive, while the actors in the enrolling network actively carry out translations.

Callon (1986; 1991), however, also describes a different view of translation. “Translate is to express in one's own language what others say or want” (Callon 1986, 223). “A translates B’. To say this is to say that A defines B” (Callon 1991, 143). I see that this interpretation of translation differs from the former by defining translation as an activity carried out by the individual actor instead of the network trying to enrol the actor. In other words, the translator now interprets other actors using its own concepts and terms, and does not accept the translation presented by the enrolling actor. According to this interpretation, if A and B are linked in a network and both perform perfect translations of each other, then they will speak exactly the same way about themselves and about one another.

In this thesis I will use both of these interpretations, because if we consider the example of the baseball team, the teens are likely to think about what I am telling them and not just accept everything I tell them as is. This why I see that in a case where humans enrol humans into networks, both forms of translation will take place.

#### 2.3.4 *Inscription and intermediaries*

In a later article, Callon (1991, 143) further defines this concept of translation by explaining that the translation process is in fact triangular: it involves a translator, something being translated, and a medium into which that translation is inscribed. The medium can be practically anything: written reports, disciplined human bodies, machines, technical instruments, computers, computer software, books, money, contracts – the list is endless. This implies that a translation always has to be inscribed into something. Callon (1991, 134) uses the term *intermediary* for all the different mediums that pass between the different actors and thus define the relationship between actors. The intermediaries act as both a channel that the translations flow through, and at the same time hold the translations in place through inscriptions. It can be argued that Callon's concept of intermediary is vague at best. Since an intermediary can just as well be a written report as the know-how of a person, identifying the actors and intermediaries in a network becomes a question of interpretation.

Through translations, actors thus become part of an actor-network as their interests become aligned with those present in the network. As the number of actors and translations increase within an actor-network, it can become what Callon (1991) calls irreversible: it cannot be broken back into separate actors. He also proposes that the more numerous and heterogeneous of the interrelationships within a network the greater the degree of network co-ordination and thus, the greater the probability of the network successfully resisting alternative translations that could break up the network. A high level of co-ordination in an actor-network can materialize into norms which create and control deviance (*ibid.*, p. 151). If an actor-network, through long periods of investment, intense effort and co-ordination becomes a strongly convergent network with translations that are so strong that they cannot be irreversibilised and behaviour that's completely predictable, it can then be perceived as a black box described earlier in this chapter.

### *2.3.5 Actor-network theory in explaining enterprise-wide IS implementations*

Actor-network theory has traditionally been used for explaining and interpreting phenomena not relating to IS implementations. Despite this, its symmetrical treatment of both human and non-human provides a flexible framework that gives a different perspective into IS implementations. As large enterprises are made up of diverse collections of people and technology, ANT provides a good framework for analysing processes that touch the whole enterprise, including IS implementations. Since ANT has already been successfully used in several studies relating to information systems, also including large, complex systems spanning entire organizations (for example Monteiro and Hanseth 1995; Hanseth and Braa 1998; Monteiro 2000), it has established itself as a framework for analysing enterprise-wide IS implementations such as ERP.

### *2.3.6 Research focus and research approach*

To summarize, the main research focus of this case study is on finding and analysing what special issues are related to the enterprise-wide IS implementation studied and how the implementation of such a system affects the case organization. This is done firstly by looking at the organization as it existed prior to the implementation of ERP, secondly, by analysing the implementation process itself, and thirdly, by looking at the organization as it existed after the ERP implementation. Actor-network theory is used to find and analyse the main events and phases of the implementation and the human and non-human actors that play a part in them. Based on this analysis, the themes and issues that arise can be used to interpret other enterprise-wide IS implementations as well, by constructing a more general theoretical framework.



### **3 RESEARCH METHODS**

To enable me to follow the implementation process in all of its intricate glory, I became part of the implementation myself. Through action research, a form of participatory research, I could both follow and analyse the implementation, as well be pro-active, taking actions to influence the direction the implementation process was going in. The chapter is made up of two parts. In the first part, I look at participatory research and the challenges it poses. In the second part, I will review the methods and tools I used for data gathering and analysis.

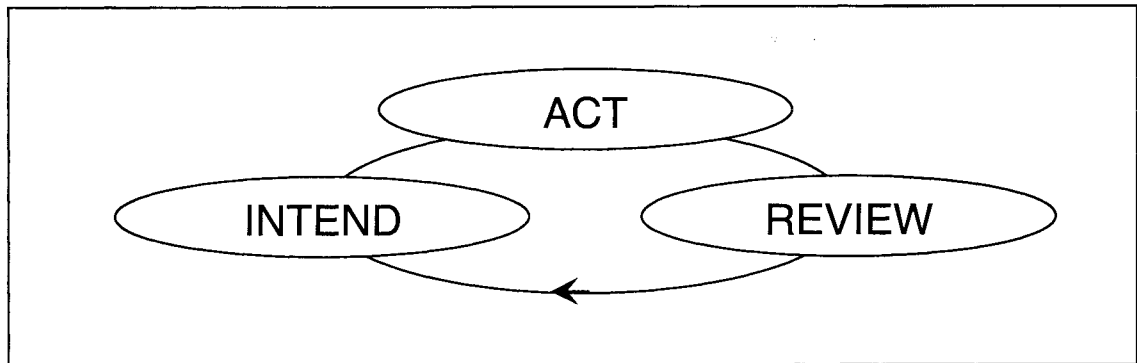
#### **3.1 Participatory research**

##### *3.1.1 Action research*

From the very beginning of the research I conducted for this thesis, it was clear that I would have an active role in the actual implementation process I was studying. Reasons for this were quite obvious. First of all, when the implementation process began, I had been working for Done for 6 months and at the time the implementation began, I was still a full-time employee of Done. This meant that I already knew something about the organization and, more importantly, knew some of the people who worked there and what work was being done there and how. The research methodology I planned to use in the study is called action research. In the following description, I have made use of an extensive online collection of action research related material and links (<http://www.scu.edu.au/schools/gcm/ar/arhome.html>). The website is maintained by Bob Dick, a lecturer at the Southern Cross University in Australia, who has also carried out research using the approach.

Action research can be seen to have begun with the work of Kurt Lewin, who researched problems related to ethnical minority groups and efficiency and social problems in industry in the mid 1940's. (Lewin 1945, 125 -141 & 201 - 217) The work of Lewin shows his desire to really create usable and noticeable results. Lewin put this concept into practice by actively trying to improve things in the organizations and

communities he studied. To achieve these improvements and still carry them out in a controlled and scientific way, Lewin used what he called *interventions*. The concept of interventions is based around a cyclical three-stage model, pictured below FIGURE 4.



**FIGURE 4** The three-phase cyclical model of action research (Dick, 1993).

The action research cycle is based on the concept of change. The cycle is divided into three main phases: intend, act and review. The *intend* phase of the cycle is preparing and planning for a change, *act* is implementing the actual change and *review* is looking at what results the change had. The results of the review process then act again as the starting point for the next change to be implemented. In theory, this cycle of preparing for, implementing and reviewing change could continue forever. The model presented by Dick is a very simplified model and several variations of the shown model exist (e.g. Heikkinen and Jyrkämä 1999, 37). These models are very similar and differences are cosmetic. Change intervention, the concept central to action research is presented in all the models. Heikkinen and Jyrkämä (1999) describe the role of change intervention in action research as being two-fold: on the one hand, reality is being changed, so that it could be studied. And on the other hand, reality is being studied so that it could be changed.

As all models, the cyclic model used to illustrate the evolution in action research aims to simplify reality. Dividing the action research process into the three basic stages of *intend*, *act* and *review* make it easier to understand the main process and the main concepts. The cyclic model, like all other models, is not a perfect portrayal of reality. A resulting problem of trying to follow a model too exactly can be that the researcher

becomes a prisoner of the model, unable to free his or her thinking from the reality represented by the model. This might lead to the researcher spending all his energy on worrying about if the research is methodically correct when he should be concentrating on implementing the change. Kemmis (1994) and McNiff et al. (1996) discuss other limitations and pitfalls of the cyclical model.

### 3.1.2 *Challenges*

Active participation of the researcher in the organization in some form is a requisite of action research. This participation enables the researcher to better understand the full spectrum of events taking place, and the complex interrelations that exist between these events and between the people involved in the change process. Seeing the world as the organization being changed sees it, is an asset when looking at all the factors influencing the change process. However, becoming a part of the organization also involves some hazards for the researcher.

As Huttunen and Heikkinen (1999, 124) put it, becoming a part of the organization means that the researcher must accept the customs and norms of the organization, which to some extent, means existing ways of seeing things being replaced by new ways. When the researcher becomes a part of the organization he is studying, he also assumes the meaning horizon that exists in the organization. Action research takes always place in the context being studied, and looking at the events taking place from a completely remote and detached viewpoint is impossible (Hutturi *et al.* 1999, 24). When studying a company undergoing an organizational change, there will be several truths about the change: the truth according to the researcher, the truth according to the management of the company, the truth according to the employees of the company and so on.

When I conducted my action research and at the same time worked as part of the organization I met many different people. Some in my daily work, some in meetings and some in the interviews I conducted. Critically viewed, I'm sure that contact with the different 'truths' influenced me. As I was aware of this danger because of the literature I had studied (for example Dick, 1993) I tried to make sure that I did not accept any single person's view of things as the absolute truth, but instead I searched for evidence

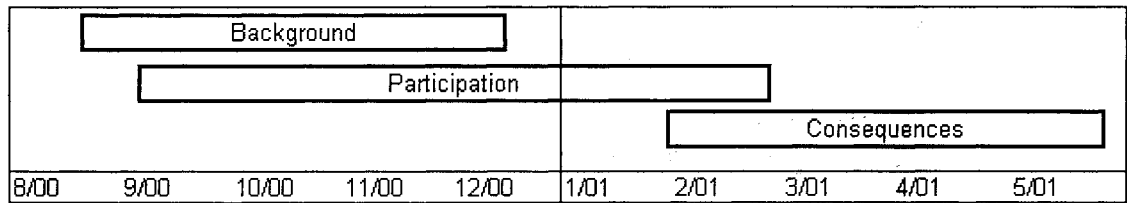
that would contradict what the first person had said. In practice this meant conducting several interviews and analysing them to find contradicting views about the same issues. Despite these intentional efforts, I am sure that some particular individuals taking part in the implementation process had a stronger influence on me than others. People who I worked with a lot during the implementation, who were also pleasant to work with, had an undeniable influence on my own views. I will look at these influences and my role in the implementation process in more detail later in this thesis.

I claim that accepting truths of others does not pose a serious threat to the reliability of a study, as long as the researcher is aware of the influence these truths have on him. This is why I strived to make self-reflection a part of my research. Admittedly, at times the self-reflection became more reflecting the actions of others or due to the urgency of things, I had to concentrate on putting things into action instead of reflecting on what had happened. These times are potential blind spots where my own objectivity might have been compromised. As recommended by Dick (1997), I also kept a research diary. The main purpose of the diary was to record and analyse events as they took place and to provide explanations for the decisions I made during the implementation, but it also served as valuable tool for reflecting on the main themes of the implementation, and for looking at my own role in the implementation (see Hughes 1998).

## **3.2 Data gathering and analysis**

### *3.2.1 Data gathering methods and phases*

In the course of this thesis, I employed three main methods of data gathering: interviews, observation and studying existing documentation and material. The data gathering I conducted consisted of three main phases, pictured in FIGURE 5. Soon after I began the research for this thesis, I made rough plans for conducting these three basic phases. As the implementation continued, this timetable soon proved impossible. In practice this meant that the phases took place as the implementation and my own calendar allowed them. This is why figure 5 should only be considered an overview of the time periods during which I focused on a specific phase of the data gathering.



**FIGURE 5 Three main phases of data gathering**

I have divided the data gathering into these three phases to reflect the function of the data gathered in each phase. During the first phase, background, I collected information about Done and Done Information through interviews and by going through available documentation such as investor information released by Done, and internal Done documentation related to the internal business processes of the business areas and business units. The main goal of this phase was to add detail and clarity to the picture I had at the time of the Done as a whole and more importantly of the Done Information business area. This information served as background information when I later looked at how the implementation of IFS affected Done Information and the way it operated.

The aim of the second phase, participation, was to observe the implementation process as it unfolded. The main means of collecting data during this phase were the observations I made. This consisted mainly of my participation in meetings and other events concerning the implementation. I also collected and sorted emails I received relating to the implementation and other ongoing events within Done. To support my memory, I also kept a research diary, described later in this chapter.

The aim of the third phase, consequences, was to look at how Done and especially Done Information had changed during the implementation, either as a result of the implementation or as a result of other events, such as organizational re-structuring. The majority of information I used in this phase consisted of interviews of employees of Done Information. I then used these interviews to reflect on what interviewees had said in the interviews I conducted in the first phase. In addition, I used material published by Done, such as annuals reports and stock exchange releases to provide perspective on the main organizational changes.

Of the data gathering methods I used, the interviews I conducted provided a large portion of the most valuable data. I conducted two rounds of interviews, the first mainly during October and November 2000, during which I interviewed 17 people and the second round during June 2001, during which I interviewed 12 people. Thus, in total I conducted 29 interviews. (For a complete list of interviewees see Appendix 1).

For the first round of interviews, I interviewed people who were either identified to me as key persons in the implementation, or whom I felt could provide useful information. I did not interview people who were not directly involved in the implementation, since I found out through some information discussion that they in fact had very little to say about the implementation at all. However, some people not directly participating in the implementation provided valuable information about the operations of their business unit. With the exception of one interview (Ser.Inter.G), I conducted all the interviews in Finnish. To enable me to concentrate on the interview, I also recorded all the interviews using a tape recorder. Then, as I later found that an interview contained useful comments, I translated the relevant portions into English, and used them in this thesis. In translating the interviews, I have attempted to convey as much of the original message as I could and have used lengthy excerpts instead of short ones where possible, so that the possible changes of meaning of a single word resulting from the translation would not affect the overall message of a sentence.

I conducted the first round of interviews based around a few basic themes I wanted to investigate, as suggested by Hirsjärvi (1988). The basic themes I examined were the current project processes and tools supporting them and the expectations people had towards the IFS implementation. Often other themes arose during the interviews, and if they seemed important to the interviewee, I let him or her continue. After each interview, I reflected on what new themes arose and then introduced them into subsequent interviews. At this stage I used MindManager®, a software application for creating mindmaps, to create a visual overview of each interview (see Appendix 4 for an example).

As I listened to the recording of an interview, I created a mindmap of the interview and used visual aids, such as colours and symbols to highlight key elements. MindManager offers the possibility to quickly change the structure of a mindmap, which allowed me to adjust how the different themes and answers were grouped and the relations that existed between them. As the implementation continued, I then first used these mindmaps of the interviews to locate comments on themes I found important. Next, I listened to the interview and transcribed the portion in question for a detailed description. If I later found that a recording did not provide sufficient information, I either phoned or emailed the person to get clarification.

The second round of interviews had two main objectives. First, to get as many perspectives on the implementation as possible and secondly, to compare the expectations the interviewees expressed on the first round of interviews to the way things actually turned out. This is why I interviewed several of the persons I had interviewed in the first round of interviews. In one case (Sol.Inter.I) this was not possible, since the interviewee had left Done. To ensure that the interviewees would not hold back in their comments in fear of being identified, I also took measures to ensure the anonymity of the interviewees (see Appendix 1). However, I made one exception to the general rule of anonymity. The two interviews of Joe (7.12.2000 and 17.5.2001), a central character in the implementation process, are referred to directly, without trying to hide his identity. This is due to two reasons. Firstly, Joe gave comments about topics only he could know about. Secondly, Joe left Done following the outsourcing of Done Basis, and therefore his position in Done is not jeopardized by publishing his comments.

Being part of the implementation process had allowed me to focus on the main themes of the implementation, which allowed me to use a more defined interview structure than in the first round interviews. I sent the people I intended to interview the structure of the interview (Appendix 3) beforehand, together with a list of the expectations they had stated during the first round of interviews. This helped some interviewees to provide more detailed answers. Since I had identified the themes I was interested in, I made an near complete transcriptions of all of the interviews. The preset interview structure helped to eliminate the need for check-up phone calls or emails.

In addition to the interviews, I also tried to capture as much of the ongoing implementation process as possible. To help me in this and to provide something more solid than my human and thus error prone memory, I used four electronic aids. The first, and most important was the research diary I kept. The purpose of the diary was really two-fold. Primarily, it contained a description of the whole the implementation process. When I started piecing together the description of the implementation, the diary provided an excellent timeline and overview of the implementation, with descriptions of important events and key actors. Secondly, it helped me define the main questions and problems of the implementation and of my thesis. This really took place by just writing out the thoughts that were going round in my head. By doing this, the diary also proved helpful in communication with my thesis supervisor.

The second aid I used was an electronic calendar I had in Microsoft® Outlook®. Without the calendar, finding exact dates for some meetings or other events would have been impossible. The third was email. By email, I mean collecting all email relating to the implementation process or to Done in general. Storing all relevant (and some seemingly irrelevant) emails allowed me to later piece together the tale of the implementation process.

The fourth tool I used was MindManager. I used it for conducting and analysing interviews, but I also used it for creating overviews of meetings. Recording and transcribing entire meetings was pointless and probably would have affected what was said, but since I wanted some record of what was discussed in the meetings, I decided to use mindmaps. The visual structuring helped me identify main points during the meeting and to link them with previous meetings. To supplement all the data gathering methods listed above and to provide a perspective from outside Done, I used articles about Done published in various IT magazines.

### *3.2.2 Data analysis*

To present the data gathered in an understandable, yet detailed manner, I created three overlapping descriptions of the implementation process using the collected data. First, I created a tale-like description (cf. Van Maanen 1988) of the implementation process



(chapter 5). To construct the tale, I essentially combined the various bits of information I had collected from different sources around a common time-line. The common time-line acts as a framework which combines the individual events, people and organizations into a continuous depiction of the implementation process. By not stopping to look at every minute detail of the implementation, I hoped to make the tale both easy and enjoyable to read.

Second, I looked at the implementation process and chose what the people I interviewed and I myself saw as the most important events and phases of the implementation process (cf. Karsten 1995). To filter out the less significant events and phases, I looked for events and phases that significantly influenced the implementation, or which symbolized the main themes of the implementation in some way. Since each event and phase involved some kind of interaction between human and non-human actors, I used the events to find the actors that played significant roles in the implementation. During this analysis, I noticed that some of the events had an influence on the implementation process in Done as a whole, while some were of real importance only to specific business units. Because of this, I decided to divide my analysis into three parts, corresponding to the different parts of the Done Corporation. In the three different parts, I then analysed the events and phases I had chosen by using the interviews I conducted and material I had collected to provide a more detailed description of background and after-effects of the events and phases (chapter 6).

Third, I used the concepts of actor-network theory to explain the events and phases that I had identified in ANT terms (chapter 2.3). From this analysis of the individual events and phases I then formulated a tentative framework for explaining enterprise-wide IS implementation (chapter 8.2).

## **4 CASE STUDY: DONE**

The empirical case I have used in this thesis is based around Done Information, a business area of the Done Corporation (Digital Open Network Environment Corporation Done), a medium size IT company based in Finland (see website at [www.donesolutions.com](http://www.donesolutions.com)).

For simplification purposes, in this thesis I will refer to the entire Done Corporation simply as Done. Done's business idea is to help companies to move their operations to electronic business (eBusiness). The rapid growth of Done through several recent acquisitions of companies has meant that the organization of the corporation has been in a constant state of change. Done, in many ways is a network of companies that create various levels of synergy. A shared brand and marketing material allow more effective marketing, and together the smaller companies can offer a larger scale of services than on their own. I consider Done a collection of companies joined together in a heterogeneous actor-network (for example Law 1992), which is made up of the people who work in the companies and all the technology and tools they use in their daily work.

In this chapter I will first look at what Done is like as a company and came into existence. The main focus of this chapter, however, is on the detailed analysis of Done Information, one of the five business areas that make up the Done Corporation.

### **4.1 Organization and objectives of Done**

#### *4.1.1 History and organization*

According to the offering circular (Conventum 2000a) the Done Corporation, also referred to as the Done Group, was formed on June 24, 1999 when a company called Credere acquired two Finnish IT companies: Solution Garden Oy, Noir Production Oy and Markkinoinnin ja mainonnan suunnittelutoimisto BSA Oy, a Finnish marketing company. In addition, Credere, increased its stake in Finhost Oy, an IT hosting company it already owned a part of to 100 percent. The first three of the companies

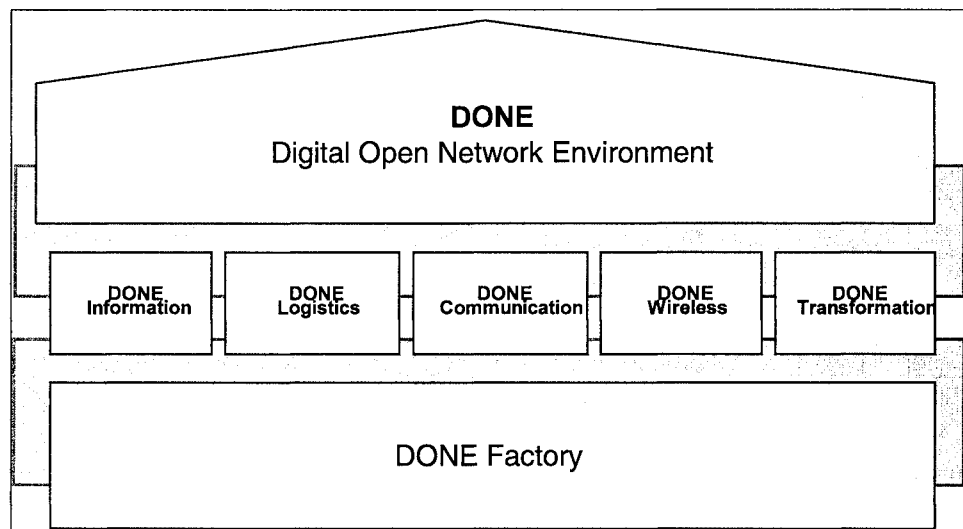
mentioned had all worked in projects carried out for Safematic Oy. At the time, the president and CEO of Done was the vice president of Safematic. When the Done Group was formed, Credere changed names with its fully-owned subsidiary Digital Open Network Environment Oy Done, which later became Digital Open Network Environment Corporation Done.

During 1999, Done then went on to acquire two more companies and has continued acquiring more companies at an accelerating pace during the year 2000. At the end of the year, a total of 64 companies or operations had been acquired. The rapid growth is visible in the number of employees, which rose from 450 on December 31, 2000 to 1132 on November 16, 2001. This rapid growth is partly due to organic growth through recruiting, but the main force behind it has been the acquisition of companies.

Trading in Done's shares commenced on the pre-list of the Helsinki Exchanges on June 19, 2000, and on the NM-list (New Market list) on June 21, 2000. This was important, because after shares became available, they were used as the main commodity for acquiring new companies (Conventum 2000a, Done 2000e). By combining the acquired companies, the five business areas and a supportive business unit (BU) shown in FIGURE 6 were formed. Of the business areas Done Wireless provides wireless electronic business solutions, Done Information provides process control, knowledge management and customer solutions, Done Communication provides customer relationship management, new media and eBusiness solutions, Done Logistics provides supplier and operational information solutions, Done Transformation provides transformation consultancy for eBusiness and the Done Factory business unit provides software development services in Done's various business areas (Conventum 2000a).

Each of the business areas consists of business units. The business units, in turn, are made up of one or more companies. In addition to the business units, the Done Corporation has an administrative head office, simply called Done. To distinguish the head office from the corporation, I will refer to it simply as the head office. This unit handles issues touching the whole Done Corporation. Acquiring new companies and creating stock exchange releases and other information required by the Helsinki Stock

Exchange is the most visible activity of the head office. Internally in Done, the head office also sets corporation wide policies and acts as an initiator and controller for projects affecting several business areas. Examples of these include making decisions about changes in the organizational structure of Done, adjustments to the business vision of the entire corporation, changes in the look and feel of the Done brand name and setting company wide policies for practical issues, such as arranging health care and setting employee working benefits.



**FIGURE 6** The organization of DONE on July 7, 2000. (Conventum 2000a, 25)

#### *4.1.2 Business objectives*

At the time the trading of Done’s shares started, according to the offering circular (Conventum 2000a, 20), the business objective of the Done group was “to become the European leader and one of the leading global developers and providers of comprehensive eBusiness solutions in its chosen client segments by the year 2003.” The concept of a provider of comprehensive eBusiness solutions is based on the idea that with its five business areas, Done is a full service business house, which can offer the full range of services and solutions that companies need to consider when transforming their businesses towards eBusiness models. According to Conventum (2000a; 2000b) the business areas can be seen as forming a network, within which they can co-operate

and support each other. The words network and environment seem to support this concept.

This vision of focusing tightly on eBusiness could also be seen in the names of the business areas, each of them having the prefix 'e', referring to eBusiness, i.e. eCommunication and eFactory. A second area of focus was wireless solutions, but at the time the shares were first offered to the public, mobile solutions were not emphasized as strongly as was the orientation towards eBusiness. The key strategies Done planned to use to reach its business objectives were rapid growth through acquisitions and internationalisation to more attractive markets partly through company acquisitions from abroad (Conventum 2000a).

#### *4.1.3 A changing organization*

Thus one of the goals of the Done Corporation is rapid growth. The swift melding of the new companies to the existing business structure of the corporation has kept the organization in a cycle of constant change. Bringing a company that previously has functioned independently into a larger business organization involves many dimensions of transformation. Up until the acquisition, the purchased company will have existed on its own, allowing it to cultivate an organization culture and the work practices best suited for its personnel and atmosphere.

When it becomes a part of the Done Corporation, the company will inevitably start to undergo a transformation of some scale. Certain corporation-wide policies will be implemented in the merged company, meaning that work will not continue exactly as before. Based on my personal experience of working in Done and on the informal discussions I have had with other Done employees, I see that joining Done is often met with mixed emotions, which is quite natural considering the uncertainties of how the acquisition affects the daily work of its employees.

The acquisition of a company by Done Corporation should not, however, be seen as a single-sided process, where only Done-initiated changes take place, but instead as a dialogue between the company and Done. Since Done is quite small if compared to

multinational companies such as Nokia or IBM, each acquired company brings something new to the corporation. If the acquired company is of sufficient size or has a strong enough organizational culture, it can have a considerable affect on the organization culture of the whole corporation. For some companies, the only visible change in the operations is in the look and feel of the company. When a company is acquired by Done, the visual appearance of the company undergoes a transformation the objective of which is to apply the Done brand in the company. This 'face-lift' includes all material the acquired company uses to communicate. New layouts for printed advertisements and presentation slides, new pens and business cards, and new email addresses to name but a few are all adjusted to comply with the Done brand. From the viewpoint of an acquired company, this brand assimilation may serve primarily as a marketing strength. For a smaller company, an expensive marketing campaign is not commonplace.

## **4.2 Done Information prior to the implementation of IFS**

### *4.2.1 Concerning the description*

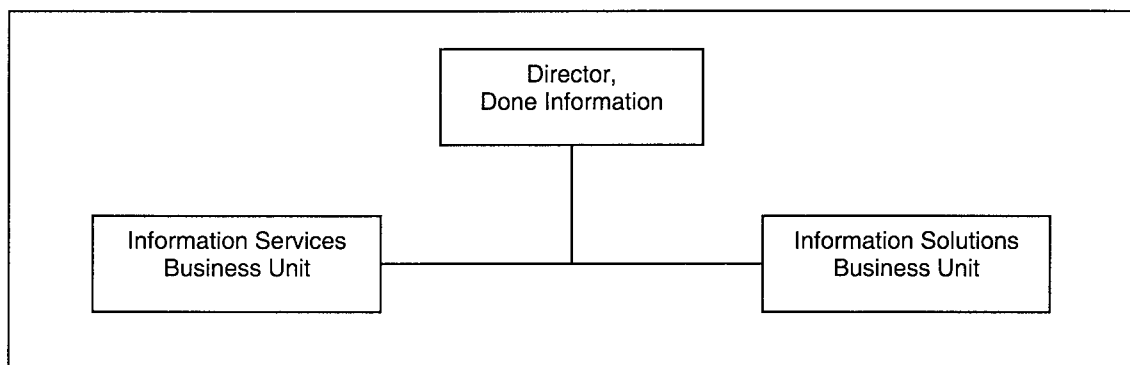
To be able to analyse how the upcoming IFS implementation would affect Done Information, I conducted a comprehensive study of the two business units that make up the Done Information business area: Information Services and Information Solutions. My goal was to map out how the business units worked: what kind of work or projects the BUs carried out, what kind of positions and roles existed within them and especially what kind of processes and tools were utilized to manage and implement customer projects.

I carried out this in-depth examination through interviews, discussions, and emails and by reading material I found or was given related to how the BUs worked. Since I examined both business units in extensive detail, the study resulted in a long and comprehensive description of various aspects of both business units. All of the description, however, is not directly relevant to the issues I focus on in this thesis. That's why I chose only to include a summary and analysis of the key characteristics of

each business unit here. The list of interviewees and other material used is included in Appendix 1. Since Done and Done Information underwent many changes during this time period I examined in this thesis, the following can only be considered a fairly accurate presentation of how things were August 31, 2000. Changes that occurred after this time are examined in chapter 7.

#### 4.2.2 Organization

At the time, Done Information consisted of two business units (BU), Information Services and Information Solutions, internally referred to simply as Services and Solutions. In August 2000, I could not find any formal documentation of the organizational structure of Done Information. So, in FIGURE 7, I have pictured the organization structure, as I perceived it.



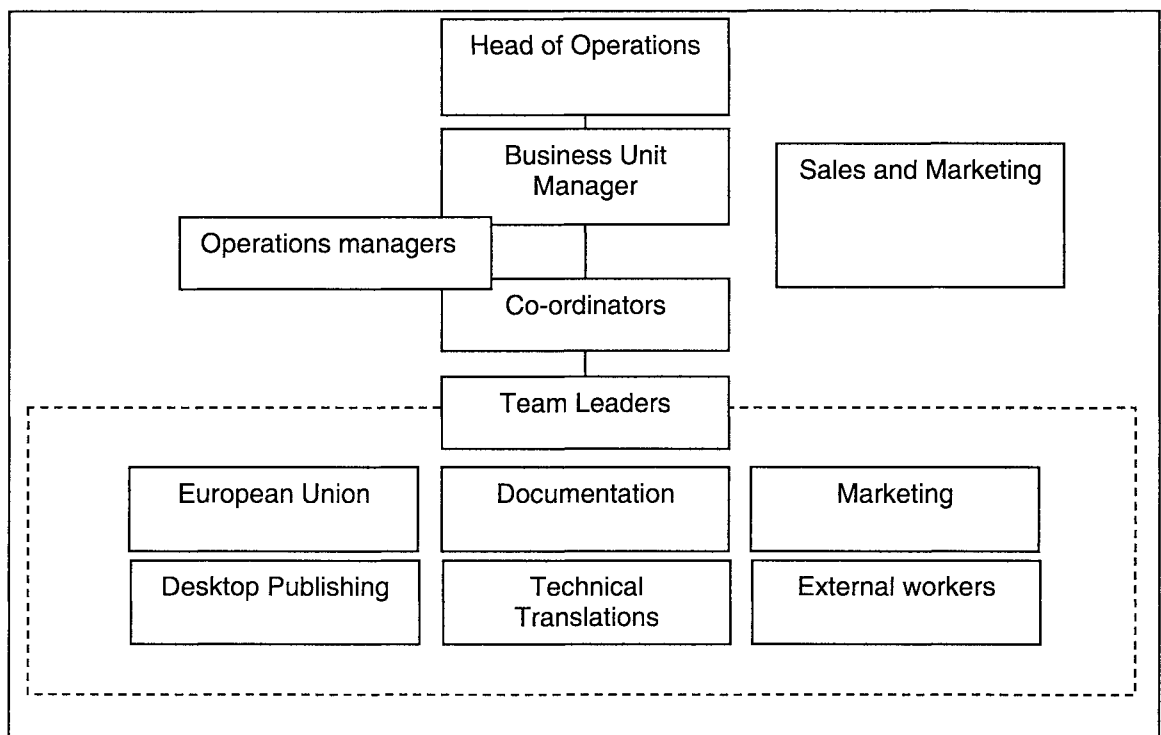
**FIGURE 7 Perceived organization structure of Done Information**

Naturally tasks such as marketing, personnel management and payroll were handled by someone at the time, but this simple structuring can be seen as a fairly accurate representation of how a majority of the employees saw the formal organization of Done Information at the time. The two BUs operate quite autonomously, with the director of Done Information overseeing the operations of both of the BUs.

The Services BU consists of the previous operations of a single company, Alpha Communications, Ltd. The company was established in 1991 and when joining Done on May 30, 2000 it employed a total of 72 persons in its four offices. Two of the offices are placed in Finland; one in Helsinki and the second in Tampere. The head office in

Helsinki employed 20 persons, while the office in Tampere employed 28 people. Two other offices exist outside Finland. A sister company, Alpha Communications UK, Ltd. ran operations in Great Britain from a single office in Farnham in the south of England. This office employed 16 people. In addition, a small office employing 10 people resides in Solna, Sweden.

The key competence areas of the Information Services business unit are translation, localization and technical writing services. Internally these competence areas operate as fairly independent teams, pictured in FIGURE 8, each of which is headed by a team leader. In addition to working with the rest of the team to complete customer work, the team leader also administers the team and takes care of tasks related to recruiting new members to the team.



**FIGURE 8** Organizational structure of the Information Services business unit

The project co-ordinators, operations managers and business unit manager form the managerial level of the BU, situated above the team leaders in the hierarchy. The projects co-ordinators, or simply co-ordinators as they were referred to, ensure the smooth progress of ongoing projects and related operative work. In practice this means

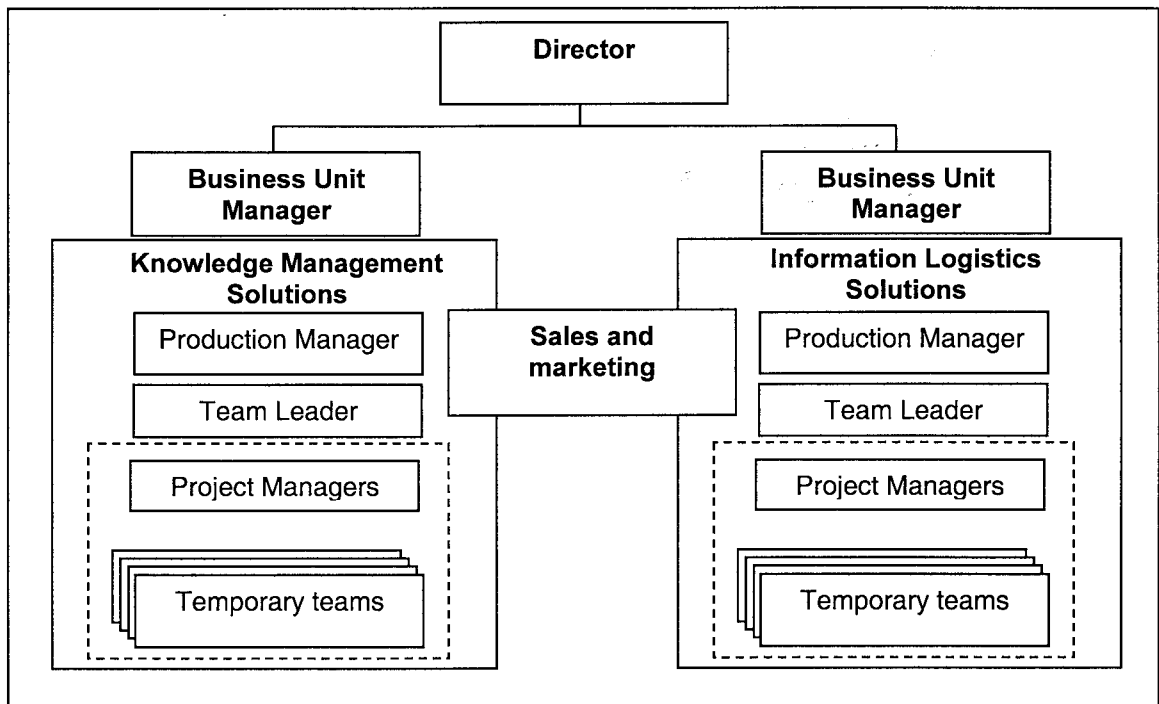


managing the timetables and resources of projects by communicating intensely with both the customer organization and the various competence teams. The two operations managers are each responsible for one of the offices in Finland. The business unit manager, or BUM, oversees and develops the operations of the business unit.

The Solutions business unit consists of the former Solution Garden, Ltd., based in Jyväskylä, Finland and Remtec Systems, Ltd., based in Espoo, Finland. Together they employ 42 persons. Both of these two companies represent to a large extent one of the competence areas within the business unit. Solution Garden, Ltd. forms the core of the Knowledge Management Solutions (KMS) competence area, while Remtec Systems, Ltd. forms the core of the Information Logistics Solutions (ILS) competence area.

At first glance, the organizational structure of Information Solutions seemed chaotic. The organizational structure was based around the two business units, so unlike Information Services, in Information Solutions the main level contained two business units under it. This was puzzling at first, since the Information Solutions business unit appeared to consist of business units, but in hindsight, it was only a temporary arrangement and a sign of things to come. Since a documented organizational structure was nowhere to be found, I created my own, based on how I perceived it at the time, as seen in FIGURE 9.

Both of the business units have their own business unit manager. As in Information Services, the business unit managers in Solutions had diverse tasks, and their work can be simply summed up as running the business unit. The director of Information Solutions oversees the operations of both of the business units as well as the Done Information business area. Both of the business units shared a common sales and marketing function. The majority of the employees of Solutions are part of temporary project teams which are formed to suit the requirements of customer projects. A project manager heads each project team, while each of the offices has a production manager who oversees the operations of all the project teams.

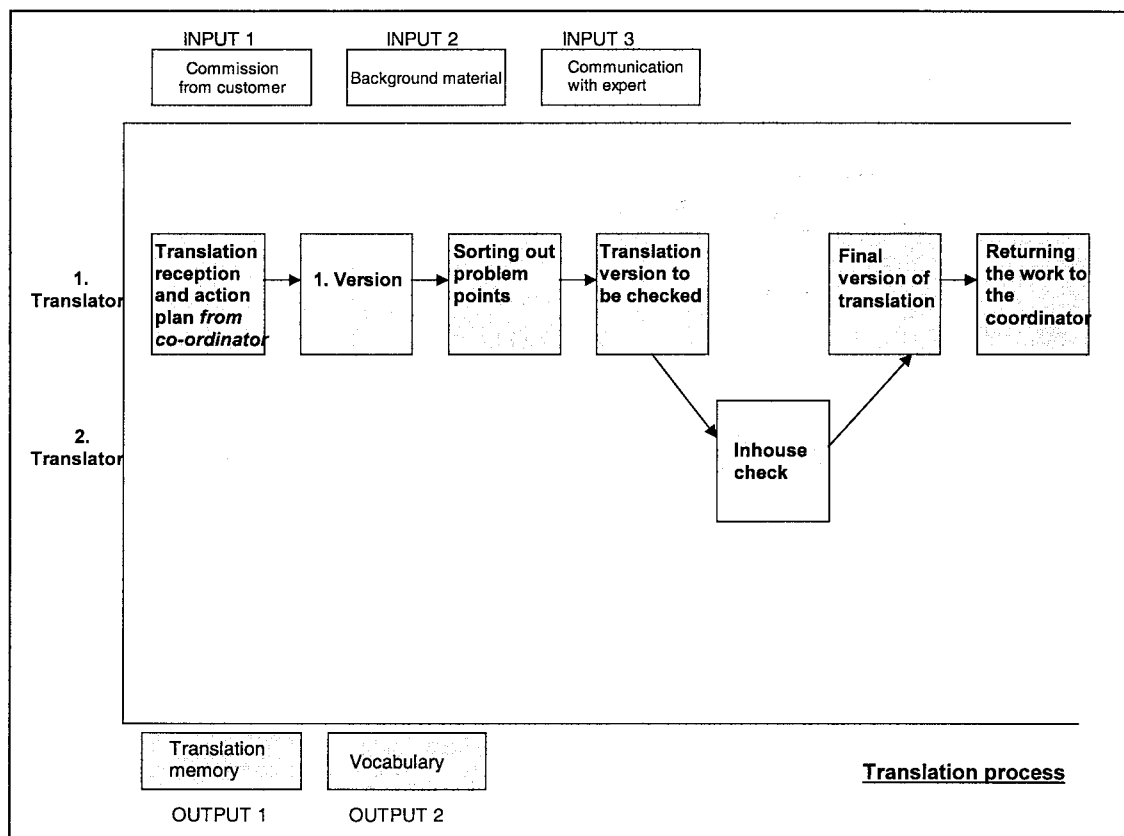


**FIGURE 9 Perceived organizational structure of the Information Solutions BU**

#### 4.2.3 Processes and tools supporting work

The Services business unit specialises in offering its customers translation and documentation related services. Due to the basic similarities that exist between different translation jobs, some basic process models have been documented to establish some common ways of working. An example of such a translation process model is pictured in FIGURE 10.

Several of the co-ordinators I interviewed said that using the term *project* seemed a bit too “fancy” or too “big” to describe the majority of the customer cases they handle. Instead the terms “translation so and so” or “job so and so” were used usually in communication within the teams and within the business unit. The co-ordinators said that they would use the term project to describe larger work, e.g. the translation of material into several languages. In addition, in communication with customers, the term project was used constantly. For shorter jobs, like a translation taking a single day, using the term project seemed almost comical.

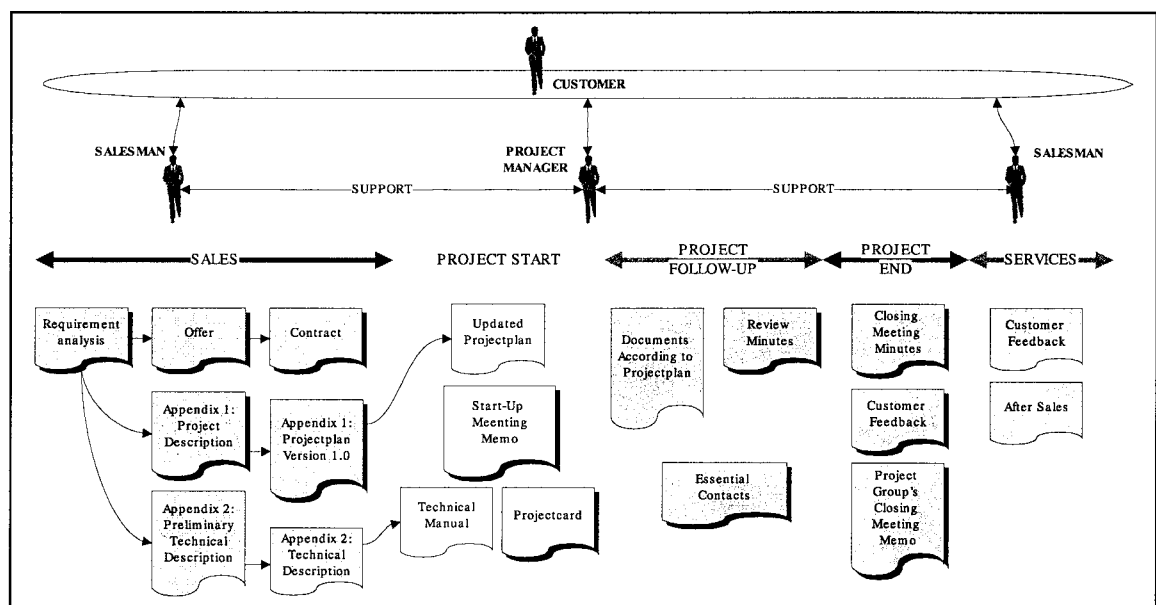


**FIGURE 10** An example of a translation process model

The main tool supporting work in Services was a Microsoft Access® based project management system created in 1995 by a co-ordinator working in the business unit. This meant that the system included many features that supported the actual work that the co-ordinators did. The user interface was also designed with the intended target audience in mind. As a result, the system was taken into use in most offices of Alpha Communications. Even though the co-ordinators saw that the system supported the operations of the business unit well to a large extent, several also commented that the system was so slow that it interfered with their daily work. The designer also acknowledged this and said that the problem was mainly due to network bandwidth. The system runs over a network and therefore any performance problems of the network immediately resulted in slower operation.

All work carried out in Information Solutions is in some way project driven. This observation is based on my personal experience of working in the Information Solutions

unit, the project manager interviews I carried out and the study of existing project models and their documentation. The project driven approach is not surprising, considering that both of the business units specialize in application development, and that resource management is crucial to the operations in both units. Even though the two companies behind Information Solutions each had their own histories, the basic elements, such as the project models, appeared to be very similar. One reason for the similarity is that some unification work had been carried out on the project models and project work after joining Done. Some differences existed between the project models, as some were suited for project involving a particular product while others were meant as general guidelines. The project model in FIGURE 11 shows the lifecycle of a project. The model is a general project model reflecting the main common features of most projects carried out in Information Solutions.



**FIGURE 11 General project model in use in Information Solutions (General project model documentation, 2000)**

For project management, both of the competence teams use their own tools. The ILS team uses Replicon Web Timesheet® and the ECM team uses a Lotus Domino® application built by the team itself. The main interface to both of the applications is a web browser. They are accessible from within the corporate intranet and with a secure

modem dialup from anywhere in the world. The systems are similar in terms of their basic project management features.

#### *4.2.4 Summary and analysis*

The following is a summary of the relevant similarities and differences between the Information Solutions and Information Services business units. Some of the clearest similarities between the two were in the organizational structures of the BUs. Both of the BUs displayed many characteristics of an adhocracy (Mintzberg 1983), such as ad-hoc teams, and organizational flexibility. Communication is not controlled, but different levels of the organizations can communicate freely with each other. The job titles differed between the organizations, but I found that many similarities existed between the roles and responsibilities associated to the position, for example between the roles of a project manager in and a project co-ordinator. Some small differences existed between the various offices of both of the BUs. The differences in Services were mostly due to the difference in the type of work carried out at two offices, while the differences between the two offices of Solutions' were mostly due to the separate organizational history, i.e. Remtec and Solution Garden.

I found that the main differences between the business units were in the characteristics of the work they did. In Services, several of the 'translation jobs' were very short, maybe lasting just a few hours each. In Information Solutions, on the other hand, practically all work was carried out in projects, all of them lasting considerably longer than the jobs Services worked with. This fact also inevitably resulted in different tools and models for managing ongoing work.

Despite the differences, there were also some similarities. Both Services and Solutions had applications and tools to assist in managing past and present work. I consider that the MS Access based project system was the most advanced of all the tools used, and best incorporated end user considerations. The two project management systems used in Information Solutions were very similar to each other, but they were built in a more generic way than the system Services employed. Another point to also consider is that the employees of both BUs were used to reporting their working hours using some kind of arrangements.

### **4.3 The IFS system**

#### *4.3.1 Business components*

To help to understand the issues which arose during the IFS implementation in Done, I will first explain the basic structure and concepts of the IFS system. Fundamentally, IFS does not have one single rigid structure which is applied to all of its implementations, but, instead, it is made up of a collection of business components. Each of these components provides features and functions related to a certain type of activity or a certain part of a process chain. These business components are in practice the basic building blocks from which each IFS implementation is then assembled (see Appendix 5 for a graphical illustration of the structure, or IFS homepage <http://www.ifsworld.com> for details).

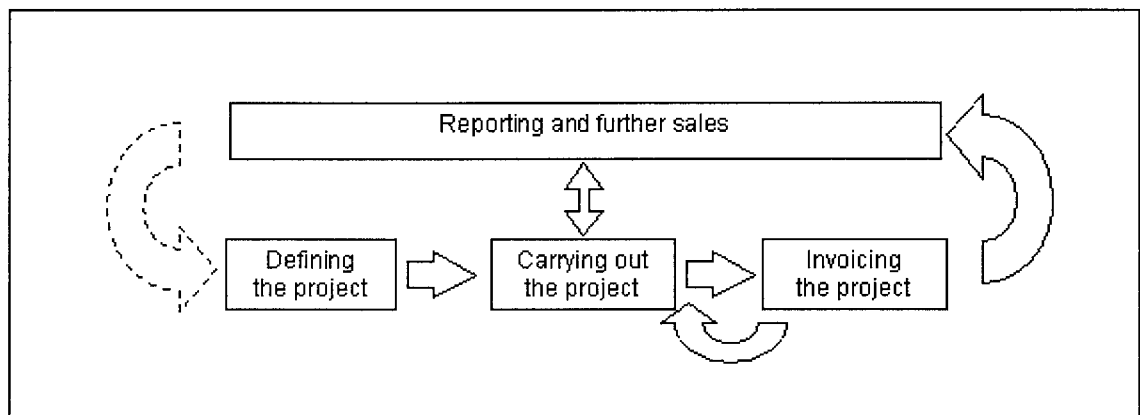
The business components in turn are made up of programming objects. The new version of IFS, IFS Applications 2001®, consists of over 3000 objects documented with Rational Rose®, an object modelling tool, and defined in Unified Modelling Language (UML). “For most part, a business component works like the objects it is made of. It has a well-defined function and interface so that it is clear how it communicates (the type of data it receives, handles and produces)” (IFS 2001, 17). The advantages of this component-based approach have been acknowledged in both the general IS market as well the ERP market (Sprott 2000).

From the collection of business components available in IFS, an appropriate set is then chosen to suit the specific needs of a customer. In addition to the business components, an IFS implementation will always include the core of IFS is called IFS Foundation1™ and General components, which support the business components (IFS 2000b). The Done implementation of IFS included tens of interconnected business components. The business components used in the Done implementation belonged to the financials, human resources and sales and marketing categories, also called modules. The semantic differences between a business component and a module became somewhat obscured during the implementation, and the term module was generally used to mean a part of IFS of any size. For this reason, the project reporting business component of the human

resources module I focus on in this study, quickly became known simply as ‘the project reporting module’. This is why I too refer to the business component using this short name. In the following, I present how the project reporting module supports the basic stages of a project lifecycle and at what connections exist between the module and other modules and business components.

#### 4.3.2 *The lifecycle and structure of a project in IFS*

The basic project lifecycle I have pictured in FIGURE 12 is a compressed one. It contains all the basic stages of a typical project in IFS and applies to projects carried out in both Information Services and Information Solutions. I have divided the lifecycle into four stages, each consisting of similar tasks which take place in both IFS and the project itself. The lifecycle is very similar to the one I used in several presentations I made in Done on how the IFS project reporting module supports the lifecycle of a project. The project lifecycle does not include the initial sales process of a project, since the project reporting module does not directly support that.

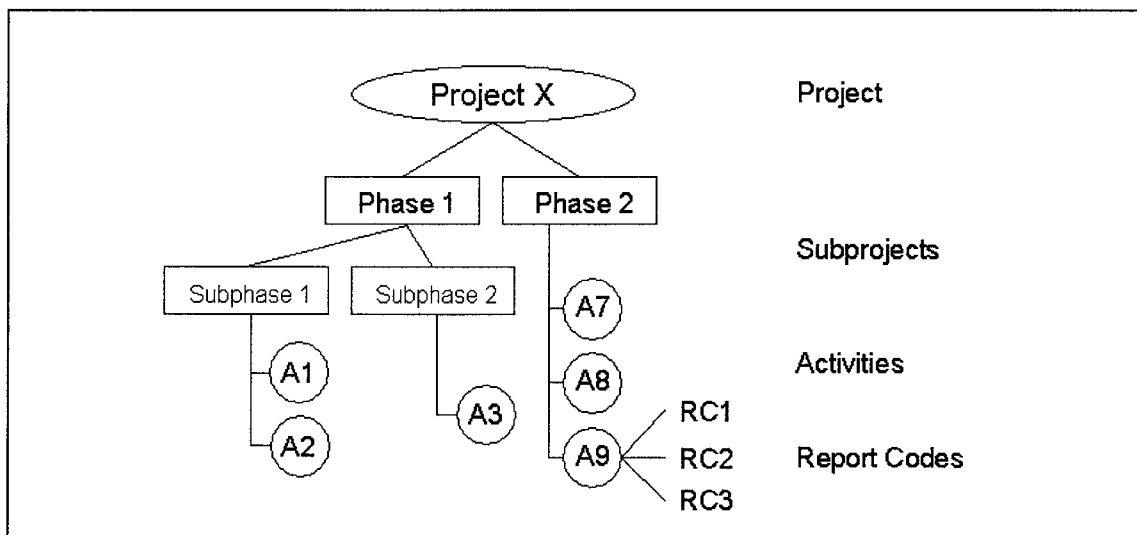


**FIGURE 12 Compressed IFS project process model (Adapted from my own presentation slides)**

After the project has been sold, the first stage is ‘Defining the project’. In IFS this means entering basic data about the project including the customer and project manager for the project. After the basic data has been defined, a project structure must also be set for the project.

In the project reporting module, all projects have a structure consisting of a minimum of four levels, as pictured in FIGURE 13. In IFS, a project is always made up of one or more subprojects. These subprojects can be used to split the project into smaller, more manageable parts, and for delegating responsibility for subprojects to subproject managers.

Each subproject can also contain further subprojects, this way adding a further level to the project structure, but this is usually only necessary in large projects. During the IFS implementation in Done, I did not witness any projects using two subproject levels. For most purposes, the next level of the project structure is activity. Activities are used for low level grouping of tasks. An activity is often used to group a set of similar report codes, e.g. planning and programming (cf. FIGURE 13). The last level of the IFS project structure is the report codes, which are single tasks that individual employees can carry out. Report codes in the programming activity might be C programming, C++ programming and Java programming. The report codes for each activity are chosen from a selection list, defined in the project reporting module. This list is shared by all projects to ensure consistency across projects.



**FIGURE 13 Logical project structure used in IFS (Adapted from IFS training material)**

Otherwise different project managers might create different report codes for describing the same task. Choosing the right report codes is important, since the report codes



chosen for an activity control how an employee can register hours when the project gets underway.

The 'Carrying out the project' stage forms the main part of the project. In simple terms, it consists of the project team working to complete the objectives of the project. As the project progresses, members of the project team will register the hours they have used for various project tasks. To register hours in IFS, an employee goes through a logical selection tree, by first choosing a project, then selecting a subproject, then an activity and finally the report code. Next the employee can enter the hours used for that report code per day.

When registering hours, the choices available for each level of the project structure naturally depend on how the project manager defined them in the previous stage. By restricting how hours can be registered, the project structure influences both the work of the project manager and the members of the project team. For the project team, the project structure controls how hours can be registered and for the project manager, the project structure controls what kind of information she or he can get on the progress of the project. A very simple project structure usually means that it is easier for employees to register hours since there are fewer choices for each level, and thus the chance of mistakes will be smaller. On the other hand, for a project manager a simple project structure means that the information he can get from the project will not be as detailed.

I will illustrate the above with an example. A project manager is defining the structure of a project and must decide what report codes to add to the programming activity. If he chooses a simple project structure, he might only use one report code called programming, to encompass all the different types of programming. If he chooses to use a more complex structure, he might use several report codes to indicate the different types of programming taking place, e.g. C programming, C++ programming, Java programming etc. The results of the two options become visible when employees start registering hours for a project. In the simple project structure, an employee only needs specify if he or she has used any hours for programming or not. The project manager in turn will see the amount of programming carried out, but will not see what

programming language the employee has used. In the complex project structure, the employee will have to select the report code reflecting the programming language used, and thus the project manager will later be able to extract information about how the different programming languages were used for in the project. On a project scale these choices might be small, but for following tens of projects these choices have a larger impact. Information concerning the amount of programming languages used could be utilized, for example, when planning future training for employees.

I have placed the extraction of information from a project in the 'Reporting and further sales' stage which typically takes place a number of times in the project lifecycle. First, as the project proceeds, the project manager and other interested parties, such as the production manager, can check project status by looking, for example, at how many hours have been used for a certain subproject, activity or report code. This information helps the project manager to form an overview of the project status and make decisions concerning the project. The amount of this kind of reporting depends on the project and the project manager, but as a rule the reporting is carried out in some magnitude a second time at end of the project. The reporting and analysis at the end of the project serves a slightly different function than the reporting which takes place during the project.

After the project has been invoiced, the overall success of the project can be analysed. Comparison of the estimated and actual number of hours used, together with verbal feedback from the customer, provide an overview of how the project went. The analysis and feedback help to improve project management and the project process, but they also serve a second function: finding new customer needs and thus enabling further sales. By looking at how the project went and especially at possible additional customer needs discovered, plans for selling further projects or products to the customer can be made. These additional needs might also be discovered during the actual project and thus result in further sales even before the project has ended. In this kind of ideal scenario, the customer will start negotiations for a new project before the previous project has ended.

The 'Invoicing the project' stage consists of creating one or more invoices which are sent to the customer. The actual invoicing process is handled in the financials module, but the project manager typically defines in the project reporting module when a project should be invoiced. The project manager can view and print a preliminary invoice to check if all the information is correct. After he has checked the preliminary invoice, he releases the invoice. The release of an invoice is the point when the invoice is transferred to the financials module. A project can also be invoiced directly from the financials module by directly entering sums to be invoiced.

## **4.4 Participant expectations**

### *4.4.1 Diverse expectations in a diverse organization*

When a system as large as IFS is implemented into an organization, it is reasonable to assume that everybody in the organization will have expectations about what effect the implementation will have. To map out these expectations, I asked persons involved in the implementation during October and November 2000 to describe their expectations concerning IFS: how they expected IFS would change their work and operations in their business unit. Since the implementation was already underway at the time, many of the people had already seen IFS and had some idea of what it offered. I believe that these expectations are most valuable, since they were given by people who had been actively involved in the IFS project, and thus knew something about the project. People who were not been actively involved in the implementation had little to say about the implementation, (for example Ser.Inter.B).

### *4.4.2 Information Services*

In Information Services, the expectations expressed were in general very positive. This may have been partly due to the general dissatisfaction concerning the old MS-Access based system. "The previous project management (system) is terribly slow, and it was not built to handle a database [as big as] it is running now [...] it does not fulfil our reporting needs" (Ser.Inter.C). These opinions were shared by all the people I interviewed, with an emphasis on the slowness of the system. Getting rid of the old system seemed to be one important positive expectation. The biggest worries were concerning how well IFS would address the special needs the business unit had. A part of this was understanding how to think of needs in the terms of IFS. This took time as a co-ordinator commented: "The project structure in IFS took some getting used to, with all the sub-projects and such" (Ser.Inter.E&F). But even the rigid project structure was seen as having some positive aspects to it as well: "will it [the project structure] limit our options, or maybe it will formalize things" (Ser.Inter.E&F). One co-ordinator joked about the complexity and interconnected nature of IFS: "Everything you put in there

affects everything plus three more things, so watch out, watch out, watch out!”(Ser.Email.E).

All of the people I interviewed in Information Services had many expectations about how IFS might make their work easier, or as a co-ordinator commented “It can’t bring any more work, because we are already doing all the work there is” (Ser.Inter.E&F). Handing over the responsibility of reporting translator hours to the translators themselves was considered a relief. IFS was also expected to make work less complex, since it would mean that “everybody would have to enter information in the same way and there would be no ifs and buts” (Ser.Inter.E & F). Finding all relevant information in a single system instead of using several systems would also cut down on complexity and also make work more efficient, expected many of the interviewees. On the other hand, one person expected that in the beginning, IFS would actually hinder and slow down working instead of allowing faster work (Ser.Inter.D) .

Many expected that invoicing would become easier and that many kinds of invoicing needs could be accommodated. However, there were also some doubts concerning invoicing, especially regarding the loss of control over invoicing. The fear was that when the invoices would no longer be printed by the co-ordinators, but instead by somebody else sitting at a completely different location, the co-ordinators would not be able to follow invoicing as closely as with the MS-Access based system, in which they personally took care of the invoicing (Ser.Inter.E & F).

IFS was also expected to be a valuable tool for planning operations and reporting on profitability and work being carried out: ”We can follow what kind of work is profitable, what kinds of customers are profitable, how much of our work is outsourced, we can react quicker to changes, e.g. if the number Finnish-Estonian translations increases, we can plan the development and training of personnel, we can react quicker to changes in (translation) technology” (Ser.Inter.C), "I can see what this translator has done, or how much profit I will make on this, or do I need to raise the prices of these” (Ser.Inter.D). Cooperation between the Helsinki and Tampere offices was also expected to improve, since both offices could monitor the situation of the other office.

Despite the anticipated problems, the overall expectations were positive. Or as one person put it:

”All except the project [reporting module] are [purely] positive [things], because marketing has not had their own system before, [...] In human resources even updating the internal telephone number lists has been very difficult, so really nothing but positive [Marketing and human resources], and finance has to be taken into use due to corporate reasons. The project [reporting module] will cause problems, since it was designed for needs different from ours [...] but the project [reporting module] is part of the same entity as finance and marketing [modules] so I consider the big picture to be more important.” (Ser.Inter.C)

#### 4.4.3 *Information Solutions*

In Information Solutions the majority of the expectations were related to improved reporting. ”We will be able to make better, more efficient and more comprehensive reports”, commented one interviewee (Sol.Inter.B). The expectations about reporting possibilities varied from being able to look at general trends: ”tools to estimate the direction ’the boat’ is going in” (Sol.Inter.A), to specific reports, e.g. how many hours each person spent on the different tasks during a certain week, or what was the ratio between invoicable and non-invoicable hours during a certain week or month. IFS was also expected to make it possible to monitor the amounts invoiced and to be invoiced through IFS.

Worries concerning the system varied from having to use a system with an ”terrible”, and ”antique” user interface to the system being ”more for hour reporting” (Sol.Inter.A), than offering tools for planning and coordination. IFS was in many cases compared to the existing Lotus Domino based system, and concern was voiced about for example ”will hour reporting be as handy to do”, or ”will it be as easy to create a project card” (Sol.Inter.D). Based on what the interviewees had seen of the project reporting module, they expressed concern about how well the formal and rigid project structure of IFS would suit smaller projects with simple project structures.

An interesting expectation voiced by one of the interviewees (Sol.Inter.I), was that after IFS had been implemented, the same implementation process would have to be repeated from time to time, even if on a smaller scale. The person saw IFS as a more static

system, and wondered how it would change to accommodate the new needs. What the person was referring to, was that Done would keep on changing and as the organization and business changed, new needs would arise. IFS, along with the existing ways of working would have to adjust to those needs in one way or another. Then, after the changes had been taken into consideration in IFS, the changes would then have to be implemented to operations around Done. He used the term "continuous implementation" (Sol.Inter.I, my translation) to describe his prediction of the implementation of IFS being a more a continuous process than a single event.

To protect the business interests of Done, chapters five and six (pages 56-98) of this thesis are not public until January 1<sup>st</sup>, 2004, and have therefore been removed.



## **7 SITUATION AFTER THE IMPLEMENTATION**

The world did not sit still while Done implemented IFS. The IT field was going through very turbulent times and numerous promising eBusiness companies were going bankrupt. Like other companies, Done too adapted to the changes in its environment by adjusting its business and business vision. In this chapter I will first look at how Done changed as a whole during the implementation, and secondly, in more detail, at how Done Information changed as an organization and how the project reporting model affected the project process of the business units.

### **7.1 Changes in the Done group**

As in any large company, the organizational changes that took place in Done did not take place over night, but more as a continuous process. Some events, such as stock releases, could be interpreted as the exact date an organizational change, for example the acquisition of a company, formally took place. I feel that the change itself began much earlier and continues past the acquisition. This is why I consider it is highly speculative to pinpoint when a particular organizational change began and when it ended.

For these reasons, I feel that providing a day-to-day description of each individual event, e.g. company acquisition, personnel change etc., is not needed here. Instead I will give an overview of how Done changed by looking at two time periods: the first of Done as it was at the end of 2000 and the second as it was on 30.6.2001. The reason I have chosen these time periods is for two reasons. First, both of the periods ended in the release of either an annual report (Done 2000e) or an interim report (Done 2001). Second, I conducted the second round of interviews during June 2001, after which my involvement with Done and with the IFS implementation has been minimal, and therefore I feel that I am not in a position to comment on changes that took place after June 30, 2001.

### *7.1.1 Changes up until December 31, 2000*

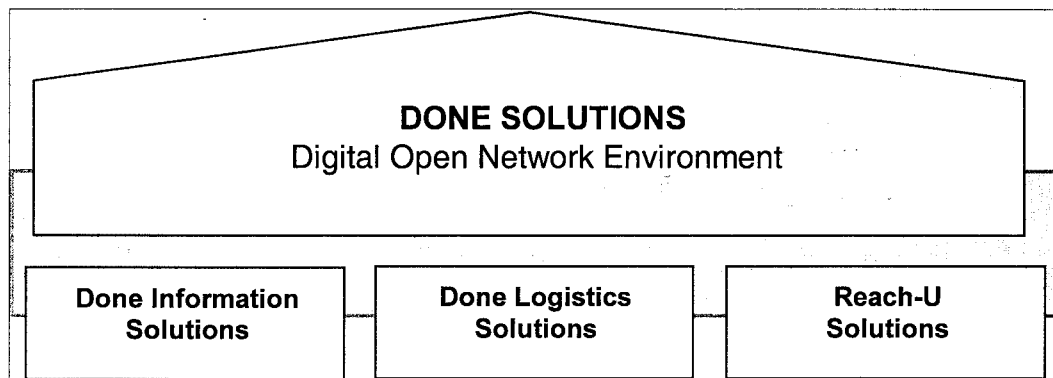
By the end of the year 2000, the organizational structure of Done had been simplified in many ways. Instead of the six business areas that existed earlier, now only three existed. Done Logistics Solutions, Done Information Solutions and Done Wireless Solutions. Through a number of sales and mergers, Done Communication, Done Factory and Done Factory no longer existed. The way Done described itself had also changed quite radically:

Done is a provider of comprehensive supply chain management solutions and technical information solutions for specific customer segments. Done's solutions include integrated software solutions and automation systems, as well as consulting and outsourcing services. (Done 2000e, 7)

One example of changing from an full-service house to a more focused solution provider could be seen in such basic things as the web address, which changed from [www.done360.com](http://www.done360.com) to [www.donesolutions.com](http://www.donesolutions.com). Another example of business focusing could also be seen in Done Wireless. The company originally called Done Wireless became an independent company and changed its name to Mginе Technologies. Another Done subsidiary then changed its name to Done Wireless. Mginе focus was on positioning and personalization software for use in the mobile environment (Done 2000e, 5; Done 2000c). It remained a part of the Done Wireless Solutions business area, but plans to list Mginе independently on the stock exchange were published at the beginning of December (Done 2000d).

### *7.1.2 Changes up until June 30, 2001*

During the first half of 2001, the diverging paths of Mginе and Done took some additional turns. The Done Wireless Solutions business area changed its name to Reach-U Solutions business area. Reach-U Solutions in turn was part of Mginе Holding Oyj. The Done Logistics Solutions and Done Information Solutions business had become the core of Done and were part of Done Solutions Oyj. Since I could not find any public graphical illustration of Done's organizational structure, I created my own, seen in FIGURE 20, based on the information available.



**FIGURE 20** The perceived organizational structure of the Done Corporation (30.6.2001)

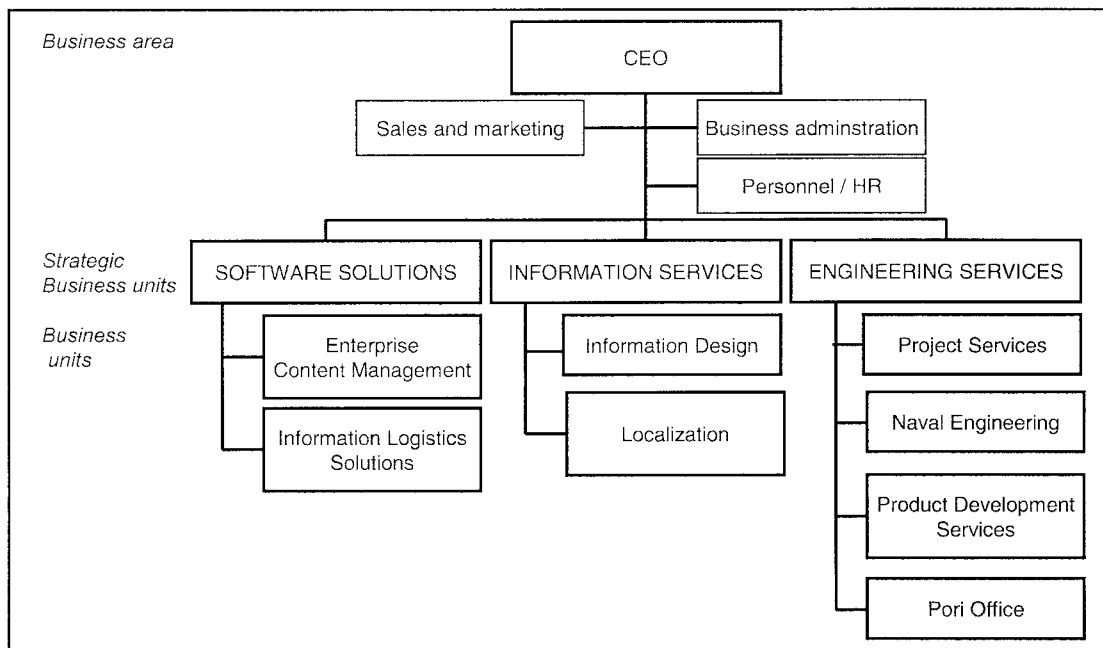
## **7.2 Changes in Done Information Solutions**

### *7.2.1 Organizational changes*

By the end of the first half of 2001, Done Information Solutions had undergone many changes. One interviewee commented that, compared to August 2000, only very few aspects of the BU have really remained the same from his perspective (Sol.Inter.5). As with Done as a whole, I consider the changes that took place in the Information Solutions as a complicated chain reaction in which various events and actors came together. As I have shown, capturing just one of these chain reactions is a challenge, and thus I will not even attempt to describe all the chains of events, but instead will look at how Done Information Solutions had changed from Autumn 2000 up until July 30<sup>th</sup> 2001.

The changes that took place can be best illustrated in the organizational structure. Earlier no documented description of the organizational structure of Done Information could be found. In July 2001, however, I received a clearer description of the structure (FIGURE 21). When the IFS implementation process began, a variety of naming conventions for the different levels of the organization existed. This had now been unified. The Done Information business area had been divided into strategic business units (SBUs), which contain several business units. The biggest single change in the business area was the addition of the Engineering Services SBU (Strategic Business

Unit) to the organization. The SBU is the in reality the former Projektivalvelu Corporation, acquired by Done September 4<sup>th</sup> 2000. The Software Solutions SBU has remained largely unchanged on the surface. Both of the business areas still exist, even though some changes have taken place in their personnel. Their movement within Done and from outside, 'recycled' the personnel in many ways, especially in the ILS business unit. However, in addition to these minor changes, some larger changes have also taken place within the SBU.



**FIGURE 21 Official organizational structure of Done Information Solutions (Done internal material)**

In the ECM BU, one clear was that the size of customer projects had grown, even quite radically, as a result, several interviewees commented that work has become more hectic (Sol.Inter.1; Sol.Inter.3; Sol.Inter.4). Even though the size of projects had grown, co-operation with other Done business areas was described as minimal, even though the co-operation within the Information business area was seen by some as improving gradually (Sol.Inter.3; Sol.Inter.4; Sol.Inter.5). The larger projects also meant changes in the general way work is carried out, as one interviewee commented:

“What we do is not quite so ad-hoc anymore, it’s more defined ... It’s more like working in a big company now ... some of the earlier entrepreneurship has disappeared. Before it was our company and our team. ... The human resource management, business administration and other such support

functions, have helped us get rid of some routines and helped clarify some things, but they have also caused bureaucracy and [organizational] inflexibility.” (Sol.Inter.3).

This may reflect the tighter integration of the Done group as a whole and especially the integration within the Information Solutions business area. The separate companies that joined Done have started melding into a larger entity. In the ILS BU, one main change trend has been the narrowing of the product range (Sol.Inter.5).

The Information Services BU has also undergone some internal structural changes. One major change was the decision to outsource a group of technical writers who had carried out contract work for other translation companies. This has allowed the SBU to focus on key areas such as documentation. The size of the documentation team has doubled to close to 30 people (Ser.Inter.2). As many of the members of the documentation team work at customer locations, more autonomy has been given to teams and team leaders (Ser.Inter.2). Another interesting change is that a person with the title of project manager started work from the beginning of May 2001 (Ser.Inter.2).

The project manager handles considerably larger entities [than a co-ordinator] ... the co-ordinators handle mainly orders, but the project manager handles only projects... So, for example, if we are doing some work for a customer, the project manager takes care that the customer does his part of the work .. he takes care that certain things are carried out by a certain date and so on .. now we talk about project management.

This comment reflects a similar trend as in the Software Solutions SBU: projects have grown both in size and complexity.

### *7.2.2 Changes related to the project processes*

The implementation of IFS did not significantly change the existing project processes in Done Information. The changes that did take place are more related to how well the project management tool supports projects. This is hardly surprising, as the project processes before the implementation had evolved over a considerable time period. Also, the speed and haste of the IFS implementation had hardly left room for change. For this reason, I will look at how the interviewees felt IFS supported or did not support the project processes of the different SBUs in Done Information Solutions.

In the second round of interviews, the opinions about IFS were both for and against. Some saw it as a necessary evil and some saw the opportunities it offered. One major trend that was apparent in most of the interviews was that IFS did not suit the operations of any SBU perfectly. In Information Solutions the majority of interviewees estimated that only 10-30 percent of the potential of IFS was being used (Sol.Inter.3; Sol.Inter.4; Sol.Inter.5). One interviewee saw IFS as just a very expensive invoicing system that was not really good for much else (Sol.Inter.4). In Information Services the estimate was considerably higher: “We are using 60 percent of its potential, but we really could make more use of it, there’s just been too little time to learn it, too many other things happening” (Ser.Inter.2).

The policy of minimal customisations to the system meant that the misfits that existed between the business processes embedded into IFS and the actual existing ways of working had to be bridged by adapting to IFS (Soh *et al.* 2000). In the Software Solutions business unit many commented that the project structure used by IFS was too bureaucratic: “Too much of that sort of fancy bureaucracy, what we need is a lighter version.. IFS Light ... all those things [features] are not really necessary” (Sol.Inter.1). “Even in big projects it [projects in IFS] easily becomes kind of like a shooting a fly with an elephant gun sort of a thing, but I’m sure it supports really big projects, so big in fact that few have projects that big” (Sol.Inter.5). Others saw the project structure of IFS as versatile, supporting a large variety of different types of projects and enabling different project structures (Sol.Inter.2; Sol.Inter.3). For some, the problem of bureaucracy was accentuated:

[In small projects] it [IFS] is just a necessary evil to be able to create an invoice. What’s the use of defining the structure, access rights and reporting codes for a two-day project, okay you can copy-paste them, but it’s an additional step and it easily takes half an hour to fill in the data, and all you want to do is to send the invoice.” (Sol.Inter.4)

Some, on the other hand saw that creating the project structure for was “easy and fast” (for example Sol.Inter.3). For the Information Services SBU, the project structure was not the main concern, even though they originally had doubts about it. This was probably because they had accepted it and learned to live with it. A bigger concern was the missing subcontracting module which meant that subcontracting invoices had to be

manually entered into IFS, which was far from problem-free (Ser.Inter.2; Ser.Inter.3; Ser.Inter.4). Another shortcoming was due to the way the co-ordinators needed to use IFS:

”The thing that bugs me the most is that it [IFS] is such a different tool for us than compared to Engineering or Logistics, who just throw in their hours every Friday afternoon. We need it actively, every 5 minutes or so. If the network fails or the server is unreachable then it **really** gets annoying. For quite some time there has been a tendency that on Friday afternoons it [IFS] does not work at all, because the whole gang rushes there to enter their hours. For our work, we need to have unobstructed access to the system at all times.” (Ser.Inter.1 emphasis added)

Since the co-ordinators were used to using the Access based system as a reference tool that was open all the time as they worked with other applications, being cut off from the system is understandably frustrating.

Invoicing was one operation that many of the interviewees in the first round of interviews had expected to become easier and more versatile. As with the issues I have discussed above, invoicing in IFS also had both advocates and critics. At one extreme were positive opinions such as this: “Invoicing is surprisingly easy nowadays, it’s no longer that eek, I have to invoice, it’s that time of the month or week ... It’s really easy and fast if you have carried out the basic preparations” (Ser.Inter.1).

During the first round of interviews interviewees in Information Services voiced an expectation that if the invoices are printed somewhere else, it would make life more difficult for the co-ordinators. This expectation did not become reality: “A positive thing about IFS is that it is fast and easy to modify invoices. You can modify them yourself and then the invoicing itself, well, even though the invoices are printed at [names another location] it’s still quick.” (Ser.Inter.3). In Information Solutions many saw as a big plus the possibility to carry out a project and invoice it in the same system, without having to manually transfer it from system to system (Sol.Inter.4; Sol.Inter.5).

At the other extreme, one interviewee saw invoicing in IFS as a major hurdle: “Especially invoicing is complicated, if you have to create a complex invoice or if you have to correct an invoice that you have made or you have made a mistake when

creating the invoice, then it's oh dear [how complicated]" (Sol.Inter.3). Reporting with IFS also divided opinions. Some interviewees named examples of useful reports they could get from IFS (Ser.Inter.2), while others commented that to create useful reports, the data first has to be exported from IFS and then modified with a tool like MS Excel (Sol.Inter.4).

All in all, the IFS implementation swept through Done and Done Information at such a speed that they did not really have time implement major changes in the project processes. The financial needs acted as a primus motor for the implementation and that could be seen in the results. The primary function of the system was that it enabled invoicing, but the features relating to managing projects and project processes were left out in the rush to get the system implemented. To increase IFS use, several interviewees suggested carrying out a second implementation (Sol.Inter.3; Sol.Inter.5; Sol.Inter.6).



## 8 DISCUSSION AND CONCLUSIONS

The implementation of IFS in Done involved a variety of issues, some technical and some organizational. Analysing the events and phases that took place during the implementation can, however, only reveal so much. Many of the events that took place could be dismissed as unique, taking only place in the Done implementation. In this chapter, I will look at the difficulties I encountered in trying to record and describe the roles the different actors played in the IFS implementation, and at how I tried to solve these problems. In addition, based on my experience of the IFS implementation in Done, I also provide a tentative framework for interpreting enterprise-wide changes. The framework I present is based on the concept that a large enterprise consists of a hierarchical collection of actor networks, each containing a number of smaller actor networks. These levels are aligned or misaligned with each other, depending on how successful the translations made between these networks are. Primarily, I see that the framework could be used for explaining IS implementations in large enterprises, but I also provide an example of other possible applications by using the framework to explain how corporate business visions filter through the different levels of an organization. Last, I discuss what in general should be done to ensure the successful implementation of enterprise-wide information systems.

### 8.1 Implementation overview

#### *8.1.1 From events to themes*

In chapter 6, I attempted to dissect some of the key events and phases of the IFS implementation in Done. To accomplish this, I used concepts of actor-network theory combined with IS implementation related issues I found by reviewing literature. I am convinced that this deeper analysis of the implementation process helped to highlight some of the complex chains of events that took place during the implementation and the various roles both humans and non-humans played in the IFS implementation actor-network. On one hand, I see that research like this that is centred around a single case as

valuable, since the descriptions of events and phases were very detailed, which helped highlight the truly intertwining relation between technology and organizational change, as found by for example Karsten (2000). On the other hand, the case centred approach means that the events and issues that the implementation included can, critically viewed, be seen as examples of the unique challenges of ERP implementations Markus et al. (2000) write about.

I believe that the truth is really somewhere between these two. Admittedly, the exact circumstances that existed in Done are probably unique, but at the same time some themes, like the influence of money that Callon (1991; 1999) writes about, is unquestionably a theme that in its various shapes will remain an issue for all foreseeable IS implementations. The problems of misfits that exist between the way an organization works and the way an information system works, really exist with any packaged software introduced into an organization (Soh *et al.* 2000). What I would like emphasize, however, is that even though many of the issues can be seen in smaller IS implementations as well, in an enterprise-wide implementation they take place on multiple levels of an organization. In the Done implementation, the misfits were not only abstract problems faced by business units or teams, but also visible problems faced by individual employees. While some saw invoicing as easy, others saw it as a major hurdle. This way the organizational misfits became personal misfits also.

To further expand this notion of how problems are faced on multiple levels of the organization, and to provide an analysis of enterprise wide IS implementations that does not only reflect the Done implementation, I have incorporated my experience of the Done implementation with actor-network theory into the tentative framework I present below.

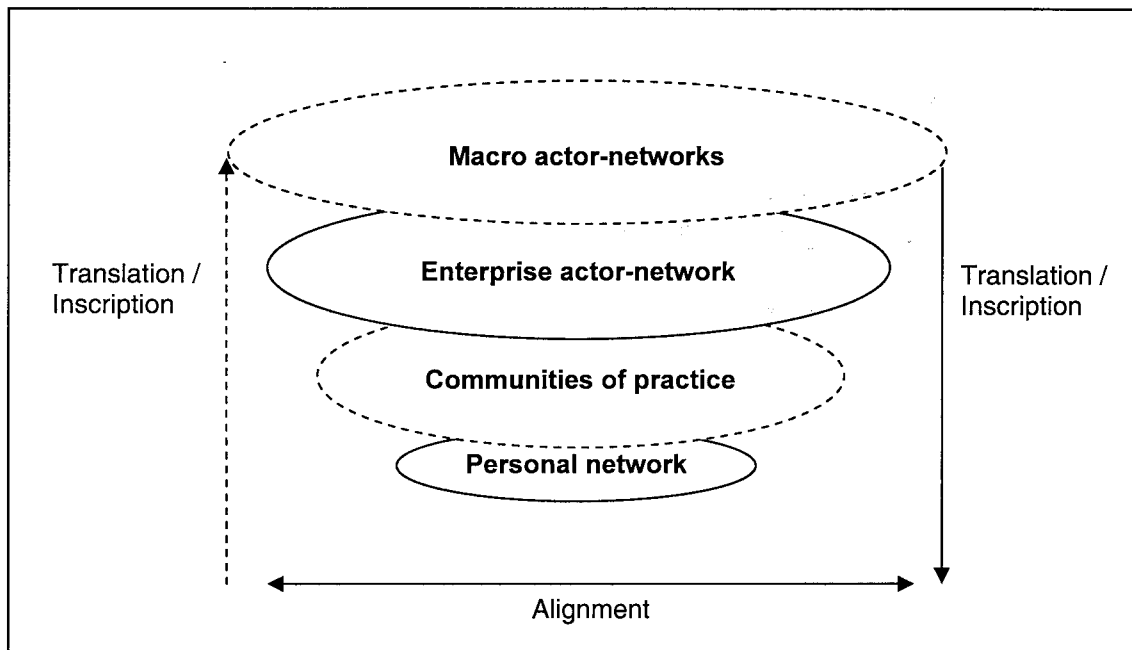
## 8.2 Tentative framework for explaining enterprise-wide IS implementations

### 8.2.1 *Enterprise, a network of networks*

The basic premise for the framework I present below is that each individual actor can also be considered a network of actors. Using this perspective, a large enterprise, such as the Done group, can be considered a network consisting of smaller networks, which in turn can consist of yet smaller networks and so on. In the case of Done, a business area consists of business units which, in turn, consist of teams which can in turn consist of sub teams and so on. As discussed, how far this dissection of actors into networks continues, is a matter of convenience (see Hanseth and Monteiro 1997). For simplification purposes, I will end my dissection by slicing up the network that an individual employee actor is made up of.

The employee actor-network is made up of an incredible collection of bits and pieces. If you consider all the different human and non-human actors that define you as a person, then the list will be very long. To name just a few, consider your family, the house and neighbourhood you live in, the car you drive, the clothes you wear and the school or university you studied at - the list is endless.

To define the next level of my framework, I will borrow Wenger's (1998) concept of *communities of practice*. Communities of practice, which I will abbreviate COP, are informal and pervasive communities exist all around us. We often are not even aware of them even though we are members of many of these communities every day. In companies, although workers may be contractually employed by the company, in their day-to-day work, they operate with an in a much smaller set of people – a community of practice (ibid., p. 6).



**FIGURE 22** Illustration of tentative actor-network framework

Examples of such a COPs in an enterprise, such as Done, include project teams, departments, business units and business areas. Members of these communities are bonded together by something, be it the space they work in or the type of work they do. It might be even something that is not even directly related to the work they do. For example, employees who support the same sports team can form their own little community of practice. The community just has to have something in common. Since COPs exist everywhere, they often overlap. In addition, I see that larger, more abstract COPs can encompass smaller COPs, for example, a business area consists of several business units. This is why the second level of my framework is just called communities of practice, because any number of COPs can exist within an enterprise.

Thus, on the bottom level of the framework, each individual employee is considered a network, but on the next level, the employee becomes an actor in various COPs. Each COP actor-network is thus made up of yet another collection of actors, both human and non-human. Thus, as we climb up the framework, the level of abstraction of the actors increases, similar to the concept of using black-boxes (for example Latour 1987) to hide the internal complexity of actors. I would like to point out, however, that a business unit

in a changing organization such as Done should not be considered a black box, before the internal network of the BU is completely aligned.

Continuing this concept of COPs within COPs, the third level of the framework, enterprise actor-network, can also be considered just another COP. For the purposes of this thesis, however, I wish to look at the levels separately. Considering Done, the enterprise actor-network consists of all the businesses of Done. The fourth level is a logical macro level, which for example, could be Finland. Thus, it includes all the companies and enterprises operating in Finland. Using the three bottom levels of the framework, any enterprise, or organization for that matter, can be divided into levels. The reason why this division is important, is because of the process of translation and alignment takes place between the levels.

### *8.2.2 Alignment through translation*

When an enterprise-wide IS implementation is implemented, it is never a decision which each and every employee in the organization gets to participate in. Like in Done's case, the decision is often made in the top levels of the organization. After such a decision is made, steps must be taken to ensure that the implementation will go as smoothly as possible. In practice, this means getting the commitment and support of the different businesses, or COPs that make up the enterprise. I see Joe's first email about the implementation as an example of such an attempt. In terms of ANT, Joe was trying to enrol the different business areas to the IFS implementation actor-network.

As I have showed, the results were not that great. Only the Done Information business area participated actively, while others remained very passive about the whole implementation. I see that the first and subsequent emails Joe sent were in fact devices of interessement which were not successful because they were not strong enough to keep the business areas from becoming interested in other anti-programs. Ongoing customer projects and the desire to make a profit were enrolling the business areas to their actor-networks using one powerful device of interessement - money. Viewed in hindsight, to counter these anti-programs, Joe should have translated what the IFS implementation meant for the business areas in terms of money. Actual figures about

the cost of the implementation in terms of lost working hours and of the savings IFS would give through better financial control might have been more successful.

Joe, however, did manage to enrol Done Information, because Information Services and Information Solutions saw the advantages that could be gained from the new system. In Information Services, the will to get rid of the old system was motivation enough. The motives for Information Solutions were somewhat more varied. On one hand, the improved features were seen as a good point, but on the other hand, not cooperating was seen as just delaying the inevitable:

“If a decision has been made on the corporate level that a system like this [IFS] will be taken into use, then it really does not help much if we start fighting it. The faster we get it implemented and the faster we get it up and running, the more likely our life with the corporate level will be easier. Purely selfish reasons really.” (Sol.Inter.4)

Thus, various communities of practice became aligned with the actor-network of IFS implementation for various reasons. At first, it seemed that the whole Done Information had become aligned, but this proved to be incorrect. For example, the ILS BU could not participate actively because they were under constant pressure to create a profit. For the ILS BU to become aligned with the IFS implementation, a new translation should have taken place between the business area and the business unit. Simply relaying the message coming from the enterprise level was pointless, since it did not take into consideration the interests of the business unit.

Thus, each level of the framework tries to enrol the level below it using translation and devices of interessement to get the actors to align with enterprise actor-network. In the case of the ILS BU, I see that another more powerful translation prevented the BU from becoming properly aligned with the IFS implementation. The pressure to create a profit was a stronger translation, or even an anti-program that simple devices of interessement such as emails or meetings could not counter. It had become inscribed into the business unit over time through business unit managers, project managers, project documentation and countless other intermediaries.

Accordingly, at outset the various actors that an enterprise consists of, are misaligned. The example of the ILS business unit is just one example of how the different levels can be misaligned. The COPs might be misaligned in terms of business visions, working ethics, employee treatment, salary guidelines, political opinions, ideas about the best ice hockey team and so on. Some of these misalignments are irrelevant to running the business; e.g. differences in opinions about what the superiority of one hockey team over another between two project teams will not prevent them from working together, but opinion differences concerning salary guidelines between the management of a business unit and the teams that the BU is made up of might well result in co-operation problems. Alignment can also take place on a smaller scale, for example the different teams that make up a business area might share the same business vision, but the vision is not that supported by the management of the whole enterprise. This way partial alignment can also take place.

Alignment and translation can also takes place in the enterprise from the bottom up. If a certain COP has certain interests it is pursuing, it might also attempt to enrol and align the larger COP that encompasses it. An example of this would be a department trying to adjust the salary guidelines of a business area to such a level that the department could keep hold of some key employees planning to leave the department in search of better paid jobs. Over time, the translations made by the department would then become inscribed into the way the whole business area operates. Admittedly, this interpretation differs from the concept offered by Callon, since I see that an actor can also enrol a network to serve its own interests also, not only vice versa. This interpretation, however, is not part of the core of the framework and should therefore only be considered a possible expansion of the framework. For this reason, I will not discuss this aspect of the framework further.

The alignment that takes place during an enterprise-wide implementation consists to a large part of top-down translation and alignment. The aim of the implicit alignment process is to create a shared understanding of the IS implementation, and through it gain commitment from the various COPs that exist within the enterprise.

### 8.2.3 *Other applications of the framework*

Since the framework itself does not distinguish for what purpose the alignment is carried out, it has possible applications in other enterprise-wide issues. One example of such an application is explaining how the business vision of the corporation is translated between the different levels of the enterprise, so that finally it is expressed in a way the employee can relate to in his or her daily work. The question of business vision differs in many ways from an IS implementation, therefore creating a direct correspondence between the two is a major simplification. To investigate the issue, however, I introduced the theme of business vision in to the second round of interviews. The responses I got supported my interpretation of the importance of translation between the different levels of the enterprise. The general impression I got from the interviews was that since Done was changing so rapidly, there was not enough time to translate the visions of the corporate management into terms the employee could understand. The following quotes seem to support this interpretation:

“The vision has to be expressed in a more understandable form, they should not just be in the cabinets of the management. Even though it [the vision] is written down in some abstract form in the business plan, what does that mean in practice - on the grass roots level.” (Ser.Inter.1)

“I’m sure the business vision would be visible in my daily work **if it did not change every month**, there is never enough time to take it through the entire organization”. (Sol.Inter.4)

Partial alignment, however, seemed to be taking place:

“The business units have really been given a lot independence. At the moment I focus on what my BU is doing, and I don’t really have the energy to think about what Done or Done Information is doing.” (Ser.Inter.2)

These few quotes give some indications that the framework could possibly be applied to other enterprise-wide issues as well. Since applying my tentative framework in a scientific way to other examples enterprise-wide activities was outside the scope of this thesis, the generalization of the framework is highly speculative at the time, and therefore applying it to explain other similar phenomena should be at least attempted.



### **8.3 Reflections on the process**

#### *8.3.1 Own role in the implementation*

During my research, I encountered many of the problems I read about in the literature on action research I reviewed. Implementing interventions in a organized and scientific way was considerably more difficult than I had anticipated. Originally I was hoping to be able to first review the current situation in detail, then to implement an carefully planned intervention and finally to review the results of my intervention. In practice, I fell far short of this controlled three-phase intend-act-review cycle. Planning and reviewing interventions became increasingly difficult as my participation and the intensity of the implementation process increased. Originally I was hoping to carry out interventions of a larger scale and during a longer time period, so that I could control and follow how my intervention affected the implementation process.

However, as the implementation process I studied soon proved considerably more unpredictable than anybody had expected, my actions soon became more reflexive and ad-hoc, than carefully planned and controlled interventions. The powerful and multi-dimensional organizational changes that took place in Done meant that following the implementation and recording the results of my own actions was in many cases impossible. There were some exceptions, however. I consider some larger events, such as the simulation days and the presentations I gave, an example of a controlled intervention. Even if in hindsight, I did not consider the research I conducted as action research at the end of my study, I still participated actively in the implementation process, and thus had some effect on how it went. The large number of other changes taking place in the organization further complicated things. Changes in the organizational structure, ways of working and the people involved in the process, to name but a few, made it difficult to deduce what changes were the result of my own interventions and what were the result of other changes taking place.

Despite my attempts to stay objective during the implementation, I am convinced that the story I have described is just one of many. One shortcoming of this study was that the interviews I carried out did not include the corporate management. The main reason

for this was that at the beginning of the implementation, I did not see that the comments of the corporate management were relevant to the project processes of Done Information. The situation later changed, as I have shown. Me being nominated subproject manager for the project management module meant a considerable change in the focus of the study, since I really became a part of the implementation organization and was no longer the observer. I do feel that I managed to capture at least a part of what was happening in Done during the implementation process. A different researcher working a different part of the organization probably would have given a different interpretation of the events. Taking into consideration the limitations of working alone, I see that description of the process is valuable, for this research and as material for further research.

### *8.3.2 What should be done ensure successful implementations?*

Looking beyond the technical problems that plagued the IFS implementation in Done, I believe that one of the most important issues in ensuring the success of an enterprise-wide implementation is the alignment of the whole enterprise toward a common objective. Without coordinated alignment of the different parts of the enterprise, a considerable amount of time and energy can be wasted. I feel that coordinated alignment requires that translations are carried out in a planned and organised manner, using devices of interessement that are powerful enough to enrol the essential communities of practice to the implementation actor-network.

The alignment of the enterprise is, however, only the first step in the process. Even with the commitment of the whole organization, the implementation will always include numerous unique technical and organizational challenges that even the most well prepared project team cannot anticipate. Since an enterprise is constantly changing, the implementation of an enterprise-wide IS is never an once-in-a-lifetime event, but as the organization changes, additional implementations must be carried out, even though they might be in a smaller scale than the original. This is why I see that even the alignment of an enterprise requires a considerable amount of planning and resources, the investment will still pay itself back over time.

## REFERENCES

Callon, M. (1986). Some elements of a sociology of translation: domestication of the scallops and the fishermen of St Brieuc Bay. In J. Law (Ed.), *Power, action and belief*. London: Routledge & Kegan Paul. 196-233.

Callon, M. (1991). Techno-economic networks and irreversibility. In J. Law (Ed.), *A sociology of monsters*. London: Routledge. 132-161.

Callon, M. (1999). Actor-network theory – the market test. In J. Law and J. Hassard (Eds.), *Actor Network Theory and after*. Oxford: Blackwell. 181-195.

Conventum. (2000a), Offering circular information about DONE shares (released June 2.2000).

Conventum. (2000b), Analysis of Done by Conventum. 31 pages.

Czarniawska, B. & Sevón, C. (Eds.) (1996). *Translating Organizational Change*. Berlin: Walter de Gruyter.

Dick, B. (1993). Thesis resource paper - You want to do an action research thesis?. [online], [date of reference 19.10.2001]. Available in <<http://www.scu.edu.au/schools/gcm/ar/art/arthesis.html>>.

Dick, B. (1997). Resource paper - Approaching an action research thesis: an overview. [online], [date of reference 18.10.2001]. Available in <<http://www.scu.edu.au/schools/gcm/ar/arp/phd.html>>.

Done (2000a). Stock exchange release: Done has acquired Alpha Communications Oy and it's subsidiaries abroad. [online], [date of reference 23.11.2001]. Available in <[http://www.donesolutions.com/inenglish/sisalto/sijoittaja\\_05.htm#](http://www.donesolutions.com/inenglish/sisalto/sijoittaja_05.htm#)>.

Done (2000b). Stock exchange release 4.9.2000: Done has acquired majority of Projektipalvelu corporation. [online], [date of reference 23.11.2001]. Available in <[http://www.donesolutions.com/inenglish/sisalto/sijoittaja\\_05.htm#](http://www.donesolutions.com/inenglish/sisalto/sijoittaja_05.htm#)>.

Done (2000c). Stock Exchange release 19.10.2001: Done reorganizes its Wireless business into two companies. [online], [date of reference 21.10.2001]. Available in <[http://www.donesolutions.com/inenglish/sijoittaja\\_05\\_frame.htm](http://www.donesolutions.com/inenglish/sijoittaja_05_frame.htm)>.

Done (2000d). Stock Exchange release 1.12.2001: Done will start investigating potential listing of Mginet Technologies Corporation. [online], [date of reference 21.10.2001]. Available in <[http://www.donesolutions.com/inenglish/sijoittaja\\_05\\_frame.htm](http://www.donesolutions.com/inenglish/sijoittaja_05_frame.htm)>.

Done (2000e). Annual report 2000. [online], [date of reference 21.10.2001]. Available in <[http://www.donesolutions.com/inenglish/done\\_vsk\\_eng\\_www.pdf](http://www.donesolutions.com/inenglish/done_vsk_eng_www.pdf)>.

Done (2001). Interim report 1.1. 2001 – 30.6.2001. [online], [date of reference 21.10.2001]. Available in <[http://www.donesolutions.com/inenglish/Done\\_Interim%20Report-2-01.pdf](http://www.donesolutions.com/inenglish/Done_Interim%20Report-2-01.pdf)>.

Gasson, S. and Holland, N. (1996). The Nature and Processes of IT-Related Change. In W. J. Orlikowski, G. Walsham, M. R. Jones and J. I. DeGross (Eds.), Information technology and changes in organizational work. Proceedings of the IFIP WG8.2 working conference, December 1995, Cambridge, UK. London: Chapman & Hall. 213-235.

Grint, K., Case, P. and Willcocks, L. (1996). Business Process Reengineering Reappraised: The Politics and Technology of Forgetting. In W. J. Orlikowski, G. Walsham, M. R. Jones and J. I. DeGross (Eds.), Information technology and changes in organizational work. Proceedings of the IFIP WG8.2 working conference, December 1995, Cambridge, UK. London: Chapman & Hall. 39-61.

Hanseth, O. and Monteiro, E. (1997). Understanding Information Infrastructure. [online], [date of reference 23.11.2001]. Available in <<http://www.ifi.uio.no/~oleha/Publications/bok.html>>.

Hanseth, O. and Braa, K. (1998). Technology as Traitor. SAP infrastructures in Global Organizations. In R. Hirscheim, M., and J.I. DeGross (Eds.), Proceedings from 19th Annual International Conference on Information Systems (ICIS), Helsinki, Finland, December 13-16, 1998, p. 188 - 196.

Hirsjärvi, S. and Hurme, H. (1988), Teemahaastattelu. Helsinki: Yliopistopaino

Hughes, I. (1998). How to keep a research diary. [online report], [date of reference 18.10.2001]. Available in <<http://www.cchs.usyd.edu.au/arow/reader/rdiary.htm>>.

Huttunen, R. and Heikkinen, H. L. T. (1999). Kriittinen teoria ja toimintatutkimus. In H. L. T. Heikkinen, R. Huttunen, and P. Moilanen, (Eds.), Siinä tutkija missä tekijä. ATENA kustannus: Juva.

Huttunen, R., Kakkori, L. and Heikkinen, H. L. T. (1999). Toiminta, tutkimus ja totuus. In H. L. T. Heikkinen, R. Huttunen, and P. Moilanen, (Eds.), Siinä tutkija missä tekijä. ATENA kustannus: Juva.

IFS (2000a). IFS/Document Management. [online], [date of reference 21.10.2001]. Available in <[http://www.ifsworld.com/products/pdf/General/doc\\_mgmt\\_e.pdf](http://www.ifsworld.com/products/pdf/General/doc_mgmt_e.pdf)>.

IFS (2000b). IFS Applications overview summary (6 pages).

IFS (2001). IFS Applications 2001 (Product information leaflet published by IFS). Can be ordered online at <[http://www.ifsworld.com/contact\\_us/order\\_info.asp](http://www.ifsworld.com/contact_us/order_info.asp)> [date of reference 21.10.2001].

IT-viikko (2001a). Donen tulos lähes kaksinkertaistui. [online], [date of reference 25.11.2001]. Available in <<http://www.itviikko.fi/uutiset/uutinen.asp?UutisID=44081>>.

IT-viikko (2001b). Donen tietotekniikka lepää Patjalla. [online], [date of reference 23.11.2001]. Available in <<http://www.itviikko.fi/uutiset/uutinen.asp?UutisID=45870>>.

Jones, M. R. (1998). Information systems and the double mangle: Steering a course between the Scylla of embedded structure and the Charybdis of strong symmetry. In T. Larsen, L. Levine and J. DeGross (Eds.), *Information systems: Current issues and future changes*. Proceedings of the IFIP WG8.2/8.6 Joint Working Conference. Helsinki, Finland: IFIP. 287-302.

Karsten, H. (1995). Converging paths to Notes: In search of computer-based information systems in a networked company. *Information Technology and People*, 8(1). 7-34.

Karsten, H. (2000). *Weaving tapestry: collaborative information technology and organizational change*. Jyväskylä, Finland: Jyväskylä University Printing House. Doctoral dissertation.

Kemmis, S. (1994). Action Research. In the book Husén, T. & Postlewaithe, N.(eds). *International encyclopedia of education*. Volume 1. Exeter: Elsevier.

Kumar, K. and Van Hillegersberg, J. (2000). ERP experiences and evolution. *Communications of the ACM* April 2000/Vol.43,No. 4, 23 – 26.

Latour, B. (1987). *Science in Action: How to Follow Scientists and Engineers Through Society*. Milton Keynes Open University Press, 1987.

Latour, B. (1991). Technology is society made durable. In J. Law (Ed.), *A sociology of monsters*. London: Routledge. 103-131.

Latour, B. (1999). On recalling ANT. In J. Law and J. Hassard (Eds.), *Actor Network Theory and after*. Oxford, UK: Blackwell. 15-25.

Laudon, K.C. and Laudon, J.P. (2000). *Management information systems*. 6th Ed., Upper Saddle River, NJ: Prentice-Hall Inc.

Law, J. (1986). On the methods of long distance control: vessels, navigation and the Portugese route to India. In J. Law (Ed.), *Power, action and belief*. London: Routledge & Kegan Paul. 234-263.

Law, J. (1992). Notes on the theory of actor-network: ordering, strategy, and heterogeneity. *Systems Practice*. 5(4). 379-393.

Lewin, K. (1945). *Resolving Social Conflict*. New York: Harper & Brothers.

Lozinsky, S. (1998). *Enterprise-Wide Software Solutions*. Reading, MA: Addison-Wesley.

Lyytinen, K. and Hirscheim, R. (1987). Information systems failure: A survey and classification of the empirical literature", *Oxford Surveys in Information Technology* 4, 257-309.

Markus, M.L., Tanis, C. and van Fenema, P.C. (2000). Multisite ERP implementations. *Communications of the ACM* April 2000/Vol.43,No. 4, 42-46.

McMaster, T., Vidgen, R.T. and Wastell, D.G. (1997). Technology transfer: diffusion or translation? In the *Proceedings of Facilitating Technology Transfer through Partnership: Learning from practice and research*, IFIP WG8.6 Working Conference on Diffusion, Adoption and Implementation of Information Technology, 25-27.6.1997, Ambleside, Cumbria, UK, London. Chapman & Hall. 64-75.

McNiff J., Lomax P. and Whitehead J. (1996) *You and Your Action-Research Project*, New York: Routledge.

Mintzberg, H. (1983). *Structure in fives designing effective organizations*. Englewood Cliffs, N.J. Prentice-Hall.

Monteiro, E. and Hanseth, O. (1995). Social shaping of information infrastructure: on being specific about the technology. In W. J. Orlikowski, G. Walsham, M. R. Jones and J. I. DeGross (Eds.), *Information technology and changes in organizational work*. Proceedings of the IFIP WG8.2 working conference, December 1995, Cambridge, UK. London: Chapman Hall. 325 - 343.

Monteiro, E. (2000). Actor-network theory. In C. Ciborra and associates (Eds.), *From control to drift: The dynamics of corporate information infrastructure*. Oxford, UK: Oxford University Press.

Orlikowski, W. J. (1993). Learning from Notes: Organizational issues in groupware implementation. *The Information Society*. 9(3). 237-150.

Orlikowski, W. J. (2000). Using technology and constituting structures: A practice lens for studying technology in organizations. *Organization Science* 11(4). 404-428.

Scheer, A-W. and Haberman, F. (2000). Making ERP a success. *Communications of the ACM* April 2000/Vol.43, No. 4, 57-61.

Soh, C., Siew Kien, S. and Tay-Yap, J. (2000). Cultural fits and misfits: is ERP a universal solution? *Communications of the ACM* April 2000/Vol.43, No. 4, 47-51.

Sprott, D. (2000). Componentizing The Enterprise Application Packages. *Communications of the ACM* April 2000/Vol.43, No. 4, 63 – 69.



Tatnall, A. and Gilding, A. (1999). Actor-Network Theory and Information Systems Research. Proceedings of the Australasian Conference on Information Systems, December 1999, Wellington, NZ. 955-966.

Tietoviikko. (2000a). IFS hakee ostajaa. [online], [date of reference 23.11.2001]. Available in <<http://www.tietoviikko.fi/doris/Doriswww.Dll?dpubl&STiviSearch,10192>>.

Tietoviikko. (2000b). IFS kiistää vaikeudet. [online], [date of reference 23.11.2001]. Available in <<http://www.tietoviikko.fi/doris/Doriswww.Dll?dpubl&STiviSearch,10220>>.

Van Everdingen, Y., Van Hillegersberg, J. & Waarts, E. (2000). ERP adoption by European midsize companies. Communications of the ACM April 2000/Vol.43,No. 4, 27 – 31.

Van Maanen, J. (1988). Tales of the field: on writing ethnography. Chicago, IL, USA: University of Chicago Press.

Wenger, E. (1998). Communities of practice: learning, meaning and identity. New York, USA: Cambridge University Press.

## Appendix 1: List of Interviewees and Done internal material used

The reference name for each reference has the following format: **xxx.yyy.zzz**

xxx = Indicates if the business unit from which the information comes from.

Ser=Information Services

Sol=Information Solutions

O=Other

yyy = Indicates the type of the source used

Doc=Documentation, manuals etc.

Email=Answers and/or material supplied by email

Inter=Interview

zzz=Indicates the subject

### First round interviews and material used

Reference name	Description of source	Date received/conducted
Ser.Doc.Quality	Quality handbook of Alpha communications (draft March 2000)	13.9.2000
Sol.Doc.PM1	The general project model of the Knowledge Management team of Information Solutions	1.9.2000
Sol.Doc.PM2	Written documentation for the general project model of the Knowledge Management team of Information Solutions	1.9.2000
Ser.Email.A	Team Leader, Tampere	24.1.2001
Ser.Inter.B	Team Leader, Tampere	27.10.2000
Ser.Email.B	Team Leader, Tampere	12.1.2001
Ser.Inter.C	Business unit manager, Helsinki	24.10.2000
Ser.Inter.D	Project co-ordinator, Tampere	27.10.2000
Ser.Email.D	Project co-ordinator, Tampere	Numerous
Ser.Inter.E & F	Group interview of two project co-ordinators, Helsinki	24.10.2000
Ser.Email.E	Project co-ordinator, Tampere	Numerous

Ser.Inter.G	(Phone Interview), MS Access system designer, UK office	30.3.2001
Ser.Inter.H	(Phone Interview) Team Leader, Helsinki	13.6.2001
Ser.Email.H	Translator, Tampere	2.3.2001
Ser.Inter.I	Business controller, Tampere	27.10.2000
Sol.Inter.A	Production manager, Jyväskylä	13.11.2000
Sol.Inter.B	Project manager, Jyväskylä	21.11.2000
Sol.Email.B	Project manager, Jyväskylä	26.3.2001
Sol.Inter.C	Production manager (ILS), Espoo	22.11.2000
Sol.Inter.D	Project manager, Jyväskylä	15.11.2000
Sol.Inter.E	Production manager (New Media), Jyväskylä	21.11.2000
Sol.Inter.F	Business unit manager (ILS), Espoo	22.11.2000
Sol.Email.G	Assistant, Espoo	22.3.2001
Sol.Inter.H	Project manager (ILS), Espoo	22.11.2000
Sol.Inter.I	Key account manager, Espoo	22.11.2000
Joe.1	IFS implementation project manager, Helsinki	7.12.2000

**Second round interviews:**

<b>Reference name</b>	<b>Date conducted</b>
Ser.Inter.1	14.6.2001
Ser.Inter.2	18.6.2001
Ser.Inter.3	18.6.2001
Ser.Inter.4	18.6.2001
Ser.Inter.5	18.6.2001
Sol.Inter.1	14.6.2001
Sol.Inter.2	14.6.2001
Sol.Inter.3	14.6.2001
Sol.Inter.4	16.7.2001
Sol.Inter.5	20.6.2001

Sol.Inter.6	20.6.2001
Joe.2	17.5.2001

## Appendix 2: Basic themes for first round interviews

### **Work description / History**

- Basic information

### **Expectations of IFS**

- What sort of reporting possibilities do you expect to have?
- How do you think your work will change as a result of IFS?
- How do you expect project management to change?
- What do you know of ERP?
- What do you know of the implementation project?

### **Project reporting**

- What are the best and worst features in the current project management and supporting information system?
- What features do you feel are missing from the project management information system currently in use or what do you feel should be improved?
- Projects - do they go according to some model?
- The most important tasks of a project manager?

## Appendix 3: Interview structure used in the second round of interviews

### **1. How has your work changed from last summer?**

- In general?
- How do you feel IFS has changed you work?

### **2. IFS now**

- What expectations of IFS you made earlier have been filled and what have not? (included was a list of expectations listed on the first round of interviews)
- Is using the system (IFS) easy at the moment?
- Do you feel IFS supports operative work / strategic planning, how?
  - Does it support the special needs of this office?
- Functionality / technical problems of the system?
- Technical support?

### **3. What things do you feel have improved compared to the project reporting systems in use before IFS?**

### **4. What changes do you feel have taken place in projects since last summer?**

- Larger projects?
- More cooperation?
- Cooperation with offices abroad?

### **5. How do you feel IFS supports project operations?**

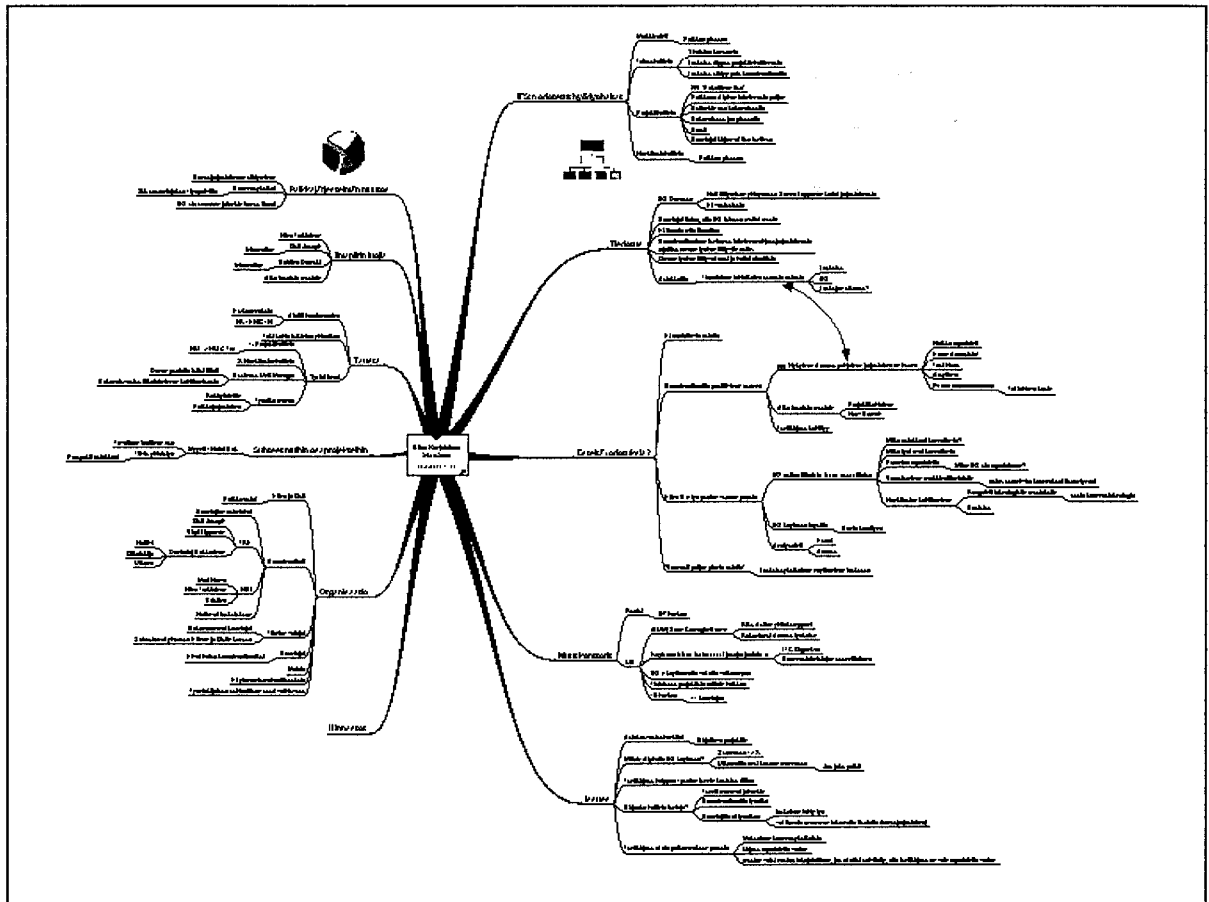
- Small projects
- Large projects

### **6. Your opinion of the IFS implementation (In Done as a whole/ in Done Information/ in your business unit)?**

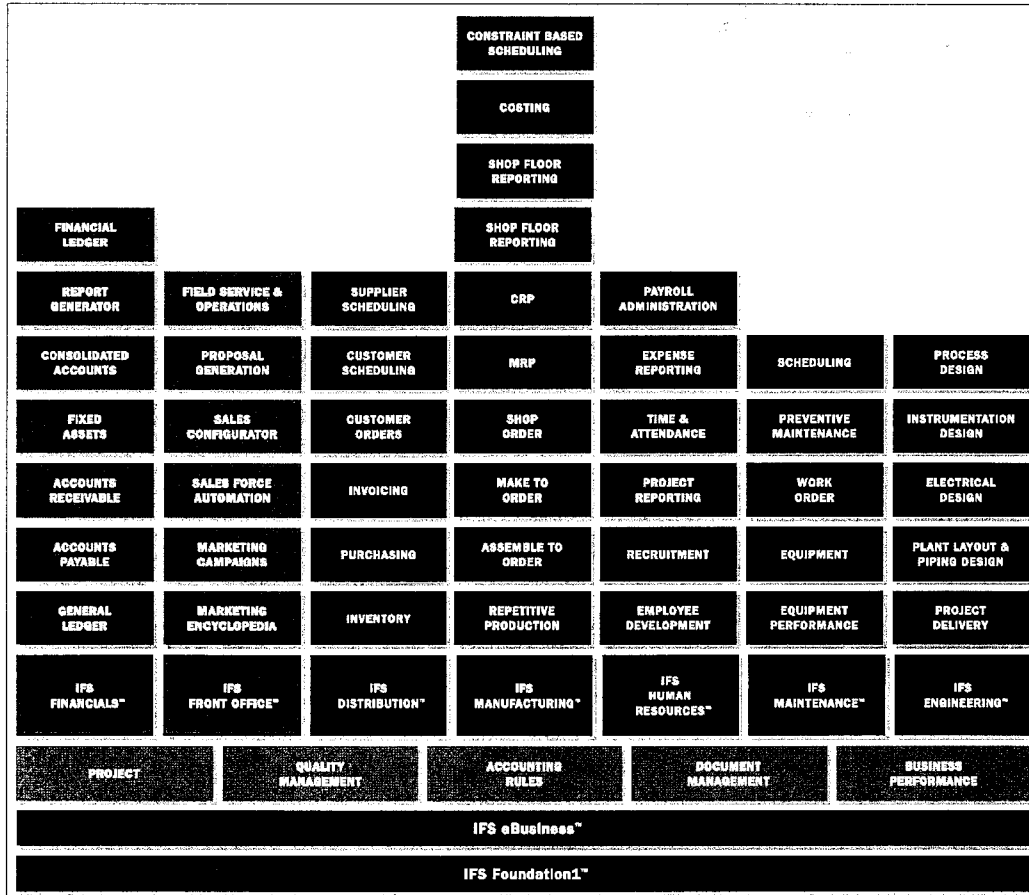
### **7. Define the Done business vision**

- Who does it show in your daily work?
- Have the operations of your business unit been adjusted to reflect this vision?

## Appendix 4: Overview of a mindmap generated by MindManager



Appendix 5: IFS Applications 2000™ business components



Business components of IFS Applications 2000 (IFS 2000a, 4)