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Challenges of Deploying an ERP System with Conflicting Implementation Methods

Importance of Bidirectional Communication

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The case company studied in this Master's thesis went through a major reorganization in the company structure. For the reorganization, the case company required tools to run the business for a new company that was to be divided from the original case company. One of the required tools was an enterprise resource planning (ERP) system. This thesis presents the phases of that ERP system project in a project report form, from finding and choosing the service provider, to deploying the new system.

The project was part of a lengthier development entity. This makes the project report also a part of continuum and one cycle of an action research. Firstly, the theory on information technology (IT) projects and different styles of IT project implementations were examined, which formed the data of the existing knowledge. Furthermore, the company's management team and project's core team members were interviewed regularly during the six-month project. In addition, notes were taken of project meetings, and during the actual implementation and testing phase a diary type memo was written daily. These interviews and notes formed the research data for this thesis. Finally, the existing knowledge and the project implementation were analyzed to discover learning points for further projects.

The ERP project was a success when looking at the end result. The new company had a functioning system to run their business operations from the first day of their existence, as planned. However, one common development objective that was stated by all interviewees was communication. In addition, the schedule was agreed to have been challenging and rigid. There was only a three and a half months' period from the signing of the contract to being in production with a functioning system. However, the committed and responsible group of people and their outstanding work morale contributed to getting the required job done on time.

In conclusion, the author raises some learning points from the project, e.g. openness in the project being an important one. Openness is important bidirectionally in three ways; between the case company and the consultant company, between the internal IT team and the project core team, and between the consultant company and the internal IT team. In addition, the interdependent tasks within the project and also around the project could have been taken into consideration more thoroughly when planning the ERP project and the reorganization of the company structure.

Keywords	Information technology project, ERP, agile, waterfall, communication

Contents

1 Introduction

1.1 Background of previous project

The case company, examined in this thesis, is a Finnish family enterprise that has been operating for more than two decades. The case company operates in the financial sector and has different types of products/services. The products that the project in this thesis involves are intangible and operate only online. In the early years the case company had outsourced their IT functions 100 per cent to another small Finnish company. About ten years ago the case company decided to start looking at changing the layout of the IT functions. The original operating system was purpose built for the company and it did everything the case company's core business required initially; had the extranet for the customers, administrative interface for the customer service, the billing and other related services for the financial administration and storage and sales information for the sales. In addition, sales used another Customer Relationship Management (CRM) system for administrating customer relations. The original operating system was used for over a decade and it had been developed in co-operation with the outsourced IT function. However, times changed, customers and employees started wanting something newer, better, a system that would do more, perform more efficiently, be from the 21st century and so on. The company hired a person to investigate possibilities for a new operating system. Two different, already existing, systems were chosen to be integrated with a third, new purpose-built system. The goal became to create one large operating system 'triangle' out of these three. Most of the chosen service providers and their program developers were not aware of the case company's business logics and processes in depth enough to advice on the system architecture. Also, a lot of customizing was required for the chosen bulk systems by the case company to maintain the business processes as they were. All of this led to a very complex system 'triangle' that needed a lot of work to become operational and after the initial deployment to maintain.

Over the years with the previous system project, the case company had become frustrated with the lack of progress and ever-increasing timeline of the project. This led to the company hiring their own system developers and system architects. They wanted to have their own system development team inside the company in order to bring the progress of the project and development processes within the company's control. These

new employees formed an internal IT team for the case company. It was that IT team that brought the system project into production in 2014. After the initial launch of the new triangle of systems, the team continued developing the core system, the systems architecture and the functionalities as the company wanted and the business needed.

1.2 Business problem

The new operating system triangle had been in use for two and half years before the case company's management decided to completely restructure the company and with it change the systems again.

One of the systems in the operating system triangle was approaching the time for a version update. There had been problems with this system from the beginning of the first system project. The system also had a lot of customizations, which would have meant that the update project would be yet another massive system project. There had been a thought of replacing this part of the system triangle to some other system before the decision of restructuring the company. Now there were enough internal and external factors to move the idea of renewing the system architecture forward.

The case company needed to find and choose a new system to take care of financial operations. The schedule was tight since the company was to be divided into three individual companies. For this to happen the new company needed to have an Enterprise Resource Planning (ERP) system to run their daily operations. Consequently, the schedule for the organisational restructuring and system architecture restructuring were the same. Before the project began the goal was to have the entire implementation project completed from announcement of the changes to being in production in less than three months. This schedule was found to be impossible early on and adjusted, but only adding two months.

1.3 Objective and scope

The system project, undertaken by the case company to replace one part of the system triangle, is the focus of this thesis. Therefore, the objective and scope come from this replacement project. The objective of the system project is to be in production within the

planned schedule with one business unit of the case company. Naturally, some modifications will be done to the system once in production. However, from the thesis' point of view it is not important how the system works after it has been successfully integrated and brought into production or how other business units of the case company will do with their own deployment projects later.

The first aim of the project is to find and choose financial management software. The change is from traditional license software to cloud service, which is not the most traditional option in accounting systems. The thesis' discussion has reached the conclusion when the new software is functioning in the production environment.

One large aspect of this thesis will be the communication within the project team and the different cells within that team. At the beginning of the project there are only two companies; the consulting company that sells the cloud service and the case company that buys the sold product/service. When the project finishes, the case company will be divided into three separate companies. These companies will need to work together during the project towards a common goal that will be tangible in the beginning for only one of the three companies.

2 Methods section

This section will introduce the research approach and research design of the thesis. In this section will also be presented the interviewees interviewed for this thesis.

2.1 Research approach

This project was part of a bigger and lengthier development entity. The project followed in this thesis is about one company, out of a group of companies, deploying a software system. Other companies in the group will follow with their deployment projects later. This makes the project a part of a continuum and one cycle of an action research. The thesis can also be seen as an empirical study and a project report.

Because of this, the methods for the study selected are somewhere in between an action research and a design science research. Furthermore, it can also be described as a qualitative, empirical study.

Dresch et al. (2014) argue that the general ideas in management are problem solving, building and designing objects for daily use of the business. They also discuss the concept of design science and state that it dates back to 1969 when Herbert Simon published “The Science of the Artificial”. Romme (2003) and van Aken (2004) outline the mission of design science. They believe that it should develop knowledge for the design. Moreover, that the main idea is to create either something completely new, or a new, improved state of something that already exists. According to Romme (2003) the important question in design science is “Will it work?” on the contrary to “Is it valid or true?”

Vaishnavi and Kuechler (2015) have outlined the process steps of design science research in a model; shown below in Figure 1. Figure 1 displays the flow of knowledge that the design science research accumulates. Due to the knowledge gained after the original problem recognition the process might go back to the beginning with new aspects of the original problem. This also resembles cyclical motion in action research.

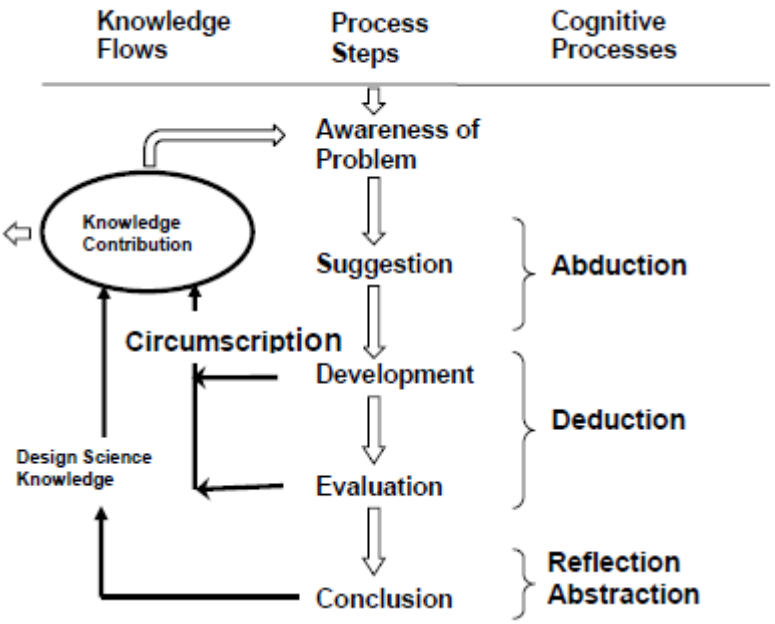

Figure 1. “Cognition in the Design Research Cycle” from Vaishnavi and Kuechler (2015) page 10.

Coughlan and Coghlan (2002) present the four-step chain of events in action research, these consists of; planning, taking action, evaluating the action which then leads to further planning and from there back to the beginning of the cycle.

According to Coughlan and Coghlan (2002) action research also aims at creating knowledge while taking action, experimenting while solving practical problem and involving the researcher itself with other stakeholders of the problem with the research and the action taken as part of the process. Coughlan and Coghlan (2002) indicate action research as having lifelike traits. In comparison to other research approaches, action research is imprecise, uncertain and sometimes unstable.

As mentioned in the beginning of this chapter, this thesis can also be described as a qualitative study. This is because the data collection includes interviews and workshops.

The University of Jyväskylä (2015) describes an empirical study as having tangible research material for the baseline of the process. As stated in the beginning; the main research targets are to find, choose and deploy a financial management software for the case company; therefore, the study is also more empirical than theoretical.

The project is also an experiment in its surroundings; this is the first business unit in the group of companies that will begin the use of a new system that others will also start using later. Therefore, the life cycles of the process as a whole will continue after the thesis comes to an end.

2.2 Interviews

From the beginning of the project, followed in this thesis, there were regular interviews with people involved with the project; Chief Financial Officer, M1, who represented the financial department in the project, Chief Technology Officer, M2, who represented case company's internal IT team in the project, and Chief Digital Officer, M3, who was also the project manager from the case company's side of the project. The consulting company had their own project manager. There were regular one-to-one interviews, lasting in duration from 30 minutes to an hour. In the beginning there were always the same questions asked to the interviewees that were modified during each interview as required. Notes were taken from each interview by the interviewer.

The Change Management Manager joined the project half way, this person was interviewed for the thesis due to the important role in the project and will be designated as M4. The company hired a Finance Business Partner during the project who is designated as M5.

In addition, there are notes from project meetings. As the project proceeded, the pace quickened, more people became involved in the project and as there were important events nearly daily, a diary type of memo was started to be written on a daily basis.

In the end of the project another member, N1, from the internal IT team, in addition to M2, was interviewed. And lastly the consultant company's view is given by their leading consultant, C1.

Table 1. The interviewees

Chief Financial Officer	M1
Chief Technology Officer	M2
Chief Digital Officer	M3
Change Management Manager	M4
Finance Business Partner	M5
IT-team representative	N1
Consultant Company's Leading Consultant	C1

Above, there is a Table 1 that presents all the interviewees interviewed one-to-one for this thesis with the abbreviations used of each person.

2.3 Research design

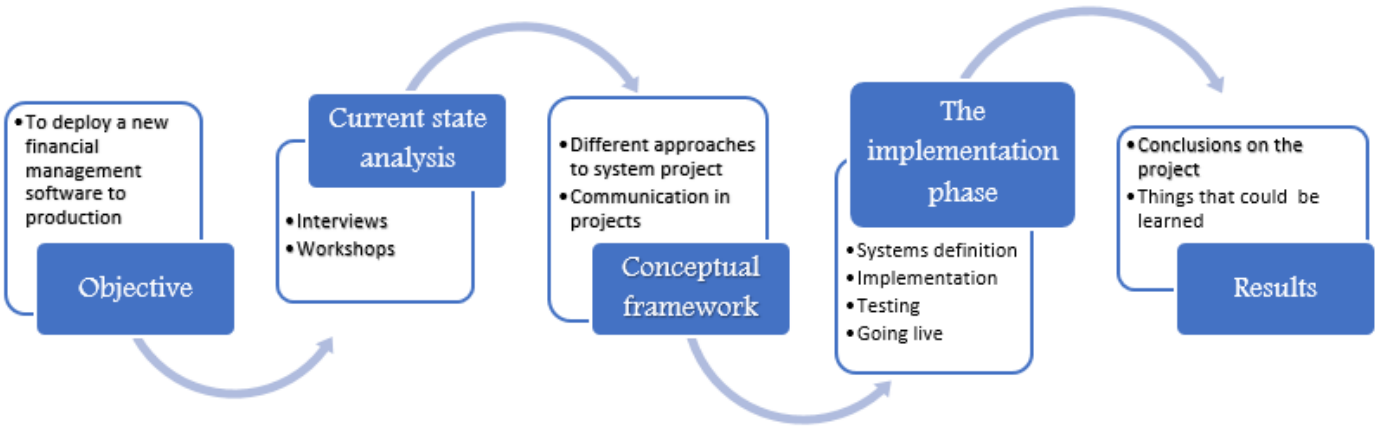

Figure 2. Research design diagram

The above figure, Figure 2, illustrates research design in a process chart. It begins by stating the objective, which in summary, is to reach functional production environment in an ERP system project. The first step is to perform a current state analysis, which is implemented through interviews and workshops. Existing knowledge about different style of implementation in systems projects builds up the conceptual framework. The implementation phase is the project, including the definition, building, testing and finally taking the new system to production use. Finally, at the end of this thesis the learning points will be presented with a comparison between reality and literature and what could have been done differently.

3 Current state analysis

On September 5th, 2016, the management team introduced their restructuring plan of the case company to the employees. One company was to become three separate companies. This arrangement included an ERP project to be implemented within the same timeline as the separation of the companies. The timeline was to be extremely tight, with a thought that everything would be done by the end of that year (M3 19.9.16 & M1 27.9.16).

The following week after the announcement, the project management team met with potential service providers that offered cloud-based ERP systems. In the first meetings the potential providers gave a brief tour of their systems. Due to the tight timeframe there was not enough time to create exact system definitions and extensive use case stories before the final decision of the chosen service provider was to be done (M3 19.9.16).

After the initial meetings with the four potential providers one was eliminated immediately. This was because the business model of this company was based on services and they did not have a system for their customers' use at all. With another potential provider, more thought was put into the elimination decision. However, with this option, there was no need for a second meeting due to several issues. The biggest elimination reason was the outdated technique used in the system this company was selling (M2 21.9.16 & M1 27.9.16).

In the beginning of October 2016, the two service providers that were left, out of the four, showed demonstrations of their systems. The demonstrations were based on one meeting with the project management team prior to the second meeting. In addition to the demonstration, the case company used general information about the service providers that could have been found online and from the company's own webpages. Based on these, the management needed to decide which candidate to begin the actual project with and start working on the requirements. As indicated before, there was not much time for the project. All the managers wanted to be able to make the decision as soon as possible, latest by the end of October. On a larger scale the decision that changes the everyday work for two of the new companies was made in a very short period of time (M3 19.9.16 & M2 21.9.16 & M1 27.9.16).

Even though this project could have been seen as a pilot project from some aspect, it was not one. The case company had real business operations that could not work without a functioning ERP system. In the beginning, only one company out of the group was going to start using the new system. However, the mother company that was left using the old ERP system was going to have their own system project later. Their goal was to be in production by the summer of 2017 (M1 27.9.16 & M3 19.9.16).

3.1 Reasons behind the need for a new ERP system

According to M2, the system that handled the accounting and finance was in a need for an update, as it was at the end of its present versions' lifecycle. With all the modifications made to the system, an updating project would have been massive and expensive. This would have made the project as risky as changing the system to a new one. In addition, both M1 and M2 brought up the issue of ongoing, high expenses of this system. And lastly; the system was rigid and cooperation with the service provider had not been as smooth as initiated years before (M2 21.9.16 & M1 27.9.16).

There was a clear need of finding a facile and more cost-effective solution. The timing for the project came from the board of directors; one single company was to be divided into three separate companies. Two of these companies needed an ERP system daily to run business operations. In order to make the division possible, either the present EPR system needed a new subsidiary and an update project, or the group of companies needed to acquire a new ERP system. With the latter option, the most urgent need was to get the ERP system to production use with the newly formed company. The other company could continue using the old system for a while longer. The option of a new system would be a quicker and an assumedly cheaper solution and the division was to happen as fast as possible. All the above reasons led to the project of finding a replacement for the present ERP system (M2 21.9.16 & M1 27.9.16).

3.2 The new ERP system

In the tight schedule, four system providers were quickly chosen. They were compared with each other and to the present ERP system. Two out of four had tried selling their services before to the company, one was familiar by name and one was a contact through a member of the board of directors of the "mother" company (M1 27.9.16).

The chosen system was wanted be cloud based, easily integrated and have good interfaces. The basic features had to fulfill the basic needs of the company. The possible, minor, deficiencies could be built to the company's own core system by the internal IT team (M2 21.9.16).

It would have been seen as an advantage if the system offered some sort of CRM functionality. For the new company, a lighter CRM tool, compared to the existing one, could

be enough. But the decision on which candidate to choose was not to be made based on CRM functionalities (M2 21.9.16 & M1 27.9.16 & M3 19.9.16).

M1 also raised the issue of limitations on the operations of the businesses: the group of companies was in a need of a system that could handle new type of products easily. With the ERP system that had been in use for couple of years a new product, that did not follow same the use cases and business logics as the existing products, had required laborious projects and even more modifications to the system. This had been a continued problem that was hoped to be eliminated in the future (M1 27.9.16).

4 Conceptual background

This section will go through few different theory's related to information technology (IT) projects. Starting with the concept of information technology project. Subsequently, two different types of approaches, or ways to develop products or systems are presented. Lastly, the chapter concludes with a topic of communication in an IT project.

4.1 Information technology projects

Marchewka (2015) formulates IT projects as being organizational investments; when an organization builds or implements a new IT-based product, service, or solution, it commits time, money, and resources to the project with an expectation of receiving something of value in return.

According to Marchewka (2015) some common attributes that can be given to all projects are:

- Time frame. The project is always temporary, but the product, service or system created by the project can have either a brief or lasting impact.
- Purpose. Projects are undertaken to accomplish or create something, such as, new product, service, system, or an enhancement of an existing product, service, or system.
- Ownership. A project can have many stakeholders that include people, groups, or other organizations that have a vested interest in the project's success or failure.

- Resources. Such as time, money, people, facilities and technology. Although resources provide a means for achieving the project's goal and completing the work, they can be a constraint as most organizational resources are limited.
- Project roles. All projects require people with skill sets that include both technical and nontechnical skills.
- Risks and assumptions. All projects include an element of risk, and some projects entail more risk than others. Assumptions are different forms of risk that are introduced to the project as a result of a forecasts or predictions, for example about schedule and budget.
- Interdependent tasks. The work to deliver a product, service, or system requires many interdependent tasks or activities. Often the delay of one task can affect other subsequent, dependent tasks – This can then result in schedule slippage.
- Organizational change. New products, services, or systems are planned organizational change, which must be understood and managed.
- Organizational environment. Projects operate in an environment larger than the project itself.

According to Forselius et. al. (2009) it is extremely common in an IT project that both the qualitative and quantitative requirements changes, clarifies and gets affixed long after the beginning of the project. If the communication during the project has not been sufficient, at the end of the project it will be noticed how far the desires of the customer and the understanding of the supplier are from each other. No matter what the technology, model or method for the development project the three main challenges are always present, and they are: communication, communication and communication.

4.1.1 Waterfall development method

Marchewka (2015) states that structured approach to systems development has been around since the 1960s and 1970s when large mainframe systems were developed. A computer scientist, Dr. Winston W. Royce (1970), presented models to develop software systems in his paper "Managing the Development of Large Software Systems". This was the origin of the waterfall model, even though Dr. Royce did not use the word waterfall once in his paper. He did present a figure that later, in a simplified form, has been used to graphically present the idea of waterfall method in several publications. In a waterfall

model there is a cascade of activities from one phase to the next, and one phase is completed before the next phase is started, as can be seen in Figure 3.

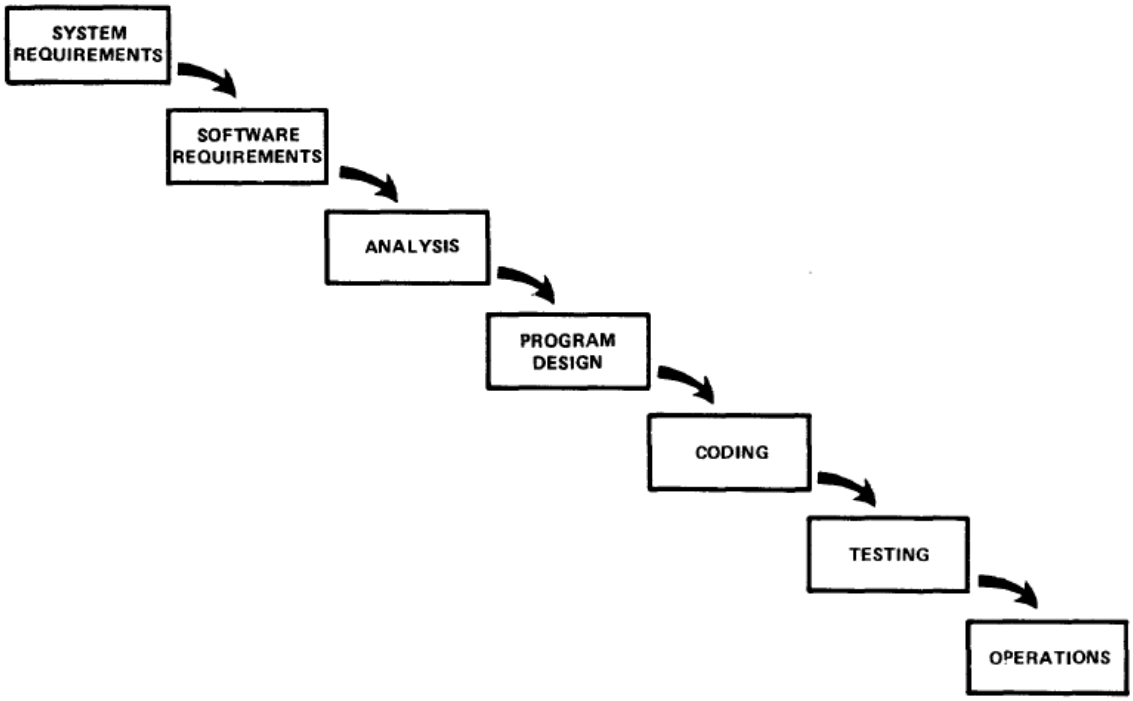

Figure 3. “Implementation steps to develop a large computer program for delivery to a customer” from Royce (1970) page 2.

Marchewka (2015) presents the waterfall methodology as allowing one to plan each phase of a project in detail, so that the schedule and budget can be computed by summing the time and cost estimates for all the tasks defined in each phase. In theory, the project will be completed on time and within budget when each phase is completed according to the estimate. This requires a great deal of time and effort spent in the early phases of the project, getting the requirements and design correct. To add requirements, or to change software that has already been written, adds to the schedule and cost of the project. This risks the end result either not meeting the users’ needs or extending the project schedule. Which subsequently increases the cost of the project significantly.

Royce (1970) argues this method as being risky and inviting failure due to the testing phase occurring at the end of the development cycle. Royce (1970) also reasons that the required design changes are likely to be so disruptive that the software requirements upon which the design is based, and which provides the rationale for everything, are violated. This in turn leads to a need to modify the requirements or make substantial

changes in the design. In his article, Royce (1970) does proposes a more iterative approach to developing systems, having loops going backwards between the different phases. Yet, according to Marchewka (2015) the waterfall method gained popularity as being a logical and systematic process that has appealed to many people.

Marchewka (2015) claims that inexperienced developers often have a false belief that when asking the users what they want, the developers would receive a clear, accurate, and complete set of requirements. The truth is that most users do not know or are unable to articulate their needs early in the project. Even if the users would be able to deliver a flawless set of requirements, they will most likely change later. Furthermore, when using waterfall method, the potential value of the project can only be attained at the end of the project. This is when the system with all its defined requirements is delivered. If an organization runs out of funds halfway through a project delivered with a waterfall method, the software is incomplete and probably unusable. This is because most, or all, of the code has not been written and tested. This leads to the organization receiving no value from its investment, even though half of the budgeted funds has been used.

According to Pries & Quigley (2011) the greatest single benefit of the waterfall method is that it is easy to understand. At its simplest, the implication is that tasks appear and are completed linearly. Unfortunately, understanding this does not always lead itself to ease of implementation. Pries & Quigley (2011) reason that the straight forward model is simply unrealistic. Furthermore, they present a more realistic version of the waterfall approach with loops backwards for the cases where a stage gate in the model cannot be passed and the team must cycle through that phase again. Pries & Quigley (2011) argue that this version of waterfall has similar flaws, for example the schedule can outspread, the planning is often over-optimistic, and the resources are needed to be tied to the project for a longer time than expected.

4.1.2 Agile development methods

The Agile Alliance (2017) introduces the following thought to explain the need for agile methods; the production of a car, electrical appliance, or home after the design is complete are examples of definable work. In these kinds of projects, the processes are usually well understood and there are typically low levels of execution uncertainty and risk. However, new design, problem solving, and not-done-before work is exploratory. These kinds of projects require subject matter experts to collaborate and solve problems to

create a solution. Definable work is being automated more and more. Furthermore, project teams are undertaking more high-uncertainty work projects that have higher rates of change, complexity, and risk. Agile approaches were created to respond to these changes, complexities, and risks.

Cooke (2010) describes the core of agile principles is understanding that change is an inevitable – and essential – part of any business. A markets' needs evolve, project funding gets re-allocated and staff move on. An organization which expects, and embraces change in customer requirements, market demand, supply chain provision and internal resource availability has a significant competitive advantage over a less responsive organization.

Highsmith (2010) explains that agility is no quick solution, and that there are no 'five easy steps' to achieve agility. Nevertheless, most of the literature, presented in this thesis, introduces the Manifesto for Agile Software Development, the complete version can be found from the Appendix. Here are the four concluding sentences:

Individuals and interactions over processes and tools
Working software over comprehensive documentation
Customer collaboration over contract negotiation
Responding to change over following a plan

Smith (2014) goes into detail about the foundation of the Manifesto for Agile Software Development. In February 2001, seventeen software developers convened in Snowbird, Utah, to discuss lightweight software development methods. One of the motivational factors was to find alternatives to the document-driven and process-landed software development that characterized many organizations. The attendees described themselves as organizational anarchists wanting to change the status quo, which had been running software projects using a predictive approach of estimating, designing and implementing.

Smith (2014) explains the first point of the manifesto as being that you must have motivated individuals within the environment they need, in order to be successful. Often a successful environment in agile teams means an open plan lab space to make it convenient for the team to solve problems, brainstorm, and pair program. The process part

can be summarized as not serving a process but making the process serve you. However, there is no one solution that will work in all situations.

Working software over comprehensive documentation according to Canty (2015), means that there is a greater value on the main reason for the project, the working software, which is what the customer is paying for. The documentation is useful in some ways but is merely a bonus which has little or no value by itself.

Moreira (2013) clarifies about the customer collaboration -phrase by allowing the customers' needs to evolve over time through continued collaboration. While there will often be a need to execute a contract, it should not define a static list stating what will be built, but to allow collaboration to evolve the list. It is in human nature to evolve over time, therefore, the assumption should be that the needs of customers will evolve. Because of this, a static list can be outdated fairly quickly.

Highsmith (2010) compares agile and more traditional approaches. He argues that it is not a matter of either/or, but a matter of emphasis, of the primary style. Both agile and traditional managers plan; it is how they view plans that differs. A traditional project manager focuses on following the plan with minimal changes, whereas an agile leader focuses on adapting successfully to inevitable changes. Smith (2014) introduces a quote that characterizes the point of agile: "Everyone has a plan 'til they get punched in the mouth" by Mike Tyson, former boxer and heavyweight champion.

The Agile Alliance (2017) points out that teams can plan and manage projects with clear, stable requirements and clear technical challenges with little difficulty. However, as the technical degree of uncertainty in the project increases, the likelihood of changes, wasted work, and rework also increases, which is costly and time consuming.

Highsmith (2010) also presents a different type of view about the agile approach to software development. The usual constraints in a project are time and cost, this often leaves value as having no meaning at all. Other assumption that can be made is that delivering on scope, schedule, and cost means delivering value. However, studies show that over 50 per cent of software functionalities are rarely or never used. This suggests that the idea of focusing on scope and requirements yields value is mistaken.

Highsmith (2010) gives an example about the dilemma with budget, schedule and value; the movie Titanic was severely over budget and schedule, and at the same time it was also the first movie to generate over one billion dollars in worldwide revenue. However, by common constraint-based project management measures of success, scope, cost, and schedule, Titanic was a failure.

Alternatively, Highsmith (2010) also presents the fact that agile projects can deliver value early and incrementally during the life of the project using iterative development. This means that the developers build a partial version of a product and then expand that version through successive short time periods of development followed by reviews and adaptations.

Canty (2015) highlights that agility is not limited to IT software development. It can also be utilized by individuals who work in innovative industries (e.g. engineering), those who transfer information to others (i.e. teaching). She also states that those whose jobs require that they make changes to technology tend to realize the greatest benefits from agility.

In the next page there is a Table 2, that compares the agile approach to the traditional, waterfall like, perspective from Hüttermann (2012).

Table 2. "Common agile practices and associated misunderstandings" from Hüttermann (2012) pages 38-39.

Practice	Agile approach	From the traditional perspective
Software development	Treats software development as an information process.	Software development is a manufacturing process.
Communication	Encourages and requires continuous interaction and feedback; the whole team is collocated.	Project members focus on their individual tasks first and often rely on documents more than on communication.
Courage	Encourages on open atmosphere.	There's a fear of missed deadlines and misunderstandings with customers.
Collective ownership	Specifies that program code and documents are owned and maintained by the team.	People feel responsible for only their piece of work.
Integration	Uses continuous integration to get early feedback and increase quality.	Integrations are rare, late, and felt to be a waste of time.
Test-driven development	Treats testing as a great value for design, code, and quality.	Tests are considered a waste of time. Many tests are done manually.
Customer involvement	Encourages customer participation.	The customer is often seen as the contracted party.
Refactoring	Accepts temporary suboptimal, pragmatic design; design is maintained and improved continuously.	Errors aren't allowed; created artifacts are supposed to run perfectly at once.
No overtime, sustainable pace	Follows regular working schedules that can be sustained over time.	Regular overtime is necessary to deliver on time while planning aggressively.
Iterations	Slices software into handy and convenient iterations.	No iterations are necessary; the work focuses on a single release, mostly a big bang release.
Stand-up meetings	Institutes daily structured exchanges.	Big, long, infrequent project meetings are used. The allocation of people and amount of time are often excessive.
Documentation	Uses documentation only where necessary, and when it adds value.	Documentation is considered an important artifact, written according to standards. In reality, it's seldom read.
Team	Treats the team as important, as a collection of individuals having their own strengths and characteristics. The team should be cross-functional.	The individual expert is in focus. Work is done in isolated islands of knowledge.
Standards	Uses standards, where necessary, that are understood and agreed on by the team.	The work involves a strict process, with many heavyweight standards, often for the sake of having standards.
Quality	Is inherent in everything the team does.	Quality is the first goal to be skipped when time and money get short.
Change	Considers change as a normal part of project work.	Change is more condemned than encouraged.

4.1.3 Communication in an IT project

Cockburn (2007) presents software development as a cooperative game of communication, implying that the project's rate of progress is linked to how long it takes information to get from one person's mind to another's. For example, if Kim knows something Pat needs, the project's progress depends on how long it takes Pat to discover that Kim knows something useful, and how much energy it costs Pat and Kim together to get the knowledge transferred to Pat.

In Marchewka's Information technology project management: providing measurable organizational value (2015) he presents a publication, originally from 1987, about generally accepted principles and practices of project management. This was called Project Management Body of Knowledge (PMBOK). Project Management Institute (PMI) has released subsequent updated versions of PMBOK guide ever since 1987. PMI is an international, nonprofit, professional organization with more than 700 000 members worldwide. The principles and practices presented are generally accepted but that does not mean that they would work the same way on each project.

The Project Management Institute's (PMI's) Guide to the Project Management Body of Knowledge (PMBOK guide) (2017) introduces the following mechanisms for exchanging information:

- Written form. Either physical or electronic.
- Spoken. Either face-to-face or remote.
- Formal or informal (as in formal papers or social media).
- Through gestures. Tone of voice and facial expressions.
- Through media. Using pictures or actions.
- Choice of words. There can be subtle differences in the meaning of different word and phrases used.

These mechanisms can be used to exchange information, both intended and involuntary. Communication develops the relationships necessary for successful project and program outcomes.

Dow & Taylor (2008) present some of the above communications mechanisms in more detail. For example, communicating in writing can happen by e-mail, formal reports or presentations, an informal memo or instant messaging. Whereas, verbal communication can happen face-to-face or different forms of call, such as telephone call, conference call

or computer call. In addition, for the face-to-face communication there are different variants, for example: presentations, all sorts of meetings, mingling in functions, talking over a coffee and gossiping. Moreover, visual communication includes presentations and different kinds of documents created about the project. One visual adjusting document type is a project calendar. The purpose of a project calendar is to display the major events in the project or affecting the project, such as milestone dates, meeting events, current activities in the project and project member vacations or personal events that would influence the project.

According to the PMBOK guide (2017) misunderstandings in written communication can be reduced, but not eliminated, when using:

- Correct grammar and spelling.
- Concise expression and elimination of excess words.
- Clear purpose and expression directed to the needs of the reader.
- Coherent logical flow of ideas.
- Controlling flow of words and ideas

These points are additionally supported by communication skills that the PMBOK guide (2017) lists as follows:

- Listening actively.
- Awareness of cultural and personal differences.
- Identifying, setting, and managing stakeholder expectations.
- Enhancement of skills of all team members in the following:
    - Persuading a person, a team, or an organization to perform an action;
    - Motivating people and providing encouragement or reassurance;
    - Coaching to improve performance and achieve desired results;
    - Negotiating to achieve mutually acceptable agreements between parties and reduce approval or decision delays; and
    - Resolving conflict to prevent disruptive impacts.

The PMBOK guide (2017) also raises issues, such as political and cultural awareness that effect the communications within a team. Political awareness concerns the recognition of power relationships, both formal and informal, and also the willingness to operate within these structures. It is important to have an understanding of the strategies of the organization, such as knowing who holds the power and influence within it. The cultural

awareness is understanding the differences between individuals, groups, and organizations. This awareness and any consequent actions minimize misunderstanding and miscommunication that may result from cultural differences within the project's stakeholder community.

Marchewka (2015) also discusses the topic of formal and informal organization. He states that in many cases the informal organization bypasses the formal lines of communication and authority. This is because of the inevitable relationships that become established over time in any organization.

Cockburn (2007) compares the flow of information with that of heat and gas, saying that information or energy gets picked up by people within sight or hearing when working physically in the same space. Cockburn (2007) presents three separate effects that office layout has on communication costs within a project:

- The lost-opportunity cost of not asking question
- The overall cost of detecting and transferring information
- The reduction in cost when people discover information in background sounds

According to the PMBOK guide (2017), the communication externally from the project is also an important factor to consider. Furthermore, the information flow between the project team and the stakeholders is important and can be taken care of by ensuring timely and appropriate collection, creation, distribution, storage, retrieval, management, monitoring, and the ultimate disposition of project information.

The PMBOK guide (2017) states that each project is unique, and the project team will need to tailor the communication processes to fit to the project. Here are some issues that could be considered about the communications within a project:

- Stakeholders. Who belongs to the stakeholders of the project?
- Physical location. Where are the members of the project located?
- Communications technology. What technology is available and most appropriate to be used with the project?
- Language. How many and which languages are in use?
- Knowledge management. Is there a formal knowledge management repository, and will it be used?

Lastly, the PMBOK guide (2017) concludes that, the fundamental attributes of effective communication activities and developing effective communication artefacts are:

- Clarity on the purpose of the communication – defining its purpose;
- Understanding as much as possible about the receiver of the communications, meeting needs, and preferences; and
- Monitoring and measuring the effectiveness of the communications.

5 Implementation

This chapter will cover the case company's ERP project. Firstly, it will examine the search and selection process of the service provider. Furthermore, it will go into the systems requirements definition, and then testing and deployment of the chosen system.

5.1 Search for the service provider

The first meeting with a potential service provider was two days after the upcoming changes in the company structure had been announced to the entire company. The changes in the company structures were desired to proceed quickly, however it could not happen without the ERP project being completed first. From all aspects this was a time sensitive project.

During September 2016 the core project team met with four potential service providers. Only two were met with again, and one of these could not fulfill the needs until the next summer. On October 5th the contract of business requirement definition phase was agreed to with the only service provider that seemed somewhat possible in the timeframe given. At this stage the contract did not contain the entire defined project. This was because only two meetings had taken place, there was no way that a comprehensive picture of the project could have been formed by either party. There was no way of knowing so early if the service provider can offer what the customer is expecting.

Out of the four service providers, only one had received a "no" from the case company, and only one had received a contract including the first stage of the potential project. After the definitions would be done with the chosen company, the management team would make the final decision on how to proceed. They wanted to keep their options

open as long as possible, which was why the two other service providers had not yet heard “yes” or “no” at this stage (M1 & M3 14.10.2016 & Comparison Graph).

The cost of only three of the offers had been received since there was one offer that was declined before costs were part of the selection process. The costs varied massively between the three options. The two cheapest ones priced their deployment process under a thousand euros, whereas the most expensive option was closer to 100 000 euros. M3 pointed out that the deployment costs lose their magnitude if, and when, the software is in use on time and is used for years to come. The annual cost to use the different software also varied. The cheapest was a little over a thousand euros whereas the most expensive was close to 30 000 euros. Those amounts differed also on what was included. Some offers priced each transaction separately, having a small amount included in the offered price and the rest of the transactions would be priced on the usage. Pricing based on usage could never have worked with the case company due to a large amount of transactions daily (M1 & M3 14.10.2016 & Comparison Graph).

According to existing contracts with current customers of the case company, the hosting location was not to be outside of European Economic Area (EEA) area, which all the options fulfilled. The interfaces were also an important factor that eliminated some options. In addition, some details in the general business operation model of the case company, which was not a basic model, brought out problems with all the operators. The case company had IT knowhow and its’ internal IT team had worked for a long time with the system architecture to make it possible to change the software structure. They had built some ERP type functions to the core system and cut out some dependencies to the existing ERP system. Since two systems were being integrated together, both ends needed development work. In addition, the case company’s internal IT team was to be in charge of the integration in between. So far it seemed that the software that was in the process of business requirements definitions would require less work from the case company’s side compared to other options. This would mean less time spent by the case company’s internal IT team with the core and more time for the integration, at least in theory. The amount of work is an important factor when making the decision, since time is something the project does not have (M1 & M2 3.10.2016, M1 & M3 14.10.2016 & Comparison Graph).

Unfortunately, there was no possibility for an in-depth comparison of the options at this stage. The risk was being minimized by executing only the requirement phase with the

most potential option at first. The consultants of the service provider were able to answer the case company's questions well and trust was being established as the co-operation moved forward. The management team evaluated the consultant company as being actively involved with the process of defining the requirements and looking for solutions to the problems that had occurred (M1 & M3 14.10.2016).

5.2 Preliminary system definition phase

The time frame in October was that the deployment of the production environment for one of the newly formed companies would be January 1st, 2017. The definitions were taking place in the last weeks of October 2016. The management team saw the schedule as "invalid" and "unimaginable". However, they had decided to voice their concerns later, after the definitions had been done and the possible obstacles in the execution had been reviewed. The management team wanted to know more about the execution for all the companies of the group that would move over to use the possible software, now or later. About ten separate juridical companies in the group would be affected by this new system, two of which needed the software to run the core business daily. In the requirement phase all the companies and their needs were being looked at. Nevertheless, immediately after the decision on which provider to select, the project was going to be focused on the first company that was going to start using the software and will need it for their daily operations. The second company that will make the switch later, will continue with the old system for a little longer (M1 & M3 14.10.2016).

Already during the preliminary system definition phase, and before the final decision had been made, the project team grew. More people became involved in different tasks of the project. Representatives from the IT and business side were added. The extended team met up before the first meeting with the consultant company offering the new system. It was made clear to everyone that the schedule was tight. There would be no room for internal arguments when workshopping together with the consultants. In addition, it was emphasized that this system was not be modified corresponding to all the internal processes of the case company, and that this might lead to internal processes being altered. The emphasis was not to be on *how* the case company had done things before, but on *what* would be required to be done. This was a critical phase for the goal setting; the case company needed to know when it would be realistic to be in production. After the deployment date has been set officially, the case company could not afford to modify the schedule due to the business juridical side of the project. During a certain time frame,

customers with existing contracts needed to be informed, for example about VAT number change. In addition, there were such things as the Finnish Business Information System requiring information about company changes in advance. The amount of work was to be clear for everyone at the end of October. It was needed to be known how much work would be needed in the case company's core system and how much time it would take for the new ERP system to be configured for testing and eventually deployment. All the requirement definitions could not have been completed by the time the decision was to be made. The approach would be to begin with the difficult cases and look for all the possible obstacles that would prevent the deployment all together (M1 & M3 14.10.2016 & Notes from 20.10.2016).

At the start of the preliminary definitions the project was being laid down and looked at together with the participants from the case company and the participants from the consultant company. They discussed for example about following topics: what was the situation in the case company, why there was a second ERP project when the last one has been in production less than three years, where the schedule originated, was there an alternative schedule, what needed to be working by the end of year 2016, if that was the schedule when would the deadline for system testing be. The group agreed that at this stage it was impossible to go through normal business requirements definitions due to the time limits and needed to determine essentials; which modules will be necessary, will there be needs for other detached systems, how much modifications are needed etc. The case company's IT team needed their developers to begin their work as soon as possible and wanted to talk about the use of different environments. In the first meeting also first business use cases were looked at, followed by discussion about the possible solutions for the difficulties found in them (Notes from 21.10.2016).

In the early stages of the process some selling arguments began to actualize in a different way than what was implied. During the negotiations the consultant company had let the case company know how close their headquarters are, few hundred meters away. Already for the second requirement definition session the consultant project group did not show up in person but attended via remote conference tools from couple hundred kilometers away. In this session were handled issues that concerned detailed business use-cases, integration, third party systems that would be connected to the big picture. Questions were set from both ends of the lines and answers were given. Even with the remote set up things were put forward (Notes from 27.10.2016).

After the second definition work shop each party involved with the project had an understanding that the dead line at the end of the year 2016 was not going to be realistic and it was said out loud. In third work shop, on the third of November, the agenda had all the remaining questions especially about the second company that would start using this new software later; would there be any obstacles preventing their deployment from their business use-cases. The final decision had not yet been made, but a new possible schedule was already discussed, including the different stages and amount and type of work that each stage would require. If the contract would be signed by the 15th of November and there would be continuous work done the new deployment date could be first of March 2017 and for the second company the first of May 2017. Both companies shared business use-cases so the work that would be done for the first company would also help the second one, this was the basis for the time estimate. The consultants underlined that this kind of schedule would also be dependent on the case company's resources. Dead line on the first of March 2017 would going to be compact and full of work, there was not going to be time for extra disruption. CRM module was also discussed, and it was said that the case company's new established company would not start using the CRM module on the go live date. Instead, the new company could use the old CRM that would still be in production for the "mother" company. The down side with this kind of arrangement would be that for the new company there would be no integration to the core system anymore after the separation of companies was going to be completed (Notes from 3.11.2016).

It was discussed that the definitions would become more precise in the actual definition phase that was going to last until December 9th. A lot of the business use-cases were to be mutual to both companies that would use the new ERP system with their daily operations, so the definitions were to be done keeping this in mind. After the definition phase was to be complete, the implementation phase was planned to begin, which was scheduled to take four weeks all together. Both the use-case tests and data migration tests were agreed to be needed to begin on mid-January 2017. This schedule would give two weeks' time to test before the final "no-return" decision needed to be made juridically. There was an assumption that the customer data would not have had enough time to corrupt after the last ERP project, which also included a massive master data project. Therefore, the data would not need additional work or clean-up to be migrated to the new system in the condition it was in (Notes from 3.11.2016).

At the end of the last preliminary definition day some general topics were paid attention to, such as test environment; in the original offer there was only three months use of test environment, the case company saw this as too short time. The project was going to be continued with other companies after the first deployment; therefore, three months would not be enough time even for the second company to be in production. Also, schedule, configuration, data migration and amount of data being migrated was discussed as well as implementation of migration testing and user acceptance testing and introduction of the system to the end users. One bigger discussion was about making it clear that the case company would not again be buying tailor-made software just for them, but more like a shelf product that would be configured by adding forms to each customer underneath the top layer of the software. Consequently, when the software will be updated there will not be a need for an update project for the companies using the service. The software has been built to allow this type of configuration keeping the core of software common for all the companies using it. The software's top-layer will be updated twice a year. Before each update, all the customers will have a possibility to test their functionalities, but the assumption will always be that there will be no changes to the users (Notes from 3.11.2016).

Lastly discussed were expenses that had increased from the original workload estimate by 20% during the preliminary definition phase. The consultants explained that there was no one single reason for the increasement. In the beginning the details and needs were not known as well as they were later and for the definition excel documentation every topic gained more rows than originally, which increased the work and consequently the expenses. In addition, the integration had become more detailed than what was originally thought. The consultants did not want to give a workload estimate that they could not stay within. Finally, the pricing model was looked at together, and explained the cost structure of different modules and licenses for the case company's group of companies that would start using the software. After the third preliminary requirement meeting it was agreed that the preliminary business requirements definition phase had been ended (Notes from 3.11.2016).

5.3 The official beginning of the project

This chapter deliberates insights about the offer. In addition, the chapter describes the official beginning of the project that had a goal of having a functional ERP system in use for one company on the first of March 2017.

5.3.1 The offer

The following day from the finish of the preliminary business requirement definitions, the consultant company sent their offer to the case company. On the same day the executive board members gave unofficial comments about continuing with the project and possibly saying no to the other service providers at this stage.

On the 7th of November M1, M3 and the project manager with the sales person from the consultant company went through the offer together. The schedule was to be same as discussed earlier; if the offer would be signed by the 15th of November the go-live date could be 1st of March 2017 for the first company. The test environment had been offered for a year instead of the original three months. The modules were briefly looked at as well as the other detached systems that would be needed. In addition, CRM was also mentioned; the deployment of CRM would not be included in the offer, but on the other hand if the case company could utilize the interface on their own it would be possible to start using the CRM functionalities without the consultant company's input. The case company presented an idea of target-pricing for the deployment project. The case company would agree to pay x amount of the deployment project. And if the project costs would end up being lower than the x, the case company would pay half of the difference, and if the costs would end up growing higher than x, the case company would only pay half of the difference. The consultant company's project manager and sales person were willing to commit to what had been presented. Their goal was also to stay within the given workload estimate, therefore the target-pricing sounded fair. At the end of the meeting the case company asked for draft of the agreement with target-pricing included as well as rough frame of the project plan with resource needs presented; when and how much resources would be expected from the case company. This would be material for the final decision making as well as with the project plan. With the project plan it would be possible to follow that the project would be staying on track and schedule (Notes from 7.11.2016).

The following day, 8th of November the final version of the contract was delivered to the case company. Few meetings inside the case company and one week later it was signed. The actual official first day of the project with singed contract was 17th of November; two and half months after the internal publication of the plans for the new company and about three and half months before deployment date. Of course, the preliminary definitions gave almost a month of head start. Nonetheless, the time frame was still tight.

5.3.2 Getting started

Yet again more people joined the project; one person to coordinate testing and communications inside the case company, Change Management Manager, M4. And another entirely new person to the case company that had joined the financial department as Finance Business Partner, M5, and therefor also the project. Once again, the case company was left assuming that the consultants would physically be present. This time even breakfast was offered by the case company which the consultants were able to enjoy via remote conference tools. The actual project began with a kick-off type meeting where the status of the situation was told to everyone that had joined the project since last meeting together. The consultant company's side had also new people to the project. Not everyone had been along every part of the preliminary phase, and again the project was reviewed together and what had been done so far (Notes from 17.11.2016).

The project from this point onwards mainly concerned only the new company that would be divided from the original case company. In the project team however, there were more people from the original case company involved and a lot of the work was to be done that was going to help with the second deployment project with the "mother" company in the spring 2017. The project was going to continue with creating more exact definitions and actual design for the system. The definitions were to be controlled in an excel format and the processes will be presented in power point. Here again CRM was mentioned by stating that goal would be to deploy the CRM functionalities within the case company's organization. The integration concerning the CRM functionalities would need to be only one direction and the case company's organization had the knowhow within the company, to be able to figure out the basics. If and when help would be required, the case company could arrange time later in the spring for a mini CRM project (Notes from 17.11.2016).

The different phases and big picture with the required tasks were discussed; all the possible changes to business processes and general administration and communication were the case company's responsibility. According to the M3 the technical deployment was going to be a minor issue compared to internal deployment of new tools and processes. For the new company this was not seen such a worrying issue due to small number of employees, of which some had not been involved with the old system (Notes from 17.11.2016).

The planned schedule was looked at together. First the technical requirements were to become more precise, and this was supposed to happen by Christmas 2016. Migrations and master-data related issues were said to be solved by mid-December when person responsible for these issues was going to leave for a longer holiday. Configuration, testing, introduction, migrations, user acceptance testing were all important and were planned to be taking place around the end of January and the beginning of February. By the end of January 2017 there was supposed to be a certainty about the schedule being confirmed to be the 1st of March. In the beginning of February there were couple weeks of time planned to change the responsibility from implementation project to production as well as migration etc. The schedule was still seen tight from the case companies as well as the consultant company's point of view (Notes from 17.11.2016).

In the beginning of the requirements definition phase there were workshops planned together with the consultants and the business representatives to define the preliminary business definitions. During the configuration phase it was said that there will be contact when needed, but no planned time slots in calendar, other than brief status checks weekly. After configuration phase it would be the time for the migration tests, introduction of the system to the key users and user acceptance testing. The case company wanted to be assured that there would be understanding of the status of different modules of the project at all times and that the schedule will not stall. A steering group was nominated for the case company, that consisted of M1, M3 and the new employee that started in the financial department, M5. The first steering group meeting was going to be after the definitions were to be completed in 21.12.2016. M2 was going be along the project whenever needed and help out here and there but mainly be in charge in the internal IT team and lead their work (Notes from 17.11.2016).

Another issue that was discussed in the kick-off meeting was the structure of the test-environment; the case company wanted to make sure it would be similar to production from the case company's organizational structure's point of view. In addition, it was said that testing in the test environment should be as it would be a production environment. Obviously sending e-invoices would not be possible, but to the point where something would leave out of the system, everything was assured to be testable. At this stage it was also pointed out by the consultant company that testing was going to be the best introduction to the system. When doing the user acceptance testing the users will have contact on every function of the system. In addition, it was pointed out that the key-users would be responsible of the introduction of other employees of the case company. The

system that was to be deployed was in use worldwide, and it had their own help functions and huge material bank for the users, but obviously not everything was to be needed by the case company, that was going to deploy only some blocks of the system. The end-user manuals were going to be on the case company's own responsibility. The first task was to find out internally all the stakeholders who should know that certain elements would be changed and find out possible external parties that would be affected. One task was to find out potential risks; what can prevent the success of the project. As well as, what were the most important goals and what could come in the way of reaching the goals, what were the most critical issues to look after. The project documentation was to be in a cloud and in order to have all documents in the cloud e-mailing was to be avoided. The case company stated that for the actual definition workshops the consultants were to be physically present, adding that the project manager could attend via remote conference tools if presence was to be needed. For testing phase the communication was agreed to be immediate in case of a bug that would prevent the testing, other flaws were to be reported by the end of each day with the test excel. There was no ticketing system in use between the case company and the consultant company to report the errors in the beginning of the project. Because case company's responsibility was to make their data migratable to the new system the case company demanded on getting the scripts by the beginning of December so that their IT team could move forward with their tasks. From this meeting onwards, the case company started using an application to keep track of each project team member's time usage; everyone was meant to log their hours spent on the project to an application to be able to know how much time was used for the project. Last thing addressed on this meeting was that the communication about the project is only internal, externally this ERP project was not to be mentioned because it would not affect the customers. Other changes that were going to be visible to the customers due to the changes in the business structure would be another issue and communicated through different channels (Notes from 17.11.2016).

5.4 Accepting the definitions

The first actual definition work shop on the 21st of November was not very structured. Present were altogether 10 people out of which one joined via remote conference tools. The two consultants had not prepared themselves nor had they given any preliminary questions to the case company which was mentioned about before. The topics jumped illogically from one to another and a lot of people did not understand why they were

present at all. The case company's project manager, M3, gave feedback to the consultant company the next day. Case company's Chief Technology Officer, M2, was only worried that the consultant company was going to start using too much time with such issues that were not within the scope of the first implementation project but concerned the other company that would implement the system later. M2 also underlined the importance of the case company's IT department getting access to the new systems development and testing environments in order to get the case company's parts of the project moving (Notes from 21.11.2016, M2 22.11.2016 & M3 22.11.2016).

After the first work shop there were three definitions workshops more, which went better than the first one. Communication also continued outside of the workshops back and forth. 15th of December the consultant company suggested on postponing the steering group meeting that was scheduled on the 21st of December because the definitions were not looking like they would be ready by that date. The case company did not accept the suggestion due to the fact that the Chief Financial Officer, M1, was to be on a holiday the following week and everything had to be done by the 16th of December that required the input of M1. The consultant company prioritized the work so that they could deliver a package to M1 by the end of that day (Notes 16.12.2016).

The scheduled steering group meeting was held on 21.12.2016. The planned agenda was to sum up the defined definitions, agree together that situation was what it was supposed to be like, and the project was in condition to go forward to the next phase, which was configuration, development and testing phase. The situation was that some parts of the definitions were not completed. It was agreed that the documents that could not have been delivered would be sent to the case company by the following day. Another unplanned topic was the increased amount of work. According to the consultant company this was due to issues that came up during the actual definition phase that were not identified in the preliminary definition phase. The extra amount of work would be confirmed by members of the steering group after it would be agreed on how to implement the new added features. The result of this steering group was that the case company accepted what had been delivered so far and it was enough for deciding that the project can proceed to the next phase. Furthermore, an additional steering group meeting was calendared to the end of January 2017 to affirm that the go-live date would be accomplished as planned (Meeting memo 21.12.2016).

5.5 Project status

After the definitions had been accepted all the managers were interviewed one-to-one on what kind of outlook each had on the status and situation of the project. In the last week of December was also held a meeting in the case company's project group to sum up the situation and to look together what could be expected to happen during January.

5.5.1 Chief Digital Officer M3

M3 felt good about the project after the steering group where definitions were accepted. Few days of delay would not affect radically to the project and the reasons behind the delay was caused by the case company as well as certain issues that came about during the definition phase. The status was what it was supposed to be like at this stage and budget looked good. M3 also praised the consultant that worked on the project being straight forward and honest. So far everything was looking good. However, during the last trimester of the project there might come some problems to overcome. The first migration of data will be the first moment of truth and when the testing will begin that will also be an important phase of the project. Until this point M3 would not have changed anything that had been done (M3 22.12.2016).

According to M3 surprises will come for sure, there are no projects such as the current one that would not have surprises. M3 had a strong belief that there would not be surprises that could move the schedule of the project. Everything had been noted as well as possible. This had been easier than normally due to the previous system project not being that far away in the past and project team members being experienced in such projects. The consulting company had also noted that the case company had been able to describe their needs and business use cases exceptionally and in detail (M3 22.12.2016).

The biggest uncertainty had been in the resourcing; the consultant company's project manager had been quite invisible and during December also sick for couple of weeks. This led the main consultant having to work as the project management and working with the implementation. The schedule for the project had been strict from the beginning but during the definition process it was proven to be realistic (M3 22.12.2016).

5.5.2 Chief Technology Officer M2

M2 laughed nervously for the question “what your feelings at this stage of the project are”. M2 continued by saying that it had been a good thing that the case company’s internal IT team had been able to work independently using internet as their source for information, since the software is global. Some special cases were and would be needed to be solved with the consultant company. M2 added that hopefully the project would start to go forward when the consultant company gets to start working on the configurations (M2 22.12.2016).

M2 had not read the definitions, nor been involved in creating them. M2 sees that the definitions were created by talking through issues and could not tell if they gave any value to anyone. It would have been much more efficient to go through cases with concrete software open on the side. Now the workshops had no context. Software can not be changed, certain things can be configured, but the people that were in the workshops had never seen the software when they were talking about the definitions with the consultant company. On the other side M2 was confident that there will not be any insurmountable obstacles and all the problems that will come about can be solved (M2 22.12.2016).

The biggest uncertainty for M2 at this stage was that the project was focusing too much on the case company’s problems that have to do with the second implementation project not to the new company that will start using the software first. Some processes were being held the same as they have been before and not looked at globally acceptable ways of operating to keep the software simpler. On the other hand, the software itself had some strange requirements that did not fit to the case company as they were, or the software was lacking some functionality, but according to M2 everything can be worked around (M2 22.12.2016).

M2 would have done the definitions differently; it was not a good idea to start conversations from scratch, but to have the actual software open and use it as the base line. When talking about the processes as they have always been done, the needs can easily shape to a way that would not be logical to the software. Furthermore, the group was too large, three people would have been enough, and then change the people according to subject (M2 22.12.2016).

M2 raised the same issue as M3 about the consultant company's project manager being invisible. M2 also pointed out that again case company bought something that was not true. The case company is small and works in agile ways, has done projects previously physically side by side with the other party of a project and that idea was also sold for this project. Reality was that the consultants work hundreds of kilometers away and prefer working from distance. It appeared to be very traditional project organization where a big project is drawn to paper and then the papers are reviewed together in meetings (M2 22.12.2016).

All in all, M2 was still very confident about the end result. If and when during testing, the case company would notice that something was missing a lot can still be added and fixed so that everything will be ok by the end of February 2017 (M2 22.12.2016).

5.5.3 Change Management Manager M4

M4 had conflicting feelings about the current state of the project. M4 had created own project management lists and action lists even though M4 did want to trust the consultant company and their project management. At the same time M4 was not 100 per cent sure that everything was under control. Even in the project schedule excel everything was not green at the moment of the interview, which backed the feelings that not everything had been taken under consideration. Furthermore, the case company's internal IT team's work had not been transparent, but M4 believed that M2 had the situation under control (M4 20.12.2016).

The biggest concerns M4 had, were to do with the case company's second implementation project, not the one that was going to go live first. M4 was not going to be working with the new company that will start its' operations on the 1st of March but stay with the "mother" company. If something could be changed M4 would have wanted to be in the project team earlier to have better understanding of the project as a whole (M4 20.12.2016).

M4 was also having same thoughts as M2 and M3 about the consultant company's project management role being minimal but also stated that every individual in the project carried responsibility of the success. Other worrying issues included the data migration and understanding the project as a whole; certain topics have been discussed through only in small, individual pieces and those conversations might have lacked the different

dependencies functionalities have. M4 awaits the mid-January with excitement to see how migrations succeed (M4 20.12.2016).

5.5.4 Chief Financial Officer M1

M1 had a feeling that the project will succeed but at the same time wondered how much issues and functionalities there were that have not been discussed and that the case company has taken for granted but should not have. These will come out when the case company will see the software and gets to test the functionalities. This kind of situation must be accepted with the schedule the project had (M1 28.12.2016).

With the given time frame M1 would not have done anything differently, if there would have been more time M1 would have asked more questions, wanted to see how things actually work in the environment etc. As M4 also M1 was more concerned of the case company's second implementation project, not the one that was going to go live first. M1 does not work in either of the companies that will use the software in their daily operations but in a third juridical company that has strong relations with the case company that will divide into three (M1 28.12.2016).

All the interviewed managers M1 included mentioned the absence of project management from consultant company's side. Consultant company has had a project manager from the beginning but also M1 commented the subject as not understanding the role of the counter party's project management (M1 28.12.2016).

5.5.5 Case company's internal status meeting

At the end of year 2016 case company had an internal status meeting on where they looked at what will happen during January and what is the situation currently. In the next page there is a graph, Figure 4, of January 2017 based on what the case company expected to happen and when (Notes from 28.12.2016).

Figure 4. Plan of January 2017

According to the plan the first migration practices would have happened in the second week of January. Only one full week after the status meeting.

5.6 Implementation and Testing

These two paragraphs are joint together since these two parts of the project were also done together more than separately. The implementation took longer than expected and overlapped with testing, also pushing the testing period to start weeks later than planned. This of course had effects on the testing time line since the go-live date was not going to be pushed further.

5.6.1 January

In the beginning of January, the case company's project team had a little break from the project, some were on holiday and all had other work outside of the project to take care of. By beginning of January's second week, the project team assumed the configuration work would be done to the point so that the migration could be tested during week 2. This did not happen.

Instead on the 9th of January there was a meeting about the user roles in the system. In this meeting again CRM was brought up to discussion as stating that the bought license includes the use of CRM. Any work was not included in the current project but if the case company can start using the functionalities on their own there would be nothing that would prevent that (Notes from 9.1.2017).

Another topic addressed was the current amount of user licenses, which would not be enough for the case company. All the user licenses were attached to username, so 10 users did not mean 10 people using the software at a time, but 10 named users that were able use the software with their username. The consultant company proposed that case company could buy more user licenses at the same price as the existing one's have been bought. The different types of user levels were discussed as well as other general user role matters. The consultant company also expressed that for the user acceptance testing there would not be migrated any data, but at the end of that week the test cases would needed to be created manually to the test environment by the cases company (Notes from 9.1.2017).

On the same day as the meeting, was a phone call with M5. On the phone call it became certain that data migration through integration would not happen as planned. Only small selection of customer data would be pushed through the integration and possibly no event data. M5 was brief and only said that the situation was a bit unclear at the moment (Phone call 9.1.2017).

Later in March there was an interview with the project's leading consultant (C1) from the consultant company. In the interview likewise January's second week was discussed. C1 defended by saying that the final definitions were in reality finished on the second week of January, the definitions that were accepted on the 21st of December. Even though the configuration job had begun during the definition phase, by the time the definitions were completed the schedule was behind the plan. Furthermore, the Holidays with Christmas and New Year and vacations of project team members messed the plans. All this started a domino effect and even tighter race with time (C1 24.3.2017).

During the second week of January when there was no testing of data and user rights as planned, the project team in the case company planned the schedule for the go live day and listed things that needed to be taken into consideration with the separation of the companies. On the 11th of January the project team still were in the belief that week

three would begin with training of the system by the consultant company. And that each process would be gone through together and then tested, and after testing if necessary there would be time to fix the problems found. It was said that during week four it would be possible to start end-to-end testing. This thought changed again by the end of week two (Notes from 11.1.2017).

Throughout January the use of different environments; testing environment, development environment and production environment were discussed several times. The case company had needs to test migration which needed one environment and another environment for the user acceptance testing. The thought was to use both testing environment and development environment to use the time efficiently because the migration testing could not happen from week two onwards as planned. The confusion was on which environment would be used for what purpose. This topic was raised repeatedly, and the decision was changed often based on who was present in the meeting. On the second of February a meeting was held with all the stakeholders present. For the first time the consultant company said that all the testing should be done in only in testing environment. During the meeting compromise was agreed so that some small migration testing can be done in development environment before the user acceptance tests are finished (Notes from and 2.2.2017 and January 2017)

In the interview with C1 in March also confusion with the environments was discussed. C1 stated that the consultant company had no idea that the case company wanted to test in two different environments and had not prepared the environments for that (C1 24.3.2017).

On the 13th of January when the case company was supposed to create the test cases to the test environment manually, nothing worked properly; the people that were present did not have user rights to the software, the integrations between case company's core system and the new system were not on. The case company's end had plenty of bugs which prevented the creation of new use cases. All in all, the first day of testing was unfortunate and unproductive (Notes from 13.1.2017).

On the 18th of January was the first training by the consultant company, only two days later than originally planned. Before this, some use cases were successfully created, but the testing environment was still not complete. The consultant company had failed to deliver their work in time to the case company's IT team, which had caused the case

company's IT ream to have zero time to work on their end. Furthermore, the user role problem reflected to the training day as well since both case company's internal IT and the consultant company needed access as well as people present in the training. The 10 existing roles run out. During the same morning other similar issues emerged, where the message had not reached the correct recipient (Notes from 18.1.2017).

The second day of training was held on the 20th of January. By then the user role problems had been solved. Again, new matters were discussed that were caused by communication not working to all parties. Three main "teams" being the consultant company, the case company's project core team and the case company's internal IT team that had wanted to stay out of the project core team. The core team included a little bit different assembly on different occasions, the people varying in this group were M4, M5, representative from the new company and M1 (Notes from 20.1.2017).

During the third week of January the project core team was trying to test as much as possible and report the findings to the internal IT team with a ticketing system as had been agreed. Already in the beginning of week four the internal IT team wanted to have the information of the bugs in some other way than tickets in the ticketing system, which the case company had used even before this project when communicating with IT team. An excel format was agreed to be used internally to report the bugs. In addition, it was stated that the integrations are not working as meant to and should not be tested at all for the time being. Another surprising information brought up, was that some functionalities would be built in the case company's end only during February and necessarily not everything would be built at all (Notes from 23.1.2017).

Since the consultant company's schedules had been delayed it had not given any time for the case company's IT team to work their end of the integration. The internal development work was wanted to get under control, therefore the last week of January was given for the IT team to fix their end of the environment. It was implied that testing in the other end could be continued. But in the Monday afternoon the testing was suspended altogether (Notes from 23.1.2017).

On Tuesday the Change Management Manager went through the bug tickets with the internal IT team. It was agreed that by Friday 27th of January they would release a package of fixes that would make it possible to test with integration on. On the same day there

was also a meeting with the consultant company, where bug tickets were looked at together. There were several functionalities that did not work for the time being, and there was no possibility to test anything. Before the following week there was no opportunity to have end-users testing the systems at all. In a week from this there was going to be a steering group meeting where the go live date for 1st of March was supposed to be locked and by then there was meant to be certainty that the integration would be functional (Notes from 24.1.2017).

In Tuesday's Daily meeting with the project managers and core project team the consultant company's project manager warned ahead about the following day's introduction session; everything will not be perfect since so many things are still unfinished. Despite the incompleteness the training will not be cancelled, and it was agreed that the case company will meet up with the consultants the following day at 10 am (Notes from 24.1.2017).

The Tuesday's Daily meeting continued within the case company's core project team. The Change Management Manager (M4) was concerned about the user acceptance testing that had not even begun yet. The Project Manager (M3) accepted stretching the schedule for user acceptance testing from 10th of February onwards but the deployment date could be changed. The project team was also concerned of communication between them and the internal IT team; M3 said that it has been agreed to give them space to work in peace. M4 had an understanding that the work with the IT team would be more interactive, however the situation has been quite diverged (Notes from 24.1.2017).

On Wednesday 25th of January was the third training/introduction day to the system. A lot of different features and processes were looked at together and, on the side, what was possible was also tested (Notes from 25.1.2017).

During the day the project core team with some of the end users were in the introduction session, the IT team finished with their work and got to release some fixed features and integration. The following day; 26th of January M4 and M5 tested the integration and got the critical information through the integration successfully. They also combined new package to the IT team of issues that still needed corrections (Notes from 26.1.2017).

On the last Friday of January, the 27th, the project core team wrote some instructions down together while testing. The testing was very slow. For the first-time processes almost worked end-to-end between different systems. Some errors and set-backs did still occur but nothing as dramatic as before. New list of bugs that still needed to be fixed was delivered to the IT team and the consultant company had few tickets open. The schedule for following week was unclear, there were lots of things including performance capacity testing and data migration that hadn't even started yet, so everyone agreed on having a meeting with the project core team, the consultant company and IT team on Monday morning. During the following week the month was going to change to February and the new schedule for the user acceptance testing was that it should begin on the 2nd of February. Before that, there would still be a lot of work to be done (Notes from 27.1.2017).

On Monday the 30th of January there was some testing done. It turned out to be difficult due to the fixes done to the environments. All the use cases were broken, which was not expected nor informed to the project core team. Again, the uncertainty between the case company's core project team and IT team came forth. The Change Management Manager was not aware of the roles inside the IT team and how to communicate with them. There was no-one present in the daily meetings with the consultant company from the IT team. On this Monday it became clear that the project team was in different understanding with the IT team on what the IT team is going to build to the core system. It was a surprise for everyone in the case company's project team that they needed to start negotiating with their internal IT team on each feature, even though in the beginning it was said that everything that would not work in the new system can be built to the core system of the case company. There was no organized co-working between the case company's core team and the IT team and it did not seem like they were working together in the same company with the same project. To say the least the communication had started to become inflamed (Notes from 30.1.2017).

In the steering group meeting on that Monday the steering group went through the current situation. Even though some parts of the schedule were three weeks behind from the original schedule the steering group did not recognize any uncontrollable risks that would change the planned go live date from first of March 2017. The very last "go or no go" check point would be on the last steering group meeting on the 21st of February (Meeting memo 30.1.2017 & Notes from 31.1.2017).

On the following Tuesday the project core team continued use case testing with a smaller group. There was an ugly conversation between the project core team and the IT team about over five years old functionalities and definitions. One concern was common for all and that was the migration testing, that had still not yet begun. Once more, the difference between different environments was discussed. It is still not clear to all parties what will be tested in which environment and when (Notes from 31.1.2017).

	MAANANTAI	TIISTAI	KESKIVIIKKO	TORSTAI	PERJANTAI
VIIKKO 52	26. joulu	27	28 Case company's internal status meeting	29	30
VIIKKO 1	2	3	4	5	6
VIIKKO 2	9 User role meeting	10 Definitions done during this week	11	12	13 Unproductive attempt to create use cases
VIIKKO 3	16 Creating use cases to test environment	17	18 First introduction to the system & testing	19 Fixing the systems and the user roles & testing	20 Second day of introduction to the system & testing
VIIKKO 4	23 IT bug excel to use All testing suspended	24 Chat with IT team & project managers	25 Third introduction to the system	26 Testing with a small group	27 Writing down instructions & testing
VIIKKO 5	30 Steering group meeting Testing	31 Testing & disagreements with IT team	**1. helmi**	2	3

Figure 5. January

Above a Figure 5, that demonstrations what happened during January. It is very different to the representation of what was the plan for January.

5.6.2 February

February's schedule was never looked beforehand together with the project core group within the case company like January was. In the original plan February was supposed to be time for fine tuning and hand-over from the project to production. User acceptance testing was supposed to be mostly done by the end of January with one week of additional time from the beginning of February. As can be read from above, this was not the case when January came to an end.

In the beginning of February one member of the case company's internal IT team came back from a longer holiday and was surprised that no migration tests had been executed in mid-January as was planned. The IT team mentioned during this conversation that on the 17th of January (one day before the first training by the consultant company) they received message that certain fixes concerning the migration were then done and the IT team could begin their work. This was over a week after the migration tests were supposed to begin. The work was in standstill for over two weeks in the IT team's end when they were waiting for the consultant company to get their end done (Notes from 2.2.2017).

There was over 200 000 lines of transaction data to be migrated. The entire amount of data has not been transferred once ever, it was still unclear which environment to use for testing and would it be possible to start over without having to build everything manually from scratch after each practice run. The project core team wanted to know when they could start examining the results of the migration, but it kept staying unclear on what environment to even use for the migration testing (Notes from 2.2.2017).

In the afternoon 2nd of February there was a meeting where present were both the internal IT team and the consultant company. Each party presented their ideas on what they thought they would do, when and in which environment regarding use case- and migration testing. The same conversation continued in the project daily meeting in the end of the day. It was still unclear how all the testing could be done on time with the new information that in reality there was only one environment in use for both use case testing and migration testing, when both were already behind schedule. The consultant company had informed one day before this meeting that the test environment was finally ready and now they announced that the use case tests should be done by the end of the week, which was the following day. The case company knew the schedule was critically behind and thought they could perform use case testing in one environment and migration testing in another, which according to the consultant company was not possible (Notes from 2.2.2017).

The environment discussion continued again the next day, which was Friday. In the morning the case company internally concluded that the following week will be only user acceptance testing and hopefully everything would be ready by the next Friday. Then the test environment could be prepared during weekend for the migration tests. Later during the same day in a meeting with the consultant company the plan changed yet

again. The project manager from the consultant company said that the preparation of the environment for the migration tests requires manual labor, and if the user acceptance tests are ready on the following Friday the consultants will start their work on the next Monday. In the same meeting was also discussed what data will not be migrated and needs to be transferred manually to new environments. Financial business partner, M5, highlighted that the schedule leaned on a presumption that in addition to the testing, also all the found bugs will be fixed by the end of next week (Notes from 3.2.2017).

Due to the organizational changes in the case company, Monday 6th of February was a moving day. People from two companies that will be separated from the "mother" company in the 1st of March moved to their new offices. Tuesday 7th of February was the first day of user acceptance testing. Testing came to standstill often, due to bugs. The internal IT team ended up working simultaneously on fixing bugs found in the user acceptance testing while preparing for the migration testing, this seemed to make the tightened atmosphere even more intense within the case company. On this day the case company's project manager agreed that there should be a daily meeting with the IT team to have better understanding on workload and situation. The project manager also underlined how there was no possibility, for the projects' success' sake, to lengthen the user acceptance testing period. The migration tests must begin the following week. The communication methods between the case company's project core team and the IT team were mainly email and instant messaging, this caused a lot of misunderstandings on what the actual problems in testing were (Notes from 7.2.2017).

On Wednesday the 8th of February there was a meeting internally within the case company's different functions about migration. In this meeting several issues seemed to be unclear and people had different understanding on what data was going to be migrated and in what form. There was a long conversation on the topic and as a result another meeting with the consultant company was decided to be held. There was also another meeting concerning the user acceptance testing, which had resulted a long list of bugs to be fixed for both the case company's internal IT team and the consultant company. There was no time for regression testing and in general with the time left, the testing will not be all-inclusive. The project core team commented that the testing felt more like technical testing than user acceptance testing. The testing was quite bouncy due to several functionalities being tested at once and a lot of bugs being found. A result of this meeting was that the testing schedule was decided to be pushed to following Wednesday the 15th of February (Notes from 8.2.2017).

The following day the atmosphere grew even more intense. The project core team inquired from the internal IT team who was their project manager. The reply was that there was no project manager among the IT team. They did not seem to be stressed about the project one bit, which added to the irritation within the case company's project team. This day's testing issue became absence of documented mapping on which information from core system was supposed to flow to which field in the new ERP (Notes from 9.2.2017).

During the evening of Thursday and morning of Friday e-mails were sent back and forth inside the case company's different functions, which cleared the air in a good way. In the afternoon there was a meeting with the consultant company's project manager where the amount of errors preventing the deployment was discussed. There were still obstacles in both ends of the integration on that Friday. The situation was discussed in larger scale as well, the integration kept changing due to the fixes that were being made due to the bugs that were found during testing. The actual end users had not been part of the testing as much as was originally planned since the nature of the testing had been more technical testing than user acceptance testing. The consultant company's project manager defended the situation by stating that the implementation has been far more challenging than what was expected and therefore enormously late. With one-month extra time they would have had time to test themselves and the quality would be better, also the definitions had kept on changing until February, when they were supposed to be done by the end of December (Notes from 10.2.2017).

On that Friday a steering group meeting was held as planned. The original agenda was to approve the implemented project and proceed to deployment preparation. This could not have been done since the implementation part was not yet in a condition to be approved as completed. Also, in this meeting came up that the project had been more challenging than what was expected, functionalities and integration had needed a lot of changes and adjustments, the functionalities that had been developed under time pressure had needed more fixing than what was assumed. In addition, the workload estimate had increased due to the extra work listed before. The case company did not approve the work as completed but believed that it was in a convincing state to be finished on time. The decision of the steering group meeting was that the project would continue onwards with the original schedule having the project in production 1st of March 2017. Also, an additional steering group meeting was decided to be held in the following week, Wednesday the 15th of February (Steering group meeting memo 10.2.2017).

During the weekend 11th to 12th of February the project core team was doing use case testing. Monday 13th of February there were few status meetings, but the day was spent mostly on fixing the bugs that were found during weekend's testing (Notes from 11.-12.2.2017 & Notes from 13.2.2017).

Tuesday began with heated conversation inside the case company's different organizations. The roles of people were still unclear, which was the origin of the days dispute. In the afternoon's daily the situation started to calm down (Notes from 14.2.2017).

By the additional steering group meeting, on the 15th of February, most of the unfinished issues were done. Four cases would be fixed before the deployment and a list of little over ten issues was agreed to be dealt with later in March. Also, budget was discussed. The reasons behind the increased workload from the original estimate was discussed in the previous steering group meeting. The effect in the budget with the agreed 50/50 model ends up being little over seven per cent. It was also written down that the agreed 50/50 model will not be included as a default in future assignments between the case company and the consultant company (Meeting memo 15.2.2017).

The rest of the week seven was spent with migration testing. During the weekend the consultant company had done their part of the data migration so that everything was ready for the following Monday morning (Notes from 17.2.2017 & Note from 20.2.2017).

Monday 20th of February began with a status meeting on migration tests. The results were being examined and in the afternoon it was decided that the examination of the results would continue on Tuesday. Some critical use case tests could be done on Wednesday and by the end of Wednesday the test environment was planned to be emptied to run the migration tests again. During this Monday some members from the case company found out that the main consultant from the consultant company will be on a holiday the entire week. In addition, the confusion on responsibilities within the project continued (Notes from 20.2.2017).

The 21st of February was spent as planned, examining the migration results. In a daily project meeting the consultant company inquired, out of a blue, about the next project's schedule with all the project team present, which caused bafflement. To bring up the next project in the busiest time of the ongoing project was not understood well within the case company (Notes from 21.2.2017).

On Wednesday 22nd of February the project core team was supposed to do end-to-end testing with the data that was migrated. Problem was that nothing worked. The different versions of different environments were not connected, and even after some quick fixes the tests could never even begin. The attempts to test were suspended at 10:30. After noon the test environment was decided to be emptied and start migration again (Notes from 22.2.2017).

On Thursday morning, 23rd of February, the migration from previous night was finished. In the morning a quick look at the result had to be enough. The end-to-end test with migrated data had to be done. With the testing a problem after another was found by the case company's project core team. Functionalities that had already been fixed before were broken again and everything seemed somewhat weird. The project core team tried to continue testing to late evening with resulting only a longer list of issues found to be broken (Notes from 23.2.2017).

On Friday 24th of February there were several serious meetings between the case company and the consultant company. Case company was trying hard to get some answers from the consultant company that's leading consultant had been on a holiday the entire week. There was a suspicion that when the test environment was emptied between the migrations, there was more than data that had been reset. In the beginning the consultant company denied everything, and sincerely did not know what the reason behind the problem could be. By the afternoon the leading consultant was called back to work from holiday. In the end of the day the project core team received a task to find out could the core system run the business operations on its own for couple of days in case the ERP system will not be functional by the 1st of March. Due to the structure of the business and the big role the core system plays in the customer end of the daily transactions, it theoretically could be possible to run some of the operations without having the integration on to the ERP system (Notes from 24.2.2017).

During the weekend 25.-26.2. there was a small group of people testing after the consultant company had informed that they had fixed the system to the state it was in on Wednesday before the latest refresh. The tests during this weekend were not successful, again new problems were found and some functionalities worked differently than what was assumed (Notes from 26.2.2017).

Monday 27th of February seemed a little bit chaotic. People who didn't smoke, went to buy cigarettes, several things were still broken, and with some features information was given that they will not be fixed which caused manual tasks to end-users before Wednesday. The integration between two systems had been used with username of one of the internal IT team members and that wanted to be changed two days before go-live. Several issues were unclear. There was a final steering group meeting to officially accept going live the next day. In the meeting it was also discussed what had happened during previous week and will it have an effect in production. Greetings from steering group were that on last Wednesday there had been some technical errors when copying the functionalities to the refreshed environment and since there was not enough time for the consultant company to test themselves the functionalities at all after the refreshment, they did not notice the situation. In addition, it was decided not to postpone the deployment schedule and the project would be in production in the 1st of March (Notes from 27.2.2017, C1 24.3.2017 & Meeting memo 27.2.2017).

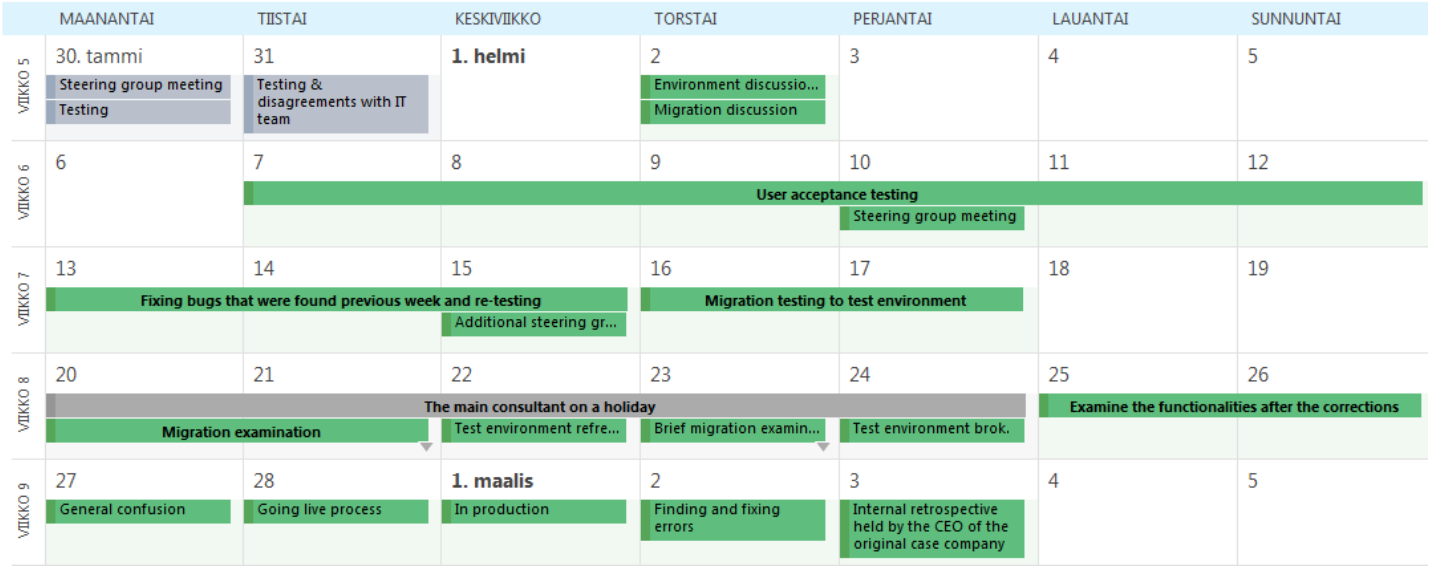

Figure 6. February

The above figure, Figure 6, illustrates the occurrence of events during February.

5.7 Project status

Next there are interviews of Change Management Manager M4, Financial Business Partner M5 and Chief Digital Officer M3. In these interviews the last-minute feelings before

the deployment of each manager are discussed as well as the project as a whole with its pros and cons.

5.7.1 Change Management Manager M4

This interview was held one week prior to the deployment day. M4 has had a long experience from working with the case company and has seen all the different IT projects there has been. The unstable and uncertain last-minute atmosphere did not come as a surprise for M4, this was more expected than something unpredictable (M4 22.2.2017).

The positives about the project for M4 has been close-knit and effective project core team. The negative aspect has been failures with communication, especially internally within the case company, which was also said to be the biggest improvement point together with a goal to create clarity in responsibilities (M4 22.2.2017).

At this point the user acceptance testing was supposed to be done and a question was asked about the current feelings. M4 commented that the testing phase is not over. Even in the difficult situation M4 trusted on the project team's systematic approach and that next week's Wednesday the project will have crossed the finish line (M4 22.2.2017).

All in all, M4 felt a bit misled on the project execution. M4 came to the project half way and trusted what was said about how training and testing would alternate from day to day. To the first session too large group of people was invited. That was when nothing in the system was in a proper condition for testing use cases and most of the people had to be released to continue work outside of the project. In addition, the general set up and internal communication between different functions was never clear enough to have functioning co-operation (M4 22.2.2017).

M4 has seen several different IT service providers and yet again there was a feeling that the salespeople have sold something that can only barely be executed. The schedule was still said to be tight and felt very much forced (M4 22.2.2017).

5.7.2 Financial Business Partner M5

Similarly, M5 was interviewed one week prior to the deployment day. M5 had a good feeling about the project. There will be problems before the project will be live in production, but they will be solved on the go. During the project the testing phase was terribly scheduled and implemented. The consultant company could have done technical testing before letting the case company test anything. Now majority of the time was spent on finding, reporting and fixing bugs. This was a problem with both the new system and the integration. There was no time for actual user acceptance testing (M5 22.2.2017).

Good element in the project was that all the participants were interested in the final result and to finish the project in time. There was also a variety of different types of know-how in the project group which ensured that different aspects were taken into consideration. In addition, the strong support from the management for the project was great. From the case company's side several people had 100 per cent of their working time only for this project, and if there was a need for extra people it was always arranged. The entire testing part could and should have gone much better, now the testing was too superficial. Also, the ways of working could have been set up together to make it clear for all the party's how to work, how to communicate and so on. During the project for the communication there were instant messaging, e-mail, phone, excel, project management tools in use to name a few, which must have made communication frustrating for everyone. Another thing were the definitions and development. In this type of project, the development should have been begun together with the definitions, work with prototypes or at least have the system open when making the definitions. Now the definitions kept changing for too long which then delayed the development work (M5 22.2.2017).

Likewise, as M4, also M5 mentioned that it would have been useful to accompany the project from the very beginning. In addition, proper morning meetings with the project group might have helped with some of the communication problems. As well as have the development of core system as a clear part of the project. Now it was too separate block that made it difficult to see the general status for the project. There was never representation from the internal IT team in the daily project meetings, sometimes it was only the two project managers with no-one else (M5 22.2.2017).

M5 saw the scheduling as horrible, and the problems with testing only emphasizing how horrible the schedule really was. Without weekends and long evenings, the time would

not have been enough. Good aspect was easy to find for someone coming from outside and being new person in the case company. M5 said that the employees clearly have had experience from project work, which is not something that can be taken for granted. The division into three separate companies inside the case company was also present in the project. Everyone from case company's side did still technically work for the same employer, but mentally the division begun during the project. Different groups had different interests and there was no technical project management, which would probably have made the situation and communication clearer (M5 22.2.2017).

5.7.3 Chief Digital Officer M3

An interview with M3 was held on the day of deployment, 28th of February. In the afternoon M3 had good feelings about the project. M3 admitted the problems and misunderstandings during the testing period. If the working methods that were used would have been known from the beginning, the plan and schedule would have looked different. Also, the communication with the internal IT team was not sufficient. They had worked with the integration on their own from November onwards and their development work was too disconnected from the rest of the project. This lead to clear improvement objective being the communication; certain things are needed to be talked out loud with each other and not assume anything (M3 28.2.2017).

From the viewpoint of the project management the system will be in production on time, in a condition with only few corrections needed, on a super tight schedule. So, when looking at the entity as a whole and not judging separate components, this was close to being perfectly executed project and it is not often when the end result is so good. Sure, when looking at the hours spent, both ends of the project did more work within the given time frame than what was originally thought. Nevertheless, the system ended up being more of a bulk solution than only for the case company's needs customized version that would need massive project in the future when there will be a version update (M3 28.2.2017).

The thoughts about the consultant company's project manager have changed from the beginning to a better direction. Compared to the interview before Christmas, the consultant company's project manager now got praises for keeping the project on time and getting people at their end also working during weekends and evenings. The timing was set by the case company's management, the consultant company would have wanted

the schedule to have more leeway, but in the end, they did commit to the set dead line. The reasons behind difficulties in communication are hard to be determined. On one hand the internal IT team was left alone to give space and peace to work but on the other hand that led them and everything they did being as a separate part of the project and the communication to and from was not successful at all (M3 28.2.2017).

5.8 Going live

In the afternoon of the 27th the final scheduling meeting for the next day was held. Next is a graph, Table 3, where on the left is what was discussed in the afternoon and on the right is what actually happened and when on the 28th of February and 1st of March (Notes from 27.2.2017, 28.2.2017).

Table 3. Deployment day

	Planned	**Happened**
Customer data migration from core to ERP	10:00-14:00	10:20-15:45
Check for migrated customers	16:00-18:00	19:00-20:00
Customer extranet blocked	16:00	16:00
Transaction data package from core	16:00-18:00	16:20-19:00
Transaction data package check		20:00-21:00
Transaction data package migration to ERP	18:00-23:00	21:00-8:00
Check for migrated data	23:00-01:00	First part 02:00-04:00 Second part 8:00-8:30
Manual tasks	23:00-01:00	08:00-09:00
First tests in production	"In the morning"	09:00-10:00
First use cases in production in controlled manner	08:30-09:30	10:00-13:30
Integration turned to automatic settings		13:40

For the deployment day the case company had arranged a meeting room for the core team to have their headquarters. The IT team worked close by but separately in their new office space. The consultant company's consultants were working from their office, hundreds of kilometers away. The morning started with a meeting and it was agreed that no-one will do anything without a permission from the core team. Every action and possible error was to be reported on the time of occurrence.

As can be seen from the figure 9, the deployment day followed the course of the project. Some delays in the schedule did happen, but the new ERP system was in automated production use on the first of March 2017.

5.9 After thoughts

After the new ERP system was successfully in production in the set time frame the technical people were also allowed to be interviewed. Following are the thoughts from the case company's internal IT team and from the consultant company's leading consultant.

5.9.1 Chief Technology Officer M2

Three days after go-live date there was an interview with the Chief Technology Officer that also represents the internal IT team. Which was now one of the new companies that came to be three days ago. M2 began by saying that from the part of the new system the final result is substantially what was supposed to. Few issues remained that still needed to be corrected, but the work will continue with the following project with the original case company. As a technical project this project was quite straight forward. From the IT team's point of view there were only few minor problems and special cases, but in the last quarter of the project the general hassle around the project started being the annoying bit (M2 3.3.2017).

The biggest problems from the development point of view were the custom fields added to the new system by the consultant company. The consultant company did not inform the IT team of the added custom fields, they had not documented the fields nor what were the functionalities and what information the core system was supposed to send to each field. All this came out during testing. The IT team had used documentation from previous ERP system, but that hadn't been useful (M2 3.3.2017).

The IT team had been in contact mainly with the leading consultant and only via email. According to M2 the complexity was produced by the rest of the project team around. The IT team had figured out that the cooperation with the consultant company worked best when they asked one or two precise questions at the time. They received the answers even during the same day and could continue work accordingly. M2 saw that this way of working did not appear to be a problem for the consultant company (M2 3.3.2017).

M2 had been working with this project since November 2016. This ERP project was only a piece of the case company's rearrangement undertaking. Since January 2017 M2 was in a minor role with the ERP project and focused on other matters relating to the new company structure and the splitting up of the core system into two. According to M2 the

person who took bigger role with the ERP system project used the worktime 40-60; 40 per cent to the development work and 60 per cent explaining what had been done, what will be done and sitting in meetings. Also, according to M2, this person did not know that the responsibility of “project manager” was appointed to this person, nevertheless there were no other resources in use (M2 3.3.2017).

The reason behind data migration schedule failure according to M2 was that the consultant company had not finished their end on time. A lot of fields were missing when the configurations were supposed to be finished, this did come as a surprise for M2. At the same time the IT team could not begin their work with these fields before the other end was done. When the work with the customized fields was done, IT did not know what exactly had been done and the IT team asked one at a time about each field when trying to test the integration. Before the data model was fixed it took a long time (M2 3.3.2017).

About the testing, M2 commented that with a little creativity the migration testing and use-case testing could have been done parallel in same environment, but the case company’s project team did not want to do this. With the set-up of use case testing done before the migration testing, the consultant company did not have resources to help the IT team with the migration because they were fixing the bugs found from the use case testing. In addition, the IT team could have had more resources with such a schedule. The IT team did not work over time, whereas the other project team worked over time a lot which was significant for the success of the project (M2 3.3.2017).

Good aspects of the project from M2’s point of view were that the project stayed on time and the technology in the software ended up being technically pretty much as good as expected in the beginning. It appeared that the new technology in use will not become an obstacle for the business to expand the business operations in the future. The problems that M2 saw, included the consultant company’s resources; the whole project should not have been dependent on one consultant. Also, the internal communication to the rest of the organization failed, which resulted in ugly emails internally with a too large distribution. And lastly the communication and comprehension within the project team was not successful either. It felt like the team doing the testing imagined that the they were testing a perfect system that would not have any faults in it, the core team assumed way too early that things would have been ready and functional. The IT team had said to the Change Management Manager that the testing is technical testing because no-one has tested the system yet, this was the only way to get something to test for the project

team. When the consultant company added fields in such a late point of time there was no time to do technical testing. Also, the IT team was not in any of the training sessions, so they did not even know how they could have tested anything end-to-end. The amount of panic in the project team was irrational when working in an agile project. Though at the same time the scheduling for the project was also bizarre. In a calendar, there was a day for introduction and training, but the consultant company adjusted their end of the integration even after the training. Furthermore, the set day for training gave the project team assumption that everything is ready, and then when it wasn't, the panic started growing. It had been agreed that by mid-January things would be ready, but the consultant company kept on working until the end of January and even later. The consultant company should have started the configuration work a lot earlier and not wait for definite specifications. According to M2 the communication might have worked better if the IT team would have had their own project manager in the project (M2 3.3.2017).

The definitions did not give much for the IT team and M2 also suspects that the consultant company did not get as much use out of them as potentially could have. The definitions were not specific according to M2 and most of the time spent with the definitions was used in explaining things to the project managers and the project team. M2 also challenges the consultant company's project manager's knowledge of the system (M2 3.3.2017).

The original assumption that the IT team, including M2, had of their role, was that they were supposed to create the technical integration between the core system and the new ERP system and technical implementation. This backfired because they did not have enough resources for administrative tasks and they skipped the communication to the others involved in the project. The IT team used their resources to development work and cut everything else which caused problems. M2 got a feeling that others expected them to behave as a system supplier, but the team behaved as individual developers. The roles were unclear, from the IT teams point of view a developer develops and sitting in a meeting was seen unnecessary, especially when there were project manager and a coordinator from the case company's side involved with the project. But instead the last month of the project the other project team required the presence from IT team to meetings explaining what will be done and when. The answer from IT team was that everything will be in a standstill to the end of each meeting and the investigation of each problem will begin only after the meeting is finished, therefore for there were no answers to give in the meetings. The developers turned into project managers and coordinators

even having to ask permission what could be done and when. All this took time from development work. M2's opinion was that the project team could have delivered a list of bugs, the IT team could have investigated each problem and come back with answers. When worries occur the project manager could have approached the team and then reported to the others. M2 defends their position saying that the IT team was only supposed to take care of the technical implementation. In addition, there was a lot of work to be done related to the division of the case company, which also took a lot of time from the IT team. This was not taken into consideration or accepted within the ERP project. At the end of the day the division of the case company was where everything was aiming to. The feeling M2 got, was that the ERP project became the number one even though it was only one part of the entity and the most vital every day transactions are done elsewhere (M2 3.3.2017).

The communication about bugs from the case company's testing team to IT team had to be arranged with an excel. There was a ticketing system in place before, but it was misused by asking questions in the tickets that were opened and not reporting bugs. Also, the communication about the status of each case became a problem. The IT team did not have time to maintain the bug excel which led to needless questioning sessions with the testing team. M2 concludes that there was an instant messaging program in use, and it should have been used more in order to avoid necessary meetings and "bug" reports, that were more questions on how this should work and not an actual bug (M2 3.3.2017).

Even though M2 strongly critiqued the cooperation between the case company's project team and IT team, M2 concludes the interview that the project core team and especially the change management manager had too much work assigned to them and that the project could not have been on time without the effort of that team (M2 3.3.2017).

5.9.2 Member from the internal IT team, N1

The day after deployment day there was an interview of the team member that worked the most with the project from the internal IT team during the last month, N1. N1 had been reflecting with M2 already from November 2016 onwards, but in January N1 took a bigger role in the project. The project as such was nothing special, the schedule was tight but the hassle around the project was the irritating part. The main tasks N1 was assigned were to put final touches to the integration and develop what was still needed, but most of the work was already done from November to January (N1 2.3.2017).

N1 commented on the communication with the consultant company being smooth since the leading consultant was the one point of contact and they spoke the same language together. The schedule was something else. The consultant company finished their work at the very last minute and even after that. When, according to the planned schedule, the different testing were supposed to begin, the IT team received the confirmation that the consultant company was done with their end, which was when the IT team could only begin to finalize their work with the customized fields added by the consultant company (N1 2.3.2017).

The good points from the project N1 named the case company's core project team that worked long busy hours. And the named down side was that it was impossible to do several things at the same time, as in developing and answering to questions and sitting in meetings. N1 revised the previous weeks and commented on the original plan of one day testing one day fixing etc. having been utopia (N1 2.3.2017).

N1 argued that the best method to connect the developers would have been via instant messaging which does not interrupt the flow of development work. Emails with distribution of two or three people can also be efficient in general, but meetings where present are five to eight people, couple people talking and one writing an excel are and were inefficient. Conversations in person can be fun and useful if the party's joining are prepared and topics are planned ahead. What it comes to daily meetings, N1 reasons that they are not supposed to be 30 to 60 minutes long 'sun is shining today' type of chit chat meetings, but compact, quick look on the current situation on the tasks and possible problems on hand each day. N1 felt frustrated that the same issue was discussed during the same day too many times via different communication methods and did not understand why one time was not enough (N1 2.3.2017).

About the project management in general N1 commented that the IT team worked on several things that others could not see or know, and others were not even supposed to know on each single minor detail that in larger scale make things happen. Also, the ERP project was only one part of the division of one company into three. There was a lot of work outside of the ERP project that made the division possible. N1 presented own thoughts describing the people in a project being self-acting professional that carry responsibility of own actions, not a recruit in an army who is not even meant to think on their own and can be commanded to do whatever the person in command wants to. If it is thought that someone has full right to command others, also the responsibility moves

over to the person in command. The down side is that in projects like this one, there is a lot of work done that the person in command is not even aware of (N1 2.3.2017).

From N1's point of view the testing was not problematic. There were bugs found that were fixed. The only cause of stress was the hassle within the project. Too much time was used to communicating in different channels. The feeling of the software implemented was positive; it seemed to be better and more agile than what was used previously, and the costs being significantly smaller can be seen as a big bonus. The interface seemed quite straight forward. The documentation was either really good or then really bad. Since the system was not open source system and the community was rather small and closed, the investigation of bigger problems can be challenging (N1 2.3.2017).

The general layout of the project was confusing for N1. The consultant company seems to have been working with a traditional software consult project when the IT team has been trying to work fast and agile and be ready in advance in order to execute what is needed on time that was wanted. In addition, the bigger outcome of the project; division of the case company and all the subprojects related to that, tangled with the ERP project. The way the ERP project was implemented as a project, would have required the IT team having their own project manager with dedicated time for the communication with the rest involved with the project. N1 explains the ways of working being a straightforward person who does not have patience to repeat oneself, but rather concentrate on the work itself which might come out as arrogance (N1 2.3.2017).

From the beginning of the project the IT team had mental readiness to be in production in January, which was the first wished dead line from the owners. The problem was that the work could not be complete before the consultant company was ready with the customized fields. There was a possibility to finish the development work sooner if the other end had been finished quicker. The general work and bug fixes were straight forward. The worst part of the project was the migration testing and the confusion with the different environments that took up time that could have been used to complete more migration tests. N1 did not feel strongly being part of the project and says that the case company's project core team did most of the work (N1 2.3.2017).

5.9.3 Leading consultant C1

The first thoughts of the project C1, the leading consultant from the consultant company, had, got to do with the synchronization of the schedules. The definitions were delayed, which started a domino effect, that resulted in too tight schedule for the deployment of the new system. The main good point of the project C1 brought out was that the project did finish within the set time frame with no delays. The project was done hurriedly which led to stupid mistakes that had an influence on the overall quality of the work. And this was also the development point C1 brought up; to have a better scheduling (C1 24.3.2017).

The original intent for the case company was to acquire an ERP system that would not be modified for the case company but could work without complex and heavy modifications. C1 explained that the system that was now brought into production, gets always modified to respond each company's processes, this is done without breaking any normal functionalities of the system which enables the system behind being updated twice a year. The case company has couple tailor made features, but both are done so that the update of the system will not break anything. According to C1 the project was implemented in very light ways considering that the business processes of the case company are run in a separate core system that has integrations to the ERP system (C1 24.3.2017).

C1 comments the definitions being difficult since the case company's IT team was not present and answering to questions about certain details. The group of people present included correct know-how otherwise, and if, in addition, there would have been someone from IT's side, it would have been perfect. Using the power points in the definition workshops has been a normal way of conducting the definitions with the consultant company, that way both ends can find out how each other's processes work (C1 24.3.2017).

Communication with the IT team was unstructured and inefficient. The communication with the testing team did work but did not stay within one channel. In an ideal situation the communication would have been only in a ticketing channel, but in reality, there is no project that this would work with. At the end of the day we are all humans, and in hurry when writing a description of a bug a word can easily be forgotten from a sentence or wrong word might be used and the meaning can be understood differently, nevertheless everything cannot be taken care of by phone either (C1 24.3.2017).

The testing was done in too constricted schedule. The consultant company did not have time to test themselves enough. Also, the consultant company could not have known all the different use cases for each functionality, all they knew about the company's use cases were based on the requirements. In addition, the consultant company was unaware that the migration tests and use case tests were wanted to be carried out in different environments which also added confusion. The consultant company never got a clear picture of the overall architecture and the absence of the IT team was the biggest reason for this. C1 had a holiday on the last week before the deployment day, week 8. On the 17th of February when C1 started the holiday, the overall feeling of the project was good, the system was not ready yet, but nothing major was supposed to happen before the deployment. The next week something did happen and C1 was called back to work the following Friday. According to C1 the consultant company was using a new technique to refresh the test environment and the mistakes were unfortunately not spotted on time before the case company's testing group (C1 24.3.2017).

The consultant company did not start the project thinking they would be doing configuration work until the last days. The overall feeling after the project was positive; there is always something to improve but the project was carried out in the set time. Though it was the timing that also C1 mentioned being the biggest area for improvement. The timing is complex ensemble with numerous factors that have an impact on the realization of the schedule. Transparency is important in order to have a mutual understanding on the situation and to synchronize the schedules for a common goal. According to C1 the resources were adequate, no extra hands on the consultant company's side would not have made a difference (C1 24.3.2017).

6 Conclusions

The success of this ERP project cannot be argued. The set, extremely tight, dead line was reached with a functioning system. Furthermore, for customers the change had only minimal effect. On the first day of production some functionalities were off-line for a couple of hours in the morning, and later some invoice corrections had to be explained in a few individual cases that were caused by the system change. Even with a few minor side effects, the new company was able to deliver their products and services within the set contracts to their customers.

One afternoon in February, there was a chat with M2 that summarises one of the main problems about the different project methods. The case company's IT team had started the development work from mid-November when the contract was signed. Since then, their methods had been agile, and their schedules had been very flexible. The IT team had said in the beginning that they could have even committed to being in production 1st of January 2017, if the consultant company could deliver their part on time. The image that the consultant company gave, first training and then testing, had turned into looking for bugs and fixing the bugs. From what the IT team saw, the consultant company used a waterfall approach to the project. Whereas, the IT team was working with agile approach with the project from the beginning, as was the norm within the case company (Notes from 10.2.2017).

In the early stages of the project, the chosen service provider formed and presented an agile impression of themselves to the case company. The word 'agile' was not used, but it was said that the co-working will be easy and flexible, for example due to the short distance between their headquarter and the case company's offices. In addition, in the implementation plan it was stated that there will be a cyclical variation between introduction, testing and possible fixes to the software. The general image the consultant company created was that they would be active and pliable. The sales people did not even say 'no' to the original idea of being in production 1st of January 2017. Of course, the sales people also disappeared after the contract was finally signed.

In reflection, the requirement definition phase was planned to take two months. This ended up increasing even longer. However, originally there was about two months' time for the entire rest of the project, which was to include the configuration, testing and hand over from the deployment project to production. Already in the original schedule, defining the requirements took half of the entire project time. This strongly suggests that the consultant company was indeed used working with waterfall methodologies. However, the methodologies on how the project was going to be implemented was never discussed. The case company did require a draft of a schedule from the consultant company. Nevertheless, responsibilities' and different phases were discussed but the interdependency of the tasks was not examined nor planned at all.

Moreover, even though the case company had the schedule they had asked from the consultant company, neither the case company nor the consultant company reacted to the delay that occurred in the mid-January. All the testing began three weeks after initially

planned. Individual people questioned the situation, but the steering group did not see this as a problem. From the beginning it was said that the schedule was going to be tight and there would be no room for errors. Yet, when the planned schedule did not happen it was disregarded as nothing crucial. However, during February several members from the project core team and from the consultant company did have to work overtime, also during weekends.

In the next page there is a modified chart, table 4, from Hüttermann (2012) comparing the agile and traditional, waterfall like methodologies. In this chart green color stands for the internal IT team, blue for the consultant company and yellow for the project in general. The colors have been appointed based on the implementation paragraph and the authors notes during the project. To make the chart visually clear, only one color was used per item.

Table 4. "Common agile practices and associated misunderstandings" modified from Hüttermann (2012) pages 38-39.

Practice	Agile approach	From the traditional perspective
Software development	Treats software development as an information process.	Software development is a manufacturing process.
Communication	Encourages and requires continuous interaction and feedback; the whole team is collocated.	Project members focus on their individual tasks first and often rely on documents more than on communication.
Courage	Encourages on open atmosphere.	There's a fear of missed deadlines and misunderstandings with customers.
Collective ownership	Specifies that program code and documents are owned and maintained by the team.	People feel responsible for only their piece of work.
Integration	Uses continuous integration to get early feedback and increase quality.	Integrations are rare, late, and felt to be a waste of time.
Test-driven development	Treats testing as a great value for design, code, and quality.	Tests are considered a waste of time. Many tests are done manually.
Refactoring	Accepts temporary suboptimal, pragmatic design; design is maintained and improved continuously.	Errors aren't allowed; created artifacts are supposed to run perfectly at once.
No overtime, sustainable pace	Follows regular working schedules that can be sustained over time.	Regular overtime is necessary to deliver on time while planning aggressively.
Iterations	Slices software into handy and convenient iterations.	No iterations are necessary; the work focuses on a single release, mostly a big bang release.
Stand-up meetings	Institutes daily structured exchanges.	Big, long, infrequent project meetings are used. The allocation of people and amount of time are often excessive.
Documentation	Uses documentation only where necessary, and when it adds value.	Documentation is considered an important artifact, written according to standards. In reality, it's seldom read.
Team	Treats the team as important, as a collection of individuals having their own strengths and characteristics. The team should be cross-functional.	The individual expert is in focus. Work is done in isolated islands of knowledge.
Quality	Is inherent in everything the team does.	Quality is the first goal to be skipped when time and money get short.
Change	Considers change as a normal part of project work.	Change is more condemned than encouraged.

As can be seen from the chart, the internal IT team possessed mostly only agile qualities whereas the consultant company did not have any agile qualities. The project in general also had a lot more traditional characteristics' than agile.

Perhaps this was also one of the reasons that led to the case company's internal IT team working very independently and separately from the rest of the project. The case company's core project team never asked or expected a plan or schedule from the IT team. The IT team had begun working with the project before any other teams, but there was no status check with them at the requirement definition phase. Nor was there later, to understand their status and needs. The IT team was treated as part of the project team and as an individual, independent team at the same time. Nothing was really agreed to in advance between the IT team and the project core team. Neither was there anything about working or communication methods planned beforehand between the IT team and the consultant company.

There was not enough time to create a communications plan or fancy graphs about the different phases of the project having every single action of the project on paper. This might not have been needed either, at least not for everyone. Both developers from the IT team commented on the technical execution as having been straight forward. The project would not have succeeded on time, without the sangfroid and flexibility of the IT team. Of course, everyone was needed, but when the planned schedule started stalling, it never seemed to be a major problem for the IT team. They were just doing their jobs. However, since there was not a general idea on what the interdependent tasks exactly were, it generated confusion and frustration. If the core team would have known what could have been assumed to be working when A has been done but B is not yet finished, the expectations would have been more realistic. Also, the current state of the system entity would have been clearer for the project core team without having to test a faulty system to figure out what worked and what did not. In addition, if the interdependent tasks would have been neutrally discussed beforehand, the consultant company would have had the possibility to understand what it would mean to be late with their configuration work. The situation ended up seeming like that different teams assumed other teams knowing and understanding what they were doing and when, which unfortunately was not the case.

This leads to the subject of communication, which all the interviewees commented on having been implemented poorly. It is important to remember that every single person in the project was part of the communication implementation when communicating themselves. In the kick-off meeting in November it was said that all the documentation was to be in a cloud and e-mailing was to be avoided. This was essentially everything that was said about communication in the beginning. This kind of "communication plan" could

never have worked in such an intensive and high-tempo project. Consequently, when there were no mutually agreed methods of communication for a need to communicate, the same issue ended up being communicated in several different ways using multiple communication channels. This therefore led to frustration on the receiving end and cumulated into annoyance and desire to halt communication altogether.

Another side of the communication was the openness about the different factors in each end of the project. There were planned holidays and other absences in both the case company and in the consultant company which came as a surprise every time right before the absence of someone in the project. Likewise, unexpected absences were not communicated clearly. The theory, discussed earlier, presented solutions for this kind of problem. A project calendar that would have included major events in the project or affecting the project, such as milestone dates, meeting events, current activities in the project and vacations or personal events that would influence the project. This would have required commitment and openness from everyone within the project but could have worked transferring the information required.

Another major communication failure was the use of different environments. The internal IT team brought this subject up in October 2016 for the first time. And yet, in February 2017 it was not clear what environments were able to be used in testing and what kind of testing was to be done. This was an excellent example of the cooperative game of communication that Cockburn (2007) presented; the project's rate of progress is linked to how long it takes for information to get from one person's mind to another's. For example, if the consultant company knows something the IT team needs, the project's progress depends on how long it takes and how much energy it costs to get the knowledge transferred to the IT team. Here the problems escalated in February because the purpose of different environments was not clear for anyone. Another argument from theory related to this issue was from the PMBOK guide (2017) that discussed about the fundamental attributes of effective communication activities and listed the clarity on the purpose of the communication as the first item. It seemed like the purpose of the IT team's questions about the different environments became clear only in February when the need of different environments actualized for everyone working with the project.

The communication between the project core team and the consultant company upheld a very professional tone of voice throughout the project, even when difficult situations were encountered. However, the same could not be said about the atmosphere inside

the case company. The communication between the core team and IT team did heat up a few times. The situation was of course different in these two sets of interphases. There were major organisational changes going on in the case company, which furthermore were not managed properly. Also, issues from previous projects must have had an effect. In addition, people knew each other relatively well, which likewise made it easier to show real feelings towards one another.

The organisational changes in the case company were not taken into consideration when planning the project. It was stated that what happens outside of the project does not concern the project. In a way this focused people on delivering a functioning ERP system on time. But on the other hand, the new company that was to be divided from the original case company, could not have continued their businesses with only a functioning ERP system. There were other additional actions outside this project to be taken into consideration. Especially the internal IT team needed to devote their resources to focus on other aspects of the division, for example to creating a duplicate core system for the new company. A third part of the original system triangle was the CRM system, this was actively forgotten during the ERP project. This led the case company to start their operations without correct data in their system that also could have worked as a CRM system for them.

There was a coordination group for the division of the company. This group met regularly but no project was created, and the restructuring of the case company was not managed in the way the ERP project was. This led to an image of the ERP project being the only important aspect of the division. Communication about the division and different tasks related to the division and restructuring of the company could have also helped the ERP system project team to understand other interdependent tasks that had an effect on the people working several different tasks, not only with the ERP project. Change management in general was not taken into consideration appropriately, in such a huge organizational change. These factors only partially affected the ERP project as such, which was the solitary subject of this thesis. But then again have to do with communication within the case company, which was one part of this thesis.

Nothing is ever black and white, there are always some things to be improved and it was not a surprise for anyone that this ERP project encountered challenges. The challenges were not known in advance. However, communication in general had not been the smoothest part of the case company's IT projects previously, nor in the case company

in general, especially between different functions. Thus, perhaps the problems with communication was not the biggest surprise, only the detailed subjects and problems that originated from poor communication was the unforeseen element. This is definitely not a problem or something to improve on only with the case company, as Forselius et. al. (2009) put it: No matter what the technology, model or method for the development project the three main challenges are always present, and they are: communication, communication and communication.

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M3 2016. Chief Digital Officer. Case Company, Finland. Interview 22.12.2016.
M4 2016. Change Management Manager. Case Company, Finland. Interview 20.12.2016.
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Notes from 11.-12.2.2017
Notes from 13.2.2017
Notes from 14.2.2017
Notes from 17.2.2017
Notes from 20.2.2017
Notes from 21.2.2017
Notes from 22.2.2017
Notes from 23.2.2017
Notes from 24.2.2017
Notes from 26.2.2017
Notes from 27.2.2017
Notes from 28.2.2017

Manifesto for Agile Software Development

We are uncovering better ways of developing
software by doing it and helping others do it.
Through this work we have come to value:

Individuals and interactions over processes and tools
Working software over comprehensive documentation
Customer collaboration over contract negotiation
Responding to change over following a plan

That is, while there is value in the items on
the right, we value the items on the left more.

Kent Beck
Mike Beedle
Arie van Bennekum
Alistair Cockburn
Ward Cunningham
Martin Fowler
James Grenning
Jim Highsmith
Andrew Hunt
Ron Jeffries
Jon Kern
Brian Marick
Robert C. Martin
Steve Mellor
Ken Schwaber
Jeff Sutherland
Dave Thomas

List of figures and tables