Securing an ERP Implementation

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Preface

The Bachelor Thesis was executed during the fall semester 2007, with the scope of implementing an Enterprise Resource Planning System. The education of Information Logistics is given by the Centre for Information Logistics, University of Växjö. As a final step of the education the students are supposed to do a Bachelor Thesis, which in my case was executed at Ericsson Mobile Platforms in Lund.

I would like to direct appreciation and thanks to Peter Unelind, head of the Department of Procurement and Supply, for the opportunity to do my Bachelor Thesis here at Ericsson Mobile Platforms, offering a stimulated working environment and giving me input to my assignment.

I would also like to direct thanks to the entire department of Sourcing and Procurement & Supply for a kind and nice reception. A special thanks to Issef Aouali, project coordinator and my nearest contact person at EMP for introducing me to the project. I am also grateful for all the support I got from other contact persons within EMP.

Special thanks should be sent to Daniela Mihailescu, Ph.D. Candidate, JIBS for giving me rewarding suggestions and information about how to proceed with the project, certainly helping with the work of my thesis from an academic point of view.

Another person who has been very helpful to me is Ulla-Margarethe Carlsson, study coordinator and librarian at the university in Ljungby. I would like to direct special thanks to her because of all the help with supporting and giving suggestions on literature that were helpful to do a Thesis corresponding to the requirements I had.

The last and biggest thanks should be directed to the person who has been giving rewarding discussions and support in tough situations, truly acting as a co writer. Jennie Ljunggren, thank you for the great team work.

Lund, December 2007

Mari-Louise Andersson
Abstract

An implementation project of an ERP system results in large changes. Organizations that face an ERP implementation project have several risks to consider in order to avoid problems that cause failures. The purpose of this research is to extend existing models and create a method for implementation of ERP systems. The method has then been employed to an ongoing project at the department of Procurement and Supply at Ericsson Mobile Platforms in Lund. Objectives for the research are to consider which implementation strategy can be used and how an organization can minimize risks.

The research approach and methodology is influenced by the qualitative research method since it was necessary to gather qualitative facts instead of quantitative facts. Included is also a case study due to the research is executed within Ericsson Mobile Platforms in Lund.

There are two main opposite implementation strategies, Big Bang and Step-by-Step. The choice of implementation strategy depends on number of factors like the size of the organizations, complexity and resources.

A method of ERP implementation has been put forward as a result of the integrated models. The method includes an overall model and a check list. Risk identification is a problem that many implementation project faces, a way to solve this is to make a careful risk analysis, a risk matrix with several identified risks are put forward throughout this study.

Key words: ERP implementation project, choice of implementation strategy, Risk identification, Method for implantation, Pre-study
Term Explanation

BOM – Build of Materials
CBS – Common Business Solutions
CSF – Critical Success Factors
EAB – Ericsson AB
ERP – Enterprise Resource Planning
EMP – Ericsson Mobile Platforms
LC – Local Company
MAP – Models, Artifacts and Processes
MU – Market Units
MUS – Market Unit Solutions
One! – Module within SAP
PS – Project Solutions
PO – Purchase Order
ROI - Return on Investment
SAP – Enterprise System
TCO – Total cost of ownership
Buyer – EMP’s purchasers
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Introduction

In the introduction part of this thesis the background of the study is described. Formulations of the problems are then done and from this a purpose is worked out. The delimitations will be discussed and the target groups are presented. The disposition of the report is then handled.

1 Background

Organizations want to improve their competitiveness by implementing and investing in high information technology, such as Enterprise Resource Planning (ERP) Systems (Grabski & Leech, 2006). An ERP system is defined by Kumar and Van Hillegersberg (2000, p. 23) as a system that “integrate information and information-based processes within and across functional areas in an organization”. By implementing an ERP system an organizational change take place (Harwood, 2003). The goal by having an ERP system implemented is that integrated data and business processes from different departments will be gathered in one single computer system (Coffin and Murray, 2001).

The benefits of using an ERP system are, according to Harwood (2003), to handle different transactions, maintain records, provide real time information and also facilitate the planning and control functions. An ERP system is a generic solution and its design reflects a series of assumptions about how the companies operate in general. The ambition with implementing the system is to make the daily work more efficient (Davenport, 1998).

It is not always easy to implement an ERP system, many things can go wrong. Tatsiopoulos, Panayiotou, Kirytopoulos and Tsitsiriggos (2003) claims that the success of Information Technology (IT) implementation projects is dependent on technological issues like software and hardware. Implementation projects are also dependent on the design of new efficient processes and the utilisation of human resources that will participate in new processes to be used within new IT solution. An implementation cycle is characterized by complexity, uncertainty and a long timescale (Harwood, 2003). According to Coffin and Murray (2001) ERP implementations have historical been exposed by failures. When organizations face their ERP implementations they often experience difficult challenges. There are many different approaches to make an implementation, but every situation is unique and therefore an organization cannot only choose a single approach. Instead they can use an existing approach as support when they work out their own specific model (Harwood, 2003). There are different implementation strategies and an organization must decide which strategy that suits their implementation project (Welti, 1999). Tatsiopoulos et al. (2003) states that risk management could be an important strategic
component that can help in the identification and control of risks related to implementation projects

The Procurement and Supply department at Ericsson Mobile Platforms (henceforth EMP) are in great need of an extended ERP implementation due to they are facing an implementation of a SAP module called PS. The main problem is to secure a successful ERP implementation by anticipate eventual risks and failures. It is important for the organization to have clear guidelines that they can follow to increase the chance to succeed. It is necessary for EMP to adjust these guidelines to their specific environment.

The work environment within Procurement and Supply department that handles all the project purchases are today very ineffective and are therefore often stressful. The purchasing group within procurement is today working with Excel sheets, which takes a lot of time from each individual. Because of the time it takes to handle all the Excel sheets more and more resources will be needed as the work-load is increasing (P. Unelind, personal communication, 2007-11-25), making the need of an ERP implementation evident as this would improve productivity considerably buyers.

The objective for Ericsson AB is to implement a common ERP system called one! (I. Aouali, personal communication, 2007-11-05).

Since 2005 EMP uses SAP to place orders, make goods receipt and provide different reports (S. Lindström, personal communication, 2007-09-27). To have a more open system that provides the buyers with accurate information will avoid mistake caused by manually handled information. By having an ERP system the information will be gathered and easy to find and this increase the efficiency of the daily work for the project buyers (S. Lindström & A. Paulson, personal communication, 2007-09-27).

According to Davenport (1998) a new ERP system has a direct impact on a company’s organization and culture, but on the other hand an ERP system allows organizations to for instance streamline their management structures, be more flexible and so on.

Several factors affect an ERP implementation project. Issues that need to be sorted out primarily are which implementation strategy to use and how to consider risks handling. The objectives for this research are to answer the questions below:

- Which implementation strategy can be used while implementing an ERP system?
- How should an organization consider risks handling?

1.1 Purpose

The purpose of this study is to integrate existing models and develop a method for ERP Systems implementation. The method will then be analyzed on the basis of a case study.
1.2 Delimitations

Due to the limited time frame of the research, the technical aspects of an ERP system will not be handled, nor how changes affect the end users.

The case study is executed at Ericsson Mobile Platforms in Lund were an implementation of the PS module is in progress. Due to delays in the PS implementation project a comparison and analysis has not been handled throughout the whole implementation cycle. Comparison between the presented method and PS implementation project has only been executed on the first stages.

Since an ERP implementation project contains many different issues that need to be addressed and considered this thesis will handle the entire ERP implementation life cycle in order to be able to give suggestions on how Ericsson Mobile Platforms could proceed with their implementation project. However other companies facing an ERP implementation project also can apply the suggestion.

The study will not concern the Critical Success Factors (CSFs are defined by Simms (2007) as factors that need to exist in order for the project to succeed, outside the control of the project manager), because the purpose is to integrate existing models in order to suggest a way to continue the implementation project of the PS module. However will the importance of making a risk analysis be pointed out and also a risk matrix of some important risks be illustrated, to make the readers of this thesis aware of the importance of considering potential risks.

1.3 Target Group

The result of this thesis is targeted primary at the Procurement and Supply Department of Ericsson Mobile Platforms in Lund, since the suggestion of the resolution are targeted at Ericsson Mobile Platforms.

A secondary target group is other organizations that face an ERP implementation project, and also students or other academic researchers within the field of ERP implementation projects and methodologies.

1.4 Disposition

The disposition of the research is structured as figure 1 illustrates. The Research is divided into five main parts, Introduction, Research Approach and Methodology, Theoretical Framework, Case Study and Conclusion.
The introduction contains a discussion about the background to the research including purpose, delimitations, target groups and disposition. The research approach and methodology presents the methodological approach used in the research. The theoretical framework is used as a support to the Case Study and includes presentations about the background to ERP systems, choice of implementation strategy, an implementation life cycle, identified risks, eight steps to use while implement an ERP System and finally a chapter about the integrated model. The Case Study includes a company presentation about Ericsson AB since this is the company where the Case Study is executed. The case study also contains the result and analysis of the research. The conclusion contains the reflections of the result.
Research Approach and Methodology

Chapter two contains a description of the research method used in this study. The theoretical, empirical and analytical line of action is included in this section. The last part of this chapter contains a discussion regarding criticism of the used methodology.

2 Methodological Research Method

“Methodological insight gives an audience a better understanding of previously conducted research and how to proceed in future.” (Gammelgaard, 2004, p. 480)

Research methods can be classified in different ways, the choice of approach affects the way the researcher is collecting data. The most common distinction is between the quantitative and the qualitative approaches (Myers, 2007). Quantitative approaches were originally used while studying natural sciences like: laboratory experiments, survey methods and numerical methods. According to Björklund and Paulsson (2003) a qualitative study is used when the researcher wants to get a deeper understanding on a specific topic or situation. Myers (2007) states that the qualitative approach was developed in social sciences in order to support the researcher in studies including cultural and social phenomena. Sources included in the qualitative approach are interviews, questionnaires, observations, documents and the researcher’s impression and reactions.

The chosen approach is qualitative and the motivation of the chosen approach will be discussed in the chapter below.

2.1 Qualitative Research Method

Since the purpose of this study is to integrate existing models for ERP implementation suiting the department of Procurement and Supply and analyze the implementation that the department is going through a qualitative research are required. The study is based on a qualitative theoretical research and the empirical finding consists of interviews performed in a qualitative way, this will be discussed further in the following chapters.

To adopt a case study research were a strategically move due to that this method suits the Information Systems researches well. According to Myers (2007) a case study is an empirical inquiry that investigates subject in its real-life context, which was the case in this study.

2.1.1 Case Study Research Approach

Ellram (1996) states that executing a case study methodology results in both a vigorous design as well as a rigorous analysis. A case study requires a careful planning and execution. A case study also requires the ability to
step back from data, analyze it objectively, develop explanations creatively and search for different patterns in order to find different issues or problems in the existing patterns. Ellram (1996) claims that case studies are excellent to theory buildings, providing detailed explanations of best practices and providing a better understanding of the data that has been gathered.

After several theory researches the empirical findings within Ericsson Mobile Platforms could be discussed and analyzed on the basis of the theoretical framework. By executing a case study a comparison between theories and found facts can give both expected and unexpected results.

2.1.2 Collection of Data

There are two main techniques for collection of data which are primary data and secondary data (Arbnor & Bjerke, 1999). Myers (2007) states that primary sources are those were data is unpublished and is gathered directly from the people or organization, whereas secondary sources refer to any materials which have been previously published.

2.1.2.1 Primary Data

Data that has been collected for the first time by the researcher are defined as primary data (Björklund & Paulsson, 2003). Primary data consists of interviews, observations, questionnaires and experiments (Arbnor & Bjerke, 1999). Throughout this study have observations and interviews been used to gather data.

2.1.2.1.1 Interviews

Interviews are according to Björklund and Paulsson (2003) different ways of questioning by personal contacts or via telephones, email and text messages. There are a number of different ways to execute an interview. By using a structured interview all questions are decided in advance. A semi structure interview has a decided subject but the questions are formulated during the interview. By using an unstructured interview the interview become more as a conversation between the interviewees and the interviewer. The interviews can be executed toward one person or a group.

Interviews with employees (the head, project coordination, buyers and other knowledgeable persons) have been very helpful since it is very important to receive correct information. The interviews consisted of both discussions to obtain as much helpful information as possible and semi structured interviews.

The benefit of having interviewing the employees at Procurement and Supply is that they know about their processes, were the shortages are located and what is needed to be addressed. Instead of acquiring quantitative information a concentration of gathering qualitative information through these interviews was done. It was vital that the collected information was right and trustworthy so that a reliable thesis could be carried out. Both unstructured and semi-structured interview has been carried out. The un-
structured were used in advance when interviewing the buyers in order to
get a dialog where the most trustworthy information was shared. Primary
semi-structured interviews were held with the project coordinator and the
head of Procurement and Supply to keep track on important issues.

2.1.2.1.2 Observation
Observations can be executed in different ways. The observer can either
participate in the researched activity or observe by watching from distance.
The observation can be planned or can take place without the observed
knows about it (Björklund & Paulsson, 2003).

As being a part of some work shops observations could take place. The
benefit of having the time and opportunity to do observations is that a
personal opinion can be formed which will be a good complement to the
interviews and the reliability increases. As Yogi Berra (Strategcos, 2007)
stated: “You can observe a lot by watching”. Throughout this study an open
mind were held due to be able to present an objective study.

Due to the authors dual role (both thesis worker and part time consultant
at Ericsson Mobile Platforms) several observations could be carried out
successfully. By working close to both the buyers and other knowledgeable
personal observations contributed to an insight on how different aspects can affect each other.

2.1.2.2 Secondary Data
The secondary data consists of various documentation. It is essential to
use secondary data in order to get a wider sight. For a researcher it is im-
portant to see what other researcher has done and their results within the
research field (Arbnor & Bjerke, 1999).

2.1.2.2.1 Literature Study
A literature study consists of researches from books, brochures or maga-
zines (Björklund & Paulsson, 2003). The literature study was based on the
purpose of this report, which was to extend a method for implementation
of ERP Systems that suits the department of Procurement and Supply at
Ericsson Mobile Platforms in Lund. To fulfill the purpose, I needed to
find some background information about ERP systems in general, its
benefits and the risks that implementations of ERP systems bring.

The benefit of making an extensive literature study is to find out what the
theory claims about the topics in focus. The disadvantage however, is that
it is hard to find theoretical studies that suit the company’s unique exist-
ence. Consequently, assumptions and adjustments had to be made.

2.1.3 Choice of Theory
Throughout this study extensive literature study has been executed. In par-
ticular were three sources used more than others. Stephen Harwood pre-
sents in his book, ERP – the implementation cycle (2003), an implementation
model. Steven Harwood has worked with IT since the late 1970s and has
experience of ERP system in the fields of information management, or-
ganizational change and business strategy. This source was chosen because Harwood presents a widely accepted and well-known model for ERP implementation project life cycle. In particular Harwood also points out the importance of having control on what is happening on the market while a project is ongoing, which is an iterative process. However the models presented by Harwood are missing out on focusing on the some other important steps and therefore additional sources, like Computer Sweden, have been presented as well.

Computer Sweden, who is presented by IDG that are world leading of gathering information about IT, technology and business (Marnfeldt, 2007), have gathered an article including tips and experiences from five different reporters. The article presents eight steps to implement a new ERP system. The article presented by Computer Sweden has some other focuses than Harwood, which throughout this study has been analyzed and accepted.

To be able to identify major risks throughout an ERP implementation Daniel E. O'Leary book *Enterprise Resource Planning Systems - Systems, life cycle, electronic commerce, and risks* from 2005 has been to great help. O'Leary has published more than 120 papers in a variety of management, information system, computer science and management science journals. The risks presented by O'Leary were divided into three main categorizes that suited the outcome of this study, consequently O'Leray become the main source of the risk, of course other aspects from other sources has been presented as well like Mary Sumners (presented in Shanks Seddon & Willcocks, 2003) for instance.

Besides these three sources described above additional research has been carried out to verify or show differences about the collected information, which affects the reports validity.

### 2.1.4 Validity and Reliability

Validity, reliability and objectivity are three measurements connected to the quality of the study. Validity is defined as to which extent the researcher really measure what was supposed to be measured. The reliability is defined as the level of trustworthy in the measurement, like if the researcher should get the same result if the study were repeated. Objectivity is how the researcher’s valuation affects the study (Björklund & Paulsson, 2003).

#### 2.1.4.1 Validity

The validity can be increased by using different perspectives like using different data sources (books or respondents), use different evaluators of the material or use different theories on the same piece of data. Questionnaires or interviews with clear questions can be a help to increase the validity (Björklund & Paulsson, 2003).

The validity throughout the study is increased by use of different reliable sources. By gathering information from different places (books, articles,
Internet and interviews) and do a comparison between findings from the sources a valid report could be carried out.

### 2.1.4.2 Reliability

By using control questions in questionnaires or interviews where the issues once again are checked helps to increase the reliability (Björklund & Paulsson, 2003).

The study’s reliability is frequently high. Interviewing different persons at the department and asking the same or similar questions and reviewing the result could hold a good level of reliability.

### 2.1.5 Criticism of the Choice of Research Method

This study was build up by a qualitative research method supported by a case study. The data has been collected qualitative due to the importance of having the facts presented in a reasonable way. It was vital to have a clear picture on how the situation in the case study were, what was prior to achieve and the best way of doing so. The results of the interviews executed were influenced by different level since the head of the department, the project coordinator, the affected buyers and additional other knowledgeable persons were involved.

If this study were to take place one more time, the qualitative research method and the case study research method could be used advantageous. Another research method to use could be an action research, which also lies under the qualitative research method. The objective of the action research is:

“[…] to contribute both to the practical concerns of people in an immediate problematic situation and to the goals of social science by joint collaboration within a mutually acceptable ethical framework” (Myers, 2007),

this can be taken into consideration while executing a study similar to this one. Another research methodology that could be used is grounded theory, which is a method useful in developing context-based, process-oriented descriptions and explanations of the phenomenon (Myers, 2007).
Theoretical Framework

This part consists of the theoretical framework, including information collected from different authors. At first will a background about Enterprise Resource Planning be presented followed by the two main strategies to consider by implementing an ERP system. All potential risks will then be described and finally a model for implementation of ERP systems.

3 Enterprise Resource Planning System

O’Leary (2005) defines Enterprise Resource Planning system as powerful software packages which enables different business to integrate different kinds of functionalities.

It is important to understand what an ERP system is and how it works. According to O’Leary (2005) an ERP system is a computer based system that is designed to be able to process a transaction of an organization. Klaus, Rosemann & Gable (2000) states that ERP systems is a commodity, in other words a product in form of computer software. The package software seeks to fulfill integration of the complete range of business’s processes and all the functions, to be able to present a holistic view from a single information- and IT architecture. Klaus et al. (2000) also states that ERP could be seen as a development objective for mapping processes. An ERP can also be a key element of an infrastructure that delivers solutions to business. O’Leary (2005) adds that an ERP system have the purpose to facilitate already integrated and real-time planning, production and also customer support. There are five primary vendors of ERP System. BOPSE is the common name and stands for BAAN, Oracle, PeopleSoft, SAP and J.D Edwards.

Klaus et al. (2000, p. 143) defines the purpose of ERP systems: “...to support all business functions of an enterprise, especially procurement, material management, production logistics, maintenance, sales, distribution, financial accounting, asset management, cash management, controlling, strategic planning and quality management.” O’Leary (2005) states that an ERP system includes different modules, which are components containing different functionality.

The ERP software is an application software, the applications modules of ERP are integrated across the supporting functions and across the involved data. The software is based on a database that stores master data and transactional data in a consistent way and also with controlled redundancy (Klaus et al. 2000). The packaged software is designed for client/server architecture, its purpose is to integrate a business’s processes and it processes a large amount of the transactions. The system uses an enterprise-wide database for storing every piece of data once and it also allow access to the data in real time (O’Leary, 2005).
4 Implementation Strategy

There are two different implementation strategies that must be considered. An organization must decide which strategy is best for their implementation project in their situation. Welti (1999) presents a Step-by-Step and a Big Bang strategy. The Step-by-Step and the Big Bang implementation are the each other opposite strategies.

4.1 Step-by-Step Implementation Strategy

By using the Step-by-Step strategy the implementation proceed in small steps (Welti, 1999). This Step-by-Step implementation can also be called phased implementation (O’Leary 2005). The risk of failure is low, even though new interfaces need to be built between the existing and the new system. Opportunities and threats by using a Step-by-Step strategy are presented by Welti (1999) below:

**Opportunities:**
- Reduced complexity for coordinating, controlling and organizing the project and resources
- Costs are spread over a longer period of time
- Smoother changeover

**Threats:**
- Project time increased
- Motivation declines
- Interfaces must be customized and programmed to maintain the data transfer for implemented modules and, later on, to adjust the already running modules to the new ones

4.2 Big Bang Implementation Strategy

The second strategy that Welti (1999) presents is the Big Bang implementation, which replaces the existing systems in a single operation with new enterprise software. O’Leary (2005) states that by using a Big Bang implementation an entire suite of ERP applications can be implemented at all locations at the same time. By using the Big Bang strategy brings different opportunities and threats; they are presented by Welti (1999) and O’Leary (2005) below.

**Opportunities:**
- Shorter implementation time
- Motivation high
- No interfaces between the old and the new system are necessary
Threats:

- Implementation are complex
- Risks of total failure
- Time between development and implementation may be longer

### 4.3 Choosing Implementation Strategy

According to O'Leary (2005) organizations uses costs and benefits analysis in order to decide if they should implement an ERP system. The next step after the results of the analysis is to decide which strategy to use while implementing an ERP system. The choice of implementation strategy is depending on organizational characteristics as size, structure, complexity and controls of the organization. Often smaller and less complex organization uses the Big Bang approach whereas the larger and more complex organizations often use a phased or Step-by-Step strategy. The number of products and customers reflects in the complexity of the organization. A smaller organization has less variation of products and customers. For an organization that is smaller is the risk by using the Big Bang implementation not that big but if the organization is more complex it is more likely that a Step-by-Step approach is more suitable, because it lowers the risks.

According to Welti (1999) should the implementation strategy be adopted on the basis of the availability of human resources, expertise, financial resources and time. The strategy will then have impact on the objectives of the project and the costs.
5 Implementation Life Cycle

A number of implementation techniques have been included in the search for the most effective and minimized risks. For instance is Morin (1999) presenting a simple project model consisting of four phases: analytical, design, tests and implementation. Another model is presented by O’Leary (2005), is an implementation life cycle that includes different activities like: deciding to go ERP, choosing an ERP system, designing, implementing, after going live and training. A further strategy for ERP implementation is design, implementation, stabilization, continuous improvement and transformation (Ross, Vitale & Willecocks, represented in Shanks et al. 2003). An eight steps model, presented by Computer Sweden (2005), has also been reviewed. This model presents the stages pre-study, purchase, implementation, education, maintenance and support, upgrade, profitable systems and in practice.

After studies about implementation models for ERP systems the model Harwood (2003) presents, implementation life cycle, is considered to have the best basis for a complete life cycle of implementation activities. This model includes the stages of need, vendor selection, implementation, go live and review, improvement and finally market awareness that affect the whole circle. The model is illustrated in figure 2.

![Figure 2, ERP Implementation Life Cycle (Harwood, 2003).](image)

The implementation cycle starts at the point when the need for a new ERP system is recognized. After the need is identified the organization must understand and be aware of the technology available at the market, and this makes market awareness important to consider. The market awareness then leads to the next stage, which is vendor selection. In vendor selection a solution is required to meet the defined need. The implementation is a complex stage that follows the vendor selection. The implementation stage involves many people and culminates the transition to the go live & review stage. After the go live & review stage it is benefited to have a continuous improvement program. An improvement program enables the benefits of the systems to be fully exploited, however the cycle continuous once the new system is running. There can be new needs discovered and thereby the life cycle are ongoing again (Harwood, 2003). The
life cycle can be divided into the five stages: market awareness, define needs, select vendor, implement the project and the Post-GoLive improvements. The activities and the focus of these stages are presented further in figure 3.

<table>
<thead>
<tr>
<th>Stage</th>
<th>Focus</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 Market awareness</td>
<td>Marketplace</td>
<td>Understand what is going on in the marketplace</td>
</tr>
<tr>
<td>1 Define need</td>
<td>Requirements</td>
<td>Establish why</td>
</tr>
<tr>
<td></td>
<td>Cost-benefits</td>
<td>Establish costs and determine benefits</td>
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<td></td>
<td>Requirements</td>
<td>Determine requirements</td>
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<tr>
<td>2 Select vendor</td>
<td>Vendor offerings and fit</td>
<td>Establish selection process</td>
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<td></td>
<td></td>
<td>Execute selection process 'Close the deal'</td>
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<tr>
<td>3 Implement project</td>
<td>Create and maintain conditions for project implementation</td>
<td>Establish and assign project participant roles</td>
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<td></td>
<td></td>
<td>Establish, monitor and maintain commitment</td>
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<td>Define scope</td>
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<td>Produce, monitor and update plan</td>
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<td></td>
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<td>Establish, monitor and update budget</td>
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<td></td>
<td></td>
<td>Set up and manage problem resolution mechanisms</td>
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<td></td>
<td></td>
<td>Assess and contain risks</td>
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<td></td>
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<td>Establish, monitor and manage performance</td>
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<td></td>
<td></td>
<td>Manage vendor relationships</td>
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<td></td>
<td></td>
<td>Install and commission hardware, software and networks</td>
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<td></td>
<td></td>
<td>Develop training strategy</td>
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<tr>
<td>Implement project plan</td>
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<td>Train project team</td>
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<tr>
<td>4 Post-GoLive improvements</td>
<td>Process performance</td>
<td>Improve processes</td>
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<tr>
<td></td>
<td></td>
<td>Review</td>
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</table>

![Figure 3, A Breakdown of the ERP Implementation Cycle (Harwood, 2003).](image)

5.1 Need

As mentioned earlier the implementation cycle starts with a need. The need can be divided into two categories, initial need and requirements definition (Harwood, 2003).

5.1.1 Initial Need

Someone must decide that there is a need for a change. Once this is realized there are a number of parameters that are significant for the decision. Each decision has different grades of difficulties that brings consequences like extra time and costs (Harwood, 2003).

Regarding the costs there are one-off costs and on-going costs. The one-off costs consist of direct costs, like hardware, consultancy and training. Indirect costs, on-going costs, are those who mostly are internal an can include time and consequent cost of employees involved in the project, costs that are related to off-site travel, costs related to internal resources (Harwood, 2003). A total cost of ownership (TCO) is a methodology that
shows how important it is to analyze all indirect and direct costs. The methodology’s purpose is to in a systematical way analyze both the costs and performance issues (Heilala, Montonen and Helin, 2007).

5.1.2 Requirements Definition

Harwood (2003) claims that it is time-consuming to make a requirement definition because of all details must be captured and presented in a voluminous document. There are different ways of establishing requirements; identify the process and define key issues that need to be addressed in order to make a list of all the needs. Once the requirements are defined a way to meet them must be identified and the statements below should be considered:

✓ Choose larger vendors such as SAP or Oracle
✓ Choose modules or components to deal with
✓ Choose “best-of-breed” (take the best parts from different vendors)

The final decision to take is which route to go (Harwood, 2003).

5.2 Vendor Selection

The chosen vendor shall provide the application software and the skill in how to use the application. The vendor will also provide expertise in implementing the application (Harwood, 2003).

5.2.1 Select a Vendor

The process of selecting vendor can, according to Harwood (2003), take about four to six weeks. There are four stages to considerate when choosing vendors:

✓ Find out who is on the market which generates the first vendor list
✓ Generate a short-list of suppliers who offer the potential for meeting requirements
✓ Reduce the short-list to the most suitable
✓ Make the final selection

5.2.2 Contract Negotiation

Once the vendor is selected a contract negotiation can begin. It is important to ask a lot of questions in order to clear out issues in order to receive approved directives.
The process of creating approved contracts can take longer time than expected. According to Harwood (2003) contracts differ from vendor to vendor; below follows some issues that should be discussed:

- Definitions
- Price/Payment
- Delivery
- Training
- Copyright/Ownership
- Software license
- Third Party Software
- Operating System
- Hardware
- Liability
- Warranty
- Software Errors
- Software Support
- New Releases
- Cancellation of Licence

### 5.3 Implementation

According to Harwood (2003) the implementation begins with the training of the project team so they are able to carry out their tasks, then definition of new processes are in focus. The testing and documentation, data set-up and end user training should then follow.

#### 5.3.1 Training Strategy – Phase One

The first phase of the training strategy is the activity that relates to training of the project team and systems administrators. The training should result in knowledge and skills about the application, implementation, practices and software functionally. It is significant to learn how to navigate around the system and all the details of functionality (Harwood, 2003).

#### 5.3.2 Define Processes

A core activity during the implementation is to define and develop new processes (Harwood, 2003). According to Ljungberg (2002) the common and traditional way is to see a process as a series of activities but a process is not only sequences of activities, it is also a structure for action and different ways of coordinating them.

Harwood (2003) advocate a method for mapping process called Collage. This method has a number of benefits: it provides a quick and easy method to capture the complexity of a process that allows a whole picture to be viewed; it provides a reference point for issues related to the process and it provides a foundation for establishing process documentation and training material.

#### 5.3.3 Prototyping and Pilot

In the prototyping activity is the purpose to make a set up on how things are going to be executed once they are using the new software. During the prototype activity there are a number of questions that are exemplified below (Harwood, 2003):

- What are we trying to achieve?
- What is the best way of doing this?
Do we want to do things the way we have always done them, if so why?

What alternative ways are there for doing this?

How to keep the process simple?

The pilot phase provides the opportunity to test the final version before going live. It is a simulation of the real world events. This phase often goes through three stages; preparation, simulation and follow-up. The preparation phase consists of complete scripts, ready data and program of events. Once the preparation is done the simulation of the pilot can be carried out. The simulation phase consists of a final check and testing of the system before going live. In the follow-up issues are exposed and adjustments are made. After this phase should everybody be satisfied and the system should work as expected (Harwood, 2003).

5.3.4 Responsibilities

A clear definition of tasks should be established and for each task responsibility should be added. For example if there is a new supplier added to the system responsibilities like who is setting up the parameters should be established and presented (Harwood, 2003).

5.3.5 Documentation

The final stage of process implementation is documentation. The documentation includes the procedures, structures and templates. The documents should be carried out by those who defined the process. The documents should include the process name, the purpose and description of the process, roles responsibilities, process flow, instructions and details of related documentation (e.g. sales order, invoice and purchase order) (Harwood, 2003).

5.3.6 Training Strategy – Phase Two

Phase two of the training strategy is for the end users and the managers. The purpose is to make the users able to handle the system. The training is recommended to be executed in workshops were the users receive the knowledge they need in order to work and navigate in the system (Harwood, 2003).

5.3.7 Data Set Up

Data is the basis for all events within the organization. Since data exists everywhere it need to be correct otherwise there will be big risks that wrong decisions are taken. The migration of data into systems can occur in two different ways, manually or electronically. By choosing the manually way to transfer data into the system the cost and time increases. The electronically way is decreasing the time and is more favorable especially if there are large amount of data (Harwood, 2003).
5.3.8 Last Minute Check

When all previous steps are fulfilled there is only the last minute check left. In the final stage, last minute check, exists the opportunity to make final adjustments on the last existing shortages (Harwood, 2003).

5.4 Go Live & Review

Once a new system is implemented and have gone live employees switch from their old way of working with the old systems to the new way of working required by the new system. If the employees are trained properly then they should know what to do on the day the systems goes live. The success of the go live day is measured by the lack of problems but if there are any problems there should be mechanisms in place to deal with them (Harwood, 2003).

A way to handle eventual problems is to set up an user help-desk, which supports the users when needed and allows the client to log problems that cannot be solved and can be solved late on. When the system has been running for a time it is useful to reflect upon the implementation and its progress. The review of the implementation is not the end of the life cycle but leads to the next major stage (Harwood, 2003).

5.5 Improvement

“The implementation should never really stop” (Harwood, 2003 p. 159)

Once a system has gone live and had some time to settle down; issues can be emerged and improved if they are handled right. As the ERP system is a tool that facilitates the activities within an organization can improvements of the new ERP system be carried out.

There is a continuous improvement program, illustrated in figure 4 showing the objective Figure 4, Features of a Continuous Improvement Program (Harwood, 2003) of doing an improvement and what must be demanded from participants.
The objectives of the organization are presented and which approach to choose in order to fulfill them and finally define which participants who should be involved in the improvement stage (Harwood, 2003).

<table>
<thead>
<tr>
<th>Objective</th>
<th>To become more competitive</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>To lower costs</td>
</tr>
<tr>
<td></td>
<td>To improve customer satisfaction</td>
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</tbody>
</table>

**Approach**

By means of a company-wide continuous improvement programme, to reduce non-conformance in all activities. This requires:

- understanding of the business, the processes making up the business and the implications of the change
- focus employing
- planning, implementation and control
- education/training of the workforce, including management

**Participants**

All people within the organization, requiring

- individual understanding and awareness (by effective communication) and responsibility (for action)
- recognition for success
- management commitment and leadership . . . especially from top management

*Figure 4, Features of a Continuous Improvement Program (Harwood, 2003)*
6 Risks

According to Sumner (represented by Shanks et al. 2003) ERP system implementation projects are unique because of their size, scope and the organizational impact. According to Welti (1999) all potential risks must be identified and analyzed at an early stage. If a potential risk are identified to late it can become a real problem that will lead to consequences like poor quality, reduced functionality, more resources needed (both costs and humans) and in the worst scenario this could lead to that the project fail. Sumner (represented by Shanks et al. 2003) suggest organizing the risk factors and by identify and clarify which individuals who should be responsible for managing risk factors in different phases a better starting point for managing these risks could be developed.

Figure 5 presents an iterative process of the cycle of stages in an ERP implementation project (Harwood, 2003). The implementation project must go through these activities to be complete. The risks that are essential will be described in the each different activity below.

![Figure 5, ERP Implementation Life Cycle (Harwood, 2003).](image)

There are different kinds of risks; technical risks, business risks and organizational risks. Each category appears in the different stages (figure 5). The risks are of different types and have dissimilar level of risk from very low to very high (O'Leary, 2005).

6.1 Technical Risks

An ERP implementation project often results in a general conflict and high level of failure (Olson, 2004). The technical risks refers to the risks that arise largely because of information processing technology, like for instance operating systems, client/server computing, network capabilities, database and links to other systems and independence of computing environment (O'Leary, 2005).
6.1.1 Need
When the needs are identified the organization must decide whether to go ERP or not. Those organizations that are familiar with advanced technology capabilities are more likely to understand the risks and are able to avoid problems. For those organizations who do not have the knowledge have to find a way to gain an understanding (O’Leary, 2005). This can be pointed out by the quote below.

“[i]t is people who make it harder for them selves by picking the wrong technology or by trying to push the envelope.” (Stein, 1999, represented in O’Leary, 2005 p. 218).

6.1.2 Vendor Selection
Next step is to choose right hardware and software, which in similarity to choosing right vendor can take some time and must be considered. One major concern is to choose a hardware that is able to meet the processing requirements. No software can be optimal for every organization; there is a risk that the software does not meet all expectations and needs (O’Leary, 2005).

6.1.3 Implementation
Sumner (2005, represented in Andersson, Andreasson and Johansson, 2007) identifies the technical risk as how well the new technique is compatible with already existing systems in the organization, like for example databases, operative systems or different networks. According to Glader (2004, represented in Andersson, Andreasson and Johansson, 2007) there are many risk oriented problems that are included in an ERP implementation. In similarity to Sumner, Glader states that there are risks concerning database management system, operative systems, programming and communication problems between modules that builds the systems.

6.1.4 Go Live & Review
Training is the first step during the Go Live activity. The end users must gain knowledge about how to implement and use the new technology. It is important that the end users and other concerned parties understands how an ERP system usage can be facilitated the daily work (O’Leary, 2005).

Harwood (2003) states that when technical problems arise there must be a problem response mechanism that can take care of the occurring problems. When a technical problem is discovered it must be reported to the person responsible for the problems resolution. A question that should be answered after going live is whether the software fulfills the expectations or not.

6.1.5 Improvement
If an organization overlooks the usefulness of doing a comparison with other organizations, best practices or benchmarking, they risk to not taking advantage of other existing solutions or systems (Harwood, 2003).
6.2 Business Risks

O'Leary (2005) defines three different areas of business risks; the organization's choice of model, artifacts and processes (MAPs), how well the MAPs functions in the organization and how they facilitate interaction with other organizations. In general, business risks are related to how well an organization is able to compete with others.

6.2.1 Need

After the need is identified and the decision of carrying out an ERP implementation project is made there still are more risks to consider. ERP creates huge business risks if the resources are insufficient. Having sufficient resources is one of the most important requirements. Another risk and a vital factor is to reflect on new and existing partnerships of the organization. An ERP implementation is critical and will probably affect the partnerships (O’Leray, 2005).

6.2.2 Vendor Selection

In this phase, vendor selection or choosing an ERP system, it is essential to reflect of the involved costs. There is a risk that the budget will be exceeded, not only affecting the organization internal but also eventual partners (Welti, 1999). Costs that are included in the budget are hardware, database and software licence fee, operating system, additional modules licence fee, third party software licence fee and software customization (Harwood, 2003).

6.2.3 Implementation

The two biggest risks, identified by O’Leary (2005), are that the time scale of the implementation goes above planned time and that the planned budget is exceeded. Activities that can affect the budget are project management, data conversion for Go Live, consultancy, training and upgrades (Harwood, 2003).

6.2.4 Go Live & Review

As the training is a very important activity it should provide the users with process and system information (O’Leary, 2005).

When the ERP system has gone live there is a risk that the system do not work as expected. This can affect both the customer and the suppliers negatively (O’Leary, 2005 and Harwood, 2003). In the review phase it is important to consider if the timescale and budget corresponds to the goals and expectation (Harwood, 2003).

6.2.5 Improvement

It is important in the improvement phase to not forget analyzing how successfully the implementation has been executed (Harwood, 2003).
6.3 Organizational Risks
The organization is affected by the people, organization structure and environment were the system is to be implemented (Harwood, 2003). Figure 6 illustrates different organizational risks divided into the main categories: strategic risks, operational risks, reporting risks and compliance risks (Epstien & Buhovac, 2006).

![Figure 6, Organizational risks (Epstien & Buhovac, 2006)]

6.3.1 Need
Once the need has been discovered and ERP implementation project is decided, a big risk is to not involve the top management. Without top management’s participation there may not be sufficient resources for the commitment nor authorization to change processes (O’Leary, 2005).

6.3.2 Vendor Selection
While choosing vendor/system can many risks occur; like choosing wrong consultant or choosing a vendor/system that cannot provide the organization with enough support during and after the implementation (O’Leary, 2005 and Harwood, 2003).

6.3.3 Implementation
Models of the organization have to be built into the new software, which can affect the information flow badly. This could lead to that each department is forced to make a profit center or cost center (Bashein, Maruks & Finley, 1997 represented in O’Leray, 2005). Changes like this can affect the relationship that the organization has.

6.3.4 Go Live & Review
The biggest risk is if the employers do not know how to use the new system, and that the education is not as prioritized as it should be. The risk by hiring in consultants to do the implementation is that they, after the implementation is made, leave the end users unfamiliar with the system and therefore do not know how to manage it (O’Leary, 2005).
6.3.5 Improvement

A risk is to be satisfied with the system and therefore not have an ongoing continuous improvement (Harwood, 2003).
7 Eight Steps to Implement new ERP Systems

To complement the previous presented model, Harwood’s (2003) implementation life cycle (chapter 5) the eight steps to implement new ERP system presented by Computer Sweden (2005) will be described below. Since Harwood’s (2003) model have a lack of two vital stages in his model Computer Sweden’s report (2005) functions as a great complement in the matter that the importance of pre-study and training and education are pointed out. The steps consists of pre-study, purchase, implementation, education, maintenance and support, upgrade, profitable systems and in practice.

7.1 Pre-study

According to Åslund (2005a) the pre-study is the first step once the need of a new ERP system is identified by the organization. The pre-study should highlight the goal of the new system and visualize the questions that need to be addressed. This is the foundation of a new ERP implementation project. The pre-study can be divided into three phases: objective, processes and in-depth. In the objective phase it is vital to make a first analysis about which process within the organization are affected, define which kind of system are required and understand the goals with the implementation. The process phase include definition of the difference between today’s processes and the processes that the system contributes with, the business goal should be highlighted from a strategic perspective and what changes in the business demands on the new system. In the in-depth phase systems and vendors are chosen and a prototype of the system can be tested and an understanding of what works and what needs to be addressed are established.

The pre-study should start with overall system architecture because it is important to have a chosen technique from the beginning. Because the personnel are affected by an implementation they need to be involved in the pre-study. A pre-study is not ready before a risk analysis is completed and has clear actions ready to be set in (Åslund, 2005a).

7.2 Purchase

The second step begins with an inspection of systems and their vendors on the market. In the purchase step it is important to find the vendors that fulfill the key factors that the organization has on the system’s functionality, competence, branch knowledge, quality and technique. Important is that the organization goes throw their demands and establish a specification of requirements (Åslund, 2005b).

When to make an evaluation of vendors there are several central points to consider:

✓ Check if the systems is efficient to use, let the operational end users work with the system
✓ Check the system’s integration opportunities, there can be hidden costs and unpleasant surprises

✓ Ask the vendor to illustrate live how the system integrate to other systems

✓ Ask many questions to check their creativeness

The purchase can be divided into three stages: pre-study, meeting with vendor and comparison of systems. It is necessary that a pre-study about the demands is executed so that the purchase phase can begin. When it is time to meet the possible vendors the key factors, which were established in the pre-study, is a great support to better see which vendors are more interesting than others. Factors that are of interest in an early stage are branch knowledge, economy stability, local attendance, technical platform for the system and support. The last stage, comparing the systems, is distinguished by all the important criteria that should be graded to see the total number of points a certain system has. It is now time to have closer discussions with the remaining vendors; they should set up a demo version of the system to show how well they had understood the organization's demands (Åslund, 2005b).

7.3 Implementation

Cooke (2005) describes the implementation phase as cooperation between the vendor and the buying organization, which has the same responsibility to make a successful implementation. The implementation method of the vendors are quite the similar, important is to keep the implementation time as short as possible in order to decrease implementation costs.

7.4 Education

The education should go in parallel with the project and should not be terminated to early. There are two reasons to educate the end users. The end users need to learn how to work within the new system, and then to change the behavior that often is the motive for the implementation (Höij, 2005a). The budget for the education is often to low. It is also important to set enough time for the training. Jonsson (represented in Höij, 2005a) (in charge of Sales, SAP's educations) provoke that the educations phase should be included as a component in the purchase.

Höij (2005a) presents a number of expert advices about education that should be considered:

✓ Make a budget for the education in an early stage

✓ Make sure that the education include the concerned parties

✓ Buy a test environment at the same time as the ERP system, for the employee to test

✓ The management should communicate why the new ERP system has been implemented
Identify the concrete needs of education among the end users and project members

Use external help for competence investment

Allocate internal education resources

Specify the budget and the timeframes in the total implementation costs

See competence development as a constant ongoing process

See education as a possibility to succeed and not as a must

7.5 Maintenance and Support

When the system is implemented there are two aspects that often are neglected that is maintenance and support (Wallström, 2005a). The daily activities must work with high flexibility and to as low cost as possible. The organization, as a customer, should be able to demand that the vendor offers maintenance and support during agreed time period. There are three different alternatives that should be acknowledged in the agreement, which are own operation, outsourcing of the operation or outsourcing of the whole ERP system.

Wallström (2005a) presents several expert advices about maintenance and support that should be noticed:

- Detect hidden costs
- Use the consultants’ knowledge, not only with the implementation
- Have clear defined responsibilities
- Be careful with the support agreement, be aware when the agreement comes to an end
- Evaluate the existing alternatives

7.6 Upgrade

An upgrade of a system brings often high costs and much more work needs to be put in than expected (Wallström, 2005b). The upgrade should be on the organization’s condition and not on the vendor’s demand. The organization must take a decision on the basis of their needs. An upgrade can contribute with an opportunity to improve the system. When to upgrade the system make sure the necessary functions are included in the new version and works as well or better in that version. To adjust or not adjust is vital to consider in the upgrade phase. Adjustments should be carried out carefully, but are motivated in some cases.
An organization that has decided to upgrade the system has three questions to answer: why, when and how? The organization must define why they want to upgrade their system, does the organization have new demands or is the vendor affecting the system. The organization must decide when they want to upgrade, by choosing if they want to wait and try a reliable and tested system or take a chance with a completely new system. The organization still has one question to consider, standard or adjustments. The difficulty is to find a balance between the different departments’ need, which affect how the organization decide to upgrade their system (Wallström, 2005b).

### 7.7 Profitable Systems

To achieve profitable systems the pre-study a must because it is in this step the planning and the goals are set, which affect the whole process. The reason is that planning is required in order to change an organization. “Change Management” is utilized to clarify that time and effort is needed to reach the wanted result, so much more than just a new program. Once the system has gone live the management wants to see the return on investment (ROI). The management wants to see that the investment has been successful (Höij, 2005b).

### 7.8 In Practice

In practice a new ERP system contributes to more work than foreseen. The organization may in this part reflect over the outcome of the implementation and problems that have been discovered. According to Larsson (2005) an implementation often means more work that expected.
8 The Integrated Model

There are many different approaches to adopt while executing an ERP implementation project, but every situation is unique and therefore an organization cannot only choose a single approach. Instead they can use an existing approach as support when they work out their own specific model (Harwood, 2003).

An integrated model were required due to the model presented by Harwood (2003) were missing out on important stages. Therefore has the model been integrated with stages that Computer Sweden (2005) presented. Computer Sweden pushes the importance of having a pre-study and also the importance of having the resources and time to execute a training and education, whereas Harwood (2003) are pointing out that the market awareness is vital to keep the project updated.

The integrated model is presented in figure 7, this model should be used in combination with a check list that are presented in appendix 1 and together these two functions as a method that could be used advantageous throughout an ERP implementation, especially for the situation the case study is executed in. The check list is developed on the basis of the model presented above and is also reflecting the result of the risks presented. How to use these tools will be described further in chapter 10.5.3: How to use the method.

Figure 7, Integrated Model for Successful Implementation of ERP Systems (based on Harwood, 2003 and Computer Sweden, 2005).
Case Study

The case study will start with a company presentation of Ericsson AB and Ericsson Mobile Platforms as this is the company where the case study has been executed. Case study consists of information gathered about the PS implementation project. Included is also an analysis of the recommended implementation strategy, the method for ERP implementation, a risk matrix and alternative ways to proceed.

9 Ericsson AB – A Company Presentation

Ericsson AB is the world-leading provider of telecommunication equipment and related services to mobile and fixed network operators globally. There are over 1000 networks in 140 different countries that use Ericsson’s network equipment. About 40 percent of all the mobile calls go through Ericsson’s systems. Ericsson is one of the few companies in the world that can offer an end-to-end solution for all major mobile communication standards. Ericsson’s headquarters are situated in Stockholm, Sweden (Ericsson, 2007a).

The vision of EAB is “To be the prime Driver in an all-communicating world” (Ericsson, 2007b) and by this they mean that EAB wants to be able to support all people in the world with voice, data, images and video to share wherever and whenever they want.

9.1 Ericsson Mobile Platforms

Ericsson Mobile Platforms was established in September 2001. EMP’s headquarters are situated in Lund, Sweden and is based on the research and development group that developed the core technology for Ericsson’s mobile phones. EMP provides mobile terminal technology to customers who want to develop and produce mobile phones for the GPRS, EDGE and WCDMA standards. EMP’s mission is to “To be the leading mobile platform supplier, with complete and optimized solutions in all segments, making our customers truly successful.” (EMP, internal information, 2007-05-15)

In 2004 Ericsson Mobile Platforms had signed license and development agreements with fourteen different customers worldwide. Sony Ericsson, LG and Sharp are some of the customers that EMP provides with platforms. EMP offers their customer a complete phone platform containing all integrated circuits and software that are needed to build mobile phones based on the standards GPRS, EDGE or WCDMA. The platforms provide necessary system functionality and therefore they can provide customers a fast and safe way of launching new 2.5G and 3G products. In
addition to this EMP also offers assistance with application development tools like software development kits, development boards and integrated development environments. This includes training, customization, and industrialization type approval and operator acceptance. (Kornby, 2006).

9.1.1 Products within Ericsson Mobile Platforms

EMP is able to provide their customers with a complete platform that are needed in order to build a mobile phone. By using EMP’s platform the customer can specialize on their resources on product differentiation in different areas like branding, applications, design, manufacturing and distribution (Ericsson, 2007c).

The platform consists of integrated circuit design, complete design of reference phones and test software. A complete platform delivery includes following:

- **Reference Design** – The main purpose is to support the customer in the development, assuring that the platform has been tested and verified with major network vendors and operators.

- **Platform Software** – Has its focus on adaptability and therefore enables the customer to develop their own applications.

- **ASICs and Development Board** – Helps the customer to build the first software quickly.

- **Development and Testing Tools** – The software development kit provides the customer with environment designed for developing handset software. The platform also provides a powerful test environment including test tools and suits.

- **Support and Documentation** – EMP offer services to the customer in order to support them from the start to the finish line. This because each customer project is unique and the demand of support differs. System design, Application and Integration And production Support are examples of services that are offered.

- **Training** – The customer has the opportunity to participate in Ericsson training courses. The training can consist of: System overview, application and peripheral development, software testing, radio development and basement development (Ericsson, 2007c).
10 The Result of the Case Study

Today Ericsson AB is using two modules within the enterprise resource planning system SAP R/3, CBS (Common Business Solutions) and MUS (Market Unit Solutions) (figure 7). The reason to use these modules is that they include different functions like administration functions (MUS) and production functions (CBS) (I. Aouali, personal communication, 2007-11-01).

EAB wants to assure that operational efficiency, flexibility and reliability are carried out. This can be fulfilled by implementing one! which is a module including functions from both CBS and MUS. All users can perform their task but still use the same module, which will lead to easier and more effective cooperation within the entire organization (P. Unelind & I. Aouali, personal communication, 2007-06-03).

It will take time to have one! fully implemented within the whole Ericsson AB, EMP will have one! implemented latest 2009. This affects the Procurement and Supply department at EMP negatively since they have identified problems and are in need of a change. The PS (Project Solutions) module is an intermediate goal which will solve the most urgent problems within the department (P. Unelind, personal communication, 2007-09-24).

10.1 Today’s Situation

The project buyers at Procurement and Supply daily work have been more efficient due to a change in their ways of working. They have changed from one single Excel sheet where all buyers were working into five separate sheets. The old Excel sheet that were used did not have clear divided responsibilities, which led to that emails were sent to all buyers, too many meetings leading to actions not being fulfilled within an acceptable timeframe and overlap of responsibility and ownership so that the buyers did not need to do exactly the same job or that tasks not are being correctly fulfilled due to lack of ownership. An improvement of the Excel sheets
makes the daily work more effective today (J. Moore, personal communication, 2007-08-06).

The responsibility for each supplier has been divided per buyer, which has led to that the routines now are much more effective. The new excel sheets are now divided per supplier and not per component type, which gives the buyers a wider knowledge frame. The buyers’ knowledge about both electronical and mechanical products makes it easier to be back up for each other in cases of sickness or holidays (S. Lindström, personal communication, 2007-11-02).

10.2 Intermediate Goal

The five buyers today have over 100 BOMs (build of materials), over 400 components, over 1700 purchase orders (PO) and over 143 different suppliers to handle during a year. The number of BOMs, components, POs and suppliers will probably increase over the time and therefore is the Procurement and Supply department in great need of an ERP implementation that should shorten the time to handle POs, suppliers and BOMs remarkable. Because of the situation today is a change of the work environment justified. The situation will be worse because the BOMs, POs, components and the number of suppliers are expected to increase at the same time as the risk for mistakes will be more obvious (I. Aouali, personal communication, 2007-09-20).

A solution to the described problem above is to implement one! The system one! will unite all EABs companies to work unified. Unfortunately one! implementation will take place too far into the future and therefore EMP must choose an alternative solution until it is time for the realization of one! A temporary solution to one! is to use the PS module (Project Solutions). This module will replace the work with the excel sheets; hence all work will be included in SAP (I. Aouali, personal communication, 2007-09-20).

10.3 Vision

According to P. Unelind (personal communication, 2007-06-03) the overall purpose with one! is to collect technical pre-requisites and relevant business requirements, functional or legal, on the ERP implementation supporting project procurement processes.

The vision is to unite all units within EAB into one single system; same tasks should have same routines within the organization (figure 8). Because it is one business with one way of working it should have one ERP solution, which resulted in the module one! (J. Löfberg, personal communication, 2007-11-05).
EAB consists of units all around the world. Today they are using different SAP modules in order to perform their tasks. Besides this, new companies will be a part of EAB and they are required to change their systems to SAP's module one! Within EAB are CBS and MUS the modules used at the moment. The market units use the MUS module, which is standard SAP solution. CBS is a solution, which includes more functions than MUS. This module has a lot of adjustments and therefore SAP consultants no longer can help with updates within the module, instead the help must come from the creator of the adjustments in the solution, which can be difficult. CBS has adjustments that make it impossible for EAB to build a new module based on this solution. MUS is a simpler solution than CBS and the new module one! will be based on MUS because this is a standard solution just like one! (J. Löfberg, personal communication, 2007-11-05).

The one! module contributes with a close cooperation across organizations and processes. The one! implementation project also adds an active support from project or process owner, sponsors and focus on migration planning and strategy (P. Unelind, personal communication, 2007-06-03).

10.4 PS Module

The first phase is completed and Procurement and Supply has gone from the first Excel sheet to the new more advanced and effective Excel sheet. The reorganization and the use of the new Excel sheets has also contributed to the fact that the new sheets are working well. By upgrading the Excel sheet an insight of a further improvement has been obvious. The next phase to enter is the PS module “light”. The PS module “light” support functions for purchasing but not for planning of manufacturing (figure 9). To get the PS module fully implemented the functions of product planning and distribution should be included (I. Aouali, personal communication, 2007-09-20).
According to I. Aouali (personal communication, 2007-11-05), who is the coordinator of the project, the implementation of the PS module is an internal improvement project that is run as a side project to one. Because of this the documentation during the pre study and the requirements specification has been insufficient, which leads to problems later on in the implementation according to P. Unelind (personal communication, 2007-10-30).

Figure 10 illustrates the way I. Aouali (personal communication, 2007-09-20) wanted to proceed with the project, including data upload, maintenance, test scenario, pilot and transport before going live.

10.5 Review of the PS Implementation Project

The activities illustrated in figure 10 above, were the supposed way to implement the PS module at Procurement and Supply. The data upload has been executed by reviewing existing Excel sheets and rework of them so it fits the SAP standard. During the maintenance a sanity check is carried out. The test scenario is then followed and includes testing of the process. After the tests the pilot takes place and it is the last chance to make changes before the transport from the test environment to going live (I. Aouali, personal communication, 2007-11-05).
10.5.1 Strategy Used within the PS Implementation Project

The two main implementation strategies presented in chapter 4 are Big Bang and Step-by-Step. As discussed the choice of implementation strategy is depending on a number of factors like the size of the organizations, complexity and resources. A decision to make is whether to adjust the system to the organization or to adjust the organization and the people working within the organization to the system. This choice leads to a system that is standardized or has several adjustments. The choice brings questions to consider about costs and difficulties in updating the system in the future.

The strategy chosen within Procurement and Supply is easy to identify as a Step-by-Step implementation. Often a large organization uses a Step-by-Step strategy, but as the PS implementation only includes the buyers within the Procurement and Supply department a strategy closer to the Big Bang strategy could been chosen. The Big Bang often concern smaller organization, in this case the Big Bang could be useful as it is just a smaller part of the organization that is included. If a pre-study is carried out, as the method (chapter 8) recommends, the Big Bang strategy could be used advantageous in this specific case because the new module could go live and be used at the same time.

10.5.2 Method for an ERP Implementation

Harwood’s (2005) model and the model presented by Computer Sweden (2005) will together become a model suiting the ERP systems implementation in the situation presented in the case study. The model in figure 7 p. 29 together with the checklist presented in appendix 1 is a method for implementation of ERP. The method contributes with helpful guidelines and support for implementation projects in general. A vital factor to extend the model Harwood presented is that the market awareness is pointed out. To succeed must the organization be updated and be aware of what happens on the market. This is a process that should be ongoing throughout the implementation project. Projects often reach at least half a year and the conditions on the market are changing which is a reason to have the market awareness in mind through the project.

10.5.3 How to Use the Method

The presented method in figure 7 p. 29 is a can be used while implementing ERP system. This method should be used together with the manual in appendix 2. The method is general and useful for the most implementations of ERP systems but the check points should be specified to each project. The method is a support to be able to make an implementation of an ERP system.

By adopting this method the project team starts their project with work shops where they together adjust the method to their requirements by specifying the check points in the manual so it fits their project.
10.5.4 Why the Method Suits the PS Module Implementation

The presented method in chapter 8 suits the PS module implementation as it is flexible, easy to use and provides clear check points. The characteristic properties in the method generate flexibility in the way that it is adjustable and fits both big and small implementations. It is also adjustable in the matter of using the necessary activities of the method because there are clear check points for each activity. These check points should be specified to fit the specific project, in this case the PS module implementation. It is important to get a clear picture of what has been done throughout the implementation project and what is left to do. The method helps to keep the project going forward due to the check points that can be followed easily.

A method to execute an ERP implementation project is now suggested, further need a suggestion on how to proceed with the PS implementation project be putted forward, and this will be presented in chapter 10.5.8 Alternatives to Proceed.

10.5.5 Circumstances and Identified Problems

I. Aouali (personal communication, 2007-11-06) has divided the identified problems into four categories; internal, external, system and limitations within the system. Circumstances affect the outcome and Aouali has noticed problems affected by the circumstances that can be included within the four categories.

The internal problem that has been observed is that the buyers have a lack of knowledge about SAP. One external problem is that the project is depending on other external circumstances like consultants, factories and IT services. A problem with the system is that project purchase not is standardized but requires adjustments to fit their operational work. There is limited knowledge which leads to problems with the training in the new system (I. Aouali, personal communication, 2007-11-06).

10.5.6 Risk identification

As mentioned in chapter 6 the risks can be divided into three categorize of risks, technical, business and organizational. Depending on in which state the organization is in the implementation cycle will different risk factors be visible, as are illustrated in figure 12 below.
Risks identified for the PS implementation can be divided into four different kinds, internal, external, system and limitation of the system. Each of these four risks can be reflected in the risk matrix. The system and the limitation of the system can be classified as technical risks. The internal external can be classified into all three categories of risks. The risks that the project coordinator has identified are lack of knowledge among the users, in this case about using the system. Another risk is that wrong people educate the users or that no education at all takes place.

Only two of all the presented risks in the matrix have been identified in the case study by the project coordinator and are lack of knowledge among end users and a lack of proper education. At the moment the project stands still but according to the first published time frame for the project, it should already have gone live. This can be connected to a lack of a proper risk matrix because almost none of the risk in the matrix is considered. As mentioned earlier is the pre-study significant in order to succeed with a project. The risks are a main issue to consider while executing this implementation and this is a reason for the risks to be both identified and putted forward in an early stage. In this particular situation has a pre-study not been carried out and therefore are not the risks identified either. To explain why the situation has become what it is today a number of circumstances that has affected the procedure are discovered and analyzed.

### 10.5.7 Influence

As the situation has faced several problems during the process the project has slowed down remarkable. Discovered circumstances that affected the implementation project of the PS module are for example that the project is considered as a side project to the one implementation. This leads to that not enough resources are allocated and a lack of support from the management. A continuous synchronization between the project coordinator and the head of the department is vital to be executed throughout the whole project. The synchronization is both parties responsibility in order to keep project ongoing and to be able to solve upcoming problems quickly and efficient. To minimize the risks to overlook factors that matter for the project is the best way to execute a project like this in a team and not just having one person in the project responsible for each part. The
benefit of having a project team is that team members that complement each other can be putted together, which leads to discussions and hopefully prevents problems. It is not always that the knowledge is missing but a project team reduces the risks of overlooking eventual problems in an early stage.

The buyers have expressed expectations of what the PS implementation will bring. They hope that it will be easier access to purchase order information, outstanding order reporting, better accuracy on order management, less manual work and opportunity to receive statistics. This input should be taken into consideration by the project coordinator in an early stage of the project. The communication between the project coordinator and the end users are as important as the communication between the head of the department and the project coordinator. The result of the questionnaires shows that the majority of the buyers think that they have a lack of information about the PS module and its benefits.

Insufficient information with the external parties leads to misunderstandings that can change the conditions of the whole project. The changed conditions leads to that the planning of the project no longer can be held. External resources can be unavailable because of misunderstandings from the insufficient communication. This can lead to that certain functions of the final result will not be as planned. All problems that the project runs into have consequences like increased time frames and this leads to increased costs.

10.5.8 Alternatives to Proceed

As the PS implementation project goes slowly forward and the participation level is low something has to be done. It is important to find a way out of all problems and to make the changes that are necessary, a new plan is required.

Figure 13 illustrates a process of how to proceed from today’s situation to be able to finalize the project. All parties that are concerned by the project could join in a project group and together with the project coordinator start a work shop. Hopefully inputs from each member can help the project coordinator to put together a new plan to solve the issues. The new plan should then be presented and supported by the team group. The plan must then be either accepted or rejected by both the members and the head of the department.

Figure 13, Process of creating a new plan
Once the plan is initiated there are two main directions to choose between a totally new plan or to continue on the old plan (see appendix 2). If the process takes the direction of continuing on the old plan there are two different paths to take. The first path is to continue to the next step without any reviews and just follow the first plan. Problems are taken care of as they arise. The second path in this direction is to make a review of processed activities and from there clarify next step and review identified risks and resources. A detailed plan of both responsibilities and the time scales should now be created and presented. It is also important to have continuous meetings so that all members and the head of the department are updated, if that is not possible the information anyhow must reach the concerned parties. Both paths in this direction will then take the same three final steps, test and pilot, transport and go live.

The other direction that is suggested requires a new plan. As illustrated in Appendix 3 there are three different paths within this direction. In one of the paths in this direction the old plan can be used as a base with the possibilities to update this after new conditions and understandings. Shortages should also be reviewed and a plan to avoid and to deal with them should be set. The other two paths are quite similar but have some differences. Both are based on that the need should be updated to fit the new conditions. Pre-study should also be executed and a risks and resources analyzed.

After this activity either an evaluation of a module are carried out or a review of the chosen module take place. All three parts will then join one path, they should have continuous meetings, test and pilot, implementation, training and education, go live and review and finally improvement. The second direction is also supported by the method presented in chapter 8.

10.5.9 Suggestion of how to Proceed

The paths described earlier are those who are possible ways to proceed with the project. Below are the recommended path in this case presented, see figure 14a (compare to appendix 2). As a support a manual of check point in implementing ERP systems has been developed. Originally the manual can be used from the beginning of a new project, but in this case were some work already has been done it is good to use as a complement to easier get on track (appendix 3).

![Diagram](image)

Figure 14a, Overall illustration of the recommended way (for details see appendix 2)

Figure 14b presents the recommended way to proceed and suits the implementation project of the PS module and the procedure in each activity will be described.
Figure 14b, Detailed illustration of the recommended way

As the situation today is not optimal there is a need of taking radical actions. Suggested is that a new plan should be initiated. The conditions have changed and therefore the need has to be updated. Originally there was a need to improve the daily work for the buyers; today they are satisfied with their new way of working. When the project started was the conditions were different, one did not have a start date, PS module were supposed to go live earlier and the questions is if it is still necessary to proceed with the implementation of the PS module. This depends on a number of circumstances like if the PS module can be used direct into and when the go live date for PS module is set. To be able to take a correct decision there has to be reliable answers regarding the compatibility and time frames of the PS module and one.

Once the need is updated and fits the requirements next activity is to make a pre-study or improve the first version. Suggested is to use the pre-study to first define what has been carried out and identify what is left to do. Apart from this it is also recommended to take a look at the composed check list which is presented in appendix 1. The check list is good to use in this case to check if there is anything missing in the pre-study that should be taken care of. It is also important to have opportunities to train and educate the end users. If the resources for training and education not exist in the organization consultants could be a good alternative.

In the process (figure 14b) the risk and resource analysis has been visualized as an own activity because it is vital to put in an extra effort for this activity. The risk and resource analysis is a part of the pre-study as the method in chapter 8 illustrates. The project has already tackled problems that can be derived to poor risk analysis therefore it is important to make a new analysis in order to better avoid new problems. The resources should also be reviewed as the project already is on its way. Resources like how much time is available, budget and knowledge among employees are important to take into account.

To review of choice to proceed is also relevant because there could be unnecessary work executed due to the go live date for one is coming closer.

Because the rest of the steps in the project not have begun the recommendation is to follow the manual of check points that are created on the basis of the method in chapter 8.
Conclusion

The conclusion is the last part of this thesis. It consists of reflections of the result from the theoretical studies and case study.

11 Reflections

The purpose of this study was to integrate model and bring forward a method that could work as a guide while implementing an ERP system. In order to fulfill this purpose two questions were supposed to be answered, which implementation strategy can be used while implementing an ERP system and how an organization could act in order to avoid risks. These two questions will be answered in this chapter. The questions are considered from a theoretical point of view in compare to the case study.

The two main implementation strategies are each other’s opposite, Big Bang and Step-by-Step, and are the basic ideas when it comes to make a choice regarding the implementation strategy. How the organization should act is depending on factors like, the size of the organization, complexity of the project and which resources (time, budget and knowledge) are available. The factors affect whether the ERP system is standardized or requires adjustments. The different implementations strategies fit different situations depending on the size of the organization and its project. A recommendation is to use a standardized system so far as possible, adjustments risk to lead to unexpected increased costs and in the future get problems with complex solutions.

Essential for this case study were the Step-by-Step strategy, which were the main course. Since the implementation project were quite small and did not affect that many within the organization a Big Bang strategy could be used advantageous. More time could be spent in the pre-study phase but in the actual implementation activity it does not have to take to long time.

The method for ERP implementation has been put forward as a support for a new implementation project, update of an existing system or guideline for an ongoing implementation project. In this method are an overall model and a check list included. The check list is general and should be adjusted to each unique situation to give an optimal result. The method contributes with:

- Transparent cooperativeness
- Starting point
- Acts as a planning (deadlines can be added)
- Prevent overlooking important activities
The method that is put forward does not only suit the implementation project in this case study, but could also be adjusted in order to fit other ERP implementation projects.

An ERP implementation project is exposed by several risks and problems. In order to avoid problems and risks a vital activity is to execute a detailed risk analysis in the pre-study. If the pre-study is carried out according to the check list and adjusted to the unique situation is the opportunity to a successful project closer. When creating a risk analysis in a small project group there should be someone outside the group who moderates this, so that they together can go through the risks. It is hard to identify risks that can be derived from the project coordinator. To minimize the risk of problems the risk matrix can be used as a support where the identified risks are visualized that make it easier to avoid them.

The PS implementation project was exposed by several problem, which can be derived from the lack of an risk analysis in the pre-study. Established is that after the pre-study, the feasibility study is a vital activity in order to avoid problems in the future. In the feasibility study should all resources be clarified so that resources are not missing throughout the implementation project. The training activities for the end users should also be established in this phase. This is an activity that has been identified as one of the missing vital parts of the PS implementation project.

If there are too many or big problems during the project, which leads to delays, recommendations are to:

- Take a brake and reflect on how to proceed
- Review the pre-study
- Create a better plan (responsibilities, distribution of work and resources)
- Continuous meetings
- Review choice of vendor/system
- Be aware of changes in the market

Delays of an implementation project can cause different consequences and the extent can vary. The delay of the PS implementation project can cause extensive consequences. The PS module may not be of any interest any longer because the one! implementation go live date is getting closer. Have in mind that the market affect the project and therefore be aware of changes at the market.

Finally have the questions above been answered and the purpose of the study fulfilled. The research gave wanted result and the reader gets the opportunity to accept and adjust the method to their unique situation. The
situation, which the PS implementation project is in today, demands that there is an available support and guidelines on how to proceed.
References

Below are lists of the references that are used during this report

Published Books

Arbnor, I. & Bjerke, B. 1999 Företagsekonomisk metodlära, Lund: Studentlitteratur


Harwood, S. 2003, ERP the Implementation Cycle Great Britain: MPG Books Ltd


Published Articles


Computer Sweden, 2005 May: Atta steg för att införa nya affärssystem, Publication: IDG Communications

Cooke, J. 2005 May: Rätt metod sätter systemet på plats, Publication: Computer Sweden and IDG Communications


Epstein, M. & Buhovac, A. 2006 November Organizational risk reporting for internal and external decision making, Publication: CMA Management


Höij, M. 2005a May: Utbildningen måste följa med bela projektet, Publication: Computer Sweden and IDG Communications

Höij, M. 2005b May: Slaget om framgång står i föreberedelsesfasen, Publication: Computer Sweden and IDG Communications


Larsson, J. 2005 May: Stenas byte blev jobbigare än väntat, Publication: Computer Sweden and IDG Communications

Ljungberg, A. 2002 Process measurement, Lund: Trivector Logiq AB


Wallström, M. 2005a May: Drift och support stora utmaningar, Publication: Computer Sweden and IDG Communications

Wallström, M. 2005b May: Planering viktigt inför uppgraderingar, Publication: Computer Sweden and IDG Communications

Åslund, B. 2005a May: Förstudien spelar en allt viktigare roll, Publication: Computer Sweden and IDG Communications

Åslund, B. 2005b May: En systemleverantör ska kunna branschen, Publication: Computer Sweden and IDG Communications

World Wide Web


# Appendix 1 – Check list for ERP implementation project

## Check list for ERP implementation project

<table>
<thead>
<tr>
<th>Need</th>
<th>Check Point</th>
<th>Status (%)</th>
<th>Completed Date</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify today’s problems</td>
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<tr>
<td>Define why to implement system</td>
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<tr>
<td>Define when to implement system</td>
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<tr>
<td>Define how to implement system</td>
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<tr>
<td>Be updated and aware about the market</td>
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<table>
<thead>
<tr>
<th>Pre-study</th>
<th>Check Point</th>
<th>Status (%)</th>
<th>Completed Date</th>
<th>Comment</th>
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<tbody>
<tr>
<td>Define existing business process</td>
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<tr>
<td>Define future architecture (processes, products, channels, operators)</td>
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<tr>
<td>Define recourses (people, time, money)</td>
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<tr>
<td>Clear objectives</td>
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<tr>
<td>Let the management’s strategically objective be included</td>
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<tr>
<td>Vendor Selection</td>
<td>Completed</td>
<td>Check Point</td>
<td>Status (%)</td>
<td>Completed Date</td>
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<td>-------------------------------------------------------</td>
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<tr>
<td>Elimination of systems</td>
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<tr>
<td>Evaluate the vendor's chance to be successful</td>
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<tr>
<td>Evaluate the system's chance to survive and be successful within the branch</td>
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<tr>
<td>Step</td>
<td>Description</td>
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<tr>
<td>Check if the systems is efficient to use, let the operational employees work with the system</td>
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<tr>
<td>Detailed assessment, and choose 2-5 systems</td>
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<td>Check the system's integration opportunities, there can be hidden costs and unpleasant surprise</td>
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<td>Define solution together with the vendor</td>
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<tr>
<td>Ask the vendor to illustrate live how the system integrate to other systems</td>
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<tr>
<td>Contract negotiation with the best vendors</td>
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<tr>
<td>The vendor must accept the demands</td>
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<tr>
<td>Check vendor's creativity by asking many questions</td>
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<tr>
<td>Contract negotiation about support during and after the implementation</td>
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<tr>
<td>Clarify together with vendor which implementation method to use</td>
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<tr>
<td>Clarify together with vendor time frames and costs</td>
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<tr>
<td>Secure solution with all parties by having clear agreements</td>
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<td>Make final choice</td>
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<tr>
<td><strong>Implementation</strong></td>
<td><strong>Check Point</strong></td>
<td><strong>Status (%)</strong></td>
<td><strong>Completed Date</strong></td>
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<td><strong>Completed</strong></td>
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<tr>
<td>Be updated and aware</td>
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<td>about the market</td>
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</table>

- Project leader put together project team
- Train project team
- Review defined processes and implementation method
- Develop final process
- Establish process documentation
- Establish training material
- Consider what should be achieved and the best way to do this
- Keep the process simple
- Before final test make sure preparation is complete
- Do a simulation (final test pilot)
- Do a follow up of the pilot and do eventual adjustments
- Be completely satisfied with the final test
- Define responsibilities of different tasks
- Make clear documentation (processes, structures, templates)
- Be updated and aware about the market
<table>
<thead>
<tr>
<th>Completed</th>
<th>Check Point</th>
<th>Status (%)</th>
<th>Completed Date</th>
<th>Comment</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Make a budget for the education</td>
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<tr>
<td></td>
<td>Identify the needs of education among the end users and project members</td>
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<td></td>
<td>Make sure that the management communicate why the new ERP system has been implemented</td>
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<td></td>
<td>Use external help for training and education</td>
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<td>Allocate internal education resources</td>
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<td></td>
<td>Make sure that the education include the concerned parties</td>
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<td></td>
<td>Buy a test environment at the same time as the ERP system, for the employee to test</td>
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<td></td>
<td>Include the budget and the time frames in the total implementation costs</td>
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<td></td>
<td>See competence development as a constant ongoing process</td>
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<td></td>
<td>See education as a possibility to succeed and not as a must</td>
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<td></td>
<td>Be updated and aware about the market</td>
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**Go Live & Review**
<table>
<thead>
<tr>
<th>Completed</th>
<th>Check Point</th>
<th>Status (%)</th>
<th>Completed Date</th>
<th>Comment</th>
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<tbody>
<tr>
<td></td>
<td>Provide extra support the first days</td>
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<td></td>
<td>Detect hidden costs</td>
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<td>Use the consultants’ knowledge, not only with the implementation</td>
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<td>Create a help desk</td>
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<td>Have clear defined responsibilities</td>
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<td>Be careful with the support agreement, be aware of when the agreement comes to an end</td>
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<td></td>
<td>Reflect upon the implementation and its process</td>
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<td>Be updated and aware about the market</td>
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<table>
<thead>
<tr>
<th>Improvement</th>
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<th>Comment</th>
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<tbody>
<tr>
<td></td>
<td>Make a continuous improvement program</td>
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<td></td>
<td>See the opportunity to improve the system (be more competitive, lower costs and improve customer satisfaction)</td>
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<td>Define why to upgrade system</td>
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<td>Define when to upgrade system</td>
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<td>Define how to upgrade system</td>
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<td></td>
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Appendix 2 – Process Map of Alternative Ways
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