

# **SOA and M&A**

- **Relationships between Service Oriented Architectures (SOA) and Mergers and Acquisitions (M&A).**

Master thesis, 10 credits, department of informatics

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### Abstract

*The increased competition caused by the global economy we are facing has forced companies to develop well established corporate strategies. Merging or acquiring a company has for a long time been used by organizations as one of the main strategic tools for expanding globally or for entering new markets. The problem is that over 50 percent of the Mergers and Acquisitions (M&A) fail by delivering the expected outcome, which tends to be depending on integration problems connected to the integration of the business systems. For many years the integration has been ruled by enterprise resource planning (ERP) systems or other centralized solutions, but today the new buzzword for integrating business systems is Service Oriented Architectures (SOA). SOA is an architecture that depends on loose couplings of services which make it possible to connect any business system. The purpose for this study is to deepen the understanding of the relationship between SOA and M&A, which is done by concluding existing literature about the two sub areas in order to generate relationships between use of SOA and M&A. The relationships are then used as a foundation for the research which focuses on verifying the relationships and are performed by case studies at five companies. The companies in this research are Alfa Laval, Dynapac, KCI Konecranes, Sandvik and Volvo/CE. The research has contributed with several relationships between SOA and M&A being discovered, for example that the use of SOA leads to better communication between business and IS departments, which facilitates the integration of an acquired company, and that the use of SOA increases the chance for receiving the expected benefits from an M&A.*

**Keywords:** Service Oriented Architectures, SOA, Mergers and Acquisitions, M&A, integration, business systems, business processes

# Presentation



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Thank you all! / Claes Svensson and Linus Wallén

A handwritten signature in black ink, appearing to read 'Claes Svensson'.

A handwritten signature in black ink, appearing to read 'Linus Wallén'.

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# 1 Introduction

*In this chapter, the background and the problem space of the research area are presented. The idea is to give a general view and an explanation of the purpose of the study.*

## 1.1 Background

Today we are experiencing a transition from the former client-server/database-oriented modules that were used by many enterprise resource planning (ERP) systems to a more flexible architecture built on software components, the Internet, and a variety of XML<sup>1</sup> – related protocols (www.bptrends.com, 2006). A new common word for these new architectures is Service Oriented Architectures (SOA). SOA aims to improve the ability of organisations to quickly create, integrate and reconfigure information system (IS) to support new and rapidly changing markets (Duke et al., 2005). To be able to successfully implement SOA and benefit from it is important for the company to understand the technology, which can be difficult (Datz, 2004). Pre studies for this master thesis have shown that many companies have decided to start implementing SOA, but few knows how to do it, and knows little about the possibilities and problems they will have to deal with, and the purpose for this study is to deepen the understanding of the relationship between SOA and M&A. The reason for relationships between SOA and M&A being studied is due to the fact that issues as poor integration and problems connected to implementation of IS are particularly obvious within M&A (Baro, 2004), and since our mentor, PhD student Stefan Henningsson, is studying M&A, this felt as an natural approach for the study. Besides Baro (2004) requests research how to address M&A performance from the perspective of the IS function, specifically for integration related issues.

## 1.2 Definitions of key concepts

**Business Process** - A business process can be seen as a group of business activities undertaken by an organisation in pursuit of a common goal. Typical business processes include marketing services, selling products, receiving orders, delivering services, distributing products etcetera.

**M&A** - A “merger” suggests a neutral combination of two objects while ‘acquisition’ derives from the verb acquirer and its meaning of takeover. Mergers typically involve companies of equal size, while in acquisitions the acquiring company tends to be of larger size than its counterpart (Krekel et al., 1969). The combined term Mergers and Acquisitions (M&As) are often used together as many researcher chooses to study the variations as one single phenomenon.

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<sup>1</sup> XML, eXtensible Markup Language is a simple, very flexible text format. Originally designed to meet the challenges of large-scale electronic publishing, XML is also playing an increasingly important role in the exchange of a wide variety of data on the Web and elsewhere (<http://www.w3.org/XML>).

**SOA** - A Service Oriented Architecture (SOA) is a distributed system architecture that mainly is aimed at putting the business process at the focus of system design. It assumes that business entities are often relatively constant whereas business processes can change regularly (Shelly et al., 2006).

**IS** - The definition of information systems (IS) is adopted from Zwass (1998) where hardware, software, databases, telecommunications, human resources, and procedures, are utilized in unison. IS transform data into information in order to support an organization's operations, management, and knowledge workers.

### 1.3 Problem space

As the range of products and services continues to grow in numbers the need for ways of expressing a company's identity to the customers become more and more important. The increased competition has forced companies to develop well established corporate strategies (Holger & Holmberg, 2002). One way for achieving this is through the act of M&A (Baro, 2004) which have been increasing heavily during the 90s. In 2003 the total number of M&A exceeded 30 000 operations with a purchase price of 1 365 billion Euro (Henningsson, 2005). Unfortunately even though acquisitions can be an effective strategy for creating economic value more than half of the acquisitions fail to achieve their objectives, which often results in organizational difficulties and poor performance (Ravenscraft & Scherer, 1987).

Succeeding with M&A requires not only strategic and financial analysis of the situation and of the companies affected by the M&A, but requires the acquiring firm to have a good understanding of the different subgroups and cultures of the target firm, in order to manage them appropriately (Markus, 2000). The globalization of organizations and companies that M&A often results in also creates a huge dependency for information and IS (Leidner et al., 1999), and according to Soh & Markus (1995) there is no possibility of creating value for an organization if the chosen IS, is not appropriate for the organization or used in correct way.

Many researchers assert that a partnership is necessary between IS and business in order to succeed with any planned business activity (Henderson, 1990, Baro, 2004, Segars and Grover, 1998). This conclusion is drawn from the fact that many companies discovered they were developing IS that did not support their business strategies (Baro, 2004). Many attempts to align the world of IS with business have been made but failed due to two reasons, first is the time lag between separate business and IS planning processes, and the second is the lack of communication between the business and IS management (Van Der Zee & De Jong, 1999).

In many previous acquisitions the integration of the IS has been done by implementing the same system in the acquired company as used by the main organization, or to implement a totally new system. In those cases the company is pretty much stuck with whatever the vendor can provide (Lager, 2006). But by using SOA many new opportunities arise due to its loosely coupled services (Datz, 2004). These services are accessible by the individual systems which let them communicate with each other over a network without having to change the systems as before (Bort, 2005). Specht et al., (2005) mean that SOA is an appropriate technology-independent approach to implement cooperative business processes, and the main benefit is said to be the close alignment of IS resources with business functions (Shelly et al., 2004). The problem is that many companies and managers do not know how to implement and use SOA (Knorr & Rist, 2005).

## 1.4 Purpose and research question

The purpose for this study is to deepen the understanding of the relationship between SOA and M&A. The reason for this study is the lack of scientific material that specifically deals with this issue, even though there is research in nearby areas that confirm that a relationship exists. The research question for obtaining the purpose of this study is:

✓ *What relationships exist between integration of acquired companies and SOA?*

By posing this question this research do not aim to survey all possible relationships between integration of acquired companies and SOA but as the purpose states to deepen the understanding of the relationship between SOA and M&A. In order to answer the research question the study will be executed in three steps (which are described further in section 2.1), first by generating relationships from existing research about SOA and M&A, secondly to verify them by studying if they are rooted in companies that are using SOA today, and have, or will use SOA for integrating acquired companies. Finally to further generate relationships from the studies performed at the companies, interviews with vendors, and experts.

## 1.5 Scope

In order to reach the purpose set for this study (to deepen the understanding of the relationship between SOA and M&A) our perspective has been to examine how the use of SOA can affect an integration of an acquired company. Other aspects of using SOA that is not connected to the outcome of the M&A, has therefore been excluded from this research, as well as other factors not connected to IS affecting the outcome of M&A. For example general economical and organizational issues regarding M&A have therefore been excluded from this research as long as they do not have any impact on the integration of the acquired companies. As well have depth technical issues regarding SOA, as for instance how information is transported between and within systems been excluded from this study. The only case where the recently excluded phenomena have been included in the research is when they were needed to describe M&A or SOA in order to create an overview for the reader. Besides SOA and M&A also system integration have been described and explained in general, but has only been described in depth where this has mattered for the relationship between SOA and M&A.

In order to answer the research question (What relationships exist between integration of acquired companies and SOA?), the effect of using other system integration solutions for integrating acquired companies have been excluded from this research, and have only been described briefly in order to further conclude research material to lay down a foundation for the case study. The research has further been limited not to answer the research question by finding and describing all possible relationships between integration of acquired companies and SOA, but as the purpose states, to deepen the understanding of the relationship between SOA and M&A.

The number of companies has been limited to five companies in order to maintain a variety and broader span of the interview answers while at the same time maintaining the depth of the interviews. Since organizations that use SOA for integrating acquired companies still are unusual some of the companies used in this study have not yet used SOA for integrating any acquired companies. What is common for all of them are that they use SOA, have performed several acquisitions, and have used SOA for integrating acquired companies, or are planning to use SOA for integrating acquired companies in the future. The interviews at the companies have been performed with people that are of some certain significance for the integration, for

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example, being in charge of SOA, or responsible for the integration of the acquired company. People that are not involved in these processes have been excluded from the study.

## 2 Research method

*This chapter describes our views, standpoints, and motives for the method that has been used for this study. Furthermore the procedures that have been performed in this research, as well as the research quality will be accounted for.*

### 2.1 Research approach

The pre studies about the problem space for this thesis have shown a considerable lack of scientific material that specifically deal with how SOA and M&A are related and how SOA can be used for integrating acquired companies. Nevertheless have large amounts of literature and research about the two main areas, SOA and M&A, been found. The lack of information about the specific subject has led to the consideration about the subject as being scientifically unexplored, why it seemed natural to use a partly explorative approach for this study. An explorative approach is according to Patel and Davidson (1991) investigating in its nature with the main purpose to collect specific knowledge to enlighten the subject. The reason for the research being partly explorative is because of the significant amount of research that already exists in the two sub areas, SOA and M&A. Describing the sub areas is therefore the non explorative part of the research, while generating relationships between the two areas into a new area and test this theory by collecting empirical data is the explorative part.

By choosing a partly explorative approach for the study it has also become natural to perform a qualitative study, since a qualitative approach is more appropriate for studying complex problems that are not measurable with any instruments (Wallén, 1993). A qualitative approach also increases the chances for receiving a broader, more holistic result (Bryman, 2002) which favours this study since it aimed to conclude both literature and real life experiences about the relationships between SOA and M&A. Furthermore an advantage with qualitative research that suits this study is that the focus does not need to be totally clear when beginning the investigation (Bryman, 2002), which led to the opportunity to approve and specify the relationships generated in this research further along the way.

### 2.2 The execution of the study

This study is of a theory generating nature which means that theory, in form of relationships between SOA and M&A will be generated based on existing research about SOA and M&A (Wallén, 1993). The aim of the empirical study has first been to verify the relationships by examining if they are rooted in companies that are using SOA today, and have, or will use SOA for integrating acquired companies, secondly to generate further relationships between SOA and M&A based on the empirical data. For collecting the empirical data (further described in section 2.4) semi structured interviews with representatives from the companies and with a SOA consultant, and a SOA expert have been made.

### 2.3 Generating relationships

Due to the lack of research within the specific research area (described in section 2.1), the relationships used in this research have been generated from existing literature about SOA and M&A. The relationships are similar to hypotheses, but are in qualitative research often referred to as propositions, even though they serve about the same service as hypotheses (Maxwell, 2005). The difference between the qualitative hypotheses or relationships which

they are referred to in this study, and hypotheses used in quantitative research is that they are formulated after the researcher has begun the study. The relationships also depend on the conclusion of existing theories rather than being prior ideas that are simply tested by the data, as hypotheses in quantitative research often are. Critics often argue that creating hypotheses after the beginning of the study is inappropriate. For example when studying statistical data, as in many quantitative studies, creating hypotheses after the beginning of the study would affect the result in an adverse way. But in qualitative, non statistical studies as this one the argument is irrelevant, where continuously creating and testing hypotheses are to be considered a good tool for generating new theories (Maxwell, 2005).

Huber (1990) who also have used hypotheses for his research which are similar to the relationships used in this study, states that, new knowledge or data may condition or falsify hypothesized knowledge developed by past research. Our conviction about knowledge is what Wallén (1993) probably would describe as closely related to critical realism, where knowledge and methods continuously are evaluated in order to improve them. Our intention with the relationships generated in this study has during the whole research period been to critically review the results in order to improve the knowledge contribution, which according to Maxwell (2005) should be done in order to prevent yourself from not seeing what is going on, or missing alternative ways.

The relationships in this study are either grounded in an earlier study that states, or strengthens the relationship, or generated from a match where problems connected to M&A and benefits from using SOA could be found. The construction and selection of the relationships are thereby affected by the researchers beliefs, as when creating any hypotheses (Maxwell, 2005), but is motivated by the connection to the literature presented in chapter 6. The credibility and validity of the relationships are further discussed in section 2.6.

## **2.4 Data gathering**

The primary data in this research is the case study which is used to verify the relationships generated by the literature (the secondary data). The primary data is collected using triangulation where a variety of sources are used in order to reduce the risk of certain limitation of specific source, and allowing gaining a broader and more secure understanding of the issues investigated (Maxwell, 2005). The reason for using triangulation is that the use of SOA for integrating acquired companies so far is very unusual. The few companies that already have started using SOA for this cause are few by number, and in the beginning phase. Complementing interviews with SOA experts and consultants have therefore been made, in order to better cover the research area.

### **2.4.1 Literature**

The literatures that are used in this study are mainly collected from scientific articles. Books have also been used but to a minor degree due to the fact that the information in books is not as up to date, as the information found in articles. The articles used in this study have been found through the databases ELIN<sup>2</sup> and SpringerLink<sup>3</sup> that are available through the Internet, the books have been collected from libraries in Lund.

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<sup>2</sup> ELIN, Electronic Library Information Navigator integrates information from many different publishers, databases and open e-print archives. ELIN can be reached through <http://elin.lub.lu.se/>

Since literatures within the specific area for this study have not been found, the focus has been to conclude theory about the sub areas: M&A, SOA, and general integration, in order to form an understanding of the subject and to generate possible relationships between SOA and M&A.

#### **2.4.2 Selection of the companies**

The objective for the selection was to find companies that have, or will use SOA for integrating acquired companies, and to interview one person at each company in charge of SOA, or the integration process. Finding companies that matched this criterion was not the easiest thing since very few companies have started using SOA in their organizations. Example of companies that were asked to participate but turned out not to use SOA was Astra Zeneca, Malaco Leaf, Tetra Pak, IKEA etcetera. Since very few companies have started using SOA for integrating acquired companies we turned to Synchron, a SOA and middleware consultant company located in Malmo, Sweden. Among Synchron's customers five companies were suited for the study, where three of them used SOA for integrating acquired companies (KCI Konecranes, Volvo, and Alfa Laval), whereas the other two (Dynapac and Sandvik) were planning to use SOA for this cause in the future, but yet only had used SOA for integrating different departments and companies already within the organization. In order to complement the data from the five companies used in this study, and to obtain triangulation, interviews with a SOA expert Berndt Lobalk, and SOA consultant Carl-Johan Andersson at Synchron, were made.

The companies that have been selected for this research are established in a variety of areas (The companies are described in more detail in chapter 7).

- Alfa Laval is a leading global provider of specialized products and engineered solutions that are dedicated to helping customers to optimize the performance of their processes.
- Dynapac is a company that offers a full range of vibratory and static rollers, trench and duplex rollers, vibratory plates, rammers and concrete equipment.
- KCI Konecranes is a world-leading provider of lifting solutions and maintenance services, with a track record in pioneering, leading, and shaping developments in the industry.
- Sandvik is a high-technology, engineering group with advanced products and a world-leading position within cemented-carbide and high-speed steel tools, machinery, and stainless and high-alloy steels, special metals, resistance materials and process systems.
- Volvo Construction Equipment is one of the world's leading manufacturers of construction equipment, with a product range encompassing backhoe loaders, wheel loaders, excavators, articulated haulers, motor graders and compact equipment.

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<sup>3</sup> SpringerLink is one of the world's leading interactive databases for high-quality STM journals, book series, online Reference Works, eBooks, and the Online Archives Collection. SpringerLink can be reached through <http://www.springer.com/>

### **2.4.3 Interviews**

Since the purpose for this study is to deepen the understanding of the relationship between SOA and M&A interviews seemed appropriate. Maxwell (2005) means that interviews often is an effective and valid way of understanding someone's perspective as they obtain the views and standpoints of the interviewees. The interviews were semi-structured following an interview guide with loosely specified areas of interest (the relationships between SOA and the integration of acquired companies, generated by the literature). According to Bryman (2002) this type of interviews gives the researcher the opportunity to ask further questions on the basis of the answers that seems to be essential which contributes to the explorative approach, which is partly set for this research.

To avoid misunderstanding and bring clearness about the questions, personal interviews were performed. Personal interviews have the advantage that gives the interviewer the possibility to repeat and clarify the questions, and ask further questions to assure exhaustive answers (Creswell, 1998). Amongst the interviews, four were performed over the telephone, and three performed face-to-face. Telephone interviews could be seen as a considerable cheaper and less time consuming alternative since the researcher do not need to spend time and money on travelling to the respondents (Bryman, 2002). Since four of the companies were located in different regions of Sweden and Finland, telephone interviews were a good alternative for collecting the data. To prevent any loss of data the interviews were audio taped and after being transcribed and concluded, sent to the interviewees so they could confirm their answers and have the possibility to complement their answers.

The individual that represented each company is either working as a CIO or have some leading IS position within the organization. The persons that have participated are Lennart Edegård at Dynapac, Kari Suominen at KCI Konecranes, Johan Malmgren at Sandvik, Göran Elvenger at Volvo CE and Lennart Åström at Alfa Laval. In order to complement the empirical data and achieve triangulation interviews with SOA expert Bernt Lobalk, and SOA and middleware consultant Carl-Johan Andersson were made.

- Bernt Lobalk is C.E.O at MBC international, and has for many years worked as a management consultant within over 300 organizations, and is a well known SOA expert and lecturer.
- Carl-Johan Andersson is a consultant at Synchron, specialised in presale, working in direct contact with the customer, arranging workshops amongst other things.

### **2.5 Data analysis**

Miles and Huberman (1994) recommend early analysis in order to get the most out of the interviews. By performing the analysis as an ongoing process and already during the interviews have the analysis in mind it is possible to save time and fill possible gaps of knowledge that could come up during the data collection (Kvale, 1997). To collect all the data needed for the analysis the interview guide, with questions related to the relationships generated by the literature, were followed, which made it easy to see under which relationships the answers were belonging. By having a well understood method for performing the analysis set up before doing the interviews it is possible to have the analysis in mind while executing the interviews, which makes it easier for the researchers, to cycle back

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and forth between thinking about the existing data and generating strategies for collecting new, often better, data (Miles and Huberman, 1994).

The analysis in this study is divided into three phases, which are data reduction, data display, and conclusion drawing and verification which Miles and Huberman (1994) recommend. Data reduction refers to the process of selecting, focusing, simplifying, abstracting, and transforming the data that appear in written-up field notes or transcriptions (Miles and Huberman, 1994), which in this study was done by transcribing the essence of the taped interviews. The transcribed material was then sent to the respondents so they could verify their answers. The answers were then coded by grouping them into the different relationships in order to make it possible for the reader to follow the discussion in the analyse (chapter 9 Verifying the relationships) and draw their own conclusions. The data display is by Miles and Huberman (1994) described as an organized, compressed assembly of information that permits conclusion drawing and action. To further maintain the internal validity the process of coding and grouping the respondents' answers by the different relationships were done individually by the two researchers and then compared to see if the answers were interpreted and understood equally.

### 2.5.1 Coding

From the relationships between SOA and M&A that were generated by the literature (presented in chapter 6), a foundation for coding was created. The foundation was used to classify, and group the different answers into the different relationships. When an answer did not match with any of the pre defined relationships it was marked with OR which stands for “other relationship”. The answers classified as other relationship, were then used to generate new relationships to complement the literature based relationships.

#### Foundation for coding

The relatively low cost and commitment for implementing SOA is of relevance for the outcome of the M&A.	R1
The integration of new departments and acquired companies is easier when using SOA than when using centralized system solutions.	R2
When acquired companies can maintain their present system the acceptance against the acquiring company and the commitment among the employees is better.	R3
The use of SOA leads to better communication between business and IS departments, which facilitates the integration of an acquired company.	R4
Use of SOA increases the chance for receiving the expected benefits from an M&A.	R5

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Other relationship OR

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Below is an extract from one of the interviews that shows how the coding has been carried out.

Interviewer:	<i>What do you as an organization expect from using SOA?</i>	
Interviewee:	<i>There are big expectations that the use of SOA will save or redistribute resources. The most obvious potential with using SOA is the lower costs and better timeframe. To be able to slowly change a business system one part at a time increases the acceptance compared to changing the whole system at a time which tends to very problematic. To proceed slowly by doing tests, pilot studies, and by learning along the way seems like the right approach for SOA. The reason why we use SOA is primary to integrate our different business systems and processes, and since it is not suitable for us to use a centralized system solution like SAP on our different companies due to their much higher price and complexity, SOA makes a good alternative.</i>	R1  R3  R2

## 2.6 Validity

To construct internal validity for this research, the empirical data have been connected to the theory through a compilation of relationships. The relationships then act as a foundation for the questions that have been used during the interviews as well as for evaluating and presenting the results from the research. By using the relationships a clear pattern has been upheld between the theory and the empirical data. Since the credibility of causal connections are very important for the internal validity (Bryman, 2002) one could argue that there is no guarantee that the relationships between SOA and M&A described in this research are the only ones, nor could be said to only depend on the use of SOA. But since the relationships are strengthened by the empirical data and the purpose for this research only is to deepen the understanding of the relationship between SOA and M&A, not to cover them all, this should not affect the internal validity of the study. In order to further strengthen the internal validity the respondents in the research got the chance to verify the transcribed empirical data and make changes of miss interpreted statements.

When it comes to the external validity, Maxwell (2005) proclaims that the critic against qualitative case studies often refers to the generalization issue. We believe that a greater number of case studies could lead to a better coverage of the problem area, as long as it does not limit the depth of the research, but do not claim that the results from this study in any mean could be generalized for all cases, or to used for predicting the outcome of the use of SOA for integrating an acquired company in the future. The results show some clear results connected to the use of SOA and integration of acquired companies, but should be interpreted individually by the reader.

## 2.7 Reliability

A limitation in this study could be that SOA overall is described as positive which could be related to the existing literature about SOA being positive. The reason for this optimistic approach to SOA presented in the literature could be a result of SOA being a new phenomenon and that problems yet have not been discovered. Brynjolfsson (1993) mean that this is a common effect of new IS which effects often do not show for several years. Another possible limitation with this study is the selection of the companies that are mediated by Carl-Johan Andersson at Synchron. The reason for this selection was the lack of companies that had implemented SOA and used it, or planned to use it for integrating acquired companies. This selection involves the risk that the companies chosen are more positive than the average against SOA. It had been ideal if companies which had chosen not to use SOA also had been represented in the study, which had strengthened the reliability, but since we were unable to find such companies this was not possible. By pointing out this problem we want to make the reader aware of the reason for the positive presentation of SOA and by doing so mean that the reliability is not in danger. We further believe that comparable results would be achievable if same companies and respondents were to be engaged in a similar study once again. We also believe that the method used for this study is very clearly described and motivated so that it would be quite easy to replicate the study if wanted.

## 2.8 Ethics

In order to develop a good and faithful relation with the interviewees, the purpose of the study, how to present the result, how their engagement would look like, has been clearly explained from the beginning. By explaining all possible outcome that could be associated with the participation of the study suspiciousness and uncertainty that can exist against the

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research are to be eliminated (Kvale, 1997). On demand the interviewees also got the questions in advance which also could strengthen their confidence. Since the purpose for this study is to deepen the understanding of the relationship between SOA and M&A the interview answers in the study are never individually discussed or compared in order to verify if they are right or wrong, which makes participating relatively safe for the respondents. Since we strongly believe in the respondents' competence and that their position in their respective company increases the credibility for the study they are throughout the study mentioned in name which makes them quite exposed. But the fact that the interview first has been transcribed and sent to the interviewees so that they could confirm and correct their answers to make them correspond to their opinion, and that the issues discussed in the interviews are quite uncontroversial, leads the study still can not harm the respondent. Furthermore, since the study will be published as a public document, and thereby can be used by different people in different contexts, we have been careful how the results from the case studies are presented (Miles and Huberman, 1994), so that the results would not damage the people and companies participating in the study.

### **3 M&A**

*In this chapter the area of M&A will be presented. It begins with a general introduction to clarify the phenomenon, and continues with a description of problems related to M&A and the involvement of IS within M&A.*

#### **3.1 What is M&A**

Mergers and acquisitions are often used together or as one term (M&A) but should even though they often are studied together, be considered as individual phenomenon with differences in transaction. A merger is more in the nature of collaboration, where two companies as the word implies, merge together into one. Acquisitions can also be on a collaborative basis but here one of the companies acquires or takes over another company (the acquired company) (Baro, 2004). Generally the degree of cooperation is much higher in mergers than in acquisitions where sometimes the acquired company has no option but to follow the acquiring (the takeover) company's orders.

Merging or acquiring a company is a strategic decision that often will determine if the company will grow or survive in the future. This decision must consider the possibility of shifting capital structure, product capacity, and owner structure, which makes it a corporate re-organizational decision (Martinez et al., 1996). Through the act of M&A companies are able to reach economies of scale, remove inefficient management or respond to economic shocks (Croson et al., 2004). But to actually receive these kind of benefits the companies must integrate their business systems and as a part of the business system also the IS (Lubatkin, 1983).

M&A is not a new phenomenon, but has been the trend during the last century (Martinez et al., 1996). Going up and down in waves the M&A movement has at all time been driven by fundamental economic forces. Towards the end of the 1980s to the late 1990s, the world witnessed a strong wave of such corporate restructuring operations, and the progress toward unification in Europe and globalization was one reason for this movement (Weston, 2001). New technologies, changes in regulations and the reducing of communication/transportation costs also affect the M&A activity. Generally there is no single motive that drives the M&A process where often complex patterns of motives, and no single approach can render a full account (Trautwein, 1990).

Even though M&A is a common approach for gaining financial, strategic and operational benefits, many M&As have been unsuccessful, suggesting that they are generally not well understood in practice (Baro, 2004). Many acquisitions fail to achieve their objectives and instead result in organizational difficulties and poor performance (Ravenscraft and Scherer, 1987). According to studies by Porter (1987) and Young (1991), acquisitions have such a high failure rate that nearly half of all acquisitions are being reported unsatisfactory.

#### **3.2 Types of M&A**

We have earlier discussed the difference of merges and acquisitions and how these actions can vary from a collaborative to a more straight overtaking approach. Buono and Bowditch (1989) describe this as the intention of the M&A. The friendliest form is the rescue where the acquiring company takes over a company that otherwise would go bankrupt. The next degree

of acquisition friendliness is the collaboration where both parts try to reach a fair deal. In the contested combinations only one of the companies wants the deal while the raid is the most aggressive type of M&A where one company takes over another by bypassing management and directly negotiating with the shareholders.

Haspeslagh and Jemison (1991) further present four levels of integration which also are of importance for the outcome (Holding, Preservation, Symbiosis, Absorption). With a holding approach the acquired unit is left undisturbed while preservation means partial integration of the new entity. Symbiosis is explained as a situation where the acquirer and acquired are equally transformed to fit each other. Finally the absorption can be seen as the complete integration of an acquired company into the acquiring organization (Haspeslagh and Jemison, 1991).

### **3.3 Problems / success factors with M&A**

Studies have shown that a major reason for M&A failure is because of implementation problems (Popovich, 2001). Baro (2004) means that the biggest reason for failure is the significant investments acquisitions require. The investments are often due to the redoing and adjusting of the existing system architecture to align with new business processes which tend to be rather expensive and involves a significant personal effort (Datz, 2004). Another factor is the changes in work processes, staff, IS and management that often M&As result in. Larsson and Lubatkin (2001) underscore that these changes often lead to resistance, which is often referred to as “culture clash” which results in lower commitment and cooperation among acquired employees (Baro, 2004). The problems that arise from changes in organizational and staff often create stress and anxiety for employees who may rely on rumors because of lack of proper information about the M&A (Schweiger & DeNisi, 1991). Although employees, except for top management, often are drastically affected by an M&A huge numbers of jobs that are shifted or even eliminated after an M&A, the employees are usually the last to find out about an M&A (Werhane, 1988). The poor information is often a result of the secrecy the management tries to maintain in order not to get unnecessary attention at the stock market. But if the staff rely on rumors they tend to focus on the negative, often inaccurate information which leads to lower commitment and increased anxiety (Baro, 2004).

The average M&A deal is enormously complex and involves sophisticated reasoning and planning on the part of several parties. Bonissone and Dutta (1990) and Croson et al. (2004) stress that the ultimate goal of a M&A is to realize synergies, but that the dividing of the synergies between the involved companies is an open question that is critical for identifying. Baro (2004) means that the closer the acquiring company is to the target the better they perform but fundamental for all M&A success is financial and strategic analysis about the acquisition and the target company. Another important aspect is good understanding from the acquiring company of the different subgroups and cultures of the target firm, in order to manage each appropriately (Baro, 2004).

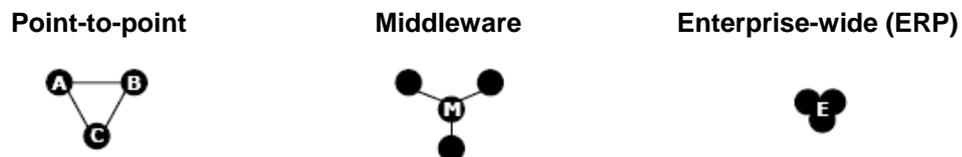
## 4 System integration

*In this chapter system integration is described in order to connect the area of M&A to the area of SOA. It begins with an overview of three approaches to system integration, and continues with a description of some related problems which later are handled in the SOA chapter.*

### 4.1 Three approaches

Haspeslagh and Jemison (1991) point out the importance for the match of the two organisations IS in order to get the expected result from the M&A. The outcome of the integration of two companies is very dependent on the integration of the IS (Haspeslagh and Jemison, 1991). Currently the integration of IS is considered as a post-M&A issue, dealt with reactively by many managers. However, according to Henderson (1990) it should be an early issue, used proactively to maximize chances for a positive outcome of the M&A.

To obtain a close and early linkage of the IS strategy and business strategy are to be considered as one of the main key factors for successful IS planning (Segars and Grover, 1998). The concept of strategic alignment stems from the fact that many companies discovered they were developing IS that did not support their business strategies (Smaczny, 2001). The function of the IS is by Weill and Broadbent (1998) divided into infrastructure, Transaction, Information and Security. Markus (2000) especially points out how different IS has different effect on the integration. Below are some idealized architectures often used in M&A that all have their individual impact on the M&A deal.



**Figure 1** Three approaches to IS-Integration (Henningsson, 2005, p.5)

**Point-to-point** - The first approach is a point-to-point alternative, where software bridges, also known as an interface, acts as a direct connection between two applications. Data from application, A, is more or less automatically transferred to another application, B. If a third application, C is needed, two new interfaces have to be built connecting A and B respectively. This approach could be rather complex when many entities need to communicate with each other (Henningsson, 2005).

**Middleware** - Middleware can be seen as a second alternative that represents the connective tissue that binds together different applications. It wraps up existing applications into service components in a way that lets them share data across a truly various environment (www.computerprof.com, 2005). The applications programs are modified to “call” the middleware, which then for example “calls” the databases. The benefit is that a program could

be replaced without changing the database. Another aspect is that it does not require much business process change (Markus, 2000).

**Enterprise-wide (ERP)** - The third approach which according to (www.bptrends.com, 2006) so far is the most common one is to adopt an integrated Software Package. Software Package represents by complete systems that have been developed to support the entire business process and administrative functionality. Instead of developing new systems from scratch, companies can buy systems from specific suppliers, and then modify them so that they can give useful support to the business activities that they may serve (Nilsson, 1991). Software Packages are usually associated with enterprise resource planning systems (ERP) and the development of these systems have increased over the years and have now an important role in the software market (Carmel, 1993). The main ERP vendors at the market are SAP, Baan, J. D. Edwards, Oracle and PeopleSoft (Klaus et al., 2000). ERP is designed for companies that act (purchase, produce, sell, administer) in various countries and they are of considerable strategic importance to the companies that implement them, due to their ability to integrate all aspects of a business (Scott and Vessey, 2000). In these systems the different applications share the same database which results in that all applications' data is updated simultaneously, since they actually are using the same data.

## 4.2 System integration failure

Studies have shown that companies that have a tight alignment and good communication between business and IS departments have a better understanding of their organization's goals, objectives, and direction and consequently are in a better position to ensure that new opportunities made possible by IS are seized, and that capital expenditures from information resources are ranked according to business needs (Baro, 2004). Van Der Zee and De Jong (1999) argue that the attempts to align IS with business have failed because of two main reasons. First, because of the lag between separate business and IS planning processes and secondly, because of the lack of common language between business and IS management as mentioned earlier. A solution to the problem is to integrate business and IS management processes which greatly reduces the time lag between the two (Van Der Zee and De Jong, 1999).

The disadvantage with for example, ERP systems is that they are not adjusted very well to the companies' processes. They either demand that the organisation adapts to the systems or that the systems adopt after the organisations (George, 2000). In any case, the systems needs to be configured before it could be used and this could be a rather tough experience. ERP configuration tends to be trial-and-error. SAP R/3, for example, has almost 15,000 tables (version 4.0B), resulting in billions of configuration options (Scott and Vessey, 2000). Implementing an ERP is therefore a very complex endeavour. The implementation also requires many different and novel types of knowledge and the use of ERP may also change significantly the way people work compared to majority of in-house developed systems.

ERP systems have often been installed in companies that want to improve their business processes. A huge amount of these companies have had limited success with these systems and the way that they have been installed have made them difficult to maintain or upgrade. It is not uncommon for global organizations to have many different versions of ERP systems like SAP or Oracle running in different parts of an organization. Today we are experiencing a transition from the former client-server/database-oriented modules that were used by many ERP systems to a more flexible architecture built on software components, the Internet, and a

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variety of XML – related protocols ([www.bptrends.com](http://www.bptrends.com), 2006). A new widespread word for these new architectures is SOA.

## 5 SOA

*In this chapter the concept of SOA will be introduced and described in order to give an overview of the phenomenon and its' possibilities. The aim with the presentation of the possibilities connected to SOA is to create a foundation for the relationship generating presented in the proceeding chapter.*

### 5.1 What is SOA

SOA has received considerable attention recently and it has become a preferred choice of software architects who struggle to provide solutions for distributed applications, while at the same time trying to maintain manageable system architectures (Duan et al., 2005). SOA can easily be described as a collection of services that all can communicate with each other, available on a network. The services have individual platform independent user interfaces that are reusable which makes it available no matter the system that is used (Datz, 2004). SOA is now increasingly replacing large bulky system integration solutions, described earlier, as the premier design principle for new business applications. Datz (2004) claims that by the year 2008 more than 60 % of the companies will be using the basic principles of SOA for developing processes critical to business. The movement of SOA is driven in part by the inherent benefits for new application projects. The most general advantages of SOA are according to Yefim (2003):

- *Incremental development and deployment of business software*
- *Reuse of business components in multiple business experiences*
- *Low-cost assembly of some new business processes*
- *Clarity of application topology*

(Yefim, 2003, p.5)

Vambenepe et al. (2005) mean that SOA will turn out to be the most established approach for realizing modern services and systems in the future. But since there is a lot of uncertainty about SOA in general, many myths have been developed in the industry. The reality is more modest, but also more immediately beneficial than the hype (Yefim, 2003). SOA offers better support for decoupling and heterogeneity compared to previous generation middleware systems, resulting in more scalable and adaptive solutions. But in order to receive the potential benefits from SOA, organizations need to move from a centralized data management system to a more distributed middle-tier data fabric that provides a scalable way to access and distribute data across multiple services (Gemstone, 2005).

Even though people have started talking about SOA quite recently it is not something new. It has been around since 1989 but it is just recently the technology has been developed enough to technically support it, using technologies like Web services (Lager, 2005) explained later in this chapter. The fundamental principles of SOA came even earlier and were used in the beginning of the 1970s when the developers realised that the users could search for information in the system easier if they got access to information through well defined interfaces (Datz, 2004).

## 5.2 How does SOA work?

SOA is a distributed system architecture that mainly is aimed at putting the business process at the focus of system design. It assumes that business entities are often relatively constant whereas business processes can change regularly (Shelly et al., 2006). Yefim (2003) means that SOA better should be named “interface-oriented architecture” since it is a software architecture that starts with an interface definition and builds the whole application typology as a topology of interfaces, interface implementations and interface calls.

As mentioned earlier, SOA consists of a collection of functional elements called services (Wong-Bushby et al., 2006). Services are software modules (like databases, programs, devices etc.) that are accessed by name via an interface, typically in a request-reply mode (Yefim, 2003). The services sum up reusable business functions that are loosely-coupled to other services, and are called upon through connection technologies (Wong-Bushby et al., 2006). This adds some flexibility to the business process and by gathering the services into applications, standardization and interoperability can be achieved (Lager, 2005). SOA relies on Middleware and is endless in scope because of the software reuse and interconnection. Feng et al. (2005) describes the characteristics of SOA as three levels:

- **Operations:** *Computational units represent single logical units of work that are executable parts of a system. Examples for operations are instructions, basic blocks, routines, classes, compilation units, components, modules or subsystems.*
- **Services:** *Represent logical groupings of operations. For example, in a digital library system, User profiling is viewed as a service, and then Maintaining a user profile, Store search profile and Notify user of updates per profile represent the associated operations.*
- **Business Processes:** *A long running set of actions or activities performed with specific business goals in mind. Business processes typically include multiple service invocations.*

(Feng et al., 2005, p.2)

## 5.3 SOA benefits

The benefits of using SOA are most characterised by the reuse of components, the potential of reduced IS costs and improved business agility that have resulted in many organizations deciding to start working with SOA (Knorr & Rist, 2005).

### 5.3.1 Reuse

That SOA can provide more reusable components means that IS apartments do not need to reinvent the wheel (Bort, 2005) and thereby decreases the development costs (Datz, 2004). The architecture works like a library where services can be taken out and shared no matter what they are written on. Another aspect of reuse is composite applications, where services use other services to generate a wanted result (Lager, 2006).

SOA makes it more trouble-free to integrate all types of IS environments within the company (Datz, 2004). It works in mixed settings and it is easy to add new members because of the layer of abstraction that SOA adds on top of existing computing environments (Haibin, 2005). Developers do not need to put a lot of work into writing new code to connect applications. They can instead use standard protocols as Web services, explained later in this chapter. Existing business systems that companies have invested in, like SAP and Oracle can also more easily cooperate and existing systems do not need to be replaced with new ones (Datz, 2004).

### **5.3.2 Lower cost of integration**

A well-designed SOA lets organizations deal with multiple smaller integration projects with less capital and resource investment, as opposed to the high investment and resource commitments associated with traditional solution development architectures (Classon, 2004). Instead of creating an entire suite, or even an individual application from scratch, you assemble the appropriate services to create applications or get them from other sources. At worst a new service needs to be created (Lager, 2006). By leveraging and reusing existing assets and streamlining processes, SOA not only can save direct development costs but also can have a tremendous impact on minimizing efforts for ongoing maintenance (Shelly et al., 2006). According to Wong-Bushby et al. (2006) this also makes it easier to get upper management approval which in today's budget conscious environment could be quiet hard.

### **5.3.3 Business agility**

SOA can be seen as a good tool for integrating since you are not as reliant on what system you use (Lager, 2006). An organization with an established SOA can also expect a more rapid integration (Classon, 2004). The ability to add or change smaller modules of work that will effectively interoperate within existing processes can allow organizations to focus work efforts toward core and differentiating values and help accelerate the introduction of new products and services.

With packaged software suites that for a long time have been the standard, the company is pretty much stuck with whatever the vendor can provide. With SOA it is less hard to create new business processes (Lager, 2006). SOA allows a close alignment of IS resources with business function and because of this, partners can be changed very rapidly and business processes changed as market needs dictate. The use of a particular service could be dictated by price, availability, performance or the changing needs and desires of the service consumer's own customer (Shelly et al., 2006). SOA could also lead to a better communication between IS managers and managers at the annual side due to IS department forces to think in new terms of business processes instead of focusing on technologies (Datz, 2004).

## **5.4 SOA versus Web Services**

One of the reasons for the curiosity about SOA is due to the arrival of Web Services as an enabling technology that often is used with SOA. Shelly et al. (2006) describe Web Services as loosely coupled, reusable software components that present their public interfaces using XML in a manner that allows other software systems to interact with them using XML messaging over standard Internet protocols. Web services answer for the demands and challenges such as openness, portability, ability to adapt quickly to changing execution

environments, and highly dynamic reconfiguration, as many Internet applications demand. Web Services together with SOA are in this context playing an important role, significantly impacting software development and evolution (Feng et al., 2005). Web Services together with SOA is also important in situations such as M&A as described earlier, where application, process and information integration needs to occur across heterogeneous platforms (Gemstone, 2005). There is no requirement that SOA must be implemented using Web services (Wong-Bushby et al., 2006) but the relationship between them two is important and they are mutually influential: Web services momentum will bring SOA to mainstream users, and the best-practice architecture of SOA will help make Web services initiatives improved (Yefim, 2003).

## **5.5 Disadvantage with SOA**

Although SOA is a good practice for software design, it is not an answer to all problems. SOA is still in the developing phase and there are still a lot of issues that need to be taken care of. Problems are mostly related to managing security and updating the different systems that might be connected with SOA.

### **5.5.1 Security**

The security is one of the biggest issues regarding SOA. An open architecture like SOA is more complicated to control than a closed system and it demands more over-watching since it is important that different pieces will not cause any trouble in the organisation (Bort, 2005). If something goes wrong, a transaction gets lost or if someone enter the wrong information into the network, it could also be hard to figure out what went wrong due to the involvement of many different suppliers (Datz, 2004). Other researchers like Lager (2006) means that the security issue is no problem since service providers and service consumers have an intermediary between them acting as a combination of switchboard and traffic cop, and that the whole thing is managed and that there are certain rules for using SOA. Datz (2004) argues that the best way to handle the security is to slowly develop SOA in order not to be surprised by the problems, and to start with processes that do not involve a high need for security.

### **5.5.2 Update**

The good thing about using an ERP system for all departments compared to using different systems at every department as often is the case with SOA, is when the system needs to be upgraded. Then there is only need for upgrading one system instead of every system (Lager, 2005) which can cause problems and be time consuming when various vendors have to be engaged in the update process.

## 6 Proposed relationships between SOA and M&A

*In this chapter the proposed relationships generated by the literature about SOA and M&A are presented. Each proposed relationship begins with the conclusion drawn from the literature (described in depth in section 2.3), followed by a motivation that describes the reason and qualification of the relationship.*

- **R.1 - The relatively low cost and commitment for implementing SOA is of relevance for the outcome of the M&A.**

As mentioned earlier in section 3.3 the biggest reason for M&A failure is the significant investments that are required (Baro, 2004). The investments often originates from the redoing and adjusting of the existing system architecture to align with new business processes, which tend to be a rather expensive process involving a significant personal effort (Datz, 2004). Knorr & Rist (2005) argues that this could be enhanced with SOA due to the reduced IT costs and greater business agility SOA often involves. Datz (2004) mean that the reason for the reduced costs and increased business agility is because of the reusability that liberates developers from writing new code to couple different functions, and instead can use standard protocols as Web Services. Another reason is claimed to be SOAs platform impendence which lets companies and departments within an organization maintain their current system instead of implementing a new ones in all the different locations (Haibin, 2005).

- **R.2 - The integration of new departments and acquired companies is easier when using SOA than when using centralized system solutions.**

Markus (2000) argues that system integration often is required to achieve business integration, and so far centralized systems like ERP often have been installed in companies that want to improve their business processes. These systems are not adjusted very well to the companies' processes. They either demands that the organisation adapts to the system or that the system are adjusted to the organisation (George, 2000). In any case, the system needs to be configured before it could be used, which could be a rather tough experience (described more in section 4.2). With SOA it is possible to connect different business systems like SAP, Siebel and Oracle more easily at lower costs (Datz, 2006). An organization with an established SOA can therefore expect a smoother, more rapid integration of new departments or companies (Classon, 2004), this originates from the loose couplings between the services used by SOA that make it easier to add new members, and the flexible, easy to integrate, operations of combined applications that perform different business functions (Gemstone, 2005).

- **R.3 - When acquired companies can maintain their present system the acceptance against the acquiring company and the commitment among the employees is better.**

As mentioned in section 3.3 Larsson and Lubatkin (2001) mean that one of the failures connected to M&A is resistance, which often results in lower commitment and cooperation among the employees in the acquired company. Non-involvement or refusal to use a system occurs when the users are unable to participate, or if the system is to be imposed on them (Alter, 2002) which is a common phenomenon within M&As with a high level of integration (Haspeslagh and Jemison, 1991). One of the

Proposed relationships between SOA and M&A  
- SOA and M&A<sup>©</sup>

benefits with SOA as described earlier is that existing business systems that companies have invested in, like SAP and Oracle more easily can cooperate, and that these existing systems do not need to be replaced with new ones (Datz, 2004).

- **R.4 - The use of SOA leads to better communication between business and IS departments, which facilitates the integration of an acquired company.**

Many researchers assert that partnership is necessary between IS and business in order to succeed with business integration (Henderson, 1990, Markus, 2000). Van Der Zee and De Jong (1999) argues that one of the reasons, that attempts to align IS with business have failed, is because of the lack of common language between business and IS management as mentioned in section 4.2. Datz (2004) argues that SOA can lead to better communication between IS management and business management, since the IS departments are forced to think in terms of business processes instead of focusing on technology (further described in section 5.3.3). The concept of alignment between business and IS stems from the fact that many companies discovered they were developing IS that did not support their business strategies (Smaczny, 2001) which is one of the reasons many M&A have failed to deliver the expected outcome (Baro, 2004)

- **R.5 - Use of SOA increases the chance for receiving the expected benefits from an M&A.**

The outcome of the M&A is as mentioned earlier very dependent on the integration of the IS (Haspeslagh and Jemison, 1991). According to Datz, (2004) SOA makes it easier to integrate all types of IS environments and different business systems. SOA works well in mixed settings and makes it easy to add new members because of the layer of abstraction that SOA adds on top of existing computing environments (Haibin, 2005).

## 7 Presentation of the companies

*In this chapter the companies used for this study are presented together with a short description of how SOA is used within their respective organization.*

### 7.1 Alfa Laval

Alfa Laval is a leading global provider of specialized products and engineered solutions that are dedicated to helping customers to optimize the performance of their processes. They help customers to heat, cool, separate and transport products such as oil, water, chemicals, beverages, foodstuffs, starch and pharmaceuticals. They have grown through a numerous of acquisitions and are now an worldwide organization that works closely with customers in almost 100 countries and the number of employees runs up to 9500. Their net sales exceeded €1700 million in 2005 ([www.alfalaval.com](http://www.alfalaval.com), 2006).

Alfa Laval uses a SOA resembling solution to integrate different acquired companies IS. The system is called One4all and act as bridge between the companies. The system takes care of orders, quotations, delivery status etcetera, which among other things leads to a greater transparency for the different sales departments.

### 7.2 Dynapac

Dynapac is a leading global manufacturer of compaction and paving equipment for the road-building and construction markets. They offer a full range of vibratory and static rollers, trench and duplex rollers, vibratory plates, rammers and concrete equipment. They cover the entire compaction and paving field from top to bottom and they help the customers get to the bottom of things by ensuring that they use the very best on top. The company operates in more than 50 countries worldwide and Dynapac's net sales exceeded €320 million in 2003. ([www.dynapac.com](http://www.dynapac.com), 2006).

Dynapac uses SOA to integrate message handling between numerous business systems. At the moment they have only used SOA for integrating their own companies and not yet used SOA on any acquired companies, even though they plan to in the future.

### 7.3 KCI Konecranes

KCI Konecranes is a world-leading provider of lifting solutions and maintenance services, with a track record in pioneering, leading, and shaping developments in the industry. They have 5900 employees in 38 countries and the totalled sales in 2005 were €71 million. KCI Konecranes has grown over the years mainly organically but has a strong acquisition track record as well. Their mission is to enable businesses to become more productive by providing state-of-the-art lifting solutions and related maintenance services that maximize uptime and offer the lowest cost of ownership ([www.konecranes.com](http://www.konecranes.com), 2006).

KCI Konecranes is at the moment moving towards a more centralised solution and they are using SOA for this. They have so far only used SOA to a minor degree but are soon to implement it in a wider range. The SOA solution has so far only been used for integrating few acquired companies, which are located in Germany, France and America.

## **7.4 Sandvik**

Sandvik is a high-technology, engineering group with advanced products and a world-leading position within selected areas. Worldwide business activities are conducted through representation in 130 countries. The Group has 39 000 employees and annual sales of approximately €760 million. Sandvik's business concept is based on a unique competence in materials technology. This has resulted in a world-leading position in three core areas that are Cemented-carbide and high-speed steel tools, machinery, and stainless and high-alloy steels, special metals, resistance materials and process systems (www.sandvik.se, 2006).

Sandvik uses an older SOA resembling methodology to connect modules that have their own limited tasks like registering of orders, bills etcetera. SOA has not been used so far on any acquired companies but is something that Sandvik intends to do.

## **7.5 Volvo CE**

Volvo Construction Equipment is one of the world's leading manufacturers of construction equipment, with a product range encompassing backhoe loaders, wheel loaders, excavators, articulated haulers, motor graders and compact equipment. They offer a broad range of quality, safe, environmentally adapted products, efficient worldwide service and a range of solutions in financing, used equipment and leasing to meet the construction equipment needs of demanding customers all over the world. Volvo Construction Equipment is a global enterprise that is represented in 125 markets with more than 10000 employees, that has grown through numerous M&A. Their total sale in 2005 was €738 million. (www.volvo.com, 2006).

Volvo CE uses SOA to integrate acquired companies and the main reason for this is to integrate and harmonise the different storages globally around the world. The system that they use exists of a web interface which makes it easy to reach other systems which facilitates for the customers doing business with them.

## 8 Presentation of the research data

*In this chapter a summary of the results from the study will be presented, grouped by the different relationships. A total presentation consisting of the concluded answers from each respondent can be found in appendix 2.*

- **R.1 - The relatively low cost and commitment for implementing SOA is of relevance for the outcome of the M&A.**

All the respondents in the research mentioned that they thought that the use of SOA would lead to faster integration and economical advantages when integrating acquired companies. “The most obvious potential with using SOA is the lower costs and better timeframe.” (L. Edegård, Dynapac, May 8<sup>th</sup> 2006) But to receive these benefits from integration with SOA the condition was said to be a functioning SOA, and a great understanding for the business processes within the organization. All respondents described the first phase of implementing SOA could be problematic and most crucial since it involves defining the business processes which the whole SOA is depending on. Bernt Lobalk used an example as this phase being similar to taking a driving licence, where all the hard work, education, costs and problems occurs in the first phase and the benefits of driving occurs in the following phase. The respondents representing the companies also described these investments but even though they had gone through this phase or was in the middle of it meant that the costs and commitment connected to SOA was relatively low.

- **R.2 - The integration of new departments and acquired companies is easier when using SOA than when using centralized system solutions.**

All respondents replied that SOA makes the integration easier than when using centralized system solutions with the same condition as for the first relationship, that the SOA is well implemented and understood in the organization. Carl-Johan Andersson at Synchron gave an example where a company had succeeded with a fast and smooth ERP implementation but also argued that SOA was superior for integrating organizations consisting of sales companies, production departments, products, customers and suppliers, etcetera. Kari Souminen at KCI Konecranes pointed out that one of the big differences between SOA and centralized system solutions is: “...the timeframe where the integration with centralized system solutions often takes at least six months, up to a year, but when using SOA can be shortened to two-three months.” (K. Souminen, May 12<sup>th</sup> 2006) Despite the problems that can be connected to the beginning phase of using SOA all respondents although clearly preferred SOA compared to centralized system solutions. The main reason for their choice of SOA was said to be the possibility to change a system one part at a time, instead of having to change the whole system at the same time, which often is very complex and time consuming. Johan Malmgren at Sandvik described SOA as a better alternative because of the smoother integration, where it is possible to maintain most of the old system and just add new modules. But even though the use of SOA mediates the possibility to maintain an old system, the majority of the respondents mentioned that the old systems often were liquidated due to their poor usability and inefficient functionality which is further described in relationship three.

- **R.3 - When acquired companies can maintain their present system the acceptance against the acquiring company and the commitment among the employees is better.**

All respondents meant that the acceptance was, or thought it would be better in acquired companies when using SOA for integrating them with the main organization compared to their experiences of other system integration solutions. Lennart Åström at Alfa Lavall said that companies that have continued working with their ERP system without having to change anything have not suffered from any lack of acceptance at all. The reason for the better acceptance was claimed to be the possibility to slowly change a business system one part at a time instead of changing the whole system at once which was explained to be very problematic. To proceed slowly by doing tests, pilot studies, and by learning along the way was described by Lennart Edegård at Dynapac as the optimal approach for SOA. But although the acceptance could be maintained by leaving the system in the acquired company intact this was not truly the case. A majority of the respondents mentioned that there often was a need for changing the systems used in the acquired companies since they tended to be quite old and inefficient. SOA could in these cases be used to integrate those systems with for example a new simpler user interface which facilitated for the user who instead of having to enter data into several system now could achieve the same thing by entering data into one system. The acceptance was said to be unaffected by the change of the system as long as the new system facilitated the work for the user. But to be sure to succeed with the integration using SOA Bernt Lobalk argued for any change in systems being done slowly in a step by step manner, whereas the most crucial parts first should be taken care of.

- **R.4 - The use of SOA leads to better communication between business and IS departments, which facilitates the integration of an acquired company.**

The research shows that SOA in some cases can lead to better communication, even though the general experience was that this so far was not fully achieved. Kari Souminen at Konecranes described that SOA can lead to better communication since it is dependent on proper definitions of business processes, which further requires business people and IS people working together. This might also be the case in some companies according to the other respondents, but that this improved communication would facilitate the integration of an acquired company, is not anything that they mention could be taken for granted, and even though the respondents agreed that SOA in some cases can lead to better communication between business and IS departments the majority of them described the current situation as lacking from such communication. Johan Malmgren at Sandvik mentioned that the work at the IS departments yet have not changed very much but was hoping for a change in the future, whereas the IS department focused on buying customized modules instead of dealing with programming, technology and special development. Bernt Lobalk argued that the reason for the current lack of communication is that IS departments and organization management seldom speaks the same language, to which consultants often is the solution who can help companies define their business processes.

- **R.5 - Use of SOA increases the chance for receiving the expected benefits from an M&A.**

All respondents agreed to this relationship with the same condition as for relationship one and two, that the SOA is properly implemented in the main organization. The majority of the representatives from the companies described the benefits from using SOA for integrating acquired companies as being the faster integration of new companies and their products. Another benefit that was mentioned by the respondents was the increased customer value that SOA often conveys. “One of the advantages for the customers is that they instead of being dependent on what product to order are forced to use a certain order system, can use one unified order system.” (G. Elvenger, Volvo, May 10<sup>th</sup> 2006). Kari at KCI Koncranes gave the following example how SOA can affect the outcome of an acquisition:

*An acquired company was buying components to a much higher price than the main organization used to do, and since we did not make a fast integration with SOA the acquired company continued to buy the components to over prices, due to the lack of visibility, for a longer period of time than they would have done if we had used SOA. (K. Souminen, KCI Konecranes, May 12<sup>th</sup> 2006)*

Lennart Åström at Alfa Laval described another dimension of increased visibility as a benefit from using SOA, since the use of SOA had led to the order administration being able to track down orders at all time which was something that was not possible before. Carl-Johan Anderson at Synchron finally stated that SOA even though it can facilitate integration, is just one of many components that are needed for a positive outcome from an acquisition.

- **Other relationships (customer related)**

The benefits caused by using SOA most described by the respondents was the faster and less expensive integration, but also the non organizational benefit of the increased value for the customer where expressed as important. Bernt Lobalk even described it as the most important effect caused by SOA and as the main objective with implementing a SOA solution. The customer value was mostly said to depend on the unification of the ordering process. An example could be the elimination of the need for customers to use several user identities, by implementing a new user interface and instead only have to use one identity, which facilitates for the customer when doing business with the company. “One is no longer needed to operate various systems involving green screens with low usability.” (J. Malmgren, Sandvik, May 9<sup>th</sup> 2006) But as with many of the other relationships between SOA and M&A the increased value for the customer was by the respondents said to be dependent on how well the SOA is implemented in the main organisation (described earlier).

- **Other relationships (education related)**

The whole research was permeated by the respondents discussing the condition for great understanding for, and properly defined business processes, and the outcome of SOA being dependent on this. “If one is unable to map and define the business processes within the organization it is impossible to further discuss SOA, and therefore SOA also tends to turn into a question of education in process thinking.” (L. Edegård, Dynapac, May 8<sup>th</sup> 2006) Carl-Johan Andersson at Synchron meant that

Presentation of the research data  
- SOA and M&A<sup>©</sup>

companies in general had problems with describing their processes, which could be explained by many of them being in the beginning process of implementing SOA, described earlier, but did not know if this affected the outcome of the integration of an acquired company. The overall understanding among the respondents was that educations were a good solution for increasing the consciousness for business processes within the organization. Bernt Lobalk further argued that the lack of education and knowledge about SOA also was the reason for the uncertainty about SOA that exists among many companies and managers.

## 9 Verifying of the relationships

*In this chapter the different relationships are analysed by discussing and concluding the results from the research seen from the literature. The aim is to verify whether the proposed relationships could be considered existing or not.*

- **R.1 - The relatively low cost and commitment for implementing SOA is of relevance for the outcome of the M&A.**

What could be understood from the research is that the cost and commitment for implementing SOA not at all is low, but compared too many other solutions for system integration could be considered as relatively low. Since the respondents agreed to that the low cost and commitment for implementing SOA being of relevance for the outcome of the M&A this relationship should be considered as existing, even though this was agreed to conditionally. The condition was said to be that the SOA and the business processes which SOA depends on, had to be well understood in the main organization, in order to succeed with any further integration, which seems like a condition which could be valid for most solutions used for integration. What is not covered by the empirical data is if SOA is more dependent on the first phase where the architecture is implemented than other system integration solutions. Since all respondents described this phase as the most crucial this could be a conclusion, but we would instead argue that the difficulties connected to the implementation of a SOA has to do with SOA still being a new technology, and that implementing SOA is not harder than implementing other system integration solutions.

That the benefits from SOA was something that first occurred in the second phase was not as clear stated in the literature as in the empirical data, but a clear match could be interpreted of the benefits of SOA described by Knorr & Rist (2005) as being reduced IT costs and greater business agility, which was supported by the respondents in the study. So if the major reason for M&A failure is the significant investments that are required which is claimed by Baro (2004), it seems like SOA might be the solution for reducing this failure.

- **R.2 - The integration of new departments and acquired companies is easier when using SOA than when using centralized system solutions.**

As shown by the study all respondents agreed to SOA making the integration easier than when using centralized system solutions, but with the same condition as mentioned before (that the SOA is well implemented and understood in the organization). The respondent's conditions are similar to Classon (2004) argument that an organization with a well established SOA would expect a smoother, more rapid integration of new departments or companies. We mean that this coverage of this relationship both in the literature and the empirical data verifies the relationship as being existent. What could be said against this argument and the fact that all companies mentioned SOA as being easier to use for integrating acquired companies, is if this would depend on their business. Other companies with different ways of doing business would possibly experience other solutions as being easier for integrating acquired companies, but this is something neither mentioned in the literature, nor within this study. What further speaks against this possibility is that the companies represented in this study are covering quite different ways of doing

Verifying of the relationships  
- SOA and M&A<sup>©</sup>

business and integrating companies, and although prefers SOA compared to other solutions, which we mean further strengthens the existent of this relationship.

- **R.3 - When acquired companies can maintain their present system the acceptance against the acquiring company and the commitment among the employees is better.**

As described in chapter six, Larsson and Lubatkin (2001) mentions that one of the failures connected to M&A is resistance, which often results in lower commitment and cooperation among the employees in the acquired company. The study show that the advantage with using SOA compared to other system integration solutions, could be seen as the option to let the acquired company maintain their current system unaffected, or to change crucial parts to the better, which also the respondents in the research mentioned. The results from the research were thereby equal to the description Datz (2004) presented, where companies that did not have to change their current ERP or SAP system were more easily integrated, which strengthens this relationship as being existent.

The fact that some companies even though they did not have to, often changed the acquired companies systems, especially when they considered them being old and inefficient was on the other hand not described as well in the literature. We think that this adds another dimension to SOA compared to many other system integration solutions since organizations can choose if they want to let acquired companies maintain their current system, change it completely, or just change certain parts of the system. The opportunity to proceed slowly and change parts of the system one at a time gives the acquired company the chance to acclimate to the new context which further increases the acceptance against the main organization, and the new system. In this case the new system does not have to be imposed on the acquired company, which according to Haspeslagh and Jemison, (1991) is a common problem within M&As with a high level of integration.

- **R.4 - The use of SOA leads to better communication between business and IS departments, which facilitates the integration of an acquired company.**

Datz (2004) argues that SOA can lead to better communication between IS management and business management, since the IS departments are forced to think in terms of business processes instead of focusing on technology. Even though several of the respondents stated that this was not yet the case, the majority although meant that SOA could lead to better communication between businesses and IS departments. That this increased communication would facilitate the integration of an acquired company is not directly proved by the study but what could be understood is that SOA is dependent on well defined business processes, which is easier developed if the communication within the organization is good. A well functioning SOA further facilitates the integration of an acquired company as said to be the condition for several of the recently described relationships describing M&A success from using SOA. Although it might be too early to say if the enhanced communication that SOA sometimes leads to really facilitate the integration of an acquired company. The reason is that the companies so far have not achieved or experienced very much of the increased communication and therefore as the research showed had a hard time discussing this relationship.

Verifying of the relationships  
- SOA and M&A<sup>©</sup>

- **R.5 - Use of SOA increases the chance for receiving the expected benefits from an M&A.**

This relationship could be considered depending on how the expected benefits from an M&A are defined, since the study do not show if all expected benefits are increased. The majority of the representatives from the companies defined the most important benefits from using SOA for integrating acquired companies as being the faster integration of new companies and their products to a lower price. Another benefit was said to be the increased customer value that SOA often conveys. Although these benefits are described by the respondents, and further grounded in the theory, it is hard to argue that SOA increases all possible expected benefits from an M&A. If nevertheless this would be the case, and SOA in general increased any benefit expected from an M&A, the use of SOA would of course be superior to any other system integration solution, but since covering all expected benefits is not feasible it is not possible to determine if this is the case. On the other hand, if the benefits are to be defined by faster, and cheaper integration, faster generation of profits, better customer value and easier operation of the systems this relationship should be considered as existing which strengthens Datz (2004) statement that SOA leads to easier integration of all types of IS environments and different business systems. Since SOA after all seems to increase the benefits from M&A that also is said to be crucial for succeeding with the M&A (described in chapter 3) we mean that this relationship even though it might not cover all expected benefits are to be considered as existing.

## 10 Generating relationships from the empirical data

*In this chapter the empirical data grouped “other relationships” during the coding process are discussed. Since very clear tendencies were discovered “other relationships” are here presented as two new relationships, one customer related and one education related.*

- **R.6 – Successful integration of an acquired company using SOA leads to increased value for the customers.**

This relationship was generated since several of the respondents were describing the increased value for the customers as being an important benefit from using SOA. Further more Bernt Lobalk stated this benefit as being the most crucial, and as what ought to be the objective for all SOA usage. One could argue that successful integration of an acquired company using any integration system solution would lead to increased value for the customers, and even though this might be the case we mean SOA is superior. Since one off the advantages with SOA was said to be the possibility to supply the customers with a single user interface which is connected to all the various business systems within the organization, letting the customer do business with the company by only using one user identity, SOA is preferable. The examples given by the respondents as for instance how non SOA integration (described in chapter 8), led to difficulties maintaining the same prices in the organization further verifies this relationship as being existent.

- **R.7 - Poor understanding for the business processes that SOA depends on leads to reduced chances for succeeding with the integration of an acquired company.**

The whole research was permeated by the respondents discussing the condition for great understanding for, and properly defined business processes, and the outcome of SOA being dependent on this, which is the main reason for this relationship being generated. “If one is unable to map and define the business processes within the organization it is impossible to further discuss SOA” (L. Edegård, Dynapac, May 8<sup>th</sup> 2006) The condition posed in this relationship is further motivated by the connection to relationship 1, 2, 5 and 6 which are to be considered as direct dependent on this condition. In order to verify the proposed relationship it is although needed to say that the poor understanding for the business processes not directly affect the outcome of the integration, but will definitely affect it if one is to succeed with the implementation of SOA. Furthermore, to have a well implemented and functioning SOA is one of the things stressed most by the respondents as a fundamental condition for succeeding with using SOA for integrating an acquired company, which we mean verifies the proposed relationship as being existent.

## 11 Concluding discussion

*In this chapter the overall results and the contribution of the study is presented. The handling of the research question and the purpose will also be discussed and the chapter ends with a proposal for future research within the research area.*

### 11.1 Summary of the research

The purpose for this study have been to deepen the understanding of the relationship between SOA and M&A, which have been done by concluding existing literature about the two sub areas in order to generate relationships between use of SOA and M&A. The relationships were further verified by collecting empirical data from the “real world”. The empirical data used in this research were collected from the following companies: Alfa Laval, Dynapac, KCI Konecranes, Sandvik and Volvo/CE, and were complemented by interviews with SOA expert Bernt Lobalk and SOA and middleware consultant Carl-Johan Andersson. The relationships that have been discovered between SOA and M&A through this research are:

- R.1 - The relatively low cost and commitment for implementing SOA is of relevance for the outcome of the M&A.
- R.2 - The integration of new departments and acquired companies is easier when using SOA than when using centralized system solutions.
- R.3 - When acquired companies can maintain their present system the acceptance against the acquiring company and the commitment among the employees is better.
- R.4 - The use of SOA leads to better communication between business and IS departments, which facilitates the integration of an acquired company. (said by the respondents not fully being the case yet)
- R.5 - Use of SOA increases the chance for receiving the expected benefits from an M&A.
- R.6 – Successful integration of an acquired company using SOA leads to increased value for the customers.
- R.7 - Poor understanding for the business processes that SOA depends on leads to reduced chances for succeeding with the integration of an acquired company.

### 11.2 Overall results

Even though the proposed relationships generated by this study was shown to be more or less verified as existing by the respondents in the case study, a condition for successful integration with SOA that were connected to several of the other relationships were mentioned. This condition involves the difficulties of the first phase of implementing SOA and is represented by relationship 7 (Poor understanding for the business processes that SOA depends on leads to reduced chances for succeeding with the integration of an acquired company.) We do not think that the first phase of implementing SOA is more complex, expensive or more difficult than the first phase when implementing other system integration solutions, which also could be interpreted from the empirical data, but mean that the defining of the business processes is

especially important for implementing SOA, which further on could be used for integrating acquired companies. By posing this argument we do not mean that the understanding of the business processes would not be important when using other system integration solutions only that these are very crucial for succeeding with the implementation of SOA.

### **11.3 Handling of the purpose and research question**

The research was aimed to answer what relationships that exist between integration of acquired companies and SOA, which was posed as the research question. Based on the literature about SOA and M&A, presented in this study five relationships were generated. These were later verified by the respondents in the companies and with a varying result all more or less considered as existing. Furthermore the research generated two additional relationships which made the study resulting in the total of seven relationships. We do not claim that this study covers all possible relationships between the use of SOA and integration of acquired companies but that was not said to be the purpose for this study, and further consider the research question as being answered with the result of seven relationships.

The purpose of this study was to deepen the understanding of the relationship between SOA and M&A. It is mostly achieved by the case studies but already during the presentation of the literature about SOA and M&A it is possible to see how close these two are related. The generation of the proposed relationships further strengthens the realisation of the purpose which is further stated since the case studies were verified them all as being more or less existent. By analysing the answers from the interviews it was also clear that the different relationships had mutual individual relations. For example that relationship 5 (Use of SOA increases the chance for receiving the expected benefits from an M&A) could be considered as connected to the understanding of the business processes posed in relationship 7 (Poor understanding for the business processes that SOA depends on leads to reduced chances for succeeding with the integration of an acquired company.) After finishing the research we consider the purpose totally fulfilled.

### **11.4 Research contribution**

The research contribution from this study can be divided into the three phases that this research involves. The first phase refers to the conclusion and examination of existing literatures about SOA and M&A which have a practical contribution since SOA after all is such a new phenomenon and many companies and managers yet do not have the knowledge about SOA, and to whom this overview might come to use. The second phase involves the theory building which were executed by merging together existing research about SOA and M&A in order to create new theory which in this study is represented by the five relationships. The theory building has a scientific contribution since the new theory generated may lay as a foundation for future research within the research area. Finally the third phase is characterized by theory testing where empirical data are collected in order to verify if the proposed relationships could be considered existing. This phase also involved further theory generating from the empirical data which resulted in two new relationships being generated. The contribution of this last phase is both scientific and practical. Scientific since the new theories were tested against the “real world”, and since new theory were generated, which also could be used in future research as described earlier. The practical contribution of the last phase could be seen as the research result, that clarifies that several relationships between SOA and M&A do exists, which could help companies think of this connection more strategically.

### **11.5 Problems connected to the research**

The objective for the case selection was to find companies that has, or will use SOA for integrating acquired companies, and to interview one person at each company in charge of SOA, or the integration process. Finding companies that matched this criterion was not the easiest thing since very few companies have started using SOA in their organizations. The fact that two of the companies have not used SOA for integrating acquired companies may be seen as a problem, but since our purpose (to deepen the understanding of the relationship between SOA and M&A) have been fulfilled we do not see this as a major issue.

The overall impression of the study was the difficulty to collect both literature and empirical data that covered the research area in a credible way. Triangulation was used to uphold and compliment the credibility of the data, but more, alternative sources would probably been applicable. But even though the research area set for this study could be considered as being unexplored this was not a reason for not studying the phenomenon, and since SOA still is such a new phenomenon, and also one of the new “buzz words” among companies and managers the reason for studying this area was even greater.

The fact that no companies or advocates of non use of SOA, claiming other alternatives of system integration solutions as being superior to SOA participated in this study could be seen as a weakness. The reason for this lack of selection originated from the fact that companies that were contacted and which used other solutions did not know what SOA was. During the pre studies for this research involving companies using other solutions were discussed, but was said to be included in the study only if their representatives considered themselves knowing what SOA was. Since we were unable to find such companies or persons, and our purpose and research question did not demand such involvement, we had to let this go, but would be very interested in taking part of future research involving this issue.

Another weakness of this study is the sometimes very positive approach used against SOA, which originates from the literature about SOA used for this research. We believe that the reason for SOA being described quite positive with few drawbacks is due to the fact that SOA still are to be considered a new technology. Finding literature handling disadvantages from using SOA which is close to non existent was not easy, but is something that we think might change as more companies starts using SOA, and further research are performed within the area.

### **11.6 Further Research**

To replicate this research or studying the outcome and benefits from using SOA in a couple of years, when the technique is more developed and used would be very interesting. As Marcus (2000) argues, the outcome from integration often does not show until several years after the implementation taking place. If SOA is a paradigm shift as Bernt Lobalk claims it would be interesting to study what happens to the companies choosing not to engage in SOA, and if there will be other ways for competing and achieving fast and smooth integration. Also, to perform a quantitative research to further verify the relationships between SOA an M&A and possibly receive a result that could be generalized which is not practically feasible today, but would be interesting to do in the future. We believe that this research has deepened the understandings for the relationships between SOA and M&A, but are sure there are more aspects to explore, overlooked by us.

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## Appendix 1: Interview guide

*In this appendix the questions that have been used during the interviews are shown.*

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What was the main reason for your company deciding to use SOA?

How did the price affect the decision to start using SOA? (convincing the management, related to other systems)

What system do you use today? (problems, benefits)

How is SOA useful to you during the integration?(for integration, in planning, obligations, flexibility)

How will SOA affect the acceptance and commitment among the employees? (in the main organization, in the acquired company, acceptance/resistance)

How is the acceptance in the IS departments in the companies when they have to change their way of working? (working with business processes, security)

Have you noticed any problems with SOA? (security, maintenance, update)

How will SOA affect the communication? (communication today, with SOA)

How will the IS and business departments work when using SOA? (in the main organization, in the acquired company, between the two companies)

What do you as an organization expect from using SOA?

How will the use of SOA affect the outcome of the M&A?(time/level for integration, economical profits)

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## Appendix 2: Interviews

*In this appendix the results from the study will be presented in total, consisting of the concluded answers from each respondent grouped by the different relationships.*

- **R.1 - The relatively low cost and commitment for implementing SOA is of relevance for the outcome of the M&A.**

### Alfa Laval

Our solution was created as a project for rationalisation with the objective to decrease the staffing within order administration at both sales and production departments, in order to save money. After this project we have received a unified IS environment and system architecture but this effect is more a spin off than the primary purpose. What could be said about this SOA solution is that it definitely leads to lower costs and faster integration of acquired companies.

### Dynapac

There are big expectations that the use of SOA will save or redistribute resources. The most obvious potential with using SOA is the lower costs and better timeframe. The reason why we use SOA is primary to integrate our different business systems and processes, and since it is not suitable for us to use a centralized system solution like SAP on our different companies due to their much higher price and complexity, SOA makes a good alternative.

### KCI Konecranes

With SOA we are able to alternate our business processes and get rid of the many walls that exist between our current systems, and to proceed in a faster way which leads to results being generated in a shorter period of time. We do not talk about years as with other centralised systems, with SOA we can gain results within months. It is also possible to see some result already during the first phase of implementing and then possible to expand the solution in order to receive more results.

### Sandvik

If SOA were used to integrate acquired companies it would probably facilitate the administrative system maintenance. The costs for maintenance and for updating the system or its solutions would also be lower. After all, the reason for us using SOA is to make the business system easier to adjust when the business is changing.

### Volvo

For us SOA is about faster and cheaper integration of the products distributed by the companies that Volvo acquires. You could say that it is both the time aspect and the economical aspects that make SOA efficient for integrating new companies. By being able to fast and smoothly integrate new companies the benefits from the sales of products in these companies are generated faster. But in order to really get economical outcome from an acquisition it can be interesting to do an analysis about the current situation and how well the target company will fit into the main organizations' architecture. This turns out to be a question of putting a price on the integration in order to be able to compare it with the expected benefits from the acquisition.

Appendix  
- SOA and M&A<sup>©</sup>

Berndt Lobalk

I do not consider that SOA directly will result in any saved economical resources compared to other solutions in the opening phase. In the beginning phase that often span over a couple of years, no major economical benefits are received. This could be compared with getting a driving license. It is difficult and expensive in the beginning but gets easier when the first phase is accomplished. To have some expenses in the beginning phase of using SOA is something that is needed in order to get started with the new technology, but it could be seen as a one time fee, and first when you proceed to the next phase the economical benefits occur when integrating acquired companies. After all IS in itself, should not be considered as an instrument for competing for business in the long term, and SOA in itself is not something one can make money out of, it is more in the nature of a paradigm shift. It should be considered as a ticket to a new context, and the risk is that bystanders to the new technology will be left out. An example of a similar phenomenon could be a company which chose not to have a homepage and because of this might go out of business.

Carl-Johan Andersson (Syncron)

SOA is something many people talk about but few have tried themselves. Few have knowledge about SOA and are often more interested in the solution in itself instead of how SOA are to be considered the solution or not. When choosing a SOA solution one needs to pay an entrance fee that might not be the cheapest thing. But those who engage in this in a long term perspective will face lower costs for integrating acquired companies. Those who chose not to enter into this technology often argue that the investments are greater than the profit they can receive directly. But after all the reason for investing in a SOA platform might not be to succeed with acquisitions, it seems more like a strategic than tactical decision.

- **R.2 - The integration of new departments and acquired companies is easier when using SOA than when using centralized system solutions.**

Alfa Laval

Simplicity is something we strive for and when it comes to integrating acquired companies it is just simplicity that our solution results in. The advantage when adding a new company is that there is no need for changing the current ERP system locally in the acquired company, they can use whatever system they like. What we do is to enter their customers following the standards set for our solution, and inserting their products into our product catalogues. When this is achieved the sale of these products can begin very quickly, and sometimes also add a sales company without any problem. One of the benefits with SOA is that one is not forced to change the whole business of a new company, which makes things less complex. But something that I can think of as a problem is the day we want to sell a part of the business. The production companies are easily sold but it could be harder with the sales companies. The employees in the sales company might not be dedicated to the products in the new company, nor feel that they have any support from the company.

## Appendix - SOA and M&A<sup>©</sup>

### Dynapac

We have so far only used SOA for integrating departments already within the organization, but it is clear that SOA would facilitate the integration if being part of the planning of an acquired company. Earlier solutions for integrating are both expensive and complex, and often take 12-18 month to implement. With SOA this is now achieved within a couple of weeks. SOA also facilitates when a company are to be cut loose or sold from the organization. The difficulty with integrating with SOA is to be sure, in advance, if earlier implementations could be reused. If for example company A and company B are successfully integrated and later company C, which seems to have the same structure as company A, are to be added, problems with duplicating the business processes can arise anyway. But problems like this have often to do with the level of SOA consciousness in the organization, and decrease as the understanding for the business analyse and SOA increase.

### KCI Konecranes

SOA facilitates the integration, but the beginning phase of using SOA is crucial for the outcome, where you have to define all the business processes which could be very challenging, which also demands planning and learning about SOA. Most of the problems tend to occur in this phase, and not until SOA are correctly implemented, the integration gets easier. But to use SOA for integrating acquired companies is the ideal way even though it is not the only way. The reason is that the integration is much easier when you do not need to replace existing systems, and SOA also lets you decide what information you need from the source systems. Another big difference between SOA and centralized system solution is the timeframe where the integration with centralized system solutions often takes at least 6 month, up to a year, but when using SOA can be shorten to 2-3 month.

### Sandvik

SOA has come as an alternative to the giant ERP systems, and it feels much smoother when it is possible to maintain most of the old systems and just add purchased modules, and the different departments within the company are not even forced to use the same modules in order to maintain the business process. When we build our SOA solution the objective is to connect the old systems to this new architecture in order to isolate them, and later be able to liquidate them. Since we have created a clear interface with SOA it is not as many strings attached that need to be cut in order to remove the old systems. This is one of the advantages with SOA compared to centralized system solutions where the whole package needs to go at once, and nobody knows how things are connected, since there are too many chefs of the soup.

### Volvo

SOA facilitates to proceed forward in the development, both concerning integration of companies and their systems, and the liquidation of a system platform. The whole thing is now proceeding faster and smoother when systems can be changed one part at a time instead of all at once as with many of the old super sized systems.

Appendix  
- SOA and M&A<sup>©</sup>

Berndt Lobalk

Whenever the SOA and layer are in their place, and are functioning it is definitely easier to integrate new systems. But the beginning phase consists of changing from the old technique to SOA which should be considered as a paradigm shift where significant work and investments have to be done in order to make SOA work properly.

Carl-Johan Andersson (Syncron)

If your organization consists of sales companies, production departments, products, customers and suppliers, etcetera, there is a need that is not satisfied by just implementing a new ERP system. SOA on the other hand is a very natural tool for this since it is based on loosely coupled solutions, but there are examples that also speak for the ERP systems. A company in Mölnlycke succeeded with using an ERP system to integrate a company in less than 30 days, and within this time period liquidated their old system and implemented a new one. But the success was partly depended on the low number of products and customers they had which made changes of item identity numbers less confusing.

- **R.3 - When acquired companies can maintain their present system the acceptance against the acquiring company and the commitment among the employees is better.**

Alfa Laval

We believe that the acceptance is getting better, and we have some examples where companies have continued working with their ERP systems which has resulted in almost no lack of acceptance at all, which is very good. Since this solution also renders gradual changeovers the acceptance is generally better.

Dynapac

To be able to slowly change a business system one part at a time increases the acceptance compared to changing the whole system at a time which tends to very problematic. To proceed slowly by doing tests, pilot studies, and by learning along the way seems like the right approach for SOA. But although we have had problems with for example the capacity that often is to low. The resources and the needs often grow far above what was expected from the beginning, regarding hardware, software, and communication over the net.

KCI Konecranes

It is easier to maintain employee acceptance since the employees are not affected by the shift to SOA until we change the services or add new ones. But since all new features aim to make it easier for the employees, this is seldom a problem after all. An example is the change from being forced to enter data into several systems with SOA only needs to enter the data into one system, which makes the process easier.

Sandvik

It is positive that one is not forced to make any big changes but since many of the existing systems that are used today are old and ineffective, SOA often is used for integrating these new systems, but with a new more simple user interface. But when it comes down to it there are really not that many employees that are concerned about what SOA is, but they tend to like the idea of it when it is explained to them.

Appendix  
- SOA and M&A<sup>©</sup>

Volvo

SOA increases the acceptance in the beginning since it is not necessary to make any changes in the acquired company, but sooner or later one is forced to deal with the big questions and to make changes anyway, for example by liquidating the a giant existing business system.

Berndt Lobalk

It is clear that not having to do a total system change and educate the staff on a new system always is good, since it often takes many years. Although the use of SOA does not in all cases let the staff in an acquired company fully maintain their current system, since changes to some parts are quite common. But in order to succeed with SOA the change needs to be done slowly in a step by step manner, where the most crucial parts first are taking care of , which could be to better serve the customers, and to let less important parts be until later.

Carl-Johan Andersson (Synchron)

This could be seen from two angles. It can of course be positive to maintain a current system but at the same time it can be engaging to get hold of a new one. An acquired company has the possibility to utilize the potential which being part of a bigger company involves. The current system might for instance be old and inefficient, and when suddenly someone shows interest and is willing to invest in the company a change of system feels natural. What I see as a problem with changing a current system into for example a SAP/R3 system is time and money rather than the risk of having a interest of conflicts with the staff.

- **R.4 - The use of SOA leads to better communication between business and IS departments, which facilitates the integration of an acquired company.**

Alfa Laval

Dynapac

To proceed from dealing with technical issues to dealing with defining processes and how the business really works is of importance, and depends on the development and education phase. Sometimes the different parts have not understood the business processes and then the integration needs to start with education. After all SOA is to be considered a bridge between different functions which let one understand how things in the organization could be improved, which in the end leads to improved understanding between the different departments.

KCI Konecranes

We believe that SOA leads to better communication, since solutions based on SOA, needs a proper business process description in place. They require both business people and IS people and that they work together. The description of the business processes needs to be done together, and from those process descriptions we are able to describe the services that are needed for our solutions. Before the IS people and the business people did not speak the same languages, but it is now going in the right direction.

Appendix  
- SOA and M&A<sup>©</sup>

Sandvik

So far the work at the IS departments has not changed very much, but we are in the beginning of phase of change, with the purpose to shorten the distance between the IS side and process development. Hopefully the IS departments will be buying customized modules instead of dealing with programming, technology and special customized development.

Volvo

The communication is improved within the company since SOA mainly is about business processes and to describe these, which is done with help from Synchron has resulted in a higher level of consciousness within the organization.

Berndt Lobalk

SOA might lead to better communication, but the problem is that IS people generally are not understood with business processes and ideas, nor speak the same language as the organization management. When this is the case consultants often has to help the company to define their business processes, but if the management instead learns to express the business processes through some kind of notification language, this could be considered the communication device between the management and the IS department, and in these cases SOA would lead to improved communication. This scenario also makes it possible for other employees in the organization to take part of how the business processes works. In the future it would be optional if the IS departments were managed by people with both technical and business knowledge.

Carl-Johan Andersson (Synchron)

In the current situation the distance between the developers and the management is not that close. I do not think that the economy departments are aware of what processes that exist in the company and asking them to describe the company's business processes would probably cause problems.

- **R.5 - Use of SOA increases the chance for receiving the expected benefits from an M&A.**

Alfa Laval

Since companies together with their products easily can be integrated the sales of the products starts earlier and can be accessed at 60 markets instead of 5 as it could be before, which generates economical profit. We have also received a quality benefit by using this solution since the order administration at the sales companies now has full visibility and possibility to track down the order at all time.

Dynapac

When using SOA it is easier to get production profits, which is our main objective, and are achieved by connecting processes in one company with those in another in a smart and digital way. By using SOA we are expecting better integration of business systems, but also a duplicating of the business processes which will make them reusable for a similar company. SOA could be seen as a device for standardizing business processes, and if it is well implemented, in the future, facilitate the integration of an acquired company without making as many changes, which increases flexibility.

Appendix  
- SOA and M&A<sup>©</sup>

KCI Konecranes

To use SOA for integrating an acquired company would increase the benefits since it is faster to integrate with SOA, and therefore should be faster to receive benefits from it. But the outcome depends on how far you have reached with the implementation of SOA in the main organization. If the implementation is poorly developed the benefits from an acquisition using SOA would be less beneficial. In order to exemplify the benefits from using SOA I will describe a case where SOA was not used: An acquired company was buying components to a much higher price than the main organization used to do, and since we did not make a fast integration with SOA the acquired company continued to buy the components to over prices, due to the lack of visibility, for a longer period of time than they would have done if we had used SOA.

Sandvik

Implementing SOA is a slow process and spending several billions on fast implementation in the belief that this would generate immediate profits is not the case. But in a longer timeframe SOA can be used both for integrating and disintegrating a company that is sold, in order to generate economical advantages.

Volvo

Since the use of SOA let us integrate acquired companies faster to a lower price the benefits from selling the acquired company's products occur sooner, which makes SOA a good alternative. One of the advantages for the customers is that they instead of being dependent on what product to order are forced to use a certain order system, can use one unified order system. SOA is after all a lot about flexibility, and makes it possible to achieve a lot with quite few resources, but it does not solve all problems.

Berndt Lobalk

When SOA are functioning as it supposed to, it is easy to add new companies and business processes.

Carl-Johan Andersson (Synchron)

If SOA already exists in the organization, and a company is acquired it is natural that you use it for integration and thereby increase the chances for a better outcome. But if a SOA do not exist in the organization it is not anything you implement in order to succeed with starting up the business in the acquired company. SOA is just one of many components in the whole solution and there are many other aspects that make an acquisition successful. If the whole integration are analysed many companies says that the calculated value seldom matches the actual value, since a full integration often do not take place.

- **Other relationships (customer related)**

Alfa Laval

Because of SOA the customers are now able to use one single user identity instead of several different within the same sales company, as the case used to be. What has happened is an improvement for the sale staff, described earlier, which facilitates for the customer when doing business with us, and this could be seen as a major profit.

Appendix  
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Dynapac

KCI Konecranes

Our main objective is to use SOA within our company to integrate the different business processes and systems. It might be used against the customers later but the internal needs is priority one. But our internal integration generates information transparency so in the end the customers are affected but not directly.

Sandvik

By for example implementing a new user interface that is connected to the old business systems, it is possible to facilitate and unify the meeting of the customer. One is no longer needed to operate various systems involving green screens with low usability. But in order to facilitate for the customers it is important to continuously work with the business processes. To be able to adjust our processes for the needs of the customers, SOA is a very efficient tool, since it improves the business processes and letting us keep improving our relationship with the customers.

Volvo

One of the big reasons for us deciding to use SOA was to achieve a global and unified order process a by this facilitate for the customers. Instead of forcing the customers to use a number of various systems for ordering they now only have to use one system that thru a web based user interface accesses all the different systems. SOA facilitates for the customer to do business with us. We use SOA for integrating acquired companies which in the end for instance leads to an improved order process for the customer. One can say that we are integrating in order to receive benefits on the customer side.

Berndt Lobalk

I mean that those who have understood SOA primary are expecting to improve their ways of servicing their customers. The whole thing is simply about a paradigm shift where it is necessary to see what creates value for the customers. If one chose to stay in the old business system and not integrating themselves against their customers or suppliers, there is a significant risk they will wind up out of business.

- **Other relationships (education related)**

Alfa Laval

If it is something one needs to have control over it is the customers and the products. If you do not have control over customers and products, there is a risk for an acquisition being less beneficial. In order to become successful with a public approach over the Internet it is crucial that you have the processes within the main organization totally in order. Otherwise the risk is that the inner inefficiency is revealed for the customers. The solution is product knowledge among the sales staff and education. Education is an important part for succeeding with integration, but it is just one of many aspects, to summarize it the whole thing is about control, and if you have a lack of it you will face problems.

Appendix  
- SOA and M&A<sup>©</sup>

Dynapac

If one is unable to map and define the business processes within the organization it is impossible to further discuss SOA, and therefore SOA also tends to turn into a question of education in process thinking. First of all one is needed to be able to describe the current business processes, and then how to define the optional process for the future, and because of this SOA generates a bigger conciseness for what is going on in the organization which also leads to very big opportunities.

KCI Konecranes

We have not had much education within the organization yet. Some people have had education about how to describe processes, and how to use programming to describe processes, but more education definitely need be done in this area, since the most crucial thing is that the business processes are good and well described. Otherwise we are not able to integrate at all.

Sandvik

Education is something we are working with a lot at the moment. SOA first of all demands control and having things in order, and education is a good tool for getting this, and in order to define the business processes that SOA depends on there is no major need for programming knowledge but for understanding of the business processes. SOA is simply dependent on how well the different business processes are understood in the organization and the following success factors explains this further. SOA needs:

- Keeping order of master data and processes in order to maintain them.
- Efficient solutions for system integration that can be exposed to very high load.
- A correct coupling between process definitions and IS solutions.
- Some form of certification involving the requirements for modules in order to make them work all together.

Volvo

One needs to have very good control over the infrastructure when solutions like SOA are implemented. If there is any lack of control the whole thing might be experienced as unreachable. This will lead to integrating being very difficult and education is a good solution for this.

Berndt Lobalk

The hope is that SOA leads to improved insight especially for company managers so that they in the future by themselves can describe the company's ways of doing business and how they would like to improve this. Being able to visualise and communicate the business processes is one part of the paradigm shift that SOA involves, since SOA is more about the wholeness than being able to describe the details. The uncertainty that exists among many companies and managers depends very much on lack of education and knowledge about SOA.

Appendix  
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Carl-Johan Andersson (Synchron)

Companies are in general not very good at defining their business processes, and very few can visualize them by drawing them. If you ask people at the companies who is in charge of a process the answers are very different depending on whom you ask. The lack of consciousness for the processes and who is responsible for them is a problem, but if this leads to poor integration is beyond my knowledge.