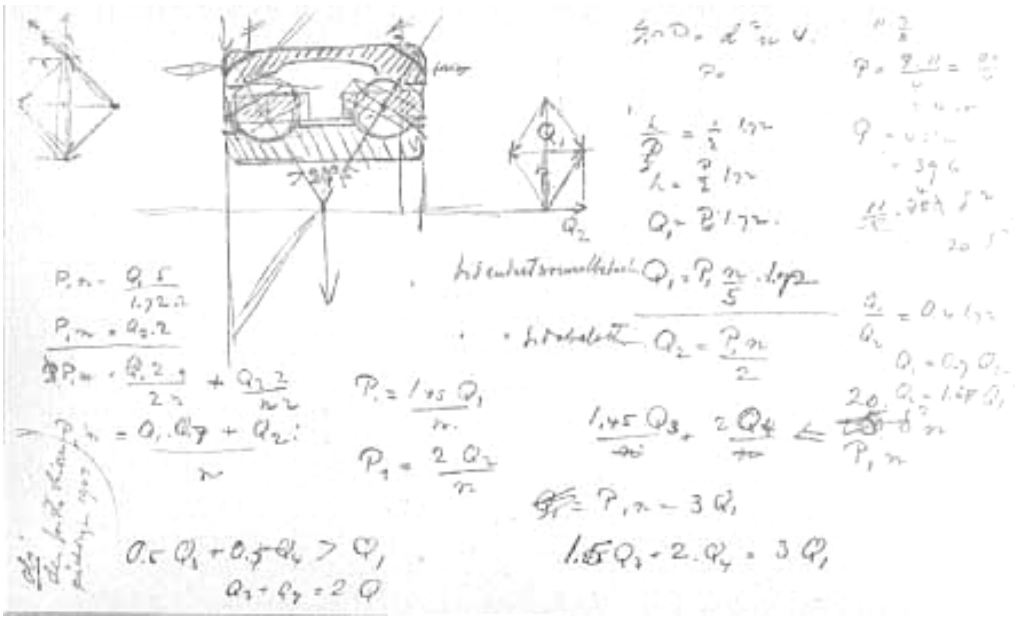
Institutionen för
INFORMATIK
vid Göteborgs universitet

**MASTER OF SCIENCE THESIS**
May 1999

# SKF- A CASE STUDY

## ROLES & RESPONSIBILITIES IN IT ISSUES



At one page in the young talented Swedish engineer, Sven Wingkvist's drawing-book from 1907 the world's first self- adjusting bearing was shown. The same year as the self- adjusting bearing was a commercial reality SKF was founded.


**Supervisors:**
Kalevi Pessi, Dept of Informatics, Gothenburg
Jan-Olof Erlandsson, SKF
Paul Nagel, SKF

**Authors:**
Martin Malmros 680405
Petra Wallin 700115

# SUMMARY

This master thesis concerns the roles and responsibilities of IT issues in Supply Chain, which is SKF's biggest business process. Our investigation focuses on the three different roles, IT orderer, IT supplier and Supply Chain management and their responsibilities. This thesis consists of an evaluation of how these roles experience the current situation and how the desired situation looks like. We have studied the similarities and the differences between these two situations. Since there are two different views of the desired situation, of how working situation could be improved, we have compared the desired situation from the top-management point of view with the one that the employees have communicated to us. With this material as a base, we have compared the current situation with Hugoson's model to see if, by using this model, it is possible for SKF to reach a desired situation. To investigate this we have studied literature and made interviews. We have come to the conclusions that the process organisation is not rooted in SKF when looking at the Supply Chain process. If SKF decides to implement the process organisation absolutely, there is a need of incitement for the Business divisions for carry out the work. There is also a great need of information about the work procedures to everyone that comes in contact with this organisation, since the process organisation is seen as a "*product of the headquarter*" in the way that only the highest members within the Group knows about it. The most important discovery we have made is the lack of goals for the process work. About the result of the comparison between the desired situation at SKF and Hugoson's model we have seen many similarities but also two important differences which are of financial and authorisation matter.

Roles and the collaboration between them are hard to define when an organisational change has not been implemented fully. If not all roles in a new organisation is assigned as supposed to, the consequence will be that the work within the organisation will stumble. Neither the new nor the old working procedures will function. This in turn leads to that the business will be negatively affected. Setting explicit goals and resource allocation are critical success factors when implementing a change strategy. If the strategy is the road to the goal, and no goal is set, the strategy will not ever be fulfilled and it will therefor not be possible to evaluate it as successful or as a failure. If resources are not allocated, no one will carry out and most certainly not pay for the strategy implementation. If the strategy has not been rooted at all organisational levels, it will be hard to carry out. It is the top management's job to set a shared vision and communicate it to each and all. Only then it is possible to have it rooted and carried out.

# TABLE OF CONTENTS

# INTRODUCTION

## BACKGROUND

We have been studying IT-management at the System Analysis/ Information Systems program, which is situated at the Department of Informatics at the University of Gothenburg, School of Economics and Commercial Laws. This is the reason why we decided to do our master within the area IT-management. Since Kalevi Pessi is in charge of the IT- management direction, it felt natural to us to ask him to be our tutor for our master thesis.

During discussions between the authors, it became clear that the domain of interest was the roles and responsibility in the area of Information Systems/ Information Technology (IS/IT). The reason for this is partly because of the two series of lectures that Mats-Åke Hugoson held for us during the courses IS/IT and Change Processes and IS/IT Management given at the School of Economics and Commercial Laws in Gothenburg during 1998. Mats-Åke Hugoson is a consultant at Cap Gemini and professor at the University of Jönköping. He talked about the importance of having the roles and responsibilities defined in the organisations and he has developed a model of aligning the business development and IS/IT development, which will be referred to as "Hugoson's model", hereafter.

During the months of December and January we contacted some companies for presenting our idea of master thesis. The companies we were in contact with were all very positive to our thesis ideas. After discussions, we finally agreed with SKF Application Delivery to do our master thesis at SKF. Of all companies we were in contact with, our area of interest corresponded mostly with theirs.

The reason for them wanting this kind of study was the complex relation with their internal customers within SKF. Since one of the IT customer organisations are a matrix-organisation there exists internal problems related to roles and responsibilities. This in turn effects the working situation for the IT supplier, Application Delivery.

## PROBLEM DOMAIN

The situation, for many companies today, is different than it was before. During the late eighties the business world started to decentralise work responsibilities and collaboration became a necessity. Today when the business world talks about centralisation of control of the critical resources, this demand possibilities of organisational change where Information Systems (IS) is able to change in the same velocity as the businesses. What has caused the new demands is that the market has become more dynamic within most areas, which in turn has led to that the competition has changed. Today it is all about the capability of reacting to the environmental change, it can within some areas even be of decisive importance for survival. This will affect the situation within the organisation. Among other things it becomes very important to clarify the relationship of responsibilities, assure that the systems become independent i.e. autonomous systems

which work together. This gives the organisation more flexibility, and makes it easier to clarify the couplings between the IS and the business. Today it also requires a de-coupling between the system and the technique since the latter often is exchanged.[1]

In many of today's organisations there is a lack of co-ordination between business development and IT development. The IT development should instead be aligned with, and support, the business development within the company. This will ensure that the business benefits will set the rules for the IT development. It does not make any difference how good systems a company has, if it does not support the requirements of the business it will not add any value. A new type of IT organisation alone will not assure the aligning of business development and IT development, there has to be a whole new way of looking at the roles and responsibilities in the practice of development.[2]
There are surveys showing that the number of successful IT- projects is unfortunately not as big as the number of failed ones. These figures that appear in different contexts vary, but they all have in common that they are unacceptable. Our opinion is that one of the major reasons for this is indistinct roles and responsibilities within the organisation.

Enquist have in his licentiate thesis identified the need of research in the area of process issues, structure issues, dependency issues and roles & responsibility. He has in his thesis work come to the conclusion that these four areas are very important to the management function. Among other things he has seen the need of asking questions like "*When and where in the process is the business analysed and its need of IT?*", "*Is shared knowledge created between the IT-user and the IT-supplier*?". Another thing that he has seen the need to investigate are *"How does the IT-supplier handle the relations to many different and perhaps even competing customers?"*, *"Is it possible to put the development responsibility concerning the IT systems on the IT-supplier?".* [3]

These are some facts that made us curious about this problem domain and some of the reasons why we finally choose to carry out our master thesis project within the area of roles and responsibility.

## THE QUESTIONS AT ISSUE

What is the current situation like within the Supply Chain Process at SKF, concerning roles and responsibilities in IS/IT related issues?

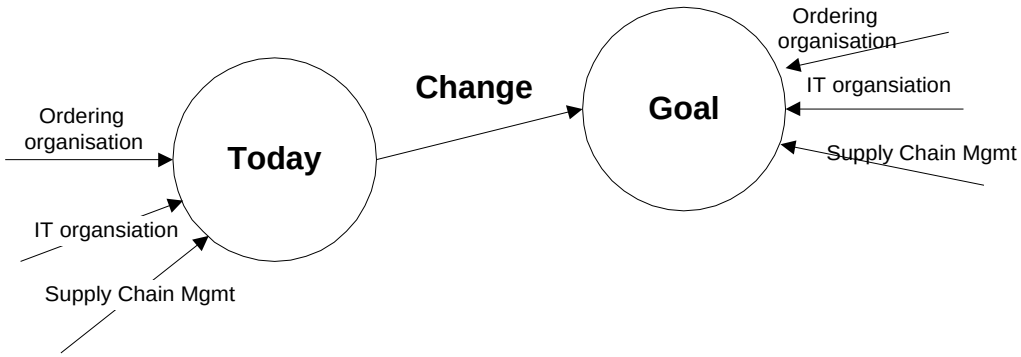
What does the desired situation look like within the Supply Chain Process at SKF, concerning roles and responsibilities in IS/IT related issues?

If the current situation and the desired situation do not match, how can the desired situation be reached? Is it possible to reach it by using Hugoson's model referred to above?

1 Pessi, Lecture 980901

2 Hugoson, Study material, 1998

3 Enquist, 1999




*Figur 1 The questions at issue*

## PROBLEM DELIMITATION

To do this master thesis within the given time, it is of great importance to limit the number of problem areas within the organisation to study. We will therefore set boundaries to our study object and limit the number of problem areas within this study object.

The following will be our scope of study:

We will focus on the structure of the IT ordering organisations structure and its roles & responsibilities in IT issue. We will during this master thesis not study the IT infrastructure at SKF. Henceforth we consider the IT supplier organisation equivalent to Application Delivery. Our study object is the greatest of SKF's business processes, the Supply Chain Process. The reason for this is that it is within this business area that process management has been most deployed. The process development work being done within the Supply Chain Process will be used as a reference when developing other business processes within the SKF Group. The IT ordering organisation is an area of concern for Application Delivery. As a supplier of IT for the Supply Chain Process they have recognised intra- organisational problems within the IT ordering organisation that affect SKF Application Delivery's working situation. Application Delivery have problems with co-ordinating IT projects because of the complexity of the ordering organisation makes it difficult to agree on project prioritisation, costs and who will pay and so on.

We will compare Hugoson's model with the desired situation at SKF's Supply Chain Process, concerning roles and responsibilities in IT related questions. The reasons for just comparing the desired situation, as the top management has given to the SKF organisation as guidelines, with Hugoson's model is that this is the strategy that the Supply Chain Process ought to be working after. At the same time, we are going to study and relate to organisational aspects that Hugoson's model does not consider. By doing this we will get a better, overall view of the problem that we otherwise would not get.

## PURPOSE

The purpose of this report from Application Delivery point of view is to get an overview of how the organisation works today concerning the IT ordering role in the Supply Chain Process.

Application Delivery also want to make the problems that partly the IT ordering organisation and partly the role of the IT supplier might have, more visible. By doing this, a reflection of the ordering organisation's desired situation could be known. By interviewing employees at SKF and studying written documents about the Supply Chain organisation and roles and responsibilities within the same we will learn about the current and desired situation at SKF.

If there are any problems related to roles and responsibilities concerning IT related issues the authors are going to suggest changes in order to reach the desired situation. To be able to do so we will do literature studies of relevant literature with the main focus on recent research within the area of IT-management.

What underlies our suggestions of change are mainly the theories of Mats-Åke Hugoson and the proposals that will come up during our depth interviews with the employees since they have experienced the work within the Supply Chain process during almost two years.

In order to be prepared for the working life as IT- professionals, we want to apply the theoretical knowledge that we have gained during our training at the Department of Informatics to the practical field by studying an organisation.

## TARGET GROUPS

Our primary target group is Application Delivery at SKF, but we also turn to other units within the Group of SKF who might be interested in this study, as for example key persons who in one way or another have been involved in this project. We also turn to other businesses that have shown interest in these kinds of questions.

# DISPOSITION

This master thesis consists of the following sections.

## INTRODUCTION

The introduction includes a background part that describes the initiation of the master thesis. We are also describing the problem domain, which is the scope of study. The questions at issue are located in this section too, these are the questions that we are going to answer. Finally you will find the purpose here.

## METHODS & SCIENTIFIC THEORIES

We are here describing the approach of the entire master thesis, the Case study and the types of data collection that we have used and an explanation of why we have used the theories that we have chosen.

## THEORETICAL FRAMEWORK

Here are the theories that we have studied and used in order to have a frame of theories that would be wide and deep enough to take on the case and analyse the collected data. The studied theories are only briefly described here. We think that a summary of the aspects of the theories that we will use in different phases of the thesis should be presented in order to explain how we have reached our conclusions.

## SKF - CASE STUDY

This case study is divided in two main sections. These are *SKF- A description* and *The handling of IT issues in the Supply Chain*.

### SKF – A DESCRIPTION

The study object, the Supply Chain process organisation and related matters will be found here. This is an attempt to give the reader an overview of the study object. In this chapter we will give a description of the business at SKF.

### THE HANDLING OF IT ISSUES IN THE SUPPLY CHAIN

In this section the analysis of the study object will be found, with related theories in order to answer the questions at issue. We have pointed out what we think is important factors, effects of problems and differences in the situation and the desired state. The last question at issue is to propose changes if necessary, this will be done in the Result-part.

## RESULT

This is the summary of the analysis and the conclusions that we have come up with.

## DISCUSSION

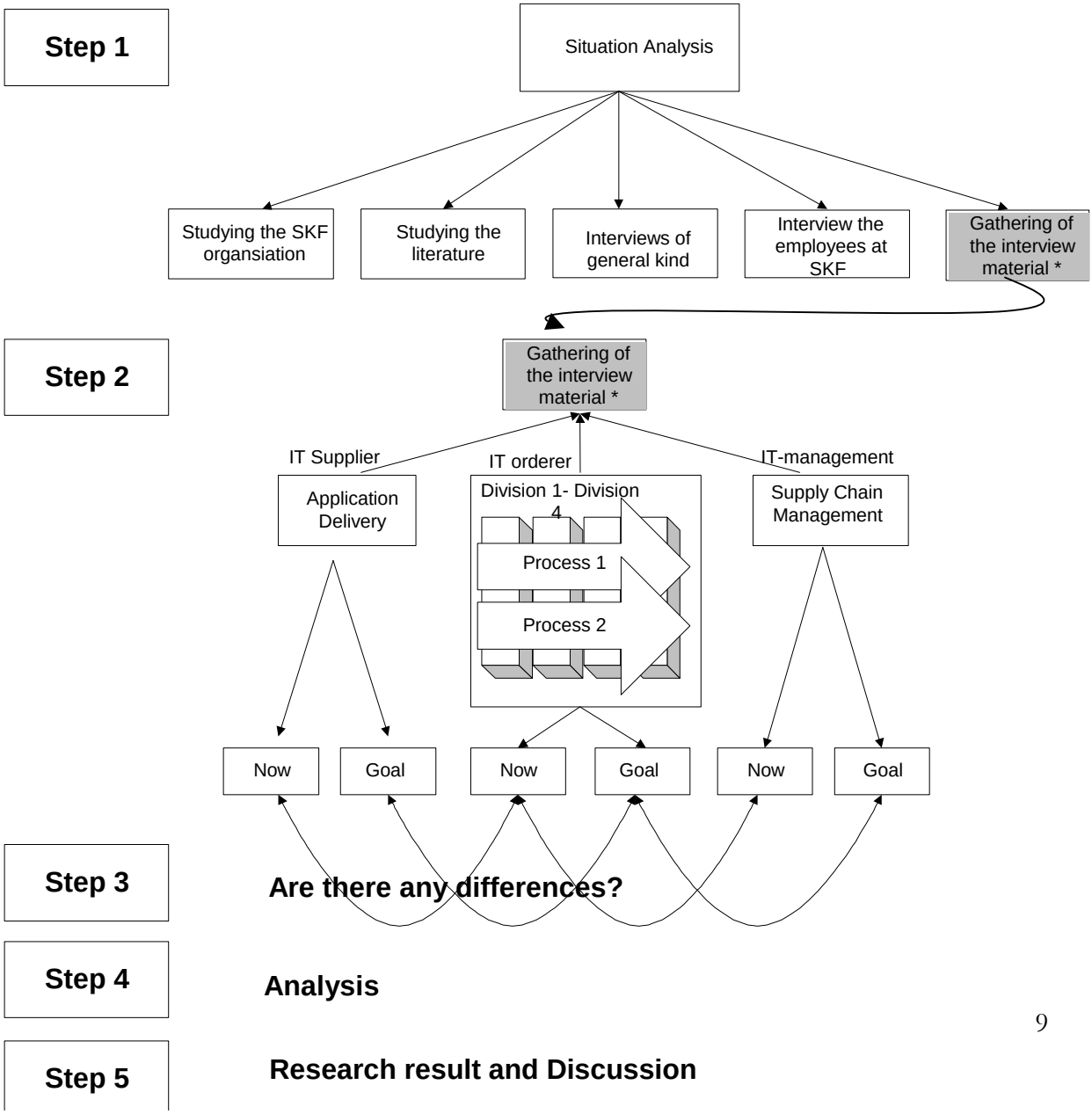
We are here expounding the analysis and giving our thoughts of the reasons of the effects that we have shown upon in the analysis section. Here you will also find the suggestions of changes. Factors that touch the boundaries of our master thesis but are of interesting nature and are related to the problems are discussed here. Also suggestions of further studies and research will be brought up here.

# METHODS & SCIENTIFICAL THEORIES

A model is often simplified and generalised in order to fit a greater span of usage. To apply a theoretical model on an organisation can be risky. The complexity that an organisation may posses could make it hard to make the model fit the organisation. To clarify the organisations position today is of great importance. When there is a truer picture of the situation, it is possible to make a comparison between the theoretical model and the organisation in order to see if there are any differences. By doing a careful mapping of the organisation there is a greater chance of clarifying possible problem areas and their causes. This could be a way of noticing problems that has not been seen before.

**APPROACH**

*Figure 2 The approach*



We will start this master thesis by doing a situation analysis. This **first step** includes the studying of the SKF organisation. We have received material from our contacts at SKF. This and the interviews will be studied thoroughly, but we will also learn about this organisation through meetings with employees at SKF. When we have a clearer picture of the organisation we will search for relevant literature in the subject. We will look among the literature that we have used during our four years of studying. We will also search for material at the libraries, in databases, papers on the Internet but also regular papers. After doing this, it is time for interviewing people of interest, which means persons that are familiar with the problems of roles and responsibilities in their daily work. This will be part of the theoretical framework of the thesis. When it comes to interviewing people within the organisation, about the roles and responsibilities in the area of IT, Supply Chain management; IT orderers organisation and IT suppliers is of concern. The selection of them will be done by our contacts at SKF. We do not think this will affect the research result, since they are very interested in the solution of this problem that they experience. If we need to interview personnel that are not within the by SKF chosen sample, we think that it is open for suggestions.

As **step two** we will gather the interviewing material. We will separate the Supply Chain management, the IT supplier employees and the IT orderer employeesinterviews from each other. Furthermore, within these three categories we will divide the interviews depending on how they experience their working situation today and how their desired one looks like. The situation of today as refered to by Supply Chain management,
IT suppliers and IT orderers will be compared with each other and the same will be done for the desired situation. It is most probable that it does not just exist one opinion of how improvements could be done concerning the work within IT related issues in the Supply Chain process.

The **third step** will be to compare the interview material and see differences when it comes to the current and the desired working situation within the Supply Chain organisation. Since the Supply Chain is a matrix organisation the IT orderers is affected in that they have responsibilities both to the divisions and to the processes. We will therefor look for problems that might exist in this business process concerning double responsibilities.

The **fourth step** consists of analysing the Supply Chain organisation by comparing the proposed framework model for process work at SKF and how the work process actually works. This includes studying the workflow within the Supply Chain, for examples are the orderers doing what the suppliers think they do, and vice versa? After this analysis we will make a comparison between the desired state that we will come up with Hugoson's model.

As a final and **fifth step** we will suggest changes according to the analysis at the fourth step. By doing this we want to see if Hugoson's model can help with solving the experienced problems at SKF Supply Chain organisation.

Why will we adopt the mentioned approach? It would be difficult to conduct this study with a positivistic approach. We do not consider this survey to be done in "an independent world" as the positivists consider to be the only way to carry out the work of research. By this the positivists mean that scientific research is meaningful only if the result can be verified empirically. Further, they say that everything that can not be verified empirically, like emotions, a persons own set of values, religious and political announcements, are not part of the scientific world[4]. Since this study will include people and the collaboration between them, the gathered material will be coloured by their behaviour and values. According to the positivism the researcher cannot have an own set of values. In this tradition it is also very common to have a deductive approach, i.e. they start with a theory and a hypothesis that they want to verify or falsify.[5] In other words, in this case it is almost impossible to make a quantitative survey. These are the reasons for selecting a phenomenology approach. The phenomenological tradition does not consider the objective research to be the ideal way of conducting research. Instead they have become aware of that the researcher always has own set of values that are hard to disregard. In this tradition the understanding, thoughts, impressions, feelings and knowledge that the researcher has, are considered as assets rather than obstacles in order to understand the object of research.[6] In this tradition the inductive approach is very common. This means that the researcher does not enter the study with theories and hypothesis of his own. It also considers the environment to be socially constructed, see page 14 for further description.

### CASE STUDY

These type of studies is often used as a collection of research methods that have in common that they focus on the investigation or the study of a certain phenomenon. The investigation consists of objects within limits, for example one person, a group of persons or an organisation. In our case we have set the limit to one organisation. The purpose for the researcher is to get an overall picture to be able to get an understanding that covers most of the phenomenon of interest. In a case study many different kinds of research methods can be used, no method can be disqualified; interviews, observations, questionnaires, it is also possible to do an ordinary literature study. Both positivists and phenomenologists use this methodology.[7]

The reason for carrying out this study in just one organisation instead of doing a benchmarking study with a couple of companies is that we wanted to study a big international organisation. They are very complex and with complexity comes roles and responsibility problems. We want to delve in the organisation thoroughly and see the complexity from as many aspects as possible. To make this possible, it requires that we do many interviews. By this delimitation we are convinced that we will get a deeper understanding for the problems at issue. We think that the research study will gain in

4 Wallén, 1996

5 Ranerup, Compendium

6 Patel, Davidsson, 1991

7 Axelsson, 1998

quality because of the depth in this project. From SKF's point of view it is of course of a bigger interest to see why the proposed organisational change still is not working as supposed to, and to find out what people think of the *"new"* organisation.

Another important issue is that since this is a master thesis, we will not have the time for trying our theories in other organisations to compare the results with each other in order to be able to draw conclusions about any hypothesis that we might come up with.

## DATA COLLECTION

During our study we will use qualitative methods. As we have said, we will carry out our research with the phenomenological point of view. In this sense we will start from our gathered material from the interviews.

> *"Develop ideas through induction from data".* [8]

But another important element of this master thesis work is the literature study. What we actually are going to do is a master thesis that includes literature studies in order to get the necessary background that we need to conduct this master thesis. Therefor this master thesis cannot be of any pure inductive approach but rather a mixture of methods.

### INTERVIEWS

What we have called the IT ordering organisation in this master thesis includes different kinds of orderers. First we have the orderer that actually make the orders to the IT suppliers, i.e. Application Delivery. Other types of employees that we have categorised as orderers are the "super users" as they are being called at SKF and then the Users. The difference between them are that the super users are managers or employees with long experience with the systems but not always are daily users of the systems meanwhile the Users are more of daily users of the systems.

To be able to get the experienced problems with the process organisation from the people involved we will as explained before use depth interviews. We motivate this choice of method by that the experienced problems are subjective. The advantage of depth interviews is that this technique is very easy to use for more complicated questions. One can use visual aids, it is easy for the interviewer to do succession questions and there is always the possibility to use the body language.[9] To be able to understand how the Supply Chain organisation works at SKF it is necessary to conduct interviews. Although it exists a proposal for how to work within the Supply Chain there might be other factors that might influence the working process. At a lecture of Bo Dahlbom, he lectured about social constructions. This means that only because the employees all of a sudden can use an ERP[10], for example SAP R/3, there are probably a couple of the them that will

8 Easterby-Smith et al.., 1997

9 Wiedersheim-Paul, Eriksson, 1991

10 Enterprise Resource Planning, a big integrated system that covers all the needs of the business

transform the new system into the old and familiar one. This means that they will use the "*old"* functions that they know of. This implicates that SAP R/3 will be used as if it was the old system although with a better interface.[11] If these thoughts are applied to SKF and the process organisation that was introduced two years ago, can it be that the change did not have the effect that the work now a day is more efficient? Maybe it just has had the result that the work now is conducted a bit different than it was before. This factor is easier to catch with depth interviews. If we instead of choosing this method would have chosen to mail out the questions to we think that it would have been easier for the interviewed to search for the answers they do not have. Another reason is that it is easier to exchange confidence.

There are two possible approaches to make descriptions. One is the depth interview that aims to see how people react over themselves. The second one is observation. The reason for emphasise on the interviews that might be subjective rather than observations is that despite the subjectivity we will not be in a situation where we would miss any important information because of the observation time is ended. One advantage in doing more observations is that the researcher will notice phenomenon that the "object" of research might not know of, but since we are short of time we choose to focus on interviews. With depth interviews we will be able to see the differences between the old and the new way of working at SKF. We will get a wider and deeper knowledge of how the persons comprehend their working situation. We will also get an understanding of how the work is organised, co-ordinated and the existing collaboration. The "Quick-and-dirty-ethnography" method that we will use is based on getting a lot of knowledge in a very short time with the mixture of conversation-interview-observation.[12] The observation part will be included since we will have our office at SKF during our master thesis work. We will therefore be part of the organisation for a while. Criticism that has been directed towards depth interviews is among other things that it is time-consuming to do and to analyse.[13]

Qualitative interviews can be of different kind. There are informal conversations, guided interviews or standardised interviews with open questions.[14] We have chose to use a mixture of standardised interviews and informal conversations. This decision was made because of following facts:

1. We are not that familiar with conducting interviews of this kind so we want to have some sort of a model to lean on.

2. We do not want to miss the opportunity to get other information that we have not been thinking of.

By mixture these two qualitative interview forms we hope to overcome the disadvantages with them both. About the standardised interview it is said that it has the negative effect that the interviews are inflexible which can lead to that the important follow-up questions are not asked. The informal conversations are said to be difficult to

11 Dahlbom, 980923

12 Bergquist & Lundberg., Ethnographical Folder

13 Ibid.

14 Axelsson, 1998

analyse because of those different questions that can be asked during different interviews.[15]

A very normal problem when you have to interview powerful members of an organisation is that they may not have the time or the inspiration for granting an interview[16]. We do not think that there will be any greater problems in making appointments for the interviews in the organisation. This assumption is based on that we made the precaution that our contacts at SKF will make first contact with our interview objects, we will after this write to them in order to make them more interested in this research project.

When looking for persons to interview we want to interview three different kinds of employees within SKF, based on the three mentioned roles. At the most we want to do 18 depth interviews all together, six per role, to get different perspectives of the existing and desired situation. The reason for this is that we do not think that there will be time for more interviews since we also have to do literature study. If we do fewer interviews we will not get enough material to be able to get a truer picture.

All the material will be analysed to make it possible to describe it later on. After this we will be able to create ideas and theories.

### LITERATURE STUDIES

Before and during the interview phase we will also do our literature studies. The literatures we are going to study are about scientific theories, process theories, Change management and design theories. We think that we need this knowledge to get a comprehension of the problems and possibilities within the problem domain. The scientifical theories are needed in order to work with methods that are known and to be aware of the different approaches that exists in conducting research at master thesis level. By studying process theories we will get a better background about what it means by using processes as a way of working within organisations. Since SKF recently made an organisational change, problems that often arise with organisational change are of interest to study and thereby be more aware of. Design theories are of interest because the IT within an organisation is there by some reason. It has a goal to fulfil. In order to fulfil its goal IT is organised in a way to do so. This way of organise IT might have to be re-organised when the organisation change. Design theories are theories that explains possible ways of organising IT and also why and when to use different types of designs.

15 Axelsson, 1998

16 Easterby-Smith et al, 1997

# THEORETICAL FRAMEWORK

In this chapter two different design theories will be discussed with both their respective advantages and disadvantages. It is important to be aware of that these two theories are the extremes and that it is common that they are both used in organisations but at different levels and sometimes even as a mixture. There are more design theories, but these two are the extremes and all the other design theories build on these two. Hugoson's model is here discussed wich contains his thoughts about the three roles IT-management, IT orderer and IT supplier together with their respective responsibilities. In this section there is a part describing the importance of defining roles and responsibilities. Further there are two theoretical sections about processes and change management.

## HUGOSON'S MODEL FOR ALIGNING THE IS/IT DEVELOPMENT WITH THE BUSINESS DEVELOPMENT

Hugoson's model, defined and founded by Mats-Åke Hugoson, a senior consultant at Cap Gemini, for co-ordinating the IT development with the business development is based on organisations intra-collaboration. Hugoson's model is:

> *"A concept that first of all shall clarify roles and responsibilities for creating possibilities for controlling and aligning different development efforts"*[17]

In this model the same structure of the information systems is asked for as there is in the business. The work starts in the business by studying how the information systems is governed by the organisational units or by the processes which also gives a good picture of the area of responsibilities. The IT development that is being done in the businesses today is in many cases project driven and is to often separated from the business development. It is in this area that this model can make the difference. This model describes roles and responsibilities and it serves as the basis for developing a suitable IT organisation. The three roles that the model describes are the IT supplier role, the role of the IT orderer and the IT management role. On the basis of these roles, the model looks upon their respectively main tasks. It shall also give the basis for describing and carry out the different sub processes that must be able to work cross functional to guarantee the quality and the effectiveness of the IT business. Hugoson's model also treats the operative co-ordination between the roles in the model.

17 Hugoson, 1998, page 2

A description of the roles of the IT supplier, the IT orderer and the IT management as Hugoson talked about at his second series of lectures[18] whose theme was *"IT management, how shall we manage to manage?"* follows below. Every role will be described on the basis of their different tasks and responsibilities that are connected to them.

18 Hugoson, Lecture series september – december 1998

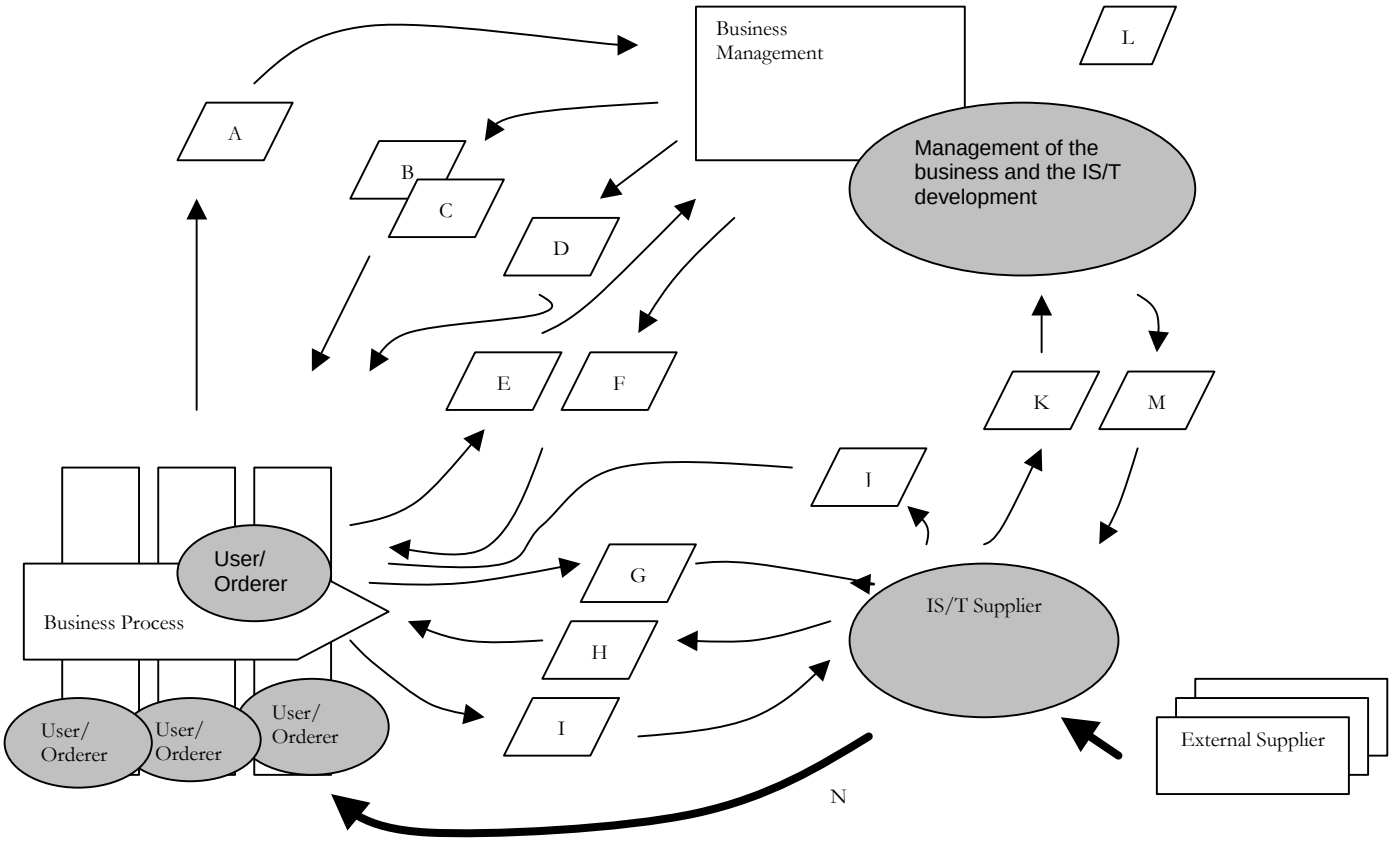



*Figure 3 The management model*

A. Business Plans, Finance
B. Established Business Plans
C. IS/IT Strategy
D. Future Business Model, System Map, IT- Infrastructure
E. Change Request
F. System Authorisation
G. Project Inquiry
H. Submit a tender
I. Acceptance of a tender
J. IT Possibilities
K. Development Need (IT- infrastructure)
L. Project Inquiry
M. Grant for the IT-infrastructure
N. Delivery of the System

## IT MANAGEMENT

The IT management's main task is to create a long-term strategy. They have the object to take care of the structure questions[19] on an overarching level in order to avoid "information islands". When a decision is made about how the structure of the business should look like, it is the IT management's task to create a business model, a structure of the system and make decisions about the IT- infrastructure. The definition of IT-infrastructure is that *it manifests the hardware, base software like Operative System and Database Management Systems, and also the communication systems.*[20] Andersen writes at the same page that the word infrastructure is used as a reminder of the fact that it is the basic features that is to be included. Hugoson defines infrastructure "for common use", but he also develops it by pointing out that it is up to the IT management to decide what infrastructure is, and also to manage it at that level. The rest of the business development will then be empowered to business- responsibility level. Even authorisation and co-ordination of development project will be at their responsibility. This means systems delimitation, i.e. decisions concerning what the systems will support, if the systems should be common or uniform and so on. It is also the IT management's responsibility to govern that projects are aligned with the over all strategy because of the need to co-ordinate development. After considering the IT orderer's proposition in the light of the overall strategy, the IT management decide whether to sustain or dismiss the proposal. In other words, there will under no circumstances be possible to implement or develop any IS without the authorisation from the IT management. Hugoson makes the comparison with a city plan. He points out that it is not possible to build just any kind of house within a living area. There has to be an approval from some kind of building committee. The committee will see if the proposed building is in line with the existing and future structure of the living area. The same concept could be applied at IT planning.

## THE IT ORDERER

The delimitation of the IT orderer's responsibilities could be of functional nature or be defined by a process. The business analysis is not an IT question. It is the business needs that is the base to build the IT support upon. It is the business development that steers the IT development, both at strategic and operational level. Therefore, it is quite natural that business analysis and need analysis is the responsibilities of the business, where the need has developed. Earl has also pointed out the importance of identifying the business needs in his article *"Putting information Technology in it's place: A polemic for the nineties"*[21] It will then be the IT orderer's responsibilities to deliver system suggestions to the IT management and seek for approval. The IT orderer may not start any projects without the necessary authorisation. When there is an approval it is up to the IT orderer to decide

19 A structure shows a couple of parts and the coordination between the parts. Hugoson, 980414

20 Andersen, 1994

21 Earl M.J, "Putting Information Technology in tis place: a polemic for the nineties"

who should be in charge of the project. Next step should be the cost proposition. By comparing the benefit analysis with the cost propositions a decision upon which IT supplier to hire should be made, it is not the IT orderer that delivers the solution. It is also important to point out that it is the orderer's organisation that has cost responsibility. If the IT orderer's organisation will add value or will be more cost efficient because of a new or improved system they should also pay for it. This is an incitement to fully analyse IT investments from the business point of view. The IT orderer's organisation will also pay for maintenance and development of their systems.

The orderer of IT infrastructure is the IT management organisation.

#### THE IT SUPPLIER

This role has no decision responsibility when it comes to IT issues, their role is solely to sell ideas and deliver propositions and IT solutions. This is the role of the house salesman in the City plan metaphor. The house salesman has many houses to offer but he is by no means in a position where he can decide if anyone should buy his houses. The IT supplier has two main objects considering IT issues within an organisation:

**The first** one is to support businesses in seeing what kind of possibilities there are, with the support of IT, to make the business organisation more efficient. **The second** main task is to make cost considerations and deliver propositions. Thereafter they shall, on assignment, deliver IT. This can be done by external suppliers or through in-house development.

Even development and maintenance of IT infrastructure is the responsibility of the supplier at the assignment. These assignments lead to a need of an operative management function in order to plan and co-ordinate all development assignments.

## SUMMARY OF HUGOSON'S MODEL

To sum up the three roles and their responsibilities in a process oriented perspective the IT management process is responsible for the structure, the IT ordering process is responsible for the business need analysis and the IT supplier is responsible to see to that the project goals are reached. In other words, the IT supplier is not responsible for the IT use, but only to develop sound systems.

Hugoson's model also describes the operative co-ordination between the different roles and the documents needed to handle this co-ordination.

## WHY IS IT IMPORTANT TO CLARIFY ROLES AND RESPONSIBILITIES IN IT RELATED QUESTIONS?

Watzlawick et al. has written a book that describes how problem arises and how to solve them. They write:

> *"All to seldom differences in status, power and interests of members in a social system leads to a constructive complementary relationship and a fruitful collaboration. Instead, they lead to chronic and stubborn conflicts that all involved is sorry for, but cannot do anything about."*[22]

If we apply this thinking on an organisation and their handling of IS/IT related issues, our opinion is that by a clarifying of roles and responsibilities in these issues it is possible to reduce some of these conflicts. The reason for clarifying this is that the market today is in a state of constant change. Watzlawick et al. describes what they call the first and second order of changes. The difference between them is the first order of changes is a change that takes place within a system and the second order of changes is a change where the structure of a system is being changed. Another important difference is that, in order to reach a change of second order it is necessary for someone outside the system to initialise the change. This is not necessary when doing changes of the first order. The reason of the need for an outside force to initialise a change of second order is, according to a quote by Osgood mentioned in the book in a book of Watzlawick et al., that "the mutual politics of fright do not include any actions for its own solution[23]". Many changes of the first order seem at a first glance to be of a second order. The most common mistake that is being made is the suggestion that the solution of the problem is the opposite of what has to be changed. But there is a mutual relationship between contradictions that are called enantiodromi.

The authors describe one of the changes that the red gardists made in China in the beginning of the Cultural Revolution. The red gardists destroyed all public signs that carried names that they thought belonged to the bourgeoisie and changed them to signs with more revolutionary names." This was a change of first order because the red gardists did not change the structure, in this case the street names. (By keeping the structure, this led to the unwanted effect that, as in the spirit of the French saying, everything that is being changed is kept old.) Another reason for the importance of clarifying responsibilities in IS/IT related questions is that today there are many organisation mergers, sales and buys being made in order to posses a greater market share. BBS has its strength here because of the autonomy of units. Davenport et al. points out the importance of in these situations let the divisions have their own systems that can coheres with other systems, as in the case of BBS.[24]

22 Watzlawick et al., 1978, page 164

23 Ibid., page 30

24 Davenport et al., 1998

An equally important aspect in this discussion that puts another dimension to it is what happens when roles and responsibilities are not clarified? An example that shows this in a good way is when technical heads and product heads within a division in a greater chemical corporation was convinced that a customer database that could include integrated information from their product groups, should improve their business situation. The added value would be the possibility to make "cross sales" and a better co-ordination of customer orders. What none of them knew was that the top management had plans of moving product groups to other divisions and to sale some of their product groups. The decision-makers at top management level did not know that the new integrated database did not allow that the product groups were moved to the new division. This led to that the organisation was forced to cancel the expensive project in order to separate the systems.

The management in business organisations must be aware of the fact that they no longer can delegate important decision making concerning IS/IT to technically oriented co-workers or consultants as have been done before. The above mentioned example illustrates what happens when co-workers does not have a clear picture of their roles and responsibilities. The information technology concerns everything from the organisation's structure to its product market strategy. When you look at it from this point of view it is important that the management takes responsibility in these questions and become aware of that IT investments adds value to the organisation's business strategies and that IT heads might not have the overall business perspective which is required.

## DESIGN THEORIES

Most of the organisations have an organisation map to visually present their formal responsibility- and power relationships. Andersen writes in his book "*Systemutveckling-principer, metoder och tekniker*" that it can be very informative to place the Information Systems architecture (IS- architecture) in this map. The reason for this is that the IS-architecture shows the information systems that exists within the organisation, but also the relationships between them.[25] Today the information systems play a very important part of the business, which also must be examined in terms of roles and responsibilities. The following arguments about the structure of architecture is due to:

> *They harmonise and balance different kinds of conflict that exists in the business concerning the providing and handling of the information. Among many aspects like responsibilities and co-operation are of relevance in the context of architectures.*[26]

In Sweden there are two architecture philosophies[27] / design theories that is dominating this field:[28]

- Design theory based on business, BBS (Business Based System structuring)
- Design theory based on information, IRM (Information Resource Management)

The most important differences between these two are that in the IRM concept the database is an essential resource, i.e. the co-ordination among different departments is done through stored data which should be stored in a unitary way. The IRM emphasise on the collection and administration of IS while the BBS emphasise on the use and co-ordination among the IS. The co-ordination in the BBS concept is done by formalised messages that are transferred among the autonomous systems in the business. The similarities between them both are that both concepts make sure the possibilities for changes and also the orientation towards the users. But the two concepts are based on different theoretical models and they have different criteria of the type of ideal.

Andersen points out that it does not exist one architecture that could be called the right one. The choice that is made has to be based on what assumptions the business have and what factors is considered to be the most important one. Examples of what factors that could be of interest are:

25 Andersen, 1994

26 Magoulas & Pessi, 1998

27 Andersen, 1994

28 Magoulas, Pessi, 1998

- The business' degree of decentralisation
- How the business consider the responsibilities
- The business' and the environment's view on stability
- To what degree do the business' want to use their information systems in a strategic way

The BBS concept is considered to give a more clear discernment of responsibilities and authorities than other architectures.

## IRM

IRM means Information Resource Management. This concept came up during the seventies and it was coming forward because of the database technique that then was developed. It was John Zachman that came up with this concept, *Zachmans IRM*, which main ideas are information quality and information availability[29]. Another important person for the development of IRM is the mathematician Ted Codd. He presented his theory of normalising, which was the base for the technology of the relational database. This theory made it possible to avoid inconsistency and redundancy in the databases; the technology also made it possible to create the independence between the data and the applications.[30] The main reason for this separation is that the information resource is stable and finite while the using of it is changeable and infinite[31]. As explained before this concept sees the information as a resource, but a resource that has to be controlled[32]. Just as the company has personnel resource and material resource it also has information resource. To be able to control the information resource according to this strategy there is a need for a central function, information resource managers, that has an overarching organisational responsibility for definition and maintenance of the common information, i.e. a database responsible[33]. It is also important that the information has to be independent of the technology being used[34]. This resource is very valuable and it is also seen as a strategic one. IRM is the most dominating paradigm today. This concept has been used as strategic information systems planning. The purpose was to give the management a better support for decision making and to make it possible to get strategic advantages[35].

29 Axelsson, 1998

30 Magoulas & Pessi, 1998

31 Ibid.

32 Lecture of Nuldén, 970129

33 Axelsson, 1998

34 Magoulas & Pessi, 1998

35 Ibid.

IRM promotes decentralisation, but this means a co-ordinated decentralisation. This concept is based on rules and that every department/unit has its own systems of rules. The database is central and the data is a central and common resource. Everyone can develop his or her own application but the data has to be a central resource. By having a data administration that is strongly co-ordinated the organisation can achieve that the information will be handled as efficient as possible. This means that the information will be:[36]

- Planned by data modelling
- Procured only once and by the source.
- Stored in a way that everyone can get the information they need

Procured only once and by the source means that the part of the organisation that registers a specific data is responsible for that the data is correct. This data is only registered one time because of the negative effects if there are any existing redundancy in the database.[37]

Axelsson is referring to Trauth in her dissertation that has studied how this concept has been developed over the years. She has come to the conclusion that IRM has three goals:[38]

- To contain the global sight of the common organisational data
- The responsibility of the data should be placed at the top of the organisation's hierarchy
- To integrate both the information and the information technology

An important issue is that IRM belongs to one organisation and should not be used as an inter-organisational concept.[39]

To get the information from the database there are two ways to proceed, either by doing a direct search to the database with the help of SQL[40] or through the local applications that are connected with this common database. Both concepts uses applications to get the information but the difference between them are that by using the local application the user can only ask questions that are already defined and that is not the case when using the direct search.[41]

36 Axelsson, 1998

37 Ibid.

38 Ibid.

39 Lecture of Thanos, 971124

40 Structured Query Language

41 Axelsson, 1998

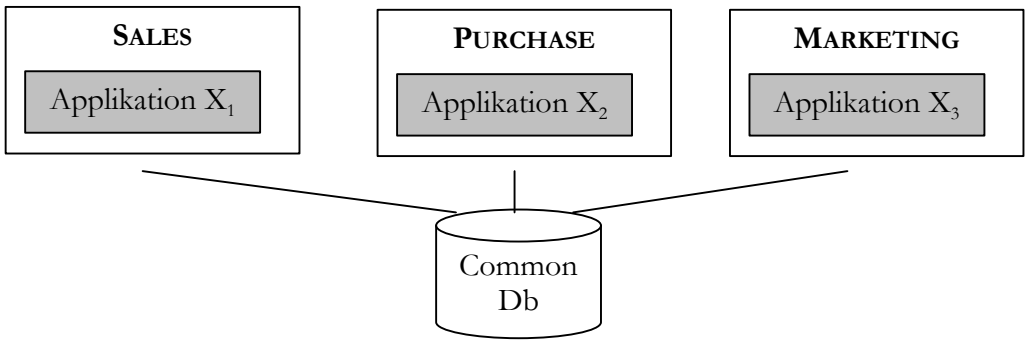



*Figure 4 The IRM design*

In this strategy the organisation's data and its structure is the base of the business information systems. This assumptions is based on that the structure of the organisation is stable, which leads to that the same entities can be used over time and big changes will not be made. This means that it is not the users needs of information that is of interest since the users probably will change over time while the data structure will not. By having this philosophy it is not necessary to do many changes in the database. Here the main thing is to get the information collection right at the first time; this is done by data modelling and by making it independent of the organisational structure.[42]

#### CRITISISM OF IRM

One thing that is said about IRM is that it is easy to talk about it, but it is very difficult to apply. At Volvo for example, the managers at the different departments did not want to let go of their power, they did not want the information ownership to leave the department.[43] This is a very common problem.

Magoulas and Magoulas have done an empirical study and in this they claim as follows:

> *According to our empirical data the current status of IRM- philosophy is suffered by many undesired functional, morphological and structural diseases. These issues together make the whole concept of IRM questionable for the management of information.*[44]

In the report they say that the persons that advocate this design theory do not consider the impact people have on the information, the fact that the power can be derived from the ownership of the information. Another critic they proclaim is that the model does not consider that the reality that it is supposed to be reflected is changeable, and the model should be able to change with it, but today it does not.

Another person that directs criticism toward IRM is Davenport. He says that because of the overwhelming quantity of information that the organisations have today, it is impossible for them to handle it centrally. He also says that this concept does not

42 Axelsson, 1998

43 Ibid.

44 Magoulas & Magoulas, 1995, page 403

consider that there are people in the organisations with different interests and that ignoring the human factor lead to that it is difficult to motivate people to work with it.[45]

## BBS (BUSINESS BASED SYSTEM STRUCTURE)

Mats-Åke Hugoson introduced this concept and it is mentioned as the trend of the eighties. The factors that contributed to this development were among other things:

The business world's striving for decentralisation of responsibilities and authority in organisations

Both hardware and software became cheaper, the general knowledge of computers was spread among the "regular" co-worker, i.e. it was not just the "white coated experts" that possessed this knowledge

The changeablity that started to characterise the business.

With this new concept he wanted to promote the responsibility of the individual in the organisations. The goal of BBS is to create information systems that are able to change with the same velocity as the different parts of business.

The information environment in an organisation that is practising this concept has the distinguishing features that the IS- architecture reflects:

- The structure of the organisation
- Every area of responsibility has the right to an autonomous IS.
    - Co-operation between the IS in the organisation will be summitted by messages.
    - Demands for freedom of action, i.e. that there are the same possibilities to change or exchanging the system, as there is to make changes in the business.
    - Independence in development and maintenance, which means that if a system does not work in one part of the business the other systems will not be affected.
    - The management of the business is responsible for the overall structure of both business and information systems.

45 Davenport et al.. (1998 march to april). How executives can shape their company's IS. *Harvard Business Review*

### CRITICISM OF BBS

It does not exist many scientifical studies of criticism of the BBS concept. Axelsson writes in her doctorial dissertation that this should not be interpreted as if this concept is superior to IRM- concept[46], instead the reason for this is that

> *"The concept has had a limited international spread to the society of science and therefore it has not been analysed in the same extent"*[47].

The criticism directed towards this concept is that the local conceptual models is not enough to provide the business with the information it needs, but it takes a balance between local and common models. Other critical opinion is that this design theory does not consider aspects as cultural, language differences or social patterns that are important to consider if it is an organisation with great geographical scope.[48]

Eskil Swende is an IRM- supporter that has criticised BBS. He claims that this strategy leads to an unstable IS architecture and therefore it will not be able to give the organisation the flexibility it strives to attain. The reason for this is that the information systems are built from the existing structure of responsibilities, which will not be stabile in a longer perspective. He also claims that the BBS strategy will limit the asset of information and knowledge in the organisation. Furthermore he thinks that this concept will lead to anarchy since the information as a resource will not have a central allocated responsible. The consequences of not having one person responsible for distributing all the information to everyone will be a bad using of the resources and a less effective business. Finally he consider that this design theory leads to bad quality of the data since it allows replication, which costs money.[49]

The opinion of Hugoson is that every function or process responsible person, i.e. who is responsible for the business, is also responsible for the information system and that this system exclusively will contain the relevant information for his/hers part of the organisation. This has together with the conviction that the need for co-ordination of the IT development with the business development resulted in the development of Hugoson's model.[50]

46 Information Resource Management

47 Axelsson, 1998

48 Magoulas & Pessi, 1998

49 Axelsson, 1998

50 Hugoson, 1987

# CHANGE MANAGEMENT

When there is an organisational change the resistance of the employees in the organisations is a common problem. In this section we will discuss some normal change process problems. Another important thing to have in mind both before and during the change phase is that there are two different reactions to changes. The announcement of an organisational change can either be received in a positive or a negative way. It is of great importance to clarify that the different reactions have different stages and requires different approaches to be able to be carried out successfully. Psychological contract is another reason for people to resist change even though they agree with it. A change is not automatically followed by an improvement, the working situation can even be worsened.[51]

## NORMAL PROBLEMS WITH CHANGE PROCESSES

The most critical factor of change management that often is forgotten by the senior management is that organisation does not change, people do. There is a great gap between the senior management and the employees concerning the way of thinking. The management is on an overall process level while the employees are more "hands-on". Marshall and Conner write in their article

> *"To implement sustained change, we must translate our initiatives to implications for each individual who will be affected. This is the key reason why change programs always take longer than we think IT will".*[52]

In this article they share the lessons they learned during change projects. These are among other things that resistance is inevitable even though people think that the change is a good idea. This depends on that a change is a loss of control and which will be resisted. Another thing they mention is that people express this resistance differently if they are positive or negative to the change, and that the resistance can either be overt or covert i.e. it can be said out loud or one's own thoughts can be kept to oneself. The latter one is far more dangerous according to the writers of this article. The reason for that is that the covert resistance is impossible to change since it can not be confronted.

## REACTIONS WITH CHANGES

When a company wants to make bigger changes it is crucial for the result that the person who is in charge for the changes has the necessary leader quality. Abilities within the area of *Change Management* include leadership development, marketing- and selling ability, a good ability to communicate is also important. The work of change is easier to carry out if the stages that people have to go through mentally during the period of change are

51 Lecture of Thanos Magoulas, 971110

52 Marshall and Conner

known. By being aware of these stages it is easier to know whether or not the change process has been successful, or if there are more problems to be expected. Whenever there is a change, people often react according to a certain pattern. It is of great importance to understand if the responses to the change is positive or negative since these two different reactions have different sets of stages. Both of them will be described briefly.

**POSITIVE RESPONSES**

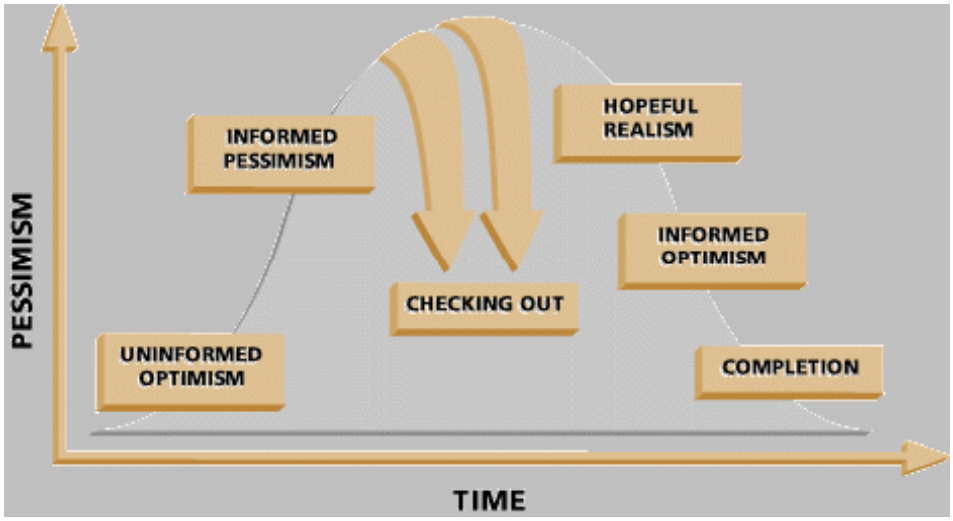



*Figure 5 managing positive responses to change*

Figure 5 shows the ways people resists when they view the change as a good idea, and in the article "*Another reason why companies resist change*"[53] the writers give the marriage as a good example to illustrate it. In the beginning, the just-married couple has a relation that is characterised by an **uninformed optimism** because they have not learnt enough about each other. After this sweet time they will slowly get to know what they got in to, she just loves to talks over the phone for hours and he sleeps all weekend. This stage is called the **informed pessimism**. Even if they might consider this marriage to be a good overall decision there might be many significant costs that were not expected. Here there is a possibility that they will, as the model calls it, "check out". This **"check out"** can either be public, i.e. a divorce, or private in the way that one of them try to cover an undiscussed conflict. If this checkout phase is not realised an understanding for both the advantage and disadvantage with the change will come out of this stage and the result will be **hopeful realism**. The next will be an **informed optimism**, which consists of the feelings that the desired change is achievable and a big part has already been accomplished. The final step is **completion**. The writers of this article mean that the organisational changes often have the same curve with

*"the excitement that immediately follows the announcement of a major merger and how that can give way to a realisation that the promised synergy just doesn't exist.*[54]**"**

53 **M**arshall and Conner

54 Ibid.

*(footnote continued)*

### NEGATIVE RESPONSES

This figure shows the different phases that will follow if there will be a negative response to the change, i.e. if people see the change as a bad idea.

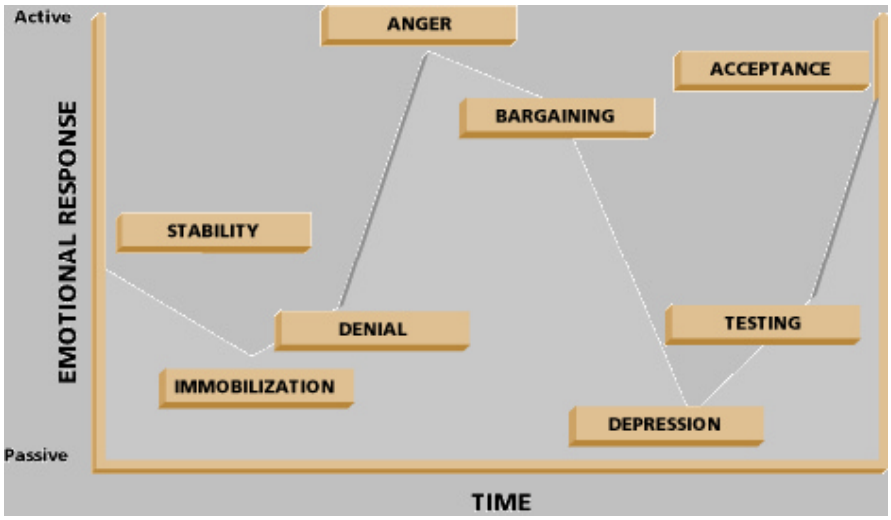



*Figure 6 Managing negative responses to change*

The **stability phase** is before the change announcement has been made and is seen as a status quo. **Immobilisation** is after the announcement, this is the chock phase, "it can not be true, it is just a joke". In the **denial phase** the person thinks that if he or she only ignores it, it will disappear. This reaction is followed by the **Anger/ frustration phase**. Here the anger will be directed towards other employees. Later on when the worst anger has been damped the bargain phase comes to minimise the change impact. When the **bargained** has failed, the person that was negative to the change from the beginning will be depressed once he understands that the change is real and permanent. The positive side of this stage is that the **depression** is the beginning of the acceptance, but before the final acceptance it is time for the **testing,** which is very similar to the bargain stage. The difference is that the person is **accepting** the change and is busy figuring out how to succeed under new conditions.

### FAILED PROJECTS

When a project fails there might be one of the following factors that are the reasons:[55]

There is a lack of understanding for the need of change because of a badly rooted idea.

The persons involved consider the negative effects of the change to be bigger than expected and therefor they lose the belief to the suggested change.

If people doubt that their working situation will continue, they try to stop the change.

55 Bogert et al. (1998)

People can not see why the change has to be done so quickly.

In the organisation there is not the understanding that to implement bigger changes there will have to be many small ones, i.e. there is a lack of overall picture.

### PSYCOLOGICAL CONTRACT

Psychological contract is another important issue why people resist change even though they agree with the goal of the change. This type of contract is an unwritten relation between the different levels within the organisation.[56] As an example, take a department manager at a medium-sized organisation that earlier has been reporting directly to the corporation management. He considers this as a very important part of the work that has given him a feeling of prestige and a possibility to influence, by this regular communications with the management. Then the structure of the organisation is changed which leads to that this person now will report to a level below the one he used to report to. His title, salary nor his relations with his subordinates have changed. The only thing that has been changed is something that this manager experienced as an important part of his work. The psychological contract has been changed and this can be enough for this person to resist this change process.[57]

### SOLUTIONS TO MANAGE CHANGE

Since people's reaction to the change is governed by their perceived loss of control, the key to managing resistance is selling the idea of change. It is of importance that resistance is to be expected as both "good and bad", and to let everyone know that it is essential to get the problems out in open, i.e. that overt resistance will be encouraged. By this it will be easier for the managers to know whether the resistance are having a positive or negative reaction to the change. What Marshall and Conner use to do is to tell the managers to help their personnel to understand their individual implications of the change *"so that we can recognise the resistance, surface it, manage it and get it behind us"*.

### PROBLEM THAT MAY ARISE WHEN IMPLEMENTING CHANGE

Even if a change process manage to dodge the above-mentioned traps it is not sure that the implementation will be smooth. Problems that arise with the implementation could be one or more of the following:

The change cannot be realised because it cannot be transformed into operational terms. Strategies are not connected to department- or individual goals, but only rooted at top management level. Department Heads focus on short-term goals rather than long-term strategies. Decision-makers often miss to engage in what goes on at the departments.

56 Hussey, 1998

57 Bogert et al.. (1998)

This may be interpreted by the actors involved as if the project is not of great importance. The management's way of act will, as we all know, colour the organisation as a whole. The implementation will be complicated by the fact that resource allocation is based on short-term budgets and not the organisation strategy. Within many organisations short-term results are measured, seldom are long-term goals evaluated which makes it difficult to evaluate the strategy in a correct manner. Because of the strategy is being set on a long term, short-term goals can never give a true picture of the situation.

### IMPORTANT FACTORS TO THINK OF IN CHANGE WORK

There are some factors that has to be considered when dealing with change:

The management must demonstrate a personal belief and commitment to the change at all occasions. It is also important to widen the personal contacts in the organisation in order to communicate the belief and to explain the change with key persons. This could be a valuable way to build up involvement and give the actors a possibility to participate in the process. Always make sure that there are channels for a two-way communication within the organisation. Find successful examples and distribute these in order to strengthen the belief in the change. What is most important is to be a support for the employees and show faith in them. Not much is needed in order to raise the motivation. It is important that the management is aware of that a change process takes time and that there are several phases that must be passed, and every phase takes different amount of time for different individuals. One has to understand that individuals do not want change but that they are satisfied with doing things the way that they always have, they have to know that there is a need for the change.

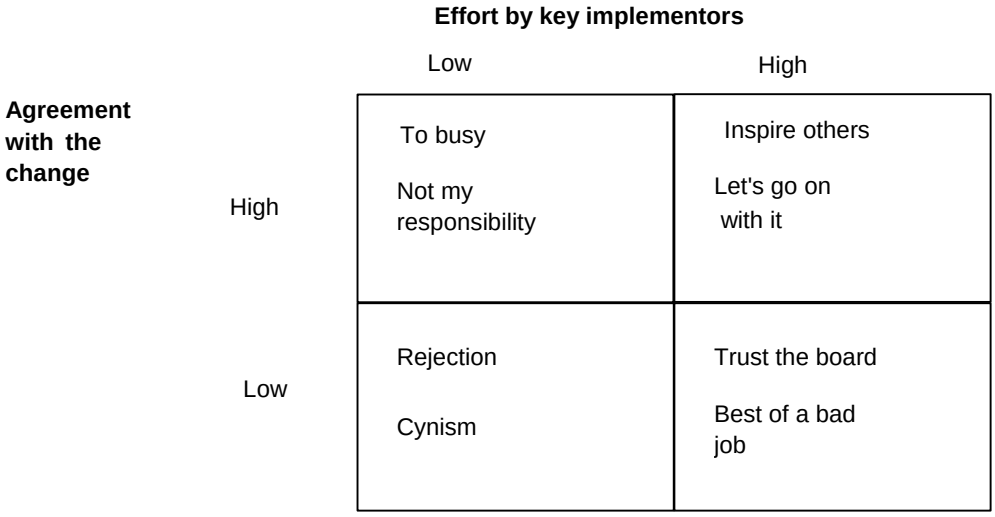



*Figure 7 Change acceptance matrix (Bogert et al., 1998)*

When confronting a change it is possible to end up in the **top left square**, people agree upon the change, but are not involved. This could be because they do not consider themselves having the time, or do not understand what is expected from them. These are important causes that it is necessary to be aware of when trying to pull through a change.

The **bottom left square**, which expresses that one does not agree upon the change or feel any involvement, neither does one agree on the change. These are all signs of that one does not see the need for change or that one thinks the change is incorrect. The only way of getting right with this problem is by trying to explain the reason for why the change is needed.

The **bottom right square** could lead to a successful change, but can also be a sign of problem. The attitude here, "I do not agree, but I guess the management is right", certainly does not mean that the change process is stopped, but it does not lead to any creative ideas from persons that is expected to participate.

The ideal is of course the **top right square**, where one agrees upon the change at the same time as the key persons take on the task to inspire the others and force the change forward. But this is unfortunately not always the case.

To implement change within organisations could mean trouble. Being aware of this may reduce the problems. One concept that has arisen to manage change is "change management". The concept means to actively lead change processes and it considers the pitfalls that are included in the change processes. Pitfalls can be avoided through active management and great awareness of the psychological and social factors that exists in all organisations. These factors influence the degree of success in a change process.

# PROCESS THEORIES

We will in this part give the reader some information about processes since the organisation we are describing, SKF, is using processes as a means of improvement. The Supply Chain and Application Delivery are using processes. To have knowledge about the background and theories about processes are vital to understand the master thesis at full extent.

BACKGROUND

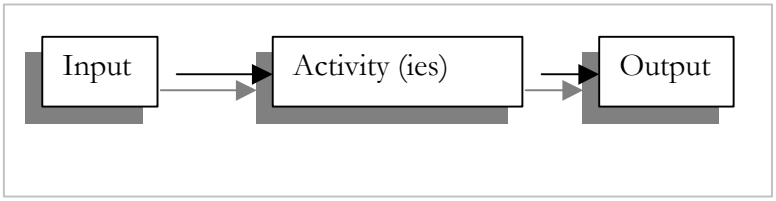



*Figure 8 The scope of a process*

Order and effectiveness come from structure and which governs either bureaucracies or the more specific aspects of production.[58] Everything within professional organisations is about production or adding value to a product. Produce or add value and deliver to customer. Organisations have always sought for effectiveness and efficiency when it comes to production. The core business within an organisation is all about production or value adding to a specified customer or customer segment. In order to do that the organisation needs support activities such as financial control activities, marketing activities, sales activities and so on. The activities needed within an organisation could be summoned up in Porter's model of the Value Chain[59]. There are interfaces between the different functions, otherwise there would be no communication between them. It is those interfaces that ought to be the subject of monitoring and improvement when talking about improving performance within organisations.

A process has input and output. In between, there are activities that add value to the input so that the output has greater value than before it entered the process.

The above picture is somewhat simplified. Actually there are different types of processes. When we hereafter talk about processes we will have the following frame of reference:

We are dividing processes into three classes, Business Processes, Main processes and finally Sub Processes.

58 Armistead and Rowland, 1996

59 Robson, 1997 / Kotler, 1996

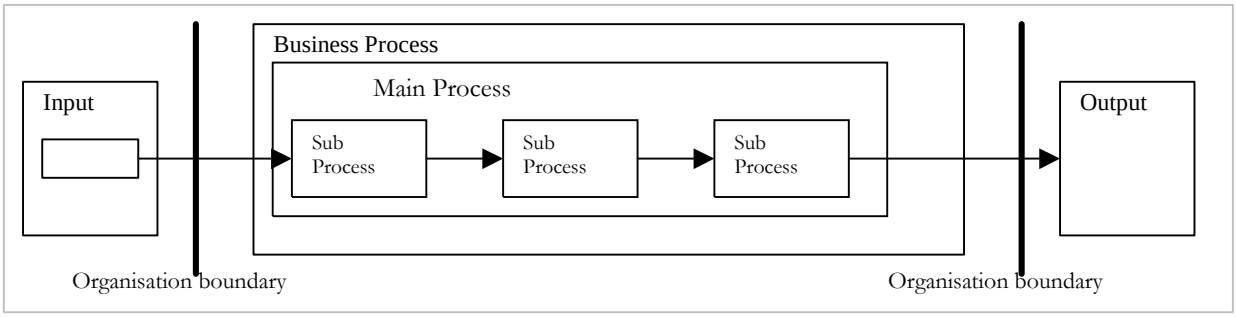



*Figure 9 Different types of processes*

> *Operations should be viewed as one example of a business process. The key point is that transformed resources originate from outside the boundaries of the organisation, and that outputs in the form of goods and services leave the boundaries of the organisation. It is the "end-to-end" property, which should be used to distinguish business processes.* [60]

This means that Business Process is the highest level of processes, the process with the widest scope. The input should come from outside the boundary of the organisation and the output should deliver a product to a customer outside the organisation. This process in itself may, and hopefully does, include one or several Main Processes. The Main processes are groups of Sub processes that are grouped together because theirs nature and their inputs and/or outputs are somehow related to each other. The Sub Processes are the smallest processes. They are the activities at the lowest level that should be documented.

There are quite a number of books and other materials on why and how to use or rather how to manage processes in organisations. Processes are indeed a reality in all organisations; it is the workflow of activities. How are things getting done in organisations? Not the Organisational charts, not the legal units, but the way the daily work are being done. For example, what person at the warehouse unit is delivering the goods to whom at the distribution unit? Why is he doing that? Could someone else do it? Could the person at distribution unit pick it up at the warehouse instead? Should we merge the distribution unit and the warehouse unit? And so on. The questions are important to study thoroughly. There are time, and therefor money, to be saved when managing the work procedures in an efficient way.

60 Armistead and Rowland, 1996

# SKF- THE CASE STUDY

## SKF- A DESCRIPTION

The purpose of the following section is to give an understanding about the working situation within the Supply Chain process at SKF. To be able to get this understanding we are convinced that both the history and the current situation of SKF is to be communicated, also which systems they use and why. How the systems works together is another important input that need to be known to be able to get the whole picture of the situation since this complexity affects the work at SKF. In this chapter the different roles and responsibilities within the Supply Chain process are also described according to the proposals written when introducing the process organisation at SKF two years ago.

### SKF BACKGROUND

The international industry group SKF is the world leader, and have been for most of this century, in the production of ball and bearings. The company has around 15-20% of the world market. SKF is represented in more than 130 countries with approximately 43,000 employees. Manufacturing takes place in about 80 countries in 90 factories and there are about 7,000 distributors.[61] The Group headquarter is situated in Gothenburg where the company has had its roots since it was founded in 1907. In that year the company made 2,200 bearings, today SKF produce 227,000 bearings per hour. They have 22,000 different bearings. The smallest bearing is about 2 mm in diameter and is used in aeroplane gyroscopes. The largest bearing that SKF produces is used in tunnel drilling machines and is about 7.2 meter in diameter with a weight of 45 tons.[62]

Within three years after founding SKF, the company was established in Finland, Germany, France, Great Britain, Australia and the United States. By 1918 the company already had 12 factories. They also had their own factories with the corresponding warehouses and sales offices. The only thing that was centralised was the product development. Since the technology of transportation and communication evolved this led to a change of strategy. Because of the technology evolvement SKF could start to integrate the production with the distribution of the sales representatives in 100 countries with around 12 000 employees.[63]

From the beginning the "global" SKF was organised as independent local organisations which all contained all the functions, production, distribution, marketing and sales that was necessary. This in turn led to the replacement of the mother- daughter organisation

61 http://www.skf.se/sverige/index.htm

62 Dahlbom et al.. (1999)

63 The world of SKF

by the divisional organisation. The meaning with this new strategy was that each bearing only should be produced at one place, in one factory. This means that each factory shall supply the customers all over the world. The gain is decreasing costs.[64]

Another way of increasing the profit is by reducing the lead-time from raw material to the final product, working time and final goods in stock. Introducing the Channel concept in the factories of SKF all over the world made this happen. Instead of large series and long production lines SKF has chosen smaller autonomous groups that is called production channels. By introducing the Channel concept SKF has speeded up the information flow because of the shorted communication ways. Also, bottlenecks and unnecessary steps in the production have been eliminated.[65] This concept represents an ambition towards a more market- and customer oriented production.[66]

This decision that was made in the early 1970s about the organisational changes in SKF also had implications to the IT strategy. There was a need for an integrated IT infrastructure. Earlier, with the local organisations, they all had their own IT strategy and infrastructure. Another reason for the importance of an integrated IT infrastructure is that SKF was, and is, expanding in central and eastern Europe by buying factories that earlier was run by the governments. Today SKF also expands in new markets by joint ventures. This demands for an easiness to connect them to SKF's information systems.

SKF's customers are found within car, truck, railway, general machinery, aerospace, electrical, customised engineering industries, specialised industries and in the automotive and the industrial after markets.[67] The group is divided into six divisions: Automotive, Electrical, Industrial, Service, Steel and Seal, see figure 10. These in turn have subsidiaries, which are spread around the world. The major part of the business in Sweden is connected to SKF Sverige AB.[68]

64 The world of SKF

65 Ibid.

66 Microvärldens mästare Forskning och utveckling inom SKF

67 SKF Environmental Report

68 http://www.skf.se/sverige/index.htm

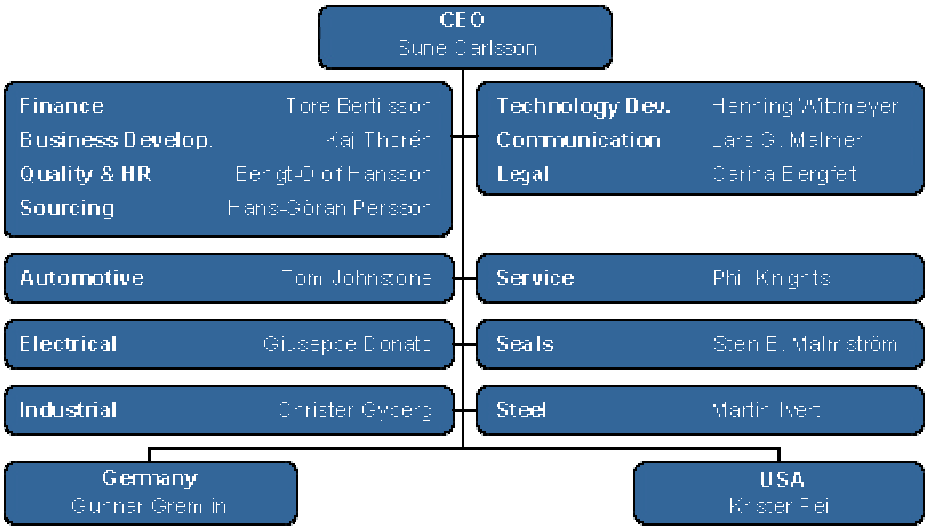



*Figure 10 Organisation chart showing the SKF management.*

The SKF Group is a matrix organisation that partly consists of the divisions that are mentioned above and partly their seven Business Processes shown below: (See also figure 11):

- Manage the Corporation
- Develop Manufacturing Processes
- Develop products
- Supply Chain
- Select  Develop Suppliers
- Sell Products and Services
- Support the Business - Which consists of the three Main Processes:
  - Human Resources Planning & Development
  - Finance & Administration
  - Information Systems

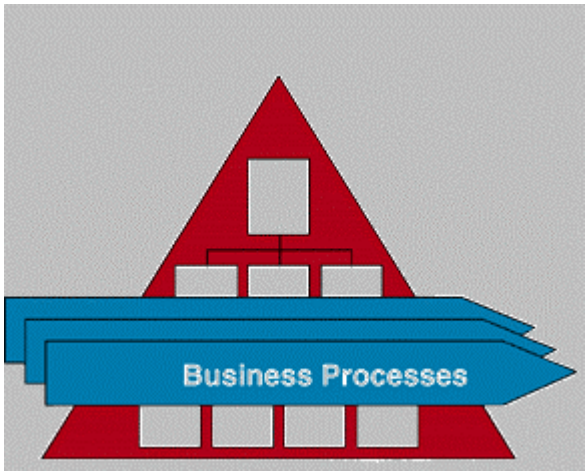



*Figure 11 The structure of SKF matrix organisation*

The problem domain that is in focus for this master thesis is situated within the Business Process Supply Chain. The SKF Application Delivery, which is our assigner, is an IT supplier for the four divisions Automotive, Industrial, Electrical and Service, which all work within the Supply Chain-process. The scope of this process reaches over Sweden, Germany, Italy, Netherlands and France.

The Supply Chain business process consists of the processes:

- Volume Planning
- Procurement- Materials & Components
- Master Scheduling
- Customer Service
- Procurement- Shop Supply
- Manufacturing Flow
- Warehousing & Transports

The reason for the matrix organisation is that SKF by this has taken into consideration the need of roles and responsibilities to keep together and co-ordinate the supply chain between the divisions.

SKF see the organisational and structural form of the IT orderer (within the business processes) as a big problem. The internal problem that exists in the business process makes Application Delivery working situation difficult. The decision-makers in this matrix organisation have different areas of responsibilities. Partly they are responsible for their divisions or departments and partly they also have responsibilities towards the process/processes that their department works towards. The internal struggles that

flourish within the process organisation results in that it takes very long time for Application Delivery to receive working orders. Since the decision-makers and the users normally is not the same person a dilemma may occur. If the user reports an error or necessary changes according to the established routines, but is not getting any response, someone is responsible. If the users do not have an overall picture of the problem, it is easily and probably the wrong authority that might be blamed for not attending the errors. This could be a "good will- problem" for Application Delivery

Another problem for Application Delivery is that they are a service organisation at the same time as they have budget responsibilities. The result of this is that they might have to prioritise among projects, which should not be their responsibility. The reason for this could be that the Application Delivery together with their customer, the process organisation, puts together the frame of the budget. Application Delivery estimate the total amount for the IT maintenance and the IT development and the costs is then divided between the different divisions by the POT's. The calculated budget that they do for themselves is based on the necessary changes, necessary maintenance, existing projects and projects that has been decided upon etc. At the same time, on group- level, a budget frame for Application Delivery is decided. The problem here is that the two different budgets do not always match.

## THE HISTORY OF THE COMMON SYSTEMS

SKF has a set of common systems that are integrated and it has been like that for 20 years. The reason why SKF did not buy standard systems in the beginning of the information technology era, was that SKF were very early in adopting the new technology, in fact SKF was the pioneer in establishing their own proper international data communications network. The type of systems that were available in the market did not have the functionality that SKF needed.

SKF had MACPAC that was a batch system in the seventies that came from Arthur Andersen. There were difficulties with changes in this system. SKF decided that they wanted to have Common systems concerning the planning systems, i.e. they should have one common set of system to handle the planning. This led to that SKF started to scan the market. Hoskins was an English software house that was a big consulting firm and at that time they had just came forward with a modern database structure that they wanted to sell to SKF. It was possible to make the desired changes to fit the needs at SKF. The product was modified according to the needs of SKF and became a SKF standard product, delivered in 1989. This co-operation led to that Hoskins consultants later on made another system for SKF that was called MCSS. This co-operation had the effect that one might say that SKF have their own standard systems since they are very much modified to fit their needs.

Because of the decision to integrate the production with the distribution there was a need for co-ordination. SKF wanted to link the units within the business together, this required a shared underlying IT-infrastructure. To be able to co-ordinate, the best solution would be to have one single system. This could however not be done, it was therefor necessary for SKF to create a more distributed model. What they did was that they replaced all the systems by a portfolio of systems that was common all over the company. For each system they made local copies which were installed at each unit.

The different reasons for SKF to have their own standard package, for example in manufacturing, are among other things that the packages that were in the market could not handle the overlapping of orders. Another reason was that the SKF manufacturing system could handle double keys, article number and the designation.

## AN EXPLANAITION OF THE COMMON SYSTEMS

The standard packages that are being used in manufacturing are the ones in North and South America and India. The reason for this is that outside Europe, the service of these is much better.

While talking to the employees that are working with the different systems today we found out that they are all very satisfied with the functionality, the only thing that has been commented is the interface that could need some improvement.

The most important systems in the Common systems portfolio are SCSS, ICSS, MPSS and MCSS. Here follows a brief description of them.

### SCSS

The Sales Company Service System was installed in 1987. This system supports the sales company with all the administrative functions. This system also serves the International Distribution and the International Distribution Warehouses. It contains sales budget and support, marketing support, warehousing support, transport scheduling and also customer order handling and invoicing. The main function of the system is to allocate products to customers. This system is installed at local computers at the sales subsidiaries. These AS400 computers also have the function of being nodes in the data communication network. When for example a sales agent wants to place an order, the system will first check the local stock. If the order cannot be taken the system automatically will continue to search the bearing industry warehouse's stock and if there is not any of the required bearings in stock, the sales agent will get an answer when the bearing can be produced from a specialised manufacturing unit.

### ICSS

The International Customer Service System was installed in 1982. It is the interface between the sales and manufacturing organisations. The system functions are pricing, order entry, order acknowledge, work order, capacity booking, delivery time fixing and export document creation. It is used as a tool for handling dispatch orders, delivery of goods to customers and to the Distribution Centres, and information and reports.[69] When a product is not available in the domestic warehouse the system will book orders against internal supply.

### MPSS

The Master Production Scheduling System was installed in 1987/1988. This system is used by all the SKF bearing factories in Europe and contains functions for overall planning and production. The system supports the Product Divisions. MPSS is used as a tool for overall production planning, resource requirement planning, product forecasting and master production scheduling.[70] *"The function of Master Production Scheduling is to create a plan for which items the company expects to manufacture expressed in quantity and time. This plan is called the Master Production Schedule.*[71]*"* The system identifies the resource requirements and checks these against the manpower and the machine capacity that is available. With these data the system produce a production plan. MPSS gets its data from the ICSS and from a system called PFS (Product Forecasting System).[72]

---

69 Information Systems used in the "Total Material Flow"

70 Ibid.

71 Ibid.

72 Dahlbom et al.., 1999

MCSS

The Manufacturing Customer Service System, MCSS, contains functionality for the factory on a more day-to-day basis. This system serves the production and their Bearing Channels. It is used as a tool for the product and manufacturing data handling, the channel planning, purchasing and cost calculations and reporting, i.e. all the data that are necessary for estimating the production are within this system. For example, controlling that the work orders that are proposed contains all the necessary information about what to produce, what needs to be purchased, how much is needed and when it is necessary to buy it[73]. This whole module is connected to the purchase module.

## HOW THE SYSTEMS WORK TOGETHER

We will here give an example of how the systems at SKF work together in a very simplified way. The following section is a brief summary from the paper *Information Systems Used In The Total Material Flow*. If a customer makes a phone call to his local sales unit to make an order the salesman register that order in the SCSS system, as described above. Because of the new strategy in the seventies that each bearing should only be produced at one place in one factory it requires that this system know where the specific product is produced. The system will then send the file to the local ICSS system that contains this product.

If the product is at the domestic warehouse the system will deliver an answer to the SCSS system when the specific product is to be expected. When the system register the order it calculates the delivery time and sends an order acknowledgement to the Sales Unit.

The MPSS system gets its input from the ICSS system. To be able to make the Master Production Scheduling (MPS) for the factories, they need information about the customer demands, i.e. what the order book looks like and how the current stock looks like. ICSS will provide them with all this information. In the unit's own MPSS they can find if there are any group restrictions and what the product-forecast looks like. The MCSS will get the MPS's from the MPSS, non-production orders from the ICSS and orders from other factories. If the SCSS wants to order a specific Bearing and there is no one in the local or the international warehouse it goes deeper down to see when it is supposed to be manufactured and when to expect the delivery. The SCSS system simply cannot say no to the customer, only when. When the ICSS has sent the order acknowledgment to the customer and booked the order, the factories can plan their production all the way down to the factory floor.

Meta Group has just finished a benchmarking study at SKF and their Common systems were considered to be best in class at international level.

73 Information Systems used in the "Total Material Flow"

Earlier SKF was more system oriented. Before the new process organisation there were different control units for different purposes. The IT's support of common systems were organised by having one support team per system, which today still is the case. Each system had its own board that did the budget for that particular system. This board also set the overall frames. The User Reference Group, URG, took care of the systems requests, both bigger and smaller ones. URG consisted of about 6-9 persons, for example distribution managers and middle managers from the Business divisions. They handled and prioritised among the CRD's, (Change Request Description), which they got from the users. Each system had its own System Board. The URG members handled all the smaller changes. Bigger changes that were supposed to be going on for more than six months or required a budget on more than one million Swedish crowns were handled by the System Board. The URG's met about four times a year during three days giving thumbs up or down for the presented CRD's. There was always a long list of suggested changes. It could take as long as two to three years to get the improvement done. The ICSS had an extreme long queue for CRD's before the process organisation; it was as long as five years. One could see these User Reference Group meetings as a first selection of CRD's. These prioritisations were later presented to the system board. If one does a comparison between the way of working before and today one can say that User Reference Group is corresponding to the Process Owner Team and the System Board is corresponding to the Supply Chain Board. The latter one with the difference that the SCB is a collection of all the System boards together. Another important difference that one more time needs to be pointed out is that the earlier organisation only had system change requests. The new one is supposed to include all types of changes within the process organisation. The previously called change requests have been substituted by so called project proposals that are supposed to cover bigger and more change requests.

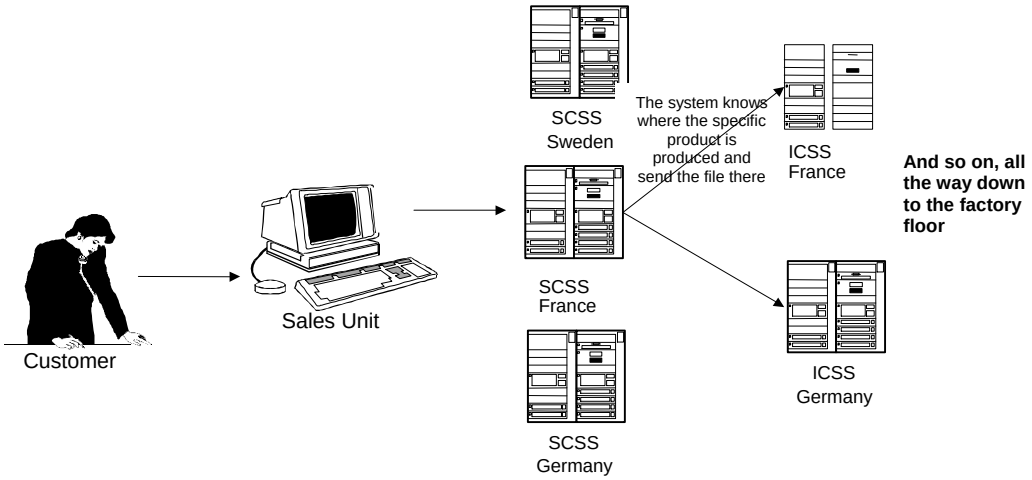



*Figure 12 How the system work togehter*

The User Reference Group had user contacts that were used as "*speaking partners*". These persons knew the system well. They were not the operative co-workers that worked with entering customer orders in the system, instead they normally worked in project form and could therefore be available from time to time. The user contact person made detailed requirements and searched for approvals.

We have been told that when this organisation existed there were ignorance of the systems at SKF, i.e. the employees did not have enough knowledge of what functionalities the systems had. It was not rare that there were requests for things that the system already could perform, it was also common that there were double requests since the users did not know what requests already had come in. This is what SKF now want to solve by the new order book database that is called RAPS. RAPS will be available to everyone and all the proposals are supposed to be listed in this database. An employee will be able to use RAPS in order to check for the status of a specific project proposal. Another thing that is used in order to try to solve this problem is initiating the documentation of the work procedures and manuals about the systems. Noteworthy is that almost everyone that we interviewed was very satisfied with the way of working with the URG. The only complaints have been that the CRD queue was very long, but this was only the complaint from two of the interviewed.

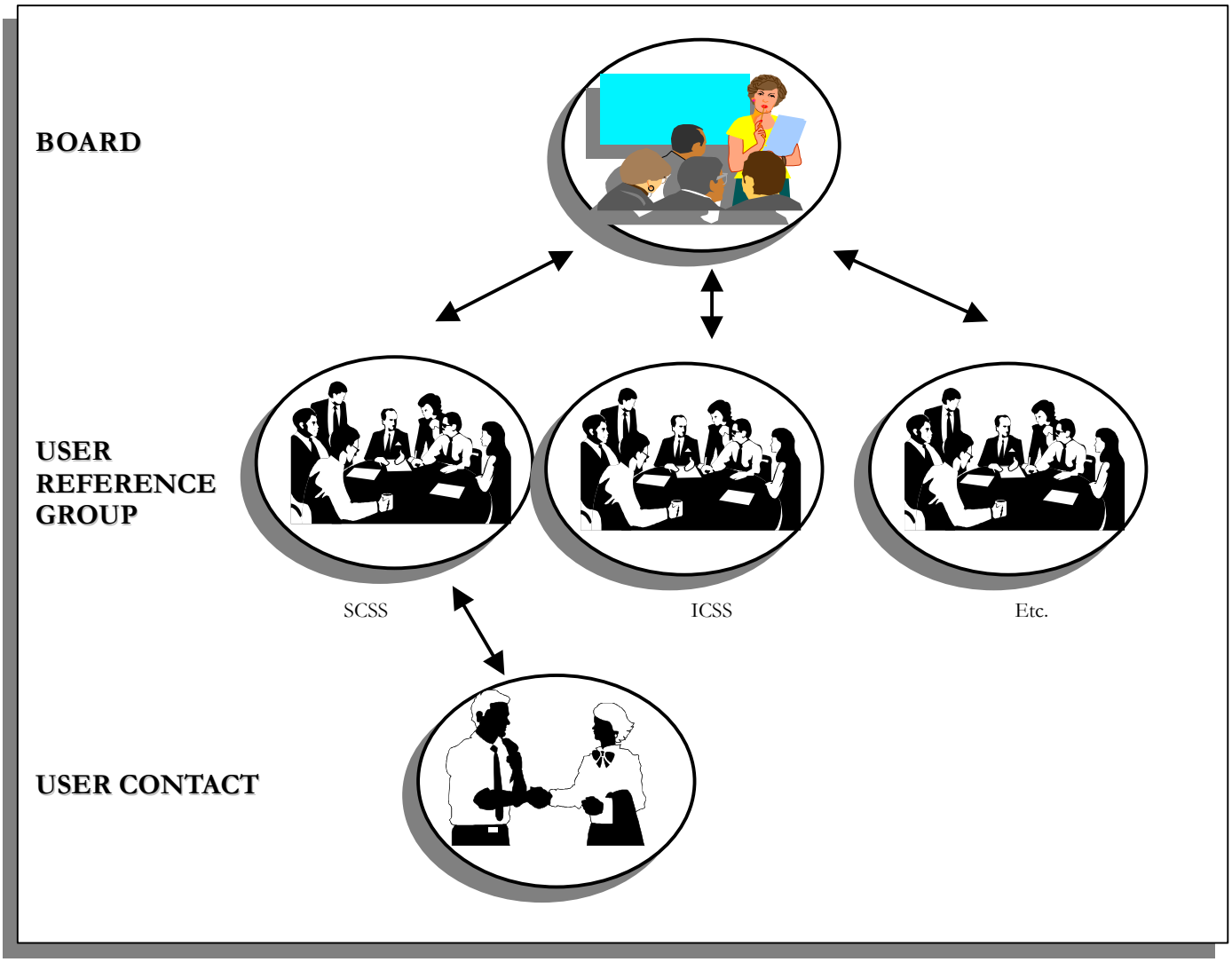



*Figure 13 System organisation – As it used to be*

### A BACKGROUND TO THE SUPPLY CHAIN PROCESS

We will here describe what the, hereafter mentioned proposal documents, consists of. It is not an evaluation of how the process organisation work, just a reproduction of the proposal papers. However, it is shortened and modified in order to fit this master thesis.

During 1997 and 1998 there were five documents written, describing how SKF should organise a new, process-oriented organisation called The Supply Chain Process. As we previously described, there are seven Business Processes at SKF. The Supply Chain Process is one of them. The documents were distributed to a number of people. We cannot say exactly when the thoughts of implementing business processes first came up at SKF but it was Peter Augustsson that took the process thinking with him from his previous employment at Volvo. 1997-03-19, the then Chief Executive Officer Peter Augustsson sent a document via E-mail that in short said that the Business Process work had taken a step towards a common structure for all business processes. Enclosures to this document was *"Roles and responsibilities within the Business Process work"*, *"SKF Group Business Processes"* and *"Names of Process Owners and members of 'Group Business Process & IS Board' "*.
P. Agustsson puts emphasis on that the terminology used in these documents should also be used thereafter.
The *"Roles & responsibilities"* –enclosure applied with the above mentioned e-mail describes the Overall objective, the Group Business Process map, some explanation of BPR (Business Process Reengineering) and TQM (Total Quality Management), and a description of different roles and their responsibilities within the new organisation. Finally there is a presentation of the different boards within the process organisation.

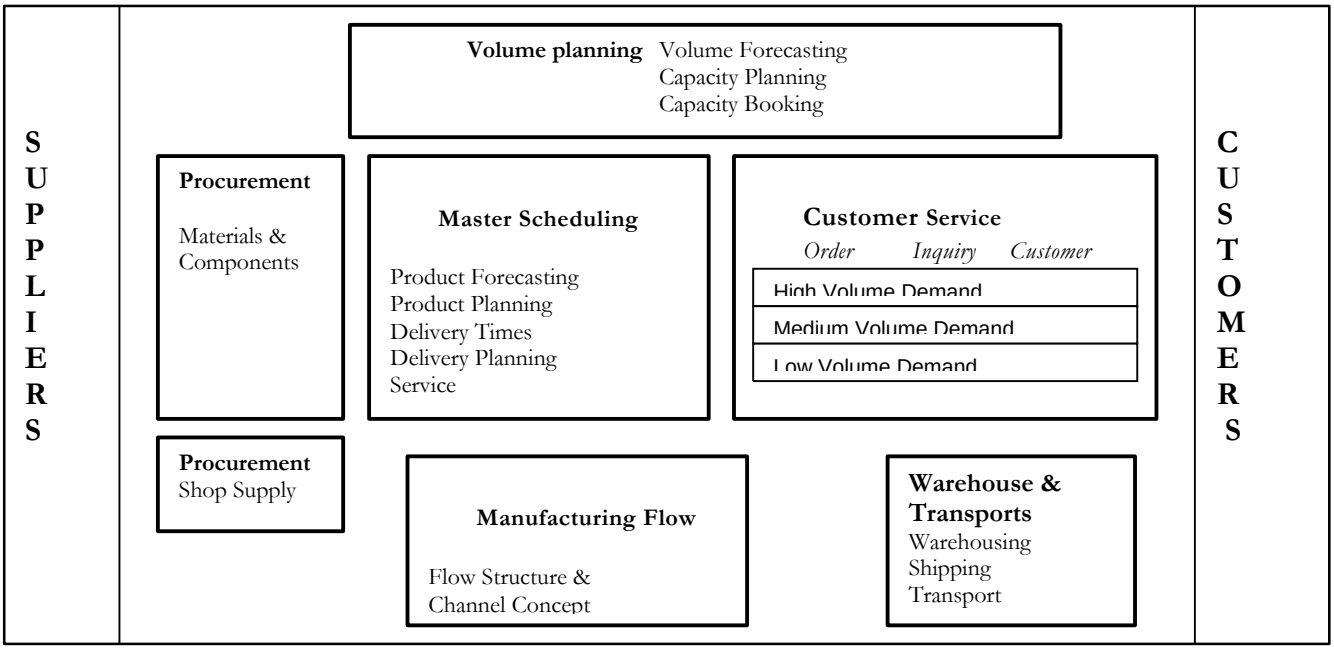



*Figure 14 Supply Chain Processes*

The first meeting with the Group Business Process & IS Board was held 1997-06-26. All the above mentioned papers describe the process work at Group level.

Between March 1997 and October the same year two documents were written for the Supply Chain Process development alone. It was a couple of people from the Business divisions that had composed a paper called *"A proposal for reengineering of the process for controlling supply chain development"* –Part 1 and Part 2.

**Part 1**-*"Supply Chain Organisation & Control"* describes a proposal for the Supply Chain Process structure, Process control organisation, how to prioritise, and the organisation around the Supply Chain Process.

**Part 2**-*"Process Control"* describes the Process Hierarchy, Process Ownership, how to handle the repairing and maintenance and the resources of the Common Systems, and finally it describes the role of the Business representatives.

During the winter 1997-1998 (November to January), the IT organisation wrote a document that described the IT alignment within the Supply Chain Process, *"A proposal for reengineering of the process for controlling Supply Chain Development* ***Part 3*** *– IT Alignment"*. The authors of this document are all representatives from the IT organisation. The paper describes how Application Delivery should handle maintenance and project matters towards the Supply Chain Process. Also, it describes how Application Delivery should organise to better fit the new process thinking. In June 1998 there were two other documents distributed within the IT organisation (**Part** – *"IT Budget and Charging"*, and **Part** – *"About Projects"*). As the names tell, it is not difficult to understand what information these papers contain.

As we have mentioned in our "problem delimitation"-part, we are going to focus on the parts that have to do with IT development matters. That would be the IT organisation, but also the Supply Chain Process organisation where it deals with IT issues.

If one takes a look at the time variable in the discussed matter it would look like this:

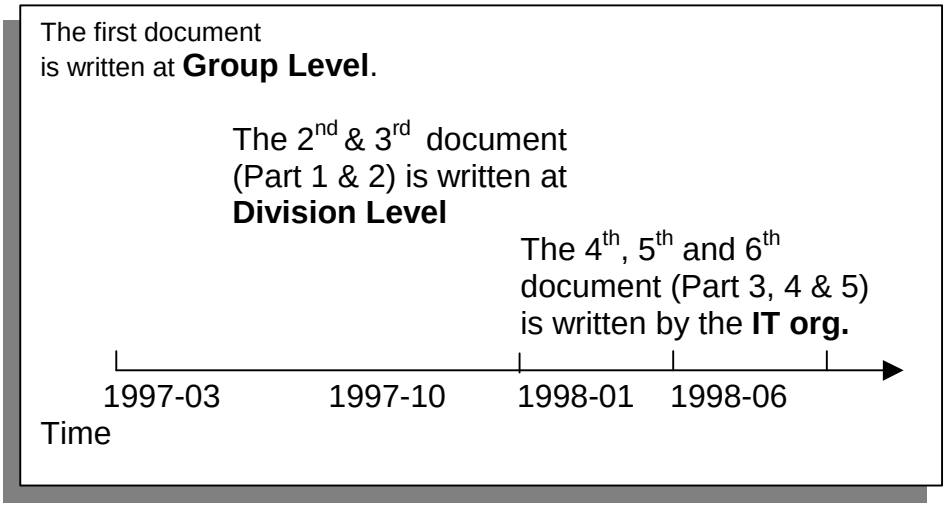



*Figure 15 Course of Implementation*

When studying the documents there is no doubt about that strategic intent from the Group management.
The four Business divisions: Automotive, Industrial, Electrical and Service are all involved in the Supply Chain Process (SCP). Each Main Process within the SCP has representatives from each of the four Business divisions. In this representatives team, the Process Owner Team (POT), there is also a representative from the Supply Chain staff, the Supply Chain Process Development Organisation and finally there is an IT representative.

**The Process Owner Team** consists of representatives from both the divisions and the processes but each POT also has an IT-representative. The team's main responsibilities are to define:

- The processes
- Its components
- Input and output of their process
- The activities within the process
- The sub-processes
- The activities of the sub-processes
- Suggestions to the Supply Chain Board for IT- projects before the budget

The POT's should also see to that the work that is done within the POT's lies within the strategy of the Supply Chain Process.

There are a lot of different POT's within the Supply Chain. Therefor there has to be a co-ordinating organisation or unit that manage the different project proposals that the different teams will suggest, (as mentioned before, related change requests are now collected and called project proposals.) This organisation is the Supply Chain Board. It consists of representatives from the Business divisions, the Supply Chain staff and the Process Owner. The Business Process as a whole has a Process Owner who is responsible for co-ordinating and aligning the Supply Chain Process strategy with the overall SKF business strategy.

Today the heads of the four divisions get their directives from the CEO of SKF, Sune Carlsson. They all are members of the **Supply Chain Strategic E ecutive Board** together with the head of finance. In this board the Supply Chain Process Owner is the chairman. They convene a meeting when needed; i.e. they do not meet on regularly basis. The reason of existence for the Supply Chain Strategic Executive Board is that there sometimes is a need to establish overarching decisions more firmly.

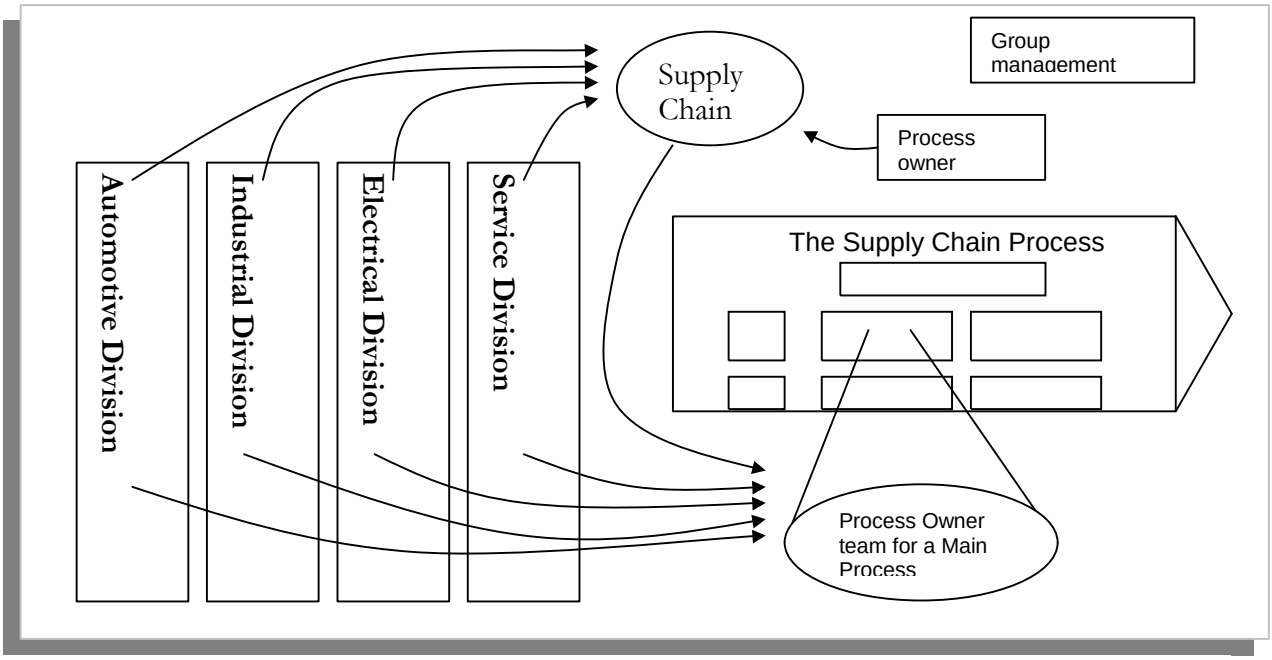



*Figure 16 Representatives of the Divisions in the Process Organiaation*

The mentioned Process Owner Teams include people from various countries and divisions. For example, the Customer Service Process Owner Team consists of representatives from Automotive, Industrial, Electrical and Service Divisions, all of the main Business divisions. On the other hand, the Warehousing & Transport POT has since the start of the process organisation not been functioning at all. The Warehousing & Transport POT has, just as every other POT, consisted of representatives from each and all of the Business divisions. However, the only Division that ever comes in contact with the systems within the warehousing and transporting areas are the Service Division. Therefore the other divisions have had no interest in this particular Process Owner Team. The team has just recently, the month of April this year, been restructured to include representatives from the Service Division alone.

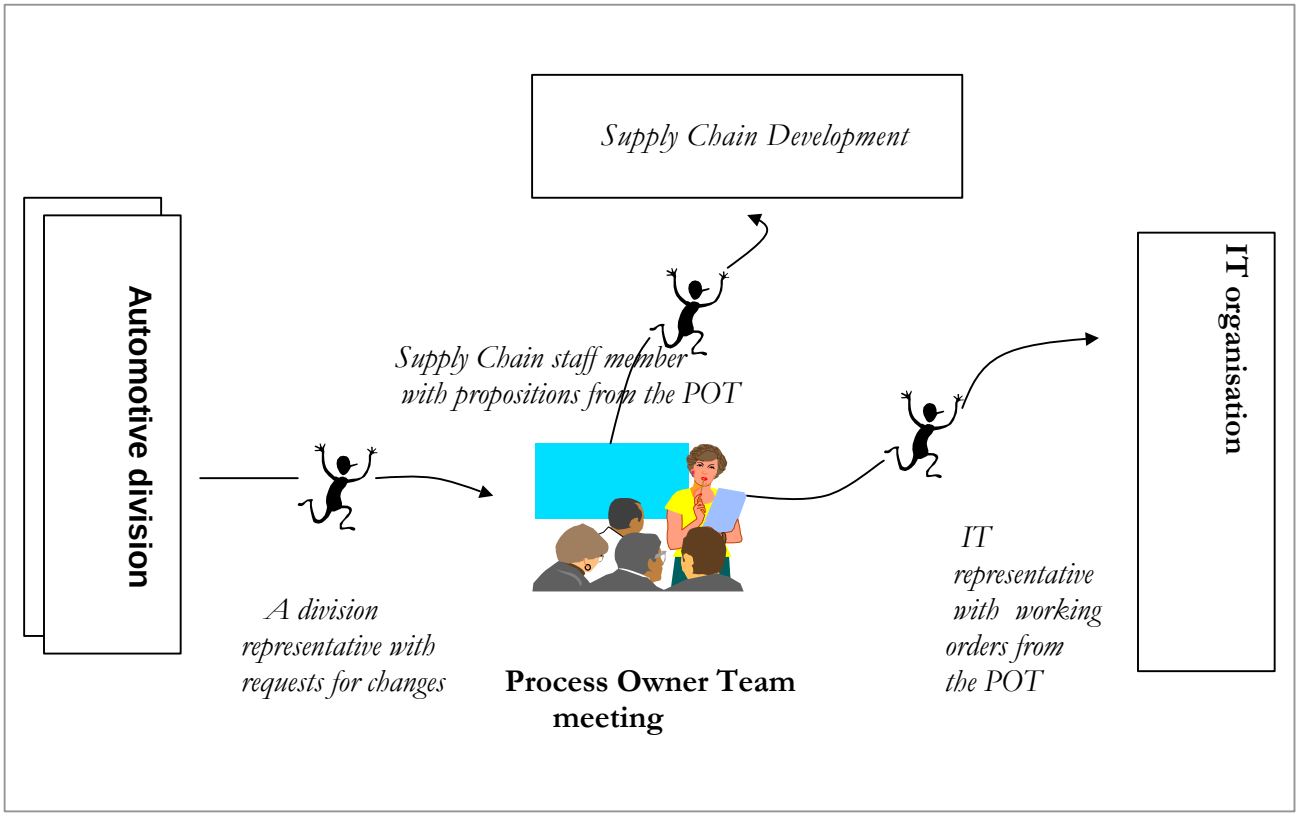



*Figure 17 Process Team meetings and the closest related actions.*

This is a somewhat simplified picture of the procedure of Process Owner Team meetings and the closest related actions. Depending on the size of the project (it depends on the estimated project cost), the POT have the authority to start a project on their own or may have to seek for approval at the Supply Chain Board.

1. If the cost is greater than 5 million Swedish crowns and investments are needed that is greater than 1 million Swedish crowns the project is an issue for the Group Executive Committee.

2. If the project cost is less than 5 million Swedish crowns and investments are less than 1 million Swedish crowns the project is an issue for the Supply Chain Board.

3. If the cost is less than 1 million Swedish crowns and investments needed are not greater than 250 thousand Swedish crowns the POT may start the project on their own.

Since we have delimiting our study to the IT related matters within the Supply Chain process organisation we will not become too much engrossed in other issues such as work procedures and others.

As we described above there is a procedure for handling projects within the Supply Chain Process. When it comes to IT matters there are two different activities that the IT

organisation divides its actions into. That is repairing & support and projects. These two classifications of tasks are also charged on two different budgets, the Base Budget and the Project Budget (which is individual per division).

The Base Budget is the total budget for maintaining the existing systems. Application Delivery sums up the cost for the different systems and the POT's split the cost over the divisions depending on how much they use the systems in relation to other divisions. Application Delivery and the divisions have dialogues about the cost and come to a mutual agreement. The total sum of the predicted cost is then the Base Budget. The Base Budget also includes costs for pre-studies. The Base Budget is the frame that the IT maintenance cost must be contained within. The projects are handled as mentioned above and are not limited by any budgets from Application Delivery point of view.

## THE ROLES AND RESPONSIBILITIES WITHIN THE SUPPLY CHAIN ORGANISATION

In this section we will expound the roles that have been decided upon within the Supply Chain organisation. If some of the responsibilities are of that kind that we have considered it to be of little or no interest for the reader or us, we have not listed it in this section.

### GROUP BUSINESS PROCESS OWNER

*Role*

He or she is to be overall, world- wide responsible for the Business Process and its IS development on the highest level within the SKF Group.

*Responsibilities*

- To set strategic direction, performance goals and "desired state" for the Process. Strategic direction for the Process is to be fully aligned to the SKF Group Strategy.
- To ensure that the Process is documented and that the scope and interfaces are clearly defined and have been agreed upon with boundary process owners.
- To ensure that the customer requirements have been identified and that input and output have been agreed upon.
- To ensure that the Business Process and its sub processes are correctly represented on the overall SKF Group's Process map.
- To ensure that process performance measurements are established, continuously monitored and followed up.
- To ensure both short- and long-term development of the Process by:

  a) stimulating continuous improvement efforts and

  b) initiating bigger change projects when necessary

- It is the Group Business Process Owner's responsibilities to prioritise among project proposals and to assure that initiated projects are in line with each other and also aligned to strategic direction.
- To stimulate internal Best Practise sharing and to push for standardisation when appropriate.
- To promote external benchmarking.

- To appoint and co-ordinate 'Group Sub Process Owners'.
- To represent the Business Process in 'Group Business Process & IS Board'.
- To act as chairman in the 'Business Process & System Board'.
- To ensure that proper IS/IT initiatives and support are in place.
- To decide on implementation of the process into the organisation.
- To decide to what extent the process should be common within the SKF Group.

PROCESS DEVELOPMENT MANAGER

*Role*

On a permanent basis, play a key role in process development work (preferably full-time assignment for major processes) by directly supporting the Group Process Owner, and on his behalf carry out strategeis. He is responsible for much of the process development work. The Process Development manager reports in this role to the Group Business Process Owner.

*Responsibilities*

- To document the process and verify that the process is documented in all involved units.
- To establish the process performance measures.
- To monitor overall process performance, by following up the process performance measures from involved organisations.
- To propose and initiate both short- and long- term improvement activities.
- To propose resource allocation and prioritisation among project proposals.
- To verify that initiated projects are in line with each other and that they are aligned to strategic direction.
- To work closely together with the Business Process representatives, collect their requirements on the process and to actively support them in their improvement work.
- To monitor the progress during implementation of improvement projects and to advise Group Business Process Owner of potential deviations so that corrective actions can be made.

- To frequently communicate with other Process Development Managers in order to be aware of and understand ongoing changes in boundary Business Processes.

- To ensure that training need are identified and that training is held. To coach and facilitate Improvement teams.

- To work closely together with the IS organisation in order to safeguard proper IS support related to the process.

- To perform administrative tasks for the Group Business Process Owner.

PROJECT LEADER

*Role*

He or she has a temporary assignment connected to one or several specific improvement projects within the Group Business Process Owner's area of responsibility. He or she reports in this role to the Group Business Process Owner or to the Process Development Manager depending on the size of the project.

*Responsibilities*

- Normal project leader responsibilities

GROUP SUB PROCESS OWNER

He or she has a similar role and responsibilities as the Group Business Process Owner, but for one specific part of the process. Reports to the Group Business Process Owner in this role and has the responsibility:

A) To contribute and agree with the Group Business Process Owner about strategic direction, goals and "desired state" for the entire Business Process as well as for his/her own Sub Process.

B) To develop the Sub Process in line with the strategic direction for the entire Business Process.

C) To participate in the Business Process & System Board.

BUSINESS PROCESS REPRESENTATIVE

*Role*

His or hers role is to be overall responsible for the Business Process within a specific organisational unit. The Business Process Representative should be a manager involved in the Process in his/her daily work.

*Responsibilities*

- To ensure implementation of the Business Process in line with direction decided on Group level within his/her organisational unit.
- To supply the Group Business Process Owner/Development Manager on improvements that would be of benefit also outside his/her specific unit and participate in the overall development of the Process by closely co-operating with the Group Business Process Owner and his/hers Process Development Manager.
- To ensure a continuous improvement of the Process within the specific organisational unit.
- To do modifications according to local requirements when implementing the Process within his/her organisational unit.

LINE MANAGER

*Role*

To use the Process in his/her daily work.

*Responsibilities*

- To measure process performance.
- To implement improvement projects.
- To provide resources and develop peoples' functional competencies.
- To be responsible for the output from the line function.
- To co-operate with the Business Process Representative in order to maximise customer focus and cost effectiveness.

## THE DIFFERENT ORGANISATIONS WITHIN THE SUPPLY CHAIN PROCESSS

AN OVERVIEW

- The Supply Chain Board.
  - Approve process and Sub Process targets
  - Ensure business requirements
  - Prioritise and approve projects
  - Review progress of major projects

- Process Owner Teams
  - Propose targets for processes and sub-processes
  - prioritise between projects proposals for Sub Processes
  - Co-ordinate the Process
  - Propose financing
  - Ensure work procedures
  - Safeguard business requirements

- Sub-Process Owner Team
  - Collect needs
  - Generate project proposals
  - Responsible for work procedures

- Maintenance Reference Group
  - Immediate decisions for repairing

- Project Leader
  - Manage projects
  - Develop work procedures

- User
  - Be a member of a project team
  - Support development
  - Take active responsibility for work procedures

- Common Systems; IT-Resources
  - Support development
  - Execute system development and realisation

THE GROUP SUPPLY CHAIN STAFF

This organisation and its staff are working full-time with Supply Chain Process matters. This organisation and its function are to reassure that the necessary actions are being taken in order to fulfil the goals of the Supply Chain Process and in the extension the Group Business Process strategy.

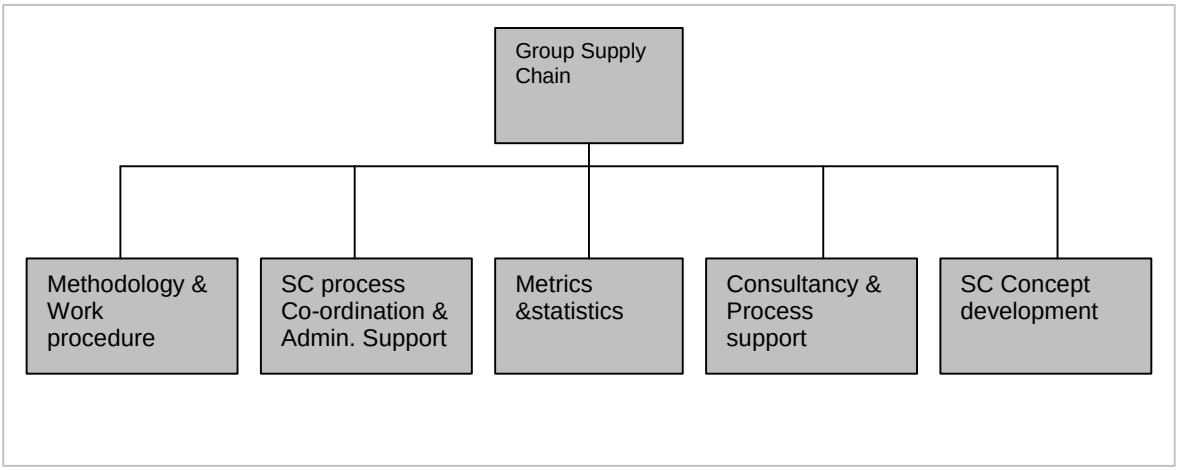



*Figure 18 The Group Supply Chain Staff Organisation*

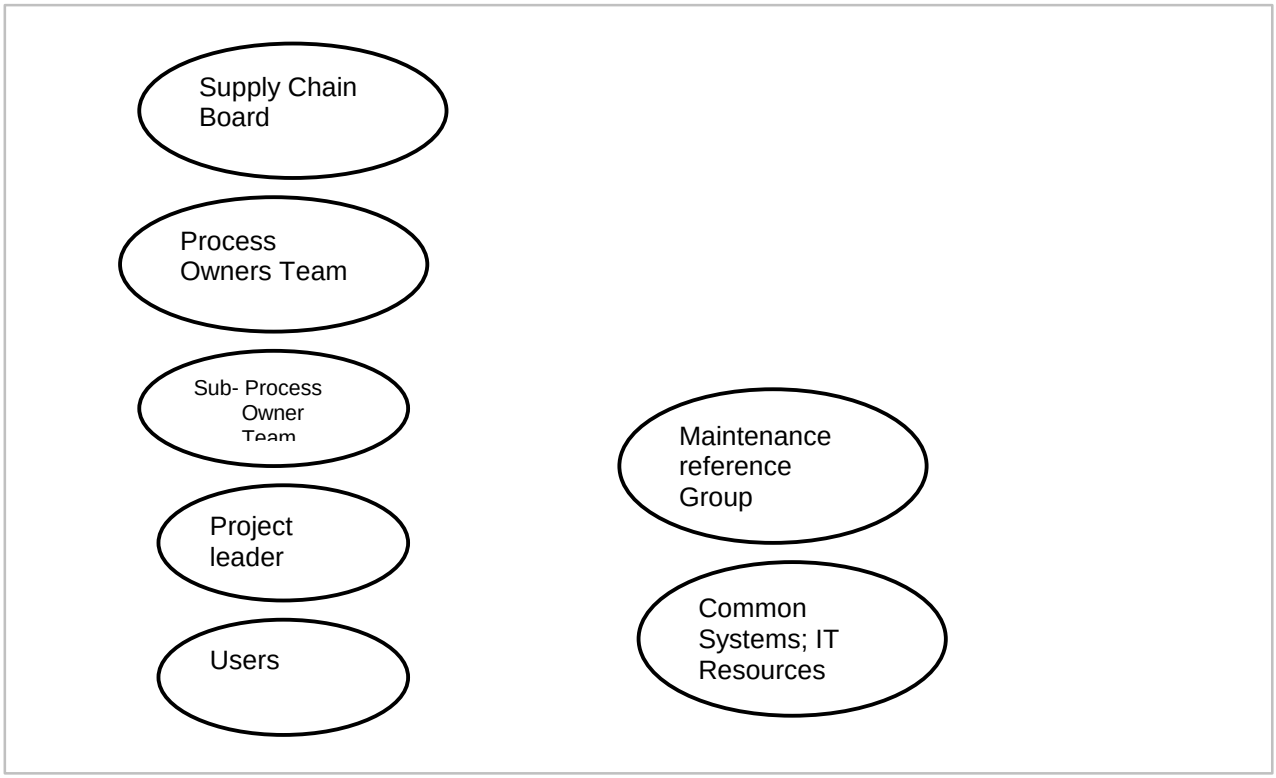



*Figure 19 The different authorities*

The majority of the members of the Board and other authorities mentioned above have other responsibilities towards organisations that they represent outside the framework of the Supply Chain Process. The Group Supply Chain Staff on the other hand have no other responsibilities than working with the Supply Chain matters.

The Process Development Manager, the manager of this organisation, reports directly to the Group Business Process Owner of the Supply Chain.

What we have not yet described fully is in what way the users and co-workers within the Business divisions contact their representatives, i.e. the POT members. In 1999-02-26 a description of a procedure for handling user's requirement on improvement of a process or a system was distributed to concerned people within SKF. In this document that is written and distributed by the Manager within the Group Supply Chain, it is mentioned that the user should address the proposals to the proper person representing his/her division in the POT. If the user do not have any representative from his/her division within the POT that handles that particular system or process, the user should contact the Group Supply Chain.

What we have described in this section is the way that SKF wants the Supply Chain process organisation to work. It is strictly an objective study of the papers that are distributed within SKF with intent to steer the process work in the right direction. In the section called "Situational Analysis" we will describe what the actual situation is like.

# THE HANDLING OF IT ISSUES IN THE SUPPLY CHAIN

This section is divided inot three main parts based on our questions at issue, which are the current situation, the desired situation and the comparison between SKF and Hugoson's model. We have also included two other parts, which are the comparison between the proposal documents and the situation analysis that we have made, the other part is the consequence analysis of the desired state as the employees at SKF sees it. The reason for including these two other parts are to show differences that exists between the current situation and how the top management at SKF wants it to be. We also want to point out consequences of the suggestions given to us from the employees at SKF that might not have been considered. About the interviews we would like to point out that we had the intention to do 18 interviews at most. We did 27. The reasons for this were that we wanted to get as many opinions as possible. A small number of the interviews we had to do by mail. The reason for this was that the interviewees were situated abroad and were not visiting Sweden during the span of our master thesis work. However, since these employees were IT users we saw there opinions as vital to our work. Also, they would give us the geographical dimension that we otherwise would not get.

## SITUATION ANALYSIS OF THE CASE STUDY

The business organisation, the Supply Chain Process and the Business divisions, have contact with Application Delivery through different channels. Depending on what type of business unit or process that Application Delivery is working against it has to act differently. It is indeed a problem for Application Delivery when the business organisation that Application Delivery support and develop systems for are working in such different ways and showing such different faces. It puts great pressure on Application Delivery to be able to meet their customers in quite different manners depending on what unit or process they are acting towards. Because of the problem delimitation that we have done we will only describe the situation as it is in the interface towards the Supply Chain Process. Even with this limitation there are differences in the way that the Supply Chain act towards Application Delivery. We are going to describe how the different employee types see the Supply Chain Process and Application Delivery and their interaction.

### THE CURRENT SITUATION AS THE SUPPLY CHAIN MANAGEMENT SEE IT

We want to make clear that the employees at SKF that we have interviewed and here considered being part of what Hugoson's model refer to as the IT-management role. As explained previously in the section “Hugoson's model for aligning the IS/IT development with the business development”, they are not absolute in this role but the closest we can get. When analysing the gathered material from our depth interviews with the employees at SKF that can be characterised as IT-management, we came to the conclusion that they gave the same picture of the process organisation as we have already

seen in the documents that were distributed within the organisation. For this role there is no reason to get into a deeper explanation of their opinion about how the roles and responsibilities within the Supply Chain works. Still we want to give the Supply Chain management's point of view of how they see the work that has been done in the Supply Chain in a more strategic way. By this we mean for example how the earlier change request queue was "cleaned up", why it is important to implement Common Work Procedures and also more general ideas that came up during the interviews. What is of great interest is their view of the problems that exists in the process organisation.

Supply Chain Board, SCB, as explained before do the budget. This board also decide what IT projects that may start. When SKF started implementing this process organisation 1 ½ - 2 years ago there were somewhere around 50 projects that were to start or were already running. The new process organisation had to start with cleaning up this queue, and they managed to go from approximately 50 to 21 projects by which 11 of the most important was prioritised. During this cleaning up period they looked for if the intended projects had a project leader, which was not always the case, and if there were one it was always an "IT-guy". They also looked at the costs, how far they had come and if there existed any project description, if it did it often lacked a structure. Earlier, it was a free utility for everyone to leave a change request, and there were requests lying in "queue" for 2-3 years. Many times the problem was already solved one way or another or it was not relevant to do the change since it has been many years of waiting and the conditions had changed. Today, a project proposal must have a project description if the project is calculated to be going on for more than five days. There is also a need for a cost/benefit calculation. The process organisation has up until now been characterised by pure cleaning up. But it is necessary to think in terms of profitability.

In SKF today Application Delivery has an execution role, which they are not satisfied with. Before this new organisation they were part of the project from the start. The main part of the interviewed from the Supply Chain management have the opinion that this problem should be solved, i.e. that the Application Delivery should be involved in at an earlier stage again.

The reason for SKF wanting to document the work procedures is that the employees are considered to be very bad in documenting. The systems are so complex and complicated at SKF that the competence and the knowledge are lost when good and competent personnel leave the company. Each Process Owner Team should describe and document their processes in a coherent way. This is not the case in every POT, but in the ones where this is done they proceed this work by having workshops of "best practise". This is done by discussing the different ways of performing work so that every possibility of improving the work process come up before the final decision is made. This common work procedure that is decided upon is then documented in the BIM.[74] In this database the processes will be documented all the way down to the carrier of the information, which is the computer. This database will be released during the spring at the SKF Intranet. This work is considered to be very important since employees do not work similarly over nation boarders. It is considered to be a very important issue to document the common work procedures. So far it is not compulsory to conduct the work with the

74 Business Information Model

common work procedures, but from this role's point of view it is considered to be a need for it. The IT-management thinks that the divisions should conduct this documentation since they should consider the Process Organisation as a service. The implementation of the process organisation is done with a pilot-project to be able to learn from mistakes. Still two year after the start of the organisation there is not any prioritisation for all the Process Owner Teams to have all their work procedures done in order to be able to do a common implementation for everyone. It is not considered to be a reasonable thought.

### THE WORK FLOW AND COMMUNICATION CHANNELS

As we have explained before, today when a project proposal is discussed it is necessary that system specifications is written for the project. As one staff member explained to us, even though the Supply Chain organisation is supposed to be working according to the new process organisation it is still necessary to write one specification per system. Instead it should be one specification per project independent of how many systems that are involved. He could not understand why it could not be considered as a whole.

### EXPERIENCED PROBLEMS FROM THE SUPPLY CHAIN MANAGEMENT POINT OF VIEW

- Organisational changes take very long time in bigger organisations. Furthermore, if these are geographically outspread it takes even more time. What is a common opinion among the staff members are that more resources should have been allocated to implement the process organisation. Not even the chairmen of the POT's have time allocated for working with process organisation matters. The chairman always comes from the divisions, which also is considered to be a problem. This leads to that the chairman is dedicated 100% to his work in the division and only when and if he finds the time he works with the process organisation. One interviewed gave us an example of a hospital with 40 wards. At this hospital they implemented a process organisation at several of the wards at the same time. Here various doctors and nurses were allocated to the work, each one of them 50% of their working time. The work was finished in three months. At SKF the same person claims that everyone is agree and see the need of the new organisation, but there is a lack of incitement from the division point of view. What now needs to be done is to get everyone to work towards the new organisation.
- There is a problem in how the process organisation has been implemented. Peter Augustsson came with the proposals of process work 1995 but he did not follow it up. When he finally did he tried to "govern" it all.
- An important part of the problem as one of the staff members sees it is that the process implementation has been done in the wrong order, first the organisational changes and after that the conceptual work of common work procedures. This should have been done the other way around.
- Everything is very formal nowadays; *"they have no longer any freedom"*. This formality has the positive effect that the decisions are well anchored since it has to go through the POT, but it takes to long time to get a decision. Before, if there were a very strong group that wanted to force through a decision they only had to yell out loudest. Today the good thing is that they have to pay for it as well.

- There is not any clear idea of which the systems owners are within the Supply Chain. All the interviewed gave different answers when this question came up. But they all agreed on that the POT's should be the owners. This is considered to be a problem since it is very easily for project proposals to "fall between chairs".
- IT-management sees the problems that the information about the new organisation has not been spread within SKF. The documents are easily held up in the distribution chain and it has been up to the divisions to spread this information. It is under the responsibility of the material flow managers. The reason for this is that the divisions have a better contact with the employees. Now they want to try another way by putting the information accessible for all employees at the Intranet, but they do not consider the problem to be solved by that, since everyone does not have access to it. The process thinking is spread within the company, but the strategy implementation is not as spread.
- Functionally, IT is considered to support the processes, but it can always be better. The co-operation between the IT organisation and the process organisation is a problem. They think that the IT organisation should be more flexible.
- Process development has not been up at the management level.
- Application Delivery is not a budget organisation. Despite the expected demand for commissions from the Business divisions and Process Owner Teams, teh budget is what Application Delivery use as reference when they plan theirs resources.
- It is seen as a problem that the system development is done over the "system boarders". The IT- organisation should take care of this co-ordination. The business side should not have to be involved with the technicalities such as which systems that are of concern when there is a functionality development for the processes. There are problems with the interfaces between the systems. The support teams are considered to be unwilling or ignorant of the integration between the systems. It is very clearly defined where each and every system starts and ends. This is another reason why project proposals "fall between chairs". The IT organisation has not yet learnt how to act as a service organisation. The synchronisation is bad and the systems implementation takes to long time. This is a problem because there might be other projects that are being implemented during this span of time that need the latest update to function correct.

## THE CURRENT SITUATION AS THE IT ORGANISATION SEE IT

Application Delivery is affected by how the Supply Chain Process do business with them. Due to that the different processes within the Supply Chain Process has not come equally far when it comes to implement the processes, Application Delivery has to act differently depending on which Main or Sub Process within the Supply Chain they do business with. Therefor Application Delivery has experienced and seen some problems within the area of the Supply Chain Process. It is mostly in the interface between the user organisation and Application Delivery that problems have been noticed from Application Delivery point of view.

Application Delivery consists of different systems teams when it comes to maintenance and development of the "back-bone"- systems, the common systems. Back when there were User Reference Groups (URG's) and Systems Boards, the system teams where more involved in the prioritisation process. They were represented in the URG's then, they are not members of the POT's now. There has been a shift of power from the systems teams to the POT's and the Supply Chain Staff. It is always a problem when there is a shift of power. Application Delivery is more of an executing unit now. Their previous presence in the prioritisation procedure is no more. In this matter Application Delivery has no channel out to any party, just an input channel. This is not entirely true, Application Delivery have a service for pre-studies of projects. Because of the concern within the systems support teams it seems as if there is not as much communication as it was before the process era.

### THE WORK FLOW AND COMMUNICATION CHANNELS

Application Delivery gets inputs from their customers through different channels. Application Delivery has different support teams that are developing and maintaining their respective systems. As the Supply Chain process organisation is set up to work, it is meant that the support teams should get project inputs from the POT through the IT representatives that are members in the POT's. These IT representatives participates in the POT meetings as representatives for the entire IT organisation. Whenever there are systems problems that need to be attended, it should be presented and discussed at the POT meetings. The IT representative should thereafter discuss the matter with the right authority. This is not the case today, these representatives are not considered representing Application Delivery since they do not give the systems support teams the feedback they need. The systems support teams therefore have the feeling that they have lost their communication channel with their customers.

Depending on the scope of the prospective project it should be searched for approval at either the SCB or the POT. We have described the rules for whom should be contacted depending on economical factors in the section "SKF - The Case Study." Actually, this is not always the case. In some cases employees from the divisions contacts support teams directly, instead of contacting the POT member representing his or hers division. There are cases where systems support teams are not contacted at all. There are no users that

contact them at all. This is the case with a particular system support team. The POT that handles issues concerning the system support teams system does not exist.

Every POT has its chairman. The division's representatives have different mandate from their respective division. Some of them have mandate to make decisions up to a certain amount of money, others have to go to their superior with the suggestions that come up at the POT-meeting and come back. This depends on the trust they got from their respective division. The speed of decision making depends on the interest that the divisions have in the project proposal, if there is a big interest in a certain proposal *"one have to put on the track shoes"* as one interviewed said. It can even be the case that though the other divisions are not interested in a change the interested division can pay for the entire development.

When it comes to handling issues that affects, and is affected by, the Supply Chain process organisation there are multiple interfaces to Application Delivery and in some cases there are no interface at all.

- The issue is communicated directly from the division to a support team at Application Delivery.

- Another interface is from POT via IT representatives to the affected systems support team at Application Delivery.

- Another situation is that there is no POT, additionally divisional members do not know whom to address in those issues, which means there are no channels between users and systems professionals within Application Delivery.

- Yet another channel is from the Supply Chain Board to Application Delivery.

- In some great issues matters are channelled from the divisions to the SCB.

### EXPERIENCED PROBLEMS FROM THE IT ORGANISATION POINT OF VIEW

- Not many know how the correct procedure is. They (the users) do not know what the Supply Chain process is.

- As it was before, the IT people had better contact with the user organisation.

- The procedure today is to slow; the organisation has not been implemented and introduced to an extent that is necessary.

- There is a natural inertia within the Supply Chain because of the bureaucracy.

- There are central resources, but it will be to top managed then, they can never get the full view and understanding that is at POT level.

### THE CURRENT SITUATION AS THE IT ORDERER ORGANISATION SEE IT

The greatest problem within the Supply Chain process is that there is a lack of knowledge about the Supply Chain process at all levels. We have talked with employees at factories that have heard that there is a process organisation but they do not know why or how the process organisation works. Another problem is the fact that there seems not to be a unanimous strategy of common work procedures. Even within the same division there seem to be different views of how to take position in the common work procedure matter. We have heard from a Business Division that the Supply Chain Process is a "special interest organisation" for the Business divisions. As all parties have pointed out, there are no resources dedicated to the process organisation from the Business divisions' point of view.

### THE WORK FLOW AND COMMUNICATION CHANNELS

As it is meant to be, the employees at the divisions should address IT related projects proposals to the POT member that represents the division. The POT member should then bring up the issue at the next POT meeting. The POT members that are division representatives are in some cases also contact men within their divisions. Whether the picture that the POT member is presenting at POT meetings is the true one or not depends on if the communication between the POT representative and employees within the divisions are functioning.

This is the way it works in most cases, but there are also other channels that are being used. In cases where the POT members or contact men within the divisions are not known, the proposal goes directly from the division to the systems support team at Application Delivery. In some cases employees in the divisions do not know whom to contact at all, neither at their division (the respective POT member depending on what system that is addressed) nor at Application Delivery. In these cases there are no channels for the personnel at the divisions to use when it comes to address system matters to Application Delivery.

### EXPERIENCED PROBLEMS FROM THE IT ORDERING ORGANISATION POINT OF VIEW

- There is a local problem that cannot be solved since POT has to be involved and decide if proposals can be accepted or not.

- It could be that there is no problem with this new way of handling proposals, the problem might be that the new way of doing this is not known well enough in the whole organisation.

- From the logistics point of view, only a few things are moving since the POT organisation was established.

- It could be a problem with different divisions fighting over IT resources.

- The process organisation has not been "sold" into the organisation. The users might not know whom to turn to. The POT members do not always have the time to spend on POT issues they would need to because of their full-time assignments at the divisions.

- Today it is more complex and heavy to handle. The decision process demands unity and consensus.

- One problem is the downsizing and cuts.

- Because of the inter-dependencies between the different units and divisions within SKF it is hard to isolate problems to one unit/division.

- There is a problem in that it is said that the IT organisation should be 100% service organisation, i.e. the IT organisation takes on any projects they are given from the Business divisions/processes and these, as customers, pay for it.

- "Within the Supply Chain Staff there are to many generals and no soldiers".

### THE SYSTEMS OWNERS PROBLEM

Under "Experienced problems from the IT management point of view" in this section, we described that the Supply Chain management experienced it as a problem that there is no clear systems owners role. The IT organisation and the IT orderer organisation did not expressed the same concern for the fact that there are no clear roles for systems owners in the cases where the interviewed could not answer the question of who (m) the systems owners are (is). The reason why we put emphasis on this particular question is that it has to do with roles and responsibilities in IT matter. If it is as at it looks like, there is a lack of unanimous responsibility for business matters and IT support matters.

Here follows some of the answers to the question "Who is (are) the system owner(s) for the systems that are being used within the Supply Chain.

- No one owns the systems.
- XX is the systems owner for the local system.
- It is the Supply Chain Process.
- Do not know. Logically, it ought to be the POT.
- The POT's are systems owners!
- Someone within the Supply Chain.
- The Supply Chain Organisation.
- There are no an explicit systems owners, and yet it has not been a problem.

The most frequent answer has been that the Process Owner Teams are, or should be, systems owners. However the situation today is that there is no explicit rule for systems ownership. As we previously have explained, the Common systems that SKF uses are from an era where SKF where organised geographically, not as today when it is more business area oriented. Before, the systems were synchronised to fit the organisation, now the organisation has changed, but the systems have not. This makes it harder to find the same responsibility scheme as when the organisation was geographically organised, and when there was no process organisation. Actually, we have explicitly been told that there are no systems owners. It is not possible since SKF is organised as it is and the systems are organised and managed as they are.

As it is, many systems are involved in the Supply Chain process, within the Supply Chain process there is a situation where different systems are involved in the same Main process. One of the Process Owner Teams tasks is to solve problems that stretch over the entire process. The POT therefor has to deal with all the different systems that are involved in their particular process. It is even more complicated; the different systems are involved in more than one process. Different POT's might have interests in the same systems. This is the reason why the question of whom are systems owners is a tricky one.

## SUMMARY OF THE SITUATION ANALYSIS

*The workflow and communication channels*

| | |
|---|---|
| 1 | In issues of greater importance, divisions contact members at the SCB directly. |
| 2 | Sometimes employees at the divisions contact the support teams directly and sometimes even the CIO is contacted. |
| 3a | In matters where the support teams have been contacted directly by the divisions they tells the division employee(s) to take the matter to the POT of concern. In other cases the support team handles and solves the problem without going the formal way through the POT. |
| 3b | Another way to handle the problem when division members contact the system support teams directly is to receive the project proposal and see to that it is delivered to the right POT member. |
| 4 | This question mark represents when the employees at the divisions do not know where or whom to turn to. |

*Table 1 The work flow and communication channels*

These five channels are being used additionally to the formal flow of project proposals. When referring to the formal flow we mean the workflow, as it should be conducted according to the directives from top management as presented in the case study part. When showing these additional channels with the formal ones one gets a more complete picture of what the current situation actually looks like (figure 20).

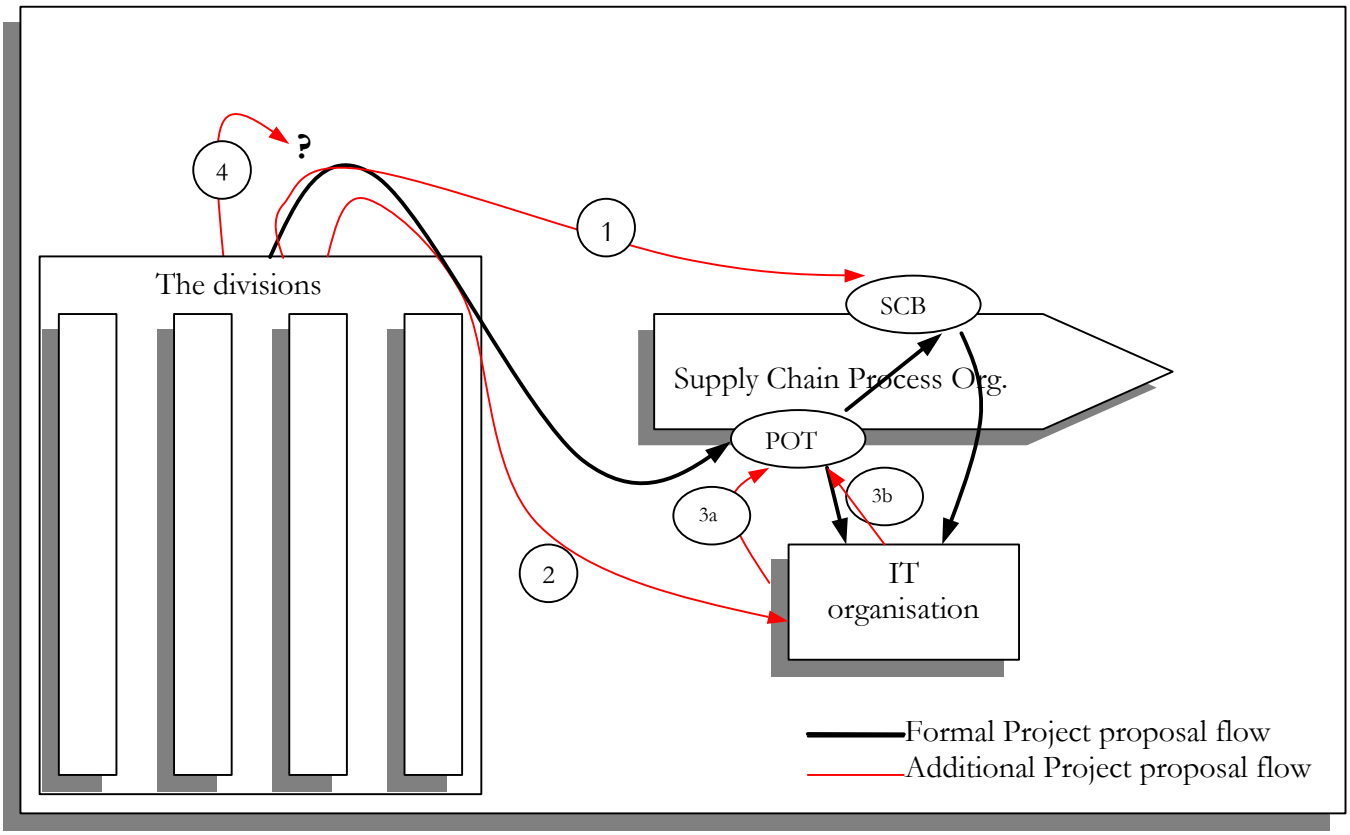



*Figure 20 The formal and actual project proposal flow*

THE EXPERIENCED PROBLEMS

All employee categories see or experience problems within the borders of the project proposal flow. Some of these problems could be the reason for why the formal channels are not functioning in all cases.

Almost everyone we have interviewed has had an opinion of why there are problems with the process organisation today. The pattern is that most of them think that the Supply Chain process has not been implemented right and spread well enough in the organisation. Another thing is that many interviewed think that there are not allocated enough resources in order to work with the Supply Chain process organisation.

While planning for the interviews we wanted to get the knowledge and experience from the people that worked within the Supply Chain. We explicitly wanted them to give us their own suggestions about how the experienced problems could be solved. The ulterior motive for this was that in most cases the interviewed had experiences from both the old and new way of working. If the new organisation is not satisfying their needs, they probably have their own ideas of how to solve the problems. It might just be the case that they have chosen to work according their own ideas since it better suit their way of working. We have pointed out the suggestions given from each of the three roles, Supply Chain management, IT Orderers and IT Suppliers. During the interviews, proposals of various kind of how to improve the working situation were brought up. The following are the suggestion that we considered to be of interest within the problem delimitation of this master thesis. Thereafter we have made consequence analysis of the given solutions.

### THE DESIRED SITUATION AS THE SUPPLY CHAIN MANAGEMENT SEES IT

- Group Supply Chain should have mandate over the divisions. The Supply Chain Process Owner should have the authority to force through decisions. He should also be able to make demands upon the set of time for the implementation. Since he gives directives and co-ordinate he should therefore also be able to have the control of the whole course of development.

- The SCB should have the authority to give directions to run a project when the division representatives in the POT's cannot come to an agreement on a project suggestion. This should be possible if the decisions are considered to be important to the process. There are cases when the project is of the best interest of the Supply Chain process and these should be run anyway. The reason for this is that the person from the central process organisation look more to the overall picture and the struggle for power can be avoided. The responsibilities of the divisions should be limited to the implementations of the decisions in the business. A more formal contact should be created between the process organisation and the divisions.

- A more clear role of the process ownership. Today there is a too relaxed process ownership. One way of solving this could be by replacing the chairmen of the POT's that today it is always a division representative, with someone from the Supply Chain development. This replacement could solve the problem with that the questions that are of more process-oriented kind would not "fall between the chairs" or be dribbled away between the divisions.

- The system owners should be the POT's.

- The system support teams should be included in the POT as they were in the URG while the IT- representatives should be transferred up one level to the SCB. The IT organisation should be a discussion partner earlier. They are IT suppliers but they should not be involved only in the design of the systems, but also in the earlier stages since they are specialists of the systems and have good system knowledge.

- Application Delivery should start to work as an external consultant in the sense that this department should start to sell their products. Today the IT organisation is far to passive. One member of the IT management has even got the advice not to care a bit about the process organisation from another IT management employee. The solution is that the IT organisation should be a service organisation.

- A more pronounced interface organisation should be created, so that the customer should know whom to turn to and that this person at the IT organisation should deliver the assignment to the ones that are concerned.

- Each country should have their own Account Manager that the customers could turn to in matters of more technical concern.

- The co-ordination should be handled by the IT organisation since they have the overall picture of the systems. By giving this responsibility to the IT organisation the IT orderer will not have to be involved as they are today. Today, it sometimes happens that the IT orderer has to co-ordinate IT issues themselves despite their lack of overall picture.

### THE DESIRED SITUATION AS THE IT ORGANISATION SEES IT

- There should be more resources allocated to deal with the work that has to be done between the POT meetings, for instance documentation. This would shorten the lead-times.

- If SKF has not succeeded with implementing the Process organisation in one and a half-year it will not ever work.

- Information to the users so they know how to act. Priority issues also have to be clarified.

- It is a problem that all representatives within the POT's have full-time commitment towards the divisions. Resources should be allocated.

- Members or representatives from the support teams should also be included as members of the POT's.

An important issue is that Application Delivery wants to be a service organisation to full extent. They want to sell and deliver IT to the orderer organisations without having any restrictions other than the IT orderer organisations demands. As we have previously written, in Application Delivery's opinion this is not the case today.

### THE DESIRED SITUATION AS THE IT ORDERING ORGANISATION SEE IT

- The project proposal procedure has to be described and communicated in a better way.

- The issuer has to be able to know the status of his proposals.

- The organisation should go back to the use of a local contact person.

- Allocation of resources to the initiation of the work since it will demand a lot of resources to get over the first threshold.

- The system is already developed and implemented; now the work with the work procedures has to be done. It has to be done in this order since SKF started the work of the new organisation in the wrong order. The work should have been done the other way around.

- Instead of that the IT organisation should make further prioritations since many projects often are urgent, Supply Chain Board should do this.

- Concerning the problem with the system owners this could be solved by giving local responsibilities to the different systems.

- The IT organisation should be a service organisation in the same way that the Service organisation at SKF is. As such, the IT organisation cannot tell their customer to turn to different units within Application Delivery. It requires one interface towards the customers. They should re-organise to be able to take care of their customers in a better way. SKF's should copy IBM's way of working, which would be that it is not the factories that should have to contact the different units within the IT organisation, instead they should have a contact person there. The divisions do not have the required resources to take care of all the contacts between the different systems. The divisions want a package, which includes the work procedures and a system that supports them. Together with this they want training.

- One of the interviewed said that the divisions are and should be in focus, Supply Chain Board should not have decisions mandate over the Business Divisions.

We have been comparing the proposal documents (1-5) with the situation analysis to see if there are some differences between them. We also wanted to analyse the reasons for the prospective differences. The result of this comparison is that there are differences between them that we are convinced have influenced the result of the process implementation. The factors that will be discussed in the following section are the workflow, the budget and the roles & responsibilities.

### THE WORKFLOW AND COMMUNICATION CHANNELS

As shown in the situation analysis, there are multiple channels between Application Delivery and the Business divisions in addition to the formal channels. This is described in the picture 20 and table 1 in the situation analysis section. In table 1 we have described what the additional channels are. We will here try to point out the probable causes of them.

In channels 1, 2 and 4, the user organisation are using different channels than the formal ones. After the interviews and observations during the time at SKF we believe that the following are the reasons.

In those cases where the process organisation has been implemented the formal channels are not known, by different reasons. The IT orderers are using the channels that they used before the process implementation. There are cases where the process organisation has not yet been implemented. In these cases the channels that have always been used are still in use. From the IT ordering organisation point of view there is nothing strange or any sense of using the wrong channels in these cases. Application Delivery on the other hand feels that there is something wrong, they are now expecting the IT ordering organisations to act as the Supply Chain process is supposed to function. As in channel 4 (see figure 20), which actually is not a channel but the lack of channels, the interface towards Application Delivery is not known at all.

Another thing that we have found out is that many think that the new organisation is bureaucratic and slow. Time is being saved by passing the POT and go directly to the SCB or Application Delivery.

When the IT ordering organisation takes contact directly with the Supply Chain Board instead of the POT, we think that additionally to the cause mentioned above, there is a strong political factor involved. Why should a member of the user organisation at a high hierarchical level use the bureaucratic way, when he or she knows whom to turn to at the highest instance? They use their personal contacts that have been developed over the years.

Application Delivery, when they receive the project proposal or what the message might be, redirects it to the POT, which is the proper receiver. Sometimes the receiver at Application Delivery takes care of the errand himself or herself, without the interference of the POT. As one employee at Application Delivery said, "they are our customers and if they want help it is my job to help them."

These are the effects of, amongst other things, strategy and change management issues. This is outside the boundary of our master thesis, but we are going to mention it in the discussion part because it might underlie the problems with roles and responsibilities.

### THE BUDGET

Application Delivery make their budget based on the discussion they have with the process organisation. The IT organisation estimates the budget on the prospective projects that have been decided at the POT's and at SCB. Through this, the IT organisation will act as the service organisation they want to be. The problem is that SKF is in a period of cutting costs and the CEO has given the same directive to Application Delivery as to the rest of the units in the organisation. This has the consequence that all the projects that have been planned can not be fulfilled since the IT organisation will have to make their own prioritisation.

### ROLES & RESPONSIBILITIES

While studying the roles and responsibilities within the Supply Chain as it is supposed to look like and how it actually works we have noticed differences between the responsibilities of the Group Business Process Owner, Process Development Managers, Line Managers and Users.

A. As we have explained before, in the proposals the Group Business Process Owner (GBPO) has the responsibilities to set the strategic direction and performance goals. This we interpret as that the GBPO should have the authority to decide whether or not Supply Chain should decide that the common work procedures should be used or not. Today this is not the case since the GBPO do not have the mandate to tell the divisions what to do.

   Another thing that the GBPO is supposed to do is to set performance goals for the process. What we have seen during our interviews is that if there are any goals for the process, these have not been implemented with the employees in the Supply Chain. An important thing that is mentioned in the proposals but not performed today, is the work with establishing the process performance measurements, monitoring and following up.

B. The only difference between the proposals and what has been explained to us about the work of the Project Development Managers is that it is his job to ensure that training needs are identified and that training is held which today is not done.

C. The Line Managers are supposed to measure the process performance but as explained before there are no indications that this work is done. Notable is that it is also the line manager that should provide resources and develop peoples functional competencies according to the given proposals, but today this is not the case.

D. The users should take active responsibility for the work procedures, but this we think is something that only a few of them know about.

All the above mentioned causes we think are the result of that SKF's priorities is today cutting costs, with the consequence that implementing the process organisation is not in focus. This colours the entire organisation.

The desired situation given from the employees at SKF as described above have different consequences on the organisation. We have studied the suggestions made a consequence analysis. Since some of the suggestions have the same consequence we have collected them.

The suggestion that the Group Supply Chain should have the mandate over the divisions would have the consequence that it would be possible to carry out the process organisation formally. The responsibilities of the process owner do not interfere with the responsibilities of the divisions. By this we mean in the way that the process organisation's goals are to diminish lead-time and to be customer focused which should not interfere with the divisional goals. It is the Group Business Process Owner's (GBPO) responsibilities to align the Group Supply Chain's strategy with the overall SKF strategy. About if the GBPO should set the implementation time is difficult to force through. Since he has no mandate over the divisions he cannot decide the amount of resources nor the set of time for the implementation. These decisions should therefore come from the CEO of SKF, the division heads superior. It is therefore today not possible for the GBPO to make these decisions.

If the SCB would have the authority to give directives to the divisions the process development can be executed faster and smother that it would otherwise. We base this assumption on that when the members of the POT cannot agree, i.e. the division representatives might not see the overall best for the process, the SCB can force through decisions. An example of this is that they might have their division goals in the Balanced Scorecard that will be measured, and the process work might effect these measurements in a negative way. This might be one of the possible reasons for that the representatives will not see to the overall best for the process since the only measurements that exist today is the one based on the division goals.

One thing that was inquired was a more informal contact between the process organisation and the divisions. Since the informal network most often is strong or even stronger than the formal one in this type of hierarchical organisations this will have the consequence that a deeper understanding and integration between the divisions and the process organisation would be created.

If the system owners would be the POT the consequence would be that each process would have its own copy of the system which in turn leads to higher maintenance costs but on the other hand more the systems would be more adjusted to the processes.

The advantage of having the support team's representatives representing their system in the POT's is that this would lead to an understanding of the problems in an earlier stage of development and this would save a lot of time. Even though the IT representatives are members of the POT, they are more of generalisers, while a support team member is more of a specialist.

Concerning the suggestion that the IT organisation should not be a budget organisation we see a consequence that the CEO cannot for example, later on overrule the fact that

Application Delivery is a service organisation. By this we mean that the IT organisation's budget should be decided by the business organisations/ process organisations.

About the desire of one interface towards the IT organisation, it would lead to that it would be much more easy for the customers. There is also the advantage that it would be easier to receive and distribute incoming orders for Application Delivery.

When it comes to allocate more resources to the Supply Chain development process it would first increase costs, but in the long run an organisation which has a goal to shorten lead-time and is customer focused probably would pay off. SKF must be able to compete with its competitors that most certainly are doing the same.

The users have to be informed about the correct procedures. Users would then better know how to carry out their work. This would save time and other resources from all involved. It is time consuming for all when things fall between chairs, which might be the case when procedures are not properly known.

If representatives would have more resources to spend on process matters they would be more dedicated and process issues would be more in focus for all involved.

If users know whether their issue is taken care of or not and when and how long it would take it would be easier for all involved. If the issuer knows the status of his or hers proposal it saves the IT organisation and himself or herself time consuming waiting over the phone.

If Application Delivery would have local contacts it would bring them closer to the customer.

If there would be local responsibilities of the different systems it would lead to that there would be different occurrences of systems with different system owner for each and every system. This could lead to that the local copies could be developed in different directions, which in turn leads to that common work procedures could be endangered.

There have been a wish from some parts of the divisions that packages including procedures and systems should be used and replace the separate development of systems and procedures. This means that there would have to be a closer interaction between the process organisation and Application Delivery in all process and IT matters.

If there would be a licence-fee for the users that use the Common systems that would include maintenance and development cost, it would make the user organisations more aware of the costs and it would move the IT cost control and management from Application Delivery to the user organisation. Such a fee would be like the licence that all software companies use to their products.

Project proposals do not necessarily go through the Supply Chain management. Depending on the amount of money, 1 Million Swedish crowns or less, the project proposal can be proposed directly from the POT to Application Delivery, this is probably a question of bureaucratic matter, SCB would be drowned in project proposals otherwise. According to Hugoson's model all the project proposals have to be handled by SCB.

The case with the Group Business Process Owner of the Supply Chain is that he is also the head of Group Sourcing, which is the organisation that Application Delivery belongs to. When discussing roles and responsibilities of the IT management Hugoson says that:

*"In order to create clear responsibility boundaries, IT management should not be organisationally co-ordinated neither with IT ordering tasks, nor with management of the internal supplier organisation. "* [75]

As it is today, and as it should be according to the proposal documents, the Supply Chain Board has decision right in financial matters of projects concerning the Supply Chain as we previously have described in the Case study section and also in the figure above. Due to Hugoson, IT management:

*"Should not make prioritisation or economic judgement concerning the Businesses' information systems"*[76]

We are however aware of the fact that our definition of who are members of the Supply Chain management group may not be directly compatible to Mats-Åke Hugosons idea about who should be part of this role. The reason for this is that this board has members that belong to the orderer organisation and this is not right according to the thoughts of Hugoson, but is suitable in SKF's case.

When it comes to the IT infrastructure responsibilities there are in Hugoson's model defined roles and responsibilities, but since this is outside the delimitation of our thesis we will not discuss it further.

Hugoson also says that an organisation or a process should define responsibilities. The IT ordering responsibilities must be synchronised with business responsibilities. In the Supply Chain process today, this is impossible because of the design and the way the Common systems are used. The Common systems are used over the Main- and Business process borders which makes it impossible for a manager to be responsible for the information systems that is used within his or hers process.

75 Hugoson, 1998, page 8

76 Ibid.

When it comes to the roles and responsibilities of the IT supplier, there are no differences of importance as we see it. SKF has the same design of the IT organisation as Hugoson suggests in his model, with different responsibilities of the IT infrastructure and the businesses information systems.[77]

What is called the IT representatives in the POT's are actually persons whose work is of more strategical or/and architectural kind. Being called "IT representatives" we think is a misguiding word. This we base on the fact that they do not have the formal or the informal information channel to the systems support teams at Application Delivery. According to us they seem to be representatives of Supply Chain management or the customers. Their role is somewhat complex and is not easy to define in a simple way. They have an ordering competence, and as long as they do not have a decision right in ordering IT, their role could be as true IT representatives with the role of helping the customers in seeing the possibilities of IT. On the other hand their role whether being a representative at POT meetings or not, are as IT architects with a strategic function at SKF. If they have a role as Supply Chain management representatives, that is having a role of seeing to that the IT projects proposals are aligned with the overall IT strategy, they should not be members of the POT's at all according to Hugoson's model.

The differences that we have mentioned above will be further discussed in the Result section. We will there expound our opinions and our view of the matters that we have brought up in this Analysis section.

77 Hugoson, 1998, page 8

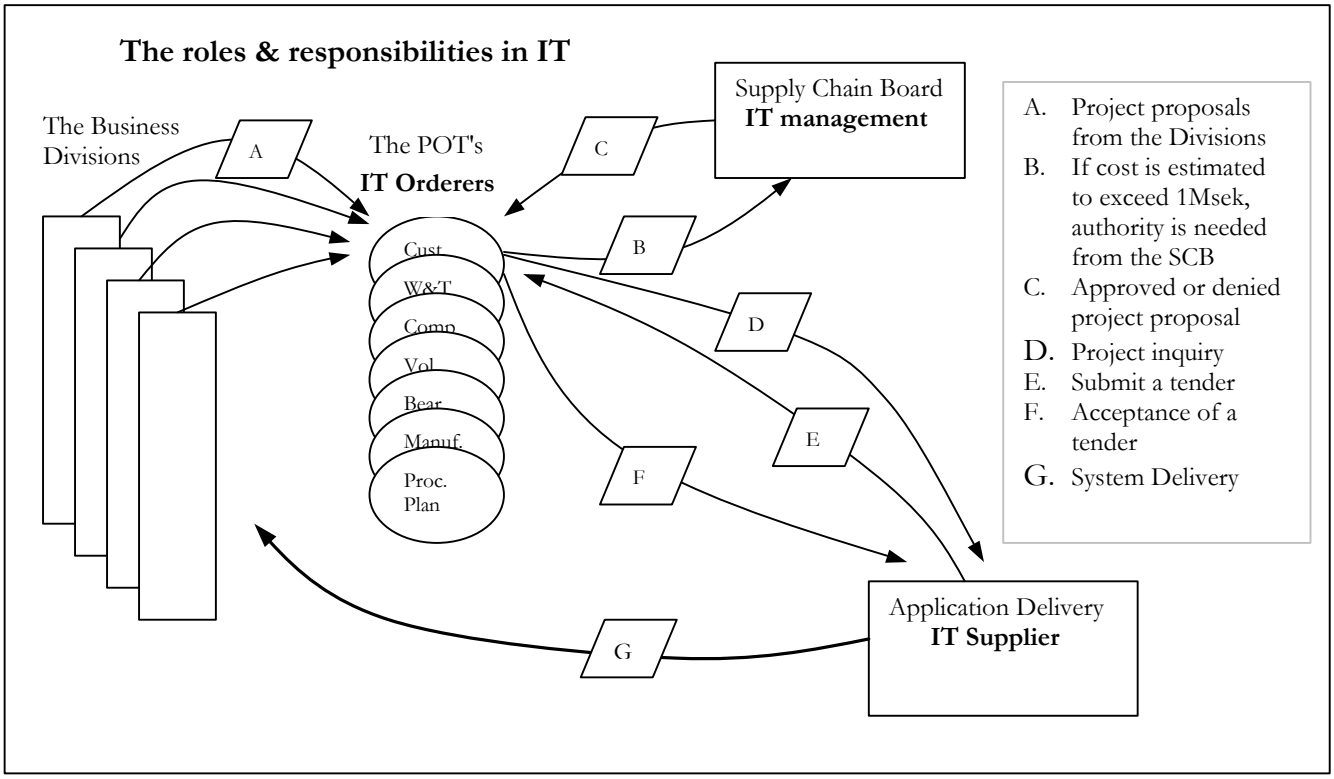



*Figure 21 The documents flow concerning the project proposals*

Within the Supply Chain process there are two types of forum for the divisions and the stab members to discuss the matters of the process organisation, these are the POT's and the SCB. By the following picture the three roles discussed in this master thesis together with their respective interface towards the Supply Chain process is shown.

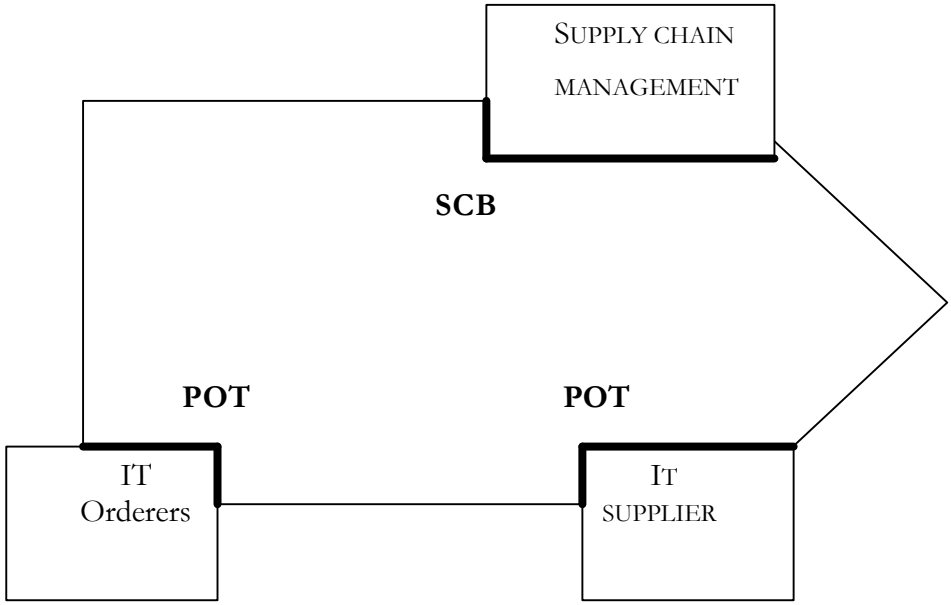



*Figure 22 The interfaces between the three roles*

# RESEARCH RESULT

This is the result that we have reached when studying the case at SKF. Our own thoughts of the reasons and suggestions of how to solve the problems will be further discussed in the next section called discussion.

While studying our material, both the interviews and the written documents, we have noticed that there are not only differences between the current situation and the desired one. There are also differences between the desired situation as described in the written proposals and the desired situation of the interviewees.

**The current situation** within the Supply Chain process concerning roles and responsibilities in IS/IT related questions are somewhat vague. By this we mean that the predefined communication channels between the responsibility areas are used by some but there are also informal channels used additionally in the cases where the formal channels are not known nor functioning.

When talking about the IT ordering organisation it must be taken into consideration that only 60% of the IT orderers that we have been in contact with have agreed on being interviewed. We have seen a clear difference if the user is a so-called super-user or an "ordinary" user since the latter one in most cases did not know about the process organisation. Some of them knew about it but did not know where or whom to turn to in process or IT matters.

Most of the interviewed at SKF have had the opinion that the process organisation has not been implemented or is just in the beginning of the implementation. During our interviews we have come to the conclusion that this is the case. Due to the fact that the information of this new organisation is poorly spread and the lack of explicit pronounced goals has had the effect that there are great differences in the opinions about the maturity stage of the process organisation. Because of the lack of goals it is not possible to get feedback or to measure whether the implementation has been successful or not.

One important issue is that Application Delivery is a service organisation, which should mean that they should provide the services that its customers order. As it is today they cannot work like this since they also have budget directives from top management, which briefly consist of cutting costs. This leads to that the IT organisation has to prioritise among the projects already ordered by the IT ordering organisation since they can not exceed their budget set by the top management. A conflict then arises when the IT organisation has to do an economic prioritisation between the different projects.

Another area of concern is the lack of the resource allocation to the process organisation. There are no directives of how this resource allocation should be conducted. There is no pressure on the Business divisions from top management to implement the process organisation. Since top management measures the given goals of each division, the

divisions are focused on accomplishing these goals and will not "waste" resources on something that will not be measured.

**The desired situation** within the Supply Chain process concerning roles and responsibilities in IS/IT related questions are divided in two different parts. First there is the desired situation as the corporate management sees it, then there is the desired situation as the employees in the three defined roles sees it. They do not match. The reasons for this are that the strategy has not been implemented in a correct way, and since the process organisation has existed for almost two years the people involved have found weak spots in the proposal documents during the time that has passed.

There is an essential difference between the roles of who should have mandate in process matters. Of course the process organisation think that they should be able to carry out important issues for the process organisation while the divisions think that since they are superior the process organisation they decide what should be carried out in there division according to their own interests.

In the change management section in this master thesis we discussed normal problems with change processes. We wrote about differences in the level of thinking that exists between for example the management and the employees. This difference of level is very clear at SKF when studying our gathered interview material about the given suggestions about improving the current situation. The IT orderers had more concrete suggestions while the Supply Chain management were more on what we can call a "process suggestion level", i.e. they see more to the overall picture. This we interpret as if there have not been much consideration about the change management aspects in this implementation work.

All three roles suggest that resources have to be allocated in order to carry out the process implementation.

When **comparing the current situation with the desired situation** we reached the conclusion that they do not match. The working situation does not function as supposed to. One good example of this is the communication channels as mentioned in the situation analysis. Also, it is not clear what kind of mandate the Group Business process owner should have. If SKF decides to implement a process organisation at full extent it is necessary to have mandate to make changes that are in the best interest of the process whether or not the divisions approve these changes. As it is today there is no such mandate for the process organisation. This means that it is hard for the process organisation to carry out, as they see it, necessary changes and get the support they need from the divisions.

The systems support teams has not until recently been members of the POT's, this was an important issue to them since they had felt that they had lost their forum with their customers. During the time when there was no direct contact with the users, they did not get feedback on the job done. This problem has been solved during the month of May this year. Each POT has now one system support team representative from Application Delivery. The reason for not letting all systems teams being part of each POT that is of concern, is a cost matter and the desire to keep the number of POT members down.

As have been pointed out by most of the interviewed, allocation of resources is a problem. Resource allocation was not mentioned in the distributed process documents, but obviously it is now understood that it is a need for doing this allocation.

When comparing the desired states with Hugoson's model there are many similarities but we have seen a few differences and they are as follows:

When looking at the connections between the POT's and the SCB we see two important differences between Hugoson's model and the desired situations.

a) The Supply Chain Board has decision right in financial matters of projects concerning the Supply Chain. This, when looking on Hugoson's model, should not be the case. The IT-management (SCB) role should not be of cost controlling matter. The IT-management should have responsibility to carry out the IT management strategy, co-ordinate and support current development projects. They should not make prioritisation or economic judgement concerning the Businesses information systems. This economic measurement should be the responsibility of the POT's who are the orderers of IT.

b) Today, systems or development projects do not necessarily go through the IT management, as for SKF represented by SCB. Depending on the amount of money (1 Million Swedish Crowns) or less the project proposals can be proposed directly from the POT to Application Delivery, this is probably a question of bureaucratic matter. According to Hugoson's model all proposals should go through the IT management (SCB) in order to secure that the projects are aligned with the SKF overall strategy.

**Our main findings during this master thesis are as follows:**

Roles and the collaboration between them are hard to define when an organisational change has not been implemented fully. If not all roles in a new organisation is assigned as supposed to, the consequence will be that the work within the organisation will stumble. Neither the new nor the old working procedures will function. This in turn leads to that the business will be negatively affected. Setting explicit goals and resource allocation are critical success factors when implementing a change strategy. If the strategy is the road to the goal, and no goal is set, the strategy will not ever be fulfilled and it will therefor not be possible to evaluate it as successful or as a failure. If resources are not allocated, no one will carry out and most certainly not pay for the strategy implementation. If the strategy has not been rooted at all organisational levels, it will be hard to carry out. It is the top management's job to set a shared vision and communicate it to each and all. Only then it is possible to have it rooted and carried out.

# DISCUSSION

We have chosen to divide this discussion chapter in seven main sections, which are the following: Strategy, System Owners, Budget Organisation vs. Service Organisation, IT-representatives, Common Work Procedures, The System Design at SKF and Further Studies.

## STRATEGY

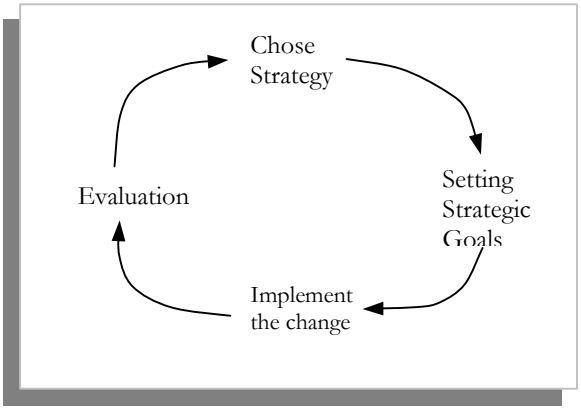



*Figure 23 The strategy implementation loop*

What is a goal? It is a desired state, and it should be the desired state of corporation management, the user, the customer and the environment. Their interests should all be included in the goal picture. When this is done the organisation is said to have a representative picture of the goal, the opposite is when the goal is fragmented, this means that the picture is given. We have understood that no goals have been set for the process implementation work. In order to be able to control the strategy implementation there have to be explicit measurable goals set and a feedback channel.

If there is no goal, it is almost impossible to have a control function that is of any use. There are no measurements that the result can be evaluated against and therefor it is impossible to know goal fulfilment.
The figure on the next page shows the three elements of strategy implementation and the tactical factors.[78]

78 Robson, 1997, page 68

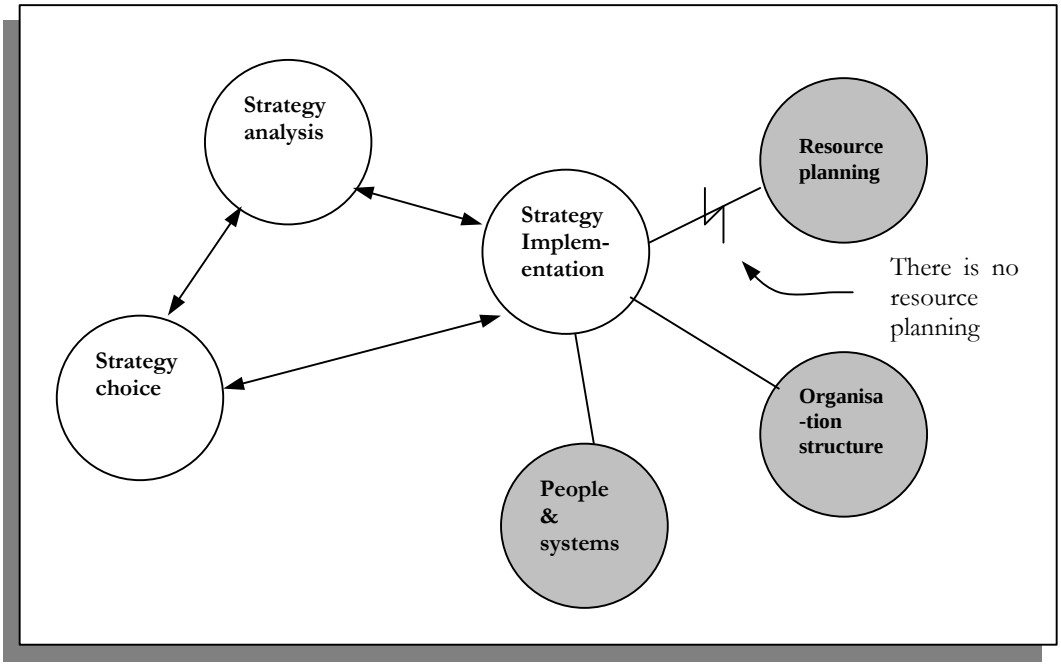



*Figure 24 Three Strategic elemtents (Robson, 1998, page 68)*

If we look at the process implementation strategy that has been used in the SKF case and see what parts have been used and compare with factors mentioned in the figure 24 there are at least one factor that we have not seen in the SKF case. The strategy choice and the strategy analysis we cannot have opinions about because we have not seen how this process has been developed. However, the strategy implementation directives, i.e. the process organisation proposals, do not mention the resource-planning factor. The resource planning should identify the major tasks that needs to be done and estimates how, and by whom, these tasks can be done. When looking at the responsibilities of the defined roles in the proposal papers we cannot see that the resource planning is mentioned. The Line manager has the responsibility to *provide resources and develop peoples' functional competencies*[79]. However, the process organisation does not have any mandate to give directives to the Business divisions. It seems as if the resource allocation is an issue that has fallen between chairs. This is an important success factor for strategy implementation and ought to be dealt with a soon as possible. This is a dilemma and a big reason for why there is a big inertia in the process implementation work. As we see it, that the documents describing the process organisation is called "A **proposal** for reengineering of the process for controlling Supply Chain management" tells us that there is not enough emphasis put on the process reengineering. A proposal is not something that necessarily will be carried out in full extent.

The distribution of the process thoughts and the written material seem to have faded out before it reached all that needs to now about it. For example, it seems as if employees located outside Sweden know less of its existence than employees within Sweden do. This is something that we base on the number of employees that answered our question of whether they wanted to be interviewed or not. A great deal of the users that we contacted who where situated abroad ignored us, were not interested or did not know

79 See page 50

much about the Supply Chain process work at all. This, we see as a sign of that the interest of the process work within the Business divisions is not that big. This strengthens the thoughts of some users, that the Supply Chain process is a "product of the Headquarter".

As we have seen it there might lack one important role in the process organisation. One metaphor that that has been used and gives a better understanding of the roles and responsibilities in a process is the one about restaurants. When applying it on the Supply Chain, the process owner is the recipe maker, i.e. the chef. His responsibility is to make sure that the restaurants have recipes to follow in order to be able to cook. The restaurants cannot be run without a manager. This is what is missing in the Supply Chain process. There are no operational managers, i.e. restaurant managers, to take care of the different restaurants. These are called Process Managers. There should be a process manager per occurrence of physical process, if this is done the process work will be maintained and will be followed up. This is an important issue that we learnt during our interviews and that needs to be taken care of at SKF if a lasting change is wanted.

However there is a role that is called Business Process Representative[80] in the proposal papers, this role seems to be similar to the process manager role. We have not talked to any employee who has this role and also got the impression that this function is not appointed. However, if this function is appointed, all the necessary roles are appointed in order to distribute and implement the strategy.

In the chapter about Change Management, figure 7 is about Change Acceptance Matrix[81]. When comparing this matrix with the situation within the Supply Chain process we have seen were the three defined roles could be situated:

Top Left Square – The Divisions
Bottom Left Square – The Orderers
Bottom Right Square – Supply Chain Management
Top Right Square- **?**

This classification is an important observation that we have done during the interviews at SKF. The Top Right Square that is considered to be the most important to be able to carry out the change management does not have any role connected to it. The top management must see to that they get these key implementators that have the ability to inspire others and that have the spirit of "Let's go on with it!" Here we think that the Process Managers have a job to do.

**The above discussed matters:**

Most of these matters we think could be solved if the process work was more prioritised at top management level.

1. Explicit goals.

80 See page 49

81 See page 33

2. Resource allocation

3. The distribution of the process organisation work

4. Strategy control function

(1) Clear and explicit goals have to be set up for the process implementation work. A good example is the ABB T50 project. Lead-times at ABB were to be cut with 50%. This is a clear and explicit goal that is easy to understand and therefor easy to root at all organisational levels.

(2) A directive from top management to the Business divisions that gave the Process organisation mandate to implement the process organisation at all levels. To set up goals for the Business divisions that measures the process implementation is one way to give the Business divisions incitement for this. The divisions, of course, have strategies to reach the divisional goals. This is what the top management measures the Business divisions on, and quite understandably, the divisions will not waste resources on something that is not included in the goal picture and therefor is not measured.

(3) This would also approve the distribution of the strategy in the organisation since the Business divisions then has to allocate resources and set up their part of the process organisation which leads to that the organisation will be known.

(4) The strategy has to be rooted in the Business divisions. By using, for example Balanced Scorecard, and measure the divisions' goal fulfilment in process work as well as the divisional goals.

To end this strategy section we want to relate to what Watzlawick et al. say about changes of second order. It is the top management that have to take control and responsibility of these kinds of business changes. The reason for this is that when realising a change of second order, one cannot expect the employees involved in the Supply Chain process organisation to take responsibility of this organisational change. This depends on what we already quoted from Osgood on page 22 that "the mutual politics of fright do not include any actions for its own solution". This we consider to be an important thought to take under consideration.

## SYSTEMS OWNERS

According to the thoughts of Hugoson, he thinks that to assure that the systems are supporting the business in an efficient way the responsibilities of the systems should be where the responsibilities of the business are. The problem at SKF as we see it is that each POT having projects that reaches over defined system modules boundaries. This leads to that the system ownership cannot belong to the POT's. However we do not have enough technical skills of the Common systems at SKF to give any concrete suggestions of how this problem ought to be solved. We just want to point out the importance of solving this issue since the operational systems and process development

is the responsibility of the POT's they should have the full authority to develop their systems in order to give them the efficient support they need in their daily work.

## BUDGET ORGANISATION VS SERVICE ORGANISATION

Concerning the role of Application Delivery whether they are a service organisation or a budget organisation this issue has to be sorted out. If SKF wants to cut IT costs, the prioritisation among the IT projects is the responsibility of the businesses. If they do the cost/benefit analysis, they know what to prioritise and not. It ought to be quite clear that Application Delivery do not have the overall picture they need to do this. Probably this was not initially the responsibility of Application Delivery, but an order from top management was that the IT costs should be cut and this order were given to them, not the divisions. They then had to make prioritisation among projects already decided upon. The problem that arises in the current situation at SKF can be avoided if the "cut IT cost directives where given from the top management to the Business divisions instead of Application Delivery. The divisions then make the prioritisation since they know the IT support needed within their organisation. This ought to be taken care of as soon as possible in order to strengthen Application Delivery role as a service organisation. To let them be a service organisation with no other budget than the businesses summed up IT-spending is perfectly in line with Hugoson's model.

## IT-REPRESENTATIVES

Application Delivery has now the POT representatives they wanted from the system support teams. They are now the channels between the IT orderers and Application Delivery. These representatives come from one of the system support teams. Since the decisions that the POT's make may concern more than one system, we do not think that this solution solves the whole problem. By adding these new representatives from Application Delivery, the co-ordination and information sharing problems are not solved. Still the representatives from Application Delivery have to report to other system support teams of concern. They might not have the overall knowledge of systems and of the process they shall support that might be needed.

Instead we suggest that there should be an account manager for each process. By this SKF would get one interface between Application Delivery and the business organisation. The Account Manager should represent all the systems in that process, and have knowledge about them. Further it is his or hers responsibility to report to the systems support teams. We have the idea that the customers to the IT organisation only should have one contact point and that it is up to the IT organisation to further deliver the assignment to the support teams of concern. This would make it easier for their customers and this is one of the goals when introducing the process concept to an organisation, to put the customer in focus. This is what many of the customers to the IT organisation is asking for.

Due to Hugoson's model the IS/IT management is responsible for the entire system structure of the whole business, but not specific development projects. In order to clarify the roles and responsibilities in IT issues we suggest that the members of the IT organisation in strategic and architectural matters should move up one level in the process organisation from the Process Owner teams to the Supply Chain Board. Since specific development projects are not their responsibilities according to the management model, their knowledge would be of better use in the SCB. This rearrangement requires that all project proposals needs to get the authorisations of the SCB. This is to secure that the projects are aligned with SKF Supply Chain's overall strategy and the existing architecture.

## COMMON WORK PROCEDURES

Many of the interviewed saw a benefit of using common work procedures. Mapping the current work procedures is a must if a best practice is to be used. If the current work procedures are mapped and known, the changes that need to be done in order to reach a best practice could be known and obtained. The reason for this is that SKF sees synergetic effects in doing this. But as we see it, this work will not be done unless top management makes it compulsory to do it. Ones again this is a matter of resource allocation and goal fulfilment measurements.

## THE SYSTEMS DESIGN AT SKF

What we have understood, there is a striving for having the IT support and development centrally managed at SKF. The Common systems that indeed are the backbone of SKF's logistics and financial information resources and distribution are centrally managed and owned. This is the IRM way of structuring the ownership of information. Copies of the Common systems are distributed to the different business units where needed. These copies are then modified locally in so called "local exits". In reality, this means that the common system is a kernel with modifications added to it. Because of the central development and distribution of the common systems, the locally added modifications must be added and modified every time there is a new release of the common system. The SKF policy in this matter is that there should be as little local development as possible. The tendency is that there is less and less local development.

There are positive synergetic effects with a central support function due to SKF. This is one reason for their strive for diminish the local development. We can see no tendency towards a BBS structure of the systems. We have not seen the entire information systems pool at SKF though, which makes it a possibility that there are other local systems also. Within the Supply Chain process the Common systems are the ones, as we understand it, that is the most important ones.

The Common systems are vital to and liked within SKF and are therefor hard to redesign. SKF is in a change phase and have gone through an organisational change previously and the systems are still "best in class" due to a Meta Group study. The

Common systems are function oriented, not bound to business units. Since SKF is an organisation that does not have a wide range of product types, the systems do not have to support totally different types of production units. In addition to the production there are the invoice, order and acceptance handling, the logistics, the service support and so on. In whatever way the organisation will be structured, the functions that the Common systems support will exist. Therefor, in SKF's case it seems as if the Common systems are structured in a way that is optimal for SKF. As we have mentioned there is a problem with the systems ownership in this case. As Hugoson's model suggests, the business responsibility and IT responsibility should be aligned. But the development of the Common systems are handled in a way that makes it possible to develop them quite freely within the frame of what the used technology allows. As we have understood in SKF's case, there is not a big problem with not having system ownership on a business unit level, but rather it is as if the Common systems together have the function of an ERP-system. It is a strategic system that is decided upon on Group level. As long as the coupling and de-coupling of the copies and systems parts is not a problem when selling, buying or merging business units there ought not to be a problem.

But as we have understood from the interviews and seen in the proposals the way to manage systems that have an IRM structure is that it is bureaucratic and demands a lot of co-ordination. This is the cost of having the systems managed and developed centrally. Hopefully SKF gain these costs back on cheaper and easier monitored support. Also, when it comes to the functions that the Common systems support we think that it is of such kind that there are no quality gains in having locally developed or implemented systems. How the systems outside the range of the Common systems are conceptually designed we do know. There is a possibility that there are systems that are developed and maintained locally, although this is outside our problem delimitation.

## FURTHER STUDIES

When we have studied the Supply Chain Process organisation we have seen other phenomenon that could be of interest for further studies. How could systems support process work over business units, and still be autonomous? How could this change be made from business unit supporting systems to process supporting systems? SKF have for example various customer types, it might be that there have to be different processes because of this.

# REFERENCES

## BOOKS


**A**ndersen Erling (1994) *Systemutveckling- principer, metoder och tekniker* [Lund: Studentlitteratur]

**A**rmistead and Rowland (1996) *Managing Business Processes - BPR and beyond* [Wiley: Chichester]

**A**xelsson Karin (1998) *Metodisk systemstrukturering*, Doctoral Dissertation, at the Department of Computer and Information Science at the University of Linköping

Backman Jarl (1998) *Rapporter och Uppsatser* [Lund: Studentlittertur]

**D**ahlbom B, Hanseth O and Ljungberg J (1999) *Conservative Success Organization and Infrastructure Evolution at SKF*, in Ciborra (ed) Infraglobe [Oxford University press] (forthcoming)

**E**asterby-Smith, Lowe A and Thorpe R (1997*) Management research - An introduction* [London: SAGE Publications Ltd]

**E**nquist Håkan (March 1999) *IT-management för komplexa ledningssystem,* Licentiate Thesis in Informatics, at the Department of Informatics at the University of Gothenburg

**H**ussey D (1998) *Strategic Management- from theory to implementation* [Oxford: Butterworth-Heinemann]

**K**otler Philip, (1996) *Principles of Marketing* [London: Prentice Hall]

**M**agoulas T and Pessi K (March 1998) *Strategisk IT-management*, Doctoral Dissertation, at the Department of Informatics at the University of Gothenburg

**P**atel R and Davidsson B, (1991) *Forskningsmetodikens grunder Att planera, genomföra och rapportera en undersökning* [Lund: Studentlitteratur]

**R**obson Wendy (1997) *Strategic Management & Information Systems* [London: Pitman Publishing]

**W**allén Göran (1996) *Vetenskapsteori och forskningsmetodik* [Lund: Studentlitteratur]

**W**atzlawick P, Weakland J. and Fisch R. (1978) *Förändring- Att ställa och lösa problem* [Stockholm: Bokförlaget Natur och Kultur]

**W**iedersheim-Paul F and Eriksson L.T. (1991) *Att utreda, forska och rapportera* [Malmö: Liber-Hermods]

## ARTICLES

**D**avenport T, Hammer M and Metsisto T (March-April 1989) *How executives can shape their company's information system,* Harvard Business Review

**E**arl M.J. (1992) *Putting information technology in it's place: a polemic for the nineties*, Material from Literature Seminar at the IT-management course, the Department of Informatics, School of Economics and Commercial Laws at the University of Gothenburg, 981007

**M**agoulas M and Magoulas T (1995) *A Critical Analysis of IRM- Towards a New Philosophy to Manage the Unmanageable*, In Dahlbom et al., (*Proceedings of the 18th Information Systems Research Seminar in Scandinavia*, volume 2, page 403-418

## OTHER WRITTEN MATERIAL

**B**ergquist M and Lundberg N Candidates for the doctorate at the Department of Informatics in Gothenburg, Ethnographical Folder Study Material given at the Informatics as Science course

**B**ogert et al. (1998) Report number 3, *Change Management*, IT-management Course, Department of Informatics, School of Economics and Commercial Laws at the University of Gothenburg

**H**ugoson Mats-Åke (1987) *Systemstrukturering*, Gothenburg, Programator AB

**H**ugoson Mats-Åke (1998) *Styrmodell för att samordna IT- utveckling med verksamhetsutveckling* Study material given at the IT.management course, the Department of Informatics, School of Economics and Commercial Laws at the University of Gothenburg

**R**anerup Agneta (1998) Study Material given at the Informatics as Science course, the Department of Informatics, School of Economics and Commercial Laws at the University of Gothenburg

***I****nformation Systems used in the "Total Material Flow"*

***M****icrovärldens mästare Forskning och utveckling inom SKF*

***S****KF Environmental Report 1997*

***T****he World of SKF,* Published by SKF Group Headquarters

***R****oles and responsibilities within the Business Process work*

***S****KF Group Business Processes*

## ORAL SOURCES

### LECTURES

**D**ahlbom Bo, Professor at the Department of Informatics at the University of Gothenburg, School of Economics and Commercial Laws in Gothenburg, 980923

**H**ugoson Mats-Åke, Senior Consultant at Cap Gemini Syd AB/ Professor at the University of Jönköping, Lecture series IS/IT and change, April-May 1998 and IT-management, September-December 1998

**M**agoulas Thanos, PhD, School of Economics and Commercial Laws at the University of Gothenburg, November 1997

**N**uldén Urban, School of Economics and Commercial Laws at the University of Gothenburg, during the course databases and system development

**P**essi Kalevi, Ph D, School of Economics and Commercial Laws at the University of Gothenburg, 980901

### DISCUSSIONS

**E**nqvist Håkan, Candidate for the doctorate at the Department of Informatics in Gothenburg, School of Economics and Commercial Laws at the University of Gothenburg/ Consultant at Enator, 990218

**H**ugoson Mats-Åke, Senior Consultant at Cap Gemini Syd AB/ Professor at the University of Jönköping, 990216, 990312, 990505

**J**arlevang Lennart, Senior Consultant at Guide Datakonsult AB, 990226

### INTERVIEWS

27 interviews with employees at SKF

## INTERNET

**M**arshall Jay and Conner Daryl R., *Another reason why companies resist change*
http://www.strategy-business.com/briefs/96101/index.html

http://www.skf.se/sverige/index.htm

# ENCLOSURE

The following section consists of our interview questions that we have used during the interviews. First we had the base questions, i.e. the questions of more general kind. Then we have divided the standard form according to the three roles: Ordering organisation, IT organisation and the Corporate Management/ IT-management. We also had some questions for the interviewed person who belongs to the management in their respected roles.

**Public**

1. Title/function?
    a) What does that include?
2. According to the three roles that we have discussed in our project description, in which role or roles do you place yourself?
3. Time of employment at SKF and in this function?
4. What is IT? (Define IT).
5. What is the purpose of having IT at SKF and not outsourcing this service?

***Workflow/organisational structure***

6. How did you work with IT questions before the Supply Chain process organisation?
7. What does the word process mean to you?
8. There is a new organisation with four Business divisions.
    a) Whom do you contact today in case you have a request for a change of a process or a system?
9. Does anyone contact you concerning request for change of a process or a system?
9. Are there any problems with this way of handling requests?
    a) If so, can you give us an example?
        (i) What do you think should be a better way to solve this problem that arisen with the organisational change?
    b) If no, what has been improved?

10. What are important IT issues?

11. Who prioritatise what should be ordered considering IT issues within your organisation?

12. Who is responsible for co-ordinating IT related problems that need to be attended in your organisation?

13. How about the uniformity of systems, do you consider it a problem with local variances?

    a) If so, in what way do you think this problem should be solved?

**Ordering organisation**

14. What systems do you come in touch with?

15. Who is (are) system owner(s) for the systems that are being used within the Supply Chain? (Responsibility for the functionality that the systems support the business with)

    a) Where do you think that the responsibility for the IS should be in the future? (Division or Process)

16. Is it your opinion that IT supports you in your daily work?

    a) If not, why?

    b) If yes, in what way?

17. If you have any problems or opinions that are IT related, i.e. if you have problems with your systems, whom do you turn to?

18. What authority do you have within the area of IT? (The orderer)

19. Who is your customer?

20. Could you give us a concrete example of how a specific IT related problem have been handled. (This will give us an overview of how this process works)

    a) Who summons the first meeting for solving these problems?

    b) Who is the driving force in these meetings?

21. Do you think that the process implementation has been successful?

    a) In what way?

22. If you have more than one function within the organisation, do you consider this to be a problem? (See the second question about roles)

14. Do you make cost/benefit analysis for the system projects?

15. What is the main task for the IT organisation?

16. Who is your customer?

17. Do you think that the process implementation has been successful?

    a) In what way?

18. If you have more than one function within the organisation, do you consider this to be a problem? (see the second question about roles)

**IT organisation**

14. What is the main task for the IT organisation?

15. Who is your customer?

16. Do you help your customer with pre-studies or are your tasks very specified when you get them?

17. Do you think that the process implementation has been successful?

    a) In what way?

18. If you have more than one function within the organisation, do you consider this to be a problem? (see the second question about roles)

### *IT organisation Management*

14. What is the main task for the IT organisation?

15. Who is your customer?

16. Why do you have IT development in-house?

17. Do you think that the process implementation has been successful?

    a) In what way?

18. If you have more than one function within the organisation, do you consider this to be a problem? (see the second question about roles)

**Corporate Management**

14. What is the main task for the IT organisation?

15. Do you think that the process implementation has been successful?

    a) In what way?

16. If you have more than one function within the organisation, do you consider this to be a problem? (see the second question about roles)